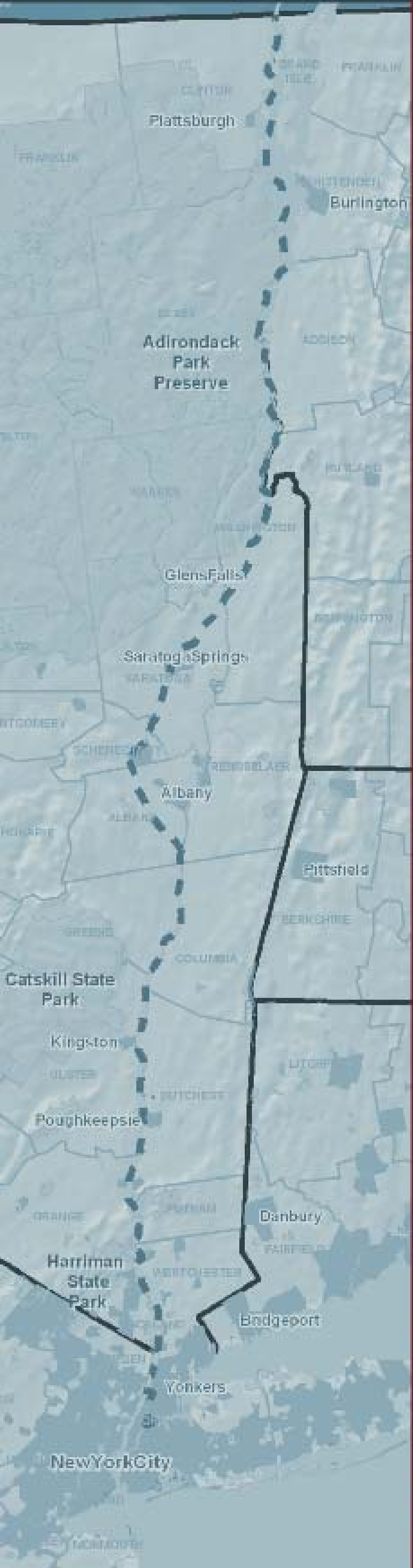
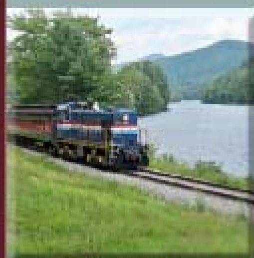




DOE/EIS-0447

Final

Final

Champlain Hudson Power Express Transmission Line Project Environmental Impact Statement

Volume II: Appendices A - O

U.S. DEPARTMENT OF ENERGY
OFFICE OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY
WASHINGTON, DC

August 2014

FINAL

CHAMPLAIN HUDSON POWER EXPRESS TRANSMISSION LINE PROJECT ENVIRONMENTAL IMPACT STATEMENT

Volume II: Appendices A - O

U.S. DEPARTMENT OF ENERGY
OFFICE OF ELECTRICITY DELIVERY
AND ENERGY RELIABILITY

COOPERATING AGENCIES

U.S. ENVIRONMENTAL PROTECTION AGENCY
U.S. ARMY CORPS OF ENGINEERS
U.S. FISH AND WILDLIFE SERVICE
U.S. COAST GUARD
NEW YORK STATE DEPARTMENT OF PUBLIC SERVICE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AUGUST 2014

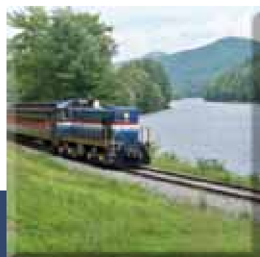
FINAL

CHAMPLAIN HUDSON POWER EXPRESS TRANSMISSION LINE PROJECT ENVIRONMENTAL IMPACT STATEMENT

VOLUME II: APPENDICES
CONTENTS

APPENDIX	
A	PROPOSED CHPE PROJECT TRANSMISSION SYSTEM DETAILED MAP ATLAS
B	CWA SECTION 404 PERMIT APPLICATION ALTERNATIVES ANALYSIS REPORT
C	NYSPSC ORDER GRANTING CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE PROPOSED CHPE PROJECT
D	SCOPING SUMMARY REPORT
E	EIS DISTRIBUTION LIST
F	COASTAL ZONE CONSISTENCY DOCUMENTATION AND LAND USE TABLES
G	APPLICANT-PROPOSED IMPACT AVOIDANCE AND MINIMIZATION MEASURES
H	ESA SECTION 7 DOCUMENTATION
I	SUMMARY OF WETLANDS AND SOILS ALONG PROPOSED CHPE PROJECT ROUTE
J	NHPA SECTION 106 DOCUMENTATION
K	VISUAL AND RECREATIONAL RESOURCES ALONG PROPOSED CHPE PROJECT ROUTE
L	ENVIRONMENTAL JUSTICE ANALYSIS BACKGROUND INFORMATION
M	AIR QUALITY ANALYSIS BACKGROUND INFORMATION
N	NOISE ANALYSIS BACKGROUND INFORMATION
O	CONTRACTOR DISCLOSURE STATEMENT

THIS PAGE INTENTIONALLY LEFT BLANK



APPENDIX A

Proposed CHPE Project Transmission System Detailed Map Atlas

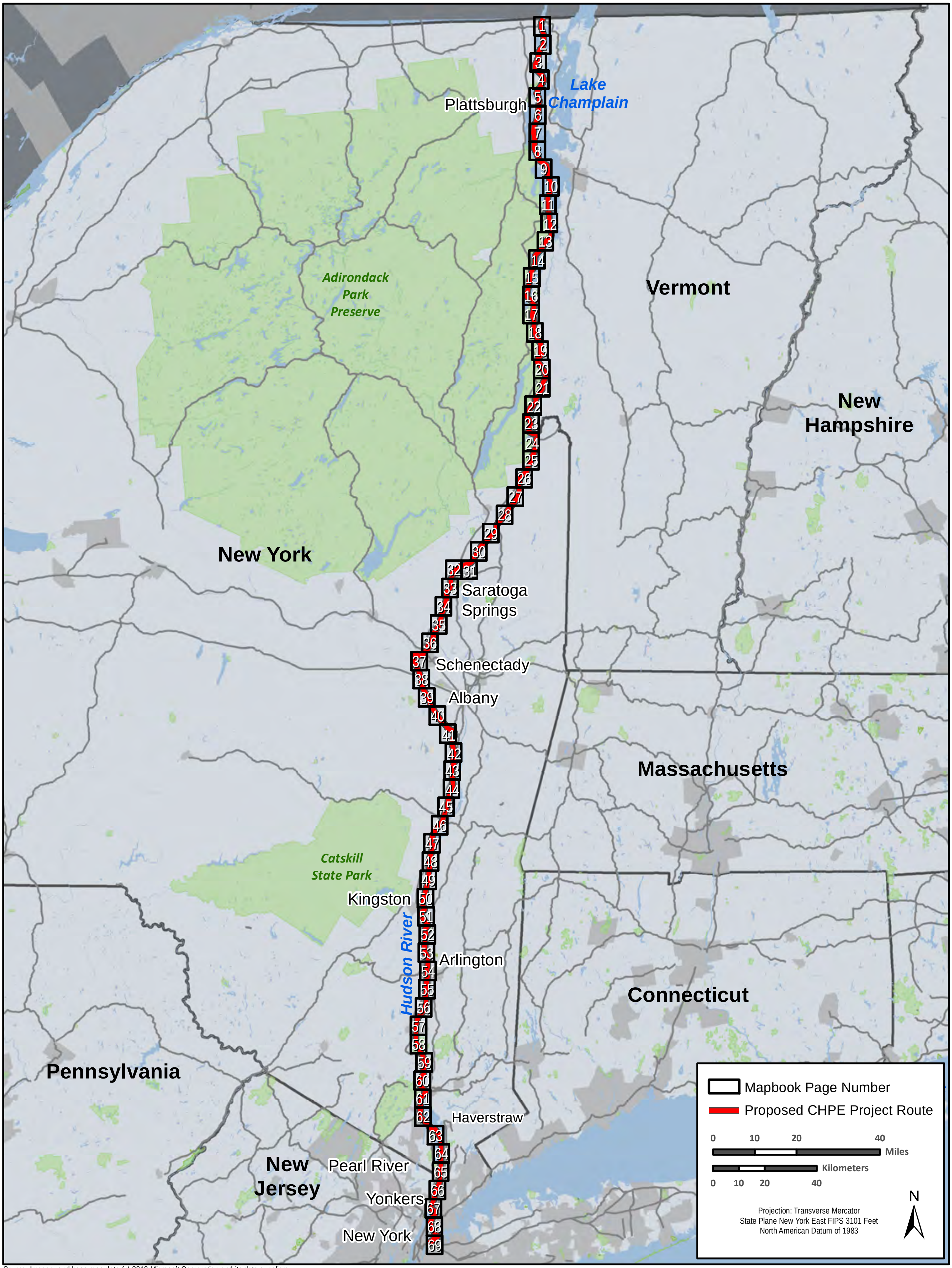
Appendix A
Proposed CHPE Project Transmission System Detailed Map Atlas

This appendix provides detailed maps of the entire proposed Champlain Hudson Power Express (CHPE) Project route. The sources of the base maps used for the figures are U.S. Geological Survey (USGS) 1:24,000-scale topographic quadrangle maps. **Table A-1** lists each of the maps presented in the appendix. The maps are presented in an order that geographically is from north to south.

Table A-1. Map Guide

Map Number	Mileposts	Segment	Key Geographic Feature
1	0–4	Lake Champlain	Rouses Point, NY
2	5–9	Lake Champlain	Point au Fer
3	9–13	Lake Champlain	Trembleau Point
4	14–18	Lake Champlain	Beekmantown, NY
5	19–23	Lake Champlain	Cumberland, NY
6	23–27	Lake Champlain	Sawyer Island
7	28–31	Lake Champlain	Providence Island
8	32–36	Lake Champlain	Port Kent, NY
9	37–41	Lake Champlain	Schuyler Island
10	42–46	Lake Champlain	Four Brothers Islands
11	46–50	Lake Champlain	Jones Point
12	51–55	Lake Champlain	Essex, NY
13	55–60	Lake Champlain	Split Rock Mountain
14	61–65	Lake Champlain	North West Bay
15	66–70	Lake Champlain	Beaver Brook
16	70–75	Lake Champlain	Crown Point State Park
17	75–79	Lake Champlain	Indian Ridge
18	80–84	Lake Champlain	Spar Mill Bay
19	85–89	Lake Champlain	Fort Ticonderoga, NY
20	90–94	Lake Champlain	Huckleberry Mountain
21	95–99	Lake Champlain	Mill Bay
22	100–105	Lake Champlain, Overland	Dresden, NY
23	105–110	Overland	Pine Lake Brook
24	110–115	Overland	Whitehall, NY
25	116–120	Overland	Great Meadows State Prison
26	120–125	Overland	Fort Ann, NY
27	126–130	Overland	Kingsbury, NY
28	131–135	Overland	Hudson Falls NY
29	136–141	Overland	Moreau, NY
30	142–146	Overland	Ballard Corners, NY

Map Number	Mileposts	Segment	Key Geographic Feature
31	147–149	Overland	Wilton, NY
32	150–153	Overland	Saratoga Springs, NY
33	154–158	Overland	Saratoga Spa State Park
34	159–163	Overland	Ballston Spa, NY
35	164–168	Overland	Burnt Hills, NY
36	168–173	Overland	Mohawk River
37	174–180	Overland	Rotterdam, NY
38	181–185	Overland	Watervliet Reservoir
39	186–190	Overland	Voorheesville, NY
40	191–195	Overland	Unionville, NY
41	196–201	Overland	South Bethlehem, NY
42	202–206	Overland	Ravena, NY
43	207–210	Overland	New Baltimore, NY
44	211–215	Overland	Coxsackie, NY
45	216–219	Overland	Athens, NY
46	220–225	Overland	Catskill, NY
47	225–230	Overland, Hudson River	Germantown, NY
48	231–235	Hudson River	Saugerties, NY
49	235–239	Hudson River	Tivoli Bay State Unique Area
50	240–244	Hudson River	Ulster, NY
51	245–249	Hudson River	Port Ewen, NY
52	249–253	Hudson River	Norrie State Park
53	254–258	Hudson River	Hyde Park, NY
54	258–262	Hudson River	Poughkeepsie, NY
55	263–267	Hudson River	Poughkeepsie, NY
56	267–271	Hudson River	Newburgh, NY
57	272–276	Hudson River	Beacon, NY
58	277–281	Hudson River	Cornwall, NY
59	282–286	Hudson River	West Point, NY
60	287–291	Hudson River	Highlands, NY
61	292–296	Hudson River	Stony Point, NY
62	297–301	Hudson River	Haverstraw, NY
63	302–307	Hudson River	Rockland Lake State Park
64	308–311	Hudson River	Tarrytown, NY
65	312–316	Hudson River	Greenburgh, NY
66	317–321	Hudson River	Yonkers, NY
67	321–326	Hudson River, New York City Metropolitan Area	Spuyten Duyvil, NY
68	327–332	New York City Metropolitan Area	Bronx, NY
69	333–336	New York City Metropolitan Area	Queens, NY



Source: Imagery and base map data-(c) 2010 Microsoft Corporation and its data suppliers.

0 0.25 0.5 1 Miles

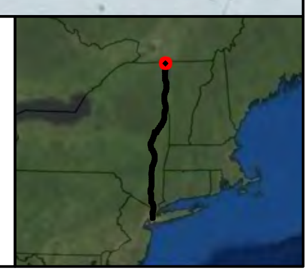
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 1 of 69

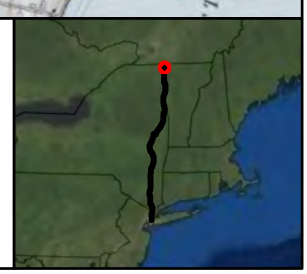


Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 2 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

0 0.25 0.5 1 Miles

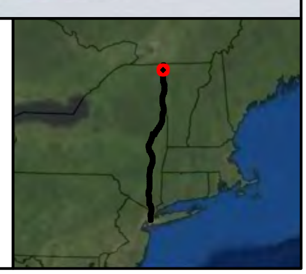
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

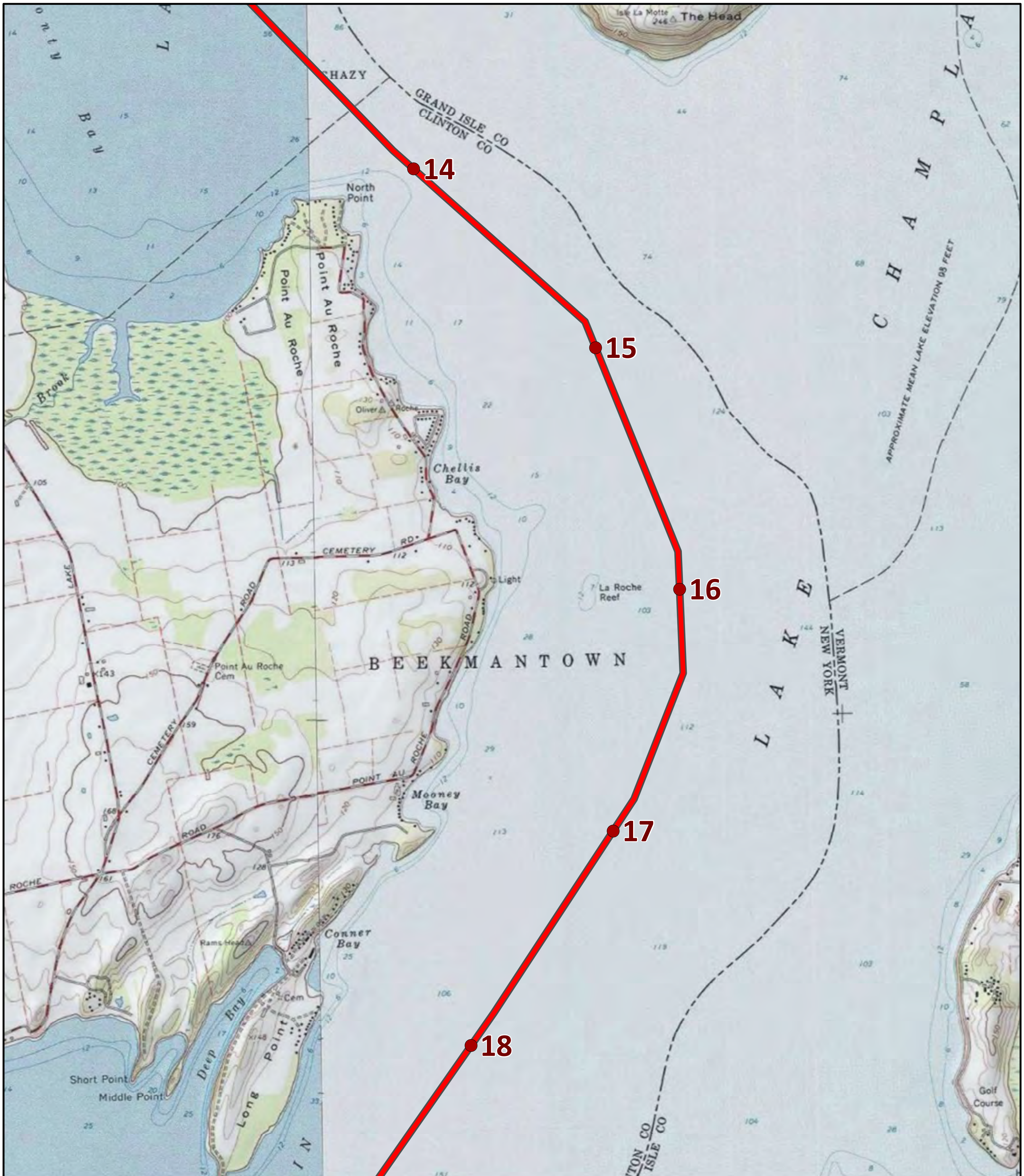
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 3 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

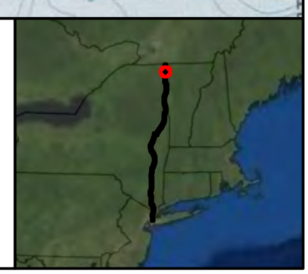
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 4 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

0 0.25 0.5 1 Miles

Kilometers 0 0.25 0.5 1

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

Proposed CHPE Project Route Mileposts

Proposed CHPE Project Route

HDD Installation

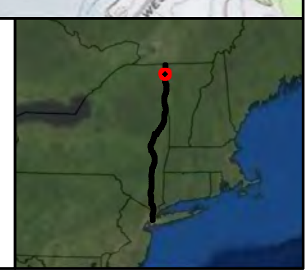
Pipe Bridge Installation

Federal Navigation Channel

FEMA 100-Year Flood Zone

Delineated Wetlands

Map 5 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

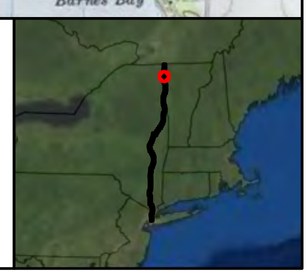
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

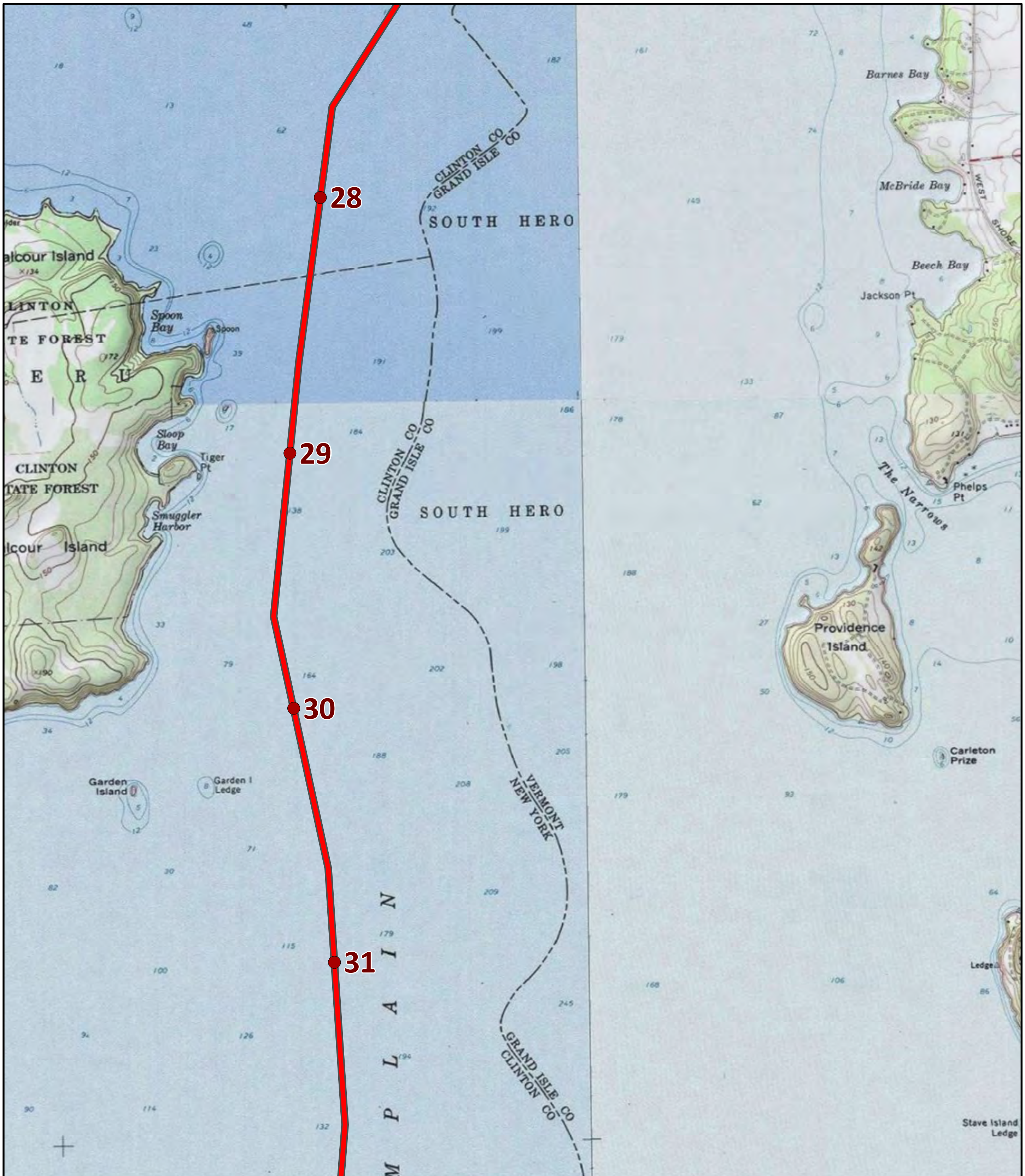
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 6 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

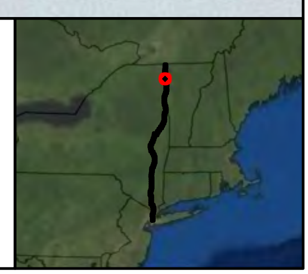
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

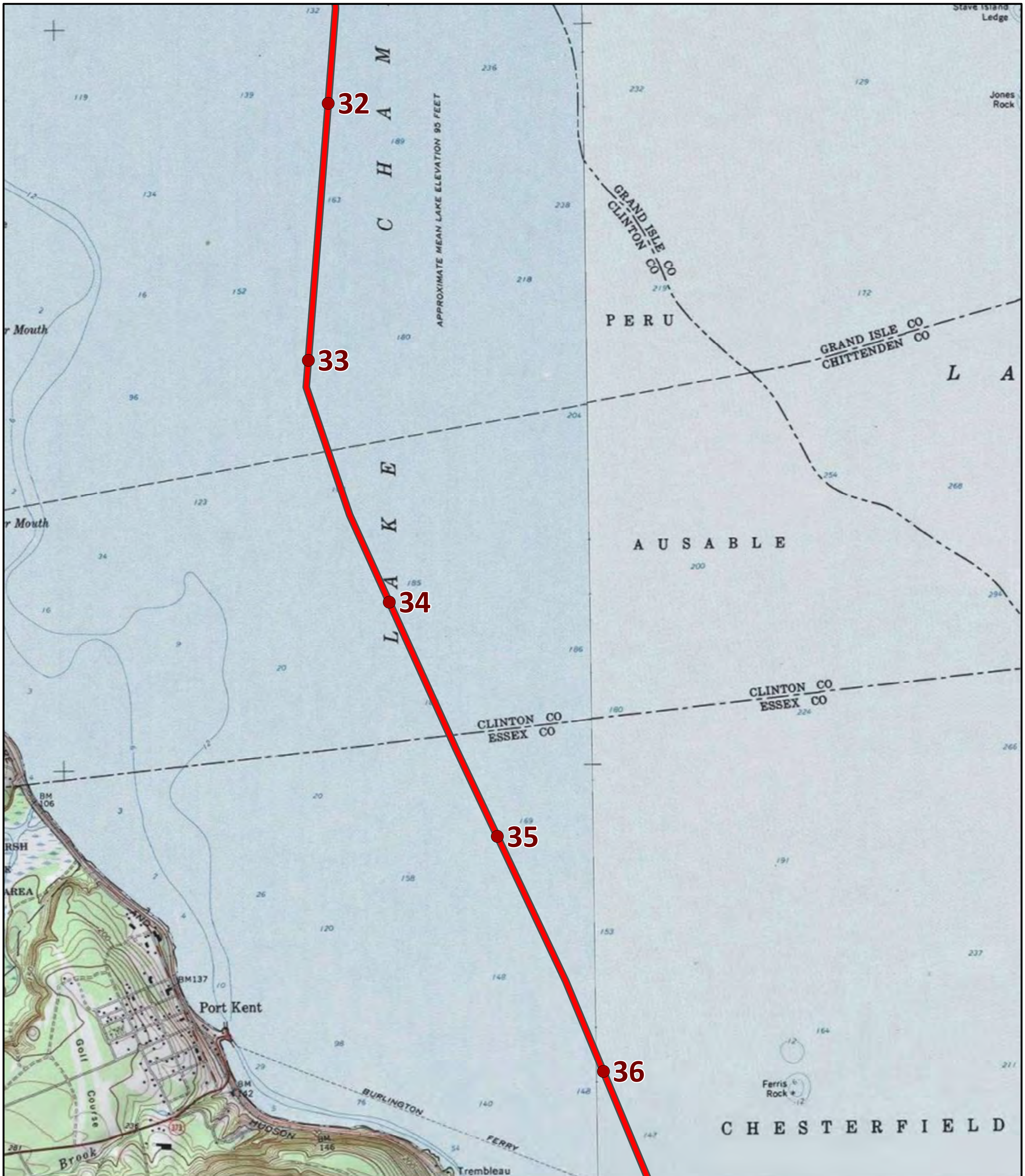
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 7 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

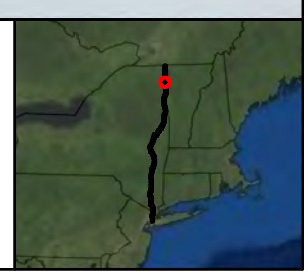
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

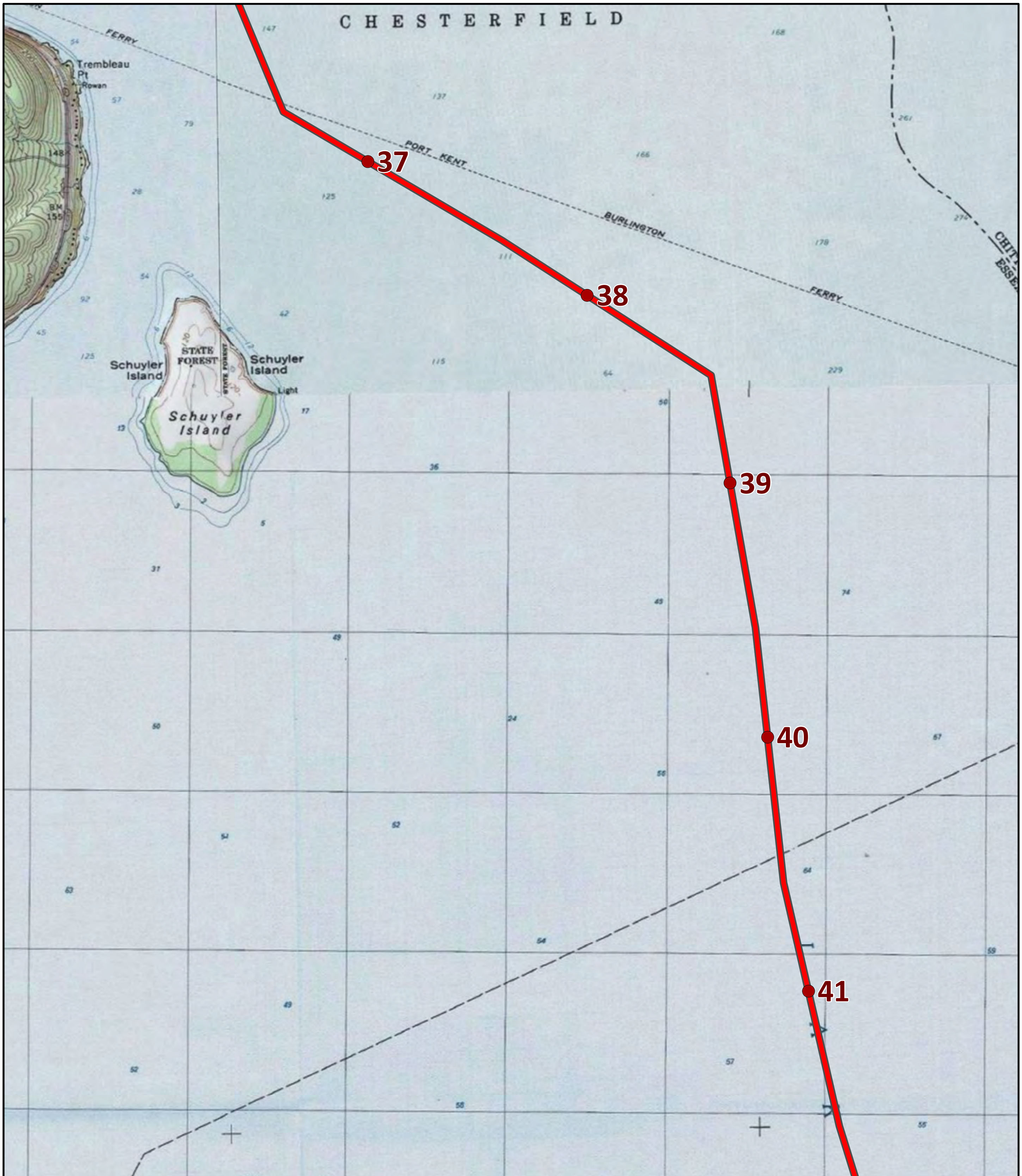
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 8 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

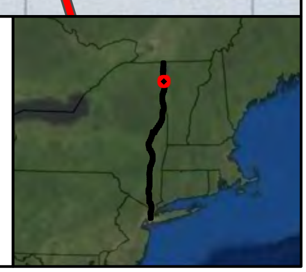
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 9 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

0 0.25 0.5 1 Miles

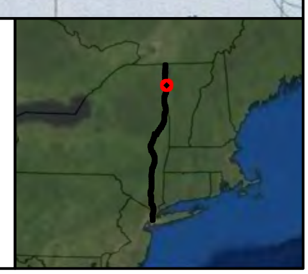
0 0.25 0.5 1 Kilometers

N

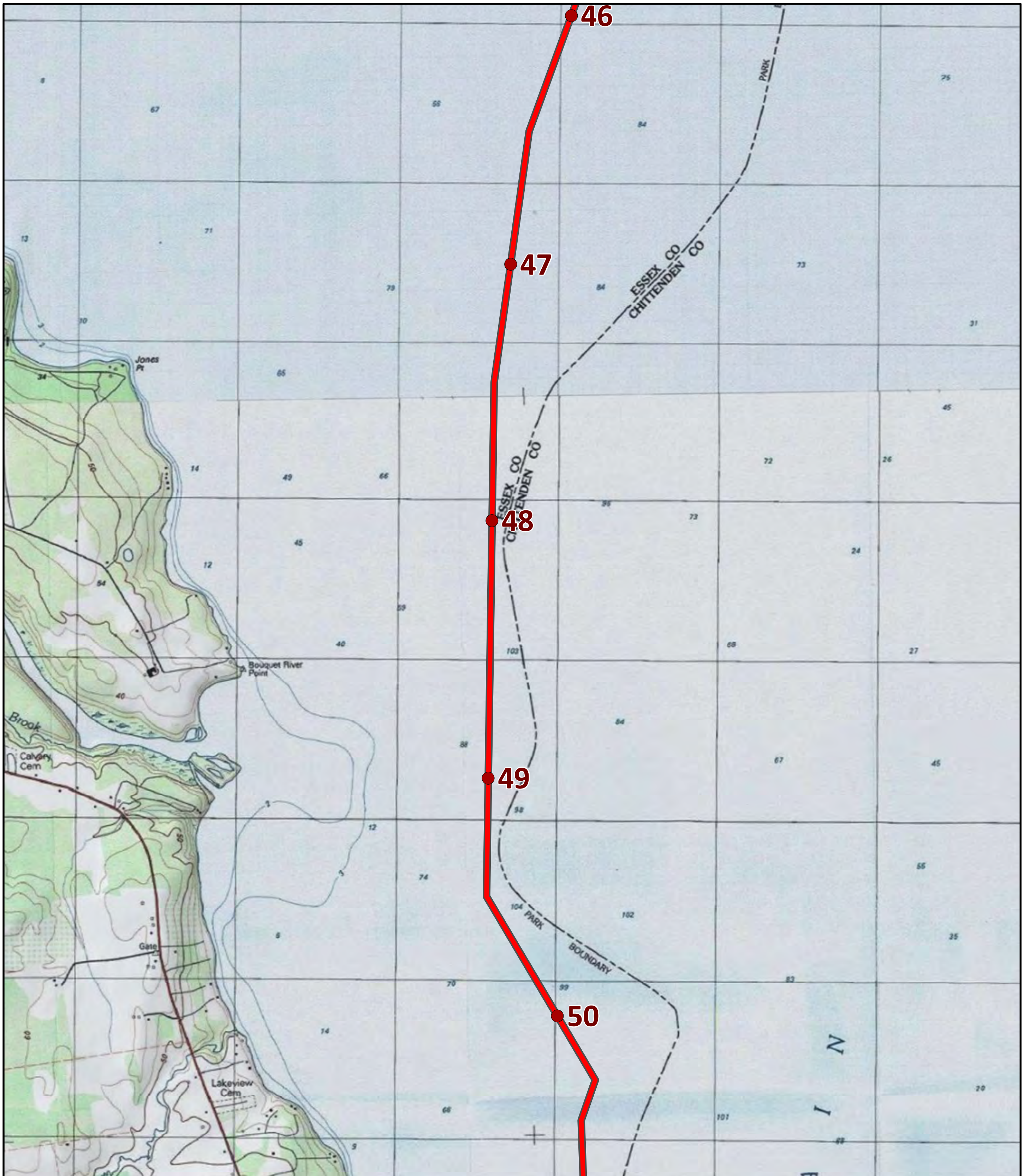
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 10 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

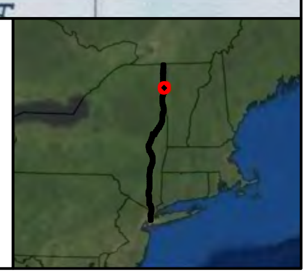
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 11 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

● Proposed CHPE Project Route Mileposts	Delineated Wetlands	
Proposed CHPE Project Route		
HDD Installation		
Pipe Bridge Installation		
Federal Navigation Channel		
FEMA 100-Year Flood Zone		

0 0.25 0.5 1 Miles

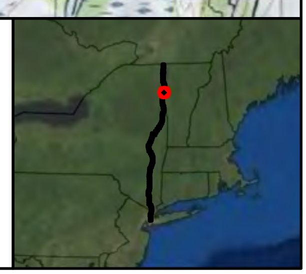
0 0.25 0.5 1 Kilometers

N

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

Map 12 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

N

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 13 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

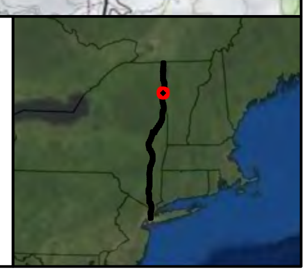
0	0.25	0.5	1 Miles
0	0.25	0.5	1 Kilometers

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

N

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

Map 14 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

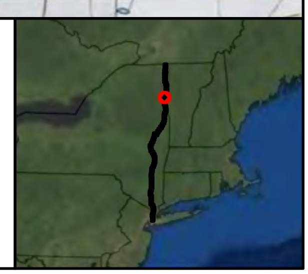
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 15 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

0 0.25 0.5 1 Miles

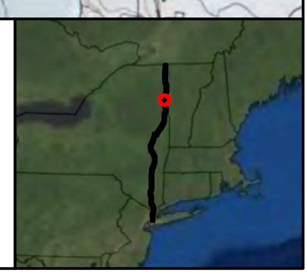
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

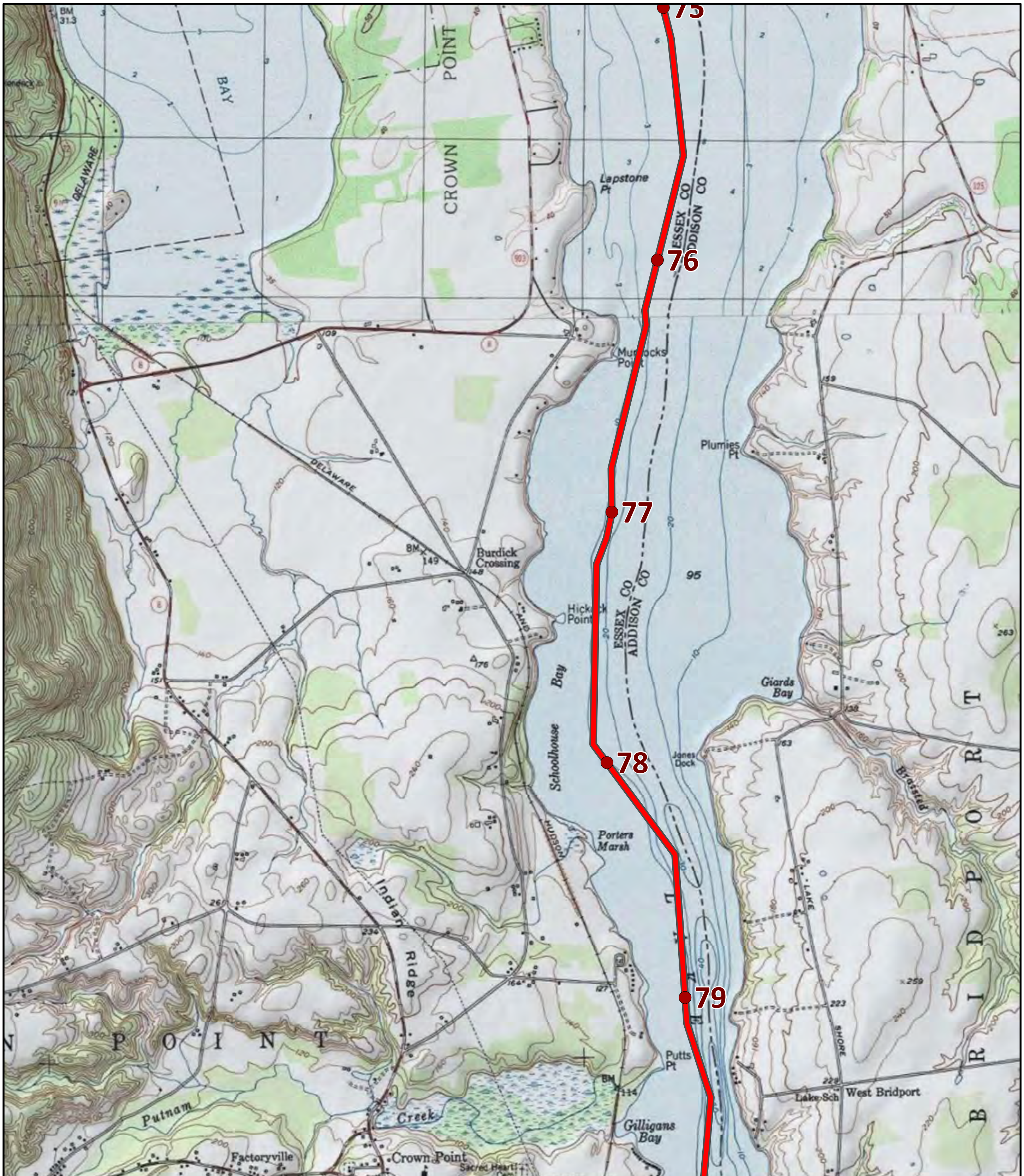
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 16 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

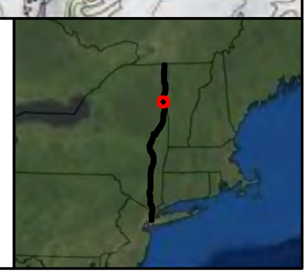
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

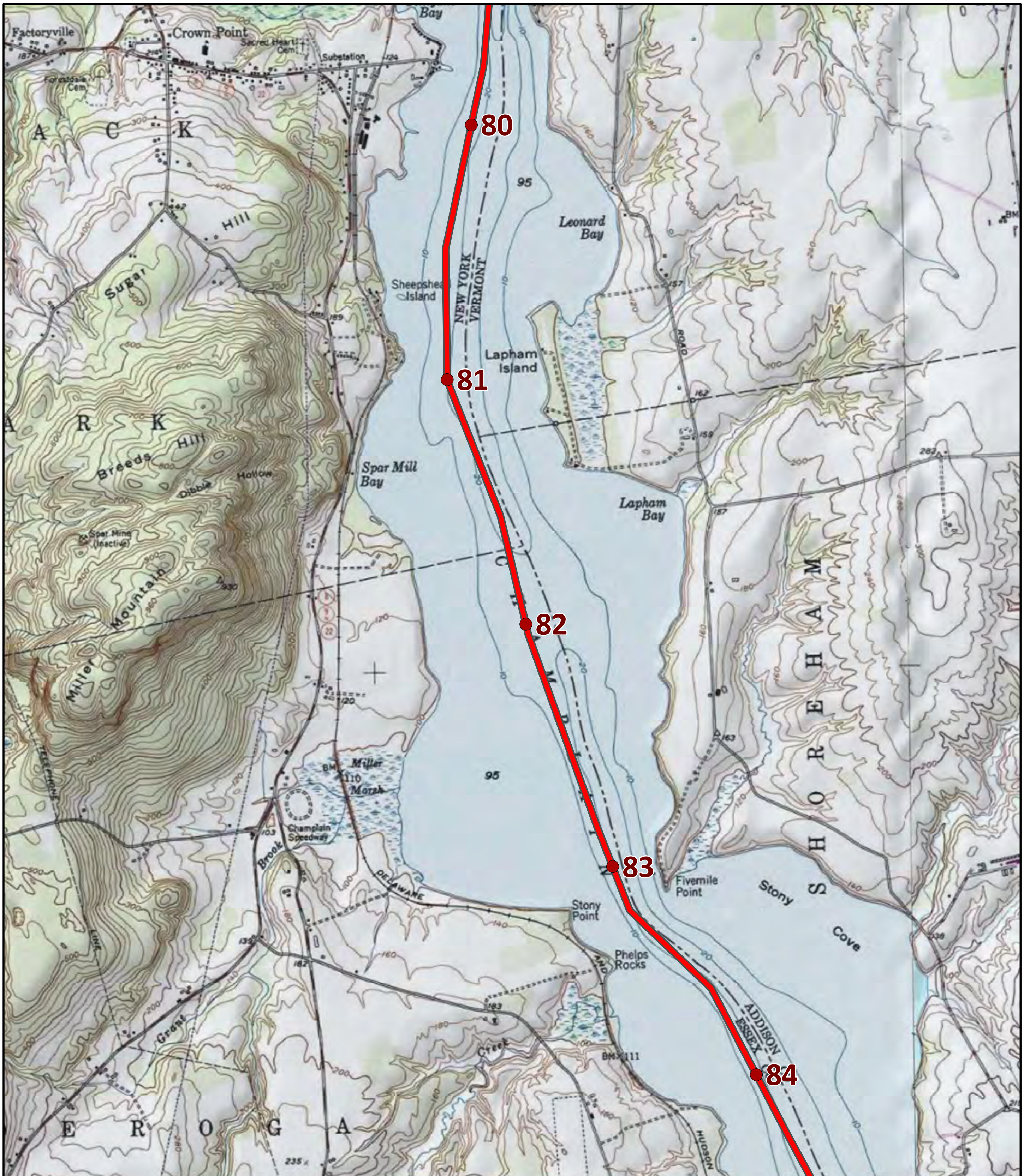
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 17 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



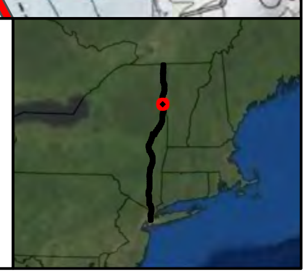
0 0.25 0.5 1 Miles

Kilometers 0 0.25 0.5 1

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

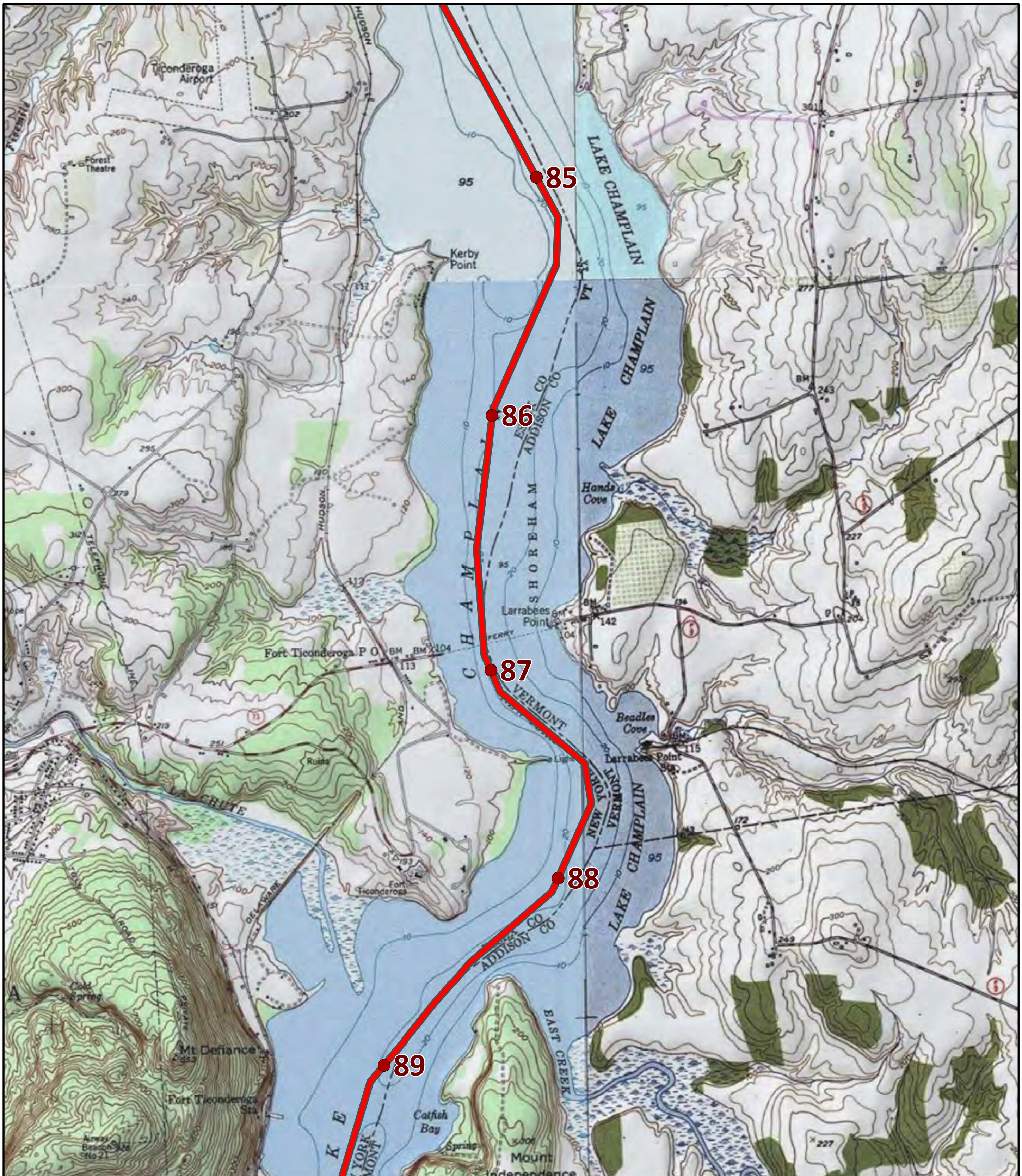
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 18 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

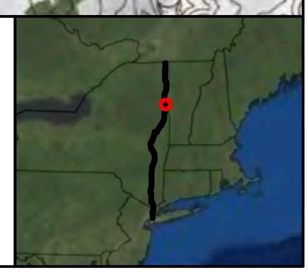
0 0.25 0.5 1 Kilometers

N

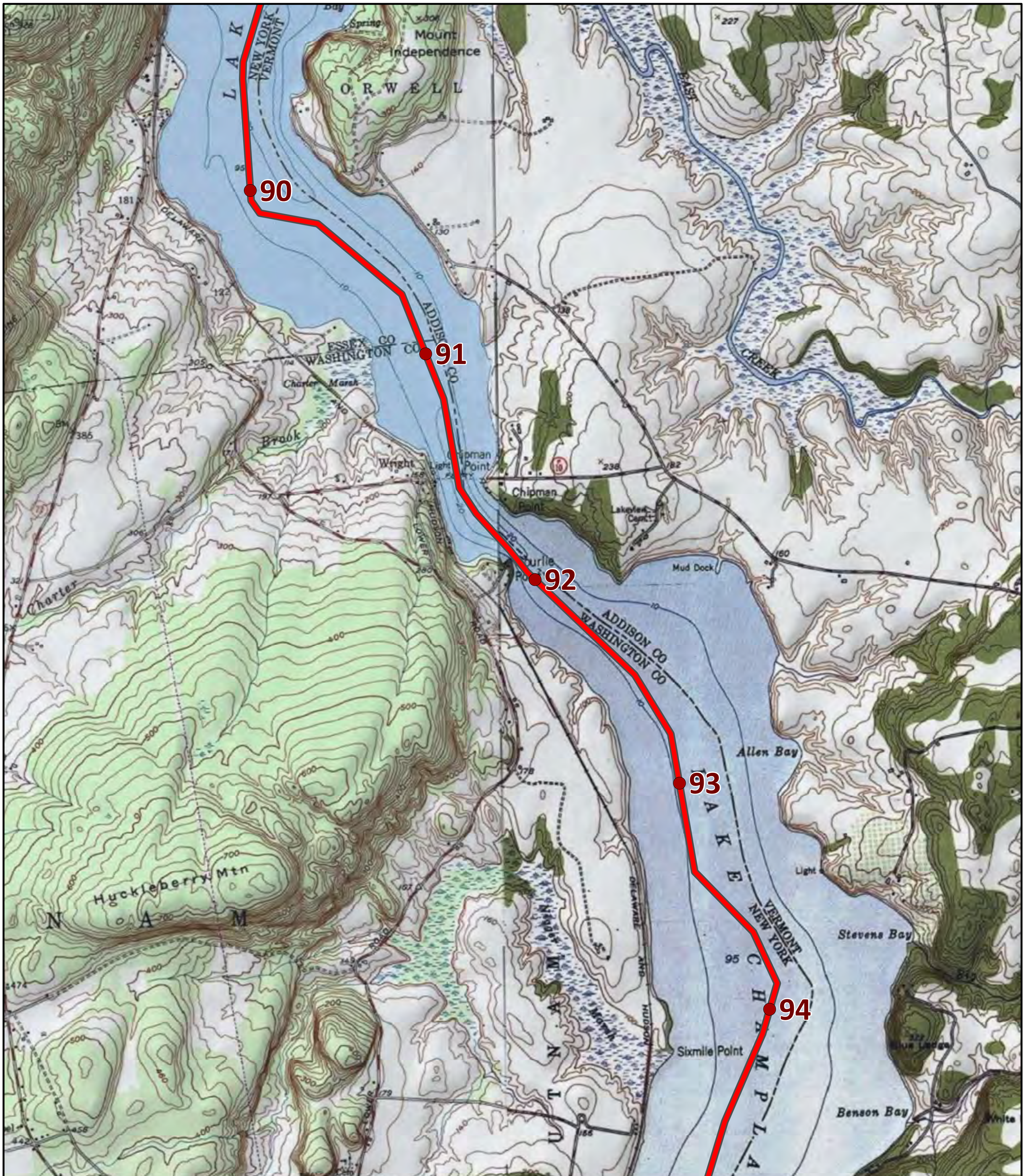
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 19 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles	
0 0.25 0.5 1 Kilometers	

Proposed CHPE Project Route Mileposts

Proposed CHPE Project Route

HDD Installation

Pipe Bridge Installation

Federal Navigation Channel

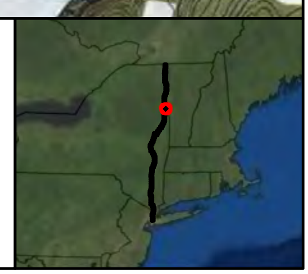
FEMA 100-Year Flood Zone

Delineated Wetlands

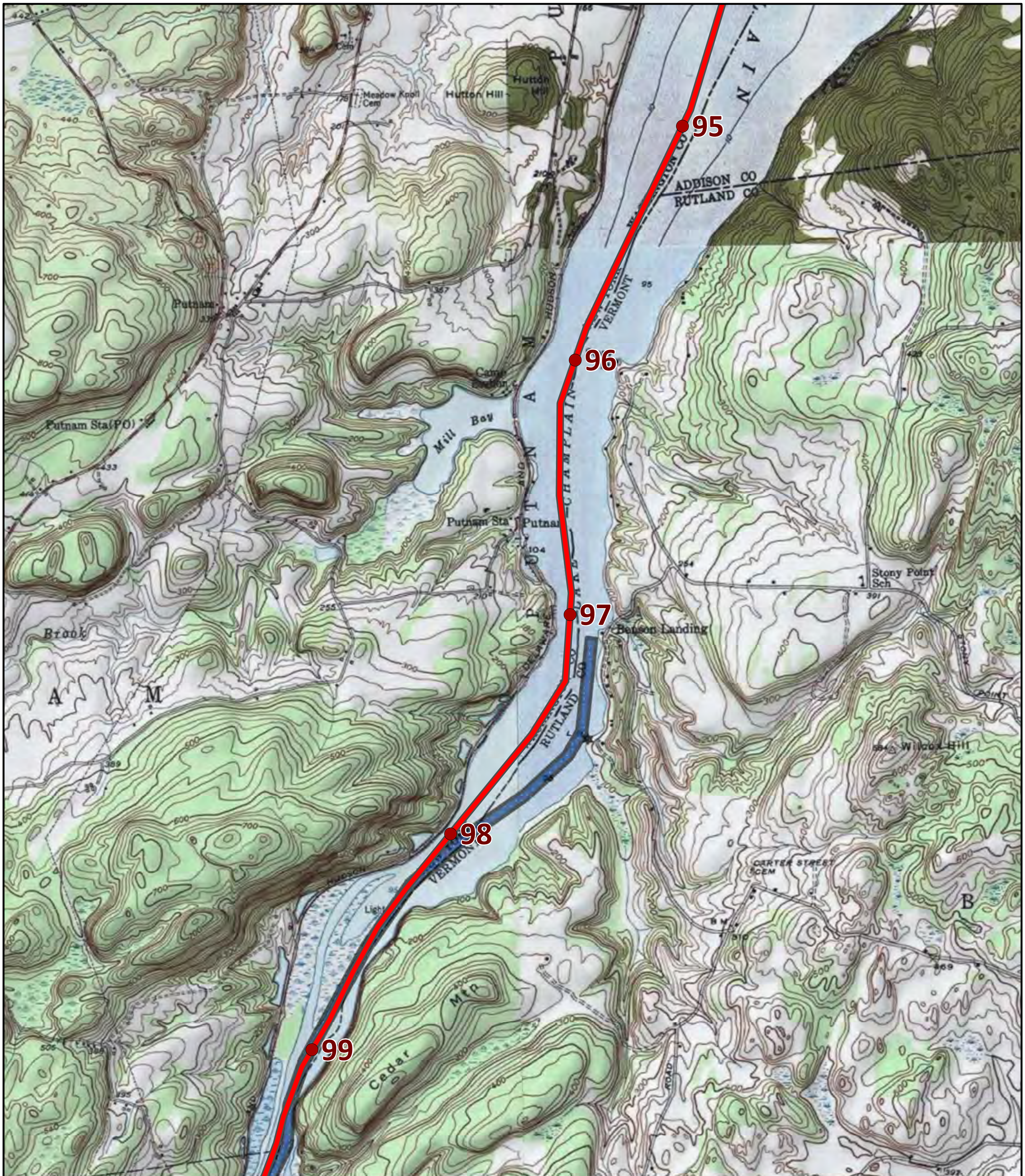
N

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

Map 20 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



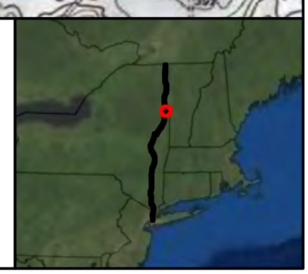
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

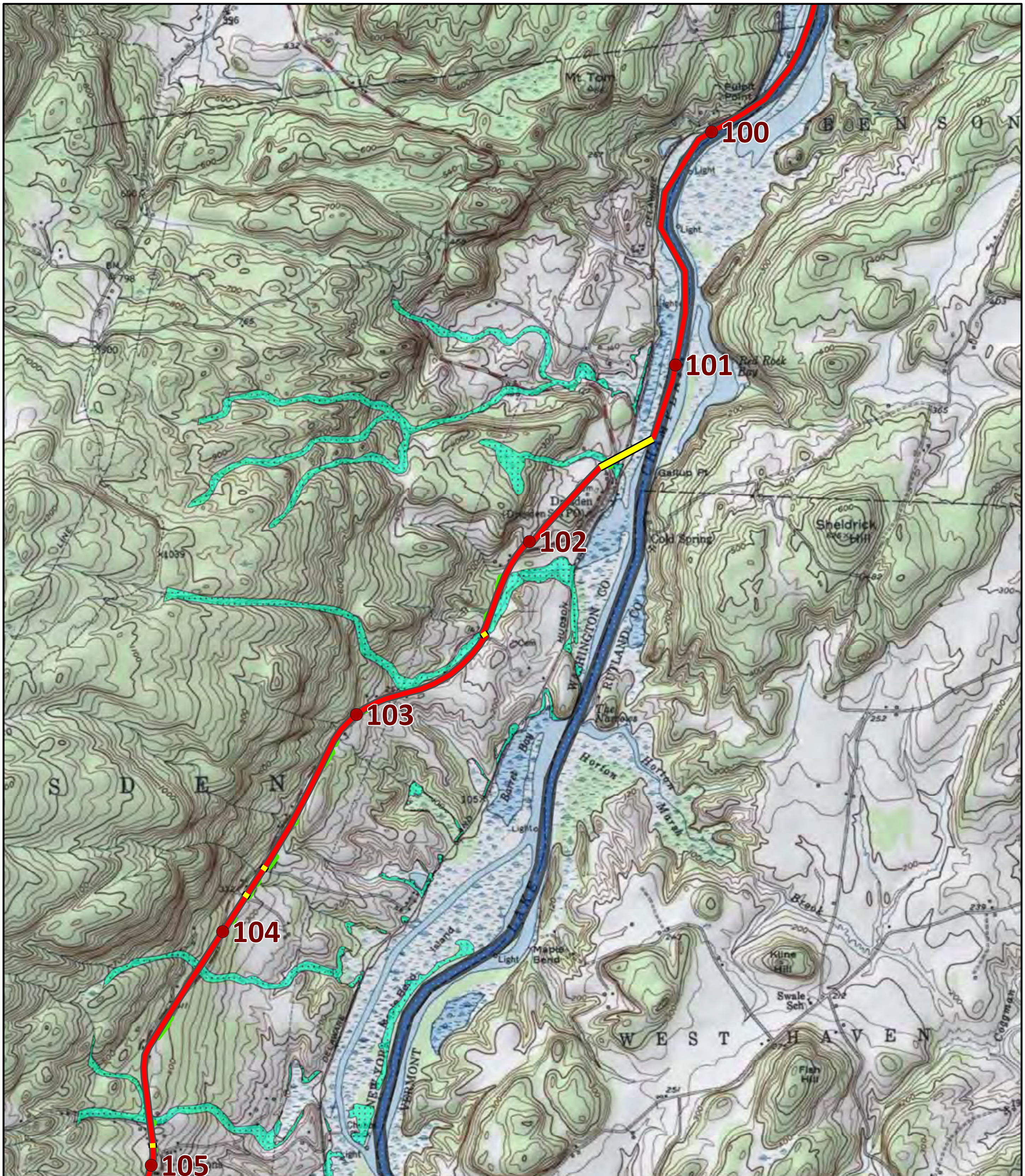
N

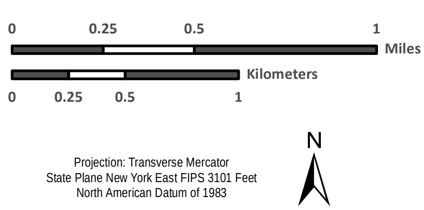
- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



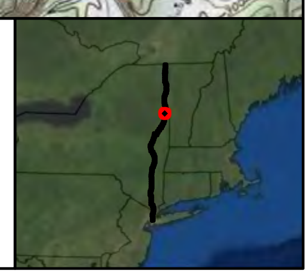
Map 21 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

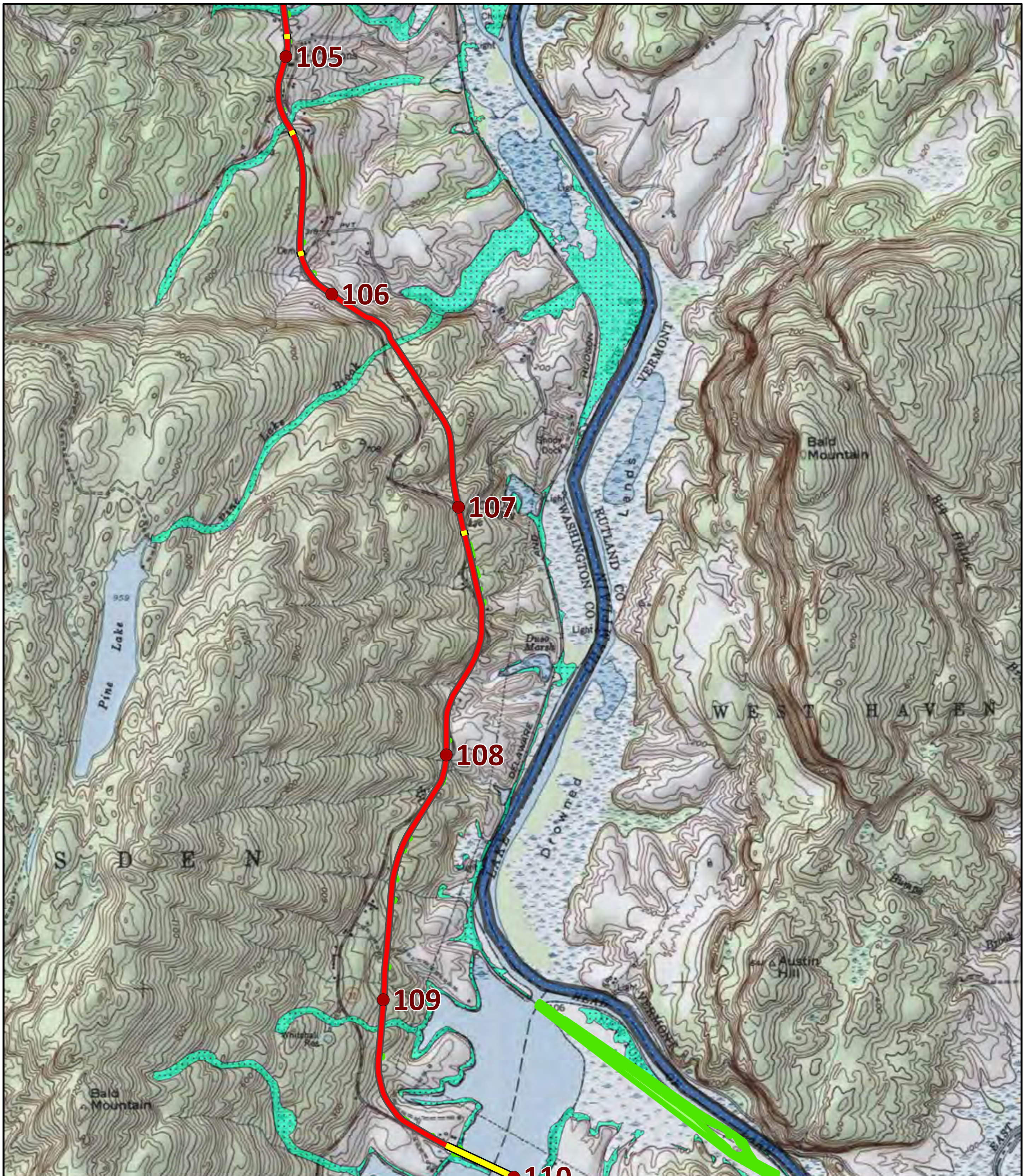




Proposed CHPE Project Route Mileposts
Proposed CHPE Project Route
HDD Installation
Pipe Bridge Installation
Federal Navigation Channel
FEMA 100-Year Flood Zone
Delineated Wetlands



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

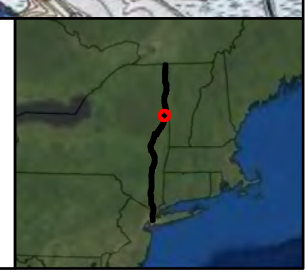
Kilometers 0 0.25 0.5 1

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

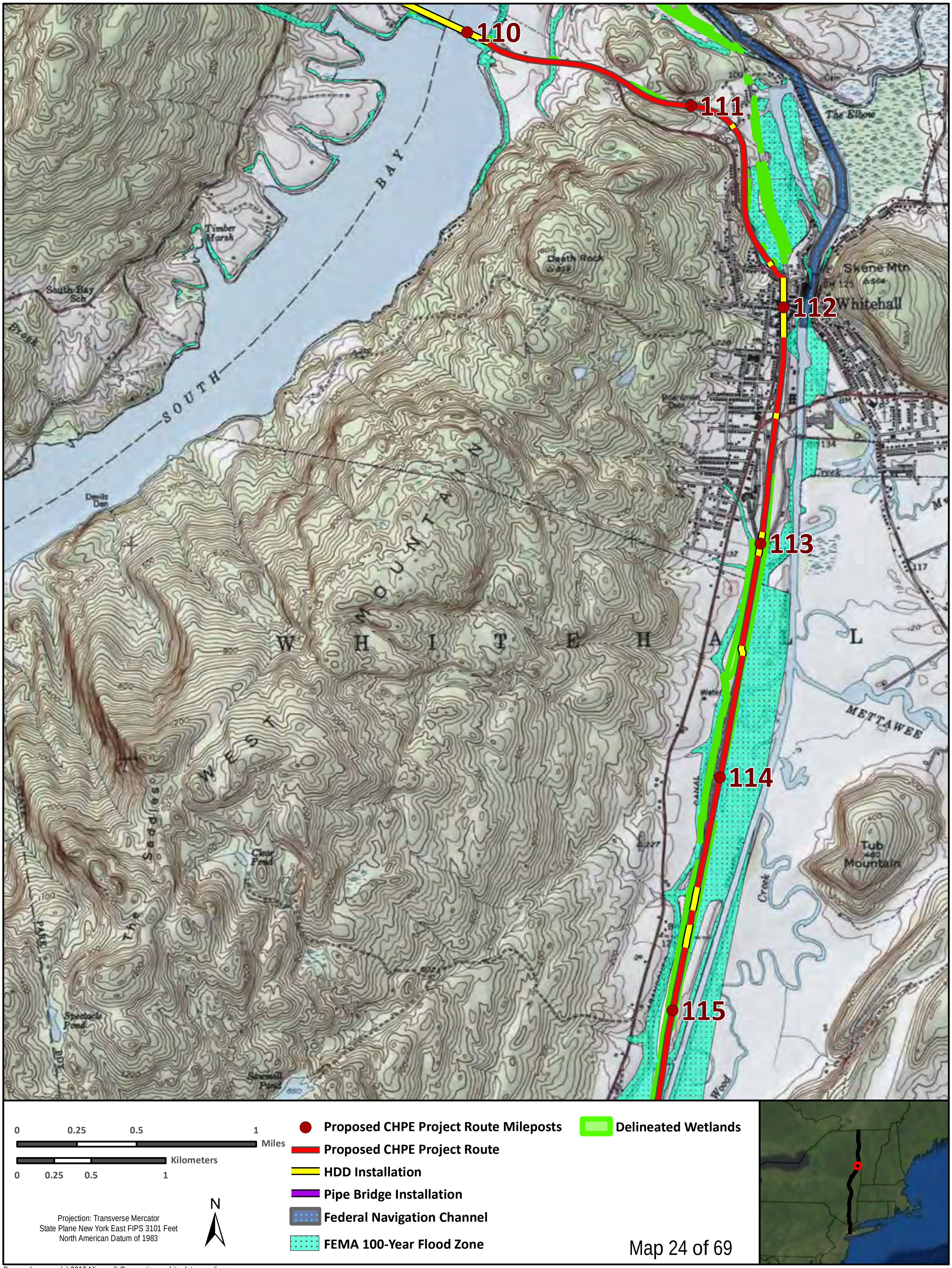
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

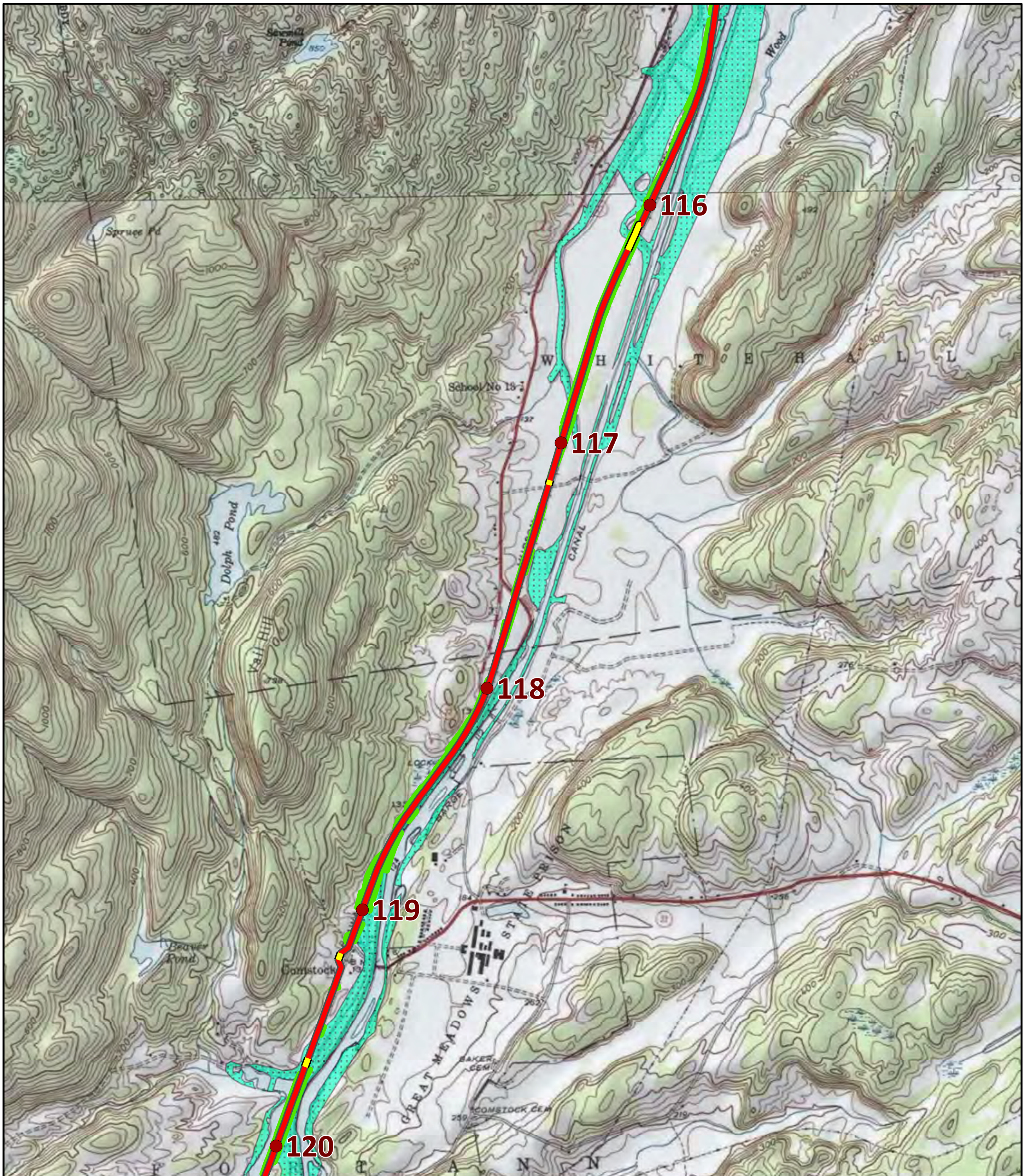
Map 23 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



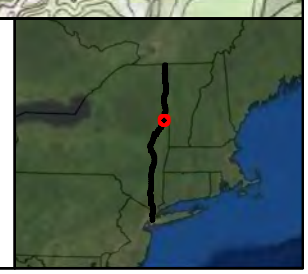
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

N

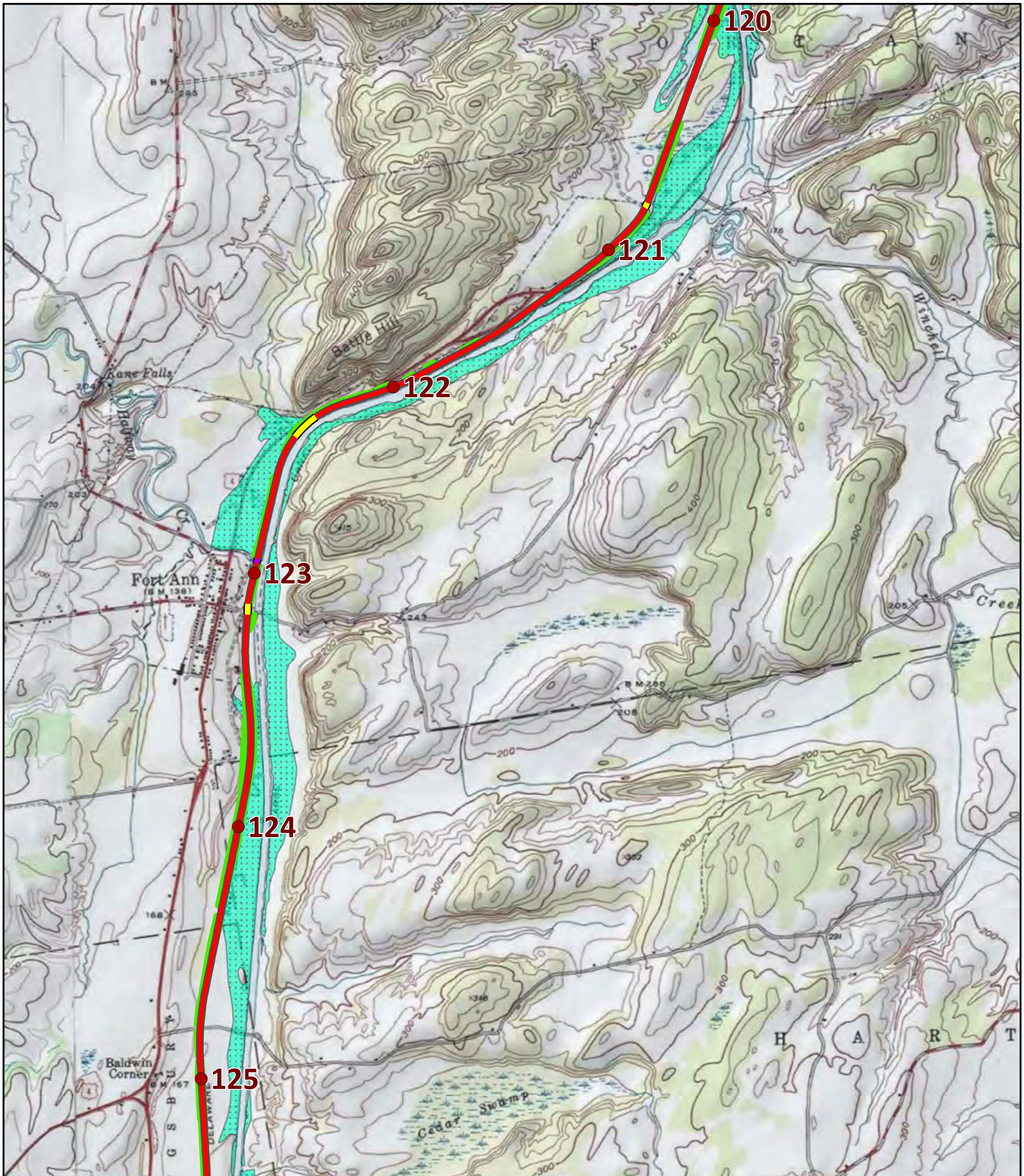
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 25 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

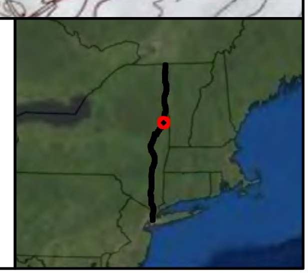
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

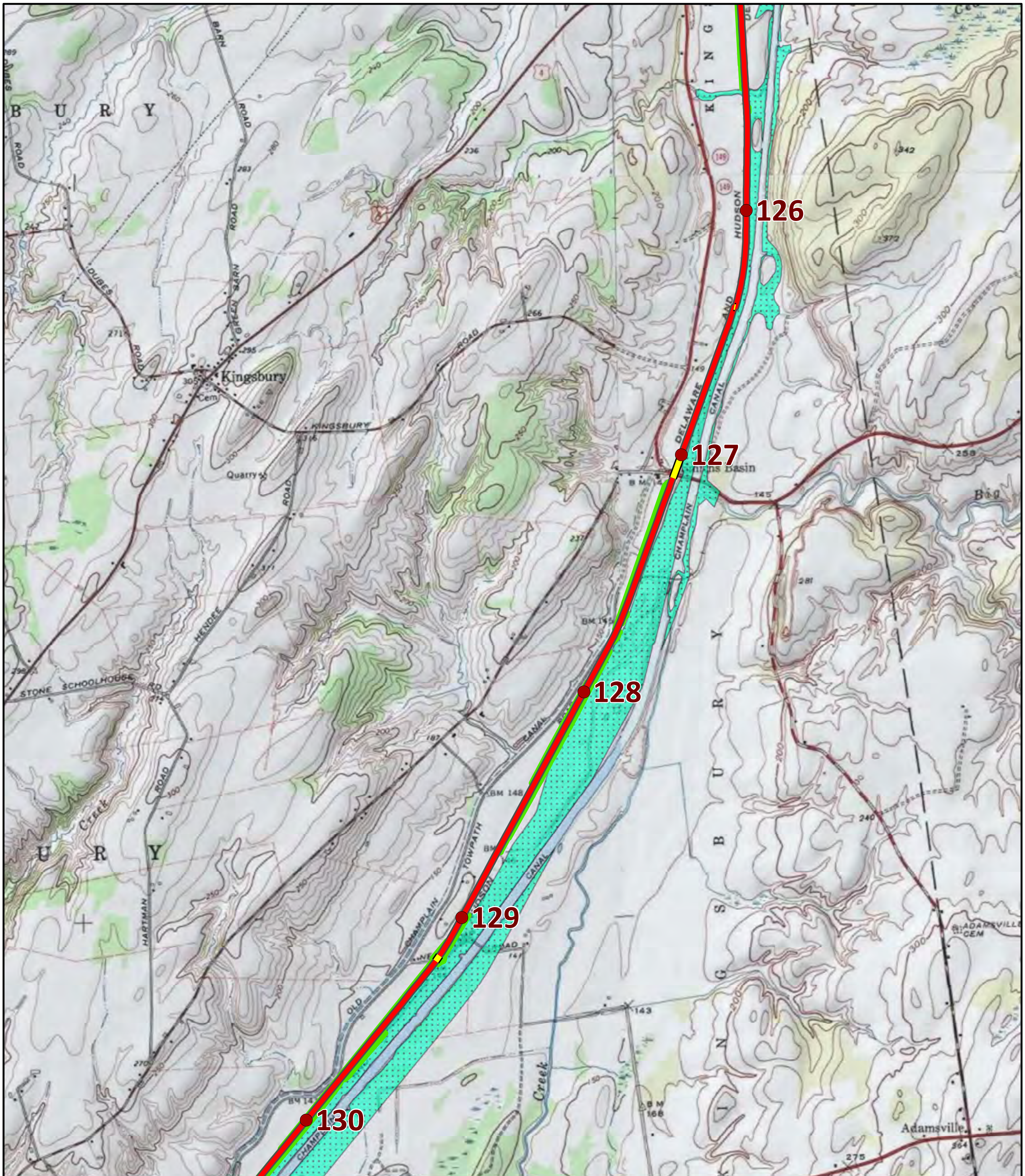
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 26 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

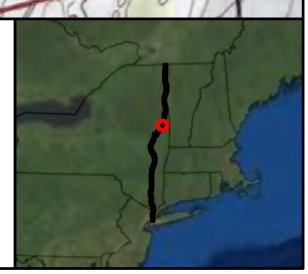
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

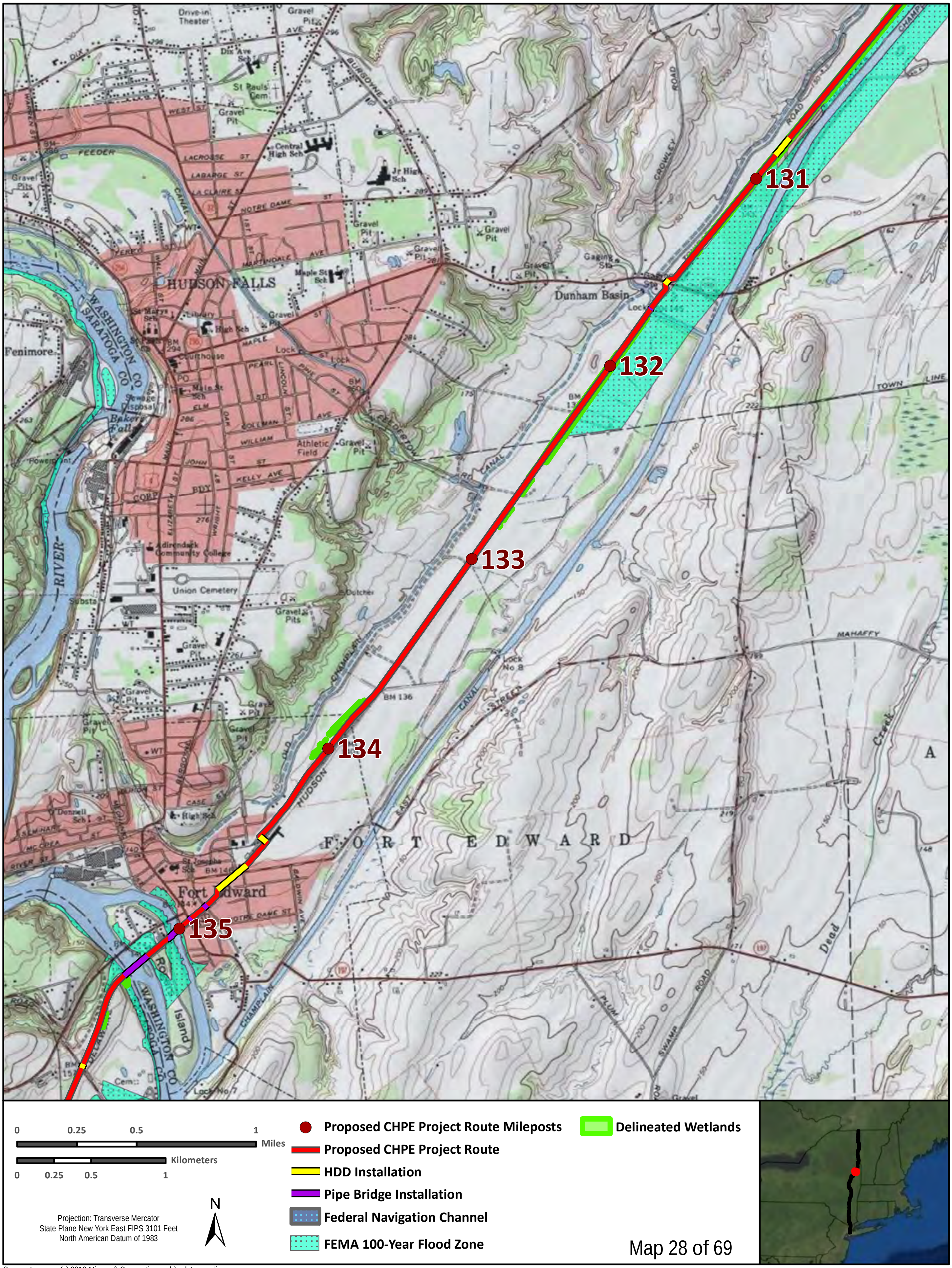
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

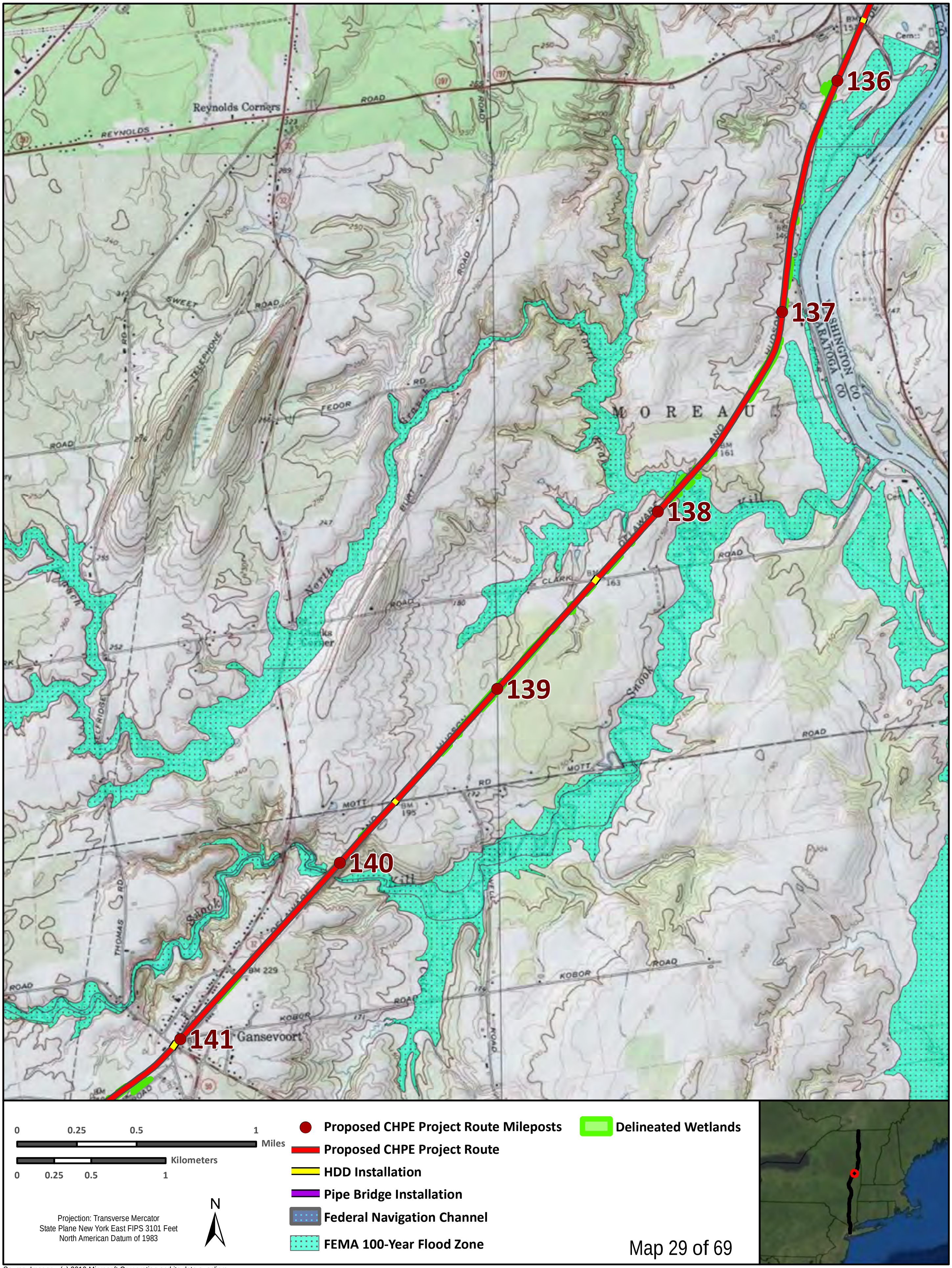
Map 27 of 69



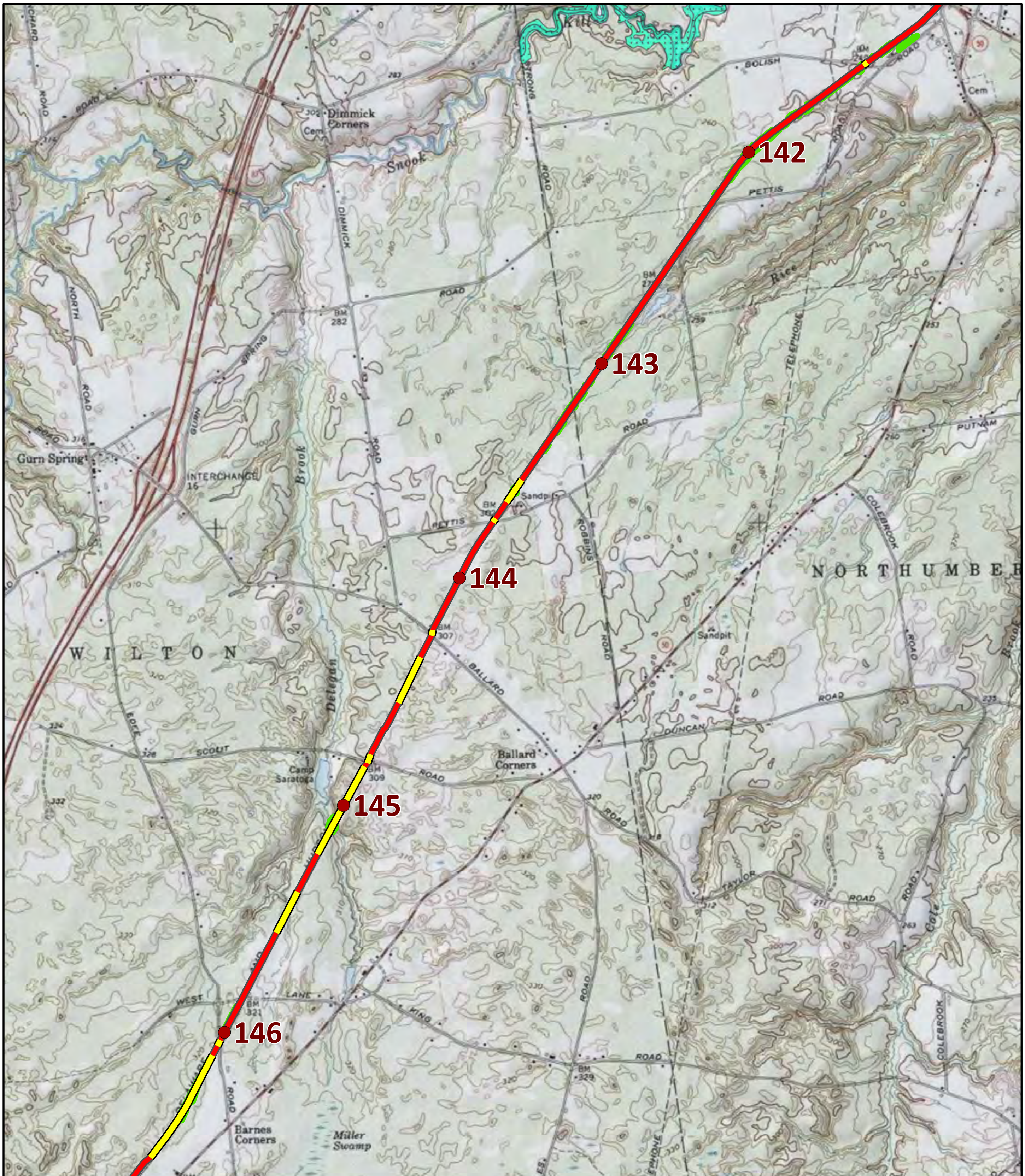
Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

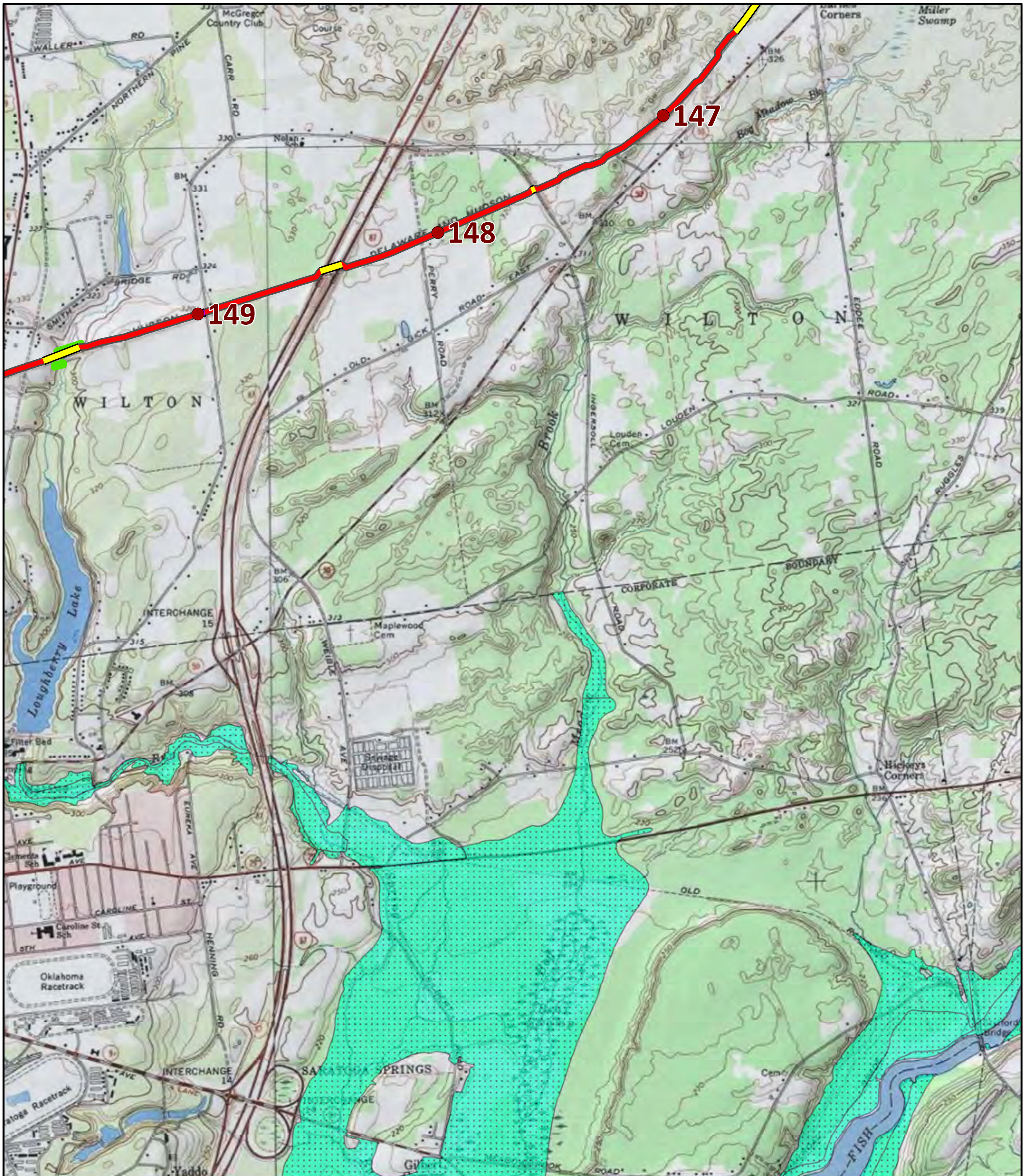
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 30 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

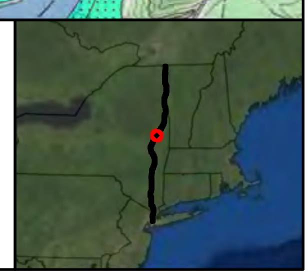
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

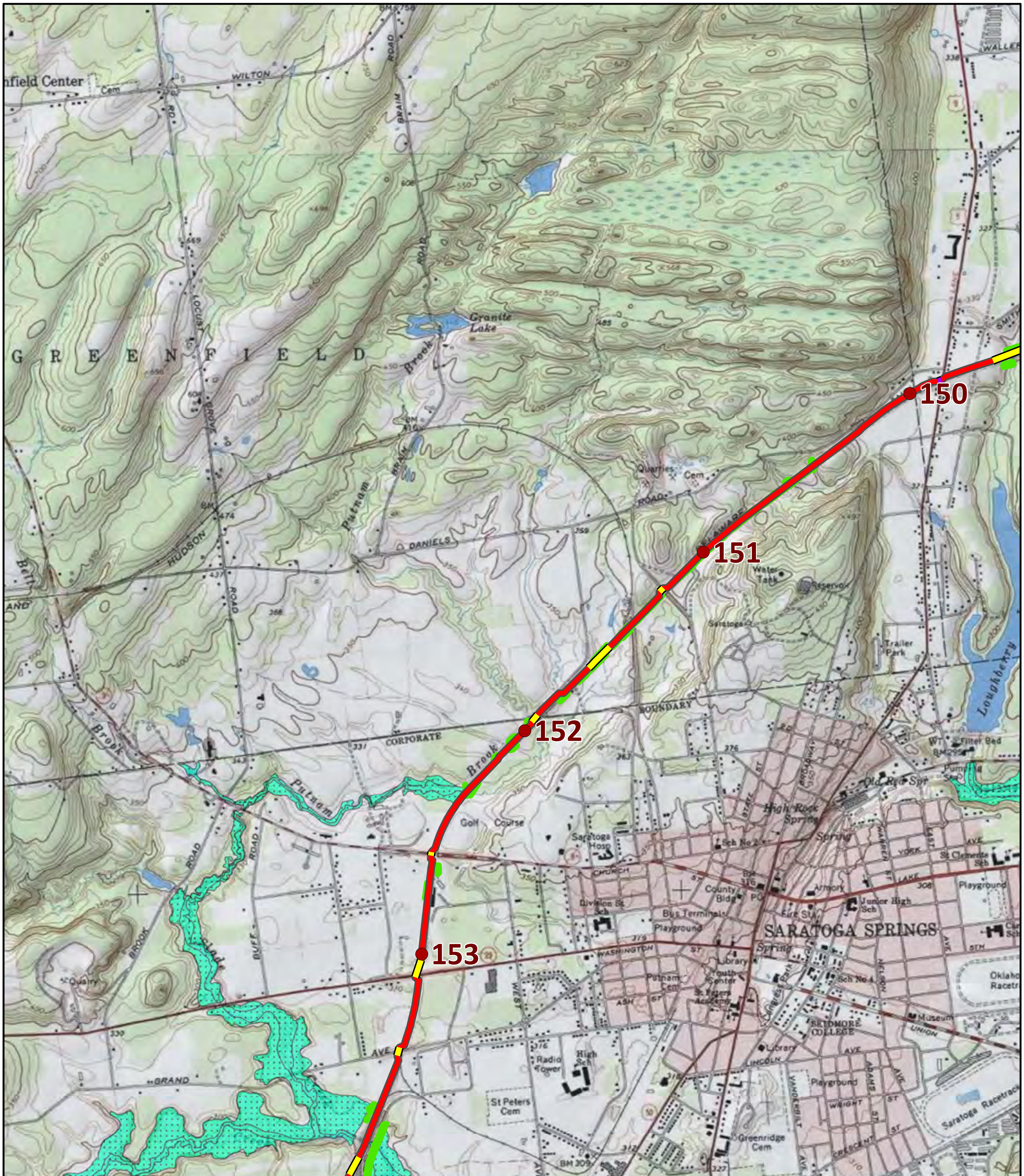
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 31 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



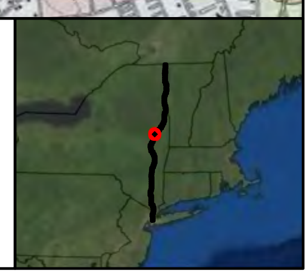
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

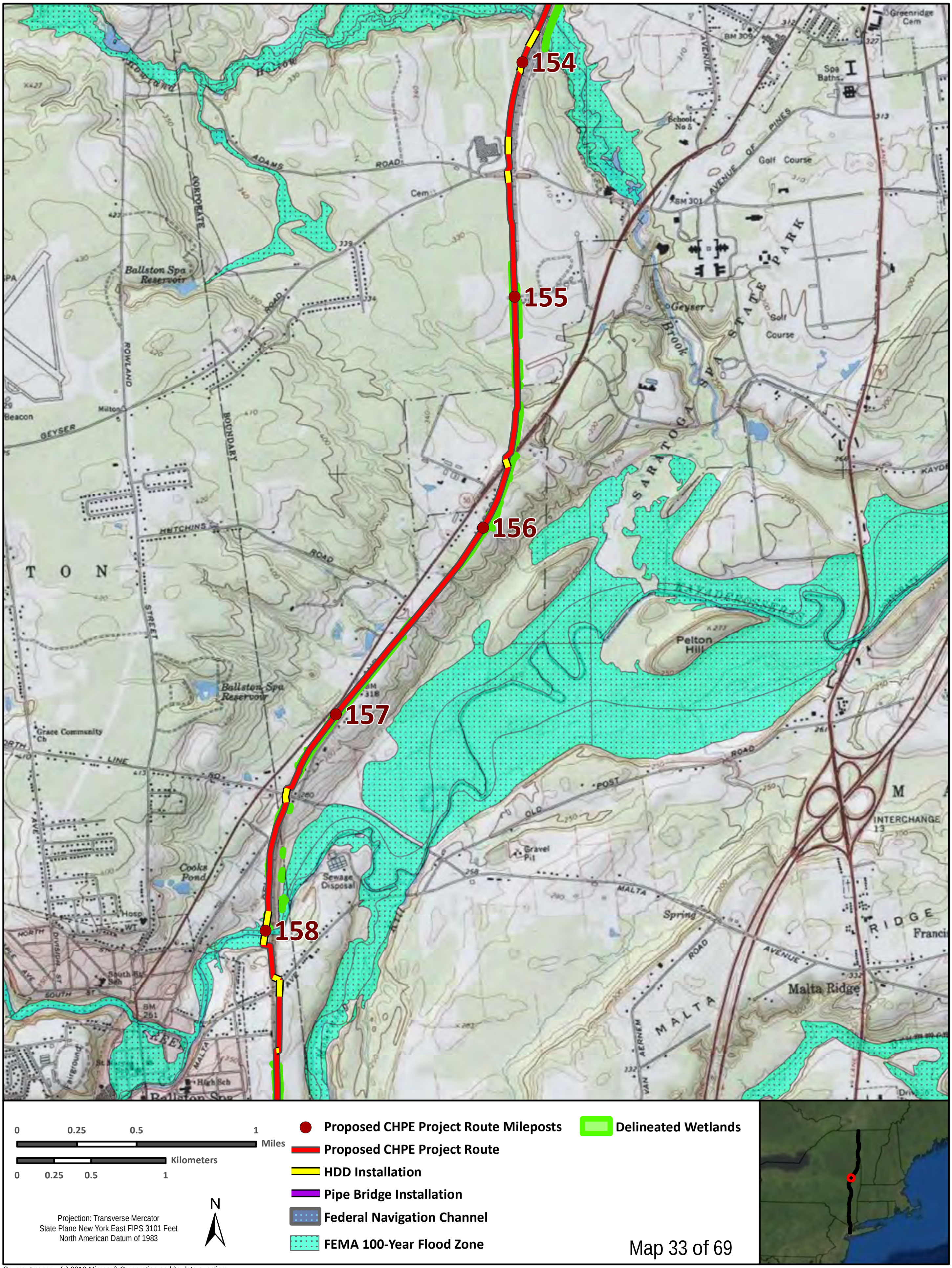
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



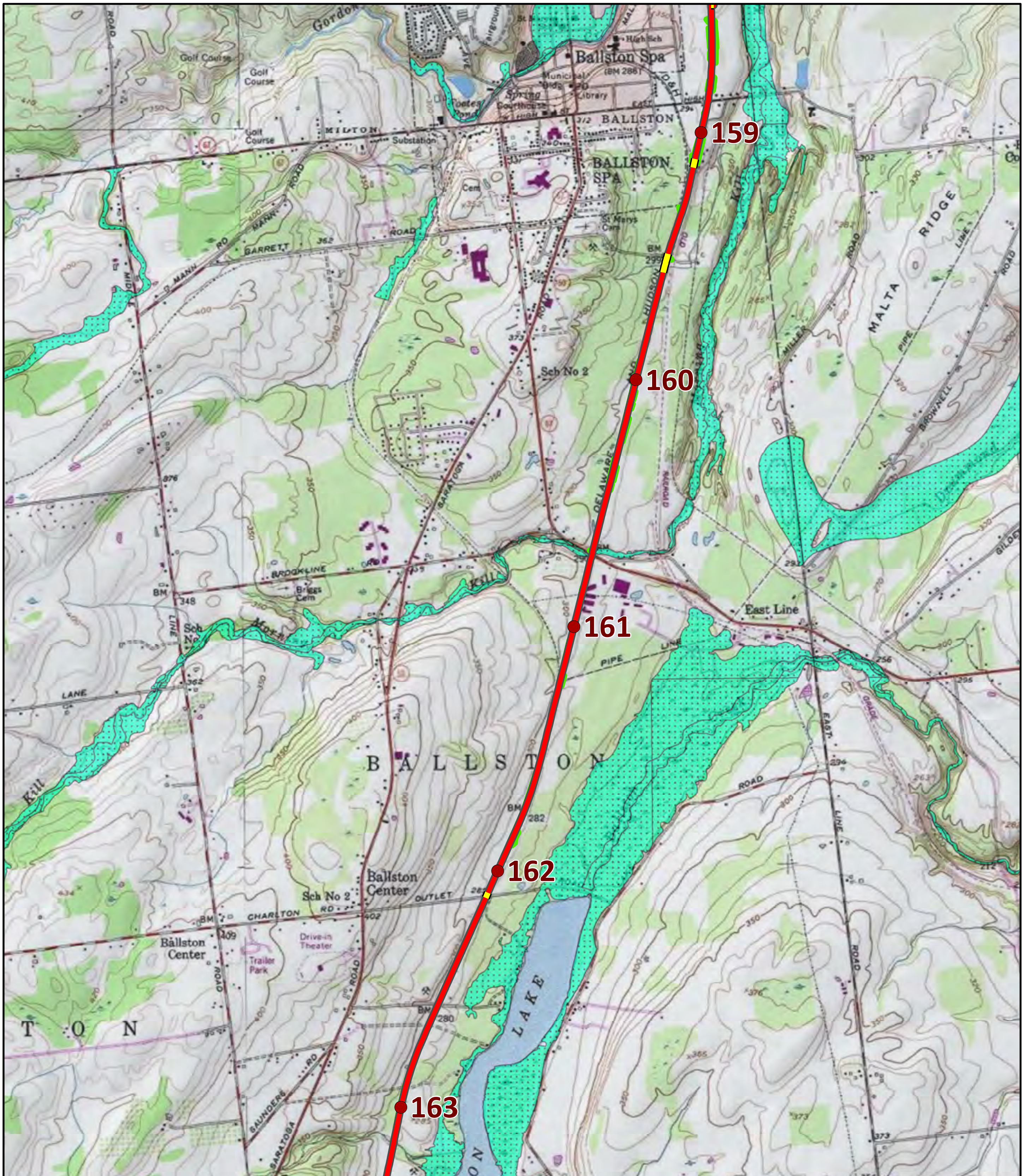
Map 32 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



Map 33 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



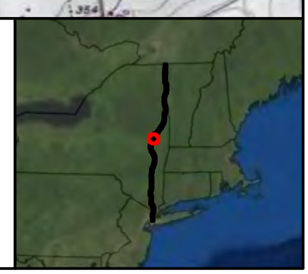
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

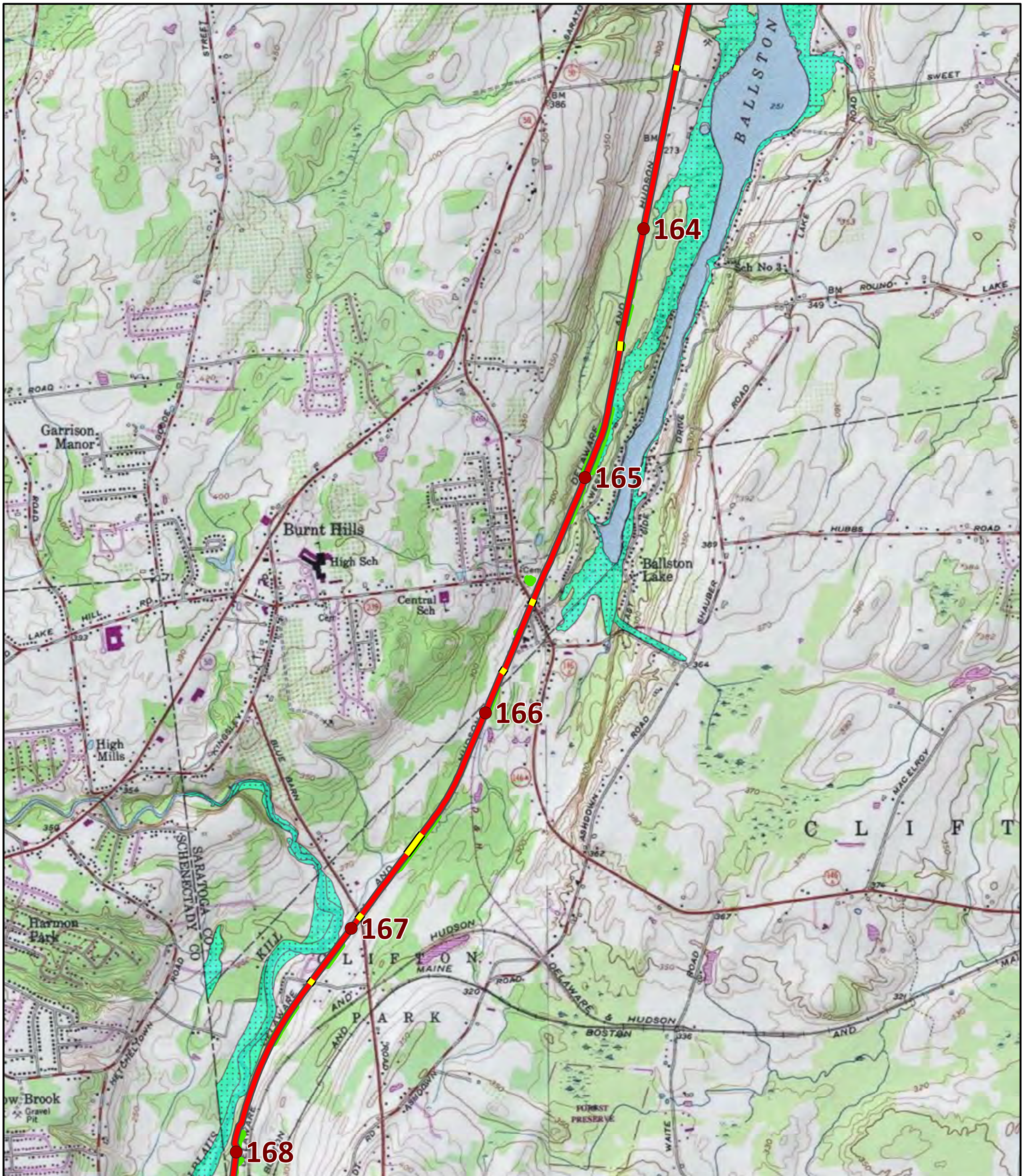
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 34 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

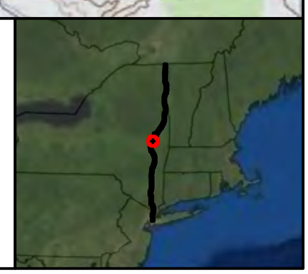
Kilometers 0 0.25 0.5 1

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

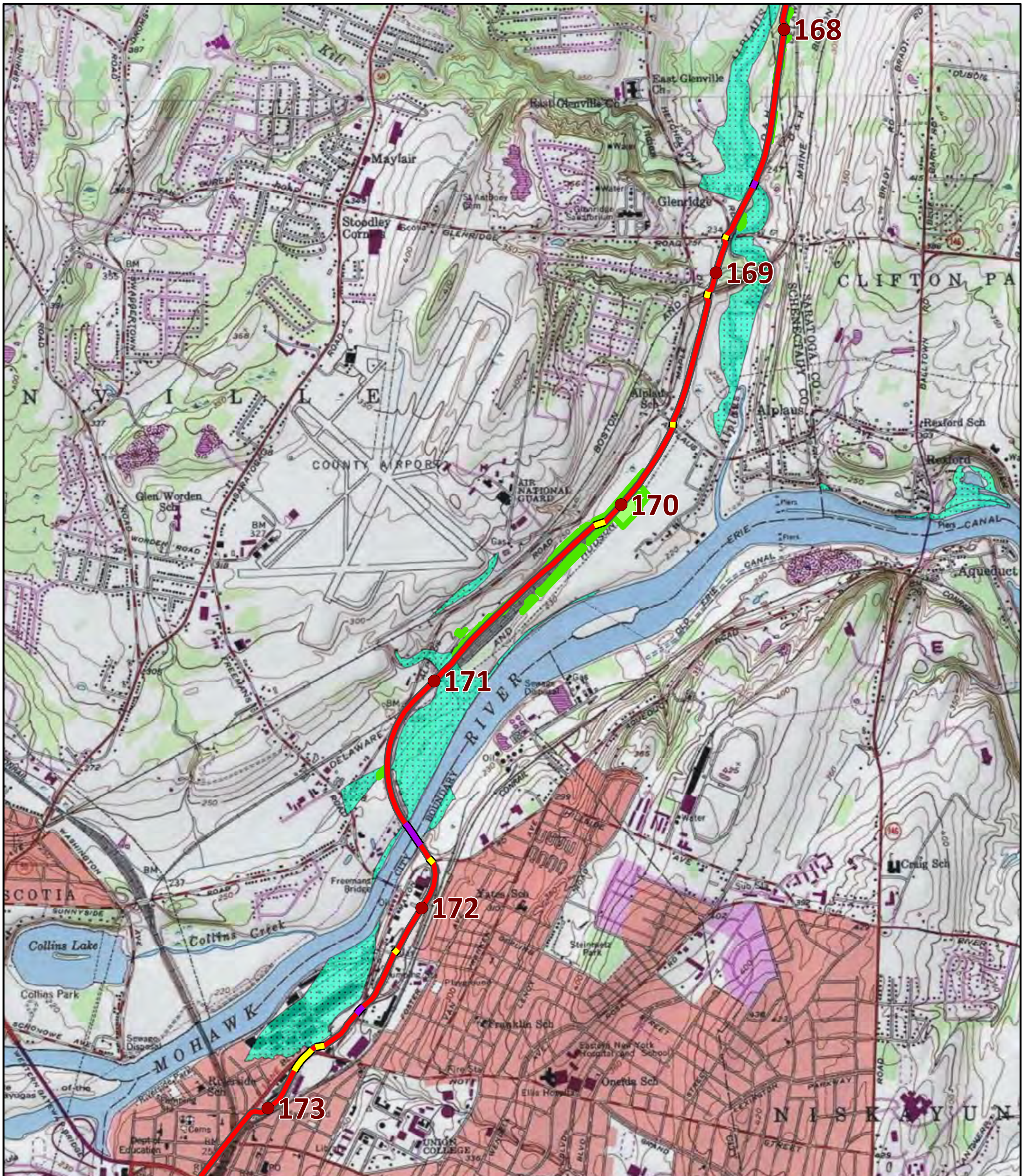
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 35 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



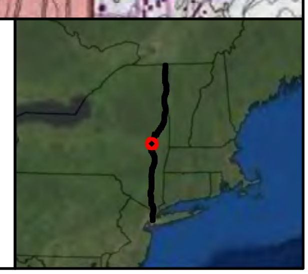
0 0.25 0.5 1 Miles

Kilometers 0 0.25 0.5 1

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

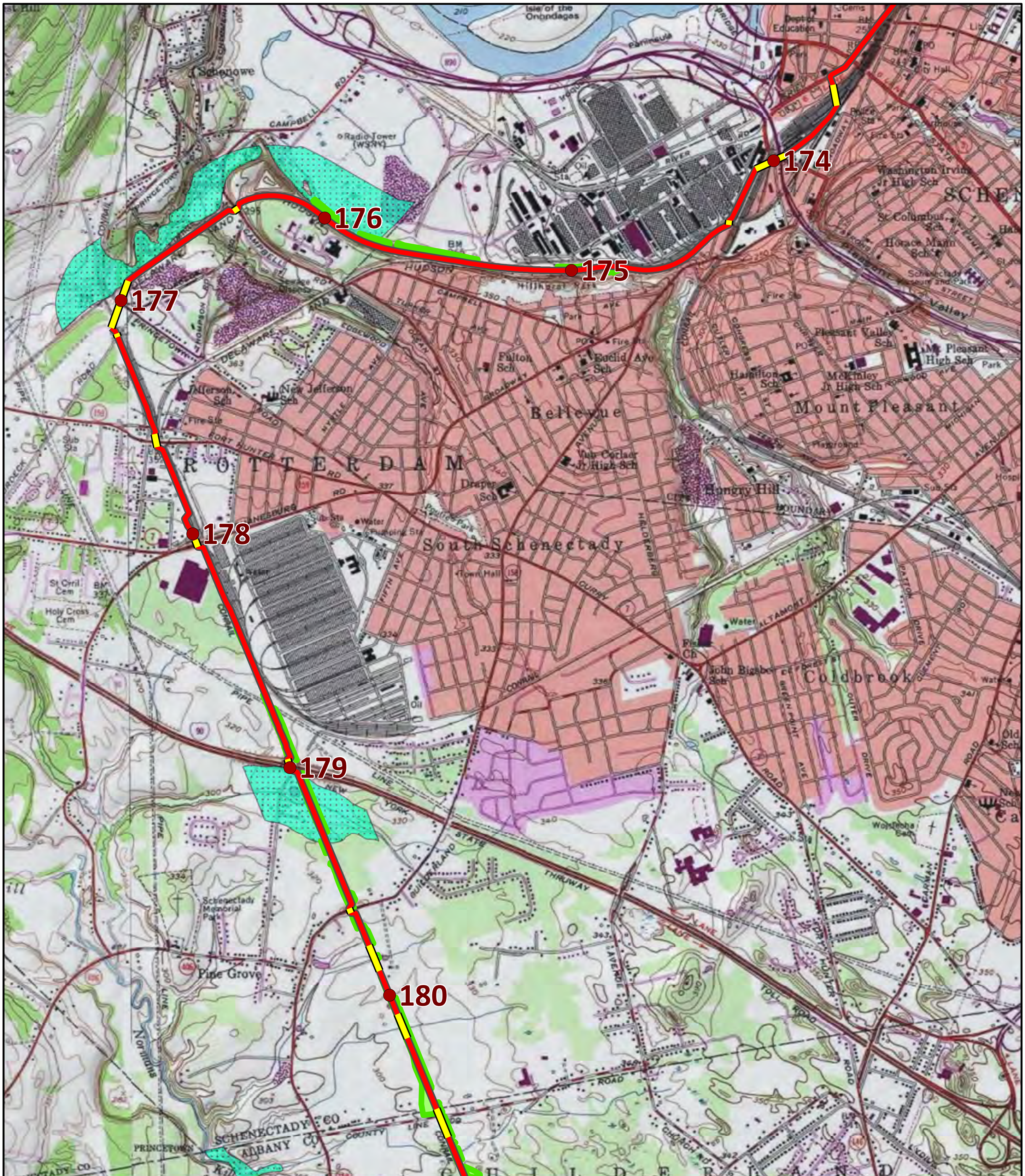
N

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983



Map 36 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



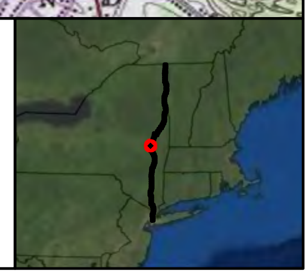
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

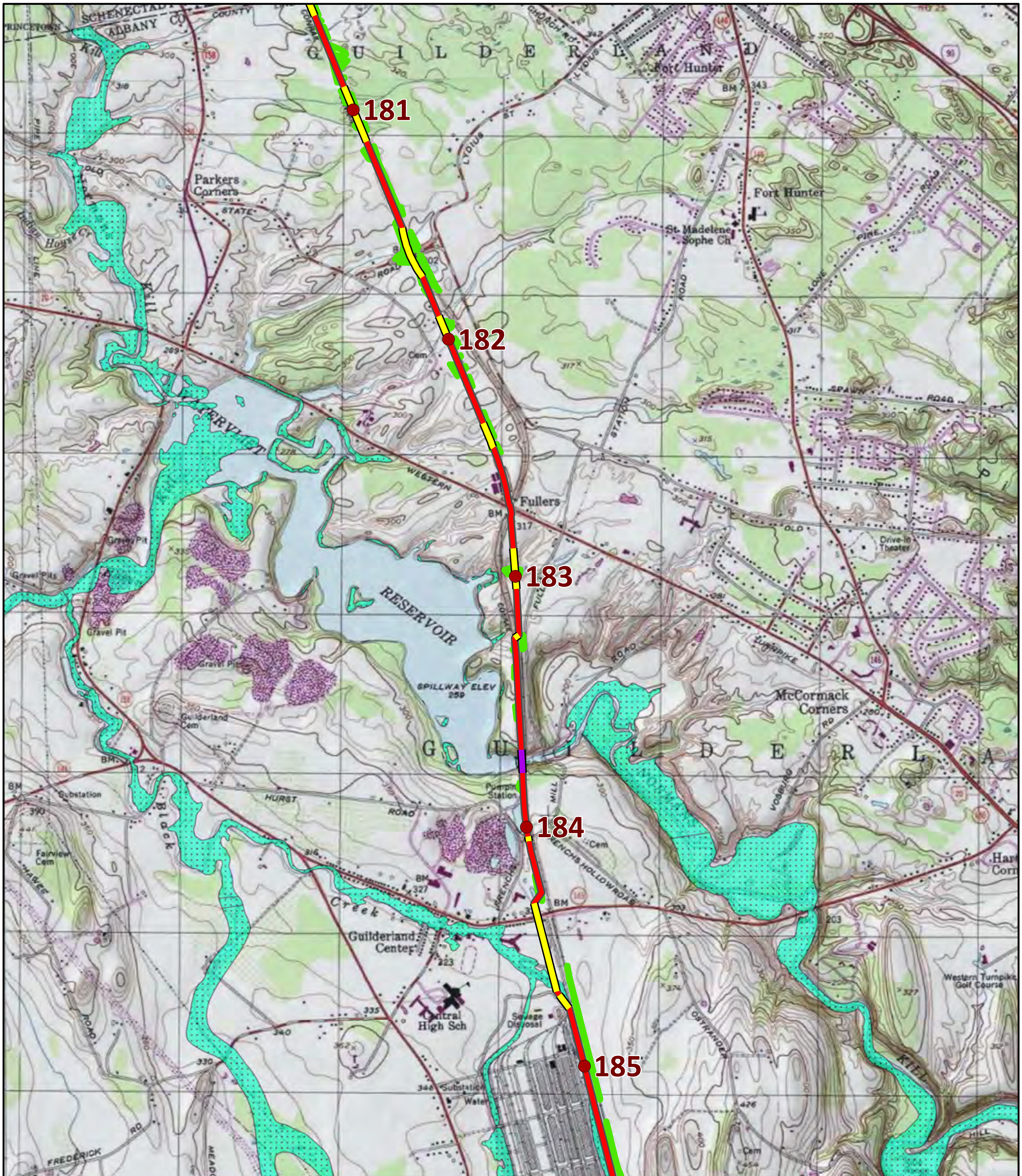
N

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



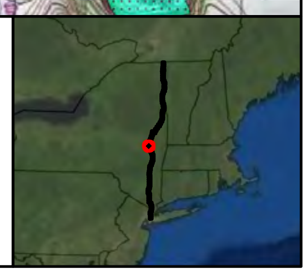
0 0.25 0.5 1 Miles

Kilometers 0 0.25 0.5 1

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

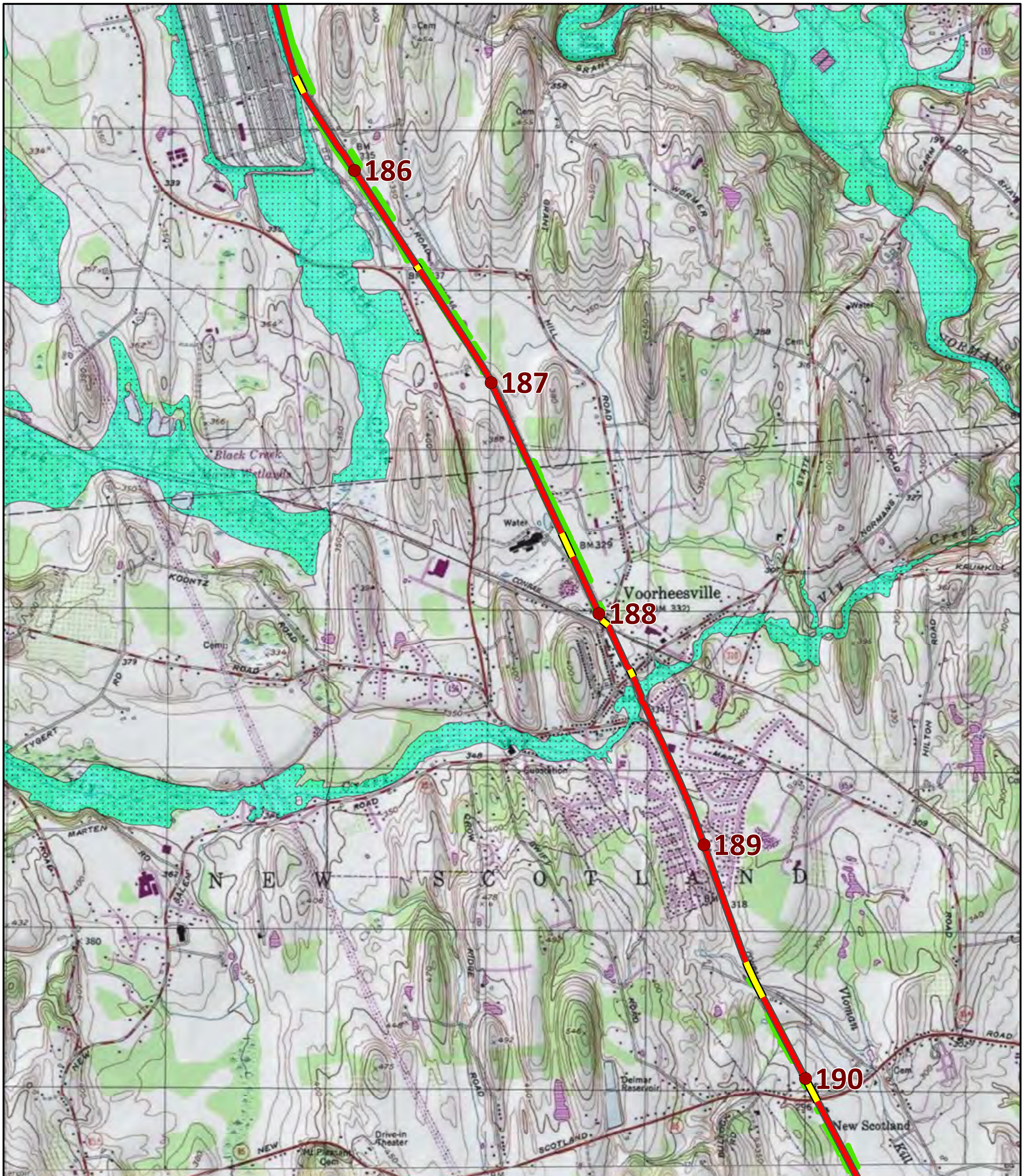
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 38 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

Proposed CHPE Project Route Mileposts

Proposed CHPE Project Route

HDD Installation

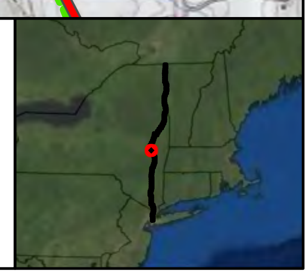
Pipe Bridge Installation

Federal Navigation Channel

FEMA 100-Year Flood Zone

Delineated Wetlands

Map 39 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

0 0.25 0.5 1 Miles

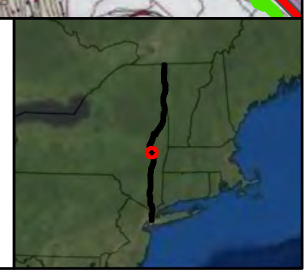
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

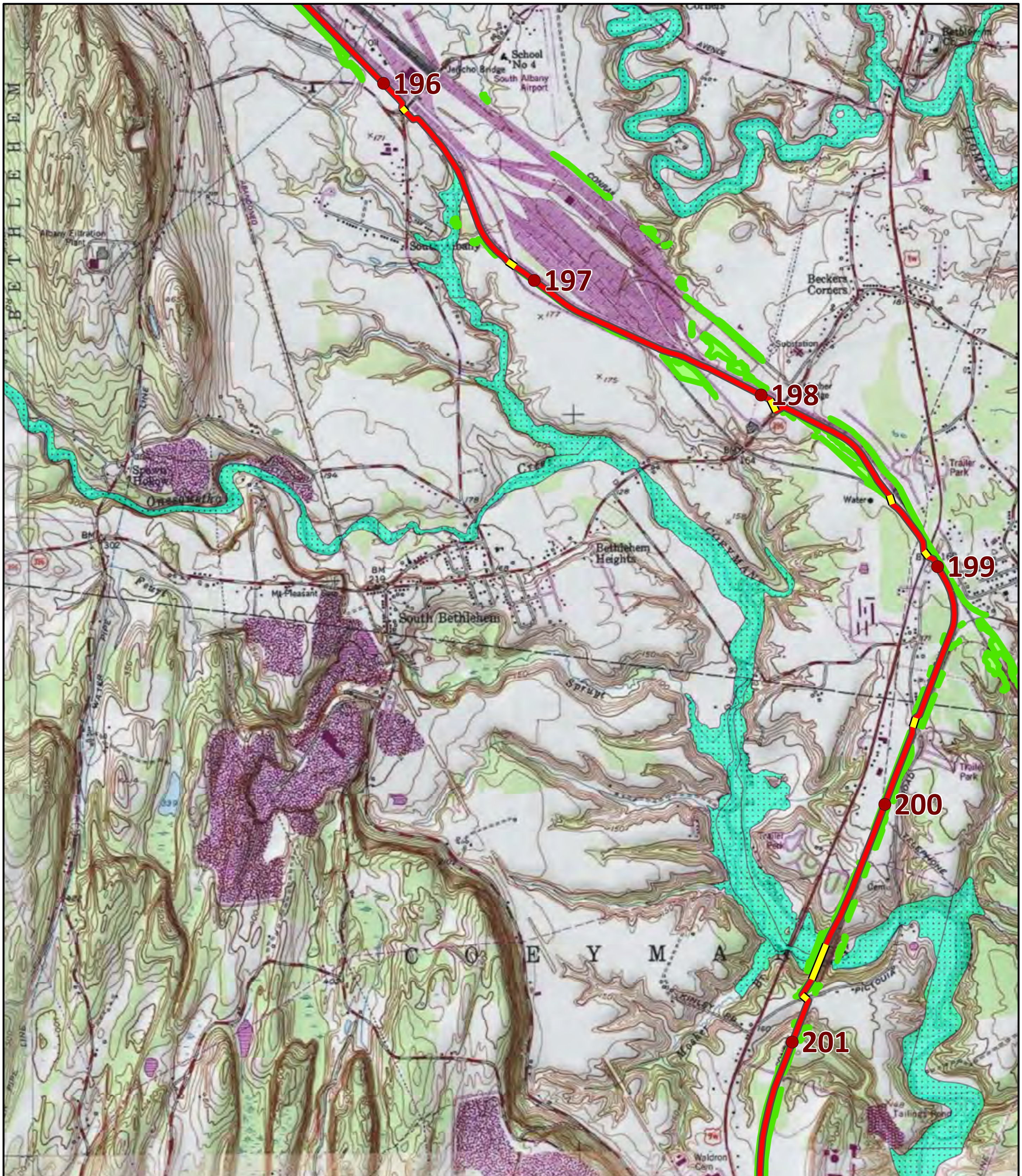
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 40 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

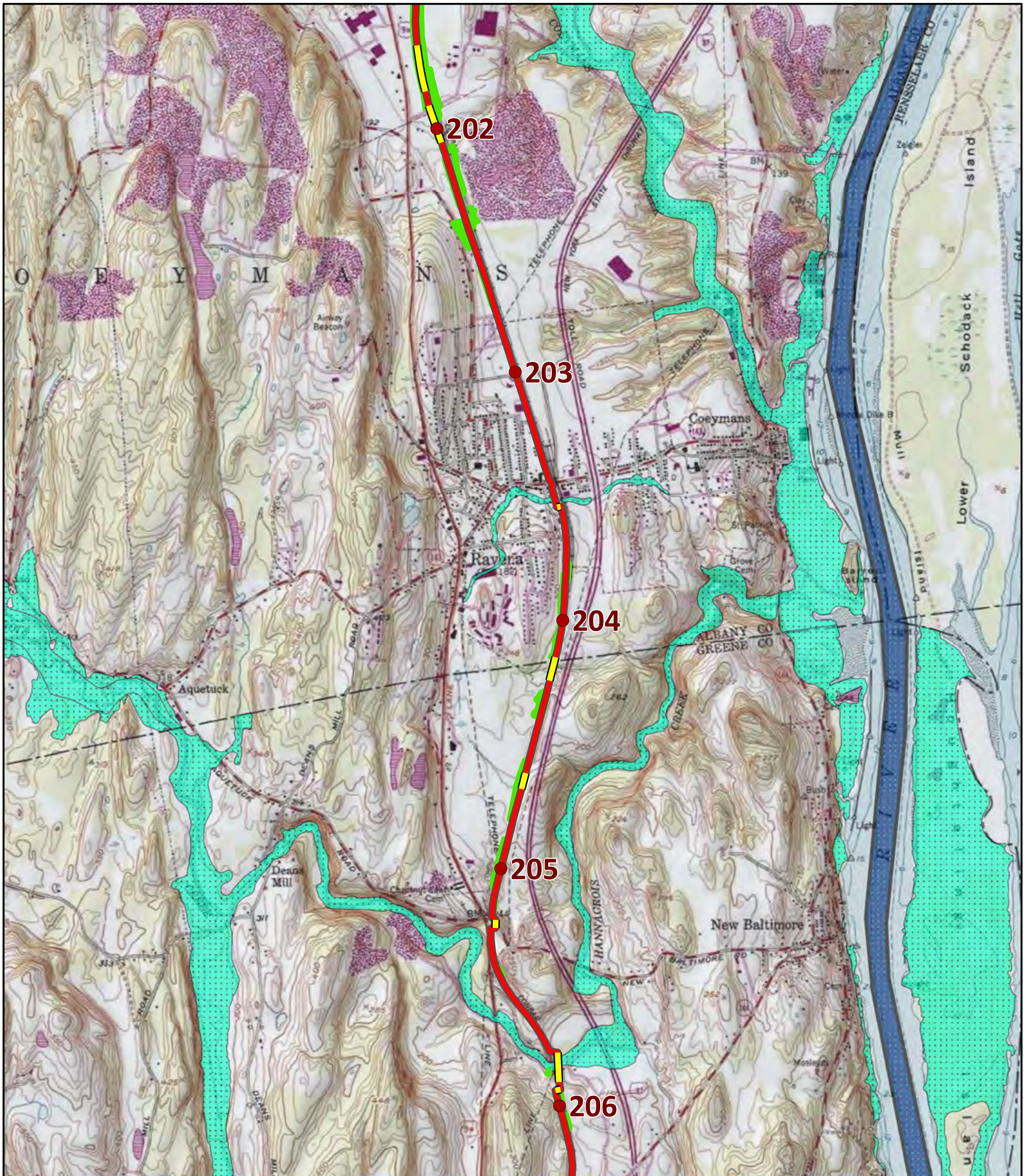
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 41 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



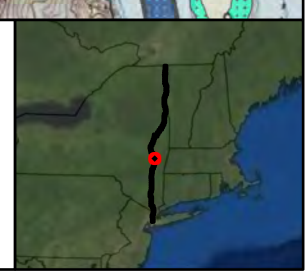
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

N

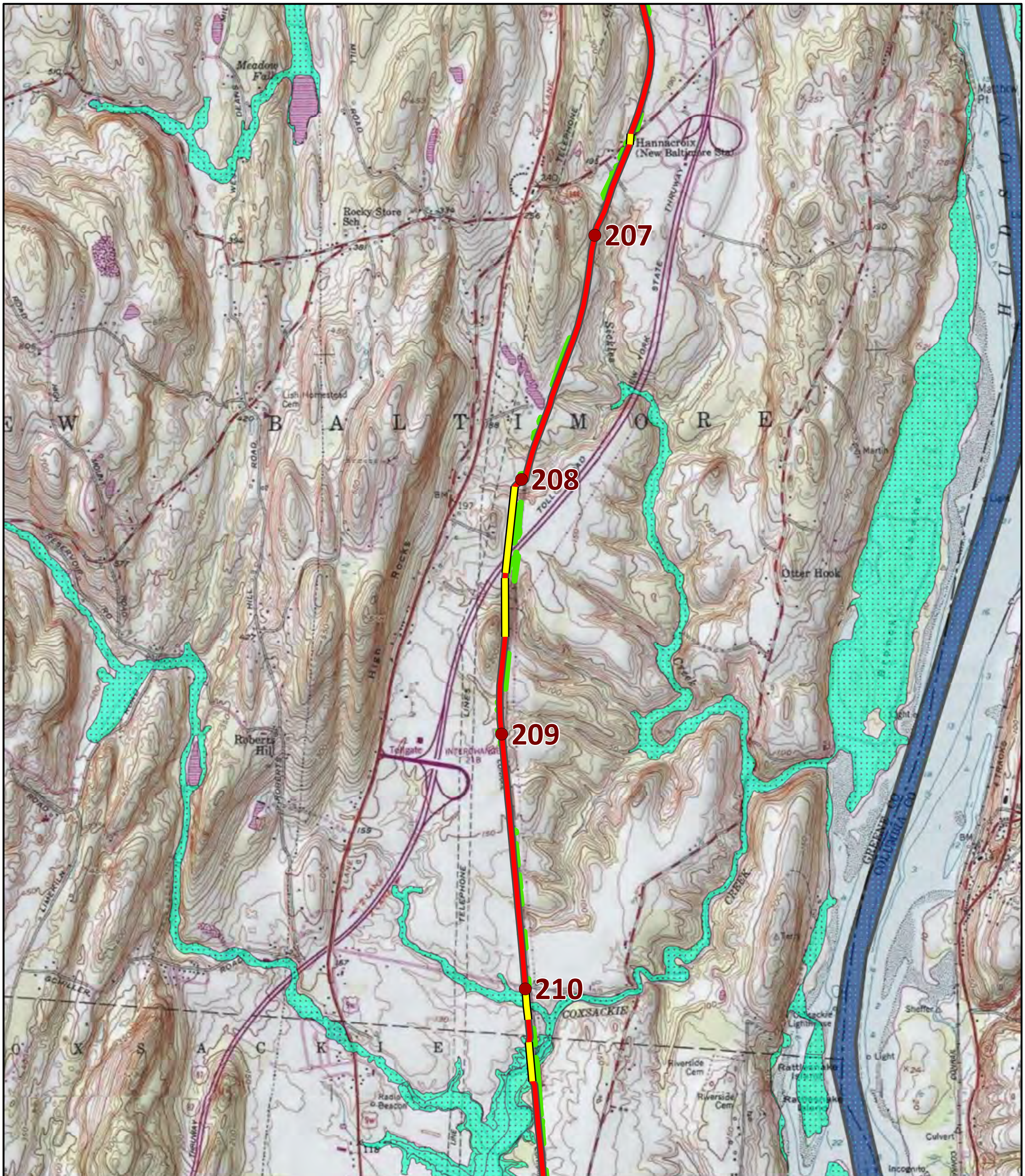
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 42 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



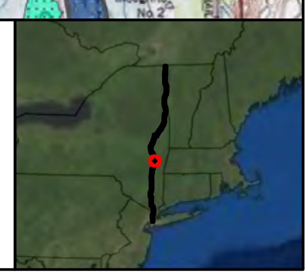
0	0.25	0.5	1	Miles
0	0.25	0.5	1	Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

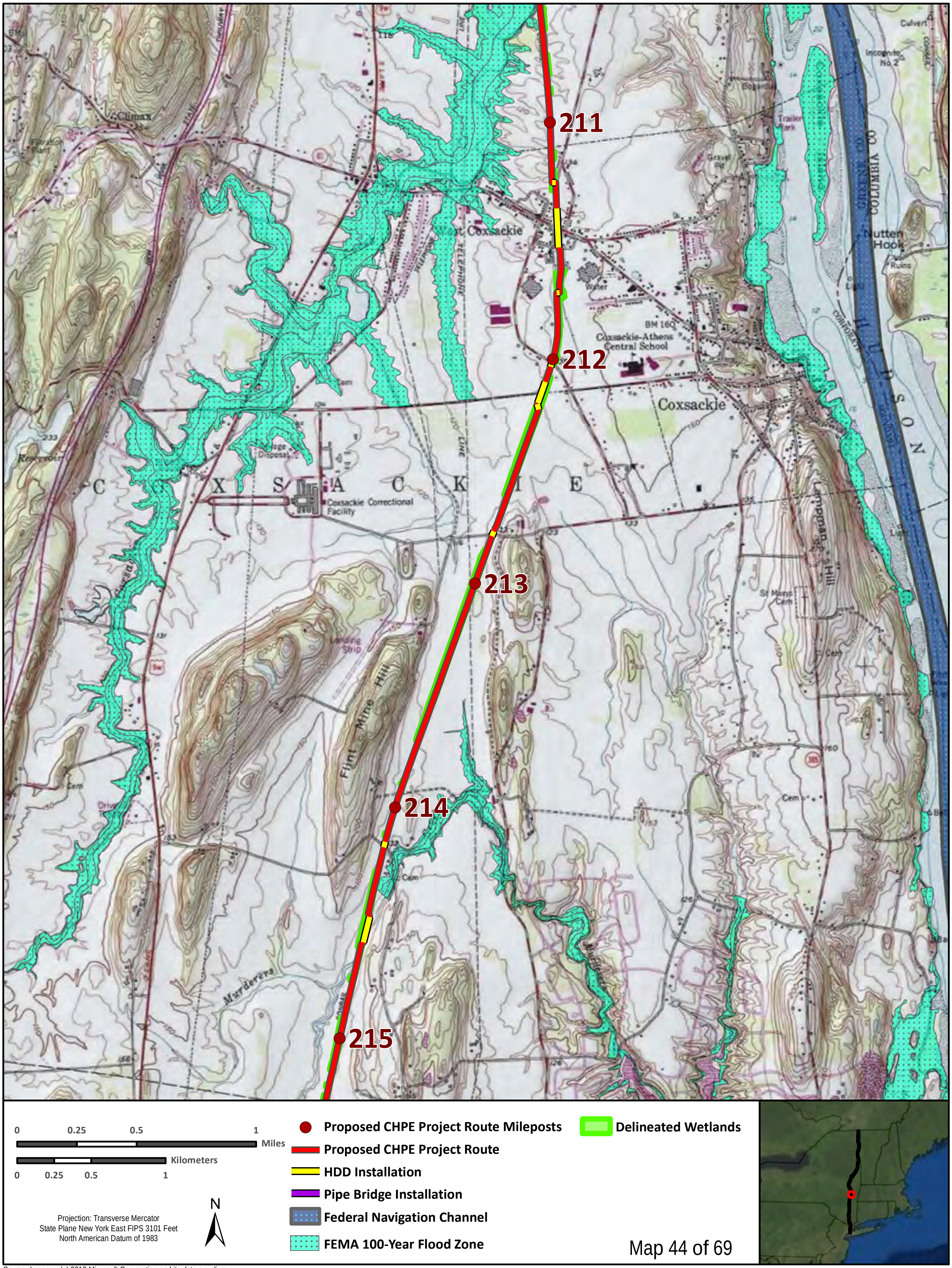
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

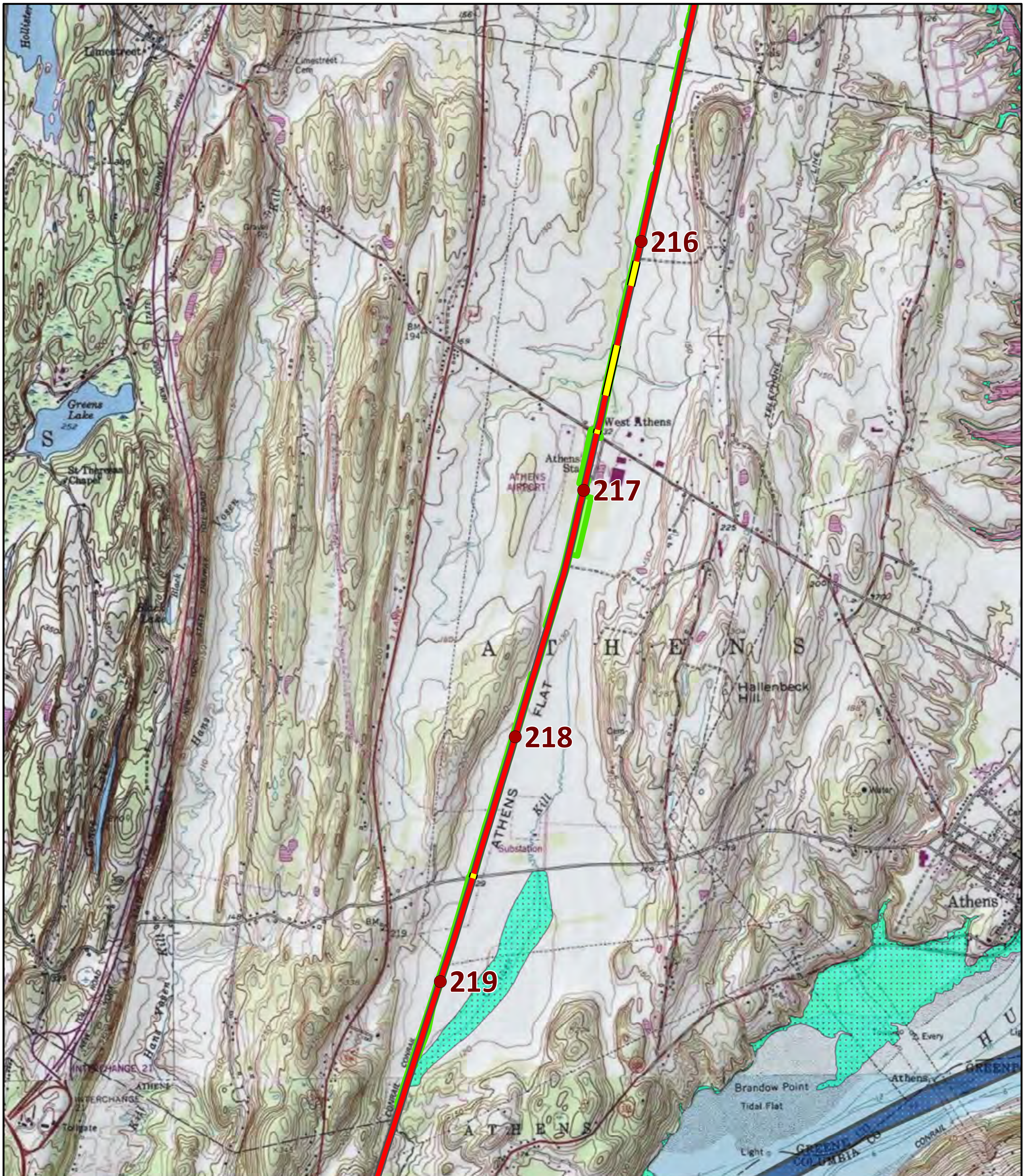
Map 43 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

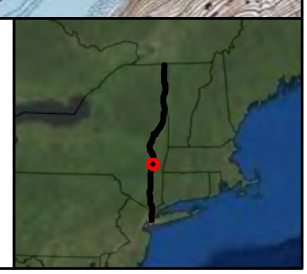
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

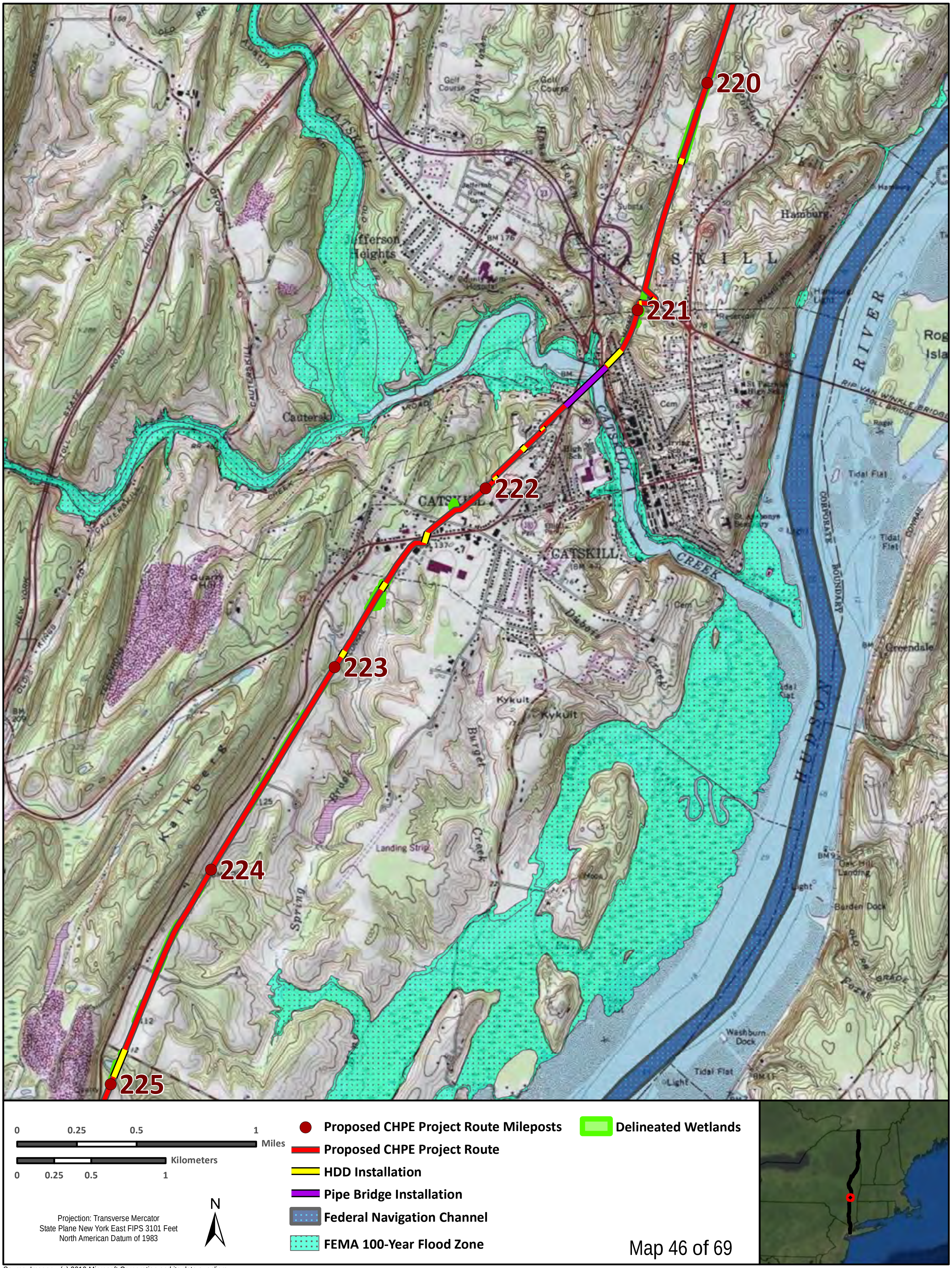
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 45 of 69



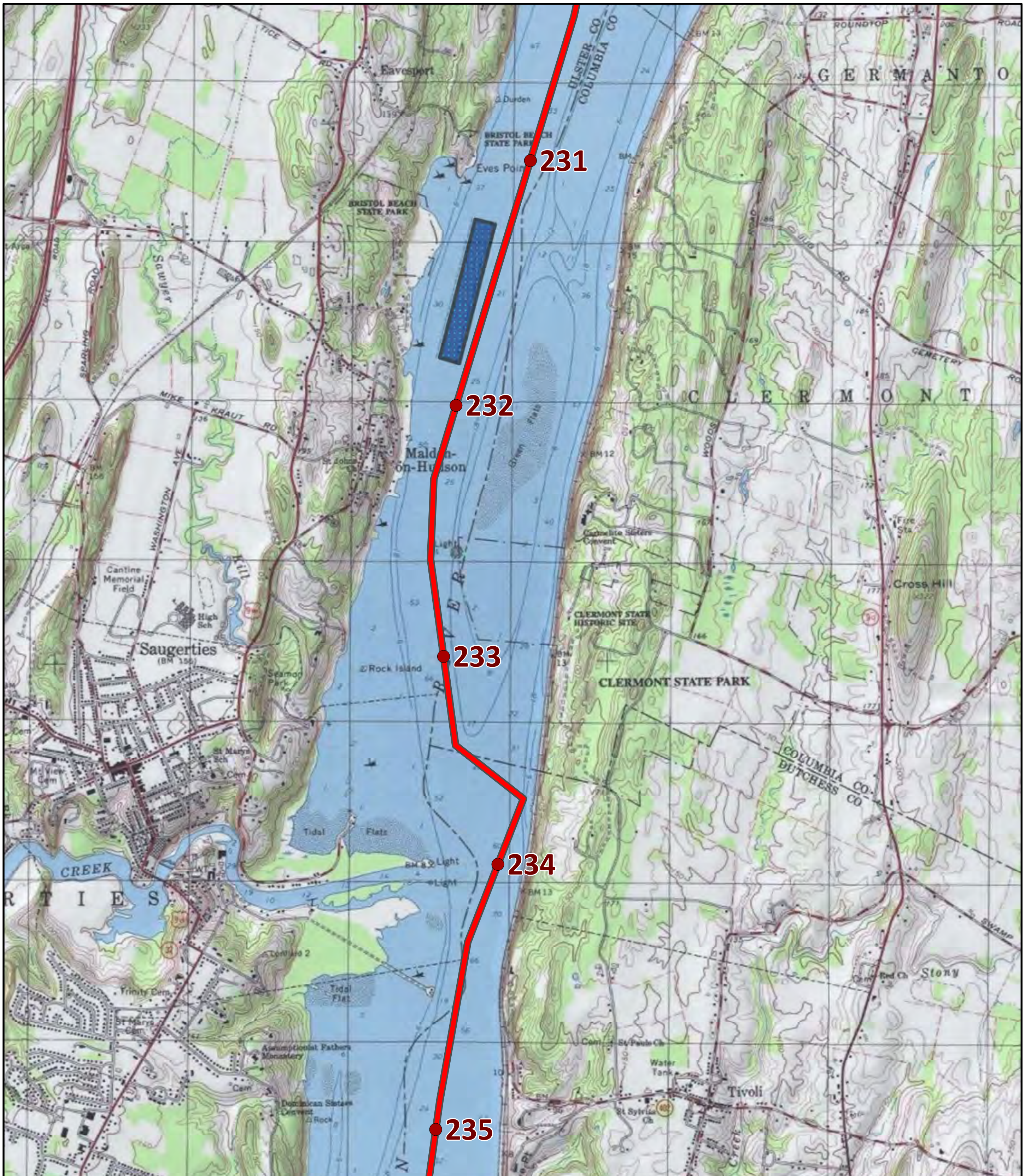
Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



Map 46 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

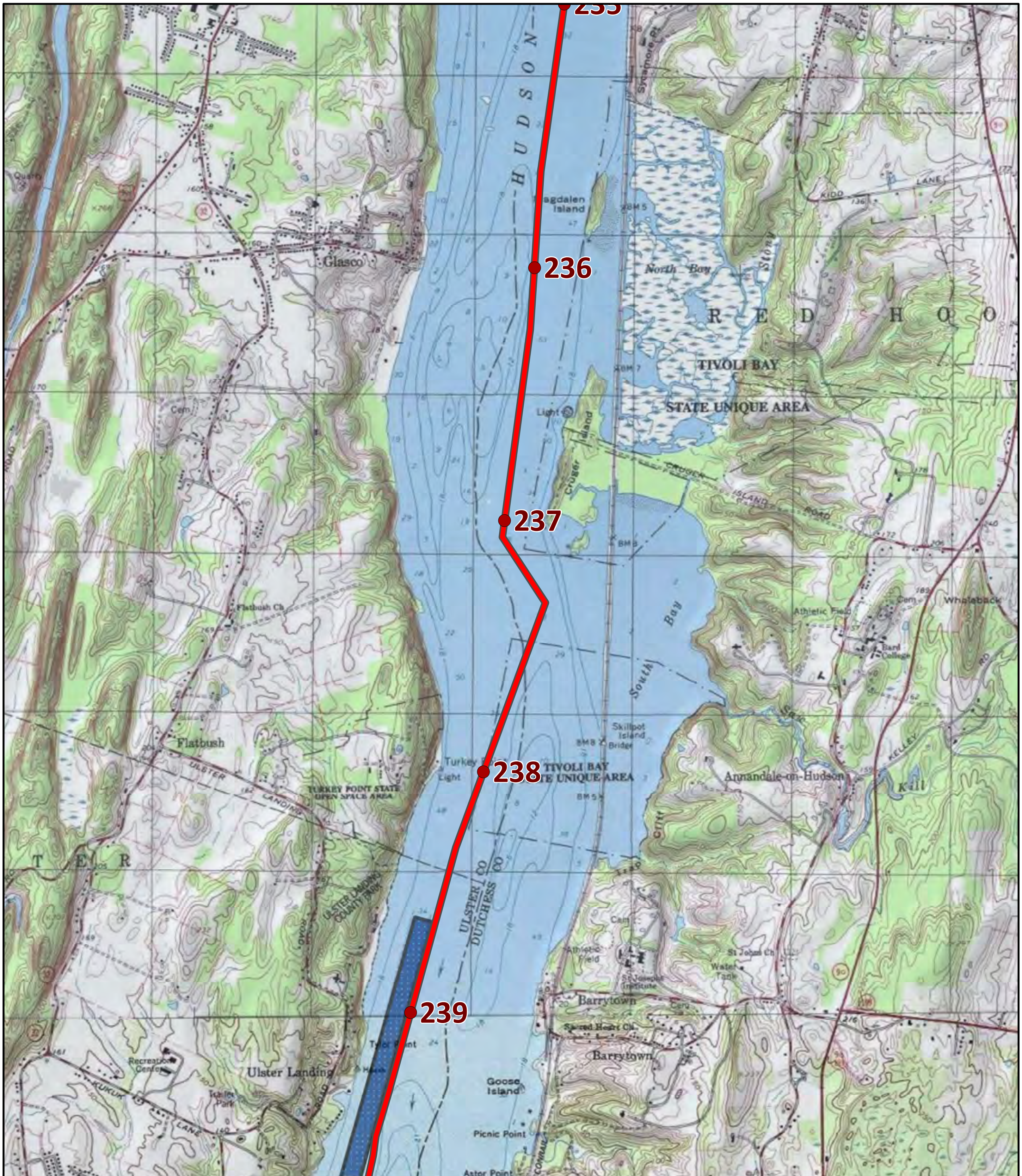
N

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 48 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



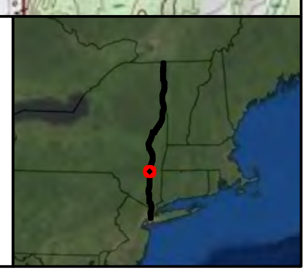
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

N

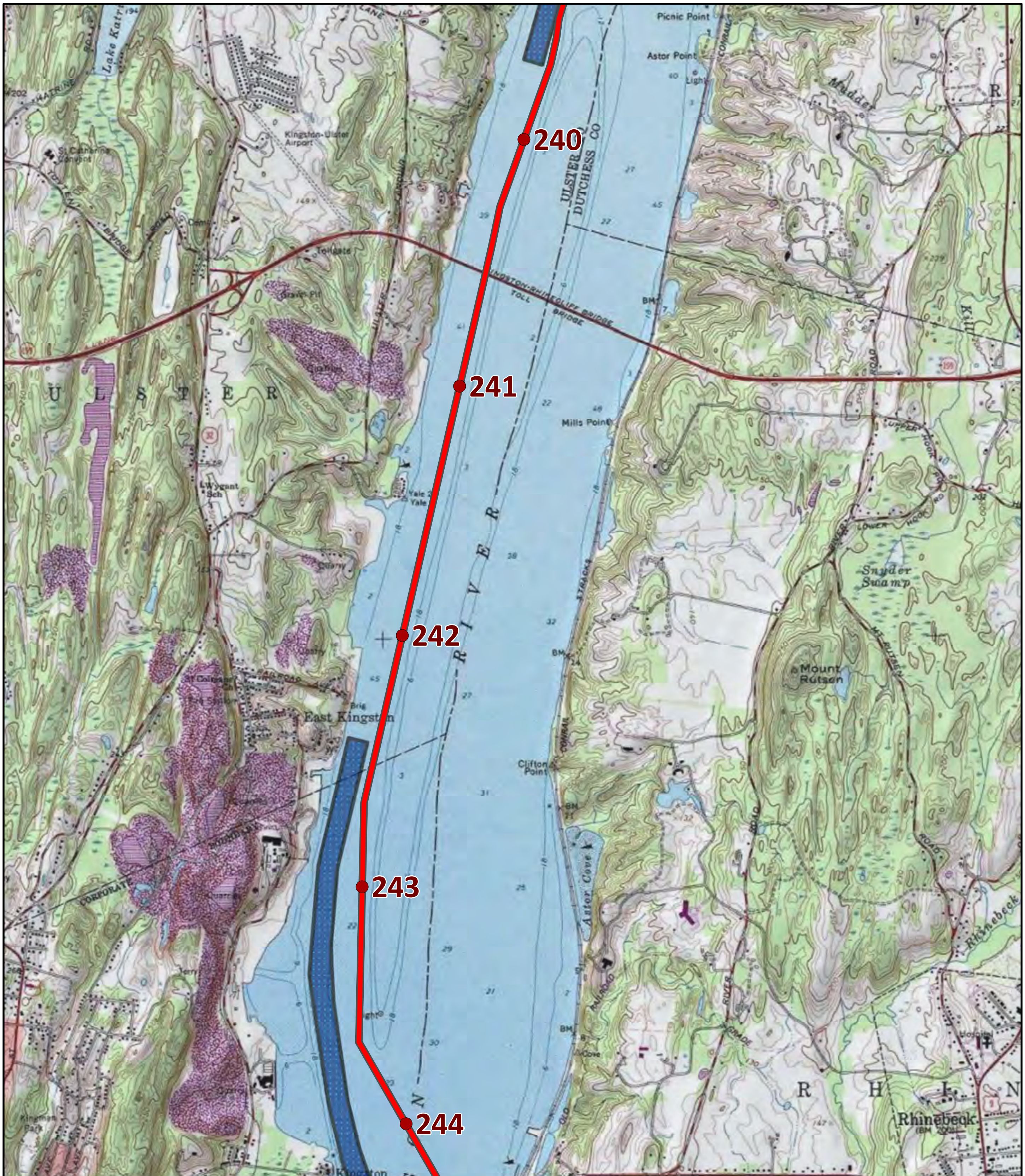
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 49 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

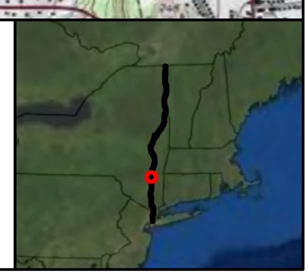
Kilometers 0 0.25 0.5 1

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

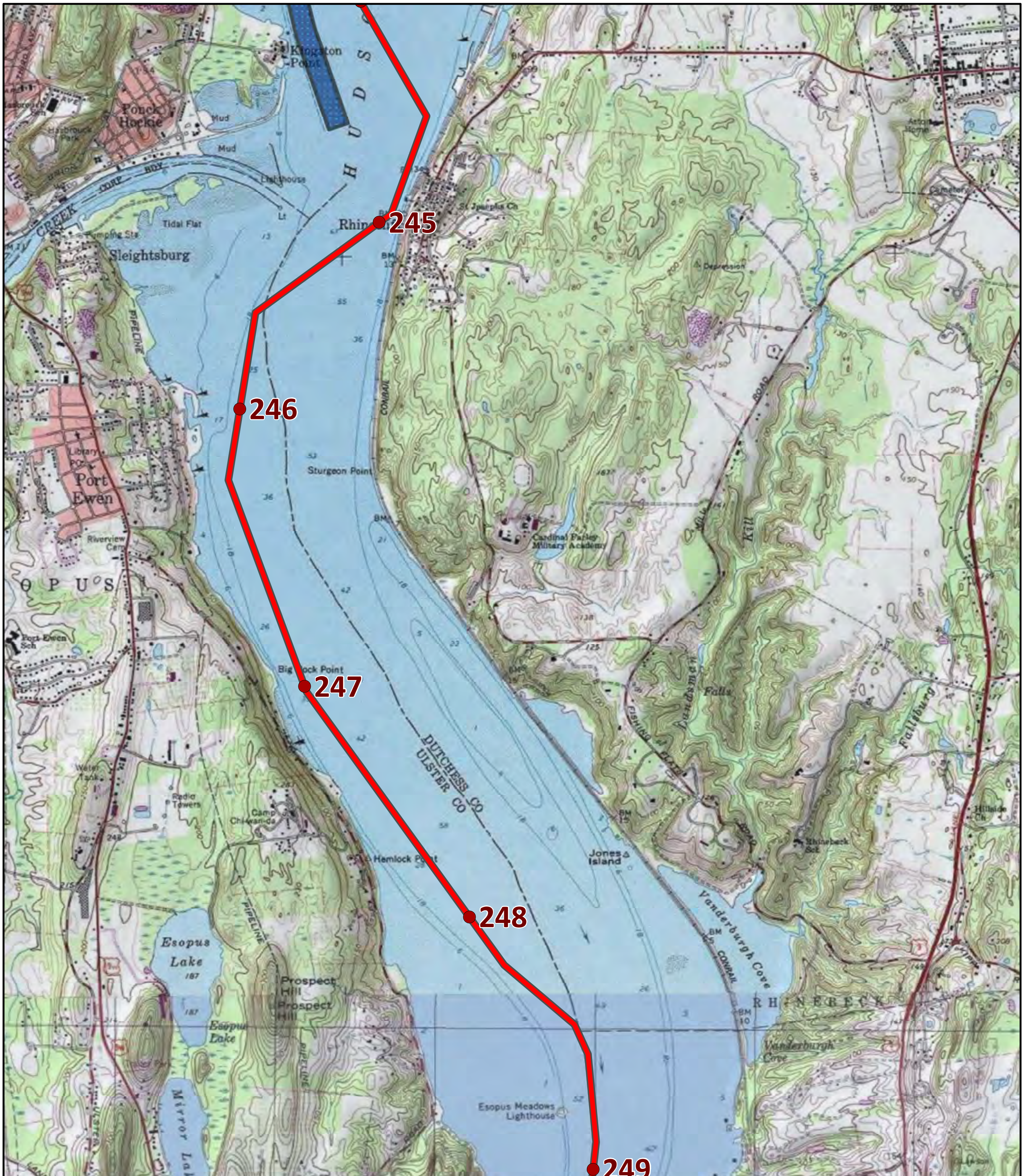
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 50 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



Proposed CHPE Project Route Mileposts

Proposed CHPE Project Route

HDD Installation

Pipe Bridge Installation

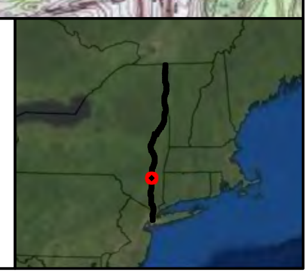
Federal Navigation Channel

FEMA 100-Year Flood Zone

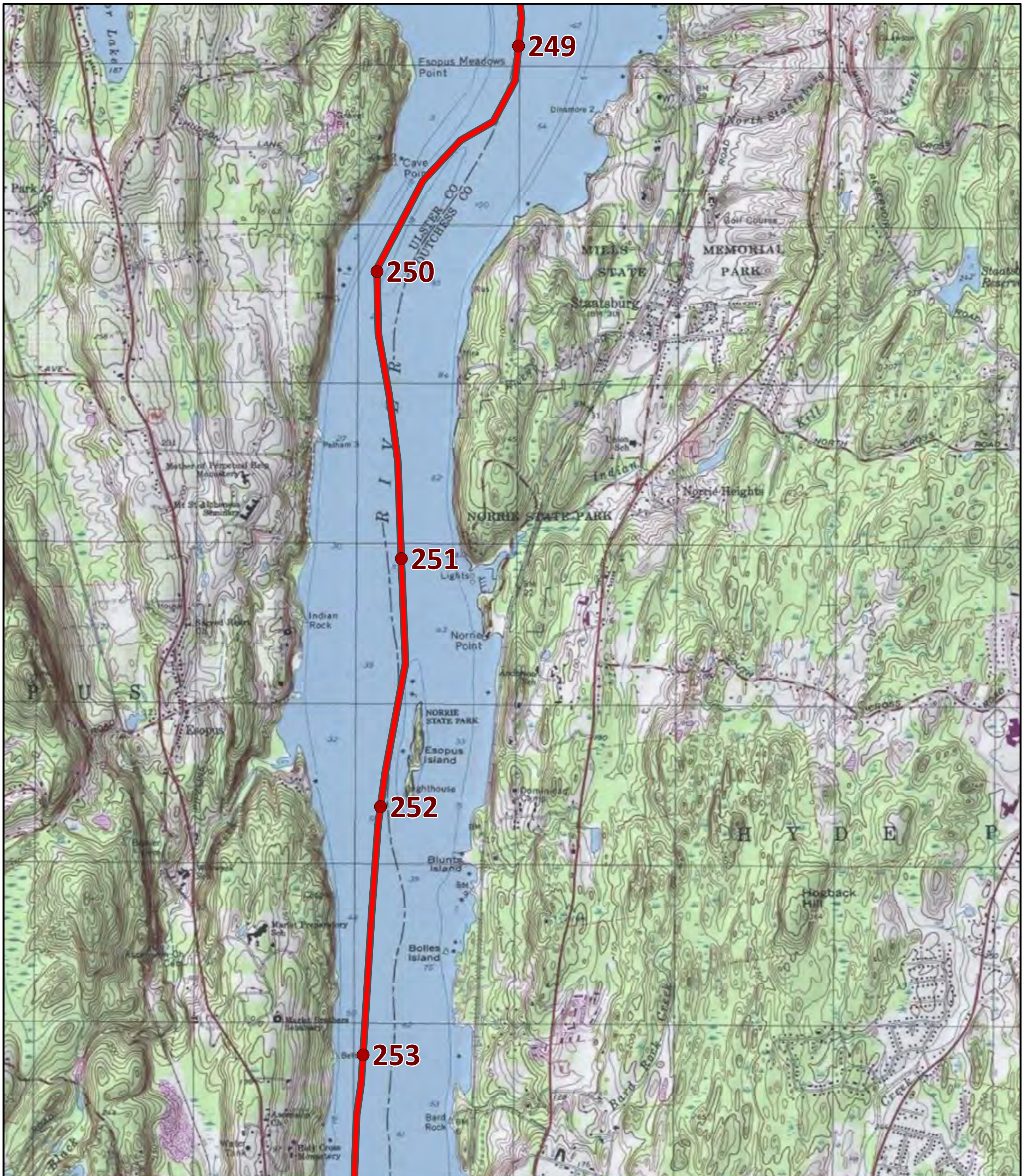
Delineated Wetlands

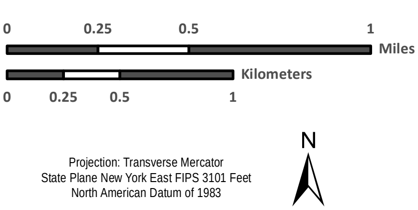
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

Map 51 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

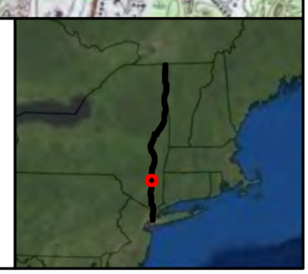




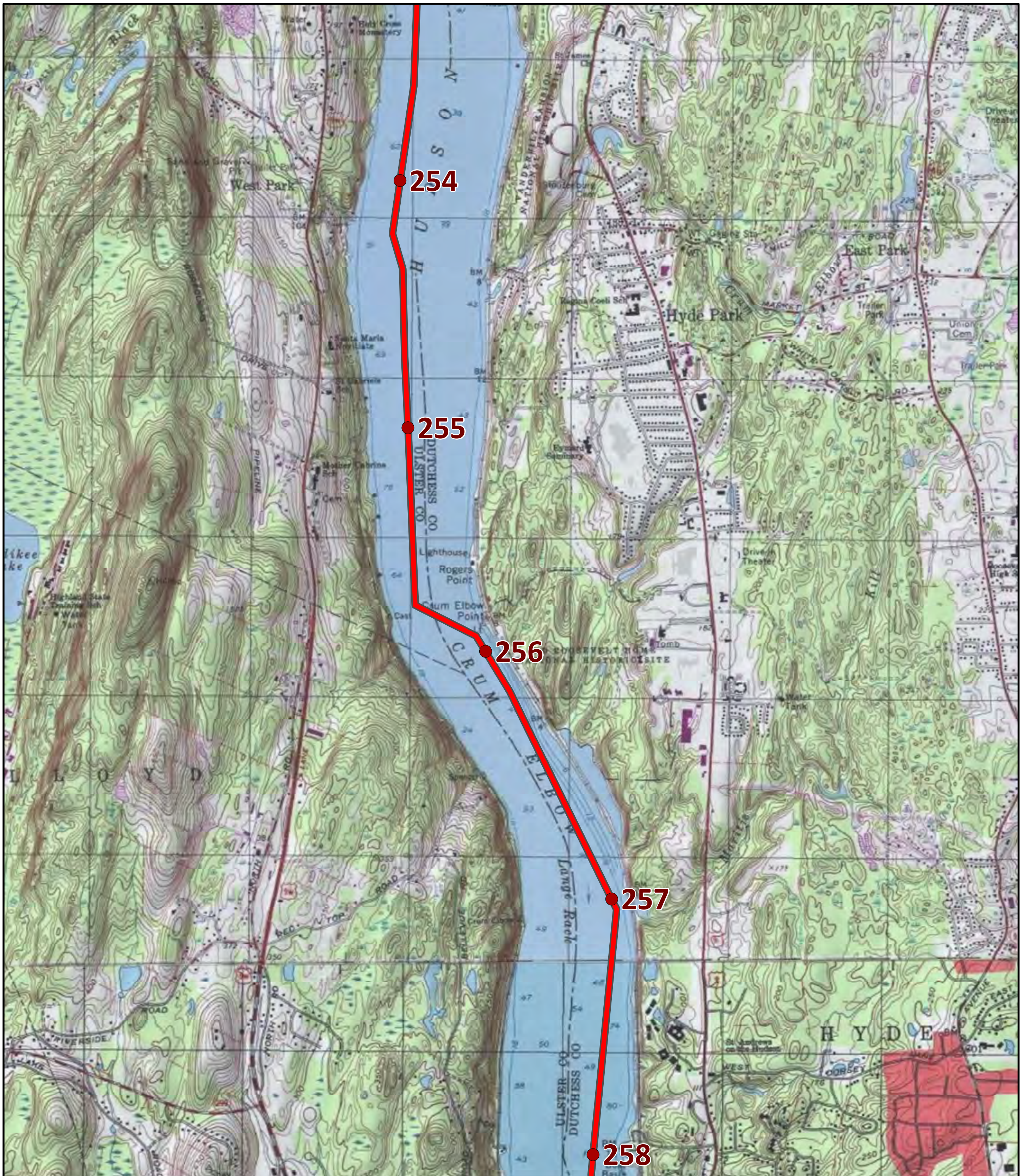
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 52 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



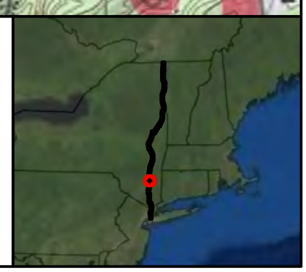
0 0.25 0.5 1 Miles

Kilometers 0 0.25 0.5 1

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

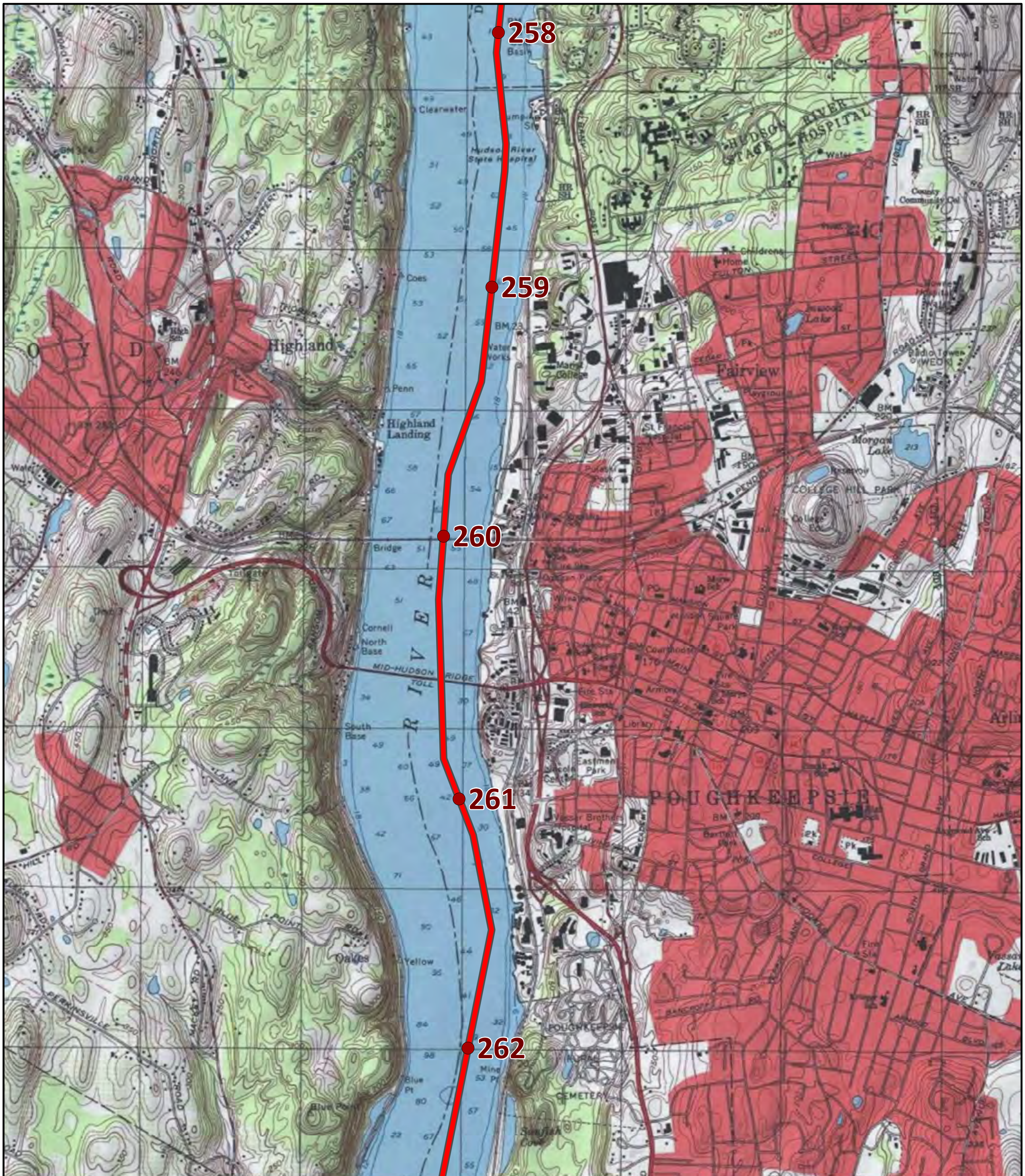
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 53 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



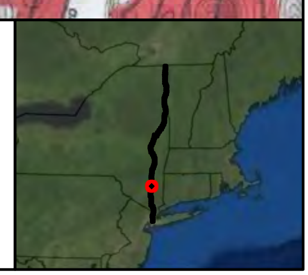
0 0.25 0.5 1 Miles

Kilometers 0 0.25 0.5 1

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

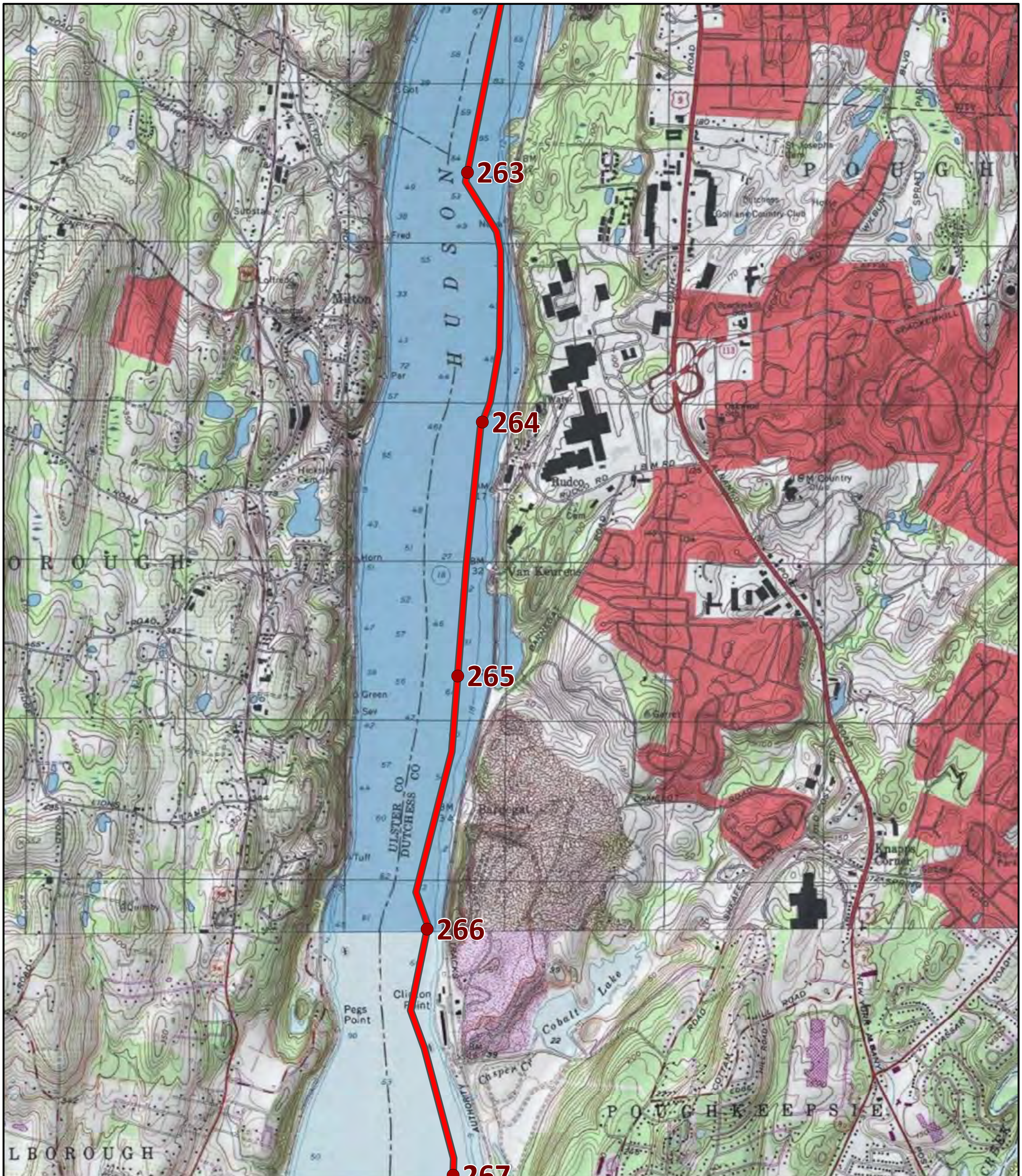
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 54 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

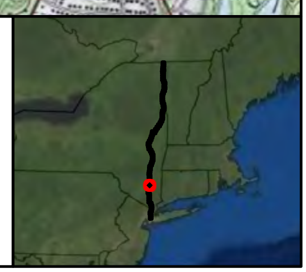
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

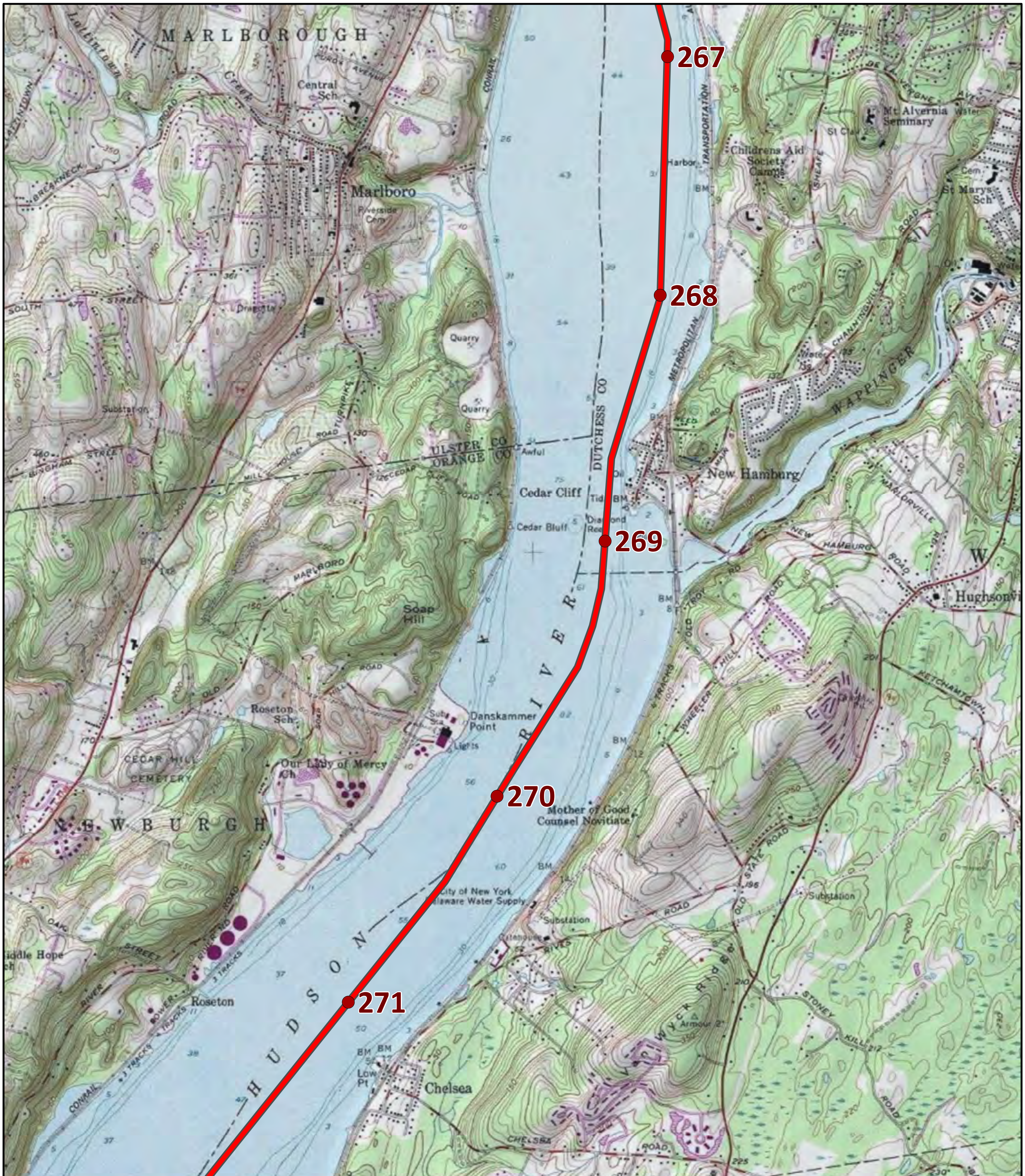
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 55 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

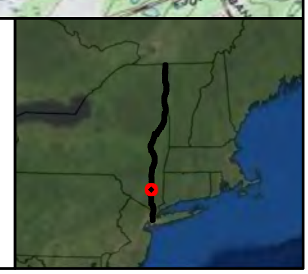
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

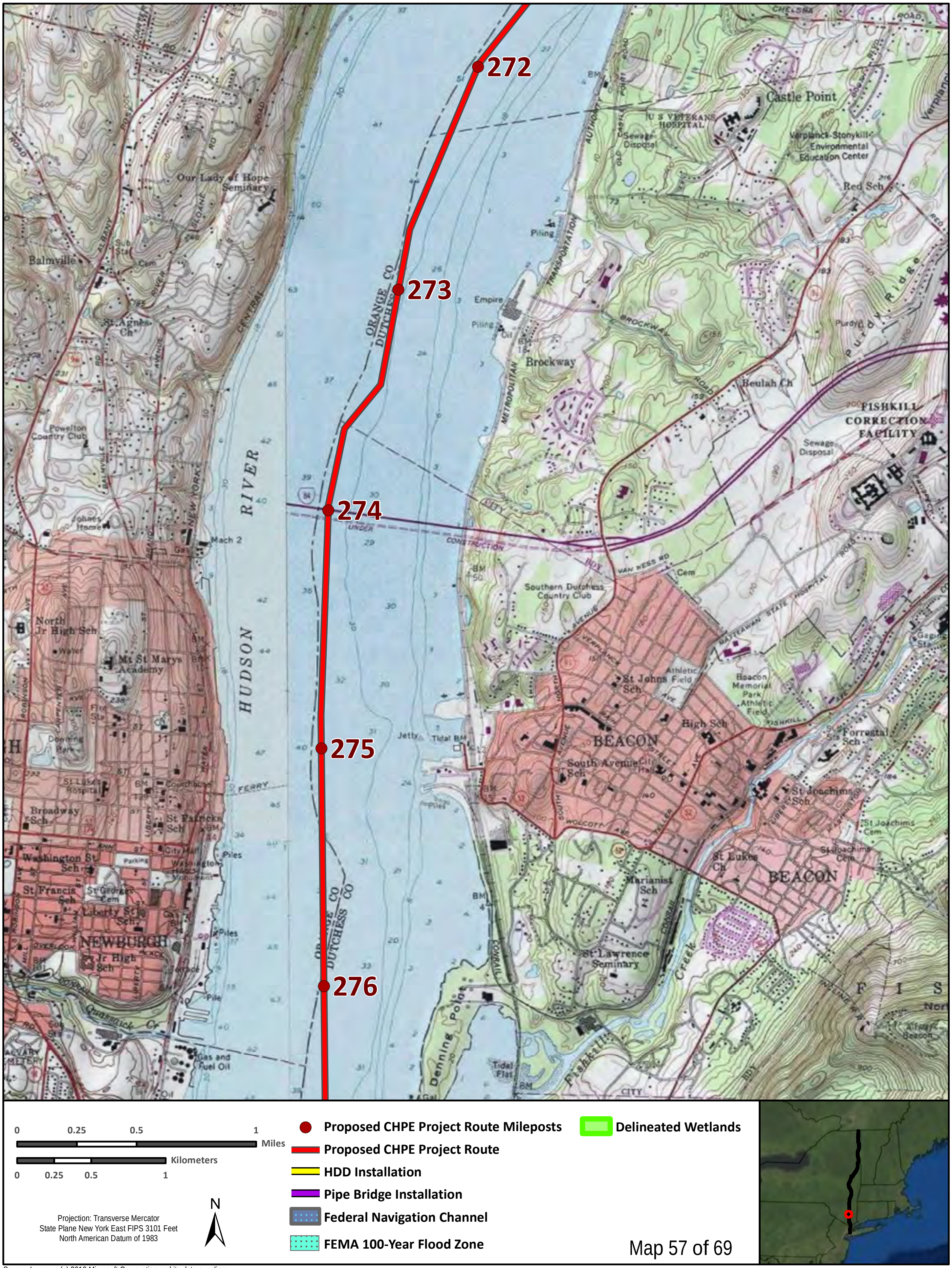
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 56 of 69



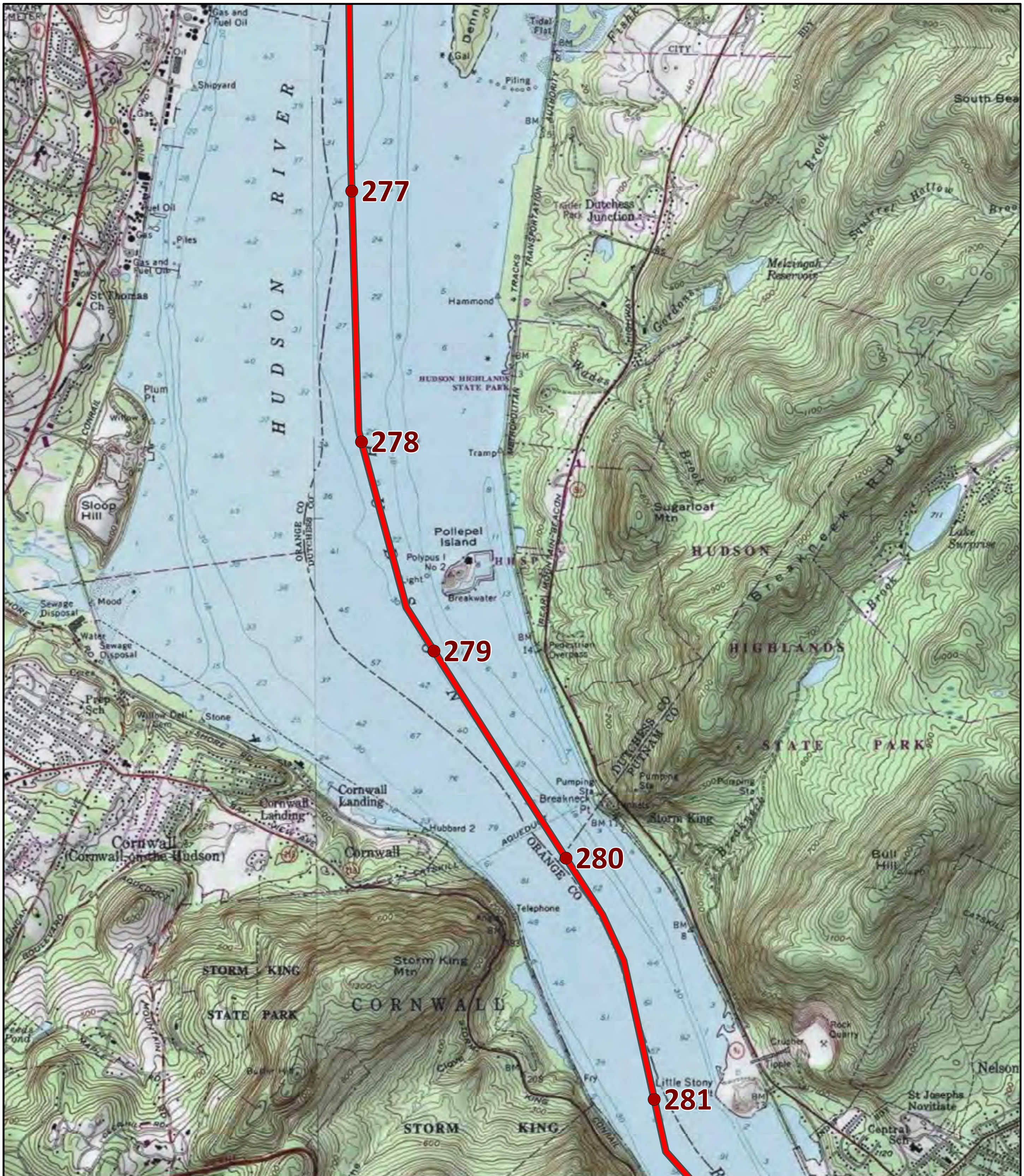
Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

Map 57 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



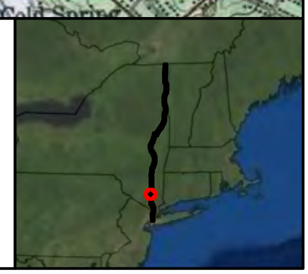
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

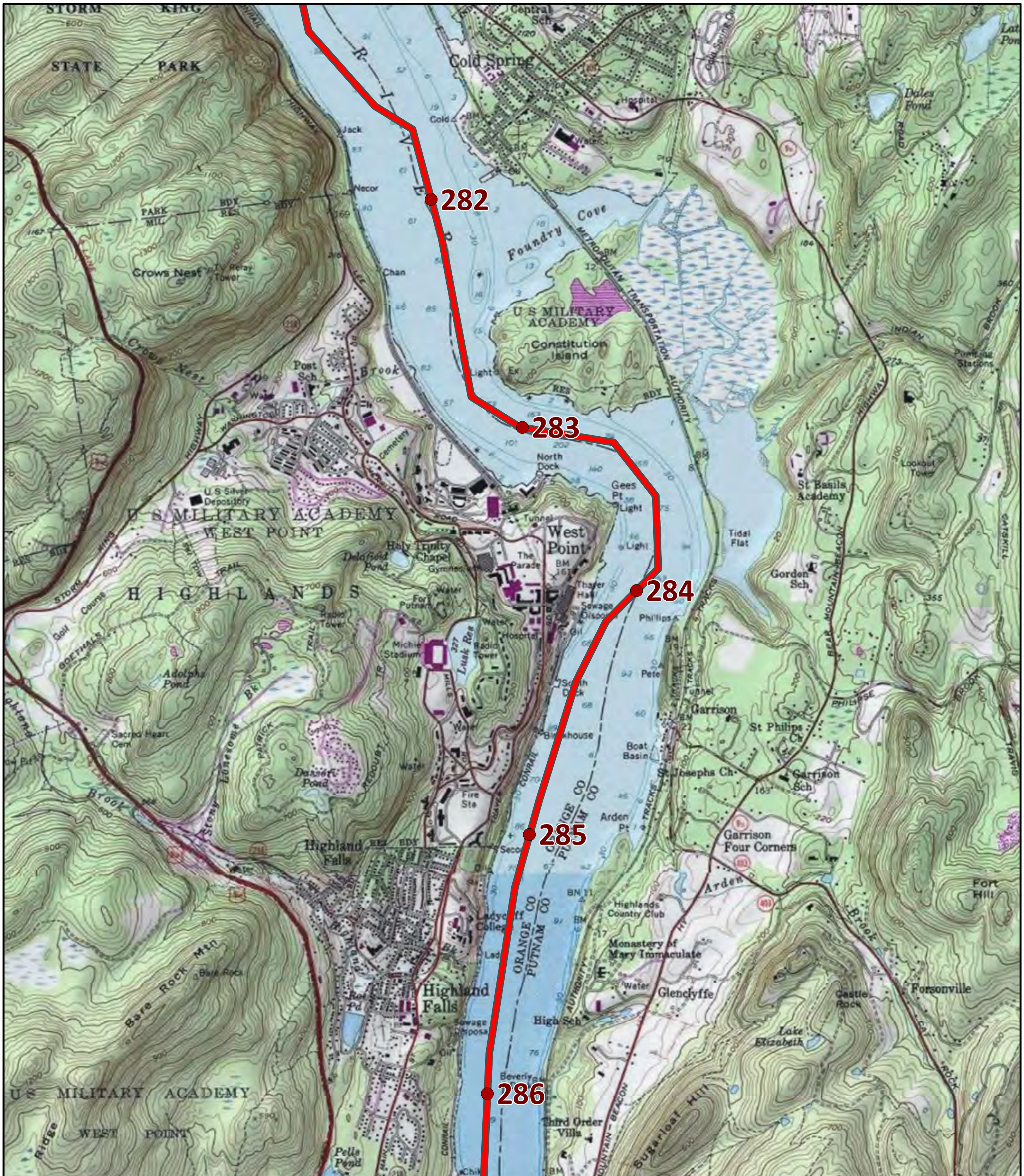
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 58 of 69



0 0.25 0.5 1 Miles

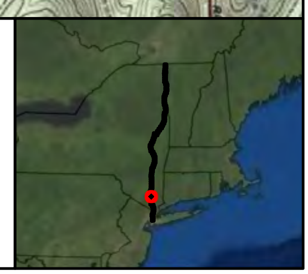
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

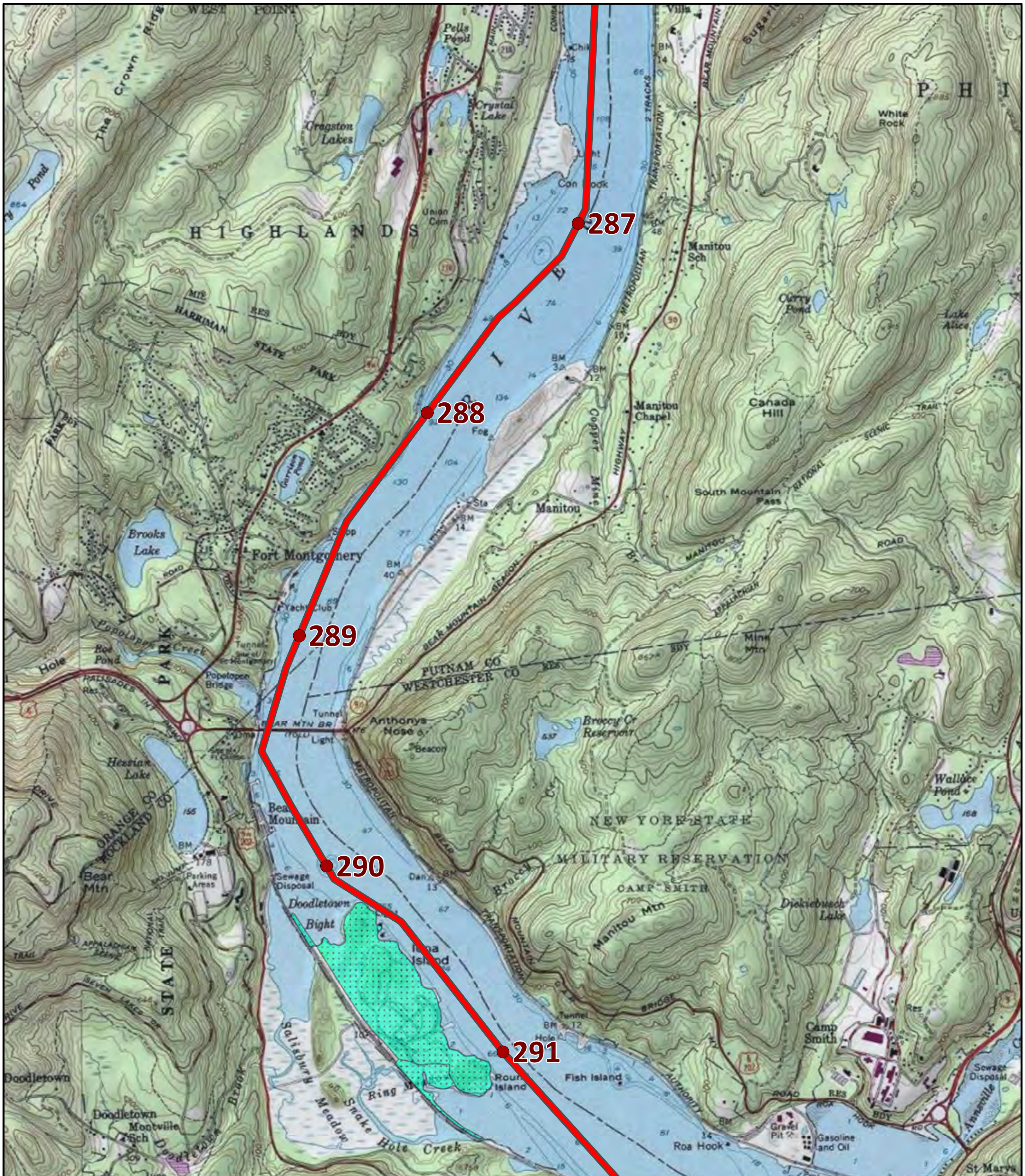
N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 59 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

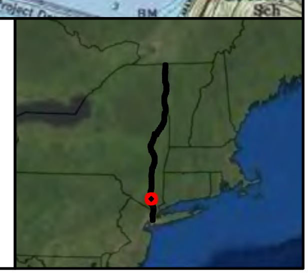
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 60 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

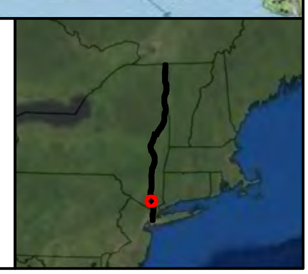
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 61 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

0 0.25 0.5 1 Miles

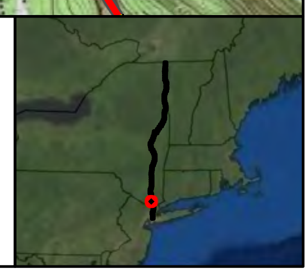
0 0.25 0.5 1 Kilometers

N

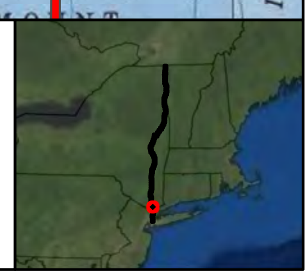
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 62 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

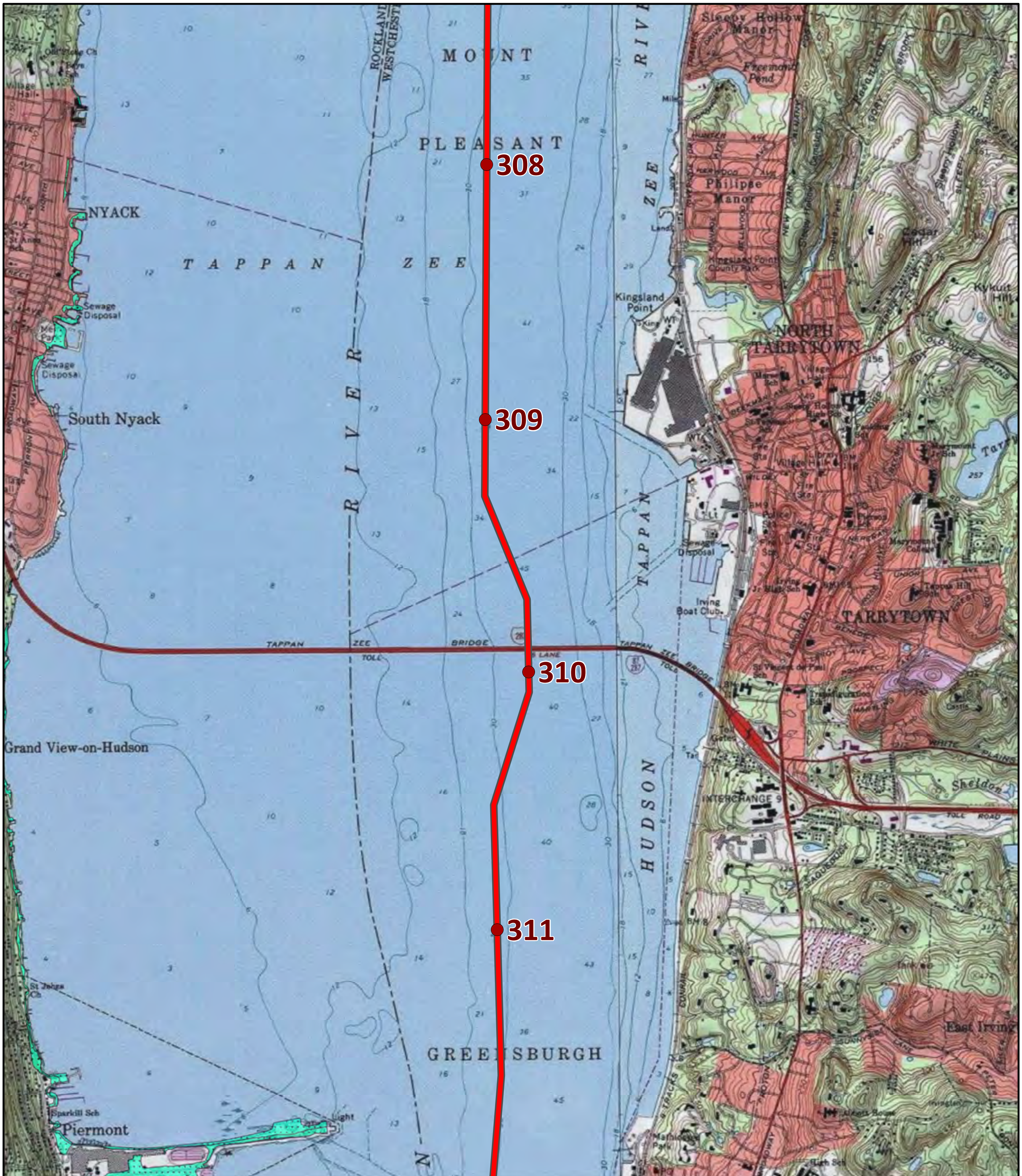
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 63 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



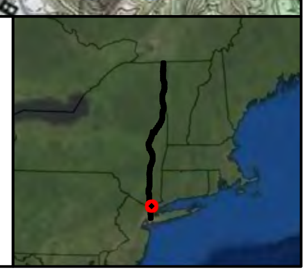
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

N

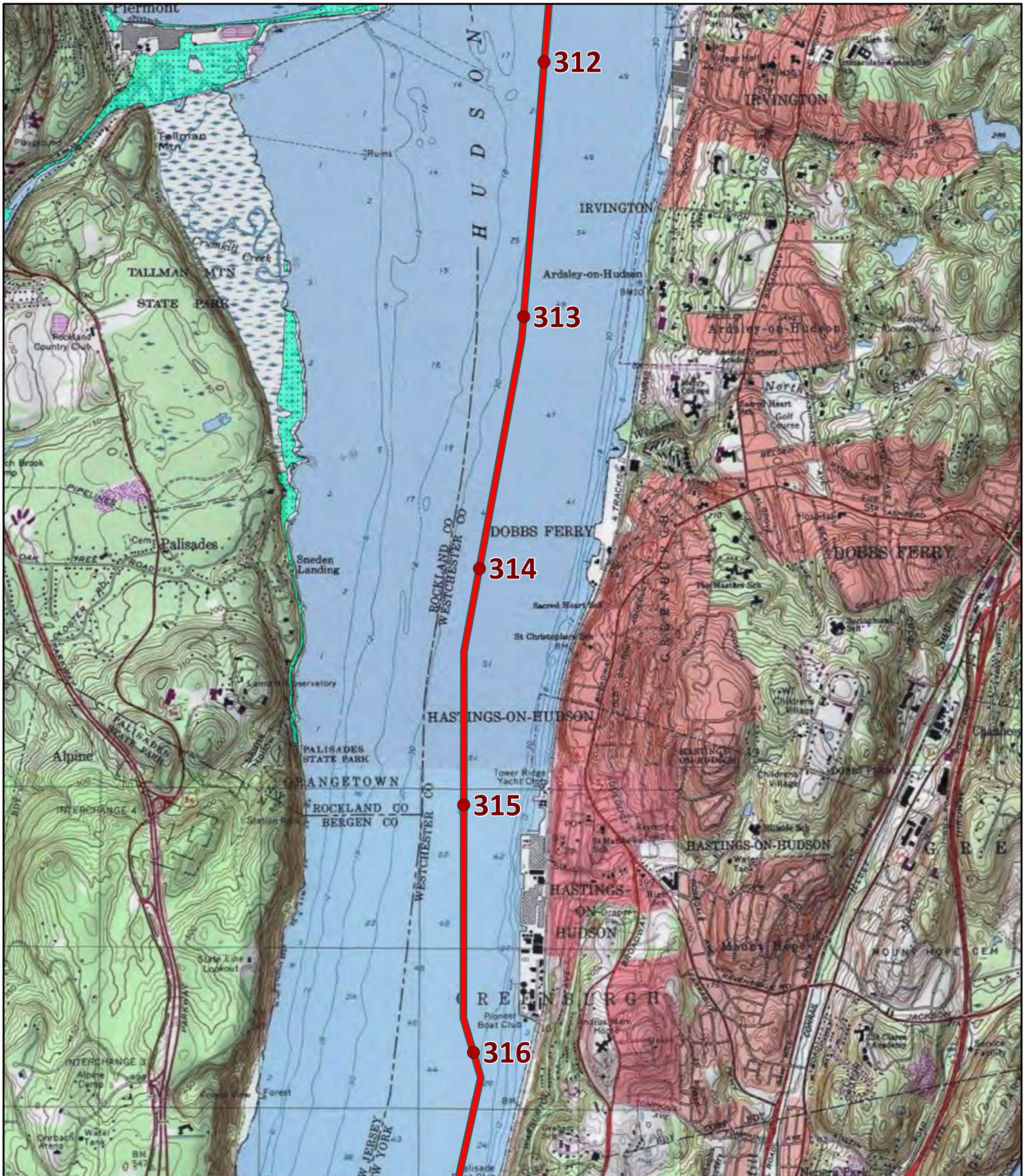
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

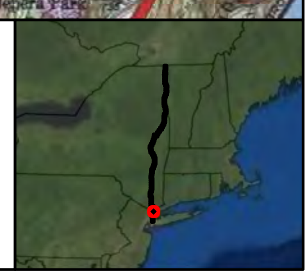
- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands



Map 64 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.





0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

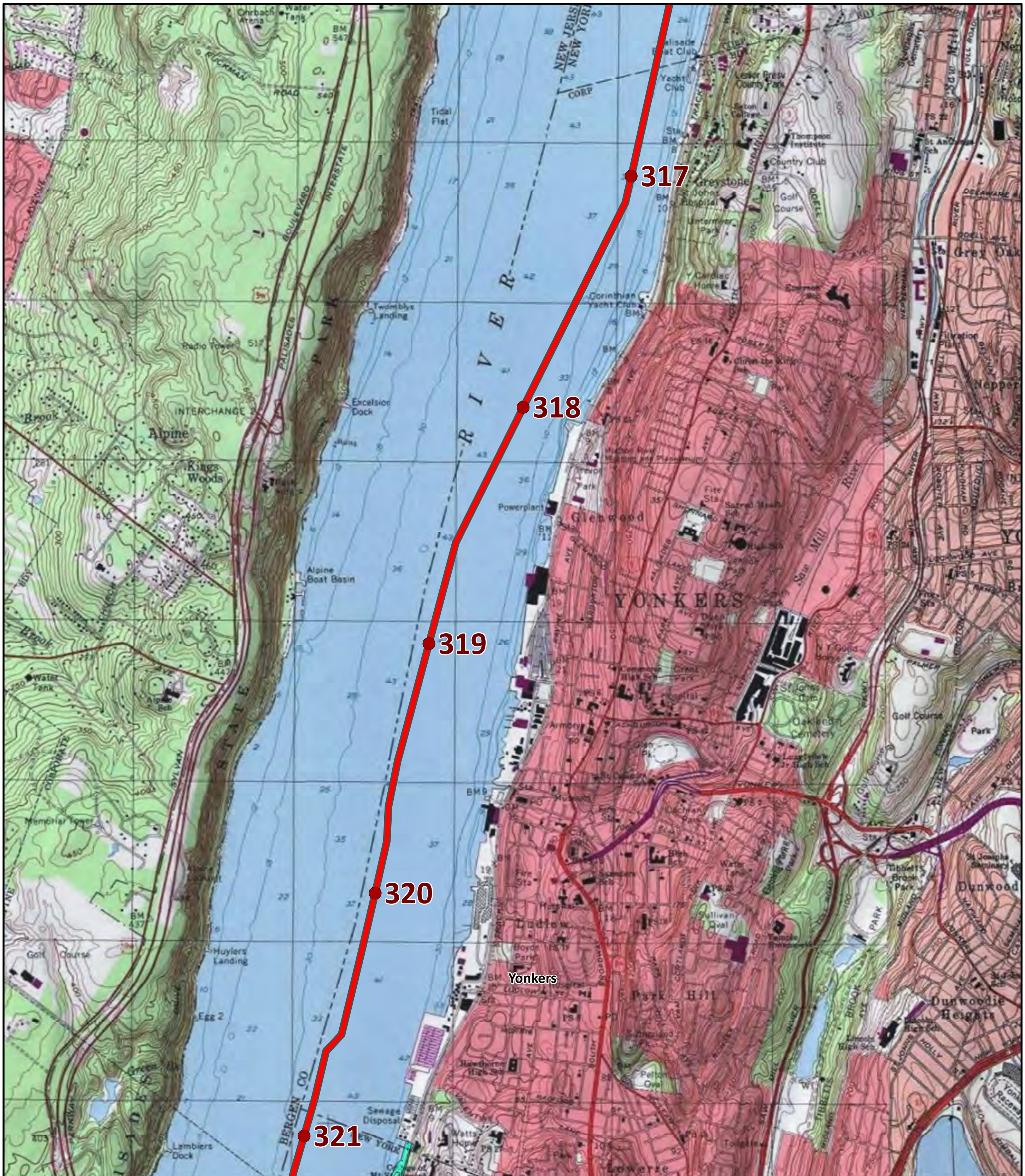
N

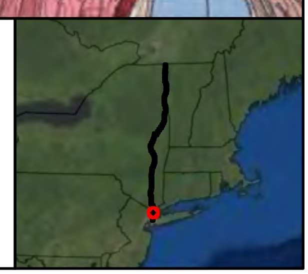
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 65 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.





0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

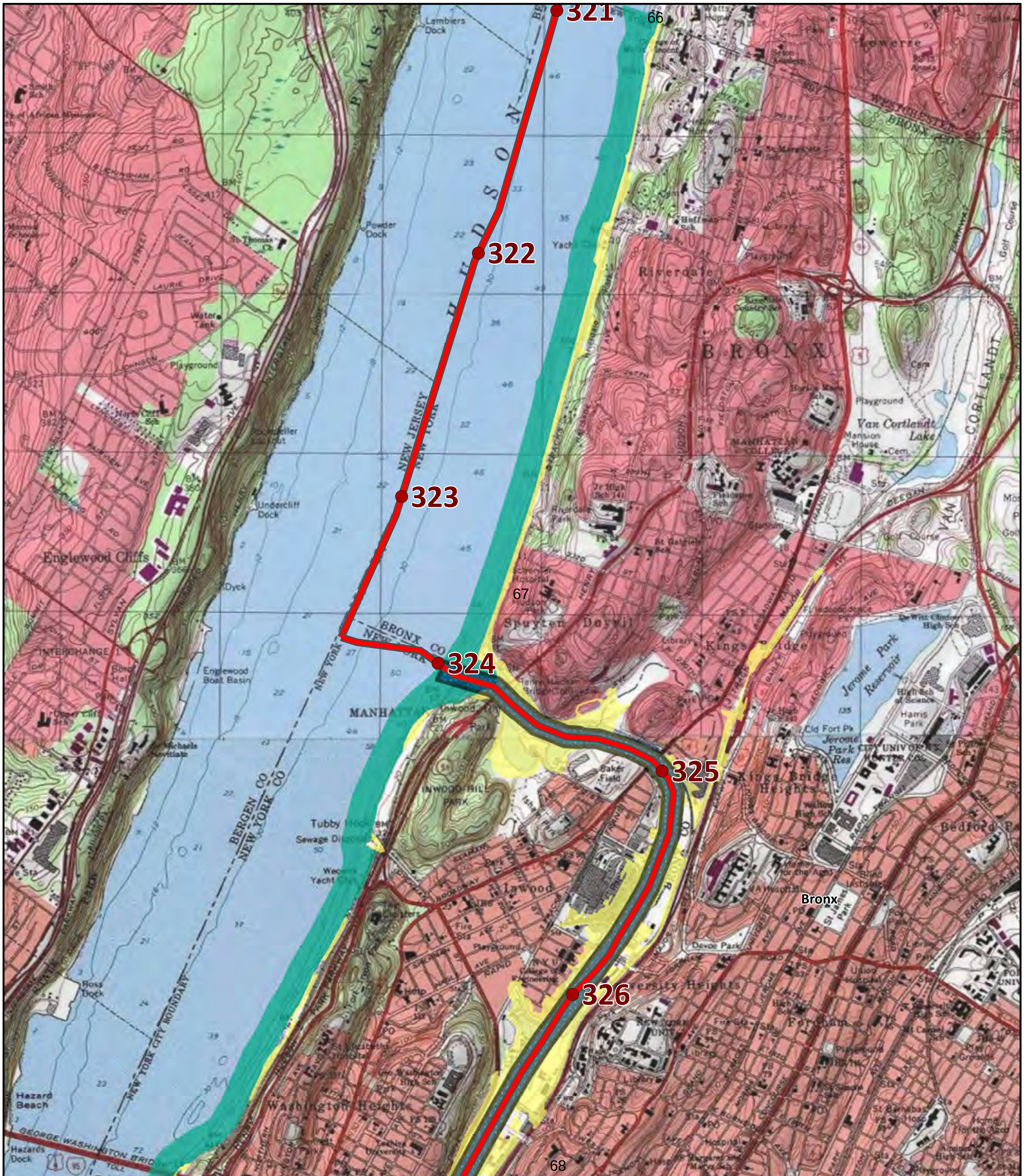
Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route
- HDD Installation
- Pipe Bridge Installation
- Federal Navigation Channel
- FEMA 100-Year Flood Zone
- Delineated Wetlands

Map 66 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

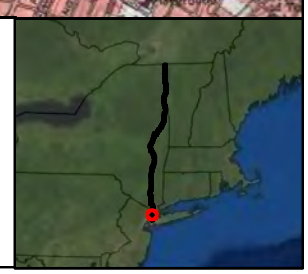
- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route

FEMA Preliminary Draft Work Map Data

- Zone AE - High flood risk subject to inundation by the 1% annual-chance flood event. Base Flood Elevations (BFEs) have been determined.
- Zone VE - High flood risk subject to inundation by the 1% annual-chance flood event and storm-induced velocity wave action (a 3-foot or higher breaking wave).

- HDD Installation
- Pipe Bridge Installation
- Delineated Wetlands
- Federal Navigation Channel

Map 67 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.

Proposed CHPE Project Route Mileposts

Proposed CHPE Project Route

FEMA Preliminary Draft Work Map Data

Zone AE - High flood risk subject to inundation by the 1% annual-chance flood event. Base Flood Elevations (BFEs) have been determined.

Zone VE - High flood risk subject to inundation by the 1% annual-chance flood event and storm-induced velocity wave action (a 3-foot or higher breaking wave).

HDD Installation

Pipe Bridge Installation

Delineated Wetlands

Federal Navigation Channel

0 0.25 0.5 1 Miles

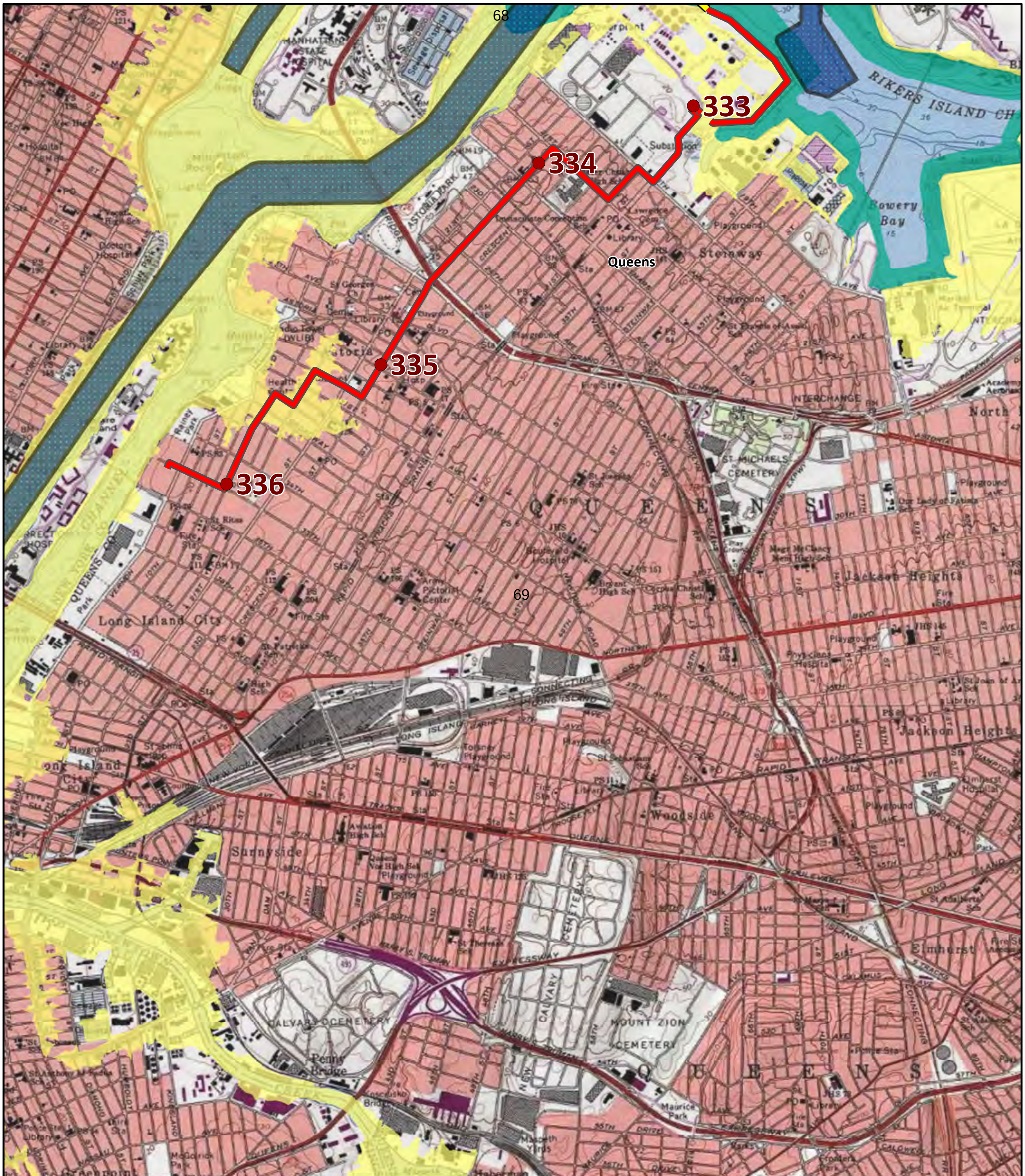
0 0.25 0.5 1 Kilometers

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

N

Map 68 of 69

Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



- Proposed CHPE Project Route Mileposts
- Proposed CHPE Project Route

FEMA Preliminary Draft Work Map Data

- Zone AE - High flood risk subject to inundation by the 1% annual-chance flood event. Base Flood Elevations (BFEs) have been determined.
- Zone VE - High flood risk subject to inundation by the 1% annual-chance flood event and storm-induced velocity wave action (a 3-foot or higher breaking wave).
- HDD Installation
- Pipe Bridge Installation
- Delineated Wetlands
- Federal Navigation Channel

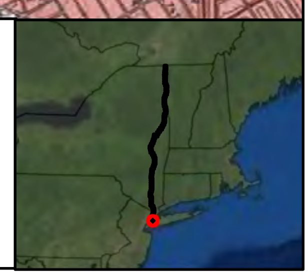
0 0.25 0.5 1 Miles

0 0.25 0.5 1 Kilometers

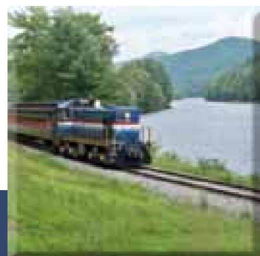
N

Projection: Transverse Mercator
State Plane New York East FIPS 3101 Feet
North American Datum of 1983

Map 69 of 69



Source: Imagery -(c) 2010 Microsoft Corporation and its data suppliers.



APPENDIX B

CWA Section 404 Permit Application Alternatives Analysis Report

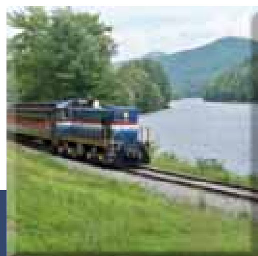
Appendix B
CWA Section 404 Permit Application Alternatives Analysis Report

This appendix contains the Clean Water Act (CWA) 404 Permit Application Alternatives Analysis Report for the proposed CHPE Project issued by the U.S. Army Corps of Engineers (USACE) on July 3, 2013.

The full version of the Alternatives Analysis is available at the CHPE EIS Web site Document Library found at the following link:

http://www.chpexpresseis.org/docs/CHPE_EIS_CWA_Section_404_Alternatives_Analysis.pdf

THIS PAGE INTENTIONALLY LEFT BLANK



APPENDIX C

NYSPSC Order Granting Certificate of Environmental Compatibility and Public Need for the Proposed CHPE Project

Appendix C
NYSPSC Order Granting Certificate of Environmental Compatibility and Public Need for the Proposed CHPE Project

This appendix contains the Order Granting the Certificate of Environmental Compatibility and Public Need (Certificate) for the proposed CHPE Project issued by the New York State Public Service Commission (NYSPSC) to the Applicant on April 18, 2013 (NYSPSC 2013).

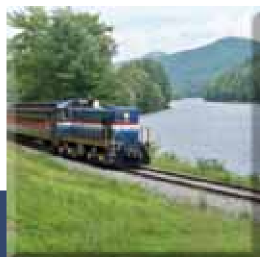
The full version of the Certificate (including attachments) is available at the CHPE EIS Web site Document Library found at the following link: http://www.chpexpresseis.org/docs/NYSPSC_Order.pdf. The attachments to the Certificate and the page number at which each attachment starts in the full version of the Certificate are provided below.

- The main text of the Joint Proposal (starting at page 108)
- Revised Certificate Conditions (January 2013) (starting at page 197)
- Five attachments to the Revised Certificate Conditions:
    - Attachment 1: Champlain Hudson Power Express Suspended Sediment/Water Quality Monitoring Plan Scope of Study (starting at page 309)
    - Attachment 2: Champlain Hudson Power Express Benthic and Sediment Monitoring Scope of Study (starting at page 315)
    - Attachment 3: Champlain Hudson Power Express Bathymetry, Sediment Temperature, and Magnetic Field Scope of Study (starting at page 320)
    - Attachment 4: Champlain Hudson Power Express Atlantic Sturgeon Pre- and Post-Energizing Scope of Study (starting at page 323)
    - Attachment 5: List of Approved Projects for the Champlain Hudson Environmental Research and Development Trust (starting at page 328)
- Draft EM&CP (starting at page 339)
- Best Management Practices (starting at page 356)
- Other selected Joint Proposal exhibits (starting at page 513).

The Joint Proposal was attached to the Certificate. The Joint Proposal itself included nearly 200 attachments, called appendices and exhibits. These appendices and exhibits are available for download from the NYSPSC's Document Matter Master (DMM) Web site for the CHPE Project at:

http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=10-T-0139

THIS PAGE INTENTIONALLY LEFT BLANK



APPENDIX D

Scoping Summary Report

APPENDIX D.1 – 2010 SCOPING REPORT

SCOPING SUMMARY REPORT

CHAMPLAIN HUDSON POWER EXPRESS TRANSMISSION LINE PROJECT ENVIRONMENTAL IMPACT STATEMENT

U.S. Department of Energy
Office of Electricity Delivery and Energy Reliability
Washington, DC 20585

Cooperating Agencies:
U.S. Environmental Protection Agency
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
New York Department of State
New York Department of Environmental Conservation

DECEMBER 2010

ACRONYMS AND ABBREVIATIONS

AC	Alternating Current
CFR	Code of Federal Regulations
CHPEI	Champlain Hudson Power Express, Incorporated
CP	Canadian Pacific Railway
CSX	CSX Railroad
CZMA	Coastal Zone Management Act
DC	Direct Current
DOE	U.S. Department of Energy
EIS	Environmental Impact Statement
EMF	Electromagnetic Fields
EO	Executive Order
EPAct	Energy Policy Act of 2005
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
km	kilometer
kV	kilovolt
MW	megawatt
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NYISO	New York Independent Systems Operator
NYSPSC	New York State Public Service Commission
NYSCC	New York State Conservation Council
NYSDEC	New York State Department of Environmental Conservation
NYSDPS	New York State Department of Public Service
NYSTA	New York State Thruway Authority
SCFWH	Significant Coastal Fish and Wildlife Habitats
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

SCOPING SUMMARY REPORT
CHAMPLAIN HUDSON POWER EXPRESS EIS

TABLE OF CONTENTS

1. INTRODUCTION 1

1.1 OVERVIEW 1
1.2 PUBLIC OUTREACH 1
1.3 COOPERATING AGENCIES 2
1.4 PROJECT CHRONOLOGY TO DATE 4
1.5 PROJECT OVERVIEW 5

2. SCOPING COMMENTS 7

APPENDICES

A. Federal Register Notice
B. Newspaper Advertisements and Affidavits
C. Example Press Release and Press Release Distribution
D. Meeting Transcripts
E. Comment Letters
F. Detailed Route Maps
G. Chronological Listing of Scoping Commenters and Summarized Comments

FIGURES

1. Project Regional Map 3

TABLES

1. Dates and Locations of the Public Scoping Meetings 2
2. Summary of Scoping Comments Received by DOE 9
3. Directory of Stakeholder Comments 19

THIS PAGE INTENTIONALLY LEFT BLANK

1. Introduction

1.1 Overview

On January 25, 2010, Champlain Hudson Power Express Inc.[1] (CHPEI) applied to the U.S. Department of Energy (DOE) for a Presidential permit in accordance with Executive Order (EO) 10485, as amended by EO 12038, and the regulations codified at 10 Code of Federal Regulations (CFR) 205.320 et seq. (2000), "Application for Presidential Permit Authorizing the Construction, Connection, Operation, and Maintenance of Facilities for Transmission of Electric Energy at International Boundaries." The DOE Office of Policy, Siting and Analysis, in the Office of Electricity Delivery and Energy Reliability (OE-20) is responsible for issuing Presidential permits. The Presidential permit for CHPEI (OE Docket Number PP-362), if issued, would authorize CHPEI to construct, operate, maintain, and connect the U.S. portion of the project, which consists of an electric transmission line that would cross the international border between the United States and Canada, near the village of Rouses Point, New York. A project overview is provided in **Section 1.5**, and additional project details are provided in CHPEI's January 25, 2010, application letter to DOE, as amended on August 5, 2010. All of these documents are available on the DOE Web site at http://chpexpresseis.org, and additional project information is also available on the Applicant's Web site at http://chpexpress.com.

Pursuant to the National Environmental Policy Act of 1969 (NEPA), and in considering an application for a Presidential permit, the DOE must take into account possible environmental impacts of the proposed facility. DOE has determined that an Environmental Impact Statement (EIS) is the appropriate level of environmental review under NEPA for granting the requested Presidential permit. DOE will use the NEPA planning process to encourage agency and public involvement in the review of the proposed project, and to identify the range of reasonable alternatives. The public outreach process is designed to facilitate the public discussion of the scope of appropriate issues to be addressed in the EIS.

1.2 Public Outreach

On June 18, 2010, DOE published in the *Federal Register* its Notice of Intent (NOI) to Prepare an EIS and to Conduct Public Scoping Meetings; Notice of Floodplains and Wetlands Involvement; Champlain Hudson Power Express, Inc. (75 FR 34720). The Notice of Intent (NOI), provided in **Appendix A**, explained that DOE would be assessing potential environmental impacts and issues associated with the proposed project and reasonable alternatives. The NOI was sent to interested parties including Federal, state, and local officials; agency representatives; stakeholder organizations; local libraries, newspapers, and radio and TV stations; and private individuals in the vicinity of the proposed transmission line. Issuance of the NOI commenced a 45-day public scoping period that ended on August 2, 2010. However, the NOI did note that comments submitted after the deadline "would be considered to the extent practicable."

DOE placed advertisements in 32 local and regional newspapers along the proposed project corridor to invite the public to local scoping meetings, and to announce their times and locations. Copies of newspaper tear sheets and affidavits are included in **Appendix B**. In addition, press releases were

[1] CHPEI is a joint venture of TDI–USA Holdings Corporation (TUHC), a Delaware corporation, and National Resources Energy, LLC (NRE). TUHC is owned by Transmission Developers, Inc. (TDI), a Canadian Corporation and by Sithe Global TDI LLC (Sithe Global TDI). Sithe Global TDI is a wholly owned subsidiary of the Blackstone Group L.P. NRE is a wholly owned subsidiary of National RE/sources Group, a limited liability corporation duly organized under the laws of the State of Connecticut.

sent out to 10 local radio and 17 television stations and to 26 newspapers prior to the meetings. **Appendix C** contains an example of the press releases and a list of media outlets to which they were sent.

During the public scoping period, DOE conducted seven scoping meetings: one in Connecticut and six within the Hudson River Valley corridor of New York State. **Figure 1** provides an overview of the route of the proposed transmission line along with an identification of the locations where scoping meetings were held. The meetings occurred between July 8 and July 16, 2010, as noted in **Table 1**.

Table 1. Dates and Locations of the Public Scoping Meetings

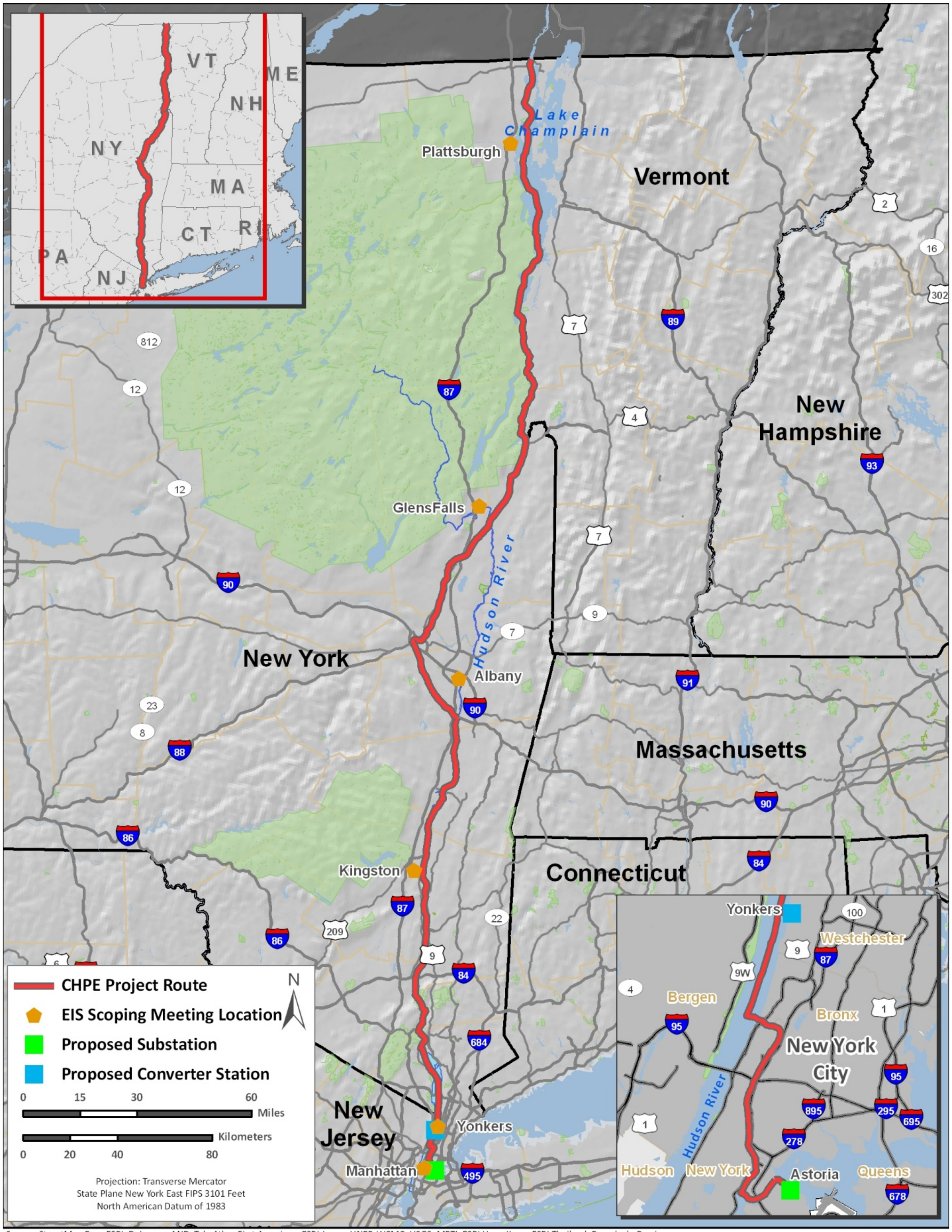
Meeting Date	Location	Number of Attendees
July 8, 2010	City Hall, Bridgeport, CT	10
July 9, 2010	Federal Building, Manhattan, New York City	25
July 12, 2010	Royal Regency Hotel, Yonkers, NY	27
July 13, 2010	Holiday Inn, Kingston, NY	28
July 14, 2010	Holiday Inn, Albany, NY	31
July 15, 2010	Ramada Inn, Glens Falls, NY	18
July 16, 2010	North Country Chamber of Commerce, Plattsburgh, NY	28

The meetings provided the public with the opportunity to learn more about the proposed project and to provide comments on potential environmental issues associated with the project. A total of 33 people gave verbal comments at the meetings, and their comments were transcribed by court stenographers. Transcripts of the scoping meetings along with materials submitted at the meetings are provided in **Appendix D**. In addition, DOE received scoping comments in the form of 22 written letters or emails from private citizens, government agencies, and nongovernmental organizations. A copy of the comment letters received during the scoping period and written materials submitted for the record at the scoping meetings are included in **Appendix E** to this report and are also available at http://chpexpress.org.

DOE's Draft EIS will also contain a subsection that summarizes the comments received during the scoping period.

1.3 Cooperating Agencies

DOE has invited several Federal and state agencies to participate in the preparation of the EIS to ensure that it satisfies the environmental requirements of those agencies to make their respective determinations regarding their permitting processes and to engage their specialized expertise. Region 2 of the U.S. Environmental Protection Agency (USEPA), the New York District of the U.S. Army Corps of Engineers (USACE), and the New York Field Office (Region 5) of the U.S. Fish and Wildlife Service (USFWS) are Federal cooperating agencies. In addition, the New York State Department of Public Service (NYSDPS) and the New York State Department of Environmental Conservation (NYSDEC) are cooperating agencies in the development of the CHPE Project EIS.



Source: StreetMap Pro; ESRI, DeLorme, AND, Tele Atlas, First American, ESRI Japan, UNEP-WCMC, USGS, METI, ESRI Hong Kong, ESRI Thailand, Procalculo Prosis

Figure 1. Project Regional Map

The following outlines each agency's requirements for the EIS:

USEPA. The USEPA does not have a direct regulatory role in the permitting process for the CHPE Project. However, Federal law provides for USEPA review of draft and final EISs. Specifically, the USEPA's Office of Federal Activities has the following responsibilities:

1. Review and prepare written comments on NEPA documents prepared by Federal agencies.
2. Review all major proposed Federal actions subject to NEPA and work with Federal agencies to avoid, minimize, and mitigate adverse environmental impacts.
3. Coordinate with Federal agencies to maximize environmental protection of proposed projects
4. Foster interagency partnerships to promote environmental stewardship in planning and implementing Federal actions.

USACE. The USACE will use the EIS in their decisionmaking for the permits that would be required under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. In accordance with 33 CFR Part 325 Appendix B (8)(c), the USACE will coordinate with DOE to ensure that the CHPE Project EIS can be adopted by USACE in support of its decisionmaking requirements on the Section 10 and Section 404 permit application by CHPEI.

USFWS. The USFWS role as a cooperating agency will include evaluation of environmental impacts on fish and wildlife, in general. They will also evaluate potential environmental impacts on federally listed threatened and endangered species and designated critical habitat and might issue a Biological Opinion based on a potential Biological Assessment prepared for the project.

NYSDPS. Construction and operation of the CHPE Project would require that the New York State Public Service Commission (NYSPSC) issue a Certificate of Environmental Compatibility and Public Need (Certificate) and a Federal Clean Water Act of 1972 (CWA) Section 401 Water Quality Certification. The NYSDPS, who serve as staff to the Commission, has requested Cooperating Agency status to coordinate its review with that of DOE.

NYSDEC. NYSDEC has responsibility for the review and approval of projects that would affect water quality, wetlands, and air quality within the state and has promulgated a number of regulations that would affect the development of the CHPE Project. NYSDEC has requested cooperating agency status in the NEPA process to participate in reviewing the scope and the analysis included in the EIS. NYSDEC will review the EIS, evaluate impacts and mitigation measures in accordance with the State Environmental Quality Review Act, and provide comments on the EIS to DOE.

1.4 Project Chronology to Date

The following timeline summarizes the scoping process events previously described:

January 25, 2010	DOE received CHPEI application for Presidential permit.
June 18, 2010	DOE issued *Federal Register* NOI (75 FR 34720) to Prepare an EIS.
July 8 to 16, 2010	Seven public scoping meetings held in Connecticut and New York State.
August 2, 2010	Scoping period ended.
August 5, 2010	CHPEI submitted addendum to Presidential permit application eliminating the Connecticut portion of the project, changing the proposal from two parallel cables to one cable, and moving a portion of

the transmission line from the Champlain Canal to a railroad right-of-way.

1.5 Project Overview

The CHPE project is described in the January 25, 2010, application letter to DOE as amended by additional correspondence on August 5, 2010, both of which are available on the DOE project Web site at http://chpexpressEIS.org.

According to the Applicant's Presidential permit application, the proposed transmission system comprises a 1,000- megawatt (MW) Voltage-Sourced Converter controllable High Voltage Direct Current (HVDC) bipole. A bipole consists of two connected submarine or underground cables, one of which is positively charged (+), and the other negatively charged (-). This two-cable bipole would be laid between Quebec, Canada, and a converter station in Yonkers, New York (see **Figure 1**). The CHPEI stated purpose of and need for the proposed transmission line is that it would connect sources of renewable power generation in Canada with load centers in and around New York City.

Detailed maps showing the entire proposed project route are included in **Appendix F** and posted on DOE's Web site at http://chpexpressEIS.org. The Project's precise final route is subject to a number of factors, including resource issues, permitting, land acquisition, and stakeholder agreement. As noted in Section 1.4, since the publication of the NOI, the Applicant's proposal was revised to eliminate the Connecticut portion of the project, reduce the project's total transmission capacity, and change the location of one segment of the transmission line route from the Champlain Canal to a nearby railroad right-of-way.

The project would originate at an HVDC converter station near Hydro-Québec TransÉnergie's 765/315-kilovolt (kV) Hertel substation, located southeast of Montreal, and travel approximately 35 miles (56.3 kilometers [km]) to the international border between the United States and Canada, crossing the border to the east of the village of Rouses Point, New York, within the town of Champlain, New York. South of the international boundary, the bipole would travel south under Lake Champlain for approximately 111 miles (178.6 km) entirely within the jurisdictional waters of the State of New York. At the southern end of Lake Champlain, the bipole would exit the water just north of Lock C12 of the Champlain Canal in the town of Whitehall, New York, and would be buried within an existing railroad right-of-way owned by Canadian Pacific Railway (CP) for approximately 65.7 miles (105.7 km) through the municipalities of Comstock, Fort Ann, Kingsbury, Fort Edward, Moreau, Northumberland, Wilton, Greenfield, Saratoga Springs, Milton, Ballston, Clifton Park, Glenville, and Schenectady, New York. In the town of Rotterdam, New York, the buried route would transfer to the CSX Railroad (CSX) right-of-way and proceed south for approximately 23.7 miles (38.1 km) through the municipalities of Guilderland, New Scotland, Voorheesville, and Bethlehem, New York. The proposed project route would exit the railroad right-of-way (ROW) and enter the Hudson River south of Albany at the town of Coeymans, New York.

Upon entering the Hudson River, the bipole would be buried in the river bottom for 118 miles (189.9 km) until it reaches the City of Yonkers, New York. The HVDC bipole cables would terminate at the converter station near Wells Avenue in Yonkers, New York, for a total length of approximately 319 miles (513.4 km) from the U.S. border with Canada to Yonkers, New York. From the Yonkers Converter Station, double-circuit 345-kV High Voltage Alternating Current (HVAC) cables would enter the Hudson River and travel south through the Hudson and Harlem rivers for a distance of approximately 14.3 miles (23 km). The HVAC cables would terminate in a spare bay at a new electric substation being constructed by the New York Power Authority on Consolidated Edison

Power Park property near the site of the former Charles Poletti Power Plant in Astoria, Queens, New York.

In addition, Champlain Hudson applied to DOE on September 12, 2009, for a Federal loan guarantee for the proposed project in response to a DOE competitive solicitation, "Federal Loan Guarantees for Electric Power Transmission Infrastructure Investment Projects," issued under Section 1705, Title XVII, of the Energy Policy Act of 2005 (EPAct). Section 406 of the American Recovery and Reinvestment Act of 2009 amended EPAct by adding Section 1705. This section is designed to address the current economic conditions of the nation, in part by facilitating the development of eligible renewable energy and transmission projects that commence construction no later than September 30, 2011. The Loan Programs Office of DOE is carrying out an evaluation of the application submitted by Champlain Hudson. Should DOE decide to enter into the negotiation of a possible loan guarantee with Champlain Hudson, DOE would use the CHPE EIS to meet its NEPA requirements in making a determination associated with the funding. Additional information on the Loan Program Office is available at http://lpo.energy.gov/.

2. Scoping Comments

A variety of issues and concerns were raised during the public scoping period. DOE considered the content of all comments in determining the scope of the EIS and identified the following representative issues and concerns:

- Many commenters questioned the purpose of and need for the project, noting that the EIS needs to establish the evidence that the necessary electricity demand exists (or will exist) for the proposed project.
- Many commenters expressed concerns about the proposed Yonkers location for the Convertor Station. Commenters noted potential visual impacts, land use issues, impacts on cultural resources, health and safety concerns, potential air quality impacts, and concerns about the convertor station having disproportionate impacts on the low-income and minority populations in Yonkers.
- Commenters noted the potential environmental impacts from burying the transmission line in Lake Champlain and the Hudson River. Commenters expressed concerns regarding sediment disturbance and the impacts that sediment would have on wildlife, fish habitat, endangered species, and benthic habitat. Commenters also noted that the sediment disturbance could churn up PCBs and other contaminants into the water column and have an adverse impact on drinking water quality and human health and safety.
- Commenters requested that the EIS contain an analysis of the effects of Electromagnetic Fields (EMFs) and thermal effects produced by both Direct Current (DC) and Alternating Current (AC) transmission lines on aquatic ecosystems, including behavior and reproduction of fish and other animals.
- Many commenters expressed concerns about the impacts of the transmission line and Yonkers Convertor Station on existing infrastructure. Commenters noted the presence of pipelines, power cables, outfalls, and other electricity lines that the proposed transmission line could impact.
- Commenters noted that the transmission line route contains many visually important resources and that the EIS should analyze the impact that construction of the transmission line would have on these resources.
- Many commenters also identified additional alternatives that they believed should be analyzed in the EIS. Based on scoping comments, the following alternatives have been included in the analysis:
    - Substation siting alternatives. Several commenters requested DOE discuss a siting alternative to the CHPE interconnection at ConEd Power Park.
    - Several commenters requested that alternative converter station sites in the City of Yonkers be examined, including the possible re-use of the former Glenwood Power Plant building.
    - Alternative transmission line routing alternatives that would follow upland rights-of-way, such as highways and rail lines.
- Commenters requested information on the potential for impacts associated with the use of HVDC technology.

A summary of the comments received during the scoping period is provided in **Table 2**, which identifies the major issues raised, arranged by general topic. Each issue that is within the scope of the

EIS will be addressed in the Draft EIS. **Table 3** presents a list of the individuals or organizations who submitted scoping comments along with the date each comment was received by DOE.

Transcripts of the scoping meetings along with materials submitted at the meetings are provided in **Appendix D**. Copies of the complete comments are included in **Appendix E** and are also available on the DOE project EIS Web site at http://chpexpresseis.org. **Appendix G** presents a summary compilation of all of the comments received, arranged by the date the comments were received. The Draft EIS will also contain a subsection that summarizes the comments received during scoping. For the purposes of this Scoping Report, the comments are paraphrased and condensed from the actual comments; however, the environmental analysis included in the EIS will rely on the full text of the comments as submitted.

Table 2. Summary of Scoping Comments Received by DOE

Subject Area	Comment Summary
NEPA Process	*Purpose and Need.* Nine commenters noted that the purpose and need statement should establish the evidence that the need for electricity exists in the area, or will exist if projected population and planned land use growth are realized. *Cooperating Agencies.* One commenter noted that the National Oceanic and Atmospheric Association (NOAA) should be included as a cooperating agency, because of the agency's expertise in evaluating impacts on fisheries and aquatic biota. In addition, the New York State Hudson Valley Greenway Council should also be included as a cooperating agency to evaluate potential project impacts and consistency with the criteria established by New York State during the creation of this organization (see New York Environmental Conservation Law Article 44, Hudson River Valley Greenway). *Public Involvement.* One commenter noted that the development of the EIS should proceed with a perspective of incorporating transparency during the review process and post-approval (if approved). The alternatives that are evaluated should include a consideration of opportunity for public scrutiny of impacts, such as thorough review of monitoring data. Accordingly, the alternatives design should incorporate facilities or options that promote public assessment during the project lifetime. These might be metering abilities, equipment locations, or other facilities that aid in sampling and reviewing project impacts and success of mitigation measures. *Worst-Case Analysis.* One commenter noted that the EIS should analyze the possible worst-case scenarios if any of the infrastructure or equipment used in its installation fails in any way. *Precautionary Principle.* One commenter noted that the precautionary principle should be used to frame the analysis in the EIS. *Permits.* One commenter noted that the EIS should include a discussion of all potential permits, including Section 404 permits from the USACE that might be required for this project.

Subject Area	Comment Summary
Proposed Action and Alternatives	*Project Description.* Four commenters noted that the EIS should describe the construction, operation, and maintenance of the transmission line, convertor station, and other components of the Proposed Project. The description of construction should include a discussion of the locations of staging areas; the installation method, exact location, and depth of underwater transmission lines; and any facilities, maintenance, or other activities needed to ensure project compliance with North American Electric Reliability Corporation standards. One commenter noted that the EIS should discuss the feasibility of installing an underwater cable for distances greater than 50 miles. The EIS should include a discussion of operations in relation to the New York Independent System Operator (NYISO), regional entities (e.g., New England Independent System Operator, PJM Interconnection, and Northeast Power Coordinating Council), and non-discriminatory open access. One commenter noted that the EIS should include a discussion of anticipated project life and a description of decommissioning and abandonment of facilities. *Yonkers Converter Station.* Four commenters noted that the EIS should describe the siting of the Yonkers Converter Station and the risks of flashovers. The area surrounding the proposed converter station, particularly the Alexander Street area, is made land that did not exist 100 years ago. The cable landfall might have to be supported on piles and the impacts of that activity should be investigated in the EIS. Alternatives to the proposed location of the Yonkers Converter Station should be considered, including the Glenwood Power Plant site and property on the south side of the American Sugar Refinery site.
Proposed Action and Alternatives (continued)	*Alternatives Analysis.* Fourteen commenters noted that the EIS should include an evaluation of alternatives to the Proposed Action, including reasonable alternatives not within the jurisdiction of the lead agency, and the No Action Alternative. The alternatives analysis should include discussion of diversified generation, and upgrading existing transmission infrastructure to meet the purpose of meeting existing and future electricity demands in New York City. Alternative locations for the transmission line should be evaluated, including construction in existing utility corridors, highway rights-of-way (e.g., the I-87 corridor), and railroad rights-of-way. The EIS should consider the potential of extending the proposed transmission line or expanding capacity if market conditions should become favorable to such enhancements in future years, including expansion east into Long Island Sound. In the event that renewable resources are not used for power generation or are discontinued, then the environmental impact of the project would vary from the proposal. Therefore, the EIS should consider alternative power generation sources, for example fossil fuel sources, that can be used with the new CHPEI facilities and evaluate environmental impacts. In addition, it is possible that the CHPEI facilities would be used to transmit New York-generated electricity for export to Canada. Under this scenario, fossil-fuel sources, rather than renewable sources, might be used. Alternative transmission and generation scenarios should thus be considered in the evaluation of environmental impacts. *Connected Actions.* Nine commenters noted that implementation of the Proposed Project would result in development of hydroelectric power sources, which should be evaluated in the EIS. If the Applicant is exploring the use of upstate wind or other U.S. energy sources, the DOE should include those sources in the EIS, as well.
Biological Resources	*Impacts on Flora and Fauna.* Eight commenters noted that the EIS should evaluate the impacts of construction and operation of the CHPE project on biological resources, including threatened and endangered terrestrial and aquatic species. The

Subject Area	Comment Summary
	analysis should include evaluation of impacts on sensitive wetlands, aquatic and terrestrial wildlife and habitat, and spawning periods. One comment noted that impacts on biological resources can occur from increased turbidity in the water column, resuspension of contaminants, electromagnetic fields, storm water discharges into terrestrial environments, thermal resistivity, and shoreline disturbance. *Impacts of Burying Underwater Pipelines.* One comment noted that burying the transmission line beneath Lake Champlain and the Hudson River might be unnecessarily disruptive ecologically and hydrologically. The EIS should include an analysis of the projected underwater sediment disturbance caused by the dredging and trenching techniques along the Richelieu River, Lake Champlain, and the Hudson River onto wildlife, fish habitat, endangered species, micro-organisms, vegetation, and human activities such as swimming and fishing. In addition, the EIS should describe the area and quality of benthic habitat (e.g., oyster beds and submerged aquatic vegetation) that will be disturbed due to the placement of cables. The EIS should also discuss the area and quality of benthic habitat that will be permanently lost due to the placement of concrete mats on the cables if it is laid on the surface of the sediment. This EIS should evaluate different methods (e.g., water jet trenching, mechanical plowing, or dredging) that will be used in different areas and the varying environmental impacts of each of these methods, and the potential for resuspension of contaminants and ways that risks can be minimized.

Subject Area	Comment Summary
Biological Resources (continued)	*Impacts of Electromagnetic Fields.* Four commenters noted that the EIS should include a rigorous and independent analysis of the effects of EMFs and thermal effects produced by both DC and AC transmission lines on aquatic ecosystems, including behavior and reproduction of fish and other animals. One comment noted that EMF could affect aquatic species that use the Earth's magnetic field for orientation during navigation. Electra-sensitive species could be attracted or repelled by the electrical fields generated by the transmission cables. Areas of breeding, feeding, or nursing are particularly prone to these effects because of the congregation or dispersion of sensitive individuals in the benthic community. *Special Status Species.* One commenter noted that the EIS should assess the impacts on the federally listed endangered Karner blue butterfly, the species that has the greatest potential for impacts from the proposed project *(Lycaeides melissa* sarnuelis*).* Suitable habitat occurs in several portions of the project, and there are some known occurrences. One comment noted that the NOI discussed federally listed species under NOAA jurisdiction, but omitted species under USFWS jurisdiction. *Protected Areas.* One commenter noted that the EIS should also consider the effects on Essential Fish Habitat designated under the Magnuson-Stevens Act; Haverstraw Bay has some other designations that should be considered. The transmission line would pass through the Hudson River National Estuarine Research Reserve, a marine protected area. Two commenters noted that the EIS should analyze all Significant Coastal Fish and Wildlife Habitats (SCFWHs) that would be affected by the installation, operation, or maintenance of the proposed transmission line and determine if they would affect the viability of the SCFWHs. Any difference in effects between installations in disturbed versus undisturbed areas of applicable SCFWHs should be discussed. *Invasive Species.* Two commenters noted that the EIS should evaluate the potential of the project to spread aquatic invasive species, including the zebra mussel, Chinese mitten crab, and the purple loosestrife. *Coastal Zone Management.* One commenter noted that the EIS should include an analysis of all applicable Coastal Management Program and Local Waterfront Revitalization Programs (LWRP) policies. The New York State Department of State requires all applicants seeking concurrence with a consistency certification to provide an analysis of all applicable Coastal Management Program or applicable LWRP policies. The proposed action would traverse multiple communities with federally approved LWRPs and, as such, where the proposed action would have an effect on such a community, an analysis of applicable LWRP policies for each LWRP community should be provided.
Geology and Soils	*Seismic Activity.* One commenter noted that the EIS should evaluate the impact of seismic activity on power cable integrity. *Geology and Soils.* One commenter noted that the EIS should characterize sediment size and soil type along the entire transmission line route and characterize the suitability of each area to use the proposed installation method.

Subject Area	Comment Summary
Visual Resources	*Aesthetic and Visual Resources.* Two commenters noted that the EIS should characterize all visually important resources affected by construction and operation of the Proposed Project, including below-ground construction of the transmission line. Visually important resources include Scenic Areas of Statewide Significance, and areas that have been specially designated as scenic districts by New York State under New York Environmental Conservation Law Article 49, Protection of Natural and Man-Made Beauty (e.g., the Tappan Zee East Scenic District, Olana Scenic District). One comment noted that extended construction and maintenance of facilities, including below-ground facilities, can produce visual and aesthetic impacts. As such, these impacts should be identified and evaluated. Presently, the NOI only states that aboveground components will be evaluated. Another comment indicated that the EIS should consider temporary visual impacts of nighttime lighting and equipment near the Hudson River. *Visual Impacts from the Yonkers Convertor Station.* Three commenters noted that the EIS should assess the visual impact of the converter station and discuss mitigation strategies. A thorough visual analysis determining places from which the converted station would be seen should be prepared. The analysis should include computer-generated visual simulations in order to understand how the converter station would look from important vantage points. These should include the Library, Yonkers Station, Hudson River, upland neighborhoods, adjacent sidewalks, and nearby intersections. At a minimum the visual impacts from the Yonkers Train Station Platform should be shown. Views from Palisades Interstate Park (National Natural Landmark), located across the river in New Jersey and in Rockland County, New York; and from the Bell Place National Register Historic District, the Old Croton Aqueduct State Park, and Philips Manor Hall, listed on the National Register of Historic Places and a State Historic Site, must be assessed. Other locations should be identified in consultation with City officials.
Land Use and Infrastructure	*Transmission Line Land Use.* One commenter suggested proposed signage to alert river users to the presence of the buried power cables to avoid disturbance and damage. Another comment suggested that the EIS should identify and characterize all agricultural land that might be affected by the proposed transmission line. *Yonkers Convertor Station Land Use.* One commenter noted that the EIS should characterize land use around the proposed Yonkers Convertor Station and analyze the potential impacts of constructing the convertor station on surrounding land uses. The analysis should discuss future land values, impacts on the Alexander Street Master Plan, impacts on future redevelopment by the City of Yonkers near the convertor station, impacts on commuter parking, impacts on marina development and harbor management by the City of Yonkers, impacts on continued use of the Yonkers Recreation Pier as a ferry point and embarkation point for other boats, impacts on the Beczak Environmental Education Program and on the Yonkers Canoe Club, and impacts on the City of Yonkers Jail.

Subject Area	Comment Summary
Land Use and Infrastructure (continued)	*Infrastructure.* One commenter noted that the development of the EIS should consider the impacts on existing infrastructure in the vicinity of the proposed transmission line route and the proposed Yonkers Convertor Station. Specifically, commenters noted the presence of Rip Van Winkle Bridge piers, pipelines, power cables, outfalls, and the high-voltage electrified lines along the Metro-North Railroad. The analysis in the EIS should also consider the operation of existing infrastructure on the proposed project. One commenter noted that electrical or magnetic interference with the proposed transmission line could occur with existing infrastructure. With respect to the upland placement of the cables, the General Accounting Office briefing on "Issues Associated with High-Voltage Direct-Current Transmission Lines along Transportation Rights of Way" dated February 2008, stated that electromagnetic fields and stray current could interfere with railroad signaling systems and highway traffic operations, and accelerate pipeline corrosion. The Hudson River Federal Navigation Channel is authorized at 32-foot depth. The EIS should analyze how to avoid damage to the power cables due to periodic maintenance dredging to maintain that depth. One commenter asked the questions: Would the converter station require service from City of Yonkers infrastructure including water, storm, or sanitary sewer? What volume of water will be required at the converter station? Will potable water be used for any reason other than human consumption and sanitary needs? Where will connections for city infrastructure be made? Does sufficient capacity exist for the need of the converter station or will new connections be required to be made? One commenter suggested that the EIS determine if the Hudson River navigation channel's maximum depth is practicable to support existing and future commercial navigation given existing, authorized depths, topography, necessary channel side slopes, port infrastructure, and aerial clearances.
Cultural Resources	*Transmission Line Cultural Resources.* Five commenters noted that the EIS should evaluate the impacts of construction on historic resources along the transmission line route, including the Glenwood Power Station, historic shipwrecks within Lake Champlain, and the Champlain Canal (part of the Erie Canal National Heritage Corridor). *Yonkers Convertor Station Cultural Resources.* One commenter noted that the EIS should evaluate the impacts of construction and operation of the convertor station on surrounding National Register of Historic Places-eligible resources, including the Otis Elevator Plant, the Philips Manor Hall, the Habishaw Club site (the Beczak Environmental Education Center), and the North Yonkers Pump Station. The EIS should discuss means to blend the proposed convertor station into the surroundings. *Impacts on the Champlain Canal.* One commenter noted that the EIS should evaluate the impacts on the Champlain Canal (a National Heritage Corridor). The potential impacts on the canal include evaluating underground utility depth requirements in order to minimize potential impacts on vessel operations and channel maintenance operations; placement of cables within the official canal channel, which would not be permitted (alternatives to effective crossing of the canal that do not impact maintenance and use of the channel should be discussed); impacts on New York State Conservation Council (NYSCC) corporate operations; impacts on commercial boating traffic due to delays during construction; impacts on NYSCC employee safety; impacts on the canal from electromagnetism; and impacts associated with turbidity within the canal system. The EIS should also discuss that real property rights or a permit must be acquired from the NYSCC to use the Champlain Canal.

Subject Area	Comment Summary
Health and Safety	*Public Health and Safety near the Yonkers Converter Station.* One commenter noted that the EIS should consider the impacts on public health and safety from electrical and magnetic fields generated near the proposed Yonkers Convertor Station. The EIS should also consider the potential impacts on the public from fires and explosions at the convertor station. *Occupational Health and Safety*. Three commenters noted that the EIS should discuss the potential for explosions and fire from electrical equipment contained in the Yonkers Convertor Station. The EIS should discuss mitigation measures to be taken to reduce the probability and reduce the impacts of fires and explosions, such as deluge and fire suppression systems. As the Consolidated Edison substations near the proposed converter station site have had major transformer fires, the EIS should discuss the potential for impacts from similar fires at the convertor station. The EIS should discuss whether workers would be more likely to be injured given the increased safety risk of close proximity of the transmission lines to transportation rights-of-way. One comment asked if there would be any human health impacts upon workers in adjacent buildings in the I-Park/Otis Elevator Plant complex near the Yonkers Convertor Station. Are there any potential impacts upon equipment or manufacturing or research activities that might take place in the buildings surrounding the proposed converter station or adjacent to the cables serving the station?
Air Quality	*Air Quality Analysis.* One commenter noted that the air quality analysis in the EIS should include a General Conformity Applicability Analysis and a carbon footprint analysis. One commenter suggested using diesel particulate filters on construction equipment to reduce impacts from particulate matter. *Air Quality near the Yonkers Convertor Station.* One commenter noted that the EIS should discuss air quality impacts of operation of the converter station. Will there be ozone creation from the electrical equipment? Will there be any public health issues to area residents from the operation of the plant? What mitigation can be instituted to deal with air quality issues to area residents? One comment noted that Southwest Yonkers is an asthma problem area and suggested that the EIS discuss any impact that might add to the asthma problem stemming from the proposed converter station. *Ozone Standards.* One comment noted that the USEPA is on the verge of finalizing a revised National Ambient Air Quality Standard for ozone. The new standard will be 20 to 40 percent more stringent than the current standard and will require significant emissions reductions, possibly by 70 percent or more, within the eastern United States. DOE should work with the NYISO and the New York State Public Service Commission (NYSPSC) to assess the air quality impacts associated with importing an additional 1,000 MW of clean new capacity to the greater New York City metropolitan area. This effort should assess ozone precursor reductions, toxic air pollutant emissions reductions, and any environmental justice benefits associated with reduced emissions from older, less-efficient electric generating units in the area to be served by this new capacity. One commenter noted that DOE should also work with NYISO to identify those electrical generating units likely to become uneconomic as a result of an influx of significant new capacity so that USEPA can develop appropriate air quality modeling assumptions for the implementation of the revised ozone standard.

Subject Area	Comment Summary
Water Resources	*Water Quality.* One commenter noted that the EIS should address the potential impacts of sediment disturbances in the Superfund Area along the transmission line route on drinking water quality supplied by the Hudson River to the residents of Rhinebeck, Port Ewen, Lloyd, Poughkeepsie, Stillwater, Halfmoon, Waterford, and Green Island. The commenter suggests assessing sediment contamination before working in these areas to minimize disturbance. Six commenters noted that the EIS should identify and characterize all pollutants along the route and analyze the likelihood of resuspension or release. Where specific pollutants are identified, adequate preventative measures, including applicable alternatives, should be analyzed and their anticipated coastal effects should be included in the EIS. One commenter noted that the EIS should investigate the potential in Lake Champlain for impacts from fuel leaks from the wrecked tugboat McAllister. *Surface Water and Wetlands.* Four commenters noted that the EIS should characterize the potential effects of construction, operation, and maintenance of the proposed transmission line on the surface water regime along all buried portions of the route including freshwater and tidal wetlands. Further, the impacts of Horizontal Directional Drilling, which is proposed for transition points where the cables enter and exit the water, on wetlands must be investigated. *Floodplains.* One commenter noted that the portions of the proposed route using the railroad right-of-way would cross Federal Emergency Management Agency-mapped floodplains associated with the Hudson River, as would the underground connection to the Yonkers converter station. Any potential impacts from construction equipment and activities on wetlands should be evaluated in the draft EIS. *Resuspension of PCBs.* Four commenters noted that the EIS should address the potential for resuspension of PCBs and other contaminants in the Mid- and Lower-Hudson River due to the burying of cable in contaminated sediment. While the concentration of PCBs is greatest in the Upper Hudson, it is undisputed that PCBs contaminate the Mid- and Lower-Hudson River as well. The resuspension of PCBs would impact wildlife and aquatic species, and human health.
Environmental Justice	*Environmental Justice Analysis for the Proposed Yonkers Convertor Station.* Three commenters noted that the EIS should include a detailed environmental justice analysis of the siting of the proposed Yonkers Convertor Station. The City of Yonkers contains a number of utility and transportation land uses that serve the greater New York City area. These utility and transportation land uses could have a disproportionate impact upon area residents. Additionally, the City of Yonkers has a higher share of the county's low- income and minority populations than would be proportionate to its share of the county's overall population. The area around the proposed converter station is overwhelmingly low-income and minority. *Socioeconomic Impacts.* One commenter noted that since the proposed project will pass through but provide no benefits to the communities along the route of the cable, the EIS should consider mitigation opportunities for these communities.

Subject Area	Comment Summary
Socioeconomics	*Economic Benefits.* One commenter noted that the EIS should evaluate the economic benefits of the additional 1,000 MW of additional electricity capacity and its impact on marginal electric supply costs, including the potential for these benefits to accrue beyond the immediate New York City metropolitan area. *Economic Impacts of the Yonkers Convertor Station.* One commenter noted that the EIS should examine the impacts upon the planned changes to the Yonkers downtown area around the site of the proposed converter station. The comment asks what socioeconomic changes are likely with and without the converter station? The analysis should include employment at the site, income tax implications of employment at the site, sales tax spin-off impacts of employment at the site, and the impacts upon the surrounding downtown with the converter, with other planned uses and without the converter station. One comment requested that the EIS investigate and discuss area businesses that would be negatively impacted by construction period air quality impacts. Another comment requested that the EIS discuss the property tax implications of the proposed converter station in Yonkers and any other real property installations that are a part of the proposed action. An additional comment suggested that the EIS examine and analyze the occupancy impacts of the converter station upon nearby properties. The comment asked if the converter station would cause a change in the quality of occupancy in the commercial buildings to the east of the proposed site and if the converter station would have any impacts upon the residential community to the north of the I-Park/Otis Elevator Plant Site?
Hazardous Materials and Waste	*Hazardous Materials at the Yonkers Convertor Site.* One commenter noted that the EIS should discuss the presence of any toxic materials used at the facility. Are there nontoxic materials used at the facility that when combined with other nontoxic materials at the facility might become toxic? *PCBs.* One commenter noted that there are known or likely accumulations of paper-processing waste including PCBs in the areas of Cumberland Bay and near the mouth of the LaChute River. The area around the existing International Paper Plant in Ticonderoga should also be considered a potential area of contamination.
Recreation	*Recreation.* Six commenters noted that the EIS should contain an analysis of the impacts on recreational river traffic, including impacts on public access to recreational opportunities along the transmission line route. One commenter noted that the EIS should analyze the impacts of the proposed project and alternatives on anchoring boats in Lake Champlain. The issue would be particularly relevant in the shallow and narrow southern part of the lake. If there are any risks to swimmers, divers, or snorkelers, these should also be addressed in the EIS.
Cumulative Impacts	*Cumulative Impacts Analysis.* Seven commenters noted that the EIS should consider the following projects in the cumulative impacts analysis: New York State Thruway Authority (NYSTA) ongoing maintenance and capital improvements projects for the Tappan Zee Bridge, demolition and replacement of the Crown Point Bridge, previous and future dredging projects along the transmission line route, and projects in the downtown Yonkers area.
Mitigation	*Mitigation Measures.* One commenter noted that the EIS should consider all appropriate mitigation measures to avoid sensitive aquatic and terrestrial habitats; cable installation during mating, spawning, and migration seasons; resuspension of contaminants; and permanent alternation of lake and river bed substrates.

Subject Area	Comment Summary
Other Issues	*Impacts in Canada.* Three commenters noted that the EIS should consider impacts on the Canadian environment and the social and economic impacts upon native people affected by new power development in Canada as a result of the CHPE transmission line. *Balance of Payments.* Three commenters noted that from an economic perspective, purchasing of energy from outside New York State is bad for the state's balance of payments, and for national balance of payments. The public interest would not be served by the project from this perspective, and the comment requests that this be considered in the EIS. *Energy Efficiency and Conservation Measures.* Three commenters noted that the EIS should include an evaluation of alternatives to the Proposed Project that includes energy efficiency and conservation measures in lieu of construction of the transmission line.

Table 3. Directory of Stakeholder Comments

Stakeholder Name and Affiliation	Comment Date and Source
Federal Agencies	
Grace Musumeci, Chief Environmental Review Section, U.S. Environmental Protection Agency Region 2	July 28, 2010, letter to DOE
David Stilwell, Field Supervisor, U.S. Department of the Interior, U.S. Fish and Wildlife Service, Cortland, NY Office	August 2, 2010, letter to DOE
Native American Tribes and Canadian First Nations	
Patrycja Ochman, O'Reilly & Associes Avocats, stated as on behalf of the Uashannuat, Innu of Uashat mak Mani-Utenam First Nation	August 2, 2010, letter to DOE
State and Provincial Agencies	
Alain Olivier, Government of Quebec	July 9, 2010, public scoping meeting July 14, 2010 , public scoping meeting
Peter Casper, Assistant Counsel, New York State Thruway Authority, New York State Canal Corporation	July 29, 2010, letter to DOE
M. Jodi Rell, Governor, State of Connecticut	July 30, 2010, letter to DOE
Jeffrey Zappieri, Supervisor, Consistency Review Unit, Office of Coastal, Local Government and Community Sustainability, New York State Department of State	August 2, 2010, letter to DOE
Local Government Agencies	
Chuck Lesnik, City Council President, City of Yonkers	July 12, 2010, public scoping meeting August 2, 2010, letter to DOE
Lee Ellman, Planning Director, Planning Bureau, City of Yonkers	July 12, 2010, public scoping meeting July 30, 2010, letter to DOE
Frank Stilo, Yonkers 1st Precinct Community Council	July 12, 2010, public scoping meeting
John Bowacic, New York Senate, 42nd District	July 13, 2010, public scoping meeting
Ronald Miller, Trustee, Village of Menands	July 14, 2010, public scoping meeting
Roland R. Vosburgh, Principal Planner, Columbia County	July 28, 2010, letter to DOE
Christopher Crane, Legislative Counsel, Westchester County Board of Legislators	August 1, 2010, letter to DOE
Philip A. Amicone, Mayor, City of Yonkers	August 2, 2010, letter to DOE
Non-Governmental Organizations and Individuals	
Angela Pernice, private citizen	July 8, 2010, email to DOE
Scott Lorey, Legislative Director, Adirondack Council	July 12, 2010, public scoping meeting
James Frakes, Adirondack Council	July 16, 2010, public scoping meeting
Steve Davis, private citizen	July 29, 2010, email to DOE
Mike Winslow, Staff Scientist, Lake Champlain Committee	August 1, 2010, letter to DOE
John Davis, Conservation Director, Adirondack Council	August 2, 2010, letter to DOE

Stakeholder Name and Affiliation	Comment Date and Source
Non-Governmental Organizations and Individuals (continued)	
Rose Van Guilder, Alliance for Independent Long Island; Long Island Rockaway Ratepayers Alliances	July 9, 2010, public scoping meeting
Frank Eadie, private citizen	July 9, 2010, public scoping meeting
Joel R. Kupferman, NY Environmental Law and Justice Organization	July 9, 2010, public scoping meeting
Demosthenes Matsis, private citizen	July 9, 2010, public scoping meeting
Annie Wilson, Energy Committee Chair, Sierra Club Atlantic Chapter	July 9, 2010, public scoping meeting August 2, 2010, letter to DOE
Susan Leifer, private citizen	July 12, 2010, public scoping meeting
Richard S. Tarantelli, private citizen	July 12, 2010, public scoping meeting
Clifford Schneider, Beczak Environmental Education	July 12, 2010, public scoping meeting
Philip Musegaas, Hudson River Program Director, Riverkeeper	July 12, 2010 , public scoping meeting July 13, 2010, public scoping meeting August 2, 2010, letter to DOE
Hayley Mauskapf, Environmental Advocacy Associate, Scenic Hudson, Inc.	July 12, 2010, public scoping meeting July 13, 2010, public scoping meeting August 2, 2010, letter to DOE
George Klein, Chairman, Sierra Club Lower Hudson Group	July 12, 2010, public scoping meeting August 2, 2010, letter to DOE
William Overstone, private citizen	July 13, 2010, public scoping meeting
David Ladenheim, private citizen	July 13, 2010, public scoping meeting
Jurgen Wekerle, Sierra Club - Ramapo/Catskill Group	July 13, 2010, public scoping meeting
Randolph Horner, Solar Evolution, LLC	July 13, 2010, public scoping meeting
Geddy Sveikauskas, Ulster Publishing Company	July 13, 2010, public scoping meeting
Tom Ellis, Citizens' Environmental Coalition	July 14, 2010, public scoping meeting
Julia Stokes, Saratoga Plan	July 15, 2010, public scoping meeting
Gordon Boyd, Energy Next, Inc.	July 15, 2010, public scoping meeting
Skip Stranahan, private citizen	July 15, 2010, public scoping meeting
David Manwell, private citizen	July 16, 2010, public scoping meeting
Peter D'Elia, private citizen	July 16, 2010, public scoping meeting
Lori Fisher, Lake Champlain Committee	July 16, 2010, public scoping meeting
Jack Hills, private citizen	July 16, 2010, public scoping meeting
Jean Public, private citizen	July 21, 2010, email to DOE
Roger L. Jennings, President, RJennings Company	August 2, 2010, letter to DOE
Doris Delaney, PROTECT	Undated letter to DOE, received August 2, 2010

Note

A full version of the 2010 Scoping Report, including appendices, is available in the CHPE EIS website document library at http://www.chpexpresseis.org.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX D.2 – 2012 SCOPING REPORT ADDENDUM

SCOPING SUMMARY REPORT
ADDENDUM

CHAMPLAIN HUDSON POWER EXPRESS
TRANSMISSION LINE PROJECT
ENVIRONMENTAL IMPACT STATEMENT

U.S. Department of Energy
Office of Electricity Delivery and Energy Reliability
Washington, DC 20585

Cooperating Agencies:
New York State Department of Environmental Conservation
New York State Department of Public Service
U.S. Army Corps of Engineers
U.S. Coast Guard
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

SEPTEMBER 2012

ACRONYMS AND ABBREVIATIONS

BMP	best management practice
CHPE	Champlain Hudson Power Express
CHPEI	Champlain Hudson Power Express, Incorporated
CSX	CSX Transportation
DOE	U.S. Department of Energy
EIS	Environmental Impact Statement
EMF	electromagnetic field
HDD	horizontal directional drilling
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NYSPSC	New York State Public Service Commission
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
RCRA	Resource Conservation and Recovery Act
ROW	right-of-way
TDI	Transmission Developers, Inc.

SCOPING SUMMARY REPORT ADDENDUM
CHAMPLAIN HUDSON POWER EXPRESS TRANSMISSION LINE PROJECT EIS

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS .... INSIDE FRONT COVER

1. INTRODUCTION 1-1

1.1 OVERVIEW 1-1
1.2 SUMMARY OF PROJECT CHANGES 1-1

2. SCOPING COMMENTS 2-1

FIGURES

1-1. Joint Proposal Route 1-3

TABLES

2-1. Summary of 2012 Public Scoping Comments 2-1

THIS PAGE INTENTIONALLY LEFT BLANK

1. Introduction

1.1 Overview

On January 25, 2010, Transmission Developers Inc. (TDI) submitted an application to the U.S. Department of Energy (DOE) for a Presidential permit for the Champlain Hudson Power Express (CHPE) project (proposed project).[1] On June 18, 2010, DOE issued the *Notice of Intent to Prepare an Environmental Impact Statement and to Conduct Public Scoping Meetings, and Notice of Floodplains and Wetlands Involvement; Champlain Hudson Power Express, Inc.* (75 FR 34720), and conducted public scoping from June 18, 2010 to August 2, 2010. The Champlain Hudson Power Express Scoping Report (December 2010) (2010 Scoping Report) summarizes comments received during that DOE public scoping period.

On February 28, 2012, TDI submitted an amendment to the Presidential permit application that reflected changes to the proposed transmission line route. The proposed changes are the result of settlement negotiations among New York State agencies, Champlain Hudson Power Express, Inc. (CHPEI), CHPE Properties, Inc. and other stakeholders as part of the project review under Article VII of the New York State Public Service Law. The amendment is referred to as the Joint Proposal. In response to submission of the Joint Proposal DOE published an *Amended Notice of Intent to Modify the Scope of the Environmental Impact Statement for the Champlain Hudson Power Express Transmission Line Project in New York State* (77 Federal Register 25472) (Amended NOI) on April 30, 2012, and accepted public comments from April 30, 2012 to June 14, 2012. DOE also stated that it will consider comments submitted after June 14th to the extent practicable. In the Amended NOI, DOE stated that it did not intend to hold further public scoping meetings, but recognized that comments provided by the public during the New York State Public Service Commission's (NYSPSC's) April 2012 public statement hearings might be relevant to the National Environmental Policy Act (NEPA) scoping process. Therefore, DOE explained that it "intends to review the Commission's April public hearing statement transcripts and consider them, to the extent matters relevant to the federal environmental review process arise, as scoping comments for the purposes of the EIS." This 2012 Scoping Summary Report Addendum summarizes scoping comments related to the Joint Proposal.

The 2010 Scoping Report, this 2012 Scoping Summary Report Addendum, comments submitted directly to DOE, and copies of the April 2012 NYSPSC public statement hearings are available on the Champlain Hudson Power Express Project Environmental Impact Statement (EIS) Website at http://chpexpresseis.org. Comments submitted to the Commission are available at http://documents.dps.ny.gov.

1.2 Summary of Project Changes

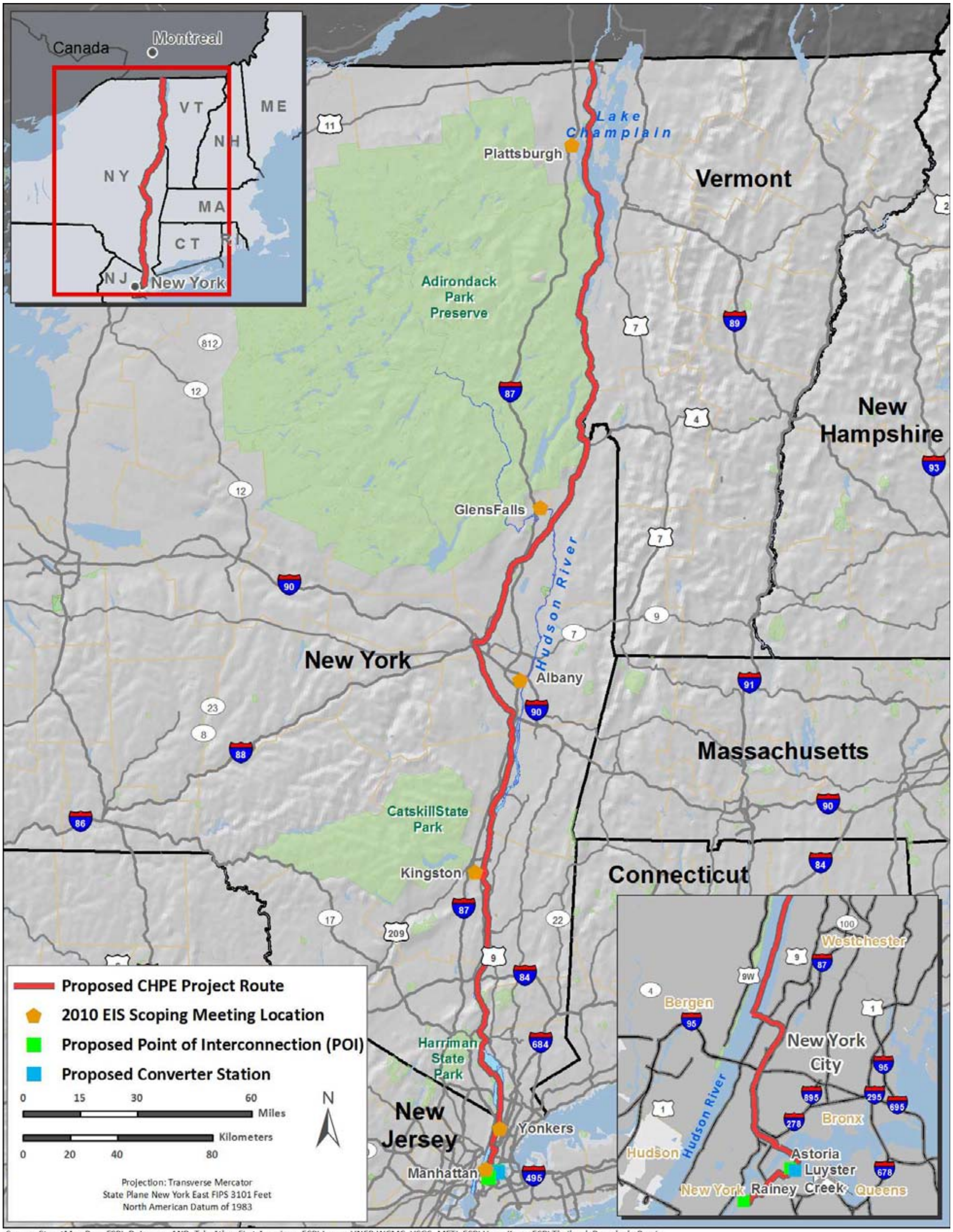
The Joint Proposal Route (see **Figure 1**) is essentially the same as the original proposed route, as amended in August 2010, for major portions of the transmission line route, except for adjustments in the route alignment at five primary locations and minor route adjustments in other areas along the route. The proposed primary route adjustments are as follows:

- A relocated 10-mile stretch of route between Dresden, New York, and Whitehall, New York, underground along New York State Route 22 to avoid installing the cables in the southern end of Lake Champlain. This change is being proposed to remove the transmission line from the environmentally sensitive southern portion of Lake Champlain.

[1] TDI submitted amendments to the proposed route in its original application on August 5, 2010 and July 7, 2011.

- The routing of the transmission line underground off the railroad right-of-way (ROW) for more than 1 mile through city streets in the City of Schenectady to avoid engineering constraints.
- Relocation of a portion of the transmission line into the Hudson River. As originally proposed the transmission line would have entered the Hudson River at the Town of Coeymans, New York. Under the Joint Proposal, the line would enter the Hudson River at the Town of Catskill via horizontal directional drilling (HDD). From Selkirk to Catskill, the transmission line would primarily be in the CSX Transportation (CSX) railroad ROW for approximately 30 miles instead of in the Hudson River.
- Removal of the transmission line from the Hudson River at Haverstraw Bay where the segment would instead run along the railroad ROW through the community of Stony Point for approximately 7 miles. The transmission line would be installed underground here to avoid impacts on aquatic resources in Haverstraw Bay.
- Relocation of the transmission line from a portion of the Harlem and East rivers to the Hell Gate Bypass Route, north of the Willis Avenue Bridge, and proceeding east approximately 1 mile through the New York State Department of Transportation (NYSDOT) railroad corridor and rail yards. From there, the transmission line would follow the rail corridor along the northern side of the Bronx Kill and then enter the East River.

Additionally, the proposed location of the converter station would be constructed in Astoria, Queens County, New York (Luyster Creek Converter Station) under the Joint Proposal, rather than as previously proposed in Yonkers, New York. Additional details about the Joint Proposal can be found on the DOE Champlain Hudson Power Express Project EIS Website at http://chpexpressEIS.org.



Source: StreetMap Pro; ESRI, DeLorme, AND, Tele Atlas, First American, ESRI Japan, UNEP-WCMC, USGS, METI, ESRI Hong Kong, ESRI Thailand, Procalculo Prosis

Figure 1. Joint Proposal Route

THIS PAGE INTENTIONALLY LEFT BLANK

2. Scoping Comments

An overview of comments received during the 2012 public scoping period, catalogued by general topic, is provided in **Table 2-1** below. Issues potentially relevant to the scope of the EIS will be considered by DOE during development of the Draft EIS.

Table 2-1. Summary of 2012 Public Scoping Comments

Subject Area	Comment Summary
NEPA Process	***Public Involvement.*** Comments requested an extension of the public comment period.
Proposed Project	***Project Life Cycle.*** Comments stated that they EIS should examine the lifespan of the proposed project, potential failure scenarios, how well the proposed project would withstand being under water for many years, and eventual removal of the cable following decommissioning. ***Project Description.*** Comments stated that the analysis should include potential operational issues that could arise for other power entities operating in New York, including the New York Independent Systems Operator, Central Hudson Gas and Electric, Consolidated Edison, Entergy Nuclear Power, and the New York Power Authority. Comments also requested further explanation of the purpose and need from CHPE for the proposed project. ***Alternatives.*** Comments stated that the purpose of and need for the proposed project would be met by constructing renewable energy sources, building new power generation sources in the United States, or refurbishing existing power plants, rather than importing power from Canada. Comments sought evaluation of an overland transmission route using highway corridors; a railroad ROW underground route; any New York State Department of Public Service proposed alternative; any combination of route alternatives that would have less impact to the aquatic environment. Comments stated that it would be preferable to invest in weatherization and conservation projects. ***Alternative Transmission Line Locations.*** Comments stated that constructing the proposed project along the Old Champlain Canal should be evaluated as an alternative in the EIS. Other comments stated that the transmission line from the Astoria substation to the Consolidated Edison Rainey Substation should be placed in the East River rather than through neighborhoods in Queens. ***Luyster Creek Converter Station Location.*** Comments stated that the environmental impacts from the Luyster Creek Converter Station location should be addressed in the review of the proposed transmission line project. ***Alternative Converter Station Locations.*** Comments stated that additional locations for the converter station should be evaluated, including a site in Brooklyn near the Gowanus Substation, the Harlem River Rail Yards, and an area near the Consolidated Edison Rainey Substation. ***System Reliability.*** Comments stated that the potential impacts of the proposed transmission line project on electric reliability, system redundancy, and bulk power systems, both within and adjacent to New York, should be considered. ***Permitting Requirements.*** Comments stated that the Joint Proposal would be in conflict with the parameters established by the U.S. Army Corps of Engineers for the Clean Water Act Section 404 permitting process for this project.

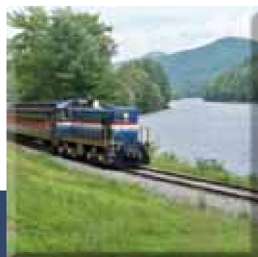
Subject Area	Comment Summary
Land Use	***Potential Use of Forest Preserves.*** Comments stated that the proposed project could be a violation of Article 14 of the state constitution, which states that lands constituting a forest preserve cannot be sold to a private entity. Comments stated that the Attorney General of New York has stated that underwater lands adjacent to Adirondack Park were considered forest preserve lands. ***Impacts on Residential Areas.*** Comments stated that the EIS needs to address potential impacts on future land use in residential areas. ***Luyster Creek Converter Station Land Use Consistency.*** Comments stated that the Luyster Creek Converter Station would be consistent with the existing land use at the site and would be appropriate for construction of a converter station. Other comments stated that the construction of the Luyster Creek Converter Station would not be consistent with Consolidated Edison's proposed use of the site for utility purposes. ***Encroachment Outside of Right-of-Way.*** Comments stated that the proposed project would encroach on additional lands outside of the existing right-of-way and that these impacts should be considered. **ROWs.** Comments expressed concern that the use of ROWs and approval of the proposed project could create a competitive monopoly for CHPE and lead to lawsuits related to access to land.
Infrastructure	***Water Utilities.*** Comments stated that the proposed project needs to address potential impacts on workers and a new main water line that is being repaired in the Town of Whitehall.
Water Resources	***Lovett Plant.*** Comments stated that the closure of the Lovett Plant left a coal ash plume in the groundwater table and requested that the impacts of the proposed transmission line on that plume be evaluated. ***Sludge Bed.*** Comments stated concern about the potential for the proposed project to resuspend pollutants found in the sludge bed at the mouth of the LaChute River, noting that when the paper mill on site was closed in the 1960s, approximately 945,000 cubic meters of waste were left behind covering approximately 98 hectares. ***Resuspension of Phosphorus.*** Comments stated that the proposed project would disturb sediments and increase the concentration of phosphorus in the water column within Lake Champlain, and the EIS should address any potential impacts and prescribe mitigation measures, as appropriate.
Cultural Resources	***Luyster Creek Converter Station Cultural Resources***. Comments stated that the Luyster Creek Converter Station site in Astoria has been identified by the State Historic Preservation Office as an archaeologically sensitive area.
Geology and Soils	***Impacts on Agricultural Lands.*** Comments expressed concern that the proposed project would result in potential impacts on agricultural lands through the construction of temporary access roads and work areas, and from any deviations from the centerline.
Wildlife and Fish	**Electromagnetic Fields (EMF).** Comments stated concerns about EMF on fish and birds.

Subject Area	Comment Summary
Visual Resources	***Visual Impacts on Lake Champlain.*** Comments stated that construction on Lake Champlain would lead to potential visual impacts from the visibility of the construction equipment at the surface of the lake. ***Visual Impacts along Route 9W.*** Comments requested evaluation of the removal of trees on the eastern side of Route 9W in Rockland County, which currently provides screening from the roadway and existing residential areas.
Transportation and Traffic	***Local Traffic.*** Comments asked how the proposed project would impact local traffic during construction.
Recreation	***Recreation Areas.*** Comments stated that the proposed project would disturb park lands including the Tompkins Cove and Waldron Revolutionary War Cemetery historic areas, Rockland Lake State Park, Stony Point Park, and the Haverstraw Little League Fields.
Public Health and Safety	***Public Safety.*** Comments stated that the proposed transmission line would pose a public health threat by being located too close to residential areas. Comments requested analysis of the effects of EMF in proximity to residential areas and public spaces. ***Navigation Safety.*** Comments stated that the placement of the transmission line 6 feet below the river bottom and plan to lay the cable over rock areas could result in a potential safety hazard for ships attempting to anchor in the Hudson River and could disrupt marine traffic and use of the cables. Comments stated that if the cables occupy any federally maintained navigation channels, they should be buried at least 15 feet below the authorized depth within those channels. Comments also expressed concern about impacts the proposed project could have on future navigational improvements (e.g. dredging) in the Hudson River.
Hazardous Materials and Wastes	***Contamination of Luyster Creek Site.*** Comments stated that the Luyster Creek Converter Station site in Astoria is the site of a former manufactured gas plant, has ongoing contamination issues, and is included in the New York State Department of Environmental Conservation's (NYSDEC's) Resource Conservation and Recovery Act (RCRA) Corrective Action program.
Air Quality	***Reduction in Air Pollution.*** Comments stated that the proposed project would result in a reduction of air pollution. Other comments stated that constructing the proposed transmission line would mean fewer power plants in New York City, which would reduce air quality issues in the city.
Socioeconomics	***Socioeconomic Impacts.*** Comments stated that the EIS should evaluate the potential for real estate values to drop in areas where the proposed transmission line is constructed.
Environmental Justice	***Environmental Justice.*** Comments stated that the proposed project would increase the cost of electricity, which would place an unfair burden on the low-income residents of New York.

Subject Area	Comment Summary
Mitigation/Best Management Practices	***Champlain Canal.*** Comments stated that, as part of mitigation, the project proponent should invest in the construction of a portion of the proposed Champlain Canalway Trail. The trail could be used by the contractors as a means of accessing the project site during construction. Following construction, the trail would become a long-term tourist attraction. ***Mitigation Fund.*** Comments stated that the mitigation fund created to account for unanticipated effects of the proposed project would be insufficient and fail to address the unanticipated impacts on water quality and other resources along the proposed transmission line route. Comments also stated that the Commission needs to evaluate the fairness of the process for determining which projects receive funding from the mitigation fund, including ensuring that there is an appropriate balance of projects along upland areas, Lake Champlain, and the Hudson River. Other comments praised the creation of the mitigation fund, noting that the creation of the fund would result in a net benefit to the Hudson River and Lake Champlain. ***Best Management Practices.*** Comments stated that the EIS needs to disclose best management practices (BMPs) for erosion and sediment control, vegetation clearing and disposal, activities in streams and wetlands, access road construction, invasive species control, protection of threatened and endangered species, and inspection and monitoring.
Cumulative Impacts	***Cumulative Impacts.*** Comments requested that the cumulative impacts analysis for the proposed project consider the construction of the United Waters Desalination Plant and potential closure of the Indian Point nuclear facility. Comments stated that other entities have proposed similar projects within portions of the Hudson River and asked how many other lines could be located along the same route. Other comments expressed concern that approval of the proposed project could lead to construction of additional transmission lines from Canada.

Subject Area	Comment Summary
Other Issues	***Economic Opposition.*** Comments stated that the proposed project would not lower electricity rates, improve the electricity grid, alleviate congestion, grow or improve New York State's electricity infrastructure, or provide local or long-term jobs to the communities along the proposed transmission line. Comments also stated the proposed project would mean higher energy bills and create more reliability problems. Comments also stated that the project would send jobs and economic development to Canada rather than generating new jobs in New York. **Economic Support.** Comments expressed support for more electricity and lower costs. **Energy Highway.** Comments expressed concern that development of the proposed project was inconsistent with and/or would undercut Governor Cuomo's "energy highway" initiative that seeks to invest in New York State resources to upgrade the State's energy infrastructure. Comments stated that the proposed project will bypass the existing grid and existing New York generators who will not be able to access the line and could lead to the shuttering of upstate power generators. **Article X.** Comments stated that the proposed project is inconsistent with Article X legislation designed to expedite construction of new power generation in New York State. ***Local Government Authority.*** Comments stated that Public Service Law Section 126 (1)(f) allows local government to enact substantive requirements on transmission facilities that are not unreasonably restrictive. Comments note that these guidelines should be clarified to identify the scope of the authority that local governments have to enact these requirements. **Renewable Energy.** Comments raised questions about how the use of "green power" would be guaranteed. Other comments stated support for the use of "clean energy." Other comments stated that the proposed project would impede the development of renewable energy as well as New York's ability to meet the Renewable Portfolio Standard goal of 30 percent renewable resources by 2015 and shut out New York State's growing renewable energy market. **Eminent Domain.** Comments raised questions about the potential use of eminent domain. **Hydroelectricity.** Comments stated that hydroelectricity generation in Canada would have impacts in Canada, including: damming miles of dikes, impounding large amounts of water, flooding river valleys, increasing levels of methylmercury in water, fish, birds and humans, destroying wildlife habitat, nesting and spawning grounds, social and dietary impacts to Native people, and increasing methane gas release from decaying vegetation.

THIS PAGE INTENTIONALLY LEFT BLANK



APPENDIX E

EIS Distribution List

Appendix E
EIS Distribution List

Appendix E lists individuals and organizations who have received varying forms of media related to the development of the CHPE EIS.

Federally Elected Officials

The Honorable Lamar Alexander
Ranking Member, Subcommittee on Energy and Water Development
455 Dirksen Senate Office Building
Washington, DC 20510

The Honorable Timothy Bishop
1st Congressional District of New York
306 Cannon HOB
Washington, DC 20515

The Honorable Barbara Boxer
Chairman, Environment and Public Works Committee
112 Hart Senate Office Building
Washington, DC 20510

The Honorable Yvette Clarke
9th Congressional District of New York
2351 Rayburn HOB
Washington, DC 20515

The Honorable Chris Collins
27th Congressional District of New York
1117 Longworth HOB
Washington, DC 20515

The Honorable Joseph Crowley
14th Congressional District of New York
1436 Longworth HOB
Washington, DC 20515

The Honorable Eliot L. Engel
16th Congressional District of New York
2161 Rayburn HOB
Washington, DC 20515

The Honorable Rodney Frelinghuysen
Chairman, Subcommittee on Energy and Water Development, and Related Agencies
2306 Rayburn HOB
Washington, DC 20515

The Honorable Chris Gibson
19th Congressional District of New York
1708 Longworth HOB
Washington, DC 20515

The Honorable James M. Inhofe
Ranking Member, Senate Environment and Public Works Committee
202 Russell Senate Office Building
Washington, DC 20510

The Honorable Kirsten Gillibrand
United States Senate
478 Russell
Washington, DC 20510

The Honorable Michael Grimm
11th Congressional District of New York
512 Cannon HOB
Washington, DC 20515

The Honorable Ralph Hall
Member, Subcommittee on Energy and Power
2405 Rayburn HOB
Washington, DC 20515

The Honorable Richard Hanna
22nd Congressional District of New York
319 Cannon HOB
Washington, DC 20515

The Honorable Brian Higgins
26th Congressional District of New York
2459 Rayburn HOB
Washington, DC 20515

The Honorable Steve Israel
3rd Congressional District of New York
2457 Rayburn HOB
Washington, DC 20515

The Honorable Hakeem Jeffries
8th Congressional District of New York
1339 Longworth HOB
Washington, DC 20515

The Honorable Peter King
2nd Congressional District of New York
339 Cannon HOB
Washington, DC 20515

The Honorable Nita Lowey
17th Congressional District of New York
2365 Rayburn HOB
Washington, DC 20515

The Honorable Dan Maffei
24th Congressional District of New York
422 Cannon HOB
Washington, DC 20515

The Honorable Carolyn Maloney
12th Congressional District of New York
2308 Rayburn HOB
Washington, DC 20515

The Honorable Sean Patrick Maloney
18th Congressional District of New York
1529 Longworth HOB
Washington, DC 20515

The Honorable Carolyn McCarthy
4th Congressional District of New York
2346 Rayburn HOB
Washington, DC 20515

The Honorable Gregory Meeks
5th Congressional District of New York
2234 Rayburn HOB
Washington, DC 20515

The Honorable Grace Meng
6th Congressional District of New York
1317 Longworth HOB
Washington, DC 20515

The Honorable Lisa Murkowski
Ranking Member, Senate Committee on Energy and Natural Resources
709 Hart Senate Building
Washington, DC 20510

The Honorable Jerrold Nadler
10th Congressional District of New York
2110 Rayburn HOB
Washington, DC 20515

The Honorable Bill Owens
21th Congressional District of New York
405 Cannon HOB
Washington, DC 20515

The Honorable Charles Rangel
13th Congressional District of New York
2354 Rayburn HOB
Washington, DC 20515

The Honorable Tom Reed
23rd Congressional District of New York
1504 Longworth HOB
Washington, DC 20515

The Honorable Charles E. Schumer
United States Senate
322 Hart Senate Office Building
Washington, DC 20510

The Honorable José Serrano
15th Congressional District of New York
2227 Rayburn HOB
Washington, DC 20515

The Honorable Louise Slaughter
25th Congressional District of New York
2469 Rayburn HOB
Washington, DC 20515

The Honorable Lamar Smith
Chairman, House Committee on Science, Space and Technology
2409 Rayburn HOB
Washington, DC 20515

The Honorable Paul Tonko
20th Congressional District of New York
2463 Rayburn HOB
Washington, DC 20515

The Honorable Fred Upton
Chairman, House Committee on Energy and Commerce
2183 Rayburn HOB
Washington, DC 20515

The Honorable Nydia Velázquez
7th Congressional District of New York
2302 Rayburn HOB
Washington, DC 20515

The Honorable Peter Visclosky
Member, Subcommittee on Energy and Water Development, and Related Agencies
2256 Rayburn HOB
Washington, DC 20515

The Honorable Henry Waxman
Ranking Member, House Committee on Energy and Commerce
2204 Rayburn HOB
Washington, DC 20515

The Honorable Ron Wyden
Chairman, Senate Committee on Energy and Natural Resources
221 Dirksen Senate Office Building
Washington, DC 20510

Tribes

President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Delaware Tribe of Indians
170 Northeast Barbara
Bartlesville, OK 74006

Robert Chicks
President
Stockbridge Munsee Community of Wisconsin
N8476 Moh He Con Nuck Road
P.O. Box 70
Bowler, WI 54416

Chairperson Randy King
Shinnecock Indian Nation
P.O. Box 5006
Southampton, NY 11969

Arnold Printup
Saint Regis Mohawk Tribe
Tribal Historic Preservation Office
412 State Route 37
Akwesasne, NY 13655

Federal Agencies

Chris Boelke
National Marine Fisheries Service - NE Fisheries Science Center
Milford Laboratory
212 Rogers Avenue
Milford, CT 06460

John K. Bullard
Regional Administrator, Northeast Region
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

Dan Deerinwater
Regional Director
U.S. Bureau of Indian Affairs
Southern Plains Region Office
WCD Office Complex, P.O. Box 368
Anadarko, OK 73005

Michele DesArtels
U.S. Coast Guard
408 Atlantic Avenue
Boston, MA 02110

Ed Green
U.S. Coast Guard
43 Duffy Hill Road
Underhill, VT 05489

James Haggerty
U.S. Army Corps of Engineers
Fort Hamilton
Building 301
Brooklyn, NY 11252

Duncan Hay
National Park Service
15 State Street
Boston, MA 02109

Daniel L. Hubbard
Maritime Energy Specialist
U.S. Coast Guard District, First District
408 Atlantic Avenue
Boston, MA 02110

Franklin Keel
Regional Director
U.S. Bureau of Indian Affairs
Eastern Region Office
545 Marriott Drive, Suite 700
Nashville, TN 37214

Lingard Knutson
Environmental Scientist
U.S. EPA Region 2
Environmental Review Section
290 Broadway, 25th Floor
New York, NY 10007

Steve Mars
U.S. Fish and Wildlife Service
New Jersey Field Office
927 N. Main Street
Heritage Square, Building D
Pleasantville, NJ 08232

Michael Marsh
Director
U.S. EPA Region 1
Water Quality Branch
JFK Federal Bldg., 15 New Sudbury Street
Boston, MA 02203

Missy Morrison
Resource Planning Specialist, External Review Coordinator
National Park Service, Northeast Region
Division of Resource Planning and Compliance
200 Chestnut Street, 5th Floor
Philadelphia, PA 19106

W.A. Muilenburg
U.S. Coast Guard
408 Atlantic Avenue
Boston, MA 02110

Grace Musumeci
Chief, Environmental Review Section
U.S. EPA Region 2
290 Broadway, 25th Floor
New York, NY 10007

Robyn Niver
U.S. Fish and Wildlife Service
New York Field Office
3817 Luker Road
Cortland, NY 13045

Robert Nyman
U.S. Environmental Protection Agency
New York-New Jersey Harbor and Estuary Program
290 Broadway, 24th Floor
New York, NY 10007

Danielle Palmer
National Marine Fisheries Service
Northeast Regional Office
55 Great Republic Drive
Gloucester, MA 01930

Andrew L. Raddant
U.S. Department of the Interior
Office of Environmental Policy and Compliance
15 State Street, Suite 400
Boston, MA 02109

Cori Rose
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

Diane Rosen
Regional Director
U.S. Bureau of Indian Affairs
Midwest Region Office
Norman Pointe II Building,
5600 West American Boulevard, Suite 500
Bloomington, MN 55347

Stephan Ryba
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278

John Stamos
U.S. Department of Energy
12397 N. Debkay Court
Monrovia, MD 21770

David A. Stilwell
Field Supervisor
U.S. Fish and Wildlife Service
3817 Luker Road
Cortland, NY 13045

Tim Sullivan
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
New York Field Office Region 5
3817 Luker Road
Cortland, NY 13045

Willie R. Taylor
U.S. Department of the Interior
Office of Environmental Policy and Compliance
1849 C Street, NW
Mai1 Stop 2462
Washington, DC, 20240

Maria Tur
U.S. Fish and Wildlife Service
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301

Charlene Dwin Vaughn
Assistant Director
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue, NW, Suite 803
Washington, DC 20004

Genevieve Walker
NEPA Coordinator
U.S. Department of State
Office of Environmental Policy (OES/ENV)
2201 C Street, NW
Washington, DC, 20520

Lee Webb
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building, 1100 Pennsylvania Avenue, NW, Suite 803
Washington, DC 20004

Jun Yan
Project Manager, Eastern Section
U.S. Army Corps of Engineers, New York District
26 Federal Plaza, Room 1937
New York, NY 10278

Jeff Yunker
Waterways Management Coordinator
U.S. Coast Guard, New York Sector
Waterways Management Division
212 Coast Guard Drive
Staten Island, NY 10305

State Elected Officials

Assemblymember Thomas J. Abinanti
New York State Assembly
Assembly District 92
Legislative Office Building 631
Albany, NY 12248

Assemblymember Carmen E. Arroyo
New York State Assembly
Assembly District 84
Legislative Office Building 734
Albany, NY 12248

Senator Greg Ball
New York State Senate
40th Senate District
817 Legislative Office Building Empire State Plaza
Albany, NY 12247

Assemblymember Didi Barrett
New York State Assembly
Assembly District 106
Legislative Office Building 532
Albany, NY 12248

Senator John J. Bonacic
New York State Senate
42nd Senate District
188 State Street
Room 509 Legislative Office Building
Albany, NY 12247

Senator Neil D. Breslin
New York State Senate
44th Senate District
172 State Street
Room 414,The Capitol
Albany, NY 12247

Assemblymember Kevin A. Cahill
New York State Assembly
Assembly District 103
Legislative Office Building 716
Albany, NY 12248

Senator David Carlucci
New York State Senate
38th Senate District
181 State Street
815 Legislative Office Building
Albany, NY 12247

Assemblymember Marcos A. Crespo
New York State Assembly
Assembly District 85
Legislative Office Building 454
Albany, NY 12248

The Honorable Andrew M. Cuomo
Governor of New York State
State of New York
New York State Capitol Building
Albany, NY 12224

Assemblymember Jeffrey Dinowitz
New York State Assembly
Assembly District 81
Legislative Office Building 941
Albany, NY 12248

Assemblymember Janet L. Duprey
New York State Assembly
Assembly District 115
Legislative Office Building 635
Albany, NY 12248

Senator Adriano Espaillat
New York State Senate
31st Senate District
Legislative Office Building Room 513
Albany, NY 12477

Assemblymember Patricia Fahy
New York State Assembly
Assembly District 109
Legislative Office Building 452
Albany, NY 12248

Senator Hugh Farley
New York State Senate
49th Senate District
188 State Street
Room 711 Legislative Office Building
Albany, NY 12247

Assemblymember Herman D. Farrell, Jr.
New York State Assembly
Assembly District 71
Legislative Office Building 923
Albany, NY 12248

Assemblymember Sandy Galef
New York State Assembly
Assembly District 95
Legislative Office Building 641
Albany, NY 12248

Senator Michael Gianaris
New York State Senate
12th Senate District
Senate Capitol Building, Room 413
Albany, NY 12247

Senator Terry Gipson
New York State Senate
41st Senate District
Legislative Office Building Room 617
Albany, NY 12247

Assemblyman Tony Jordan
New York State Assembly
Assembly District 113
Legislative Office Building 322
Albany, NY 12248

Senator Jeffrey D. Klein
New York State Senate
34th Senate District
Legislative Office Building Room 913
Albany, NY 12247

Assemblymember Kieran Michael Lalor
New York State Assembly
Assembly District 105
Legislative Office Building 531
Albany, NY 12248

Senator William J. Larkin, Jr.
New York State Senate
39th Senate District
188 State Street
Room 502 Senate Capitol Building
Albany, NY 12247

Senator Betty Little
New York State Senate
45th Senate District
188 State Street
Room 310 Legislative Office Building
Albany, NY 12247

Assemblymember Peter D. Lopez
New York State Assembly
Assembly District 102
Legislative Office Building 402
Albany, NY 12248

The Honorable Dannel P. Malloy
Govenor
State of Connecticut
State Capitol
210 Capitol Avenue
Hartford, CT 06106

Senator Kathleen A. Marchione
New York State Senate
43rd Senate District
188 State Street
Legislative Office Building Room 306
Albany, NY 12247

Assemblymember Shelley Mayer
New York State Assembly
Assembly District 90
Room 323 Legislative Office Building
Albany, NY 12248

Senator George Maziarz
Vice President Pro Tempore
New York State Senate
62nd Senate District, Energy and
Telecommunications Committee
Room 708 Legislative Office Building
Albany, NY 12247

Assemblymember Catherine Nolan
New York State Assembly
Assembly District 37
Legislative Office Building 836
Albany, NY 12248

Senator José Peralta
New York State Senate
13th Senate District
188 State Street
Room 415 Legislative Office Building
Albany, NY 12247

Senator Bill Perkins
New York State Senate
30th Senate District
188 State Street
Room 517 Legislative Office Building
Albany, NY 12247

Assemblymember Victor M. Pichardo
New York State Assembly
Assembly District 86
Legislative Office Building 744
Albany, NY 12248

Assemblymember J. Gary Pretlow
New York State Assembly
Assembly District 89
Legislative Office Building 845
Albany, NY 12248

Assemblymember Annie Rabbit
New York State Assembly
Assembly District 98
Legislative Office Building 320
Albany, NY 12248

Senator Gustavo Rivera
New York State Senate
33rd Senate District
181 State Street
Room 408 Legislative Office Building
Albany, NY 12247

Assemblymember Robert J. Rodriguez
New York State Assembly
Assembly District 68
Legislative Office Building 729
Albany, NY 12248

Assemblymember Gabriela Rosa
New York State Assembly
Assembly District 72
Legislative Office Building 628
Albany, NY 12248

Assemblymember Angelo Santabarbara
New York State Assembly
Assembly District 111
Legislative Office Building 833
Albany, NY 12248

Senator José M. Serrano
New York State Senate
29th Senate District
181 State Street
Room 406, Legislative Office Building
Albany, NY 12247

Assemblymember Aravella Simotas
New York State Assembly
Assembly District 36
Legislative Office Building 652
Albany, NY 12248

Assemblymember Frank Skartados
New York State Assembly
Assembly District 104
Legislative Office Building 435
Albany, NY 12248

Assemblymember James Skoufis
New York State Assembly
Assembly District 99
Legislative Office Building 821
Albany, NY 12248

Assemblymember Dan Stec
New York State Assembly
Assembly District 114
Legislative Office Building 940
Albany, NY 12248

Assemblymember Phil Steck
New York State Assembly
Assembly District 110
Legislative Office Building 819
Albany, NY 12248

Senator Andrea Steward-Cousins
New York State Senate
35th Senate District
188 State Street
Room 907 Legislative Office Building
Albany, NY 12247

Assemblymember James Tedisco
New York State Assembly
Assembly District 112
Legislative Office Building 404
Albany, NY 12248

Senator Cecilia Tkaczyk
New York State Senate
46th Senate District
311 Legislative Office Building
Empire State Plaza
Albany, NY 12247

Assemblymember Keith L.T. Wright
New York State Assembly
Assembly District 70
Legislative Office Building 943
Albany, NY 12248

Assemblymember Kenneth Zebrowski
New York State Assembly
Assembly District 96
Room 637 Legislative Office Building
Albany, NY 12248

State Agencies

Deputy Director for Canal Maintenance and Operations
New York State Canal Corporation
P.O. Box 189, 200 Southern Boulevard
Albany, NY 12201-0189

Director of Engineering Services and Chief Engineer
New York State Department of Public Service
112 State Street, Drawer 20
Montpelier, VT 05620

Adirondack Park Agency
New York State Adirondack Park Agency
P.O. Box 99
1133 New York State Route 86
Ray Brook, NY 12977

Commissioner Darrel J. Aubertine
New York State Department of Agriculture and Markets
10B Airline Drive
Albany, NY 12235

Jim Austin
Deputy Director
New York State Department of Public Service
Office of Energy Efficiency and Environment
Empire State Plaza Agency Building 3
Albany, NY 12223-1350

Melanie Bachman
Senior Environmental Analyst
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

John Bonafide
Director
New York State Historic Preservation Office
Bureau of Technical Preservation Services
Peebles Island Resource Center
P.O. Box 189
Waterford, NY 12188

Sarah Boushsones
New York Power Authority
123 Main Street
White Plains, NY 10601

Javier E. Bucobo
New York Power Authority
123 Main Street
White Plains, NY 10601

Klaus Busch
Field Advisor
New York Farm Bureau
159 Wolf Road, P.O. Box 5330
Albany, NY 12205

Pamela Carter
New York State Department of Public Service
Empire State Plaza Agency Building 3
Albany, NY 12223

Peter M. Casper
New York State Canal Corporation/Thruway Authority
200 Southern Boulevard, P.O. Box 189
Albany, NY 12201-0189

Dianne K. Cooper
New York State Public Service Commission
Empire State Plaza Agency Building 3
Albany, NY 12223-1350

Patricia Desnoyers, Esq.
New York State Department of Environmental Conservation
Office of General Counsel
625 Broadway
Albany, NY 12233-7235

John Ferguson
New York State Department of Environmental Conservation
Division of Environmental Permits
625 Broadway
Albany, NY 12233-7235

Lorna Gillings
New York State Department of Public Service
Empire State Plaza Agency Building 3
Albany, NY 12223

Rose Harvey
Commissioner
New York State Office of Parks, Recreation and Historic Preservation
Albany, NY 12238

Nancy Herter
Program Leader/Native American Liaison
New York State Historic Preservation Office
Peebles Island Resource Center
P.O. Box 189
Waterford, NY 12188

Susan Jacobson
Senior Environmental Analyst
Connecticut Department of Energy and Environmental Protection
Office of Long Island Sound Programs
79 Elm Street
Hartford, CT 06106-5127

Ethan J. Kaplan
New York State Attorney General Office
445 East 80th Street, #11C
New York, NY 10075

Jeremy Magliaro
New York State Attorney General Office
Office of the Attorney General
The Capitol
Albany, NY 12224-0351

Jim de Waal Malefyt
New York State Department of Public Service
Empire State Plaza Agency Building 3
Albany, NY 12223

Mark Malone
New York Power Authority
123 Main Street
White Plains, NY 10601

Matthew Maraglio
Coastal Review Specialist
New York State Department of State
1 Commerce Plaza, Suite 1010
Albany, NY 12231

Terry Martino
New York State Adirondack Park Agency
P.O. Box 99
1133 NYS Route 86
Raybrook, NY 12977

Jeannine McCrumb
Regulatory Review Coordinator
Agency of Natural Resources
Division of Regulatory Management and Act
250 Review
103 South Main Street
Waterbury, VT 05671-0301

Joan McDonald
Commissioner
New York State Department of Transportation
Main Office
50 Wolf Road
Albany, NY 12232

Cathy Mural
Senior Associate of Director of Public Policy
New York Farm Bureau
159 Wolf Road
P.O. Box 5330
Albany, NY 12205

Erin O'Dell-Keller
New York State Department of Public Service
Empire State Plaza Agency Building 3
Albany, NY 12223

John L. Osinski
New York Power Authority
30 South Pearl Street
Albany, NY 12207

Ruth Pierpont
Deputy Commissioner/Deputy SHPO
New York State Historic Preservation Office
Peebles Island Resource Center
P.O. Box 189
Waterford, NY 12188

Steve Stanne
New York State Department of Environmental Conservation
Hudson River Estuary Program
215 Putt Corners Road
New Paltz, NY 12561

Steven Sweeney
New York State Canal Corporation
P.O. Box 189
200 Southern Boulevard
Albany, NY 12201

Jill Wasser
New York State Public Service Commission
90 Church Street
New York, NY 10007

Brian Yates
New York State Historic Preservation Office
Peebles Island Resource Center
P.O. Box 189
Waterford, NY 12188

Jeff Zappieri
Supervisor, Consistency Review Unit
New York State Department of State
Office of Coastal, Local Government and Community Sustainability
1 Commerce Plaza Suite 1010
Albany, NY 12839

Locally Elected Officials

Robert P. Astorino
County Executive
County of Westchester
900 Michaelian Building, 148 Martine Ave.
White Plains, NY 10601

Thomas Basile
Councilman
Town of Stony Point
26 Zachary Taylor Street
Stony Point, NY 10980

The Honorable Michael R. Bloomberg
Mayor
City of New York
City Hall
New York, NY 10007

Larry Brissing
Town of Stony Point
Superintendent of Highways
190 W Main Street
Stony Point, NY 10980

Edwin Day
Rockland County Legislator
District 5
11 New Hempstead Road
New City, NY 10956

Geoffrey Finn
Town Supervisor
Town of Stony Point
Office of the Supervisor,
47 Main Street
Stony Point, NY 10980

Alan Grattidge
Chairman of the Board of Supervisors
Saratoga County
Charlton Town Hall
758 Charlton Road
Ballston Lake, NY 12019

Alex Guarino
Town of Haverstraw
Assistant to Supervisor
1 Rosman Road
Garnerville, NY 10923

Dustin Hausner
Represents Assemblyman James Skoufis
11 Main Street
Chester, NY 10918

Karl Javenes
Town of Stony Point
Councilman
2 Ridgetop Drive
Tomkins Cove, NY 10986

Douglas J. Jobson
County Legislator - District 1
Rockland County Legislature
Allison-Parris County Office Building 11 New Hempstead Road
New City, NY 10956

Luanne Konopko
Town of Stony Point
Councilwoman
31 Ethan Allen Drive
Stony Point, NY 10980

Chuck Lesnick
City Council President
Yonkers City Council
40 Broadway, Room 403
Yonkers, NY 10701

Rita Louie
Trustee of Village of Pomona
1 Secor Court
Pomona, NY 10970

Daniel P. McCoy
County Executive
Albany County
Office of the County Executive - Albany County
Office Building
112 State Street, Room 825
Albany, NY 12207

Jim McDonnell
Stony Point Town Board
1 Fawn Drive
Stony Point, NY 10980

Ronald Miller
Trustee, Village of Menand
7 Sage Hill Lane
Menands, NY 12204

Howard T. Phillips, Jr.
Town Supervisor
Town of Haverstaw
Haverstraw Town Hall
1 Rosman Road
Garnerville, NY 10923

Ilan Schoenberger
County Legislator - District 4
Rockland County Legislature
Allison-Parris County Office Building,
11 New Hempstead Road
New City, NY 10956

Joan Skinner
Town of Stony Point
Town Clerk
74 E Main Street
Stony Point, NY 10980

The Honorable Mike Spano
Mayor
City of Yonkers
City Hall, 40 South Broadway
Yonkers, NY 10701

Wayne Speenburgh
Chairman of the Legislature
Greene County, New York
District 296 Washington Avenue,
Coxsackie, NY 12051

Jim White
Town of Stony Point
Councilman
5 Delaware Court
Stony Point, NY 10980

Local Agencies

Christopher Crane
Westchester County Board of Legislators
148 Martine Avenue, 8th Floor
White Plains, NY 10601

Ed Diamante
Principal Planner
Greene County Department of Economic
Development, Tourism & Planning
411 Main Street, Suite 419
Catskill, NY 12414

Dennis Doyle
Ulster County Planning Department
P.O. Box 1800
Kingston, NY 12402

Lee J. Ellman
City of Yonkers Planning & Development
40 South Broadway Street
Yonkers, NY 10701

Kenneth J. Flood
Commissioner
Columbia County Planning & Economic
Development
401 State Street
Hudson, NY 12534

Eddie Greenfield
New York City Department of City Planning,
Waterfront
22 Reade Street, 6E
New York, NY 10007

Bruce W. McKinnon
Connecticut Municipal Electric Energy
Cooperative
17 Pleasant View Road
Wilbreham, MA 01095

Kelly Myers
Town Supervisor
Town of Saugerties
4 High Street
Saugerties, NY 12477

Mike Nidoh
Office of Planning and Economic Development:
City Planning
999 Broad Street
Bridgeport, CT 06604

Wesley O'Brien
New York City Mayor's Office of
Environmental Coordination
100 Gold Street, 2nd Floor
New York, NY 10038

Tate Rider
New York City Economic Development
Corporation
110 Williams Street
New York, NY 10038

Justin M. Robinson
Chief Technology Officer
Vermont Telephone Co., Inc.
354 River Street,
Springfield, VT 05156

Robert B. Tierney
Chair
New York City Landmarks Preservation
Commission
Municipal Building
1 Centre Street, 9th Floor
New York, NY 10007

Douglas Ward
Town Attorney
Town of Northumberland
5 Palisades Drive
Albany, NY 12205

Organizations and Stakeholders

Central Hudson Gas & Electric Corporation
284 South Avenue
Poughkeepsie, NY 12601

Consolidated Edison Company of New York,
Inc.
Con Edison - Cooper Station,
P.O. Box 138
New York, NY 10276

Entergy Nuclear Power Marketing, LLC
2001 Timberlock Place, 2nd Floor
The Woodlands, TX 77380

International Brotherhood of Electrical Workers
Local Union No. 97
12 Wade Road
Latham, NY 12210

National Grid
Metropolitan New York Area
One Metrotech Center
16th Floor
Brooklyn, NY 12201

Office of the Corporation Counsel for City of
Yonkers
40 South Broadway
Yonkers, NY 10701

Solidarity Committee of the Capital District
Meeting
33 Central Avenue
Albany, NY 12210

Orange and Rockland Utilities
390 West Route 59
Spring Valley, NY 10977

Vermont Electric Power Company Inc.
Vermont Transco, LLC
366 Pinnacle Ridge Road
Rutland, VT 05701

Dylan Adler
Laborers' International Union of North America
4 Cedar Ridge Road
New Paltz, NY 12561

Dave Ahl
Galesi Group
695 Rotterdam Industrial Park
Schenectady, NY 12306

Vincent Albanese
New York State Laborers'
221 E 23rd Street, Apt 12
New York, NY 10010

Alton Allison
Laborers' International Union of North America
Local 754
28 N Cole Avenue
Spring Valley, NY 10977

John J. Alvino
Laborers' International Union of North America
Local 754
14 Chestnut Street
Pearl River, NY 10965

Barbara Amorosa
Laborers' International Union of North America
Local 754
229 Colden Hill Road
Newburgh, NY 12550

Donald Anslow
Laborers' International Union of North America
Local 186
1483 US Route 9
Schroon Lake, NY 12870

Bonito Arellano
New York State Laborers' Organizing Fund
46 New Road
Newburgh, NY 12550

Brad Ashford
Laborers' International Union of North America
Local 754
1 Berachah Avenue
Nyack, NY 10960

Brian Babcock
Laborers' International Union of North America
Local 17
652 S Drury Lane
Rock Tavern, NY 12575

Melissa Badick
Laborers' International Union of North America
Local 754
6 Nelson Place
Nanuet, NY 10954

Ken Baer
Sierra Club
91 6th Avenue
Brooklyn, NY 11217

Brian R. Barbera
Laborers' International Union of North America
Local 754
2 Benson Street
West Haverstraw, NY 10993

John A. Basile
New York Affordable Reliable Electricity
Alliance
P.O. Box 493
Stillwater, NY 12170

Kathy Bauer
Laborers' International Union of North America
Local 754
292 Marl Road
Pine Bush, NY 12566

Jeff Beck
Laborers' Internaitional Union of North America
Local 17
395 Carter Avenue
Newburgh, NY 12550

Eric Beck
Laborers' International Union of North America
Local 17
7 Diorio Prince Place
Marlboro, NY 12542

Thomas Becker
Laborers' International Union of North America
Local 190
212 Sundew Drive
Schenectady, NY 12303

Gary Befnaffo
Laborers' International Union of North America
18 Corporate Woods Boulevard
Albany, NY 12211

Peter Bellhouse
Laborers' International Union of North America
Local 754
190 Ridge Street
Pearl River, NY 10965

Shane M. Berome
Laborers' International Union of North America
Local 17
70 Gladstone Avenue
Walden, NY 12586

Theodore H. Bohlke
International Union of Operating Engineers
Local 825
12 Bellows Lane
Chestnut Ridge, NY 10952

Alex Boutsioulis
The United Illuminating Company
157 Church Street, #16
New Haven, CT 06506

Gordon M. Boyd
Energy Next, Inc.
6 Franklin Square
Saratoga Springs, NY 12866

Barry Brooks
Sons of the American Revolution
157 Washburns Lane
Stony Point, NY 10980

William Brown
International Brotherhood of Electrical Workers
Local 2032
P.O. Box 86
Massena, NY 13662

Allison M. Buckley
Conservation Director
Adirondack Council
P.O. Box D-2 103 Hand Avenue #3
Elizabethtown, NY 12932

Brian Buel
International Brotherhood of Electrical Workers
19 Tuscany Meadows
East Durham, NY 12423

John Bunt
Laborers' International Union of North America
Local 17
P.O. Box 324
Milton, NY 12547

Theresa Bunyea
Laborers' International Union of North America
Local 754
147 Dara Lane
Stony Point, NY 10980

Paul Capel
Hudson River Pilots Association
232 Rockefeller Lane
Red Hook, NY 12571

Hayley Carlock
Scenic Hudson
1 Civic Center Plaza, Ste 200
Poughkeepsie, NY 12601

Andrew P. Carr Jr.
Laborers' International Union of North America
Local 17
110 Last Road
Middletown, NY 10941

Dave Carron
International Brotherhood of Boilermakers
Local 5
241 Old Maxwell Road
Latham, NY 12110

James Cassase
Laborers' International Union of North America
Local 754
32 S Franklin Street
Nyack, NY 10960

Douglas E. Casscles
International Union of Operating Engineers
Local 825
16 Smith Street
Stony Point, NY 10980

Tim Casscles
International Union of Operating Engineers
Local 825
12 Silvestro Way
Garnerville, NY 10923

Vincent Cavazza
Laborers' International Union of North America
Local 17
30 Nellies Place
Highland, NY 12528

Kevin Chlad
Legislative Associate
Adirondack Council
342 Hamilton Street
Albany, NY 12210

Charles Ciccone
International Brotherhood of Electrical Workers
Local 320
8 Nee Avenue
New Windsor, NY 12553

Sylvain Clermont
Hydro-Québec
Complexe Desjardins, Tour Est 19˚ étage
C.P. 10000, succ. Pl. Desjardins
Montréal, QC H5B 1H7

Raymond Coia
New York State Laborers
18 Corporate Woods Boulevard
Albany, NY 12211

Mark Colandrea
Laborers' International Union of North America
Local 17
29 Travis Lane
Newburgh, NY 12550

Frank Collier
Stony Point Action Committee for the
Envionment
10 Kuadp Road, P.O. Box 179
Stony Point, NY 10980

Kyle Collins
Hydro-Québec
HQ Energy Services US
41A Fairway Drive
Wethersfield, CT 06109

Daniel R. Conway
Laborers' International Union of North America
Local 186
152 Fitzgerald Road
Westport, NY 12993

Tom Corrigan
Laborers' International Union of North America
Local 754
46 Park Avenue
Suffern, NY 10901

Pal Cotrone
Laborers' International Union of North America
Local 754
5 Circle Court
New City, NY 10956

Kendre Cottle
Laborers' International Union of North America
Local 754
5 Summit Park Road
Spring Valley, NY 10977

Ben Craig
Congressional Staffer
17th Congressional District of New York
Office of Rep. Nita Lowey
222 Mamaroneck Avenue, #310
White Plains, NY 10605

Nick Crismale
President
Connecticut Commercial Lobstermen
Association
75 Kimberly Drive
Guilford, CT 06437

John Cronin
Director and Chief Executive Officer
Beacon Institute for Rivers and Estuaries
199 Main Street
Beacon, NY 12508

Adolinar Cruz
Laborers' International Union of North America
Local 754
22 Adele Boulevard
Spring Valley, NY 10977

Porfirio Cruz
Laborers' International Union of North America
Local 754
25 Fairview Drive
Danbury, CT 06810

Mike Cruz
New York State Laborers' Organizing Fund
3711 35th Avenue
Queens, NY 11101

Andy Culpepper
Laborers' International Union of North America
Local 1010
104 Interchange Plaza
3rd Floor
Monroe Township, NJ 08831

Steven Damato
New York State Laborers' Organizing Fund
37-11 35th Avenue
Astoria, NY 11101

Don Darrah
WSP Group
205 Palmer Avenue
Corinth, NY 12822

Kyle Decker
Laborers' International Union of North America
Local 754
182 County Road 51
Campbell Hall, NY 10916

Doris Delaney
Executive Director
PROTECT
408 Steamboat Station
Southampton, PA 18966

James R. Dibblz
Laborers' International Union of North America
Local 754
13 Schassler Place
Stony Point, NY 10980

Peter DiCapda
Laborers' International Union of North America
Local 17
241 Tuckers Corners Road
Highland, NY 12528

Patrick Donahue
Laborers' International Union of North America
17 Draper Avenue
Plattsburgh, NY 12901

John Donoghue
Laborers' International Union of North America
Local 186
2 Broderick Road
Plattsburgh, NY 12901

Garry F. Douglas
Plattsburgh-North Country Chamber of Commerce
7061 State Route 9
Plattsburgh, NY 12901

Roger Downs
Conservation Associate
Sierra Club
353 Hamilton Street
Albany, NY 12210

Jacquelyn Drechsler
Sierra Club
116 Sierra Vista Lane
Valley Cottage, NY 10989

Sue Duratte
Laborers' International Union of North America
Local 186
9 Saratoga Court
Plattsburgh, NY 12901

Peter Ellis
Laborers' International Union of North America
Local 754
64 W Burda Place
New City, NY 10956

Charles Ellis
Laborers' International Union of North America
Local 754
P.O. Box 729
Cornwall, NY 12518

Dean Ellis
Dynegy Inc.
4 London Avenue
New Windsor, NY 12553

Tom Ellis
Citizens' Environmental Coalition
43 North Pine Avenue
Albany, NY 12203

Garry Ero
Laborers' International Union of North America
2025 10th Street
Rensselaer, NY 12144

Anthony Faricellia
Laborers' International Union of North America
Local 17
610 Broadway, Box 156
Newburgh, NY 12550

Paul Ferrante
Laborers' International Union of North America
Local 754
33 Brooks Drive
Stony Point, NY 10980

Susan Filgueras
Stony Point Action Committee for the Environment
87 Mott Farm Road
Tomkins Cove, NY 10986

Mary Esch
Associated Press
Albany Times Union
645 Albany-Shaker Road
Albany, NY 12211

Lori Fisher
Lake Champlain Committee
LCC 106 Main Street, Suite 200
Burlington, VT 05401-8434

Ed Flanagan
International Union of Operating Engineers
Local 825
928 Orchard Drive
Wallkill, NY 12589

William Forst
WMHT Educational Telecommunications
4 Global View
Troy, NY 12180

Hannah Foster
Sierra Club
244 East 21st Street
New York, NY 10010

James Tyler Frakes
Adirondack Council
P.O. Box 130
Port Kent, NY 12975

Patrick J. Frank
Laborers' International Union of North America
Local 754
32 Hudson Avenue
Haverstraw, NY 10927

Anthony Fresina
Laborers' International Union of North America
Local 190
311 Fisher Boulevard
Delmar, NY 12054

Greg Fry
WAMC Northeast Public Radio
1 Hawk Drive CSB51
New Paltz, NY 12561

Jon Fuzak
New York State Laborers' Organizing Fund
100 Arend Avenue
Buffalo, NY 14221

Carl George
Greenville Leithfield Protection Commission
Union College
807 Union Street
Schenectady, NY 12308

Gabriel Goday
Laborers' International Union of North America
Local 754
39 Pershing Avenue
Ossining, NY 10562

Chris Gonyea
Laborers' International Union of North America
Local 186
P.O. Box 55
Schuyler Falls, NY 12985

S. Jay Goodman
Counsel for the City of New York
540 Broadway, 7th Flood
Albany, NY 12207

Ricardo Gotla
New York League of Conservation Voters
30 Broad Street, 30th Floor
New York, NY 10004

Jason Gould
Laborers' International Union of North America
Local 754
Box 341, 9 First Avenue
Unionville, NY 19088

Ross Gould
Environmental Advocates of New York
353 Hamilton Street
Albany, NY 12210

Thomas Grace
Laborers' International Union of North America
Local 754
116 Highway Avenue
Congers, NY 10920

Manna Jo Greene
Environmental Action Director
Hudson River Sloop Clearwater Inc.
724 Wolcott Avenue
Beacon, NY 12508

Gary Gudz
Laborers' International Union of North America
Local 186
40 Newell Avenue
Plattsburgh, NY 12901

Ashok Gupta
Air and Energy Program Director
Natural Resources Defense Council
40 West 20th Street
New York, NY 10011

Corey Hadley
Laborers' International Union of North America
Local 754
26 Apex Spur
Hancock, NY 13783

Thom Hallock
Mountain Lake PBS
1 Sesame Street
Plattsburgh, NY 12901

John A. Harms
The American Waterways Operators
801 North Quincy Street
Suite 200
Arlington, VA 22203

Dwaine Harris
Laborers' International Union of North America
Local 17
795 Wyckoff Avenue
Mahwah, NY 07430

Greg Hart
Workforce Development Institute
61 Beach Street,
Massena, NY 13662

Dan Heath
Press Republican
514 Point au Fer Road
Champlain, NY 12919

William Helmer, Esq.
Sr. Vice President, General Counsel, and Secretary
Transmission Developers, Inc.
600 Broadway
Albany, NY 12207

Dennis Hemion
Laborers' International Union of North America
Local 754
79 Orange Street
Port Jervis, NY 12771

Lorenzo Henderson
Laborers' International Union of North America
Local 754
20 Dorothy Drive
Spring Valley, NY 10977

Chad Hood-Solon
Laborers' International Union of North America
Local 754
530 Saracino Drive
Maybrook, NY 12543

David Hoover
International Brotherhood of Electrical Workers
Local 910
P.O. Box 252
Plattsburgh, NY 12901

Randolph Horner
Solar Education, LLC
P.O. Box 467
Woodstock, NY 12498

Donald Horton
Laborers' International Union of North America
Local 17
238 Petticoat Lane
Bloomingberg, NY 12721

Roger Howerton
International Union of Operating Engineers
Local 158
665 Clintonville Road
Peru, NY 12972

Roger Howerton III
Laborers' International Union of North America
Local 186
278 Thomasville Road
Au Sable Forks, NY 12912

John Hutchings
Laborers' International Union of North America
2 Christopher Street
Binghamton, NY 13903

Bob James
New York State Laborers' Organizing Fund
3711 35th Avenue
Astoria, NY 11101

John Jazwinski
Laborers' International Union of North America
Local 17
412 Milton Turnpike
Milton, NY 12547

Roger L. Jennings
President
R. Jennings Manufacturing Company, Inc.
22 Hudson Falls Road
South Glens Falls, NY 12803

Donald Jessome
President and CEO
Transmission Developers, Inc.
600 Broadway
Albany, NY 12207

Eric Johansson
Maritime Association of the Port of New York
and New Jersey
Tug & Barge Committee
17 Battery Place, Suite 913
New York, NY 10004

Brendan Jordan
Laborers' International Union of North America
Local 754
37 Putnam Drive
Carmel, NY 10512

Steve Juracek
Laborers' International Union of North America
Local 17
1255 Union Avenue
Newburgh, NY 12550

John Kaiser
International Brotherhood of Electrical Workers
Local 320
80 Washington Street
Poughkeepsie, NY 12601

R. Kaleita
Laborers' International Union of North America
Local 17
496 Minisink Turnpike
Port Jervis, NY 12771

Joe Karandy
Laborers' International Union of North America
Local 190
686 Lancaster Street
Albany, NY 12203

Jeffrey Kellogg
International Union of Operating Engineers
Local 158
47 Ridge Street
North Creek, NY 12853

Edward J. Kelly
Executive Director
Maritime Association of the Port of New York
and New Jersey
17 Battery Place, Ste 913
New York, NY 10004

Mah Kirk
Hartgen Archaeological Associates
33 Glendale Avenue
Albany, NY 12208

George Klein
Chairman
Sierra Club Lower Hudson Group
74 Croton Dam Road
Ossining, NY 10562

Casey Knapp-Rich
Laborers' International Union of North America
Local 754
273 Route 210
Stony Point, NY 10980

Arthur "Jerry" Kremer
Chairman
New York Affordable Reliable Electricity Alliance
114 W 47th Street, 19th Floor
New York, NY 10036

Charles Kruger Jr.
Laborers' International Union of North America
Local 17
11 Chestnut Street W
Wurtsboro, NY 12790

Joel R. Kupferman
New York Environmental Law and Justice Project
351 Broadway, 3rd Floor
New York, NY 10013

Chris LaBombard
International Union of Operating Engineers
Local 158
48 LaFrancis Road
Ellenburg Center, NY 12934

Matthew LaPresti
International Brotherhood of Boilermakers
Local 5
163 Rosemont Street
Albany, NY 12206

Chris LaRoe
Independent Power Producers of New York, Inc.
19 Dove Street, Suite 302
Albany, NY 12810

Susan Lawrence
Sierra Club
100 Hollywood Avenue
Albany, NY 12208

Roy Lawrence
International Brotherhood of Electrical Workers
Local 2032
3501 State Highway 345
Waddington, NY 13694

Edward LeStrangt
Laborers' International Union of North America
Local 754
12 Jerben Drive
Stony Point, NY 10980

Kim Lengle
Regional News Network (RNN) TV News
800 Westchester Avenue, Suite S-640
Rye Brook, NY 10573

Justin Letiba
Laborers' International Union of North America
Local 17
11 Old Route 299
New Paltz, NY 12561

Kenneth Lewis
Laborers' International Union of North America
Local 754
43 Hamptonburgh Road
Campbell Hall, NY 10916

Scott Lorey
Adirondack Council
342 Hamilton Street
Albany, NY 12210

David Lowrie
New York State Assembly
Office of Rep. Kevin Cahill
1 Albany Avenue
Kingston, NY 12401

Terry Lucadamo
CNAT
96 Longvue Terrace
Yonkers, NY 10710

Steven Ludwigson
Business Manager
International Brotherhood of Boilermakers
Local 5
24 Van Siccen Avenue
Floral Park, NY 11001

Daniel Machold
International Brotherhood of Electrical Workers
Local 97
265 New Karner Road
Albany, NY 12205

Kevin Maher
Town Engineer
Town of Stony Point
74 E Main Street
Stony Point, NY 10980

Ben Mainville
Laborers' International Union of North America
5 Pepper Hill Road
Mooers Forks, NY 12959

Brian Mann
NCPR (Public Radio)
15 Franklin Avenue
Saranac Lake, NY 12983

James Mansky
AECOM
125 Broad Street
New York, NY 10004

Frank Marchese
New York State Laborers
8 Kenington Place
Albany, NY 12209

Frank Marchese Jr.
Laborers' International Union of North America
205 Colonial Avenue
Albany, NY 12208

Glenn Marek
New York State Laborers' Organizing Fund
48 First Avenue
Boardalbin, NY 12025

Fernando Martinez
Laborers' International Union of North America
Local 754
90 W Prospect Street
Nanuet, NY 10954

Hayley Mauskapf
Environmental Advocacy Associate
Scenic Hudson, Inc.
1 Civic Center Plaza, Suite 200
Poughkeepsie, NY 12601-3157

Dominic Mauro
International Union of Operating Engineers
Local 825
23 Shadybrook Lane
New City, NY 10956

Michael McCune
Laborers' International Union of North America
Local 754
10 Heights Road
Stony Point, NY 10980

Thomas P. McDowell
Laborers' International Union of North America
Local 754
24 Shuart Road
Airmont, NY 10952

Tom McHole
Laborers' International Union of North America
Local 186
2450 Falls Road
Marcellus, NY 13108

Brian McPartland
International Brotherhood of Electrical Workers
Local 503
3 Rieger Drive
Monroe, NY 10950

Rob Micallof
Laborers' International Union of North America
30 Potowomut Road
North Kingstown, NY 02852

Joe Mirabile
New York State Laborers' Union
18 Corporate Woods Boulevard
Albany, NY 12211

Brandon Morgan
Laborers' International Union of North America
Local 754
2127 New York 41
Nineveh, NY 13813

Timothy R. Muller
International Union of Operating Engineers
Local 825
6 Wesley Court
Middletown, NY 10941

Ryan Munro
Laborers' International Union of North America
Local 17
207 Primrose Lane
Milford, PA 18337

Michael Murphy
Laborers' International Union of North America
Local 754
13 Homestead Lane
New City, NY 10956

Ben Murtash
International Brotherhood of Electrical Workers
Local 2032
9 Prospect Avenue
Massena, NY 13662

Phillip Musegaas
Hudson River Program Director
Riverkeeper, Inc.
828 South Broadway, Suite 101
Tarrytown, NY 10591

Joseph Nery
Laborers' International Union of North America
Local 754
125 E Allison Avenue
Nanuet, NY 10954

Anthony Nigro
Laborers' International Union of North America
Local 754
23 Dickens Street
Stony Point, NY 10980

Scott Noreau
Laborers' International Union of North America
Local 754
3432 New York 208
Campbell Hall, NY 10916

Jeffrey Ocasio
Laborers'International Union of North America
Local 754
28 Ashland Avenue
Middletown, NY 10940

Patricia Ochman
O'Reilly & Associates
1155 Rue University, Bureau 1007
Montreal, QC H3B 3A7

William O'Heary
International Brotherhood of Electrical Workers
Local 1049
686 Old North Ocean Avenue
Patchogue, NY 11772

Alain Olivier
Directeur des Communications et Affaires
Publiques
Quebec Government Office in New York
1 Rockefeller Plaza, Suite 2600
New York, NY 10020-2102

David Ostrander
Laborers' International Union of North America
Local 754
51 Spring Street
Nutley, NY 07110

Paul W. Pardy
International Union of Operating Engineers
Local 158
27 Dukette Road
Plattsburgh, NY 12901

Amber Paterson
Riverkeeper, Inc.
828 South Broadway, Suite 101
Tarrytown, NY 10591

Lael J. Paulson
American Sugar Refining, Inc.
1 Federal Street
Yonkers, NY 10705

Mary "Chris" Pearsall
Stony Point Seniors Club
88 N Liberty Drive
Stony Point, NY 10980

Christopher Phelps
Program Director
Environment Connecticut
198 Park Road 2nd Floor
West Hartford, CT 06119

Tom Pipczynski
New York State Laborers' Organizing Fund
37-11 35th Avenue
Astoria, NY 11101

Jim Planck
Hudson-Catskill Newspapers
The Daily Mail
414 Main Street
Catskill, NY 12414

Paul Post
Saratogian
20 Lake Avenue
Saratoga Springs, NY 12866

Scott Purdy
Laborers' International Union of North America
51 Spring Street
Nutley, NY 07110

David Quattrocchi
Laborers' International Union of North America
Local 754
15 Kwiecinski Street
West Haverstraw, NY 10993

Jessica Rabideau
Laborers' International Union of North America
Local 186
P.O. Box 463
Dannemore, NY 12929

John Reese
US Power Generating Company
505 5th Avenue
New York, NY 10036

Robert T. Reich
Laborers' International Union of North America
Local 754
1819 New York 166
Cooperstown, NY 13326

Stephen Reich
Laborers' International Union of North America
Local 754
215 Old Nyack Turnpike
Chestnut Ridge, NY 13320

Gary Rink
Laborers' International Union of North America
119 Upper Brook Road
Sparrow Bush, NY 12780

John Rodriguez
Laborers' International Union of North America/
New York State Laborers' Organizing Fund
3511 35th Avenue
Astoria, NY 11101

Chad M. Rubideau
Laborers' International Union of North America
Local 186
945 Standish Road
Saranac, NY 12981

Kathleen Rumsey
Laborers' International Union of North America
Local 754
20 Greenthorp Lane
Port Jervis, NY 12771

Anthony Runnt
Laborers' International Union of North America
Local 17
23 N Clover Street
Poughkeepsie, NY 12601

Thomas Ryan
International Brotherhood of Boilermakers
Local 5
24 Van Siclen Avenue
Floral Park, NY 11001

Matt Ryan
PBS Statewide Television Program
4 Global View
Troy, NY 12180

Esteban Sanes
Laborers' International Union of North America
Local 190
P.O. Box 953
Albany, NY 12201

Tyler Schaub
Laborers' International Union of North America
Local 754
87 Blauvelt Avenue
West Haverstraw, NY 10993

Leah Schmalz
Director of Legislative and Legal Affairs
Connecticut Fund for the Environment - Save the Sound
142 Temple Street, Suite 305
New Haven, CT 06510

Clifford Schneider
Beczak Environmental Education Center
35 Alexander Street
Yonkers, NY 10701

David Schnoder
WPTZ - NBC Affiliate
5 Television Drive
Plattsburgh, NY 12901

Joseph Scopo
Laborers' International Union of North America
DC-16 Cement and Concrete Workers of New York City
36 Hollywood Avenue
Selden, NY 11784

Sam Scoppettone
Environmental Advocacy Assistant
Scenic Hudson, Inc.
1 Civic Center Plaza, Suite 200
Poughkeepsie, NY 12601-3157

Richard Serpentini
Laborers' International Union of North America
Local 754
22 Wickham Avenue
Middletown, NY 109400

Todd Singer
Transmission Developers, Inc.
39 East 120th Street, 407
New York, NY 10203

Amber Sisson
New York Affordable Reliable Electricity Alliance
347 Fifth Avenue, Suite 508
New York, NY 10016

Cheryl Slavin
Rockland County Times
117 New Valley Road
New City, NY 10956

James Slevin
Utility Workers of America
Local 1-2
5 W 37th Street, 7th Floor
New York, NY 10018

Lavar Smith
International Brotherhood of Boilermakers
Local 5
1556 Broadway
Rennsselaer, NY 12144

Eldon Smith
Golub Corporation
461 Nott Street
Schenectady, NY 12308-1812

Chris Smith
Laborers' International Union of North America
Local 190
25 B Winne Place
Glenmont, NY 12077

James Spooner
Laborers' International Union of North America
Local 186
29 Quellette Circle
Keeseville, NY 12944

Paul Steidler
New York Affordable Reliable Electricity Alliance
114 W 47th Street, 19th Floor
New York, NY 10036

Scott Stevens
Laborers' International Union of North America
Local 17
P.O. Box 4066
Middletown, NY 10941

Julia S. Stokes
Saratoga Plan
112 Spring Street, Room 202
Saratoga Springs, NY 12866

Stephen Stolieker
Laborers' International Union of North America
#19 Woods Place
Middletown, NY 10940

Geddy Sveikauskas
Ulster Publishing Co.
322 Wall Street
Kingston, NY 12401

Dean Tamburri
Laborers' International Union of North America
Local 17
451 A Little Britain Road
Newburgh, NY 12550

David Taube
The Post-Star
76 Lawrence Street
Glens Falls, NY 12801

Richard Thomas
New York Affordable Reliable Electricity Alliance
114 W 47th Street, 19th Floor
New York, NY 10036

John Tuller
New York Affordable Reliable Electricity Alliance
707 Westchester Avenue
White Plains, NY 10604

Clyde Tune
Laborers' International Union of North America
Local 190
198 Central Avenue, Apt 1
Albany, NY 12206

Luther Turmelle
New Haven Register
40 Sangent Drive
New Haven, CT 06511

Tony Valderez
Laborers' International Union of North America
Local 17
208 N Putt Corners Road
New Paltz, NY 12561

Esler A. Van Houten
Laborers' International Union of North America
Local 754
6 Woods Road
Greenwood Lake, NY 10925

Jaime O. Vargas
Laborers' International Union of North America
Local 754
57 Rockwood Circle, #18D
Middletown, NY 10940

Jaime Velez
Laborers' International Union of North America
Local 190
691 Western Avenue
Albany, NY 12203

Fred Veno
Laborers' International Union of North America
Local 754
25 Hasbrouck Road, Apt A
Garnerville, NY 10923

David Vila
Laborers' International Union of North America
2849 Webb Avenue
Bronx, NY 10468

Annette Vizzini
Gramatan Hills Homeowners Association
125 Gramatan Drive
Yonkers, NY 10701

Kenneth J. Vogel
HydroCoil
488 New Unionville Road
Wallkill, NY 12589

Kevin Wagner
Laborers' International Union of North America
Local 754
456 Kinderkamack Road
Oradell, NY 07649

Anthony Warren
Laborers' International Union of North America
Local 17
1222 Albany Post Road
Gardiner, NY 12525

Harrison Watkins
New York State Laborers' Organizing Fund
100 Dove Street
Albany, NY 12210

Jürgen Wekerle
Chair, Sterling Forest/Highlands Committee
Sierra Club-Ramapo/Catskill Group
P.O. Box 287
Walden, NY 12586

Bill Wellman
New York State Council of Trout Unlimited
7 Helen Street
Plattsburgh, NY 12904

Paul Welsh
Laborers' International Union of North America
Local 754
31 Stahl Way
Monroe, NY 10950

Loring L. Whiteman
Laborers' International Union of North America
Local 190
1903 Route 203, #16
Chatham, NY 12037

Phil Wilcox
International Brotherhood of Electrical Workers
Local 97
5226 Pendale Avenue
North Tonawanda, NY 14120

Stephen Williams
Daily Gazette
2345 Maxon Road Extension
Schenectady, NY 12308

Annie Wilson
New York Environmental Law and Justice Project
351 Broadway
3rd Floor, Suite 300
New York, NY 10013

Mike Winslow
Staff Scientist
Lake Champlain Committee
208 Flynn Avenue
Building 3, Studio 3F
Burlington, VT 05401

Jason Wisneski
Dann Marine Towing
P.O. Box 250
Chesapeake City, MD 21015

Joseph Wrighter
Laborers' International Union of North America
Local 754
50 Lordville Road
Hancock, NY 13783

Nicholas Zaza
International Brotherhood of Boilermakers
456 Third Street
Schenectady, NY 12306

Randy J. Zeltman
Laborers' International Union of North America
Local 754
12760 Allendale Circle
Ft. Myers, FL 33912

Barry Zielinski
Laborers' International Union of North America
Local 17
12 Sandford Avenue
Chester, NY 10918

Scott Zoltan
WMHT Educational Telecommunications
35 Ableman Avenue
Albany, NY 12203

Private Citizens

Torben Aabo
Ballston Spa, NY

Nora Bailin
Brooklyn, NY

Anita Babcock
Tomkins Cove, NY

Brian Barbara, Jr.
Pomona, NY

Stephen, Breda and Brian Beckerle
Stony Point, NY

Joseph Beecher
Au Sable Forks, NY

Jean A. Bellon
Stony Point, NY

Laura and John Bolak
Stony Point, NY

Matthew Booth
Morrisonville, NY

Keith Bottali
Queens, NY

Katherine Brezler
Yonkers, NY

Iherm Brosnan
Florida, NY

Joan Burns
Altamont, NY

Jesse Callahan
Newburgh, NY

Ca. Cameron
Slingerlands, NY

Ken Capolino
White Plains, NY

Glen Casey
Albany, NY

Wellington and Rebecca Casscles
Stony Point, NY

Brenda and Daniel Cirruzzo
Stony Point, NY

Nancy Clarke
West Sand Lake, NY

Jeff and Elisabeth Clock
Willsboro, NY

Brian Connasheton
Pittsford, VT

Russell Corigliano
Springfield, VA

Joseph Coskey
Tomkins Cove, NY

Laurrie Cozza
Stony Point, NY

Anna Crispino
Stony Point, NY

Robert Cuneo
Yonkers, NY

Brandon Curry
Newburgh, NY

Gerald A. Davison
Ulster Park, NY

Carl N. Decker
New City, NY

Peter D'Elia
Schuyler Falls, NY

Mike Devine
Newburgh, NY

Michael Diederich, Jr.
Stony Point, NY

Cory Diorio
Marlboro, NY

Lou Domanico
Altamont, NY

Roger and Anne Donevan
Hinesburg, VT

Michael Doyle
Hartford, CT

Ralph Drake
Albany, NY

Frank Eadie
New York, NY

Kathi Ellick
Cornwall, NY

Tory and Munford C. Epps
Albany, NY

Fred Fayette
Milton, VT

Ramon R. Figueroa
West Coxsackie, NY

Jim Fitzgerald
Ramsey, NJ

James C. Fox
Chazy, NY

Sam Fresina
Voorheesville, NY 12186

Raymond and Mary Ellen Furlong
Stony Point, NY

Thomas Gallagher
Milton, NY

Kari Gathen
Albany, NY

Jennifer Glass
Ossining, NY

Thomas C. Gotthardt
Garnerville, NY 10925

Nicolas Graver
Saratoga Springs, NY

Susan Gregg
Stony Point, NY

George A. Hagerty
Queensbury, NY

John B. Hamor
Schenectady, NY

Gus Hang
Spring House, PA

Captain Jack E. Hills, USAF
Plattsburgh, NY

Robert Hoffman
Albany, NY

Brenda Holzinger
Rockaway, NJ

Tom Howell
New City, NY

Mark Hutchins
Bedford, NH

Tom Jersey
Pearl River, NY

June Jobson
Stony Point, NY

Ray Johnson
Menands, NY

Harold Jones
Haverstraw, NY

Jack Joyce
Clifton Park, NY

Frank Kania
Pine Bush, NY

Baisley Katherina
Stony Point, NY

Bobbi Katz
Port Ewen, NY

Richard Keil
Schenectady, NY

Jeremy Kergel
Scotia, NY

Robert Knight
Congers, NY

Eugene Kraese
Stony Point, NY

Todd Kruger
Highland, NY

David S. Ladenhein
West Hurley, NY

W.G. Lawson
Clifton Park, NY

Paul LeClaire
Plattsburgh, NY

Devin LeClaire
Churubusco, NY

Susan Leifer
Pleasantville, NY

John L. Lenney
Rensselaer, NY

Donald Lessard
Keeseville, NY

Jennifer Lima
Stony Point, NY

Pete Looker
Scotia, NY

Hope Luhman
Mount Tremper, NY

Aaron Ma
Kingston, NY

Judith Maculan
Hinesburg, VT

David E. Manwell
Plattsburgh, NY

Gene Martin
New York, NY

John Martini
Orangeburg, NY

Robert Masiello
Garnersville, NY

Demosthenes Matsis
New York, NY

Michael McCabe
Kingston, NY

Bruce McDermott
New Haven, CT

Kevai McGrath
Plattsburgh, NY

Curtis D. Merritt
Albany, NY

Dori Michener
Port Henry, NY

Bryan Mills
Montpelier, VT

Huge Mimee
Montreal, QC

Robert Mitchell
Albany, NY

James Monaghan
Stony Point, NY

Burt Morton
Spring Valley, NY

Tony Moscatiello
Troy, NY

Terench Mosley
Highland, NY

Chris Moulton
Saranac, NY

Dan Murphy
Yonkers, NY

R. Jay Murphy
Clifton Park, NY

Mary Beth Mylott
Briarcliff Manor, NY

Don Nahumck
South Burlington, VT

Elsie Nissen
Stony Point, NY

Joseph Oavegn
Stony Point, NY

David Otterbein
Stony Point, NY

William Overstone
Tivoli, NY

Elaine and John Peluso
Stony Point, NY

John Penoyer
Hinesburg, VT

Helene Perrault
Saint-Hyacinthe, QC

John Peters
West Islip, NY

Ivette Alejandro Petr
Stony Point, NY

Katherine and Ronald Redmond
Tomkins Cove, NY

Diane Reichert
Stony Point, NY

Timothy Riley
Highland, NY

Tom Robertson
Campbell Hall, NY

Joyce and Thomas Robinson
Stony Point, NY

Marguerite Rogers
Stony Point, NY

Bert G. Rothing
Yonkers, NY

Chris Round
Glens Falls, NY

Bryan Sanderson
Charleston, MA

George and June Sanderson
Staatsburg, NY

Walter Schatz
Hartford, CT

Casey A. Schewarz
Kingston, NY

Karl F. Schoch
Schenectady, NY

Jose Sebastiao
Killington, VT

Jessica Semon
Albany, NY

Howard Shaffer
Fishs Eddy, NY

J. Shapiro
Yonkers, NY

Bradlee Sheldon
Milford, NY

Ann S. Sheridan
Stony Point, NY

Frank Silvano
West Coxsackie, NY

Robert Silvestri
Hamden, CT

Antonio Simeone, Sr.
Albany, NY

Peter R. Smith
New York, NY

Linda Smoot
Stony Point, NY

Donald Solomon
Stony Point, NY

Marc Solomon
New Windsor, NY

Rich Speidel
Warrensburg, NY

Sara Stamos
Monrovia, MD

Charles T. Stark
Stony Point, NY

Sandy Steubing
Albany, NY

Frank Stilo
Yonkers, NY

Sheldon Stowe
New Windsor, NY

Skip Stranahan
Lake Forge, NY

Jeannette Strassburg
Stony Point, NY

Carolyn Stuetzle
Stony Point, NY

Mary Sullivan
Stony Point, NY

Regina Sullivan
Stony Point, NY

Elizabeth Tannhauser
Stony Point, NY

Carol Tansey
Albany, NY

Lynn Teger
Haverstraw, NY

Nicolas Thomaselli
Beacon, NY

Richard S. Tiarantelli
Yonkers, NY

Sondra Tillou
Kingston, NY

Paul J. Tirc
Stony Point, NY

Scott Valentine
Downsville, NY

Celia Velez
Stony Point, NY

Ellen Vermilyea
Pennbroke, NH

John Viola
Watervliet, NY

Paula Marie Vogel
Milford, PA

Timothy P. Waldron
Stony Point, NY

William Wasilauski
Queensbury, NY

Felipa A. Watts
Stony Point, NY

Dennis Weakley
Albany, NY

Jay Williams
Ballston Lake, NY

Daylon Willis
Albany, NY

Lilly Ann Wilson
Stony Point, NY

Susan Wright
Stony Point, NY

Paul Zubar
Troy, NY

Libraries

Crandall Public Library
251 Glen Street
Glens Falls, NY 12801

Kingston Public Library
55 Franklin Street
Kingston, NY 12401

Plattsburgh Public Library
19 Oak Street
Plattsburgh, NY 12901

Rose Memorial Library
79 East Main Street
Stony Point, NY 10980

Schenectady County Public Library
99 Clinton Street
Schenectady, NY 12305

Queens Library – Steinway
21-45 31st Street
Long Island City, NY 11105

Yonkers Public Library – Riverfront Library
1 Larkin Plaza
Yonkers, NY 10701

APPENDIX F

Coastal Zone Consistency Documentation and Land Use Tables

APPENDIX F.1 – COASTAL ZONE CONSISTENCY DOCUMENTATION

Appendix F.1
Coastal Zone Consistency Documentation

Appendix F.1 consists of documents relating to the coastal zone consistency determination for the proposed CHPE Project.

Appendix F.1 contains the following documentation:

- **F.1-1.** Correspondence from New York State Department of State (NYSDOS) to Mr. Sean Murphy on behalf of Champlain Hudson Power Express, Inc. (CHPE), The Applicant, June 25, 2010
- **F.1-2.** Correspondence from NYSDOS to Mr. Keith Silliman (c/o TRC) on behalf of the Applicant, November 22, 2010
- **F.1-3.** Appendix B of the Clean Water Act Section 404 Application (Attachment to F.1-2)
- **F.1-4.** Correspondence from NYSDOS to Mr. Sean Murphy on behalf of the Applicant, January 5, 2011
- **F.1-5.** Correspondence from Mr. Sean Murphy on behalf of the Applicant to Mr. Jeffrey Zappieri (NYSDOS), January 18, 2011
- **F.1-6.** Correspondence from Mr. Sean Murphy on behalf of the Applicant to Mr. Jeffrey Zappieri (NYSDOS), February 4, 2011
- **F.1-7.** Correspondence from Mr. Sean Murphy on behalf of the Applicant to Mr. Jeffrey Zappieri (NYSDOS), February 18, 2011
- **F.1-8.** Correspondence from NYSDOS to Mr. Sean Murphy on behalf of the Applicant, March 8, 2011
- **F.1-9.** Correspondence from NYSDOS to Mr. Donald Jessome (c/o CHPE), June 8, 2011
- **F.1-10.** Correspondence from Transmission Developers, Inc. (TDI)/CHPE to Mr. Anthony J. Como (U.S. Department of Energy), July 7, 2011
- **F.1-11.** Correspondence from NYSDOS to Mr. Sean Murphy on behalf of the Applicant, May 29, 2012

THIS PAGE INTENTIONALLY LEFT BLANK

STATE OF NEW YORK
DEPARTMENT OF STATE
ONE COMMERCE PLAZA
99 WASHINGTON AVENUE
ALBANY, NY 12231-0001

DAVID A. PATERSON
GOVERNOR

LORRAINE A. CORTÉS-VÁZQUEZ
SECRETARY OF STATE

June 25, 2010

Mr. Sean Murphy
C/O HDR/DTA
970 Baxter Boulevard
Portland, ME 04103

Re: O-2010-0025
Champlain Hudson Power Express
Hudson River, Harlem River, East River,
Long Island Sound
General Correspondence

Dear Mr. Murphy:

Pursuant to our meeting of June 15, 2010 the Department of State (DOS) is providing a list of the following questions regarding the proposed installation of a High Voltage Direct Current electric transmission line from Canada to New York City and Connecticut. This does not constitute a formal request for information, does not indicate that a consistency certification has been submitted, and does not indicate that formal federal consistency review pursuant to 15 CFR part 930 has begun. This information is provided solely as guidance at the request of HDR/DTA and TRC to aid in their submittal of a complete application.

The alternative analysis provided with TDI's article VII application and provided to the DOS appears to fail to provide sufficient detail to allow for adequate review and comparison of potentially feasible alternatives to the transmission line as currently proposed. Generally, DOS encourages activities or development within or adjacent to water only when it is infeasible to conduct that activity or development in upland areas. Before specific future considerations can be given to sitting the proposed transmission line within the Hudson River, an expanded alternative analysis will be needed that specifically outlines and analyzes viable upland alternatives and demonstrates why such alternatives can be deemed infeasible to meet the stated project goals. Should TDI be able to demonstrate this, DOS foresees the following questions arising regarding the currently proposed underwater route. These questions are based on information received to date and meetings with HDR, TRC and TDI staff.

1) What capabilities exist to place the cable 15 plus feet below the river bottom?
2) What percentage of the route, as currently proposed, will be within the existing federal navigation channel?
3) Would the capacity exist for future transmission cables to be placed in the waterways or would the project's four cables occupy all usable space for the lifetime of the project? What capabilities exist, following installation, to bury the line deeper?
4) Will the DOE have any regulatory authority beyond the transmission cable?
5) What is plan for avoiding impacts to Haverstraw Bay? If proposed to occupy the federal navigation channel, please characterize discussions with other applicable regulatory agencies

regarding this route. Additionally, please characterize alternative upland routes around Haverstraw Bay.

6) Will the transmission cable follow a previously dredged navigation channel or otherwise disturbed area in Long Island Sound/East River/Harlem River?
7) Are the 2000 mw of power the maximum amount of electricity that the cable can transmit?
8) What research is being conducted regarding the anticipated turbidity associated with cable installation?
9) How much would the turbidity levels increase in relation to the depth of cable placement?
10) Does your alternative analysis examine the possibility of siting the cable along existing right-of-ways, such as the NYS Thruway, railroad beds, or existing transmission corridors?
11) Why does the project propose to split the transmitted electricity to two different markets?
12) What is the reasonably foreseeable maximum depth of the Hudson River Federal Navigation Channel if it were to be deepened during the design life of this project?
13) From Selkirk south, how much of the cable will be buried in the Hudson River and how much will be laid and protected?
14) What are the soil chemistries along the proposed route?
15) What are the potential effects of heat or EMF at the sediment/water interface? How does this change when the line transitions to an HVAC line in Manhattan?
16) What are the anticipated residual effects following decommissioning?
17) What is the anticipated effect of long term exposure to EMF, such as an individual transiting up or down the Hudson, parallel to the proposed line, as compared to an individual transiting a similar cable crossing of the river?

These questions have arisen based on a cursory review of material provided to date. DOS understands that the material submitted in support of the pending NYS Article VII proceeding was deficient in several regards and that additional information will be submitted in the coming months to supplement the Article VII application and to develop an environmental impact statement pursuant to NEPA.

If further information or clarification is required, please contact Matthew Maraglio at 518-474-5290 (email: matthew.maraglio@dos.state.ny.us) and reference our file number O-2010-0025.

Sincerely

Jeffrey Zappieri
Supervisor, Consistency Review Unit
Office of Coastal, Local Government and Community Sustainability

CC

US DOE: Dr. Jerry Pell
US ACOE/NY: Naomi Handell
NYS DEC Central Office: William Little
NYS DPS: Andrew Davis

STATE OF NEW YORK
DEPARTMENT OF STATE
ONE COMMERCE PLAZA
99 WASHINGTON AVENUE
ALBANY, NY 12231-0001

DAVID A. PATERSON
GOVERNOR

RUTH NOÉMI-COLÓN
ACTING SECRETARY OF STATE

November 22, 2010

Mr. Keith Silliman
C/O TRC
10 Maxwell Drive
Clifton Park, NY 12065

Re: S-2010-0025
DOE Docket #: PP-362
NYS PSC Case: 10-T-0139
Champlain Hudson Power Express
Request for additional information and Preliminary comments on updated alternatives analysis

Dear Mr. Silliman:

The Department of State (DOS) has reviewed the Updated Alternative Analysis prepared for Champlain Hudson Power Express, Inc. (CHPE) dated November 05, 2010 and submitted during the above referenced Public Service Commission (PSC) Article 7 proceeding. DOS is currently acting in an advisory capacity to the PSC and will also be reviewing the CHPE project for its consistency with the New York State Coastal Management Program (NYSCMP) in separate proceedings pursuant to 19 CFR part 930 following receipt of a consistency certification from CHPE.

Beginning with our initial meeting with Transmission Developers Inc (TDI) and CHPE, and in each subsequent meeting, DOS has provided extensive pre-application comments regarding potentially applicable coastal policies, as well as identifying additional information that DOS anticipates will likely be necessary to complete its review of CHPE's forthcoming consistency certification. During our past discussions, DOS has routinely and consistently identified four potential areas of concern:

- Need for a complete and in-depth analysis of potential route alternatives that avoid or minimize impacts on coastal resources. Some of this information has been provided as part of the Updated Alternatives Analysis, but additional information and analysis (as identified in previous meetings and detailed in this letter) will be necessary;
- Operational and installation related affects of the proposed transmission line on *Significant Coastal Fish and Wildlife Habitats* (SCFWH). The need to avoid certain of these sensitive areas has been requested since our initial meeting and may be partially addressed by utilizing a western railroad corridor above Catskill; DOS is still awaiting confirmation of alternative route identification that will avoid impacts to Haverstraw Bay SCFWH.
- Operation and installation related affects of the proposed transmission line on commercial and recreational navigation. This has been sought since our initial meetings. Information on potential utilization and impacts of using channel side slopes is still needed.
- Assessment of impacts to commercial and recreational fisheries due to the operation of the proposed transmission line. DOS is still expecting detailed analysis of impacts on these resources, particularly in areas outside of designated SCFWH areas. As discussed previously, this analysis needs to identify measures for reducing impacts, where possible.

Once submitted, review of the applicant's consistency certification and accompanying necessary data and information may result in identification of additional policy concerns and information needs.

Alternative Analysis:

In response to requests by DOS and parties participating in the PSC proceeding to provide a full and complete analysis of potentially feasible alternatives to the proposed transmission line, TRC provided the above referenced document for review and comment by staff. TRC has requested comments from DOS and others in response to this document and as such DOS provides the following comments on those route alternatives that are sited south of Albany, NY.

<u>Mid Hudson Rail Alternative (North of Kingston):</u> The analysis did not identify any constraints to the western railroad route identified by the Department of Public Service (DPS) for the portion between Albany and Kingston. As such, the analysis should be expanded to include siting the proposed transmission line within this rail corridor to a point in the vicinity of Kingston. As discussed previously, utilizing this rail corridor alternative avoids impacts to several SCFWH sites.

<u>Mid Hudson Rail Alternative (South of Kingston)</u>: The analysis identified multiple constraints to the western railroad route identified by DPS for the portion of the route south of Kingston. Many of the identified constraints appear to be linked to a strict focus on the rail corridor and lacked analysis of potential alternate non-rail route segments that could avoid these constraints.

In general, the identified constraints occur primarily in the vicinity of bridges, tunnels, in-water railroad fills, steep rock cuts, utility lines within the rail corridor, and proximity to existing structures.

a. Where bridges are identified as constraints, the analysis should be expanded to include an evaluation of the potential to attach the proposed transmission line to the bridge structure and provide for protection of the line through a conduit or other mechanism as well as an evaluation of alternative segments.

b. Where tunnels are identified as constraints, the analysis should be expanded to include siting the proposed line in the tunnel within a conduit or recessed into the sides or ceiling of the tunnel as well as alternative route segments that would avoid the tunnel.

c. Where in-water rock fills and steep rock cuts constrain the route, the analysis should identify alternative upland or in-water route segments that could allow the proposed line to avoid these constraints. In addition, the individual and total length of the identified fill and steep rock cut constraints should be presented to provide reviewers with perspective regarding their magnitude.

d. Where co-located utility lines were identified as constraints, it is unclear why existing above ground utility lines would be considered a constraint for a buried electric transmission line. The analysis should include a specific discussion regarding cable burial methods proximate to utility corridors within railroad corridors. In areas where existing structures constrain the route, the analysis should be expanded to include alternative route segments along existing road networks, parking facilities or short new right of way segments.

<u>Existing Utility Corridors</u>: An existing utility corridor was identified and evaluated. Many of the identified constraints were not substantiated with data, field visits or interviews and as such, it does not appear that there is enough information to eliminate this route as a viable alternative, especially since there is a lack of identification of the property interest within these utility corridors as well as a lack of communication between applicable property interests and the project sponsors. The several constraints that were identified and a response to these constraints follow:

a. Property acquisition may be required: The analysis does not identify where or why property acquisition outside of the existing utility corridor may be required or why property acquisition would make the alternative infeasible.

b. Access road reinforcement may be required: It is unclear why access road reinforcement is necessary, or if necessary, why such an action constitutes a development constraint. The access roads in question were constructed to support the installation and maintenance of large transmission towers, their associated foundations and miles of electrical transmission lines. As such, it is unclear how these same roads would not be able to support similar equipment to that required to establish the existing transmission line. Even if such reinforcement was deemed necessary, given modern application of best management practices for sediment and erosion control as well as stormwater infiltration and retention techniques, it is unclear why access road reinforcement should be viewed as development constraint rather than a requirement for construction.

c. Existing Business Impact: The analysis presented one business that would be impacted along the utility corridor route that would be impacted for approximately one month. The analysis should be expanded to indicate how this situation could be addressed.

d. Catskill Aqueduct: The analysis concludes that the New York City water supply aqueduct is “in the immediate vicinity” of the utility corridor route. It is unclear whether the installation of the proposed underground transmission cable would affect the aqueduct or if alternative route segments could alleviate any sitting difficulties associated with the aqueduct.

e. Waterbody Crossing: The analysis identifies several waterbody crossings that would be required along the utility corridor route, the longest of which does not exceed 1,700 feet. This 1,700 foot long crossing is identified as a constraint because a horizontal directional drill (HDD) in this location may be infeasible. However, given that a majority of the currently proposed underwater route would be installed via methods other than HDD and that HDD lengths are known to exceed 2,000 feet, it is unclear why such a waterbody crossing would be identified as a development constraint prior to site specific analysis.

f. Hudson River Crossing: A crossing of the Hudson River in the vicinity of Athens, NY would need to occur for the proposed transmission line to be sited within the identified utility corridor. The analysis states that the river could not be crossed at this point via HDD. Given that the currently proposed underwater route transitions from underwater to upland configurations via HDD and that a substantial length of the proposed route is to be installed via jet plow, it is unclear why an inability to utilize HDD to cross the entire river would be considered to be a development constraint.

g. Road Crossings: The analysis identifies road crossings perpendicular to the utility corridor as development constraints, However, it is unclear why road crossings along the currently proposed upland portion of the transmission line north of Albany, NY, would not also be considered as development constraints. The analysis should be expanded to include the justification for identifying road crossings along the utility corridor as development constraints.

<u>Haverstraw Bay alternative</u>: The analysis should be updated when the applicant completes their analysis. It is noted that the potential upland route to the west of Haverstraw Bay appears to be a viable route. Of particular importance, using this alternate route avoids the ecologically sensitive Haverstraw Bay SCFWH. The sensitive and significant nature of this habitat has been discussed by DOS on numerous occasions.

The analyzed alternatives should be reassessed prior to submitting your consistency application. Overall, the Updated Alternatives Analysis appears to take a very narrow view of identified alternatives to the currently proposed route and fails to adequately identify potential solutions to the constraints. There appear to be many broad statements relating to project feasibility that are not substantiated by research and fact and several of the identified constraints along the alternative routes south of Albany appear to be minor impediments along the currently proposed route north of Albany. Greater attention is to be paid to providing a comprehensive look at alternative routes and justifying identified route constraints as well as including alternative route segments should a justification to any constraints be identified.

Information Needs:

As previously discussed during many past meetings, both prior to and during the aforementioned Article 7 proceedings, the following information is necessary in order for DOS to provide substantive comments regarding potential coastal effects of the proposed project, assuming that the above referenced alternative analysis can be expanded to justify the currently proposed route. This information will also be required for DOS to complete its review of CHPE's forthcoming consistency certification

Commercial and Recreational Fisheries and SCFWHs:

Electro-magnetic fields - The proposed transmission cable is purported to utilize various technologies that would prevent the establishment of electric fields proximate to the cable. However, such technologies would not prevent the creation of magnetic fields surrounding the cables. The physical extents and relative intensities of these fields are unclear. As such, a cross-sectional representation of applicable electro-magnetic fields surrounding the proposed cable should be provided that characterizes all areas where artificial electro-magnetic fields are expected to be outside of natural ranges. Should alternate installation techniques, such as installation of the entire bi-pole within one trench, result in dissimilar electro-magnetic fields to the currently proposed installation technique, such information should be presented. Additionally, a consolidated summary, with references, of your mentioned extensive literature search relating to effects of electro-magnetic fields on commercial and recreational fisheries, should be provided. The in-water area exposed to the electro-magnetic fields proximate to the proposed cable is likely to be directly correlated to the depth that it is buried. As such, the expected achievable installation depths throughout all portions of the underwater route should be provided. This should include all areas where target depth is not attainable, thus necessitating non-native fill. As discussed extensively during pre-application conversations, DOS has concerns that the proposed line may, if sited within the Hudson River or other confined riverine systems, adversely affect commercial and recreational fisheries as well as habitat areas essential for their growth and development, especially those incorporated into the NYSCMP as SCFWHs.

SCFWHs are identified areas within New York State that are afforded special protections within the NYSCMP due to their uniqueness, species composition, human and wildlife levels of use, and degree of irreplaceability. DOS has routinely identified and discussed SCFWHs along the proposed transmission line's route and has repeatedly advised that SCFWHs should be avoided; if avoidance proved impracticable, the proposed line should be sited, subject to justification by applicable data, within previously disturbed areas such as dredged navigation channels or other dredged areas.

Navigation:

The proposed transmission line's potential effects on commercial and recreation navigation have routinely been identified as a concern of paramount importance to the NYSCMP. It will be necessary for the applicant to show their ability to attain appropriate burial depths within the side slopes of the federally maintained navigation channel and areas of the river typified by large "sand waves." Repeated inquiry to CHPE regarding attainable depths in these areas has generally been deferred to an as yet unidentified Environmental Management and Control Plan (EMCP) contractor. Such information would be necessary to adequately assess the proposed project's potential effects on navigation. The project sponsors should recognize that, given the worldwide trend of increased vessel draft, possible future federal navigation channel expansion should not be precluded by the installation and operation of the proposed transmission line.

Please address the alternative analysis comments iterated above and provide responses and information to the identified data gaps as soon as possible. Given your desired timeframes, your prompt response is necessary for DOS's continual consultation and forthcoming timely review to result in an outcome amenable to TDI, CHPE Inc., and DOS.

If further information or clarification is required please contact Matthew Maraglio at 518-474-5290 (email: matthew.maraglio@dos.state.ny.us) and reference our file number S-2010-0025.

Sincerely,

Jeffrey Zappieri
Supervisor, Consistency Review
Office of Coastal, Local Government
and Community Sustainability

JZ/mm

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B

- **NEW YORK STATE DEPARTMENT OF STATE COASTAL MANAGEMENT PROGRAM - FEDERAL CONSISTENCY ASSESSMENT FORM**
- **NEW YORK CITY WATERFRONT REVITALIZATION PROGRAM - CONSISTENCY ASSESSMENT FORM**
- **COASTAL CONSISTENCY ASSESSMENT SUPPLEMENT**

NEW YORK STATE DEPARTMENT OF STATE
COASTAL MANAGEMENT PROGRAM

Federal Consistency Assessment Form

An applicant, seeking a permit, license, waiver, certification or similar type of approval from a federal agency which is subject to the New York State Coastal Management Program (CMP), shall complete this assessment form for any proposed activity that will occur within and/or directly affect the State's Coastal Area. This form is intended to assist an applicant in certifying that the proposed activity is consistent with New York State's CMP as required by U.S. Department of Commerce regulations (15 CFR 930.57). It should be completed at the time when the federal application is prepared. The Department of State will use the completed form and accompanying information in its review of the applicant's certification of consistency.

A. APPLICANT (please print)

1. Name: Champlain Hudson Power Express, Inc. & CHPE Properties

2. Address: Pieter Schuyler Building, 600 Broadway, Albany, NY 12207-2283

3. Telephone: Area Code (518) 465-0710

B. PROPOSED ACTIVITY

1. Brief description of activity:

The Project consists of a 1,000 megawatt (MW) underwater/underground HVDC electric transmission system extending from the international border between Canada and the United States to New York City. The Applicants propose to develop the CHPE Project to deliver clean and renewable sources of power to New York City.

2. Purpose of activity:

The stated purpose of the CHPE Project is to supply clean and renewable sources of power to the NY ISO load center in New York City without contributing to transmission congestion on the electric grid.

3. Location of activity:

County	City, Town, or Village	Street or Site Description
See Attachments	See Attachments	See Attachments

4. Type of federal permit/license required: USACE Section 404/10; USDOE Presidential Permit

5. Federal application number, if known: USACE File 2009-01089-EHA; PP-362

6. If a state permit/license was issued or is required for the proposed activity, identify the state agency and provide the application or permit number, if known:

New York State Public Service Commission, Case 10-T-0139

C. COASTAL ASSESSMENT Check either "YES" or "NO" for each of these questions. The numbers following each question refer to the policies described in the CMP document (see footnote on page 2) which may be affected by the proposed activity.

1. Will the proposed activity result in any of the following:	YES	NO
a. Large physical change to a site within the coastal area which will require the preparation of an environmental impact statement? (11, 22, 25, 32, 37, 38, 41, 43)	☒	☐
b. Physical alteration of more than two acres of land along the shoreline, land under water or coastal waters? (2, 11, 12, 20, 28, 35, 44)	☒	☐
c. Revitalization/redevelopment of a deteriorated or underutilized waterfront site? (1)	☐	☒
d. Reduction of existing or potential public access to or along coastal waters? (19, 20)	☐	☒
e. Adverse effect upon the commercial or recreational use of coastal fish resources? (9,10) . . .	☐	☒
f. Siting of a facility essential to the exploration, development and production of energy resources in coastal waters or on the Outer Continental Shelf? (29)	☐	☒
g. Siting of a facility essential to the generation or transmission of energy? (27)	☒	☐
h. Mining, excavation, or dredging activities, or the placement of dredged or fill material in coastal waters? (15, 35)	☒	☐
i. Discharge of toxics, hazardous substances or other pollutants into coastal waters? (8, 15, 35)	☐	☒
j. Draining of stormwater runoff or sewer overflows into coastal waters? (33)	☐	☒
k. Transport, storage, treatment, or disposal of solid wastes or hazardous materials? (36, 39) .	☒	☐
l. Adverse effect upon land or water uses within the State's small harbors? (4)	☐	☒

2. Will the proposed activity affect or be located in, on, or adjacent to any of the following:	YES	NO
a. State designated freshwater or tidal wetland? (44)	☒	☐
b. Federally designated flood and/or state designated erosion hazard area? (11, 12, 17,)	☒	☐
c. State designated significant fish and/or wildlife habitat? (7)	☒	☐
d. State designated significant scenic resource or area? (24)	☒	☐
e. State designated important agricultural lands? (26)	☐	☒
f. Beach, dune or barrier island? (12)	☐	☒
g. Major ports of Albany, Buffalo, Ogdensburg, Oswego or New York? (3)	☐	☒
h. State, county, or local park? (19, 20)	☒	☐
i. Historic resource listed on the National or State Register of Historic Places? (23)	☒	☐

3. Will the proposed activity require any of the following:	YES	NO
a. Waterfront site? (2, 21, 22)	☐	☒
b. Provision of new public services or infrastructure in undeveloped or sparsely populated sections of the coastal area? (5)	☐	☒
c. Construction or reconstruction of a flood or erosion control structure? (13, 14, 16)	☐	☒
d. State water quality permit or certification? (30, 38, 40)	☒	☐
e. State air quality permit or certification? (41, 43)	☐	☒

	YES	NO
4. Will the proposed activity occur within and/or affect an area covered by a State approved local waterfront revitalization program? (see policies in local program document)	☒	☐

D. ADDITIONAL STEPS

1. If all of the questions in Section C are answered "NO", then the applicant or agency shall complete Section E and submit the documentation required by Section F.

2. If any of the questions in Section C are answered "YES", then the applicant or agent is advised to consult the CMP, or where appropriate, the local waterfront revitalization program document*. The proposed activity must be analyzed in more detail with respect to the applicable state or local coastal policies. On a separate page(s), the applicant or agent shall: (a) identify, by their policy numbers, which coastal policies are affected by the activity, (b) briefly assess the effects of the activity upon the policy; and, (c) state how the activity is consistent with each policy. Following the completion of this written assessment, the applicant or agency shall complete Section E and submit the documentation required by Section F.

E. CERTIFICATION

The applicant or agent must certify that the proposed activity is consistent with the State's CMP or the approved local waterfront revitalization program, as appropriate. If this certification cannot be made, the proposed activity shall not be undertaken. If this certification can be made, complete this Section.

"The proposed activity complies with New York State's approved Coastal Management Program, or with the applicable approved local waterfront revitalization program, and will be conducted in a manner consistent with such program."

Applicant/Agent's Name: Champlain Hudson Power Express, Inc. & CHPE Properties

Address: Pieter Schuyler Building, 600 Broadway, Albany, NY 12207-2283

Telephone: Area Code (518) 465-0710

Applicant/Agent's Signature: [signature] Date: December 6, 2010

F. SUBMISSION REQUIREMENTS

1. The applicant or agent shall submit the following documents to the **New York State Department of State, Office of Coastal, Local Government and Community Sustainability, Attn: Consistency Review Unit, 1 Commerce Plaza, 99 Washington Avenue - Suite 1010, Albany, New York 12231.**

a. Copy of original signed form.
b. Copy of the completed federal agency application.
c. Other available information which would support the certification of consistency.

2. The applicant or agent shall also submit a copy of this completed form along with his/her application to the federal agency.

3. If there are any questions regarding the submission of this form, contact the Department of State at (518) 474-6000.

*These state and local documents are available for inspection at the offices of many federal agencies, Department of environmental Conservation and Department of State regional offices, and the appropriate regional and county planning agencies. Local program documents are also available for inspection at the offices of the appropriate local government.

For Internal Use Only: WRP no.__________________
Date Received: __________________ DOS no.__________________

NEW YORK CITY WATERFRONT REVITALIZATION PROGRAM
Consistency Assessment Form

Proposed actions that are subject to CEQR, ULURP or other local, state or federal discretionary review procedures, and that are within New York City's designated coastal zone, must be reviewed and assessed for their consistency with the *New York City Waterfront Revitalization Program (WRP)*. The WRP was adopted as a 197-a Plan by the Council of the City of New York on October 13, 1999, and subsequently approved by the New York State Department of State with the concurrence of the United States Department of Commerce pursuant to applicable state and federal law, including the Waterfront Revitalization of Coastal Areas and Inland Waterways Act. As a result of these approvals, state and federal discretionary actions within the city's coastal zone must be consistent to the maximum extent practicable with the WRP policies and the city must be given the opportunity to comment on all state and federal projects within its coastal zone.

This form is intended to assist an applicant in certifying that the proposed activity is consistent with the WRP. It should be completed when the local, state, or federal application is prepared. The completed form and accompanying information will be used by the New York State Department of State, other state agencies or the New York City Department of City Planning in their review of the applicant's certification of consistency.

A. APPLICANT

1. Name: Champlain Hudson Power Express Inc. and CHPE Properties, Inc.

2. Address: Pieter Schuyler Building, 600 Broadway, Albany, NY 12207-2283

3. Telephone: 518-465-0710 Fax:__________ E-mail: bill.helmer@transmissiondevelopers.com

4. Project site owner:__________________

B. PROPOSED ACTIVITY

1. Brief description of activity:

The CHPE Project consists of a 1,000 MW HVDC transmission system extending from the International border between Canada and the U.S. and New York City, NY. The HVDC transmission system consists of two approximately 6-inch diameter HVDC submarine cables buried beneath the bed of Lake Champlain and the Hudson River. To bypass the Champlain Canal and a portion of the upper Hudson River, two 6-inch diameter HVDC land cables will be buried underground within a railroad right-of-way from Whitehall, NY to Coeymans, NY. The HVDC cables will terminate at an HVDC converter station located in Yonkers, NY. From Yonkers, NY, two bundles of three AC cables will continue south through the Hudson River, Harlem River, and East River and terminate at the planned Poletti Substation in Astoria, Queens NY.

2. Purpose of activity:

The stated purpose of the CHPE Project is to supply clean and renewable sources of power to the NY ISO load center in New York City without contributing to transmission congestion on the electric grid.

3. Location of activity: (street address/borough or site description):

The submarine and land cables will be located in the following counties: Clinton, Essex, Washington, Saratoga, Schenectady, Albany, Rensselaer, Greene, Columbia, Ulster, Duchess, Orange, Putnam, Rockland, Westchester, Bronx, New York, and Queens.
The converter station will be located at multiple properties at the intersection of Wells Avenue and Atherton Street in Yonkers, NY.
The interconnection point will be located to the north of the intersection of 20th Avenue and 31st Street in Queens, NY.

Proposed Activity Cont'd

4. If a federal or state permit or license was issued or is required for the proposed activity, identify the permit type(s), the authorizing agency and provide the application or permit number(s), if known:

   U.S. Department of Energy - Presidential Permit (PP-362);
   U.S. Army Corps of Engineers - Section 10/404 Permit (2009-01089-EHA);
   New York PSC - Article VII Certificate of Environmental Compatibility and Public Need (Case 10-T-0139)

5. Is federal or state funding being used to finance the project? If so, please identify the funding source(s).

   The Applicants have applied to the U.S. Department of Energy for a Federal loan guarantee in response to a DOE competitive solicitation "Federal Loan Guarantees for Electric Power Transmission Infrastructure Investment Projects," issued under Section 1705, Title XVII, of the Energy Policy Act of 2005.

6. Will the proposed project require the preparation of an environmental impact statement?
   Yes ✓ No ____ If yes, identify Lead Agency:

   U.S. Department of Energy

7. Identify **city** discretionary actions, such as a zoning amendment or adoption of an urban renewal plan, required for the proposed project.

   The Applicants are unaware of any required discretionary actions at this point.

C. COASTAL ASSESSMENT

Location Questions:	**Yes**	**No**
1. Is the project site on the waterfront or at the water's edge?	✓	
2. Does the proposed project require a waterfront site?		✓
3. Would the action result in a physical alteration to a waterfront site, including land along the shoreline, land underwater, or coastal waters?		✓

Policy Questions	**Yes**	**No**

The following questions represent, in a broad sense, the policies of the WRP. Numbers in parentheses after each question indicate the policy or policies addressed by the question. The new Waterfront Revitalization Program offers detailed explanations of the policies, including criteria for consistency determinations.

Check either "Yes" or "No" for each of the following questions. For all "yes" responses, provide an attachment assessing the effects of the proposed activity on the relevant policies or standards. Explain how the action would be consistent with the goals of those policies and standards.

	Yes	No
4. Will the proposed project result in revitalization or redevelopment of a deteriorated or under-used waterfront site? (1)		✓
5. Is the project site appropriate for residential or commercial redevelopment? (1.1)		✓
6. Will the action result in a change in scale or character of a neighborhood? (1.2)		✓

Policy Questions cont'd	Yes	No
7. Will the proposed activity require provision of new public services or infrastructure in undeveloped or sparsely populated sections of the coastal area? (1.3)		✓
8. Is the action located in one of the designated Significant Maritime and Industrial Areas (SMIA): South Bronx, Newtown Creek, Brooklyn Navy Yard, Red Hook, Sunset Park, or Staten Island? (2)		✓
9. Are there any waterfront structures, such as piers, docks, bulkheads or wharves, located on the project sites? (2)		✓
10. Would the action involve the siting or construction of a facility essential to the generation or transmission of energy, or a natural gas facility, or would it develop new energy resources? (2.1)	✓	
11. Does the action involve the siting of a working waterfront use outside of a SMIA? (2.2)		✓
12. Does the proposed project involve infrastructure improvement, such as construction or repair of piers, docks, or bulkheads? (2.3, 3.2)		✓
13. Would the action involve mining, dredging, or dredge disposal, or placement of dredged or fill materials in coastal waters? (2.3, 3.1, 4, 5.3, 6.3)	✓	
14. Would the action be located in a commercial or recreational boating center, such as City Island, Sheepshead Bay or Great Kills or an area devoted to water-dependent transportation? (3)		✓
15. Would the proposed project have an adverse effect upon the land or water uses within a commercial or recreation boating center or water-dependent transportation center? (3.1)		✓
16. Would the proposed project create any conflicts between commercial and recreational boating? (3.2)		✓
17. Does the proposed project involve any boating activity that would have an impact on the aquatic environment or surrounding land and water uses? (3.3)	✓	
18. Is the action located in one of the designated Special Natural Waterfront Areas (SNWA): Long Island Sound- East River, Jamaica Bay, or Northwest Staten Island? (4 and 9.2)		✓
19. Is the project site in or adjacent to a Significant Coastal Fish and Wildlife Habitat? (4.1)	✓	
20. Is the site located within or adjacent to a Recognized Ecological Complex: South Shore of Staten Island or Riverdale Natural Area District? (4.1and 9.2)		✓
21. Would the action involve any activity in or near a tidal or freshwater wetland? (4.2)	✓	
22. Does the project site contain a rare ecological community or would the proposed project affect a vulnerable plant, fish, or wildlife species? (4.3)	✓	
23. Would the action have any effects on commercial or recreational use of fish resources? (4.4)		✓
24. Would the proposed project in any way affect the water quality classification of nearby waters or be unable to be consistent with that classification? (5)		✓
25. Would the action result in any direct or indirect discharges, including toxins, hazardous substances, or other pollutants, effluent, or waste, into any waterbody? (5.1)		✓
26. Would the action result in the draining of stormwater runoff or sewer overflows into coastal waters? (5.1)		✓
27. Will any activity associated with the project generate nonpoint source pollution? (5.2)		✓
28. Would the action cause violations of the National or State air quality standards? (5.2)		✓

Policy Questions cont'd	Yes	No
29. Would the action result in significant amounts of acid rain precursors (nitrates and sulfates)? (5.2C)		✓
30. Will the project involve the excavation or placing of fill in or near navigable waters, marshes, estuaries, tidal marshes or other wetlands? (5.3)	✓	
31. Would the proposed action have any effects on surface or ground water supplies? (5.4)		✓
32. Would the action result in any activities within a federally designated flood hazard area or state-designated erosion hazards area? (6)	✓	
33. Would the action result in any construction activities that would lead to erosion? (6)		✓
34. Would the action involve construction or reconstruction of a flood or erosion control structure? (6.1)		✓
35. Would the action involve any new or increased activity on or near any beach, dune, barrier island, or bluff? (6.1)		✓
36. Does the proposed project involve use of public funds for flood prevention or erosion control? (6.2)		✓
37. Would the proposed project affect a non-renewable source of sand ? (6.3)		✓
38. Would the action result in shipping, handling, or storing of solid wastes, hazardous materials, or other pollutants? (7)	✓	
39. Would the action affect any sites that have been used as landfills? (7.1)		✓
40. Would the action result in development of a site that may contain contamination or that has a history of underground fuel tanks, oil spills, or other form or petroleum product use or storage? (7.2)	✓	
41. Will the proposed activity result in any transport, storage, treatment, or disposal of solid wastes or hazardous materials, or the siting of a solid or hazardous waste facility? (7.3)	✓	
42. Would the action result in a reduction of existing or required access to or along coastal waters, public access areas, or public parks or open spaces? (8)		✓
43. Will the proposed project affect or be located in, on, or adjacent to any federal, state, or city park or other land in public ownership protected for open space preservation? (8)	✓	
44. Would the action result in the provision of open space without provision for its maintenance? (8.1)		✓
45. Would the action result in any development along the shoreline but NOT include new water-enhanced or water-dependent recreational space? (8.2)		✓
46. Will the proposed project impede visual access to coastal lands, waters and open space? (8.3)		✓
47. Does the proposed project involve publicly owned or acquired land that could accommodate waterfront open space or recreation? (8.4)		✓
48. Does the project site involve lands or waters held in public trust by the state or city? (8.5)	✓	
49. Would the action affect natural or built resources that contribute to the scenic quality of a coastal area? (9)		✓
50. Does the site currently include elements that degrade the area's scenic quality or block views to the water? (9.1)		✓

Policy Questions cont’d	Yes	No
51. Would the proposed action have a significant adverse impact on historic, archeological, or cultural resources? (10)		✓
52. Will the proposed activity affect or be located in, on, or adjacent to an historic resource listed on the National or State Register of Historic Places, or designated as a landmark by the City of New York? (10)	✓	

D. CERTIFICATION

The applicant or agent must certify that the proposed activity is consistent with New York City’s Waterfront Revitalization Program, pursuant to the New York State Coastal Management Program. If this certification cannot be made, the proposed activity shall not be undertaken. If the certification can be made, complete this section.

“The proposed activity complies with New York State’s Coastal Management Program as expressed in New York City’s approved Local Waterfront Revitalization Program, pursuant to New York State’s Coastal Management Program, and will be conducted in a manner consistent with such program.”

Applicant/Agent Name: Champlain Hudson Power Express Inc. & CHPE Properties, Inc.

Address: Pieter Schuyler Building, 600 Broadway, Albany, New York, 12207

Telephone 518-465-0710

Applicant/Agent Signature: ____________ Date: December 6, 2010

Champlain Hudson Power Express Project

Coastal Zone Consistency Assessment Supplemental Information

CHAMPLAIN HUDSON POWER EXPRESS PROJECT
COASTAL ZONE CONSISTENCY ASSESSMENT
SUPPLEMENTAL INFORMATION

TABLE OF CONTENTS

Section	Title	Page No.
1.0	COASTAL ZONE CONSISTENCY ASSESSMENT	1
2.0	NEW YORK STATE DEPARTMENT OF STATE COASTAL MANAGEMENT PROGRAM STATE COASTAL POLICIES	1
3.0	NEW YORK CITY LOCAL WATERFRONT REVITALIZATION PROGRAM COASTAL POLICIES	9
4.0	LOCAL WATERFRONT REVITALIZATION PLAN (LWRP) ASSESSMENT	12
4.1	Town of Essex	13
4.2	Village of Whitehall	16
4.3	Town of Schodack and Village of Castleton-on-the-Hudson	16
4.4	Village of Athens	17
4.5	Village of Tivoli	17
4.6	Village of Saugerties	18
4.7	Town of Red Hook	18
4.8	City of Kingston	19
4.9	Town of Rhinebeck	20
4.10	Town of Esopus	21
4.11	Town of Poughkeepsie	22
4.12	Town of Lloyd	22
4.13	City of Beacon	23
4.14	City of Newburgh	25
4.15	City of Peekskill	26
4.16	Town of Stony Point	26
4.17	Village of Haverstraw	27
4.18	Village of Croton on the Hudson	28
4.19	Village of Ossining	30
4.20	Village of Nyack	30
4.21	Village of Sleepy Hollow	31
4.22	Village of Piermont	33
4.23	Village of Dobbs Ferry	34

1.0 COASTAL ZONE CONSISTENCY ASSESSMENT

The Federal Coastal Zone Management Act and the New York State Waterfront Revitalization of Coastal Areas and Inland Waterways Act established direction for the appropriate use and protection of the nation's and New York State's coastal areas and waterways. As part of the New York State Coastal Management Program, 44 state coastal policies were developed. In some parts of the State, the coastal policies have been refined to take into account regional and local considerations. In New York City, the state coastal policies have been refined in the City's Waterfront Revitalization Program. Additionally, throughout the state, certain local municipalities have approved Local Waterfront Revitalization Programs (LWRPs) to address their specific local issues and concerns.

The Federal regulations that implement the consistency provisions of the Coastal Zone Management Act (CZMA) are found at 15 CFR Part 930, which establish the procedures to be followed in order to assure that federal agency activities are consistent with the enforceable policies of the New York State Coastal Management Program.

Any applicant for a federal agency license or permit is required to submit a certification that the proposed activity is consistent with all applicable state coastal policies. The consistency certification must include the following: a completed Federal Consistency Assessment Form; an identification of coastal policies affected by an applicant's proposed activity; a brief assessment of the effects of the activity on the applicable policies; and a statement indicating how the activity is consistent with each applicable policy.

A Coastal Management Plan Federal Consistency Assessment Form (FCAF) and a New York City Waterfront Revitalization Program Consistency Assessment Form (LWRP CAF) have been completed. The FCAF and the LWRP CAF identify those policies from their respective programs that are applicable or potentially applicable to the Project based on a review of the components of the Project located within the Coastal Area. Additionally, the Applicants performed a review of all other LWRPs that pertain to the territory within the Project area.

The CHPE Project has been sited and designed, and will be constructed and operated, in a manner that is consistent with the applicable New York State Department of State (NYSDOS) Coastal Management Program (CMP) State Coastal Policies, the New York City Local Waterfront Revitalization Program (LWRP) Coastal Policies, and all other applicable LWRPs within the Project area. The specific policies that are relevant to the Project are listed below and are accompanied by a brief description of the manner in which the Project is consistent.

2.0 NEW YORK STATE DEPARTMENT OF STATE COASTAL MANAGEMENT PROGRAM STATE COASTAL POLICIES

State Policy 2 *- Facilitate the siting of water-dependent uses and facilities on or adjacent to coastal waters.*

The CHPE Project will involve solid state transmission cables buried and laid within waterways of the state (Lake Champlain, Hudson River, Harlem River, and East River).

The transmission cables will be sited, designed, and installed to avoid impacts to current and/or future water-dependent projects. The cables will make landfall and extend inland to a converter station in Yonkers, NY and a substation in Queens, NY. The cable landfall will be buried via HDD and will not affect the current and/or future siting of water-dependent uses at the waters edge with the exception of the required narrow utility easement (approximately 30 feet) for the buried cable. Additionally, the Yonkers converter station and the Queens substation are not located on waterfront properties.

State Policy 7 - *Significant Coastal Fish and Wildlife Habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.*

Where the transmission cables transition from land to water (i.e., Hudson River in Coeymans, NY) the Project will utilize HDD methods to install the cable. This method will be utilized to minimize disturbance to shoreline and nearshore coastal fish and wildlife habitats. The HDD entry/exit point is designed to enter/exit the water at a depth sufficient to avoid impacts to shoreline, intertidal and nearshore areas.

The proposed underwater cable route intersects with six Significant Coastal Fish and Wildlife Habitats (SCFWH): Esopus Estuary, Kingston Deepwater Habitat, Poughkeepsie Deepwater Habitat, Hudson rivermile 44-56, Haverstraw Bay, and the Lower Hudson Reach.

The deepwater area near the mouth of Esopus Creek is recognized as post-spawning and wintering habitat for shortnose sturgeon. The deepwater areas at Kingston and Poughkeepsie are recognized as spawning and wintering habitat for shortnose sturgeon. The deepwater area of Hudson Rivermile 44-56 is recognized as a spawning area for striped bass and wintering habitat for shortnose sturgeon. The deepwater area in Haverstraw Bay is recognized as wintering habitat for shortnose sturgeon. Atlantic sturgeon can also be expected to use this area, as well as overwintering striped bass. Shortnose sturgeon favor the channel areas of the Hudson and have been shown to use both naturally deep and dredged channels.

The Applicants will work cooperatively with agencies to determine appropriate work windows for cable installation in order to avoid Project activities during seasonal use of the aforementioned Significant Coastal Habitats. Where the Project route cannot avoid designated Significant Coastal Habitat, the cables will be installed within previously disturbed areas, such as the side slope of the federal navigation channel, which will also avoid the deep areas of the navigation channel favored by shortnose sturgeon.

State Policy 11 - *Buildings and other structures will be sited in the coastal area so as to minimize damage to property and the endangering of human lives caused by flooding and erosion.*

Structures associated with the Project will be developed on a previously disturbed property in an urban/industrial zone and will not affect potential flooding or erosion in coastal areas. The cables associated with the Project will be buried underwater or underground and the surface vegetation/topography will be restored to its original state. HDD methods will be utilized to install the cables at landfall locations in order to avoid impacts to the nearshore and shoreline areas.

State Policy 12 - *Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs.*

See response to State Policy 11.

State Policy 15 - *Mining, excavation, or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land.*

Along the majority of the Project's submarine cable route, cables will be buried approximately 3 to 4 ft beneath the lake/river bed utilizing a water-jetting machine. For these portions of the route, sediment will not be removed from the trench; instead, sediment fluidized during water-jetting will be allowed to naturally backfill the trench. Where the Project's submarine cable route crosses or is located within federal navigation channels, cable will be buried to the required depths utilizing water jetting techniques and where necessary, conventional dredging techniques. In the event that conventional dredging is required for cable installation and sediment removed from the trench cannot be re-used as backfill, such dredging will be kept to a minimum and the sediments will be appropriately re-used or disposed of pursuant to permit requirements. All portions of the submarine cable route will then be allowed to return to their pre-installation condition. Therefore, installation of the underwater portions of the transmission cable is not expected to interfere with natural coastal processes or increase erosion of adjacent lands.

State Policy 17 - *Non-structural measures to minimize damage to natural resources and property from flooding and erosion shall be used whenever possible.*

At cable landfall locations, the cables will be installed via HDD methods to avoid impacts to the nearshore and shoreline areas.

State Policy 19 - *Protect, maintain, and increase the level and types of access to public water-related recreation resources and facilities.*

The Yonkers converter station site will be constructed on a private industrial site that is already disturbed and will not affect public access to the water.

Cables installation at shoreline crossings will be installed using HDD methods which will not result in impacts to public access to the waterbodies. Underwater cable burial will not result in impacts to public access. During construction, to protect the safety of the public, access will be restricted around active in-water construction locations. This work will only occur on a small area of the overall waterbody and will be temporary in any one location, so impacts will be minor during the construction period.

State Policy 20 - *Access to publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided and it shall be provided in a manner compatible with adjoining uses.*

The Project will not affect access to publicly-owned foreshore lands or lands adjacent to the foreshore or the water's edge. See above response to State Policies 11 and 19.

State Policy 22 - *Development, when located adjacent to the shore, will provide for water-related recreation, whenever such use is compatible with reasonably anticipated demand for such activities, and is compatible with the primary purpose of the development.*

The Project will not affect current or future development for water-related recreation at properties located adjacent to the shore.

State Policy 23 - *Protect, enhance and restore structures, districts, areas and sites that are of significance in the history, architecture, archaeology or culture of the state, its communities, or the nation.*

In general, the Project is unlikely to have a significant effect on standing historic structures, districts, areas or sites of significance within the Project's vicinity. With the exception of the newly constructed Yonkers converter station on a previously disturbed, industrial zoned area, the Project's infrastructure will be buried and will not have an effect on the viewshed. The converter station will be designed to match the character of the surrounding area, and is not expected to have an adverse impact on any historic properties in the vicinity.

The Applicants are in the process of conducting a detailed analysis of archaeological sites, historic properties, and shipwrecks along the Project route, including those resources listed in or eligible for inclusion in the National Register of Historic Places. The Project will avoid archaeological, historical and cultural resources to the greatest extent feasible. It is anticipated that, with appropriate avoidance and mitigation, no adverse impacts on these resources will occur.

State Policy 24 - *Prevent impairment of scenic resources of statewide significance.*

With the exception of the Yonkers converter station, the Project's principal components will be buried and will not have an effect on any viewsheds. The Yonkers converter station will be designed to match the character of the surrounding area, which includes existing industrial land use, and is not expected to have an adverse impact on any scenic resources.

State Policy 25 - *Protect, restore or enhance natural and man-made resources which are not identified as being of statewide significant, but which contribute to the overall scenic quality of the coastal area.*

The transmission cables associated with the Project will be buried; there will be no overhead transmission cables. The Yonkers converter station will be built on an inland property in an existing industrial zoned area on a previously disturbed property. The converter station will be located within a building, which will be designed to blend with the architecture of the surrounding development. The Project will connect to an existing substation (currently under construction) on an inland property in Queens, NY. Therefore, the Project will not affect the overall scenic quality of the coastal area.

State Policy 27 - *Decisions on the siting and construction of major energy facilities in the coastal area will be based on public energy needs, compatibility of such facilities with the environment, and the facility's need for a shorefront location.*

The Project has filed an application for a Certificate of Environmental Compatibility and Public Need (CECPN) under Article VII of the New York State Public Service Law. The Project will provide needed electricity to load centers in the NYISO via an HVDC transmission cable system that is primarily buried in the riverbed of coastal area waterways (Hudson River, Harlem River, and East River). The Project has been designed to utilize construction techniques to avoid or minimize environmental impacts. For example, the majority of the submarine cable will be installed using water-jetting methods, which minimize sediment transport and impacts to water quality. HDD methods will be used at cable landfall locations (i.e., Yonkers and Queens) in order to avoid potential impacts to nearshore and shoreline resource areas. Additionally, the Project's converter station and substation interconnections will be located on inland properties and will not require shorefront properties, other than narrow easements.

State Policy 28 - *Ice management practices shall not interfere with the production of hydroelectric power, damage significant fish and wildlife and their habitats, or increase shoreline erosion or flooding.*

Not applicable.

State Policy 30 - *Municipal, industrial, and commercial discharge of pollutants, including but not limited to toxic and hazardous substances, into coastal waters will conform to state and national water quality standards.*

A three-dimensional hydrodynamic and time-variable water quality model was developed by the Applicants to assess water quality impacts and compliance with applicable water quality standards in the Hudson, Harlem and East Rivers. The model was used to simulate ten contaminants that were found in sediment cores collected during the Spring 2010 Marine Route Survey. The maximum model-computed concentrations of contaminants along the cable route were graphically presented and compared to New York State's water quality standards.

The effects of the proposed cable installation are projected to comply with state and national water quality standards that are based on protecting aquatic life from acute toxicity. These standards are the most appropriate criteria for the assessment of the proposed Project given the non-chronic (i.e., short-term) and incremental nature of the potential exposure to sediment contaminants resulting from the cable installation.

Effects of the proposed cable installation in portions of the Upper Hudson River PCB Superfund Site were also modeled. The model indicated that the projected maximum total PCB concentration during cable installation would be below the EPA’s Engineering Performance Standard water quality criteria for dredging resuspension at the Hudson River PCBs Superfund Site (EPA 2003).

State Policy 32 - *Encourage the use of alternative or innovative sanitary waste systems in small communities where the costs of conventional facilities are unreasonably high, given the size of the existing tax base of these communities.*

Not applicable.

State Policy 35 - *Dredging and filling in coastal waters and disposal of dredged material will be undertaken in a manner that meets existing state permit requirements, and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands, and wetlands.*

During installation of the Project transmission cables, dredging and/or filling in coastal waters may be necessary in certain, limited areas. These areas may include limited areas of dredging within federal navigation channels or limited areas characterized as fill locations due to the use of rip rap or other protective cable coverings. However, subsequent to the installation of the Project, the area will be allowed to return to its original state.

The Applicants have conducted sediment sampling and analyses to characterize the sediment type and quality and has also conducted water quality modeling to ensure that the Project will be able to comply with applicable water quality standards. The Project will comply with all applicable federal and state laws and regulations regarding water quality, fish and wildlife habitats, wetlands, scenic resources, natural protective features, important agricultural lands, and important coastal resources in order to avoid or minimize potential affects to these resources by the Project. The Project will obtain all necessary permits associated with dredging or filling activities prior to commencement of work.

State Policy 36 - *Activities related to the shipment and storage of petroleum and other hazardous materials will be conducted in a manner that will prevent or at least minimize spills into coastal waters; all practicable efforts will be undertaken to expedite the cleanup of such discharges; and restitution for damages will be required when these spills occur.*

The Project transmission cables are solid state, i.e. they do not contain fluids. The cable installation equipment will likely include petroleum powered equipment; therefore, a spill prevention control and countermeasure (SPCC) plan will be developed and implemented, pursuant to state and federal regulations, during the use and/or storage of petroleum-containing equipment. The Project's converter station and substation interconnection may include the use or storage of petroleum or hazardous materials. An SPCC plan or its equivalent will be developed for these facilities.

Surface and groundwater resources, significant fish and wildlife habitats, recreation areas, important agricultural land, and scenic resources will be protected by implementing diligent management of any petroleum and hazardous materials during all construction and operation activities.

State Policy 37 - *Best Management Practices will be utilized to minimize the non-point discharge of excess nutrients, organics, and eroded soils into coastal waters.*

Soil erosion and sediment movement will be minimized during construction and operation via erosion control measures and soil stabilization protocols, which will be implemented as necessary to protect the aquatic resources in the area. The Applicants are developing standard Best Management Practices (BMPs) for construction that are currently under review by state agencies.

State Policy 38 - *The quality and quantity of surface water and groundwater supplies will be conserved and protected, particularly where such waters constitute the primary or sole source of water supply.*

The Project is comprised of solid state transmission cable; therefore, the cables do not contain any potentially polluting fluids. Equipment located at the converter station and interconnection site may contain petroleum or hazardous substances; SPCC plans or their equivalent will be developed to ensure that appropriate spill prevention, countermeasure, and contingency measures are implemented wherever Project features present a risk of spill or discharge to waters of the United States.

The Project is required to obtain a water quality certification pursuant to Section 401 of the Clean Water Act. The Project will comply with all requirements of the water quality certification.

Surface and groundwater resources will be protected by implementing diligent management of any hazardous substances on the sites and erosion control measures to prevent sediment transport to the waterway. Applicants have made Freedom of Information Requests for information on drinking water intake systems to four municipalities who rely upon the Hudson River for water supply. The Applicants will employ Best Management Practices and other protocols so that potential impacts from the Project are commensurate with other natural processes and routine activities in the Hudson River (i.e., storm events, boat traffic, maintenance dredging of navigation channels, etc.)

State Policy 39 - *The transport, storage, treatment and disposal of solid wastes, particularly hazardous wastes, within coastal areas will be conducted in such a manner so as to protect groundwater and surface water supplies, Significant Fish and Wildlife Habitats, recreation areas, important agricultural land, and scenic resources.*

Surface and groundwater resources, significant fish and wildlife habitats, recreation areas, important agricultural land, and scenic resources will be protected by implementing diligent management of any solid wastes during all construction activities. Best Management Practices will be used to protect the aforementioned resources.

State Policy 40 - *Effluent discharges from major steam electric generating and industrial facilities into coastal waters will not be unduly injurious to fish and wildlife and shall conform to state water quality standards.*

Not applicable.

State Policy 41 - *Land use or development in the coastal area will not cause national or state air quality standards to be violated.*

The Project will obtain all applicable air quality permits; therefore, no violations of national or state air quality standards during its construction or operation stages.

State Policy 43 - *Land use or development in the coastal area must not cause the generation of significant amounts of acid rain precursors: nitrates and sulfates.*

The Project will not generate emissions that release nitrates or sulfates to the atmosphere during operation.

State Policy 44 - *Preserve and protect tidal and freshwater wetland and preserve the benefits derived from these areas.*

Subsequent to cable installation, the area will be restored to its original condition. Therefore, any wetlands crossed by the land or submarine cables will remain wetlands after construction. At the Project's landfall locations (i.e., Yonkers and Queens), HDD methods will be used to install the cables in order to avoid potential impacts to nearshore and shoreline resource areas (i.e., wetlands). The HDD is expected to exit the water at a depth sufficient to avoid impacts to intertidal and foreshore areas.

The Yonkers converter station and the Queens interconnection point are located in industrial zones. No wetlands are located at these sites; therefore, construction at these sites will not result in any direct or indirect impacts to wetlands.

3.0 NEW YORK CITY LOCAL WATERFRONT REVITALIZATION PROGRAM COASTAL POLICIES

The CHPE Project is a HVDC transmission system extending from the international border between Canada and the United States to New York City. The Project's HVDC transmission cables will be buried either underground or underwater for the entire route. In New York City, the Project's transmission cables will be buried beneath the riverbed of the Hudson River, Harlem River, and East River before making landfall in Queens, New York where the cables will extend inland for approximately 1 mile to terminate at a spare bay at the 345-kV substation currently under construction by the New York Power Authority on land owned by Con Edison. HDD methods will be utilized at the landfall location in Queens, New York to transition the cables from water to land while avoiding impacts to the shoreline or nearshore areas. Because the cables will be located beneath the waters edge, no waterfront property in New York City is needed to develop this Project, with the exception of a narrow (approximately 30 ft) easement.

Local Policy 2.1 *- Promote water-dependent and industrial uses in Significant Maritime and Industrial Areas.*

The Project is not located in a designated Significant Maritime and Industrial Area (SMIA). The interconnection point at a substation currently under construction (land owned by Con Edison) in Queens, New York is located in a commercial/industrial zone and is not located on a waterfront site. The Project will be designed so as not to affect potential maintenance dredging activities within the navigation channels, which support and promote the development and operation of working waterfront uses. Therefore, the Project will not affect the promotion of water-dependent and industrial uses in SMIAs.

Local Policy 2.3 - *Provide infrastructure improvements necessary to support working waterfront uses.*

The Project's transmission cables will be sited outside the designated navigation channels wherever possible. In areas where a designated navigation channel cannot be avoided, the cables will either be buried within the side slopes associated with the navigation channel or buried within the navigation channel to the depth required by applicable federal and state agencies to avoid impacts to current or future dredging activities located within these navigation channels. The Project will have no other affects on infrastructure supporting the working waterfront uses.

In the event that dredging is required to install the Project's cables, dredge material will be characterized to determine the most appropriate/beneficial reuse or disposal for the material that will not interfere with working waterfront uses.

Local Policy 3.1 *- Support and encourage recreational and commercial boating in New York City's maritime centers.*

The Project is designed to have no long-term impacts to recreational and commercial boating in New York City's maritime centers. During the short-term construction phase of the Project, a cable-laying vessel will be utilized to transport and lay the cable on the riverbed, and a remote operated vehicle (ROV) will be utilized to bury the transmission cable beneath the riverbed. During the construction phase, notifications will be released to alert commercial and recreational boaters to avoid the areas where cable installation is underway, but such avoidance will be highly localized and of temporary duration. Subsequent to construction, there will be no impacts to recreational or commercial boating caused by the Project.

Local Policy 3.3 *- Minimize impact of commercial and recreational boating activities on the aquatic environment and surrounding land and water uses.*

During construction, the cable laying vessel is likely to have petroleum containing equipment on-board. The vessel will utilize best management practices to prevent potential spillage of petroleum products. The vessel will also be equipped and trained to control and respond to a spill in the unlikely event one occurs. The vessel will comply with all applicable laws and regulations related to discharges of waste from the vessel; no waste discharges are anticipated from the vessel. The Project's transmission cables are solid-state cables which contain no liquid, thereby eliminating the potential for a discharge from the cable.

Local Policy 4 *- Protect and restore the quality and function of ecological systems within the New York City coastal area.*

The Project will utilize specific construction windows and techniques designed to avoid or minimize potential impacts to important ecological systems. The Applicants will continue to work with the appropriate federal, state, and local agencies and stakeholders to incorporate best management practices to avoid and minimize any potential impacts to important ecological systems. Operation of the Project is not expected to result in any impacts to any important ecological systems, including those within the New York City coastal areas.

Local Policy 4.1 *- Protect and restore the ecological quality and component habitats and resources within the Special Natural Waterfront Areas, Recognized Ecological Complexes, and Significant Coastal Fish and Wildlife Habitats.*

The Project consists of the burial of HVDC and HVAC transmission cables within waterways of New York City. The cables will be installed primarily via water-jetting techniques, which are designed to minimize impacts to the riverbed and surrounding water quality. For short sections of the Project route, cable burial may not be feasible due to riverbed conditions (i.e., bedrock). In these locations, the cables will be laid on the riverbed with protective coverings (i.e., concrete mattresses or rip-rap). In these instances, the protective coverings are not anticipated to represent a change in the ecological habitats because the rip-rap will be consistent with the pre-existing hard bottom habitat. Subsequent to installation, the ecological habitats will be allowed to return to their pre-existing condition through natural processes

Local Policy 4.2 - *Protect and restore tidal and freshwater wetlands.*

The Project has been designed to avoid or minimize impacts to tidal and freshwater wetlands. The transmission cables will be buried beneath the riverbed, which will subsequently be allowed to return to its pre-existing condition through natural processes.

Local Policy 4.3 - *Protect vulnerable plant, fish and wildlife species, and rare ecological communities. Design and develop land and water uses to maximize their integration or compatibility with the identified ecological community*.

The Applicants are consulting with federal, state, and local agencies, as applicable, regarding Endangered Species, Threatened Species, Exploitably Vulnerable Species, and Rare Species that may be located within the Project area. The Project will be designed to avoid or minimize impacts to these species to the greatest extent possible.

Local Policy 5.3 - *Protect water quality when excavating or placing fill in navigable waters and in or near marshes, estuaries, tidal marshes, and wetlands.*

Installation of the Project has been designed to comply with federal and state dredging permit requirements, where applicable. Construction windows and best management practices will be utilized to avoid or minimize impacts to water quality and associated aquatic life.

Local Policy 6 - *Minimize loss of life, structures, and natural resources caused by flooding and erosion.*

The Project will not affect flooding or erosion.

Local Policy 6.3 - *Protect and preserve non-renewable sources of sand for beach nourishment.*

The Project will not affect non-renewable sources of sand for beach nourishment.

Local Policy 8 - *Provide public access to and along New York City's coastal waters.*

The Project is a buried transmission cable and will not affect public access to or along New York City's coastal waters.

Local Policy 8.5 *- Preserve the public interest in and use of lands and waters held in public trust by the state and city.*

The Project will require a permitted corridor / easement for the transmission cables buried beneath the riverbed of the Hudson, Harlem, and East Rivers. However, the required easement will be narrow (~30 ft) and will not affect the public interest and use of lands and waters held in public trust by the state and city.

Local Policy 10 *- Protect, preserve and enhance resources significant to the historical, archaeological, and cultural legacy of the New York City coastal area.*

In the spring of 2010, a detailed marine route survey was completed along the Project's entire submarine route, which included the collection of data related to historical, archaeological, and cultural resources along the route. The Project route is being sited and designed based on the results of the spring 2010 survey (and additional surveys, where necessary) in order to avoid impacts to the resources identified.

4.0 LOCAL WATERFRONT REVITALIZATION PLAN (LWRP) ASSESSMENT

Municipalities that border coastal areas and inland waterways prepare LWRPs, in conjunction with the NYSDOS, for the preservation, enhancement, protection, development and use of the state's coastal and inland waterways. Projects which may impact coastal areas or inland waterways must be reviewed for consistency with those LWRPs that pertain to territory within the Project area. The information below includes a review of consistency with LWRPs for both the underwater portions of the Project and the terrestrial portions of the Project potentially located in close proximity to coastal or waterfront areas.

There are 24 municipalities with LWRPs along the cable route, which are listed below in order from the Canadian border south to New York City:

- Town of Essex
- Village of Whitehall
- Town of Schodack/Village of Castleton-On-The-Hudson
- Village of Athens
- Village of Tivoli
- Village of Saugerties
- Town of Redhook
- City of Kingston
- Town of Rhinebeck
- Town of Esopus
- Town of Poughkeepsie
- Town of Lloyd
- City of Beacon

- City of Newburgh
- City of Peekskill
- Town of Stony Point
- Village Haverstraw
- Village of Croton on the Hudson
- Village of Ossining
- Village of Nyack
- Village of Sleepy Hollow
- Village of Piermont
- Village of Dobbs Ferry
- New York City

The Applicants conducted an evaluation of all 24 LWRPs, which consist of state waterfront policies refined to reflect local conditions and circumstances as well as local policies. Additional local policies that relate to the Project are evaluated on a case-by-case basis below. Overall, the LWRP evaluation indicates that the Project is consistent with all of the LWRPs within the Project's proximity.

Additional supporting information has been previously submitted to numerous federal agencies (USACE) and New York State agencies (NYSDOS, NYSDPS, NYSDEC, etc) as part of the March 30, 2010 application to the New York State Public Service Commission for Certificate of Environmental Compatibility and Public Need pursuant to Article VII of the Public Service Law ("Article VII Application"). In particular, Exhibit 4 of the March 2010 Article VII Application includes a comprehensive analysis of the affected environment along the proposed Project route. Additional supporting information was submitted in a supplemental filing in July 2010 ("July 2010 Article VII Supplement")

4.1 Town of Essex

The Town of Essex has identified Split Rock Mountain, Webb Royce Swamp, Essex "Station" and the Boquet River as significant fish and wildlife habitats. Split Rock Mountain, Webb Royce Swamp and Essex "Station" are adjacent to the coastal zone area and will not be affected by this project. The Boquet River discharges into Lake Champlain and will not be affected by this project.

Policy 5 *- Protect and restore ecological resources, including significant fish and wildlife habitats, wetlands and rare ecological communities (similar to State Policy 7).*

> This Project's component in the Town of Essex involves the placement of HVDC cables in the bed of Lake Champlain using water jetting and/or trenching to open up the benthic substrate, lay the cable and re-contour the bottom. The Applicants have and will continue to work cooperatively to ensure that the Project is designed, sited, installed, and operated in a manner that protects and restores important ecological resources.

Additional information regarding fish and wildlife habitats, wetlands, and rare ecological communities was submitted within Exhibit 4 of the March 2010 Article Application. Also, see above response to State Policy 7.

Policy 6 - *Protect and improve water resources (similar to State Policy 38).*

The March 2010 Application (Exhibit 4) included an evaluation of existing water quality along the submarine portions of the Project route. Subsequently, a marine route survey (July 2010 Supplement to Article VII Application) was performed, which sampled sediments for the presence of contaminants. Sediment chemistry and water quality are linked because cable installation will disturb sediments and have the potential to suspend contaminants.

The Applicants conducted a water quality modeling study to predict the distribution and movement of suspended sediment generated by water jetting for cable installation. The study provides a basis for estimating water quality effects and for developing a water quality monitoring plan. Additional sediment chemistry data will be collected to refine observed contaminant distribution and to provide current sediment chemistry data for specific locations for puposes of HDD and conventional dredging.

Water quality is assessed through limits on selected water quality parameters that are conditions of the Project permits. Compliance with these limits will be established through monitoring of installation process and adjustments to cable installation operations when needed to avoid non-compliance.

A suspended sediment and water quality monitoring plan will be developed in consultation with federal and state authorities and agencies, which will outline the mitigation measures to eliminate or minimize impacts to water resources along the route.

For additional information, see above response to State Policies 30 and 38.

Policy 6.3 - *"Protect water quality when excavating or placing fill in navigable waters and in or near marshes, estuaries, and wetlands" (State Policies 34 and 35).*

The boundaries of any wetlands, streams and other water resources along the Project route have been identified in the field during development of the Article VII Application and supplemental filings. All delineated wetlands, streams and water resources will be mapped and prior to construction all field identified sensitive resources will be flagged to ensure resource protection. Protective measures will be implemented to ensure minimization of impacts to wetlands and other water resources potentially resulting from sedimentation, erosion, turbidity, unanticipated spills or leaks of fuel, and/or hazardous materials.

In general, impacts to marshes, estuaries, and wetlands in the Project area are expected to be temporary and limited to the construction-phase of the Project. The Project has been designed to avoid marshes, estuaries, and wetlands, wherever possible. Where wetlands cannot be avoided, the Applicants will implement appropriate protection measures during construction to minimize and/or mitigate for any impacts to benefits derived from these resources. Draft protection measures are currently under review by state agencies but the final protocols are likely to include the following:

a) Applicants will minimize work within and across streams, wetlands, or other water resources to the extent possible during preconstruction, construction, operation, and maintenance activities.

b) Applicants will notify appropriate agencies at least five (5) business days prior to construction involving federal and/or state-regulated wetland crossings.

c) Sediment and erosion control devices will be installed across the right-of-way on any slopes leading into wetlands and along the edge of the construction right-of-way, as necessary, to prevent spoil from flowing off the right-of-way into a wetland.

d) To the extent possible, work which must be in a wetland shall be scheduled to be started and completed in the dry or when the ground is frozen.

e) To expedite revegetation of wetlands, the top one (1) foot of soil will be stripped from over the trench. The exception to this includes areas with standing water or saturated soils, areas where no topsoil layer is evident or areas where the topsoil layer exceeds the depth of the trench.

f) Construction vehicles and equipment will be limited to established access roads and construction work spaces.

g) Construction equipment operating within wetlands will be limited primarily to those needed to dig the trench, install the cable, backfill, and restore the right-of-way. All other construction equipment will use access roads in upland areas to the extent practicable.

h) To minimize disturbance and compaction in wetlands with saturated soils or standing water, either wide-tracked or balloon-tired equipment operating from timber corduroy or timber mats will be used. Imported rock, stumps, brush, or off-site soil as temporary or permanent fill will be prohibited. Following construction, all materials used to stabilize the right-of-way will be removed.

i) Construction materials, including fuels, will not be stored within one hundred (100) feet of any surface water or wetland system, unless no alternative is available.

j) Construction equipment will not be refueled within one hundred (100) feet of any surface water or wetland system.

k) Spill response and mitigation procedures will be implemented in the case of any accidental spills of chemical, fuel, or other hazardous materials.

l) Construction equipment will not be washed in wetlands or within one hundred (100) feet of any wetland unless specified to minimize the spread of invasive species. Run-off resulting from washing operation shall not be permitted to directly enter any watercourses or wetlands.

m) Any temporary access routes or parking areas adjacent to wetlands and waterbodies will be graded to direct runoff away from water resources.

n) Spoil or excavated materials will be stored outside of wetlands and wetland adjacent areas. All stockpiled material will be stored at a sufficient distance to prevent sedimentation into any stream, wetland, wetland adjacent area, or other waterbody. If no storage area is available, spoil will be adequately protected and erosion and sedimentation control measures will be installed to prevent materials from entering adjacent areas. All excess material will be disposed of in approved upland locations.

o) Unless work activities will resume within fourteen (14) days, Applicants will stabilize disturbed soils as soon as possible and no more than seven (7) days upon temporary or permanent completion of ground-disturbing activities. If soil stabilization measures are not possible within seven (7) days due to snow cover, frozen ground or other weather conditions, soils will be stabilized as soon as practicable.

p) The construction right-of-way will be inspected periodically during and after construction until final restoration is complete. Erosion control or restoration features will be repaired as needed in a timely manner until permanent revegetation is successful.

4.2 Village of Whitehall

Policy 5.1 *- Protect significant coastal fish and wildlife habitats.*

The Applicants will work closely with NYSDOS, NYSDEC, the New York Natural Heritage Program (NYNHP) and local municipalities to avoid or minimize disturbance to these areas.

Additional information was provided in Exhibit 4 of the Article VII Application. Also, see above response to State Policy 7.

4.3 Town of Schodack and Village of Castleton-on-the-Hudson

Policy 7 *- The Town of Schodack and Village of Castleton-on-the-Hudson note that habitat protection is vital to ensuring the survival of fish and wildlife populations. The town has* *adopted the Significant Fish and Wildlife habitat "habitat impairment test" and defines "habitat destruction", "significant impairment" and "tolerance range."*

See above response to State Policy 7.

***Policy 7A** - The Papscanee Marsh and Creek habitat shall be protected, preserved and restored where practicable so as to maintain its viability as a habitat.*

Papscanee Marsh and Creek are listed as a Significant Fish and Wildlife Habitat with a significance rating of 48. This area will be avoided by the Project.

The Project will not destroy or cause significant impairment to any habitats in the Town of Schodack or Village of Castleton-on-the-Hudson.

See above response to State Policy 7.

***Policy 7B** - The Schodack and Houghtaling Islands and Schodack Creek habitat shall be protected, preserved and restored where practicable so as to maintain its viability as a habitat.*

The Schodack and Houghtaling Islands and Schodack Creek habitat are listed as Significant Fish and Wildlife Habitat by the NYSDOS, with a significance rating of 77. A portion of this 1,800 acre parcel is an undeveloped state park.

This area will be avoided by the Project.

4.4 Village of Athens

All of the Village of Athens' policies were reviewed and found to be consistent with the assessment of State Policies described above.

4.5 Village of Tivoli

***Policy 7** - Significant coastal fish and wildlife habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.*

See above response to State Policy 7.

Sections of North and South Tivoli Bay are within the Village of Tivoli. This is a Significant Coastal Fish and Wildlife Habitat recognized by DOS with a significance rating of 162.

This area will be avoided by the Project.

Policy 7A *- The locally significant habitats of Stony Creek and the Hudson River along Tivoli's waterfront will be protected, preserved and improved. The Hudson River Bluffs, Tivoli Bay, and Stony Creek should be protected from overdevelopment.*

This Project will avoid Tivoli Bay and Stony Creek and will not induce development in the area.

4.6 Village of Saugerties

Policy 7 *- Significant coastal fish and wildlife habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.*

See above response to State Policy 7.

The Esopus Estuary has been designated a Significant Coastal Fish and Wildlife Habitat by the NYSDOS. It has a significance rating of 98. The boundary of the Esopus Estuary extends across the Hudson River. It is impossible to avoid the boundary area of the Esopus Estuary.

The proposed cable route will be sited on the east side of the Hudson River and will minimize impacts and would not result in a direct loss of habitat.

Policy 44A *- Preserve wetlands from development and pollution and encourage wildlife activity through enforcement of existing state regulations, establishment of wetland zones and undertaking measures to eliminate pollution sources.*

This is a local policy related to NYSDOS Policy 44.

See above response to Town of Essex Policy 6.3.

4.7 Town of Red Hook

Policy 7 *- Significant Coastal Fish and Wildlife Habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.*

See above response to State Policy 7.

Policy 7A *- Protect the areas identified as significant habitat areas by the NYSDOS as well as the creeks, kills, wetland and cove areas draining into and adjacent to the Hudson River from alteration and/or pollutant discharge by residential, commercial, agricultural or industrial uses in order to maintain their viability as habitat areas.*

There are three significant habitats in the Red Hook LWRP area: The Esopus Estuary, the Flats and North and South Tivoli Bays. Impacts to these areas will be avoided or minimized as described in the above response to State Policy 7.

Policy 23A - *Conserve, protect, preserve and, if appropriate, promote the adaptive reuse of places, sites, structures, views and features in the coastal area of the Town of Red Hook of special historic, cultural or archaeological significance or which by reason of association with notable people or events, or of the antiquity or uniqueness of architectural and landscape design particular significance to the heritage of the town.*

The construction of the buried cables will have no adverse impact on these resources.

Policy 38A - *Work to re-establish and maintain the Saw Killwater quality surveillance program.*

This local policy is not applicable as the Project is not in proximity to this resource nor will it affect it.

4.8 City of Kingston

Policy 7 - *Significant coastal fish and wildlife habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.*

See above response to State Policy 7.

Policy 7A - *The Rondout Creek habitat shall be protected, preserved and, where practical, restored so as to maintain its viability as a habitat.*

Rondout Creek is a Significant Coastal Fish and Wildlife Habitat recognized by NYSDOS with a significance value of 70.

This SCFWH will be avoided by the Project.

Policy 7B - *The locally important habitat at Kingston Point Park, also known as K.E.4, shall be protected, preserved and, where practicable, restored so as to maintain its viability as a habitat.*

This mudflat freshwater wetland area will be avoided by the Project.

Another Significant Coastal Fish and Wildlife Habitat recognized by NYSDOS is the Kingston Deep Water habitat with a significance rating of 110. This six mile long habitat extends from the City of Kingston to Rhinecliff and varies in depth from 30 to 50 feet.

A detailed discussion of potential impacts and mitigation for the Kingston Deepwater habitat is provided in Exhibit 4 of the March 2010 Article VII Application. Cable installation is not expected to result in a change in overall depths in the Kingston Deepwater Habitat, and sediment deposition beyond the trench is expected to be negligible. BMPs will be employed during cable installation to mitigate any potential adverse impacts.

See above response to State Policy 7.

4.9 Town of Rhinebeck

Policy 7 *- Significant coastal fish and wildlife habitats will be protected, preserved and, where practical, restored so as to maintain their viability as habitats.*

See above response to State Policy 7.

Policy 7A *- The Vanderburgh Cove and Shallows Habitat shall be protected, preserved and, where practical, restored so as to maintain its viability as a habitat.*

Vanderburgh Cove and Shallows Habitat is a Significant Coastal Fish and Wildlife Habitat recognized by NYSDOS with a significance rating of 20.

These areas will be avoided by the Project.

Policy 7B *- The Kingston Deepwater Habitat shall be protected, preserved and, where practical, restored so as to maintain its viability as a habitat.*

The Kingston Deep Water Habitat is recognized by NYSDOS and has a significance rating of 110. This six mile long habitat extends from the City of Kingston to Rhinecliff and varies in depth from 30 to 50 feet.

A detailed discussion of potential impacts and mitigation for the Kingston Deepwater habitat is provided in Exhibit 4 of the Article VII Application. Cable installation is not expected to result in a change in overall depths in the Kingston Deepwater Habitat, and sediment deposition beyond the trench is expected to be negligible. BMPs will be employed during cable installation to mitigate any potential adverse impacts.

Policy 7C *- The Flats Habitat shall be protected, preserved and where practical, restored so as to maintain its viability as a habitat.*

The Flats Habitat is a Significant Coastal Fish and Wildlife Habitat recognized by NYSDOS with a significance rating of 118. This area is a four and one half mile long ridge running down the middle of the Hudson River. It is less than 10 feet deep at mean low water. The navigational channel runs down the Hudson River to the west of this area.

The Project is not expected to cross this SCFWH.

Policy 7D *- Support efforts to protect and enhance the natural resources of Ferncliff Forest, Snyder Swamp and the Mudder Kill.*

These areas will not be affected by this Project.

Policy 7E *- Protect the creeks, freshwater tidal wetlands, and freshwater tidal cove areas draining into and adjacent to the Hudson River from alteration and/or pollutant discharge by residential, commercial, agricultural or industrial uses.*

These areas will not be affected by this Project.

4.10 Town of Esopus

Policy 7 *- Significant coastal fish and wildlife habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.*

See above response to State Policy 7.

Policy 7A *- The locally important Kingston and Poughkeepsie deepwater habitats shall be protected and preserved so as to maintain their viability as habitats.*

Since this LWRP was adopted, these two areas have been recognized as Significant Coastal Fish and Wildlife Habitats.

The Kingston Deep Water Habitat is recognized by NYSDOS and has a significance rating of 110. This six mile long habitat extends from the City of Kingston to Rhinecliff and varies in depth from 30 to 50 feet.

The Poughkeepsie Deep Water Habitat is recognized by NYSDOS and has a significance rating of 110. This habitat extends 14 miles from the Village of West Park to the Hamlet of Marlboro. Depths range from 30 to 50 feet with one area, Crum Elbow, having depths exceeding 125 feet.

A detailed discussion of potential impacts and mitigation for these SCFWHs is provided in Exhibit 4 of the Article VII Application. Cable installation is not expected to result in a change in overall depths in either the Kingston or Poughkeepsie Deep Water Habitats, and sediment deposition beyond the trench is expected to be negligible. BMPs will be employed during cable installation to minimize any potential adverse impacts.

Policy 7B *- The locally important Rondout Creek Habitat shall be protected and preserved so as to maintain its viability as habitat.*

Since the adoption of this LWRP, the Rondout Creek has been designated a Significant Coastal Fish and Wildlife Habitat by NYSDOS with a significance value of 70.

This significant habitat will be avoided by the Project.

Policy 7C - *The locally important Esopus Meadows Habitat shall be protected and preserved so as to maintain its viability as habitat.*

Since the adoption of this LWRP, Esopus Meadows Habitat has been recognized by the NYSDOS as a Significant Coastal Fish and Wildlife Habitat with a significance rating of 71. Esopus Meadows is a shoal of approximately 350 acres.

This area will be avoided by the Project.

Policy 7D - *The other identified local habitat "the map turtle basking rocks" shall also be protected from the adverse impacts of use or development.*

This area will be avoided by the Project.

4.11 Town of Poughkeepsie

Policy 7 - *Significant coastal fish and wildlife habitats will be protected, preserved and, where practical, restored so as to maintain their viability as habitats.*

See above response to State Policy 7.

There are two Significant Coastal Fish and Wildlife Habitats in the Town of Poughkeepsie, the Poughkeepsie Deepwater Habitat and Wappinger Creek.

The Poughkeepsie Deep Water Habitat is recognized by NYSDOS and has a significance rating of 110. This habitat extends 14 miles from the Village of West Park to the Hamlet of Marlboro. Depths range from 30 to 50 feet with one area, Crum Elbow, having depths exceeding 125 feet.

Wappinger Creek is on the east side of the Hudson River between Poughkeepsie and Wappinger. It has a significance rating of 54.

This area will be avoided by the Project.

4.12 Town of Lloyd

Policy 7 - *Significant coastal fish and wildlife habitats will be protected, preserved and, where practical, restored so as to maintain their viability as habitats.*

See above response to State Policy 7.

Policy 7A - *To preserve and protect the viability of the Poughkeepsie Deep Water Habitat and the Shortnose Sturgeon, which is considered an endangered species.*

The Poughkeepsie Deep Water Habitat is recognized by NYSDOS and has a significance rating of 110. This habitat extends 14 miles from the Village of West Park to the Hamlet of Marlboro. Depths range from 30 to 50 feet with one area, Crum Elbow, having depths exceeding 125 feet.

A detailed discussion of potential impacts and mitigation for these SCFWHs is provided in Exhibit 4 of the Article VII Application. Cable installation is not expected to result in a change in overall depths in the Poughkeepsie Deep Water Habitat, and sediment deposition beyond the trench is expected to be negligible. BMPs will be employed during cable installation to minimize any potential adverse impacts. Potential impacts and mitigation for shortnose sturgeon is described in the Article VII Application.

Policy 7B - *Protect, preserve and enhance the wooded bluffs of the Hudson River shore, which is habitat to the bald eagle (an endangered species), the osprey (threatened) and peregrine falcon as well as many other bird species.*

The Project will avoid these areas.

Policy 8A - *Protect fish and wildlife resources in the waterfront area from any possible hazardous wastes and other pollutants which may be present anywhere within the waterfront area, including the Costantino Landfill.*

This Project is designed to avoid disturbance of any hazardous wastes or other pollutants which may be present anywhere within the waterfront area, it will not generate hazardous wastes, and it incorporates protections to avoid introduction of other pollutants to that area.

Policy 18A - *Safeguard the vital economic, social and environmental interests of the Town of Lloyd and its citizens in the evaluation of any proposal for an additional Hudson River crossing - either a new bridge or second deck - which would impact the town*

This local policy is not applicable to this Project.

Policy 35A - *Spoils from dredging of the navigational channel of the Hudson River, or of any areas of the river or the coastline which may require it, shall not be disposed of in the Poughkeepsie Deepwater Habitat.*

If any dredge spoil results from this Project, it will be disposed of in accordance with all state, federal and local requirements, and will not be disposed of in the Poughkeepsie Deepwater Habitat.

4.13 City of Beacon

Policy 7A - *The Fishkill Creek Estuary and marsh shall be protected, preserved, and where practical, restored so as to maintain its viability as a habitat. This Significant Coastal Fish and Wildlife Habitat has a significance rating of 54 and consists of an 80 acre estuary. (West Point North map)*

This area will be avoided by the Project.

Policy 8A *- Prohibit the discharge of untreated effluent and pollutants from commercial and industrial facilities along Fishkill Creek.*

This local policy does not apply to this Project.

Policy 23A *- Encourage the restoration and adaptive reuse of large historic estates, such as the mill buildings on Fishkill Creek.*

The Project does not involve the opportunity to restore or reuse large historic estates.

Policy 35A *- Dredging shall not occur during fish spawning season and will not be carried out without a U. S. Army Corps of Engineers Section 10 and/or 404 permit, and /or DEC Part 608 and 663 permits.*

The Project will abide by specific conditions of issued USACE Section 10/404 and/or DEC Part 608 and 663 permits, which include fish spawning timing issues. In addition, construction activity will be timed to minimize impacts to fish spawning as described in Exhibit 4 of the Article VII Application.

Policy 35B *- Spoils should not be deposited in wetlands or significant fish and wildlife habitats as identified in the LWRP inventory.*

Dredge spoil as a result of this Project will be disposed of in accordance with all state, federal and local requirements.

Policy 35C *- Reclamation of spoils sites, including landscaping, shall be conducted where it is practical to do so.*

This Project does not involve the use of spoil sites, so reclamation is not appropriate.

Policy 35D *- Groundwater contamination shall be avoided.*

The installation of the cables along the bottom of the Hudson River is designed to avoid groundwater contamination.

Policy 35E *- Spoils site design will incorporate considerations for natural features, viewsheds, and shall, where feasible, conform to existing land form.*

Spoil site development is not a component of this Project; therefore, this policy does not apply.

Policy 35F *- No deposition shall occur without testing of sample soils for toxicity.*

If dredging occurs within the limits of Beacon, dredge spoil will most likely be removed for proper disposal rather than deposited back in the trench.

Policy 35G - *Toxic or hazardous dredge spoils shall not be deposited within the waterfront boundary. The potential of worked out mines as dredge spoil sites will be investigated.*

Any dredge spoil generated, as a result of this Project will be disposed of in accordance with all state, federal and local requirements.

Policy 44A - *Preserve and protect the Fishkill Creek Marsh to maintain its many intrinsic values.*

Fish Creek Marsh Significant Coastal Fish and Wildlife Habitat has a significance rating of 54 and consists of an 80 acre estuary.

This area will be avoided by the Project.

4.14 City of Newburgh

Policy 7A - *Activities that would adversely affect fish resident in or migrating through waters adjacent to Newburgh will be avoided.*

The Applicants will comply with this local policy by avoiding, minimizing or mitigating impacts to fisheries, as described in the above response to State Policy 7 and in Exhibit 4 of the Article VII Application.

Policy 8A - *New developments or expansion of existing facilities will not be permitted if such facilities introduce hazardous wastes or other pollutants into the environment or if they are unable to acquire the necessary state, federal, and local permits.*

This Project does not anticipate introducing hazardous wastes or other pollutants into the environment since the cables do not contain these substances and cables are the only project feature proposed for placement within the City of Newburgh.

Policy 18A - *Maintain and improve existing low and moderate income housing.*

This local policy is not applicable to this Project.

Policy 23A - *No changes in any exterior architectural feature, including, but not limited to, construction, alteration, restoration, removal, demolition, or painting, shall be made to identified resources except as hereinafter provided.*

This local policy is not applicable to this Project.

Policy 44 *- Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.*

In addition to generally avoiding most tidal wetland habitats as described in Exhibit 4 of the Article VII Application, this Project will specifically avoid Quaissaick Creek tidal wetland, which is noted as locally important.

4.15 City of Peekskill

Policy 7A *- Fish and wildlife habitats of local importance are of value to the city and its natural resource inventory and shall be protected, preserved and, where practical, restored so as to maintain their viability.*

This local policy refers to Camp Smith Marsh, Annsville Creek, Peekskill Hollow Brook and the McGregory Brook, as well as Nose and Bald Mountains north of the city.

These habitats of local significance are not in proximity to the Project and will not be impacted by this Project.

4.16 Town of Stony Point

Policy 7A - *The Iona Island Marsh shall be protected, preserved and, where practical, restored so as to maintain its viability as a habitat.*

The Iona Island Marsh has a significance value of 71. It is comprised of approximately 270 acres of freshwater, tidal and brackish wetlands.

This area is along the west side of the Hudson River and will be avoided by this Project.

Policy 7B - *The Haverstraw Bay habitat shall be protected, preserved and, where practical, restored so as to maintain its viability as a habitat.*

Haverstraw Bay is a significant habitat with a significance value of 166. The bay encompasses a six mile stretch of the Hudson River from Stony Point to Croton Point. Average depth at mean low water is approximately 15 feet. Salinity in the area varies by year, but Haverstraw Bay is an important habitat for fish nurseries. The navigational channel is located on the west side of the bay and maintained at approximately 35 feet in depth.

The Applicants will move its cable into the previously and periodically disturbed side slope of the navigational channel so as to minimize impacts to Haverstraw Bay.

Policy 7C - *The Hudson River Mile 44 - 56 habitat shall be protected, preserved and, where practical, restored so as to maintain its viability as a habitat.*

This significant habitat runs from Cornwall Bay to Peekskill Bay. It is a 12 mile long deep water habitat reaching depths of up to 200 feet. The bay has strong currents and a rocky substrate. It is considered the southernmost extent of freshwater in the Hudson River and is an important spawning area.

Detailed information on potential impacts and mitigation are provided in Section 4.8.4.3 of the Application. Cable installation is not expected to result in a change in overall depths, and sediment deposition beyond the trench is expected to be negligible. BMPs will be employed during cable installation to minimize any potential adverse impacts.

Policy 23A - *Stabilize and revitalize the historic residences and neighborhoods on River Road, Munn Avenue and Grassy Point Road.*

This Project is not located in or near these areas and will have no impact on these resources, and so this policy is not applicable.

4.17 Village of Haverstraw

Policy 7A - *The Haverstraw Bay Habitat shall be protected, preserved and where practical, restored so as to maintain its viability as habitat.*

Haverstraw Bay is a significant habitat with a significance value of 166. The bay encompasses a six mile stretch of the Hudson River from Stony Point to Croton Point. Average depth at mean low water is approximately 15 feet. Salinity in the area varies by year, but Haverstraw Bay is an important habitat for fish nurseries. The navigational channel is located on the west side of the bay and is maintained at approximately 35 feet in depth.

The Applicants will move its cable into the previously and periodically disturbed side slope of the navigational channel so as to minimize impacts to Haverstraw Bay.

Policy 8A - *Control the introduction of new industries or technology which could increase the presence of hazardous materials within the Haverstraw coastal area.*

This Project's scope within the Village boundaries only involves the installation of HVDC cables, which do not contain any hazardous materials.

Policy 8B - *Encourage existing industrial productions or storage facilities to utilize the most current technologies available to minimize the potential threat from hazardous wastes or pollutants to the surrounding environment.*

This Project does not involve industrial or storage facilities.

***Policy 23A** - Stabilize and revitalize the historic residences and neighborhoods on First Street and Hudson Avenue as well as other selected areas.*

This Project is not located in or near these areas and will have no impact on these resources; therefore, this policy is not applicable.

***Policy 23B** - Preserve and protect underwater historic, archaeological and cultural resources in Haverstraw Bay.*

The Applicants proposes to place the underwater transmission cables within the existing navigational channel in Haverstraw Bay, which should minimize any potential impacts to underwater resources since these areas have been previously disturbed. Exhibit 4 of the Article VII Application provides a detailed discussion of underwater historic, archaeological and cultural resources in the vicinity of the Project.

4.18 Village of Croton on the Hudson

***Policy 7A** - The quality of the Croton River and Bay Significant Fish and Wildlife Habitat and Haverstraw Bay Significant Fish and Wildlife Habitat shall be protected and improved for conservation, economic, aesthetic, recreational, and other public uses and values. Its resources shall be protected from the threat of pollution, misuse, and mismanagement.*

Croton River and Bay is a significant habitat with a significance value of 24. The bay is comprised of approximately 1,200 acres of submerged aquatic vegetation and mudflats and is located at the south eastern edge of Haverstraw Bay. Most of the Croton River has been diverted for public water supplies.

This area will be avoided by the Project.

Haverstraw Bay is a significant habitat with a significance value of 166. The bay encompasses a six mile stretch of the Hudson River from Stony Point to Croton Point. Average depth at mean low water is approximately 15 feet. Salinity in the area varies by year, but Haverstraw Bay is an important habitat for fish nurseries. The navigational channel is located on the west side of the bay and maintained at approximately 35 feet in depth.

The Applicants will move its cable into the previously and periodically disturbed side slope of the navigational channel so as to minimize impacts to Haverstraw Bay.

***Policy 7B** - Materials that can degrade water quality and degrade or destroy the ecological system of the Croton River and Bay Significant Fish and Wildlife Habitat and the Haverstraw Bay Significant Fish and Wildlife Habitat shall not be disposed of or allowed to drain in or on land within the area of influence in the Significant Fish and Wildlife Habitats.*

No materials will be disposed of or allowed to drain into the Croton River and Bay SCFWH or the Haverstraw Bay SCFWH. The Project will be constructed with a Spill

Prevention, Control, and Countermeasure (SPCC) plan, which will be provided in the Environmental Management and Control Plans developed for in-water construction.

Policy 7C ***-*** *Storage of materials that can degrade water quality and degrade or destroy the ecological system of the Croton River and Bay Significant Fish and Wildlife Habitat or Haverstraw Bay Significant Fish and Wildlife Habitat shall not be permitted within the area of influence of the habitat unless best available technology is used to prevent adverse impacts to the habitat.*

This Project will not require the storage of materials that could degrade water quality or degrade or destroy the ecological system of the Croton River and Haverstraw Bay SCFWHs.

Policy 7D ***-*** *Restoration of degraded ecological elements of the Croton River and Bay and Haverstraw Bay Significant Fish and Wildlife Habitat and shorelands shall be included in any programs for cleanup of any adjacent toxic and hazardous waste sites.*

This local policy does not apply to the Project.

Policy 7E ***-*** *Runoff from public and private parking lots and from storm sewer overflows shall be effectively channeled so as to prevent oil, grease, and other contaminants from polluting surface and ground water and impact the Significant Fish and Wildlife Habitat.*

This local policy does not apply to the Project.

Policy 7F ***-*** *Construction activity of any kind must not cause a measurable increase in erosion or flooding at the site of such activity, or impact other locations. Construction activity shall be timed so that spawning of anadromous fish species and shellfish will not be adversely affected.*

Sediment and erosion control BMPs will be employed to minimize impacts outside of the construction area from erosion or stormwater. The buried cables will not measurably alter the riverbed elevation, thereby avoiding any possibility of increasing flooding or erosion. Construction activity will be timed to minimize impacts to fish spawning as described in Exhibit 4 of the Article VII Application.

Policy 7G ***-*** *Such activities must not cause degradation of water quality or impact identified Significant Fish and Wildlife Habitats.*

This Project will be constructed with BMPs in place that will minimize the potential for water quality degradation, other than localized and temporary increases in suspended sediment concentrations around the water jetting device. Impacts to identified SCFWHs have either been avoided through cable routing or will be minimized through the selection of jetting as the preferred burial method (Exhibit 4 of the Article VII Application).

***Policy 44A** - Wetlands, waterbodies and watercourses shall be protected by preventing damage from erosion or siltation, minimizing disturbance, preserving natural habitats and protecting against flood and pollution.*

The Applicants expect to avoid any direct impacts to wetlands along the underwater portions of the transmission cable corridor (Exhibit 4 of the Article VII Application) and will minimize siltation and other disturbances associated with the Project. The Project Description of this Joint Application provides additional details on the proposed construction methods, which allow for rapid cable laying and burial with the least sediment disturbing methods possible.

4.19 Village of Ossining

***Policy 7A** - The designated coastal habitat at the Croton River and Bay shall be protected, preserved and where practicable, restored so as to maintain its viability as habitat.*

Croton River and Bay is a significant habitat with a significance value of 24. The bay is comprised of approximately 1,200 acres of submerged aquatic vegetation and mudflats and is located at the southeastern edge of Haverstraw Bay. Most of the Croton River has been diverted for public water supplies.

This Project will avoid Croton Bay significant habitat.

***Policy 7B** - The locally important coastal wildlife habitat at Crawbuckie Nature Area shall be protected and preserved so as to maintain its viability as a habitat.*

The Crawbuckie Nature Area is east of the Croton Bay significant habitat and will be avoided by this Project.

4.20 Village of Nyack

***Policy 7A** - Protect the physical characteristics of the Hudson River along Nyack that support the varied fish populations found there. Nyack's LWRP notes that numerous species of fish are found in this area and implemented this local policy to protect them.*

This Project will not alter the physical characteristics of the Hudson River, other than generating minor and temporary increases in suspended sediments and a linear trench of fluidized sediments that will require some time to re-compact (Exhibit 4 of the Article VII Application).

4.21 Village of Sleepy Hollow

Policy 7A *- Fremont Lake and associated wetlands/watercourses and adjacent upland areas shall be protected, preserved, and, where practical, restored so as to maintain its viability as a locally significant habitat.*

Fremont Lake and its associated wetlands/watercourses and adjacent upland areas are not near nor will they be affected by this Project.

Policy 7B *- The Philipsburg Manor and Devries Field wetland/watercourse areas of the Pocantico River shall be protected, preserved, and, where practical, restored so as to maintain its viability as a locally significant habitat.*

These areas are not near nor will they be affected by this Project.

Policy 7C *- The Upper Pocantico River and Gorey Brook watercourse areas shall be protected, preserved, and, where practical, restored so as to maintain its viability as a locally significant habitat.*

These areas are not near nor will they be affected by this Project.

Policy 7D *- The Hudson River immediately adjacent and within 1000 feet of the village's shoreline shall be protected, preserved, and, where practical, restored so as to maintain its viability as a locally significant habitat.*

Installation of the cables will either occur at a distance of greater than 1,000 feet from the village's shoreline at this location or will involve only temporary disturbance to the riverbed, which will return to its pre-installation condition over time.

Policy 7E *- The lands in state ownership associated with the Rockefeller State Park Preserve and Old Croton Aqueduct Trail shall be protected, preserved, and, where practical, restored so as to maintain its viability as a locally significant habitat.*

These areas are not near nor will they be affected by this Project.

Policy 8A *- Control the introduction of new industries or technology which could increase the presence of hazardous materials within the Sleepy Hollow waterfront area.*

This Project's scope within the Village boundaries only involves the installation of HVDC cables, which do not contain any hazardous materials.

Policy 8B *- Encourage existing industrial production or storage facilities to utilize the most current technologies available to minimize the potential threat from hazardous wastes or pollutants to the surrounding environment.*

This Project does not involve industrial or storage facilities.

Policy 18A *- Protect the vital economic, social, cultural, and environmental interests of the village in the evaluation of any proposal for new roads, road widening or infrastructure.*

This local environmental policy is not applicable to this Project.

Policy 18B *- To protect the social interests of the village, proposed actions must give full consideration to the impacts of such actions on the community and cultural resources of the village and the quality of life such resources support.*

With the cables being buried in the bottom of the Hudson River, this Project will not impact the cultural resources of the village or the quality of life such resources support.

Policy 18C *- To protect the environmental interests of the village, proposed actions must give full consideration to the impacts of such actions on valuable and sensitive natural resources of the village.*

This Project will have negligible to minor impacts to certain resources (e.g. water quality, fisheries, benthos) of the Hudson River due to the temporary nature of the cable installation disturbance to the riverbed. Since the native sediments backfill the trench, the disturbed area represents a small fraction of the total area of the riverbed, and the increased suspended sediments are localized and disperse quickly so the impacted resources will return to its pre-installation condition quickly.

Policy 23A *- Preserve and enhance the structures, areas, or sites within the Village of Sleepy Hollow that are currently listed on the state and/or national register of historic places.*

This local policy does not pertain to the Project, since none of these resources will be altered or disturbed during cable installation.

Policy 23B *- Preserve and enhance the structures, areas, or sites within the Village of Sleepy Hollow that have been identified as being eligible for listing on the state and/or national register of historic places.*

This local policy does not pertain to the Project, since none of these resources will be altered or disturbed during cable installation.

Policy 23C *- Encourage the restoration and adaptive reuse of historic buildings such as the Philipse Manor Train Station.*

This local policy does not pertain to the Project, since none of these resources will be altered or disturbed during cable installation.

4.22 Village of Piermont

***Policy 7A** - Protect the Piermont Marsh south of the pier and the Sparkill Creek by severely restricting it to passive recreational uses.*

Piermont Marsh is a Significant Coastal Fish and Wildlife Habitat with a significance value of 74. It is a 725 acre tidal wetland located along the west side of the Hudson River. The Sparkill Creek empties into this wetland area.

This area will be avoided by the Project.

***Policy 8A** - The intentional dumping of oil or other pollutants into waterways and catch basins can be harmful to fish and wildlife resources, and such actions will be prosecuted.*

The Applicants and/or its contractors will not intentionally dump oil or other pollutants into the Hudson River.

***Policy 8B** - The Rockland County sewer outfall line should be extended to deeper, faster flowing water. The outfall line should be rebuilt to maintain its integrity.*

This local policy is not applicable to this Project since the Project does not involve activities which would require the use of the Rockland County sewer or otherwise warrant the Applicants' involvement in this endeavor.

***Policy 18A** - New development shall be designed to minimize impact on the availability of affordable housing and on the existing character and cultural resources of Piermont.*

The buried cables of this Project are consistent with this local policy.

***Policy 23A** - The architectural review board shall review applications for building permits involving structures identified as being architecturally significant or structures adjacent to buildings or sites identified as historically or architecturally significant.*

This local policy is not applicable to this Project.

***Policy 23B** - Place monuments and markers on structures and at sites important to the history of the Village of Piermont.*

This local policy is not applicable to this Project.

***Policy 44A** - The Piermont Marsh should be protected from pollutants that would adversely affect the ecology of the marsh.*

Piermont Marsh will be avoided by this Project and any indirect effects will be minimized by the construction methods selected and the environmental protection measures to be employed during construction, such as the implementation of SPCC plans for vessels installing the cables.

4.23 Village of Dobbs Ferry

The numbering of the policies for Dobbs Ferry differ from the numbering of these policies by NYSDOS. All policies have been reviewed and it has been determined that this Project will be consistent with the policies that might impact it. Specific policies are as follows:

Policy 6.1 *- Protect locally significant coastal fish and wildlife habitats.*

See above response to State Policy 7.

This Project will avoid or minimize impacts to SCFWHs to the greatest extent possible, both by the location of the cable corridor within the deeper waters of the Hudson River and the use of water jetting to bury the cable, which allows for faster burial than conventional dredging so that the duration and extent of suspended sediments are reduced. This installation method also allows for the initiation of riverbed recovery to occur sooner.

Policy 6.2 *- Support the restoration of Significant Coastal Fish and Wildlife Habitats wherever possible so as to foster their continued existence as natural, self-regulating systems.*

While not directly related to this Project, this Project will not interfere with or prevent restoration activities by others.

Policy 10.5 *- Promote the efficient management of surface waters and underwater lands.*

This Project will conform to this policy because of the selected location and proposed construction methods are designed to avoid more ecologically sensitive areas and minimize impacts to those lands and waters that cannot be avoided, as compared to other types of cable installation procedures.

THIS PAGE INTENTIONALLY LEFT BLANK

STATE OF NEW YORK
DEPARTMENT OF STATE
ONE COMMERCE PLAZA
99 WASHINGTON AVENUE
ALBANY, NY 12231-0001

ANDREW M. CUOMO
GOVERNOR

RUTH NOEMÍ COLÓN
ACTING SECRETARY OF STATE

January 5, 2011

Mr. Sean Murphy for Champlain Hudson
Power Express, Inc. and CHPE Properties
C/O HDR/DTA HDR Engineering Inc
970 Baxter Blvd
Suite 301
Portland, ME 04103-5346

Re: F-2010 -1162 (formerly S-2010-0025)
U.S. Army Corps of Engineers/NY District Permit
Application #: 2009-01089-EHA
DOE Docket #: PP-362
NYS PSC Case: 10-T-0139
NYS DEC Regions 2, 3, 4 and 5
Champlain Hudson Power Express, construct/operate 1,000 MW underwater/underground HVDC electric transmission system extending between Canada and NYC.
Received Federal Consistency Assessment Form - Request for Additional Information

Dear Mr. Murphy:

The Department of State (DOS) received your Federal Consistency Assessment Form, consistency certification and supporting information regarding the above proposed project on December 08, 2010 and began its review pursuant to 15 CFR Part 930, Subpart D on that date. A full review of your consistency certification will be conducted as it does not appear that the above referenced activity meets the criteria for a General Concurrence.

Based on the information provided during the extensive pre-application consultation involving DOS and the applicant, as well as other state and federal agencies, DOS has elected to waive the requirement that a Final Environmental Impact Statement (FEIS) be submitted as necessary data and information to initiate federal consistency review. However, pursuant to 15 CFR 930.58(a)(2) and in accordance with New York State's Coastal Management Program (CMP), as amended in 2001, an FEIS is considered additional data and information necessary for DOS to complete its review. If the applicant fails to provide the FEIS, DOS may object to your consistency certification on the grounds of insufficient information. However, if during the six month review period, DOS determines that the FEIS is not necessary to complete the review process, DOS will notify you accordingly.

Pursuant to 15 CFR 930.58, the following additional information and data is necessary to enable the Department of State to adequately assess the consistency of the proposed activity with the New York Coastal Management Program:

1. Please provide a written response to all information requested by DOS in the letter to Keith Silliman of TRC Companies, Inc. dated November 22, 2010 (enclosed). To date, verbal responses provided to DOS from TRC Companies, Inc. and HDR have been inadequate and reflect the need to submit written responses that includes information as to the ability of TDI to site the proposed line within existing utility corridors and in the right-of-way of state and county roads.

2. The information provided in the application envisions burying the cable along the proposed submarine route in the Hudson River at depths of 3 to 4 feet, in conjunction with the use of concrete mattresses in yet to be identified areas where burial would be prohibitive because of the presence of bedrock. In some instances, a greater depth may be required to avoid either environmental or magnetic field impacts or navigational deepening. Please provide a technical analysis of the maximum attainable cable burial depth for the entire submarine portions of the proposed route and identify where the use of concrete mattresses would be necessary.

3. Please provide information pertaining to the suitability and feasibility of siting the proposed cables within areas of the Hudson, East and Harlem Rivers that were previously mechanically dredged.

4. Please provide scientifically verifiable estimates for magnetic field levels and ambient temperature increases in soil and water for cable burial depths of 4, 8, 12 and 15 feet and a scientific analysis of the impacts of the magnetic fields and temperature increases on aquatic species in the Hudson River, including impacts on migratory routes, feeding, spawning, and all life development stages for each burial depth.

5. Please state the design life of the proposed project.

6. Analyzing existing Hudson River dredging and navigational use data, and recognizing the trend in the use of deeper draft vessels in the Hudson River, please explain how TDI will adjust the depth of the buried cable in the riverbed to accommodate any future federal dredging and navigation projects over the design life of the proposed project. Please include a discussion as to whether or not the burial of the proposed cables would interfere with such anticipated navigational improvements to the Hudson River.

The information requested is necessary for DOS to assess the consistency of your consistency certification with CMP policy numbers 2, 5, 7, 8, 9, 10, 11, 19, 20, 21, 22, 23, 27, 33, 35, 37, 38, and 44. This list of potentially applicable policies should not be viewed as exhaustive as the applicability of additional coastal policies may become apparent during our review.

If this additional information and data is not provided within thirty days of the date of this letter, the Department of State may, pursuant to 15 CFR Part 930.63(c), object to the consistency certification for this proposed activity on the grounds of insufficient information.

If the Department objects to the consistency certification for this proposed activity, the consistency provisions of the federal Coastal Zone Management Act prohibit federal agency authorization of the activity, unless the Department's objection is overridden on appeal to the U.S. Secretary of Commerce. Such an appeal must be based on one or both of the grounds that the proposed activity is consistent with the objectives or purposes of the Federal Coastal Zone Management Act, or is necessary in the interest of national security.

As DOS will be soliciting comments from all applicable Local Waterfront Revitalization Program communities regarding the consistency of the proposed action with their programs, it may be beneficial for TDI to provide these communities with copies of all information, or a link to where the information can be retrieved electronically, pertaining to the above referenced consistency certification. When communicating with us regarding this matter, please contact Matthew Maraglio at 518-474-5290 (email: matthew.maraglio@dos.state.ny.us) and refer to our file #F-2010-1162.

Sincerely,

Jeffrey Zappieri
Supervisor. Consistency Review Unit
Office of Coastal, Local Government
and Community Sustainability

JZ/mm

c: COE/ NY District – Naomi Handell
U.S. DOE – Dr. Jeffrey Pell
NYSDEC/ Central Office – Chris Hogan
NYS DPS – Steve Blow

THIS PAGE INTENTIONALLY LEFT BLANK

ONE COMPANY | *Many Solutions*®

January 18, 2011

Mr. Jeffrey Zappieri
Supervisor, Consistency Review
Department of State
Office of Coastal, Local Government and Community Sustainability
99 Washington Avenue, Suite 1010
Albany, NY 12231-0001

Subject: **Updated Alternatives Analysis**
Champlain Hudson Power Express Project

Dear Mr. Zappieri:

On behalf of the Applicants, please consider this letter to be the response to your letter of November 22, 2010 which provided comments from the New York State Department of State (DOS) on the Updated Alternatives Analysis developed for the Champlain Hudson Power Express Project (Project) as well as requested additional information. We appreciate the comprehensive nature of your response.

The Applicants are in receipt of your letter of January 5, 2011 and expect to provide a formal supplement to our request for coastal consistency review of the Project at some point in the near future. Thank you again for your interest in the Project and, as always, our staff can be available at your convenience to discuss any questions or concerns arising from this document.

Sincerely,

Sean Murphy
Senior Regulatory Specialist

cc: D. Jessome, CHPEI (electronically)
F. Bifera, Hiscock and Barclay (electronically)

Champlain Hudson Power Express, Inc.

Case 10-T-0139

In a letter of November 22, 2010, the DOS requested additional information related to four topics:

- Analysis of alternate routes;
- Impacts associated with installation and operation of Project on commercial and recreational navigation;
- Impacts associated with installation and operation of Project on Significant Coastal Fish and Wildlife Habitats (SCFWH); and
- Impacts associated with installation and operation of Project on commercial and recreational fisheries.

Each of these areas of concern is discussed below.

1. Alternatives Analysis

As your letter notes, the Applicants have previously presented route alternatives as part of federal and state permitting processes. The Updated Alternatives Analysis report which was submitted to settlement parties on November 5, 2010 describes the routes. This document also provides an initial analysis of the three alternative routes presented by the New York State Department of Public Service (DPS) in late October.

In response to your letter, as well as to similar lines of questioning raised by other parties, the Applicants have endeavored to provide a detailed analysis of routing constraints and alternatives along the DPS' "Western Hudson Alternative". In order to allow for ease of analysis, the Western Hudson Alternative has been divided into segments with reference to the corresponding Route Mile marker to better aid in identifying the end points.

Segments of the route which were identified as being reasonable, as well as feasible, based on known concerns (e.g. engineering, land ownership, environmental constraints) have been accepted by the Applicants. In completing this analysis, the Applicants adopted the following principles:

a. The minimization of in-water route length is not equivalent to minimizing environmental and societal impacts. Greater use of land-based corridors in these areas requires the crossing of a significant number of streams and wetlands, presenting the risk of greater cumulative impacts to resources. Available information indicates that the preferred in-water route will only have temporary impacts to the water bodies.

b. Existing land corridors often involve construction complexities such as buried utilities and other existing infrastructure, the overcoming of which can be economically infeasible. Even if economically feasible, these routes would significantly delay the Project's in-service date, impose significant inconvenience to vehicle and/or rail traffic for commuters, and leave the cables less reliable and more subject to outages and disruptions due to accidents, rail and highway repairs and maintenance, and terrorism risks.

c. The multiple use of existing utility and transportation corridors has been a longstanding siting policy that now must be reconsidered in light of heightened concerns about terrorism. Increased security is required when installing new utility infrastructure in any new Right-of-Way (ROW). Submarine routes inherently offer enhanced security due to the absence of readily visible identification. Constructing a transmission line in its own ROW, rather than concentrating utility infrastructure in multiple use corridors, increases reliability by decreasing the chances that accidents and maintenance and repair work on other facilities will result in disruptions.

d. When considering overland alternatives the preference is to utilize state highways rather than local roads due to the generally more expansive width of available rights-of-way, which allows for greater construction flexibility, increased worker safety, and decreased disruption of normal traffic flow. The Applicants also strongly preferred utilizing public lands for the cable corridor rather than establishing a permanent easement on private lands, although temporary easements may be necessary on private lands for construction purposes.

In terms of overland alternatives, parties have questioned in the past why existing utility corridors have not been utilized. In the Alternatives Analysis submitted with the July Supplement, a buried utility line extending from the U.S. / Canada border to the New York region was evaluated but ultimately eliminated from consideration. Since that time, the Applicants spoke with the three utilities who own the ROWs under discussion and each voiced opposition to collocation with their facilities. The New York Power Authority noted that they were under the same statutory restrictions as the New York State Canal Corporation in terms of their ability to dispose of public lands and that they do not believe they would have the ability to grant the necessary long term land interests. National Grid expressed concern regarding the impact this Project would have on their system reliability and potential expansion of their own facilities within the ROW. A representative of Con Edison stated that for safety and reliability reasons they would not want the cables installed in near proximity to their tower foundations. In addition, their transmission lines within Westchester County are buried and their representative did not believe Con Edison could grant the right to use their ROW to a separate private entity. These conversations have confirmed the Applicants' previous position that any attempt to collocate the Project with an existing utility ROW would require the acquisition of land rights adjacent to the ROW either through purchase or eminent domain due to concerns by the ROW owners over the safety of their system and their desire to preserve the ROW for potential future expansion.

Route Mile 202 to 223 (Coeymans to Catskill)

The Project route as originally proposed would enter the Hudson River in Coeymans, New York by following the CSX Transportation (CSX) ROW. The Applicants have reviewed the CSX

ROW from Selkirk south to north of Catskill and identified no significant engineering constraints. From Catskill, the Applicants would propose laying the cables within the Route 23 ROW to enter the river at approximately Mile 223.5 of the original route. This alternative bypassed several SCFWH areas, including Stockport Creek and Flats, Vosburg Swamp and Middle Ground Flats.

Route Mile 223 to 233 (Catskill to Malden-on-Hudson)

From Catskill to Malden-on-Hudson (north of Saugerties), the Applicants note only one potential engineering issue, the Catskill Trestle which crosses Catskill Creek and Route 9. Previous conversations with CSX suggest that the cables could be attached to this structure. Following the railroad ROW until it intersects with Route 34, the cables could be laid in the roadway ROW to the east to connect with Riverside Road and then Riverside Drive. While the Project in general seeks to avoid local roads due to the more narrow rights-of-way and potential for local opposition, the relative shortness of this usage seems justified given the length of overland that would be enabled. The parking lot for the boat launch at the termination of this road will allow for a horizontal directional drill (HDD) into the Hudson River.

The Applicants believe that this portion of the Western Hudson Alternative is a feasible alternative but that it is not possible to install the cables upland south of this point to Kingston for the reasons discussed below. Based on this analysis, the Applicants are including this segment in their overall settlement proposal.

Route Mile 233 to 245 (Malden-on-Hudson to Kingston)

Siting in this segment is complicated by the dense development within the Ulster / Kingston area. As the CSX railroad travels beneath Route 209 in Ulster, the railroad corridor is bound on either side by existing transmission lines. Typically when collocating in a common ROW, the utility companies must maintain a specified separation from other facilities, which would not be possible along this segment. This is one of the concerns raised by utility companies about collocating with existing transmission lines (see above for a more extended discussion). The route in this area would have to collocate in the ROW of John M. Clark Drive, which runs parallel to the tracks until they both intersect with Route 157, at which point the transmission lines no longer run on both sides of the railroad ROW. The utilization of the roadway does not represent an obstacle but is presented so as to be clear that the Applicants would need to leave the railroad ROW in this area.

After passing through the Kingston railyard and over Route 32/Flatbush Avenue, the railroad corridor traverses the middle of St. Mary's Cemetery with an overhead transmission line on the western side of the railroad corridor. There is insufficient room between the cemetery (actual gravestones) and the railroad tracks along the eastern side of the railroad corridor to install the Project's cables. A roadway bypass would require utilizing the Route 32 ROW to access Farrelly Street to the east or Foxhall Avenue to the west. Utilizing either of these roadways would require traveling through residential neighborhoods where the houses are tightly packed and close to the roads, making installation extremely difficult and disruptive.

Immediately south of the cemetery, the railroad corridor extends through a heavily developed urban area where large buildings are located immediately adjacent to the railroad corridor (within ~10 feet), resulting in insufficient horizontal clearance to install the Project cables within this section of ROW. This level of development is intermittent until the railroad crosses a small bridge over Broadway. As with the roads proximal to the cemetery, the roadways that might be utilized as an alternative to this segment (e.g. Foxhall Avenue, Cornell Street, Ten Broeck Avenue, and Grand Street) also have buildings immediately adjacent to the roadway as well as residential houses where construction would be disruptive.

The Applicants also reviewed roadway alternatives that would bypass the city of Kingston. Route 9W could be accessed by following Route 157 east at the terminus of John M. Clark Drive. While Route 9W has a low density of development north of Route 32, it becomes a limited access highway (controlled-access road) once it crosses Route 32. The New York State Department of Transportation (NYSDOT) has indicated that the Federal Highway Administration would need to review installation in this segment and that the last review required 18 months. Route 32 becomes Flatbush Road and Flatbush Avenue as it passes within the city center and experiences the same high level of development as other roadways within the city.

Based on this analysis, the Applicants were unable to identify any reasonable alternative that traversed the municipalities of Ulster and Kingston and therefore the cables will need to enter the water prior to this point. Moving north along the railroad ROW, the track runs parallel to the Hudson River until it intersects with Route 31, at which point it veers to the northeast towards Saugerties. As the Esopus Estuary SCFWH stretches along the riverbank north from where Esopus Creek empties into the Hudson River, the entry point would need to be in or north of Malden-on-Hudson. From the ROW, Route 34 could be followed to the east into Malden-on-Hudson and private land accessed to allow for an HDD into the Hudson at approximately Mile 233 of the original route.

In terms of roadway alternatives, the only road that travels in relatively close proximity to the Hudson River is Route 32 with a separation distance of approximately one-half mile. However, this roadway, as well as Route 9W, traverses the Esopus Creek Bridge to cross the Esopus Creek. To date, the New York State Department of Transportation has indicated that they would not permit hanging cables on structures owned and operated by the agency. An HDD would be complicated by the depth of the gorge (approximately 75 feet), the gravity dam downstream of the bridge, and existing buildings at both ends of the bridge. There are no existing launch /exit sites that meet the necessary spacing criteria for a safe drill under these constraints. Therefore, Routes 9W and 32 south of Esopus Creek are considered inaccessible to the northern portion of the cable route and therefore not a feasible alternative.

Route Mile 245 to 254 (Kingston to West Park)

South of Kingston, the access point to the railroad will require that the cables be installed within Rondout Creek, which is a SCFWH. Rondout Creek is one of the largest freshwater tributaries of the Hudson River Estuary and the concentrations of anadromous and resident freshwater fish are considered unusual in Ulster County. In addition, the Applicants are aware of significant issues associated with a now defunct gasification plant at the mouth of the creek currently undergoing remediation. If installation of the cables were to occur in this water body, it should be done outside of the fish spawning and incubation periods (March through July for most warm water species). The railroad ROW does not appear to have any significant engineering constraints until it intersects with Route 9W in West Park.

The Applicants note that the ROW of Route 9W could also be utilized to travel north of Kingston. However, given that accessing the roadway would also require installation within the Rondout Creek SCFWH and that installation on a well-travelled road would be more disruptive than on a railroad line, the Applicants would recommend adopting the ROW alternative if it is determined that installation within the Rondout Creek is acceptable. The Applicants also considered utilizing Routes 81 /24 (River Road), which run parallel to the Hudson River but connecting to these roadways would require installing a significant length of the cable on privately-held land.

Route Mile 254 to 261 (West Park to Highland)

South of the intersection with Route 9W, the railroad line runs adjacent to the Hudson River and often the railroad lines are sited in a narrow opening between the edge of the Hudson River and large rock outcroppings or very steep terrain to the west. Installation in these areas will require either blasting of the bedrock to create a sufficient degree of separation from the railroad or an expensive HDD installation (assuming that there is available space for this technique). Using an internet mapping site that provided aerial photography, the Applicants identified sixteen distinct outcrops with an estimated average length 490 feet and a range of 230 to 1,020 feet. However, it should be noted that the desktop analysis only accounts for exposed outcroppings, so the actual extent of bedrock material may be far more extensive. In Highland, Oakes Road runs immediately adjacent to the railroad ROW for approximately 3,200 feet, so there is insufficient room to install the cables for much of this stretch. The Applicants consider installation in this section of railroad ROW to be at least impractical and likely infeasible.

The Applicants also considered the use of Route 9W, which initially travels through largely undeveloped countryside. Transmission poles border the western side of the road for less than 2 miles until it intersects with Upper North Road in Highland, so installation in this area would be on the eastern side. A short distance after the intersection with Upper North Road, Route 9W expands to four lanes. Over the next approximately 4 miles, the transmission system switches sides eight times. In order to maintain the required separation, the cables would need to cross underneath the roadway. As Routes 44 and 55 overlap with Route 9W in Highland, the transmission system poles occupy both sides of the roadway. In addition, the density of businesses with access points on the roadway increases. Route 9W also has two bridges before its connection with Route 44/55 for which there are no readily identifiable bypasses. The NYSDOT has indicated that there is no precedent for installation of a high voltage cable on a roadway bridge. The intensity of development as the highway enters Highland and high traffic volume would make utilization of Route 9W would make installation infeasible.

Route Mile 261 to 277 (Highland to Newburgh)

Immediately south of the intersection of the ROW with the Route 44 bridge, a maintenance road to the west of the tracks appears to have been built. The width of this road appears insufficient to meet CSX's minimum separation distance from the tracks. Between the Route 44 bridge and U.S. Highway 84 bridge in Newburgh, the Applicants identified eighteen rock outcrops that would significantly complicate installation if the railroad companies even allowed for the necessary construction activities. The average length of each outcrop is approximately 770 feet with a range of 160 to 2,950 feet. This segment also has seven instances where the railroad has water on both sides of the tracks for an average distance of 1250 feet. As was noted earlier, the desktop analysis only accounts for visible bedrock and so the actual length of ROW where upland construction is essentially infeasible may be far longer. A short distance south of the U.S. Highway 84 bridge the railroad occupies a raised berm. The cables would either need to be laid at the foot of the berm with HDDs for the road crossings or, in congested sections, the ROW of an alternate roadway such as Water Street would need to be accessed. The Applicants consider installation in this section of railroad ROW to be impractical.

In terms of roadway alternatives, Oakes Road passes under the Route 44 bridge but reaches a dead end within a mile. Other roadway route alternatives would need to be accessed through Highland and, as has been previously discussed; the level of development in the vicinity of the intersection of Routes 9W and 44 would prevent cable installation in a reasonable manner.

Following the Hudson River south from Highland, the first roadway to come in close proximity to the river is Old Indian Trail Road in Milton at approximately Route Mile 266. At its closest point, the road is adjacent to the railroad ROW and is less than a mile away from connecting to Route 9W. As Route 9W travels south, it traverses lightly to moderately developed areas. However, as was observed in a northern segment, the transmission poles cross the roadway multiple times which would require HDD drillings or open cut trenching at each location. The transmission line crossings are often to avoid natural and anthropogenic obstacles, thereby making installation of the Project's cables more problematic since cables would not only need to avoid the transmission lines but also these features.

As the road approaches Marlboro, development becomes more pronounced with the hamlet buildings directly adjacent to the roadway. South of the hamlet's center, the road has transmission poles on one side and a cemetery on the other for approximately 500 feet. Bypassing this section would require utilizing residential roads for approximately one-half mile. Continuing south, Route 9W continues to travel through low to moderate density developments, with transmission poles that cross the highway at infrequent intervals. The Applicants did not identify any engineering "fatal flaws" with this segment, but the high per-mile cost as well as the disruption to homes and businesses does not appear justified given the length of the bypass. In addition, as is discussed below, there are significant engineering constraints as the road passes beneath the Route 84 with no readily available bypass options.

Route Mile 277 to 280 (Newburgh to Cornwall-on-Hudson)

South of Newburgh, the Applicants did not identify any significant engineering constraints until the railroad reaches Cornwall-on-Hudson where Shore Road is proximal to the railroad tracks.

Within a one-half-mile distance of the Route 84 bridge, Route 9W experiences significant industrial development. In the center of Newburgh, the road is bordered by tightly packed residential homes, as well as occasional park and recreational facilities. South of Newburgh proper, Route 9W becomes a divided four lane highway for approximately 2 miles with transmission poles on the eastern side of the road. Once the divided highway ends, there is a bridge crossing of Moodna Creek which, based on previous conversations with NYSDOT about the use of their bridges, will require that the Project utilize an HDD drill as Route 9W crosses Route 107 in Cornwall, it transitions to a limited access highway and collocation of transmission cables in the ROW of limited access highways is highly restricted and discouraged by NYSDOT.

Route Mile 280 to 284 (Cornwall-on-Hudson to West Point)

As the railroad reaches Cornwall-on-Hudson, Shore Road runs parallel to the tracks for approximately 1 mile and for more than half that distance the Hudson River lies along the eastern side. The Applicants identified five rock outcroppings with an average length of 960 feet (range of 380 to 1,920 feet) and a berm through a water way extending approximately 300 feet. In West Point, River Road and the Upton Road run parallel to the railroad tracks with the Hudson River to the east for approximately 4,060 feet before entering the tunnel beneath West Point Military Academy. Given the engineering constraints presented over this relatively short segment, the Applicants do not consider it reasonable to utilize his route.

As previously discussed, Route 9W becomes a limited access highway in Cornwall and NYSDOT has indicated that it would likely restrict the collocation in the ROW of limited access highways. As an alternate route, the Applicants considered Route 218 which intersects the highway prior to the transition to a limited access roadway. Route 218, however, travels through the center of Cornwall-on-Hudson through tightly packed residential and commercial districts. Trees line both sides of road through the town, so that any installation would either require their removal or risk damage. Outside the town proper, Route 218 enters Storm King State Park and climbs up Storm King Mountain along a steep and windy roadway. As the road crosses the front of the mountain, there is an approximately one-half-mile stretch where the road has been carved out of the cliff face. Based on this engineering constraint, the Applicants do not consider this roadway to be a feasible alternative.

Route Mile 284 to 285 (West Point)

The tunnel beneath West Point extends for approximately 3,500 feet. The Applicants' insurance company has stated the cables must be fully protected to secure coverage. Installation of the cables within the tunnel ceiling would present a serious liability should any type of failure occur. Similarly, the railroad company has specified safety setbacks which could not be met within this tunnel. Rock cuts into the sides of the wall are theoretically possible, although a geophysical analysis would be required to ensure there was no impact on the integrity of the tunnel. Past conversations with representatives of the railroad line suggest they would not allow this approach as it would require work within the tunnel for months, significantly impacting railway use. As the railroad leaves the tunnel, there is a short stretch (approximately 500 feet) where an Academy parking lot lies to the east and Williams Road to the west. The parking lot would need to be torn up to install the cables or an HDD enacted. The Applicants consider installation in this section of railroad ROW to be impractical.

There are no state roads in close proximity to either entrance to the tunnel. Both River Road and Upton Road are in close proximity to the water and connect into existing local roads; however, these roads are built perpendicular to the slope of the foothills of Storm King Mountain and the rights-of-way are narrow. In addition, the most likely alternatives are under the control of the Academy, which may not permit installation on a military facility. The Applicants believe that an in-water route is the most practical approach considering the short reach necessary to bypass this tunnel.

Route Mile 285 to 290 (West Point to Fort Montgomery)

As with earlier segments, the railroad runs parallel to the Hudson River. The Applicants identified ten rock outcroppings with an average length of 720 feet (range of 265 to 1,606 feet) and four water crossings with an average length of approximately 490 feet (range of 402 to 644 feet). In addition, the ROW travels through the Bear Mountain tunnel, which extends for approximately 800 feet. The Applicants consider installation in this section of railroad ROW to be impractical.

There are no state roads or local roads in close proximity to the water for this segment. Mine Dock Road in Fort Montgomery could be accessed if the cables came out of the water into the railroad ROW and were laid a short distance before entering the road; however, Mine Dock Road runs underneath Route 9W and private homes are located on either side of the bridge abutments. Therefore, the Applicants did not identify any overland alternative to this segment or specifically the Bear Mountain tunnel.

Route Mile 290 to 296 (Fort Montgomery to Haverstraw)

The Applicants identified six rock outcroppings with an average length of 490 feet (range of 190 to 860 feet) and seven water crossings with an average length of 1,080 feet (range 391 to 2,373 feet). In addition, north of Stony Point Lighthouse is an approximately 2,020-foot stretch of railroad where water is to the east and utility grade transmission lines are to the west. As the railroad curves around Dunderberg Mountain past Jones Point, River Road runs parallel to the tracks for approximately 1,400 feet. Further along the tracks, West Shore Drive in Tomkins Cove runs in close proximity to the railway for approximately 1,600 feet. The Applicants consider installation in this section of railroad ROW to be impractical due to the constrained ROW.

A steep rock embankment lies beneath the bridge that connects Route 6/202 into a round-about with Routes 9W/202 and the Palisades Interstate Parkway. The Applicants are unsure if this feature is considered part of the parkway and therefore unusable by a transmission system. Assuming Route 9W/202 is available, the roadway travels south through Bear Mountain State Park. Trees line both sides of the road, which is kept in a natural setting. The roadway passes a boat launch near Iona Island, whose bay is a SCFWH. The Applicants identified six rock outcroppings for an average length of 850 feet (range of 141 to 2,556 feet). The Applicants consider installation in this section of road to be impractical due to the extent of clearing, blasting and/or other activities that would be required within a state park for a relatively short overland segment.

Route Mile 296 to 303 (Haverstraw Bay)

The Applicants recently submitted a settlement proposal which would site the Project outside of Haverstraw Bay.

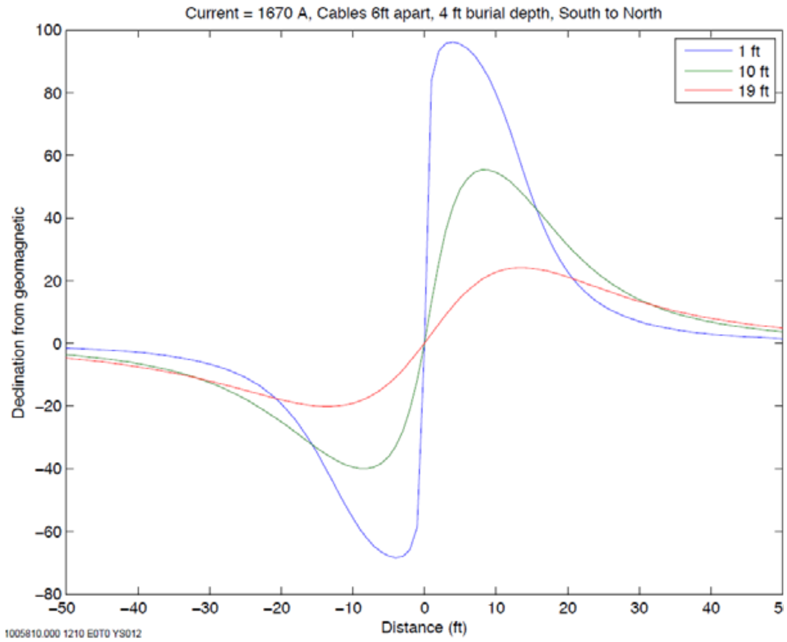
2. Commercial and Recreational Navigation

Impacts to commercial and recreational use of the waterways during the construction phase are expected to be minor and temporary. During Project construction, the presence and operation of the cable installation barges/vessels will create elevated noise levels and additional vessel traffic on these waterways. All Project work activities will be closely coordinated with the United States Army Corps of Engineers (USACE), the United States Coast Guard (USCG), local pilot associations and other local, state, and federal agencies as determined to be necessary to minimize or avoid impacts. A Notice to Mariners or similar notification will be issued prior to any in-water work.

Cables would be buried in a manner consistent with conditions and requirements imposed by the regulatory agencies; these conditions would include reasonably foreseeable maintenance and expansion activities associated with navigation channels. The presence of the cables will result in additional areas within these waterways where restrictions would be imposed on vessel anchorage. However, the proposed route avoids designated anchorage areas, so the overall impact is expected to be minor. The Applicants are not proposing to utilize the side slopes of the Federal navigation channel, as the overland routes proposed as part of settlement bypass those SCFWH where the DOS had previously identified it would be necessary to be in a disturbed area (e.g. Haverstraw Bay).

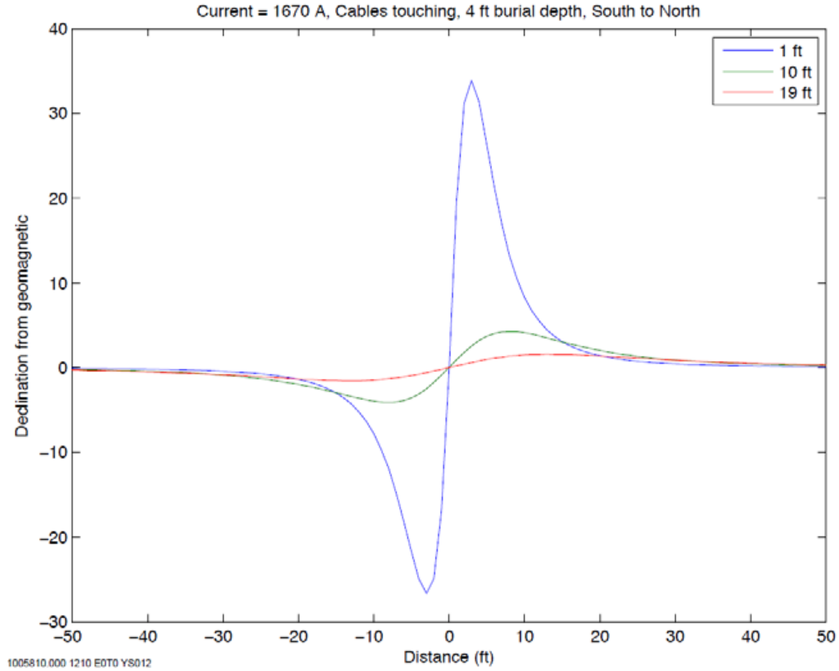
The DC magnetic field of the cables will not induce voltages or currents into communications equipment, including but not limited to marine radios, remote telephones, and cell phones. The only expected effect is a small effect on mechanical compasses when over the cables. An analysis by Exponent determined that, for cables buried at 4 feet and separated by a distance of 6 feet, the maximum deviance from magnetic north at 19 feet above the water would be an estimated 20 degrees at approximately 20 feet east or west from the cables (see Figure 1). The deviance from magnetic north is reduced to zero directly over the cables and at a distance of 50 feet from the cables.

Figure1: Deviation of a compass from magnetic north in degrees at 1, 10, and 19 feet above the sediment when cables are separated by 6 feet



The deviation of a compass from magnetic north was also estimated when the cables were in close proximity, as the Applicants are currently proposing. Under this scenario the expected declination from magnetic north would be less than 3 degrees at 19 feet above the cables and only within 10 to 20 feet of the cables (see Figure 2). As the cables are outside of the navigation channel (where vessel traffic will be heaviest) and the Hudson River is not open water, the impact of this deviance is expected to be minimal. Deeper burial of the cables would result in lowered effects.

Figure2: Deviation of a compass from magnetic north in degrees at 1, 10, and 19 feet above the sediment when cables are touching



In addition, there are no expected long term EMF exposure issues for individuals traveling along the Hudson River. The calculated magnetic field values at the surface of the Hudson River range from 38.7 to 57.3 milligauss (mG) [Appendix B, Request 14 of the supplemental document submitted to the New York State Public Service Commission on July 22, 2010]. This range is comparable to the expected magnetic field of a household appliance and considerably less than the earth's magnetic field (~470 to 590 mG). Current New York standards limit the maximum magnetic field at the end of a ROW of a major transmission line at 200 mG. None of the projected magnetic field exposures to commercial or recreational boaters would even remotely approach the limits recommended to protect human health by the International Commission on Non-ionizing Radiation Projection (NRPB, 2009).

3. Significant Coastal Fish and Wildlife Habitats

The potential impact of cable installation is addressed through an impairment test which evaluates the effects of the proposed action on a range of parameters that may be important in the ecological functioning of the designated habitat. The impairment test is used to determine if the proposed action would "destroy the habitat" or "significantly impair the viability of a habitat." The parameters used in the test involve physical processes, chemical characteristics, including pollutants and biological assemblages and processes. The installation of the cables requires a temporary physical alteration to a small portion of the designated habitat, but the evaluation of habitat destruction or impairment can only be addressed in the long term because natural habitats have the documented capacity to recover from disturbances, both natural and man-induced. An evaluation of the potential impacts to the designated habitat is provided below.

Physical Parameters

The major physical parameters influencing habitat in the designated areas are the dynamic tidal character of the Estuary and the geological setting of the habitat. These factors interact to shape the river channel and control the substrate, which, in turn, are major determinants of the biological community and biological activity in each of the designated significant habitats. The burial of the cables will temporarily disturb a small portion of the substrates in these areas, but because no Project structures will remain above bottom after installation, the tidal dynamics and geological processes (erosion and sedimentation) would be unaltered by the installation work. The physical processes would act on the disturbed area and reshape the substrate material into the same general configuration as existed before the cables were installed.

The only instances where there would be a change in the topography of a habitat area would be in places where rock outcroppings required that the use of grout filled mattresses. These coverings would remain as a permanent feature on the bottom, extending several feet above the existing substrate, and would modify river currents in a very small area. While these structures could induce sedimentation and scour in the near vicinity, their overall effect on river currents, sedimentation and scour would be negligible as they would be located in deep, swift water that would continue to dominate the hydrodynamics of the reach. The Applicants anticipate providing information regarding potential installation depths throughout the entire underwater route as part of their response to the DOS letter of January 5, 2011.

Biological Parameters

The use of water jetting to bury the cables in the substrate would temporarily impact the benthic community and organisms in the path of the cables and those adjacent to the pathway may be buried by sediment that settles along the trench. Cable installation and burial equipment (e.g., jet plow, shear plow or similar equipment) moves at variable speeds across the bottom but slowly enough (generally less than 0.5 feet/second) so that fish and mobile invertebrates can move away and avoid direct effects. Adverse effects on benthic community structure, food chain relationships, species diversity and predator/prey relationships among benthic organisms and between the fish and benthic trophic levels would be restricted to the area of disturbance and would not occur throughout these trophic levels in the undisturbed deepwater portion of the designated habitat, nor would they occur beyond the area of disturbance in the Hudson Estuary as a whole. The limited spatial distribution of effects ensures that the adjacent undisturbed benthic habitat can provide a source of recruitment of reproductive stages that can recolonize the disturbed areas.

If it is necessary to cross the Federal navigation channel, conventional dredging may be required for cable installation below the channel's authorized depth. Because dredging would take place at the bottom of the existing deep channel, there would be very limited spread of dredged material turbidity laterally across the shallow habitat adjacent to the channel. Dredged material would be brought to the surface for placement in scows for transport to the selected disposal location. Conventional dredging would employ best management practices (BMPs). These

BMPs would limit the spread of a surface turbidity plume, minimizing turbidity and sedimentation effects on the adjacent shallow water. Dredging proceeds slowly across the bottom so that fish and mobile invertebrates can move away and generally avoid direct effects. The limited spatial distribution of effects ensures that the adjacent undisturbed benthic habitat can provide a source of recruitment of reproductive stages that can recolonize the disturbed area.

The recovery of the benthic community and the re-establishment of its ecological relationships with other trophic levels after cable installation is contingent upon the re-establishment of the benthic substrate which supports the benthic community. Installation of the cables disturbs the sediment in a very small area of any cable segment, but does not remove the substrate material except in cases where dredging is required. Much of the existing sediment remains in the trench created for the cables.

The availability of organic and inorganic suspended sediment and the action of the tidal current regime are the primary factors influencing the configuration of the substrate surface. These factors would be unchanged by cable installation and would begin to reshape the disturbed sediments immediately. The disturbed sediments would compact over time and the surface sediment particles would be re-sorted by current action and the trench area would be comprised of similar grain size distribution to surrounding substrates. Benthic substrates are a dynamic habitat in that they are changing in response to the variability in the forces that are constantly acting on them. Cable installation would have no influence on the variability of these factors, thus the substrate will retain its natural dynamic characteristics.

The population characteristics of the benthic organisms, such as reproductive rates, mortality rates and population size are the results of habitat and biological interactions occurring on a spatial scale much greater than the area affected by cable installation. The substrate disturbance would have a direct, temporary effect on the localized community in the path of the cables. However, with recovery of the habitat and re-colonization of the area, the populations of benthic species would return to pre-installation levels because the factors influencing the reproductive and mortality rates would be the same as the rates prevailing over the entire distribution of these species in the Estuary. The cable installation would not alter the factors controlling these rates.

Where grouted filled mattresses are employed, they would represent a new substrate material. However, as they would be used only where rocky substrate is exposed or close to the surface, in many cases the existing hard surface substrate would be replaced by an alternative hard surface material. The concrete of the mattresses would be colonized by aquatic life that prefers hard surfaces, thereby the net change in aquatic life using the substrate would be minimal. The presence of the mattresses would have no effect on biological activity occurring above the bottom, such as spawning of striped bass or migratory movements of fish. Overwintering of fish in these deep channels would continue to take place as it does under existing conditions.

Chemical Parameters

The chemical characteristics of the water in the designated habitat areas are determined by the water mass movements in the Estuary. The levels of chemical constituents change continually throughout tidal cycling. The Hudson Estuary is well mixed, thus the magnitude of changes over

a tidal cycle are generally relatively small. The installation process does not introduce or extract any chemical constituents from the water, which limits the potential for a change to the water chemistry to the disturbance of the substrate during cable installation.
The sediment chemistry for the designated habitat areas shows that the sediments have generally low and variable levels of chemical contaminants. These contaminants are widespread in the Estuary, thus existing aquatic life are exposed to them throughout their lifecycles. Water jetting would resuspend the existing substrate along the cable route, but as discussed above, the vast majority of the sediment would remain within the trench. In areas where dredging may be conducted when crossing through navigation channels, the dredge material would be tested and placed at an approved disposal site. The concentrations and distribution of the existing contaminants may be slightly altered by the sediment disturbance, but average concentrations of these constituents would remain the same throughout the designated habitat areas. Some contaminants that are in the surface layer would probably be buried as the disturbed sediment settles into the trench. Because the aquatic life exposure to existing contaminants is not significantly altered by the installation process, there will be no impairment of ecological processes.

During the Project planning phase, the Applicants are using existing sediment quality data to site the cable route and, where possible, avoid known areas of high concentrations of contaminants. In addition, water quality modeling is being conducted to assess the potential impacts to water quality standards. If, based on model results, there are potential impacts to water quality standards. The Applicants will develop methods to minimize the impact to the maximum extent practicable during installation. In addition, during cable installation, CHPEI will perform water quality monitoring to assure water quality standards are met.

A three-dimensional hydrodynamic and time-variable water quality model was developed to assess water quality impacts and compliance with water quality standards in the Hudson, Harlem and East Rivers. The model was used to simulate ten contaminants that were found in sediment cores collected during the Spring 2010 Marine Route Survey. The maximum model-computed concentrations of contaminants along the cable route were graphically presented and compared to New York State's water quality standards. The effects of the proposed cable installation are projected to comply with water quality standards that are based on protecting aquatic life from acute toxicity, which are the most appropriate criteria for the assessment of the proposed Project given the non-chronic (i.e., short-term) and incremental nature of the potential exposure to sediment contaminants resulting from the cable installation. The projected maximum total PCB concentration is below the EPA's Engineering Performance Standard water quality criteria for dredging resuspension at the Hudson River PCBs Superfund Site (EPA 2003).

Project Impacts

The submarine cable route presented in the July 2010 Supplement to the Application for Certificate of Environmental Compatibility and Public Need was developed using the following criteria selected to minimize potential impacts on aquatic resources:

- Cable route sited in moderately deep to deep water to avoid shallow vegetated habitats;
- Avoid maintained navigation channels to the extent possible;

- ■ Avoid Significant Coastal Fish and Wildlife Habitats to the extent possible; and
- ■ Use cable installation and burial equipment that minimizes disturbance of the benthic substrate.

Originally presented to state and federal agencies as almost an exclusively submarine project, early consultation indicated significant concerns with cable installation in the Hudson River north of the Federal Dam at Troy due to significantly elevated levels of PCB and the uncertainties surrounding the schedule for the Hudson River Dredging Project dredging activities initiated in 2010. The Applicants accepted the admonitions of these agencies and non-governmental organizations that an overland route for this portion of the route should be adopted to reduce potential water quality impacts despite the increased construction costs.

Recently, the Applicants have also proposed an additional 40 miles of upland routing as a replacement for approximately the same number of miles of in-water construction. In order to minimize water quality impacts and reduce the number of navigation channel crossings. This proposal, if adopted, would bypass the following SCFWH which were in proximity to the route presented in the July 2010 Supplement to the Application for Certificate of Environmental Compatibility and Public Need:

- ■ Shad and Schermerhorn Islands
- ■ Schodack and Houghtaling Islands
- ■ Coeymans Creek
- ■ Hannacroix Creek
- ■ Mill Creek Wetlands
- ■ Coxsackie Creek
- ■ Coxsackie Island Backwater
- ■ Stockport Creek and Flats
- ■ Vosburg Swamp and Middle Ground Flats
- ■ Haverstraw Bay
- ■ Croton River and Bay

As discussed above, in their analysis of alternative routes the Applicants noted that there were no significant engineering constraints along the railroad ROW from Catskill to Malden-on-Hudson and have agreed to adopt this as part of their overall settlement proposal. The inclusion of this segment would mean the Project will bypass the following SCFWH:

- ■ Rogers Island
- ■ Catskill Creek
- ■ Ramshorn Marsh
- ■ Roeliff Jansen Kill
- ■ Inbocht Bay and Duck Cove
- ■ Germantown – Clermont Flat

Of the remaining SCFWH, the Applicants' route is adjacent to with nine resource areas and cross into six SCFWHs. In some cases the cable route passes close to the boundary of a SCFWH in the horizontal plane, but because of the criteria to place the cable in moderately deep to deepwater, there is a substantial vertical separation of the installation corridor from the nearest SCFWH boundary. As discussed in the draft Best Management Practices (BMP) document submitted as part of the settlement process, the Applicants propose to use the following BMPs when installing the cable in and adjacent to SCFWH:

- Seasonal Constraints: It is anticipated that construction windows associated with in-water construction activities (i.e., dredging, cable laying, splicing, and burial activities) will be required by federal and state regulatory agencies. Regulatory agencies develop construction work windows in order to protect and minimize the potential impact on different species and on certain life stages. Within the Hudson River, the Department of State (DOS) has identified recommended work windows associated with SCFWHs. Table 1 identifies the expected work windows where the Project traverses the SCFWH areas. However, the Applicants recognize that seasonal construction windows may be imposed for areas where the Project comes in close proximity to other SCFWHs.
- Limited Duration of cable installation: The estimated duration of cable installation is relatively short in each SCFWH. Table 1 provides estimates of this time for each of the SCFWH where the Project traverse the habitat area.
- Water Quality Monitoring: The Applicants have proposed as part of settlement that jet plow trials with water quality monitoring in typical sediment conditions prior to installation to confirm BMPs for minimizing re-suspended sediment. In addition, water quality monitoring will be conducted during cable installation.
- Water jetting operation parameter modifications: If pre-installation water quality modeling indicates that there may be exceedances of water quality standards, modifications to the water jetting operation (including a reduction in water jetting pressure and a reduction in water jetting rate of installation) will be implemented. In addition, operational modifications may occur in the field based on water quality monitoring results.
- Silt Curtains: Silt curtains may be utilized in locations where proximal resources are considered particularly sensitive. The use of silt curtains and their location will depend on local hydrodynamics and navigation traffic.

Table 1: Agency Recommended Work Windows and Estimate Cable Installation Duration

Name	Recommended Closed Work Window	Estimated Cable Installation Duration (# days)
The Flats	Spring and Fall	5
Kingston Deepwater Habitat	N/A	9
Esopus Estuary	April-July (Warmwater fish spawning)	2
Poughkeepsie Deepwater Habitat	N/A	20
Hudson River Mile 44-56	May - July (striped bass spawning)	17
Lower Hudson Reach	Mid-November - Mid-April (Striped bass)	11

Route Refinements to Minimize Impacts

The Applicants' route crosses the following SCFWH because the habitat boundaries for one or more SCFWH extend from shore to shore or the SCFWH is located in the deep water portions of the Hudson River where the cables should be installed:

- Esopus Estuary
- The Flats
- Kingston Deepwater, Vanderburg Cove and Shallows, and Esopus Meadows Habitats
- Poughkeepsie Deepwater Habitat
- Hudson River Mile 44-56
- Lower Hudson Reach

The SCFWHs intersected by the cable contain similar physical conditions and similar important biological resources. Specific ecological values for these designated habitats include wintering and spawning habitat for shortnose sturgeon and important habitat for juvenile sturgeon. At Kingston and Poughkeepsie, the deepwater contains higher salinity water during the summer that provides the habitat for marine species that penetrate up the estuary. All SCFWHs would be important for migration during spring and fall. Spring migration could include adults of river herrings, American shad, and striped bass, in addition to shortnose sturgeon. Atlantic sturgeon also utilizes the estuary and would occur in these habitats or would migrate through them. American shad and striped bass spawn in these deepwater habitat or the adjacent shoals but their eggs and larvae are planktonic. A general description of expected impacts to these resource areas is provided below, followed by specific measures taken for each SCFWH.

<u>Esopus Estuary</u>

The Esopus Estuary SCFWH contains a complex of natural estuarine communities at the mouth of a major freshwater tributary of the Hudson River. The deepwater area is recognized as a post-spawning and wintering habitat for shortnose sturgeon. The littoral zone of the Hudson River adjacent to the creek mouth is also an important spawning ground for shad and serves as a spawning, nursery and feeding area for striped bass, white perch, herring, smelt, and most of the resident freshwater species.

Esopus Estuary also contains a number of shallow water habitats, but the proposed cable route avoids the Esopus river mouth and associated fresh-tidal wetlands and littoral zone areas. In the deepwater portion of the habitat, the original route spanned 1.24 miles. Recently the Applicants modified the route from Mile 235 to Mile 237 so that the centerline of the installation corridor was moved to the east when possible in order to further reduce the intersection with the habitat. This refinement not only shifts the centerline further from the mouth of Esopus Creek, it also reduces the length of cable route within the SCFWH to 0.31 miles in the deepwater portion of this SCFWH.

The utilization of the area by fish species can be protected by limiting installation work to existing work windows designed to protect these seasonal uses. Shortnose sturgeon favors the channel areas of the Hudson and has been shown to use both naturally deep and dredged channels. Cable installation would not alter channel depths or existing current regimes, and following re-establishment of the benthic substrate the conditions that make this an important habitat for sturgeon would be unimpaired.

The Flats

The Flats is a large contiguous area of shallow, freshwater tidal flats. It serves as a spawning ground for American shad, with spawning occurring primarily on the extensive flats, shoals, sandbars and shallow areas near the mouths of tributary streams. The Flats also serve as spawning, nursery, and feeding habitat for striped bass, white perch, and various resident freshwater species. Shortnose sturgeon and Atlantic sturgeon may also use the area to feed (especially during slack water in late spring and summer).

For Route Miles 240.5 to 245.5, the route was modified so that the cables run along the western side of The Flats rather than the eastern. The western side is more heavily utilized as the maintained navigation channel occupies this portion of the river, so the cables will be sited along the maintained channel segment and the boundary of The Flats over a distance of approximately 0.5 miles at the northern end of the habitat. The Applicants would consider siting a silt curtain in this location, with the understanding that vessel traffic and hydrodynamics may present constraints. The silt curtain, if employed, would be in addition to BMPs such as seasonal restrictions and cable operational measures. Cable installation would not alter channel depths or existing current regimes, and following re-establishment of the benthic substrate the habitat value would be restored.

Kingston Deepwater, Vanderburg Cove and Shallows, and Esopus Meadows Habitats

The Kingston Deepwater SCFWH area contains six miles of continuous deep water from 30 feet deep to in excess of 50 feet deep. This deep water provides wintering habitat for shortnose sturgeon and supports spawning of sturgeon as well. With spawning occurring in this area, juveniles would also likely make use of this habitat. In addition, the higher salinity water in this deep section of the Estuary during summer low flows supports the upstream penetration of marine species in the Estuary.

For Route Miles 247 to 249, the centerline of the cable route was shifted slightly to the west to place it in deeper water between the Kingston Deepwater SCFWH and an area of shallow water. This refinement eliminates the only area in the original alignment where the cable route was in water less than 15 feet deep. In addition, a small reach of cable (Route Miles 252 to 252.75) was shifted to the east in order to remove it from the lower end of the Kingston Deepwater SCFWH.

The utilization of the area by fish species can be protected by limiting installation work to existing work windows designed to protect these seasonal uses. Shortnose sturgeon favors the channel areas of the Hudson and has been shown to use both naturally deep and dredged channels. Cable installation would not alter channel depths or existing current regimes, and following re-establishment of the benthic substrate the conditions that make this an important habitat for sturgeon would be unimpaired.

Poughkeepsie Deepwater Habitat

The Poughkeepsie Deepwater SCFWH area is a 14-mile reach of the Estuary containing a river bottom trench ranging from 30 feet deep to 50 feet deep over most of the area. A maximum depth in excess of 125 feet occurs at Crum Elbow. This reach is spawning and wintering habitat for shortnose sturgeon, and marine fish species take advantage of the higher salinity water in the depths during low summer flows. The occurrence of larval shortnose sturgeon in this reach suggests that it may be important for juveniles of this species.

The Applicants are proposing three modifications to the original alignment in order to reduce the length of the Project within this habitat. For Route Miles 255 to 257.5, the cable route centerline was shifted to the east to place it between the boundary of the Poughkeepsie Deepwater SCFWH and shallow water along the east side of the river, thereby eliminating 1.9 miles of cable route within the SCFWH. Furthermore, the cable route was shifted to the east in Route Miles 264.5 to 265 to take advantage of relatively deep water outside the Poughkeepsie Deepwater Habitat. Finally, at the lower end of the Poughkeepsie Deepwater Habitat (Route Miles 267.5 to 268.5), the cables were shifted to the east so that the route was outside the SCFWH boundary for an additional approximately 1 mile.

The Poughkeepsie Deepwater is recognized as spawning and wintering habitat for shortnose sturgeon, an endangered species in the Hudson Estuary. Because sturgeon may be using this reach much of the year, installation would be scheduled when abundance in the area is low. The Applicants would consult with resource agencies on the best time to install cables in this reach. Shortnose sturgeon favors the channel areas of the Hudson and has been shown to use both naturally deep and dredged channels. Cable installation would not alter channel depths or existing current regimes, and following re-establishment of the benthic substrate the conditions that make this an important habitat for sturgeon would be unimpaired.

Hudson River Mile 44-56

Hudson River Mile 44-56 SCFWH is an approximate 12-mile reach of the Estuary where it passes through the Hudson Highlands. This is a narrow reach with very deep water, strong currents and extensive rocky bottom substrate. This reach is biologically significant because it remains freshwater through early summer and is a spawning area for striped bass and other anadromous species. The early juveniles of these species are carried through this reach to the productive shallows of Haverstraw Bay, Croton Bay and the Tappan Zee. In addition, this is a migration corridor for species moving upstream to the upper Estuary.

The recent survey of the cable route, including sub-bottom profiling, suggests that rock outcroppings are present in this reach of Estuary which may prevent burial of the cables. More refined profiling of the bottom would likely be undertaken before final placement of the cables. Where the cables cannot be buried, they would be laid across the bottom and covered with grout filled mattresses to protect them.

This deepwater area is recognized as a spawning area for striped bass and wintering habitat for shortnose sturgeon, an endangered species in the Hudson Estuary. These seasonal uses of the area can be protected by limiting installation work to existing work windows designed to protect these seasonal uses. Shortnose sturgeon favors the channel areas of the Hudson and has been shown to use both naturally deep and dredged channels. Cable installation would alter channel depths slightly where mattresses are used to protect the cables, but existing current regimes would remain as an important feature of this habitat area. These currents and recovery of the substrate where the cable is buried would provide the conditions that make this an important habitat for striped bass and sturgeon.

Lower Hudson Reach

While this segment of the river has been heavily impacted by filling and development activities, it continues to support benthic, planktonic, and pelagic species. Striped bass in various life stages utilize the area for wintering between mid-November through mid-April. Yearling winter flounder can also be found wintering in this area during the same time period. In addition, several other fish species have been observed in surveys.

The utilization of the area by fish species can be protected by limiting installation work to existing work windows designed to protect these seasonal uses. The highest use of the habitat is during the winter season. Cable installation would not alter channel depths or existing current regimes, and following re-establishment of the benthic substrate the conditions that make this an important habitat for sturgeon would be unimpaired.

The installation of the Champlain-Hudson Power Express cables will not destroy SCFWH because the cables are buried and there will be no structures that could modify the natural processes that maintain the existing estuarine habitat community. A small portion of the deepwater habitat in the designated area will be temporarily impacted during and for a variable recovery time following the cable installation. Throughout installation and immediately after, the deepwater habitat will remain functional and will regain full ecological functionality through the action of unimpaired natural processes. In those small areas where concrete mattresses are used the change to habitat would be negligible and highly localized.

4. Commercial and Recreational Fisheries

The DOS has requested an assessment of the operational impacts of the Project on commercial and recreational fisheries. Once the cables are in place at the proper burial depth, the expectation based on numerous similar projects is that the in-water portion of the cables will be maintenance free. The only operational aspects of the cables with the potential to impact commercial and recreational fisheries are heat loss and electro-magnetic fields (EMF).

Heat Loss Effects

In its March application, the Applicants stated that there would be a negligible increase in the top 6 inches of sediment where the majority of benthic organisms reside. In response to a request from the DPS, the Applicants provided a coarse estimate of temperature rise at 0.2 meters below the seafloor assuming the cables were buried ~3 feet. The estimated average temperature rise associated with the HVDC cables would range from 1.20 degrees Celsius (°C) (gravel) to 1.50°C (sand) to 2.40°C (clay/silt) [Appendix B, Request 12 of the supplemental document submitted to the New York State Public Service Commission on July 22, 2010]. In response to an informal information request from the DOS, the Applicants applied the same formula for the HVAC cables resulting in a range of 0.70°C (gravel) to 2.30°C (clay/silt). For both cable systems, the majority of heat was projected to be primarily dissipated through the sediments, below the sediment/water interface which is the biologically productive zone in the sediments.

In response to a further request made by the New York State Department of Environmental Conservation (NYSDEC), the Applicants contracted with Dr. William Bailey of Exponent to develop a more rigorous model of heat loss. This analysis examined the expected impacts on water temperature as well as sediment temperature and expected impacts on the biological community.

Water temperature

The average flow rate of water in the Hudson River is 13,600 cubic feet per second, but it can flow as slowly as 882 cubic feet per second[1]. The energy loss from the cable in the form of heat that would be required to heat water moving at the average flow rate of the Hudson River by just 1°C is 6,000 Watts/meter (W/m) assuming a 150-mile cable length. Even at the minimum water flow of 882 cubic feet per second, a 1°C temperature increase would require a cable loss of 430 W/m[2]. The typical anticipated cable loss when the transmission line is in operation is 86.2 W/m (43.1 W/m per cable for two cables). Thus, the heat from the cable will have a negligible perhaps even immeasurable effect on water temperature anywhere along the length of the proposed cable installation and any water quality or biological effects in the water column would similarly be negligible.

Further, one can compare the water heating due to the cable heat loss to the heating of the river by the energy from the sun. Solar energy deposited on the surface of the earth is approximately 3.7 kW-h/m^2 per day, with daily variation (standard deviation) of 2.2 kW-h/m^2.[3] In the narrowest section of the Hudson River (992 feet), this produces average heating of 46,614 W/m with daily variation of 27,716 W/m; wider sections of the river will have a higher equivalent heating. The daily variation in the sun's heating is 321 times higher than the heating due to the proposed buried cables. The fluctuation in the sun's heat to the Hudson River over just one day is almost equivalent to a whole-year of heat loss from the installed cables. Hence, in any one day the heat input from the cable would be lost in the natural variability due to seasonal changes in length of daylight, meteorological conditions, and turbidity levels, and hence would have no water quality or biological effects within the water column.

Sediment temperature

Exponent performed a finite volume calculation of the temperature rise in the sediment below the seafloor surface. The model included two cables with heat losses of 43.1 W/m each, separated by 1.8 meters. The simulations were performed at cable burial depths of 3 feet (nominal burial depth), 6 feet (areas requiring additional protection), and 15 feet (crossing navigation channel).

---

1 National Water Quality Assessment Program - The Hudson River Basin, http://ny.water.usgs.gov/projects/hdsn/fctsht/su.html .

2 All the calculations assume that water had a chance to mix at least once in its travel along 150 miles of the river.

3 Based on the data of the closest U.S. Department of Energy National Renewable Energy Laboratory monitoring station at Bluefield, West VA; http://www.nrel.gov/midc/bsc/

Simulations were performed for three common sediment types: sand, clay, and gravel. The simulation was conservative in that it assumed that moving water provides no forced convection cooling of the seafloor sediment, only natural (i.e. standing water) convection and conduction of the sediment was included. In reality, moving water increases convection by assisting in the movement of heat out of the soil into the overlying water layer, which then passes away from the heat source by flow induced by the river gradient as well as tides or density changes.

Many different authorities use 2^{o}K increase at 0.2 and 0.3 meter burial depth as a measure of cable induced heating (see Worzyk, 2009). For all burial depth and sediment types, the width of sediment which exceeds 2^{o}K increase in temperature is less than 6 meters (18 feet) at depth of 0.2 and 0.3 meters below the seafloor surface. The seafloor surface temperature calculated in Tables 2 through 4 greatly overestimates the actual temperature rise due to the conservative assumptions of the model. Actual temperature rise on the seafloor surface is going to be by a far lower amount given the conservative assumption of non-flowing water. This model is more accurate, however, for the 0.2-and 0.3-meter depth calculations because the conservative assumption has less influence on the heat movement in the shallow subsurface sediment than at the sediment-water interface.

Table 2: Three Feet Cable Burial Depth

Soil Type	Thermal Resistivity (K-m/W)	Peak temperature rise (^{o}K) @ 0.2 m Depth	Width of Sediment Above 2^{o}K (m) @ 0.2m Depth	Peak temperature rise (^{o}K) @ 0.3 m Depth	Width of Sediment Above ^{o}2K (m) @ 0.3m Depth	Peak temperature rise (^{o}K) @ seafloor surface	Width of Sediment Above 2^{o}K (m) @ seafloor surface
Gravel	0.55	3.3	3.2	4.4	4	1.3	0
Sand	0.67	4.02	3.75	5.36	4.5	1.6	0
Clay/Silt	1	6	4	8	5	2.32	2.9

Table 3: Six Feet Cable Burial Depth

Soil Type	Thermal Resistivity (K-m/W)	Peak temperature rise (^{o}K) @ 0.2 m Depth	Width of Sediment Above 2^{o}K (m) @ 0.2m Depth	Peak temperature rise (^{o}K) @ 0.3 m Depth	Width of Sediment Above 2^{o}K (m) @ 0.3m Depth	Peak temperature rise (^{o}K) @ seafloor surface	Width of Sediment Above 2^{o}K (m) @ seafloor surface
Gravel	0.55	2.26	2.36	2.89	4.5	0.9	0
Sand	0.67	2.75	3	3.52	5	1.1	0
Clay/Silt	1	4.1	6	5.25	6	1.7	0

Table 4: Fifteen Feet Cable Burial Depth

Soil Type	Thermal Resistivity (K-m/W)	Peak temperature rise (°K) @ 0.2 m Depth	Width of Sediment Above 2°K (m) @ 0.2m Depth	Peak temperature rise (°K) @ 0.3 m Depth	Width of Sediment Above 2°K (m) @ 0.3m Depth	Peak temperature rise (°K) @ seafloor surface	Width of Sediment Above 2°K (m) @ seafloor surface
Gravel	0.55	1.18	0	1.45	0	0.5	0
Sand	0.67	1.44	0	1.77	0	0.67	0
Clay/Silt	1	2.15	2.86	2.65	5	0.96	0

More recently, Exponent considered the likely effect of both the cables touching (i.e. within the same trench) and being separated by 6 feet. The results are shown in the table below. As can be seen, the maximum temperature when the cables touch is higher than when there is a separation distance of 6 feet at the 0.2 and 0.3 meter depth. However, this delta becomes minimal at the seafloor surface.

Table 5: Maximum Temperature Change in Celsius for Two Cable Configurations

	6 Foot Separation	**Cables Touching**
Water	0.00021	0.0038
Surface	1.2	1.0
0.2 meter depth	3.4	5.2
0.3 meter depth	4.3	6.7

Impacts from Heat

Published calculations of the temperature effects of operating cables are consistent in their predictions of elevated temperatures in the near vicinity of the cables (OSPAR Commission 2009). The underwater cable buried below the seabed would not pose a physical barrier to fish passage, and would allow benthic organisms to colonize and demersal fish species (including demersal eggs and larvae) to utilize surface sediments without being affected by the cable operation (Mineral Management Service 2008). The small increase in seabed temperature is considered to be within normal ranges of variation and no residual effects are predicted. The potential for increases in seawater temperature above these areas is negligible and no significant effects are predicted (Shetland HVDC Connection 2009).

Specifically, the temperature requirement of river herring (alewife and blueback herring) eggs is between 7 to 29.5°C, with the optimum temperature preference at 18°C. In the Hudson River, the upper lethal temperature limit for eggs is 29.7°C. The upper lethal temperature in the Hudson River acclimated to 14°C was 31°C (Mullen et al. 1986).

Atlantic sturgeon eggs are highly adhesive and are deposited on the bottom substrate, usually on hard surfaces (e.g., cobble). Hatching occurs approximately 94-140 hours after egg deposition at temperatures of 20°C and 18°C, respectively, and larvae assume a demersal existence (Gilbert 1989; Atlantic Sturgeon Status Review Team 2007). There is no information on survival of eggs or early life stages of shortnose sturgeon in the wild. Many eggs reared in captivity die of fungus infections. However, spawning in freshwater typically occurs when water temperature increase to 8-9°C and ceases when water temperature reach 12-15°C. Spawning in the Connecticut River has been observed to occur at 18°C (National Marine Fisheries Service 1998).

Hatching of white perch occurs in 24 hours at 16°C to 20°C and in 144 hours at 11 to 16°C. Optimum hatching temperature was 14°C at a salinity of zero parts per thousand (ppt). The size of newly hatched larvae was related to temperature; the maximum length occurred at 16 to 18°C at all salinities (0 to 10 ppt) (Stanley and Danie 1983).

The estimated peak temperature rise at the seafloor surface for the cables separated by 6 feet at the 3 feet cable burial depth ranges between 1.30 to 2.32°C, the 6 feet cable burial ranges between 0.9 to 1.7°C, and the 15 feet cable burial ranges between 0.5 to 0.96°C. However, these estimated rise in seafloor surface temperature are an overestimation of the natural condition as it does not taken into account the cooling effect from the natural flowing of the Hudson River. The potential rise in temperature of the seafloor surface will be within the preferred temperature limits of the demeral eggs and larvae species that utilizes the bottom habitat of the Hudson River Estuary.

EMF Effects

By way of background information, electric (E) fields can be blocked by conducting materials, such as the sheathing and insulation that is typically used in underwater power cables. Therefore, there is no direct exposure of marine species to E fields. In its EIS for the array of subsea cables for the proposed Cape Wind Energy Project, MMS (2009) reached the same conclusions as the USACE (2004), finding that E fields from cables would be eliminated by the shielding and that there would not negative effects to the aquatic community.

Emission of magnetic (B) fields is not prevented by cable sheathing, sediment, or other materials, and therefore a weak induced electric (iE) field will be generated within close proximity to a transmission cable. B and iE fields resulting from both direct and alternating currents decrease quickly to background levels with distance from the cable. Using an EPRI model, the USACE (2004), estimated the peak intensities of B fields anticipated from the proposed Cape Wind Energy Project in Massachusetts would be strongest at the seabed directly over the buried cables and would quickly attenuate to approximately 10 percent of the peak intensity within 10 to 20 feet directly above the seafloor and 20 to 30 percent of the peak intensity within 10 feet horizontally from the AC cables. While burying the cable does not prevent the emission of these fields, it does result in an added buffer, putting distance between the cable and the marine biota over which the emissions will decrease (Exponent and Hatch 2009).

The "EMF emissions" of the cables do not vary between the marine and freshwater aquatic environments as they are a function of the cable, not the surrounding environmental conditions. The electric field of the proposed cables is totally shielded from the aquatic environment by the grounded metallic and ferromagnetic sheaths surrounding the cables. The metallic and ferromagnetic sheaths will slightly attenuate the magnetic field of the cables but the magnetic field measured outside the cables in the lake or riverbed or water column would not be affected by the salinity of the water (fresh, brackish, salt water).

The Applicants provided a discussion of EMF in the Exhibit 4 of the March 30, 2010 Application for Certificate of Environmental Compatibility and Public Need (Application). In this same document, an Electric and Magnetic Fields report was provided in Appendix H. In the supplement to the Application, the Applicants supplied a revised Electric and Magnetic Fields report that include the expected field levels for the HVAC cables [Response 14, Appendix B and Attachment M, Request 12 of the supplemental document submitted to the New York State Public Service Commission on July 22, 2010]. As discussed in Section 2 above, Exponent has also calculated expected magnetic fields at depths of 1, 10, and 19 feet above the sediment for cables that are buried six feet apart and touching. The Applicants also anticipate providing additional data in response to the DOS letter of January 5, 2011.

Concern over the EMF effects has focused on the potential for influencing migration patterns and exposure to the fields. In order to better understand the best available information on these two issues, the Applicants are providing a literature review below.

Migration

Previous studies have indicated that the weak iE field generated by a transmission cable is within the range of detectability of electrosensitive species (Normandeau and Exponent 2010, Exponent and Hatch 2009, Centre for Marine and Coastal Studies at the University of Liverpool 2003). In a controlled experiment, Gill et al. (2009) evaluated the response of three species of electro-sensitive fish (two shark species and one ray species) to a buried subsea cable. They found that while some of the elasmobranchs responded to the EMF emitted in terms of both the general spatial distribution of one of the species tested, and at the finer scale level of individual fish of different species, they stated that this response varied within the species and also during times the cable being energized and not energized, day and night (Gill et al. 2009). While electro-sensitive species may detect the EMF, the effects do not appear to be significant (Centre for Marine and Coastal Studies at the University of Liverpool 2005; Scott Wilson Ltd. and Downie 2003; Sound & Sea 2002; USACE 2004; MMS 2009; Scottish Executive 2007; World Health Organization 2005; Exponent and Hatch 2010). The Scottish Marine Renewables Strategic Environmental Assessment reported that "Current research indicates that certain species of elasmobranchs are likely to be able to detect the level of electric field that will be generated by a typical export cable but the field would not cause an avoidance reaction. Furthermore, there is no evidence to indicate that existing cables have caused any significant impact on elasmobranch migration patterns" (Scottish Executive 2007).

Studies have also investigated the effect of electric and magnetic fields on fish movement and migration. Some migratory animals, including sea turtles, Pacific salmon, Japanese eel (*Anguilla* species), and spiny lobster, are thought to detect and orient to the earth's geomagnetic field during their travel (Lohmann et al. 2004, Hatch Acres 2006, Nishi et al. 2004, Karlsson 1985, Tesch et al. 1992), though it is thought that this is one of several potential mechanisms used for navigation (Groot and Maragolis 1998; Quinn et al. 1981). Crystals of magnetite have been found in four species of Pacific salmon (Mann et al. 1988; Walker et al. 1988), and these crystals are thought to serve as a compass that orients to the earth's magnetic field (Valberg 2005, Scottish Executive 2007). In a study of chum salmon (*Oncorhynchus keta*) Yano et al. (1997) fit a tag that generated a 600 µT artificial B field around the head of the fish; there was no observable effect on the horizontal and vertical movements of the salmon when the tag's magnetic field was varied. Quinn and Brannon (1982) found that while salmon are thought to detect B fields, their behavior is probably governed by various stimuli as evidenced by the lack of effect of changing artificial B fields. Similar results were found in studies of Atlantic salmon: research of EMF effects showed that navigation and migration of Atlantic salmon was not expected to be affected by the B field produced by an underwater cable (Scottish Executive 2007).

Within the Project area, potential aquatic species of concern include shortnose sturgeon, Atlantic sturgeon. Sturgeon are weakly electric fish and can use electroreceptor senses, along with other senses, to locate prey. In the one report related to Sterlet sturgeon (A. *ruthenus*) and Russian sturgeon (A. *gueldenstaedtii*) behavior in the presence of anthropogenic EMF, Basov (1999) found differing behavior at various E field frequencies and intensities:

- At 1.0 to 4.0 Hz at 0.2 to 3.0 millivolts/cm (mV/cm), responses were searching for source and active foraging,
- At 50 Hz at 0.2 to 0.5 mV/cm, response was searching for source, and
- At 50 Hz at 0.6 mV/cm or greater, response was avoidance.
- A study completed a year after the installation of submarine HVDC cables (1,300 A) in the Baltic Sea between Sweden and Poland detected no changes in the species composition, abundance or biomass of the area's invertebrate community (Andrulewicz et al. 2003).

For the Project area, a model of the expected declination from magnetic north expected from the cables (see Figures 1 and 2 above). For cables installed six feet apart at a four foot burial depth, at one foot above the riverbed there would be a maximum deviation of approximately 95 degrees within 10 feet of the cable, with no impact within approximately 40 feet from the cables. However, for cables installed next to each other (as the Applicants recently proposed), at one foot above the riverbed there is only a 35-degree declination within ten feet of the cable and the magnetic fields at all depths returns to background levels within 20 feet of the cables.

Exposure

A number of studies have investigated the effect of very strong magnetic fields on fish egg and larval development. Strand et al. (1983) reported that exposure of rainbow trout eggs, sperm, or fertilized eggs to a 1 Tesla (10,000 Gauss [G] or 1,000,000 milligauss [mG]) direct current (DC) magnetic field had only the slightest effect on the fertilization rate. Formicki and Winnicki (1998) reported that trout and rainbow trout embryos and larvae exposed to DC magnetic fields above 4 millitesla (mT) (40 G or 40,000 mG), exhibited incubation delays and longer and heavier bodies than controls exposed at levels up to 5.5 mT.

A weak increase in the permeability of egg shells of trout, rainbow trout, and sea trout to water was reported from ultrastructural observations of the shells after exposure to a 2 mT (20 Gauss or

20,000 mG) DC magnetic field in vitro (Sadowski et al., 2007). Sea urchins exposed to 30 mT (30 G or 30,000 mG) but not 15 mT (15 G or 15,000 mG) DC magnetic fields delayed development in early embryos and caused and increase in abnormalities of gut development (Levin and Ernst, 1997). Sudden exposure of carp embryos and larvae to DC magnetic fields of 50-70 mT (500-700 G or 500,000 mG-700,000 mG) is reported to increase heart rate by 5%, which then declined to resting levels in 15 minutes (Formicki and Winnicki, 1996). Trout larvae and fry tended to be attracted to magnets placed in experimental mazes that produced magnetic fields of 0.15-0.42 mT (1.5-4.2 Gauss or 1,500-4,200 mG).

Impacts from EMF

The Applicants have found no studies that demonstrated negative effects to aquatic life resulting from EMF (Bochert and Zettler 2006; Centre for Marine and Coastal Studies at the University of Liverpool 2005; Scott Wilson Ltd. and Downie 2003; Sound & Sea 2002; USACE 2004; Scottish Executive 2007; World Health Organization 2005; Hatch Acres 2006, Exponent and Hatch 2009). The USACE (2004) concluded that there would be no negative effects to fish species or the marine environment as a result of the 60 Hz B fields because the magnitude of the B fields proximal to the transmission cable would be limited to an extremely small space and decrease rapidly within a few feet of the cable.

In terms of migration, available information indicates that no single environmental stimulus, e.g., current flow, light, smell, taste, magnetic field, temperature, salinity, etc., dominates migratory behavior. Magnetic field stimuli seem ideal for navigating between distant regions, but locations for spawning and reproduction likely are determined by local, non-magnetic cues (Lohmann et al., 2008). Migratory species thus have the means to coordinate and make use of multiple cues and resolve discrepancies. For example, the orientation of salmon towards natal lakes in tanks without olfactory, taste, or current cues is not affected by a 90-degree shift in the horizontal component of the magnetic field during the day but is observed to change at night (Quinn, 1980).

Moreover, the magnetic field of the cable will accentuate or attenuate the magnetic field of the earth in a constant fashion along a narrow band of river bottom the length of the Hudson River as it will be aligned throughout this portion of the route in a constant relationship to the north-south pole magnetic of the earth. Other alterations to the geomagnetic field that fish and other fauna encounter in aquatic environments include magnetic anomalies in geologic sediments beneath sea and river beds, and numerous perturbations of the geomagnetic field by ferromagnetic objects on the bottom, e.g. sunken ships, gas and oil pipelines, communication cables with ferromagnetic armoring. Steel surface vessels will also significantly perturb the geomagnetic field as they sit at moorings or move through the water. Studies conducted in laboratories of prolonged exposure of marine fish and invertebrates to DC-produced B fields have not detected effects to orientation or movement compared to control organisms (Bochert and Zettler 2004, 2006).

Another important consideration is that, by and large, migrating fish species will not travel in the part of the water column closest to the buried cable. The strength of the field is greatest closest to the cable and diminishes quickly with distance. As migrating fish species tend to be in the upper part of the water column (see Xie, 2002) and the average depth of the Hudson River varies between 40 feet in the southern section and 6 to 12 feet in the northern section (but with a 40-feet deep channel), the additional distance above the buried cables brings them into a region where the magnetic field characteristics will be closer to that of the earth's background geomagnetic field than at the river bottom. This separation distance diminishes the potential for negative effects on fish migration.

In evaluating the potential impacts due to exposure, the available literature indicates that there would be no adverse effect on egg and larval development. The Applicants' modeling predicted a DC magnetic field for 3652.7 mG at the river bed [Appendix B, Request 14 of the supplemental document submitted to the New York State Public Service Commission on July 22, 2010]. In contrast to DC magnetic fields that are reported to affect development at high intensities, delays in development are reported at lower intensities of 60-Hertz, alternating current magnetic fields (1,000 mG) in Japanese rice fish by Cameron et al. (1985) and sea urchins by Zimmerman et al. (1990). This data suggests that much greater magnetic fields are required than the proposed cable will produce, in order to create deleterious effects on eggs and larvae. In addition, as a percentage of the overall spawning numbers, the area of potential effect is small and extremely weak and would therefore represent a negligible effect of any kind on the number of eggs and larvae present during spawning.

It has been suggested that the research developed with respect to open marine systems may not be applicable to a river channel environment. However, a substantive change in the ambient geomagnetic field produced by the cables is confined to a limited distance around the cables. The DC magnetic field only will vary from a background level of 527 mG in the Hudson River by more than 20 percent within ± 16 feet on either side of a single cable and ± 4 feet on either side of cables laid 1.8 m apart at 20 - 40 feet above the river bed. In the lower estuary of the Hudson River where it is narrowest, this zone around the cable is a small fraction of the width of the river (about 5,000 feet) and as such is not likely to create a meaningful potential behavioral restriction within the cross sectional area of the river that fish would move through.

In summation, research studies on a variety of fish and other marine species have not reported adverse effects either in open marine systems or in small experimental tanks. The MMS has concluded that the B fields produced by the cables would not negatively affect marine life (MMS 2009). The World Health Organization (2005) reports that "none of the studies performed to date to assess the impact of undersea cables on migratory fish (e.g., salmon and eels) and all the relatively immobile fauna inhabiting the sea floor (e.g., mollusks), have found any substantial behavioral or biological impact." While it is not possible to "prove the negative", i.e. provide absolute assurance there will be no deleterious effect, repeated tests by multiple investigators have not shown any adverse effects at the relevant levels of exposure.

THIS PAGE INTENTIONALLY LEFT BLANK

February 4, 2011

Jeffrey Zappieri
Supervisor, Consistency Review Unit
New York State Department of State
Office of Coastal, Local Government, and Community Sustainability
99 Washington Avenue, Suite 1010
Albany, NY 12231-0001

RE: Champlain Hudson Power Express
F-2010-1162 (S-2010-0025)

Dear Mr. Zappieri:

On December 6, 2010, Champlain Hudson Power Express, Inc. and CHPE Properties, Inc. (collectively the "Applicants") submitted their application for coastal zone consistency review to the New York State Department of State ("NYSDOS") for the Champlain Hudson Power Express project (Project). On January 5, 2011, your office submitted a request for additional information. Please consider this letter to be the initial response to that request.

Your letter identified six areas where supplementary information was necessary. We are providing a response to each of these below or, where the information is not available at this time, providing a schedule for submittal of these materials. The Applicants also note that, as the NYSDOS is aware, confidential settlement discussions pursuant to the Public Service Commission's Settlement Guidelines have been on-going since the submission of the request for a coastal consistency determination. In mid-January 2011, the Applicants and 14 parties to the settlement process were able to report to the presiding Administrative Law Judges ("ALJs") that there has been substantial progress on issues of concern, including the Project route. Based on the outcome of this process, the Applicants may be submitting a supplement to their application outlining not only any routing changes but also any other conditions or requirements that may be of interest to your agency.

1. **Please provide a written response to all information requested by the DOS in the letter to Keith Silliman of TRC Companies, Inc. dated November 22, 2010 (enclosed). To date, verbal responses provided to DOS by TRC Companies, Inc. and HDR have been inadequate and reflect the need to submit written responses that includes information as to the ability of TDI to site the proposed line within existing utility corridors and in the rights-of-way of state and county roads.**

   The Applicants submitted this response on January 18, 2011. The Applicants are available to discuss this document at your convenience.

2. **The information provided in the application envisions burying the cables along the proposed submarine route in the Hudson River at depths of 3 to 4 feet, in conjunction with the use of concrete mattresses in yet-to-be-identified areas where burial would be prohibitive because of the presence of bedrock. In some instances, a greater depth may be required to avoid either environmental or magnetic field impacts or navigation deepening. Please provide a technical analysis of the maximum attainable cable burial depths for the entire submarine portions of the proposed route and identify where the use of concrete mattresses would be necessary.**

   In response to this question, the Applicants are reviewing sediment core data from the marine route survey completed in the Spring of 2010 in order to estimate the likely depth restrictions along the route. Additional cable protection (i.e., concrete mattresses) would likely be required where the minimum depth for adequate protection of the cables cannot be achieved.

   The Applicants propose to provide this analysis by February 18, 2011. However, this analysis is preliminary and will likely be more “coarse” in scale. A more fine level of analysis will be available once the Engineering, Procurement, and Construction (“EPC”) contractor is selected and completes the construction marine route survey. The Applicants are available to discuss these limitations at your convenience.

3. **Please provide information pertaining to the suitability and feasibility of siting the proposed cables within areas of the Hudson, East, and Harlem rivers that were previously mechanically dredged.**

   The Applicants’ assumption is that this question is related to the potential use of the federal navigation channel or its side slopes, as this is the only dredged area that follows the Project route. On September 30, 2010, the Applicants participated in a conference call that included Randall Hintz, Chief of Operations Support at the U.S. Army Corps of Engineers (“USACE”) for the greater New York City area, and Gerlyn Perlas, Chief of the Technical Support Section for the USACE, as well as representatives of the NYSDOS and U.S. Department of Energy. At this meeting, Mr. Hintz stated that installation of transmission cables within federal navigation channels was an issue at the national level. While the USACE had not gone as far as to prohibit installation along the length of the navigation channel, it was noted that the USACE would prefer for the cable to be installed outside of the channel.

   Over the course of the conversation, Mr. Hintz did state that installation of the cables within the side slope of the navigation channel could be acceptable, although certain depth requirements would need to be met. In order to understand the feasibility of this option, the Applicants contacted three nationally recognized cable installation companies to determine if installation within the side slope was feasible up to a depth of 12 feet. Two companies provided brief statements that it would not be possible to install the HVDC cables in the slope of the navigation channel, which is typically 30 degrees to the depth proposed, due to concerns about operating heavy jet plow machinery in rough riverbed terrain. The third company suggested that, while they generally like to see less than a 10-degree slope for a standard jetting plow, under the right conditions it could be possible to install cable for short segments (less than 1 kilometer) with up to a 30-degree slope. Installation in a steep slope would require that there is sufficient water at the top of the slope, as well as adequate horizontal clearance from existing features (e.g., river banks, piers, piling) to allow for a vessel that is at least 20 meters wide and drafts 6 meters of water. If these conditions are not met, then it would not be possible for the vessel to complete the considerable maneuvering necessary to prevent the plow from running down the slope. This company was unaware of any existing burial equipment that might be able to cope with the steeper side slopes at the required depth and noted that, while a purpose built plow could be discussed, the installation would be complicated if the cables were bundled. Their conclusion was that significant detail would be necessary to select the right burial equipment (including water depth, slope angle, seabed properties, and the shoreline, including abandoned and dilapidated structures) and even then there would be segments where side slope burial was not possible.

At the same time, the Applicants also provided mapping of the location of the federal navigation channel in Haverstraw Bay along with available bathymetric data (see Attachment), as this was an area of concern at the time. Company 1 and 2 were unwilling to offer an opinion based on the level of information provided. Company 3 felt that the installation could occur near the top of the slope, although additional information on issues such as water depth would be necessary. As noted in the report to the ALJs in January, an overland bypass of Haverstraw Bay is currently under discussion as part of settlement negotiations so this issue may be rendered moot.

Based on the information provided by the installation firms, the Applicants do not believe it is feasible to install the cables within the side slopes of the federal navigation channel for the entire Project. There may be short segments where burial within the side slopes could be reasonably achieved, but existing conditions must meet the restrictions previously described.

4. Please provide scientifically verifiable estimates for magnetic field levels and ambient temperature increases in soil and water for cable burial depths of 4, 8, 12, and 15 feet and a scientific analysis of the impacts of the magnetic fields and temperature increases on aquatic species in the Hudson River, including impacts on migratory routes, feeding, spawning, and all life development stages for each burial depth.

The Applicants have retained Exponent to produce the estimates requested and expect the results next week. HDR staff will then review this information and provided an analysis of impacts. The Applicants propose to provide this information no later than February 18, 2011 and hope to provide it earlier if possible.

5. Please state the design life of the proposed project.

The design life for HVDC cables is assumed to be thirty (30) years, although there are systems currently in place that have been shown to operate for longer periods.

6. Analyzing existing Hudson River dredging and navigation use data, and recognizing the trend in the use of deeper draft vessels in the Hudson River, please explain how TDI will adjust the depth of the buried cable in the riverbed to accommodate any future federal dredging and navigation projects over the design life of the proposed project. Please include a discussion as to whether or not burial of the proposed cables would interfere with such anticipated navigation improvements to the Hudson River.

The Applicants are not aware of any anticipated navigation deepening projects in the Hudson River for which the Project would interfere and believes that the proposed Project burial depths can avoid impacts to future projects. However, if the NYSDOS has specific projects in mind for this question, the Applicants request that these be identified so that a directed analysis can be completed.

The only intersection with the federal navigation channel would be where a crossing is necessary to avoid an environmentally sensitive area or other features. In these situations, the cables will be buried fifteen (15) feet below the Project authorized depths as required by USACE regulations. The Applicants have stated in other forums that additional burial depths are possible in these circumstances.

In addition, permit conditions for submarine cable projects routinely include a condition that the cable owner could be required to install the existing cable to a deeper depth at their expense should such measures be required. If these measures were required, a survey would be conducted to confirm that there is sufficient slack in the cables where the increased burial depth is required. If not, an additional length(s) of cable would be spliced onto the existing cables. Water jetting, hydraulic dredges, or, under worst case conditions, hand jetting would be employed to achieve the desired deeper depth.

We look forward to hearing your thoughts on the issues discussed in this letter. Please feel free to contact me at any time if you have any questions about the materials presented.

Regards,

Sean Murphy
Project Manager

Attachment

cc: Dr. Jerry Pell, U.S. Department of Energy
Don Jessome, Transmission Developers Inc.

February 18, 2011

Jeffrey Zappieri
Supervisor, Consistency Review Unit
New York State Department of State
Office of Coastal, Local Government, and Community Sustainability
99 Washington Avenue, Suite 1010
Albany, NY 12231-0001

RE: Champlain Hudson Power Express
F-2010-1162 (S-2010-0025)

Dear Mr. Zappieri:

On December 6, 2010, Champlain Hudson Power Express, Inc. and CHPE Properties, Inc. (collectively the "Applicants") submitted their application for coastal zone consistency review to the New York State Department of State (NYSDOS) for the Champlain Hudson Power Express Project (Project). On January 5, 2011, your office submitted a request for additional information. On February 4, 2011, the Applicants provided a response to four of the six areas where supplementary information was necessary and this letter completes the Applicants' response.

2. **The information provided in the application envisions burying the cables along the proposed submarine route in the Hudson River at depths of 3 to 4 feet, in conjunction with the use of concrete mattresses in yet-to-be-identified areas where burial would be prohibitive because of the presence of bedrock. In some instances, a greater depth may be required to avoid either environmental or magnetic field impacts or navigation deepening. Please provide a technical analysis of the maximum attainable cable burial depths for the entire submarine portions of the proposed route and identify where the use of concrete mattresses would be necessary.**

In the Spring of 2010, the Applicants conducted a Marine Route Survey for a 300' wide corridor, using the centerline proposed in the Application for Certificate of Environmental Capacity and Public Need (Application) filed on March 30, 2010 with the New York State Public Service Commission (NYSPSC) on behalf of the Champlain Hudson Power Express project (Project). The Marine Route Survey included geophysical, sediment and benthic surveys:

- Geophysical surveys were conducted to investigate existing bottom features in the lakes, rivers and canals along the proposed route. Surveys were conducted using multi-beam bathymetry, side-scan sonar, magnetometer and sub-bottom profile.

970 Baxter Boulevard
Suite 301
Portland, ME 04103-5346

Phone: (207) 775-4495
Fax: (207) 775-1031
www.hdrinc.com

- The sediment survey was conducted to collect information on the existing sediment type and quality along the proposed route.
- The benthic survey was conducted to augment existing benthic community data and will be used to assess potential impacts associated with the installation of the underwater transmission cable.

The Marine Route Survey followed the Aquatic Sampling and Analysis Plan and Sediment Sampling and Analysis Plan that was based on existing databases of sediment type and quality with the Hudson River and reviewed by the New York State Department of Environmental Conservation and the U.S. Army Corps of Engineers. These plans can be found in Attachment P of the Supplement to Application submitted to the NYSPCS in July of 2010.

Sediment sampling provided two basic types of information, the physical characteristics of sediments and chemical characteristics of sediment. A total of fifty-eight (58) samples (including landfall locations) were collected from the Town of Coeymans to Spuyten Duyvil or Project Mile 202 to 324. In the Harlem and East Rivers, seven sampling locations were identified from Project Mile 324 to 333, which is the current extent of the Project.

The proposed depth for the Champlain Hudson Power Express HVDC cables within the Hudson River is four (4) feet, except when the cables cross federally authorized navigation channels. The proposed burial depth is fifteen (15) feet below the authorized depth within federally authorized navigation channels. In order to characterize the sediments for cable installation, the core sample target depth was 1 foot below the proposed cable installation depth. In the Hudson River, core penetration depth ranged from 8 to 10 feet along the proposed route outside navigation channels. Within navigation channels, core penetration ranged generally from 18 to 19.5 feet. In the Harlem River, core penetration ranged from 1 to 18 feet, with multiple core attempts being made at three locations due to limited penetration and limited recovery.

Our analysis of likely cable burial depths achievable using hydro plowing was based on data collected during the Spring 2010 survey, including core penetration, sub bottom profiles, side scan sonar and bathymetry. Table 1 below provides a summary of the description of the results of the sub-bottom profiler provided in the Marine Route Survey Report (Attachment E of Supplement). In some locations there was little to no sub-bottom penetration but correlating core data to these locations indicated that cable installation using hydroplowing would be possible. Based on the information provided by the sub-bottom profile survey and the core data, the Applicants believe it is reasonable to assume that cable burial depths of up to six feet are obtainable for most of the Project route. However, this will be verified during the construction marine route survey.

TABLE 1
DESCRIPTION OF SUB-BOTTOM PROFILER RESULTS

Location	Description
Albany / Troy	Little to no sub-bottom penetration, although where penetration is obtained is generally 5 ft or greater.
Northern Catskills	Little to no sub-bottom penetration, although where penetration is obtained is generally 5 ft or greater.
Southern Catskills	Sub-bottom penetration generally below or approximately 5 feet.
Poughkeepsie	Sub-bottom penetration limited.
Newburgh Bay	Sub-bottom penetration to depths of 5 feet or more.
Hudson Highlands	Sub-bottom penetration achieved but sometimes limited to depth of less than 5 feet.
Tappan Zee / Haverstraw	Deep penetration throughout section.
Palisades	Sub-bottom approximately 15 feet below surface for majority of route.
Harlem River	Sub-bottom penetration typically to depth of 5 feet or greater, broken up by apparent rock outcrops.

Based on the project route presented in the Supplement, areas which the Marine Route Survey indicated are not likely suitable for cable burial (e.g., near rock outcroppings or existing utility areas) are presented in Table 2. The majority of these areas are associated with existing infrastructure or cable areas. Other areas not suitable for cable burial are generally associated with rock outcroppings that do not extend the full width of the waterbody. Re-routing of the cables at these locations is likely to avoid the need for installing additional cable protection. In the case of the Harlem River, designated cable and pipeline areas extend over substantial areas or occur frequently along the length of the river, so that the placement of protection over exposed cable may be continuous over several adjacent infrastructure elements. The detailed design developed as part of the Environmental Management and Construction Plan will optimize the placement of protection to minimize the area of the bottom covered by concrete mattresses or other protective devices.

An additional, more detailed analysis further refining maximum cable burial depths and need for additional cable protection will be available once the Engineering, Procurement, and Construction ("EPC") contractor is selected and completes the construction marine route survey. During detailed design, the location of existing infrastructure will be confirmed and the length of non-burial and the arrangement of protection will be developed. The actual area of additional protection is likely to be substantially less than the total width of the cable/ pipeline area as depicted on the NOAA charts. The design of each infrastructure crossing will be coordinated with the owner to meet their needs

As NYSDOS is aware, route modifications are being discussed during the confidential settlement discussions pursuant to the Public Service Commission's settlement guidelines. Any changes in the location of the transmission cables as a result of these discussions could impact the potential maximum burial depth. For example, if the centerline of the Project was shifted to shallower waters to avoid deep-water habitat, there could be a corresponding decrease in how deeply the cables could be installed. The Applicants therefore recommend that the analysis presented here be considered tentative until a final routing has been agreed upon by some or all of the settlement parties.

TABLE 2
CABLE NON-BURIAL AREAS REQUIRING PROTECTION OVER CABLES

Cable Segment	Obstruction Type	Approx MP Begin	Approx MP End	Approx Length (ft)
Hudson River	Infrastructure Locations	219.8	220	1000
		220	220.3	1250
		220.5	220.7	1000
		220.8	221	1000
		245.2	245.6	2000
		260.8	261.6	3900
		267.2	267.4	1000
		271	271.4	2200
		275.8	276.7	4600
		286	286.3	1900
		294.9	295.1	1300
		297.5	297.8	1500
		309	309.3	1600
		313.9	314.1	1000
	Natural Barrier	208.8	209.0	1000
		209.9	210.1	1000
		211	211.3	1600
		220.8	221	1000
		267.2	267.4	1000
		284.1	284.5	2100
		287.6	287.8	900
Harlem River	Infrastructure Locations	324.1	324.2	600
		324.9	325.0	900
		325.2	325.3	840
		325.4	325.7	1500
		326.1	326.2	840
		326.3	326.5	1050
		328.3	328.5	930
		328.8	330.4	8450
		330.5	330.9	1950
East River	Infrastructure	334	334	1955ft-cable runs N-S

[1] Milepoint zero at Canadian border on Lake Champlain.
[2] Distances based on NOAA chart not survey data.

4. **Please provide scientifically verifiable estimates for magnetic field levels and ambient temperature increases in soil and water for cable burial depths of 4, 8, 12, and 15 feet and a scientific analysis of the impacts of the magnetic fields and temperature increases on aquatic species in the Hudson River, including impacts on migratory routes, feeding, spawning, and all life development stages for each burial depth.**

The Applicants retained Exponent Inc. to provide the estimates of magnetic field levels and ambient temperature increases associated with the depths provided. This report is provided in Attachment A of this document.

The potential effects of perturbations in water temperature and magnetic fields induced by the operation of the Champlain Hudson Power Express project (Project) are localized effects in the sediment at or below the surface of the river bed. Moreover, the sediment where the temperature rise is greatest is only a small portion of the cross section of the waterbody at any given location. The modeling of the distribution of temperature increase and change in magnetic field for burial depths of 4, 8, 12, and 15 ft. define the area and volume in which a potential change in exposure on aquatic life could occur, assuming that the organisms are sensitive to small changes in these factors. The modeling shows that the magnitude of changes diminishes with depth of burial starting at a level of minimal change for the 4 ft. burial depth.

The spatial relationship of the zone of influence of the cables to the overall habitat available is an important factor in assessing the potential for impacts. The location of the zone of influence on the bottom prevents the potential exposure of many species that utilize shoreline and shallow water habitats. The cable centerline was intentionally sited in moderately deep to deep water to avoid shallows. Those species which utilize bottom habitats in deep water would potentially have greater exposure to the zone of influence than other species. Among these species are sturgeon and catfishes, which are in close contact with and are feeding along the bottom. Many other species utilize the bottom for feeding, particularly in juvenile life stages, but this occurs primarily in shallow water. The eggs of many species are spawned on the bottom or deposited on the bottom after spawning in the water column but many of these species spawn over shallow water depths. The following sections address the specific activities of migration, spawning, feeding, and early developmental stages of fish.

Migration

Migration generally refers to the movement of large numbers of individuals moving in unison to a selected, preferred location, often for spawning. For this assessment many types of movements by large segments of the fish populations are included because any significant movement patterns could bring individuals within the zone of influence of the cables. Migrations and major movements follow a seasonal pattern thus the individuals involved would not be exposed to the influence of the cables at all times unless they lived year round in the Hudson and their preferred habitat was on the bottom in deep water. The concern for cables effects on migrations is that the change in magnetic field induced by the cables would confuse the migrating fish and divert them or perhaps delay their arrival at the spawning location at the proper time.

Based on the spatial distribution of the magnetic fields, it is apparent that only a small portion of any migrating fish population would come in contact with the zone of influence of the cables. The cables are aligned generally, parallel to the axis of the river, thus migrating fish could travel the full length of the Hudson without encountering the influence of the cables, even where the cables cross federal maintained navigation channels. Fish would encounter the cables' influence only if they were migrating near the bottom and then only if they were aligned with the small zone of influence and stayed within the cable's influence. The model analyses show that there is very little change in total magnetic field (5.9%) 1 ft. above the river bottom beyond a distance of 10 ft. from the centerline of the cables buried at a depth of 4 ft. This zone of influence also extends 10 ft. above the centerline in the water column. For burial depths from 8 ft. to 15ft., the zone of influence diminished substantially. The magnetic deflection caused by the cables at a burial depth of 4 ft was ≥7.9 degrees within the same 10 ft. zone of influence around the cable centerline and diminished substantially at an 8 ft. burial depth, but only slightly more at greater depths.

For fish that enter the zone of influence around the cables, the potential for impact depends on whether or not the individuals could detect the induced changes and how they respond to the changes. There is technical literature that shows that some fish species can detect and use magnetic fields for navigation. This has been reported and studied with respect to Pacific and Atlantic salmon (Mann *et al.* 1988; Walker *et al.* 1988; Scottish Executive 2007; Yano *et al.* 1997; and Quinn and Brannon 1982). These studies did not detect an effect on fish behavior when magnetic fields around the fish were artificially altered. The lack of an effect may be due to the low level of induced change and the fact that the migrating fish are responding to a variety of stimuli. As there are no apparent impacts on individual fish this eliminates the potential for population level effects. The Hudson River is a highly developed estuary which contains many stimuli that could potentially direct or impact fish migration. There is no evidence that fish migrations in the Hudson have been or would be impaired by magnetic fields.

Spawning

As there are no apparent impacts on fish migrations, species utilizing the Hudson for spawning, including resident species, can access their preferred areas for spawning. The majority of fish species spawn in tributaries, shallow shoreline areas, and in open water in the pelagic zone. All of these areas are beyond the influence of the operating cables. The narrow zone of influence from cable operation provides a very large area of bottom habitat that is not influenced by the cables. See section on early life history development below.

Feeding

As with other aspects of potential cable effects, feeding behavior could be disrupted only in the area of river bottom influenced by the operating cables. Fishes feeding in shallow, shoreline areas of the river or in the pelagic zone would not be influenced by cable operation. Bottom feeding fish could move into and out of the zone of influence as they move in the search for food. It is also possible that the increase in water temperature could increase the production of food, in which case the cables could possibly stimulate feeding.

Sturgeon may use AC electronic signals emitted by prey to guide them to the prey (Basov 1999), but such electric fields will not be produced by the proposed cables. Altered magnetic fields will be present in a small area as described above, but there is no evidence that these fields are a factor in the feeding behavior of sturgeon.

A study of the invertebrate community in the Baltic Sea in the vicinity of a new submarine cable and at control stations found no changes in the species composition, abundance, or biomass of invertebrates (Andrulewicz *et al.* 2003). In addition, based on the post-installation benthic survey conducted for the Neptune Regional transmission project the benthic community re-colonized the cable installation areas within several months of installation (Neptune 2005). At this location there would have been no loss of feeding opportunities for fishes. For the Project, the small increase in temperature of the sediment surface estimated by modeling (1ºC) would be expected to have a minimal effect on the production of benthic invertebrates that could be a food source of fishes. The increase in sediment temperature would be well within the temperature tolerances of the organism in the existing community, and the natural variability that these organisms are exposed to, thus, it would not depress or stimulate biological activity. The increase in sediment temperature would not impact feeding by fishes.

Life Stage Development

The potential exposure of early life stages to the cables will vary depending on their habitat preferences and movement patterns. The life stage with the greatest potential for exposure would be fish eggs and newly hatched larvae that settle to the bottom habitat that is within the zone of influence of the operating cables. At this time they are undergoing rapid physiological and anatomical changes.

A number of studies have investigated the effect of strong magnetic fields on fish egg and larval development. The magnetic fields in these studies were much greater than the changes in natural magnetic fields anticipated by the operation of the proposed transmission cables. Strand *et al*. (1983) reported that exposure of rainbow trout eggs, sperm, or fertilized eggs to a 1 Tesla (10,000 Gauss [G] or 1,000,000 milligauss [mG]) direct current (DC) magnetic field had only the slightest effect of the fertilization rate. Formicki and Winnicki (1998) reported that rainbow trout embryos and larvae exposed to DC magnetic fields above 4 millitesla (mT) (40 G or 40,000 mG) exhibited incubation delays and longer heavier bodies than controls exposed at levels up to 5.5 mT.

A weak increase in the permeability of egg shells in trout, rainbow trout, and sea trout to water was reported from ultrastructural observations of the shells after exposure to a 2 mT (20 G or 20,000 mG) DC magnetic field *in vitro* (Sadowski *et al*. 2007). Sea urchins exposure to 30 mT (30 G or 30,000 mG) but not 15 mT (15 G or 15,000 mG) DC magnetic fields delayed development in early embryos and caused increase in abnormalities of gut development (Levin and Ernst 1997). Sudden exposure of carp embryos and larvae to DC magnetic fields of 50-70 mT (500-700 G or 500,000-700,000 mG) is reported to increase heart rate by 5 %, which then declined to resting levels in 15 minutes (Formicki and Winnicki 1996). Trout larvae and fry tended to be attracted to magnets placed in experimental mazes that produced magnetic fields of 0.15-0.42 mT (1.5-4.2 G or 1,500-4,200 mG).

These studies show that much stronger magnetic fields than will be produced by the proposed Project are needed to impact the early life stages of aquatic organisms. As shown in the model, the change in magnetic field produced by the proposed cables are equal to or less than 30.3 mG, which is about 10-100 times lower than the magnetic field levels that are reported to produce adverse effects in the early life stages of fish that remain in the zone of influence for an extended period of time.

Older, mobile life stages of fish from early juveniles to adults would not be exposed to these low levels of magnetic fields for extended periods. After cable installation is completed the disturbed area of the bottom is expected to recover its benthic invertebrate community. After the cable is energized, the benthic community is not expected to differ significantly from adjacent benthic area, thus there will be no unique features that would attract or concentrate fish in the vicinity of the cable. Sturgeon and other species are expected to distribute themselves throughout the Hudson Estuary as they did prior to cable installation and have incidental contact with the zone of influence of the cables.

Summary of Potential Effects on Aquatic Life

Modeling analysis shows that the increase in sediment temperature, as well as changes in the natural magnetic fields (total magnetic field and compass deflection) is limited to a small area of influence confined to the river bottom and the water column directly above the cable centerline. The magnitude of induced change in water temperature is extremely small, probably not detectable, while the sediment surface temperature is elevated slightly more than 1ºC for all burial depths. These analyses are conservative in that they are based on an assumption of a clay/silt substrate. Because the water temperature change is negligible with a 4 ft. burial depth and sediment temperature varies little among the four burial depths assessed, placing the cable deeper than 4 ft. would have no benefit in terms of reducing potential temperature impacts on aquatic life.

With regard to magnetic field, the model analyses show that a 4 ft. burial depth produces a change in total magnetic field extended up to 30 ft. from the cable centerline depending on the arrangement of the two cables. The magnitude of the change diminishes rapidly beyond 10 ft. from the centerline. Greater burial depths reduce the magnitude of change and deflection and reduce the area influenced by the cable. For a biological ‘compass’ that responds to the horizontal component of the geomagnetic field, the least change in the background geomagnetic field would occur for a cable burial depth between 4 and 8 ft. of burial. Beyond 8 ft. the reduction in the change in deflection is small.

The available information on the effects of alterations in water and sediment temperature, and changes in the magnetic field on aquatic life shows no significant adverse effects on individual organisms for various biological functions. The technical literature is not specific to species in the Hudson, but it does cover a range of related organisms. Both species-specific studies as well as reviews of literature do not reveal any significant short or long-term effects from the operation of submarine electric cables. Given this lack of evidence of significant impacts, the low level of induced changes by the proposed cables and the small spatial extent of these changes, the depth of burial does not appear to be a significant factor in the assessment of impacts on aquatic life in the Hudson. Placing the cable deeper than 4 ft. over most of its length may increase the area of the bottom disturbed during installation without providing any additional protection for aquatic life during project operation. On balance a burial depth of 4 ft. may represent the best arrangement to minimize overall effects from installation and operation of the cable.

We look forward to hearing your thoughts on the issues discussed in this letter. Please feel free to contact me at any time if you have any questions about the materials presented.

Regards,
HDR|DTA

Sean Murphy
Project Manager

Attachment

cc: Dr. Jerry Pell, U.S. Department of Energy
Don Jessome, Transmission Developers Inc.

THIS PAGE INTENTIONALLY LEFT BLANK

STATE OF NEW YORK
DEPARTMENT OF STATE
ONE COMMERCE PLAZA
99 WASHINGTON AVENUE
ALBANY, NY 12231-0001

ANDREW M. CUOMO
GOVERNOR

RUTH NOEMÍ COLÓN
ACTING SECRETARY OF STATE

March 08, 2011

Mr. Sean Murphy for Champlain Hudson
Power Express, Inc. and CHPE Properties
C/O HDR/DTA HDR Engineering Inc
970 Baxter Blvd
Suite 301
Portland, ME 04103-5346

Re: F-2010-1162 (formerly S-2010-0025)
U.S. Army Corps of Engineers/NY District Permit
Application #: 2009-01089-EHA
DOE Docket #: PP-362
NYS PSC Case: 10-T-0139
NYS DEC Regions 2, 3, 4 and 5
Champlain Hudson Power Express, construct/operate 1,000 MW underwater/underground HVDC electric transmission system extending between Canada and NYC.
Status of Consistency Review

Dear Mr. Murphy:

The Department of State is required to notify you of the status of our review of this project for its consistency with the New York State Coastal Management Program if a decision has not been issued within three months following commencement of our consistency review.

The completion of the consistency review for this project will require further coordination with the involved Federal, State, and local agencies.

A copy of this letter has been sent to the Department of Energy and the Army Corps of Engineers.

Please call Matthew Maraglio at (518) 474-5290 if you have any questions.

Sincerely,

Jeffrey Zappieri
Supervisor, Consistency Review Unit
Office of Coastal, Local Government
and Community Sustainability

c: COE/ NY District – Naomi Handell
DOE – Jerry Pell
NYSDEC/ Central Office - Christopher Hogan
NYS DPS – Steven Blow

THIS PAGE INTENTIONALLY LEFT BLANK

STATE OF NEW YORK
DEPARTMENT OF STATE
ONE COMMERCE PLAZA
99 WASHINGTON AVENUE
ALBANY, NY 12231-0001

ANDREW M. CUOMO
GOVERNOR

CESAR A. PERALES
SECRETARY OF STATE

June 8, 2011

Mr. Donald Jessome, President/CEO
Champlain Hudson
Power Express Inc. and
CHPE Properties, Inc.
Pieter Schuyler Building
600 Broadway
Albany, NY 12207-2283

Re: F-2010-1162
U.S. Dept. of Energy #: PP-362
U.S. Army Corps of Engineers Application #: 2009-01089-EHA
NYS Public Service Commission Application #: 10-T-0139
Champlain-Hudson Power Express
1,000 megawatt HVDC electric transmission system from Canada to New York City
Conditional Concurrence with Consistency Certification

Dear Mr. Jessome:

The Department of State (DOS) has completed its review of the consistency certification and data and information for the above referenced project in accordance with the federal Coastal Zone Management Act (CZMA). Pursuant to 15 CFR 930.4 and 930.62, DOS conditionally concurs with the consistency certification for the project under the enforceable policies of the New York State Coastal Management Program (CMP).

This transmission project promises to deliver a tremendous supply of clean, renewable hydropower from Canada to the New York City Metropolitan Area, one of the nation's largest energy markets. If constructed as proposed and conditioned, the project can provide several important energy benefits. The electricity will serve the New York Independent Systems Operator (NYISO) load center in Zone J and adjacent zones, a high need area. Hydro-power, a renewable energy source, diversifies the State's energy portfolio. Because the electricity is predominantly generated by hydropower, it will improve air quality by displacing less clean generators and will not contribute to greenhouse gas emissions. Importantly, the project improves the State's ability to meet future market demand for low-cost electricity should current power sources go off-line or become obsolete.

The siting of the transmission project in State navigable waters and adjacent areas requires great care to ensure that commercial navigation is not adversely impacted, Significant Coastal Fish and

Wildlife Habitats (SCFWH) are not affected, recreational fishing activities are not substantially altered, migratory patterns of aquatic species are not permanently altered, re-suspension of estuarine sediments and associated contaminants is minimized and all other environmental impacts are minimized. The conditions attached to this concurrence ensure that the project can proceed in a manner that is both consistent with the enforceable policies of the CMP and achievable by the project applicant.

I. STATUTORY FRAMEWORK FOR CONSISTENCY REVIEW

The Coastal Zone Management Act (CZMA) authorizes a coastal state to review federal agency activities in or outside of the coastal zone affecting any land or water use or natural resource of the coastal zone for their consistency with the enforceable policies of the CMP.[1] Under this regulatory framework, the state coastal agency can concur with, conditionally concur with, or object to the consistency certification for a project. In this matter, DOS has conditionally concurred with the certification. If the conditions are met, the federal agencies can proceed to make decisions on the applications once amended.

Within 30 days of receipt of the conditional concurrence pursuant to 15 CFR 930.4 and 930.62, the applicant must amend its federal applications to include the State's conditions. The Federal agency or the applicant shall immediately notify the DOS if the conditions are not acceptable. If the application is not amended or either the Federal agency or the applicant notifies DOS that the conditions are not accepted, the conditional concurrence automatically becomes an objection.

Pursuant to § 930.63(e), the applicant has the opportunity to appeal the objection to the Secretary of the US Department of Commerce within 30 days after receipt of the conditional concurrence. Also, if either federal agency does not approve the application as amended by the State's conditions, then the applicant will have 30 days after receiving such notice from the federal agency to file an appeal.

In order to grant an override request, the Commerce Secretary must find that the activity is consistent with the objectives or purposes of the Coastal Zone Management Act, or is necessary in the interest of national security. A copy of the request and supporting information must be sent to the New York State DOS Division of Coastal Resources and the federal permitting or licensing agency. The Commerce Secretary may collect fees from you for administering and processing your request.

II. SUBJECT OF THE REVIEW

The applicant, Champlain Hudson Power Express, Inc. and CHPE Properties Inc, (hereafter CHPE),[2] proposes to construct, operate and maintain a 1,000 megawatt (MW) underground and submarine high-voltage, direct current (HVDC) electric transmission system. The transmission project will primarily transport hydropower generated electricity from sources in central and eastern Canada to provide a reliable supply of clean, renewable energy to meet future demand for electric power in the New York City Metropolitan Area and the lower Hudson Valley.

The project consists of two (2) approximately 6-inch diameter HVDC transmission cables connected as a single bi-pole originating at a point beneath the Richelieu River in the southern portion of

---

[1] 16 U.S.C., Sec. 1456(c)(3)(A).

[2] The Applicant is a joint venture of TDI-USA Holdings Corporation (TUHC), a Delaware corporation, and National Resources Energy, LLC (NRE), a Delaware limited liability company. TUHC, the majority (75%) shareholder in the Applicant, is a subsidiary of Transmission Developers Inc. (TDI), a Canadian Corporation. NRE is a wholly owned subsidiary of National RE/sources Group, a limited liability corporation duly organized under the laws of the State of Connecticut.

the province of Quebec[3] and crossing the international border into New York. The cables will be buried beneath the beds of Lake Champlain and the Hudson River. To bypass the Champlain Canal and a portion of the upper Hudson River, two 6-inch diameter HVDC land cables will be buried underground within a railroad right-of-way from Whitehall, New York to Coeymans, New York. The cables enter the Hudson River at Coeymans and then continue generally south within the Hudson River bed terminating at a new alternating current (AC) converter station at Yonkers, New York.[4] After exiting the converter station, six (6) 345-kV AC cables enter the water and continue south under the Hudson, Harlem and East Rivers to the existing Poletti substation in Astoria, Queens.[5] The project will interconnect with the northeast regional grid in Zone J of the NYISO.

III. APPLICATIONS FOR REGULATORY APPROVALS

On January 27, 2010, the applicant filed an application with the Office of Electricity Delivery and Energy Reliability of the U.S. Department of Energy (DOE) requesting "Presidential Permit" authorization to construct and operate a two bi-pole, 2000 MW high-voltage direct current (HVDC) transmission system crossing the United States- Canada border to deliver electricity to markets in New York City, New York and Bridgeport, Connecticut.[6] This application was amended on August 5, 2010 by removing the 1000 MW bi-pole that terminated in Bridgeport, CT from the application. On June 18, 2010, DOE issued a public notice announcing its intention to prepare an Environmental Impact Statement to assess potential environmental impacts associated with granting a Presidential Permit for the project. On December 6, 2010, CHPE submitted an application to the U.S. Army Corps of Engineers (Corps) requesting authorization for the project pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899.

On December 8, 2010, the applicant provided to DOS a CZMA consistency certification for the project as a part of a joint application to New York State and the Corps certifying that "The proposed activity complies with New York State's approved Coastal Management Program, or with the applicable approved local waterfront revitalization program, and will be conducted in a manner consistent with such program." On January 5, 2011, DOS acknowledged receipt of this certification and notified the applicant that a Final Environmental Impact Statement (FEIS) would be considered as data and information necessary for DOS to complete its review of the consistency certification unless specifically waived. DOS has chosen to waive the FEIS requirement for purposes of commencing and conducting consistency review as the necessary information was obtained in submissions from the applicant, consultations with various New York State agencies and subject matter experts and participation in the New York State Public Service Law's Article VII[7] process in an advisory capacity. DOS has engaged in a constant effort to gather the data and information necessary to adequately consider the applicant's certification.

On March 30, 2010, CHPE filed an application for a Certificate of Environmental Compatibility and Public Need, a 401 Water Quality Certificate and other environmental permits with the New York State Public Service Commission (PSC)[8] in accordance with Article VII of the New York State Public

---

[3] Submarine HVDC cables are currently proposed to begin within the Richelieu River, proximate to converter stations in southern Quebec.
[4] A convertor station is a required component of the project as the HVDC current needs to be converted to an HVAC current prior to entering the Poletti substation.
[5] The project's precise final route would be subject to a number of factors, including resource issues, permitting, land acquisition, and stakeholder agreement. All portions of the project located within the United States would be owned and operated by the applicant.
[6] Since the cable crosses an international border, the applicant is required to obtain a Department of Energy issued Presidential Permit. (See Federal Power Act § 202(e); 10 C.F.R. Part 205).
[7] Public Service Law Article VII governs the siting of major utility transmission facilities within New York State.
[8] New York State Public Service Commission, Rate Case 10-T-0139.

Service Law. Article VII establishes the review process for consideration of any application to construct and operate an electric transmission line with a design capacity of 100 kilovolts or more, extending for at least ten miles, or with a capacity of 125 kilovolts and over, extending for a distance of one mile or more. The applicant will also require authorization from the New York State Department of Environmental Conservation (DEC) under a State Pollution Discharge Elimination System General Permit for Stormwater Discharges from Construction Activity and from the New York State Office of General Services for easements to use and occupy State-owned underwater lands.

IV. OTHER FACTORS RELEVANT TO THE REVIEW

The New York City market for electricity consumes great amounts of energy in terms of kilowatt hours and pays some of the highest prices in the nation. In 2010, the average price of electricity paid by residential customers in New York City was estimated at 22.82 cents per kilowatt hour.[9] New York City is also an under-serviced market and hence an attractive market for major suppliers of electricity. The CHPE project helps to meet the increasing energy demand in this important market.

Governor Cuomo set forth an ambitious agenda for transitioning New York to a more environmentally sustainable energy economy through increased energy efficiency and a commitment to developing renewable energy technol*ogies.* In the *Cleaner, Greener NY: The New NY Agenda,*[10] the Governor stated "we can develop synergies between economic development and environmental improvement through the development of clean energy—we will create jobs while simultaneously reducing harmful emissions." The Governor has recognized that the provision of reasonably priced hydropower from Canada to serve New York City markets advances this goal.

During the 21st century, the energy "landscape" in New York changed in direct response to national and State energy objectives. A new generation of energy proposals are now emerging which pioneer newer, cleaner technologies and promote sustainable use and diversification of energy resources. The CPHE project offers the opportunity to meet future energy needs, while balancing reliability, cost, environmental and public health impacts, and economic growth. It would be the first sub-benthic electric transmission system of its scope and scale sited within the Hudson River and would be the first transmission system of this type and scale worldwide to be constructed in a confined, linear estuarine ecosystem.

As a navigable waterway, the Hudson River has served as a vital transportation link in the nation's and the State's commercial network. Since 1834, Hudson River navigational improvements have been a cooperative state/federal effort. Energy transmission facilities serving New York City have historically been routed overland, often parallel to the Hudson River shoreline and have been available to shippers with facilities along the river. Today the Hudson River serves an important group of water-dependant industries which operate at an economic advantage due to their direct access to and reliance on, as an integral part of such industry, the use of the river and nearby energy resources. The cost savings of water transportation (as compared to land and air transport) and access to reasonably priced energy resources are directly responsible for the location of certain industries along the Hudson River.

The Hudson River estuary serves as a spawning and/or nursery ground for important fish and shellfish species, such as striped bass, American shad, Atlantic and shortnose sturgeon, river herring and blue crab. More than 200 species of fish are found in the Hudson and its tributaries. The estuary contains

---

[9] "Comparison of Electric Prices in Major North American Cities" (2010) Hydro Quebec. http://www.hydroquebec.com/publications/en/comparison_prices/pdf/comp_2010_en.pdf
[10] *Cleaner, Greener NY, The New NY Agenda* Andrew Cuomo, 8th in a Series, p. 15, available at http://d2srrmjar534jf.cloudfront.net/6/d4/3/1266/andrew_cuomo_cleaner_greener_ny.pdf.

the only significant acreage of tidal freshwater wetlands within the state. These wetlands, along with the river's brackish tidal wetlands and stands of submerged aquatic vegetation, constitute essential habitat that support the Hudson River's rich and biologically diverse web of life.[11] More than 16,500 acres of river habitat from Troy to the southern Rockland-Westchester County border are within designated SCFWHs.[12]

A rich biodiversity is evident within the Hudson River Estuary and across the Hudson River Valley and constitutes a disproportionate share of New York State's plant and animal species.[13] The Hudson River component of the National Estuarine Research Reserve System (NERRS), which focuses its research and monitoring programs on all of the Hudson River estuarine habitats, encompasses over 5,000 acres of freshwater and brackish tidal wetlands and uplands distributed at four distinct sites that span the middle 100 miles of the Hudson River estuary.[14] The coastal impacts of any proposed federal activity or project subject to federal approval proposed in this estuary must necessarily be reviewed for consistency with the State's CMP to ensure the continued viability of such habitats, while promoting economic growth and development.

V. COASTAL POLICY ANALYSIS

The CHPE project is likely to cause direct and/or indirect physical and biological impacts to coastal resources and uses in the coastal area throughout the construction phase and through its operation. Several impacts directly applicable to the installation and operation of the transmission system are applicable to several coastal policies.

Policy Analysis

State Policy 2 - Facilitate the siting of water-dependent uses and facilities on or adjacent to coastal waters.

The CHPE project will bury transmission cables within Lake Champlain, the Hudson River, the Harlem River, and the East River. While the project does not itself constitute a "water-dependent" use, several conditions ensure that the transmission cables will be sited and installed in a manner that facilitates water dependent economic uses and avoids interference with other important water dependent uses such as navigation and fishing.

This concurrence is conditioned upon the applicant's installation of the transmission lines in coastal waters at the maximum depth achievable that would allow each pole of the bi-pole to be buried in a single trench using a jet-plow. Separation from the water column is necessary to ensure that the risk of impacting existing water dependant uses, such as commercial and recreational fishing and boating, and potential future navigation channel improvements, will be minimized. These potential impacts are minimized by removing the transmission cables, the source of the impact, as far away as possible from the potential coastal conflict and placing them in close proximity to each other, while considering the effects of such an action on other water-dependant uses. Given the state of the available information, the cables can be expected to be at least six (6) feet below the sediment water interface for the majority of the route. Should the bi-pole occupy any federally maintained navigation channels it will be buried at least 15 feet below the authorized depth in a single trench within those channels. In this matter, the siting

[11] New York State Coastal Management Program (CMP) Final Environmental Impact Statement (EIS). pp. II-2-8 to II-2-10.
[12] http://www.nyswaterfronts.com/consistency_habitats.asp
[13] Hudson River NERRS, Revised Management Plan. 2009-20014.
[14] From north to south the sites are: Stockport Flats (Columbia County), Tivoli Bays (Dutchess County), Iona Island and Piermont Marsh (Rockland County). See Hudson River NERRS, Revised Management Plan. 2009-20014.

of the cable at these depths will minimize conflicts with water based navigation by substantially avoiding anchor strikes and potential future navigational improvements.

Additionally, as proposed, the submarine cables will make landfall and extend inland to a converter station in Yonkers, NY and a substation in Queens, NY. This concurrence includes a condition that the cable landfall will be buried using horizontal directional drilling and will not affect the current and/or future siting of water dependent uses at the water's edge with the exception of the required narrow utility easement for the buried cable.

State Policy 3 – Further develop the State's major ports of Albany, Buffalo, New York, Ogdensburg and Oswego as centers of commerce and industry, and encourage the siting in these port areas, including those under the jurisdiction of state public authorities, of land use and development which is essential to, or in support of, the waterborne transportation of cargo and people.

The installation and operation of the transmission cables may affect navigation or future dredging activities which may, in turn, affect the operation of port facilities in New York City and Albany. However, the applicant has consulted with appropriate port facility operators and agreed to site the project in a manner that would not hamper or interfere with port activities.

This concurrence includes the previously stated condition regarding burial depth. Another condition requires that the applicant verify the transmission cables' burial depth on a periodic basis so that they do not become a hazard to navigation or marine resources.

State Policy 7 - Significant Coastal Fish and Wildlife Habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.

The applications pending before the federal agencies describe the transmission lines as being constructed within several SCFWHs, which are special management areas designated by DOS on the recommendation of the DEC. These habitats are provided important protections under State Policy 7 of the CMP.[15] Each SCFWH has been inventoried and a general assessment of potential impacts has been developed. As the project is currently designed, SCFWH areas will be affected through: a) disturbance-related impacts associated with the installation of the cables including increased turbidity, re-suspension of pollutants, direct physical disturbance to bottom substrates, and b) operational impacts associated with ongoing use and maintenance of the transmission system including magnetic fields surrounding the cables.

The direct effects on habitats resulting from the installation of project structures can be readily estimated based on the surface area disturbed and the densities and composition of the benthic community in that area. Operational effects are more difficult to predict and any predicted effects should be verified by monitoring. Installation of the project could also permanently alter benthic habitats over the longer term if the trenches containing electrical cables are backfilled with sediments of different size or composition than the previous substrate. The most certain way to minimize the impact on benthic habitats is by siting the cable route to avoid particularly sensitive habitats.

A substantial number of designated SCFWHs are located north of the Inbocht Bay and Duck Cove SCFWH (7.5' Quadrangle: Cementon, New York). These upper Hudson River habitats would be vulnerable to impacts from this type of project and therefore must be avoided. Additionally, by avoiding

---

[15] The SCFWH assessments are available at www.nyswaterfronts.com and are fully incorporated into the CMP.

these portions of the Hudson River, potential conflict with water related commercial navigation using the federally maintained navigation channel can be avoided.

Several conditions are imposed to ensure consistency with State Policy 7. The applicant must amend its pending federal applications to display a new route which avoids these northern Hudson River habitats. The transmission cable must not occupy any segment within the Hudson River north of the southerly boundary of the Inbocht Bay and Duck Cove Significant Coastal Fish and Wildlife Habitats. Additionally, all transitions from upland to submarine configurations within the coastal area must be accomplished by horizontal directional drilling. Thus, where the transmission cables transition from land to water south of this habitat, the applicant must utilize horizontal directional drilling methods to install the cable to minimize disturbance to shoreline and nearshore coastal fish and wildlife habitats. The horizontal directional drilling entry/exit point will be designed to enter/exit the water at a depth sufficient to avoid impacts to shoreline, intertidal and nearshore areas.

The transmission cable must entirely avoid entering Haverstraw Bay. As proposed, the transmission cable would traverse the State designated Haverstraw Bay SCFWH. The habitat documentation for Haverstraw Bay states that "...the Bay possesses a combination of physical and biological characteristics that make it one of <u>the most important fish and wildlife habitat in the Hudson River estuary</u>. The regular occurrence of brackish water over extensive shallow bottom creates highly favorable conditions for biological productivity within the estuary, including submerged vegetation, phytoplankton and zooplankton, aquatic invertebrates, and many fish species." (Emphasis added).[16]

The habitat documentation indicates that in terms of ecosystem rarity, "[the bay is] the most extensive area of shallow estuarine habitat in the lower Hudson River."[17] The documentation also indicates that: Shortnose sturgeon, an endangered species, regularly occur in the bay; the habitat contributes to recreational and commercial fisheries throughout the northeastern United States; the bay is a major spawning, nursery, and wintering area for various estuarine fish species (e.g. striped bass, American shad, white perch, Atlantic sturgeon, blue claw crab) and that their population levels are unusual in the northeastern United States; and the habitat is irreplaceable. Haverstraw Bay also serves as a foraging area for the threatened bald eagle. The documentation further indicates that "Haverstraw Bay is a critical habitat for most estuarine-dependent fisheries originating from the Hudson River and contributes directly to the production of in-river and ocean populations of food, game, and forage fish species. Consequently, commercial and recreational fisheries throughout the North Atlantic, therefore, depend on or benefit from these biological inputs from the [bay]."[18]

The narrative describing the Haverstraw Bay SCFWH specifically states "[A]ny physical modification of the habitat or adjacent wetlands, through dredging, filling, or bulkheading, would result in a direct loss of valuable habitat area."[19] Hence, in the past, DOS has carefully guarded the resources of the Bay from all projects that would cause impacts. The physical presence of the transmission system within Haverstraw Bay and the proposed installation methodology would result in a direct loss of habitat within the SCFWH. There are no conditions that can be developed that would avoid habitat loss within Haverstraw Bay except for avoidance of the habitat. For that reason, the bi-pole will be in an upland, buried configuration around the Haverstraw Bay SCFWH. This concurrence is conditioned on a requirement that work within identified SCFWHs will be conducted during the timeframes provided in the narrative describing the SCFWH.

---

[16] http://www.nyswaterfronts.com/downloads/pdfs/sig_hab/hudsonriver/Haverstraw_Bay.pdf
[17] <u>Id.</u>
[18] <u>Id.</u>
[19] <u>Id.</u>

State Policy 8 – Protect fish and wildlife resources in the coastal area from the introduction of hazardous wastes and other pollutants which bio-accumulate in the food chain or which cause significant sub lethal effects on those resources.

The project installation will mechanically disturb over 95 linear miles of estuarine sediments and benthic habitat and will result in the temporary re-suspension of these sediments and any adsorbed contaminants into the water column. Potentially, contaminants may then be released to the surrounding water body, causing direct harm to resident species and/ or bio-accumulating in the food chain.

The installation and operation of the transmission cables can directly displace benthic (i.e., bottom-dwelling) plants and animals or change their habitats by altering water flows, sediment wave structures, or substrate composition. During installation, bottom disturbances will result from the temporary anchoring of construction vessels; trenching using water jetting techniques and dredging for cable installation; and installation of concrete mattresses in certain locations where bedrock and utility infrastructure crossings preclude the burial of the cable at the optimal depth. The jet-plow technology to be used is anticipated to be relatively efficient in minimizing disturbance. In any case, motile organisms will be displaced and sessile organisms will be destroyed in limited areas affected by these activities. Displaced organisms may be able to relocate assuming the availability of suitable habitat nearby. Species with benthic-associated spawning or whose offspring settle into and inhabit benthic habitats are likely to be most vulnerable to disruption during project installation. When construction is completed, disturbed areas are likely to be re-colonized by these same organisms, because the substrate will, in most places, be restored to a similar state.[20] It should be noted that juvenile sturgeon may be particularly impacted by disturbance of benthic communities if similar foraging habitat is not immediately available to them in the vicinity.

Water jetting and cable installation activities in the Hudson, Harlem and East Rivers and Lake Champlain will disturb and suspend bottom sediments and may release any contaminants attached to such sediments. As this occurs, there is also a risk of bioaccumulation in the tissues of animal species up the food chain. Avoidance of known areas of contamination is the most effective method to minimize re-suspension of contaminants and known contaminant areas should be avoided in routing the project. In addition, an assessment of contaminated soils in the lower Hudson River estuary will likely be conducted during subsequent regulatory approval phases of this project (such as the PSC's Environmental Management and Construction Plan) and compared to the precise cable route.

State Policy 9 – Expand recreational use of fish and wildlife resources in coastal areas by increasing access to existing resources, supplementing existing stocks, and developing new resources.

State Policy 10 – Further Develop commercial finfish, shellfish, and crustacean resources in the coastal area by encouraging the construction of new, or improvement of existing on-shore commercial fishing facilities, increasing marketing of the state's seafood products, maintain adequate stocks, and expanding aquaculture facilities.

The project installation, operation and maintenance has the potential to affect recreational and commercial fish and wildlife resources by exposing said resources to magnetic fields in excess of the normal range, disturbing habitat, increasing turbidity and allowing temporary re-suspension of hazardous wastes, pollutants, or materials, hence increasing the risk to resources and uses of the Hudson River.

---

[20] U.S. Department of Energy, Report to Congress on the Potential Environmental Effects of Marine and Hydrokinetic Energy Technologies. December 2009.

Electric current traveling through HVDC cables induce magnetic fields in the immediate vicinity. Certain aquatic species may be particularly sensitive to magnetic fields generated by the transmission cables including cartilaginous fishes (elasmobranches) and sturgeons. Electro-magnetic fields may change animals' foraging and feeding behaviors, alter migration patterns or cues, reproduction, and may increase susceptibility to predation. Impacts on other species, if any, are unknown at this time due to a lack of published research.

Modeling has indicated that when both poles of the HVDC cables are located within close proximity of each other, the opposing magnetic fields substantially cancel each other out, resulting in a diminished magnetic deviation from the ambient magnetic field. This deviation's potential effects on marine resources can be further minimized by providing as much physical distance as possible between the cables and the coastal resources that may be affected by it.

Given the existing state of marine cable burial technology, the specific configuration of HVDC cable currently available and the underlying geology of the Hudson, Harlem and East Rivers, a full six (6) feet or more of separation can be maintained for the majority of the sub aquatic route within the coastal area. The six (6) feet of separation and co-location of each cable within the same trench, will result in diminished magnetic field deviations within the water columns of these water bodies, thus minimizing the potential effects of magnetic fields on marine resources. Additional monitoring and reporting is expected to occur following cable installation which will supplement the existing knowledge base and guide future siting decisions for similar projects that may be proposed in the future.

The commercial and recreation fishery resources within the Hudson, Harlem and East Rivers are extremely valuable to the State and the nation. Various fish species, during various life stages, may be significantly present or absent from various locations within these water bodies. The SCFWH narratives provide time frames when habitat disturbance would be less detrimental to the SCFWH and subsequently, less injurious to the commercial and recreational fish populations that utilize them. Additionally, the ongoing PSC Article VII process may develop work windows and siting provisions describing when and where in-water work would be least detrimental to commercial and recreational fisheries outside of SCFWHs. These work windows and siting provisions, when combined with the work windows discussed in the applicable SCFWH narratives, will minimize habitat disturbance in the SCFWHs and minimize risks to commercial and recreational fisheries.

This concurrence is therefore conditioned on a requirement that when work is conducted in identified SCFWHs, it will be conducted during the timeframes provided in the narrative describing the SCFWH. Outside of SCFWHs all in-water work will be conducted in accordance with the provisions developed during the Article VII proceedings.

State Policy 19 - Protect, maintain, and increase the level and types of access to public water related recreation resources and facilities.

The project will utilize resources held in the public trust, which are traditionally used by the public for water related recreation activities including recreational fishing and boating. Substantial use of public resources will be required for the project to be installed as proposed; the use of said resources must serve a public need and alienate the least amount of public resources as possible. Generally, the project should minimize alienating public trust resources by utilizing a buried cable configuration and by sharing waterways with existing user groups during installation.

The cables will be buried at a depth within the Hudson, Harlem, and East Rivers that is not anticipated to affect current or future recreational navigation. The proposed project's impacts on recreational fisheries are anticipated to be minimal and temporary given the analysis of policy 9 and 10 above. Temporary impacts to the public's use of existing water resources will be limited to short-term exclusion from areas temporarily occupied by installation equipment. As conditioned, the project would be consistent with this policy.

State Policy 27 - Decisions on the siting and construction of major energy facilities in the coastal area will be based on public energy needs, compatibility of such facilities with the environment, and the facility's need for a shorefront location.

The CHPE project has the potential to be incompatible with the environment and will utilize shorefront locations. The need for the electricity that the project would transmit will be evaluated and considered by the PSC. The PSC's decision regarding public energy need should be entirely consistent with this policy and will be further analyzed pursuant to a complete state coastal consistency review of the state action. The potential impacts on coastal uses and resources have already been discussed in connection with other policy assessments. All of the conditions imposed with this determination are necessary to allow the project to be consistent with this policy.

State Policy 37 - Best Management Practices will be utilized to minimize the non-point discharge of excess nutrients, organics, and eroded soils into coastal waters.

The CHPE project will require excavation of soils within the coastal area as well as the re-suspension of marine sediments which may affect coastal resources. The applicant has developed a substantial best management practices (BMP) in conjunction with its Article VII process and the document outlines various BMPs that will be utilized during the installation of the proposed cable including the development of a stormwater pollution prevention plan as per the terms of the general permit for construction stormwater discharges. When finalized through the Article VII process, consistent implementation of proposed BMPs can be expected to minimize non-point discharge of nutrients, organics, and soils by first controlling erosion in disturbed areas and then containing sediment on site.

State Policy 44 - Preserve and protect tidal and freshwater wetland and preserve the benefits derived from these areas.

As originally proposed, the project will occupy existing wetlands. However, the upland portions of the proposed route have been sited within previously disturbed railroad and highway corridors and will largely avoid adjacent wetlands. For those portions of the proposed route that would traverse tidal or freshwater wetlands, the impacts will be temporary in nature and will be minimized by the use of best management practices that have been developed in support of the project.

VI. Summary of Conditions

As described in the applicant's U.S. Department of Energy Delegated Presidential permit application and the Corps CWA § 404/Rivers and Harbors § 10 Permit application, the project would not be consistent with the enforceable policies contained within the CMP. DOS has developed conditions, that if adopted by the applicant, pursuant to 15 CFR Part 930.4, that would allow the project to be found consistent if adopted. These conditions are summarized below.

1.) The transmission cables will be buried at the maximum depth achievable that would allow each pole of the bi-pole to be buried in a single trench using a jet-plow. Given the state of the available information, this is expected to be at least six (6) feet below the sediment water interface. Should the bi-pole occupy any federally maintained navigation channels it will be buried at least 15 feet below the authorized depth in a single trench within those channels. The cable will be maintained at these depths and depth of burial will be verified on a periodic basis so as to not become a hazard to navigation or marine resources.

2.) All transitions from upland to submarine configurations within the coastal area will be accomplished by horizontal directional drilling and will be at a depth sufficient so as to not interfere with any current or future water dependant uses.

3.) The transmission cable will not occupy any area within the Hudson River north of the southerly boundary of the Inbocht Bay and Duck Cove SCFWH.

4.) The transmission cable will be in an upland, buried configuration around the Haverstraw Bay SCFWH.

5.) When work will be conducted in identified SCFWHs, it will be conducted during the timeframes provided in the narrative describing the SCFWH. Outside of SCFWHs all in water work will be conducted in accordance with the recommendations developed during the Article VII proceedings.

CONCLUSION

The project is found consistent with the enforceable policies contained within the New York State Coastal Management Plan subject to the five conditions presented in this document. Should the presented conditions not be acceptable, this conditional concurrence shall be treated as an objection as the proposed activity would not be consistent with State Policies 2, 3, 7, 9, 10, 19, 27, 37 and 44 of the New York State Coastal Management Program.

Sincerely

Daniel E. Shapiro
First Deputy Secretary of State

cc: U.S. DOE: Dr. Jerry Pell, Principal NEPA Document Manager
Corps NY: Naomi Handell, Project Manager
OCRM: Joelle Gore, Acting Chief for Coastal Programs
David Kaiser, Senior Policy Analyst
Kerry Kehoe, Federal Consistency Specialist
HDR/DTA: Dr. Sean Murphy,
CHPE Inc.: William Helmer Esq.
Hiscock & Barclay, LLP:
George Pond, Esq.
Frank Bifera, Esq.
PSC: Jeffrey Cohen, Deputy for Policy and Legal Affairs
Steve Blow Esq.
DEC: Steve Russo, Esq. General Counsel
William Little Esq.
Patricia Desnoyers Esq.

THIS PAGE INTENTIONALLY LEFT BLANK

Transmission
Developers Inc.

July 7, 2011

Mr. Anthony J. Como
Director, Permitting and Siting
Office of Electricity Delivery and
Energy Reliability (OE-20)
U.S. Department of Energy
1000 Independence Avenue SW, Room 8G-024
Washington, D.C. 20585

Subject: Champlain Hudson Power Express Project
U.S. Department of Energy Presidential Permit Application PP-362

Dear Mr. Como:

On January 25, 2010, Transmission Developers, Inc. ("TDI" or "Applicants") submitted on behalf of Champlain Hudson Power Express, Inc. ("CHPEI") an application to the U.S. Department of Energy ("DOE") for a Presidential Permit and an amendment on August 5, 2010 (collectively, the "Application") in connection with the Champlain Hudson Power Express project ("Project"). On December 6, 2010, in connection with their submission of an application to the U.S. Army Corps of Engineers to obtain construction permits pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899, a coastal zone consistency certification assessment and accompanying forms were submitted to the New York State Department of State ("NYSDOS"). NYSDOS received this submission on December 8, 2010.

On June 8, 2011, NYSDOS issued its conditional concurrence for the Project which contained five conditions. To demonstrate their acceptance of these conditions, the Applicants are amending their Application as follows:

1) **The transmission cables will be buried at the maximum depth achievable that would allow each pole of the bi-pole to be buried in a single trench using a jet-plow. Given the state of the available information, this is expected to be at least six (6) feet below the sediment water interface. Should the bi-pole occupy any federally maintained navigation channels it will be buried at least 15 feet below the authorized depth in a single trench within those channels. The cable will be maintained at these depths and depth of burial will be verified on a periodic basis so as to not become a hazard to navigation or marine resources.**

The original Application stated that the submarine cable generally would be buried to a depth of approximately three (3) to four (4) feet beneath the bed surface and separated by a distance of three (3) feet. The Applicants will now install the underwater cables in the State's coastal waters, which for this project would be the Hudson, Harlem and East Rivers, to the maximum depth achievable that allows each pole of the bi-pole to be buried side-by-side in a single trench using the jet plow installation technology. Based on available information, the Applicants believe the burial depth in such situations will be six (6) feet below the sediment-water interface and that the trench will be approximately 2 feet wide. Where the bi-pole occupies any federally maintained navigation channel in the State's coastal waters, the cables will be buried at least fifteen (15) feet below the U.S. Army Corp of Engineer's authorized navigation channel depth in a single trench. The Applicants will maintain the cables at these depths and depth of burial will be verified on a periodic basis, in accordance with the Applicant's New York State Public Service Commission Article VII Certificate, so as to not become a hazard to navigation or marine resources.

2) **All transitions from upland to submarine configurations within the coastal area will be accomplished by horizontal directional drilling and will be at a depth sufficient so as to not interfere with any current or future water dependent uses.**

The original Application stated that, in intertidal and shoreline areas, horizontal directional drilling ("HDD") is preferred to open trenching because it does not expose the surface to wave action. The Applicants have agreed to complete all transitions from upland to submarine configurations by HDD. The HDD installations will be at a depth sufficient so as to not interfere with any known current or foreseeable future water dependent uses.

3) **The transmission cable will not occupy any area within the Hudson River north of the southerly boundary of the Inbocht Bay and Duck Cove SCFWH.**

The original Application stated that the cables would enter the Hudson River in the town of Coeymans, New York. The Applicants will now route the cables so they enter the Hudson River further south in the Town of Catskill, New York. This placement would locate the cables south of both the Inbocht Bay and the Duck Cove Significant Coastal Fish and Wildlife Habitat ("SCFWH").

4) **The transmission cable will be in an upland, buried configuration around the Haverstraw Bay SCFWH.**

The original Application stated that, once in the Hudson, the underwater cables would be buried in the bed of the River south to the New York City metropolitan area. The Applicants will now route the cables so they will be buried in a western-shore upland bypass configuration that would avoid the Haverstraw Bay SCFWH.

5) **When work will be conducted in identified SCFWHs, it will be conducted during the timeframes provided in the narrative describing the SCFWH. Outside of SCFWHs all in water work will be conducted in accordance with the recommendations developed during the Article VII proceedings.**

The Applicants will adhere to all SCFWH narrative timeframes when conducting work in an identified SCFWH. Outside of SCFWHs, the Applicants have, in consultation with state regulatory agencies, developed a schedule of construction windows (see Table 1) which the Applicants anticipate will be included in its Article VII certificate.

Table 1: Proposed Construction Windows

River Mile	Project Route Mile	Location	Construction Windows
	Lake Champlain		
	0 to 73	U.S./Canada Border to Crown Point	May 1 - August 31
	73 to 103	Crown Point to Dresden	September 1 - December 31
	Hudson River, Harlem River, East River		
107-103	230 to 234	Cementon - Malden	August 1 - October 15
103-97	234 to 239	Malden - Turkey Point	August 1 - October 15
97-91	239 to 246	Turkey Point - Kingston Point	August 1 - October 15
91-87	246 to 250	Kingston Point - Esopus Meadows	August 1 - October 15
87-80	250 to 257	Esopus Meadows - Crum Elbow	August 1 - October 15
80-76	257 to 261	Crum Elbow - Poughkeepsie	August 1 - October 15
76-68	261 to 269	Poughkeepsie - New Hamburg	August 1 - October 15
68-56	269 to 280	New Hamurg - Pollepel Island	September 15 - November 30
56-41	280 to 296	Pollepel Island - Verplanck	September 15 - November 30
41-33	296 to 305	Verplanck - Croton Point	OVERLAND
33-18	305 to 320	Croton point - Yonkers	July 1 - October 31
18-14	320 to 324	Yonkers - Harlem River	July 1 - October 31
all		Harlem River - East River	May 15 - November 30

The Applicants note that confidential settlement discussions regarding its application to the New York State Public Service Commission ("NYSPSC") for siting approval are still on-going. These negotiations have covered a wide variety of topics that may be relevant to the DOE's review of the Project and may affect the preferred routing. Therefore, the Applicants are proposing to submit revised sections of the Application after July 8, 2011 that will incorporate or reflect the five DOS conditional concurrence requirements as well as any conditions that come out of the Article VII process. The June 24th, 2011 report to the Administrative Law Judges called for settlement talks to be concluded by August 12, 2011. The Applicants believe and the NYSDOS has agreed this is the most efficient approach, as it would avoid having to submit and potentially resubmit sections of the Application in a relatively short period of time.

Please feel free to contact me at (518) 465-0710 or by e-mail at bill.helmer@transmissiondevelopers.com with any questions or concerns. We look forward to continuing to work with your office on this Project.

Sincerely,

TRANSMISSION DEVELOPERS INC.

William S. Helmer

William S. Helmer
Senior Vice President and General Counsel

cc: Donald Jessome, TDI
Sean Murphy, HDR|DTA
Jay Ryan, Van Ness Feldman
Kari Gathen, DOS
Jeffrey Zappieri, DOS

Murphy, Sean (Portland)

From:	Maraglio, Matthew (DOS) [Matthew.Maraglio@dos.ny.gov]
Sent:	Tuesday, May 29, 2012 1:47 PM
To:	Murphy, Sean (Portland)
Cc:	Zappieri, Jeffrey (DOS)
Subject:	RE: Champlain Hudson Power Express
Attachments:	COASTAL-#18447-v1-07-07-11_CHPE_USACE_Amendment_Ltr_pdf.pdf; COASTAL-#18449-v1-07-07-11_CHPE_USDOE_Amendment_Ltr_pdf.pdf
Follow Up Flag:	Follow up
Flag Status:	Flagged

Sean

You are required to resubmit to us if changes have occurred since DOS completed its review that would result in substantially different coastal effects or if there is new and substantial information. An applicant would generally make that determination on their own or DOS could notify an applicant if substantially different coastal effects were anticipated. Many applicants submit project modifications as a matter of caution.

In this case, it does not appear that there have been modifications to the project, (beyond the modifications described in the attached letters which reflect DOS's conditions), that would result in substantially different coastal effects than what DOS originally reviewed or conditioned. As such, at this time, it does not appear that you would need to resubmit to us. If, during the ongoing NEPA or other processes, modifications to the project occur that would result in substantially different coastal effects than what DOS reviewed or conditioned, DOS may need to review those modifications. Please feel free to have staff completing the NEPA EIS analysis contact me if needed.

-Matt

Matthew P. Maraglio, CPESC
Coastal Review Specialist
NYS Department of State
Division of Coastal Resources
One Commerce Plaza
99 Washington Avenue
Albany, NY 12231-0001

P(direct): (518) 474-5290
P(general): (518) 474-6000
F: (518) 473-2464
Email: Matthew.Maraglio@dos.ny.gov
Website: http://www.dos.ny.gov

From: Murphy, Sean (Portland) [mailto:Sean.F.Murphy@hdrinc.com]
Sent: Tuesday, May 29, 2012 10:21 AM
To: Maraglio, Matthew (DOS); Gathen, Kari (DOS)
Subject: Champlain Hudson Power Express

Good morning,
I hope this email finds you well. We recently received the following question from the staff completing the NEPA EIS analysis:

"JP Exhibit 121 (Environmental Impact Assessment) has a CZMA consistency evaluation for the JP route. Has a revised evaluation and request for consistency been sent to NYSDOS?"

We would be happy to submit a revised request for consistency if needed, but had been under the assumption that the project as proposed in the Joint Proposal for Settlement was consistent with the Conditional Concurrence issued by the NYSDOS in June of 2011 as the NYSDOS had signed onto the Joint Proposal. Could I ask you to confirm that there is no need to file a revised request for consistency?

Please let me know if you need any additional information. Thank you in advance for your consideration.

Regards,

SEAN MURPHY
Ph.D

HDR Engineering, Inc.
Manager, Regulatory Services - Renewable Energy

970 Baxter Boulevard, Suite 301 | Portland, ME 04103
207.775.4495 | c: 207.239.1296
Sean.F.Murphy@hdrinc.com | hdrinc.com

APPENDIX F.2 – LAND USE TABLES

Appendix F.2
Land Use Tables

Appendix F.2 was prepared to support the EIS analysis and identifies the approximate area of various land uses and land cover types within the proposed CHPE Project region of influence (ROI) for the Land Use resource area. The ROI for land use is defined as the land and water 50 feet on either side of the centerline of the transmission cables and within the deviation areas, when present.

Appendix F.2 contains the following tables:

- **Table F.2-1.** Land Use/Land Cover Within the Proposed CHPE Project ROI
- **Table F.2-2.** Land Use Within the Overland Segment of the Proposed CHPE Project
- **Table F.2-3.** Land Use Within the Hudson River Segment of the Proposed CHPE Project
- **Table F.2-4.** Land Use Within the New York City Metropolitan Area Segment of the Proposed CHPE Project
- **Table F.2-5.** Local Waterfront Revitalization Programs/Plans Relevant to the Proposed CHPE Project
- **Table F.2-6.** Local Municipal Land Use Plans Relevant to the Proposed CHPE Project

Table F.2-1. Land Use/Land Cover Within the Proposed CHPE Project ROI

Land Use/Land Cover	Approximate Acres	Percent
Lake Champlain Segment	**1,231**	**100.0**
Open Water	1,231	100.0
Overland Segment	**2,536**	**100.0**
Commercial/Industrial/Transportation	1,049	41.4
Forested	810	31.9
Open Land/Pasture/Hay/Scrub/Shrub	476	18.8
Residential	79	3.1
Agriculture	46	1.8
Open Water	45	1.8
N/A *	25	1.0
Parks/Open Space/Recreation	6	0.2
Hudson River Segment	**1,244**	**100.0**
Open Water	1,089	87.5
Commercial/Industrial/Transportation	61	4.9
Forested	44	3.5
Open Land/Pasture/Hay/Scrub/Shrub	28	2.3
Residential	21	1.7
Parks/Open Space/Recreation	1	0.1
New York City Metropolitan Area Segment	**196**	**100.0**
Commercial/Industrial/Transportation	96	49.0
Open Water	71	36.2
Residential	16	8.2
Forested	6	3.1
Open Land/Pasture/Hay/Scrub/Shrub	4	2.0
Parks/Open Space/Recreation	3	1.5

Source: CHPEI 2012i. General land use categories, or land cover, have been classified along the proposed CHPE Project route based on review of aerial photographs, site visits to selected locations along the transmission line route, and resource data from the New York State Geographic Information System (GIS) Clearinghouse.

Note: * N/A = Not Available. Land use GIS data were available for 600 feet on either side of the centerline of the transmission cables for all but 1 percent of the proposed CHPE Project transmission line route.

Table F.2-2. Land Use Within the Overland Segment of the Proposed CHPE Project

Jurisdiction [a]	MP Range	General Land Use/Land Cover (Within/Adjacent to ROI)	Specific Land Use (Within/Adjacent to ROI)	Zoning District	Agricultural District	Deviation Area (Land Use in Deviation Area)
Washington County						
Dresden	101–110	A, C/I/T, F, OL, R	State Bicycle Route 9, South Bay State Boat Launch and South Bay Pier, Adirondack Park and Forest Preserve (Lake George Wild Forest)	Rural Use, Resource Management, Moderate Intensity [b]	No	Yes (undeveloped/ residential, railroad, road, South Bay Boat Launch and pier, South Bay)
Whitehall	110	C/I/T, OW	County Route 7A pier	N/A	No	Yes (South Bay)
Village of Whitehall	110–113	A, C/I/T, F, OL, R	State Bicycle Route 9, unnamed park, Trinity Episcopal Church, Whitehall Amtrak Station, residences	Viewshed, Residential B, Commercial, Planned Residential, Light Industrial	No	Yes (undeveloped, roads)
Whitehall	113–118	A, F, OL, R	Champlain Canal, commercial (Adirondack Natural Stone)	N/A	Yes	Yes (undeveloped)
Fort Ann	118–123	C/I/T, F, OL	North Old Route 4, Dewey's Bridge Quarry, Champlain Canal and Lock C11	Industrial Mixed Use, Town Commercial Mixed Use, Rural [c]	No	Yes (streets, undeveloped)
Village of Fort Ann	123	C/I/T, F	Fort Ann wastewater treatment facility, Champlain Canal	Downtown, Village Residential [c]	No	Yes (roads)
Fort Ann	123–124	A, F	None	Town Commercial Mixed Use [c]	Yes	No
Hartford	124	A, F, OL	None	N/A	Yes	No
Fort Ann	124	A, F, OL	None	Town Commercial Mixed Use [c]	No	No
Kingsbury	124–132	A, C/I/T, F, OL, R	New York State Thruway Authority building, Champlain Canal/Towpath Road	N/A	Yes	Yes (roads)
Fort Edward	132–134	A, C/I/T, OL	Hudson River Dredging Project processing/treatment facility	Light Industrial (including Prime Farmland soils) [d]	Yes	No

Jurisdiction [a]	MP Range	General Land Use/Land Cover (Within/Adjacent to ROI)	Specific Land Use (Within/Adjacent to ROI)	Zoning District	Agricultural District	Deviation Area (Land Use in Deviation Area)
Washington County (continued)						
Village of Fort Edward	134–135	C/I/T, P/O/R, R	Fort Edward/Glens Falls Amtrak Station, Rodgers Island Visitors Center, Hudson River Dredging Project processing/treatment facility, residences, railroad maintenance, and commercial business	Industrial (I), Commercial (C-1 and New C-3), Residential (R-1) [e]	No	Yes (undeveloped, industrial, residential, roads, bridges)
Saratoga County						
Moreau	135–140	A, F, OL, R	Agricultural	Manufacturing 1, Agricultural and Residential (R-5)	Yes	Yes (bridge, undeveloped/ residential)
Northumberland (including Hamlet of Gansevoort)	140–143	C/I/T, F, OL, R	Gansevoort Town Park, Bertha E. Smith Park	Hamlet, Residential 1-Acre, Agricultural Protection District, Industrial, Residential 3-Acre	Yes	No
Wilton	143–150	A, C/I/T, F, OL, R	Wilton Wildlife Preserve and Park, Smith subdivision, Paddocks of Saratoga, Gavin Park, light industrial storage yard, Exits 15 and 16 Study Areas (Wilton economic development plan)	Business/Light Industrial, Residential 1 and 2, Commercial/Residential 1, Residential Business 1 and 2, New York State Lands	Yes	Yes (industrial, undeveloped, residential, street)
Greenfield	150–152	F, OL, R	Maple Avenue Middle School (athletic fields), residences, City of Saratoga Springs (including residential areas of Skidmore College)	Office Residential, Agricultural/Residential 4	No	Yes (streets)

Jurisdiction [a]	MP Range	General Land Use/Land Cover (Within/Adjacent to ROI)	Specific Land Use (Within/Adjacent to ROI)	Zoning District	Agricultural District	Deviation Area (Land Use in Deviation Area)
Saratoga County (continued)						
City of Saratoga Springs	152–158	C/I/T, F, OL, R	Saratoga Golf and Polo Club, commercial (Sunnyside Gardens), Care Lane commercial development (including Orthopedic Associates-Saratoga and North Country Academy), Saratoga Springs Amtrak Station, U-Stor-It Self Storage, Saratoga Nursery, Saratoga Spa State Park, W.J. Grande Industrial Park, railroad yard, residences	Institutional Parkland/Recreation, Transect Zone 4 Urban Neighborhood, Transect Zone 5 Neighborhood Center, Rural Residential-1, Urban Residential-2, General Industrial,	No	Yes (roads, undeveloped)
Milton	158–159	F, P/O/R, R	Ballston Spa Abner Doubleday Baseball Fields, residences, business, Kayaderosseras Creek	Residential District	No	Yes (undeveloped, creek, roads, residential, commercial)
Ballston (including Hamlet of Ballston Lake)	159–166	C/I/T, F, OL, R	Oak Street, Zim Smith County Trail, Curtis Industrial Park, Ballston Veterans Bicycle Path, residences, industrial, businesses	Rural, Industrial, Mixed Use Centers, Hamlet Residential, Planned Unit Development District, Watershed Protection Overlay District	Yes	Yes (roads)
Clifton Park	166–168	C/I/T, F, OL	Trail/unimproved road, residences	Conservation Residential, Hamlet Mixed Use, Planned Unit Development, Business Non Retail, Neighborhood Business, Light Industrial 1 and 2, Land Conservation Zone and Adult Use Business Overlay Districts	No	Yes (road)

Jurisdiction [a]	MP Range	General Land Use/Land Cover (Within/Adjacent to ROI)	Specific Land Use (Within/Adjacent to ROI)	Zoning District	Agricultural District	Deviation Area (Land Use in Deviation Area)
Schenectady County						
Glenville	168–172	C/I/T, F, OL, R	Mohawk River, St John's Lutheran Church, residences, businesses	Suburban Residential, Land Conservation	No	Yes (road, railroad, undeveloped/ residential, bridge)
City of Schenectady	172–176	C/I/T, F, OL, R	Mohawk River, various commercial/industrial businesses, residences, Erie Canalway Trail (Union Street), TA Predel & Company (scrap yard and recycling)	Light Manufacturing/ Warehousing, Manufacturing/ Warehousing, Downtown	No	Yes (Mohawk River bridge, streets, railroad, Erie Boulevard, parking lot, industrial use, trail)
Rotterdam	176–181	C/I/T, F, OL, R	Von Roll Isola USA Inc./GE facility, Tri City BMX, industrial, Rotterdam Industrial Park	Light Industrial, Heavy Industrial, Retail Business, General Business, Multiple Family Residential, One- and Two Family Residential, Planned Residential Development, Rural	No	Yes (roads, commercial/ industrial businesses, railroad)
Albany County						
Guilderland	181–187	A, C/I/T, F, OL	Residences, 84 Lumber, Watervilet Reservoir, Roger Keenholts Park, Northeastern Industrial Park	Rural, Industrial	No	Yes (undeveloped, roads, residential, railroad)
New Scotland	187–188	F	None	Medium-Density Residential	No	No
Village of Voorheesville	188–189	A, C/I/T, F, OL, R	Residences, commercial/industrial businesses, Jim Nichols Park, retail development	Residential B and C-1, Business A and B	No	Yes (roads)
New Scotland	189–194	A, C/I/T, F, OL, R	Five Rivers Environmental Education center	Commercial, Industrial, Residential Hamlet	Yes	Yes (undeveloped, road)

Jurisdiction [a]	MP Range	General Land Use/Land Cover (Within/Adjacent to ROI)	Specific Land Use (Within/Adjacent to ROI)	Zoning District	Agricultural District	Deviation Area (Land Use in Deviation Area)
Albany County (continued)						
Bethlehem (including Hamlet of Selkirk)	194–200	C/I/T, F, OL	Owens Corning facility, commercial/industrial businesses, Bethlehem Energy Center, CSX Selkirk railroad yard and buildings	Rural Light Industrial, Industrial	No	Yes (road, railroad)
Coeymans	200–203	C/I/T, F, OL, R	Residences, industrial facilities, Lafarge Cement Plant	Planned Industrial, Planned Commercial, Planned Residential	No	No
Village of Ravena	203–204	C/I/T, F, OL, R	Residences, Mosher Park	N/A	No	Yes (roadway)
Coeymans	204	R, OL	None	Industrial	No	No
Greene County						
New Baltimore	204–210	A, C/I/T, F, OL, R	Residences	ROW not zoned; Developmental Multi-Family, Rural Residential/ Agricultural, Developmental	No	Yes (roadways, undeveloped, residential)
Coxsackie	210–211	F, OL	None	Unknown [f]	No	Yes (undeveloped)
Village of Coxsackie	211–212	C/I/T, F, OL, R	Residences, Firemen's Memorial Park	Medium-Density Residential 2, Neighborhood, Commercial, Community Commercial, Industrial	No	Yes (undeveloped/ residential, roadway)
Coxsackie	212–215	A, C/I/T, F, OL, R	Greene Correctional Facility	Unknown [f]	No	Yes (undeveloped, agriculture)
Athens	215–220	A, C/I/T, F, OL	Railroad yard/industrial, aboveground transmission lines	Rural Residential, Light Industrial	No	Yes (undeveloped)

Jurisdiction [a]	MP Range	General Land Use/Land Cover (Within/Adjacent to ROI)	Specific Land Use (Within/Adjacent to ROI)	Zoning District	Agricultural District	Deviation Area (Land Use in Deviation Area)
Greene County (continued)						
Catskill	220–221	F, C/I/T, OL	Industrial businesses	Industrial, Highway Commercial	No	Yes (roadway, commercial)
Village of Catskill	221–223	C/I/T, OL, R	Residences, industrial businesses, Catskill Creek	Waterfront, General Commercial, Commercial Residence, One Family Residence, CH	No	Yes (residences, roadways, parking lot)
Catskill (including Hamlet of Cementon)	223–228	A, C/I/T, OL	Industrial businesses, Holcim Fields (Catskill Soccer Club), Alpha Road	General Commercial, Rural Residential/Agriculture, Industrial	No	Yes (undeveloped, industrial [cement plant], roadways, railroad)

Sources: CHPEI 2012i, CHPEI 2012yy, CHPEI 2012zz, NYSDOT 2012c

Notes:

a. Jurisdictions are towns unless otherwise noted.

b. The Town of Dresden has not adopted a Comprehensive Plan or zoning ordinance; therefore, Adirondack Park Agency private land use classifications from the Adirondack Park Land Use and Development Plan are applicable.

c. The zoning districts for the Town and Village of Fort Ann planning are draft planning area recommendations (CHPEI 2012zz).

d. The zoning district for the Town of Fort Edward is a draft zoning district (CHPEI 2012zz).

e. The zoning districts for the Village of Fort Edward are proposed zoning districts (CHPEI 2012zz).

f. The zoning districts for the Town of Coxsackie were not able to be identified due to the poor quality of zoning maps.

Key:

N/A = Not applicable.

A = Agriculture

C/I/T = Commercial/Industrial/Transportation

F = Forested

OL = Open Land/Pasture/Hay/Scrub/Shrub

OW = Open Water

P/O/R = Parks/Open Space/Recreation

R = Residential

Table F.2-3. Land Use Within the Hudson River Segment of the Proposed CHPE Project

Jurisdiction [a]	MP Range	General Land Use/Land Cover (Within/Adjacent to ROI)	Specific Land Use (Within/Adjacent to ROI)	Zoning District	Agricultural District	Deviation Area (Land Use in Deviation Area)
Rockland County						
Stony Point	295–298	C/I/T, OL, R	Stony Point Battlefield State Historic Site, marinas, residences, electrical utility substation, Stony Point Industrial Park, Stony Point Marsh	Unknown [b]	No	Yes (undeveloped/ residential, State Historic Site, commercial [marinas], roadways, residences, undeveloped, water)
Haverstraw	298	C/I/T, OL	Residences, former Haverstraw Landfill	Unknown [b]	No	No
Village of West Haverstraw	298–299	C/I/T, OL, R	Commercial/industrial businesses (including West Haverstraw Business Park), residences	Unknown [b]	No	Yes (commercial, roadways, undeveloped)
Village of Haverstraw	299–301	C/I/T, OL, P/O/R, R	Haverstraw Beach State Park, residences, Haverstraw little league baseball fields, Mt. Repose Cemetery, commercial/industrial businesses, industrial facility, Hook Mountain/Nyack Beach Bikeway	Unknown [b]	No	Yes (recreation, residential, roadways, commercial, undeveloped)
Clarkstown	301–303	C/I/T, F, P/O/R, R	Hook Mountain State Park, Rockland Lake State Park, residences, commercial businesses, State Bicycle Route 9	Unknown [b]	No	Yes (roadways, state parks, undeveloped, residential)

Sources: CHPEI 2012i, CHPEI 2012yy, CHPEI 2012zz, NYSDOT 2012c

Note:

[a] Jurisdictions are towns unless otherwise noted.

[b.] The zoning districts were not able to be identified due to the poor quality of zoning maps.

Key:

C/I/T = Commercial/Industrial/Transportation

F = Forested

OL = Open Land/Pasture/Hay/Scrub/Shrub

P/O/R = Parks/Open Space/Recreation

R = Residential

Table F.2-4. Land Use Within the New York City Metropolitan Area Segment of the Proposed CHPE Project

Jurisdiction	MP Range	General Land Use/Land Cover (Within/Adjacent to ROI)	Specific Land Use (Within/Adjacent to ROI)	Zoning District	Agricultural District	Deviation Area (Land Use in Deviation Area)
Bronx County						
New York City (Borough of The Bronx)	330–332	C/I/T, OL	Railroad, BFI of New York	Manufacturing Districts (M3-1 and M2-1)	No	Yes (industrial areas, railroad yard, parking lot)
Queens County						
New York City (Borough of Queens)	333–336	C/I/T, F (at Luyster Creek HVDC Converter Station site), OL, R	Ravenswood Houses, other residences, designated Class I and II bicycle routes, land uses in **Table 3.4.1-1** in the EIS	Manufacturing Districts (M1-1, M3-1) and Residential Districts (4, R-5, R5B, R5D, R6A, R6B, R7A, R7B)	No	Yes (water, roads, utility facility)

Sources: CHPEI 2012i, CHPEI 2012yy, CHPEI 2012zz, NYC 2012a, NYCDCP 2011b

Key:

C/I/T = Commercial/Industrial/Transportation

F = Forested

OL = Open Land/Pasture/Hay/Scrub/Shrub

R = Residential

Table F.2-5. Local Waterfront Revitalization Programs/ Plans Relevant to the Proposed CHPE Project

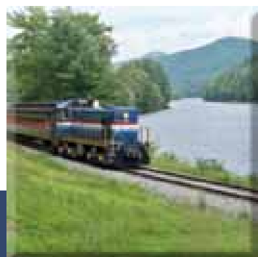
Lake Champlain Segment
• Town of Essex LWRP (includes a Harbor Management Plan)
Overland Segment
• Village of Whitehall LWRP
Hudson River Segment
• Village of Tivoli LWRP • Village of Saugerties LWRP • Town of Redhook LWRP • City of Kingston LWRP • Town of Rhinebeck LWRP • Town of Esopus LWRP • Town of Poughkeepsie LWRP • Town of Lloyd LWRP • City of Beacon LWRP • City of Newburgh LWRP • City of Peekskill LWRP • Town of Stony Point LWRP • Village of Haverstraw LWRP • Village of Croton-on-Hudson LWRP • Village of Ossining LWRP • Village of Nyack LWRP • Village of Sleepy Hollow LWRP (includes Harbor Management Plan) • Village of Piermont LWRP (includes Harbor Management Needs section) • Village of Dobbs Ferry LWRP (includes Harbor Management Plan)
New York City Metropolitan Area Segment
• New York City Waterfront Revitalization Program (i.e., New York City LWRP)

Source: CHPEI 2012i

Table F.2-6. Local Municipal Land Use Plans Relevant to the Proposed CHPE Project

Lake Champlain Segment
None
Overland Segment
• Washington County, New York Economic Development Strategic Plan • Fort Ann: A Beautiful Place at the Crossroads of a Beautiful Region (Town and Village of Fort Ann, New York Joint Community Plan) (Public Hearing Draft) • The Fort Ann Streetscape and Waterfront Revitalization Plan (Draft Master Plan Report) • Hartford, New York Comprehensive Plan • Town of Fort Edward Master Plan • Village of Fort Edward Master Plan • Green Infrastructure Plan for Saratoga County • Town of Moreau Comprehensive Land Use Plan • Town of Northumberland 2003 Comprehensive Land Use Plan (Final Draft) • Town of Wilton Comprehensive Plan • Town of Wilton Open Space, Recreation and Pathways Plan • Town of Greenfield Comprehensive Plan • The Saratoga Springs Comprehensive Plan • Town of Milton Comprehensive Plan 2001 • Town of Ballston Final Draft Comprehensive Plan • Town of Clifton Park Comprehensive Plan • Town of Clifton Park Open Space Plan • Schenectady County Agricultural and Farmland Protection Plan • The Town of Glenville Open Space Plan • City of Schenectady Comprehensive Plan 2020 • The Town of Rotterdam Comprehensive Plan and Final Generic EIS • Albany County Agricultural and Farmland Protection Plan • Town of Guilderland Comprehensive Plan 2000 • The Rural Guilderland: Open Space and Farmland Protection Plan • Route 20 Land Use and Transportation Study-Towns of Guilderland and Princeton, New York • Town of New Scotland Comprehensive Land Use Plan and Generic EIS • Town of Bethlehem Comprehensive Plan and Generic EIS • Greene County Plans: Open Space and Recreation Plan, Agricultural Development and Farmland Protection Plan, Comprehensive Economic Development Plan, and Hudson River Corridor Study • Town of New Baltimore Comprehensive Plan • Town of Coeymans Comprehensive Plan • Town and Village of Coxsackie Joint Community Plan • Town and Village of Athens Comprehensive Plan • Town and Village of Catskill Joint Comprehensive Plan • Village of Catskill Downtown and Waterfront Revitalization Strategy
Hudson River Segment
• Rockland Tomorrow: Rockland County Comprehensive Plan • Village of Haverstraw Master Plan and Zoning Plan • Town of Clarkstown Comprehensive Plan
New York City Metropolitan Area Segment
• Vision 2020: New York City Comprehensive Waterfront Plan

Source: CHPEI 2012i



APPENDIX G

Applicant-Proposed Impact Avoidance and Minimization Measures

Appendix G
Applicant-Proposed Impact Avoidance and Minimization Measures

The Applicant-proposed impact avoidance and minimization measures applicable to the proposed CHPE Project that were incorporated into the Environmental Impact Statement (EIS) analysis for the project are presented in this appendix. These include selected best management practices (BMPs) that were proposed by the Applicant for use during construction and operation to protect environmental, agricultural, cultural, and other potentially sensitive resources along the proposed CHPE Project route. These BMPs have been incorporated into the Certificate of Environmental Compatibility and Public Need issued by the New York State Public Service Commission (NYSPSC) to the Applicant and will be incorporated into the final Environmental Management and Construction Plan (EM&CP) for the proposed CHPE Project. The complete listing of BMPs proposed by the Applicant, dated February 10, 2012, is an attachment to the Certificate (CHPEI 2012q), and is available on page 356 in the full version of the Certificate that can be found at the CHPE EIS Web site Document Library at the following link: http://www.chpexpresseis.org/ docs/NYSPSC_Order.pdf. The organization of the following subsections is intended to parallel the organization of the resource area impacts analyses provided in **Chapter 5** of the EIS.

G.1 Land Use

The Applicant-proposed impact avoidance and minimization measures, including BMPs, which are applicable to land use, are as follows:

- A qualified Agricultural Inspector would be engaged during each phase of the proposed CHPE Project, including development, construction, initial restoration, post-construction monitoring, and follow-up restoration. The fundamental duty of the Agricultural Inspector is to ensure that all aspects of the proposed CHPE Project that affect farmland either fully meet (comply with) or exceed the standards of New York State Department of Agriculture and Markets including the recommendations in the Pipeline Right-of-Way Construction Project guidance document, and proposed CHPE Project transmission system-specific permit conditions or orders of certification, relevant to agricultural resources.
- The Applicant would reconfirm land use categories within 600 feet of the proposed CHPE Project, as appropriate, with special interest given to areas with sensitive land uses, including schools, health care facilities, churches, scenic areas and parks, and residences. Residential landowners with property adjacent to the proposed CHPE Project would be identified, including contact information, and contacted to discuss the proposed CHPE Project, construction schedule, and any potential concerns. Additional inquiry for other sensitive land uses would include notification of construction activities, consultation regarding special events, and consultation regarding special concerns and schedules.
- Restoration of all areas disturbed by construction activity would occur promptly. The final stage of construction would consist of restoring the construction corridor and work areas to their original condition and character as much as possible, compatible with the operation and maintenance of the proposed CHPE Project.

G.2 Transportation and Traffic

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to transportation resources, are as follows:

- Work activities in Lake Champlain would be coordinated with the U.S. Coast Guard (USCG) so that work areas are marked properly to ensure safety, and so that current information about the location of work zones can be broadcast to recreational users. A "Local Notice to Mariners" would be distributed electronically by the USCG to alert local commercial and recreational boating communities of any construction-related limitations in Lake Champlain. The notice would allow all potentially affected vessels time to relocate temporarily to prevent being blocked during the construction period. When possible, construction activities would be timed to avoid disruption of seasonal recreational events occurring in Lake Champlain.
- In Lake Champlain, cable installation would be coordinated with ferry operators to avoid effects on ferry schedules and operations. It is anticipated that additional coordination with the cable-guided Ticonderoga ferry would be necessary during cable installation activities to facilitate laying the high-voltage direct current (HVDC) cables beneath the existing ferry cables on the lake bottom.
- Construction vessel movements and material transport would be coordinated with the New York State Canal Corporation to avoid or minimize impacts on commercial and recreational users of the canal system and seasonal events occurring in the canal.
- In instances where environmental or engineering circumstances suggest that the cables should be laid within or across the navigational channel, coordination would be conducted with the U.S. Army Corps of Engineers (USACE), USCG, and other agencies as necessary to minimize the impact on normal navigation activities and ensure cables are installed at the proper depth.
- When possible, construction activities would be timed to avoid disruption of seasonal events occurring on Lake Champlain.
- If necessary, the transmission line would be buried below the authorized depth of federally maintained navigation channels as required by the USACE. Depth of burial would be verified on a periodic basis so as not to become a hazard to navigation or marine resources. The Applicant would conduct pre- and post-transmission line installation bathymetric monitoring of the route. Monitoring plans would be developed in consultation with New York State Department of Public Service (NYSDPS), New York State Department of Environmental Conservation (NYSDEC), and New York State Department of State.
- All transitions from upland to aquatic configurations would be accomplished by horizontal directional drilling (HDD) and would be at a depth sufficient so as not to interfere with any current or future water-dependent uses.
- The Applicant would provide timely information to adjacent property owners or tenants regarding the planned construction activities and schedule, and would coordinate with New York State Department of Transportation (NYSDOT), officials in counties traversed by the route, and local municipalities and police departments, as applicable, to develop and implement traffic-control measures that ensure safe and adequate traffic operations along roadways used by construction vehicles. Restoration of roadways would be designed in consultation with the appropriate jurisdictional agency. Any restoration on NYSDOT highway rights-of-way (ROWs) would be in strict compliance with the specifications of a NYSDOT highway work permit.

- Permits for oversized or overweight construction or other vehicles that exceed the legal dimensions and weights for vehicles on state highways would be obtained from NYSDOT.
- All work would be performed in accordance with applicable NYSDOT highway regulations and design standards, including the following:
    - 17 New York State Codes, Rules, and Regulations (NYCRR) §131 of the Highway Law describing *Accommodation of Utilities within State Highway ROW* and the applicable design standards of the American Association of State Highway Transportation Officials (AASHTO)
    - Guidance in the NYSDOT 2007 *Requirements for the Design and Construction of Underground Utility Installations within the State Highway Right-of-Way*
    - NYSDOT 17 NYCRR §131, the *Manual of Uniform Traffic Control Devices* (MUTCD) issued by NYSDOT in 2008, and the Federal version by the U.S. Department of Transportation (USDOT) in 2009
    - NYSDOT *Highway Design Manual*
    - NYSDOT *Policy and Standards for Entrances to State Highways*
    - NYSDOT 2007 *Requirements for the Design and Construction of Underground Utility Installations with the State Highway ROW*
    - NYSDOT 1995 *Accommodation Plan*
    - NYSDOT 2008 *Standard Specifications*.
- A Maintenance and Protection of Traffic (MPT) Plan would be completed in consultation with all affected agencies prior to the start of construction.
- Detailed traffic control plans would be provided for HDD installation areas in urban and residential areas and at road crossings.
- Signage and public notice would be posted no later than 24 hours prior to the initiation of construction.
- Traffic flow would be provided in at least one lane of the road at all times or a detour would be provided.
- Transmission line construction material delivery activities, equipment storage, and the timing of construction activities would be coordinated with the railroads so as not to affect current operations.
- Cables would be installed in accordance with railroad-specific engineering standards using the prescribed minimum separation distances from track to trench to minimize impacts on the integrity of the track system.
- In areas where HVDC cables cross existing infrastructure such as roads and utility lines, cables would be installed via HDD methodology to avoid disturbance of the existing systems.
- In the Hudson River, the project would be outside of the existing designated navigation channels. The installation of cables via water jetting technology would be closely coordinated with the USCG and adjacent terminals.
- In the Hudson, Harlem, and East rivers, a "Local Notice to Mariners" would be distributed electronically by the USCG to alert local commercial and recreational boating communities of any construction-related limitations.

- When the proposed CHPE Project must extend into designated safety and security areas along the project route, the appropriate state and Federal agencies would be contacted as required by existing regulations.
- An anchor snag manual would be developed to address a potential situation where a ship's anchor snags the proposed CHPE cables. Mitigation measures to avoid impacts on the river bottoms would include use of midline buoys to prevent anchor chain sweep. The anchor snag manual would include a navigation risk assessment that incorporates a river bottom assessment of the entire cable route within the Hudson, Harlem, and East rivers.
- Following completion of cable installation, the Applicant is required to prepare and submit as-built design drawings that show the locations of the cables. These drawings would indicate areas where the cables are laid in deep waters without cover and areas where the cables are laid on the bottom but covered. Cable installation would be recorded and monitored in real-time by the cable-laying vessel's navigation, lay control, and burial control computer systems, which would be used to produce the as-built report.

G.3 Water Resources and Quality

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to water resources with respect to avoidance of water quality impacts, are as follows:

- At least one Environmental Inspector would be employed full-time during construction and restoration. Additional Environmental Inspectors may be utilized as required to meet environmental inspection requirements set out in the EM&CP and any relevant permit conditions. The lead Environmental Inspector would be responsible for determining when additional inspectors are needed to meet inspection requirements.
- At least one Aquatic Inspector would be employed full time per spread for all underwater installation procedures for the transmission system. They would be on site at the start-up of each field operation and during environmentally sensitive phases of installation. If in-water installation operations are to occur continuously (24 hours a day) a minimum of two Aquatic inspectors would be employed. At least one inspector must be on duty during underwater installation operations.
- The proposed CHPE Project would be required to obtain coverage under the State Pollutant Discharge Elimination System (SPDES) Storm Water General permit. This coverage would require a site-specific Storm Water Pollution Prevention Plan (SWPPP) for storm water discharges. Detailed maps depicting contours, slopes, drainage patterns, and locations of erosion-control structures would be included in the EM&CP, which would serve as the SWPPP. New York State Standards and Specifications for Erosion and Sediment Control specify BMPs for addressing erosion and sediment control. Storm water management features and strategies (e.g., French drains, inlet protection, dewatering, and site stabilization) would be implemented where and when necessary.
- From the U.S./Canada border to Crown Point, New York (mileposts [MPs] 0 to 73), a jet plow would be used to install the cables in the Lake Champlain lakebed. From Crown Point to Dresden (MPs 73 to 101), a shear plow would be used to install the cables to reduce sediment disturbance and resulting water quality impacts.
- The Environmental Inspector(s) would perform inspections of all erosion and sediment controls in accordance with the SPDES Storm Water General Permit. The Environmental Inspector would also establish a protocol with the construction contractor for the identification and repair of all

erosion- and sediment-control measures deemed to be in need of repair or reinstallation. The Environmental Inspector is also responsible for record-keeping required by the EM&CP and the SPDES Storm Water General Permit.

- Effective erosion-control measures would be installed on the downslope of all disturbed areas and maintain them in fully functional condition. These erosion-control measures are to be installed before commencing any other activities involving soil disturbance.
- Upon completion of construction activities, initial restoration activities, including soil stabilization and temporary seeding of disturbed areas, would be conducted and would result in vegetation cover similar to the preconstruction habitat, although vegetation in the transmission line ROW would be managed within and adjacent to the cables to preclude reforestation.
- Vegetation buffers adjacent to sensitive areas such as wetlands and streams would be maintained to the greatest extent practicable. To prevent soil erosion along streams, vegetation (e.g., ground cover, shrubs, and tree stumps) would be left in place along a minimum 25-foot- (8-meter-) wide zone on each bank until the crossing point. Existing vegetation buffers would be maintained at stream crossings. Inspection and maintenance frequencies and requirements for permanent storm water management features would be identified in the EM&CP.
- A (clamshell) bucket dredge would be used at mechanical dredging sites to minimize suspension of fine-grained unconsolidated (silty) sediments.

G.4 Aquatic Habitats and Species

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to aquatic resources and habitats, are as follows:

- In Lake Champlain, all in-water work would be conducted within applicable time windows agreed to by NYSDEC, New York Natural Heritage Program (NYNHP), and U.S. Fish and Wildlife Service (USFWS), (if applicable) for the protection of aquatic resources along the transmission line route. From U.S./Canada border to Crown Point, New York (MPs 0 to 73), in-water construction would only occur from May 1 to August 31. From Crown Point to Dresden (MPs 73 to 101), in-water construction would only occur from September 1 to December 31.
- HDD would be used where the lines enter and exit waterbodies to avoid or minimize effects on shoreline and shallow water habitats.
- A sheet pile cofferdam, installed using a vibratory hammer, would be placed at the HDD exit point in the waterbody prior to excavation of the exit point pit. The cofferdam would remain in place and functional during all phases of the dredging operations and would be removed upon completion of dredging activities.
- Weighted silt curtains suspended on floats would be positioned to enclose the work site before commencing any mechanical dredging. The curtain would remain in place and functional during all phases of the dredging operations and remain in place for 2 hours after dredging termination.
- Blasting would occur between July 1 and November 30. Measures to startle fish or keep fish away immediately prior to underwater blasting activities, such as use of sparkler guns or bubble curtains, would be used as conditions dictate.
- An Environmental Inspector or Aquatic Inspector would have the authority to modify or suspend construction if any aquatic resources are impacted in any way by construction activities.

- During nighttime construction activities, vessels would be outfitted with identification lights and working decks would be illuminated for safety. Lights would not be directed into surrounding waters, thereby reducing the potential for effects on benthic communities and fish.
- Construction equipment and materials, fuels, and other related items would not be stored within wetlands or within 100 feet (30 meters) of any stream or wetland system.
- Construction equipment would not be refueled within wetlands or within 100 feet (30 meters) of any stream or wetland system.
- Along the railroad ROWs, construction equipment crossings would be installed across all waterbodies to gain continuous access for construction operations where reasonable alternative access is not available.
- HDD would be used to install the transmission lines under streams in as many locations as possible to minimize impacts on aquatic resources. In those instances where the HDD method is used to install the cables to cross a waterbody there would be no time of year restrictions because the method does not require a disturbance to the bed or bank of the stream.
- If a dry crossing (flume or pump method) is proposed for any NYSDEC-designated coldwater stream, the Applicant would adhere to the proposed timing restrictions of October 1 through May 31.
- During construction, vegetated buffers at all waterbody crossings would be maintained. Where the vegetation exists along the railroad ROWs, a minimum 15-foot (5-meter) buffer would be maintained with existing trees and shrubs except for that portion of the bank that has been cleared for the construction path.
- A Frac-out Contingency Plan would be developed and implemented that would allow for timely cleanup of any bentonite leaks that could occur and ensure minimal impacts on the environment.
- The Applicant would adhere to all current regulations regarding proper ballast water management to minimize introduction of additional aquatic invasive species.

G.5 Aquatic Protected and Sensitive Species

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to aquatic threatened and endangered species and their occupied habitats, are as follows:

- The Applicant would continue to work closely with Federal and state agencies to establish measures prior to construction commencement to avoid or minimize impacts on aquatic threatened and endangered species along the proposed CHPE Project route.
- HDD would be used where the cables enter and exit waterbodies to avoid or minimize effects on shoreline and shallow water habitats.
- A closed environmental (clamshell) bucket dredge would be used to minimize sediment suspension at mechanical dredging sites (i.e., exit pits for water-to-land HDD transitions) for fine-grained (silty) sediments.
- A sheet pile cofferdam, installed using a vibratory hammer, would be positioned to enclose the work site for exit pits for water-to-land HDD transitions before commencing mechanical dredging. The cofferdam would remain in place and functional during all phases of the dredging operations and would be removed upon completion of dredging activities.

- The Environmental Inspector would have the authority to modify or suspend construction if any aquatic threatened and endangered species would be impacted in any way by construction activities.
- Most designated trout streams are anticipated to be crossed using the HDD method thereby avoiding disturbance of these streams.
- In the event that the Applicant unexpectedly encounters any rare, threatened, or endangered species during the preconstruction, construction, or operation and maintenance phases of the proposed CHPE Project, the following measures would be implemented:
  - The Applicant would temporarily halt construction activities, excepting any activity required for immediate stabilization of the area, to avoid or minimize the impacts on the species or habitat.
  - The Environmental Inspector would identify the area of the sighting or encounter and record GPS locations of the likely habitat boundary or the sighting location of any aquatic threatened and endangered species.
  - Any unanticipated sightings of threatened and endangered species or observation of rare, threatened, and endangered plants would be reported as soon as possible to NYSDPS staff, NYSDEC, USFWS, or NMFS (as appropriate). Reporting of all takes of listed species of sturgeon should be directed to incidental.take@noaa.gov and the NMFS Protected Resources Division (PRD) should be contacted (Bill Barnhill, william.barnhill@noaa.gov; 978-282-8460). The Applicant would consult with applicable resource agencies for measures to avoid or minimize impacts on aquatic threatened and endangered species and their occupied habitat. Construction activities in the area would resume once protective measures, developed in consultation with NYSDPS Staff, NYSDEC, or USFWS, are implemented.
- If new aquatic threatened and endangered species occupied habitats are identified, the EM&CP would be updated to show the new occupied habitats, and consultation with appropriate Federal or state agencies would commence.
- All in-water work would be conducted within applicable time windows (see **Table 2-2** in the EIS) as agreed to by the NYSDEC, NYSDOS, NYSDPS, and NMFS Habitat Conservation Division, including location-specific dredging windows in the Hudson River estuary for the protection of aquatic threatened and endangered species. As a conservation measure, the Applicant worked with the NYSDEC to establish periods when sensitive species would be using different segments of the Hudson River. The Applicant has proposed construction windows to avoid impacts on spawning migrations, spawning activity, and larval stages of ESA-listed fish species (see Table 2-2 in Appendix Q of the EIS). NYSDOS has conditionally concurred with these construction windows as part of its CMP consistency certification for the proposed CHPE Project. Restricting construction activities to timing windows protects ESA-listed fish species from construction activities during spawning migrations, which are the most vital and sensitive portions of their lifecycle.
- Reduced in-water pressure and jetting speeds (e.g., less than 4 knots) would be used to reduce turbidity when crossing sensitive areas such as Significant Coastal Fish and Wildlife Habitats (SCFWHs), which contain important breeding habitat for protected and sensitive species (see Attachment 1 of Appendix Q in the EIS). The most appropriate speeds would be coordinated with the construction contractor, who would consider existing sediment conditions, cable weight, and multiple other factors to arrive at an installation speed that allows for a reduction in impacts and safe and efficient cable installation. Reductions in TSS would be calculated after the installation specifications have been set as part of the construction design phase. Proposed areas

where construction modifications could occur would be identified in Plan and Profile drawings included in the EM&CP.

- Commencement of in-river work south of the Haverstraw Bay SCFWH would occur between high and ebb tides to avoid or minimize impacts of re-suspended sediments on Haverstraw Bay, which contains important habitat for protected and sensitive species.
- Any sightings of sturgeon would be reported to the NYNHP, USFWS, and NMFS as soon as possible. Reporting of all takes of listed species of sturgeon should be directed to NMFS PRD. A Standard Operating Procedures Manual would be prepared to outline the monitoring and reporting methods to be implemented during proposed CHPE Project construction. This manual would be coordinated with and reviewed by NMFS PRD.
- All personnel associated with the proposed CHPE Project would be advised of the potential presence of aquatic threatened and endangered species and the need to avoid collisions. All construction personnel would also be updated on the locations of any new aquatic threatened and endangered species or occupied habitats that are identified. These areas would be reported to the applicable resource agencies.
- All vessel crewmembers and contractors would participate in a fisheries training for aquatic protected species presence and emergency procedures in the unlikely event an animal is struck by a vessel. The emergency procedure would be provided as part of the EM&CP. Both the training program and applicable parts of the EM&CP would be coordinated with and reviewed by NMFS PRD.
- All construction personnel would be responsible for observing water-related activities for the presence of these species.
- All construction personnel would be advised that there are civil and criminal penalties for harming, harassing, or killing aquatic species that are protected under the Endangered Species Act.
- All vessels associated with the construction of the proposed CHPE Project would operate at "no wake/idle" speeds (i.e., less than 4 knots) at all times while in the construction area and while in water depths where the draft of the vessel provides less than a 4-foot (1.2-meter) clearance from the bottom. In areas with substantial objects recorded in side-scan sonar and magnetometer surveys, the speed would be reduced to less than 1 knot. All vessels would preferentially follow deepwater routes (e.g., marked channels) whenever possible.
- Blasting would occur between July 1 and November 30. Measures to startle fish or keep fish away immediately prior to underwater blasting activities, such as use of sparkler guns or bubble curtains, would be used as conditions dictate.
- Any collision with or injury to a protected species would be required to be reported immediately to the NMFS Protected Resources Division.
- The Applicant would train and educate transmission system contractors and subcontractors to identify aquatic invasive species and site-specific prescriptions for preventing or controlling their transport throughout or off of the proposed CHPE Project site.
    - Require that vessels, equipment, and materials be inspected for, and cleaned of, any visible vegetation, algae, organisms, and debris before bringing them to the proposed CHPE Project area and before leaving the waterbody for another.

- Train transmission system contractors and subcontractors on the various cleaning or decontamination methods to be used on a site-by-site basis for the proposed CHPE Project.

G.6 Terrestrial Habitats and Species

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to terrestrial species and habitats, are as follows:

- The transmission cable centerline, construction corridor edges, access roads, extra workspace boundaries, and marshaling yards would be surveyed and marked with stakes and colored flagging to avoid out-of-corridor impacts.
- Areas designated as “no vehicular access” would be clearly marked in the field with a silt fence or construction fence to avoid inadvertent intrusion by construction equipment.
- Clearing needed in wooded areas to facilitate surveying would be minimized to the extent possible.
- The EM&CP plan and profile drawings would be provided to the NYSDEC, NYNHP, and NYSDPS Staff for review of significant natural community mapping prior to the start of construction.
- Significant natural communities are identified during preconstruction surveys within or adjacent to the construction corridor would be clearly flagged in the field prior to the start of construction activities. Access through or impact on any significant natural communities would be avoided or minimized, to the extent practicable. If access through a significant natural community is unavoidable, the Applicant would develop additional measures, in consultation with appropriate agencies as applicable, to avoid and minimize any potential impacts.
- All flags and staking would be checked by the Environmental Inspector or Facility Construction Inspector before construction to ensure proper alignment.
- During construction activities, measures would be implemented to prevent or control the transport of invasive plant species; including development and implementation of an Invasive Species Management Plan approved by applicable state agencies.
- During construction, the objective of vegetation clearing is to remove the vegetation from the work area that is necessary for safe and proper installation of the cables. Vegetation-clearing methods would be selected to avoid and minimize impacts on rare, threatened, and endangered plants and sensitive areas (e.g., forested areas). This would be accomplished through site-specific prescriptions for clearing and disposal of woody vegetation and selective retention of vegetative buffer zones.
- The temporary construction workspace would be kept to the minimum that would allow for spoil storage, staging, assembly of materials, construction vehicle passage, and all other activities required to install the cables safely.
- During clearing operations, crews, in coordination with the Environmental Inspector, would scout the terrain ahead for unexpected conditions, check construction corridor and transmission line ROW boundaries, and review property-specific conditions or restrictions. One of the following methods would be used for vegetation clearing, to minimize impacts:

- *Hand Cutting* – This method employs a hand-held chain saw. It is selective, but is slower and more expensive than motorized mechanical devices. Residential areas, buffer zones, wetlands, and highway screens are areas where hand cutting is typically prescribed.
- *Mechanical Clearing Machine* – This term usually refers to a machine known as the Hydro-axe or Kershaw mower. This machine can cut trees up to 10 inches (25.4 centimeters) in diameter at the rate of several acres a day, depending on stem density and terrain. It is essentially nonselective and designed for clearing construction corridors and ROWs composed of young, undesirable species in a relatively uniform stand.
- *Mowing* – This technique is primarily used in areas of herbaceous vegetation. Terrain must be relatively flat with no gullies or rocks.
- *Mechanical Whole-tree Felling Equipment* – This method allows controlled felling and loading of whole trees while minimizing damage to adjacent trees. Trees would be felled into the construction corridor to avoid damage outside the corridor.

- Any vegetation removal within a road ROW would be conducted pursuant to a highway work permit issued by NYSDOT. Within the Adirondack Park, any vegetation removal in a road ROW would be conducted in accordance with the Adirondack Park State Land Master Plan and NYSDOT Guidelines for the Adirondack Park to maintain a park-like atmosphere that complements the total Adirondack environment.
- The Asian longhorned beetle (*Anoplophora glabripennis*) and the emerald ash borer (*Agrilus planipennis*) are two insects that the NYSDEC has identified as a potential problem to native trees and vegetation. If these insects are identified during construction, they would be reported to the NYSDEC regional forester. In addition, prior to construction, the contractors would be trained to identify invasive insect species and the projectwide protocol for reporting to the NYSDEC regional forester. Unmerchantable timber would be provided as firewood to interested parties pursuant to the substantive requirements of NYSDEC's firewood restrictions to protect forests from invasive species, found in six NYCRR §192.5.

G.7 Terrestrial Protected and Sensitive Species

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to terrestrial threatened and endangered species and their habitats, are as follows:

- All known threatened and endangered species, occupied habitats, and locations where rare, threatened, and endangered plants have been observed would be identified on the EM&CP maps and in the field where protected plants have been observed based on available data. The construction drawings would be provided to the NYSDEC, NYNHP, NYSDPS, and USFWS for review of mapped occupied habitat areas and locations where rare, threatened, and endangered plants have been observed.
- Locations of threatened and endangered species or their habitat and rare, threatened, and endangered plants would be treated as confidential. All documents or plans containing specific location information would be marked as such. Appropriate training would be provided to employees and contractors regarding the confidential nature of this information.
- Construction personnel would be trained to identify known and potential threatened and endangered species; rare, threatened, and endangered plants; and significant natural communities that could be encountered, when possible, and the identification and protection measures that are included in the construction plan.

- The Environmental Inspector would be responsible for ensuring that prescribed protection measures are appropriately used during construction.
- The Applicant would avoid construction within or immediately adjacent to occupied Karner blue butterfly and frosted elfin habitats during the adult flight periods (approximately May to August) to avoid or minimize potential mortality of adults that might be nectaring or traveling between habitat areas. Because adult flight periods vary from year to year, the Applicant would contact NYSDEC prior to starting construction within any identified habitat areas to confirm that adults have not emerged.
- Prior to construction, a qualified biologist would conduct surveys for the presence of Karner blue and frosted elfin butterflies, in accordance with the USFWS and NYSDEC guidance document *Karner blue butterfly* (Lycaeides melissa samuelis) *Survey Protocols Within the State of New York*. These protocols include guidance on the following:
  - Prior to construction, the boundaries of all wild blue lupine (*Lupinus perennis*) patches within or immediately adjacent to construction workspaces or access routes would be clearly flagged in the field, and the Applicant would conduct a walk-through to discuss and review measures to avoid impacts.
  - Disturbance or access through all flagged lupine patches would be prohibited.
  - Contractors and construction crews would be trained on the locations and identification of the host plant, wild blue lupine, and for the Karner blue butterfly and frosted elfin butterfly. Construction personnel would be trained and instructed to avoid trampling or destruction of wild blue lupine plants.
  - If any previously unknown (i.e., unflagged) areas containing wild blue lupine are encountered during preconstruction environmental inspection, construction, or restoration, the Environmental Inspector would delineate the boundary of the habitat with flagging in the field, and would collect global positioning system (GPS) data mapping its location.
  - The Applicant would notify NYSDPS, NYSDEC, and USFWS as soon as possible (within 48 hours) if any previously unidentified habitats containing wild blue lupine are discovered during preconstruction environmental inspection, construction, or restoration. If additional protective measures are necessary to protect the Karner blue butterfly, frosted elfin butterfly, or occupied habitat (i.e., grasses and nectar within approximately 650 feet [200 meters] of lupine patches within or immediately adjacent to construction workspaces and access routes) for these species, the Applicant would temporarily cease any vegetation clearing, construction, ground-disturbing, or vegetation management activities in the area, excepting any activities that could be necessary for immediate stabilization of the work site, until protective measures can be implemented. Work would only resume once NYSDEC and USFWS have been notified and recommended protective measures to avoid or minimize impacts on threatened and endangered species and occupied habitat have been implemented.
- During operation of the transmission line, any vegetation management, emergency repairs, or other operational maintenance activities required within Karner blue butterfly and frosted elfin lupine habitats would be implemented in accordance with ongoing consultations between the Applicant and USFWS and NYSDEC, and the results of those consultations will be included in the EM&CP. At a minimum, the EM&CP would include the following measures to avoid and minimize impacts on Karner blue butterfly and its habitat.

- No herbicides or pesticides would be used within occupied Karner blue butterfly and frosted elfin nectar habitat, except as approved by the USFWS and NYSDEC. To minimize the impact of herbicides on Karner blue butterfly and its food plants, applications would be limited to spot application with hand-operated equipment, using personnel certified or experienced in pesticide applications and trained to identify the butterfly and lupine.
- For emergency repairs in areas where the cable was installed by HDD under Karner blue butterfly habitat, the cable would be pulled from the entry or exit locations and repaired to avoid impacts on the butterfly and its habitat. In areas where the cables are installed in trenches adjacent to nectar patches, repair crews would employ the same protocols adhered to during installation to avoid impacts (e.g., training of personnel to identify and flag habitat boundaries to be avoided).

- During the preconstruction survey, the contractors would identify large live or dead trees with peeling bark, including large specimens of shagbark hickory (*Carya ovata*), with the potential to serve as maternity or roost trees and these would be marked. Potential roost trees identified within the construction limits would be avoided where possible during construction activities. Tree removal would occur between October and March.
- In the event that the Applicant unexpectedly encounters any rare, threatened, or endangered species during the preconstruction, construction, or operation and maintenance phases of the proposed CHPE Project, the following measures would be implemented:
  - Areas of threatened and endangered species occupied habitat and locations of rare, threatened, and endangered plants along the terrestrial portions of the proposed CHPE Project route would be flagged in the field.
  - The Environmental Inspector would identify the area of the sighting or encounter; flag the boundaries of the newly identified occupied habitat or locations where the threatened or endangered species or rare, threatened, or endangered plant were observed; and record GPS locations of the likely habitat boundary or the sighting.
  - Any unanticipated sightings of threatened or endangered species or observations of rare, threatened, or endangered plants would be reported as soon as possible to NYSDPS, NYSDEC, or USFWS. The Applicant would consult with applicable resource agencies for measures to avoid or minimize impacts on plants or animals.
  - If threatened or endangered species or threatened or endangered plants are discovered during construction activities, the Applicant would temporarily halt construction activities in the vicinity of the discovery, excepting any activity required for immediate stabilization of the area, to avoid or minimize the impacts on the species or habitat. Construction activities in the area would resume once protective measures, developed in consultation with NYSDPS, NYSDEC, and USFWS, are implemented.
  - If new threatened or endangered species and occupied habitat are identified or threatened or endangered plants are observed and verified, construction plans would be updated to show the new threatened or endangered species, occupied habitat, or threatened or endangered plant species. These newly occupied areas would also be flagged in the field.
  - Construction personnel would be updated on the locations of any new threatened and endangered species or occupied habitats or locations of threatened or endangered plants that are identified. These areas would be reported to the applicable resource agencies.

- The Applicant has developed the following measures to avoid impacts on the state-listed bald eagle, which is also protected under the Bald and Golden Eagle Protection Act (BGPA) and their habitat:
  - Prior to construction, the Applicant would identify all bald eagle nest locations within 0.5 miles (0.8 kilometers [km]) of construction, based on data provided by the NYNHP.
  - If any blasting activities are necessary within 0.5 miles (0.8 km) of active bald eagle nests, the Applicant would contact USFWS and NYSDEC for guidance to avoid or minimize the potential for noise-related disturbance.
  - If construction would occur within 660 feet (201 meters) of an active nest during the nest-building or breeding season (December to August) per USFWS guidelines, the Applicant would contact USFWS and NYSDEC for guidance to avoid and minimize the potential for noise-related disturbance.
  - Environmental training for contractors and construction crews would include training on the identification of bald eagles and location of nests. Construction personnel would be instructed to report any sightings of potential eagle nests that were not previously identified by the NYNHP.
  - If any previously unidentified eagle nests are discovered, the Applicant would report findings to the NYNHP as soon as possible, and consult with the NYSDEC and USFWS for guidance to avoid or minimize the potential for disturbance, if required.
- On a project-wide basis, the Applicant would perform the following measures to prevent or control the transport of invasive plant species:
  - Prior to construction, training would be conducted to educate transmission system contractors and subcontractors on identifying invasive plant species and the site-specific protocol for preventing or controlling their transport throughout or off of the proposed CHPE Project site. These protocols include the various cleaning or decontamination methods to be used for the proposed CHPE Project. In addition, the contractors would be instructed to stay within access paths and work areas that are designated on the EM&CP plan and profile drawings to minimize ground disturbance.
  - Sediment- and erosion-control devices would be installed across the construction corridor on slopes leading into wetlands and along the edge of the corridor to prevent spoil from migrating into these areas. This would also help to prevent the dispersion of seeds from invasive plant species into uninfested wetlands during construction.
  - Vehicles, equipment, and materials (including swamp mats) would be inspected for, and cleaned of, any visible soils, vegetation, and debris before bringing them to the proposed CHPE Project area or moving them to the next wetland along the construction corridor as specified under NYSDEC's General Permit for Routine ROW Maintenance Activities, DEC No. 0-0000-01147/00001.
  - The restored corridor would be seeded with an invasive species-free seed mix immediately after final regrading to quickly create vegetative cover over the disturbed corridor and help to prevent establishment of invasive species which typically colonize disturbed sites.
  - Revegetation of disturbed areas would use seed and other plant materials that have been checked and certified as noxious-weed-free.

G.8 Wetlands

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to wetlands, are as follows:

- Prior to construction, the Applicant would obtain permits from the USACE under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Mitigation measures and BMPs for impacts on wetlands, if required, would be determined during the permit application process in consultation with the USACE. The proposed CHPE Project would be constructed, operated, and maintained in accordance with Federal and state permits. The Applicant would also adhere to stipulations in the Certificate of Environmental Compatibility and Public Need, which is administered by the NYSPSC.
- All wetlands occurring within the project area would be delineated and flagged prior to initiation of construction activities to ensure resource protection. Wetland and stream adjacent areas would be clearly marked in the field to avoid inadvertent disturbance of wetlands and streams by construction equipment. During construction activities, spoil would be stored within the construction corridor immediately adjacent to the trench or within designated extra work areas. To the extent possible, the Applicant would avoid storing spoil within wetlands; however, due to the space constraints along the roadway and railroad ROWs, it is anticipated that some spoil storage in wetland areas could occur. In these areas, soil excavated from the wetland would be temporarily stockpiled on construction matting or geo-textile fabric to be used to backfill the trench. Any excess spoil would be removed from the ROWs and disposed of off site in accordance with Federal and state laws and regulations.
- Sediment- and erosion-control devices would be installed across the construction corridor on any slopes leading into wetlands and along the edge of the corridor, as necessary, to prevent spoil from flowing off the corridor into a wetland. Locations of sediment- and erosion-control devices would be identified on the EM&CP plan and profile drawings.
- Erosion- and sediment-laden storm water runoff from disturbed areas or spoil piles in immediately adjacent uplands have the potential to affect water quality in wetlands. Therefore, temporary and permanent erosion and sediment controls would be installed prior to construction activities to avoid increases in erosion and sedimentation into waterbodies from land disturbance. Construction storm water would be managed in accordance with the SWPPP for the proposed CHPE Project to prevent increased storm water runoff volume and velocity and prevent introduction of sediments and pollutants. An SWPPP would be prepared prior to construction as part of permitting and compliance under the SPDES.
- The Applicant would segregate topsoil in wetlands, except when standing water or saturated soils are present, to prevent the mixing of topsoil with subsoil. To expedite revegetation of wetlands, the top 1 foot (0.3 meters) of surface soil would be stripped from over the trench, retained, and later replaced. This would facilitate wetland revegetation by maintaining physical and chemical characteristics of the surface soil and preserving the native seed bank. The exception to this requirement includes areas with standing water or saturated soils, areas where no topsoil layer is evident, or areas where the topsoil layer exceeds the depth of the trench.
- The HDD method would be employed to construct landfalls from the proposed transmission cables. This would be expected to avoid impacts on freshwater tidal wetlands. In addition, the HDD method would exit the water at a depth sufficient to avoid impacts on the intertidal and foreshore areas.

- In wetland areas where trenching would occur, trench plugs or other methods to prevent draining of wetlands down into the trench would be employed. In areas where wetland topsoil would be disturbed, the organic surface layer would be backfilled over the subsoil backfill to reestablish an adequate soil profile for wetland restoration objectives.
- If any construction equipment would operate within saturated wetlands that would be likely to be affected by soil compaction or rutting based on conditions at the time of construction, the Applicant would use equipment mats or low-ground-pressure tracked vehicles to minimize impacts on wetland soils. If dewatering is required within the excavated trench, water would be discharged to a well-vegetated upland area, a properly constructed dewatering structure, or a filter bag. Original surface hydrology in disturbed wetland areas would be reestablished by backfilling the trench and grading the surface to original contours, as needed.
- To minimize impacts from accidental leaks and spills, a Spill Prevention, Control, and Countermeasure (SPCC) Plan or its equivalent filed as part of the EM&CP and implemented during construction would be developed that would contain BMPs to limit potential water quality impacts. Construction crews would have sufficient supplies of absorbent and barrier materials on site to contain and clean up hazardous materials in the event of a spill. To reduce the likelihood of a spill entering wetland habitat, the Applicant would avoid storing hazardous materials, chemicals or lubricating oils, refueling vehicles and equipment, or parking vehicles overnight within 100 feet (30 meters) of the edge of a wetland, unless no reasonable alternative was available. If no alternative is available, the Applicant's Environmental Inspector would ensure that appropriate protection measures for spill prevention and controls would be implemented.
- Following construction, the Applicant would conduct final grading to restore original contours, as needed, and would seed disturbed areas with a temporary seed mixture to stabilize soils and establish vegetation cover. Emergent wetland vegetation would be expected to reestablish quickly following construction, and woody species would return more slowly. Forested wetlands, where not maintained, would be expected to go through several stages of successional vegetation before returning to the pre-construction vegetation cover type. To assist in the recovery of woody species, the Applicant would avoid removing roots and stumps in cleared areas outside of the cable trench, unless required for safety, to allow resprouting of woody species.
- During the initial restoration phase, all construction debris would be removed from the construction corridor. Segregated topsoil would be replaced, and wetland contours and drainage patterns would be restored to approximate original conditions by matching adjacent undisturbed areas. Restoring the grade, drainage patterns, and topsoil would promote the reestablishment of native hydrophytic vegetation (i.e., plant life that thrives in wet conditions). Restoration of wetlands would be completed within 24 hours after backfilling is completed. Restoration of the wetland would include final grading, seeding with an appropriate seed mix, fertilizing, and mulching. High organic soils (as determined by NYSDEC, NYSDPS, or the Environmental Inspector) would be graded back to original contours and left unmulched and unseeded to facilitate the germination of native seeds and sprouting of rhizomes from the seed bank.
- The Applicant would establish and implement a program to monitor the success of restoration upon completion of construction and restoration activities. The success of wetland revegetation would be monitored and recorded annually for the first 2 years (or as required by permit) after construction, or longer, until wetland revegetation is successful. Wetland revegetation would be considered successful when the vegetative cover is at least 80 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. If revegetation is not successful at the end of 2 years, the Applicant would develop and implement (in consultation with a professional wetland ecologist) a plan to actively revegetate the wetland with native wetland herbaceous plant species.

In addition, during construction activities within and adjacent to wetlands, protection measures would include the following:

- Minimize amount of work within and across wetlands.
- Schedule work to be conducted in wetlands to start and finish in the dry season or when the ground is frozen, to the extent practicable.
- Limit construction vehicles and equipment to established access roads and construction workspaces depicted on EM&CP plan and profile drawings.
- Limit construction equipment within wetlands primarily to what is needed to dig the trench, install the cables, backfill, and restore the construction corridor. All other construction equipment would use access roads in upland areas to the extent practicable.
- Minimize disturbance and compaction in wetlands with saturated soils or standing water, either by using wide-tracked or balloon-tired equipment operating from timber corduroy or timber mats. Imported rock, stumps, brush, or offsite soil as temporary or permanent fill would be prohibited. Following construction, all materials used to stabilize the corridor would be removed.
- Construction equipment would not be washed in wetlands or within 100 feet (30 meters) of any wetland unless specified to minimize the spread of invasive species. Runoff resulting from washing operation would not be permitted to enter any wetlands directly.
- Spoil and excavated materials would be stored outside of wetlands and wetland adjacent areas. All stockpiled material would be stored at a sufficient distance to prevent sedimentation into any stream, wetland, wetland adjacent area, or other waterbody. If no storage area is available, spoil would be adequately protected and erosion- and sediment-control measures would be installed to prevent materials from entering adjacent areas. All excess material would be disposed of in approved upland locations.
- Any temporary access routes or parking areas adjacent to wetlands and waterbodies would be graded to direct runoff away from water resources. If needed, erosion-control measures would be installed adjacent to wetlands and other water resource areas.
- Unless work activities would resume within 14 days, disturbed soils would be stabilized as soon as possible and no more than 7 days upon temporary or permanent completion of ground-disturbing activities. If soil stabilization measures are not possible within 7 days due to snow cover, frozen ground, or other weather conditions, soils would be stabilized as soon as practicable.
- The construction corridor would be inspected periodically during and after construction until final restoration has been completed. Erosion-control or restoration features would be repaired as needed in a timely manner until permanent revegetation has become successful.
- Should it become necessary to remove water from the trench, it would be pumped to a stable, vegetated upland area (where practical) and filtered through a filter bag or siltation barrier.
- Clearing of existing vegetation in or near wetlands would be limited to material necessary to allow completion of construction activities and reasonable access for long-term maintenance.
- Brush and trees would be cut at ground level leaving the root systems intact.
- Tree stumps would only be removed directly over the trench and where necessary for safe access along the corridor.

- If high soil moisture content or standing water exist in a wetland prior to construction, the use of heavy equipment would be limited to prevent rutting and soil profile mixing.
- Trees would be felled by hand and cut to lay flat on the ground and left in place unless doing so would prevent safe access to the site.

G.9 Geology and Soils

Erosion- and sediment-control measures would be developed and implemented both during and following site development to contain soil and runoff on site, and would reduce potential for adverse impacts associated with erosion, sedimentation, and transport of sediments in runoff. The following BMPs have been identified in the Applicant's EM&CP:

- *Straw Bales and Silt Fencing.* Straw bales and silt fences are used separately or together to reduce the velocity of sediment-laden runoff and affect deposition of the transported sediment load.
- *Stabilized Construction Entrances.* Stabilized construction entrances would be installed and maintained at all points where construction access roads intersect with paved surfaces, such as roads, sidewalks, or parking areas, to reduce the tracking of sediment onto roadways.
- *Water Management Devices.* The following devices would be used along terrestrial portions of the proposed CHPE Project route as necessary to reduce the velocity of storm flows and to divert storm flows away from offsite properties and environmentally sensitive areas:
    - Water Diversion Devices.
    - Waterbars
    - Drivable Berms
    - Swales and Earthen Berms
    - Side Ditches
    - Stone Check Dams
    - French Drains
    - Temporary Culverts.
- *Sediment Retention Ponds and Filtration Devices.* Catchment basins would be used where needed to intercept sediment-laden runoff and reduce the amount of sediment leaving disturbed areas. Catchment basins would be constructed in accordance with the standards in the *New York State Standards and Specifications for Erosion and Sediment Control*.
- *Concrete Washout.* After placement of concrete, wash water used to clean the concrete truck would be directed to a concrete washout structure at designated areas only. These concrete washout area(s) would be a minimum of 100 feet (30 meters) from all wetlands, waterbodies, and drainage structures.
- *Fugitive Dust Emissions.* Dust control would be used on construction roads, construction entrances, and other disturbed areas subject to surface dust movement and dust blowing. These areas would be sprinkled with water during extended dry periods to minimize dust generation. Typically only plain water would be used for dust suppression; chemical dust suppressants would only be used in situations where plain water dust suppression is not effective and where no sensitive resources (e.g., wetlands, streams, potable water supplies, organic farms) are present.
- *Clearing, Excavation, and Grading.* In general, the construction corridor would be cleared to provide safe operation of construction equipment.

- *Site Stabilization.* Non-structural controls would also be used during project construction. Mulch would be used to provide initial erosion control while seeding is established or to prevent erosion on soils with low infiltration rates.
- *Inspection and Record Keeping.* Inspections would include all disturbed areas that have not undergone final stabilization, storm water discharges from the site, material storage areas, and site entrances and exits.

In addition to erosion- and sediment-control measures, construction BMPs would be implemented to minimize soil erosion including the following:

- Non-agricultural and non-urban/residential areas
    - Grading
    - Lime Application
    - Fertilizing
    - Aerating
    - Seeding and Planting.
- *Restoration – Urban/Residential.* Construction in urban or residential areas could require a variety of restoration activities. Aboveground and underground structures (e.g., those related to water and gas services), street pavements, curbs, sidewalks, and other features could require repair or replacement as a result of construction. Curbs, sidewalks, and streets damaged by construction would be restored to pre-existing conditions. Except where replacement would inhibit or impair the safe operation of the transmission lie, shade trees and ornamental shrubs disturbed or damaged by construction would be repaired or replaced, following construction.
- *Restoration – Railway Ballast.* Upon completion of the installation of the underground transmission line in the railroad ROW, the surface of the ROW disturbed by construction activities would be graded to match the original topographic contours and to be compatible with surrounding drainage patterns. Stone ballast or mulch would be used to stabilize the disturbed soil areas in the ROW.

All blasting activity would be performed by licensed professionals according to strict guidelines designed to control energy release. Charges would be kept to the minimum required to break up the rock. Where appropriate, mats composed of heavy steel mesh or other comparable material or trench spoil would be used to prevent the scattering of rock and debris. These activities would adhere strictly to all industry standards applying to control of blasting and blast vibration limits.

G.10 Cultural Resources

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to the prevention of impacts on historic and cultural resources, are as discussed in the following paragraphs.

Measures would be implemented to mitigate the proposed CHPE Project's potential adverse effects on known terrestrial and underwater archaeological sites found to extend into the Area of Potential Effects (APE). These measures include minor rerouting to avoid the sites and Phase III data recoveries of terrestrial and underwater archaeological sites that are listed or eligible for listing in the National Register of Historic Places and cannot be avoided by ground-disturbing activities.

The development of a programmatic agreement (PA) is underway and additional formal surveys and evaluations must be taken before it can fully be determined in detail what cultural resources require mitigation under Section 106 of the National Historic Preservation Act. Measures identified at this time are presented in the following paragraphs.

Proposed CHPE Project Cultural Resources Management Plan. To manage potential impacts on cultural resources from the proposed CHPE Project, a Cultural Resources Management Plan in consultation with certain stakeholders would be developed. This plan would identify historic properties within the APE and outline the processes for resolving adverse effects on historic properties within the APE and determining the appropriate treatment, avoidance, or mitigation of any effects of the proposed CHPE Project on these resources. Treatment and avoidance measures would include the results of consultation between the Applicant and the New York State Historic Preservation Office (SHPO) regarding reasonable buffers between underwater sites and the cable-laying barge that would be used in Lake Champlain. In addition, cultural and heritage resource impact measures would be included in the EM&CP and facility management plans.

Unanticipated Discoveries. The potential exists for the unanticipated discovery of additional cultural resources and human remains during construction and operational activities. As a result, the Applicant would develop an Inadvertent Discovery Plan that details crewmember responsibilities for reporting in the event of a discovery during underwater and underground cable installation. The plan would also include procedures to be implemented in the event of an unanticipated find. If human remains are discovered, the Applicant would stop work within 50 feet (15 meters) of the discovery. The Applicant would then contact the county coroner and a professional archaeologist (i.e., an archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards in archaeology and history) to determine the significance of the discovery. If appropriate, the Applicant would also adhere to Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing regulations (43 Code of Federal Regulations [CFR] §19). Depending on the recommendations of the coroner and archaeologist, the Applicant would consult with the appropriate county in New York State to establish additional measures. Potential measures for unanticipated discoveries would include avoidance, documentation, excavation, and curation.

Treatment and disposition of an inadvertent discovery of human remains would be managed in a manner consistent with NAGPRA; the Advisory Council on Historic Preservation (ACHP) Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects; and the New York SHPO's Human Remains Discovery Protocol. If human remains are encountered in the course of ground-disturbing activities, the Applicant would implement the following actions in coordination with the New York SHPO, Native American tribes, and other Consulting Parties, as applicable:

- Any human remains discovered would be treated with dignity and respect.
- Work in the general area would stop immediately; the area would be physically secured; and a barrier prohibiting vehicles, equipment, and unauthorized persons from accessing the discovery site would be installed. The site would be protected from damage and disturbance to the maximum extent practicable.
- Human remains and associated artifacts would be left *in situ* and not disturbed. No human remains or materials associated with the remains would be collected or removed until appropriate consultation has taken place.
- The Applicant would contact local law enforcement, the county coroner's office, the New York SHPO, and Native American tribes, as appropriate. Local law enforcement officials and the county coroner's office would examine the remains to determine if they are forensic.
- If the remains are determined to be Native American, they would be left *in situ* and protected from disturbance until a plan for their protection or removal is developed. The Applicant would

notify the New York SHPO and appropriate Native American tribes within 24 hours (during normal business hours) or as soon as possible after the discovery has been determined to be forensic. The Applicant would consult with the New York SHPO and Native American tribes to develop a plan of action, the guidance provided in the NAGPRA, the ACHP's 2007 Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects, and the New York SHPO's Human Remains Discovery Protocol. Avoiding further disturbance of the remains would be the preferred option.

- If the human remains are determined to be non-Native American, the remains would be left *in situ* and protected from disturbance until a plan for their avoidance or removal were developed. The Applicant would consult with the New York SHPO and other appropriate parties to determine a plan of action.
- Work in the affected area would resume only after the completion of the necessary consultation and treatment was completed.

G.11 Visual Resources

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to visual resources, are as follows:

- Existing vegetation buffers would be maintained to the extent possible at selected road and stream crossings and other potentially visually sensitive locations, especially at HDD sites, residential areas, or near historic sites.
- When existing vegetative buffers in visually sensitive areas cannot be avoided, the areas would be restored following construction, except where replacement would inhibit or impair the safe operation of the cables.
- Good housekeeping practices and removal of temporary storm water and erosion controls such as silt fence, straw bales, and mulch; construction debris; or blast rock during the various stages of construction would limit the visual impact.

G.12 Infrastructure

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to infrastructure, are as follows:

- The Applicant would engineer, construct, and install the proposed CHPE Project so as to make it fully compatible with the continued operation and maintenance of collocated infrastructure (e.g., aboveground, below ground, and submerged electric, gas, telecommunications, water, wastewater, sewer, and steam infrastructure and appurtenant facilities and associated equipment), and affected railroads and railways; and highways, roads, streets, or avenues.
- Existing utility infrastructure owners would be contacted prior to the beginning of any preconstruction activities and throughout the proposed CHPE Project design process, and protection measures and specifications for existing utility facilities would be negotiated with the utility owners.
- The design of utility crossings would follow industry standards and infrastructure agreements based on owner consultations. Many of the crossing types would include the use of a protective sleeve around the transmission cables to ensure minimum separation at the crossing point. The sleeve would extend a minimum of approximately 15 feet (5 meters) from each side of the utility

intersection. The installed length of protective coverings would be between 60 and 75 feet (20 and 21 meters) in length to ensure this requirement is met.

Water Supply Systems

- Consultations with the water supply infrastructure owners and operators would be conducted to get specific information on each intake (e.g., specific location, water depth, intake size, dimensions and slot size of intake screening, flow rates, and average withdrawal rates).
- Based on this information, determine the potential impact on water supply intakes due to the mobilization of sediment, including contaminated sediment.
- If adverse impacts would be possible, develop strategies to avoid or minimize the magnitude of the estimated potential impacts. Such strategies include incorporating minor route adjustments, providing intake screens, sediment filters or barriers in the vicinity of the intake, or using alternate construction methods (e.g., non-burial installation).
- If it is determined that contaminated sediments might not be able to be avoided using alternative transmission cable installation methods or minor route adjustments, the Applicant would perform water quality modeling to assess the potential adverse impacts on water supply systems from installing the transmission cables within contaminated sediments.
- In the event that aquatic transmission cable installation would result in the exceedance of Maximum Contaminant Levels (MCLs) and the NYSDPS Staff determined that the continued use of techniques to reduce impacts would be unable to avoid exceedance of MCLs; aquatic transmission cable installation would be suspended; and the Applicant would consult with NYSDPS Staff, New York State Department of Health (NYSDOH), and NYSDEC regarding alternative cable installation techniques such non-burial methods, shear plow, or additional route modification and propose such changes to the approved EM&CP.

Communications

- A minimum separation between the proposed CHPE Project's aquatic cables and the existing telecommunications cable would be provided by installing a protective sleeve on the proposed CHPE cable at each utility crossing. The protective sleeve would extend for approximately 50 to 80 feet (15 to 24 meters) on each side of the crossing point.
- In some areas of the Hudson River Segment, existing telecommunication cables are buried less than 3 feet deep. At these locations, the Applicant would propose to use protective sleeves on the aquatic transmission cables along with burial until touching the existing cables, increase the burial depth of the existing cables by water jetting at the crossing point prior to installing the submarine cables, or cut and re-splice the telecommunications cables after installing the submarine cables. The details of these crossings would be coordinated with the owners of the existing facilities.

Solid Waste Management

- Some conventional dredging could be used for HDD water-to-land transitions. The construction contractor would be required to develop a detailed Dredge Plan and obtain the necessary dredge and disposal approvals in accordance with Federal and state regulations. The Dredge Plan would follow the guidance of the U.S. Environmental Protection Agency (USEPA)/USACE *Ecological Evaluation for Dredged Material Proposed for Ocean Disposal in the Marine Environment* and the Regional Implementation Manual New York/New Jersey Harbor *Guidance for Performing*

Tests on Dredged Material Proposed for Ocean Disposal. Sediment testing results would determine the resulting waste's suitability for ocean or upland disposal. Dredged waste sediment from the Hudson River would not be returned to the river. Instead, it would be disposed of either in an upland or ocean waste disposal site in accordance with Federal and state regulations.

G.13 Recreation

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to recreation, are as follows:

- Access to boat launch areas and piers would be maintained, as feasible, but could be restricted during construction for safety reasons.
- Existing vegetation buffers between parks and the railroad ROWs would be maintained near recreational areas, as appropriate, especially at HDD drilling sites.
- Following construction, impacted areas within the CHPE Project route construction area would be seeded and allowed to revegetate naturally. When vegetative buffers in recreational areas cannot be maintained, the areas would be restored following construction, except where replacement would inhibit or impair the safe operation of the cables.

G.14 Public Health and Safety

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to public health and safety, are as follows:

- One Safety Inspector would work full time on the proposed CHPE Project and would be present for any higher risk procedures. The Safety Inspector would assist in the establishment and implementation of regulatory compliance and incident-prevention activities regarding the safety and health of employees, contractor and subcontractor personnel, and the public.
- Follow all guidelines established in project Health and Safety Plans and the Emergency Contingency Plan to ensure construction activities are conducted in a safe manner.
- Follow all guidelines established in the Aquatic Safety and Communication Plan when conducting project activities in waterways to ensure activities are conducted in a safe manner.
- Follow all guidelines detailed in the project Emergency Repair and Response Plan (ERRP) to be developed for the project when conducting emergency repair and maintenance activities.

G.15 Hazardous Materials and Wastes

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to the management of hazardous materials and waste, are as follows:

- Visual, olfactory, and photoionization detector soil screenings and assessments are to be performed by a qualified environmental professional.
- Conduct waste characterization sampling of contaminated soil stockpiles prior to disposal.
- Use liners, covers, and other soil erosion and sediment controls to minimize the potential spread of contaminated soils.

- Transport and dispose of contaminated soils in accordance with applicable regulations and standards, fugitive dust monitoring, and dust-control measures.
- Provide health and safety training for all personnel who might be exposed to hazardous substances or health hazards on site.

G.16 Air Quality

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to avoidance of impacts on air quality, are as follows:

- Keep all construction equipment in good running condition to minimize emissions from internal combustion engines and ensure that emissions and odors are kept to a minimum.
- To the degree practical, minimize equipment idling for long periods of time.
- Apply water or non-toxic soil stabilizers to all unpaved access roads, parking areas, and staging areas with sufficient frequency to control dust and maintain an effective level of soil moisture or cohesion while avoiding excessive water application.
- Clean accumulated dirt, as necessary, from roads along the construction corridor or from construction vehicles.
- Implement dust-control measures, as necessary, to limit dust releases from trucks (such as covering loads, wetting dry soil and maintaining a certain depth of freeboard).
- Seed or plant exposed areas as soon as practicable after construction, or as called for by permit, at the converter station and substation to reduce the potential for wind blown erosion.
- Keep all construction equipment in good running condition to minimize emissions from internal combustion engines and ensure that odor impacts are kept to a minimum.
- Exposed stockpiles of soil and other excavated materials would be contained within perimeter silt fencing, watered, treated with soil binders, or covered as necessary.
- To the degree practical, minimize equipment idling for longer than necessary periods of time.
- Develop a monitoring plan that includes an inventory of equipment containing SF6, include design elements to reduce energy consumption and thermal cycling of switchgear which helps reduce leakage, identify and repair leaking equipment in a timely fashion, train employees on the climate change effects of SF6, and account for the respective make-up quantities.
- Use low-emission construction equipment, minimize vehicle idling, and carpool to further reduce greenhouse gas (GHG) emissions.

G.17 Noise

The Applicant-proposed impact avoidance and minimization measures, including BMPs, that are applicable to noise, are as follows:

- Measures to apply at residential areas and other noise-sensitive locations include public outreach, appropriate work hour and operation restrictions, temporary sound barriers, employment of equipment fitted with sound deadening materials, selection of low noise equipment and procedures, and other noise-reduction work methods or devices as determined appropriate for the locale and task. Construction and maintenance equipment would be equipped with appropriate sound-muffling devices (i.e. Original Equipment Manufacturer [OEM] or better), and should be maintained in good operating condition at all times.

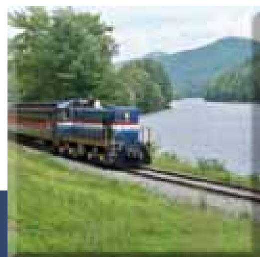
- Should blasting be required at any location where non-blasting methods of excavation are impossible or blasting causes less impact, then noise and vibration effects on nearby land uses and structures would be managed with a blasting plan for each site prior to any blasting activities. The plan should include the blasting methods, surveys of existing structures and other built facilities, and distance calculations to estimate the area of effect of the blasting.
- Locating equipment yards and marshalling areas away from noise-sensitive receptors as practical.
- Installing improved mufflers on heavy construction equipment when used in close proximity to noise-sensitive areas.
- Utilizing low-noise technologies (e.g., vibratory pile drivers) as appropriate.
- Limiting construction of high noise level activities (e.g., wood chipping, pile driving, rock drilling, blasting, excavation, and loading) to non-overnight hours as much as possible when construction is conducted in close proximity to noise-sensitive receptors.
- In cases where a noise source would be in a fixed position for an extended period of time (such as for an HDD operation), install temporary sound barriers such as wooden sound barriers to reduce noise levels or, in extreme cases, offer temporary lodging for residents adversely affected.

G.18 Socioeconomics

No measures would be necessary for socioeconomic resources.

G.19 Environmental Justice

No measures would be required for environmental justice because any human health or environmental effects related to minority or low-income populations would be negligible and not considered disproportionately high or adverse.



APPENDIX H

ESA Section 7 Documentation

APPENDIX H.1 – SECTION 7 CONSULTATION DOCUMENTATION FOR THE PROPOSED CHPE PROJECT

Department of Energy
Washington, DC 20585

June 21, 2012

Robyn Niver
Endangered Species Biologist
U.S. Fish and Wildlife Service
New York Field Office
3817 Luker Road
Cortland, New York 13045

SUBJECT: Proposed Champlain Hudson Power Express Transmission Line Project

Dear Ms. Niver:

As you are aware, Champlain Hudson Power Express, Inc. ("CHPEI" or "Applicants") has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the proposed Champlain Hudson Power Express Transmission Line Project (Project). This letter is to initiate informal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) for the Project.

CHPEI's application for a Presidential Permit was submitted to the DOE on January 27, 2010. CHPEI subsequently modified its application on August 6, 2010; July 7, 2011; and February 28, 2012. The Project currently under review by the DOE would consist of a 1,000-megawatt (MW) high-voltage direct current (HVDC) Voltage Source Converter controllable transmission system extending from the Canadian Province of Quebec to New York City, as shown in the attached Figures 1 through 4. From the international border between the United States and Canada, two cables (comprising a single bipole) would extend south to an HVDC Converter Station to be located near Luyster Creek, north of 20th Avenue in Astoria, Queens. From the Converter Station, a 345-kilovolt (kV) underground alternating current (AC) circuit would connect to the existing 345-kV gas-insulated substation owned by the New York Power Authority (NYPA) and situated near NYPA's Charles Poletti Power Project in Astoria. The Applicants also propose to construct a 3-mile buried 345-kV HVAC cable circuit from the Astoria Substation to Consolidated Edison's Rainey Substation in Queens. The Applicants have proposed to install the cables within waterways, and within the rights-of-way of existing transportation infrastructure, including railroads and roadways. Sections of the transmission line installed within waterways will generally be buried beneath the lake or riverbed. Overland sections of the Project will be buried within existing ROW corridors.

The DOE has determined that an Environmental Impact Statement (EIS) is the appropriate level of review under the National Environmental Policy Act (NEPA) for the proposed project, as was documented in our Federal Register Notice of Intent to prepare an EIS on June 18, 2010 (75 FR 117). The Notice of Intent, along with background information, an opportunity to subscribe to our mailing list, and more, are available on our EIS-specific website at http://www.chpexpresseis.org.

We ask that you provide a list of species that might occur in the action area. We also request a meeting to kick off informal consultation and discuss any concerns relative to impacts of the Proposed Action on federally listed species. We will also consult with the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service regarding threatened and endangered species and critical habitat under their purview and essential fish habitat that could be affected by the Proposed Action.

Please feel free to contact me directly at any time at Brian.Mills@hq.DOE.gov, or by phone at (202) 586-8267.

Very truly yours,

B Mills

Mr. Brian Mills
Permitting, Siting, and Analysis, OE-20
Office of Electricity Delivery and
Energy Reliability
U.S. Department of Energy

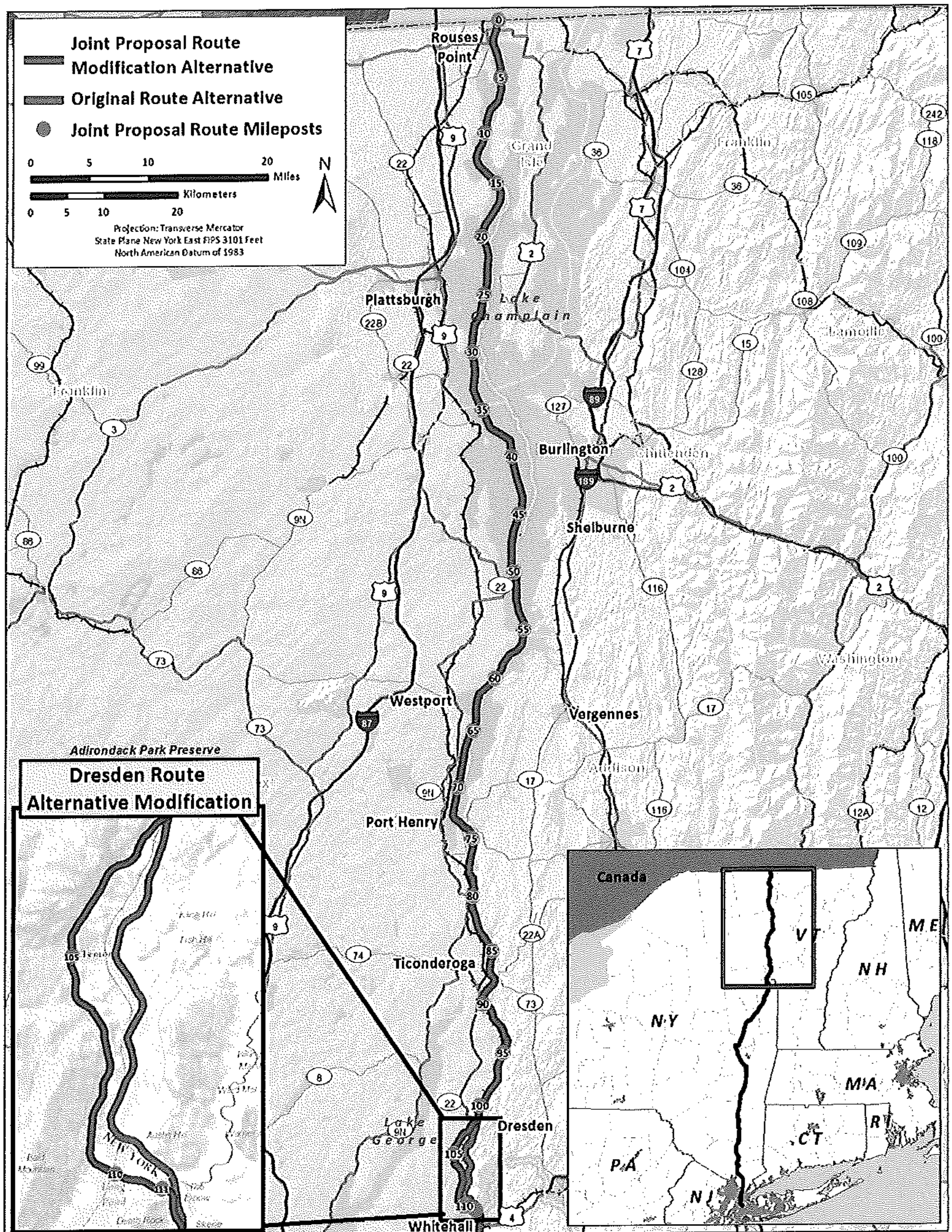


Figure 1. CHPE Lake Champlain Segment

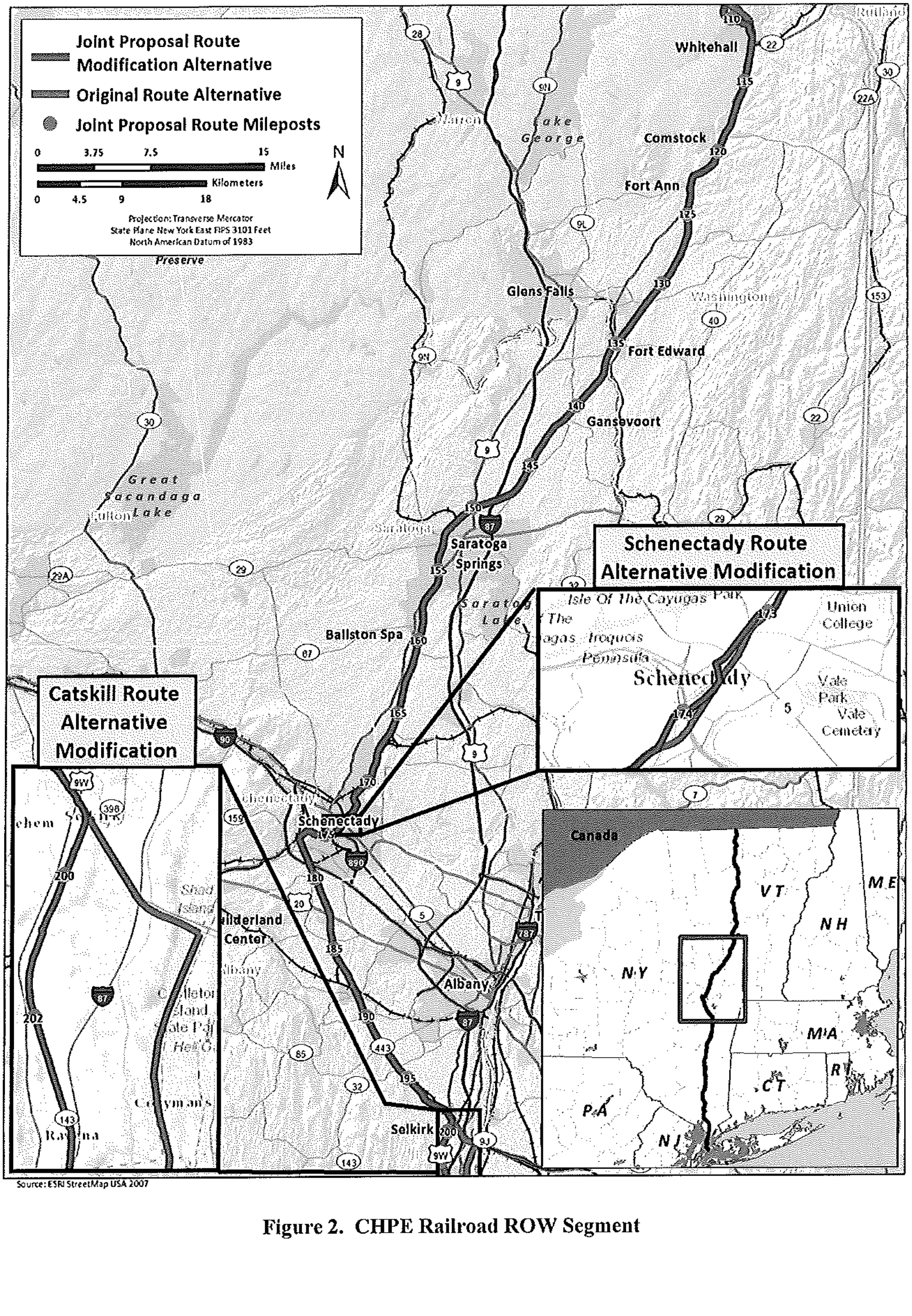


Figure 2. CHPE Railroad ROW Segment

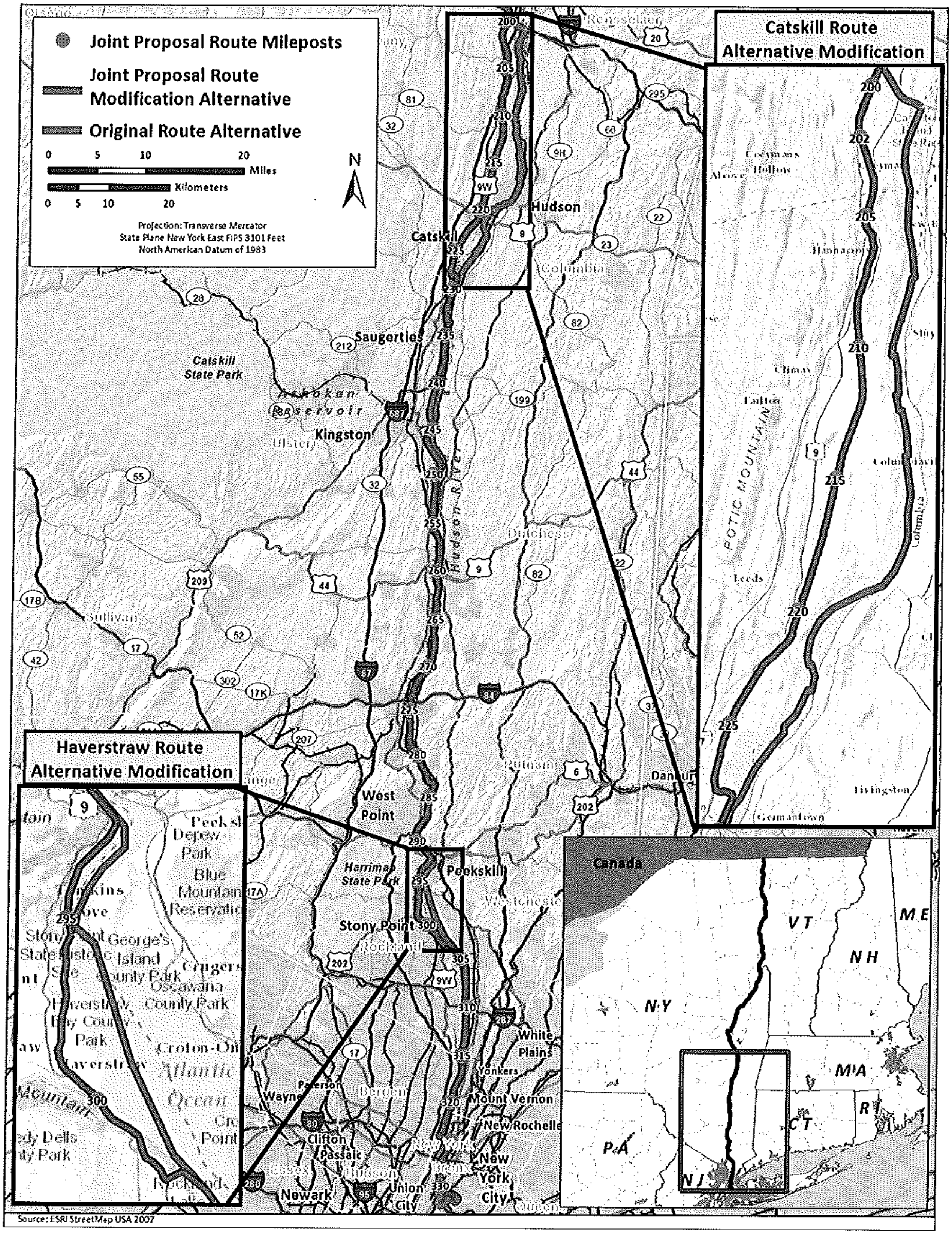


Figure 3. Hudson River Segment

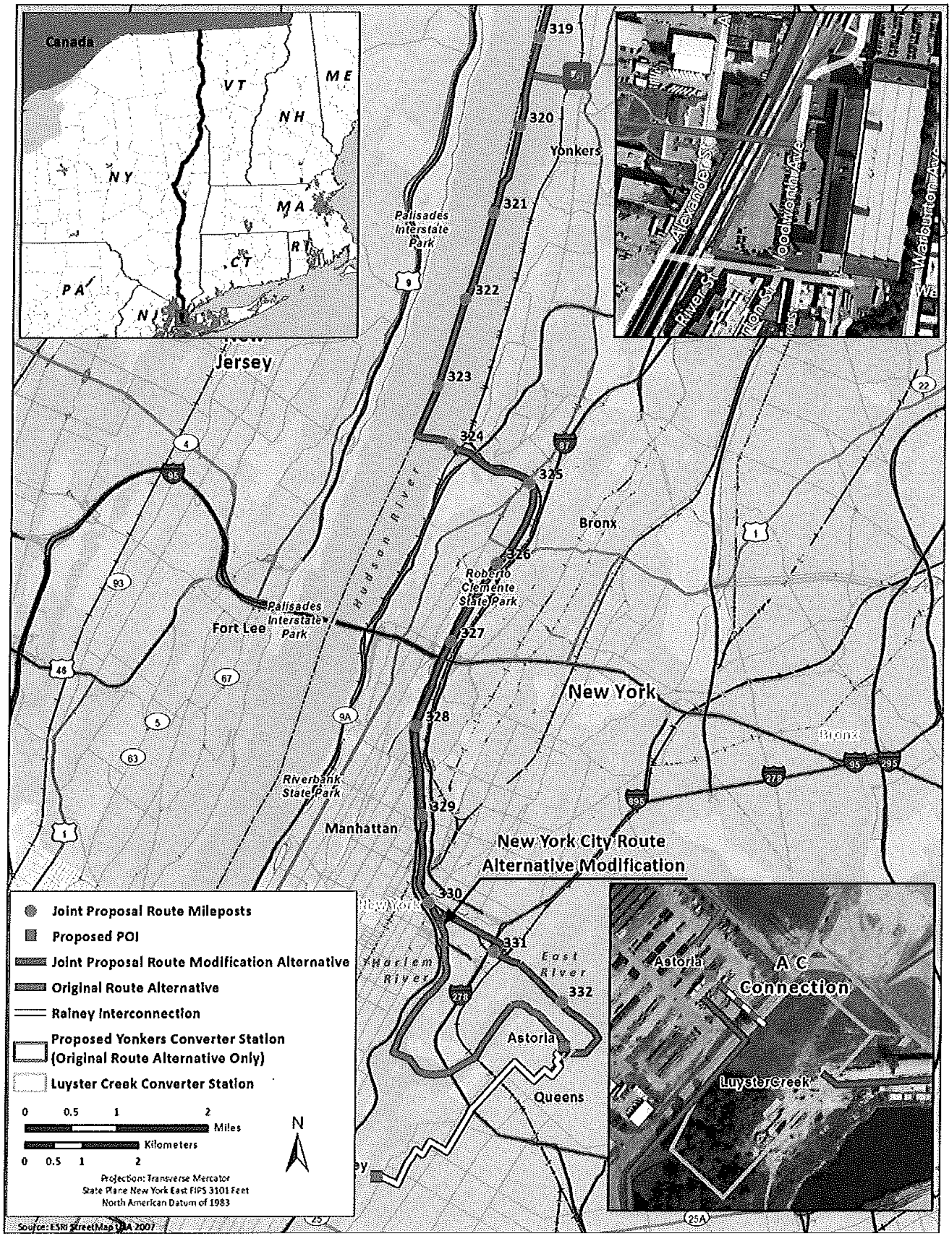


Figure 4. New York City Metropolitan Area Segment

Department of Energy
Washington, DC 20585

June 21, 2012

Ms. Mary Colligan, Assistant Regional Administrator
NOAA National Marine Fisheries Service Northeast Regional Office
55 Great Republic Drive
Gloucester, MA 01930

SUBJECT: Proposed Champlain Hudson Power Express Transmission Line Project

Dear Ms. Colligan:

As you are aware, Champlain Hudson Power Express, Inc. ("CHPEI" or "Applicants") has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the proposed Champlain Hudson Power Express Transmission Line Project (Project). This letter is to initiate informal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) for the Project.

CHPEI's application for a Presidential Permit was submitted to the DOE on January 27, 2010. CHPEI subsequently modified its application on August 6, 2010; July 7, 2011; and February 28, 2012. The Project currently under review by the DOE would consist of a 1,000-megawatt (MW) high-voltage direct current (HVDC) Voltage Source Converter controllable transmission system extending from the Canadian Province of Quebec to New York City, as shown in the attached Figures 1 through 4. From the international border between the United States and Canada, two cables (comprising a single bipole) would extend south to an HVDC Converter Station to be located near Luyster Creek, north of 20th Avenue in Astoria, Queens. From the Converter Station, a 345-kilovolt (kV) underground alternating current (AC) circuit would connect to the existing 345-kV gas-insulated substation owned by the New York Power Authority (NYPA) and situated near NYPA's Charles Poletti Power Project in Astoria. The Applicants also propose to construct a 3-mile buried 345-kV HVAC cable circuit from the Astoria Substation to Consolidated Edison's Rainey Substation in Queens. The Applicants have proposed to install the cables within waterways, and within the rights-of-way of existing transportation infrastructure, including railroads and roadways. Sections of the transmission line installed within waterways will generally be buried beneath the lake or riverbed. Overland sections of the Project will be buried within existing ROW corridors.

The DOE has determined that an Environmental Impact Statement (EIS) is the appropriate level of review under the National Environmental Policy Act (NEPA) for the proposed project, as was documented in our *Federal Register* Notice of Intent to prepare an EIS on June 18, 2010 (75 FR 117). The Notice of Intent, along with background information, an opportunity to subscribe to our mailing list, and more, are available on our EIS-specific website at http://www.chpexpresseis.org.

Detailed figures of the project area are attached for your consideration. It is our understanding that your area of interest overlaps the Hudson River and New York City Area Metropolitan segments of the project area in Figures 3 and 4, respectively. Our current information indicates that the action area is both within the immediate vicinity of the project area and along the potential routes for a cable laying ship and associated support vessels navigating to and from port for a limited number of trips. We ask that you provide a list of species that might occur in the action area. We also request a meeting at your earliest convenience, to kick off informal consultation and discuss any concerns relative to impacts of the Proposed Action on federally listed species. We will also consult with the NOAA Habitat Conservation Division regarding essential fish habitat that could be affected by the Proposed Action, as well as the U.S. Fish and Wildlife Service regarding species and critical habitat under their purview.

Please feel free to contact me directly at any time at Brian.Mills@hq.DOE.gov, or by phone at (202) 586-8267.

Very truly yours,

Mr. Brian Mills
Permitting, Siting, and Analysis, OE-20
Office of Electricity Delivery and
Energy Reliability
U.S. Department of Energy

Attch: Figures 1 through 4

Department of Energy
Washington, DC 20585

June 21, 2012

Ms. Diane Rusanowsky
NOAA Fisheries Science Center
Milford Laboratory
212 Rogers Avenue
Milford, CT 06460-6499

SUBJECT: Proposed Champlain Hudson Power Express Transmission Line Project

Dear Ms. Rusanowsky:

As you are aware, Champlain Hudson Power Express, Inc. ("CHPEI" or "Applicants") has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the proposed Champlain Hudson Power Express Transmission Line Project (Project). This letter is to initiate informal consultation under Section 7(a)(2) of the Endangered Species Act (ESA), as well as to request the identification of essential fish habitat (EFH) for the Project.

CHPEI's application for a Presidential Permit was submitted to the DOE on January 27, 2010. CHPEI subsequently modified its application on August 6, 2010; July 7, 2011; and February 28, 2012. The Project currently under review by the DOE would consist of a 1,000-megawatt (MW) high-voltage direct current (HVDC) Voltage Source Converter controllable transmission system extending from the Canadian Province of Quebec to New York City, as shown in the attached Figures 1 through 4. From the international border between the United States and Canada, two cables (comprising a single bipole) would extend south to an HVDC Converter Station to be located near Luyster Creek, north of 20th Avenue in Astoria, Queens. From the Converter Station, a 345-kilovolt (kV) underground alternating current (AC) circuit would connect to the existing 345-kV gas-insulated substation owned by the New York Power Authority (NYPA) and situated near NYPA's Charles Poletti Power Project in Astoria. The Applicants also propose to construct a 3-mile buried 345-kV HVAC cable circuit from the Astoria Substation to Consolidated Edison's Rainey Substation in Queens. The Applicants have proposed to install the cables within waterways, and within the rights-of-way of existing transportation infrastructure, including railroads and roadways. Sections of the transmission line installed within waterways will generally be buried beneath the lake or riverbed. Overland sections of the Project will be buried within existing ROW corridors.

The DOE has determined that an Environmental Impact Statement (EIS) is the appropriate level of review under the National Environmental Policy Act (NEPA) for the proposed project, as was documented in our Federal Register Notice of Intent to prepare an EIS on June 18, 2010 (75 FR 117). The Notice of Intent, along with background information, an opportunity to subscribe to our mailing list, and more, are available on our EIS-specific website at http://www.chpexpresseis.org.

Detailed figures of the CHPEI project area are attached for your consideration. Our research indicates that EFH is only designated in the Hudson River and New York City Metropolitan Area segments of the project area in Figures 3 and 4, respectively.

We ask that you provide a list of potentially affected species with EFH in the project area. We also request a meeting to initiate consultation and discuss any concerns you might have relative to impacts of the Proposed Action on EFH. We will also consult with the NOAA Protected Resources Division and the U.S. Fish and Wildlife Service and the regarding threatened and endangered species and critical habitat under their purview that could be affected by the proposed action.

Please feel free to contact me directly at any time at Brian.Mills@hq.DOE.gov, or by phone at (202) 586-8267.

Very truly yours,

B Mills

Mr. Brian Mills
Permitting, Siting, and Analysis, OE-20
Office of Electricity Delivery and
Energy Reliability
U.S. Department of Energy

Attch: Figures 1 through 4

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Field Office
3817 Luker Road
Cortland, NY 13045
Phone: (607) 753-9334 Fax: (607) 753-9699
http://www.fws.gov/northeast/nyfo

Project Number: 90534

To: Brian Mills Date: Jul 17, 2012

Regarding: Champlain Hudson Power Express

Town/County: from the Canadian Province of Quebec to New York City

The U.S. Fish and Wildlife Service (Service) New York Field Office has received your request for information regarding occurrences of Federally-listed or proposed threatened and endangered species within the vicinity of the above-referenced project/property. In an effort to streamline project reviews, we have shifted our species list request responses to our website at http://www.fws.gov/northeast/nyfo/es/section7.htm. Please go to our website and print the appropriate portions of our county list of endangered, threatened, proposed, and candidate species, and the official list request response for your files. Step-by-step instructions are also found on our website.

As a reminder, Section 9 of the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) prohibits unauthorized taking* of listed species and applies to Federal and non-Federal activities. Additionally, Section 7(a)(2) of the ESA requires Federal agencies, in consultation with the Service, to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. An assessment of the potential direct, indirect, and cumulative impacts is required for all Federal actions that may affect listed species. For projects not authorized, funded, or carried out by a Federal agency, consultation with the Service pursuant to Section 7(a)(2) of the ESA is not required. However, no person is authorized to "take"* any listed species without appropriate authorizations from the Service. Therefore, we provide technical assistance to individuals and agencies to assist with project planning to avoid the potential for "take," or when appropriate, to provide assistance with their application for an incidental take permit pursuant to Section 10(a)(1)(B) of the ESA.

Project construction or implementation should not commence until all requirements of the ESA have been fulfilled. If you have any questions or require further assistance regarding threatened or endangered species, please contact the Endangered Species Program at (607) 753-9334. Please refer to the above project number in any future correspondence.

Endangered Species Biologist: Robyn A. Niver Robyn Niver

*Under the Act and regulations, it is illegal for any person subject to the jurisdiction of the United States to ***take*** (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these), import or export, ship in interstate or foreign commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any endangered fish or wildlife species and most threatened fish and wildlife species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. "Harm" includes any act which actually kills or injures fish or wildlife, and case law has clarified that such acts may include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife.

THIS PAGE INTENTIONALLY LEFT BLANK

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

JUN 28 2012

Brian Mills
Permitting, Siting and Analysis, OE-20
Office of Electricity Delivery and Energy Reliability
U.S. Department of Energy
Washington, DC 20585

Re: Proposed Champlain Hudson Power Express

Dear Mr. Mills,

Your letter dated June 21, 2012, requests information on listed species present along the route of the proposed Champlain Hudson Power Express. Champlain Hudson Power Express, Inc. (CHPEI) has applied to the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the proposed transmission line. It is our understanding that approvals or permits will also be required from the U.S. Army Corps of Engineers and possibly the Federal Energy Regulatory Commission. The proposed project involves the installation of a new transmission cable from Quebec, Canada to New York City. The cable will be installed down the length of the Hudson River from Lake Champlain to the lower river in Manhattan.

Endangered Species
Atlantic sturgeon occur in estuarine and marine waters along the U.S. Atlantic coast, including the Hudson River. In the Hudson River, Atlantic sturgeon can occur from the Troy Dam to the confluence with the Atlantic Ocean. The New York Bight, Chesapeake Bay, South Atlantic and Carolina Distinct Population Segments (DPS) of Atlantic sturgeon are endangered; the Gulf of Maine DPS is threatened. Individuals originating from any of these DPSs could occur in the project area. A population of endangered shortnose sturgeon occurs in the Hudson River; ranging from New York Harbor to the Troy Dam. You can find more information on sturgeon species at: http://www.nero.noaa.gov/prot_res/esp/index.html.

Candidate Species
Candidate species are those petitioned species that we are actively considering for listing as endangered or threatened under the ESA, as well as those species for which we has initiated an ESA status review that it has announced in the *Federal Register*. "Candidate" status does not carry any procedural or substantive protections under the ESA. Two candidate species, alewife and blueback herring, can occur in the project area. You can find more information on these species in the Federal Register notice that announced this decision: http://www.nmfs.noaa.gov/pr/pdfs/fr/fr76-67652.pdf.

ESA Section 7 Consultation
Section 7(a)(2) of the ESA, states that each Federal agency shall, in consultation with the Secretary, insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Any discretionary federal action that may affect a listed species must undergo Section 7 consultation. We encourage you to work with the ACOE and/or FERC to ensure that the section 7 consultation is initiated with us as appropriate. We recommend that any necessary consultation or conference with us be completed prior to issuing any final permits or authorizations. We also request that you identify a lead Federal agency for purposes of section 7 consultation and that determination be provided to us in writing in a letter that identifies all of the federal authorizations or permits necessary for the project.

As project plans are developed, we recommend that you consider the following effects of the project on NMFS listed and candidate species:

- Effects of increased suspended sediment;
- Suspension of contaminated sediments, particularly PCBs;
- Discharge of any other pollutant;
- Loss of prey; and,
- Any impacts to habitat or conditions that make affected waterbodies suitable for these species.

We encourage you to develop construction plans that avoid habitat disruption in places and at times where spawning and/or rearing of early life stages takes place. With careful planning some impacts to listed species may be able to be avoided. We look forward to working with you as project plans are developed. Should you have any questions regarding endangered species and to arrange the requested meeting, please contact Julie Crocker at (978)282-8480 or by e-mail (Julie.Crocker@noaa.gov). If you have not done so already, please contact Chris Boelke in our Habitat Conservation Division at (978) 281-9394 or by e-mail (Christopher.Boelke@noaa.gov) regarding potential impacts of the proposed action on Essential Fish Habitat and resources considered under the Fish and Wildlife Coordination Act. Questions regarding candidate species should be directed to Kim Damon-Randall at (978)282-8485 or by e-mail (Kimberly.Damon-Randall@noaa.gov).

Sincerely,

Mary Colligan

Mary A. Colligan
Assistant Regional Administrator
for Protected Resources

CC: Boelke, F/NER4
Murray-Brown, Damon-Randall - F/NER3

File Code: Sec 7 tech assist 2012

APPENDIX H.2 – BIOLOGICAL RESOURCES TABLES

Appendix H.2
Biological Resources Tables

Appendix H.2 contains tables that document various species that are found along the proposed CHPE Project route. Tables are broken down by segments, with the exception of Table H.2, which includes breeding birds for the entire proposed CHPE Project route, and identifies life history characteristics that are important to species that occur within the area of the proposed CHPE Project. State-listed species are identified as such in the tables.

Appendix H.2 contains the following tables:

- **Table H.2-1.** Life History Characteristics of Representative Fish of Lake Champlain
- **Table H.2-2.** State-Listed Species Occurring Within 0.25 Miles of the Overland Segment
- **Table H.2-3.** Life History Characteristics of Representative Fish of the Hudson River
- **Table H.2-4.** State-Listed Species Occurring within 0.25 miles of the Hudson River Segment
- **Table H.2-5.** Breeding Birds in the Vicinity of the Proposed CHPE Project

Table H.2-1. Life History Characteristics of Representative Fish of Lake Champlain

Common Name	Scientific Name	Temperature Preference	Trophic Level	Habitat	Migratory or Resident	Spawning Season/Habitat
Sea lamprey	*Petromyzon marinus*	Cold water	Predator	Pelagic	Migratory	Spring-summer/rocky streams
Lake herring/cisco	*Coregonus artedi*	Cold water	Forage	Pelagic	Resident	Late fall/shallow water
Atlantic salmon*	*Salmo salar*	Cold water	Predator	Pelagic	Migratory	Fall/streams
Steelhead	*Oncorhynchus mykiss*	Cold water	Predator	Pelagic	Migratory	Spring/streams
Alewives	*Alosa pseudoharengus*	Warm water	Forage	Pelagic	Migratory	Spring-summer/shallow areas of lakes
Rainbow smelt	*Osmerus mordax*	Cold water	Forage	Pelagic	Migratory	Late winter/streams
Lake whitefish	*Coregonus clupeaformis*	Cool water	Forage	Pelagic	Resident	Fall/nearshore over rock, gravel, or sand
Lake trout*	*Salvelinus namaycush*	Cold water	Predator	Demersal	Migratory	Fall-early winter/rocky shoals
Walleye	*Sander vitreum*	Cool water	Predator	Littoral	Migratory	Spring/streams and shoals with current
Northern pike	*Esox lucius*	Cool water	Predator	Littoral	Migratory	Spring/shallow marshes
Yellow perch	*Perca flavescens*	Cool water	Forage	Littoral	Resident	Spring/shallows over sand, gravel, rubble, or vegetation
American eel	*Anguilla rostrata*	Warm water	Predator	Littoral	Migratory	Late summer-fall/ Sargasso Sea
Largemouth bass	*Micropterus salmoides*	Warm water	Predator	Littoral	Resident	Spring-summer/nearshore near vegetation
Smallmouth bass	*M. dolomieu*	Warm water	Predator	Littoral	Resident	Spring/along shore over gravel
Brown trout*	*Salmo trutta*	Cold water	Predator	Littoral	Migratory	Fall-early winter/streams
Pumpkinseed	*Lepomis gibbosus*	Warm water	Predator	Littoral	Resident	Spring-mid-summer/ nearshore near vegetation

Common Name	Scientific Name	Temperature Preference	Trophic Level	Habitat	Migratory or Resident	Spawning Season/Habitat
White crappie	*Pomoxis annularis*	Warm water	Predator	Littoral	Resident	Spring/turbid waters w/underwater objects over gravel, rock.
Black crappie	*Pomoxis nigromaculatus*	Warm water	Predator	Littoral	Resident	Spring-early summer/shallow, weedy water with sand
Lake sturgeon	*Acipenser fulvescens*	Cold water	Forage	Demersal	Migratory	Spring - early summer/ relatively shallow water near gravel beds

Sources: Trzaskos and Malchoff 2006, NYSDEC 1986, Fishbase 2013

Note: * Species stocked by state or Federal agencies.

Table H.2-2. State-Listed Species Occurring Within 0.25 Miles of the Overland Segment

Common Name	Scientific Name	New York Status	Species Information
Plants			
Rock cress	*Draba arabisans*	T	Flowering plant with a range spanning much of the northeastern United States. Grows on dry cliffs, rocky ledges, talus slopes, and open woodlands, often at calcareous sites. In New York State, rock cress has been found on bedrock of limestone, shale and siltstone, and anorthosite. Occurs in calcareous cliff communities.
Smooth rock cress	*Draba glabella*	E	Flowering plant with a range spanning northeastern United States. Grows on dry cliffs, rocky ledges, talus slopes, and open woodlands, often at calcareous sites. In New York State, smooth rock cress is only known to occur along Lake Champlain. Occurs in calcareous cliff communities.
Long's bittercress	*Cardamine longii*	T	Mustard plant limited to the Hudson River and Long Island. Habit is intertidal areas within tidal estuaries and backwater areas.
Davis sedge	*Carex davisii*	T	Sedge plant found in New York. It is mainly found in areas adjacent to the Hudson River from north of Albany south to Queens in mesic limestone, rich bottomland, and floodplain forest communities.
Handsome sedge	*Carex Formosa*	T	In New York, the sedge plant can be found scattered throughout the state. It can be found in habitats such as forests, forest edges, road sides, or less frequently in open meadows. It occurs in areas where the bedrock is limestone or the soils are calcareous. Occurs in calcareous cliff communities.
Lake cress	*Neobeckia aquatic*	T	Plant of the mustard family found in New York State. Prefers shallow, still water.
Smooth cliff brake	Pallaea glabellas sp glabella	T	Fern with a range spanning much of eastern United States. Thrives on bare limestone. Occurs in calcareous cliff communities.
Heartleaf plantain	*Plantago chordate*	T	A high proportion of the populations are along the Hudson River, where it prefers the edges of freshwater intertidal mudflats, sandy or rocky shorelines of tidal creeks and other waterways, edges of freshwater tidal marshes, and gravel shores along freshwater tidal portions.
Douglas knotweed	*Polygonum douglassi*	T	Flowering plant with a range spanning much of New England. Prefers rocky slopes and dry soils.

Common Name	Scientific Name	New York Status	Species Information
Plants (continued)			
Hill's pondweed	*Potamogeton hilli*	T	Pondweed that can be found in New York State, where it prefers the calcareous wetlands and ponds of the eastern Hudson River Valley.
Slender bulrush	*Schoenoplectus heterochaetus*	E	Rare sedge that can be found scattered but mostly east and west of Adirondacks. Prefers shallow emergent marshes along slow-moving creeks or rivers, often at their mouths.
Downey lettuce	*Lactuca hirsute*	E	Herb found in the majority of the eastern United States and prefers dry, open woods, clearings.
Estuary beggar-ticks	*Bidens hyperborean var. hyperborean*	E	Aster reaching its southern limit in New York State. Because its tidal habitat is only available for a few hours a day during low tide, there is very little information on the distribution of the species in New York. Prefers freshwater tidal mud flats and marshes.
Spongy arrowhead	*Sagittaria montevidensis var. spongiosa*	T	Scattered individuals in good habitat. Intertidal brackish marsh with muddy creek. Plants submerged at high tide.
Hudson River water-nymph	*Najas guadalupensis ssp. Muenscheri*	E	Water-nymph endemic to New York State. Prefers shallow water or pools of tidal mud flats of the Hudson River on mucky or gravel and rock soils.
Lake-cress	*Rorippa aquatic*	T	Lake-cress is scattered throughout New York State. Prefers habitat in shallow, still water, which include many ponds and lakes.
American waterwort	*Elatine americana*	E	Water starwort known to occur from Long Island through tidally influenced Hudson River. Prefers intertidal mudflats and marshes along the Hudson River.
Stiff-leaf golden-rod	*Oligoneuron rigidum* var. *rigidum*	T	Goldenrod found in calcareous or circumneutral areas within the Hudson Valley. Habitats range from open dry, shaley slopes or limestone bedrock to woodland edges between calcareous woodlands and successional old fields, among others.
Insects			
Frosted elfin	*Callophrys irus*	T	Rare butterfly extirpated from Canada and some U.S. states. Can be found scattered on sandplains, mainly in the upper Hudson River Valley. The key habitat feature is an abundance of foodplants (wild blue lupine and wild indigo [Baptisia spp.]), and is associated with remnant pine barrens, oak savannas, or dry oak forest.
Persius duskywing	*Erynnis persius persius*	E	Rare butterfly with only a few colonies remaining in New York State. Their range spans much of the United States and they prefer dry brushy or scrubby areas or relatively open woodlands with abundant New Jersey Tea (*Ceanothus americanus*).

Common Name	Scientific Name	New York Status	Species Information
Birds			
Peregrine falcon	*Falco peregrines*	E	Highly migratory falcon with an expansive foraging range. Arrives in northern breeding areas late April–early May; southern departure begins late August–early September. Prefers open habitat and often nests on ledges or holes on the face of rocky cliffs or crags.
Short-eared owl	*Asio flammeus*	E	Highly migratory bird that breeds in Essex County. Its preferred habitat consists of marshes and open lowland areas, and recent nests have been observed in pastures and agricultural areas in New York State.
Bald eagle*	*Haliaeetus leucocephalus*	T	Raptor that can be found in scattered areas throughout the United States. The bald eagle generally prefers areas adjacent to large bodies of water that support fish populations. Wintering areas are concentrated in four main areas: the Upper Delaware River, the Saint Lawrence River, the Lower Hudson River, and the Sacandaga River.
Least bittern	*Ixobrychus exilis*	T	Long distance migratory bird arriving at nesting areas in the northeastern United States in early to mid-April or early May and leaves northern breeding areas by September/October. Considered locally common in marshes of the Hudson River Valley, and possibly breeding in the Champlain Valley. Typically breeds in tall, emergent vegetation in marshes, primarily fresh water. When least bitterns are alarmed, instead of flying away, they often freeze.
Northern harrier	*Circus cyaneus*	T	Raptor with a very large home range, and whose breeding range includes most of New York State. The northern harrier prefers open marshy and lowland areas, similar to the short-eared owl.
Loggerhead shrike	*Lanius ludovicianus*	E	Prefers open habitats such as pastures, hayfields, and other agricultural areas. It uses the thorns of certain shrubs and trees, such as hawthorn, to impale its prey. It is not known whether hawthorn trees occur along the Overland Segment, but the Washington hawthorn is used extensively throughout New York State as an ornamental and landscape tree.

Sources: NatureServe 2012, PFAF Database 2012, NYNHP 2005c, UW 2012b, Cornell 2012, CHPEI 2012x, NYSDEC 2012k

Key:

T = threatened, E = endangered

* = The Bald eagle is also protected under the BGEPA.

Table H.2-3. Life History Characteristics of Representative Fish of the Hudson River

Common Name	Scientific Name	Diet	Habitat	Migratory or Resident	Salinity Preference	Spawning Season/Habitat
Alewife	*Alosa pseudoharengus*	Zooplankton, smaller fish, insects and eggs of fish, insects, and crustaceans	Pelagic	Migratory	Anadromous	March–May/shallow streams and large rivers
American eel	*Anguilla rostrata*	Insects, mollusks, fish, crustaceans	Demersal	Migratory	Catadromous (spawn in salt water, live in fresh water)	Winter and early spring/Saragosso Sea
American shad	*Alosa sapidissima*	Insects, crustaceans, mysids, copepods, small fish	Pelagic	Migratory	Anadromous	April–June/sand, silt, muck, gravel, and boulder substrates, usually in waters < 10 feet (3 meters)
Atlantic menhaden	*Brevoortia tyrannus*	Copepods, zooplankton, phytoplankton, and diatoms	Pelagic	Migratory	Marine	May–June and September–October/ coastal waters < 32 feet (10 meters)
Atlantic silverside	*Menidia menidia*	Copepods, mysids, amphipods, fish eggs, worms, and insects	Pelagic	Migratory	Estuarine	March–June/ intertidal zone of estuaries and tributaries
Atlantic sturgeon	*Acipenser oxyrhynchus*	Mollusks, worms, gastropods, shrimps, small fish	Demersal	Migratory	Anadromous	March–May/rock, rubble, or hard clay
Atlantic tomcod	*Microgadus tomcod*	Small crustaceans, mollusks, and fish	Demersal	Resident	Estuarine	November–February/shallow waters of estuaries or stream mouths
Banded killifish	*Fundulus diaphanous*	Flying insects, midge larvae	Pelagic	Resident	Fresh water	April–August/pools with vegetation

Common Name	Scientific Name	Diet	Habitat	Migratory or Resident	Salinity Preference	Spawning Season/Habitat
Bay anchovy	*Anchoa mitchilli*	Mysids and copepods	Pelagic	Migratory	Estuarine	May–September/estuarine waters < 12 ºC
Black sea bass	*Centropristis striata*	Crustaceans, mollusks, echinoderms, crabs and fish	Pelagic	Migratory	Marine	May–October/continental shelf in vicinity of large estuaries
Blueback herring	*Alosa aestivalis*	Zooplankton, smaller fish, insects and eggs of fish, insects, and crustaceans	Pelagic	Migratory	Anadromous	May–April/ fast currents over hard substrate
Bluefish	*Pomatomus saltatrix*	Zooplankton, fish larvae, shrimp, fish, squid, crustaceans	Pelagic	Migratory	Marine	June–August/ coastal waters between 8 and 26 ºC
Fourspine stickleback	*Apeltes quadracus*	Plankton, diatoms, nematodes, cyclopods	Midwater/ demersal	Resident	Marine/ Fresh water	April–August/ bottom debris and vegetation
Gizzard shad	*Dorosoma cepedianum*	Plankton and detritus	Pelagic	Resident	Fresh water	May–June/ over submerged objects like rocks or logs near shore
Hickory shad	*Alosa mediocris*	Squid, small fish, fish eggs, and small crustaceans	Pelagic	Migratory	Anadromous	April–June/ water temperate approximately 13 ºC
Hogchoker	*Trinectes maculates*	Small crustaceans and worms	Demersal	Migratory	Fresh water/ estuarine	May–August/ lower estuarine areas
Largemouth bass	*Micropterus salmoides*	Plankton, insects, and fish	Midwater/ demersal	Resident	Fresh water	May–June/1 to 5 feet of water near weedy vegetation
Mummichog	*Fundulus heteroclitus*	Small invertebrates on surface and in water column	Pelagic	Resident	Estuarine/ Marine	April–July/ empty shells of mussels and within dead leaves and algal mats

Common Name	Scientific Name	Diet	Habitat	Migratory or Resident	Salinity Preference	Spawning Season/Habitat
Sea lamprey	*Petromyzon marinus*	Parasitic; cetaceans and large fish	Demersal	Migratory	Anadromous	April–July/ rocky streams
Sheepshead minnow	*Cyprinodon variegatus*	Organic detritus and algae, microcrustaceans	Midwater/ demersal	Resident	Marine/Fresh water	April–August/ warm waters
Shortnose sturgeon	*Acipenser brevirostrum*	Crustaceans, insect larvae, mollusks, small benthic fish	Demersal	Migratory	Fresh water amphidromous (live in fresh water and spawn in marine waters of natal river)	March–May/ rock, rubble or hard clay
Spotfin killifish	*Fundulus luciae*	Detritus, diatoms, ostracods, dipterans, copepods, and other small organisms	Midwater/ demersal	Resident	Fresh water/ Estuarine	April–September/not specified
Striped bass	*Morone saxatilis*	Crustaceans, fish (e.g., alewives, eels, silversides), and invertebrates	Demersal	Migratory	Anadromous	May–June/ rivers and tributaries
Striped killifish	*Fundulus majalis*	Midge larvae, flying insects, mollusks, and flatworms	Pelagic	Resident	Estuarine/ marine	June–August/still, shallow water close to shore; and small ponds within substrate
Tautog	*Tautoga onitis*	Mollusks, gastropods, and crustaceans	Pelagic	Resident	Marine	April–June/coastal waters
Threespine stickleback	*Gasterosteus aculeatus*	Worms, crustaceans, aquatic insects	Midwater/ demersal	Migratory	Fresh water/ estuarine	April–August/shallow water
Weakfish	*Cynoscion regalis*	Shrimp, anchovies, and clupeid fishes	Demersal	Migratory	Marine	June–August/ nearshore and estuarine areas of coast

Common Name	Scientific Name	Diet	Habitat	Migratory or Resident	Salinity Preference	Spawning Season/Habitat
White catfish	*Ameiurus catus*	Aquatic insects, fish, and fish eggs	Demersal	Migratory (local migrations)	Fresh water/estuarine	June and July in California/sand or gravel bars
White perch	*Morone americana*	Aquatic insects, crustaceans, fish, and zooplankton	Demersal	Resident	Anadromous	April–May/ estuaries, rivers, lakes, and marshes
Windowpane flounder	*Scophthalmus aquosus*	Small crustaceans and fish larvae	Demersal	Migratory	Marine	April–July and September to October/ sand, silt, or mud substrate
Winter flounder	*Pseudopleuronectes americanus*	Shrimp, amphipods, crabs, urchins, and snails	Demersal	Resident	Marine	December–March/coastal waters, sandy substrate at depths of 6 feet (2 meters) to 262 feet (80 meters) deep

Sources: USFWS 1989, NYSDEC 1986, NOAA 1999a, NOAA 1999b, NOAA 2006b, NOAA 2007, ADCNR 2012, Fishbase 2013, NatureServe 2012, ODNR 2012, TPW 2012, USGS 2012b, VDGIF 2012,

Table H.2-4. State-Listed Species Occurring within 0.25 miles of the Hudson River Segment

Common Name	Scientific Name	New York Status	Species Information
Plants			
Heartleaf plantain	*Plantago chordata*	T	A high proportion of the populations are along the Hudson River Valley, where it prefers the edges of freshwater intertidal mudflats, sandy or rocky shorelines of tidal creeks and other waterways, edges of freshwater tidal marshes, and gravel shores along freshwater tidal portions.
Smooth bur-marigold	*Bidens laevis*	T	A flowering aster found mostly in states east of the Mississippi River. In New York State, it is mostly found on Long Island and along the Hudson River. This species prefers freshwater and brackish tidal mud flats and tidal marshes.
Davis sedge	*Carex davisii*	T	*Carex davisii* is mainly found in areas adjacent to the Hudson River from north of Albany to Queens and prefers mesic limestone, rich bottomland, and floodplain forests.
Straw sedge	*Carex straminea*	E	A sedge predominantly found on Long Island and southeastern New York. This species prefers swamp margins and marshes.
Basil mountain-mint	*Pycnanthemum clinopodioides*	E	This mint occurs in shallow soil associated with the Palisades and Harlem Valley and prefers dry, south- or west-facing slopes on rocky soil. These sites are open oak-hickory forests, woodlands, or savannas, with lots of exposed bedrock.
Torrey's mountain-mint	*Pycnanthemum torrei*	E	This mint is found in southern New York State from New York, Rockland, and Dutchess counties. Found in dry, open habitats, including red cedar barrens, rocky summits, trails, and roadsides
Saltmarsh aster	*Symphyotrichum subulatum* var. *subulatum*	T	Aster that occurs along the edges of the Hudson River to Putnam and Rockland counties. Prefers coastal areas in salt to brackish marshes, along the banks of salt-influenced tidal channels, brackish marshes, among other salt-influenced habitat.
Spongy arrowhead	*Sagittaria montevidensis* var. *spongiosa*	T	Arrowhead that is restricted to estuaries along the Hudson River. Prefers fresh water to brackish open intertidal mud flats. Occasionally found adjacent and upslope of these habitats.
Birds			
Peregrine falcon	*Falco peregrinus*	E	Highly migratory falcon with an expansive foraging range. Arrives in northern breeding areas in late April–early May; southern departure begins late August–early September. Prefers open habitat and often nests on ledges or holes on the face of rocky cliffs or crags.

Common Name	Scientific Name	New York Status	Species Information
Birds (continued)			
Short-eared owl	*Asio flammeus*	E	Highly migratory bird that breeds in Essex County. Its preferred habitat consists of marshes and open lowland areas, and recent nests have been observed in pastures and agricultural areas in New York State.
Bald eagle	*Haliaeetus leucocephalus*	T	Raptor that can be found in scattered areas throughout the United States. The bald eagle generally prefers areas adjacent to large bodies of water that support fish populations. Wintering areas are concentrated in four main areas: the Upper Delaware River, the Saint Lawrence River, the Lower Hudson River, and the Sacandaga River.
Northern harrier	*Circus cyaneus*	T	Raptor with a very large home range and whose breeding range includes most of New York State. The northern harrier prefers open marshy and lowland areas, similar to the short-eared owl.
Least bittern	*Ixobrychus exilis*	T	Long-distance migratory bird arriving at nesting areas in the northeastern United States in early to mid-April or early May and leaves northern breeding areas by September–October. Considered locally common in marshes of the Hudson River Valley, and possibly breeding in the Champlain Valley. Habitats vary throughout North America. Typically breeds in tall emergent vegetation in marshes, primarily fresh water. When least bitterns are alarmed, instead of flying away, they often freeze.

Sources: NYNHP 2005c, NYNHP 2005d, NatureServe 2012, NYNHP 2013c

Key: T = threatened, E = endangered

Table H.2-5. Breeding Birds in the Vicinity of the Proposed CHPE Project

Common Name	Scientific Name	Species Found in the Vicinity of the Segment: Lake Champlain Segment	Overland Segment	Hudson River and New York City Metropolitan Area Segments
Acadian flycatcher	*Empidonax virescens*	No	No	Yes
Alder flycatcher	*Empidonax alnorum*	Yes	Yes	Yes
American bittern	*Botaurus lentiginosus*	Yes	Yes	Yes
American black duck	*Anas rubripes*	Yes	Yes	Yes
American coot	*Fulica americana*	Yes	No	No
American crow	*Corvus brachyrhynchos*	Yes	Yes	Yes
American goldfinch	*Carduelis tristis*	Yes	Yes	Yes
American kestrel	*Falco sparverius*	Yes	Yes	Yes
American redstart	*Setophaga ruticilla*	Yes	Yes	Yes
American robin	*Turdus migratorius*	Yes	Yes	Yes
American three-toed woodpecker	*Picoides dorsalis*	Yes	No	No
American wigeon	*Anas americana*	Yes	No	Yes
American woodcock	*Scolopax minor*	Yes	Yes	Yes
Bald eagle	*Haliaeetus leucocephalus*	Yes	No	Yes
Baltimore oriole	*Icterus galbula*	Yes	Yes	Yes
Bank swallow	*Riparia riparia*	Yes	Yes	Yes
Barn owl	*Tyto alba*	Yes	Yes	Yes
Barn swallow	*Hirundo rustica*	Yes	Yes	Yes
Barred owl	*Strix varia*	Yes	Yes	Yes
Bay-breasted warbler	*Setophaga castanea*	Yes	No	No
Belted kingfisher	*Ceryle alcyon*	Yes	Yes	Yes
Bicknell's thrush	*Catharus bicknelli*	Yes	Yes	Yes
Black tern	*Childonias niger*	Yes	Yes	No
Black-and-white warbler	*Mniotilta varia*	Yes	Yes	Yes
Black-backed woodpecker	*Picoides arcticus*	Yes	Yes	No
Black-billed cuckoo	*Coccyzus erythropthalmus*	Yes	Yes	Yes
Black-capped chickadee	*Poecile atricapillus*	Yes	Yes	Yes
Black-crowned night-heron	*Nycticorax nycticorax*	Yes	Yes	Yes
Black-throated blue warbler	*Setophaga caerulescens*	Yes	Yes	Yes
Black-throated green warbler	*Dendroica virens*	Yes	Yes	Yes

		Species Found in the Vicinity of the Segment		
Common Name	**Scientific Name**	**Lake Champlain Segment**	**Overland Segment**	**Hudson River and New York City Metropolitan Area Segments**
Blackburnian warbler	*Setophaga fusca*	Yes	Yes	Yes
Blackpoll warbler	*Setophaga striata*	Yes	Yes	Yes
Blue grosbeak	*Passerine caerulea*	No	No	Yes
Blue jay	*Cyanocitta cristata*	Yes	Yes	Yes
Blue-gray gnatcatcher	*Polioptila caerulea*	Yes	Yes	Yes
Blue-headed vireo	*Vireo solitaries*	Yes	Yes	Yes
Blue-winged teal	*Anas discors*	Yes	Yes	Yes
Blue-winged warbler	*Vermivora pinus*	No	No	Yes
Bobolink	*Dolichonyx oryzivorus*	Yes	Yes	Yes
Brewster's warbler (golden-winged x blue-winged)*	*Vermivora Vermivora chrysoptera x cyanoptera*	No	Yes	Yes
Boreal chickadee	*Poecile hudsonicus*	Yes	No	Yes
Broad-winged hawk	*Buteo platypterus*	Yes	Yes	Yes
Brown creeper	*Certhia americana*	Yes	Yes	Yes
Brown thrasher	*Toxostoma rufum*	Yes	Yes	Yes
Brown-headed cowbird	*Molothrus ater*	Yes	Yes	Yes
Bufflehead	*Bucephala albeola*	Yes	No	No
Canada goose	*Branta canadensis*	Yes	Yes	Yes
Canada warbler	*Wilsonia canadensis*	Yes	Yes	Yes
Cape May warbler	*Setophaga tigrina*	Yes	No	No
Carolina wren	*Thryothorus ludovicianus*	Yes	Yes	Yes
Cattle egret	*Bubulcus ibis*	Yes	No	No
Cedar waxwing	*Bombycilla cedrorum*	Yes	Yes	Yes
Cerulean warbler	*Setophaga cerulea*	Yes	Yes	Yes
Chestnut-sided warbler	*Vermivora pinus*	Yes	Yes	Yes
Chimney swift	*Chaetura pelagica*	Yes	Yes	Yes
Chipping sparrow	*Spizella passerina*	Yes	Yes	Yes
Clay-colored sparrow	*Spizella pallida*	Yes	Yes	No
Cliff swallow	*Petrochelidon pyrrhonota*	Yes	Yes	Yes
Common goldeneye	*Bucephala clangula*	Yes	No	No
Common grackle	*Quiscalus quiscula*	Yes	Yes	Yes
Common loon	*Gavia immer*	Yes	Yes	No
Common merganser	*Mergus merganser*	Yes	Yes	Yes
Common moorhen	*Gallinula chloropus*	Yes	Yes	Yes
Common nighthawk	*Chordeiles minor*	Yes	Yes	Yes

		Species Found in the Vicinity of the Segment		
Common Name	**Scientific Name**	**Lake Champlain Segment**	**Overland Segment**	**Hudson River and New York City Metropolitan Area Segments**
Common raven	*Corvus corax*	Yes	Yes	Yes
Common tern	*Sterna hirundo*	Yes	No	No
Common yellowthroat	*Geothlypis trichas*	Yes	Yes	Yes
Cooper's hawk	*Accipiter cooperi*	Yes	Yes	Yes
Dark-eyed junco (slate-colored junco)	*Hunco hyemalis*	Yes	Yes	Yes
Double-crested cormorant	*Phalacrocorax auritus*	Yes	Yes	Yes
Downy woodpecker	*Picoides pubescens*	Yes	Yes	Yes
Eastern bluebird	*Sialia sialis*	Yes	Yes	Yes
Eastern kingbird	*Tyrannus tyrannus*	Yes	Yes	Yes
Eastern meadowlark	*Sturnella magna*	Yes	Yes	Yes
Eastern phoebe	*Sayornis phoebe*	Yes	Yes	Yes
Eastern screech-owl	*Megascops aslo*	Yes	Yes	Yes
Eastern towhee	*Pipilo erythrophthalmus*	Yes	Yes	Yes
Eastern wood-pewee	*Contopus virens*	Yes	Yes	Yes
European starling	*Sturnus vulgaris*	Yes	Yes	Yes
Evening grosbeak	*Coccothraustes vespertinus*	Yes	Yes	Yes
Field sparrow	*Spizella pusilla*	Yes	Yes	Yes
Fish crow	*Corvus ossifragus*	No	Yes	Yes
Gadwall	*Anas strepera*	Yes	No	Yes
Golden eagle	*Aquila chrysaetos*	Yes	No	No
Golden-crowned kinglet	*Regulus satrapa*	Yes	Yes	Yes
Golden-winged warbler	*Vermivora chrysoptera*	Yes	Yes	Yes
Grasshopper sparrow	*Ammodramus savannarum*	Yes	Yes	Yes
Gray catbird	*Dumetella carolinensis*	Yes	Yes	Yes
Gray jay	*Perisoreus canadensis*	Yes	No	No
Gray partridge	*Perdix perdix*	Yes	No	No
Great black-backed gull	*Larus marinus*	Yes	No	Yes
Great blue heron	*Ardea herodias*	Yes	Yes	Yes
Great crested flycatcher	*Myiarchus crinitus*	Yes	Yes	Yes
Great egret	*Ardea alba*	Yes	No	No
Great horned owl	*Bubo virginianus*	Yes	Yes	Yes
Greater scaup	*Aythya marila*	Yes	No	No
Green heron	*Butorides virescens*	Yes	Yes	Yes
Green-winged teal	*Anas crecca*	Yes	Yes	Yes

		Species Found in the Vicinity of the Segment		
Common Name	**Scientific Name**	**Lake Champlain Segment**	**Overland Segment**	**Hudson River and New York City Metropolitan Area Segments**
Hairy woodpecker	*Picoides villosus*	Yes	Yes	Yes
Henslow’s sparrow	*Ammodramus henslowii*	No	Yes	Yes
Hermit thrush	*Catharus guttatus*	Yes	Yes	Yes
Herring gull	*Larus argentatus*	Yes	Yes	No
Hooded merganser	*Lophodytes cucullatus*	Yes	Yes	Yes
Hooded warbler	*Wilsonia citrina*	No	No	Yes
Horned lark	*Eremophila alpestris*	Yes	Yes	Yes
House finch	*Carpodacus mexicanus*	Yes	Yes	Yes
House sparrow	*Passer domesticus*	Yes	Yes	Yes
House wren	*Troglodytes aedon*	Yes	Yes	Yes
Hybrid mallard x black or mottled	*Anas platyrhynchos x rubripes/ x fulvigula*	Yes	Yes	Yes
Indigo bunting	*Passerina cyanea*	Yes	Yes	Yes
Kentucky warbler	*Geothlypis formosa*	No	No	Yes
Killdeer	*Charadrius vociferus*	Yes	Yes	Yes
King rail	*Rallus elegans*	No	Yes	Yes
Lawrence's warbler (blue-winged x golden-winged)*	*Vermivora cyanoptera x chrysoptera*	Yes	Yes	Yes
Least bittern	*Ixobrychus exillis*	Yes	Yes	Yes
Least flycatcher	*Empidonax minimus*	Yes	Yes	Yes
Lesser scaup	*Aythya affinis*	Yes	No	No
Lincoln's sparrow	*Melospiza lincolnii*	Yes	Yes	No
Loggerhead shrike	*Lanius ludovicianus*	Yes	Yes	No
Long-eared owl	*Asio otus*	Yes	Yes	No
Louisiana waterthrush	*Seiurus motacilla*	Yes	Yes	Yes
Magnolia warbler	*Setophaga magnolia*	Yes	Yes	Yes
Mallard	*Anas platyrhynchos*	Yes	Yes	Yes
Marsh wren	*Cistothorus palustris*	Yes	Yes	Yes
Mourning dove	*Zenaida macroura*	Yes	Yes	Yes
Mourning warbler	*Geothlypis philadelphia*	Yes	Yes	Yes
Mute swan	*Cygnus olor*	No	No	Yes
Nashville warbler	*Oreothlypis ruficapilla*	Yes	Yes	Yes
Northern bobwhite	*Colinus virginianus*	Yes	Yes	Yes
Northern cardinal	*Cardinalis cardinalis*	Yes	Yes	Yes
Northern flicker (yellow-shafted flicker)	*Colaptes auratus*	Yes	Yes	Yes
Northern goshawk	*Accipiter gentilis*	Yes	Yes	Yes

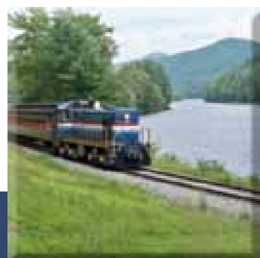
		Species Found in the Vicinity of the Segment		
Common Name	**Scientific Name**	**Lake Champlain Segment**	**Overland Segment**	**Hudson River and New York City Metropolitan Area Segments**
Northern harrier	*Circus cyaneus*	Yes	Yes	Yes
Northern mockingbird	*Mimus polyglottos*	Yes	Yes	Yes
Northern parula	*Setophaga americana*	Yes	Yes	Yes
Northern pintail	*Anas acuta*	Yes	Yes	No
Northern rough-winged swallow	*Stelgidopteryx serripennis*	Yes	Yes	Yes
Northern saw-whet owl	*Aegolius acadicus*	Yes	Yes	Yes
Northern shoveler	*Anas clypeata*	Yes	No	No
Northern waterthrush	*Seiurus noveboracensis*	Yes	Yes	Yes
Olive-sided flycatcher	*Contopus cooperi*	Yes	Yes	Yes
Orchard oriole	*Icterus spurius*	Yes	Yes	Yes
Osprey	*Pandion haliaetus*	Yes	Yes	Yes
Ovenbird	*Seiurus aurocapilla*	Yes	Yes	Yes
Palm warbler	*Setophaga palmarum*	Yes	No	No
Peregrine falcon	*Falco peregrinus*	Yes	No	No
Philadelphia vireo	*Vireo philadelphicus*	Yes	Yes	No
Pied-billed grebe	*Podilymbus podiceps*	Yes	Yes	Yes
Pileated woodpecker	*Dryocopus pileatus*	Yes	Yes	Yes
Pine siskin	*Spinus pinus*	Yes	Yes	Yes
Pine warbler	*Setophaga pinus*	Yes	Yes	Yes
Prairie warbler	*Dendroica discolor*	Yes	Yes	Yes
Prothonotary warbler	*Protonotaria citrea*	No	Yes	No
Purple finch	*Haemorhous purpureus*	Yes	Yes	Yes
Purple martin	*Progne subis*	Yes	Yes	Yes
Red crossbill	*Loxia curvirostra*	Yes	Yes	Yes
Red-bellied woodpecker	*Melanerpes carolinus*	Yes	Yes	Yes
Red-breasted merganser	*Mergus serrator*	Yes	Yes	No
Red-breasted nuthatch	*Sitta canadensis*	Yes	Yes	Yes
Red-eyed vireo	*Vireo olivaceus*	Yes	Yes	Yes
Red-headed woodpecker	*Melanerpes erythrocephalus*	Yes	Yes	Yes
Red-shouldered hawk	*Buteo lineatus*	Yes	Yes	Yes
Red-tailed hawk	*Buteo jamaicensis*	Yes	Yes	Yes
Red-winged blackbird	*Agelaius phoeniceus*	Yes	Yes	Yes
Redhead	*Aythya americana*	Yes	No	No
Ring-billed gull	*Larus delawarensis*	Yes	No	No
Ring-necked duck	*Aythya collaris*	Yes	Yes	Yes
Ring-necked pheasant	*Phasianus colchicus*	Yes	Yes	Yes

		Species Found in the Vicinity of the Segment		
Common Name	**Scientific Name**	**Lake Champlain Segment**	**Overland Segment**	**Hudson River and New York City Metropolitan Area Segments**
Rock pigeon	*Columba livia*	Yes	Yes	Yes
Rose-breasted grosbeak	*Pheucticus ludovicianus*	Yes	Yes	Yes
Ruby-crowned kinglet	*Regulus calendula*	Yes	No	No
Ruby-throated hummingbird	*Archilochus colubris*	Yes	Yes	Yes
Ruddy duck	*Oxyura jamaicensis*	No	No	Yes
Ruffed grouse	*Bonasa umbellus*	Yes	Yes	Yes
Rusty blackbird	*Euphagus carolinus*	Yes	Yes	No
Savannah sparrow	*Passerculus sandwichensis*	Yes	Yes	Yes
Scarlet tanager	*Piranga olivacea*	Yes	Yes	Yes
Sedge wren	*Cistothorus platensis*	Yes	Yes	No
Sharp-shinned hawk	*Accipiter striatus*	Yes	Yes	Yes
Short-eared owl	*Asio flammeus*	Yes	No	Yes
Song sparrow	*Melospiza melodia*	Yes	Yes	Yes
Sora	*Porzana carolina*	Yes	Yes	Yes
Spotted sandpiper	*Actitis macularia*	Yes	Yes	Yes
Spruce grouse	*Falcipennis canadensis*	Yes	No	No
Swainson's thrush	*Catharus ustulatus*	Yes	Yes	Yes
Swamp sparrow	*Melospiza georgiana*	Yes	Yes	Yes
Tennessee warbler	*Oreothlypis peregrina*	Yes	No	No
Tree swallow	*Tachycineta bicolor*	Yes	Yes	Yes
Tufted titmouse	*Baeolophus bicolor*	Yes	Yes	Yes
Turkey vulture	*Cathartes aura*	Yes	Yes	Yes
Upland sandpiper	*Bartramia longicauda*	Yes	Yes	Yes
Veery	*Catharus fuscescens*	Yes	Yes	Yes
Vesper sparrow	*Pooecetes gramineus*	Yes	Yes	Yes
Virginia rail	*Rallus limicola*	Yes	Yes	Yes
Warbling vireo	*Vireo gilvus*	Yes	Yes	Yes
Western meadowlark	*Sturnella neglecta*	No	No	Yes
Whip-poor-will	*Antrostomus vociferus*	Yes	Yes	Yes
White-breasted nuthatch	*Sitta carolinensis*	Yes	Yes	Yes
White-eyed vireo	*Vireo griseus*	Yes	Yes	Yes
White-throated sparrow	*Zonotrichia albicollis*	Yes	Yes	Yes
White-winged crossbill	*Loxia leucoptera*	Yes	Yes	No
Wild turkey	*Meleagris gallopavo*	Yes	Yes	Yes
Willow flycatcher	*Empidonax traillii*	Yes	Yes	Yes
Wilson's snipe	*Gallinago delicata*	Yes	Yes	Yes

		Species Found in the Vicinity of the Segment		
Common Name	**Scientific Name**	**Lake Champlain Segment**	**Overland Segment**	**Hudson River and New York City Metropolitan Area Segments**
Wilson's warbler	*Cardellina pusilla*	Yes	No	No
Winter wren	*Troglodytes hiemalis*	Yes	Yes	Yes
Wood duck	*Aix sponsa*	Yes	Yes	Yes
Wood thrush	*Hylocichla mustelina*	Yes	Yes	Yes
Worm-eating warbler	*Helmitheros vermivorus*	No	Yes	Yes
Yellow warbler	*Dendroica petechia*	Yes	Yes	Yes
Yellow-bellied flycatcher	*Empidonax flaviventris*	Yes	Yes	Yes
Yellow-bellied sapsucker	*Sphyrapicus varius*	Yes	Yes	Yes
Yellow-billed cuckoo	*Coccyzus americanus*	Yes	Yes	Yes
Yellow-breasted chat	*Icteria virens*	No	Yes	Yes
Yellow-rumped warbler (unid. Myrtle/Audubon's)	*Setophaga coronate*	Yes	Yes	Yes
Yellow-throated vireo	*Vireo flavifrons*	Yes	Yes	Yes
Yellow-throated warbler	*Setophaga dominica*	Yes	Yes	No

Source: NYSDEC 2008
Note:
* = Brewster's and Lawrence's warblers are two separate hybrid species from blue-winged and golden-winged warbler pairings.

THIS PAGE INTENTIONALLY LEFT BLANK



APPENDIX I

Summary of Wetlands and Soils along Proposed CHPE Project Route

APPENDIX I.1 – POTENTIALLY IMPACTED WETLANDS ASSOCIATED WITH THE PROPOSED CHPE PROJECT

Appendix I.1
Potentially Impacted Wetlands Associated with the Proposed CHPE Project

This appendix contains a brief summary of palustrine wetlands located within the proposed CHPE Project ROI for the Wetlands resource area, and a listing of all wetlands that were delineated within the construction corridor and wetlands ROI.

Appendix I.1 contains the following tables:

- **Table I.1-1.** Delineated Wetlands within the Proposed CHPE Project Construction Corridor
- **Table I.1-2.** Delineated Wetlands within the Proposed CHPE Project ROI
- **Table I.1-3.** NYSDEC Freshwater Wetlands within the Proposed CHPE Project ROI
- **Table I.1-4.** NYSDEC Freshwater Wetland Adjacent Areas within the Proposed CHPE Project ROI
- **Table I.1-5.** NYSDEC Tidal Wetlands within the Proposed CHPE Project ROI

Description of Palustrine Wetlands within the Proposed CHPE Project ROI

Palustrine Emergent Wetlands. Palustrine emergent (PEM) wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens (USACE 2012a). The freshwater emergent wetlands along the proposed CHPE Project survey area primarily include shallow emergent marshes, deep emergent marshes, and reedgrass/purple loosestrife marshes (NYSDEC 2010e). PEM wetlands occur as a single dominant wetland cover type, and also as a codominant wetland type when other plant community types exist within the wetland.

Palustrine Scrub-Shrub Wetland. The palustrine scrub-shrub (PSS) wetland cover type includes areas that are dominated by saplings and shrubs that are less than 20 feet (6 meters) tall (USACE 2012a). Scrub-shrub wetlands along the proposed CHPE Project wetland survey area were dominated by silky dogwood (*Cornus amomum*), gray dogwood (*Cornus foemina* ssp. *racemosa*), honeysuckle (*Lonicera* spp.), and speckled alder (*Alnus incana* ssp. *rugosa*). Other vegetation observed includes meadowsweet (*Spirea latifolia*), highbush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), spicebush (*Lindera benzoin*), elderberry (*Sambucus canadensis*), gray birch (*Betula populifolia*), and northern arrowwood (*Viburnum recognitum*). Invasive species observed within PSS wetlands include honeysuckle and buckthorn (*Frangula alnus*). PSS wetlands occur as a single dominant wetland cover type, and also as a codominant wetland type when other plant community types exist within the wetland.

Palustrine Forested Wetland. Palustrine forested (PFO) wetland cover types are dominated by trees and shrubs that have developed a tolerance to a seasonal high water table. To be characterized as forested, a wetland must be dominated by trees and shrubs that are at least 20 feet (6 meters) tall (USACE 2012a). PFO wetlands occur as a single dominant wetland cover type, and also as a codominant wetland type when other plant community types exist within the wetland.

Forested wetlands typically have a mature tree canopy, and depending upon the species and density, can have a broad range of understory and groundcover community components. Forested wetland communities along the proposed CHPE Project survey area include red maple (*Acer rubrum*) hardwood swamps, floodplain forest, and silver maple-ash swamps (NYSDEC 2010e).

Palustrine Open Water. Besides vegetated wetlands, a few scattered small ponds are within the ROI. These wetland areas are characterized by a vegetative cover of less than 30 percent, although there could often be emergent or shrubby vegetation bordering the open water areas (CHPEI 2012ee).

Wetland Impact Table

Approx. MP	Index Map Sheet	Town	Field ID	NYSDEC Wetland ID	NYSDEC Wetland Class	Cowardin Classification	HDD Crossing Length (feet)	Direct Bury Crossing Length (feet)	Temporary Impacts a/		Permanent Impacts b/		Total Impacts c/	
									Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)
Route 22 Right-of-Way														
101.6	1	Dresden	A3611	N/A	N/A	PEM	16.6	-	-	-	-	-	-	-
102.2	3	Dresden	A3511	N/A	N/A	PEM	-	-	-	906.5	-	-	-	906.5
102.3	4	Dresden	A3411	N/A	N/A	PSS/RUB	-	-	-	163.4	-	-	-	163.4
103.0	5	Dresden	A3311	N/A	N/A	PEM	-	-	-	104.3	-	-	-	104.3
103.1	6	Dresden	A3211	N/A	N/A	PEM	-	-	-	935.6	-	-	-	935.6
103.2	6	Dresden	A3111	N/A	N/A	PEM/PSS	-	-	-	266.4	-	-	-	266.4
103.7	7	Dresden	A2911	N/A	N/A	PEM/PFO	-	-	1,233.5	-	-	-	1,233.5	-
103.8	7	Dresden	A2711	N/A	N/A	PEM	-	-	-	877.7	-	-	-	877.7
103.8	8	Dresden	A2811	N/A	N/A	PFO/RUB	-	-	1,435.5	-	-	-	1,435.5	-
103.9	8	Dresden	A2611	N/A	N/A	PEM/POW	-	-	-	1,048.7	-	-	-	1,048.7
104.4	9	Dresden	A2511	N/A	N/A	PFO	-	-	14.5	-	-	-	14.5	-
104.8	10	Dresden	A2411	N/A	N/A	PFO/RUB	-	-	28.7	527.2	-	-	28.7	527.2
104.9	10	Dresden	A2311	N/A	N/A	PEM	-	-	-	109.9	-	-	-	109.9
105.2	11	Dresden	A2211	N/A	N/A	PEM	-	-	-	2.5	-	-	-	2.5
105.7	13	Dresden	A2111	N/A	N/A	PEM	-	-	-	299.2	-	-	-	299.2
107.2	16	Dresden	A1811	N/A	N/A	PEM/PSS	-	-	-	293.2	-	-	-	293.2
107.3	17	Dresden	A1611	N/A	N/A	PEM	-	-	-	322	-	-	-	322
107.4	17	Dresden	A1511	N/A	N/A	PEM	-	-	-	338.2	-	-	-	338.2
108.1	19	Dresden	A1311	N/A	N/A	PEM	-	-	-	1,196.3	-	-	-	1,196.3
108.4	19	Dresden	A1111	N/A	N/A	PFO	-	-	365	-	-	-	365	-

Wetland Impact Table

Approx. MP	Index Map Sheet	Town	Field ID	NYSDEC Wetland ID	NYSDEC Wetland Class	Cowardin Classification	HDD Crossing Length (feet)	Direct Bury Crossing Length (feet)	Temporary Impacts a/		Permanent Impacts b/		Total Impacts c/	
									Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)
108.4	20	Dresden	A1211	N/A	N/A	PSS	-	-	-	461	-	-	-	461
108.5	20	Dresden	A1011	N/A	N/A	PSS	-	-	-	1,017.1	-	-	-	1,017.1
109.2	22	Dresden	A0511	N/A	N/A	PEM/PFO	-	-	23.4	-	-	-	23.4	-
109.6	23	Dresden	A0811	N/A	N/A	PEM	-	283.5	-	6,250.1	-	4,006	-	10,256.1
110.4	25	Whitehall	A0411	N/A	N/A	PEM	-	-	-	1,306	-	-	-	1,306
110.8	26	Whitehall	A0311	N/A	N/A	PEM/PSS	-	-	-	313.4	-	-	-	313.4
111.4	27	Whitehall	A0211	WH-2	1	PEM	-	-	-	361.4	-	-	-	361.4
111.7	28	Whitehall	A0111	WH-2	1	PEM/PSS	-	-	-	1,218.3	-	16.5	-	1,234.8
Route 22 Right-of-Way Subtotal:							**16.6**	**283.5**	**3,100.6**	**18,318.4**	**-**	**4,022.5**	**3,100.6**	**22,340.9**
Canadian Pacific (CP) Railroad Right-of-Way														
113.5; 113.9; 116.4	33, 34, 40	Whitehall	B54	N/A	N/A	PEM/PSS/PFO	-	-	33,011.5	175,874	-	1,157.4	33,011.5	177,031.4
115.6	38	Whitehall	B55	N/A	N/A	PEM/PSS	-	-	-	4,396.2	-	960.6	-	5,356.8
117.5	43	Whitehall	B53	N/A	N/A	PEM	-	-	-	40,598.9	-	4	-	40,602.9
117.8	44	Whitehall	B52	N/A	N/A	PEM	-	-	-	5,002.6	-	-	-	5,002.6
118.1	45	Fort Ann	B51	N/A	N/A	PEM	-	-	-	64,340.7	-	0.5	-	64,341.2
118.6	46	Fort Ann	B50	N/A	N/A	PEM	-	-	-	433	-	-	-	433
118.9; 119.1	47/48	Fort Ann	B48	N/A	N/A	PEM/PFO	-	-	2,282.9	16,322.2	-	-	2,282.9	16,322.2
119.0	47	Fort Ann	B49	N/A	N/A	PEM	-	-	-	1,140.3	-	-	-	1,140.3
119.3	48	Fort Ann	F19	N/A	N/A	PFO	-	-	155	-	-	-	155	-
119.8; 120.4	49, 51	Fort Ann	F17	FA-13	1	PFO/POW	-	-	753.4	37,698	-	-	753.4	37,698
121.7	54	Fort Ann	F14	N/A	N/A	PFO	-	-	2,762.5	-	-	-	2,762.5	-

Wetland Impact Table														
Approx. MP	Index Map Sheet	Town	Field ID	NYSDEC Wetland ID	NYSDEC Wetland Class	Cowardin Classification	HDD Crossing Length (feet)	Direct Bury Crossing Length (feet)	Temporary Impacts a/		Permanent Impacts b/		Total Impacts c/	
									Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)
121.9	55	Fort Ann	F13	N/A	N/A	PFO	-	-	4,763.4	-	-	-	4,763.4	-
122.0; 122.4	55	Fort Ann	F12	N/A	N/A	PSS/PFO	-	-	18,939.9	-	-	-	18,939.9	-
122.8	57	Fort Ann	F11	N/A	N/A	PSS/PFO	-	-	23,480.4	-	-	-	23,480.4	-
123.2	58	Fort Ann	F10	N/A	N/A	PSS/PFO	-	-	3,336.4	-	-	-	3,336.4	-
124.2; 124.3; 124.4; 125.2; 125.3; 125.6	59, 60, 61, 62, 64, 65	Fort Ann	F8	N/A	N/A	PEM/PSS/PFO	-	0.7	64,793	58,489.2	25.8	731.5	64,818.8	59,220.7
127.2; 127.5	69	Kingsbury	F4	N/A	N/A	PEM/PSS	-	-	-	52,923.3	-	-	-	52,923.3
128.4	71	Kingsbury	F2	N/A	N/A	PEM/PSS	-	-	-	46,518.2	-	39.7	-	46,557.9
129.6; 130.2	74, 76	Kingsbury	A54	N/A	N/A	PEM/PSS	-	-	-	177,328.5	-	-	-	177,328.5
131.9; 132.3	81, 82	Kingsbury	A2	N/A	N/A	PEM/PSS	-	-	-	76,512.5	-	-	-	76,512.5
133.3	85	Fort Edward	A5	N/A	N/A	PSS	-	267	-	3,212.8	-	2,895.9	-	6,108.7
133.6	86	Fort Edward	A6	N/A	N/A	PFO	-	-	372.6	-	-	-	372.6	-
135.8	91	Moreau	A14	N/A	N/A	PEM/PSS	-	-	-	1,288.3	-	-	-	1,288.3
135.9	92	Moreau	A15	N/A	N/A	PSS	-	-	-	377.6	-	-	-	377.6
136.0	92	Moreau	A16	N/A	N/A	PFO	-	-	766.2	-	-	-	766.2	-
136.1	92	Moreau	A17	N/A	N/A	PFO	-	-	2,096.8	-	-	-	2,096.8	-
136.7	94	Moreau	A23	N/A	N/A	PEM	-	8.1	-	44.3	-	104.6	-	148.9
136.9	94	Moreau	A24	N/A	N/A	PEM/PSS	-	-	-	1,913.9	-	528.8	-	2,442.7
137.1; 137.2	95	Moreau	A26	F-20	2	PEM/PSS/PFO	-	-	1,056.2	13,007.8	-	-	1,056.2	13,007.8
137.8	96	Moreau	A28	N/A	N/A	PFO	-	-	158	-	-	-	158	-

Wetland Impact Table

Approx. MP	Index Map Sheet	Town	Field ID	NYSDEC Wetland ID	NYSDEC Wetland Class	Cowardin Classification	HDD Crossing Length (feet)	Direct Bury Crossing Length (feet)	Temporary Impacts a/		Permanent Impacts b/		Total Impacts c/	
									Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)
137.9	97	Moreau	A30	F-7	2	PSS	-	-	-	1,034.4	-	-	-	1,034.4
138.5	98	Moreau	A36	F-7	2	PSS	-	-	-	406.7	-	-	-	406.7
138.8; 139.0	99, 100	Moreau	A38	F-7	2	PSS/PFO	-	15.4	18,915.7	28,318	272.3	1.2	19,188	28,319.2
139.8	102	Northumberland	A41	N/A	N/A	PSS	-	-	-	5,081.7	-	-	-	5,081.7
141.3	106	Northumberland	A47	N/A	N/A	PFO	-	-	4,567.5	-	-	-	4,567.5	-
141.4	106	Northumberland	A48	N/A	N/A	PFO	-	-	404	-	-	-	404	-
141.7; 141.8; 142.1	106, 107	Northumberland	A49	Q-32	1	PSS/PFO	-	-	21,734.4	1,755.7	32.6	-	21,767.1	1,755.7
142.2	108	Northumberland	A52	N/A	N/A	PFO	-	-	2,018.5	-	-	-	2,018.5	-
142.9	110	Northumberland	D7	GA-20	2	PEM	-	-	-	8,663.4	-	-	-	8,663.4
143.0	110	Northumberland	D6	N/A	N/A	PEM/PFO	-	-	1,254.2	-	-	-	1,254.2	-
143.1	111	Northumberland	D4	N/A	N/A	PFO	-	-	342.7	-	-	-	342.7	-
143.2	111	Northumberland	D3	N/A	N/A	PFO	-	-	17,230.3	-	-	-	17,230.3	-
143.4	111	Wilton	D2	N/A	N/A	PFO	-	-	732	-	-	-	732	-
145.9; 146.0	118	Wilton	B39	N/A	N/A	PEM/PFO	-	-	10,361.2	-	-	-	10,361.2	-
146.4	119	Wilton	B36	Q-11	1	PFO/PSS	10.6	-	-	-	-	-	-	-
149.5	127	Wilton	B1	S-7	2	PEM	-	-	-	124.3	-	-	-	124.3
150.5; 150.6; 150.7	130, 131	Greenfield	B3	S-19	1	PEM/PSS /PFO	-	73.3	565.7	28,510.2	-	3,001.9	565.7	31,512.1
151.4	132	Greenfield	B4	S-19	1	PEM/PSS	-	3.3	-	15,338.7	-	264.6	-	15,603.3
152.3	135	Saratoga Springs	B5	S-19	1	PEM/PSS	-	-	-	190.9	-	-	-	190.9
152.8	136	Saratoga Springs	B6	N/A	N/A	PEM/PSS	-	-	-	9,918.5	-	9.3	-	9,927.8

Wetland Impact Table														
Approx. MP	Index Map Sheet	Town	Field ID	NYSDEC Wetland ID	NYSDEC Wetland Class	Cowardin Classification	HDD Crossing Length (feet)	Direct Bury Crossing Length (feet)	Temporary Impacts a/		Permanent Impacts b/		Total Impacts c/	
									Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)
154.9	141	Saratoga Springs	D9	S-21	3	PEM	-	1,402.3	-	86,021.6	-	19,867.9	-	105,889.5
155.5	143	Saratoga Springs	B47	S-21	3	PEM/PSS/PFO	-	45.6	642.1	-	594.1	-	1,236.2	-
155.9	144	Saratoga Springs	B45	N/A	N/A	PEM	-	1,899.2	-	4,410.6	-	22,780.9	-	27,191.5
157.0	146	Saratoga Springs	B44	N/A	N/A	PEM/PFO	-	313.1	10,031	-	3,594.3	-	13,625.3	-
157.1	147	Saratoga Springs	B41	N/A	N/A	PFO	-	-	11,762.1	-	204.3	-	11,966.4	-
157.5; 158.0	148, 149	Saratoga Springs	B10	N/A	N/A	PFO	252.2	248.8	18,784	-	2,898.6	-	21,682.6	-
158.3	150	Milton	B17	N/A	N/A	PFO	-	53.8	3,739.8	-	699.6	-	4,439.4	-
158.7	151	Milton	B16	N/A	N/A	PFO	-	-	14,919	-	-	-	14,919	-
159.0	152	Ballston	B18	N/A	N/A	PEM/PSS	-	133.9	-	15,675.5	-	3,920.4	-	19,595.8
159.1	152	Ballston	B20	N/A	N/A	PEM/PSS	-	-	-	281.6	-	-	-	281.6
159.3	153	Ballston	B21	R-50	3	PEM	-	-	-	801.6	-	-	-	801.6
159.5	154	Ballston	B23	N/A	N/A	PEM	174.7	-	-	560.3	-	347.8	-	908.2
160.1; 160.4	154, 156	Ballston	B25	R-3	3	PEM/PSS/PFO	-	107.7	12,688	36,707	251.4	6,805.7	12,939.3	43,512.7
160.7	156	Ballston	B28	N/A	N/A	PEM	-	-	-	188.8	-	-	-	188.8
160.9	157	Ballston	B29	N/A	N/A	PEM/PSS	-	-	-	1,877.7	-	56.3	-	1,934
161.2	157	Ballston	B30	N/A	N/A	PEM/PSS	-	605.8	-	10,445.5	-	6,881.1	-	17,326.6
161.6	159	Ballston	B31	R-11	2	PEM	-	-	-	17,974.4	-	1,151.2	-	19,125.6
161.8	159	Ballston	B32	N/A	N/A	PEM	-	-	-	10,108.9	-	1,371.8	-	11,480.6
162.9	162	Ballston	B-C1	N/A	N/A	PEM	-	675.4	-	5,965.6	-	8,427.8	-	14,393.4
162.9; 163.0; 163.1	162, 163	Ballston	C1	N/A	N/A	PEM/PSS	-	528	-	16,485.3	-	6,229.3	-	22,714.7
163.4	163	Ballston	C2	N/A	N/A	PEM	27.4	-	-	-	-	-	-	-

Wetland Impact Table														
Approx. MP	Index Map Sheet	Town	Field ID	NYSDEC Wetland ID	NYSDEC Wetland Class	Cowardin Classification	HDD Crossing Length (feet)	Direct Bury Crossing Length (feet)	Temporary Impacts a/		Permanent Impacts b/		Total Impacts c/	
									Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)
163.4	164	Ballston	C4	N/A	N/A	PEM	-	350.6	-	4,397.3	-	3,197.6	-	7,594.8
163.7	164	Ballston	C5	N/A	N/A	PEM	-	-	-	991.4	-	123.2	-	1,114.6
164.4	166	Ballston	C8	R-18	2	PEM	8	68.4	-	24,785.7	-	4,230.2	-	29,015.9
164.9	167	Ballston	C15	R-18	2	PFO	-	108.6	18,343.5	-	1,441	-	19,784.5	-
167.1	173	Clifton Park	C29	B-31	2	PEM	-	-	-	2,352.2	-	642	-	2,994.2
167.5	174	Clifton Park	C31	N/A	N/A	PEM	-	-	-	10,504.3	-	-	-	10,504.3
168.2	176	Clifton Park	C35	N/A	N/A	PEM/PSS	-	-	-	8,397.6	-	-	-	8,397.6
170.0; 170.2	181	Glenville	C42	S-107	2	PEM/PSS/PFO	67.5	867.9	10,693.4	53,073.3	1,165.3	11,082.6	11,858.7	64,155.9
170.5	182	Glenville	X01	N/A	N/A	PSS/PFO	-	1,002.2	16,039.5	16,853.2	4,022.6	8,075.2	20,062	24,928.4
171.4	185	Glenville	C44	S-112	2	PEM	-	-	-	282.7	-	-	-	282.7
174.8	193	Schenectady	C46	N/A	N/A	PEM	-	-	-	3,316.9	-	-	-	3,316.9
175.0	193	Schenectady	C48	N/A	N/A	PEM	-	100.4	-	814.4	-	1,302.5	-	2,116.8
175.3	194	Schenectady	C56	N/A	N/A	PEM	-	278.4	-	6,131.2	-	3,360.1	-	9,491.3
CP Railroad Right-of-Way Subtotal:							**540.4**	**9,157.9**	**354,496.8**	**1,216,169.4**	**15,201.9**	**119,553.6**	**369,698.6**	**1,335,722.8**
CSX Railroad Right-of-Way – Rotterdam to Catskill, NY														
178.4	202	Rotterdam	E2	N/A	N/A	PSS	-	-	-	5,568.7	-	-	-	5,568.7
178.8; 178.9	203	Rotterdam	E3	N/A	N/A	PEM/PFO	-	331.6	14,381.2	14,470.3	3,914.4	3,050.3	18,295.6	17,520.6
179.1	204	Rotterdam	E4	N/A	N/A	PEM	-	-	-	25,741.6	-	780.6	-	26,522.3
179.5	205	Rotterdam	E5	N/A	N/A	PEM/PFO	-	66.5	13,960	120.4	132.2	2,995.9	14,092.1	3,116.3
179.7; 179.8	205, 206	Rotterdam	E7	N/A	N/A	PEM/PSS	-	51.2	-	10,797.8	-	1,497.7	-	12,295.5
180.0; 180.1; 180.3	206, 207	Rotterdam	E9	S-117	2	PEM/PSS	-	-	-	61,877.8	-	4,111.6	-	65,989.3

Wetland Impact Table

Approx. MP	Index Map Sheet	Town	Field ID	NYSDEC Wetland ID	NYSDEC Wetland Class	Cowardin Classification	HDD Crossing Length (feet)	Direct Bury Crossing Length (feet)	Temporary Impacts a/		Permanent Impacts b/		Total Impacts c/	
									Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)
180.6; 180.7	208	Guilderland	E10	N/A	N/A	PEM/PSS	13.1	196.4	-	7,226.5	-	2,253.2	-	9,479.8
180.8	208	Guilderland	E12	N/A	N/A	PEM/PFO	224.2	415.6	15,303.1	-	4,161.1	199.9	19,464.2	199.9
181.2; 181.6; 181.7; 181.8	209, 210	Guilderland	E15	N/A	N/A	PEM/PSS/PFO	589	184	12,258.2	6,090.5	2,038	6,439.9	14,296.1	12,530.4
182.0	212	Guilderland	E95	N/A	N/A	PEM	-	4.9	-	411.1	-	85.6	-	496.6
182.1; 182.2	212	Guilderland	E96	N/A	N/A	PEM/PSS/PFO	-	78.9	208.5	4,141.1	-	962.4	208.5	5,103.5
182.4; 182.5	213	Guilderland	E97	N/A	N/A	PEM/PSS	-	2.3	-	964.6	-	124.9	-	1,089.5
183.3	215	Guilderland	E80	N/A	N/A	PEM/PSS	-	-	-	1,139.8	-	-	-	1,139.8
183.4	215	Guilderland	E79	N/A	N/A	PSS/PFO	-	-	6,124.8	-	-	-	6,124.8	-
183.5	215	Guilderland	E77	N/A	N/A	PSS	-	-	-	5,319.7	-	-	-	5,319.7
183.8	216	Guilderland	E75	N/A	N/A	PFO	-	-	1,079.1	-	-	-	1,079.1	-
184.2; 184.2	217	Guilderland	E17	N/A	N/A	PSS/PFO/POW	-	79.9	721.1	13,056	-	1,180.5	721.1	14,236.5
185.5; 186.2; 186.2; 186.3	221, 222	Guilderland	E21	N/A	N/A	PEM/PSS/PFO	-	20.5	8,817.3	61,995.3	-	1,076.5	8,817.3	63,071.8
186.5; 186.7; 186.9; 186.9	223, 224	Guilderland	E24	N/A	N/A	PEM/PSS/PFO	-	552.6	17,695	25,776.1	4,187.3	3,263.7	21,882.2	29,039.8
187.3	225	Guilderland	E26	N/A	N/A	PEM/PSS	-	-	-	9,838.6	-	696.9	-	10,535.5
187.5; 187.7; 187.8	226	New Scotland	E28	V-52	2	PSS/PFO	-	475.1	3,240.8	15,424.9	1,259.7	5,297	4,500.5	20,722
188.0; 188.0	227	New Scotland	E29	N/A	N/A	PSS/PFO	-	16.2	991.7	6,695.2	0.1	774.2	991.8	7,469.4
189.2	230	New Scotland	E31	N/A	N/A	PSS	-	-		2,013.4	-	-	-	2,013.4

Wetland Impact Table														
Approx. MP	Index Map Sheet	Town	Field ID	NYSDEC Wetland ID	NYSDEC Wetland Class	Cowardin Classification	HDD Crossing Length (feet)	Direct Bury Crossing Length (feet)	Temporary Impacts a/		Permanent Impacts b/		Total Impacts c/	
									Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)
189.8	232	New Scotland	E33	N/A	N/A	PEM/PSS/PFO	-	-	1,791.8	1,309.5	30.3	-	1,822.1	1,309.5
190.4	233	New Scotland	E35	N/A	N/A	PFO	-	-	3,111.6	-	-	-	3,111.6	-
190.7	234	New Scotland	E37	N/A	N/A	PFO	-	-	5,272.2	-	58.5	-	5,330.7	-
191.1	235	New Scotland	E39	N/A	N/A	PEM	-	345.4	-	11,289.7	-	4,377.6	-	15,667.3
191.5; 191.6	236	New Scotland	E43	N/A	N/A	PEM/PFO	-	-	4,450	1,003.1	-	-	4,450	1,003.1
194.0	243	Bethlehem	E51	N/A	N/A	PEM	-	-	-	9.8	-	-	-	9.8
194.1	243	Bethlehem	E52	N/A	N/A	PEM	-	-	-	877.8	-	94.7	-	972.5
194.1	243	Bethlehem	E59	N/A	N/A	PEM	-	17.8	-	1,386.6	-	231.8	-	1,618.4
194.2	243	Bethlehem	E58	N/A	N/A	PEM	18.5	1,962.2	-	15,570.3	-	26,527.1	-	42,097.4
197.2	250	Bethlehem	E104	N/A	N/A	PEM	-	-	-	38,523.1	-	-	-	38,523.1
199.2	253	Bethlehem	M71/ E101	N/A	N/A	PEM/PSS	36.5	161.8	-	57,844.8	-	8,899.7	-	66,744.4
199.3	256	Bethlehem	M70	N/A	N/A	PFO	-	-	1,235.9	-	-	-	1,235.9	-
199.6	257	Coeymans	M69	N/A	N/A	PEM/PFO	-	439.9	16,473.2	-	3,499.1	1,653.3	19,972.3	1,653.3
199.8	257	Coeymans	M67	N/A	N/A	PEM/PSS/PFO	-	1,592.2	67,714.2	-	19,234.4	-	86,948.6	-
200.3	259	Coeymans	M65	N/A	N/A	PEM/PSS/PFO	-	-	5,324.7	939	-	-	5,324.7	939
200.3	259	Coeymans	M66	N/A	N/A	PEM/PFO	-	58.7	1,453.7	-	574.7	-	2,028.4	-
200.8	260	Coeymans	M63	N/A	N/A	PEM/PSS/PFO	-	264.4	6,606.9	1,285	2,979.1	438.1	9,586	1,723.1
201.1	261	Coeymans	M62	N/A	N/A	PEM	-	154.3	-	7,739	-	1,954.4	-	9,693.5
201.1	261	Coeymans	Y36	N/A	N/A	PEM	-	-	-	170.2	-	-	-	170.2
201.2	261	Coeymans	M61	N/A	N/A	PEM/PSS/PFO/P OW	-	3,421	7,458.2	94,038	10.7	31,812.2	7,468.9	125,850.2
202.0	264	Coeymans	Y34	N/A	N/A	PEM/PSS	-	132.6	-	3,486.2	-	688.5	-	4,174.7

Wetland Impact Table

Approx. MP	Index Map Sheet	Town	Field ID	NYSDEC Wetland ID	NYSDEC Wetland Class	Cowardin Classification	HDD Crossing Length (feet)	Direct Bury Crossing Length (feet)	Temporary Impacts a/		Permanent Impacts b/		Total Impacts c/	
									Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)
202.2	264	Coeymans	M60	N/A	N/A	PEM/PFO	-	677.1	32,424.8	-	9,747.5	-	42,172.3	-
202.4	265	Coeymans	M59	N/A	N/A	PEM/PSS/PFO	-	43.9	2,926.9	-	537.3	-	3,464.2	-
202.6	265	Coeymans	Y33	N/A	N/A	PEM	-	32.6	-	19,632.9	-	640.5	-	20,273.4
203.0	266	Coeymans	M58	N/A	N/A	PEM/PSS	-	-	-	3,104.4	-	501.5	-	3,605.9
203.1	266	Coeymans	M57	N/A	N/A	PEM/PFO	-	216.2	1,186.8	-	2,717.8	-	3,904.5	-
203.9	268	Coeymans	M56	N/A	N/A	PEM/PSS/PFO	-	-	368.9	-	-	-	368.9	-
204.4	270	New Baltimore	M53	N/A	N/A	PEM	-	822.4	-	10,101.7	-	6,453.7	-	16,555.4
204.6	270	New Baltimore	M52	N/A	N/A	PEM	130.8	-	-	1,663.5	-	880.3	-	2,543.7
204.9	271	New Baltimore	Y32	N/A	N/A	PEM/PSS	-	-	-	1,219.7	-	-	-	1,219.7
205.1	272	New Baltimore	Y31	N/A	N/A	PEM/PSS	-	-	-	3,409	-	-	-	3,409
205.4	272	New Baltimore	Y30	N/A	N/A	PEM	-	-	-	3,492.1	-	-	-	3,492.1
206.1	274	New Baltimore	M48	N/A	N/A	PSS	-	-	-	710.2	-	50	-	760.2
206.5	275	New Baltimore	M47	N/A	N/A	PEM/PSS	27.9	396.9	-	1,939.2	-	5,152.8	-	7,091.9
208.0	279	New Baltimore	Y27	N/A	N/A	PEM/PSS	-	14.7	-	143.4	-	196.6	-	340
208.4	280	New Baltimore	Y26	N/A	N/A	PEM	155.5	-	-	-	-	93.8	-	93.8
208.8	281	New Baltimore	M42	N/A	N/A	PEM/PSS	-	386.3	-	2,164.2	-	5,074.1	-	7,238.3
208.9	282	New Baltimore	M41	N/A	N/A	PEM/PSS/PFO	-	292.7	7,558.5	-	3,845.6	-	11,404.1	-
209.0	282	New Baltimore	M40	N/A	N/A	PSS	-	50.4	-	2,372.4	-	639.7	-	3,012.1
209.0	282	New Baltimore	Y24	N/A	N/A	PEM/PSS	-	95.9	-	3,323.5	-	1,233.4	-	4,556.9
209.8	284	New Baltimore	Y22	N/A	N/A	PEM	-	269.7	-	359.7	-	2,979.5	-	3,339.2
210.4	286	Coxsackie	M36	N/A	N/A	PFO	-	219	851.5	-	2,950.2	-	3,801.6	-

Wetland Impact Table

Approx. MP	Index Map Sheet	Town	Field ID	NYSDEC Wetland ID	NYSDEC Wetland Class	Cowardin Classification	HDD Crossing Length (feet)	Direct Bury Crossing Length (feet)	Temporary Impacts a/		Permanent Impacts b/		Total Impacts c/	
									Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)
210.6	286	Coxsackie	M35	N/A	N/A	PSS	-	37.6	-	19.1	-	334	-	353
210.7	287	Coxsackie	M34	HN-101	1	PEM/PFO	-	138	160.7	-	718	1,000	878.8	1,000
210.9	287	Coxsackie	Y21	N/A	N/A	PEM	-	133.4	-	1,026.3	-	1,728.8	-	2,755.1
211.2	288	Coxsackie	Y20	N/A	N/A	PEM	18.5	1,262.5	-	8,738.2	-	16,996.3	-	25,734.5
211.7	289	Coxsackie	M33	N/A	N/A	PEM/PFO	4.4	179.9	11852	34.5	2286.8	187.7	14138.8	222.2
211.8	289	Coxsackie	Y19	N/A	N/A	PEM	12.5	23.8	-	266.7	-	583.7	-	850.4
212.3	290	Coxsackie	Y18	N/A	N/A	PEM	-	2,500.2	-	55,108.8	-	28,350.7	-	83,459.4
213.5	292	Coxsackie	M32	N/A	N/A	PEM/PSS/PFO	-	11.6	56,130.8	-	6,327.6	-	62,458.3	-
214.5; 216.0	296, 299	Coxsackie/ Athens	Y16	HN-108	1	PEM	854.1	1,627.6	-	276,129.4	-	40,961	-	317,090.4
216.8	303	Athens	Y17	HN-108	1	PEM	-	-	-	719.2	-	-	-	719.2
220.2	311	Catskill	Y15	N/A	N/A	PEM	-	-	-	37,575.7	-	-	-	37,575.7
220.4	312	Catskill	Y14	N/A	N/A	PEM	-	-	-	2,055.3	-	-	-	2,055.3
220.8	313	Catskill	Y13	N/A	N/A	PEM	-	-	-	1,562	-	242.5	-	1,804.5
220.9	313	Catskill	M29	N/A	N/A	PEM	-	36.5	-	6,019.5	-	905.8	-	6,925.3
222.0	316	Catskill	M25	N/A	N/A	PEM/PFO	-	17	952.8	-	348.3	-	1,301.2	-
222.5	318	Catskill	M24	N/A	N/A	PEM/PFO	-	1.3	4,844.9	-	100.6	-	4,945.5	-
223.2	319	Catskill	Y11	N/A	N/A	PEM	-	627.8	-	6,158.5	-	4,535.6	-	10,694.2
223.6	321	Catskill	M21	N/A	N/A	PEM	-	-	-	11,045	-	41.6	-	11,086.6
223.8	321	Catskill	M20	N/A	N/A	PFO	-	-	242.8	-	-	-	242.8	-
224.1	322	Catskill	M19	N/A	N/A	PFO	-	-	2,133.3	-	-	-	2,133.3	-
224.3	323	Catskill	Y10	N/A	N/A	PEM	-	-	-	10,013.7	-	93.2	-	10,106.9

Wetland Impact Table

Approx. MP	Index Map Sheet	Town	Field ID	NYSDEC Wetland ID	NYSDEC Wetland Class	Cowardin Classification	HDD Crossing Length (feet)	Direct Bury Crossing Length (feet)	Temporary Impacts a/		Permanent Impacts b/		Total Impacts c/	
									Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)	Forested Wetland (square feet) d/	Non-Forested Wetland (square feet)
224.5	323	Catskill	Y9	N/A	N/A	PEM	-	-	-	852.2	-	-	-	852.2
225.0	324	Catskill	M16	N/A	N/A	PEM	-	-	-	928.4	-	-	-	928.4
225.2	325	Catskill	M15	N/A	N/A	PEM	-	-	-	485.7	-	795.3	-	1,281
226.0	327	Catskill	M12	N/A	N/A	PEM	-	67.6	-	3,137.2	-	1,189.5	-	4,326.7
226.2	328	Catskill	M11	N/A	N/A	PEM/PFO	10.9	-	904.5	-	-	-	904.5	-
226.3	328	Catskill	M9	N/A	N/A	PSS/PFO	-	25.1	8,058.4	-	655.8	-	8,714.2	-
226.5	328	Catskill	M8	N/A	N/A	PEM/PFO	-	14.4	1,428	-	325.4	-	1,753.4	-
227.1	330	Catskill	M3	N/A	N/A	PEM/PSS	-	234.3		5,491.3	-	3,493.7	-	8,985
CSX Railroad Right-of-Way – Haverstraw Bay Bypass, NY														
296.1	335	Stony Point	Y1	HS-2	1	PEM	266.6	-	-	-	-	-	-	-
298.5	342	Haverstraw	Y4	N/A	N/A	PEM	-	-	-	1,161.6	-	62.5	-	1,224.2
CSX Railroad Right-of-Way Subtotal:							**2,362.5**	**21,482.4**	**347,698.8**	**996,305.7**	**72,640.5**	**236,866**	**420,339.9**	**1,233,171.6**
Total Impacts									**705,296.2 (16.2 acres)**	**2,230,793.5 (51.2 acres)**	**87,842.4 (2.0 acres)**	**360,442.1 (8.3 acres)**	**793,139.1 (18.2 acres)**	**2,591,235.3 (59.5 acres)**

a/ Temporary Impacts are based on an approximate 31- to 33-foot temporary workspace encompassing activities such as trenching, access, equipment staging, and spoil storage.
b/ Permanent Impacts are based on an approximate 13- to 17- foot permanent vegetation maintenance corridor.
c/ Total Impacts include both temporary and permanent impacts combined.
d/ If multiple Cowardin classifications exist for any given wetland identified as containing PFO (i.e. PFO/PSS), impacts were assigned to forested wetland.

Table I.1-2. Delineated Wetlands within the Proposed CHPE Project ROI

Segment	MP	Wetland ID	Cowardin Classification	Acres in ROI
Overland	102	A3411	PSS1B/R3UB1	0.02
Overland	102	A3511	PEM1F	0.14
Overland	102	A3611	PEM1C	0.07
Overland	103	A3011	PEM1B	0.02
Overland	103	A3111	PEM1B/PSS1B	0.10
Overland	103	A3211	PEM1B	0.04
Overland	103	A3311	PEM1B	< 0.01
Overland	104	A2511	PFO1B	0.22
Overland	104	A2611	PEM1B/OWxh	0.05
Overland	104	A2711	PEM1B	0.05
Overland	104	A2811	PFO1D/R3UB1	0.06
Overland	104	A2911	PFO1B/PEM1B	0.21
Overland	105	A2211	PEM1B	< 0.01
Overland	105	A2311	PEM1B	< 0.01
Overland	105	A2411	PFO1D/R3UB1	0.04
Overland	106	A2011	PEM1B/PSS1B	0.01
Overland	106	A2111	PEM1B	0.02
Overland	107	A1511	PEM1B	0.03
Overland	107	A1611	PEM1B	0.01
Overland	107	A1711	PFO1B/PEM1B	0.07
Overland	107	A1811	PEM1F/PSS1	0.08
Overland	108	A1111	PFO1B	0.01
Overland	108	A1211	PSS1C	0.02
Overland	108	A1311	PEM1B	0.03
Overland	108	A1411	PFO1	0.01
Overland	109	A0511	PEM1B/PFO1B	0.02
Overland	109	A0611	PEM	0.01
Overland	109	A0911	PFO/PEM	0.02
Overland	109	A1011	PSS1B-C	0.04
Overland	110	A0411	PEM1Br	0.08
Overland	110	A0711	PSS1/PEM	0.30
Overland	110	A0811	PEM1B	0.28
Overland	111	A0211	PEM1F	0.60
Overland	111	A0311	PSS1E/PEM1E	0.77
Overland	112	A0111	PSS1/PEM1C	0.17
Overland	113	B54	PFO/PSS	0.01
Overland	114	B54	PEM/PSS	0.56
Overland	114	B54	PSS	0.62

Segment	MP	Wetland ID	Cowardin Classification	Acres in ROI
Overland	115	B54	PEM	14.8
Overland	116	B54	PFO/PEM	4.22
Overland	116	B55	PEM/PSS	0.12
Overland	117	B53	PEM	1.61
Overland	117	B54	PFO	8.04
Overland	118	B51	PEM	4.40
Overland	118	B52	PEM	0.78
Overland	119	B48	PEM	2.27
Overland	119	B48	PFO	0.26
Overland	119	B48	PSS	0.21
Overland	119	B48-A	PEM	0.26
Overland	119	B49	PEM	0.24
Overland	119	B50	PEM	0.25
Overland	119	F19	PFO	0.04
Overland	120	F17	PEM	3.41
Overland	120	F17	PFO	0.04
Overland	120	F17	POW	2.45
Overland	120	F17	PSS	0.10
Overland	120	F20	POW	0.06
Overland	121	F16	PFO	0.84
Overland	121	F16	PFO/PEM	0.27
Overland	122	F12	PFO	0.38
Overland	122	F12	PFO/PSS	1.92
Overland	122	F13	PFO	0.51
Overland	122	F14	PFO	0.22
Overland	123	F10	PFO/PSS	0.31
Overland	123	F10	PSS	0.28
Overland	123	F11	PFO/PSS	1.65
Overland	124	F08	PFO/PSS	9.39
Overland	125	F08	PEM/PSS	1.05
Overland	125	F08	PFO/PEM	0.58
Overland	126	F08	PEM	0.04
Overland	127	F04	PEM/PSS	2.48
Overland	128	F02	PEM/PSS	6.43
Overland	128	F03	PEM	0.04
Overland	128	F03	PEM/PSS	0.13
Overland	128	F04	PSS	1.82
Overland	129	A0054	PEM	5.12
Overland	129	F02	PEM	0.02

Segment	MP	Wetland ID	Cowardin Classification	Acres in ROI
Overland	130	A0054	PSS	2.93
Overland	130	A0055	PSS	7.11
Overland	132	A0002	PEM	2.43
Overland	132	A0002	PSS	2.88
Overland	133	A0003	PEM	0.11
Overland	133	A0003	PSS	0.01
Overland	133	A0004	PEM	0.07
Overland	133	A0005	PSS	0.14
Overland	134	A0006	PFO	0.01
Overland	134	A0008	PFO	0.91
Overland	134	A0009	PFO	0.01
Overland	135	A0012	PFO	0.07
Overland	136	A0013	PEM/PSS	0.13
Overland	136	A0014	PEM/PSS	0.03
Overland	136	A0015	PSS	0.01
Overland	136	A0016	PFO	0.14
Overland	136	A0017	PEM	0.15
Overland	136	A0017	PFO	0.17
Overland	136	A0018	PFO	0.01
Overland	137	A0020	PEM/PSS	0.01
Overland	137	A0022	PSS	0.04
Overland	137	A0023	PEM	< 0.01
Overland	137	A0024	PEM	0.03
Overland	137	A0024	PEM/PSS	0.08
Overland	137	A0024	PFO	0.02
Overland	137	A0024	PFO/PSS	0.03
Overland	137	A0024	PSS	0.17
Overland	137	A0025	PSS	0.05
Overland	137	A0026	PEM/PSS	0.04
Overland	137	A0026	PFO	0.08
Overland	137	A0026	PSS	1.21
Overland	138	A0027	PFO	0.12
Overland	138	A0028	PFO	< 0.01
Overland	138	A0029	PFO	0.13
Overland	138	A0030	PSS	0.08
Overland	138	A0031	PSS	0.07
Overland	138	A0033	PSS	0.02
Overland	138	A0034	PSS	0.22
Overland	138	A0035	PEM	0.11

Segment	MP	Wetland ID	Cowardin Classification	Acres in ROI
Overland	139	A0036	PSS	0.13
Overland	139	A0037	PFO	0.08
Overland	139	A0037	PSS	1.10
Overland	139	A0038	PFO	0.49
Overland	139	A0038	PSS	0.94
Overland	140	A0041	PSS	0.13
Overland	141	A0044	PFO/PEM	0.32
Overland	141	A0046	PSS	0.05
Overland	141	A0047	PFO	0.10
Overland	141	A0047	PSS	0.12
Overland	141	A0048	PFO	0.01
Overland	141	A0050	PSS	0.06
Overland	142	A0049	PFO	0.55
Overland	142	A0049	PFO/PSS	0.01
Overland	142	A0049	PSS	0.08
Overland	142	A0051	PSS	0.20
Overland	142	A0053	PFO	1.17
Overland	142	A0053	PFO/PSS	0.01
Overland	142	A0053	PSS	0.23
Overland	142	A5211	PFO	0.07
Overland	143	D02	PFO	0.11
Overland	143	D03	PFO	0.68
Overland	143	D04	PFO	0.01
Overland	143	D05	PFO	0.03
Overland	143	D06	PFO/PEM	0.03
Overland	143	D07	PEM	0.34
Overland	143	D08	PFO	< 0.01
Overland	144	D01	PFO	0.10
Overland	145	B38	PEM	0.27
Overland	146	B36	PFO/PSS	0.47
Overland	146	B37	PFO	0.04
Overland	146	B37	PFO/PSS	0.19
Overland	146	B37	PSS	0.11
Overland	146	B39	PFO	0.20
Overland	146	B39	PFO/PEM	0.05
Overland	150	B01	PEM	0.35
Overland	150	B01	PEM/PSS	0.36
Overland	151	B03	PEM	1.31
Overland	151	B03	PSS	0.68

Segment	MP	Wetland ID	Cowardin Classification	Acres in ROI
Overland	151	B04	PEM	0.19
Overland	151	B04	PEM/PSS	1.42
Overland	152	B04	PSS	0.10
Overland	152	B05	PEM/PSS	0.39
Overland	152	B05	PSS	0.26
Overland	153	B06	PEM/PSS	0.35
Overland	153	B07	PFO/PSS	0.01
Overland	154	B08	PFO	0.01
Overland	155	B47	PFO/PSS	< 0.01
Overland	155	B47	PSS	0.08
Overland	155	D09	PEM	4.76
Overland	156	B45	PEM	1.22
Overland	156	B46	PEM	1.54
Overland	156	B47	PFO/PEM	0.62
Overland	157	B41	PFO	0.36
Overland	157	B42	PEM	0.50
Overland	157	B43	PEM	0.76
Overland	157	B44	PFO/PEM	1.09
Overland	158	B10	PFO	1.00
Overland	159	B16	PFO	0.59
Overland	159	B17	PFO	0.53
Overland	159	B17	PFO/PSS	0.10
Overland	159	B18	PEM/PSS	0.46
Overland	159	B19	PEM/PSS	0.31
Overland	159	B20	PEM/PSS	0.14
Overland	159	B21	PEM	0.07
Overland	160	B23	PEM	0.09
Overland	160	B24	PFO	0.02
Overland	160	B25	PEM	0.07
Overland	160	B25	PEM/PSS	1.51
Overland	160	B25	PFO	0.30
Overland	160	B26	PSS	0.03
Overland	161	B28	PEM	0.01
Overland	161	B29	PEM/PSS	0.04
Overland	161	B30	PEM/PSS	0.52
Overland	162	B31	PEM	0.44
Overland	162	B32	PEM	0.50
Overland	163	B-C1	PEM	0.33
Overland	163	C01	PEM	0.15

Segment	MP	Wetland ID	Cowardin Classification	Acres in ROI
Overland	163	C01	PEM/PSS	0.20
Overland	163	C01	PSS	0.17
Overland	163	C02	PEM	0.01
Overland	163	C04	PEM	0.17
Overland	164	C05	PEM	0.03
Overland	164	C08	PEM	0.85
Overland	164	C08	PFO/PEM	0.06
Overland	164	C09	PFO/PSS	0.02
Overland	164	C09	PSS	0.13
Overland	165	C12	PEM	0.09
Overland	165	C14	PEM	0.21
Overland	165	C15	PFO	1.91
Overland	166	C21	PEM	0.03
Overland	166	C23	PEM	0.28
Overland	167	C26	PEM	0.91
Overland	167	C29	PEM	0.54
Overland	167	C31	PEM	0.79
Overland	168	C31	PEM/PSS	0.10
Overland	168	C34	PEM/PSS	0.31
Overland	168	C35	PEM/PSS	0.19
Overland	168	C36	PSS	0.17
Overland	169	C37	PFO/PSS	0.10
Overland	170	C42	PEM/PSS	2.19
Overland	170	C42	PEM1E/PFO1E/PSS1E	3.87
Overland	171	C44	PEM	0.18
Overland	171	X01	PSS1E/PFO1E	2.28
Overland	175	C46	PEM	0.37
Overland	175	C48	PEM	0.26
Overland	175	C56	PEM	0.22
Overland	176	C57	PEM	0.07
Overland	176	C57	PFO/PEM	0.29
Overland	176	C57	PFO/PSS	< 0.01
Overland	178	E002	PSS	0.13
Overland	179	E003	PEM	0.92
Overland	179	E003	PFO	0.85
Overland	179	E004	PEM	1.38
Overland	179	E005	PEM	0.16
Overland	179	E005	PFO	1.42
Overland	180	E006	PFO/PSS	0.11

Segment	MP	Wetland ID	Cowardin Classification	Acres in ROI
Overland	180	E007	PEM	0.09
Overland	180	E007	PEM/PSS	0.02
Overland	180	E007	PFO/PSS	0.08
Overland	180	E007	PSS	0.44
Overland	180	E008	PEM	0.27
Overland	180	E009	PEM	3.44
Overland	180	E009	PEM/PSS	0.46
Overland	180	E009	PSS	0.15
Overland	181	E010	PEM	0.41
Overland	181	E010	PEM/PSS	0.28
Overland	181	E010	PSS	0.07
Overland	181	E011	PFO	0.16
Overland	181	E012	PEM/PSS	0.15
Overland	181	E012	PFO/PEM	1.44
Overland	181	E013	PEM	0.01
Overland	181	E014	PFO	0.08
Overland	181	E015	PEM	0.62
Overland	181	E015	PFO	1.02
Overland	182	E015	PEM/PSS	2.07
Overland	182	E015	PSS	0.02
Overland	182	E095	PEM	0.01
Overland	182	E095	PEM/PSS	0.29
Overland	182	E096	PEM	0.12
Overland	182	E096	PEM/PSS	< 0.01
Overland	182	E096	PFO	0.40
Overland	182	E097	PEM	0.10
Overland	182	E097	PEM/PSS	0.54
Overland	183	E079	PFO/PSS	0.28
Overland	183	E080	PEM/PSS	0.04
Overland	183	E081	PFO	0.01
Overland	183	E098	POW	0.20
Overland	184	E017	PFO	0.02
Overland	184	E017	PFO/PSS	0.03
Overland	184	E017	POW	0.62
Overland	184	E075	PFO	0.12
Overland	184	E077	PSS	0.32
Overland	186	E021	PEM	3.52
Overland	186	E021	PEM/PSS	0.12
Overland	186	E021	PFO	0.10

Segment	MP	Wetland ID	Cowardin Classification	Acres in ROI
Overland	186	E021	PFO/PEM	0.16
Overland	187	E024	PEM	0.11
Overland	187	E024	PEM/PSS	0.59
Overland	187	E024	PFO	0.49
Overland	187	E024	PFO/PEM	0.01
Overland	187	E026	PEM/PSS	0.28
Overland	188	E028	PEM/PSS	0.10
Overland	188	E028	PFO	0.09
Overland	188	E028	PFO/PSS	0.05
Overland	188	E028	POW/PSS	0.11
Overland	188	E028	PSS	0.49
Overland	188	E029	PEM	< 0.01
Overland	188	E029	PFO	0.02
Overland	188	E029	PSS	0.17
Overland	189	E031	PSS	0.05
Overland	190	E032	PEM	0.04
Overland	190	E033	PEM	0.24
Overland	190	E033	PFO/PEM	0.04
Overland	190	E033	PSS	0.27
Overland	190	E034	PEM	0.16
Overland	190	E034	PFO	0.05
Overland	190	E034	PSS	< 0.01
Overland	190	E035	PFO	0.60
Overland	190	E035	PFO/PSS	< 0.01
Overland	190	E036	PFO	0.12
Overland	190	E082	PEM	0.04
Overland	190	E083	PEM	0.19
Overland	191	E037	PFO	0.57
Overland	191	E037	PSS	0.66
Overland	191	E039	PEM	1.24
Overland	191	E042	PFO	0.06
Overland	191	E043	PFO/PEM	0.26
Overland	192	E042	PEM	0.16
Overland	192	E042	PEM/PSS	0.25
Overland	192	E043	PEM	0.08
Overland	192	E044	PEM	0.08
Overland	192	E046	PEM	0.13
Overland	192	E046	PEM/PSS	0.44
Overland	192	E047	PEM	0.45

Segment	MP	Wetland ID	Cowardin Classification	Acres in ROI
Overland	194	E048	PEM/PSS	0.65
Overland	194	E051	PEM	0.28
Overland	194	E052	PEM	0.21
Overland	194	E059	PEM	0.07
Overland	195	E058	PEM	1.93
Overland	195	E090	PEM	0.06
Overland	195	E091	PEM	0.08
Overland	195	E092	PEM	0.02
Overland	197	E103	PEM	0.20
Overland	197	E104	PEM	1.19
Overland	198	E106	PEM	0.05
Overland	198	M71/E101	PSS	0.02
Overland	199	E069	PEM	0.14
Overland	199	M70	PFO	0.20
Overland	199	M71/E101	PEM	4.34
Overland	199	M71/E101	PEM/PSS	0.16
Overland	199	M72	PEM	< 0.01
Overland	200	M65	PFO/PSS/PEM	1.09
Overland	200	M66	PFO/PEM	0.22
Overland	200	M67	PFO/PSS/PEM	2.54
Overland	200	M68	PFO/PSS/PEM	0.79
Overland	200	M69	PFO/PEM	1.73
Overland	200	Y38	PSS/PFO	0.03
Overland	200	Y39	PEM	0.69
Overland	201	M62	PEM	0.35
Overland	201	M63	PFO/PSS/PEM	0.74
Overland	201	M64	PFO/PEM	0.29
Overland	201	M64	PSS/PEM	0.06
Overland	201	Y36	PEM	0.22
Overland	202	M61	PFO/PSS/PEM/POW	3.47
Overland	202	M61	PFO/PSS/PEM/POW	0.12
Overland	202	Y35	PEM	1.19
Overland	202	Y35	PEM	0.02
Overland	202	M59	PFO/PSS/PEM	0.32
Overland	202	M60	PFO/PEM	1.51
Overland	202	M61	PFO/PSS/PEM/POW	2.38
Overland	202	M61	PFO/PSS/PEM/POW	0.13
Overland	202	Y34	PEM/PSS	< 0.01
Overland	202	Y34	PSS/PEM	0.38

Segment	MP	Wetland ID	Cowardin Classification	Acres in ROI
Overland	202	Y35	PEM	0.73
Overland	202	Y35	PEM	0.02
Overland	203	M57	PFO/PEM	0.10
Overland	203	M58	PSS/PEM	0.08
Overland	203	Y33	PEM	0.51
Overland	204	M53	PEM	0.38
Overland	204	M54	PSS	0.20
Overland	204	M55	PEM	0.21
Overland	204	M56	PFO/PSS/PEM	0.46
Overland	205	M52	PEM	0.10
Overland	205	Y30	PEM	0.16
Overland	205	Y31	PEM/PSS	0.08
Overland	205	Y32	PEM/PSS	1.17
Overland	206	M48	PSS	0.02
Overland	206	M49	PSS	0.05
Overland	206	M50	PSS	0.03
Overland	207	M47	PSS/PEM	0.39
Overland	207	Y29	PEM	0.82
Overland	208	M44	PFO/PEM	0.18
Overland	208	M46	PFO/PSS	0.56
Overland	208	Y26	PEM	0.46
Overland	208	Y27	PEM/PSS	0.03
Overland	208	Y28	PEM/PSS	0.08
Overland	209	M40	PSS	0.07
Overland	209	M41	PFO/PSS/PEM	0.33
Overland	209	M42	PSS/PEM	0.27
Overland	209	M43	PSS/PEM	0.36
Overland	209	Y24	PEM/PSS	0.18
Overland	210	M34	PFO/PEM	0.58
Overland	210	M36	PFO	0.12
Overland	210	M37	PFO/PSS	0.01
Overland	210	M38	PSS	0.03
Overland	210	M39	PFO/PEM	0.03
Overland	210	Y22	PEM	0.21
Overland	210	Y23	PEM/PSS	0.22
Overland	211	M35	PSS	0.01
Overland	211	Y20	PEM	0.88
Overland	211	Y21	PEM	0.08
Overland	212	M33	PFO/PEM	0.88

Segment	MP	Wetland ID	Cowardin Classification	Acres in ROI
Overland	212	Y18	PEM	3.47
Overland	212	Y19	PEM	0.20
Overland	213	M32	PFO/PSS/PEM	3.96
Overland	214	M30	PSS/PEM	0.02
Overland	214	M31	PEM	0.02
Overland	216	Y16	PEM	20.07
Overland	217	Y17	PEM	0.10
Overland	220	Y14	PEM	0.05
Overland	220	Y15	PEM	2.14
Overland	221	M26	PSS/PEM	< 0.01
Overland	221	M27	PSS	0.04
Overland	221	M28	PFO	0.04
Overland	221	M29	PEM	0.24
Overland	221	Y13	PEM	0.04
Overland	222	M25	PFO/PEM	0.03
Overland	222	Y12	PEM	0.01
Overland	223	M22	PFO	0.19
Overland	223	M23	PFO	0.18
Overland	223	M24	PFO/PEM	0.58
Overland	223	Y11	PEM	0.25
Overland	224	M19	PFO	0.05
Overland	224	M20	PFO	0.01
Overland	224	M21	PEM	0.56
Overland	224	Y10	PEM	0.62
Overland	225	M14	PEM	0.02
Overland	225	M15	PEM	0.03
Overland	225	M16	PEM	0.02
Overland	225	M17	PSS/PEM/POW	0.06
Overland	225	M18	PEM	0.01
Overland	225	Y08	PEM	0.25
Overland	225	Y09	PEM	0.02
Overland	226	M09	PFO/PSS	0.22
Overland	226	M11	PFO/PEM	0.08
Overland	226	M12	PEM	0.10
Overland	226	M13	PEM	0.04
Overland	227	M02	PEM	0.08
Overland	227	M03	PSS/PEM	0.48
Overland	227	M05	PFO/PEM	< 0.01
Overland	227	M06	PFO	0.25

Segment	MP	Wetland ID	Cowardin Classification	Acres in ROI
Overland	227	M07	PEM	0.09
Overland	227	M08	PFO/PEM	0.44
Hudson River	228	M01	PEM	0.08
Hudson River	296	Y01	PEM	0.53
Hudson River	296	Y02	PEM	0.02
Hudson River	297	Y03	PEM	0.07
Hudson River	299	Y04	PEM	0.06
Hudson River	299	Y05	PEM	0.03
Hudson River	300	Y06	PEM	0.04
Hudson River	302	Y07	PEM	0.02
Approximate Total Acreage				**257.51**

Key:

MP = milepost

OWxh = open water, excavated, diked/impounded

PEM = palustrine emergent

PEM1B = palustrine emergent, persistent, saturated

PEM1Br = palustrine emergent, persistent, saturated, artificial substrate

PEM1C = palustrine emergent, persistent, seasonally flooded

PEM1E = palustrine emergent, persistent, seasonally flooded/saturated

PEM1F = palustrine emergent, persistent, semi-permanently flooded

PFO = palustrine forested

PFO1 – palustrine forested, broad-leaved deciduous

PFO1B = palustrine forested, broad-leaved deciduous, saturated

PFO1D = palustrine forested, broad-leaved deciduous, partially drained/ditched

POW = palustrine open water

PSS = palustrine shrub-scrub

PSS1 = palustrine shrub-scrub, broad-leaved deciduous, seasonally

flooded/saturated

PSS1B = palustrine shrub-scrub, broad-leaved deciduous, saturated

PSS1B-C = palstrine shrub-scrub, broad-leaved deciduous, saturated-seasonally

flooded

PSS1E = palustrine shrub-scrub, broad-leaved deciduous, seasonally

flooded/saturated

R3UB1 = riverine-upper perennial-unconsolidated bottom-gravel

ROI = region of influence (within 100 feet on either side of the transmission line

Table I.1-3. NYSDEC Freshwater Wetlands within the Proposed CHPE Project ROI

Segment	MP	Wetland ID	NYSDEC Wetland ID	Cowardin Classification	Acres in ROI
Overland	111.4	A0211	WH-2	PEM1F	0.60
Overland	111.7	A0111	WH-2	PSS1/PEM1C	0.17
Overland	119.7	F17	FA-13	PEM	3.41
Overland	136.2	A17	HF-1	PEM/PFO	0.32
Overland	137.1	A26	F-20	PEM/PSS/PFO	1.33
Overland	137.9	A29	F-7	PFO	0.13
Overland	137.9	A30	F-7	PSS	0.08
Overland	137.9	A31	F-7	PSS	0.07
Overland	138.5	A36	F-7	PSS	0.13
Overland	138.8	A38	F-7	PFO/PSS	1.43
Overland	141.7	A49	Q-32	PFO/PSS	0.64
Overland	141.9	A53	Q-32	PFO/PSS	1.41
Overland	142.9	D7	GA-20	PEM	0.34
Overland	143.6	D1	GA-20	PFO	0.10
Overland	145.1	B38	Q-11	PEM	0.27
Overland	146.4	B36	Q-11	PFO/PSS	0.47
Overland	146.4	B37	Q-11	PFO/PSS	0.34
Overland	149.5	B1	S-7	PEM/PSS	0.71
Overland	150.5	B3	S-19	PEM/PSS	1.99
Overland	151.4	B4	S-19	PEM/PSS	1.71
Overland	152.3	B5	S-19	PEM/PSS	0.65
Overland	153.7	B8	S-19	PFO	0.01
Overland	154.9	D9	S-21	PEM	0.24
Overland	155.5	B47	S-21	PFO/PSS	0.62
Overland	159.3	B21	R-50	PEM	0.07
Overland	159.5	B24	R-50	PFO	0.02
Overland	160.1	B25	R-3	PEM/PFO/PSS	1.88
Overland	161.6	B31	R-11	PEM	0.44
Overland	164.4	C8	R-18	PFO/PEM	0.91
Overland	164.9	C15	R-18	PFO	1.91
Overland	165.9	C23	B-31	PEM	0.28
Overland	167.1	C29	B-31	PEM	0.54
Overland	170	C42	S-107	PEM/PSS/PFO/PEM1E/ PFO1E/PSS1E	6.06
Overland	171.4	C44	S-112	PEM	0.18
Overland	175.4	C57	S-115	PEM/PFO/PSS	0.36
Overland	180	E9	S-117	PEM/PSS	4.05
Overland	186.5	E24	V-51	PEM/PSS/PFO	1.29

Segment	MP	Wetland ID	NYSDEC Wetland ID	Cowardin Classification	Acres in ROI
Overland	187.4	E28	V-52	PEM/PSS/PFO	1.61
Overland	210.7	M34	HN-101	PFO/PEM	0.58
Overland	214.5	Y16	HN-108	PEM	20.07
Overland	216.8	Y17	HN-108	PEM	0.10
Hudson River	296.1	Y1	HS-2	PEM	0.53
Total Acreage					**58.05**

Key:
MP = milepost
NYSDEC = New York State Department of Environmental Conservation
PEM = palustrine emergent
PEM1C = palustrine emergent, persistent, seasonally flooded
PEM1E = palustrine emergent, persistent, seasonally flooded/saturated
PEM1F = palustrine emergent, persistent, semi-permanently flooded
PFO = palustrine forested
PFO1E = palustrine forested, broad-leaved deciduous, seasonally flooded/saturated
PSS = palustrine shrub-scrub
PSS1E = palustrine shrub-scrub, broad-leaved deciduous, seasonally flooded/saturated
POW = palustrine open water
ROI = region of influence (within 100 feet on either side of the transmission line)

Table I.1-4. NYSDEC Freshwater Wetland Adjacent Areas within the Proposed CHPE Project ROI

Segment	MP	NYSDEC Wetland ID	Acres in ROI
Overland	110	WH-1	0.02
Overland	112	WH-2	2.13
Overland	120	FA-13	8.70
Overland	122	FA-12	0.32
Overland	130	HF-10	6.76
Overland	136	HF-1	3.47
Overland	137	F-20	1.06
Overland	138	F-7	4.98
Overland	140	Q-32	9.07
Overland	143	GA-20	3.66
Overland	143	Q-32	0.02
Overland	143	GA-20	0.02
Overland	143	GA-21	1.23
Overland	145	Q-11	3.79
Overland	150	S-7	1.94
Overland	151	S-19	14.30
Overland	152	S-50	0.60
Overland	152	S-48	0.01
Overland	155	S-20	3.05
Overland	155	S-21	4.30
Overland	159	R-50	7.87
Overland	160	R-3	1.90
Overland	162	R-11	8.35
Overland	164	R-18	20.14
Overland	166	B-31	17.38
Overland	169	BH-6	2.14
Overland	169	S-105	2.31
Overland	170	S-107	7.58
Overland	171	S-112	2.09
Overland	176	S-115	3.63
Overland	180	S-117	1.37
Overland	181	S-15	0.75
Overland	187	V-51	2.35
Overland	188	V-52	2.68
Overland	228	HS-101	0.18
Overland	228	C-23	1.89

Segment	MP	NYSDEC Wetland ID	Acres in ROI
Overland	228	C-23	0.19
Hudson River	228	C-23	0.19
Hudson River	229	C-23	0.39
Hudson River	229	C-25	0.03
Hudson River	296	HS-2	2.49
Hudson River	297	HS-11	1.02
Total Acreage			**156.35**

Key:

MP = milepost

NYSDEC = New York State Department of Environmental Conservation

ROI = region of influence (within 100 feet on either side of the transmission line)

Table I.1-5. NYSDEC Tidal Wetlands within the Proposed CHPE Project ROI

Segment	MP	Tidal Wetland ID	Description	Acres in ROI
Hudson River	317.4	2020	Littoral Zone	164.30 *
Hudson River	319.6	2020	Littoral Zone	270.40 *
New York City Metropolitan Area	328.5	5000	Adjacent Area	0.06
New York City Metropolitan Area	329.1	5000	Adjacent Area	0.23
New York City Metropolitan Area	329.4	5000	Adjacent Area	0.06
New York City Metropolitan Area	332.1	5000	Adjacent Area	17.66
New York City Metropolitan Area	332.3	2030	Formerly Connected	0.63
Total Acreage				**453.34**

Note: * Acreage for the littoral zone wetlands includes the Hudson River itself.

Key:

MP = milepost

ROI = region of influence (within 100 feet on either side of the transmission line)

APPENDIX I.2 – POTENTIALLY IMPACTED SOILS ASSOCIATED WITH THE PROPOSED CHPE PROJECT

Appendix I.2
Potentially Impacted Soils Associated with the Proposed CHPE Project

Table I.2-1 provides a description of soil types found within the proposed CHPE Project ROI for the Geology and Soils resource area. The table is sorted by segment and contains the map unit name, map unit type, acres of soil within the ROI, and the mile post at which the soil occurs.

Table I.2-1. Soils within the Proposed CHPE Project ROI

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Lake Champlain	Fluvaquents	Consociation	0.03	98.6
Lake Champlain	Hudson and Vergennes soils, steep and very steep	Undifferentiated group	0.47	99.9
Lake Champlain	Fluvaquents	Consociation	0.23	100.3
Lake Champlain	Fluvaquents	Consociation	0.34	100.4
Overland	Saco silt loam	Consociation	1.78	101.4
Overland	Vergennes silty clay loam, 6 to 12 percent slopes	Consociation	1.81	101.5
Overland	Oakville loamy fine sand, 5 to 15 percent slopes	Consociation	1.65	101.6
Overland	Pits, gravel, and sand	Consociation	2.91	101.6
Overland	Farmington-Rock outcrop association, nearly level through moderately steep	Association	4.44	101.8
Overland	Oakville loamy fine sand, 5 to 15 percent slopes	Consociation	8.87	102.0
Overland	Hollis-Charlton association, moderately steep and steep	Association	0.92	102.2
Overland	Limerick silt loam	Consociation	0.63	102.2
Overland	Hudson and Vergennes soils, steep and very steep	Undifferentiated group	0.40	102.4
Overland	Hudson and Vergennes soils, steep and very steep	Undifferentiated group	0.00	102.4
Overland	Pits, gravel, and sand	Consociation	0.79	102.4
Overland	Vergennes silty clay loam, 12 to 20 percent slopes	Consociation	7.49	102.4
Overland	Hollis-Rock outcrop association, gently sloping and sloping	Association	6.68	102.7

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Vergennes silty clay loam, 12 to 20 percent slopes	Consociation	0.00	102.8
Overland	Hudson and Vergennes soils, steep and very steep	Undifferentiated group	0.17	102.9
Overland	Hollis-Charlton association, moderately steep and steep	Association	1.35	103.0
Overland	Charlton soils, very stony, gently sloping and sloping	Consociation	4.24	103.1
Overland	Hollis-Rock outcrop association, gently sloping and sloping	Association	0.07	103.1
Overland	Hollis-Rock outcrop association, gently sloping and sloping	Association	7.66	103.3
Overland	Hollis-Charlton association, moderately steep and steep	Association	4.18	103.6
Overland	Vergennes silty clay loam, 12 to 20 percent slopes	Consociation	0.44	103.6
Overland	Hudson and Vergennes soils, steep and very steep	Undifferentiated group	0.03	103.7
Overland	Vergennes silty clay loam, 12 to 20 percent slopes	Consociation	4.13	103.8
Overland	Hollis-Rock outcrop association, gently sloping and sloping	Association	16.60	103.9
Overland	Hollis-Charlton association, moderately steep and steep	Association	5.76	104.6
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	0.29	104.7
Overland	Hoosic gravelly sandy loam, rolling and hilly	Consociation	0.96	104.9
Overland	Hollis-Charlton association, moderately steep and steep	Association	1.28	104.9
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	2.33	105.0
Overland	Hollis-Charlton association, moderately steep and steep	Association	10.54	105.1
Overland	Charlton soils, very stony, gently sloping and sloping	Consociation	6.94	105.5
Overland	Vergennes silty clay loam, 6 to 12 percent slopes	Consociation	4.44	105.8
Overland	Hudson and Vergennes soils, steep and very steep	Undifferentiated group	0.28	105.9
Overland	Charlton soils, very stony, moderately steep and steep	Consociation	3.94	106.0

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Hudson and Vergennes soils, steep and very steep	Undifferentiated group	0.42	106.1
Overland	Hollis-Charlton association, moderately steep and steep	Association	21.04	106.2
Overland	Rock outcrop-Hollis association, moderately steep through very steep	Association	4.37	107.0
Overland	Hollis-Charlton association, moderately steep and steep	Association	8.08	107.2
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	0.26	107.4
Overland	Rock outcrop-Hollis association, moderately steep through very steep	Association	3.59	107.5
Overland	Hollis-Charlton association, moderately steep and steep	Association	0.10	107.7
Overland	Hudson and Vergennes soils, steep and very steep	Undifferentiated group	3.41	107.7
Overland	Hollis-Charlton association, moderately steep and steep	Association	32.78	107.8
Overland	Hollis-Rock outcrop association, gently sloping and sloping	Association	1.96	108.3
Overland	Rock outcrop-Vergennes association, gently sloping through moderately steep	Association	0.57	109.1
Overland	Rock outcrop-Vergennes association, gently sloping through moderately steep	Association	3.78	109.3
Overland	Hudson and Vergennes soils, steep and very steep	Undifferentiated group	0.90	109.4
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	4.48	109.5
Overland	Vergennes silty clay loam, 12 to 20 percent slopes	Consociation	1.93	109.6
Overland	Hudson and Vergennes soils, steep and very steep	Undifferentiated group	1.36	109.7
Overland	Saprists, Aquepts, and Aquents	Undifferentiated group	1.70	109.8
Overland	Saprists, Aquepts, and Aquents	Undifferentiated group	1.99	110.0
Overland	Hudson and Vergennes soils, steep and very steep	Undifferentiated group	1.54	110.1
Overland	Kingsbury silty clay, 2 to 6 percent slopes	Consociation	3.20	110.2
Overland	Claverack loamy fine sand, 2 to 6 percent slopes	Consociation	0.19	110.3

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	1.03	110.3
Overland	Vergennes silty clay loam, 12 to 20 percent slopes	Consociation	0.80	110.3
Overland	Kingsbury silty clay, 2 to 6 percent slopes	Consociation	3.18	110.4
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	0.17	110.4
Overland	Vergennes silty clay loam, 6 to 12 percent slopes	Consociation	1.25	110.5
Overland	Hollis-Charlton association, moderately steep and steep	Association	0.53	110.6
Overland	Rock outcrop-Vergennes association, gently sloping through moderately steep	Association	3.30	110.6
Overland	Kingsbury silty clay, 2 to 6 percent slopes	Consociation	1.68	110.7
Overland	Hollis-Charlton association, moderately steep and steep	Association	7.86	110.8
Overland	Vergennes silty clay loam, 6 to 12 percent slopes	Consociation	16.70	111.2
Overland	Saprists, Aquepts, and Aquents	Undifferentiated group	0.11	111.3
Overland	Saprists, Aquepts, and Aquents	Undifferentiated group	0.10	111.5
Overland	Saprists, Aquepts, and Aquents	Undifferentiated group	0.72	111.8
Overland	Limerick silt loam	Consociation	0.52	111.9
Overland	Vergennes silty clay loam, 12 to 20 percent slopes	Consociation	1.70	111.9
Overland	Limerick silt loam	Consociation	3.92	111.9
Overland	Vergennes silty clay loam, 12 to 20 percent slopes	Consociation	4.01	112.0
Overland	Orthents and Psamments	Undifferentiated group	43.33	112.2
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	0.96	112.2
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	0.49	112.8
Overland	Saco silt loam	Consociation	0.07	112.9
Overland	Covington silty clay loam	Consociation	0.00	113.2
Overland	Saco silt loam	Consociation	0.06	113.2
Overland	Saco silt loam	Consociation	0.00	113.5
Overland	Saco silt loam	Consociation	0.02	113.6
Overland	Saco silt loam	Consociation	0.99	113.6

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Saco silt loam	Consociation	0.99	113.7
Overland	Limerick silt loam	Consociation	13.78	114.3
Overland	Teel silt loam	Consociation	0.36	114.4
Overland	Teel silt loam	Consociation	0.09	114.6
Overland	Teel silt loam	Consociation	0.06	114.7
Overland	Saco silt loam	Consociation	4.23	114.8
Overland	Teel silt loam	Consociation	0.22	114.8
Overland	Teel silt loam	Consociation	0.18	114.9
Overland	Limerick silt loam	Consociation	1.25	115.0
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	2.04	115.1
Overland	Saco silt loam	Consociation	0.68	115.1
Overland	Orthents and Psamments	Undifferentiated group	1.89	115.2
Overland	Saco silt loam	Consociation	7.76	115.3
Overland	Orthents and Psamments	Undifferentiated group	6.99	115.6
Overland	Teel silt loam	Consociation	4.31	115.8
Overland	Hartland very fine sandy loam, 0 to 2 percent slopes	Consociation	3.80	116.0
Overland	Hartland very fine sandy loam, 0 to 2 percent slopes	Consociation	0.01	116.0
Overland	Orthents and Psamments	Undifferentiated group	0.43	116.3
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	5.35	116.3
Overland	Orthents and Psamments	Undifferentiated group	0.02	116.4
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	1.45	116.5
Overland	Covington silty clay loam	Consociation	1.62	116.6
Overland	Orthents and Psamments	Undifferentiated group	5.98	116.6
Overland	Covington silty clay loam	Consociation	1.73	116.9
Overland	Orthents and Psamments	Undifferentiated group	0.03	116.9
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	16.63	117.0
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	0.00	117.4
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	0.06	117.5

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Orthents and Psamments	Undifferentiated group	19.20	117.7
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	0.85	117.7
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	1.00	117.9
Overland	Hudson silt loam, 6 to 12 percent slopes	Consociation	0.27	118.0
Overland	Hollis-Rock outcrop association, gently sloping and sloping	Association	1.75	118.1
Overland	Vergennes silty clay loam, 12 to 20 percent slopes	Consociation	0.02	118.3
Overland	Hollis-Charlton association, moderately steep and steep	Association	0.59	118.6
Overland	Saprists, Aquepts, and Aquents	Undifferentiated group	9.19	118.8
Overland	Orthents and Psamments	Undifferentiated group	0.23	119.0
Overland	Vergennes silty clay loam, 12 to 20 percent slopes	Consociation	0.08	119.0
Overland	Hollis-Rock outcrop association, gently sloping and sloping	Association	2.56	119.1
Overland	Hudson and Vergennes soils, steep and very steep	Undifferentiated group	2.37	119.2
Overland	Vergennes silty clay loam, 6 to 12 percent slopes	Consociation	0.19	119.2
Overland	Hollis-Rock outcrop association, gently sloping and sloping	Association	4.41	119.3
Overland	Pits, quarry	Consociation	3.63	119.5
Overland	Hollis-Rock outcrop association, gently sloping and sloping	Association	16.29	119.7
Overland	Saprists, Aquepts, and Aquents	Undifferentiated group	4.46	120.5
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	0.01	120.6
Overland	Saco silt loam	Consociation	2.42	120.7
Overland	Hollis-Rock outcrop association, gently sloping and sloping	Association	35.83	120.8
Overland	Limerick silt loam	Consociation	1.87	122.4
Overland	Saco silt loam	Consociation	8.83	122.5
Overland	Limerick silt loam	Consociation	0.08	122.8
Overland	Limerick silt loam	Consociation	0.05	122.9
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	33.60	123.0

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Saco silt loam	Consociation	0.42	123.0
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	0.01	123.0
Overland	Hartland very fine sandy loam, 2 to 6 percent slopes	Consociation	8.85	124.4
Overland	Saprists, Aquepts, and Aquents	Undifferentiated group	4.14	124.6
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	16.85	125.0
Overland	Orthents and Psamments	Undifferentiated group	1.09	125.6
Overland	Covington silty clay loam	Consociation	7.51	125.7
Overland	Claverack loamy fine sand, 0 to 2 percent slopes	Consociation	0.97	126.0
Overland	Orthents and Psamments	Undifferentiated group	2.23	126.0
Overland	Covington silty clay loam	Consociation	12.11	126.1
Overland	Claverack loamy fine sand, 0 to 2 percent slopes	Consociation	0.20	126.5
Overland	Orthents and Psamments	Undifferentiated group	0.01	126.6
Overland	Claverack loamy fine sand, 0 to 2 percent slopes	Consociation	7.75	126.7
Overland	Orthents and Psamments	Undifferentiated group	0.02	126.7
Overland	Orthents and Psamments	Undifferentiated group	0.00	126.7
Overland	Orthents and Psamments	Undifferentiated group	0.02	126.7
Overland	Orthents and Psamments	Undifferentiated group	0.04	126.8
Overland	Covington silty clay loam	Consociation	7.97	127.0
Overland	Orthents and Psamments	Undifferentiated group	0.18	127.0
Overland	Claverack loamy fine sand, 2 to 6 percent slopes	Consociation	2.71	127.3
Overland	Orthents and Psamments	Undifferentiated group	0.24	127.3
Overland	Orthents and Psamments	Undifferentiated group	0.00	127.4
Overland	Kingsbury silty clay, 2 to 6 percent slopes	Consociation	16.12	127.5
Overland	Nassau shaly silt loam, undulating through hilly	Consociation	0.10	127.6

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Nassau shaly silt loam, undulating through hilly	Consociation	0.09	127.8
Overland	Covington silty clay loam	Consociation	0.00	127.9
Overland	Nassau shaly silt loam, undulating through hilly	Consociation	0.00	127.9
Overland	Covington silty clay loam	Consociation	11.23	128.1
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	0.63	128.4
Overland	Covington silty clay loam	Consociation	0.18	128.6
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	5.12	128.6
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	1.02	128.8
Overland	Orthents and Psamments	Undifferentiated group	26.94	128.9
Overland	Covington silty clay loam	Consociation	0.00	129.1
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	0.13	129.1
Overland	Covington silty clay loam	Consociation	0.63	129.2
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	1.04	129.3
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	1.08	129.7
Overland	Covington silty clay loam	Consociation	30.89	130.2
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	4.98	131.4
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	3.32	131.6
Overland	Covington silty clay loam	Consociation	0.05	131.7
Overland	Covington silty clay loam	Consociation	0.35	131.7
Overland	Vergennes silty clay loam, 2 to 6 percent slopes	Consociation	0.49	131.7
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	1.62	131.8
Overland	Carlisle muck	Consociation	21.16	131.9
Overland	Claverack loamy fine sand, 2 to 6 percent slopes	Consociation	0.00	132.5
Overland	Covington silty clay loam	Consociation	0.68	132.6
Overland	Claverack loamy fine sand, 2 to 6 percent slopes	Consociation	2.05	132.8
Overland	Covington silty clay loam	Consociation	1.51	132.8
Overland	Kingsbury silty clay, 2 to 6 percent slopes	Consociation	0.20	132.8
Overland	Claverack loamy fine sand, 0 to 2 percent slopes	Consociation	21.38	132.9
Overland	Wallington silt loam, sandy substratum	Consociation	6.85	133.8

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Claverack loamy fine sand, 0 to 2 percent slopes	Consociation	0.03	133.9
Overland	Kingsbury silty clay, 0 to 2 percent slopes	Consociation	0.16	133.9
Overland	Claverack loamy fine sand, 0 to 2 percent slopes	Consociation	23.26	134.0
Overland	Claverack loamy fine sand, 0 to 2 percent slopes	Consociation	0.23	134.1
Overland	Oakville loamy fine sand, 0 to 5 percent slopes	Consociation	1.17	135.1
Overland	Orthents and Psamments	Undifferentiated group	2.37	135.1
Overland	Orthents and Psamments	Undifferentiated group	0.01	135.2
Overland	Limerick-Saco complex	Complex	1.54	135.3
Overland	Hudson silt loam, hilly	Consociation	3.94	135.4
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	4.85	135.5
Overland	Unadilla very fine sandy loam, 8 to 15 percent slopes	Consociation	8.08	135.8
Overland	Scio silt loam, 3 to 8 percent slopes	Consociation	3.77	136.1
Overland	Hudson silt loam, hilly	Consociation	12.47	136.3
Overland	Teel silt loam	Consociation	0.00	136.4
Overland	Teel silt loam	Consociation	0.00	136.5
Overland	Teel silt loam	Consociation	0.00	136.5
Overland	Teel silt loam	Consociation	0.01	136.6
Overland	Rhinebeck silt loam, 3 to 8 percent slopes	Consociation	5.02	136.7
Overland	Teel silt loam	Consociation	0.00	136.7
Overland	Teel silt loam	Consociation	0.00	136.7
Overland	Teel silt loam	Consociation	0.51	136.9
Overland	Hudson silt loam, hilly	Consociation	2.90	137.0
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	1.02	137.1
Overland	Rhinebeck silt loam, 0 to 3 percent slopes	Consociation	0.26	137.2
Overland	Teel silt loam	Consociation	2.15	137.2
Overland	Unadilla very fine sandy loam, 3 to 8 percent slopes	Consociation	3.96	137.3
Overland	Rhinebeck silt loam, 0 to 3 percent slopes	Consociation	0.02	137.3
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	1.96	137.4
Overland	Rhinebeck silt loam, 0 to 3 percent slopes	Consociation	2.37	137.5
Overland	Shaker very fine sandy loam	Consociation	0.01	137.5
Overland	Shaker very fine sandy loam	Consociation	0.00	137.5
Overland	Shaker very fine sandy loam	Consociation	2.82	137.6

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Hudson silt loam, hilly	Consociation	2.11	137.7
Overland	Fluvaqvents frequently flooded	Consociation	3.80	137.8
Overland	Elmridge very fine sandy loam, 3 to 8 percent slopes	Consociation	2.74	138.0
Overland	Shaker very fine sandy loam	Consociation	8.09	138.1
Overland	Elmridge very fine sandy loam, 3 to 8 percent slopes	Consociation	3.66	138.4
Overland	Fluvaqvents frequently flooded	Consociation	1.06	138.5
Overland	Wareham loamy sand	Consociation	14.87	138.6
Overland	Madalin mucky silty clay loam	Consociation	1.63	139.2
Overland	Shaker very fine sandy loam	Consociation	1.73	139.3
Overland	Elmridge very fine sandy loam, 3 to 8 percent slopes	Consociation	0.03	139.4
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	0.03	139.4
Overland	Rhinebeck silt loam, 0 to 3 percent slopes	Consociation	6.06	139.4
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	2.38	139.6
Overland	Rhinebeck silt loam, 0 to 3 percent slopes	Consociation	4.63	139.7
Overland	Oakville and Windsor soils, 25 to 35 percent slopes	Undifferentiated group	6.92	139.9
Overland	Hudson silt loam, 8 to 15 percent slopes	Consociation	0.00	140.0
Overland	Rhinebeck silt loam, 0 to 3 percent slopes	Consociation	0.11	140.0
Overland	Claverack loamy fine sand, 3 to 8 percent slopes	Consociation	2.23	140.2
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	4.97	140.3
Overland	Cosad fine sandy loam	Consociation	3.65	140.5
Overland	Oakville loamy fine sand, nearly level	Consociation	15.75	140.7
Overland	Cosad fine sandy loam	Consociation	0.01	141.1
Overland	Rhinebeck silt loam, 0 to 3 percent slopes	Consociation	3.33	141.3
Overland	Rhinebeck silt loam, 3 to 8 percent slopes	Consociation	0.30	141.3
Overland	Cosad fine sandy loam	Consociation	5.89	141.5
Overland	Rhinebeck silt loam, 0 to 3 percent slopes	Consociation	11.29	141.7
Overland	Wareham loamy sand	Consociation	0.39	142.1
Overland	Oakville loamy fine sand, nearly level	Consociation	10.69	142.2
Overland	Oakville loamy fine sand, undulating	Consociation	5.93	142.6
Overland	Wareham loamy sand	Consociation	4.72	142.9
Overland	Deerfield loamy fine sand, nearly level	Consociation	5.75	143.1
Overland	Oakville loamy fine sand, undulating	Consociation	0.08	143.2
Overland	Wareham loamy sand	Consociation	0.24	143.2

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Oakville loamy fine sand, undulating	Consociation	4.17	143.3
Overland	Wareham loamy sand	Consociation	4.18	143.4
Overland	Oakville loamy fine sand, undulating	Consociation	24.42	143.7
Overland	Deerfield loamy fine sand, nearly level	Consociation	0.00	144.5
Overland	Oakville loamy fine sand, rolling	Consociation	3.12	144.7
Overland	Oakville loamy fine sand, undulating	Consociation	1.29	144.8
Overland	Oakville loamy fine sand, undulating	Consociation	0.13	144.9
Overland	Oakville loamy fine sand, rolling	Consociation	6.05	144.9
Overland	Wareham loamy sand	Consociation	0.95	145.1
Overland	Oakville loamy fine sand, nearly level	Consociation	6.33	145.2
Overland	Oakville loamy fine sand, undulating	Consociation	4.17	145.4
Overland	Oakville loamy fine sand, nearly level	Consociation	7.75	145.6
Overland	Deerfield loamy fine sand, nearly level	Consociation	2.63	145.9
Overland	Oakville loamy fine sand, nearly level	Consociation	4.39	146.0
Overland	Wareham loamy sand	Consociation	8.23	146.2
Overland	Oakville loamy fine sand, nearly level	Consociation	5.75	146.5
Overland	Oakville loamy fine sand, undulating	Consociation	12.76	146.8
Overland	Oakville loamy fine sand, rolling	Consociation	0.06	147.0
Overland	Oakville loamy fine sand, undulating	Consociation	18.83	147.3
Overland	Oakville loamy fine sand, rolling	Consociation	0.87	147.3
Overland	Windsor loamy sand, undulating	Consociation	1.60	148.1
Overland	Deerfield loamy fine sand, nearly level	Consociation	4.66	148.2
Overland	Windsor loamy sand, undulating	Consociation	13.65	148.4
Overland	Windsor loamy sand, nearly level	Consociation	9.15	148.9
Overland	Windsor loamy sand, undulating	Consociation	5.07	149.3
Overland	Fluvaquents frequently flooded	Consociation	2.49	149.5
Overland	Oakville and Windsor soils, 25 to 35 percent slopes	Undifferentiated group	0.51	149.6
Overland	Windsor loamy sand, undulating	Consociation	14.13	149.7
Overland	Windsor loamy sand, rolling	Consociation	25.12	150.2
Overland	Chatfield-Hollis complex, hilly, very rocky	Complex	1.73	150.3
Overland	Oakville and Windsor soils, 25 to 35 percent slopes	Undifferentiated group	0.68	150.8
Overland	Rhinebeck silt loam, 0 to 3 percent slopes	Consociation	0.04	151.1
Overland	Rhinebeck silt loam, 3 to 8 percent slopes	Consociation	2.34	151.3
Overland	Rhinebeck silt loam, 0 to 3 percent slopes	Consociation	4.76	151.5
Overland	Rhinebeck silt loam, 3 to 8 percent slopes	Consociation	16.43	151.7

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Hudson silt loam, 8 to 15 percent slopes	Consociation	1.51	152.3
Overland	Deerfield loamy fine sand, undulating	Consociation	6.34	152.4
Overland	Deerfield loamy fine sand, nearly level	Consociation	5.65	152.7
Overland	Windsor loamy sand, nearly level	Consociation	0.16	152.8
Overland	Windsor loamy sand, rolling	Consociation	5.80	152.9
Overland	Windsor loamy sand, undulating	Consociation	5.11	153.2
Overland	Udorthents, smoothed	Consociation	0.55	153.3
Overland	Deerfield loamy fine sand, nearly level	Consociation	4.26	153.4
Overland	Udorthents, smoothed	Consociation	0.06	153.4
Overland	Windsor loamy sand, nearly level	Consociation	0.98	153.4
Overland	Cosad fine sandy loam	Consociation	0.29	153.6
Overland	Windsor loamy sand, undulating	Consociation	2.70	153.6
Overland	Madalin mucky silty clay loam	Consociation	3.07	153.7
Overland	Windsor loamy sand, undulating	Consociation	21.50	153.8
Overland	Scio silt loam, 3 to 8 percent slopes	Consociation	5.82	154.8
Overland	Raynham silt loam	Consociation	1.04	154.9
Overland	Hoosic gravelly sandy loam, nearly level	Consociation	0.10	155.0
Overland	Deerfield loamy fine sand, undulating	Consociation	5.60	155.0
Overland	Deerfield loamy fine sand, nearly level	Consociation	0.12	155.2
Overland	Wareham loamy sand	Consociation	0.80	155.2
Overland	Claverack loamy fine sand, 0 to 3 percent slopes	Consociation	1.55	155.3
Overland	Cosad fine sandy loam	Consociation	1.28	155.3
Overland	Wareham loamy sand	Consociation	2.21	155.4
Overland	Windsor loamy sand, undulating	Consociation	0.25	155.4
Overland	Windsor loamy sand, undulating	Consociation	49.00	155.5
Overland	Deerfield loamy fine sand, nearly level	Consociation	0.01	155.7
Overland	Windsor loamy sand, rolling	Consociation	0.15	156.1
Overland	Charlton loam, 8 to 15 percent slopes	Consociation	0.24	156.4
Overland	Deerfield loamy fine sand, nearly level	Consociation	2.02	157.4
Overland	Chenango silt loam, loamy substratum, rolling	Consociation	1.15	157.5
Overland	Limerick-Saco complex	Complex	3.33	157.7
Overland	Sun silt loam	Consociation	2.14	157.8
Overland	Fluvaquents frequently flooded	Consociation	4.26	157.9
Overland	Mosherville-Hornell complex, undulating	Complex	3.72	158.1
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	4.54	158.2

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Manlius-Nassau complex, undulating, rocky	Complex	19.02	158.4
Overland	Deerfield loamy fine sand, nearly level	Consociation	3.13	158.6
Overland	Allis silt loam	Consociation	11.09	159.3
Overland	Mosherville-Hornell complex, undulating	Complex	4.88	159.8
Overland	Allis silt loam	Consociation	9.05	160.0
Overland	Sun silt loam	Consociation	0.28	160.3
Overland	Mosherville-Hornell complex, undulating	Complex	4.25	160.4
Overland	Broadalbin silt loam, 3 to 8 percent slopes	Consociation	3.70	160.5
Overland	Broadalbin silt loam, 3 to 8 percent slopes	Consociation	0.00	160.7
Overland	Manlius-Nassau complex, undulating, rocky	Complex	11.63	160.7
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	0.56	160.8
Overland	Mosherville silt loam, 3 to 8 percent slopes	Consociation	5.32	161.2
Overland	Mosherville silt loam, 0 to 3 percent slopes	Consociation	6.47	161.4
Overland	Sun silt loam	Consociation	0.00	161.6
Overland	Mosherville silt loam, 3 to 8 percent slopes	Consociation	0.25	161.7
Overland	Sun silt loam	Consociation	6.96	161.7
Overland	Mosherville silt loam, 3 to 8 percent slopes	Consociation	1.26	161.9
Overland	Mosherville silt loam, 3 to 8 percent slopes	Consociation	5.66	162.0
Overland	Broadalbin silt loam, 3 to 8 percent slopes	Consociation	0.98	162.1
Overland	Sun silt loam	Consociation	3.90	162.3
Overland	Mosherville silt loam, 0 to 3 percent slopes	Consociation	3.74	162.4
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	4.39	162.6
Overland	Mosherville-Hornell complex, undulating	Complex	6.84	162.7
Overland	Oakville loamy fine sand, undulating	Consociation	0.99	163.0
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	0.92	163.1
Overland	Mosherville-Hornell complex, undulating	Complex	20.02	163.2
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	0.03	163.5
Overland	Allis silt loam	Consociation	17.24	164.0
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	0.10	164.3
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	0.11	164.4
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	0.35	164.5

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	0.02	164.7
Overland	Palms muck	Consociation	7.09	164.8
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	6.74	164.9
Overland	Broadalbin-Manlius-Nassau, complex, rolling	Complex	0.00	164.9
Overland	Broadalbin-Manlius-Nassau, complex, rolling	Complex	0.01	164.9
Overland	Broadalbin-Manlius-Nassau, complex, rolling	Complex	0.00	165.0
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	0.15	165.3
Overland	Mosherville-Hornell complex, undulating	Complex	5.73	165.3
Overland	Palms muck	Consociation	0.04	165.3
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	15.98	165.7
Overland	Allis silt loam	Consociation	1.88	165.9
Overland	Broadalbin-Manlius-Nassau, complex, rolling	Complex	1.92	166.3
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	13.52	166.4
Overland	Mosherville-Hornell complex, undulating	Complex	1.19	166.5
Overland	Allis silt loam	Consociation	0.29	166.7
Overland	Mosherville-Hornell complex, undulating	Complex	3.01	167.0
Overland	Allis silt loam	Consociation	1.06	167.1
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	0.02	167.1
Overland	Manlius-Nassau complex, undulating, rocky	Complex	7.73	167.2
Overland	Burdett silt loam, 3 to 8 percent slopes	Consociation	14.72	167.5
Overland	Broadalbin-Manlius-Nassau, complex, undulating	Complex	0.08	167.8
Overland	Nunda silt loam, 3 to 8 percent slopes	Consociation	0.02	168.0
Overland	Ilion silt loam	Consociation	2.79	168.1
Overland	Nunda silt loam, 3 to 8 percent slopes	Consociation	0.70	168.1
Overland	Burdett-Scriba channery silt loams, 0 to 3 percent slopes	Complex	0.01	168.2
Overland	Ilion silt loam, 0 to 3 percent slopes	Consociation	5.63	168.3
Overland	Burdett-Scriba channery silt loams, 0 to 3 percent slopes	Complex	0.00	168.3
Overland	Fredon silt loam	Consociation	3.14	168.5
Overland	Teel silt loam	Consociation	2.45	168.6
Overland	Scio silt loam, 3 to 8 percent slopes	Consociation	2.10	168.7

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Teel silt loam	Consociation	2.38	168.8
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	3.33	168.9
Overland	Fluvaquents, loamy	Consociation	0.01	169.0
Overland	Raynham silt loam	Consociation	19.50	169.0
Overland	Colonie loamy fine sand, 3 to 15 percent slopes	Consociation	0.66	169.2
Overland	Elnora loamy fine sand	Consociation	2.43	169.5
Overland	Madalin silty clay loam	Consociation	0.01	169.6
Overland	Madalin silty clay loam	Consociation	0.01	169.7
Overland	Madalin silty clay loam	Consociation	12.10	170.0
Overland	Cut and fill land	Consociation	15.46	170.5
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	0.73	171.0
Overland	Wayland silt loam	Consociation	0.00	171.1
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	6.32	171.2
Overland	Wayland silt loam	Consociation	3.87	171.4
Overland	Cut and fill land	Consociation	2.43	171.6
Overland	Scio silt loam, 3 to 8 percent slopes	Consociation	0.54	171.6
Overland	Cut and fill land	Consociation	1.10	171.8
Overland	Nunda channery silt loam, 3 to 8 percent slopes	Consociation	0.32	171.8
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	4.95	171.8
Overland	Burdett-Scriba channery silt loams, 0 to 3 percent slopes	Complex	9.40	172.0
Overland	Nunda channery silt loam, 3 to 8 percent slopes	Consociation	1.41	172.1
Overland	Cut and fill land	Consociation	48.90	172.5
Overland	Colonie loamy fine sand, 0 to 3 percent slopes	Consociation	0.00	174.5
Overland	Colonie and Plainfield soils, steep	Undifferentiated group	44.50	174.5
Overland	Colonie loamy fine sand, 0 to 3 percent slopes	Consociation	0.40	174.6
Overland	Colonie loamy fine sand, 0 to 3 percent slopes	Consociation	0.15	175.9
Overland	Colonie loamy fine sand, 0 to 3 percent slopes	Consociation	0.01	176.0
Overland	Wayland silt loam	Consociation	0.05	176.0
Overland	Colonie loamy fine sand, 0 to 3 percent slopes	Consociation	0.03	176.1
Overland	Colonie loamy fine sand, 0 to 3 percent slopes	Consociation	2.92	176.4
Overland	Colonie and Plainfield soils, steep	Undifferentiated group	0.00	176.4
Overland	Made land	Consociation	0.12	176.5
Overland	Colonie and Plainfield soils, steep	Undifferentiated group	0.09	176.5

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Colonie and Plainfield soils, steep	Undifferentiated group	0.05	176.5
Overland	Plainfield loamy sand, 0 to 3 percent slopes	Consociation	8.59	176.5
Overland	Colonie and Plainfield soils, steep	Undifferentiated group	0.14	176.6
Overland	Gravel pits	Consociation	4.12	176.7
Overland	Colonie and Plainfield soils, steep	Undifferentiated group	0.04	176.7
Overland	Fluvaquents, loamy	Consociation	0.13	176.9
Overland	Mardin gravelly silt loam, 3 to 8 percent slopes	Consociation	3.79	177.1
Overland	Plainfield loamy sand, 0 to 3 percent slopes	Consociation	0.28	177.1
Overland	Plainfield loamy sand, 0 to 3 percent slopes	Consociation	31.73	177.3
Overland	Plainfield loamy sand, 3 to 10 percent slopes	Consociation	0.23	178.2
Overland	Granby loamy fine sand	Consociation	2.26	178.2
Overland	Junius loamy fine sand	Consociation	8.34	178.7
Overland	Wayland silt loam	Consociation	0.12	178.7
Overland	Wayland silt loam	Consociation	0.21	178.8
Overland	Cheektowaga fine sandy loam	Consociation	1.11	179.0
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	0.01	179.0
Overland	Madalin silty clay loam	Consociation	7.94	179.1
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	0.15	179.1
Overland	Claverack loamy fine sand, 3 to 8 percent slopes	Consociation	0.05	179.2
Overland	Junius loamy fine sand	Consociation	0.02	179.2
Overland	Junius loamy fine sand	Consociation	0.01	179.3
Overland	Claverack loamy fine sand, 3 to 8 percent slopes	Consociation	0.86	179.4
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	0.12	179.4
Overland	Colonie loamy fine sand, 3 to 15 percent slopes	Consociation	0.14	179.5
Overland	Elnora loamy fine sand	Consociation	3.33	179.5
Overland	Cheektowaga fine sandy loam	Consociation	1.80	179.6
Overland	Junius loamy fine sand	Consociation	0.31	179.6
Overland	Claverack loamy fine sand, 3 to 8 percent slopes	Consociation	0.77	179.7
Overland	Elnora loamy fine sand	Consociation	0.02	179.7
Overland	Junius loamy fine sand	Consociation	1.16	179.7

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	0.37	179.7
Overland	Cheektowaga fine sandy loam	Consociation	0.12	179.8
Overland	Cheektowaga fine sandy loam	Consociation	0.07	179.8
Overland	Claverack loamy fine sand, 3 to 8 percent slopes	Consociation	0.38	179.8
Overland	Madalin silty clay loam	Consociation	0.71	179.8
Overland	Madalin silty clay loam	Consociation	0.80	179.8
Overland	Rhinebeck silty clay loam, 3 to 8 percent slopes	Consociation	0.59	179.8
Overland	Hudson silty clay loam, 3 to 8 percent slopes	Consociation	0.72	179.9
Overland	Claverack loamy fine sand, 0 to 3 percent slopes	Consociation	0.59	179.9
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	1.47	179.9
Overland	Claverack loamy fine sand, 3 to 8 percent slopes	Consociation	0.85	180.0
Overland	Cheektowaga fine sandy loam	Consociation	2.35	180.1
Overland	Claverack loamy fine sand, 0 to 3 percent slopes	Consociation	0.62	180.1
Overland	Granby loamy fine sand	Consociation	0.01	180.1
Overland	Claverack loamy fine sand, 3 to 8 percent slopes	Consociation	1.81	180.2
Overland	Cheektowaga fine sandy loam	Consociation	5.98	180.3
Overland	Cosad loamy fine sand	Consociation	3.80	180.5
Overland	Granby loamy fine sand	Consociation	0.81	180.5
Overland	Stafford loamy fine sand	Consociation	0.08	180.5
Overland	Cosad loamy fine sand	Consociation	0.56	180.7
Overland	Fluvaquents-Udifluvents complex, frequently flooded	Complex	1.41	180.7
Overland	Fluvaquents-Udifluvents complex, frequently flooded	Complex	0.61	180.8
Overland	Fluvaquents-Udifluvents complex, frequently flooded	Complex	1.12	180.8
Overland	Stafford loamy fine sand	Consociation	0.65	180.8
Overland	Colonie loamy fine sand, rolling	Consociation	0.38	180.9
Overland	Fluvaquents-Udifluvents complex, frequently flooded	Complex	1.26	180.9
Overland	Shaker fine sandy loam	Consociation	1.62	180.9
Overland	Colonie loamy fine sand, rolling	Consociation	1.07	181.0

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Shaker fine sandy loam	Consociation	0.55	181.0
Overland	Colonie loamy fine sand, 3 to 8 percent slopes	Consociation	0.04	181.1
Overland	Raynham very fine sandy loam	Consociation	3.67	181.1
Overland	Elmridge fine sandy loam, 3 to 8 percent slopes	Consociation	0.32	181.2
Overland	Shaker fine sandy loam	Consociation	0.31	181.2
Overland	Elnora loamy fine sand, 3 to 8 percent slopes	Consociation	3.45	181.3
Overland	Elmridge fine sandy loam, 3 to 8 percent slopes	Consociation	0.82	181.3
Overland	Raynham very fine sandy loam	Consociation	0.09	181.3
Overland	Stafford loamy fine sand	Consociation	1.03	181.4
Overland	Elmridge fine sandy loam, 3 to 8 percent slopes	Consociation	1.47	181.5
Overland	Raynham very fine sandy loam	Consociation	1.33	181.5
Overland	Birdsall mucky silt loam	Consociation	0.77	181.6
Overland	Raynham very fine sandy loam	Consociation	1.38	181.6
Overland	Raynham very fine sandy loam	Consociation	2.69	181.7
Overland	Shaker fine sandy loam	Consociation	0.84	181.7
Overland	Shaker fine sandy loam	Consociation	0.13	181.8
Overland	Elmridge fine sandy loam, 0 to 3 percent slopes	Consociation	0.70	181.9
Overland	Colonie loamy fine sand, 3 to 8 percent slopes	Consociation	0.09	181.9
Overland	Scio silt loam, 3 to 8 percent slopes	Consociation	1.86	181.9
Overland	Elmridge fine sandy loam, 3 to 8 percent slopes	Consociation	0.38	182.0
Overland	Raynham very fine sandy loam	Consociation	0.76	182.0
Overland	Raynham very fine sandy loam	Consociation	0.02	182.0
Overland	Scio silt loam, 3 to 8 percent slopes	Consociation	0.81	182.0
Overland	Shaker fine sandy loam	Consociation	1.05	182.0
Overland	Elmridge fine sandy loam, 3 to 8 percent slopes	Consociation	0.50	182.1
Overland	Raynham very fine sandy loam	Consociation	0.63	182.1
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	0.30	182.1
Overland	Scio silt loam, 3 to 8 percent slopes	Consociation	1.10	182.1
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	0.44	182.2
Overland	Scio silt loam, 3 to 8 percent slopes	Consociation	0.47	182.2
Overland	Shaker fine sandy loam	Consociation	1.42	182.2
Overland	Claverack loamy fine sand, 3 to 8 percent slopes	Consociation	0.92	182.3

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	0.34	182.3
Overland	Scio silt loam, 3 to 8 percent slopes	Consociation	1.57	182.3
Overland	Claverack loamy fine sand, 3 to 8 percent slopes	Consociation	0.26	182.4
Overland	Fluvaquents-Udifluvents complex, frequently flooded	Complex	0.19	182.4
Overland	Raynham very fine sandy loam	Consociation	0.35	182.4
Overland	Raynham very fine sandy loam	Consociation	0.08	182.4
Overland	Shaker fine sandy loam	Consociation	1.34	182.4
Overland	Shaker fine sandy loam	Consociation	0.29	182.4
Overland	Colonie loamy fine sand, 3 to 8 percent slopes	Consociation	0.44	182.5
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	3.72	182.5
Overland	Raynham very fine sandy loam	Consociation	0.33	182.6
Overland	Scio silt loam, 3 to 8 percent slopes	Consociation	5.71	182.7
Overland	Unadilla silt loam, 15 to 25 percent slopes	Consociation	2.24	183.0
Overland	Hudson silt loam, 25 to 45 percent slopes	Consociation	0.67	183.0
Overland	Scio silt loam, 3 to 8 percent slopes	Consociation	14.61	183.1
Overland	Hudson silt loam, 25 to 45 percent slopes	Consociation	0.79	183.2
Overland	Colonie loamy fine sand, hilly	Consociation	1.01	183.7
Overland	Colonie loamy fine sand, hilly	Consociation	0.82	183.8
Overland	Riverhead fine sandy loam, 0 to 3 percent slopes	Consociation	1.55	183.9
Overland	Riverhead fine sandy loam, 8 to 15 percent slopes	Consociation	0.71	183.9
Overland	Riverhead fine sandy loam, 3 to 8 percent slopes	Consociation	1.41	183.9
Overland	Udorthents, loamy	Undifferentiated group	9.02	184.0
Overland	Sudbury fine sandy loam, 0 to 3 percent slopes	Consociation	1.89	184.2
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	5.57	184.5
Overland	Udorthents, loamy-Urban land complex	Complex	0.03	184.6
Overland	Valois gravelly loam, 3 to 8 percent slopes	Consociation	2.00	184.7
Overland	Udorthents, loamy-Urban land complex	Complex	0.00	184.7
Overland	Udorthents, loamy-Urban land complex	Complex	5.33	184.8
Overland	Udorthents, loamy	Undifferentiated group	34.90	185.0
Overland	Burdett silt loam, 3 to 8 percent slopes	Consociation	1.30	186.5
Overland	Ilion silt loam	Consociation	5.80	186.5
Overland	Burdett silt loam, 0 to 3 percent slopes	Consociation	2.33	186.8

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Burdett silt loam, 3 to 8 percent slopes	Consociation	13.79	186.9
Overland	Raynham very fine sandy loam	Consociation	0.00	187.3
Overland	Nunda silt loam, 3 to 8 percent slopes	Consociation	0.01	187.4
Overland	Raynham very fine sandy loam	Consociation	0.00	187.4
Overland	Burdett silt loam, 0 to 3 percent slopes	Consociation	3.82	187.5
Overland	Ilion silt loam	Consociation	5.44	187.6
Overland	Chenango gravelly silt loam, loamy substratum, 3 to 8 percent slopes	Consociation	0.15	187.8
Overland	Udorthents, loamy-Urban land complex	Complex	6.76	187.8
Overland	Pits, gravel	Consociation	0.18	187.9
Overland	Udorthents, loamy	Undifferentiated group	5.04	188.1
Overland	Fluvaquents-Udifluvents complex, frequently flooded	Complex	2.86	188.4
Overland	Chenango gravelly silt loam, loamy substratum, 3 to 8 percent slopes	Consociation	1.28	188.5
Overland	Nunda silt loam, 3 to 8 percent slopes	Consociation	1.03	188.5
Overland	Urban land	Consociation	2.19	188.6
Overland	Udorthents, loamy-Urban land complex	Complex	14.56	188.7
Overland	Shaker fine sandy loam	Consociation	1.49	189.2
Overland	Riverhead fine sandy loam, 3 to 8 percent slopes	Consociation	2.39	189.3
Overland	Chenango gravelly silt loam, loamy substratum, rolling	Consociation	2.04	189.4
Overland	Unadilla silt loam, 8 to 15 percent slopes	Consociation	1.08	189.5
Overland	Riverhead fine sandy loam, 3 to 8 percent slopes	Consociation	1.48	189.5
Overland	Scio silt loam, 3 to 8 percent slopes	Consociation	0.12	189.6
Overland	Sudbury fine sandy loam, 0 to 3 percent slopes	Consociation	4.59	189.6
Overland	Riverhead fine sandy loam, 3 to 8 percent slopes	Consociation	0.01	189.7
Overland	Fluvaquents-Udifluvents complex, frequently flooded	Complex	1.53	189.8
Overland	Riverhead fine sandy loam, 3 to 8 percent slopes	Consociation	0.13	189.8
Overland	Teel silt loam	Consociation	1.06	189.8
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	3.05	189.9
Overland	Chenango channery silt loam, fan, 3 to 8 percent slopes	Consociation	0.94	190.0
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	0.32	190.1

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Udorthents, loamy	Undifferentiated group	6.48	190.1
Overland	Burdett silt loam, 3 to 8 percent slopes	Consociation	0.79	190.4
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	8.42	190.4
Overland	Rhinebeck silty clay loam, 3 to 8 percent slopes	Consociation	0.01	190.6
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	1.46	190.7
Overland	Madalin silt loam	Consociation	0.00	190.7
Overland	Madalin silt loam	Consociation	0.05	190.8
Overland	Rhinebeck silty clay loam, 3 to 8 percent slopes	Consociation	1.34	190.8
Overland	Chenango channery silt loam, fan, 3 to 8 percent slopes	Consociation	2.50	190.9
Overland	Castile gravelly loam, 0 to 3 percent slopes	Consociation	1.79	191.0
Overland	Nunda silt loam, 3 to 8 percent slopes	Consociation	1.91	191.0
Overland	Wayland silt loam	Consociation	1.24	191.1
Overland	Burdett silt loam, 3 to 8 percent slopes	Consociation	3.04	191.2
Overland	Burdett silt loam, 0 to 3 percent slopes	Consociation	2.14	191.3
Overland	Burdett silt loam, 3 to 8 percent slopes	Consociation	2.38	191.4
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	2.89	191.5
Overland	Elmridge fine sandy loam, 3 to 8 percent slopes	Consociation	0.16	191.6
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	2.24	191.6
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	2.02	191.7
Overland	Rhinebeck silty clay loam, 3 to 8 percent slopes	Consociation	0.31	191.7
Overland	Hudson silt loam, 25 to 45 percent slopes	Consociation	1.38	191.8
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	4.12	191.9
Overland	Rhinebeck silty clay loam, 3 to 8 percent slopes	Consociation	0.11	191.9
Overland	Rhinebeck silty clay loam, 3 to 8 percent slopes	Consociation	0.01	191.9
Overland	Madalin silt loam	Consociation	1.69	192.0
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	3.56	192.1
Overland	Raynham very fine sandy loam	Consociation	1.36	192.2
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	3.71	192.3

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Hudson silt loam, 8 to 15 percent slopes	Consociation	0.00	192.4
Overland	Hudson silt loam, 8 to 15 percent slopes	Consociation	0.77	192.5
Overland	Hudson silt loam, hilly	Consociation	1.02	192.5
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	0.71	192.5
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	0.80	192.5
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	5.11	192.6
Overland	Hudson silt loam, 25 to 45 percent slopes	Consociation	2.47	192.8
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	1.79	192.9
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	15.74	193.0
Overland	Udorthents, clayey-Urban land complex	Complex	64.80	193.6
Overland	Udorthents, clayey-Urban land complex	Complex	0.21	193.6
Overland	Hudson silt loam, 25 to 45 percent slopes	Consociation	0.00	195.9
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	1.63	196.0
Overland	Scio silt loam, 0 to 3 percent slopes	Consociation	0.66	196.2
Overland	Hudson silt loam, 25 to 45 percent slopes	Consociation	4.36	196.4
Overland	Wakeland silt loam	Consociation	0.48	196.5
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	3.75	196.6
Overland	Hudson silt loam, 25 to 45 percent slopes	Consociation	0.11	196.6
Overland	Hudson silt loam, 25 to 45 percent slopes	Consociation	1.72	196.8
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	0.33	196.8
Overland	Rhinebeck silty clay loam, 3 to 8 percent slopes	Consociation	0.77	196.8
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	6.23	196.9
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	0.23	197.0
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	3.04	197.2
Overland	Udorthents, clayey-Urban land complex	Complex	30.94	197.3
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	0.01	198.2
Overland	Colonie loamy fine sand, 3 to 8 percent slopes	Consociation	0.18	198.5
Overland	Udipsamments-Urban land complex	Complex	1.12	198.6
Overland	Stafford loamy fine sand	Consociation	1.67	198.6
Overland	Elnora loamy fine sand, 0 to 3 percent slopes	Consociation	10.06	198.7
Overland	Udipsamments, smoothed	Undifferentiated group	6.38	199.1
Overland	Elnora loamy fine sand, 0 to 3 percent slopes	Consociation	7.59	199.4

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Colonie loamy fine sand, 3 to 8 percent slopes	Consociation	0.65	199.5
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	8.92	199.7
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	2.94	199.9
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	0.55	200.1
Overland	Claverack loamy fine sand, 3 to 8 percent slopes	Consociation	0.39	200.2
Overland	Hudson silt loam, 8 to 15 percent slopes	Consociation	1.99	200.2
Overland	Urban land-Udorthents complex, 0 to 8 percent slopes	Complex	0.54	200.3
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	4.97	200.3
Overland	Hudson silt loam, hilly	Consociation	0.01	200.4
Overland	Hudson silt loam, hilly	Consociation	2.38	200.5
Overland	Raynham very fine sandy loam	Consociation	0.41	200.6
Overland	Hudson silt loam, 25 to 45 percent slopes	Consociation	0.73	200.7
Overland	Wakeland silt loam	Consociation	2.50	200.7
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	1.62	200.8
Overland	Udorthents, clayey-Urban land complex	Complex	1.86	200.8
Overland	Hudson silt loam, 25 to 45 percent slopes	Consociation	2.56	200.9
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	9.86	201.0
Overland	Rhinebeck silty clay loam, 3 to 8 percent slopes	Consociation	0.61	201.0
Overland	Madalin silt loam	Consociation	1.74	201.4
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	3.04	201.5
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	18.46	201.6
Overland	Hudson silt loam, 3 to 8 percent slopes	Consociation	0.59	202.2
Overland	Nassau channery silt loam, undulating	Consociation	0.91	202.2
Overland	Udorthents, loamy	Undifferentiated group	19.11	202.5
Overland	Urban land-Udorthents complex, 0 to 8 percent slopes	Complex	11.04	203.4
Overland	Rhinebeck silty clay loam, 0 to 3 percent slopes	Consociation	9.31	203.8
Overland	Rhinebeck silty clay loam, 3 to 8 percent slopes	Consociation	2.73	204.1

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Urban land-Udorthents complex, 0 to 8 percent slopes	Complex	0.00	204.1
Overland	Hudson and Vergennes soils, 8 to 15 percent slopes	Undifferentiated group	0.92	204.2
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	0.83	204.2
Overland	Covington and Madalin soils	Undifferentiated group	12.60	204.3
Overland	Nassau channery silt loam, steep, very rocky	Complex	0.24	204.7
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	4.80	204.8
Overland	Riverhead loam, rolling	Consociation	20.95	205.0
Overland	Valois-Nassau complex, undulating	Complex	0.22	205.0
Overland	Chenango gravelly loam, 0 to 3 percent slopes	Consociation	0.33	205.8
Overland	Tioga loam	Consociation	1.08	205.9
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	1.85	205.9
Overland	Nassau channery silt loam, rolling, very rocky	Complex	9.50	206.0
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	13.24	206.3
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	12.84	206.9
Overland	Nassau channery silt loam, steep, very rocky	Complex	0.07	207.2
Overland	Valois-Nassau complex, hilly	Complex	0.22	207.2
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	5.23	207.5
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	1.64	207.7
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	3.87	207.8
Overland	Hudson and Vergennes soils, 25 to 50 percent slopes	Undifferentiated group	1.56	207.9
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	2.71	208.0
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	1.26	208.1
Overland	Hudson and Vergennes soils, 25 to 50 percent slopes	Undifferentiated group	1.35	208.1
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	3.82	208.2
Overland	Nassau channery silt loam, rolling, very rocky	Complex	0.04	208.2

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	2.34	208.3
Overland	Hudson and Vergennes soils, 25 to 50 percent slopes	Undifferentiated group	5.17	208.4
Overland	Hudson and Vergennes silty clay loams, 8 to 15 percent slopes, severely eroded	Undifferentiated group	0.04	208.4
Overland	Nassau channery silt loam, hilly, very rocky	Complex	0.51	208.6
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	4.04	208.7
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	5.30	208.8
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	0.12	209.0
Overland	Nassau channery silt loam, rolling, very rocky	Complex	3.24	209.1
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	12.20	209.2
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	1.52	209.7
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	1.34	209.7
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	0.93	209.8
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	3.84	209.9
Overland	Hudson and Vergennes silty clay loams, 8 to 15 percent slopes, severely eroded	Undifferentiated group	2.10	210.0
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	2.65	210.1
Overland	Wayland silt loam	Consociation	0.42	210.1
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	1.98	210.2
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	1.45	210.3
Overland	Wayland silt loam	Consociation	1.25	210.3
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	1.62	210.4
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	11.21	210.5
Overland	Wayland silt loam	Consociation	0.00	210.5
Overland	Elmridge very fine sandy loam, 3 to 8 percent slopes	Consociation	3.77	211.0

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	0.08	211.0
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	1.85	211.1
Overland	Shaker very fine sandy loam	Consociation	0.36	211.1
Overland	Shaker very fine sandy loam	Consociation	9.28	211.2
Overland	Udorthents, loamy	Consociation	4.63	211.6
Overland	Shaker very fine sandy loam	Consociation	10.34	211.8
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	9.54	212.2
Overland	Covington and Madalin soils	Undifferentiated group	0.99	212.5
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	6.31	212.6
Overland	Nassau channery silt loam, rolling	Consociation	0.16	212.7
Overland	Covington and Madalin soils	Undifferentiated group	0.26	212.9
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	3.77	212.9
Overland	Covington and Madalin soils	Undifferentiated group	7.23	213.1
Overland	Nassau channery silt loam, rolling	Consociation	0.13	213.1
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	6.33	213.4
Overland	Covington and Madalin soils	Undifferentiated group	0.31	213.5
Overland	Covington and Madalin soils	Undifferentiated group	2.36	213.6
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	18.71	213.7
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	0.11	214.1
Overland	Wayland silt loam	Consociation	1.91	214.5
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	3.04	214.6
Overland	Covington and Madalin soils	Undifferentiated group	1.04	214.7
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	11.30	214.7
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	1.11	215.0

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	0.15	215.2
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	0.00	215.2
Overland	Covington and Madalin soils	Undifferentiated group	1.96	215.3
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	12.11	215.4
Overland	Covington and Madalin soils	Undifferentiated group	0.02	215.6
Overland	Covington and Madalin soils	Undifferentiated group	83.16	215.9
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	0.48	216.0
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	0.14	216.0
Overland	Wayland silt loam	Consociation	0.00	216.0
Overland	Wayland silt loam	Consociation	0.00	216.0
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	0.73	216.2
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	0.07	216.4
Overland	Wayland silt loam	Consociation	1.96	216.4
Overland	Valois-Nassau complex, undulating	Complex	0.49	217.0
Overland	Valois-Nassau complex, hilly	Complex	1.23	217.7
Overland	Nassau channery silt loam, hilly, very rocky	Complex	3.10	219.5
Overland	Nassau channery silt loam, rolling, very rocky	Complex	2.41	219.7
Overland	Nassau channery silt loam, hilly, very rocky	Complex	8.25	219.8
Overland	Covington and Madalin soils	Undifferentiated group	9.73	220.1
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	0.17	220.3
Overland	Nassau channery silt loam, hilly, very rocky	Complex	0.00	220.4
Overland	Nassau channery silt loam, rolling	Consociation	0.86	220.5
Overland	Nassau channery silt loam, hilly, very rocky	Complex	11.39	220.5
Overland	Nassau channery silt loam, rolling	Consociation	0.63	220.9
Overland	Udorthents, loamy	Consociation	0.10	220.9
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	0.49	221.0
Overland	Hudson and Vergennes soils, 25 to 50 percent slopes	Undifferentiated group	0.18	221.0

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Nassau channery silt loam, steep, very rocky	Complex	5.00	221.0
Overland	Nassau channery silt loam, rolling	Consociation	1.97	221.2
Overland	Nassau channery silt loam, steep, very rocky	Complex	1.47	221.3
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	2.82	221.4
Overland	Nassau channery silt loam, rolling, very rocky	Complex	0.01	221.4
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	1.37	221.5
Overland	Nassau channery silt loam, rolling	Consociation	0.08	221.5
Overland	Riverhead loam, 0 to 3 percent slopes	Consociation	7.95	221.6
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	0.02	221.7
Overland	Riverhead loam, rolling	Consociation	0.00	221.7
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	1.58	221.9
Overland	Hudson and Vergennes soils, 25 to 50 percent slopes	Undifferentiated group	2.76	222.0
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	7.53	222.1
Overland	Kingsbury and Rhinebeck soils, 0 to 3 percent slopes	Undifferentiated group	3.44	222.4
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	1.61	222.5
Overland	Hudson and Vergennes soils, 8 to 15 percent slopes	Undifferentiated group	4.13	222.6
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	23.79	222.8
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	0.06	222.8
Overland	Farmington gravelly silt loam, rolling, rocky	Complex	0.20	223.0
Overland	Hudson and Vergennes soils, 8 to 15 percent slopes	Undifferentiated group	12.90	223.9
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	0.00	224.2
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	9.43	224.3
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	0.14	224.3
Overland	Covington and Madalin soils	Undifferentiated group	0.07	224.7

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	5.74	224.7
Overland	Hudson and Vergennes soils, 8 to 15 percent slopes	Undifferentiated group	1.24	224.9
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	13.55	225.0
Overland	Farmington gravelly silt loam, steep, rocky	Complex	4.46	225.4
Overland	Udorthents, loamy	Consociation	11.22	225.7
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	12.28	226.3
Overland	Covington and Madalin soils	Undifferentiated group	0.19	226.5
Overland	Udorthents, loamy	Consociation	4.09	226.7
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	9.88	226.9
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	1.75	227.0
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	0.63	227.3
Overland	Farmington gravelly silt loam, steep, rocky	Complex	1.84	227.4
Overland	Hudson and Vergennes soils, 3 to 8 percent slopes	Undifferentiated group	0.02	227.4
Overland	Hudson and Vergennes soils, 8 to 15 percent slopes	Undifferentiated group	1.77	227.5
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	2.35	227.6
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	0.21	227.7
Overland	Riverhead loam, 3 to 8 percent slopes	Consociation	4.95	227.7
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	0.00	227.8
Overland	Fluvaquents-Udifluvents complex, frequently flooded	Complex	0.06	227.9
Overland	Covington and Madalin soils	Undifferentiated group	2.06	227.9
Overland	Hudson and Vergennes silty clay loams, 15 to 25 percent slopes, severely eroded	Undifferentiated group	1.10	227.9
Overland	Farmington gravelly silt loam, hilly, rocky	Complex	2.14	228.0
Overland	Kingsbury and Rhinebeck soils, 3 to 8 percent slopes	Undifferentiated group	0.06	228.1
Overland	Riverhead loam, 3 to 8 percent slopes	Consociation	0.06	228.1

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Overland	Udorthents, loamy	Consociation	4.51	228.1
Overland	Medisaprists-Hydraquents, tidal marsh	Complex	0.06	228.2
Overland	Medisaprists-Hydraquents, tidal marsh	Complex	0.17	228.2
Overland	Medisaprists-Hydraquents, tidal marsh	Complex	0.00	228.3
Hudson River	Rock outcrop-Hollis complex, moderately steep	Complex	0.64	288.1
Hudson River	Charlton-Paxton complex, extremely stony, moderately steep	Complex	3.27	288.2
Hudson River	Chatfield-Rock outcrop complex, hilly	Complex	2.20	295.7
Hudson River	Chatfield-Rock outcrop complex, rolling	Complex	2.06	295.8
Hudson River	Chatfield-Rock outcrop complex, hilly	Complex	1.29	295.9
Hudson River	Chatfield-Rock outcrop complex, rolling	Complex	1.60	296.0
Hudson River	Ipswich muck	Consociation	2.81	296.0
Hudson River	Yalesville sandy loam, 15 to 25 percent slopes	Consociation	1.18	296.1
Hudson River	Udorthents, wet substratum	Consociation	6.67	296.2
Hudson River	Yalesville sandy loam, 8 to 15 percent slopes	Consociation	0.00	296.3
Hudson River	Ipswich muck	Consociation	2.39	296.5
Hudson River	Urban land	Consociation	0.71	296.5
Hudson River	Hinckley gravelly loamy sand, 3 to 8 percent slopes	Consociation	6.44	296.6
Hudson River	Hinckley gravelly loamy sand, 0 to 3 percent slopes	Consociation	0.01	296.8
Hudson River	Hinckley gravelly loamy sand, 15 to 25 percent slopes	Consociation	10.43	296.9
Hudson River	Hinckley gravelly loamy sand, 3 to 8 percent slopes	Consociation	1.17	297.1
Hudson River	Ipswich muck	Consociation	0.55	297.3
Hudson River	Ipswich muck	Consociation	1.48	297.4
Hudson River	Haven loam, 3 to 8 percent slopes	Consociation	8.25	297.5
Hudson River	Wethersfield gravelly silt loam, 15 to 25 percent slope s	Consociation	1.28	297.5
Hudson River	Pits, gravel	Consociation	0.03	297.7
Hudson River	Hinckley gravelly loamy sand, 3 to 8 percent slopes	Consociation	0.07	297.9
Hudson River	Urban land	Consociation	2.06	297.9
Hudson River	Hinckley gravelly loamy sand, 0 to 3 percent slopes	Consociation	0.01	298.0
Hudson River	Hinckley gravelly loamy sand, 3 to 8 percent slopes	Consociation	0.12	298.0

Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Hudson River	Udorthents, smoothed	Consociation	6.05	298.0
Hudson River	Hinckley gravelly loamy sand, 0 to 3 percent slopes	Consociation	0.25	298.1
Hudson River	Hinckley gravelly loamy sand, 3 to 8 percent slopes	Consociation	12.64	298.2
Hudson River	Hinckley-Urban land complex, 0 to 8 percent slopes	Complex	5.63	298.7
Hudson River	Urban land	Consociation	0.73	298.7
Hudson River	Hinckley gravelly loamy sand, 3 to 8 percent slopes	Consociation	8.44	298.9
Hudson River	Holyoke-Rock outcrop complex, rolling	Complex	0.49	299.0
Hudson River	Holyoke-Rock outcrop complex, rolling	Complex	4.02	299.3
Hudson River	Urban land	Consociation	0.09	299.4
Hudson River	Wethersfield gravelly silt loam, 3 to 8 percent slopes	Consociation	0.04	299.4
Hudson River	Wethersfield-Urban land complex, 2 to 8 percent slopes	Complex	6.82	299.5
Hudson River	Holyoke-Rock outcrop complex, hilly	Complex	9.18	299.8
Hudson River	Wethersfield gravelly silt loam, 3 to 8 percent slopes	Consociation	0.32	299.8
Hudson River	Wethersfield gravelly silt loam, 8 to 15 percent slopes	Consociation	2.86	300.1
Hudson River	Holyoke-Rock outcrop complex, hilly	Complex	2.47	300.2
Hudson River	Holyoke-Rock outcrop complex, very steep	Complex	9.18	300.3
Hudson River	Udorthents, smoothed	Consociation	1.19	300.6
Hudson River	Holyoke-Rock outcrop complex, hilly	Complex	26.27	300.8
Hudson River	Holyoke-Rock outcrop complex, rolling	Complex	0.00	301.1
Hudson River	Wethersfield gravelly silt loam, 8 to 15 percent slopes	Consociation	5.36	301.8
Hudson River	Wethersfield gravelly silt loam, 3 to 8 percent slopes	Consociation	14.52	301.9
Hudson River	Wethersfield gravelly silt loam, 8 to 15 percent slopes	Consociation	0.04	302.0
Hudson River	Udorthents, smoothed	Consociation	0.15	302.2
Hudson River	Udorthents, smoothed	Consociation	2.36	302.4
Hudson River	Wethersfield-Urban land complex, 2 to 8 percent slopes	Complex	0.34	302.4
Hudson River	Wethersfield gravelly silt loam, 3 to 8 percent slopes	Consociation	2.75	302.5
Hudson River	Wethersfield gravelly silt loam, 8 to 15 percent slopes	Consociation	0.80	302.5

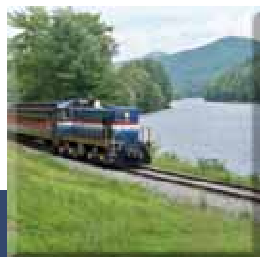
Segment	Map Unit Name	Map Unit Type	Acres of ROI	MP
Hudson River	Holyoke-Rock outcrop complex, hilly	Complex	2.18	302.6
Hudson River	Holyoke-Rock outcrop complex, very steep	Complex	2.96	302.7
New York City Metropolitan Area	Water	Water	See note	324.0
New York City Metropolitan Area	Urban Land	Consociation	See note	330.3
New York City Metropolitan Area	Water	Water	See note	331.4
New York City Metropolitan Area	Urban Land	Consociation	See note	336.1

Note: Soils in the New York City Metropolitan Area Segment have not been surveyed by the Natural Resources Conservation Service, and thus acreages of soils within the ROI in this segment are not available.

Key:

MP = milepost

ROI = region of influence (within 100 feet on either side of the transmission line)



APPENDIX J

NHPA Section 106 Documentation

Department of Energy
Washington, DC 20585

13 January 2011

Ms. Charlene Dwin Vaughn, Assistant Director
Federal Permitting, Licensing, and Assistance Section
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 20004

SUBJECT: Proposed Champlain Hudson Power Express Transmission Line Project

Dear Ms. Vaughn:

The purpose of this letter is to ensure that the Advisory Council on Historic Preservation (ACHP) is aware of the subject project, and to inquire as to whether you wish to be considered, or participate, in the conduct of our ongoing analysis of potential environmental impacts of this proposed project.

On January 5, 2010, Champlain Hudson Power Express, Inc. (CHPEI) applied to the Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential permit to construct, operate, and maintain the Champlain Hudson Power Express Transmission Line Project. As described in the application, the project would comprise a high-voltage direct current (HVDC) transmission line extending south from an HVDC converter station near Montreal, Quebec, to a HVDC converter station in the New York City metropolitan area. This project would be installed within existing waterways and along railroad rights-of-way, either buried beneath the lake or riverbed, or buried within the existing railroad.

By letter dated August 5, 2010, CHPEI submitted an addendum to the Presidential permit application modifying the number of circuits and the project's proposed alignment. The project currently under review by DOE includes a single circuit extending from the U.S./Canada border to an HVDC converter station within the vicinity of Yonkers, New York. From the Yonkers converter station, above-ground alternating current (AC) cables would carry electricity to a Consolidated Edison Company of New York, Inc., substation, currently under construction near the site of the former Charles Poletti Power Plant in Astoria, Queens, New York.

We have determined that an Environmental Impact Statement (EIS) is the appropriate level of review under the National Environmental Policy Act (NEPA) for this proposed project, as was documented in our *Federal Register* Notice of Intent to prepare an EIS on June 18, 2010 (75 FR 34720). All of these documents, along with background information, an opportunity to subscribe to our mailing list, and more, are available at http://www.chpexpresseis.org.

The proposed project has the potential to affect historic properties either listed in, or eligible for, inclusion in the National Register of Historic Places. Resources within the project's prospective area of potential effects (APE) include historic properties designated by the Secretary of the Interior as National Historic Landmarks (NHLs). As of now, the following NHLs have been identified as potentially located within or immediately adjacent to the project's APE:

- Fort Crown Point
- Fort Ticonderoga
- Hudson River Heritage District
- U.S. Military Academy
- Old Croton Aqueduct

Accordingly, we are inviting the ACHP to participate in the ongoing environmental analysis of this proposed project. Should your office have a material interest in this project, or if you have additional information that we should consider, please contact HDR, Inc., our contractor for the preparation of the EIS; to that end, I am designating regulatory specialist Robert Quiggle of HDR to follow-up with you in the near future. He can be reached at (315) 414-2216 or by e-mail at Robert.Quiggle@hdrinc.com.

I look forward to hearing from your office; please feel free to contact me at any time either by e-mail at Jerry.Pell@hq.DOE.gov (preferred), by phone at (202) 586-3362, or by fax at (202) 318-7761.

Yours very truly,

Jerry Pell

Dr. Jerry Pell
Principal NEPA Document Manager
Permitting, Siting, and Analysis, OE-20
Office of Electricity Delivery and
Energy Reliability
U.S. Department of Energy

cc: Robert Quiggle (HDR, Inc.)

Department of Energy
Washington, DC 20585

June 21, 2012

Charlene Dwin Vaughn
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 20004

SUBJECT: Proposed Champlain Hudson Power Express Transmission Line Project

Dear Ms. Vaughn:

As you are aware, Champlain Hudson Power Express, Inc. ("CHPEI" or "Applicants") has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the proposed Champlain Hudson Power Express Transmission Line Project (Project). In considering a Presidential Permit for the Project, the DOE has the lead responsibility for compliance with applicable federal laws, regulations, and policies pertaining to historic properties, including the National Historic Preservation Act of 1966, as amended (NHPA).[a] Section 106 of the NHPA (Section 106) directs federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment.

By letter dated January 13, 2011, the DOE formally initiated the Section 106 consultation process with the ACHP, the New York State Historic Preservation Officer (NYSHPO), the Delaware Nation, the St. Regis Mohawk Tribe, the Stockbridge-Munsee Community, and the U.S. Bureau of Indian Affairs (collectively the "Consulting Parties") regarding portions of the Project within the United States. Specifically, we invited the Consulting Parties to participate in the conduct of our ongoing analysis of potential environmental impacts of this undertaking, and to formally consult with us pursuant to Section 106 and its implementing regulations at 36 CFR Part 800.

CHPEI's application for a Presidential Permit was submitted to the DOE on January 27, 2010. CHPEI subsequently modified its application on August 6, 2010; July 7, 2011; and February 28, 2012. The Project currently under review by the DOE would consist of a 1,000-megawatt (MW) high-voltage direct current (HVDC) Voltage Source Converter controllable transmission system extending from the Canadian Province of Quebec to New York City. From the international border between the United States and Canada, two cables (comprising a single bipole) would extend south to an HVDC Converter Station to be located near Luyster Creek, north of 20th Avenue in Astoria, Queens. From the Converter Station, a 345-kilovolt (kV) underground alternating current (AC) circuit would connect to the existing 345-kV gas-insulated substation owned by the New York Power Authority (NYPA) and situated near NYPA's

[a] 16 USC 470 *et seq.*

Charles Poletti Power Project in Astoria. The Applicants also propose to construct a 3-mile buried 345-kV HVAC cable circuit from the Astoria Substation to Consolidated Edison's Rainey Substation in Queens. The Applicants have proposed to install the cables within waterways, and within the rights-of-way of existing transportation infrastructure, including railroads and roadways. Sections of the transmission line installed within waterways will generally be buried beneath the lake or riverbed. Overland sections of the Project will be buried within existing ROW corridors.

The DOE has determined that an Environmental Impact Statement (EIS) is the appropriate level of review under the National Environmental Policy Act (NEPA) for the proposed project, as was documented in our *Federal Register* Notice of Intent to prepare an EIS on June 18, 2010 (75 FR 117). The Notice of Intent, along with background information, an opportunity to subscribe to our mailing list, and more, are available on our EIS-specific website at http://www.chpexpresseis.org.

At this time, we wish to clarify the name and contact information for the DOE's contractor for preparation of the EIS and our representative for purposes of consultation pursuant to Section 106. In accordance with 36 CFR Part 800.2(a)(3), the DOE has authorized our contractor, HDR Environmental, Operations and Construction, Inc. (HDR EOC), to prepare the EIS. The EIS will include an analysis of the Project's potential for adverse effects on cultural resources, including historic properties as defined by Section 106 of the NHPA and its implementing regulations (36 CFR Part 800). Specifically, I am designating Dr. Greg Lockard, RPA of HDR EOC as the point-of-contact for preparing this information on behalf of the DOE. He can be reached at (571) 327-5815 or by e-mail at Gregory.Lockard@hdrinc.com. Coordination of consultation activities under the Section 106 process will be completed by Mr. Robert Quiggle, RPA, of HDR Engineering, Inc., who is working on behalf of the Applicants. Mr. Quiggle can be contacted at (315) 414-2216 or by e-mail at Robert.Quiggle@hdrinc.com. As provided in 36 CFR Part 800, the DOE remains legally responsible for findings and determinations and for the DOE's government-to-government relationships with Indian tribes.

As noted above, the DOE has formally initiated Section 106 consultation in accordance with 36 CFR Part 800.3. We anticipate additional consultation activities in the coming weeks regarding the ongoing identification of historic properties in the Project's area of potential effects (APE), assessment of adverse effects on these properties, and minimization and/or mitigation of these adverse effects. As described in our January 13, 2011 letters to the Consulting Parties, we intend to develop a Programmatic Agreement (PA) pursuant to 36 CFR Part 800.14(b) to address the proposed Project's potential effects on historic properties. The PA will be developed in consultation with federally recognized Indian tribes, the NYSHPO, the ACHP, the public, and other interested parties, as appropriate.

Please feel free to contact me directly at any time at Brian.Mills@hq.DOE.gov, or by phone at (202) 586-8267.

Very truly yours,

B Mills

Mr. Brian Mills
Permitting, Siting, and Analysis, OE-20
Office of Electricity Delivery and
Energy Reliability
U.S. Department of Energy

Cc: G. Lockard (HDR EOC)
R. Quiggle (HDR Engineering, Inc.)

CHPE EIS NHPA Section 106 Consultation Distribution List

Agencies

Charlene Dwin Vaughn
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 20004

Franklin Keel
Regional Director
Bureau of Indian Affairs
Eastern Region Office
545 Marriott Drive, Suite 700
Nashville, TN 37214

Diane Rosen
Regional Director
Bureau of Indian Affairs
Midwest Region Office
Norman Pointe II Building
5600 W. American Blvd., Suite 500
Bloomington, MN 55347

The Honorable Ken Salazar, Secretary
U.S. Department of the Interior
1849 C Street, N.W.
Washington DC 20240

Mary K. (Missy) Morrison
Resource Planning Specialist, External Review Coordinator
Division of Resource Planning and Compliance
National Park Service, Northeast Region
200 Chestnut Street
Philadelphia, PA 19106

Honorable Randy King, Chairperson
Ruth Pierpont, Director
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

Native American Tribes

Delaware Nation
Anadarko, OK

St. Regis Mohawk Tribe
Akwesasne, NY

Shinnecock Indian Nation
Southampton, NY

Stockbridge-Munsee Community of Wisconsin
Bowler, WI

THIS PAGE INTENTIONALLY LEFT BLANK

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
Eastern Regional Office
545 Marriott Drive, Suite 700
Nashville, TN 37214

JUL 18 2012

IN REPLY REFER TO:
Trust Services
Environment, Safety, and Cultural Resources Division

Mr. Brian Mills
Senior Planning Advisor
Permitting, Siting, and Analysis, OE-20
Electricity Delivery and Reliability Office
U.S. Department of Energy
1000 Independence Avenue, SW
Washington DC 20585

RE: Champlain Hudson Power Express Transmission Line Project, New York

Dear Mr. Mills:

Thank you for contacting the Bureau of Indian Affairs (BIA), Eastern Regional Office, about tribal consultation information regarding the Champlain Hudson Power Express Transmission Line Project. Tribal consultation contact information is provided on the following page for National Historic Preservation Act compliance purposes.

Tribal consultation information is available to you on the internet. An annually updated tribal leaders directory for federally recognized tribes and nations can be found at *http://www.indianaffairs.gov/WhoWeAre/BIA/OIS/TribalGovernmentServices/TribalDirectory/index.htm*. A map titled *Indian Reservations in the Continental United States* is located at *http://www.nps.gov/history/nagpra/documents/resmap*, and a Native American Consultation Database is at *http://home.nps.gov/nagpra/onlinedb*. A current list of Tribal Historic Preservation Officers is at *http://www.nathpo.org*.

If you have questions, please contact David Saunders, Eastern Regional Archaeologist, at (615) 564-6840.

Sincerely,

Randall Trickey

Acting Director, Eastern Region

Enclosure

Tribal Consultation Information for Champlain Hudson Power Express Transmission Line Project

Honorable Kerry Holton, President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005
Telephone: (405) 247-2448
Fax: (405) 247-6329

Honorable Paula Pechonick, Chief
Delaware Tribe of Indians
170 N.E. Barbara
Bartlesville, OK 74003
Telephone: (918) 336-5272
Fax: (918) 337-6591

Honorable Kimberly Vele, President
Stockbridge Munsee Community of Wisconsin
P.O. Box 70.
Bowler, WI 54416
Telephone: (715) 793-4111
Fax: (715) 793-1307

Sherry White
Tribal Historic Preservation Officer
Stockbridge Munsee Community of Wisconsin
P.O. Box 70
Bowler, WI 54416
Telephone: (715) 793-3970
Fax: (715) 793-4437

Honorable Mark Garrow, Chief
Honorable Randy Hart, Chief
Honorable Ronald La France, Chief
St. Regis Mohawk Tribe
412 State Route 37
Akwesasne, NY 13655
Telephone: (518) 358-2272
Fax: (518) 358-4519

Arnold Printup
Tribal Historic Preservation Officer
St. Regis Mohawk Tribe
412 State Route 37
Akwesasne, NY 13655
Telephone: (518) 358-2272 extension 164
Fax: (518) 358-3203

Honorable Randy King, Chairperson
Shinnecock Indian Nation
P.O. Box 5006
Southampton, NY 11969
Telephone: (631) 283-6143
Fax: (631) 204-9253

1. SMc
2. C Sternger

Department of Energy
Washington, DC 20585

June 21, 2012

Franklin Keel
Regional Director
Bureau of Indian Affairs
Eastern Region Office
545 Marriott Drive, Suite 700
Nashville, TN 37214

SUBJECT: Proposed Champlain Hudson Power Express Transmission Line Project

Dear Director Keel:

As you are aware, Champlain Hudson Power Express, Inc. ("CHPEI" or "Applicants") has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the proposed Champlain Hudson Power Express Transmission Line Project (Project). In considering a Presidential Permit for the Project, the DOE has the lead responsibility for compliance with applicable federal laws, regulations, and policies pertaining to historic properties, including the National Historic Preservation Act of 1966, as amended (NHPA).[a] Section 106 of the NHPA (Section 106) directs federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment.

By letter dated January 13, 2011, the DOE formally initiated the Section 106 consultation process with the ACHP, the New York State Historic Preservation Officer (NYSHPO), the Delaware Nation, the St. Regis Mohawk Tribe, the Stockbridge-Munsee Community, and the U.S. Bureau of Indian Affairs (collectively the "Consulting Parties") regarding portions of the Project within the United States. Specifically, we invited the Consulting Parties to participate in the conduct of our ongoing analysis of potential environmental impacts of this undertaking, and to formally consult with us pursuant to Section 106 and its implementing regulations at 36 CFR Part 800.

CHPEI's application for a Presidential Permit was submitted to the DOE on January 27, 2010. CHPEI subsequently modified its application on August 6, 2010; July 7, 2011; and February 28, 2012. The Project currently under review by the DOE would consist of a 1,000-megawatt (MW) high-voltage direct current (HVDC) Voltage Source Converter controllable transmission system extending from the Canadian Province of Quebec to New York City. From the international border between the United States and Canada, two cables (comprising a single bipole) would extend south to an HVDC Converter Station to be located near Luyster Creek, north of 20th Avenue in Astoria, Queens. From the Converter Station, a 345-kilovolt (kV) underground alternating current (AC) circuit would connect to the existing 345-kV gas-insulated substation owned by the New York Power Authority (NYPA) and situated near NYPA's

[a] 16 USC 470 *et seq.*

Charles Poletti Power Project in Astoria. The Applicants also propose to construct a 3-mile buried 345-kV HVAC cable circuit from the Astoria Substation to Consolidated Edison's Rainey Substation in Queens. The Applicants have proposed to install the cables within waterways, and within the rights-of-way of existing transportation infrastructure, including railroads and roadways. Sections of the transmission line installed within waterways will generally be buried beneath the lake or riverbed. Overland sections of the Project will be buried within existing ROW corridors.

The DOE has determined that an Environmental Impact Statement (EIS) is the appropriate level of review under the National Environmental Policy Act (NEPA) for the proposed project, as was documented in our *Federal Register* Notice of Intent to prepare an EIS on June 18, 2010 (75 FR 117). The Notice of Intent, along with background information, an opportunity to subscribe to our mailing list, and more, are available on our EIS-specific website at http://www.chpexpresseis.org.

At this time, we wish to clarify the name and contact information for the DOE's contractor for preparation of the EIS and our representative for purposes of consultation pursuant to Section 106. In accordance with 36 CFR Part 800.2(a)(3), the DOE has authorized our contractor, HDR Environmental, Operations and Construction, Inc. (HDR EOC), to prepare the EIS. The EIS will include an analysis of the Project's potential for adverse effects on cultural resources, including historic properties as defined by Section 106 of the NHPA and its implementing regulations (36 CFR Part 800). Specifically, I am designating Dr. Greg Lockard, RPA of HDR EOC as the point-of-contact for preparing this information on behalf of the DOE. He can be reached at (571) 327-5815 or by e-mail at Gregory.Lockard@hdrinc.com. Coordination of consultation activities under the Section 106 process will be completed by Mr. Robert Quiggle, RPA, of HDR Engineering, Inc., who is working on behalf of the Applicants. Mr. Quiggle can be contacted at (315) 414-2216 or by e-mail at Robert.Quiggle@hdrinc.com. As provided in 36 CFR Part 800, the DOE remains legally responsible for findings and determinations and for the DOE's government-to-government relationships with Indian tribes.

As noted above, the DOE has formally initiated Section 106 consultation in accordance with 36 CFR Part 800.3. We anticipate additional consultation activities in the coming weeks regarding the ongoing identification of historic properties in the Project's area of potential effects (APE), assessment of adverse effects on these properties, and minimization and/or mitigation of these adverse effects. As described in our January 13, 2011 letters to the Consulting Parties, we intend to develop a Programmatic Agreement (PA) pursuant to 36 CFR Part 800.14(b) to address the proposed Project's potential effects on historic properties. The PA will be developed in consultation with federally recognized Indian tribes, the NYSHPO, the ACHP, the public, and other interested parties, as appropriate.

Please feel free to contact me directly at any time at Brian.Mills@hq.DOE.gov, or by phone at (202) 586-8267.

Very truly yours,

B Mills

Mr. Brian Mills
Permitting, Siting, and Analysis, OE-20
Office of Electricity Delivery and
Energy Reliability
U.S. Department of Energy

Cc: G. Lockard (HDR EOC)
R. Quiggle (HDR Engineering, Inc.)

November 26, 2012

MEMORANDUM

TO: Bill Helmer (TDI)

FROM: Robert Quiggle (HDR Engineering, Inc.)

SUBJECT: **Champlain Hudson Power Express Transmission Line Project Summary of September 12, 2012 Consultation Meeting with the New York State Historic Preservation Office**

1.0 Introduction and Background

This memorandum provides a summary of the September 12, 2012 consultation meeting with the New York State Historic Preservation Office (NYSHPO) regarding maritime archaeological resources (e.g., shipwrecks) and anomalies of potential cultural origin identified within the prospective area of potential effects (APE) for the proposed Champlain Hudson Power Express Transmission Line Project (Project). Specifically, the purpose of this meeting was to determine appropriate avoidance measures and/or additional information needs through a review of a representative subset of maritime archaeological resources and anomalies.

The consultation meeting was held from 10:30 AM – 2:00 PM at the offices of Hartgen Archaeological Associates, Inc. (HAA, Inc.) in Rensselaer, New York. Representatives from the NYSHPO, Champlain Hudson Power Express, Inc. (CHPEI), HAA, Inc., and HDR Engineering, Inc. (HDR) participated in the consultation meeting. Specifically, meeting participants included:

- Brian Yates (NYSHPO)
- Bill Helmer (CHPEI)
- Matt Kirk (HAA, Inc.)
- Tracy Miller (HAA, Inc.)
- Robert Quiggle (HDR)

2.0 Meeting Summary

- CHPEI and HDR provided the NYSHPO with a status update on ongoing cultural resources studies and the overall permitting process for the Project.
- HDR noted that CHPEI had previously consulted with the NYSHPO to identify a suitable buffer distance for avoiding adverse effects on maritime archaeological resources. Based on this consultation a 50-meter (164-foot) buffer around maritime archaeological resources was originally proposed. Based on a review of data provided by CHPEI in 2011, the NYSHPO determined in May 2012 that this buffer area could be reduced to a distance of 40 meters (131 feet) from the Project's APE. For the maritime sections of the Project, the APE will include a 4.6-meter-wide (15-foot-wide) corridor where disturbance of lake or river bottoms may occur during installation of the transmission cables.
- The NYSHPO confirmed that a 40-meter buffer from the APE was generally appropriate to avoid adverse Project-related effects on maritime archaeological resources. However, the NYSHPO noted that this could be adjusted on a case-by-case basis depending on the nature of the identified resource, the analyses previously conducted by the Lake Champlain Maritime Museum (LCMM), and/or the sonar signature of the resource or anomaly.
- HDR briefly summarized the process that was completed for identifying maritime archaeological resources and anomalies within the Project's APE. Maritime archaeological resources and anomalies were identified by the LCMM and HAA, Inc. through an analysis of side scan sonar data collected along the extent of proposed maritime sections of the Project's APE. The side scan sonar data was compared to information available from existing archaeological site files, historical records regarding shipwrecks, previous studies conducted by the LCMM and others within Lake Champlain and the Hudson River, and other sources of information regarding known, reported, or potential cultural resources within the Lake Champlain, Hudson River, Harlem River, and East River sections of the Project's APE.
- The comprehensive analysis conducted by the LCMM and HAA, Inc. resulted in the development of a geographic information system (GIS) database of maritime archaeological resources and anomalies identified by the LCMM within approximately 300 meters (984 feet) of the Project's centerline. In 2011, modifications to the Project's alignment along an 80-kilometer (50-mile) segment of the proposed transmission cable corridor within the Hudson River required a reanalysis of side scan sonar data provided by the New York State Department of Environmental Conservation (NYSDEC). This analysis of NYSDEC data identified maritime archaeological resources and anomalies and within 100 meters (328 feet) along sections of the Hudson River.
- In preparation for the September 12, 2012 consultation meeting, HAA, Inc. developed 40-meter buffers around maritime archaeological resources and potential cultural anomalies to identify resources that would be avoided by Project construction.
- Based on the results of this GIS analysis, HAA, Inc. prioritized identified archaeological resources or potential cultural anomalies. Those resources or anomalies within 40 meters of the APE were assigned a higher potential for Project-related effects. This information was combined with data compiled from the background literature review and LCMM's analyses of the side scan sonar data to develop a preliminary assessment of significance for high-

potential maritime resources and anomalies. If analyses or documentary evidence indicated that a high-potential resource or anomaly may represent a potentially significant cultural features (e.g., a documented shipwreck or remnants of a historic bridge), the resource or anomaly was ranked as a higher priority. However, if the LCMM's analysis of side scan sonar data indicated that the identified high-potential resource or anomaly likely represented a non-cultural feature (e.g., tree stump, bedrock outcropping, etc.), the resource or anomaly was given a lower classification in regards to potential priority.

- HDR explained that, for purposes of discussion, HAA, Inc. had selected a subset of high priority maritime archaeological resources and potential cultural anomalies that generally represented high-potential locations categorized by HAA, Inc. as having a high potential significance (typically documented or suspected shipwrecks within proximity to the Project's APE).
- The NYSHPO, CHPEI, HDR, and HAA, Inc. reviewed approximately 40 high priority archaeological resources and anomalies on a case-by-case basis. For each of these resources, the NYSHPO made recommendations regarding avoidance or the need for additional information.
- In most cases, the proposed transmission cable installation corridor will sufficiently avoid high priority resources.
- In other cases, potential modifications to the Project's alignment were proposed that would allow the Project to avoid adverse effects on maritime archaeological resources or potential cultural anomalies. CHPEI agreed to consult with their engineering staff to determine if potential modifications to the Project's route were feasible.
- The NYSHPO recommended that CHPEI complete the ongoing marine route survey and prepare additional information regarding proposed anomalies that may be unavoidable. This information could be used to provide additional information regarding the nature of these anomalies and whether they actually represent cultural features.
- CHPEI agreed to review the recommendations provided by the NYSHPO and consult the results of the ongoing marine route survey (expected to be completed in Q1 of 2013). Based on this information, CHPEI will present recommendations for each site and/or anomaly within the APE and consult with the NYSHPO to determine whether proposed avoidance measures are appropriate or additional data collection or mitigation measures may be necessary.

THIS PAGE INTENTIONALLY LEFT BLANK

November 26, 2012

MEMORANDUM

TO: Bill Helmer (TDI)

FROM: Robert Quiggle (HDR Engineering, Inc.)

SUBJECT: **Champlain Hudson Power Express Transmission Line Project Summary of October 24, 2012 Consultation Meeting with the Advisory Council on Historic Preservation**

1.0 Introduction and Background

This memorandum provides a summary of the October 24, 2012 consultation meeting with the Advisory Council on Historic Preservation (ACHP) regarding the proposed Champlain Hudson Power Express Transmission Line Project (Project). Champlain Hudson Power Express, Inc. (CHPEI) has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the Project. The purpose of this meeting was to provide the ACHP with an overview of the Project, describe the cultural resources studies conducted to date, and discuss the approach to fulfilling the DOE's responsibilities pursuant to Section 106 of the National Historic Preservation Act (Section 106).

The consultation meeting was held from 11:00 AM – 11:45 AM at the ACHP's office located in the Old Post Office Pavilion in Washington, D.C. Representatives from the ACHP, DOE, HDR Environmental, Operations and Construction, Inc. (HDR EOC), and HDR Engineering, Inc. (HDR Engineering) participated in the consultation meeting. Specifically, meeting participants included:

- Charlene Dwin Vaughn (ACHP)
- Lee Webb (ACHP)
- Brian Mills (DOE)
- Greg Lockard (HDR EOC)
- Robert Quiggle (HDR Engineering)

1304 Buckley Road
Suite 202
Syracuse, NY 13212-4311

Phone: (315) 451-2325
Fax: (315) 451-2429
www.hdrinc.com

2.0 Meeting Summary

- HDR Engineering provided an introduction to the Project and the meeting participants.
  - As noted above, the Project will require a Presidential Permit from the DOE. CHPEI filed an application for a Presidential Permit on January 27, 2010. CHPEI subsequently modified its application on August 6, 2010; July 7, 2011; and February 28, 2012.
  - The DOE has authorized HDR EOC to prepare an Environmental Impact Statement (EIS) for this Project pursuant to the National Environmental Policy Act (NEPA). The EIS will include an analysis of the Project's potential effects on cultural resources, including historic properties.
  - HDR Engineering is coordinating consultation activities pursuant to the Section 106 process.
- HDR Engineering presented a PowerPoint presentation detailing the technical aspects of the Project, the Project's proposed route, and transmission cable installation methods. This presentation is enclosed as an attachment to this meeting summary.
- The presentation also included information regarding the permitting process.
  - In addition to the Presidential Permit, HDR Engineering also noted that the Project will require a permit from the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act and a permit form the U.S. Coast Guard (USCG). The DOE explained that the DOE is the lead federal agency for purposes of consultation under Section 106, but that the USACE and the USCG are cooperating agencies.
  - HDR Engineering explained that the Project will require a Certificate of Environmental Compatibility and Public Need (Certificate) from the New York State Public Service Commission (PSC) pursuant to Article VII of the New York State Public Service Law.
  - Settlement discussions regarding the Certificate resulted in a Joint Proposal (JP) signed by New York State agencies, non- governmental organizations, the City of New York and the City of Yonkers.
  - The JP includes guidelines for the Environmental Management and Control Plan(s) (EM&CP) as well as Best Management Practices (BMP) for Project construction. Both the EM&CP and BMP guidance documents include provisions for addressing cultural resources.
  - The JP also includes a proposed Water Quality Certificate pursuant to Section 401 of the Clean Water Act.
  - The PSC has received the JP and the hearing process regarding the Certificate has been completed.
- The ACHP asked if consultation pursuant to Section 106 was being coordinated with the NEPA process. HDR Engineering explained that consultation under Section 106 was initiated in January 2011, but consultation activities were delayed to allow the settlement parties to reach a JP.
- The ACHP noted that, given the existing JP and the consensus regarding the Project, the DOE may wish to coordinate compliance with Section 106 with the steps taken to meet the NEPA process. The ACHP explained that 36 CFR § 800.8 of the ACHP's regulations describes the regulatory process for coordinating Section 106 and NEPA, although no applicant for a federal license or permit has pursued this coordinated approach. The ACHP is preparing new

guidance for coordinating the Section 106 and NEPA processes, with the goal of encouraging federal agencies and applicants for federal permits or licenses to follow the regulatory approach described in 36 CFR § 800.8.

- The ACHP noted that the coordinated process would allow the record of decision prepared pursuant to NEPA to satisfy the DOE's responsibilities under Section 106.
- The ACHP agreed to provide the DOE with the new guidance regarding coordination of the NEPA and Section 106 processes following approval (anticipated to occur during the ACHP's November 15, 2012 meeting).
- HDR Engineering described the cultural resources studies conducted to date. The studies have been conducted by an experienced local team including HDR Engineering, Hartgen Archaeological Associates, Inc., and the Lake Champlain Maritime Museum. The studies were developed in consultation with the New York State Historic Preservation Officer (NYSHPO), and have included background literature reviews, analyses of side scan sonar data, and subsurface testing conducted along portions of the Project's prospective area of potential effects (APE). Information regarding these studies is included in the presentation enclosed with this meeting summary.
- HDR Engineering noted that the DOE has identified consulting parties, and that formal consultation with these parties has been initiated. CHPEI intends to convene a meeting in November 2012 to finalize the definition of the APE and to review the results of the studies conducted to date.
- The DOE intends to develop a Programmatic Agreement pursuant to 36 CFR § 800.14(b) to address the Project's potential effects on historic properties. The PA will require development of a Cultural Resources Management Plan (CRMP) in consultation with the consulting parties prior to the initiation of Project construction activities. HDR Engineering noted that a CRMP is also required by the JP.
- The ACHP indicated that development of a PA could be facilitated by coordinating the NEPA and Section 106 processes. The Draft EIS could include a list of activities and issues to be addressed in the PA, as well as a schedule and milestones for PA development. This approach would also facilitate a holistic approach to potential mitigation activities to address the adverse effects of the Project as a whole rather than on a resource-specific basis. The ACHP noted that a PA should address a public education component, and provide opportunities for Indian tribes to participate in cultural resources studies.
- The ACHP also recommended that the PA include language to allow other federal agencies (in addition to the DOE, USACE, and USCG) to be included in the PA. The ACHP agreed to provide the DOE with recommended language.
- The ACHP noted that coordination of the NEPA and Section 106 processes should be initiated by notifying the NYSHPO, Indian tribes, and the ACHP.
- The DOE agreed to consider coordination of the NEPA and Section 106 processes and to review the forthcoming guidelines from the ACHP.

Attachment: October 2012 Champlain Hudson Power Express
Advisory Council on Historic Preservation Presentation

Note: The latest version of the presentation is provided following the July 2013 Section 106 meeting announcement letter subsequently provided in this appendix.

Department of Energy
Washington, DC 20585

November 20, 2012

TO: **Attached Cultural Resources Working Group Distribution List**

SUBJECT: **Proposed Champlain Hudson Power Express Transmission Line Project Section 106 Consultation Meeting**

Dear Cultural Resources Working Group:

Champlain Hudson Power Express, Inc. has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the portions of the proposed Champlain Hudson Power Express Transmission Line Project located within the United States (Project). In considering a Presidential Permit for the Project, the DOE has the lead responsibility for compliance with applicable federal laws, regulations, and policies pertaining to historic properties, including the National Historic Preservation Act of 1966, as amended (NHPA).[1] Section 106 of the NHPA (Section 106) directs federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment.

The DOE has formally initiated the Section 106 consultation process with the ACHP, the New York State Historic Preservation Officer, the Delaware Nation, the St. Regis Mohawk Tribe, the Stockbridge-Munsee Community, the Shinnecock Indian Nation, and the U.S. Bureau of Indian Affairs (collectively the "Consulting Parties") regarding the Project. Specifically, the DOE invited the Consulting Parties to participate in the conduct of our ongoing analysis of potential environmental impacts of this undertaking and to formally consult with us pursuant to Section 106 and its implementing regulations at 36 CFR Part 800.

At this time, we would like to invite the Consulting Parties, federal agencies involved in this undertaking, and other potentially interested parties (collectively, the "Cultural Resources Working Group") to participate in a consultation meeting on November 28, 2012. The purpose of this meeting will be to (a) determine and document the area of potential effects (APE) for this undertaking, (b) describe the studies that have been conducted to identify historic properties that may be affected by the Project, and (c) discuss the process for completing the Section 106 process, including measures to resolve any Project-related adverse effects. This Section 106 consultation meeting will be held from 9:00 AM–12:00 PM at the offices of Hiscock and

[1] 16 USC 470 *et seq.*

Barclay, located at 80 State Street (6th floor) in Albany, New York 12207. Those wishing to participate but unable to attend in person are invited to participate via conference call. The dial-in number for the call will be 866-994-6437. Please enter conference code 989-014-9046 when prompted.

The DOE has established a website to provide information regarding the ongoing environmental review of this Project. Additional background information regarding the Project, an opportunity to subscribe to our mailing list, and more, are available at http://www.chpexpresseis.org.

Please feel free to contact me directly at any time at Brian.Mills@hq.DOE.gov, or by phone at (202) 586-8267. I look forward to meeting with you on November 28, 2012.

Very truly yours,

Mr. Brian Mills
Permitting, Siting, and Analysis, OE-20
Office of Electricity Delivery and
Energy Reliability
U.S. Department of Energy

Cc: Attached Distribution List

L. Jackson (DOE)
G. Lockard (HDR EOC)
R. Quiggle (HDR Engineering, Inc.)

Champlain Hudson Power Express Transmission Line Project
Cultural Resources Working Group
Distribution List

Franklin Keel, Regional Director
U.S. Bureau of Indian Affairs
Eastern Region Office
545 Marriott Drive, Suite 700
Nashville, TN, 37214

Diane Rosen, Regional Director
U.S. Bureau of Indian Affairs
Midwest Region Office
Norman Pointe II Building
5600 W. American Boulevard, Suite 500
Bloomington, MN 55347

Dan Deerinwater, Regional Director
U.S. Bureau of Indian Affairs
Southern Plains Region Office
WCD Office Complex
P.O. Box 368
Anadarko, OK 73005

Arnold Printup
Saint Regis Mohawk Tribe
Tribal Historic Preservation Office
412 State Route 37
Akwesasne, NY 13655

Kerry Holton, President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Randy King, Chairperson
Shinnecock Indian Nation
P.O. Box 5006
Southampton, NY 11969

Robert Chicks, President
Stockbridge Munsee Community of Wisconsin
N8476 Mo He Con Nuck Road
Bowler, WI 84416

Charlene Dwin Vaughn, Assistant Director
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 2004

Lee Webb
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 2004

Stephen A. Ryba
Regulatory, Western Section
NY District U.S. Army Corps of Engineers
26 Federal Plaza, Room 1937
New York, NY 10278

Jeff Yunker
Waterways Management Coordinator
U.S. Coast Guard Sector New York
212 Coast Guard Drive
Staten Island, NY 10305

Mary K. (Missy) Morrison
Resource Planning Specialist, External Review Coordinator
National Park Service, Northeast Region
Division of Resource Planning and Compliance
200 Chestnut Street
Philadelphia, PA 19106

Donald Jessome, MBA, P.Eng
President and CEO
Transmission Developers, Inc.
600 Broadway
Albany, NY 12207

Hon. Robert B. Tierney, Chair
New York City Landmarks Preservation Commission
Municipal Building
1 Centre Street, 9th Floor
New York, NY 10007

Rose Harvey, Commissioner
New York State Office of Parks, Recreation and Historic Preservation
Albany, NY 12238

Ruth Pierpont
Deputy Commissioner/Deputy SHPO
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

John Bonafide, Director
Bureau of Technical Preservation Services
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

Nancy Herter
Program Leader/Native American Liaison
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

Brian Yates
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

William Helmer, Esq.
Sr. Vice President, General Counsel, and Secretary
Transmission Developers, Inc.
600 Broadway
Albany, NY12207

THIS PAGE INTENTIONALLY LEFT BLANK

December 12, 2012

MEMORANDUM

TO: Bill Helmer (TDI)

FROM: Robert Quiggle (HDR Engineering, Inc.)

SUBJECT: **Champlain Hudson Power Express Transmission Line Project**
Summary of November 28, 2012 Consultation Meeting

1.0 Introduction and Background

This memorandum provides a summary of the November 28, 2012 consultation meeting for the proposed Champlain Hudson Power Express Transmission Line Project (Project). Champlain Hudson Power Express, Inc. (CHPEI) has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the Project. In considering a Presidential Permit for the Project, the DOE has the lead responsibility for compliance with applicable federal laws, regulations, and policies pertaining to historic properties, including the National Historic Preservation Act of 1966, as amended (NHPA). Section 106 of the NHPA (Section 106) directs federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. As the lead federal agency for purposes of consultation pursuant to Section 106 for this Project, the DOE convened the November 28, 2012 consultation meeting to (a) discuss the area of potential effects (APE) for this undertaking, (b) describe the studies that have been conducted to date to identify historic properties that may be affected by the Project, and (c) discuss the process for completing the Section 106 process, including measures to resolve any Project-related adverse effects..

The consultation meeting was scheduled from 9:00 AM – 12:00 PM at the offices of Hiscock & Barclay, LLP in Albany, New York. As described in Attachment 1 to this memorandum, representatives from the U.S. Bureau of Indian Affairs, the National Park Service, the ACHP, the New York State Historic Preservation Office (NYSHPO), the New York City Landmarks Preservation Commission, the U.S. Army Corps of Engineers (USACE), the U.S. Coast Guard (USCG), and federally recognized Indian tribes were invited to participate in the meeting. Invited participants also included representatives from AECOM, HDR Engineering, Inc. (HDR Engineering), HDR Environmental, Operations and Construction, Inc. (HDR EOC), Hartgen Archaeological Associates, Inc. (HAA, Inc.), and Van Ness Feldman, LLP (VNF). A conference line was made available for those unable to attend in person.

Henningson, Durham & Richardson Architecture and Engineering, P.C.
in association with HDR Engineering, Inc.
1304 Buckley Road
Suite 202
Syracuse, NY 13212-4311
Phone: (315) 451-2325
Fax: (315) 451-2429
www.hdrinc.com

Participants in the November 28, 2012 consultation meeting included:

- Brian Yates (NYSHPO)
- Lamont Jackson (DOE)
- Lee Webb (ACHP)
- Bill Helmer (CHPEI)
- Ed Alkiewicz (AECOM)
- Jay Ryan (VNF)
- Chuck Sensiba (VNF)
- Matt Kirk (HAA, Inc.)
- Tracy Miller (HAA, Inc.)
- Greg Lockard (HDR EOC)
- Robert Quiggle (HDR Engineering)

2.0 Meeting Summary

- HDR Engineering provided an introduction to the Project and the meeting participants.
  - As noted above, the Project will require a Presidential Permit from the DOE. CHPEI filed an application for a Presidential Permit on January 27, 2010. CHPEI subsequently modified its application on August 6, 2010, July 7, 2011, and February 28, 2012.
  - The DOE has authorized HDR EOC to prepare an Environmental Impact Statement (EIS) for this Project pursuant to the National Environmental Policy Act (NEPA). The EIS will include an analysis of the Project's potential effects on cultural resources, including historic properties.
  - HDR Engineering is coordinating consultation activities pursuant to the Section 106 process.
- HDR Engineering presented a PowerPoint presentation detailing the technical aspects of the Project, the Project's proposed route, and transmission cable installation methods. This presentation is enclosed as Attachment 2 to this meeting summary.
- The presentation also included information regarding the permitting process.
  - In addition to the Presidential Permit, HDR Engineering also noted that the Project will require a permit from the USACE pursuant to Section 404 of the Clean Water. The DOE is the lead federal agency for purposes of consultation under Section 106, but that the USACE and the USCG are cooperating agencies.
  - HDR Engineering explained that the Project will require a Certificate of Environmental Compatibility and Public Need (Certificate) from the New York State Public Service Commission (PSC) pursuant to Article VII of the New York State Public Service Law.
  - Settlement discussions regarding the Certificate resulted in a Joint Proposal of Settlement (JP) signed by New York State agencies, non-governmental organizations, the City of New York and the City of Yonkers.

  - The JP includes guidelines for the Environmental Management and Control Plan(s) (EM&CP) as well as Best Management Practices (BMP) for Project construction. Both the EM&CP and BMP guidance documents include provisions for addressing cultural resources.
  - The JP also includes a proposed Water Quality Certificate pursuant to Section 401 of the Clean Water Act.
  - The PSC has received the JP and the hearing process regarding the Certificate has been completed.
- HDR Engineering provided a summary of cultural resources studies and consultation activities, including the Phase IA Addendum Study currently being completed.
- In regards to the status of studies, HDR Engineering noted that:
  - A complete Phase IA study of the Project's entire terrestrial alignment has been completed. For this study, the Phase IA "study corridor" was developed in consultation with the NYSHPO and included an area encompassing 500 feet on either side of the Project's centerline (a total of 1,000 feet).
  - Phase IB and Phase II studies have been conducted along 66 miles of the 142-mile-long overland route. This represents approximately 46 percent of the terrestrial portion of the Project.
  - CHPEI previously consulted with the NYSHPO to identify a suitable buffer distance for avoiding adverse effects to maritime archaeological resources. The NYSHPO defined a 40-meter (130-foot) buffer from the APE as generally appropriate to avoid adverse Project-related effects on maritime archaeological resources. However, the NYSHPO noted that this could be adjusted on a case-by-case basis depending on the nature of the identified resource, the analyses previously conducted by the Lake Champlain Maritime Museum, and/or the sonar signature of the resource or anomaly.
  - An analysis of previously reported shipwrecks, maritime archaeological sites, and side scan sonar data for the entire maritime portion of the Project's alignment has been completed. In most cases, the proposed transmission cable installation corridor will sufficiently avoid high priority resources.
  - In other cases, potential modifications to the Project's alignment have been proposed by NYSHPO that would allow the Project to avoid adverse effects on maritime archaeological resources or potential cultural anomalies. CHPEI is currently consulting with engineering staff to determine if potential modifications to the Project's route were feasible.
- HDR Engineering noted that the DOE has identified consulting parties, and that formal consultation with these parties has been initiated.
- The DOE proposes to develop a Programmatic Agreement (PA) pursuant to 36 CFR § 800.14(b) to address the Project's potential effects on historic properties. The PA will require development of a Cultural Resources Management Plan (CRMP) in consultation with the consulting parties prior to the initiation of Project construction activities. HDR Engineering noted that a CRMP is also required by the JP. A draft PA is anticipated in Q1 of 2013.
- The ACHP asked if the DOE could briefly address the process for meeting the requirements of Section 106. Specifically, the ACHP noted in an October 24, 2012 consultation meeting with the DOE that the DOE might wish to coordinate compliance with Section 106 with the

steps taken to meet the NEPA process. The ACHP explained during the October 24, 2012 consultation meeting that the regulations implementing Section 106 at 36 CFR § 800.8 describe the regulatory process for coordinating Section 106 and NEPA, although no applicant for a federal license or permit has pursued this coordinated approach.

  - The ACHP is preparing new guidance for coordinating the Section 106 and NEPA processes, with the goal of encouraging federal agencies and applicants for federal permits or licenses to follow the regulatory approach described in 36 CFR § 800.8. During the November 28, 2012 consultation meeting, the ACHP noted that this guidance is currently under review by the Council on Environmental Quality and is expected to be released after January 1, 2013.

- At this time, the DOE does not intend to integrate compliance with Section 106 with the steps being taken to meet the NEPA process. The guidance document under development by the ACHP has not been released, and HDR EOC noted that the development of the Draft EIS (DEIS) has advanced to the point where coordination of the Section 106 and NEPA processes may require significant revisions to the DEIS. For these reasons, the DOE does not intend to pursue the consultation process described at 36 CFR § 800.8 at this time. However, the DOE agreed to revisit this issue following distribution of the ACHP's anticipated guidance document after January 1, 2013.
- At the ACHP's request, the DOE agreed to notify (in writing) Charlene Dwin Vaughn, the ACHP's Assistant Director for the Office of Federal Agency Programs, regarding the DOE's decision to intend to pursue the consultation process described at 36 CFR § 800.8 at this time.
- At the request of the NYSHPO, CHPEI also agreed to provide the NYSHPO with an electronic copy of the JP.
- The DOE noted that, although no Indian tribes participated in the meeting, the DOE would continue to invite their participation in any future Section 106 consultation meetings. CHPEI agreed to provide the Indian tribes identified by the DOE with study reports and other information relevant to the Section 106 process.
- The meeting adjourned at approximately 10:45 AM.

ATTACHMENT 1

LETTER FROM THE U.S. DEPARTMENT OF ENERGY INVITING THE CULTURAL RESOURCES WORKING GROUP TO PARTICIPATE IN THE NOVEMBER 28, 2012 CHAMPLAIN HUDSON POWER EXPRESS SECTION 106 CONSULTATION MEETING

Department of Energy
Washington, DC 20585

November 20, 2012

TO: **Attached Cultural Resources Working Group Distribution List**

SUBJECT: **Proposed Champlain Hudson Power Express Transmission Line Project Section 106 Consultation Meeting**

Dear Cultural Resources Working Group:

Champlain Hudson Power Express, Inc. has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the portions of the proposed Champlain Hudson Power Express Transmission Line Project located within the United States (Project). In considering a Presidential Permit for the Project, the DOE has the lead responsibility for compliance with applicable federal laws, regulations, and policies pertaining to historic properties, including the National Historic Preservation Act of 1966, as amended (NHPA).[1] Section 106 of the NHPA (Section 106) directs federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment.

The DOE has formally initiated the Section 106 consultation process with the ACHP, the New York State Historic Preservation Officer, the Delaware Nation, the St. Regis Mohawk Tribe, the Stockbridge-Munsee Community, the Shinnecock Indian Nation, and the U.S. Bureau of Indian Affairs (collectively the "Consulting Parties") regarding the Project. Specifically, the DOE invited the Consulting Parties to participate in the conduct of our ongoing analysis of potential environmental impacts of this undertaking and to formally consult with us pursuant to Section 106 and its implementing regulations at 36 CFR Part 800.

At this time, we would like to invite the Consulting Parties, federal agencies involved in this undertaking, and other potentially interested parties (collectively, the "Cultural Resources Working Group") to participate in a consultation meeting on November 28, 2012. The purpose of this meeting will be to (a) determine and document the area of potential effects (APE) for this undertaking, (b) describe the studies that have been conducted to identify historic properties that may be affected by the Project, and (c) discuss the process for completing the Section 106 process, including measures to resolve any Project-related adverse effects. This Section 106 consultation meeting will be held from 9:00 AM–12:00 PM at the offices of Hiscock and

[1] 16 USC 470 *et seq.*

Barclay, located at 80 State Street (6th floor) in Albany, New York 12207. Those wishing to participate but unable to attend in person are invited to participate via conference call. The dial-in number for the call will be 866-994-6437. Please enter conference code 989-014-9046 when prompted.

The DOE has established a website to provide information regarding the ongoing environmental review of this Project. Additional background information regarding the Project, an opportunity to subscribe to our mailing list, and more, are available at http://www.chpexpresseis.org.

Please feel free to contact me directly at any time at Brian.Mills@hq.DOE.gov, or by phone at (202) 586-8267. I look forward to meeting with you on November 28, 2012.

Very truly yours,

Mr. Brian Mills
Permitting, Siting, and Analysis, OE-20
Office of Electricity Delivery and
Energy Reliability
U.S. Department of Energy

Cc: Attached Distribution List

L. Jackson (DOE)
G. Lockard (HDR EOC)
R. Quiggle (HDR Engineering, Inc.)

Champlain Hudson Power Express Transmission Line Project
Cultural Resources Working Group
Distribution List

Franklin Keel, Regional Director
U.S. Bureau of Indian Affairs
Eastern Region Office
545 Marriott Drive, Suite 700
Nashville, TN, 37214

Diane Rosen, Regional Director
U.S. Bureau of Indian Affairs
Midwest Region Office
Norman Pointe II Building
5600 W. American Boulevard, Suite 500
Bloomington, MN 55347

Dan Deerinwater, Regional Director
U.S. Bureau of Indian Affairs
Southern Plains Region Office
WCD Office Complex
P.O. Box 368
Anadarko, OK 73005

Arnold Printup
Saint Regis Mohawk Tribe
Tribal Historic Preservation Office
412 State Route 37
Akwesasne, NY 13655

Kerry Holton, President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Randy King, Chairperson
Shinnecock Indian Nation
P.O. Box 5006
Southampton, NY 11969

Robert Chicks, President
Stockbridge Munsee Community of Wisconsin
N8476 Mo He Con Nuck Road
Bowler, WI 84416

Charlene Dwin Vaughn, Assistant Director
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 2004

Lee Webb
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 2004

Stephen A. Ryba
Regulatory, Western Section
NY District U.S. Army Corps of Engineers
26 Federal Plaza, Room 1937
New York, NY 10278

Jeff Yunker
Waterways Management Coordinator
U.S. Coast Guard Sector New York
212 Coast Guard Drive
Staten Island, NY 10305

Mary K. (Missy) Morrison
Resource Planning Specialist, External Review Coordinator
National Park Service, Northeast Region
Division of Resource Planning and Compliance
200 Chestnut Street
Philadelphia, PA 19106

Donald Jessome, MBA, P.Eng
President and CEO
Transmission Developers, Inc.
600 Broadway
Albany, NY 12207

Hon. Robert B. Tierney, Chair
New York City Landmarks Preservation Commission
Municipal Building
1 Centre Street, 9th Floor
New York, NY 10007

Rose Harvey, Commissioner
New York State Office of Parks, Recreation and Historic Preservation
Albany, NY 12238

Ruth Pierpont
Deputy Commissioner/Deputy SHPO
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

John Bonafide, Director
Bureau of Technical Preservation Services
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

Nancy Herter
Program Leader/Native American Liaison
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

Brian Yates
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

William Helmer, Esq.
Sr. Vice President, General Counsel, and Secretary
Transmission Developers, Inc.
600 Broadway
Albany, NY12207

Attachment: November 2012 Champlain Hudson Power Express
Section 106 Consultation Meeting Presentation

Note: The latest version of the presentation is provided following the July 2013 Section 106 meeting announcement letter subsequently provided in this appendix.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Energy
Washington, DC 20585

May 14, 2013

TO: **Consulting Parties**

SUBJECT: **Champlain Hudson Power Express Transmission Line Project Cultural Resources Study Reports and Area of Potential Effects**

Dear Consulting Parties:

Champlain Hudson Power Express, Inc. (CHPEI) has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the proposed Champlain Hudson Power Express Transmission Line Project (Project) across the U.S. border. In considering a Presidential Permit for the Project, the DOE evaluates the proposed transmission line as a connected action under the National Environmental Policy Act (NEPA) and is currently preparing an environmental impact statement (EIS). The DOE has the responsibility for compliance with applicable federal laws, regulations, and policies pertaining to historic properties, including the National Historic Preservation Act of 1966, as amended (NHPA).[1]

The DOE formally initiated the Section 106 consultation process with the Advisory Council on Historic Preservation (ACHP), the New York State Historic Preservation Officer (NYSHPO), the Delaware Nation, the St. Regis Mohawk Tribe, the Stockbridge-Munsee Community, the Shinnecock Indian Nation, and the U.S. Bureau of Indian Affairs (collectively the "Consulting Parties") regarding the Project. Specifically, the DOE invited the Consulting Parties to participate in the analysis of potential environmental impacts of this Project and to formally consult with the agency pursuant to Section 106 of the NHPA and its implementing regulations at 36 CFR Part 800. The DOE has designated Mr. Robert Quiggle, RPA, of HDR Engineering, Inc. (HDR) to coordinate consultation activities under Section 106. This letter represents consultation with the Consulting Parties identified in Attachment A to this letter regarding the proposed area of potential effects (APE) for this Project, the attached Cultural Resources Study Reports, and the proposed development of a Programmatic Agreement to address potential adverse effects of the Project.

I. BACKGROUND

CHPEI proposes to construct the Project to connect renewable sources of power generation in central and eastern Canada with the New York City load center. CHPEI's application for a Presidential Permit was submitted to the DOE on January 27, 2010. CHPEI subsequently modified its application on August 6, 2010; July 7, 2011; and February 28, 2012. Settlement discussions conducted under the New York State Public Service Commission's Article VII process from November 2010 through February 2012 resulted in development of a Joint Proposal that was signed by seven New York State agencies, three non-

[1] 16 USC 470 *et seq.*

governmental organizations (NGO), the City of New York, and the City of Yonkers. The Joint Proposal describes the route currently under evaluation by the DOE and other parties in the EIS.

The proposed Project under evaluation by the DOE would consist of a 1,000-megawatt (MW) underwater/underground high-voltage direct current (HVDC) controllable transmission system extending from the Canadian Province of Quebec to New York City. From the international border between the United States and Canada, two cables (consisting of a single bipole) would extend south to an HVDC converter station near Luyster Creek, north of 20th Avenue in Astoria, Queens. The converter station would be constructed on land that is currently owned by Consolidated Edison Company of New York, Inc. (ConEd).

From the Luyster Creek converter station, high-voltage alternating current (HVAC) cables would extend through Astoria, Queens, for a distance of approximately 3 miles to ConEd's Rainey Substation. In total, approximately 333 miles of proposed transmission cables would be located within the United States. CHPEI would not own or operate the Canadian portion of the transmission cables.

To the extent possible, CHPEI proposes to bury the transmission cable within existing waterways or transportation rights-of-way (ROW). CHPEI believes that this approach will minimize the visual and landscape impacts associated with traditional overhead transmission lines, while simultaneously providing the additional capacity required to meet the increasing clean energy demands of the greater New York City metropolitan area.

The ACHP's regulations at 36 CFR Part 800-Protection of Historic Properties define how federal agencies meet their statutory responsibilities pursuant to Section 106. The process described in 36 CFR Part 800 is intended to accommodate historic preservation concerns with the needs of federal undertakings through a process of consultation among agency officials, federally recognized Indian tribes, State Historic Preservation Officers, Tribal Historic Preservation Officers, and other parties, including the public, as appropriate. Pursuant to 36 CFR § 800.4, CHPEI has initiated cultural resource studies to assist the DOE and other federal agencies in identifying historic properties that may be affected by the Project.

II. AREA OF POTENTIAL EFFECTS (APE)

The DOE has initiated consultation with the NYSHPO, federally recognized Indian tribes, and other interested parties regarding the proposed APE for this Project. The DOE has defined an APE that includes the geographic area or areas within which the Project may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE includes all areas along the transmission cable corridor where ground-disturbing activities will be conducted. The APE will also include areas outside the transmission cable corridor, including the converter station site, the HVAC cable alignment, transmission interconnection sites, laydown areas, access roads, and other locations that may be affected by Project construction and operations. Additionally, the APE will take into account standing historic properties (i.e., buildings, structures, individual objects, and districts) that may be indirectly affected by the use of heavy equipment, particularly along the overland sections of the Project's proposed route.

The width of the construction corridor varies based on installation techniques and environment. The excavation of the cable trench, installation of erosion and sediment control measures, installation of the cables, and stockpiling of excavated materials are expected to occur within a 25-foot-wide corridor, or 12.5 feet on either side of the Project's centerline. To accommodate additional areas beyond the footprint of the trench that may be necessary for laydown/staging areas, and to accommodate indirect effects of Project construction activities, the APE for this undertaking has been defined to include an area encompassing 25 feet on either side of the Project's centerline. The APE may be further refined through additional engineering analyses. Table 1 describes the location, distance, and installation methods for each section of the Project.

TABLE 1.
LOCATION, DISTANCE, AND INSTALLATION METHODS FOR SECTIONS OF THE PROJECT

Section	Distance	Description
US/Canadian border to Town of Dresden	101 miles	Marine installation within Lake Champlain
Town of Dresden to Village of Whitehall	11 miles	Upland installation within the ROW of NYS Route 22
Village of Whitehall to the City of Schenectady	65 miles	Upland installation primarily along CP ROW
City of Schenectady to the Town of Rotterdam	1.3 miles	Upland installation along surface streets and within CP ROW
Town of Rotterdam to the Town of Selkirk	24 miles	Upland installation primarily along CSX ROW
Town of Selkirk to Hamlet of Cementon	29 miles	Upland installation primarily along CSX ROW
Hamlet of Cementon to Town of Stony Point	67.05 miles	Marine installation within Hudson River
Stony Point to point south of Rockland Lake State Park	7.66 miles	Upland installation including CSX ROW, NYS Route 9 and HDD beneath parkland
south of Rockland Lake State Park to Spuyten Duyvil	20.07 miles	Marine installation within Hudson River
Spuyten Duyvil to the Bronx	6.58 miles	Marine installation within Harlem River
Bronx to East River	1.1 miles	Upland installation primarily along railroad ROW
East River to Converter Station in Astoria, Queens	River crossing	Marine installation in East River
Converter Station to Rainey Substation	3 miles	HVAC installation along surface streets

In total, the Project's APE includes a 50-foot-wide corridor extending along the Project's 333-mile-long alignment from the U.S./Canadian border to ConEd's Rainey Substation. The approximate area of the APE is 20,200 acres.

On November 20, 2012, the DOE invited the Consulting Parties to participate in a consultation meeting to discuss the APE for the Project. The meeting was held on November 28, 2012 in Albany, New York, and a teleconference line was made available to those Consulting Parties unable to attend in person. The ACHP, NYSHPO, and DOE participated in the consultation meeting.

III. CULTURAL RESOURCES STUDIES

At this time, the DOE is distributing the following reports to the Consulting Parties:

- *Phase IA Literature Review and Archaeological Sensitivity Assessment, Champlain Hudson Power Express*;
- *Phase IB Archaeological Field Reconnaissance and Phase II Archaeological Site Evaluation, Champlain Hudson Power Express, Canadian Pacific Railway Segment*; and
- *Phase IA Literature Review and Archaeological Sensitivity Assessment Addendum, Champlain Hudson Power Express Terrestrial Route Modifications*.

Each of these studies is described below.

Early in the permitting process CHPEI initiated cultural resources studies and informal consultation to identify historic properties within the Project's prospective area of potential APE that may be affected by this undertaking. On February 22, 2010, HDR, on behalf of CHPEI, distributed a letter to state and federal agencies, NGOs, Indian tribes, and other potential stakeholders with a prospective interest in the Project's potential effects on cultural and historic resources. The letter provided an overview of the proposed Project and included a request for additional information. The letter also described the need for additional studies to identify historic properties within the Project's vicinity and to determine the Project's potential effects on these resources.

CHPEI subsequently completed a cultural resources screening report that was distributed to resource agencies, Indian tribes, and other stakeholders on April 9, 2010. The report, entitled: *Pre-Phase IA Cultural Resources Screening Report, Champlain Hudson Power Express, Lake Champlain to Long Island*, was prepared by Hartgen Archeological Associates, Inc. (HAA, Inc.) of Albany, New York, under the direction of HDR. The screening report was developed through documentary research, including a review of information collected from the NYSHPO, the New York State Department of Environmental Conservation, the Lake Champlain Maritime Museum, and the New York State Museum. The pre-fieldwork report provided details concerning previously reported archaeological and historic resources within the Project's vicinity, as well as information regarding those resources that are potentially located within or immediately adjacent to the transmission cable corridor proposed at that time.

Based on discussions with the NYSHPO, CHPEI subsequently prepared a Phase IA literature review and archaeological sensitivity assessment of the Project's prospective APE. The Phase IA literature review and archaeological sensitivity assessment included nearly 400 linear miles of diverse environments in New York State and a proposed terminus in Connecticut. The resulting report, entitled *Phase IA Literature Review and Archaeological Sensitivity Assessment, Champlain Hudson Power Express*, was distributed to the NYSHPO, Indian tribes, and other stakeholders on September 3, 2010. The Phase IA report presented an assessment of the archaeological sensitivity and potential of the Project's prospective APE. The report also included detailed recommendations regarding additional Phase IB testing along the proposed transmission cable alignment. The Study Plan included as Appendix 1 of the Phase IA report described the recommended testing strategy for each section of the Project's proposed alignment. The testing strategy proposed in the Study Plan was developed through initial, informal consultation and discussions with the NYSHPO. The NYSHPO reviewed the Phase IA report and concurred with the methodologies proposed for the Phase IB studies (with minor modifications) in a letter dated March 14, 2010. CHPEI subsequently modified the Project's proposed alignment to avoid environmentally sensitive areas and other resources and to remove the sections of the Project's alignment extending into Connecticut from further consideration.

At the request of CHPEI, HAA, Inc. completed Phase IB archaeological field investigations in 2010 that included subsurface testing along approximately 66 miles of the Project's proposed alignment (as proposed in August 2010) following the Canadian Pacific (CP) Railway right-of-way (ROW). The CP ROW segment of the Project investigated during 2010 segment begins at a point in Whitehall, New York, 1,850 feet north of the Poultney Street overpass, and ends at a point 197 feet southwest of the Princetown Road overpass in Rotterdam, New York. Testing indicated significant prior disturbance associated with construction of the railroad. A total of 11 archaeological sites were identified within the prospective APE. At CHPEI's request, HAA conducted Phase II archaeological site evaluations of these 11 sites to provide additional information suitable for the NYSHPO to make a determination of NRHP eligibility. Of the 11 sites, one was recommended as eligible for the NRHP, and three were recommended for avoidance or additional archaeological investigations. The results of the Phase IB and Phase II investigations were presented in HAA, Inc.'s June 2012 report, entitled *Phase IB Archaeological Field Reconnaissance and Phase II Archaeological Site Evaluation, Champlain Hudson Power Express, Canadian Pacific Railway Segment*. The Phase IB report was submitted in draft form to the NYSHPO for review in July 2012. The NYSHPO provided comments concurring with the recommendations and findings of the draft report.

In 2012, HAA, Inc. conducted an addendum Phase IA literature review and archaeological sensitivity assessment to provide supplemental information to assist the DOE in identifying reported archeological sites, historic properties, and previously completed archeological investigations along new sections of the Project's alignment that were not considered in the 2010 Phase IA report. As presented in the Joint Proposal, modifications were made to the original terrestrial portion of the Project's route along approximately 71.2 linear miles. These modifications include slight offsets from the original alignments (Rotterdam-Selkirk and Hell Gate Bypass) and three new sections (NY Route 22 from Dresden to Whitehall, Selkirk-Cementon, and Haverstraw Bay). The results of the addendum Phase IA study are presented in HAA, Inc.'s December 2012 report, entitled *Phase IA Literature Review and Archaeological Sensitivity Assessment Addendum, Champlain Hudson Power Express Terrestrial Route Modifications*.

IV. REVIEW AND CONSULTATION

As discussed above, the DOE is distributing the following reports to the Consulting Parties for consideration:

- *Phase IA Literature Review and Archaeological Sensitivity Assessment, Champlain Hudson Power Express*;
- *Phase IB Archaeological Field Reconnaissance and Phase II Archaeological Site Evaluation, Champlain Hudson Power Express, Canadian Pacific Railway Segment*; and
- *Phase IA Literature Review and Archaeological Sensitivity Assessment Addendum, Champlain Hudson Power Express Terrestrial Route Modifications*.

A Phase IA literature review and archaeological sensitivity assessment has been conducted for the terrestrial portions of the Project's APE. Phase IB and Phase II studies have been conducted along 66 miles of the 142-mile-long overland route. This represents approximately 46 percent of the terrestrial portion of the Project.

The DOE intends to develop a PA pursuant to 36 CFR § 800.14(b) to resolve the proposed Project's potential effects on historic properties. The PA will be developed in consultation with the Consulting Parties, the public, and other interested parties, as appropriate. The PA will require CHPEI to develop a

Cultural Resources Management Plan (CRMP) for this Project in consultation with the Consulting Parties prior to initiation of Project construction activities.

The DOE is seeking written comments from the Consulting Parties regarding the Project's APE and the enclosed reports. We are also seeking your views regarding the development of a PA for this Project that will resolve any adverse effects on historic properties. We respectfully request that the Consulting Parties provide written comments on the enclosed reports, the APE, and any views regarding the development of a PA for this Project within 30 days of this letter (June 13, 2013). The DOE intends to hold a meeting or conduct a conference call with the Consulting Parties to discuss the enclosed reports, the Project's APE, and the development of a PA during the 30-day review period. Additional information regarding this proposed meeting will be distributed to the Consulting Parties within the next few weeks. Should you have any additional questions or comments regarding the Project, please feel free to contact me directly at any time at Brian.Mills@hq.DOE.gov, or by phone at (202) 586-8267.

Very truly yours,

Brian Mills

Mr. Brian Mills
National Electricity Delivery Division
Office of Electricity Delivery and
Energy Reliability
U.S. Department of Energy

Cc: L. Jackson (DOE)
G. Lockard (HDR EOC)
R. Quiggle (HDR)

APPENDIX A
Champlain Hudson Power Express Transmission Line Project
Consulting Parties
Distribution List

Franklin Keel, Regional Director
U.S. Bureau of Indian Affairs
Eastern Region Office
545 Marriott Drive, Suite 700
Nashville, TN, 37214

Diane Rosen, Regional Director
U.S. Bureau of Indian Affairs
Midwest Region Office
Norman Pointe II Building
5600 W. American Boulevard, Suite 500
Bloomington, MN 55347

Dan Deerinwater, Regional Director
U.S. Bureau of Indian Affairs
Southern Plains Region Office
WCD Office Complex
P.O. Box 368
Anadarko, OK 73005

Arnold Printup
Saint Regis Mohawk Tribe
Tribal Historic Preservation Office
412 State Route 37
Akwesasne, NY 13655

Kerry Holton, President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Randy King, Chairperson
Shinnecock Indian Nation
P.O. Box 5006
Southampton, NY 11969

Charlene Dwin Vaughn, Assistant Director
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 2004

Lee Webb
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 2004

Stephen A. Ryba
Regulatory, Western Section
NY District U.S. Army Corps of Engineers
26 Federal Plaza, Room 1937
New York, NY 10278

Mary K. (Missy) Morrison
Resource Planning Specialist, External Review Coordinator
National Park Service, Northeast Region
Division of Resource Planning and Compliance
200 Chestnut Street
Philadelphia, PA 19106

Robert Chicks, President
Stockbridge Munsee Community of Wisconsin
N8476 Mo He Con Nuck Road
Bowler, WI 84416

Donald Jessome, MBA, P.Eng
President and CEO
Transmission Developers, Inc.
600 Broadway
Albany, NY 12207

Rose Harvey, Commissioner
New York State Office of Parks, Recreation and Historic Preservation
Albany, NY 12238

Ruth Pierpont
Deputy Commissioner/Deputy SHPO
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

John Bonafide, Director
Bureau of Technical Preservation Services
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

Nancy Herter
Program Leader/Native American Liaison
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

Brian Yates
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

William Helmer, Esq.
Sr. Vice President, General Counsel, and Secretary
Transmission Developers, Inc.
600 Broadway
Albany, NY12207

Stockbridge-Munsee Tribal Historic Preservation Office

Sherry White - Tribal Historic Preservation Officer
W13447 Camp 14 Road
P.O. Box 70
Bowler, WI 54416

Date 5/30/13
Project Number Champlain Hudson Power Express
TCNS Number
Company Name Department of Energy

We have received your letter for the above listed project. Before we can process the request we need more information. The additional items needed are checked below.

Additional Information Required:

___ Site visit by Tribal Historic Preservation Officer
___ Archeological survey, Phase 1
___ Colored maps
___ Pictures of the site
___ Any reports the State Historic Preservation Office may have
___ Review fee of $300.00 must be included with letter
___ Has site been previously disturbed, please explain what the use was and when it was disturbed

After reviewing your letter:

___ We are in the process of gathering more information on this site and will respond to your project request once all information has been gathered.
X This project has the potential to affect a Mohican cultural site, please contact us
___ This project is not within Mohican area of interest
___ This project is within Mohican territory, but we are not aware of any cultural site within the project area.

Additional comments Please provide us with any documents. We currently have the Phase IA, IA addendum Phase IB and Phase 2 Reports

Should this project inadvertently uncover a Native American site, we require you to halt all construction and notify the Stockbridge-Munsee Tribe immediately.

Please do not resubmit projects for changes that are not ground disturbance

Sherry White

Sherry White, Tribal Historic Preservation Officer

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Energy
Washington, DC 20585

July 12, 2013

Paula Pechonick, Chief
Delaware Tribe of Indians
170 N.E. Barbara
Bartlesville, OK 74006

SUBJECT: Proposed Champlain Hudson Power Express Transmission Line Project

Dear Ms. Pechonick:

Champlain Hudson Power Express, Inc. (CHPEI) has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the portions of the proposed Champlain Hudson Power Express Transmission Line Project across the U.S.-Canada border in northeastern New York State. In considering a Presidential Permit for the Project, the DOE has the lead responsibility for compliance with applicable federal laws, regulations, and policies pertaining to historic properties, including the National Historic Preservation Act of 1966, as amended (NHPA).[a] Section 106 of the NHPA (Section 106) directs federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. With this letter, the DOE is formally inviting the Delaware Tribe of Indians to participate in the conduct of our ongoing analysis of potential environmental impacts of this undertaking and to formally consult with us pursuant to Section 106 and its implementing regulations at 36 CFR Part 800. This letter also represents consultation with your office regarding the proposed Area of Potential Effects (APE) for this Project, the attached Cultural Resources Study Reports, and the proposed development of a Programmatic Agreement (PA) to address potential adverse effects of the Project on historic properties.

I. BACKGROUND

CHPEI proposes to construct the Project to connect renewable sources of power generation in central and eastern Canada with the New York City load center. CHPEI's application for a Presidential Permit was submitted to the DOE on January 27, 2010. CHPEI subsequently modified its application on August 6, 2010; July 7, 2011; and February 28, 2012. Settlement discussions conducted under the New York State Public Service Commission's Article VII process from November 2010 through February 2012 resulted in development of a Joint Proposal that was signed by seven New York State agencies, three non-governmental organizations

[a] 16 USC 470 *et seq.*

(NGO), the City of New York, and the City of Yonkers. The Joint Proposal describes the route currently under evaluation by the DOE and other parties in the EIS.

The proposed Project under evaluation by the DOE would consist of a 1,000-megawatt (MW) underwater/underground high-voltage direct current (HVDC) controllable transmission system extending from the Canadian Province of Quebec to New York City. From the international border between the United States and Canada, two cables (consisting of a single bipole) would extend south to an HVDC converter station near Luyster Creek, north of 20th Avenue in Astoria, Queens. The converter station would be constructed on land that is currently owned by Consolidated Edison Company of New York, Inc. (ConEd).

From the Luyster Creek converter station, high-voltage alternating current (HVAC) cables would extend through Astoria, Queens, for a distance of approximately 3 miles to ConEd's Rainey Substation. In total, approximately 333 miles of proposed transmission cables would be located within the United States. CHPEI would not own or operate the Canadian portion of the transmission cables.

To the extent possible, CHPEI proposes to bury the transmission cable within existing waterways or transportation rights-of-way (ROW). CHPEI believes that this approach will minimize the visual and landscape impacts associated with traditional overhead transmission lines, while simultaneously providing the additional capacity required to meet the increasing clean energy demands of the greater New York City metropolitan area.

The ACHP's regulations at 36 CFR Part 800-Protection of Historic Properties define how federal agencies meet their statutory responsibilities pursuant to Section 106. The process described in 36 CFR Part 800 is intended to accommodate historic preservation concerns with the needs of federal undertakings through a process of consultation among agency officials, federally recognized Indian tribes, State Historic Preservation Officers (SHPO), Tribal Historic Preservation Officers, and other parties, including the public, as appropriate.

By letter dated January 13, 2011, the DOE formally initiated the Section 106 consultation process with the ACHP, New York SHPO (NYSHPO), Delaware Nation, St. Regis Mohawk Tribe, Stockbridge-Munsee Community, and the U.S. Bureau of Indian Affairs (BIA) (collectively the "Consulting Parties") regarding the Project. Specifically, we invited the Consulting Parties to participate in the conduct of our ongoing analysis of potential environmental impacts of this undertaking and to formally consult with us pursuant to Section 106 and its implementing regulations at 36 CFR Part 800. By letter dated November 20, 2012, the DOE also invited the Shinnecock Indian Nation to participate as a Consulting Party.

Based on subsequent consultation with BIA, the DOE has also identified the Delaware Tribe of Indians as an Indian tribe recognized and eligible to receive services from the BIA that may have a potential interest in the Project's effects on historic properties. Therefore, we are inviting the Delaware Tribe of Indians to participate as a Consulting Party and to formally consult with us regarding this undertaking pursuant to Section 106.

The DOE has determined that an Environmental Impact Statement (EIS) is the appropriate level of review under the National Environmental Policy Act (NEPA)[b] for the proposed Project, as

[b] 42 USC 4321-4347

was documented in our June 18, 2010 Notice of Intent (NOI) to prepare an EIS (75 Federal Register [FR] 34720) and the amended NOI issued on April 30, 2012 (77 FR 10304). The NOI, and amended NOI, along with background information, an opportunity to subscribe to our mailing list, and more, are available on our EIS-specific website at http://www.chpexpresseis.org.

In accordance with 36 CFR § 800.2(a)(3), the DOE has authorized our contractor, HDR Environmental, Operations and Construction, Inc. (HDR EOC), to prepare the EIS, including the analysis of the Project's potential for adverse effects on cultural resources, including historic properties as defined by Section 106 of the NHPA and its implementing regulations (36 CFR Part 800). Specifically, we have designated Dr. Greg Lockard, RPA of HDR EOC as the point-of-contact for preparing this information on behalf of the DOE. He can be reached at (571) 327-5815 or by e-mail at Gregory.Lockard@hdrinc.com. Coordination of consultation activities under the Section 106 process will be completed by Mr. Robert Quiggle, RPA, of HDR Engineering, Inc., who is working on behalf of CHPEI. Mr. Quiggle can be contacted at (315) 414-2216 or by e-mail at Robert.Quiggle@hdrinc.com. As provided in 36 CFR Part 800, the DOE remains legally responsible for findings and determinations and for the DOE's government-to-government relationships with Indian tribes.

II. AREA OF POTENTIAL EFFECTS

The DOE has defined a proposed APE that includes the geographic area or areas within which the Project may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE includes all areas along the transmission cable corridor where ground-disturbing activities will be conducted. The APE will also include areas outside the transmission cable corridor, including the converter station site, the HVAC cable alignment, transmission interconnection sites, laydown areas, access roads, and other locations that may be affected by Project construction and operations. Additionally, the APE will take into account standing historic properties (i.e., buildings, structures, individual objects, and districts) that may be indirectly affected by the use of heavy equipment, particularly along the overland sections of the Project's proposed route.

The width of the construction corridor varies based on installation techniques and environment. The excavation of the cable trench, installation of erosion and sediment control measures, installation of the cables, and stockpiling of excavated materials are expected to occur within a 25-foot-wide corridor, or 12.5 feet on either side of the Project's centerline. To accommodate additional areas beyond the footprint of the trench that may be necessary for laydown/staging areas, and to accommodate indirect effects of Project construction activities, the APE for this undertaking has been defined to include an area encompassing 25 feet on either side of the Project's centerline. The APE may be further refined through additional engineering analyses. Table 1 describes the location, distance, and installation methods for each section of the Project.

TABLE 1.
LOCATION, DISTANCE, AND INSTALLATION METHODS FOR SECTIONS OF THE PROJECT

Section	Distance	Description
US/Canadian border to Town of Dresden	101 miles	Marine installation within Lake Champlain
Town of Dresden to Village of Whitehall	11 miles	Upland installation within the ROW of NYS Route 22
Village of Whitehall to the City of Schenectady	65 miles	Upland installation primarily along CP ROW
City of Schenectady to the Town of Rotterdam	1.3 miles	Upland installation along surface streets and within CP ROW
Town of Rotterdam to the Town of Selkirk	24 miles	Upland installation primarily along CSX ROW
Town of Selkirk to Hamlet of Cementon	29 miles	Upland installation primarily along CSX ROW
Hamlet of Cementon to Town of Stony Point	67.05 miles	Marine installation within Hudson River
Stony Point to point south of Rockland Lake State Park	7.66 miles	Upland installation including CSX ROW, NYS Route 9 and HDD beneath parkland
south of Rockland Lake State Park to Spuyten Duyvil	20.07 miles	Marine installation within Hudson River
Spuyten Duyvil to the Bronx	6.58 miles	Marine installation within Harlem River
Bronx to East River	1.1 miles	Upland installation primarily along railroad ROW
East River to Converter Station in Astoria, Queens	River crossing	Marine installation in East River
Converter Station to Rainey Substation	3 miles	HVAC installation along surface streets

In total, the Project's APE includes a 50-foot-wide corridor extending along the Project's 333-mile-long alignment from the U.S./Canadian border to ConEd's Rainey Substation. The approximate area of the APE is 20,200 acres.

On November 20, 2012, the DOE invited the Consulting Parties to participate in a consultation meeting to discuss the APE for the Project. The meeting was held on November 28, 2012 in Albany, New York, and a teleconference line was made available to those Consulting Parties unable to attend in person. The ACHP, NYSHPO, and DOE participated in the consultation meeting.

III. CULTURAL RESOURCES STUDIES

Pursuant to 36 CFR § 800.4, CHPEI has initiated cultural resource studies to assist the DOE and other federal agencies in identifying historic properties that may be affected by the Project. By letter dated May 14, 2013, the DOE distributed the following cultural resources study reports to the ACHP, (NYSHPO), Delaware Nation, St. Regis Mohawk Tribe, Stockbridge-Munsee Community, Shinnecock Indian Nation, and the BIA:

- *Phase IA Literature Review and Archaeological Sensitivity Assessment, Champlain Hudson Power Express*;
- *Phase IB Archaeological Field Reconnaissance and Phase II Archaeological Site Evaluation, Champlain Hudson Power Express, Canadian Pacific Railway Segment*; and
- *Phase IA Literature Review and Archaeological Sensitivity Assessment Addendum, Champlain Hudson Power Express Terrestrial Route Modifications.*

At this time, the DOE is transmitting a copy of the above-referenced study reports to the Delaware Tribe of Indians. Each of these studies is described below.

Early in the permitting process CHPEI initiated cultural resources studies and informal consultation to identify historic properties within the Project's prospective area of potential APE that may be affected by this undertaking. On February 22, 2010, HDR, on behalf of CHPEI, distributed a letter to state and federal agencies, NGOs, Indian tribes, and other potential stakeholders with a prospective interest in the Project's potential effects on cultural and historic resources. The letter provided an overview of the proposed Project and included a request for additional information. The letter also described the need for additional studies to identify historic properties within the Project's vicinity and to determine the Project's potential effects on these resources.

CHPEI subsequently completed a cultural resources screening report that was distributed to resource agencies, Indian tribes, and other stakeholders on April 9, 2010. The report, entitled: *Pre-Phase IA Cultural Resources Screening Report, Champlain Hudson Power Express, Lake Champlain to Long Island*, was prepared by Hartgen Archeological Associates, Inc. (HAA, Inc.) of Albany, New York, under the direction of HDR. The screening report was developed through documentary research, including a review of information collected from the NYSHPO, the New York State Department of Environmental Conservation, the Lake Champlain Maritime Museum, and the New York State Museum. The pre-fieldwork report provided details concerning previously reported archaeological and historic resources within the Project's vicinity, as well as information regarding those resources that are potentially located within or immediately adjacent to the transmission cable corridor proposed at that time.

Based on discussions with the NYSHPO, CHPEI subsequently prepared a Phase IA literature review and archaeological sensitivity assessment of the Project's prospective APE. The Phase IA literature review and archaeological sensitivity assessment included nearly 400 linear miles of diverse environments in New York State and a proposed terminus in Connecticut. The resulting report, entitled *Phase IA Literature Review and Archaeological Sensitivity Assessment, Champlain Hudson Power Express*, was distributed to the NYSHPO, Indian tribes, and other stakeholders on September 3, 2010. The Phase IA report presented an assessment of the archaeological sensitivity and potential of the Project's prospective APE. The report also included detailed recommendations regarding additional Phase IB testing along the proposed transmission cable alignment. The Study Plan included as Appendix 1 of the Phase IA report described the recommended testing strategy for each section of the Project's proposed alignment. The testing strategy proposed in the Study Plan was developed through initial, informal consultation and discussions with the NYSHPO. The NYSHPO reviewed the Phase IA report and concurred with the methodologies proposed for the Phase IB studies (with minor modifications) in a letter dated March 14, 2010. CHPEI subsequently modified the Project's proposed alignment to avoid environmentally sensitive areas and other resources and to remove the sections of the Project's alignment extending into Connecticut from further consideration.

At the request of CHPEI, HAA, Inc. completed Phase IB archaeological field investigations in 2010 that included subsurface testing along approximately 66 miles of the Project's proposed alignment (as proposed in August 2010) following the Canadian Pacific (CP) ROW. The CP ROW segment of the Project investigated during 2010 segment begins at a point in Whitehall, New York, 1,850 feet north of the Poultney Street overpass, and ends at a point 197 feet southwest of the Princetown Road overpass in Rotterdam, New York. Testing indicated significant prior disturbance associated with construction of the railroad. A total of 11 archaeological sites were identified within the prospective APE. At CHPEI's request, HAA conducted Phase II archaeological site evaluations of these 11 sites to provide additional information suitable for the NYSHPO to make a determination of NRHP eligibility. Of the 11 sites, one was recommended as eligible for the NRHP, and three were recommended for avoidance or additional archaeological investigations. The results of the Phase IB and Phase II investigations were presented in HAA, Inc.'s June 2012 report, entitled *Phase IB Archaeological Field Reconnaissance and Phase II Archaeological Site Evaluation, Champlain Hudson Power Express, Canadian Pacific Railway Segment*. The Phase IB report was submitted in draft form to the NYSHPO for review in July 2012. The NYSHPO provided comments concurring with the recommendations and findings of the draft report.

In 2012, HAA, Inc. conducted an addendum Phase IA literature review and archaeological sensitivity assessment to provide supplemental information to assist the DOE in identifying reported archeological sites, historic properties, and previously completed archeological investigations along new sections of the Project's alignment that were not considered in the 2010 Phase IA report. As presented in the Joint Proposal, modifications were made to the original terrestrial portion of the Project's route along approximately 71.2 linear miles. These modifications include slight offsets from the original alignments (Rotterdam-Selkirk and Hell Gate Bypass) and three new sections (NY Route 22 from Dresden to Whitehall, Selkirk-Cementon, and Haverstraw Bay). The results of the addendum Phase IA study are presented in HAA, Inc.'s December 2012 report, entitled *Phase IA Literature Review and Archaeological Sensitivity Assessment Addendum, Champlain Hudson Power Express Terrestrial Route Modifications*.

IV. REVIEW AND CONSULTATION

As discussed above, the DOE is distributing the following reports to the Delaware Tribe of Indians for consideration:

- *Phase IA Literature Review and Archaeological Sensitivity Assessment, Champlain Hudson Power Express*;
- *Phase IB Archaeological Field Reconnaissance and Phase II Archaeological Site Evaluation, Champlain Hudson Power Express, Canadian Pacific Railway Segment*; and
- *Phase IA Literature Review and Archaeological Sensitivity Assessment Addendum, Champlain Hudson Power Express Terrestrial Route Modifications*.

A Phase IA literature review and archaeological sensitivity assessment has been conducted for the terrestrial portions of the Project's APE. Phase IB and Phase II studies have been conducted along 66 miles of the 142-mile-long overland route. This represents approximately 46 percent of the terrestrial portion of the Project.

The DOE intends to develop a PA pursuant to 36 CFR § 800.14(b) to resolve the proposed Project's potential effects on historic properties. The PA will be developed in consultation with the Consulting Parties, the public, and other interested parties, as appropriate. The PA will require CHPEI to develop a Cultural Resources Management Plan (CRMP) for this Project in consultation with the Consulting Parties prior to initiation of Project construction activities.

The DOE is seeking written comments from the Delaware Tribe of Indians regarding the Project's APE and the enclosed reports. We are also seeking your views regarding the development of a PA for this Project that will resolve any adverse effects on historic properties. We respectfully request that the Delaware Tribe of Indians provide written comments on the enclosed reports, the APE, and any views regarding the development of a PA for this Project within 30 days of this letter (August 9, 2013). The DOE intends to hold a meeting or conduct a conference call with the Consulting Parties to discuss the enclosed reports, the Project's APE, and the development of a PA. Additional information regarding this proposed meeting will be distributed to the Consulting Parties within the next few weeks. Should you have any additional questions or comments regarding the Project, please feel free to contact me directly at any time at Brian.Mills@hq.DOE.gov, or by phone at (202) 586-8267.

Very truly yours,

B Mills

Mr. Brian Mills
National Electricity Delivery Division
Office of Electricity Delivery and
Energy Reliability
U.S. Department of Energy

Cc: L. Jackson (DOE)
G. Lockard (HDR EOC)
R. Quiggle (HDR)

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Energy
Washington, DC 20585

July 12, 2013

TO: **Consulting Parties**

SUBJECT: **Proposed Champlain Hudson Power Express Transmission Line Project**

Dear Consulting Parties:

Champlain Hudson Power Express, Inc. has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the portions of the proposed Champlain Hudson Power Express Transmission Line across the U.S.-Canada border in northeastern New York State. In considering a Presidential Permit for the Project, the DOE has the lead responsibility for compliance with applicable federal laws, regulations, and policies pertaining to historic properties, including the National Historic Preservation Act of 1966, as amended (NHPA).[1] Section 106 of the NHPA (Section 106) directs federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment.

The DOE formally initiated the Section 106 consultation process with the ACHP, the New York State Historic Preservation Officer (NYSHPO), the Delaware Nation, the St. Regis Mohawk Tribe, the Stockbridge-Munsee Community, the Shinnecock Indian Nation, the Delaware Tribe of Indians, and the U.S. Bureau of Indian Affairs (collectively the "Consulting Parties") regarding the Project (see Attachment A to this letter). Specifically, the DOE invited the Consulting Parties to participate in the analysis of potential environmental impacts of this Project and to formally consult with the agency pursuant to Section 106 of the NHPA and its implementing regulations at 36 CFR Part 800.

At this time, we would like to invite the Consulting Parties to participate in an upcoming consultation meeting on July 31, 2013. The purpose of this meeting will be to discuss the proposed Area of Potential Effects (APE) for this Project, the Cultural Resources Study Reports, and the proposed development of a Programmatic Agreement (PA) to address potential adverse effects of the Project on historic properties. This Section 106 consultation meeting will be held from 9:00 AM–12:00 PM (EST) at the offices of Hiscock and Barclay, located at 80 State Street (6th floor) in Albany, New York 12207. Those wishing to participate but unable to attend in person are invited to participate via conference call. The dial-in number for the call will be 866-994-6437. Please enter conference code 989-014-9046# when prompted.

[1] 16 USC 470 *et seq.*

The DOE has established a website to provide information regarding the ongoing environmental review of this Project. Additional background information regarding the Project, an opportunity to subscribe to our mailing list, and more, are available at http://www.chpexpresseis.org.

Please feel free to contact me directly at any time at Brian.Mills@hq.DOE.gov, or by phone at (202) 586-8267. I look forward to meeting with you on November July 31, 2013.

Very truly yours,

Mr. Brian Mills
National Electricity Delivery Division
Office of Electricity Delivery and
Energy Reliability
U.S. Department of Energy

Cc: L. Jackson (DOE)
G. Lockard (HDR EOC)
R. Quiggle (HDR)

APPENDIX A
Champlain Hudson Power Express Transmission Line Project
Consulting Parties
Distribution List

Franklin Keel, Regional Director
U.S. Bureau of Indian Affairs
Eastern Region Office
545 Marriott Drive, Suite 700
Nashville, TN, 37214

Diane Rosen, Regional Director
U.S. Bureau of Indian Affairs
Midwest Region Office
Norman Pointe II Building
5600 W. American Boulevard, Suite 500
Bloomington, MN 55347

Dan Deerinwater, Regional Director
U.S. Bureau of Indian Affairs
Southern Plains Region Office
WCD Office Complex
P.O. Box 368
Anadarko, OK 73005

Arnold Printup
Saint Regis Mohawk Tribe
Tribal Historic Preservation Office
412 State Route 37
Akwesasne, NY 13655

Mark Garrow, Chief
Randy Hart, Chief
Ronald La France, Chief
St. Regis Mohawk Tribe
412 State Route 37
Akwesasne, NY 13655

Randy King, Chairperson
Shinnecock Indian Nation
P.O. Box 5006
Southampton, NY 11969

Charlene Dwin Vaughn, Assistant Director
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 2004

Lee Webb
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 2004

Robert Chicks, President
Stockbridge Munsee Community of Wisconsin
N8476 Mo He Con Nuck Road
Bowler, WI 84416

Mary K. (Missy) Morrison
Resource Planning Specialist, External Review Coordinator
National Park Service, Northeast Region
Division of Resource Planning and Compliance
200 Chestnut Street
Philadelphia, PA 19106

Sherry White
Tribal Historic Preservation Officer
Stockbridge Munsee Community of Wisconsin
P.O. Box 70
Bowler, WI 54416

Paula Pechonick, Chief
Delaware Tribe of Indians
170 N.E. Barbara
Bartlesville, OK 74006

Rose Harvey, Commissioner
New York State Office of Parks, Recreation and Historic Preservation
Albany, NY 12238

Ruth Pierpont
Deputy Commissioner/Deputy SHPO
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

John Bonafide, Director
Bureau of Technical Preservation Services
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

Nancy Herter
Program Leader/Native American Liaison
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

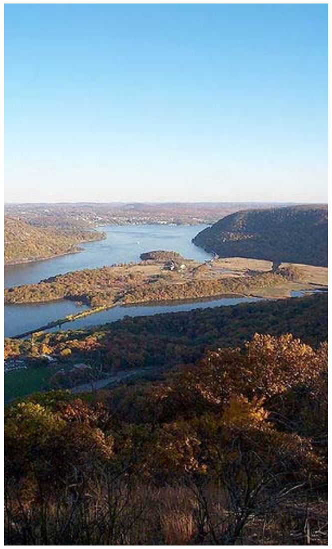
Brian Yates
New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

Kerry Holton, President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Attachment: July 2013 Champlain Hudson Power Express Section 106 Consultation Meeting Presentation

Champlain Hudson Power Express

Section 106 Consultation Meeting



July 31, 2013

HDR

Agenda

- Champlain Hudson Power Express Project
  - Project Overview
  - Regulatory Framework
- Cultural Resources
  - Regional Overview
  - Status of Cultural Resources Studies
- Next Steps
  - Programmatic Approach
  - Cultural Resources Management Plan
- Questions and Discussion

HDR

Project Introduction

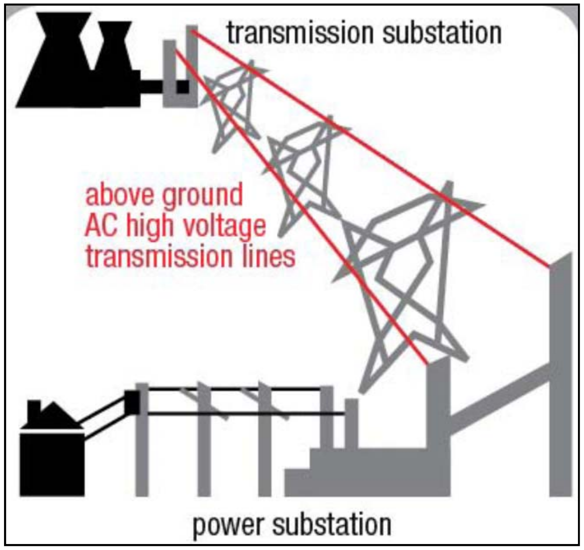
Project Introduction

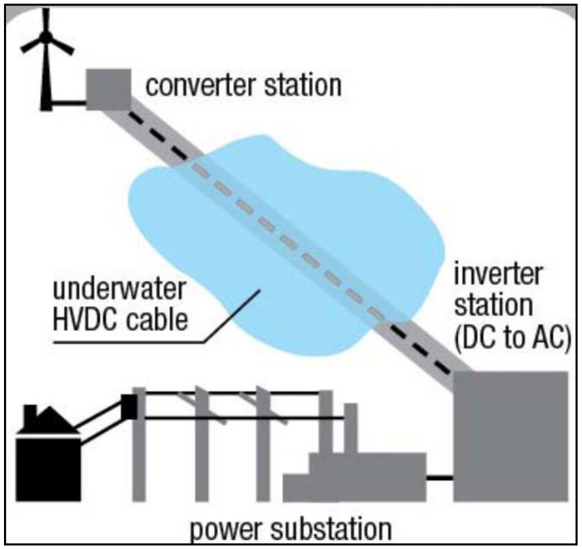
- Champlain Hudson Power Express, Inc. (CHPEI) has applied to the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability for a Presidential Permit to construct, operate, maintain, and connect the proposed Champlain Hudson Power Express Transmission Line Project (Project).
  - The proposed Project consists of a 1,000-megawatt (MW) high-voltage direct current (HVDC) Voltage Source Converter-controllable transmission system extending from the Canadian Province of Quebec to New York City.
  - CHPEI's application for a Presidential Permit was submitted to the DOE on January 27, 2010. CHPEI subsequently modified its application on August 6, 2010; July 7, 2011; and February 28, 2012.
  - The Project will bridge the gap between renewable sources of generation in Canada and the New York City load center.

Project Introduction

Project Introduction

- Selection of HVDC technology for this Project offers significant benefits over traditional alternating current (AC) transmission systems
  - HVDC technology allows high-voltage transmission over greater distances with minimal line loss and without generation of EMF.
  - CHPEI proposes to install the cables within waterways, and within the rights-of-way (ROW) of existing transportation infrastructure, including railroads and roadways.
  - This innovative routing will avoid the adverse impacts to viewscapes associated with traditional transmission infrastructure.



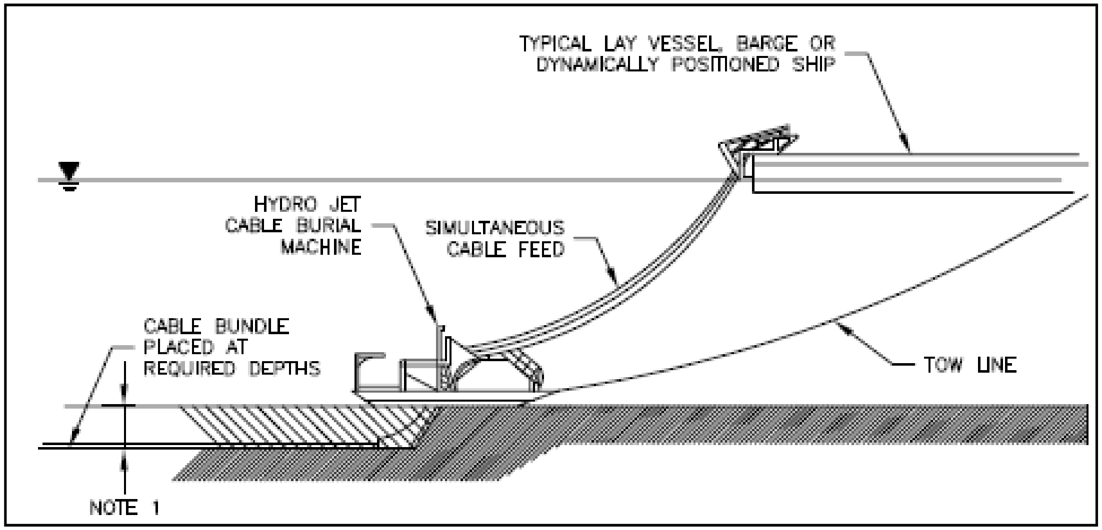


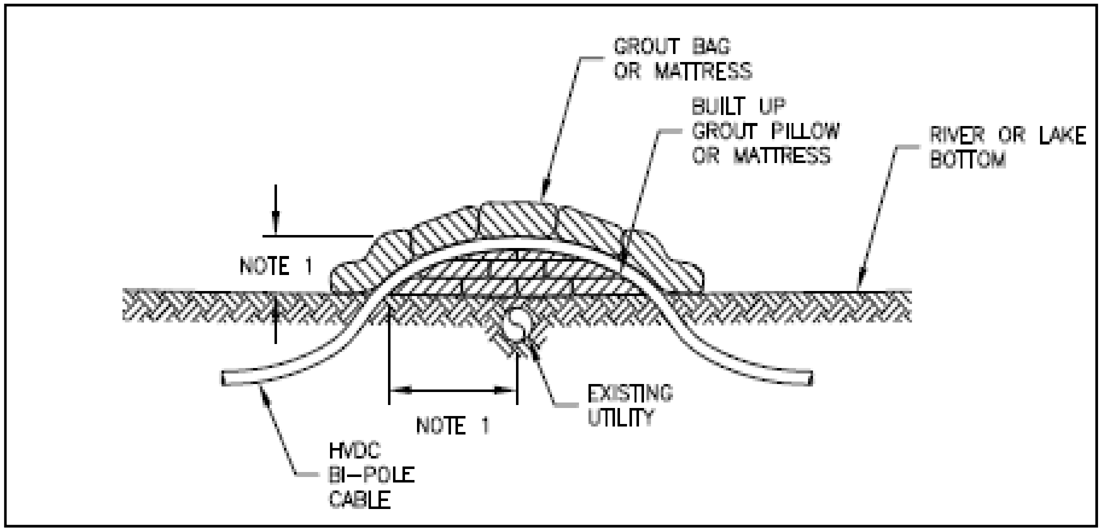
Project Introduction

- From the international border between the United States and Canada, two cables (comprising a single bipole) would extend south approximately 330 miles to an HVDC Converter Station to be located near Luyster Creek, north of 20th Avenue in Astoria, Queens.
  - Where possible, the Project will be installed along existing waterways, including Lake Champlain, the Hudson River, the Harlem River, and the East River.
  - Installation within waterways will primarily be accomplished by jet plow.
  - Shear plow or remote-operated vehicles (ROV) may be used for installation in deeper waters.
  - Target burial depth is an anticipated at 3-4 feet in Lake Champlain, 6 feet in the Hudson River, and various depths in the Harlem River. However, burial depth vary if conditions permit.
  - The maritime construction corridor is approximately 15 feet wide along lake/river bottoms.
  - If existing utilities or other infrastructure are present on the lake/river bottom, or if other conditions do not permit burial, the cable will be installed on the lake/river bottom and armored.

HDR

Project Introduction





Project Introduction

- The cables will follow an upland route when necessary to avoid environmentally sensitive areas or areas undergoing polychlorinated biphenyl (PCB) mitigation.
  - The upland sections of the Project will generally follow existing transportation infrastructure ROW, including:
    - Canadian Pacific (CP) Railway ROW
    - CSX Railroad ROW
    - New York State (NYS) Route 22
    - NYS Route 9
    - Surface Streets
  - CHPEI has also proposed to install cables via horizontal directional drilling (HDD) techniques to avoid impacts to Rockland Lakes State Park and Hook Mountain State Park
- Upland installation will generally use a cut-and-fill technique and will encompass an area within 12.5 feet from either side of the centerline. Burial depths will be approximately 3-5 feet.
- Transitions from marine to upland sections of the Project's route will be accomplished via HDD
- High-voltage AC cables will connect the Luyster Creek Converter Station to Consolidated Edison's Rainey Substation

Project Introduction

Section	Distance	Description
US/Canadian border to Town of Dresden	101 miles	Marine installation within Lake Champlain
Town of Dresden to Village of Whitehall	11 miles	Upland installation within the ROW of NYS Route 22
Village of Whitehall to the City of Schenectady	65 miles	Upland installation primarily along CP ROW
City of Schenectady to the Town of Rotterdam	1.3 miles	Upland installation along surface streets and within CP ROW
Town of Rotterdam to the Town of Selkirk	24 miles	Upland installation primarily along CSX ROW
Town of Selkirk to Hamlet of Cementon	29 miles	Upland installation along CSX ROW
Hamlet of Cementon to Town of Stony Point	67.05 miles	Marine installation within Hudson River
Stony Point to point south of Rockland Lake State Park	7.66 miles	Upland installation including CSX ROW, NYS Route 9 and HDD beneath parkland
south of Rockland Lake State Park to Spuyten Duyvil	20.07 miles	Marine installation within Hudson River
Spuyten Duyvil to the Bronx	6.58 miles	Marine installation within Harlem River
Bronx to East River	1.1 miles	Upland installation primarily along railroad ROW
East River to Converter Station in Astoria, Queens	River crossing	Marine installation in East River
Converter Station to Rainey Substation	3 miles	HVAC installation along surface streets

HDR

Project Introduction

- In addition to the Presidential Permit, the Project will require federal permits from the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act.
- The Project will also require a Certificate of Environmental Compatibility and Public Need from the NYS Public Service Commission (PSC) Pursuant to Article VII of the NYS Public Service Law. The Article VII Certificate was issued on April 18, 2013.
- Settlement discussions conducted from November 2010 through February 2012 resulted in development of a Joint Proposal that was signed by 7 NYS agencies, three non-governmental organizations (NGOs), the City of New York, and the City of Yonkers.
  - The Joint Proposal includes guidelines for the Environmental Management and Control Plan(s) (EM&CP) as well as Best Management Practices (BMP) for Project construction. Both the EM&CP and BMP guidance documents include provisions for addressing cultural resources.
  - The Joint Proposal also includes a proposed Water Quality Certification pursuant to Section 401 of the Clean Water Act.
  - The PSC approved the Joint Proposal in April 2013.

Cultural Resources

Regulatory Overview

- In considering a Presidential Permit for the Project, the DOE has the lead responsibility for compliance with applicable federal laws, regulations, and policies pertaining to historic properties, including the National Historic Preservation Act of 1966, as amended (NHPA). Section 106 of the NHPA (Section 106) directs federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment.
  - The DOE is the lead federal agency for purposes of consultation under Section 106.
  - The Project corridor includes portions of southeastern New York, the Hudson River Valley, and the Lake Champlain regions that have a rich history dating from the precontact period through the 20th century.
  - Early in the permitting process CHPEI initiated cultural resources studies and informal consultation to identify historic properties within the Project's prospective area of potential effects (APE) that may be affected by this undertaking.

Cultural Resources Studies

- CHPEI assembled a local and experienced team of archaeologists, architectural historians, and experts in maritime archaeology to lead the identification of historic properties.

HDR

HARTGEN
archeological associates inc

Lake Champlain
MARITIME MUSEUM

Cultural Resources Studies

- On February 22, 2010 CHPEI distributed a letter to state and federal agencies, NGOs, Indian tribes, and other potential stakeholders with a prospective interest in the Project's potential effects on cultural and historic resources.
- The letter provided an overview of the proposed Project and included a request for additional information. The letter also described the need for additional studies to identify historic properties within the Project's vicinity and to determine the Project's potential effects on these resources.
- CHPEI initiated informal consultation with the New York State Historic Preservation Officer (NYSHPO) in 2010 to discuss the Project and identify specific concerns.

Cultural Resources Studies

- Cultural resources studies were initiated in 2010.
- The study team initially compiled information from a variety of resources:
  - New York State Museum and New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) site files
  - Shipwreck data from the Lake Champlain Maritime Museum (LCMM)
  - Side scan sonar images of the Hudson River provided by the New York State Department of Environmental Conservation (NYSDEC)
  - Previous cultural resources studies conducted in the Project's vicinity
  - Information regarding properties listed in the National Register of Historic Places (NRHP) or determined eligible for the NRHP
  - Information regarding National Historic Landmarks within the Project's vicinity
  - Historic maps
  - Cultural contexts for the Project area
- This information was presented in the April 9, 2010 *Pre-Phase IA Cultural Resources Screening Report* which was distributed to NYSHPO, Indian tribes, and other parties.

HDR

Cultural Resources Studies

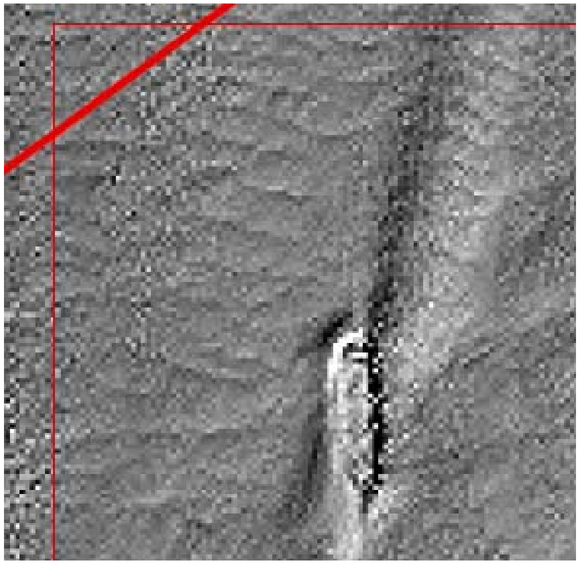
- CHPEI consulted with the NYSHPO to develop an approach to completing additional studies of the Project's prospective APE.
- A Phase IA Literature Review and Archaeological Sensitivity Assessment was prepared and distributed to the NYSHPO, Indian tribes, and other parties in September 2010. The Phase IA report included recommendations for additional studies.
  - Appendix A of the Phase IA report included a Study Plan that described the recommended testing strategy for each section of the Project's proposed alignment.
  - The testing strategy proposed in the Study Plan was developed through initial, informal consultation and discussions with the NYSHPO. The NYSHPO reviewed the Phase IA report and concurred with the methodologies proposed for the Phase IB studies (with minor modifications) in a letter dated March 14, 2011.

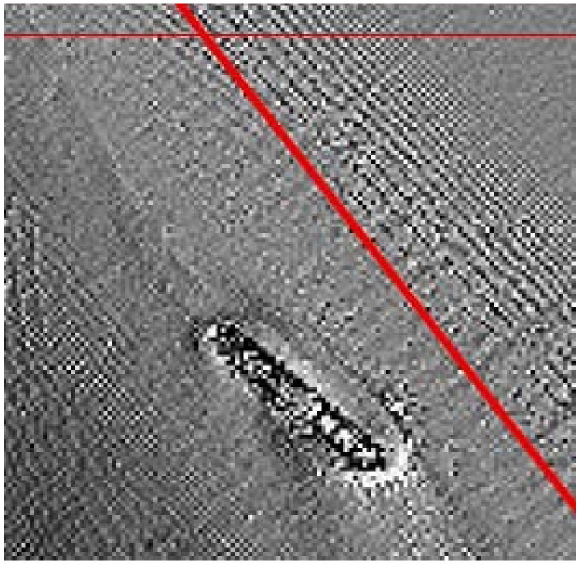
Cultural Resources Studies

- Concurrent with the Phase IA study, CHPEI undertook additional analyses to identify potential maritime archaeological resources within or adjacent to the Project's alignment.
- The LCMM and Hartgen Archaeological Associates, Inc. (HAA) conducted a comprehensive review of side scan sonar data collected for the Project's maritime route to identify known shipwrecks, potential shipwrecks, and other anomalies that may represent cultural deposits.
- Maritime archaeological resources and anomalies were identified by the LCMM and HAA, Inc. through an analysis of side scan sonar data collected along the extent of proposed maritime sections of the Project's prospective APE.
  - The side scan sonar data was compared to information available from existing archaeological site files, historical records regarding shipwrecks, previous studies conducted by the LCMM and others within Lake Champlain and the Hudson River, and other sources of information regarding known, reported, or potential cultural resources within the Lake Champlain, Hudson River, Harlem River, and East River sections of the Project's APE.

Cultural Resources Studies

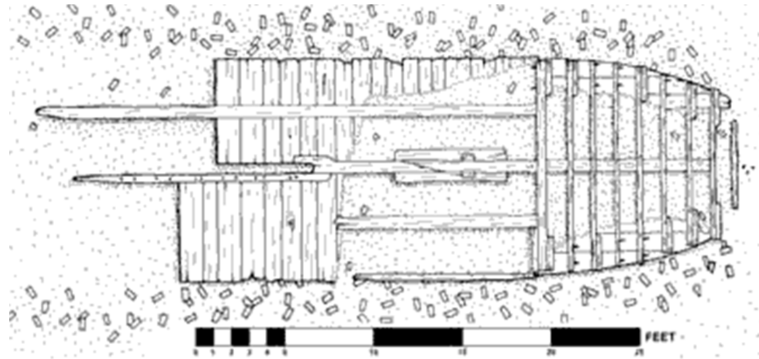
- The comprehensive analysis conducted by the LCMM and HAA, Inc. resulted in the development of a geographic information system (GIS) database of maritime archaeological resources and anomalies identified by the LCMM within approximately 300 meters (984 feet) of the Project's centerline.
- In 2011, modifications to the Project's alignment along an 80-kilometer (50-mile) segment of the proposed transmission cable corridor within the Hudson River required a reanalysis of side scan sonar data provided by the NYSDEC. This analysis of NYSDEC data identified maritime archaeological resources and anomalies and within 100 meters (328 feet) along sections of the Hudson River.

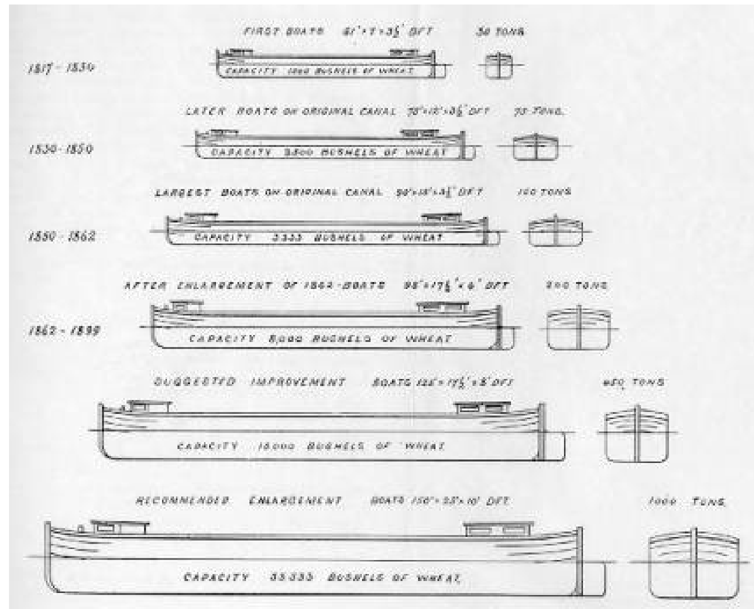




Cultural Resources Studies

- CHPEI consulted with the NYSHPO to identify a suitable buffer distance for avoiding adverse effects on maritime archaeological resources.
- The NYSHPO determined that a 40-meter (131-foot) buffer from the APE was generally appropriate to avoid adverse Project-related effects on maritime archaeological resources.
  - NYSHPO noted that this buffer could be adjusted on a case-by-case basis depending on the nature of the identified resource, analyses conducted by the LCMM, and/or the sonar signature of the resource or anomaly.

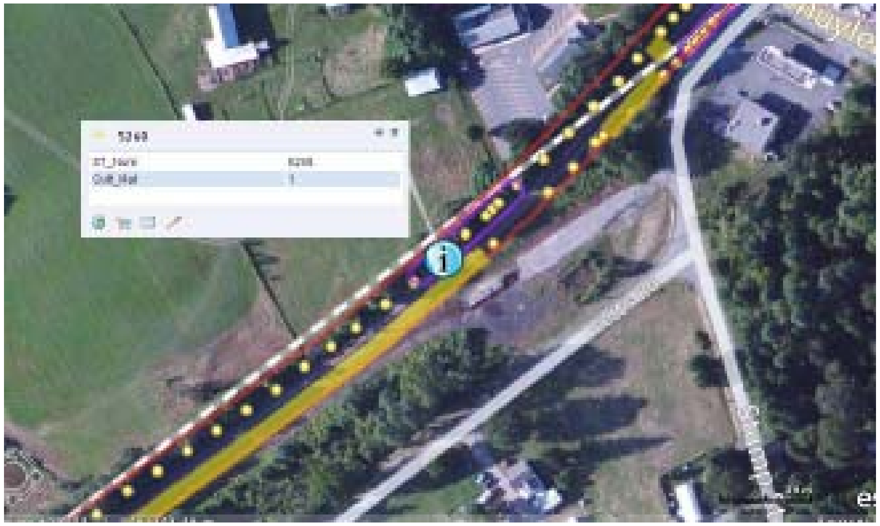




Cultural Resources Studies

- Based on the study methodology approved by the NYSHPO, CHPEI conducted Phase IB Archaeological Field Reconnaissance along portions of the Project's alignment in 2010.
  - HAA conducted subsurface testing along approximately 66 miles of the CP ROW.
  - Testing indicated significant prior disturbance associated with construction of the railroad.
  - A total of 11 archaeological sites were identified within the prospective APE.
  - At CHPEI's request, HAA conducted Phase II Archaeological Evaluations of these 11 sites to provide additional information suitable for the NYSHPO to make a determination of NRHP eligibility.
  - Of the 11 sites, 1 was recommended as eligible for the NRHP, and 3 were recommended for avoidance or additional archaeological investigations.
- The Phase IB report was submitted in draft form to the NYSHPO for review in July 2012. The NYSHPO provided comments concurring with the recommendations and findings of the draft report.

Cultural Resources Studies



HDR

Cultural Resources Studies

- In 2012, HAA conducted a Phase IA Addendum Study to identify reported archeological sites, historic properties, and previously completed archeological investigations along new sections of the Project's alignment that were not considered in the 2010 Phase IA report.

Route Segment	Approximate Length (miles)
NY Route 22 (Dresden to Whitehall)	11
Rotterdam to Selkirk (CSX Railroad ROW)	22
Selkirk to Cementon	29
Haverstraw Bay Bypass	8
Hell Gate Bypass	1.2
Total	**71.2 miles**

Cultural Resources Studies

- Study Status
  - A complete Phase IA study of the Project's entire terrestrial alignment has been completed. For this study, the Phase IA "study corridor" was developed in consultation with the NYSHPO and includes an area encompassing 500 feet on either side of the Project's centerline (a total of 1,000 feet).
    - The broad study corridor assists in documenting the cultural setting and archaeological sensitivity of the Project Area.
  - Phase IB and Phase II studies have been conducted along 66 miles of the 142-mile long overland route. This represents approximately 46 percent of the terrestrial portion of the Project.
  - An analysis of previously reported shipwrecks, maritime archaeological sites, and side scan sonar data for the entire maritime portion of the Project's alignment has been completed.

Cultural Resources Studies

- Summary of Findings (Terrestrial Sections)
  - A total of 268 resources have been reported within the 1,000-foot-wide study corridor, including archaeological sites, properties listed in the NRHP, and properties previously determined eligible for the NRHP.
  - Of these, only 68 are located within 25 feet of the terrestrial sections Project's centerline (12.5 feet on either side of the centerline).

Reported Terrestrial Resources within 25 feet of the Project's Centerline	
Resource Type	Number
Archaeological Sites*	47
NRHP-eligible properties	13
NRHP-listed properties	8
National Historic Landmarks	0
Total	**68**

*Represents reported number. Only 4 archaeological sites recommended as eligible or potentially eligible for the NRHP have been confirmed through field investigations

HDR

Cultural Resources Studies

- Summary of Findings (Maritime Sections)
  - The NYSHPO has established a 40-meter buffer for avoidance around shipwrecks or anomalies.
  - CHPEI, HDR, and HAA reviewed shipwreck and anomaly data with the NYSHPO in September 2012 to identify shipwrecks and anomalies along the maritime sections of the route that may require avoidance or mitigation.
  - The buffer area for over 100 shipwrecks or anomalies may intersect with the prospective APE.
    - CHPEI's preference is to avoid these shipwrecks and/or anomalies. Additional side scan sonar data is currently being collected to identify certain anomalies and to determine if avoidance or mitigation of these is required.
    - CHPEI is currently assessing the engineering feasibility for avoidance, and has identified avoidance options for a majority of these resources in consultation with the NYSHPO.

Cultural Resources Studies

- The DOE formally initiated consultation under Section 106 by letter dated January 13, 2011. The DOE has identified the following Consulting Parties:
  - ACHP
  - NYSHPO
  - St. Regis Mohawk Tribe
  - Delaware Nation
  - Stockbridge-Munsee Community
  - Shinnecock Indian Nation (November 20, 2012)
  - Delaware Tribe (July 12, 2013)
  - Bureau of Indian Affairs
- By letter dated May 14, 2013, the DOE initiated formal consultation with the Consulting Parties* regarding the Project's APE.
  - The APE is defined to include a 25-foot area on either side of the Project's centerline.
  - The APE includes the construction corridor (approximately 12.5 feet on either side of the Project's centerline), as well as additional areas that may be necessary for laydown, staging, and to accommodate indirect effects.

*Consultation with the Delaware Tribe regarding the APE was initiated on July 12, 2013

Cultural Resources Studies

- The DOE distributed the following study reports to the Consulting Parties on May 14, 2013*:
  - Phase IA Literature Review and Archaeological Sensitivity Assessment
  - Phase IB Archaeological Field Reconnaissance and Phase II Archaeological Site Evaluation, Canadian Pacific Railway Segment
  - Phase IA Literature Review and Archaeological Sensitivity Assessment Addendum
- To date, the DOE has not received any comments regarding the results or recommendations presented in these study reports.

*The reports were distributed to the Delaware Tribe on July 12, 2013

HDR

Next Steps

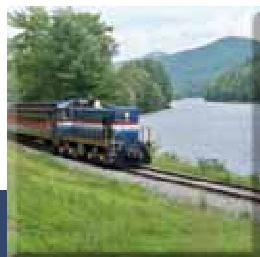
- The DOE currently intends to develop a Programmatic Agreement (PA) pursuant to 36 CFR Part 800.14(b) to address the proposed Project's potential effects on historic properties.
- A PA is appropriate for this undertaking:
  - Cultural resources studies are ongoing, but significant data characterizing historic properties within or potentially within the APE has been collected.
  - CHPEI anticipates that the DOE will issue a Presidential Permit prior to completion of all cultural resources studies, and therefore the effects on all properties cannot be fully determined prior to approval of this undertaking.
  - A PA is consistent with the provisions in the Joint Proposal, including the EM&CP and BMPs.
- The DOE will consult with the Consulting Parties to develop a PA.
- The PA will require the development of a Cultural Resources Management Plan (CRMP) for this Project in consultation with the Consulting Parties prior to the initiation of construction activities.
- A CRMP is also required under the Joint Proposal.

Next Steps

- At minimum, the CRMP will address:
  - Completion of additional studies, as necessary, to assess potential Project effects
  - Control measures to avoid Project effects on identified archaeological resources.
  - The process for conducting additional evaluations, as necessary, to determine the NRHP eligibility of archaeological sites that cannot reasonably be avoided by Project construction activities.
  - Procedures for determining the appropriate measures to minimize or mitigate adverse effects on historic properties that cannot reasonably be avoided by Project construction activities.
  - Procedures for the unanticipated discovery of archaeological resources.
  - Procedures for the unanticipated discovery of human remains.
  - Identification and proposed treatment, avoidance, or mitigation of Project effects on properties of traditional religious or cultural significance.
  - Parties responsible for coordinating activities conducted under the CRMP, including coordinating consultation and maintenance of relevant records.
  - The use of qualified cultural resources professionals.
  - CHPEI staff/contractor training requirements.
  - Appropriate standards for cultural resources investigations.
  - Standards and processes for artifact curation and/or repatriation.
  - Procedures for amendment to the CRMP.
  - Consultation requirements and contacts.
  - Scheduling considerations.

HDR

Questions/Discussion



APPENDIX K

Visual and Recreational Resources along Proposed CHPE Project Route

Appendix K
Visual and Recreational Resources
along Proposed CHPE Project Route

The aesthetic and recreational resources found along the proposed CHPE Project route are described in the following tables:

- **Table K-1.** Lake Champlain Segment Recreational Activities
- **Table K-2.** Overland Segment Recreational Activities
- **Table K-3.** Hudson River Segment Recreation Activities
- **Table K-4.** New York City Metropolitan Area Segment Recreation Activities

Table K-1. Lake Champlain Segment Recreational Activities

Aesthetic Resource	Milepost	Location	Resource Type	Recreational Facility/Activity
Lakes to Locks Passage Scenic Byway	1 to 90	Byway follows Lake Champlain	National Scenic Byway	Boating, fishing, swimming, sailing, kayaking, canoeing, waterskiing, boating, golfing, hiking and biking trails, bird watching areas, cross-country skiing, ice fishing, ice skating, and snowshoeing (LCR 2012a, LCR 2012b).
Adirondack Park	1 to 145	Borders Lake Champlain, New York State Route 22, and CP railroad ROW	State Park	Boating, camping, picnicking, hiking, cycling, hunting, fishing, swimming, downhill and cross-country skiing, ice skating, and snowshoeing (ARTC 2012).
Kings Bay Wildlife Management Area	2 to 5	Kings Bay, NY	State Wildlife Management Area	Walking and hiking trails, hunting, fishing, and bird watching (NYSDEC 2012cc)
Point Au Roche State Park	17 to 19	Point Au Roche, NY	State Park	Swimming, boating, picnicking, hiking, biking, cross-country skiing, snowshoeing, ice fishing, sports fields, boat launches, and playgrounds (NYS OPRHP 2012e)
Valcour Island Primitive Area	28 to 30	Plattsburg, NY	State Nature and Historical Preserve	Hiking, wildlife viewing and hunting, bird watching (NYSDEC 2006b)
Schuyler Island Primitive Area	37 to 38	Port Douglass, NY	State Nature and Historical Preserve	Kayaking, camping, and hiking (ARTC 2012)
Split Rock Wild Forest	56 to 62	Westport, NY	State Nature and Historic Preserve	Hiking, camping, mountain biking, rock climbing, fishing, hunting, cross-country skiing, ice climbing, trapping, and snowmobiling (NYSDEC 2012dd)
Kingsland Bay State Park	57 to 58	Ferrisburg, VT	State Park	Canoeing, kayaking, swimming, fishing, sailing, picnicking, and hiking/walking (VTSP 2009a)

Aesthetic Resource	Milepost	Location	Resource Type	Recreational Facility/Activity
Button Bay State Park	63	Vergennes, VT	State Park	Swimming, picnicking, boating, fishing, sailing, and hiking (VTSP 2009b)
D.A.R. State Park	72	Chimney Point, VT	State Park	Camping, picnicking, hunting, and fishing (VTSP 2009c)
Crown Point Campground	73	Crown Point, NY	State Nature and Historical Preserve	Camping, boating, fishing, and picnicking (NYSDEC 2012ee)
Chimney Point State Historic Site	73	Chimney Point, VT	State Historic Site	Educational programs, walking tours, and a museum (VSHS 2012)
Crown Point State Historic Site	73 to 75	Crown Point, NY	State Park	Educational programs, biking, hiking, a museum, picnicking, and cross-country skiing (NYS OPRHP 2012a)
Putts Creek Wildlife Management Area	79	Putts Creek, NY	State Wildlife Management Area	Fishing, hiking, snowshoeing, cross-country skiing, bird watching, and hunting (NYSDEC 2012ff)
Lake George Wild Forest	93 to 94, 96 to 97	Putnam, NY	State Nature and Historical Preserve	Fishing, ice fishing, snowmobiling, camping, hiking/walking trails, picnicking, and horseback riding (NYSDEC 2012gg)

Sources: CHPEI 2010, NYSDEC 2012m, NPS 2012a, USDOT-FHWA 2012a

Table K-2. Overland Segment Recreational Activities

Aesthetic Resource	Milepost	Location	Resource Type	Recreational Facility/Activity
South Bay Boat Launch and Pier	110	Whitehall, NY	State Park	Fishing (NYSDEC 2012s)
Champlain Canalway Trail	112 to 135	Whitehall, NY to Fort Edward, NY	Local Park	Jogging and walking trails (CCTWG 2011)
McIntyre Park and Bradley Park	135	Fort Edward, NY	Local Park	Playground, picnicking, tennis courts, and sports fields (Village of Walden 2011)
Ganesvoort Town Park, Bertha Smith Park	141	Gansevoort, NY	Local Parks	Playground, picnicking, and sports fields (Northumberland 2006)
Wilton Wildlife Preserve and Park	145 to 146	Ballard Corners, NY	State Wildlife Management Area	Walking trails, science-based habitat restoration, management activities, and recreational opportunities for children and the general public (WWPP 2012)
Gavin Park	149	Saratoga Springs, NY	Local Park	Playground, gymnasium, sports fields, and tennis courts (Town of Wilton 2006)
Geyser Park	154	Saratoga Springs, NY	Local Park	
Saratoga Spa State Park	154 to 158	Saratoga Springs, NY	State Park	Biking, hiking, fishing, swimming, tennis, golf, snowshoeing, cross-country skiing and ice skating, museum/visitor center, playgrounds, and picnicking (NYS OPRHP 2012b).
Saratoga State Tree Nursery	156	Saratoga Springs, NY	State tree nursery	Tree nursery
Woods Hollow Nature Preserve	157	North Ballston Spa, NY	Local Park	Hiking trails, ice skating, and fishing (Town of Milton 2012)
William S. Kelley Park/Spensieri Park	158	North Ballston Spa, NY	Local Parks	Playgrounds and sports fields

Aesthetic Resource	Milepost	Location	Resource Type	Recreational Facility/Activity
Indian Kill Nature Preserve	168	Burnt Hills, NY	Local Park	Hiking, nature study, fishing, cross-country skiing, and snowshoeing (Schenectady County 2007)
Clifton Park	168	Burnt Hills, NY	Local Park	
Rexford Aqueduct	170	Schenectady, NY	Local Park	Hiking, walking, and jogging trails (Trails.com 2012)
Carrie St. Park	172	Schenectady, NY	Local Park	
Mohawk Towpath Byway	172 to 174	Schenectady, NY	National Scenic Byway	Walking, picnicking, and biking (MTSBC 2012)
South Ave. Park, Front St. Park, Riverside Park, Liberty Park, Pulaski Park, and Veterans' Park	173	Schenectady, NY	Local Parks	Swimming, walking, and playgrounds (City of Schenectady 2006)
Orchard Park	174	Schenectady, NY	Local Park	
Hillhurst Park, Fairview Park, Westinghouse Park	175	Schenectady, NY	Local Parks	
Roger Keenholts Park, Tawasentha Park	184	Guilderland, NY	Local Parks	Sports fields, picnicking, tennis courts, swimming, hiking and biking trails, fishing, kayaking, canoeing, gardening, and snowshoeing (Town of Guilderland 2012a, Town of Guilderland 2012b)
Black Creek Marsh Wildlife Management Area	187	Voorheesville, NY	State Wildlife Management Area	Walking and bird watching (NYSDEC 2012ii)
Jim Nichols Park, Evergreen Park, New Scotland Town Park, Scotch Pine Park	188 to 189	Voorheesville, NY	Local Parks	Playgrounds and sports fields (Village of Voorheesville 2009)
Five Rivers Environmental Education Center	191	New Scotland, NY	Outdoor Education Center	Walking, skiing, and bird watching (NYSDEC 2012r)

Aesthetic Resource	Milepost	Location	Resource Type	Recreational Facility/Activity
Feura Bush Park	193	Feura Bush, NY	Local Park	Amusement Park
Selkirk Park	199	Selkirk, NY	Local Park	Biking, picnicking, and playgrounds (Town of Bethlehem 2013)
Mosher Park	203	Ravena, NY	Local Park	
Schodack Island State Park	2 to 8 miles southeast of 199	Schodack Landing, NY	State Park	Biking, boating, fishing, hiking, hunting, picnicking, playgrounds, ice skating, sports fields, and cross-country skiing (NYS OPRHP 2012g)
Columbia-Greene North SASS	2 to 20 miles southeast of 199	Schodack Landing, NY to Hudson, NY	Scenic Area of Statewide Significance	Aesthetic resource
Hudson River Islands State Park	15 to 16 miles southeast of 199	Coxsackie, NY	State Park	Camping, fishing, picnicking, hunting, hiking, nature trails, and boating (NYS OPRHP 2012h)
Four Mile Point Park	16 miles southeast of 199	Coxsackie, NY	Local Park	Bird watching, fishing, kayaking, canoeing, picnicking, walking, cross-country skiing, and snowshoeing (Scenic Hudson 2012c)
Middle Grounds Flat Unique Area	10 to 12 miles north of 228	Athens, NY	State Nature and Historical Preserve	Aesthetic resource
Green Port Town Park and Athens Boat Launch	11 miles north of 228	Athens, NY	Local Parks	Playgrounds, sports fields, and boat launches
Brandow Point Unique Area	9 miles north of 228	Athens, NY	State Nature and Historical Preserve	Aesthetic resource
Rogers Island Wildlife Management Area	7 to 8 miles north of 228	Athens, NY	State Wildlife Management Area	Boating, bird watching, snowshoeing, hunting, fishing, and trapping (NYSDEC 2012t)
Dutchman's Landing Park	6 miles north of 228	Catskill, NY	Local Park	Boating and playgrounds (Catskill.com 2012)

Aesthetic Resource	Milepost	Location	Resource Type	Recreational Facility/Activity
Olana State Historic Site	6 miles north of 228	Catskill, NY	National Register of Historic Places and State Park	Aesthetic resource
Ernest R. Lasher Memorial Park	1 mile north of 228	Catskill, NY	Local Park	Boating, swimming, and picnicking (Town of Germantown 2009)
New Baltimore Detached Parcel	210	Coxsackie, NY	State Park	
Elliot Park	222	Catskill, NY	Local Park	
Catskill-Olana SASS	222 to 226	Catskill, NY	Scenic Area of Statewide Significance	Aesthetic resource

Sources: CHPEI 2010, NYSDEC 2012m, NPS 2012a, USDOT-FHWA 2012a

Table K-3. Hudson River Segment Recreation Activities

Aesthetic Resource	Milepost	Location	Resource Type	Recreational Facility/Activity
Ulster-North SASS	230 to 246	Various	Scenic Area of Statewide Significance	Aesthetic resource
Estates District SASS	230 to 257	Various	Scenic Area of Statewide Significance	Aesthetic resource
Bristol Beach State Park	232	Maiden, NY	State Park	Swimming (PPC 2012a)
Seamon Park	233	Saugerties, NY	Local Park	
Clermont State Historic Site	233	Tivoli, NY	State Park	
Tivoli Bays Wildlife Management Area	235 to 238	Tivoli, NY	State Wildlife Management Area	Educational programs and canoeing (NYSDEC 2012y)
Town of Saugerties Glasco Mini Park	237	Glasco, NY	Local Park	
Ulster Landing State Park	238	Ulster Landing, NY	State Park	
Poet's Walk Park	239	Barrytown, NY	Local Park	
Charles Rider Park, Robert E. Post Memorial Park	240	East Kingston, NY	Local Parks	
Kingston Point Park	244	Kingston, NY	Local Park	
George H. Freer Memorial Park	245	Port Ewen, NY	Local Park	
Esopus Lloyd SASS	247 to 265	Various	Scenic Area of Statewide Significance	Aesthetic resource
Ogden Mills and Ruth Livingston Mills Memorial State Park	249 to 251	Staatsburg, NY	State Park	
Maragaret Lewis Norrie State Park	250 to 252	Staatsburg, NY	State Park	
Vanderbilt Mansion National Historic Site	254	Hyde Park, NY	National Register of Historic Places	Cultural resource

Aesthetic Resource	Milepost	Location	Resource Type	Recreational Facility/Activity
Home of Franklin D. Roosevelt National Historic Site	256	Hyde Park, NY	National Register of Historic Places	Cultural resource
Quiet Cove Riverfront Park	259	Poughkeepsie, NY	Local Park	
Walkway Over the Hudson State Historic Park	260	Poughkeepsie, NY	National Register of Historic Places	
Victor C. Waryas Park, Kaal Rock Park, Eastman Park	261	Poughkeepsie, NY	Local Parks	
Dutchess County Bowdoin Park	267 to 268	Wappinger Falls, NY	Local Park	
Castle Point Park	272	Beacon, NY	Local Park	
Riverfront Park	275	Beacon, NY	Local Park	
Hudson Highlands SASS	276 to 298	Various	Scenic Area of Statewide Significance	Aesthetic resource
Washington's Headquarters	276	Newburgh, NY	National Register of Historic Places and State Park	Cultural resource
Dutchess Junction Park	276	Dutchess Junction, NY	Local Park	
Hudson Highlands State Park	277 to 281, 289 to 292	Various	State Park	
Knox Headquarters	279	Cornwall-on-Hudson, NY	National Register of Historic Places and State Park	Cultural resource
Donahue Memorial Park	279	Cornwall-on-Hudson, NY	Local Park	
Storm King State Park	280 to 282	Various	State Park	
Bear Mountain State Park	289 to 294	Fort Montgomery, NY	State Park	
Iona Island Marsh National Natural Landmark	290	Fort Montgomery, NY	National Natural Landmark	Cultural resource
Riverfront Green Park	292	Peekskill, NY	Local Park	

Aesthetic Resource	Milepost	Location	Resource Type	Recreational Facility/Activity
Stony Point Battlefield State Historic Site	296	Stony Point, NY	National Register of Historic Places and State Park	Walking tours and educational programs (NYS OPRHP 2012c)
George’s Island County Park	1 mile south of 296	Montrose Point, NY	Local Park	Picnicking, playgrounds, athletic fields, biking, boating, and fishing (Westchester County 2012)
Oscawana County Park	2 miles south of 296	Montrose Point, NY	Local Park	Camping, hiking, biking, fishing, boating, and nature trails (RecreationParks.net 2012)
Bowline Point Town Park	298	Haverstraw, NY	Local Park	Swimming, playgrounds, tennis courts, and fishing
Haverstraw Baseball Fields	298	Haverstraw, NY	Local Park	Baseball fields
High Tor State Park	299 to 301	Haverstraw, NY	State Park	Picnicking, swimming, and hiking
Hook Mountain State Park, Hook Mountain National Natural Landmark, Haverstraw Beach State Park	301 to 306	Haverstraw, NY	State Parks and National Natural Landmark	Swimming, biking, walking, bird watching, and picnicking (NY-NJ TC 2012, PPC 2012b)
Rockland Lake State Park, Nyack Beach State Park	304 to 307	Haverstraw, NY	State Parks	Swimming, tennis courts, boating, bird watching, walking, biking, and golfing (PPC 2012c)
Rockwood Hall State Park	306	Sleepy Hollow, NY	State Park	Running, hiking, picnicking, and horseback riding (Westchester Secret Gardens 2012)
DeVries Park, Losee Park	309	Tarrytown, NY	Local Parks	Picnicking and playground (Village of Tarrytown 2012)
Tallman Mountain State Park	312 to 314	Sparkill, NY	State Park	Biking, picnicking, playgrounds, athletic fields, and cross-country skiing (NYS OPRHP 2012i)

Aesthetic Resource	Milepost	Location	Resource Type	Recreational Facility/Activity
Palisades Park	314 to 323	Various	National Register of Historic Places and National Natural Landmark	Cultural resource
Untermyer Park	317	Yonkers, NY	Local Park	Gardening
Trevor Park, JFK Marina and Park	318	Glenwood, NY	Local Parks	Boating
Philipse Manor Hall	319	Yonkers, NY	National Historic Landmark and State Park	Educational programs and tours (NYS OPRHP 2012d)
War Memorial Field	319	Yonkers, NY	Local Park	Sports fields and playgrounds (City of Yonkers 2012)
Esplanade Park	319	Yonkers, NY	Local Park	Walking and picnicking (Scenic Hudson 2012a)
Habirshaw Park	319	Yonkers, NY	Local Park	Walking, bird watching, and picnicking (Scenic Hudson 2012b)
Riverdale Park	322	Yonkers, NY	Local Park	Dog park (NYC Parks 2012c)
Inwood Hill Park	324	Washington Heights, NY	Local Park	Picnicking, sports fields, dog park, kayaking, playgrounds, tennis courts, and a marina (NYC Parks 2012d)

Sources: CHPEI 2010, NYSDEC 2012m, NPS 2012a, USDOT-FHWA 2012a

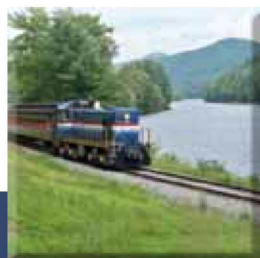
Table K-4. New York City Metropolitan Area Segment Recreation Activities

Aesthetic Resource	Milepost	Location	Resource Type	Recreational Facility/Activity
Fort Tryon Park	326	Washington Heights, NY	Local Park	Basketball courts, dog park, playgrounds, and exercise equipment (NYC Parks 2012e)
Roberto Clemente State Park	326 to 327	Washington Heights, NY	State Park	Water park, swimming, gymnasium, picnicking, and sports fields (NYS OPRHP 2012f)
Swindler Cove, Sherman Creek Park	327	Washington Heights, NY	Local Park	Boating, nature center, walking trails, gardens, and bird watching (NYRP 2013)
Highbridge Park	326 to 328	Harlem, NY	Local Park	Picnicking, sports fields, dog park, exercise equipment, and a recreation center (NYC Parks 2012f)
Fort Washington Park	326 to 328	Washington Heights, NY	Local Park	Picnicking, sports fields, dog park, and playgrounds (NYC Parks 2012g)
Randall's Island Park	330 to 331	Queens, NY	Local Park	Picnicking, biking and walking trails, golfing, sports fields, and tennis courts (NYC Parks 2012a)
Wards Island Park	South of 331	Queens, NY	Local Park	Picnicking, sports fields, and playgrounds (NYC Parks 2012h)
Federation of Italian American Organizations of Queens, Inc., soccer fields	333	Queens, NY	Private athletic fields	Sports fields (soccer) (FIAOQ 2013)
Immaculate Conception Youth Program of Astoria baseball fields	333	Queens, NY	Private athletic fields	Sports fields (baseball) (ICYP 2013)
Woodtree Playground	334	Queens, NY	Local Park	Handball courts and playgrounds (NYC Parks 2013a)
Steinway Playground	334	Queens, NY	Local Park	Handball courts and playgrounds (NYC Parks 2013b)

Aesthetic Resource	Milepost	Location	Resource Type	Recreational Facility/Activity
Astoria Park	334	Queens, NY	Local Park	Picnicking, dog park, exercise equipment, swimming, skate park, sports courts, running tracks, and playgrounds (NYC Parks 2012i)
Chappetto Square	335	Queens, NY	Local Park	Sports courts (hockey rink) (NYC Parks 2013c)
Triborough Bridge Playgrounds B and C	335	Queens, NY	Local Park	Playground
Astoria Health Playground	335	Queens, NY	Local Park	Playground
Rainey Park	336	Queens, NY	Local Park	Sports fields (baseball) and playground

Sources: CHPEI 2010, NYSDEC 2012m, NPS 2012a, USDOT-FHWA 2012a

THIS PAGE INTENTIONALLY LEFT BLANK



APPENDIX L

Environmental Justice Analysis Background Information

Appendix L
Environmental Justice Analysis Background Information

Appendix L presents demographic data for census tracts along the proposed CHPE Project route. Tables are broken down by county and contain information relating to population, percent minority, percent white, median income, and percent of families below the poverty level. Census tracts along the terrestrial portions of the CHPE Project route are shaded in gray.

Appendix L contains the following tables:

- **Table L-1.** Lake Champlain Segment Census Tract Data
- **Table L-2.** Overland Segment Census Tract Data
- **Table L-3.** Hudson River Segment Census Tract Data
- **Table L-4.** New York City Metropolitan Area Segment Census Tract Data

Table L-1. Lake Champlain Segment Census Tract Data

Geographies	County	Population	Percent Minority	Percent White	Median Income	Percent Family Below Poverty Level
New York State	n/a	19,378,102	41.7	58.3	$55,217	11.0
Clinton County	Clinton	82,128	8.9	91.1	$46,843	9.4
Census Tract 1001	Clinton	5,754	4.0	96.0	$50,833	7.9
Census Tract 1002	Clinton	4,284	3.1	96.9	$55,733	5.3
Census Tract 1006	Clinton	5,545	4.0	96.0	$70,709	3.2
Census Tract 1008	Clinton	4,412	6.7	93.3	$56,585	7.5
Census Tract 1019	Clinton	6,998	4.7	95.3	$54,707	7.5
Census Tract 1020	Clinton	3,146	4.5	95.5	$38,688	14.6
Census Tract 1021	Clinton	2,120	10.0	90.0	$54,423	15.6
Essex County	Essex	39,370	7.1	92.9	$44,734	7.4
Census Tract 9601	Essex	2,445	2.4	97.6	$49,470	7.2
Census Tract 9607	Essex	2,053	3.4	96.6	$47,625	9.8
Census Tract 9608	Essex	2,025	2.8	97.2	$45,020	8.3
Census Tract 9609	Essex	3,580	3.5	96.5	$51,438	8.6
Census Tract 9610	Essex	4,798	5.0	95.0	$40,169	9.1
Census Tract 9611	Essex	2,024	2.8	97.2	$53,378	4.3
Census Tract 9612	Essex	5,042	3.5	96.5	$35,608	12.7
Washington County	Washington	63,216	6.7	93.3	$48,565	9.3
Census Tract 820.02	Washington	1,261	2.7	97.3	$41,800	16.8

Source: USCB 2012b

Table L-2. Overland Segment Census Tract Data

Geographies	County	Population	Percent Minority	Percent White	Median Income	Percent Family Below Poverty Level
New York State	n/a	19,378,102	41.7	58.3	$55,217	11
Albany County	Albany	304,204	24.0	76.0	$56,424	7.3
Census Tract 143.01	Albany	2,852	16.5	83.5	$68,482	2.6
Census Tract 143.02	Albany	7,792	11.1	88.9	$90,136	1.3
Census Tract 144.01	Albany	4,151	7.1	92.9	$68,165	1.5
Census Tract 144.02	Albany	3,267	14.0	86.0	$52,714	0.0
Census Tract 145.01	Albany	2,380	4.3	95.7	$83,625	1.4
Census Tract 145.02	Albany	3,479	5.0	95.0	$67,785	6.4
Census Tract 145.03	Albany	2,789	5.3	94.7	$76,587	5.2
Census Tract 146.06	Albany	3,675	10.3	89.7	$82,724	0.0
Census Tract 146.11	Albany	1,818	10.8	89.2	$67,237	11.2
Census Tract 146.13	Albany	2,863	8.0	92.0	$63,219	0.0
Greene County	Greene	49,221	12.9	87.1	$45,921	8.8
Census Tract 801	Greene	3,370	5.3	94.7	$56,094	5.0
Census Tract 806	Greene	3,156	5.9	94.1	$49,152	9.2
Census Tract 807	Greene	2,988	9.8	90.2	$58,172	6.8
Census Tract 808	Greene	2,774	77.9	22.1	$0	0.0
Census Tract 810	Greene	4,568	25.1	74.9	$43,539	15.7
Census Tract 811.02	Greene	2,993	11.6	88.4	$46,901	2.0
Saratoga County	Saratoga	219,607	7.3	92.7	$65,613	4.2
Census Tract 601.01	Saratoga	6,199	8.9	91.1	$57,866	7.6
Census Tract 606.01	Saratoga	2,715	4.4	95.6	$50,560	5.0
Census Tract 607.01	Saratoga	7,078	5.9	94.1	$62,454	0.9

Geographies	County	Population	Percent Minority	Percent White	Median Income	Percent Family Below Poverty Level
Census Tract 607.02	Saratoga	9,095	6.2	93.8	$88,780	4.1
Census Tract 608	Saratoga	5,087	5.4	94.6	$61,984	4.7
Census Tract 613.02	Saratoga	6,588	8.1	91.9	$65,772	5.0
Census Tract 614.03	Saratoga	5,930	5.6	94.4	$73,000	3.1
Census Tract 617.01	Saratoga	4,367	7.6	92.4	$72,500	7.9
Census Tract 617.02	Saratoga	4,271	3.2	96.8	$74,469	10.4
Census Tract 618	Saratoga	5,684	7.7	92.3	$42,304	3.7
Census Tract 626.01	Saratoga	2,480	6.1	93.9	$103,162	0.0
Schenectady County	Schenectady	154,727	22,8	77.2	$53,322	7.9
Census Tract 202	Schenectady	2,596	48.4	51.6	$36,313	18.7
Census Tract 203	Schenectady	1,683	26.9	73.1	$26,563	43
Census Tract 212	Schenectady	2,999	19.9	80.1	$44,000	10.6
Census Tract 325.02	Schenectady	3,535	3.8	96.2	$82,788	2.6
Census Tract 326.01	Schenectady	2,064	5.2	94.8	$83,571	1.1
Census Tract 326.02	Schenectady	4,005	5.4	94.6	$56,042	3.8
Census Tract 327	Schenectady	3,742	7.4	92.6	$52,763	7.6
Census Tract 330.02	Schenectady	2,303	5.6	94.4	$74,200	0.0
Census Tract 330.04	Schenectady	2,852	6.9	93.1	$59,022	8.0
Census Tract 335	Schenectady	1,975	22.6	77.4	$35,119	10.8
Washington County	Washington	63,216	6.7	93.3	$48,565	9.3
Census Tract 803	Washington	5,390	4.3	95.7	$53,297	3.2
Census Tract 810	Washington	6,190	32.4	67.6	$51,361	4.5
Census Tract 820.01	Washington	4,980	4.5	95.5	$43,071	9.1
Census Tract 880	Washington	6,371	4.1	95.9	$42,852	10.5

Source: USCB 2012b

Table L-3. Hudson River Segment Census Tract Data

Geographies	County	Population	Percent Minority	Percent White	Median Income	Percent Family Below Poverty Level
New York State	n/a	19,378,102	41.7	58.3	$55,217	11
Bronx County	Bronx	1,385,108	89.1	10.9	$33,742	26.2
Census Tract 293.01	Bronx	1,875	25.5	74.5	$100,776	0.0
Census Tract 309	Bronx	3,891	18.0	82.0	$86,053	1.7
Census Tract 319	Bronx	751	38.5	61.5	$0	0.0
Columbia County	Columbia	63,096	11.8	88.2	$52,140	5.6
Census Tract 19	Columbia	1,965	9.9	90.1	$65,682	8
Dutchess County	Dutchess	297,488	25.4	74.6	$69,739	6.1
Census Tract 601	Dutchess	4,799	38.0	62.0	$79,020	0.0
Census Tract 602.02	Dutchess	3,997	19.7	80.3	$65,583	1.7
Census Tract 701.01	Dutchess	4,373	14.6	85.4	$63,654	7.1
Census Tract 702.01	Dutchess	2,860	13.2	86.8	$60,152	0.0
Census Tract 704.01	Dutchess	4,623	23.2	76.8	$61,875	4.4
Census Tract 1401.01	Dutchess	5,126	25.4	74.6	$58,490	0.8
Census Tract 1406.02	Dutchess	2,840	29.0	71.0	$77,536	6.6
Census Tract 1408.01	Dutchess	2,804	20.9	79.1	$64,617	9.7
Census Tract 1500.03	Dutchess	3,027	13.6	86.4	$61,250	9.8
Census Tract 1600.03	Dutchess	2,361	10.0	90.0	$62,917	5.8
Census Tract 1903.01	Dutchess	3,439	29.9	70.1	$70,000	4.2
Census Tract 2201	Dutchess	6,011	45.3	54.7	$25,551	36.5
Census Tract 2207	Dutchess	2,517	65.7	34.3	$31,203	29.3
New York County	New York	1,585,873	52.0	48.0	$65,184	13.8
Census Tract 297	New York	161	72.7	27.3	$0	0.0

Geographies	County	Population	Percent Minority	Percent White	Median Income	Percent Family Below Poverty Level
Orange County	Orange	372,813	31.8	68.2	$69,144	7.3
Census Tract 4	Orange	4,957	86.8	13.2	$26,888	35.5
Census Tract 5.02	Orange	4,578	90.7	9.3	$36,953	37.9
Census Tract 101.02	Orange	4,856	29.4	70.6	$86,588	7.3
Census Tract 131	Orange	5,094	12.9	87.1	$66,650	0.0
Census Tract 136	Orange	6,763	25.1	74.9	$92,841	0.0
Census Tract 138	Orange	2,983	18.8	81.2	$75,547	1.5
Putnam County	Putnam	99,710	17.1	82.9	$88,619	3.0
Census Tract 108	Putnam	3,449	14.4	85.6	$82,179	2.6
Rockland County	Rockland	311,687	34.7	65.3	$82,245	7.5
Census Tract 101.01	Rockland	5,813	18.0	82.0	$120,833	1.3
Census Tract 102	Rockland	4,473	21.6	78.4	$81,250	1.0
Census Tract 106.02	Rockland	6,588	70.2	29.8	$54,057	3.5
Census Tract 107.01	Rockland	4,079	68.0	32.0	$57,412	5.1
Census Tract 107.02	Rockland	4,309	89.7	10.3	$41,830	11
Census Tract 107.03	Rockland	3,522	84.4	15.6	$39,034	22.9
Census Tract 109.02	Rockland	4,117	35.6	64.4	$88,872	3.5
Census Tract 110	Rockland	2,063	15.7	84.3	$111,167	4.1
Ulster County	Ulster	182,493	13.3	86.7	$56,434	7.4
Census Tract 9514	Ulster	3,334	15.4	84.6	$45,571	6.3
Census Tract 9517	Ulster	4,782	35.4	64.6	$44,231	12.9
Census Tract 9525	Ulster	3,411	12.4	87.6	$62,875	4.2
Census Tract 9501	Ulster	5,336	7.9	92.1	$56,336	8.1
Census Tract 9513	Ulster	4,337	12.1	87.9	$49,869	4.5
Census Tract 9526	Ulster	5,630	14.6	85.4	$67,303	0.7

Geographies	County	Population	Percent Minority	Percent White	Median Income	Percent Family Below Poverty Level
Census Tract 9549	Ulster	1,585	8.8	91.2	$71,111	1.4
Westchester County	Westchester	949,113	42.6	57.4	$77,881	6.3
Census Tract 132.01	Westchester	4,366	18.5	81.5	$211,250	3.1
Census Tract 2.02	Westchester	4,175	73.6	26.4	$57,212	9.5
Census Tract 1.04	Westchester	100	0.0	0.0	$0	0.0
Census Tract 2.03	Westchester	3,329	58.2	41.8	$49,635	5.6
Census Tract 4.02	Westchester	5,902	91.5	8.5	$38,906	22.5
Census Tract 7.02	Westchester	4,096	68.6	31.4	$60,293	2.0
Census Tract 103	Westchester	3,111	28.5	71.5	$83,287	3.3
Census Tract 104	Westchester	3,916	29.7	70.3	$82,361	13.7
Census Tract 113	Westchester	6,413	17.1	82.9	$115,875	1.8
Census Tract 114	Westchester	6,368	30.3	69.7	$107,909	0.7
Census Tract 115	Westchester	4,916	45.3	54.7	$53,558	6.5
Census Tract 116	Westchester	6,848	77.5	22.5	$56,918	12.4
Census Tract 117	Westchester	2,926	20.7	79.3	$148,958	5.5
Census Tract 118	Westchester	5,626	16.4	83.6	$198,452	0.0

Source: USCB 2012b

Table L-4. New York City Metropolitan Area Segment Census Tract Data

Geographies	County	Population	Percent Minority	Percent White	Median Income	Percent Family Below Poverty Level
New York State	n/a	19,378,102	41.7	58.3	$55,217	11.0
Bronx County	Bronx	1,385,108	89.1	10.9	$33,742	26.2
Census Tract 19	Bronx	1,917	90.2	9.8	$25,093	38.5
New York County	New York	1,585,873	52.0	48.0	$65,184	13.8
Census Tract 210	New York	6,637	98.0	2.0	$36,922	22.6
Census Tract 236	New York	6,404	99.0	1.0	$36,791	22.0
Census Tract 242	New York	3,396	98.1	1.9	$21,276	28.3
Census Tract 243.02	New York	7,370	99.2	0.8	$16,505	42.2
Census Tract 297	New York	161	72.7	27.3	$0	0.0
Census Tract 299	New York	3,834	98.4	1.6	$21,909	34.8
Census Tract 311	New York	2	0.0	0.0	$0	0.0
Queens County	Queens	2,230,722	72.4	27.6	$54,878	11.0
Census Tract 37	Queens	0	0.0	0.0	$0	0.0
Census Tract 39	Queens	1,592	78.1	21.9	$33,750	35.9
Census Tract 43	Queens	2,437	91.8	8.2	$16,638	53.9
Census Tract 45	Queens	2,975	45.4	54.6	$61,667	12.7
Census Tract 69	Queens	4,611	55.0	45.0	$52,549	10.4
Census Tract 71	Queens	3,963	46.3	53.7	$44,653	4.7
Census Tract 77	Queens	1,478	62.3	37.7	$64,732	0.0
Census Tract 79	Queens	3,493	68.9	31.1	$42,333	14.1
Census Tract 81	Queens	1,188	70.0	30.0	$55,917	0.0
Census Tract 85	Queens	1,270	72.8	27.2	$51,413	24.0
Census Tract 95	Queens	2,289	28.6	71.4	$54,533	14.4

Geographies	County	Population	Percent Minority	Percent White	Median Income	Percent Family Below Poverty Level
Census Tract 97	Queens	3,580	25.5	74.5	$66,058	14.5
Census Tract 101	Queens	2,552	31.3	68.7	$57,097	2.6
Census Tract 103	Queens	3,934	38.3	61.7	$48,106	9.7
Census Tract 105	Queens	4,244	59.3	40.7	$33,211	21.2
Census Tract 111	Queens	3,050	42.5	57.5	$79,948	6.8
Census Tract 113	Queens	4,234	41.3	58.7	$52,810	13.4
Census Tract 107.01	Queens	0	0.0	0.0	$0	0.0

Source: USCB 2012b

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX M

Air Quality Analysis Background Information

Appendix M
Air Quality Analysis Background Information

Appendix M contains detailed lists of construction equipment, and associated emissions calculations for the four proposed CHPE Project route segments. This appendix also contains various emissions factors that were used in the air quality analysis.

Lake Champlain Segment

- **Table M-1.** Estimated Equipment and Vehicle Use During Aquatic Cable Installation
- **Table M-2.** Emissions Factors
- **Table M-3.** Estimated Total Emissions

Overland Segment

- **Table M-4.** Estimated Equipment and Vehicle Use During Terrestrial Cable Installation
- **Table M-5.** Estimated Equipment and Vehicle Use During Construction of Cooling Stations
- **Table M-6.** Emissions Factors
- **Table M-7.** Fugitive Dust Estimation Calculations – Earthmoving
- **Table M-8.** Fugitive Dust Estimation Calculations – Road Dust
- **Table M-9.** Estimated Total Emissions

Hudson River Segment

- **Table M-10.** Estimated Equipment and Vehicle Use During Aquatic Cable Installation
- **Table M-11.** Estimated Equipment and Vehicle Use During Terrestrial Cable Installation
- **Table M-12.** Estimated Equipment and Vehicle Use During Construction of Cooling Stations
- **Table M-13.** Aquatic Cable Installation Emissions Factors
- **Table M-14.** Terrestrial Cable Installation and Cooling Station Construction Emissions Factors
- **Table M-15.** Fugitive Dust Estimation Calculations – Earthmoving
- **Table M-16.** Fugitive Dust Estimation Calculations – Road Dust
- **Table M-17.** Estimated Total Emissions

New York City Metropolitan Area Segment

- **Table M-18.** Estimated Equipment and Vehicle Use During Construction of Converter Station
- **Table M-19.** Estimated Equipment and Vehicle Use During Aquatic Cable Installation
- **Table M-20.** Estimated Equipment and Vehicle Use During Terrestrial Cable Installation
- **Table M-21.** Estimated Equipment and Vehicle Use During Construction of Cooling Station
- **Table M-22.** Emissions Factors
- **Table M-23.** Fugitive Dust Estimation Calculations – Earthmoving
- **Table M-24.** Fugitive Dust Estimation Calculations – Road Dust
- **Table M-25.** Estimated Total Emissions
- **Table M-26.** Proposed One-MW Generator Emissions

Table M-1. Estimated Equipment and Vehicle Use During Aquatic Cable Installation, Lake Champlain Segment

Activity	Equipment and Vehicles			Hours per Day	Working Days	LF	trips	cables	Total hours
	Type	BHP	Qty						
Cable installation	Primary Cable Vessel								
	2 azimuth units	2,640	2	24	68	0.25	1	2	1,632
	azimuth unit	1,360	1	24	68	0.25	1	2	816
	retractable azimuth unit	2,475	1	24	68	0.1	1	2	326.4
	tunnel unit	1,300	1	24	68	0.25	1	2	816
	generators (500 kVA)	536	4	24	68	0.75	1	2	9,792
	generators (600 kVA)	643	1	24	68	0.5	1	2	1,632
	Survey boat	1,131	1	24	68	0.5	1	2	1,632
	Crew boat	425	1	24	68	0.2	1	2	652.8
Installation of Cable Protection	Tugboat, Towboat	1,970	1	12	68	0.25	1	2	408
	Crew boat	425	1	12	68	0.2	1	2	326.4
Cable Shipments	Main propulsion	8,201	1	10		0.5	19		95
	Auxiliary engine	1,776	1	10		0.17	19		32.3

Notes:

BHP: Brake-horsepower. The maximum rated load of the vehicle or vessel engine(s).

LF: Load Factor

68 work-days based on 1.49 miles per day from mileposts 0 to 101.3.

Cable shipments emission duration of 10 hours per trip based on 12 mph for 120 miles.

120 miles is the average distance for each of the 19 cable shipments (6 miles of cable per shipment) round trip.

Table M-2. Emissions Factors[1], Lake Champlain Segment

Activity	Equipment and Vehicles			VOC lb/hr	CO lb/hr	NO_x lb/hr	SO_x lb/hr	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	CO_2 lb/hr	CH_4 lb/hr[2]	N_2O lb/hr[2]
	Type	Category	BHP									
Cable Installation	2 azimuth units	Marine	2,640	2.07	10.48	29.64	0.03	1.41	1.37	3,118.31	0.12	0.02
	azimuth unit	Marine	1,360	1.06	5.40	15.27	0.01	0.73	0.70	1,606.40	0.06	0.01
	retractable azimuth unit	Marine	2,475	1.94	9.82	27.79	0.03	1.32	1.28	2,923.41	0.11	0.02
	tunnel unit	Marine	1,300	1.02	5.16	14.60	0.01	0.69	0.67	1,535.53	0.06	0.01
	generators (500 kVA)	Marine	536	0.33	1.47	5.46	0.01	0.23	0.23	626.53	0.02	0.00
	generators (600 kVA)	Marine	643	0.40	1.76	6.55	0.01	0.28	0.27	751.60	0.03	0.01
	Survey boat	Marine	1,131	0.89	4.49	12.70	0.01	0.60	0.59	1,335.91	0.05	0.01
	Crew boat	Marine	425	0.21	1.44	3.48	0.00	0.19	0.18	502.37	0.02	0.00
Installation of Cable Protection	Tugboat, Towboat	Marine	1,970	1.67	8.66	23.20	0.02	1.18	1.14	2,326.55	0.09	0.02
	Crew boat	Marine	425	0.21	1.44	3.48	0.00	0.19	0.18	502.37	0.02	0.00
Cable Shipment[3]	OGV main propulsion	Marine (kW)	8,201	10.85	25.31	307.36	65.45	8.14	7.59	10,645.38	0.11	0.56
	OGV auxiliary engine	Marine (kW)	1,776	1.57	4.31	54.42	16.60	1.92	1.76	2,704.41	0.02	0.12

Notes:

[1] Emissions factors weighted for calendar year 2013 (USEPA 2003, USEPA 2006, USEPA 2009b).

[2] Offroad N_2O and CH_4 emissions are based on 40 CFR 98, Subpart C.

[3] Cable Shipment emissions based on USEPA 2009b.

BHP: Brake-horsepower. This should be the maximum rated load of the vehicle of vessel engines(s).

Table M-3. Estimated Total Emissions[1], Lake Champlain Segment

Activity	Equipment and Vehicles			VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[2]
	Type	Category	hrs										
Cable Installation	2 azimuth units	Marine	1632	3,372	17,102	48,373	45	2,303	2,233	5,089,079	199	40	5,105,635
	azimuth unit	Marine	816	869	4,405	12,460	12	593	575	1,310,823	51	10	1,315,088
	retractable azimuth unit	Marine	326.4	632	3,207	9,070	8	432	419	954,202	37	7	957,306
	tunnel unit	Marine	816	830	4,211	11,910	11	567	550	1,252,993	49	10	1,257,069
	Generators (500 kVA)	Marine	9792	3,279	14,374	53,462	54	2,276	2,208	6,134,933	243	49	6,155,101
	generators (600 kVA)	Marine	1632	656	2,874	10,689	11	455	441	1,226,605	49	10	1,230,637
	Survey boat	Marine	1632	1,445	7,326	20,723	19	986	957	2,180,208	85	17	2,187,300
	Crew boat	Marine	652.8	136	941	2,270	3	124	120	327,947	13	3	329,013
Installation of Cable Protection	Tugboat, Towboat	Marine	408	680	3,535	9,466	8	480	465	949,232	37	7	952,321
	Crew boat	Marine	326.4	7	47	112	0	6	6	16,227	1	0	16,279
Cable Shipment	OGV	Marine	95	1,031	2,405	29,199	6218	773	721	1,011,311	10	53	1,028,033
	OGV	Marine	32.3	51	139	1,758	536	62	57	87,352	1	4	88,578
Total Underwater Cable Laying Emissions, lbs				**12,988**	**60,564**	**209,492**	**6925**	**9,056**	**8,753**	**20,540,911**	**776**	**210**	**20,622,361**
Total Underwater Cable Laying Emissions, tons				**6.49**	**30.28**	**104.75**	**3.46**	**4.53**	**4.38**	**10,270**	**0.39**	**0.11**	**10,311**

Notes:

[1] Emissions weighted for calendar year 2013 (USEPA 2003, USEPA 2006, USEPA 2009a).

[2] Carbon dioxide equivalents (CO_2 eqv) are calculated by summing the products of mass GHG emissions by species times their respective GWP coefficients (USEPA 2009a).

Table M-4. Estimated Equipment and Vehicle Use During Terrestrial Cable Installation, Overland Segment

Task	Equipment and Vehicles				Working Days	Daily		# equipment hours operation (127 miles)	Miles Per Hour (on road only)
	Equipment Type	Progress (miles)/8-hour day	BHP	Qty		hours	VMT		
Vegetation Clearing	Brush Hog	1	11	1	127	8		1,016	
Topsoil removal and storage	Small Bulldozer	1	285	1	127	8		1,016	
	Bobcat	1	73	1	127	8		1,016	
Access path prep (gravel)	Small Bulldozer	0.5	285	1	254	8		2,032	
	18-yard dump	0.5		2	254	8	20,320	4,064	5
	Backhoe	0.25	73	1	508	8		4,064	
	Bobcat	0.25	73	1	508	8		4,064	
	Ram Hoe	0.25	330	1	508	4		2,032	
	Hard Rock Trencher	0.25	335	1	508	2		1,016	
Deliver Cable @ 3 reels per	Flatbed Truck, 30 mph	0.5		1	254	8	60,960	2,032	30
	Crane	0.5	300	1	254	2		508	
HDD[1,2]	Drilling Unit				282	8		2,256	
	Drilling Power Unit		800		282	8		2,256	
	Generator		50		282	8		2,256	
	Water Pumps				282	8		2,256	
	Mud Pump				282	8		2,256	
Site Deliver and Pull Cable	Flatbed Truck, 30 mph	0.5		1	254	8	60,960	2,032	30
	Crane, 40-ton	0.5		1	254	2		508	
	Puller/Tensioner	0.5	165	2	254	8		4,064	
	Mid-pull caterpillars	0.5	165	2	254	8		4,064	
Splice Cable	Generators	0.25	48	1	508	8		4,064	
	Propane heaters	0.25	0.5	1	508	8		4,064	
Deliver and install Thermal Backfill	18-yard dump	0.25		2	508	8	243,840	8,128	30
	Backhoe	0.25	73	1	508	8		4,064	
	Bobcat	0.25	73	1	508	8		4,064	

Task	Equipment and Vehicles				Working Days	Daily		# equipment hours operation (127 miles)	Miles Per Hour (on road only)
	Equipment Type	Progress (miles)/8-hour day	BHP	Qty		hours	VMT		
Install Native Backfill	Backhoe	0.5	73	1	254	8		2,032	
	Bobcat	0.5	73	1	254	8		2,032	
	Shaker/screen	0.5	110	1	254	8		2,032	
	Compressor for tampers	0.5		1	254	8		2,032	
Remove Excess Native Fill from Site	18-yard dump	1		2	127	8	10,160	2,032	5
	Backhoe	1	73	1	127	8		1,016	
Replace Topsoil, York Rake Vegetation	Small Bulldozer	0.5	285	1	254	8		2,032	
	Hydroseed Sprayer	0.5	115	1	254	8		2,032	
Miscellaneous	Pickup trucks			10	220	4	264,000	8,800	30

Notes:

HDD: Horizontal Directional Drilling

[1] HDD includes 44 Upland Streams, 1 Champlain exit, 2 Hudson Entrance/Exit, 47 Locations, and 6 equipment days per location.

[2] Support for HDD includes 3 Locations, 12 Working Days (4 Equipment Days per location) at 8 hours per day, and 96 equipment hours of operation.

Table M-5. Estimated Equipment and Vehicle Use During Construction of Cooling Stations, Overland Segment

Task	Overall Duration	Equipment and Vehicles			Working Days*	Daily		# equipment hours operation	Miles per Hour (on road only)
		Equipment Type	BHP	Qty		Hours	VMT		
Site Preparation (pavement and foundations)	4.5 days (half a day at each cooling station)	Bulldozer	285	1	4.5	8		36	
		Backhoe	73	1	4.5	8		36	
		Loader	150	1	4.5	8		36	
		18-yard dump		1	4.5	8	180	36	5
Site Prep Grading	4.5 days (half a day at each cooling station)	Bulldozer	285	1	4.5	8		36	
		Backhoe	73	1	4.5	8		36	
		Loader	150	1	4.5	8		36	
		18-yard dump		2	4.5	8	360	72	5
Building Foundations, Floor	4.5 days (half a day at each cooling station)	Backhoe	73	1	4.5	8		36	
		Bobcat	73	1	4.5	8		36	
		Loader	150	1	3	8		24	
		Bulldozer	285	1	3	8		24	
		Small crane-forms	155	2	0	8		0	
		Medium crane-concrete bucket	300	2	0	8		0	
		Concrete Mixer, offsite delivery		1	2	8	40	16	2.5
Building	18 days (2 days at each station)	Small crane	155	1	13.5	8		108	
		Forklifts, offloading equipment	75	1	9	8		72	
		Generators	50	2	9	8		144	
		Propane heaters	58.9	2	9	8		144	
HDD, transmission cables		Drilling Power Unit, 9 locations @ 6 equipment days/location	800		54	8		432	
		Generator	50		54	8		432	

Task	Overall Duration	Equipment and Vehicles			Working Days*	Daily		# equipment hours operation	Miles per Hour (on road only)
		Equipment Type	BHP	Qty		Hours	VMT		
Final Site Preparation, traprock, vegetation paving, plantings	9 days (1 day at each cooling station)	Bulldozer		1	2	8		16	
		18-yard dump		1	2	8	80	16	5
		Hotbox with truck		1	2	8	40	16	2.5
		Roller	100	1	2	8		16	
		Flatbed Truck, 30 mph		1	1	8	240	8	30
		Backhoe, plantings	73	1	1	8			
Miscellaneous	7 weeks	Craft utility, delivery trucks		2	35	4	8,400	280	30
		Pickup trucks		1	35	4	4,200	140	30

Notes:

* Calendar days are used to provide for long workdays and weekend work.

HDD: Horizontal Directional Drilling

Table M-6. Emissions Factors[1], Overland Segment

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	$PM_{2.5}$ lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Installation of Terrestrial Transmission Cables												
Vegetation Clearing	Brush Hog	offroad	11	0.02	0.11	0.11	0.00	0.01	0.01	14.27	0.00	0.00
Topsoil Removal and Storage	Small Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
Access Path Prep (gravel)	Small Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	18-yard dump	onroad HHD		0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
Trench Excavation	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Ram Hoe	offroad	330	0.14	0.94	2.35	0.00	0.13	0.13	390.14	0.01	0.00
	Hard Rock Trencher	offroad	335	0.24	1.61	3.40	0.00	0.22	0.21	395.76	0.02	0.00
Cable Delivery	Flatbed Truck, 30 mph	onroad HHD		0.00	0.00	0.01	0.00	0.00	0.00	3.70	0.00	0.00
	Crane, 40 ton	offroad	300	0.17	0.47	2.22	0.00	0.10	0.09	350.73	0.01	0.00
HDD[7]	Drilling Power Unit	offroad	800	0.89	3.39	11.69	0.01	0.54	0.52	933.94	0.04	0.01
	Generator	offroad	50	0.03	0.18	0.53	0.00	0.03	0.03	64.97	0.00	0.00
Site Deliver and Pull Cable	Flatbed Truck, 30 mph	onroad HHD		0.00	0.00	0.01	0.00	0.00	0.00	3.70	0.00	0.00
	Crane, 40-ton	offroad	300	0.17	0.47	2.22	0.00	0.10	0.09	350.73	0.01	0.00
	Puller/Tensioner	offroad	165	0.34	1.28	2.02	0.00	0.23	0.22	226.92	0.01	0.00
	Mid-pull caterpillars	offroad	165	0.34	1.28	2.02	0.00	0.23	0.22	226.92	0.01	0.00
Splice Cable	Generators	offroad	48	0.03	0.18	0.51	0.00	0.03	0.03	62.37	0.00	0.00
	Propane heaters	offroad	58.9	0.00	0.01	0.02	0.00	0.00	0.00	20.64	0.00	0.00
Deliver and Install Thermal Backfill	18-yard dump	onroad HHD		0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	$PM_{2.5}$ lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Installation of Terrestrial Transmission Cables (continued)												
Install Native Backfill	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Shaker/screen	offroad	110	0.07	0.22	0.90	0.00	0.05	0.05	128.57	0.01	0.00
	Compressor for tampers	offroad	20	0.03	0.12	0.22	0.00	0.02	0.02	25.94	0.00	0.00
Remove Excess Native Fill from site	18-yard dump	onroad HHD		0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
Replace Topsoil, York Rake Vegetation	Small Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	Hydroseed Sprayer	offroad	115	0.27	0.99	1.64	0.00	0.17	0.17	158.04	0.01	0.00
Miscellaneous	Pickup trucks	onroad LD		0.00	0.02	0.00	0.00	0.00	0.00	0.97	0.00	0.00
Construction of Cooling Stations												
Site Preparation (pavement and foundations)	Bulldozer	offroad	285	0.1	0.6	1.8	0.0	0.1	0.1	336.9	0.0	0.0
	Backhoe	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
	Loader	offroad	150	0.3	1.2	1.8	0.0	0.2	0.2	206.3	0.0	0.0
	18-yard dump	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
Site Prep Grading	Bulldozer	offroad	285	0.1	0.6	1.8	0.0	0.1	0.1	336.9	0.0	0.0
	Backhoe	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
	Loader	offroad	150	0.3	1.2	1.8	0.0	0.2	0.2	206.3	0.0	0.0
	18-yard dump	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	$PM_{2.5}$ lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Construction of Cooling Stations (continued)												
Building Foundations (floor)	Backhoe	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
	Bobcat	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
	Loader	offroad	150	0.3	1.2	1.8	0.0	0.2	0.2	206.3	0.0	0.0
	Bulldozer	offroad	285	0.1	0.6	1.8	0.0	0.1	0.1	336.9	0.0	0.0
	Small crane-forms	offroad	155	0.1	0.3	1.2	0.0	0.1	0.1	181.2	0.0	0.0
	Medium crane-concrete bucket	offroad	300	0.2	0.5	2.2	0.0	0.1	0.1	350.7	0.0	0.0
	Concrete Mixer, offsite delivery	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
Building	Large crane	offroad	450	0.2	1.1	4.2	0.0	0.2	0.2	526.1	0.0	0.0
	Small crane	offroad	155	0.1	0.3	1.2	0.0	0.1	0.1	181.2	0.0	0.0
	Forklifts, offloading equipment	offroad	75	0.1	0.6	0.7	0.0	0.1	0.1	98.4	0.0	0.0
	Small crane, offloading equipment	offroad	155	0.1	0.3	1.2	0.0	0.1	0.1	181.2	0.0	0.0
	Generators	offroad	50	0.0	0.2	0.5	0.0	0.0	0.0	65.0	0.0	0.0
	Propane heaters	offroad	58.9	0.00	0.01	0.02	0.00	0.00	0.00	20.64	0.00	0.00
Final Site Preparation, traprock, paving, vegetation plantings	Bulldozer	offroad		0.1	0.6	1.8	0.0	0.1	0.1	336.9	0.0	0.0
	18-yard dump	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
	Hotbox with truck	onroad LD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
	Roller	offroad	100	0.1	0.8	0.9	0.0	0.1	0.1	131.2	0.0	0.0
	Flatbed Truck, 30 mph	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
	Backhoe, plantings	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	$PM_{2.5}$ lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Construction of Cooling Stations (continued)												
HDD	Drilling Power Unit, 9 locations @ 6 equipment days/location	offroad	800	0.9	3.4	11.7	0.0	0.5	0.5	933.9	0.0	0.0
	Generator	offroad	50	0.0	0.2	0.5	0.0	0.0	0.0	65.0	0.0	0.0
Miscellaneous	Craft utility, delivery trucks	onroad MD		0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0
	Pickup trucks	onroad LD		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0

Notes:

Overland Equipment estimate includes mileposts 101.3 to 228.4.

BHP: Brake-horsepower. This should be the maximum rated load of the vehicle of vessel engine(s).

HDD: Horizontal Directional Drilling. LD: Light Duty. HD: Heavy Duty. HHD: Heavy Heavy Duty

[1] Emissions factors weighted for calendar year 2013.

[2] Units are operating hours for offroad engines, vehicle miles traveled (VMT) for onroad vehicles.

[3] Offroad diesel exhaust $PM_{2.5}$ = 92% of PM_{10}; Onroad HHD particulate emission factors include allowances for tire and brake wear.

[4] Offroad N_2O and CH4 emissions are based on 40 CFR 98, Subpart C.

[5] Onroad N_2O and CH_4 emissions are based on the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2008 (USEPA 2009b).

[6] Onroad CO_2 emissions are based on EPA420-F-05-001 which rates gasoline emissions at 19.4 lb/gal and diesel at 22.2 lb/gal (USEPA 2005).

[7] HDD includes 44 Upland Streams, 1 Champlain exit, 2 Hudson Entrance/Exit, 47 Locations, and 6 equipment days per location.

Table M-7. Fugitive Dust Estimation Calculations - Earthmoving, Overland Segment

Construction Earthmoving	Project hours	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	PM_{10} lbs	$PM_{2.5}$ lbs
Topsoil Removal and Storage					
Small bulldozer	1,016	16.64	4.91	16,911.15	4,993.17
Bobcat	1,016	0.00034	0.000052	0.35	0.05
Access path prep (gravel)					
Small bulldozer	2,032	16.64	4.91	33,822.29	9,986.33
18-yard dump	4,064	0.00034	0.000052	1.38	0.21
Trench Excavation					
Backhoe	4,064	0.00034	0.000052	1.38	0.21
Bobcat	4,064	0.103	0.005126	419.71	20.83
Ram Hoe	2,032	0.103	0.005126	209.85	10.42
Hard Rock Trencher	1,016	0.103	0.005126	104.93	5.21
HDD					
Drilling Unit	2,256	0.00034	0.000052	0.77	0.12
Generator	2,256	0.00034	0.000052	0.77	0.12
Deliver and Install Thermal Backfill					
18-yard dump	8,128	0.00034	0.000052	2.77	0.42
Backhoe	4,064	0.00034	0.000052	1.38	0.21
Bobcat	4,064	16.64	4.91	67,644.58	19,972.67
Install Native Backfill					
Backhoe	2,032	0.00034	0.000052	0.69	0.10
Bobcat	2,032	16.64	4.91	33,822.29	9,986.33
Shaker/screen	2,032	0.00034	0.000052	0.69	0.10
Compressor for tampers	2,032	0.00034	0.000052	0.69	0.10
Remove Excess Native Fill from Site					
18-yard dump	2,032	0.00034	0.000052	0.69	0.10
Backhoe	1,016	0.00034	0.000052	0.35	0.05
Replace Topsoil, York Rake Vegetation					
Small bulldozer	2,032	16.64	4.91	33,822.29	9,986.33
Hydroseed Sprayer	2,032	0.103275	0.005126	209.85	10.42
Site Preparation					
Bulldozer	36	16.64	4.91	599.21	176.92
Backhoe	36	0.00034	0.000052	0.01	0.00
Loader	36	0.00034	0.000052	0.01	0.00
18-yard dump	36	0.00034	0.000052	0.01	0.00

Construction Earthmoving	Project hours	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	PM_{10} lbs	$PM_{2.5}$ lbs
Site Prep Grading					
Bulldozer	36	16.64	4.91	599.21	176.92
Backhoe	36	0.00034	0.000052	0.01	0.00
Loader	36	0.00034	0.000052	0.01	0.00
18-yard dump	72	0.00034	0.000052	0.02	0.00
Building Foundations					
Backhoe	36	0.00034	0.000052	0.01	0.00
Bobcat	36	0.10328	0.00513	3.72	0.18
Loader	24	0.00034	0.000052	0.01	0.00
Bulldozer	24	16.64	4.91	399.48	117.95
Concrete Mixer, offsite delivery	16	0.00034	0.000052	0.01	0.00
Final Site Preparation					
Bulldozer	16	16.64	4.91	266.32	78.63
18-yard dump	16	0.00034	0.000052	0.01	0.00
Hotbox with truck	16	0.00034	0.000052	0.01	0.00
Roller	16	0.10328	0.00513	1.65	0.08
HDD					
Drilling Power Unit	432	0.00034	0.000052	0.15	0.02
TOTAL (lbs)				**186,979**	**54,974**
Total Earthmoving Emissions, tons				**93.49**	**27.49**

Notes:
HDD: Horizontal Directional Drilling
Based on USEPA 2006 (USEPA 2006).
AP-42 Section 11.9 for dozing (Table 11.9-1):
$E = 0.75 * (s)^{1.5} / (M)^{1.4}$ for PM_{10}
$E = 0.105 * 5.7 \times (s)^{1.2} / (M)^{1.3}$ for $PM_{2.5}$
E = lb/hr fugitive
s = Silt Content assumed to be 55% for construction sites. (CHPEI 2010)
M = moisture content = 8% (assumes unwatered subsoil)

AP-42 Section 11.9 for grading, rolling, and excavating (Table 11.9-1) (USEPA 2006)
$E = S * 0.60 * 0.051 \times (S)^{2.0}$ for PM_{10}
$E = S * 0.031 * 0.040 \times (S)^{2.5}$ for $PM_{2.5}$
Simplifies to $E = 0.60 * 0.051 \times (S)^{3.0}$ for PM_{10}
Simplified to $E = 0.031 * 0.040 \times (S)^{3.5}$ for $PM_{2.5}$
E = lb/VMT * VMT/hr = lb/hr fugitive
S = Mean Vehicle Speed assumed to be 3 mph for graders, 1.5 mph for excavators & rollers
Assumes VMT = S * hours of use

AP-42 Section 13.2.4 Loading/Handling (digger, driller, backhoe, loader): (USEPA 2006)
$E = 0.35 * 0.0032 * (U/5)^{1.3}/(M/2)^{1.4}$ for PM_{10}
$E = 0.053 * 0.0032 * (U/5)^{1.3}/(M/2)^{1.4}$ for $PM_{2.5}$
E = lb/ton * tons/hr = lb/hr fugitive
U = average wind speed is 8.9 mph for Albany, New York (NOAA 2002)
M = moisture content = 8% (assumes unwatered subsoil)

Table M-8. Fugitive Dust Estimation Calculations - Road Dust, Overland Segment

Construction Road Dust	Project VMT	PM_{10} lb/VMT	$PM_{2.5}$ lb/VMT	PM_{10} lbs	$PM_{2.5}$ lbs
All Roads					
Pickup Truck	268,200				
18-yard dump Truck	0				
Flatbed Truck	122,160				
Subtotals	**390,360**				
Unpaved Roads					
Pickup Truck	80,460	0.06820	0.00682	5,487	549
18-yard dump Truck	0	0.10604	0.01060	0	0
Flatbed Truck	12,216	0.19222	0.01922	2,348	235
Subtotals	**92,676**			**7,836**	**784**
Paved Roads					
Pickup Truck	187,740	0.00622	0.00076	1,168	143
18-yard dump Truck	0	0.02802	0.00403	0	0
Flatbed Truck	109,944	0.20521	0.03061	22,561	3,365
Subtotals	**297,684**			**23,729**	**3,509**
Total Road Dust Emissions, tons				**15.78**	**2.15**

Notes:
Based on USEPA 2006 and USEPA 2003.
Unpaved Road Dust (AP-42 Section 13.2.2):
$E = 1.5 * (s/12)^{0.9} * (W/3)^{0.45} * PC * (1-CE)$ for PM_{10}
$E = 0.15 * (s/12)^{0.9} * (W/3)^{0.45} * PC * (1-CE)$ for $PM_{2.5}$
E = lb/VMT fugitive
s = surface silt content = 9%
(average for unpaved roads and construction sites, AP-42 Table 13.2.2-1)
W = average vehicle weight (see below)
PC=(365-P/365)
CE = Control Efficiency for watering = 90% for M between 4 and 5
(AP-42 Figure 13.2.2-2)

Based on USEPA 2006.
Paved Road Dust (AP-42 Section 13.2.1)
$E=0.016*(sL/2)^{0.65}*(W/3)^{1.5}-0.00047*PC$ for PM_{10}
$E=0.0024*(sL/2)^{0.65}*(W/3)^{1.5}-0.00036*PC$ for $PM_{2.5}$
E = lb/VMT fugitive
sL=Silt Loading assumed to be 0.5 g/m^2 for average ADT categories from Table 13.2.1-3
Note: precipitation correction not used (PC=1) for worst case day calculations
PC=(1-P/4N)
P = number of wet days over 0.01 in precipitation for averaging period
(150 days/year average for New York State)
N=days of period = 365 days

Vehicle Weights based on USEPA 2010.
Light Duty = 3 tons average
Medium Duty = 8 tons average
Heavy Heavy Duty = 30 tons average (loaded 40 tons, unloaded 20 tons)
18-yard dump assumes 70% unpaved mileage, and 30% paved mileage.
Pickup Truck assumes 30% unpaved mileage, and 70% paved mileage.
Flatbed Truck assumes 10% unpaved mileage, and 90% paved mileage.

Table M-9. Estimated Total Emissions[1], Overland Segment

Activity	Equipment and Vehicles[2]			VMT	VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
	Type	Category	hrs											
Emissions from Installation of Terrestrial Transmission Cables														
Vegetation Clearing	Brush Hog	offroad	1,016		15	109	110	0	11	10	14,500	1	0	14,543
Topsoil Removal and Storage	Small Bulldozer	offroad	1,016		148	621	1,830	3	118	114	342,255	13	3	343,368
	Bobcat	offroad	1,016		202	1,031	928	1	153	149	113,203	3	1	113,488
Access Path Prep (gravel)	Small Bulldozer	offroad	2,032		297	1,242	3,661	6	236	229	684,510	27	5	686,735
	18-yard dump	onroad HHD	4,064	20,320	48.83	281.74	387.14	0.59	7.54	5.89	75,184	0.22	0.22	75,255
Trench Excavation	Backhoe	offroad	4,064		810	4,122	3,714	4	613	595	452,811	14	3	453,951
	Bobcat	offroad	4,064		810	4,122	3,714	4	613	595	452,811	14	3	453,951
	Ram Hoe	offroad	2,032		284	1,908	4,766	7	262	255	792,768	28	6	795,110
	Hard Rock Trencher	offroad	1,016		244	1,640	3,454	4	219	213	402,093	16	3	403,401
Cable Delivery	Flatbed Truck, 30 mph	onroad HHD	2,032	60,960	47.85	169.47	601.00	1.77	22.62	17.68	225,552	0.671	0.65	225,766
	Crane, 40 ton	offroad	508		85	237	1,127	2	48	47	178,170	7	1	178,756
HDD	Drilling Power Unit	offroad	2,256		2015	7,645	26,366	19	1,209	1,173	2,106,975	84	17	2,113,910
	Generator	offroad	2,256		78	417	1,187	1	74	72	146,578	5	1	147,012
Site Deliver and Pull Cable	Flatbed Truck, 30 mph	onroad HHD	2,032	60,960	47.85	169.47	601.00	1.77	22.62	17.68	225,552	0.67	0.65	225,766
	Crane, 40-ton	offroad	508		85	237	1,127	2	48	47	178,170	7	1	178,756
	Puller/Tensioner	offroad	4,064		1,362	5,202	8,226	8	927	900	922,194	31	6	924,770
	Mid-pull caterpillars	offroad	4,064		1,362	5,202	8,226	8	927	900	922,194	31	6	924,770
Splice Cable	Generators	offroad	4,064		135	721	2,053	2	128	125	253,487	9	2	254,236
	Propane heaters	offroad	4,064		7	50	87	0	5	5	83,868	1	6	85,768
Deliver and Install Thermal Backfill	18-yard dump	onroad HHD	8,128	243,840	585.95	3,380.84	4,645.64	7.07	90.46	70.71	902,208	2.68	2.58	903,066
	Backhoe	offroad	4,064		810	4,122	3,714	4	613	595	452,811	14	3	453,951
	Bobcat	offroad	4,064		810	4,122	3,714	4	613	595	452,811	14	3	453,951

Activity	Equipment and Vehicles[2] Type	Category	hrs	VMT	VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
Emissions from Installation of Terrestrial Transmission Cables (continued)														
Install Native Backfill	Backhoe	offroad	2,032		405	2,061	1,857	2	307	297	226,406	7	1	226,976
	Bobcat	offroad	2,032		405	2,061	1,857	2	307	297	226,406	7	1	226,976
	Shaker/screen	offroad	2,032		143	452	1,830	2	107	104	261,260	10	2	262,119
	Compressor for tampers	offroad	2,032		59.17	246.01	449.68	0.48	36.62	35.52	52,717.80	1.88	0.38	52,874
Remove Excess Native Fill from site	18-yard dump	onroad HHD	2,032	10,160	24.41	140.87	193.57	0.29	3.77	2.95	37,592	0.11	0.11	37,628
	Backhoe	offroad	1,016		202	1031	928	1	153	149	113,203	3	1	113,488
Replace Topsoil, York Rake Vegetation	Small Bulldozer	offroad	2,032		297	1,242	3,661	6	236	229	684,510	27	5	686,735
	Hydroseed Sprayer	offroad	2,032		556	2,007	3,339	3	349	338	321,130	11	2	322,028
Miscellaneous	Pickup trucks	onroad LD	8,800	264,000	383.06	6,250.99	354.55	5.02	14.52	6.60	256,080	9.50	3.8544	257,474
Emissions from Construction of Cooling Stations														
Site Preparation (pavement and foundations)	Bulldozer	offroad	36		5.3	22.0	64.9	0.1	4.2	4.1	12,127.1	0.5	0.1	12,167
	Backhoe	offroad	36		7.2	36.5	32.9	0.0	5.4	5.3	4,011.1	0.1	0.0	4,021
	Loader	offroad	36		11.0	41.9	66.2	0.1	7.5	7.2	7,426.4	0.3	0.1	7,447
	18-yard dump	onroad HHD		180	0.4	2.5	3.4	0.0	0.1	0.1	666.0	0.0	0.0	667
Site Prep Grading	Bulldozer	offroad	36		5.3	22.0	64.9	0.1	4.2	4.1	12,127.1	0.5	0.1	12,167
	Backhoe	offroad	36		7.2	36.5	32.9	0.0	5.4	5.3	4,011.1	0.1	0.0	4,021
	Loader	offroad	36		11.0	41.9	66.2	0.1	7.5	7.2	7,426.4	0.3	0.1	7,447
	18-yard dump	onroad HHD		360	0.9	5.0	6.9	0.0	0.1	0.1	1,332.0	0.0	0.0	1,333
Building Foundations (floor)	Backhoe	offroad	36		7.2	36.5	32.9	0.0	5.4	5.3	4,011.1	0.1	0.0	4,021
	Bobcat	offroad	36		7.2	36.5	32.9	0.0	5.4	5.3	4,011.1	0.1	0.0	4,021
	Loader	offroad	24		7.3	27.9	44.2	0.0	5.0	4.8	4,950.9	0.2	0.0	4,965
	Bulldozer	offroad	24		3.5	14.7	43.2	0.1	2.8	2.7	8,084.8	0.3	0.1	8,111
	Forklifts, offloading equipment	offroad	72		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	Generators	offroad	144		14.0	44.5	178.5	0.2	10.5	10.2	26,089.3	1.0	0.2	26,175
	Propane heaters	offroad	144		5.0	26.6	75.8	0.1	4.7	4.6	9,356.1	0.3	0.1	9,384

Activity	Equipment and Vehicles[2]			VMT	VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
	Type	Category	hrs											
Emissions from Construction of Cooling Stations (continued)														
Final Site Preparation, traprock, paving, vegetation plantings	Bulldozer	offroad	16		2.3	9.8	28.8	0.0	1.9	1.8	5,389.8	0.2	0.0	5,407
	18-yard dump	onroad HHD		80	0.2	1.1	1.5	0.0	0.0	0.0	296.0	0.0	0.0	296
	Hotbox with truck	onroad LD		40	0.1	0.6	0.8	0.0	0.0	0.0	148.0	0.0	0.0	148
	Roller	offroad	16		1.3	12.6	14.1	0.0	1.7	1.6	2,098.9	0.1	0.0	2,105
	Flatbed Truck, 30 mph	onroad HHD		240	0.2	0.7	2.4	0.0	0.1	0.1	888.0	0.0	0.0	889
	Backhoe, plantings	offroad	8		1.6	8.1	7.3	0.0	1.2	1.2	891.4	0.0	0.0	894
HDD	Drilling Power Unit, 9 locations @ 6 equipment days/location	offroad	432		385.8	1,463.9	5,048.9	3.6	231.5	224.6	403,463.3	16.0	3.2	404,791
	Generator	offroad	432		15.0	79.9	227.3	0.3	14.2	13.8	28,068.2	1.0	0.2	28,151
Miscellaneous	Craft utility, delivery trucks	onroad MD		8,400	22.6	276.9	19.5	0.2	0.5	0.2	10,864.0	0.6	0.2	10,954
	Pickup trucks	onroad LD		4,200	6.1	99.4	5.6	0.1	0.2	0.1	4,074.0	0.2	0.1	4,096

TOTAL Combustion Emissions By Activity (tons)	VOC lbs	CO lbs	NOx lbs	SOx lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
Vegetation Clearing	0.01	0.05	0.05	0.00	0.01	0.01	7.25	0.00	0.00	7.27
Topsoil Removal and Storage	0.18	0.83	1.38	0.00	0.14	0.13	227.73	0.01	0.00	228.43
Access Path Prep (gravel)	0.17	0.76	2.02	0.00	0.12	0.12	379.85	0.01	0.00	381.00
Trench Excavation	1.07	5.90	7.82	0.01	0.85	0.83	1,050.24	0.04	0.01	1,053.21
Cable Delivery	0.07	0.20	0.86	0.00	0.04	0.03	201.86	0.00	0.00	202.26
HDD	1.05	4.03	13.78	0.01	0.64	0.62	1,126.78	0.04	0.01	1,130.46
Site Deliver and Pull Cable	1.43	5.41	9.09	0.01	0.96	0.93	1,124.05	0.03	0.01	1,127.03
Splice Cable	0.07	0.36	1.03	0.00	0.06	0.06	126.74	0.00	0.00	127.12
Deliver and Install Thermal Backfill	1.10	5.81	6.04	0.01	0.66	0.63	903.92	0.02	0.00	905.48
Install Native Backfill	0.51	2.41	3.00	0.00	0.38	0.37	383.39	0.01	0.00	384.47
Remove Excess Native Fill from site	0.11	0.59	0.56	0.00	0.08	0.08	75.40	0.00	0.00	75.56
Replace Topsoil, York Rake Vegetation	0.43	1.62	3.50	0.00	0.29	0.28	502.82	0.02	0.00	504.38
Miscellaneous	0.19	3.13	0.18	0.00	0.01	0.00	128.04	0.00	0.00	128.74

TOTAL Combustion Emissions By Activity (tons)	VOC lbs	CO lbs	NOx lbs	SOx lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
Site Preparation	0.01	0.05	0.08	0.00	0.01	0.01	12.12	0.00	0.00	12.15
Site Prep Grading	0.01	0.05	0.09	0.00	0.01	0.01	12.45	0.00	0.00	12.48
Building Foundations	0.01	0.06	0.08	0.00	0.01	0.01	10.53	0.00	0.00	10.56
Final Site Preparation, traprock, paving, vegetation plantings	0.00	0.02	0.03	0.00	0.00	0.00	4.86	0.00	0.00	4.87
HDD	0.20	0.77	2.64	0.00	0.12	0.12	215.77	0.01	0.00	216.47
Subtotal	6.62	32.05	52.22	0.06	4.39	4.24	6,493.78	0.21	0.04	6,511.94
Total Combustion Emissions, lbs	**15,782**	**78,441**	**122,699**	**141**	**10,863**	**10,502**	**15,664,926**	**510**	**113**	**15,710,761**
Total Combustion Emissions, tons	**8**	**39**	**61**	**0**	**5**	**5**	**7,832**	**0**	**0**	**7,855**
Total Fugitive Dust emissions, earthmoving tons[4]	**-**	**-**	**-**	**-**	**93**	**27**	**-**	**-**	**-**	**-**
Total Fugitive Dust emissions, road dust, tons[4]	**-**	**-**	**-**	**-**	**16**	**2**	**-**	**-**	**-**	**-**
Combined Combustion and Fugitive Dust emissions, tons	**7.89**	**39.22**	**61.35**	**0.07**	**114.70**	**34.88**	**7,832**	**0.26**	**0.06**	**7,855**

Notes:

No underwater cable laying in segment.

Overland Equipment estimate includes mileposts 101.3 to 228.4.

BHP: Brake-horsepower. This should be the maximum rated load of the vehicle of vessel engines(s).

HDD: Horizontal Directional Drilling.

[1] Emissions factors weighted for calendar year 2013 (USEPA 2003, USEPA 2009b).

[2] Units are operating hours for offroad engines, vehicle miles traveled (VMT) for onroad vehicles.

[3] Carbon dioxide equivalents (CO_2 eqv) are calculated by summing the products of mass GHG emissions by species times their respective GWP coefficients (USEPA 2009a).

[4] See Fugitive Dust Estimation Calculations tables for more detailed information.

Table M-10. Estimated Equipment and Vehicle Use During Aquatic Cable Installation, Hudson River Segment

Activity	Equipment and Vehicles			Hours per Day	Working Days	LF	trips	cables	Total hours
	Type	BHP	Qty						
Cable installation	Primary Cable Vessel								
	2 azimuth units	2,640	2	24	59	0.25	1	2	1,416
	azimuth unit	1,360	1	24	59	0.25	1	2	708
	retractable azimuth unit	2,475	1	24	59	0.1	1	2	283.2
	tunnel unit	1,300	1	24	59	0.25	1	2	708
	generators (500 kVA)	536	4	24	59	0.75	1	2	8,496
	generators (600 kVA)	643	1	24	59	0.5	1	2	1,416
	Survey boat	1,131	1	24	59	0.5	1	2	1,416
	Crew boat	425	1	24	59	0.2	1	2	566.4
Installation of Cable Protection	Tugboat, Towboat	1,970	1	12	59	0.25	1	2	354
	Crew boat	425	1	12	59	0.2	1	2	283.2
Cable Shipments	Main propulsion	8,201	1	10.5		0.5	20		105
	Auxiliary engine	1,776	1	10.5		0.17	20		35.7

Notes:

BHP: Brake-horsepower. The maximum rated load of the vehicle or vessel engine(s).

LF: Load Factor

59 work days based on 1.49 miles per day from mileposts 228.4 to 295.4 and 302.8 to 324.0.

Cable shipments emission duration of 10.5 hours per trip based on 12 mph for 125.7 miles.

125.7 miles is the average distance for each of the 20 cable shipments (6 miles of cable per shipment) round trip.

Table M-11. Estimated Equipment and Vehicle Use During Terrestrial Cable Installation, Hudson River Segment

Task	Equipment and Vehicles				Working Days	Daily		# equipment hours operation (7.6 miles)	Miles Per Hour (on road only)
	Equipment Type	Progress (miles)/ 8-hour day	BHP	Qty		Hours	VMT		
Vegetation Clearing	Brush Hog	1	11	1	7.6	8		60.80	
Topsoil removal and storage	Small Bulldozer	1	285	1	7.6	8		60.80	
	Bobcat	1	73	1	7.6	8		60.80	
Access path prep (gravel)	Small Bulldozer	0.5	285	1	15.2	8		121.60	
	18-yard dump	0.5		2	15.2	8	1,216	243.20	5
Trench Excavation	Backhoe	0.25	73	1	30.4	8		243.20	
	Bobcat	0.25	73	1	30.4	8		243.20	
	Ram Hoe	0.25	330	1	30.4	4		121.60	
	Hard Rock Trencher	0.25	335	1	30.4	2		60.80	
Deliver Cable @ 3 reels per	Flatbed Truck, 30 mph	0.5		1	15.2	8	3,648	121.60	30
	Crane	0.5	300	1	15.2	2		30.40	
Site Deliver and Pull Cable	Flatbed Truck, 30 mph	0.5		1	15.2	8	3,648	121.6	30
	Crane, 40 ton	0.5		1	15.2	2		30.4	
	Puller/Tensioner	0.5	165	2	15.2	8		243.2	
	Mid-pull caterpillars	0.5	165	2	15.2	8		243.2	
Splice Cable	Generators	0.25	48	1	30.4	8		243.2	
	Propane heaters	0.25	0.5	1	30.4	8		243.2	
Deliver and install Thermal Backfill	18-yard dump	0.25		2	30.4	8	14,592	486.4	30
	Backhoe	0.25	73	1	30.4	8		243.2	
	Bobcat	0.25	73	1	30.4	8		243.2	
Install Native Backfill	Backhoe	0.5	73	1	15.2	8		121.6	
	Bobcat	0.5	73	1	15.2	8		121.6	
	Shaker/screen	0.5	110	1	15.2	8		121.6	
	Compressor for tampers	0.5		1	15.2	8		121.6	

Task	Equipment and Vehicles				Working Days	Daily		# equipment hours operation (7.6 miles)	Miles Per Hour (on road only)
	Equipment Type	Progress (miles)/ 8-hour day	BHP	Qty		Hours	VMT		
Remove Excess Native Fill from Site	18-yard dump	1		2	7.6	8	608	121.6	5
	Backhoe	1	73	1	7.6	8		60.8	
Replace Topsoil, York Rake Vegetation	Small Bulldozer	0.5	285	1	15.2	8		121.6	
	Hydroseed Sprayer	0.5	115	1	15.2	8		121.6	
Miscellaneous	Pickup trucks			10	30.4	4	36,480	1216	30

Table M-12. Estimated Equipment and Vehicle Use During Construction of Cooling Stations, Hudson River Segment

Task	Overall Duration	Equipment and Vehicles			Working Days*	Daily		# equipment hours operation	Miles per Hour (on road only)
		Equipment Type	BHP	Qty		Hours	VMT		
Site Preparation (pavement and foundations)	3 days (half a day at each cooling station)	Bulldozer	285	1	3	8		24	
		Backhoe	73	1	3	8		24	
		Loader	150	1	3	8		24	
		18-yard dump		1	3	8	120	24	5
Site Prep Grading	3 days (half a day at each cooling station)	Bulldozer	285	1	3	8		24	
		Backhoe	73	1	3	8		24	
		Loader	150	1	3	8		24	
		18-yard dump		2	3	8	240	48	5
Building Foundations, floor	3 days (half a day at each cooling station)	Backhoe	73	1	3	8		24	
		Bobcat	73	1	3	8		24	
		Loader	150	1	2	8		16	
		Bulldozer	285	1	2	8		16	
		Small crane-forms	155	2	0	8		0	
		Medium crane-concrete bucket	300	2	0	8		0	
		Concrete Mixer, offsite delivery		1	1.5	8	30	12	2.5
Building	12 days (2 days at each station)	Small crane	155	1	9	8		72	
		Forklifts, offloading equipment	75	1	6	8		48	
		Generators	50	2	6	8		96	
		Propane heaters	58.9	2	6	8		96	
HDD, transmission cables		Drilling Power Unit, 6 locations @ 6 equipment days/location	800		36	8		288	
		Generator	50		36	8		288	
Final Site Preparation, Paving	6 days	Bulldozer		1	1.5	8		12	
		18-yard dump		1	1.5	8	60	12	5
		Hotbox with truck		1	1.5	8	30	12	2.5
		Roller	100	1	1.5	8		12	

Task	Overall Duration	Equipment and Vehicles			Working Days*	Daily		# equipment hours operation	Miles per Hour (on road only)
		Equipment Type	BHP	Qty		Hours	VMT		
Final Site Preparation, Plantings	(1 day at each cooling station)	Flatbed Truck, 30 mph		1	0.5	8	120	4	30
		Backhoe, plantings	73	1	0.5	8		4	
Miscellaneous	4.5 weeks	Craft utility, delivery trucks		2	22.5	4	5,400	180	30
		Pickup trucks		1	22.5	4	2,700	90	30

Notes:

* Calendar days are used to provide for long workdays and weekend work.

HDD: Horizontal Directional Drilling

Table M-13. Aquatic Cable Installation Emissions Factors[1], Hudson River Segment

Activity	Equipment and Vehicles			VOC lb/hr	CO lb/hr	NOx lb/hr	SOx lb/hr	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	CO_2 lb/hr	CH_4 lb/hr[2]	N_2O lb/hr[2]
	Type	Category	BHP									
Cable Installation	2 azimuth units	Marine	2,640	2.07	10.48	29.64	0.03	1.41	1.37	3,118.31	0.12	0.02
	azimuth unit	Marine	1,360	1.06	5.40	15.27	0.01	0.73	0.70	1,606.40	0.06	0.01
	retractable azimuth unit	Marine	2,475	1.94	9.82	27.79	0.03	1.32	1.28	2,923.41	0.11	0.02
	tunnel unit	Marine	1,300	1.02	5.16	14.60	0.01	0.69	0.67	1,535.53	0.06	0.01
	generators (500 kVA)	Marine	536	0.33	1.47	5.46	0.01	0.23	0.23	626.53	0.02	0.00
	generators (600 kVA)	Marine	643	0.40	1.76	6.55	0.01	0.28	0.27	751.60	0.03	0.01
	Survey boat	Marine	1,131	0.89	4.49	12.70	0.01	0.60	0.59	1,335.91	0.05	0.01
	Crew boat	Marine	425	0.21	1.44	3.48	0.00	0.19	0.18	502.37	0.02	0.00
Installation of Cable Protection	Tugboat, Towboat	Marine	1,970	1.67	8.66	23.20	0.02	1.18	1.14	2,326.55	0.09	0.02
	Crew boat	Marine	425	0.21	1.44	3.48	0.00	0.19	0.18	502.37	0.02	0.00
Cable Shipment[3]	OGV main propulsion	Marine (kW)	8,201	10.85	25.31	307.36	65.45	8.14	7.59	10,645.38	0.11	0.56
	OGV auxiliary engine	Marine (kW)	1,776	1.57	4.31	54.42	16.60	1.92	1.76	2,704.41	0.02	0.12

Notes:

[1] Emissions factors weighted for calendar year 2013 (USEPA 2003, USEPA 2006).

[2] Offroad N_2O and CH_4 emissions are based on 40 CFR 98, Subpart C.

[3] Cable Shipment emissions based on USEPA 2009b.

BHP: Brake-horsepower. This should be the maximum rated load of the vehicle of vessel engines(s).

Table M-14. Terrestrial Cable Installation and Cooling Station Construction Emissions Factors[1], Hudson River Segment

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	$PM_{2.5}$ lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Installation of Terrestrial Transmission Cables												
Vegetation Clearing	Brush Hog	offroad	11	0.02	0.11	0.11	0.00	0.01	0.01	14.27	0.00	0.00
Topsoil Removal and Storage	Small Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
Access Path Prep (gravel)	Small Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	18-yard dump	onroad HHD	0	0.00	0.01	0.02	0.00	0.00	0.00	4.22	0.00	0.00
Trench Excavation	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Ram Hoe	offroad	330	0.14	0.94	2.35	0.00	0.13	0.13	390.14	0.02	0.00
	Hard Rock Trencher	offroad	335	0.24	1.61	3.40	0.00	0.22	0.21	395.76	0.02	0.00
Cable Delivery	Flatbed Truck, 30 mph	onroad HHD	0	0.00	0.00	0.01	0.00	0.00	0.00	4.22	0.00	0.00
	Crane	offroad	300	0.10	0.31	1.24	0.00	0.07	0.07	181.18	0.01	0.00
Site Deliver and Pull Cable	Flatbed Truck, 30 mph	onroad HHD	0	0.00	0.00	0.01	0.00	0.00	0.00	4.22	0.00	0.00
	Crane, 40 ton	offroad	0	0.17	0.47	2.22	0.00	0.10	0.09	350.73	0.01	0.00
	Puller/Tensioner	offroad	165	0.34	1.28	2.02	0.00	0.23	0.22	226.92	0.01	0.00
	Mid-pull caterpillars	offroad	165	0.34	1.28	2.02	0.00	0.23	0.22	226.92	0.01	0.00
Splice Cable	Generators	offroad	48	0.03	0.18	0.51	0.00	0.03	0.03	62.37	0.00	0.00
	Propane heaters	offroad	0.5	0.00	0.01	0.02	0.00	0.00	0.00	20.64	0.00	0.00
Deliver and Install Thermal Backfill	18-yard dump	onroad HHD	0	0.00	0.01	0.02	0.00	0.00	0.00	4.22	0.00	0.00
	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
Install Native Backfill	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Shaker/screen	offroad	110	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Compressor for tampers	offroad	0	0.03	0.12	0.22	0.00	0.02	0.02	25.94	0.00	0.00
Remove Excess Native Fill from site	18-yard dump	onroad HHD	0	0.00	0.01	0.02	0.00	0.00	0.00	4.22	0.00	0.00
	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	$PM_{2.5}$ lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Installation of Terrestrial Transmission Cables (continued)												
Replace Topsoil, York Rake Vegetation	Small Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	Hydroseed Sprayer	offroad	115	0.27	0.99	1.64	0.00	0.17	0.17	158.04	0.01	0.00
Miscellaneous	Pickup trucks	onroad LD	0	0.00	0.02	0.00	0.00	0.00	0.00	0.97	0.00	0.00
Construction of Cooling Stations												
Site Preparation (pavement and foundations)	Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Loader	offroad	150	0.30	1.16	1.84	0.00	0.21	0.20	206.29	0.01	0.00
	18-yard dump	onroad HHD	0	0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
Site Prep Grading	Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Loader	offroad	150	0.30	1.16	1.84	0.00	0.21	0.20	206.29	0.01	0.00
	18-yard dump	onroad HHD	0	0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
Building Foundations (floor)	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Loader	offroad	150	0.30	1.16	1.84	0.00	0.21	0.20	206.29	0.01	0.00
	Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	Small crane-forms	offroad	155	0.10	0.31	1.24	0.00	0.07	0.07	181.18	0.01	0.00
	Medium crane-concrete bucket	offroad	300	0.17	0.47	2.22	0.00	0.10	0.09	350.73	0.01	0.00
	Concrete Mixer, offsite delivery	onroad HHD	0	0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
Building	Small crane	offroad	155	0.10	0.31	1.24	0.00	0.07	0.07	181.18	0.01	0.00
	Forklifts, offloading equipment	offroad	75	0.07	0.60	0.69	0.00	0.08	0.08	98.37	0.00	0.00
	Generators		50	0.03	0.18	0.53	0.00	0.03	0.03	64.97	0.00	0.00
	Propane heaters	offroad	58.9	0.00	0.01	0.02	0.00	0.00	0.00	20.64	0.00	0.00

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	$PM_{2.5}$ lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Construction of Cooling Stations (continued)												
Final Site Preparation, traprock, paving, vegetation plantings	Bulldozer	offroad	0	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	18-yard dump	onroad HHD	0	0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
	Hotbox with truck	onroad LD	0	0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
	Roller	offroad	100	0.08	0.79	0.88	0.00	0.11	0.10	131.18	0.00	0.00
	Flatbed Truck, 30 mph	onroad HHD	0	0.00	0.00	0.01	0.00	0.00	0.00	3.70	0.00	0.00
	Backhoe, plantings	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
HDD	Drilling Power Unit, 6 locations @ 6 equipment days/location	offroad	800	0.89	3.39	11.69	0.01	0.54	0.52	933.94	0.04	0.01
	Generator	offroad	50	0.03	0.18	0.53	0.00	0.03	0.03	64.97	0.00	0.00
Miscellaneous	Craft utility, delivery trucks	onroad MD	0	0.00	0.03	0.00	0.00	0.00	0.00	1.29	0.00	0.00
	Pickup trucks	onroad LD	0	0.00	0.02	0.00	0.00	0.00	0.00	0.97	0.00	0.00

Notes:

Overland Equipment estimate includes 7.6 miles.

BHP: Brake-horsepower. This should be the maximum rated load of the vehicle of vessel engines(s).

HDD: Horizontal Directional Drilling. LD: Light Duty. HD: Heavy Duty. HHD: Heavy Heavy Duty.

[1] Emissions factors weighted for calendar year 2013.

[2] Units are operating hours for offroad engines, vehicle miles traveled (VMT) for onroad vehicles.

[3] Offroad diesel exhaust $PM_{2.5}$ = 92% of PM_{10}; Onroad HHD particulate emission factors include allowances for tire and brake wear.

[4] Offroad N_2O and CH_4 emissions are based on 40 CFR 98, Subpart C.

[5] Onroad N_2O and CH_4 emissions are based on the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2008 (USEPA 2009b).

[6] Onroad CO_2 emissions are based on EPA420-F-05-001 which rates gasoline emissions at 19.4 lb/gal and diesel at 22.2 lb/gal (USEPA 2005).

Table M-15. Fugitive Dust Estimation Calculations - Earthmoving, Hudson River Segment

Construction Earthmoving	Project hours	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	PM_{10} lbs	$PM_{2.5}$ lbs
Site Preparation (pavement and foundations)					
Bulldozer	24	16.64	4.91	399.48	117.95
Backhoe	24	0.00034	0.000052	0.01	0.00
Loader	24	0.00034	0.000052	0.01	0.00
18-yard dump	24	0.00034	0.000052	0.01	0.00
Site Prep Grading					
Bulldozer	24	16.64	4.91	399.48	117.95
Backhoe	24	0.00034	0.000052	0.01	0.00
Loader	24	0.00034	0.000052	0.01	0.00
18-yard dump	48	0.00034	0.000052	0.02	0.00
Building Foundations, floor					
Backhoe	24	0.00034	0.000052	0.01	0.00
Bobcat	24	0.10328	0.00513	2.48	0.12
Loader	16	0.00034	0.000052	0.01	0.00
Bulldozer	16	16.64	4.91	266.32	78.63
Concrete Mixer, offsite delivery	12	0.00034	0.000052	0.00	0.00
Final Site Preparation					
Bulldozer	12	16.64	4.91	199.74	58.97
18-yard dump	12	0.00034	0.000052	0.00	0.00
Hotbox with truck	12	0.00034	0.000052	0.00	0.00
Roller	12	0.10328	0.00513	1.24	0.06
HDD, transmission cables					
Drilling Power Unit, 6 locations @ 6 equipment days/location	288	0.00034	0.000052	0.10	0.01
Topsoil Removal and Storage					
Small bulldozer	60.80	16.64	4.91	1012.01	298.80
Bobcat	60.80	0.00034	0.000052	0.02	0.00
Access path prep (gravel)					
Small bulldozer	121.60	16.64	4.91	2024.01	597.61
18-yard dump	243.20	0.00034	0.000052	0.08	0.01
Trench Excavation					
Backhoe	243.20	0.00034	0.000052	0.08	0.01
Bobcat	243.20	0.103	0.005126	25.12	1.25
Ram Hoe	121.60	0.103	0.005126	12.56	0.62
Generators	60.80	0.103	0.005126	6.28	0.31

Construction Earthmoving	Project hours	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	PM_{10} lbs	$PM_{2.5}$ lbs
Deliver and Install Thermal Backfill					
18-yard dump	486.40	0.00034	0.000052	0.17	0.03
Backhoe	243.20	0.00034	0.000052	0.08	0.01
Bobcat	243.20	16.64	4.91	4,048.02	1,195.21
Install Native Backfill					
Backhoe	121.60	0.00034	0.000052	0.04	0.01
Bobcat	121.60	16.64	4.91	2,024.01	597.61
Shaker/screen	121.60	0.00034	0.000052	0.04	0.01
Compressor for tampers	121.60	0.00034	0.000052	0.04	0.01
Remove Excess Native Fill from Site					
18-yard dump	121.60	0.00034	0.000052	0.04	0.01
Backhoe	60.80	0.00034	0.000052	0.02	0.00
Replace Topsoil, York Rake Vegetation					
Small bulldozer	121.60	16.64	4.91	2,024.01	597.61
Hydroseed Sprayer	121.60	0.103275	0.005126	12.56	0.62
TOTAL (lbs)				**12,458**	**3,663**
Total Earthmoving Emissions, tons				**6.23**	**1.83**

Notes:
HDD: Horizontal Directional Drilling
Based on USEPA 2006 (USEPA 2006).
AP-42 Section 11.9 for dozing (Table 11.9-1):
$E = 0.75 * (s)^{1.5} / (M)^{1.4}$ for PM_{10}
$E = 0.105 * 5.7 \times (s)^{1.2} / (M)^{1.3}$ for $PM_{2.5}$
E = lb/hr fugitive
s = Silt Content assumed to be 55% for construction sites. (CHPEI 2010)
M = moisture content = 8% (assumes unwatered subsoil)

AP-42 Section 11.9 for grading, rolling, and excavating (Table 11.9-1) (USEPA 2006)
$E = S * 0.60 * 0.051 \times (S)^{2.0}$ for PM_{10}
$E = S * 0.031 * 0.040 \times (S)^{2.5}$ for $PM_{2.5}$
Simplifies to $E = 0.60 * 0.051 \times (S)^{3.0}$ for PM_{10}
Simplified to $E = 0.031 * 0.040 \times (S)^{3.5}$ for $PM_{2.5}$
E = lb/VMT * VMT/hr = lb/hr fugitive
S = Mean Vehicle Speed assumed to be 3 mph for graders, 1.5 mph for excavators & rollers
Assumes VMT = S * hours of use

AP-42 Section 13.2.4 Loading/Handling (digger, driller, backhoe, loader): (USEPA 2006)
$E = 0.35 * 0.0032 * (U/5)^{1.3}/(M/2)^{1.4}$ for PM_{10}
$E = 0.053 * 0.0032 * (U/5)^{1.3}/(M/2)^{1.4}$ for $PM_{2.5}$
E = lb/ton * tons/hr = lb/hr fugitive
U = average wind speed is 8.9 mph for Albany, New York (NOAA 2002)
M = moisture content = 8% (assumes unwatered subsoil)

Table M-16. Fugitive Dust Estimation Calculations - Road Dust, Hudson River Segment

Construction Road Dust	Project VMT	PM_{10} lb/VMT	$PM_{2.5}$ lb/VMT	PM_{10} lbs	$PM_{2.5}$ lbs
All Roads					
Pickup Truck	39,180				
18-yard dump Truck	0				
Flatbed Truck	7,416				
Subtotals	**46,596**				
Unpaved Roads					
Pickup Truck	11,754	0.06820	0.00682	802	80
18-yard dump Truck	0	0.10604	0.01060	0	0
Flatbed Truck	742	0.19222	0.01922	143	14
Subtotals	**12,496**			**944**	**94**
Paved Roads					
Pickup Truck	27,426	0.00622	0.00076	171	21
18-yard dump Truck	0	0.02802	0.00403	0	0
Flatbed Truck	6,674	0.20521	0.03061	1,370	204
Subtotals	**34,100**			**1,540**	**225**
Total Road Dust Emissions, tons				**1.24**	**0.16**

Notes:
Based on USEPA 2006 and USEPA 2003.
Unpaved Road Dust (AP-42 Section 13.2.2):
$E = 1.5 * (s/12)^{0.9} * (W/3)^{0.45} * PC * (1-CE)$ for PM_{10}
$E = 0.15 * (s/12)^{0.9} * (W/3)^{0.45} * PC * (1-CE)$ for $PM_{2.5}$
E = lb/VMT fugitive
s = surface silt content = 9%
(average for unpaved roads and construction sites, AP-42 Table 13.2.2-1)
W = average vehicle weight (see below)
PC=(365-P/365)
CE = Control Efficiency for watering = 90% for M between 4 and 5
(AP-42 Figure 13.2.2-2)

Based on USEPA 2006.
Paved Road Dust (AP-42 Section 13.2.1)
$E=0.016*(sL/2)^{0.65}*(W/3)^{1.5}-0.00047*PC$ for PM_{10}
$E=0.0024*(sL/2)^{0.65}*(W/3)^{1.5}-0.00036*PC$ for $PM_{2.5}$
E = lb/VMT fugitive
sL=Silt Loading assumed to be 0.5 g/m^2 for average ADT categories from Table 13.2.1-3
Note: precipitation correction not used (PC=1) for worst case day calculations
PC=(1-P/4N)
P = number of wet days over 0.01 in precipitation for averaging period
(150 days/year average for New York State)
N=days of period = 365 days

Vehicle Weights based on USEPA 2010.
Light Duty = 3 tons average
Medium Duty = 8 tons average
Heavy Heavy Duty = 30 tons average (loaded 40 tons, unloaded 20 tons)
18-yard dump assumes 70% unpaved mileage, and 30% paved mileage.
Pickup trucks assumes 30% unpaved mileage, and 70% paved mileage.
Flatbed truck assumes 10% unpaved mileage, and 90% paved mileage.

Table M-17. Estimated Total Emissions[1], Hudson River Segment

Activity	Equipment and Vehicles[2]				VOC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2 eqv
	Type	Category	hrs	VMT	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs[3]
Emissions from Installation of Aquatic Transmission Cables														
Cable Installation	2 azimuth units	Marine	1,416		2,926	14,838	41,971	39	1,998	1,938	4,415,524	173	35	4,429,889
	azimuth unit	Marine	708		754	3,822	10,811	10	515	499	1,137,332	45	9	1,141,032
	retractable azimuth unit	Marine	283.2		549	2,782	7,869	7	375	363	827,911	32	6	830,604
	tunnel unit	Marine	708		720	3,653	10,334	10	492	477	1,087,155	43	9	1,090,692
	generators (500 kVA)	Marine	8,496		2,845	12,471	46,386	47	1,975	1,915	5,322,956	211	42	5,340,455
	generators (600 kVA)	Marine	1,416		569	2,493	9,274	9	395	383	1,064,260	42	8	1,067,759
	Survey boat	Marine	1,416		1,254	6,357	17,981	17	856	830	1,891,651	74	15	1,897,805
	Crew boat	Marine	566.4		118	861	1,970	2	108	104	284,542	11	2	285,467
Installation of Cable Protection	Tugboat, Towboat	Marine	354		590	3,067	8,214	7	416	404	823,599	32	6	826,278
	Crew boat	Marine	283.2		7	51	124	0	7	7	17,935	1	0	17,993
Cable Shipment	OGV	Marine	105		1,139	2,658	32,273	6,872	854	797	1,117,764	11	59	1,136,247
	OGV	Marine	35.7		56	154	1,943	593	68	63	96,547	1	4	97,902
Emissions from Installation of Terrestrial Transmission Cables														
Vegetation Clearing	Brush Hog	offroad	60.8	0	10.67	76.23	76.56	0.09	7.42	7.20	10,104.29	0.36	0.07	10,134.22
Topsoil Removal and Storage	Small Bulldozer	offroad	60.8	0	41.34	173.04	510.22	0.82	32.88	31.90	95,400.19	3.74	0.75	95,710.34
	Bobcat	offroad	60.8	0	141.04	718.11	646.96	0.72	106.84	103.63	78885.39	2.39	0.48	79,083.99
Access Path Prep (gravel)	Small Bulldozer	offroad	121.6	0	1,240.14	5,191.24	15,306.70	24.52	986.50	956.90	2,862,005.76	112.10	22.42	2,871,310.21
	18-yard dump	onroad HHDV	243.2	1,216	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trench Excavation	Backhoe	offroad	243.2	0	282.08	1,436.23	1,293.92	1.45	213.67	207.26	157,770.77	4.79	0.96	158,167.98
	Bobcat	offroad	243.2	0	112.83	574.49	517.57	0.58	85.47	82.90	63,108.31	1.91	0.38	63,267.19
	Ram Hoe	offroad	121.6	0	49.45	332.46	830.26	1.20	45.73	44.36	138,110.15	5.41	1.08	138,559.05
	Hard Rock Trencher	offroad	60.8	0	68.08	457.21	962.66	1.00	61.08	59.25	112,079.40	4.39	0.88	112,443.96
Cable Delivery	Flatbed Truck, 30 mph	onroad HHDV	121.6	3,648	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Crane	offroad	30.4	0	3.48	11.03	44.25	0.06	2.60	2.53	6467.98	0.26	0.05	6,489.25
Site Deliver and Pull Cable	Flatbed Truck, 30 mph	onroad HHDV	121.6	3,648	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Crane, 40 ton	offroad	30.4	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Puller/Tensioner	offroad	243.2	0	8.04	30.72	48.58	0.05	5.48	5.31	5,446.02	0.18	0.04	5,461.24
	Mid-pull caterpillars	offroad	243.2	0	8.04	30.72	48.58	0.05	5.48	5.31	5,446.02	0.18	0.04	5,461.24
Splice Cable	Generators	offroad	243.2	0	0.80	4.26	12.12	0.01	0.76	0.74	1,496.97	0.05	0.01	1,501.40
	Propane heaters	offroad	243.2	0	0.04	0.30	0.52	0.00	0.03	0.03	495.28	0.01	0.04	506.51

Activity	Equipment and Vehicles[2] Type	Category	hrs	VMT	VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
Emissions from Installation of Terrestrial Transmission Cables (continued)														
Deliver and Install Thermal Backfill	18-yard dump	onroad HHDV	486.4	14,592	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Backhoe	offroad	243.2	0	4.78	24.34	21.93	0.02	3.62	3.51	2,674.08	0.08	0.02	2,680.81
	Bobcat	offroad	243.2	0	4.78	24.34	21.93	0.02	3.62	3.51	2,674.08	0.08	0.02	2,680.81
Install Native Backfill	Backhoe	offroad	121.6	0	4.78	24.34	21.93	0.02	3.62	3.51	2,674.08	0.08	0.02	2,680.81
	Bobcat	offroad	121.6	0	9.56	48.69	43.86	0.05	7.24	7.03	5,348.16	0.16	0.03	5,361.63
	Shaker/screen	offroad	121.6	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Compressor for tampers	offroad	121.6	0	0.70	2.91	5.31	0.01	0.43	0.42	622.65	0.02	0.00	624.50
Remove Excess Native Fill from site	18-yard dump	offroad	121.6	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Backhoe	onroad HHD	60.8	608	3.19	16.23	14.62	0.02	2.41	2.34	1,782.72	0.05	0.01	1,787.21
Replace Topsoil, York Rake Vegetation	Small Bulldozer	offroad	121.6	0	2.34	9.78	28.83	0.05	1.86	1.80	5,389.84	0.21	0.04	5,407.36
	Hydroseed Sprayer	offroad	121.6	0	3.28	11.85	19.72	0.02	2.06	2.00	1,896.44	0.06	0.01	1,901.74
Miscellaneous	Pickup trucks	onroad HHDV	1216	36,480	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions from Construction of Cooling Stations														
Site Preparation (pavement and foundations)	Bulldozer	offroad	24	0	3.50	0.00	6.31	0.00	0.73	0.00	246.87	0.00	0.65	448.83
	Backhoe	offroad	24	0	4.78	0.00	4.37	0.00	0.66	0.00	73.45	0.00	0.05	88.84
	Loader	offroad	24	0	7.31	0.00	13.45	0.00	2.79	0.00	575.70	0.00	0.80	823.57
	18-yard dump	onroad HHD	24	120	0.06	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Prep Grading	Bulldozer	offroad	24	0	3.50	0.00	6.31	0.00	0.73	0.00	246.87	0.00	0.65	448.83
	Backhoe	offroad	24	0	4.78	0.00	4.37	0.00	0.66	0.00	73.45	0.00	0.05	88.84
	Loader	offroad	24	0	7.31	0.00	13.45	0.00	2.79	0.00	575.70	0.00	0.80	823.57
	18-yard dump	onroad HHD	48	240	0.12	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Foundations (floor)	Backhoe	offroad	24	0	4.78	0.00	4.37	0.00	0.66	0.00	73.45	0.00	0.05	88.84
	Bobcat	offroad	24	0	4.78	0.00	4.37	0.00	0.66	0.00	73.45	0.00	0.05	88.84
	Loader	offroad	16	0	4.87	0.00	8.97	0.00	1.86	0.00	383.80	0.00	0.53	549.05
	Bulldozer	offroad	16	0	2.34	0.00	4.21	0.00	0.49	0.00	164.58	0.00	0.43	299.22
	Concrete Mixer, offsite delivery	onroad HHD	12	30	0.03	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building	Small crane	offroad	72	0	7.02	0.00	8.70	0.00	0.63	0.00	114.98	0.00	0.17	166.13
	Forklifts, offloading equipment	offroad	48	0	3.29	0.00	2.27	0.00	0.19	0.00	18.70	0.00	0.01	22.72
	Generators		96	0	3.33	0.00	1.75	0.00	0.06	0.00	3.75	0.00	0.00	4.29
	Propane heaters	offroad	96	0	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Activity	Equipment and Vehicles[2]				VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
	Type	Category	hrs	VMT										
Emissions from Construction of Cooling Stations (continued)														
Final Site Preparation, traprock, paving, vegetation plantings	Bulldozer	offroad	12	0	1.75	0.00	3.16	0.00	0.37	0.00	123.44	0.00	0.33	224.42
	18-yard dump	onroad HHD	12	60	0.03	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Hotbox with truck	onroad LD	12	30	0.03	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Roller	offroad	12	0	1.00	0.00	0.89	0.00	0.09	0.00	12.37	0.00	0.01	15.92
	Flatbed Truck, 30 mph	onroad HHD	4	120	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Backhoe, plantings	offroad	4	0	0.80	0.00	0.73	0.00	0.11	0.00	12.24	0.00	0.01	14.81
HDD	Drilling Power Unit, 6 locations @ 6 equipment days/location	offroad	288	0	257.22	0.00	3,006.24	0.00	1,611.00	0.00	1,504,580	0.00	11,145.21	4,959,595
	Generator	offroad	288	0	9.99	0.00	5.26	0.00	0.17	0.00	11.25	0.00	0.01	12.87
Miscellaneous	Craft utility, delivery trucks	onroad MD	180	5,400	0.48	177.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Pickup trucks	onroad LD	90	2,700	0.13	63.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Combustion Emissions, lbs					13,860	62,611	212,724	7,644	11,261	9,312	23,154,419	812	11,373	26,697,151
Total Combustion Emissions, tons					6.93	31.31	106.36	3.82	5.63	4.66	11,577.21	0.41	5.69	13,348.58
Total Fugitive Dust emissions, earthmoving tons[4]					-	-	-	-	**6.23**	**1.83**	-	-	-	-
Total Fugitive Dust emissions, road dust, tons[4]					-	-	-	-	**1.24**	**0.16**	-	-	-	-
Combined Combustion and Fugitive Dust emissions, tons					**6.93**	**31.31**	**106.36**	**3.82**	**13.10**	**6.65**	**11,577**	**0.41**	**5.69**	**13,349**

Notes:

[1] Emissions factors weighted for calendar year 2013 (USEPA 2006, USEPA 2009b).

[2] Units are operating hours for offroad engines, vehicle miles traveled (VMT) for onroad vehicles.

[3] Carbon dioxide equivalents (CO_2 eqv) are calculated by summing the products of mass GHG emissions by species times their respective GWP coefficients (USEPA 2009a).

[4] See Fugitive Dust Estimation Calculations tables for more detailed information.

Table M-18. Estimated Equipment and Vehicle Use During Construction of Converter Station, New York City Metropolitan Area Segment

Task	Overall Duration	Equipment and Vehicles			Working Days*	Daily		# equipment hours operation	Miles per Hour (on road only)
		Equipment Type	BHP	Qty		hours	VMT		
Site Preparation (pavement and foundations)	1 month	Bulldozer	285	2	30	8		480	
		Backhoe	73	2	30	8		480	
		Loader	150	1	30	8		240	
		18-yard Truck, transport debris		2	30	8	2,400	480	5
Site Prep Grading	2 weeks	Bulldozer	285	1	15	8		120	
		Backhoe	73	1	15	8		120	
		Loader	150	1	15	8		120	
		18-yard Truck, clean fill		2	15	8	1,200	240	5
Fence, Paving of street accesses, AC site lighting and trailer	2 weeks	Truck with Kelly bar auger		2	15	8	600	240	2.5
		Concrete Mixer, offsite delivery	6	1	15	8	300	120	2.5
		Bobcat	73	2	15	8		240	
		Bulldozer	285	1	15	8		120	
		18-yard Truck, asphalt		1	15	8	600	120	5
		Hotbox with truck		1	15	8	300	120	2.5
		Roller	100	1	15	8		120	
		Backhoe	73	1	15	8		120	
		Small crane	155	1	15	8		120	
Converter Building Foundations, floor	3 months	Backhoe	73	2	90	8		1,440	
		Bobcat	73	1	90	8		720	
		Loader	150	2	60	8		960	
		Bulldozer	285	1	60	8		480	
		Small crane-forms	155	2	30	8		480	
		Medium crane-concrete bucket	300	2	30	8		480	
		Concrete Mixer, offsite delivery		4	30	8	2,400	960	2.5

Task	Overall Duration	Equipment and Vehicles			Working Days*	Daily		# equipment hours operation	Miles per Hour (on road only)
		Equipment Type	BHP	Qty		hours	VMT		
Converter Building Superstructure	3 months	Large crane, for frame and gantry crane	450	1	30	8		240	
		Small crane, for roof and cladding	155	2	90	8		1,440	
		Forklifts, offloading equipment	75	1	60	8		480	
		Small crane, offloading equipment	155	1	60	8		480	
		Generators		5	90	8		3,600	
		Propane heaters	58.9	5	90	8		3,600	
Transformer Yard Foundations and Conduits	2 months	Backhoe	73	1	30	8		240	
		Loader	150	1	60	8		480	
		Small crane-forms	155	1	30	8		240	
		Bulldozer	285	1	60	8		480	
		Bobcat	73	1	60	8		480	
Transformer Yard Structural, Electrical	3 months	Small crane	155	2	30	8		480	
		Manlift trucks		2	90	8	3,600	1,440	2.5
		Compressor	20	2	90	8		1,440	
HDD, transmission cables		Drilling Power Unit, 2 locations @ 6 equipment days/location	800		12	8		96	
		Generator	50		12	8		96	
Final Site Preparation, traprock, paving, vegetation plantings	2 weeks	18-yard Truck, traprock		1	15	8	600	120	5
		Loader	150	1	15	8		120	
		Bulldozer, paving	285	1	15	8		120	
		Bulldozer, planting		1	15	8		120	
		18-yard Truck, asphalt		1	15	8	600	120	5
		Hotbox with truck		1	15	8	300	120	2.5
		Roller	100	1	15	8		120	
		Flatbed Truck, plantings		1	5	8	1,200	40	30
		Backhoe, plantings	73	1	10	8		80	

Task	Overall Duration	Equipment and Vehicles			Working Days*	Daily		# equipment hours operation	Miles per Hour (on road only)
		Equipment Type	BHP	Qty		hours	VMT		
Miscellaneous	1 year	Construction Trailers, propane	58.9	5	90	8		3,600	
		Craft utility, delivery trucks		30	360	4	1,296,000	43,200	30
		Pickup trucks		10	360	4	432,000	14,400	30

Notes:

* Calendar days are used to provide for long workdays and weekend work.

Table M-19. Estimated Equipment and Vehicle Use During Aquatic Cable Installation, New York City Metropolitan Area Segment

Activity	Equipment and Vehicles			Hours per Day	Working Days	LF	trips	cables	Total hours
	Type	BHP	Qty						
Cable Installation	Primary Cable Vessel								
	2 azimuth units	2,640	2	24	5	0.25	1	2	120
	azimuth unit	1,360	1	24	5	0.25	1	2	60
	retractable azimuth unit	2,475	1	24	5	0.1	1	2	24
	tunnel unit	1,300	1	24	5	0.25	1	2	60
	generators (500 kVA)	536	4	24	5	0.75	1	2	720
	generators (600 kVA)	643	1	24	5	0.5	1	2	120
	Survey boat	1,131	1	24	5	0.5	1	2	120
	Crew boat	425	1	24	5	0.2	1	2	48
Installation of Cable Protection	Tugboat, Towboat	1,970	1	12	5	0.25	1	2	30
	Crew boat	425	1	12	5	0.2	1	2	24
Dredging	Clamshell dredge	1,920	1	24	5	0.9	1	1	108
	Tender, Pushboat	1,131	1	24	5	0.5	1	1	60
	Tugboat, Towboat	1,970	1	24	5	0.5	1	1	60
	Crew boat	425	1	24	5	0.2	1	1	24
Cable Shipment	Main propulsion	8,201	1	1.8		0.5	3		2.7
	Auxiliary engine	1,776	1	1.8		0.17	3		0.918

Dredging at Navigation Crossings			
Equipment Type	**Average Horsepower**	**Estimated Equipment Duty***	**# of days for New York City Area**
Clamshell dredge	1,920	Marine medium continuous duty/transient	10
Tender, Pushboat	1,131	Marine heavy-duty	10
Tugboat, Towboat	1,970	Marine heavy-duty	10
Crew boat	425	Marine medium continuous duty	10

Notes:
BHP: Brake-horsepower. The maximum rated load of the vehicle or vessel engine(s). LF: Load Factor
5 work days based on 1.49 miles per day from mileposts 324.0 to 330.2 and 331.6 to 332.3.
Cable shipments emission duration of 1.8 hours per trip based on 12 mph for 21.5 miles.
21.5 miles is the average distance for each of the 3 cable shipments (6 miles of cable per shipment) round trip.

Table M-20. Estimated Equipment and Vehicle Use During Terrestrial Cable Installation, New York City Metropolitan Area Segment

Task	Equipment and Vehicles				Working Days	Daily		# equipment hours operation (3.7 miles)	Miles Per Hour (on road only)
	Equipment Type	Progress (miles)/8-hour day	BHP	qty		hours	VMT		
Vegetation Clearing	Brush Hog	1	11	1	1.40	8		11.20	
Topsoil removal and storage	Small Bulldozer	1	285	1	1.40	8		11.20	
	Bobcat	1	73	1	1.40	8		11.20	
Access path prep (gravel)	Small Bulldozer	0.5	285	1	2.80	8		22.40	
	18-yard dump	0.5		2	2.80	8	224	44.80	5
Trench Excavation	Backhoe	0.25	73	1	5.60	8		44.80	
	Bobcat	0.25	73	1	5.60	8		44.80	
	Ram Hoe	0.25	330	1	5.60	4		22.40	
	Hard Rock Trencher	0.25	335	1	5.60	2		11.20	
Deliver Cable @ 3 reels per	Flatbed Truck, 30 mph	0.5		1	2.80	8	672	22.40	30
	Crane	0.5	300	1	2.80	2		5.60	
HDD[1,2]	Drilling Unit				12	8		96	
	Drilling Power Unit		800		12	8		96	
	Generator		50		12	8		96	
	Water Pumps				12	8		96	
	Mud Pump				12	8		96	
Site Deliver and Pull Cable	Flatbed Truck, 30 mph	0.5		1	2.8	8	672	22.4	30
	Crane, 40 ton	0.5		1	2.8	2		5.6	
	Puller/Tensioner	0.5	165	2	2.8	8		44.8	
	Mid-pull caterpillars	0.5	165	2	2.8	8		44.8	
Splice Cable	Generators	0.25	48	1	5.6	8		44.8	
	Propane heaters	0.25	0.5	1	5.6	8		44.8	

Task	Equipment and Vehicles				Working Days	Daily		# equipment hours operation (3.7 miles)	Miles Per Hour (on road only)
	Equipment Type	Progress (miles)/8-hour day	BHP	qty		hours	VMT		
Deliver and install Thermal Backfill	18-yard dump	0.25		2	5.6	8	2,688	89.6	30
	Backhoe	0.25	73	1	5.6	8		44.8	
	Bobcat	0.25	73	1	5.6	8		44.8	
Install Native Backfill	Backhoe	0.5	73	1	2.8	8		22.4	
	Bobcat	0.5	73	1	2.8	8		22.4	
	Shaker/screen	0.5	110	1	2.8	8		22.4	
	Compressor for tampers	0.5		1	2.8	8		22.4	
Remove Excess Native Fill from Site	18-yard dump	1		2	1.4	8	112	22.4	5
	Backhoe	1	73	1	1.4	8		11.2	
Replace Topsoil, York Rake Vegetation	Small Bulldozer	0.5	285	1	2.8	8		22.4	
	Hydroseed Sprayer	0.5	115	1	2.8	8		22.4	
Miscellaneous	Pickup trucks			10	15	4	18,000	600	30

Notes:

HDD: Horizontal Directional Drilling

[1] HDD includes 2 Hudson Entrance/Exit, 2 Locations, and 6 equipment days per location.

[2] Support for HDD includes 3 Locations, 12 Working Days (4 Equipment Days per location) at 8 hours per day, and 96 equipment hours of operation.

Table M-21. Estimated Equipment and Vehicle Use During Construction of Cooling Station, New York City Metropolitan Area Segment

Task	Overall Duration	Equipment and Vehicles			Working Days*	Daily		# equipment hours operation	Miles per Hour (onroad only)
		Equipment Type	BHP	Qty		hours	VMT		
Site Preparation (pavement and foundations)	0.5 days (half a day at each cooling station)	Bulldozer	285	1	0.5	8		4	
		Backhoe	73	1	0.5	8		4	
		Loader	150	1	0.5	8		4	
		18-yard Truck, transport debris		1	0.5	8	20	4	5
Site Prep Grading	0.5 days (half a day at each cooling station)	Bulldozer	285	1	0.5	8		4	
		Backhoe	73	1	0.5	8		4	
		Loader	150	1	0.5	8		4	
		18-yard Truck, clean fill		2	0.5	8	40	8	5
Building Foundations, floor	0.5 days (half a day at each cooling station)	Backhoe	73	1	4.5	8		36	
		Bobcat	73	1	4.5	8		36	
		Loader	150	1	0.5	8		4	
		Bulldozer	285	1	0.5	8		4	
		Small crane-forms	155	2	0	8		0	
		Medium crane-concrete bucket	300	2	0	8		0	
		Concrete Mixer, offsite delivery		1	0.5	8	10	4	2.5
Building	2 days (2 days at each station)	Small crane	155	1	0.5	8		4	
		Forklifts, offloading equipment	75	1	1	8		8	
		Generators	50	2	1	8		16	
		Propane heaters	58.9	2	1	8		16	
HDD, transmission cables		Drilling Power Unit, 1 location @ 6 equipment days/location	800		6	8		48	
		Generator	50		6	8		48	

Task	Overall Duration	Equipment and Vehicles			Working Days*	Daily		# equipment hours operation	Miles per Hour (onroad only)
		Equipment Type	**BHP**	**Qty**		**hours**	**VMT**		
Final Site Preparation, traprock, paving, vegetation plantings	1 day (1 day at each cooling station)	Bulldozer		1	0.5	8		4	
		18-yard Truck, asphalt		1	0.5	8	20	4	5
		Hotbox with truck		1	0.5	8	10	4	2.5
		Roller	100	1	0.5	8		4	
		Flatbed Truck, plantings		1	0.5	8	120	4	30
		Backhoe, plantings	73	1	0.5	8		4	
Miscellaneous	7 weeks	Craft utility, delivery trucks		2	5	4	1,200	40	30
		Pickup trucks, 30 mph		1	5	4	600	20	30

Notes:

* Calendar days are used to provide for long workdays and weekend work.

HDD: Horizontal Directional Drilling

Table M-22. Emissions Factors[1], New York City Metropolitan Area Segment

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	PM_{25} lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Construction of the Converter Station												
Site Preparation (pavement and foundations)	Bulldozer	offroad	285	0.1	0.6	1.8	0.0	0.1	0.1	336.9	0.0	0.0
	Backhoe	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
	Loader	offroad	150	0.3	1.2	1.8	0.0	0.2	0.2	206.3	0.0	0.0
	18-yard Truck, transport debris	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
Site Prep Grading	Bulldozer	offroad	285	0.1	0.6	1.8	0.0	0.1	0.1	336.9	0.0	0.0
	Backhoe	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
	Loader	offroad	150	0.3	1.2	1.8	0.0	0.2	0.2	206.3	0.0	0.0
	18-yard Truck, clean fill	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
Fence, Paving of street accesses, AC, lighting, and trailers	Truck with Kelly bar auger	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
	Concrete Mixer, offsite delivery	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
	Bobcat	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
	Bulldozer	offroad	285	0.1	0.6	1.8	0.0	0.1	0.1	336.9	0.0	0.0
	18-yard Truck, asphalt	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
	Hotbox with truck	onroad LD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
	Roller	offroad	100	0.1	0.8	0.9	0.0	0.1	0.1	131.2	0.0	0.0
	Backhoe	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
	Small crane	offroad	155	0.1	0.3	1.2	0.0	0.1	0.1	181.2	0.0	0.0
Converter Building Foundations (floors)	Backhoe	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
	Bobcat	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
	Loader	offroad	150	0.3	1.2	1.8	0.0	0.2	0.2	206.3	0.0	0.0
	Bulldozer	offroad	285	0.1	0.6	1.8	0.0	0.1	0.1	336.9	0.0	0.0
	Small crane-forms	offroad	155	0.1	0.3	1.2	0.0	0.1	0.1	181.2	0.0	0.0
	Medium crane-concrete bucket	offroad	300	0.2	0.5	2.2	0.0	0.1	0.1	350.7	0.0	0.0
	Concrete Mixer, offsite delivery	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	PM_{25} lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Construction of the Converter Station (continued)												
Converter Building Superstructure	Large crane, for frame and gantry crane	offroad	450	0.2	1.1	4.2	0.0	0.2	0.2	526.1	0.0	0.0
	Small crane, for roof and cladding	offroad	155	0.1	0.3	1.2	0.0	0.1	0.1	181.2	0.0	0.0
	Forklifts, offloading equipment	offroad	75	0.1	0.6	0.7	0.0	0.1	0.1	98.4	0.0	0.0
	Small crane, offloading equipment	offroad	155	0.1	0.3	1.2	0.0	0.1	0.1	181.2	0.0	0.0
	Generators	offroad	50	0.0	0.2	0.5	0.0	0.0	0.0	65.0	0.0	0.0
	Propane heaters	offroad	58.9	0.00	0.01	0.02	0.00	0.00	0.00	20.64	0.00	0.00
Transformer Yard Foundations and Conduits	Backhoe	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
	Loader	offroad	150	0.3	1.2	1.8	0.0	0.2	0.2	206.3	0.0	0.0
	Small crane-forms	offroad	155	0.1	0.3	1.2	0.0	0.1	0.1	181.2	0.0	0.0
	Bulldozer	offroad	285	0.1	0.6	1.8	0.0	0.1	0.1	336.9	0.0	0.0
	Bobcat	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
Transformer Yard Structural, Electrical	Small crane	offroad	155	0.1	0.3	1.2	0.0	0.1	0.1	181.2	0.0	0.0
	Manlift trucks	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
	Compressor	offroad	20	0.0	0.1	0.2	0.0	0.0	0.0	25.9	0.0	0.0
Final Site Preparation, traprock, paving, vegetation plantings	18-yard Truck, traprock	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
	Loader	offroad	150	0.3	1.2	1.8	0.0	0.2	0.2	206.3	0.0	0.0
	Bulldozer, paving	offroad	285	0.1	0.6	1.8	0.0	0.1	0.1	336.9	0.0	0.0
	Bulldozer, planting	offroad	285	0.1	0.6	1.8	0.0	0.1	0.1	336.9	0.0	0.0
	18-yard Truck, asphalt	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
	Hotbox with truck	onroad LD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
	Roller	offroad	100	0.1	0.8	0.9	0.0	0.1	0.1	131.2	0.0	0.0
	Flatbed Truck, plantings	onroad HHD		0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0
	Backhoe, plantings	offroad	73	0.2	1.0	0.9	0.0	0.2	0.1	111.4	0.0	0.0
HDD	Drilling Power Unit	offroad	800	0.9	3.4	11.7	0.0	0.5	0.5	933.9	0.0	0.0
	Generator	offroad	50	0.0	0.2	0.5	0.0	0.0	0.0	65.0	0.0	0.0

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	PM_{25} lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Construction of the Converter Station (continued)												
Miscellaneous	Construction Trailers, propane	offroad	58.9	0.0	0.0	0.0	0.0	0.0	0.0	20.6	0.0	0.0
	Craft utility, delivery trucks	onroad MD		0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0
	Pickup trucks	onroad LD		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Installation of Aquatic Transmission Cables												
Cable Installation	2 azimuth units	Marine	2,640	2.07	10.48	29.64	0.03	1.41	1.37	3,118.31	0.12	0.02
	azimuth unit	Marine	1,360	1.06	5.40	15.27	0.01	0.73	0.70	1,606.40	0.06	0.01
	retractable azimuth unit	Marine	2,475	1.94	9.82	27.79	0.03	1.32	1.28	2,923.41	0.11	0.02
	tunnel unit	Marine	1,300	1.02	5.16	14.60	0.01	0.69	0.67	1,535.53	0.06	0.01
	generators (500 kVA)	Marine	536	0.33	1.47	5.46	0.01	0.23	0.23	626.53	0.02	0.00
	generators (600 kVA)	Marine	643	0.40	1.76	6.55	0.01	0.28	0.27	751.60	0.03	0.01
	Survey boat	Marine	1,131	0.89	4.49	12.70	0.01	0.60	0.59	1,335.91	0.05	0.01
	Crew boat	Marine	425	0.21	1.44	3.48	0.00	0.19	0.18	502.37	0.02	0.00
Installation of Cable Protection	Tugboat, Towboat	Marine	1,970	1.67	8.66	23.20	0.02	1.18	1.14	2,326.55	0.09	0.02
	Crew boat	Marine	425	0.21	1.44	3.48	0.00	0.19	0.18	502.37	0.02	0.00
Dredging	Clamshell dredge	Marine MD	1,920	1.98	10.84	24.7	0.02	1.46	1.41	2,266.44	0.09	0.02
	Tender, Pushboat	Marine HD	1,131	0.89	4.49	12.70	0.01	0.60	0.59	1,335.91	0.05	0.01
	Tugboat, Towboat	Marine HD	1,970	1.67	8.66	23.20	0.02	1.18	1.14	2,326.55	0.09	0.02
	Crew boat	Marine MD	425	0.21	1.44	3.48	0.00	0.19	0.18	502.37	0.02	0.00
Cable Shipment[7]	OGV main propulsion	Marine HD	8,201	10.85	25.31	307.36	65.45	8.14	7.59	10,645.38	0.11	0.56
	OGV auxiliary engine	Marine HD	1,776	1.57	4.31	54.42	16.60	1.92	1.76	2,704.41	0.02	0.12
Installation of Terrestrial Transmission Cables												
Vegetation Clearing	Brush Hog	offroad	11	0.02	0.11	0.11	0.00	0.01	0.01	14.27	0.00	0.00
Topsoil Removal and Storage	Small Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
Access Path Prep (gravel)	Small Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	18-yard dump	onroad HHD		0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	PM_{25} lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Installation of Terrestrial Transmission Cables (continued)												
Trench Excavation	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Ram Hoe	offroad	330	0.14	0.94	2.35	0.00	0.13	0.13	390.14	0.01	0.00
	Hard Rock Trencher	offroad	335	0.24	1.61	3.40	0.00	0.22	0.21	395.76	0.02	0.00
Cable Delivery	Flatbed Truck, 30 mph	onroad HHD		0.00	0.00	0.01	0.00	0.00	0.00	3.70	0.00	0.00
	Crane	offroad	300	0.17	0.47	2.22	0.00	0.10	0.09	350.73	0.01	0.00
HDD[7]	Drilling Power Unit	offroad	800	0.89	3.39	11.69	0.01	0.54	0.52	933.94	0.04	0.01
	Generator	offroad	50	0.03	0.18	0.53	0.00	0.03	0.03	64.97	0.00	0.00
Site Deliver and Pull Cable	Flatbed Truck, 30 mph	onroad HHD		0.00	0.00	0.01	0.00	0.00	0.00	3.70	0.00	0.00
	Crane, 40 ton	offroad		0.17	0.47	2.22	0.00	0.10	0.09	350.73	0.01	0.00
	Puller/Tensioner	offroad	165	0.34	1.28	2.02	0.00	0.23	0.22	226.92	0.01	0.00
	Mid-pull caterpillars	offroad	165	0.34	1.28	2.02	0.00	0.23	0.22	226.92	0.01	0.00
Splice Cable	Generators	offroad	48	0.03	0.18	0.51	0.00	0.03	0.03	62.37	0.00	0.00
	Propane heaters	offroad	0.5	0.00	0.01	0.02	0.00	0.00	0.00	20.64	0.00	0.00
Deliver and Install Thermal Backfill	18-yard dump	onroad HHD		0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
Install Native Backfill	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Shaker/screen	offroad	110	0.07	0.22	0.90	0.00	0.05	0.05	128.57	0.01	0.00
	Compressor for tampers	offroad		0.03	0.12	0.22	0.00	0.02	0.02	25.94	0.00	0.00
Remove Excess Native Fill from site	18-yard dump	onroad HHD		0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
Replace Topsoil, York Rake Vegetation	Small Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	Hydroseed Sprayer	offroad	115	0.27	0.99	1.64	0.00	0.17	0.17	158.04	0.01	0.00
Miscellaneous	Pickup trucks	onroad LD		0.00	0.02	0.00	0.00	0.00	0.00	0.97	0.00	0.00
Construction of the Cooling Station												
Site Preparation (pavement and foundations)	Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Loader	offroad	150	0.30	1.16	1.84	0.00	0.21	0.20	206.29	0.01	0.00
	18-yard Truck, transport debris	onroad HHD	0	0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	PM_{25} lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Construction of the Cooling Station (continued)												
Site Prep Grading	Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Loader	offroad	150	0.30	1.16	1.84	0.00	0.21	0.20	206.29	0.01	0.00
	18-yard Truck, clean fill	onroad HHD	0	0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
Building Foundations (floor)	Backhoe	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Bobcat	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
	Loader	offroad	150	0.30	1.16	1.84	0.00	0.21	0.20	206.29	0.01	0.00
	Bulldozer	offroad	285	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	Small crane-forms	offroad	155	0.10	0.31	1.24	0.00	0.07	0.07	181.18	0.01	0.00
	Medium crane-concrete bucket	offroad	300	0.17	0.47	2.22	0.00	0.10	0.09	350.73	0.01	0.00
	Concrete Mixer, offsite delivery	onroad HHD	0	0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
Building	Small crane	offroad	155	0.10	0.31	1.24	0.00	0.07	0.07	181.18	0.01	0.00
	Forklifts, offloading equipment	offroad	0	0.07	0.60	0.69	0.00	0.08	0.08	98.37	0.00	0.00
	Generators	offroad	75	0.03	0.18	0.53	0.00	0.03	0.03	64.97	0.00	0.00
	Propane heaters	offroad	155	0.00	0.01	0.02	0.00	0.00	0.00	20.64	0.00	0.00
Final Site Preparation, traprock, paving, vegetation plantings	Bulldozer	offroad	0	0.15	0.61	1.80	0.00	0.12	0.11	336.87	0.01	0.00
	18-yard Truck, asphalt	onroad HHD	0	0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
	Hotbox with truck	onroad LD	0	0.00	0.01	0.02	0.00	0.00	0.00	3.70	0.00	0.00
	Roller	offroad	100	0.08	0.79	0.88	0.00	0.11	0.10	131.18	0.00	0.00
	Flatbed Truck, plantings	onroad HHD	0	0.00	0.00	0.01	0.00	0.00	0.00	3.70	0.00	0.00
	Backhoe, plantings	offroad	73	0.20	1.01	0.91	0.00	0.15	0.15	111.42	0.00	0.00
HDD	Drilling Power Unit, 1 location @ 6 equipment days/location	offroad	800	0.89	3.39	11.69	0.01	0.54	0.52	933.94	0.04	0.01
	Generator	offroad	50	0.03	0.18	0.53	0.00	0.03	0.03	64.97	0.00	0.00

Activity	Equipment and Vehicles			VOC lb/unit[2]	CO lb/unit[2]	NO_x lb/unit[2]	SO_x lb/unit[2]	PM_{10} lb/unit[2,3]	PM_{25} lb/unit[2,3]	CO_2 lb/unit[2,6]	CH_4 lb/unit[2,4,5]	N_2O lb/unit[2,4,5]
	Type	Category	BHP									
Construction of the Cooling Station (continued)												
Miscellaneous	Craft utility, delivery trucks	onroad MD	0	0.00	0.03	0.00	0.00	0.00	0.00	1.29	0.00	0.00
	Pickup trucks, 30 mph	onroad LD	0	0.00	0.02	0.00	0.00	0.00	0.00	0.97	0.00	0.00

Notes:

[1] Emissions factors weighted for calendar year 2013 (USEPA 2003, USEPA 2006, USEPA 2009a).
[2] Units are operating hours for offroad engines, vehicle miles traveled (VMT) for onroad vehicles.
[3] Offroad diesel exhaust $PM_{2.5}$ = 92% of PM_{10}; Onroad HHD particulate emission factors include allowances for tire and brake wear.
[4] Offroad N_2O and CH_4 emissions are based on 40 CFR 98, Subpart C.
[5] Onroad N_2O and CH_4 emissions are based on the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2008 (USEPA 2009b).
[6] Onroad CO_2 emissions are based on EPA420-F-05-001 which rates gasoline emissions at 19.4 lb/gal and diesel at 22.2 lb/gal (USEPA 2005).
[7] Cable Shipment emissions based on STARCREST 2005.
Project counties include Bronx and Queens. Mileposts 324.0 to 333.7 for underwater cable laying and dredging.
Onland Construction activities - Mileposts 333.7 to 337.4/Astoria and Rainey substations connections.
BHP: Brake-horsepower. This should be the maximum rated load of the vehicle of vessel engines(s).
HDD: Horizontal Directional Drilling

Table M-23. Fugitive Dust Estimation Calculations - Earthmoving, New York City Metropolitan Area Segment

Construction Earthmoving	Project hours	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	PM_{10} lbs	$PM_{2.5}$ lbs
Site Preparation (pavement and foundations)					
Bulldozer	480	16.64	4.91	7989.52	2358.98
Backhoe	480	0.00034	0.000052	0.16	0.02
Loader	240	0.00034	0.000052	0.08	0.01
18-yard Truck, transport debris	480	0.00034	0.000052	0.16	0.02
Site Prep Grading					
Bulldozer	120	16.64	4.91	1997.38	589.74
Backhoe	120	0.00034	0.000052	0.04	0.01
Loader	120	0.00034	0.000052	0.04	0.01
18-yard Truck, clean fill	240	0.00034	0.000052	0.08	0.01
Converter Building Foundations (floors)					
Backhoe	1440	0.00034	0.000052	0.49	0.07
Bobcat	720	0.10328	0.00513	74.36	3.69
Loader	960	0.00034	0.000052	0.33	0.05
Bulldozer	480	16.64	4.91	7989.52	2358.98
Small crane-forms	480	0.00034	0.000052	0.16	0.02
Medium crane-concrete bucket	480	0.00034	0.000052	0.16	0.02
Concrete Mixer, offsite delivery	960	0.00034	0.000052	0.33	0.05
Transformer Yard Foundations and Conduit					
Backhoe	240	0.00034	0.000052	0.08	0.01
Loader	480	0.00034	0.000052	0.16	0.02
Small crane-forms	240	0.00034	0.000052	0.08	0.01
Bulldozer	480	16.64	4.91	7989.52	2358.98
Bobcat	480	0.10328	0.00513	49.57	2.46
Final Site Preparation					
18-yard Truck, traprock	120	0.00034	0.000052	0.04	0.01
Loader	120	0.00034	0.000052	0.04	0.01
Bulldozer	120	16.64	4.91	1997.38	589.74
Bulldozer	120	16.64	4.91	1997.38	589.74
18-yard Truck, asphalt	120	0.00034	0.000052	0.04	0.01
Hotbox with truck	120	0.00034	0.000052	0.04	0.01
Roller	120	0.10328	0.00513	12.39	0.62
HDD					
Drilling Power Unit	96	0.00034	0.000052	0.03	0.00

Construction Earthmoving	Project hours	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	PM_{10} lbs	$PM_{2.5}$ lbs
Topsoil Removal and Storage					
Small bulldozer	11.20	16.64	4.91	186.42	55.04
Bobcat	11.20	0.00034	0.000052	0.00	0.00
Access path prep (gravel)					
Small bulldozer	22.40	16.64	4.91	372.84	110.09
18-yard dump	44.80	0.00034	0.000052	0.02	0.00
Trench Excavation					
Backhoe	44.80	0.00034	0.000052	0.02	0.00
Bobcat	44.80	0.103	0.005126	4.63	0.23
18-yard dump	22.40	0.103	0.005126	2.31	0.11
Backhoe	11.20	0.103	0.005126	1.16	0.06
HDD					
Drilling Unit	96	0.00034	0.000052	0.03	0.00
Generator	96	0.00034	0.000052	0.03	0.00
Deliver and Install Thermal Backfill					
18-yard dump	89.6	0.00034	0.000052	0.03	0.00
Backhoe	44.8	0.00034	0.000052	0.02	0.00
Bobcat	44.8	16.64	4.91	745.69	220.17
Install Native Backfill					
Backhoe	22.4	0.00034	0.000052	0.01	0.00
Bobcat	22.4	16.64	4.91	372.84	110.09
Shaker/screen	22.4	0.00034	0.000052	0.01	0.00
Compressor for tampers	22.4	0.00034	0.000052	0.01	0.00
Remove Excess Native Fill from Site					
18-yard dump	22.4	0.00034	0.000052	0.01	0.00
Backhoe	11.2	0.00034	0.000052	0.00	0.00
Replace Topsoil, York Rake Vegetation					
Small bulldozer	22.4	16.64	4.91	372.84	110.09
Hydroseed Sprayer	22.4	0.103275	0.005126	2.31	0.11
Site Preparation					
Bulldozer	4	16.64	4.91	66.58	19.66
Backhoe	4	0.00034	0.000052	0.00	0.00
Loader	4	0.00034	0.000052	0.00	0.00
18-yard Truck, transport debris	4	0.00034	0.000052	0.00	0.00

Construction Earthmoving	Project hours	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	PM_{10} lbs	$PM_{2.5}$ lbs
Site Prep Grading					
Bulldozer	4	16.64	4.91	66.58	19.66
Backhoe	4	0.00034	0.000052	0.00	0.00
Loader	4	0.00034	0.000052	0.00	0.00
18-yard Truck, clean fill	8	0.00034	0.000052	0.00	0.00
Building Foundations					
Backhoe	36	0.00034	0.000052	0.01	0.00
Bobcat	36	0.10328	0.00513	3.72	0.18
Loader	4	0.00034	0.000052	0.00	0.00
Final Site Preparation, traprock, paving, vegetation plantings					
Bulldozer	4	16.64	4.91	66.58	19.66
18-yard Truck, asphalt	4	0.00034	0.000052	0.00	0.00
Hotbox with truck	4	0.00034	0.000052	0.00	0.00
Roller	4	0.10328	0.00513	0.41	0.02
HDD					
Drilling Power Unit	48	0.00034	0.000052	0.02	0.00
TOTAL				**32,365**	**9,519**
Total Earthmoving Emissions, tons				**16.18**	**4.76**

Notes:
Based on USEPA 2006.
AP-42 Section 11.9 for dozing (Table 11.9-1):
$E = 0.75 * (s)^{1.5} / (M)^{1.4}$ for PM_{10}
$E = 0.105 * 5.7 x (s)^{1.2} / (M)^{1.3}$ for $PM_{2.5}$
E = lb/hr fugitive
s = Silt Content assumed to be 55% for construction sites. (CHPE 2010)
M = moisture content = 8% (assumes unwatered subsoil)

AP-42 Section 11.9 for grading, rolling, and excavating (Table 11.9-1) (USEPA 2006).
$E = S * 0.60 * 0.051 x (S)^{2.0}$ for PM_{10}
$E = S * 0.031 * 0.040 x (S)^{2.5}$ for $PM_{2.5}$
Simplifies to $E = 0.60 * 0.051 x (S)^{3.0}$ for PM_{10}
Simplified to $E = 0.031 * 0.040 x (S)^{3.5}$ for $PM_{2.5}$
E = lb/VMT * VMT/hr = lb/hr fugitive
S = Mean Vehicle Speed assumed to be 3 mph for graders, 1.5 mph for excavators & rollers
Assumes VMT = S * hours of use

AP-42 Section 13.2.4 Loading/Handling (digger, driller, backhoe, loader): (USEPA 2006).
$E = 0.35 * 0.0032 * (U/5)^{1.3}/(M/2)^{1.4}$ for PM_{10}
$E = 0.053 * 0.0032 * (U/5)^{1.3}/(M/2)^{1.4}$ for $PM_{2.5}$
E = lb/ton * tons/hr = lb/hr fugitive
U = average wind speed is 8.9 mph for Albany, New York (NOAA 2002)
M = moisture content = 8% (assumes unwatered subsoil)

Table M-24. Fugitive Dust Estimation Calculations - Road Dust, New York City Metropolitan Area Segment

Construction Road Dust	Project VMT	PM_{10} lb/VMT	$PM_{2.5}$ lb/VMT	PM_{10} lbs	$PM_{2.5}$ lbs
All Roads (paved)					
Light Duty (pickup trucks)	432,600	0.00622	0.00076	2,691	330
Medium Duty (work trucks)	1,296,000	0.02802	0.00403	36,314	5,226
Heavy Heavy Duty (tractor/trailers)	13,500	0.20521	0.03061	2,770	413
Subtotals	**1,742,100**			**41,775**	**5,969**
All Roads					
Pickup Truck	432,015				
18-yard dump Truck	0				
Flatbed Truck	1,344				
Subtotals	**433,359**				
Unpaved Roads					
Pickup Truck	129,605	0.06820	0.00682	8,839	884
18-yard dump Truck	0	0.10604	0.01060	0	0
Flatbed Truck	134	0.19222	0.01922	26	3
Subtotals	**129,739**			**8,865**	**887**
Paved Roads					
Pickup Truck	302,411	0.00622	0.00076	1,881	231
18-yard dump Truck	0	0.02802	0.00403	0	0
Flatbed Truck	1,210	0.20521	0.03061	248	37
Subtotals	**3,171,916**			**52,769**	**7,124**
Total Road Dust Emissions, tons				**26.38**	**3.56**

Notes:

Based on USEPA 2003 and USEPA 2006.

All roads assumed paved.

Paved Road Dust (AP-42 Section 13.2.1) (USEPA 2006).

E = [0.016*(sL/2)0.65*(W/3)1.5 - 0.00047] * PC for PM_{10}

E = [0.0024*(sL/2)0.65*(W/3)1.5 - 0.00036] * PC for $PM_{2.5}$

E = lb/VMT fugitive

sL = Silt Loading assumed to be 0.5 g/m^2 for average ADT categories from Table 13.2.1-3.

W = Average weight of vehicles in tons (below)

C = Correction for exhaust, break wear, tire wear: 0.00047 lb/VMT for PM_{10}, 0.00036 lb/VMT for $PM_{2.5}$

PC = (1-P/4N)

P = Number of wet days over 0.01 in precipitation for averaging period (150 days/year average for New York State)

N = days of period = 365 days

Note: precipitation correction not used (PC=1) for worst case day calculations

Vehicle Weights based on USEPA 2010

HDD: Horizontal Directional Drilling

Light Duty = 3 tons average; Medium Duty = 8 tons average; and Heavy Heavy Duty = 30 tons average (loaded 40 tons, unloaded 20 tons)

Table M-25. Estimated Total Emissions[1], New York City Metropolitan Area Segment

Activity	Equipment and Vehicles[2]			VMT	VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
	Type	Category	hrs											
Emissions from Construction of the Converter Station														
Site Preparation (pavement and foundations)	Bulldozer	offroad	480		70.1	293.3	864.8	1.4	55.7	54.1	161,695.2	6.3	1.3	162,221
	Backhoe	offroad	480		95.6	486.9	438.6	0.5	72.4	70.3	53,481.6	1.6	0.3	53,616
	Loader	offroad	240		73.1	279.3	441.6	0.4	49.8	48.3	49,509.3	1.7	0.3	49,648
	18-yard Truck, transport debris	onroad HHD		2,400	5.8	33.3	45.7	0.1	0.9	0.7	8,880.0	0.0	0.0	8,888
Site Prep Grading	Bulldozer	offroad	120		17.5	73.3	216.2	0.3	13.9	13.5	40,423.8	1.6	0.3	40,555
	Backhoe	offroad	120		23.9	121.7	109.7	0.1	18.1	17.6	13,370.4	0.4	0.1	13,404
	Loader	offroad	120		36.6	139.6	220.8	0.2	24.9	24.1	24,754.7	0.8	0.2	24,824
	18-yard Truck, clean fill	onroad HHD		1,200	2.9	16.6	22.9	0.0	0.4	0.3	4,440.0	0.0	0.0	4,444
Fence, Paving of street accesses, AC, lighting, and trailers	Truck with Kelly bar auger	onroad HHD		600	1.4	8.3	11.4	0.0	0.2	0.2	2,220.0	0.0	0.0	2,222
	Concrete Mixer, offsite delivery	onroad HHD		300	0.7	4.2	5.7	0.0	0.1	0.1	1,110.0	0.0	0.0	1,111
	Bobcat	offroad	240		47.8	243.4	219.3	0.2	36.2	35.1	26,740.8	0.8	0.2	26,808
	Bulldozer	offroad	120		17.5	73.3	216.2	0.3	13.9	13.5	40,423.8	1.6	0.3	40,555
	18-yard Truck, asphalt	onroad HHD		600	1.4	8.3	11.4	0.0	0.2	0.2	2,220.0	0.0	0.0	2,222
	Hotbox with truck	onroad LD		300	0.7	4.2	5.7	0.0	0.1	0.1	1,110.0	0.0	0.0	1,111
	Roller	offroad	120		10.0	94.6	106.1	0.1	12.7	12.4	15,741.7	0.6	0.1	15,788
	Backhoe	offroad	120		23.9	121.7	109.7	0.1	18.1	17.6	13,370.4	0.4	0.1	13,404
	Small crane	offroad	120		11.7	37.1	148.7	0.2	8.8	8.5	21,741.1	0.9	0.2	21,813

Activity	Equipment and Vehicles[2] Type	Category	hrs	VMT	VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
Emissions from Construction of the Converter Station (continued)														
Converter Building Foundations (floor)	Backhoe	offroad	1440		286.9	1,460.6	1,315.9	1.5	217.3	210.8	160,444.9	4.9	1.0	160,849
	Bobcat	offroad	720		143.4	730.3	657.9	0.7	108.6	105.4	80,222.4	2.4	0.5	80,424
	Loader	offroad	960		292.4	1,117.2	1,766.5	1.8	199.1	193.2	198,037.3	6.7	1.3	198,591
	Bulldozer	offroad	480		70.1	293.3	864.8	1.4	55.7	54.1	161,695.2	6.3	1.3	162,221
	Small crane-forms	offroad	480		46.8	148.3	594.9	0.8	35.0	34.0	86,964.5	3.4	0.7	87,250
	Medium crane-concrete bucket	offroad	480		79.9	224.2	1,064.8	1.5	45.6	44.2	168,349.9	6.7	1.3	168,903
	Concrete Mixer, offsite delivery	onroad HHD		2,400	5.8	33.3	45.7	0.1	0.9	0.7	8,880.0	0.0	0.0	8,888
Converter Building Superstructure	Large crane, for frame and gantry crane	offroad	240		57.8	261.5	1,004.7	1.1	39.7	38.5	126,268.8	5.0	1.0	126,684
	Small crane, for roof and cladding	offroad	1440		140.4	445.0	1,784.8	2.3	105.0	101.9	260,893.4	10.3	2.1	261,751
	Forklifts, offloading equipment	offroad	480		32.9	290.1	331.2	0.4	40.2	39.0	47,217.2	1.7	0.3	47,356
	Small crane, offloading equipment	offroad	480		46.8	148.3	594.9	0.8	35.0	34.0	86,964.5	3.4	0.7	87,250
	Generators	offroad	3600		124.9	665.6	1,894.4	2.1	118.5	115.0	233,901.4	8.3	1.7	234,593
	Propane heaters	offroad	3600		5.9	44.6	77.3	0.1	4.2	4.2	74,292.5	1.2	5.3	75,976
Transformer Yard Foundations and Conduits	Backhoe	offroad	240		47.8	243.4	219.3	0.2	36.2	35.1	26,740.8	0.8	0.2	26,808
	Loader	offroad	480		146.2	558.6	883.3	0.9	99.6	96.6	99,018.6	3.3	0.7	99,295
	Small crane-forms	offroad	240		23.4	74.2	297.5	0.4	17.5	17.0	43,482.2	1.7	0.3	43,625
	Bulldozer	offroad	480		70.1	293.3	864.8	1.4	55.7	54.1	161,695.2	6.3	1.3	162,221
	Bobcat	offroad	480		95.6	486.9	438.6	0.5	72.4	70.3	53,481.6	1.6	0.3	53,616
Transformer Yard Structural, Electrical	Small crane	offroad	480		46.8	148.3	594.9	0.8	35.0	34.0	86,964.5	3.4	0.7	87,250
	Manlift trucks	onroad HHD		3,600	8.7	49.9	68.6	0.1	1.3	1.0	13,320.0	0.0	0.0	13,333
	Compressor	offroad	1440		41.9	174.3	318.7	0.3	26.0	25.2	37,359.1	1.3	0.3	37,470

Activity	Equipment and Vehicles[2] Type	Category	hrs	VMT	VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
Emissions from Construction of the Converter Station (continued)														
Final Site Preparation, traprock, paving, vegetation plantings	18-yard Truck, traprock	onroad HHD		600	1.4	8.3	11.4	0.0	0.2	0.2	2,220.0	0.0	0.0	2,222
	Loader	offroad	120		36.6	139.6	220.8	0.2	24.9	24.1	24,754.7	0.8	0.2	24,824
	Bulldozer, paving	offroad	120		17.5	73.3	216.2	0.3	13.9	13.5	40,423.8	1.6	0.3	40,555
	Bulldozer, planting	offroad	120		17.5	73.3	216.2	0.3	13.9	13.5	40,423.8	1.6	0.3	40,555
	18-yard Truck, asphalt	onroad HHD		600	1.4	8.3	11.4	0.0	0.2	0.2	2,220.0	0.0	0.0	2,222
	Hotbox with truck	onroad LD		300	0.7	4.2	5.7	0.0	0.1	0.1	1,110.0	0.0	0.0	1,111
	Roller	offroad	120		10.0	94.6	106.1	0.1	12.7	12.4	15,741.7	0.6	0.1	15,788
	Flatbed Truck, plantings	onroad HHD		1,200	0.9	3.3	11.8	0.0	0.4	0.3	4,440.0	0.0	0.0	4,444
	Backhoe, plantings	offroad	80		15.9	81.1	73.1	0.1	12.1	11.7	8,913.6	0.3	0.1	8,936
HDD	Drilling Power Unit	offroad	800		714.5	2,710.9	9,349.8	6.7	428.7	415.8	747,154.3	29.6	5.9	749,614
	Generator	offroad	50		1.7	9.2	26.3	0.0	1.6	1.6	3,248.6	0.1	0.0	3,258
Miscellaneous	Construction Trailers, propane	offroad	3600		5.9	44.6	77.3	0.1	4.2	4.2	74,292.5	1.2	5.3	75,976
	Craft utility, delivery trucks	onroad MD		1,296,000	3,480.1	42,715.0	3,011.5	32.9	71.4	32.9	1,676,160.0	95.1	38.3	1,690,027
	Pickup trucks	onroad LD		432,000	626.8	10,228.9	580.2	8.2	23.8	10.8	419,040.0	15.6	6.3	421,322
Emissions from Installation of Aquatic Transmission Cables														
Cable Installation	2 azimuth units	Marine	120		248	1,257	3,557	3	169	164	374,197	15	3	375,414
	azimuth unit	Marine	60		64	324	916	1	44	42	96,384	4	1	96,698
	retractable azimuth unit	Marine	24		46	236	667	1	32	31	70,162	3	1	70,390
	tunnel unit	Marine	60		61	310	876	1	42	40	92,132	4	1	92,432
	generators (500 kVA)	Marine	720		241	1,057	3,931	4	167	162	451,098.0	18	4	452,581
	generators (600 kVA)	Marine	120		48	211	786	1	33	32	90,192	4	1	90,488
	Survey boat	Marine	120		106	539	1,524	1	73	70	160,309	6	1	160,831
	Crew boat	Marine	48		10	69	167	0	9	9	24,144	1	0	24,192

Activity	Equipment and Vehicles[2]			VMT	VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
	Type	Category	hrs											
Emissions from Installation of Aquatic Transmission Cables (continued)														
Installation of Cable Protection	Tugboat, Towboat	Marine	30		50	260	696	1	35	34	69,796	3	1	70,024
	Crew boat	Marine	24		5	35	83	0	5	4	12,057	0	0	12,096
Dredging	Clamshell dredge	Marine MD	108		214	1,171	2,667	2	157	153	244,775	10	2	245,572
	Tender, Pushboat	Marine HD	60		53	269	762	1	36	35	80,155	3	1	80,415
	Tugboat, Towboat	Marine HD	60		100	520	1,392	1	71	68	139,593	5	1	140,047
	Crew boat	Marine MD	24		5	35	83	0	5	4	12,057	0	0	12,096
Cable Shipment	OGV main propulsion	Marine HD	2.7		29	68	830	177	22	21	28,743	0	2	29,218
	OGV auxiliary engine	Marine HD	0.9		1	4	50	15	2	2	2,483	0	0	2,517
Emissions from Installation of Terrestrial Transmission Cables														
Vegetation Clearing	Brush Hog	offroad	11.20		0	1	1	0	0	0	160	0	0	0
Topsoil Removal and Storage	Small Bulldozer	offroad	11.20		2	7	20	0	1	1	3,773	0	0	0
	Bobcat	offroad	11.20		2	11	10	0	2	2	1,248	0	0	0
Access Path Prep (gravel)	Small Bulldozer	offroad	22.40		3	14	40	0	3	3	7,546	0	0	0
	18-yard dump	onroad HHD	44.80	224	0.54	3.11	4.27	0.01	0.08	0.06	828.80	0.00	0.00	0.00
Trench Excavation	Backhoe	offroad	44.80		9	45	41	0	7	7	4,992	0	0	0
	Bobcat	offroad	44.80		9	45	41	0	7	7	4,992	0	0	0
	Ram Hoe	offroad	22.40		3	21	53	0	3	3	8,739	0	0	0
	Hard Rock Trencher	offroad	11.20		3	18	38	0	2	2	4,433	0	0	0
Cable Delivery	Flatbed Truck, 30 mph	onroad HHD	22.40	672	1	2	7	0	0	0	2,486	0	0	0
	Crane	offroad	5.60		1	3	12	0	1	1	1,964	0	0	0
HDD	Drilling Power Unit	offroad	96		86	325	1122	1	51	50	89,659	4	1	0
	Generator	offroad	96		3	18	51	0	3	3	6,237	0	0	0

Activity	Equipment and Vehicles[2]			VMT	VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
	Type	Category	hrs											
Emissions from Installation of Aquatic Transmission Cables (continued)														
Site Deliver and Pull Cable	Flatbed Truck, 30 mph	onroad HHD	22.4	672	1	2	7	0	0	0	2,486	0	0	0
	Crane, 40 ton	offroad	5.6		1	3	12	0	1	1	1,964	0	0	0
	Puller/Tensioner	offroad	44.8		15	57	91	0	10	10	10,166	0	0	0
	Mid-pull caterpillars	offroad	44.8		15	57	91	0	10	10	10,166	0	0	0
Splice Cable	Generators	offroad	44.8		1	8	23	0	1	1	2,794	0	0	0
	Propane heaters	offroad	44.8		0	1	1	0	0	0	925	0	0	0
Deliver and Install Thermal Backfill	18-yard dump	onroad HHD	89.6	2,688	6	37	51	0	1	1	9,946	0	0	0
	Backhoe	offroad	44.8		9	45	41	0	7	7	4,992	0	0	0
	Bobcat	offroad	44.8		9	45	41	0	7	7	4,992	0	0	0
Install Native Backfill	Backhoe	offroad	22.4		4	23	20	0	3	3	2,496	0	0	0
	Bobcat	offroad	22.4		4	23	20	0	3	3	2,496	0	0	0
	Shaker/screen	offroad	22.4		2	5	20	0	1	1	2,880	0	0	0
	Compressor for tampers	offroad	22.4		1	3	5	0	0	0	581	0	0	0
Remove Excess Native Fill from site	18-yard dump	onroad HHD	22.4	112	0	0	0	0	0	0	83	0	0	0
	Backhoe	offroad	11.2		2	11	10	0	2	2	1,248	0	0	0
Replace Topsoil, York Rake Vegetation	Small Bulldozer	offroad	22.4		3	14	40	0	3	3	7,546	0	0	0
	Hydroseed Sprayer	offroad	22.4		6	22	37	0	4	4	3,540	0	0	0
Miscellaneous	Pickup trucks	onroad LD	15	15	0	0	0	0	0	0	15	0	0	0
Emissions from Construction of the Cooling Station														
Site Preparation (pavement and foundations)	Bulldozer	offroad	4	0	0.6	0.0	1.1	0.0	0.1	0.0	41.1	0.0	0.1	0.0
	Backhoe	offroad	4	0	0.8	0.0	0.7	0.0	0.1	0.0	12.2	0.0	0.0	0.0
	Loader	offroad	4	0	1.2	0.0	2.2	0.0	0.5	0.0	95.9	0.0	0.1	0.0
	18-yard Truck, transport debris	onroad HHD	4	20	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Activity	Equipment and Vehicles[2]			VMT	VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
	Type	Category	hrs											
Emissions from Construction of the Cooling Station (continued)														
Site Prep Grading	Bulldozer	offroad	4	0	0.6	0.0	1.1	0.0	0.1	0.0	41.1	0.0	0.1	0.0
	Backhoe	offroad	4	0	0.8	0.0	0.7	0.0	0.1	0.0	12.2	0.0	0.0	0.0
	Loader	offroad	4	0	1.2	0.0	2.2	0.0	0.5	0.0	95.9	0.0	0.1	0.0
	18-yard Truck, clean fill	onroad HHD	8	40	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Building Foundations (floor)	Backhoe	offroad	36	0	7.2	0.0	6.6	0.0	1.0	0.0	110.2	0.0	0.1	0.0
	Bobcat	offroad	36	0	7.2	0.0	6.6	0.0	1.0	0.0	110.2	0.0	0.1	0.0
	Loader	offroad	4	0	1.2	0.0	2.2	0.0	0.5	0.0	95.9	0.0	0.1	0.0
	Bulldozer	offroad	4	0	0.6	0.0	1.1	0.0	0.1	0.0	41.1	0.0	0.1	0.0
	Small crane-forms	offroad	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Medium crane-concrete bucket	offroad	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Concrete Mixer, offsite delivery	onroad HHD	4	10	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Building	Small crane	offroad	4	0	0.4	0.0	0.5	0.0	0.0	0.0	6.4	0.0	0.0	0.0
	Forklifts, offloading equipment	offroad	0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Generators	offroad	8		0.3	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0
	Propane heaters	offroad	0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final Site Preparation, traprock, paving, vegetation plantings	Bulldozer	offroad	4	0	0.6	0.0	1.1	0.0	0.1	0.0	41.1	0.0	0.1	0.0
	18-yard Truck, asphalt	onroad HHD	4	20	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Hotbox with truck	onroad LD	4	10	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Roller	offroad	4	0	0.3	0.0	0.3	0.0	0.0	0.0	4.1	0.0	0.0	0.0
	Flatbed Truck, plantings	onroad HHD	4	120	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Backhoe, plantings	offroad	4	0	0.8	0.0	0.7	0.0	0.1	0.0	12.2	0.0	0.0	0.0

Activity	Equipment and Vehicles[2]			VMT	VOC lbs	CO lbs	NO_x lbs	SO_x lbs	PM_{10} lbs	$PM_{2.5}$ lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
	Type	Category	hrs											
Emissions from Construction of the Cooling Station (continued)														
HDD	Drilling Power Unit, 1 location @ 6 equipment days/location	offroad	48	0	42.9	0.0	501.0	0.0	268.5	0.0	250,763.5	0.0	1,857.5	826,600
	Generator	offroad	48	0	1.7	0.0	0.9	0.0	0.0	0.0	1.9	0.0	0.0	2
Miscellaneous	Craft utility, delivery trucks	onroad MD	40	1,200	0.1	39.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Pickup trucks, 30 mph	onroad LD	20	600	0.0	14.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TOTAL Combustion Emissions By Activity (tons)	VOC lbs	CO lbs	NOx lbs	Sox lbs	PM_{10} lbs	PM_{25} lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
Site Preparation	0.1	0.5	0.9	0.0	0.1	0.1	136.8	0.0	0.0	137.2
Site Prep Grading	0.0	0.2	0.3	0.0	0.0	0.0	41.5	0.0	0.0	41.6
Fence, Paving of street accesses, AC, lighting, and trailers	0.1	0.3	0.4	0.0	0.0	0.0	62.3	0.0	0.0	62.5
Converter Building Foundations	0.5	2.0	3.2	0.0	0.3	0.3	432.3	0.0	0.0	433.6
Converter Building Superstructure	0.2	0.9	2.8	0.0	0.2	0.2	414.8	0.0	0.0	416.8
Transformer Yard Foundations and Conduits	0.2	0.8	1.4	0.0	0.1	0.1	192.2	0.0	0.0	192.8
Transformer Yard Structural, Electrical	0.0	0.2	0.5	0.0	0.0	0.0	68.8	0.0	0.0	69.0
Final Site Preparation, traprock, paving, vegetation plantings	0.1	0.2	0.4	0.0	0.0	0.0	70.1	0.0	0.0	70.3
HDD	0.4	1.4	4.7	0.0	0.2	0.2	375.2	0.0	0.0	376.4
Miscellaneous	2.1	26.5	1.8	0.0	0.0	0.0	1,084.7	0.1	0.0	1,093.7
Subtotal	3.6	33.1	16.4	0.0	1.1	1.1	2,878.8	0.1	0.0	2,894
Cable Installation	0.4	2.0	6.2	0.0	0.3	0.3	679.3	0.0	0.0	688.5
Installation of Cable Protection	0.0	0.1	0.4	0.0	0.0	0.0	40.9	0.0	0.0	41.5
Dredging	0.2	1.0	2.5	0.0	0.1	0.1	238.3	0.0	0.0	242.2
Cable Shipment	0.0	0.0	0.4	0.1	0.0	0.0	15.6	0.0	0.0	16.2
Subtotal	0.6	3.2	9.5	0.1	0.5	0.4	974.1	0.0	0.0	988.5
Vegetation Clearing	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Topsoil Removal and Storage	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0
Access Path Prep (gravel)	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0

TOTAL Combustion Emissions By Activity (tons)	VOC lbs	CO lbs	NOx lbs	Sox lbs	PM_{10} lbs	PM_{25} lbs	CO_2 lbs	CH_4 lbs	N_2O lbs	CO_2 eqv lbs[3]
Trench Excavation	0.0	0.1	0.1	0.0	0.0	0.0	11.6	0.0	0.0	0.0
Cable Delivery	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0
HDD	0.0	0.2	0.6	0.0	0.0	0.0	47.9	0.0	0.0	0.0
Site Deliver and Pull Cable	0.0	0.1	0.1	0.0	0.0	0.0	12.4	0.0	0.0	0.0
Splice Cable	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0
Deliver and Install Thermal Backfill	0.0	0.1	0.1	0.0	0.0	0.0	10.0	0.0	0.0	0.0
Install Native Backfill	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0
Remove Excess Native Fill from site	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Replace Topsoil, York Rake Vegetation	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0
Miscellaneous	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	0.5	2.2	6.8	0.1	0.3	0.3	706.2	0.0	0.0	611.6
Site Preparation	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Site Prep Grading	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Building Foundations	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Building	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final Site Preparation, traprock, paving, vegetation plantings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HDD	0.0	0.0	0.3	0.0	0.1	0.0	125.4	0.0	0.9	413.3
Miscellaneous	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	0.0	0.0	0.3	0.0	0.1	0.0	125.7	0.0	0.9	413.3
Total Combustion emissions, lbs	**8,140**	**73,415**	**54,263**	**283**	**3,591**	**3,168**	**8,163,672**	**325**	**1,958**	**8,569,457**
Total Combustion emissions, tons	**4**	**37**	**27**	**0**	**2**	**2**	**4,082**	**0**	**1**	**4,285**
Total Fugitive Dust emissions, earthmoving, tons[4]	-	-	-	-	**16**	**5**	-	-	-	-
Total Fugitive Dust emissions, road dust, tons[4]	-	-	-	-	**31**	**4**	-	-	-	-
Combined Engine and Fugitive Dust emissions, tons	**4.37**	**36.71**	**27.13**	**0.14**	**48.80**	**10.35**	**4,082**	**0.16**	**0.98**	**4,285**

Notes:

Underwater Cable Laying includes mileposts 290 to 333.

VMT: vehicle-miles traveled for on-road vehicles. LD: Light Duty. HD: Heavy Duty. HHD: Heavy Heavy Duty.

[1] Emissions weighted for calendar year 2013 (USEPA 2003, USEPA 2006, USEPA 2009a).

[2] Units are operating hours for offroad engines, vehicle miles traveled (VMT) for onroad vehicles.

[3] Carbon dioxide equivalents (CO_2 eqv) are calculated by summing the products of mass GHG emissions by species times their respective GWP coefficients (USEPA 2009a).

[4] See Fugitive Dust Estimation Calculations tables for more detailed information.

Table M-26. Proposed One-MW Generator Emissions

Generator Kilowatts		Conversion from kW to Btu/hr	Engine Btu/hr (Assume 90% efficiency converting mechanical to electrical power)	Engine MMBtu/hr		
1000		3414.4	3,793,807	3.79		
Diesel Industrial Engine Emissions Factors from AP-42, Section 3.4	**NO_x**	**CO**	**VOC**	**PM_{10}**	**SO_2**	**CO_2**
	lb/MMBtu	**lb/MMBtu**	**lb/MMBtu**	**lb/MMBtu**	**lb/MMBtu**	**lb/MMBtu**
Emissions Factor	3.2	0.85	0.09	0.1	1.01	165
	(lbs/yr)	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**	**(lbs/yr)**
Assume max. 300 hr/yr operation and testing	3,642.05	967.42	102.43	113.81	1,149.52	187,793.42
	(tons/yr)	**(tons/yr)**	**(tons/yr)**	**(tons/yr)**	**(tons/yr)**	**(tons/yr)**
Emissions Per Generator	**1.821**	**0.484**	**0.0512**	**0.0569**	**0.575**	**93.897**

Source: USEPA 1996. AP-42. Large Stationary Diesel And All Stationary Duel-fuel Engines. Table 3.4-1. Page 3.4-5.

References

40 CFR 98 — Electronic Code of Federal Regulations. *Mandatory Greenhouse Gas Reporting*. Title 40, Part 98, Subpart C. Available online: <*http://ecfr.gpoaccess.gov*>. Accessed December 2010.

CHPEI 2010 — Champlain Hudson Power Express, Inc. (CHPEI). 2010. Champlain Hudson Power Express Project, Supplement to the Article VII Application. Appendix D. July 2010.

NOAA 2002 — National Oceanic and Atmospheric Administration (NOAA). 2002. Weather Data. Available online: <*www.noaa.gov*>. Accessed December 2010.

Starcrest 2005 — Starcrest Consulting Group, LLC. 2005. *Port of Los Angeles Inventory of Air Emissions for Calendar Year 2005 Technical Report*. September 2005.

USEPA 1996 — U. S. Environmental Protection Agency (USEPA). 1996. AP-42. Large Stationary Diesel And All Stationary Duel-fuel Engines. Table 3.4-1. Page 3.4-5.

USEPA 2003 — USEPA. 2003. *MOBILE6.2.0.3 Mobile Vehicle Emissions Factor Model and AP-42 Methods for Re-entrained Road Dust*. September 2003.

USEPA 2005 — USEPA. 2005. Office of Transportation and Air Quality. *Emission Facts -Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel*. EPA420-F-05-001. February 2005.

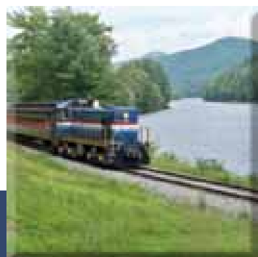
USEPA 2006 — USEPA. 2006. AP 42, Fifth Edition, Volume 1, Chapter 13: Miscellaneous Sources. Available online: <*www.epa.gov*>. Accessed December 2010.

USEPA 2009a — USEPA. 2009. Office of Transportation and Air Quality. "NONROAD2008a Installation and Updates." Available online: <*http://www.epa.gov/otaq/models/nonrdmdl/nonrdmdl2008/readme08.htm*>. July 2009.

USEPA 2009b — USEPA. 2009. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2008*.

USEPA 2010 — USEPA. 2010. Office of Transportation and Air Quality. *Draft Regulatory Impact Analysis*. EPA-420-D-10-901. October 2010.

THIS PAGE INTENTIONALLY LEFT BLANK



APPENDIX N

Noise Analysis Background Information

Appendix N
Noise Analysis Background Information

Modeling of noise levels associated with construction of the proposed CHPE Project was conducted for certain cases where reasonable noise data from previous studies were not available. Noise levels were determined based upon the types of equipment that would be used and the duration of their use. Noise emission factors for common construction equipment were obtained from guidance documents from the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) (USFTA 2006, FHWA 2006a, FHWA 2006b), and corresponding sound levels were estimated (Maling et al. 1992) or calculated based on rated construction equipment horsepower. Other construction equipment noise emissions levels were estimated from brake horsepower ratings (Wood 1992). Utilization factors were employed to represent the amount of time each noise source contributed to the potential noise exposure. This approach is considered conservative, and in some cases a more realistic and lower noise estimate was obtained from the FHWA guidance document (FHWA 2006a).

Appendix N contains detailed tables showing the noise emissions and utilization factors for each piece of equipment associated with various forms of construction and operating equipment related to the proposed CHPE project.

The following tables are included in **Appendix N**:

- **Table N-1.** Land-Based Construction Noise Sources
- **Table N-2.** Converter Station Construction Noise Sources
- **Table N-3.** Prominent Discrete (Pure) Tone Analysis for Transformers
- **Table N-4.** Pure Tone Analysis for Coolers

Table N-1. Land-Based Construction Noise Sources

Activity	Equipment and Vehicles	SWL/ Unit (dBA)	Qty per 1 hour	UF	Total SWL (dBA)	Calculated Sound Pressure Level (dBA) as L_{eq} (1 hour) at distance			
						100 feet	500 feet	1,000 feet	2,000 feet
Vegetation Clearing	Brush Hog	108	2	40%	107	66	53	46	40
	TOTAL COMBINED NOISE					**66**	**53**	**46**	**40**
Topsoil Removal and Storage	Small Bulldozer	114	2	40%	113	72	58	52	46
	Bobcat	116	2	40%	115	75	61	55	49
	TOTAL COMBINED NOISE					**77**	**63**	**57**	**51**
Access Path Prep (gravel)	Small Bulldozer	114	2	40%	113	72	58	52	46
	18-yard dump	108	2	40%	107	66	52	46	40
	TOTAL COMBINED NOISE					**73**	**59**	**53**	**47**
Excavate Trench	Backhoe	110	2	40%	109	68	54	48	42
	Bobcat	116	2	40%	115	75	61	55	49
	Ram Hoe	122	2	10%	115	74	60	54	48
	Hard Rock Trencher	123	2	20%	119	78	64	58	52
	TOTAL COMBINED NOISE					**81**	**67**	**61**	**55**
Cable Delivery	Flatbed Truck, 30 mph	106	2	40%	105	64	50	44	38
	Crane, 40 ton	113	2	16%	108	67	53	47	41
	TOTAL COMBINED NOISE					**69**	**55**	**49**	**43**
HDD	Drilling Power Unit	127	2	50%	127	86	72	66	60
	Generator	113	2	50%	113	72	58	52	46
	TOTAL COMBINED NOISE					**86**	**72**	**66**	**60**
Site Deliver and Pull Cable	Flatbed Truck, 30 mph	106	2	40%	105	64	50	44	38
	Crane, 40 ton	113	2	16%	108	67	53	47	41
	Puller/Tensioner	120	2	40%	119	78	64	58	52
	Mid-pull caterpillars	120	2	40%	119	78	64	58	52
	TOTAL COMBINED NOISE					**81**	**68**	**61**	**55**
Splice Cable	Generator	113	2	40%	112	71	57	51	45
	Propane heaters	115	2	75%	117	77	63	57	50
	TOTAL COMBINED NOISE					**78**	**64**	**58**	**52**
Deliver and Install Thermal Backfill	18-yard dump	108	2	40%	107	66	52	46	40
	Backhoe	110	2	40%	109	68	54	48	42
	Bobcat	116	2	40%	115	75	61	55	49
	TOTAL COMBINED NOISE					**76**	**62**	**56**	**50**

Activity	Equipment and Vehicles	SWL/ Unit (dBA)	Qty per 1 hour	UF	Total SWL (dBA)	Calculated Sound Pressure Level (dBA) as L_{eq} (1 hour) at distance			
						100 feet	500 feet	1,000 feet	2,000 feet
Install Native Backfill	Backhoe	110	2	40%	109	68	54	48	42
	Bobcat	116	2	40%	115	75	61	55	49
	Shaker/screen	118	2	50%	118	77	63	57	51
	Compressor for tampers	110	2	40%	109	68	54	48	42
	TOTAL COMBINED NOISE					**80**	**66**	**60**	**54**
Remove Excess Native Fill from site	18-yard dump	108	2	40%	107	66	52	46	40
	Backhoe	110	2	40%	109	68	54	48	42
	TOTAL COMBINED NOISE					**70**	**56**	**50**	**44**
Replace Topsoil, York Rake Vegetation	Small Bulldozer	114	2	40%	113	72	58	52	46
	Hydroseed Sprayer	118	2	75%	120	79	65	59	53
	TOTAL COMBINED NOISE					**80**	**66**	**60**	**54**

Notes: SWL=sound power level; UF=Utilization Factor

Table N-2. Converter Station Construction Noise Sources

Activity	Equipment and Vehicles	Source noise emission by SPL at 50 feet				Calculated SPL (dBA) as L_{eq} (1 hour) at distance			
	Type	SPL Per Unit (dBA)	Qty. per 1 hour	UF	Net SPL (dBA)	100 feet	500 feet	1,000 feet	2,000 feet
Site Preparation	Bulldozer	91	2	40%	90	84	70	64	58
	Backhoe	78	2	40%	77	71	57	51	45
	Loader	79	1	40%	75	69	55	49	43
	18-yard Truck, transport debris	76	2	40%	75	69	55	49	43
	TOTAL COMBINED NOISE					**84**	**70**	**64**	**58**
Site Prep Grading	Bulldozer	91	1	40%	87	81	67	61	55
	Backhoe	78	1	40%	74	68	54	48	42
	Loader	79	1	40%	75	69	55	49	43
	18-yard Truck, clean fill	76	2	40%	75	69	55	49	43
	TOTAL COMBINED NOISE					**81**	**67**	**61**	**55**
Fence, Paving of street accesses, AC, lighting, and trailers	Truck with Kelly bar auger	79	2	75%	81	75	61	55	49
	Concrete Mixer, offsite delivery	79	1	40%	75	69	55	49	43
	Bobcat	85	2	40%	84	78	64	58	52
	Bulldozer	91	1	40%	87	81	67	61	55
	18-yard Truck, asphalt	76	1	40%	72	66	52	46	40
	Hotbox with truck	77	1	75%	76	70	56	50	44
	Roller	80	1	20%	73	67	53	47	41
	Backhoe	78	1	40%	74	68	54	48	42
	Small crane	78	1	16%	70	64	50	44	38
	TOTAL COMBINED NOISE					**84**	**70**	**64**	**58**
Converter Building Foundations	Backhoe	78	2	40%	77	71	57	51	45
	Bobcat	85	1	40%	81	75	61	55	49
	Loader	79	2	40%	78	72	58	52	46
	Bulldozer	91	1	40%	87	81	67	61	55
	Small crane-forms	78	2	16%	73	67	53	47	41
	Medium crane-concrete bucket	81	2	16%	76	70	56	50	44
	Concrete Mixer, offsite delivery	79	4	40%	81	75	61	55	49
	TOTAL COMBINED NOISE					**83**	**69**	**63**	**57**

Activity	Equipment and Vehicles	Source noise emission by SPL at 50 feet				Calculated SPL (dBA) as L_{eq} (1 hour) at distance			
	Type	**SPL Per Unit (dBA)**	**Qty. per 1 hour**	**UF**	**Net SPL (dBA)**	**100 feet**	**500 feet**	**1,000 feet**	**2,000 feet**
Converter Building Superstructure	Large crane, for frame and gantry crane	83	1	16%	75	69	55	49	43
	Small crane, for roof and cladding	78	2	16%	73	67	53	47	41
	Forklifts, offloading equipment	75	1	40%	71	65	51	45	39
	Small crane, offloading equipment	78	1	16%	70	64	50	44	38
	Generator	81	5	50%	85	79	65	59	53
	Propane heaters	84	5	75%	90	84	70	64	57
	TOTAL COMBINED NOISE					**85**	**71**	**65**	**59**
Transformer Yard Foundations and Conduits	Backhoe	78	1	40%	74	68	54	48	42
	Loader	79	1	40%	75	69	55	49	43
	Small crane-forms	78	1	16%	70	64	50	44	38
	Bulldozer	91	1	40%	87	81	67	61	55
	Bobcat	85	1	40%	81	75	61	55	49
	TOTAL COMBINED NOISE					**82**	**68**	**62**	**56**
Transformer Yard Structural, Electrical	Small crane	78	2	16%	73	67	53	47	41
	Manlift trucks	75	2	20%	71	65	51	45	39
	Compressor	78	2	40%	77	71	57	51	45
	TOTAL COMBINED NOISE					**73**	**59**	**53**	**47**
Final Site Preparation, traprock, paving, vegetation plantings	18-yd Truck, traprock	76	1	40%	72	66	52	46	40
	Loader	79	1	40%	75	69	55	49	43
	Bulldozer	91	1	40%	87	81	67	61	55
	Bulldozer	91	1	40%	87	81	67	61	55
	18-yard Truck, asphalt	76	1	40%	72	66	52	46	40
	Hotbox with truck	77	1	75%	76	70	56	50	44
	Roller	80	1	20%	73	67	53	47	41
	Flatbed Truck, plantings	74	1	40%	70	64	50	44	38
	Backhoe	78	1	40%	74	68	54	48	42
	TOTAL COMBINED NOISE					**84**	**70**	**64**	**58**

Activity	Equipment and Vehicles	Source noise emission by SPL at 50 feet				Calculated SPL (dBA) as L_{eq} (1 hour) at distance			
	Type	**SPL Per Unit (dBA)**	**Qty. per 1 hour**	**UF**	**Net SPL (dBA)**	**100 feet**	**500 feet**	**1,000 feet**	**2,000 feet**
HDD	Drilling Power Unit	95	2	50%	95	89	75	69	63
	Generator	81	2	50%	81	75	61	55	49
	TOTAL COMBINED NOISE					**89**	**75**	**69**	**63**

Notes: SPL=sound pressure level; UF=Utilization Factor

Table N-3. Prominent Discrete (Pure) Tone Analysis for Transformers

TDI- Astoria Converter Station
Transformers
One-Third Octave Band Analysis for Prominent Pure Tones

Typical Transformer Spectrum from the Handbook of Acoustical Measurements and Noise Control, Harris 1991

	1 / 3 Octave Band (dB)																													
	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1K	1.25K	1.6K	2K	2.5K	3.15K	4K	5K	6.3K	8K	10K	12.5K
Measured Levels (dB)**			49	53	64	51	51	57	63	75	58	62	74	71	74	73	66	64	60	56	54	52	49	47	45	43	42	40	39	
1.) Does the 1/3 octave band have a greater dB value than do both of the adjacent 1/3 octave bands? ("1" is yes, "0" is no)		0	0	0	1	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
The actual arithmetic average of adjacent 1/3 octave bands, where applicable		-	-	-	52.0	-	-	-	-	60.5	-	-	66.5	-	72.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2.) Does condition 1) apply, and is the 1/3 octave band greater than the arithmetic average of its adjacent 1/3 octave bands? ("1" is yes, "0" is no)		0	0	0	1	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
The amount by which the 1/3 octave band does exceed the arithmetic average of its adjacent 1/3 octave bands, where applicable		-	-	-	12.0	-	-	-	-	14.5	-	-	7.5	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Allowable exceedence per NYSDPS protocol		15	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
3.) Is the standard exceeded - Is the 1/3 octave band a "prominent pure tone"?		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

Note: Definition of pure tone as defined by "Model Community Noise Control Ordinance" USEPA, 1975.

Source: CHPEI 2012ff

Table N-4. Pure Tone Analysis for Coolers

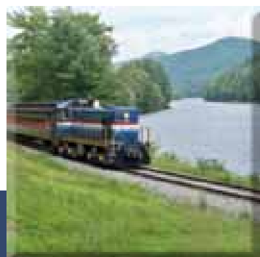
TDI- Astoria Converter Station
Valve Coolers
One-Third Octave Band Analysis for Prominent Pure Tones

Typical Cooler Spectrum from the Handbook of Acoustical Measurements and Noise Control, Harris 1991

	1 / 3 Octave Band (dB)																													
	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1K	1.25K	1.6K	2K	2.5K	3.15K	4K	5K	6.3K	8K	10K	12.5K
Measured Levels (dB)**					85	87	86	84	89	101	92	93	96	95	101	99	99	98	97	94	94	95	97	93	87	85	87	82	78	
1.) Does the 1/3 octave band have a greater dB value than do both of the adjacent 1/3 octave bands? ("1" is yes, "0" is no)		0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	
The actual arithmetic average of adjacent 1/3 octave bands, where applicable		-	-	-	-	85.5	-	-	-	90.5	-	-	94.0	-	97.0	-	-	-	-	-	-	-	94.0	-	-	-	83.5	-	-	
2.) Does condition 1) apply, and is the 1/3 octave band greater than the arithmetic average of its adjacent 1/3 octave bands? ("1" is yes, "0" is no)		0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	
The amount by which the 1/3 octave band does exceed the arithmetic average of its adjacent 1/3 octave bands, where applicable		-	-	-	-	1.5	-	-	-	10.5	-	-	2.0	-	4.0	-	-	-	-	-	-	-	3.0	-	-	-	3.5	-	-	
Allowable exceedence per NYSDPS protocol		15	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
3.) Is the standard exceeded - Is the 1/3 octave band a "prominent pure tone"?		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

Note: Definition of pure tone as defined by "Model Community Noise Control Ordinance" USEPA, 1975.

Source: CHPEI 2012ff



APPENDIX O

Contractor Disclosure Statement

Appendix A

NEPA DISCLOSURE STATEMENT FOR PREPARATION OF THE CHAMPLAIN HUDSON POWER EXPRESS TRANSMISSION LINE PROJECT ENVIRONMENTAL IMPACT STATEMEMT

The Council on Environmental Quality (CEQ) Regulations at Title 40 of the *Code of Federal Regulations* (CFR) Section 1506.5(c), which have been adopted by the U.S. Department of Energy (10 CFR Part 1021), require contractors who will prepare an environmental impact statement to execute a disclosure specifying that they have no financial or other interest in the outcome of the project.

"Financial or other interest in the outcome of the project" is defined as any direct financial benefit such as a promise of future construction or design work on the project, as well as indirect financial benefits the contractor is aware of (e.g. if the project would aid proposals sponsored by the firm's other clients). It excludes any benefits such person or entity may enjoy in common with other electricity ratepayers in the same service territory.

In accordance with these requirements, HDR, Inc. shall complete this document.

HDR, Inc., on behalf of itself, its subsidiaries (including but not limited to HDR Environmental, Operations and Construction, Inc. and HDR Engineering, Inc.) and its employees, hereby certifies as follows, to the best of its knowledge as of the date set forth below:

(a) HDR, Inc, HDR EOC, HDR Eng has no financial or other interest in the outcome of the project.

~~(b) ______________________________ has the following financial or other interest in the outcome of the project and herby agrees to divest itself of such interest prior to award of this contract, or agrees to the attached plan to mitigate, neutralize or avoid any such conflict of interest.~~

~~Financial or Other Interests~~
~~1.~~
~~2.~~
~~3.~~

W.H.W.

Certified by:

William H. Wadsworth

Name, Title Exec. V.P - HDR Engineering, Inc.

COI Administrator - HDR, Inc.

Company

6-29-12

Date

THIS PAGE INTENTIONALLY LEFT BLANK