

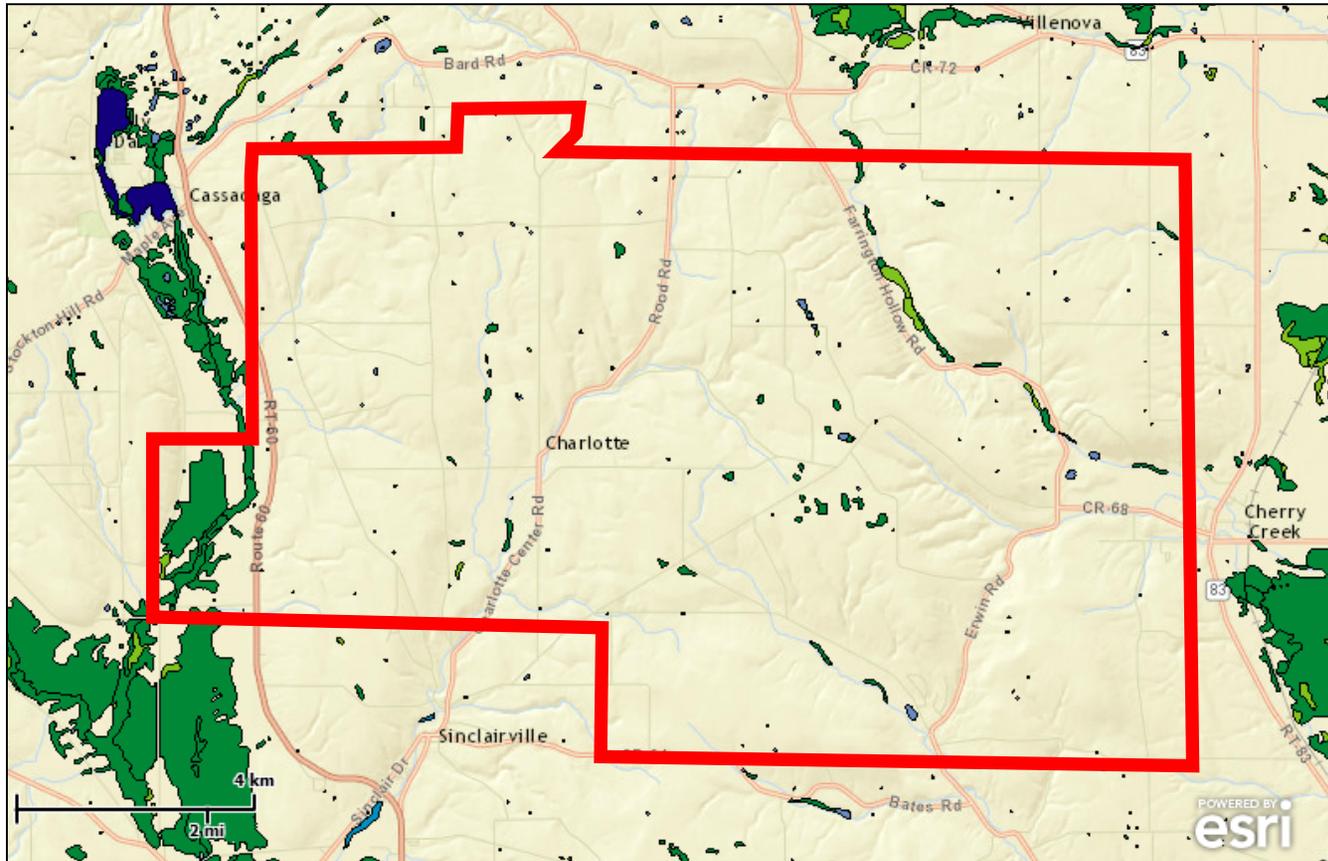
ATTACHMENT B

ADDITIONAL INFORMATION FOR STUDY AREA



U.S. Fish and Wildlife Service National Wetlands Inventory

Sep 29, 2015



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Riparian

- Herbaceous
- Forested/Shrub

Riparian Status

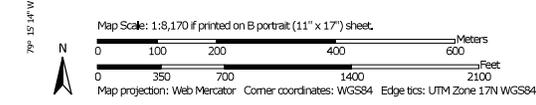
- Digital Data

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

CASSADAGA WIND PROJECT
SOIL TYPES AND SLOPES
CHAUTAUQUA COUNTY, NEW YORK

PROPOSED WIND TURBINE LOCATION	SOIL TYPE	DESCRIPTION	SLOPE (%)
T1	CkB	Chautauqua silt loam	3 to 8
T2	CkB	Chautauqua silt loam	3 to 8
T3	CkC	Chautauqua silt loam	8 to 15
T4	ShB	Schutler silt loam	3 to 8
T5	FmB	Fremont silt loam	3 to 8
T6	As	Ashville silt loam	-
T7	BsB	Busti silt loam	3 to 8
T8	BsB	Busti silt loam	3 to 8
T9	CkC	Chautauqua silt loam	8 to 15
T10	CkB	Chautauqua silt loam	3 to 8
T11	BsB	Busti silt loam	3 to 8
T12	BsB	Busti silt loam	3 to 8
T13	CkB	Chautauqua silt loam	3 to 8
T14	FmC	Fremont silt loam	8 to 15
T15	CkC	Chautauqua silt loam	8 to 15
T16	FmC	Fremont silt loam	8 to 15
T17	CkC	Chautauqua silt loam	8 to 15
T18	FmC	Fremont silt loam	8 to 15
T19	ChE	Chadakoïn silt loam	25 to 35
T20	BsB	Busti silt loam	3 to 8
T21	BsB	Busti silt loam	3 to 8
T22	CkC	Chautauqua silt loam	8 to 15
T23	CkB	Chautauqua silt loam	3 to 8
T24	BsB	Busti silt loam	3 to 8
T25	BsB	Busti silt loam	3 to 8
T26	CkB	Chautauqua silt loam	3 to 8
T27	BsA	Busti silt loam	0 to 3
T28	BsB	Busti silt loam	3 to 8
T29	VcC	Valois gravelly silt loam	8 to 15
T30	BsB	Busti silt loam	3 to 8
T31	BsB	Busti silt loam	3 to 8
T32	CkC	Chautauqua silt loam	8 to 15
T33	CkC	Chautauqua silt loam	8 to 15
T34	BsB	Busti silt loam	3 to 8
T35	FmC	Fremont silt loam	8 to 15
T36	BsA	Busti silt loam	0 to 3
T37	BsB	Busti silt loam	3 to 8
T38	BsA	Busti silt loam	0 to 3
T39	BsB	Busti silt loam	3 to 8
T40	FmA	Fremont silt loam	0 to 3
T41	CkB	Chautauqua silt loam	3 to 8
T42	BsB	Busti silt loam	3 to 8
T43	BsB	Busti silt loam	3 to 8
T44	BsB	Busti silt loam	3 to 8
T45	BsB	Busti silt loam	3 to 8
T46	BsB	Busti silt loam	3 to 8
T47	BsB	Busti silt loam	3 to 8
T48	BsB	Busti silt loam	3 to 8
T49	FmA	Fremont silt loam	0 to 3
T50	ShC	Schuyler silt loam	8 to 15
T51	BsB	Busti silt loam	3 to 8
T52	VoB	Volusia Channery silt loam	3 to 8
T53	BsB	Busti silt loam	3 to 8
T54	ShC	Schuyler silt loam	8 to 15
T55	ShB	Schuyler silt loam	3 to 8
T56	FmB	Fremont silt loam	3 to 8
T57	ChC	Chadakoïn silt loam	8 to 15
T58	FmA	Fremont silt loam	0 to 3
T59	OrC	Orpark silt loam	8 to 15
T60	BsB	Busti silt loam	3 to 8
POI-SUBSTATION	Ge	Getzville silt loam	-
COLLECTOR-SUBSTATION	VoB	Volusia Channery silt loam	3 to 8



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Chautauqua County, New York
 Survey Area Data: Version 13, Sep 21, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

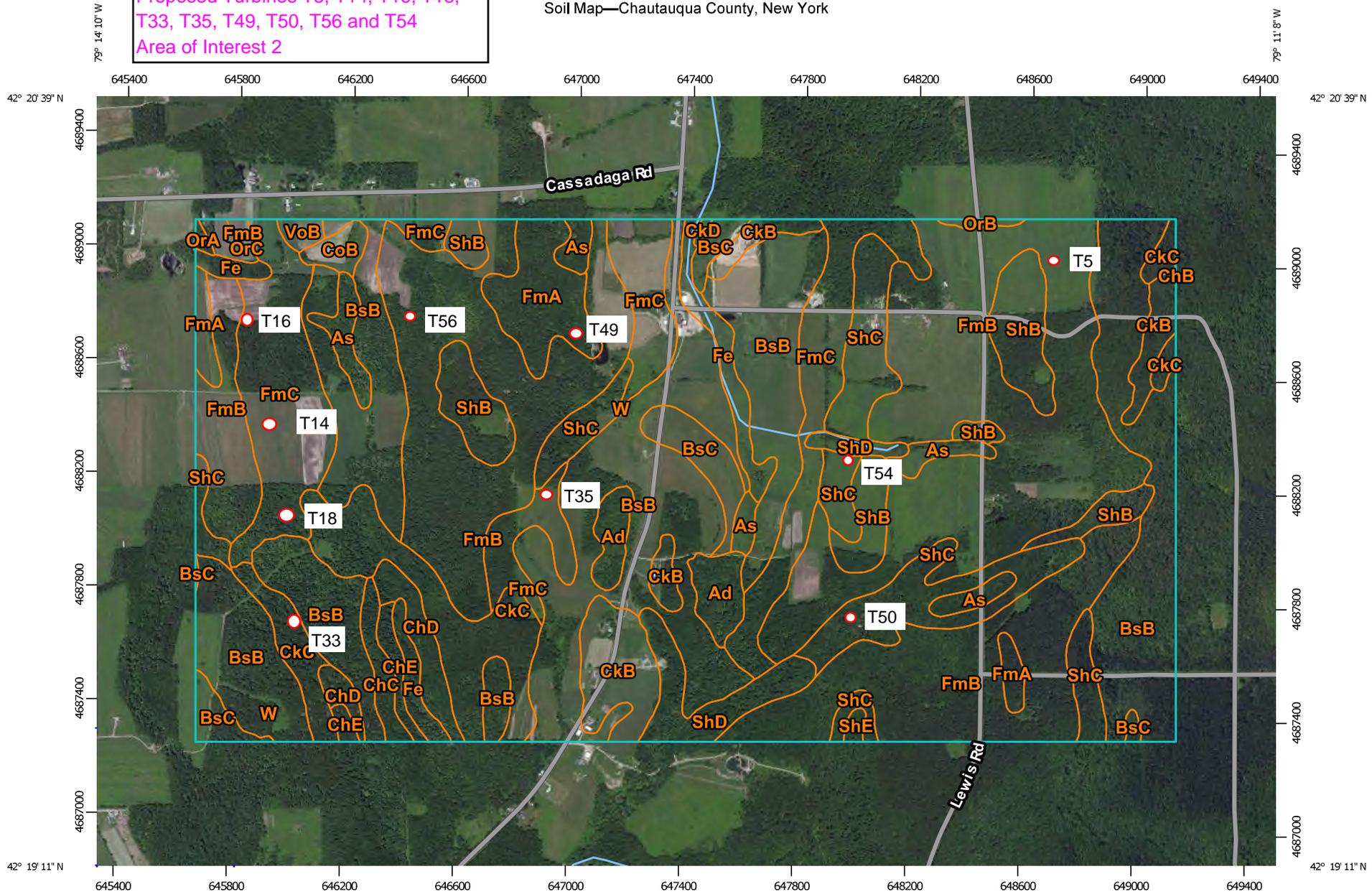
Map Unit Legend

Cassadaga Wind Project
Proposed Turbines T4, T7 and T11
Area of Interest 1

Chautauqua County, New York (NY013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
As	Ashville silt loam	33.1	5.8%
BsA	Busti silt loam, 0 to 3 percent slopes	57.3	10.0%
BsB	Busti silt loam, 3 to 8 percent slopes	288.3	50.4%
BsC	Busti silt loam, 8 to 15 percent slopes	28.3	4.9%
ChE	Chadakoin silt loam, 25 to 35 percent slopes	0.0	0.0%
CkB	Chautauqua silt loam, 3 to 8 percent slopes	7.7	1.3%
CkC	Chautauqua silt loam, 8 to 15 percent slopes	47.0	8.2%
FmB	Fremont silt loam, 3 to 8 percent slopes	37.9	6.6%
OrA	Orpark silt loam, 0 to 3 percent slopes	25.6	4.5%
OrB	Orpark silt loam, 3 to 8 percent slopes	32.9	5.7%
OrC	Orpark silt loam, 8 to 15 percent slopes	0.3	0.1%
ShB	Schuyler silt loam, 3 to 8 percent slopes	8.1	1.4%
ShD	Schuyler silt loam, 15 to 25 percent slopes	1.9	0.3%
ToD	Towerville silt loam, 15 to 25 percent slopes	2.8	0.5%
W	Water	1.0	0.2%
Totals for Area of Interest		572.1	100.0%

Cassadaga Wind Project
 Proposed Turbines T5, T14, T16, T18,
 T33, T35, T49, T50, T56 and T54
 Area of Interest 2

Soil Map—Chautauqua County, New York



Map Scale: 1:19,100 if printed on A landscape (11" x 8.5") sheet.

0 250 500 1000 1500 Meters

0 500 1000 2000 3000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

Map Unit Legend

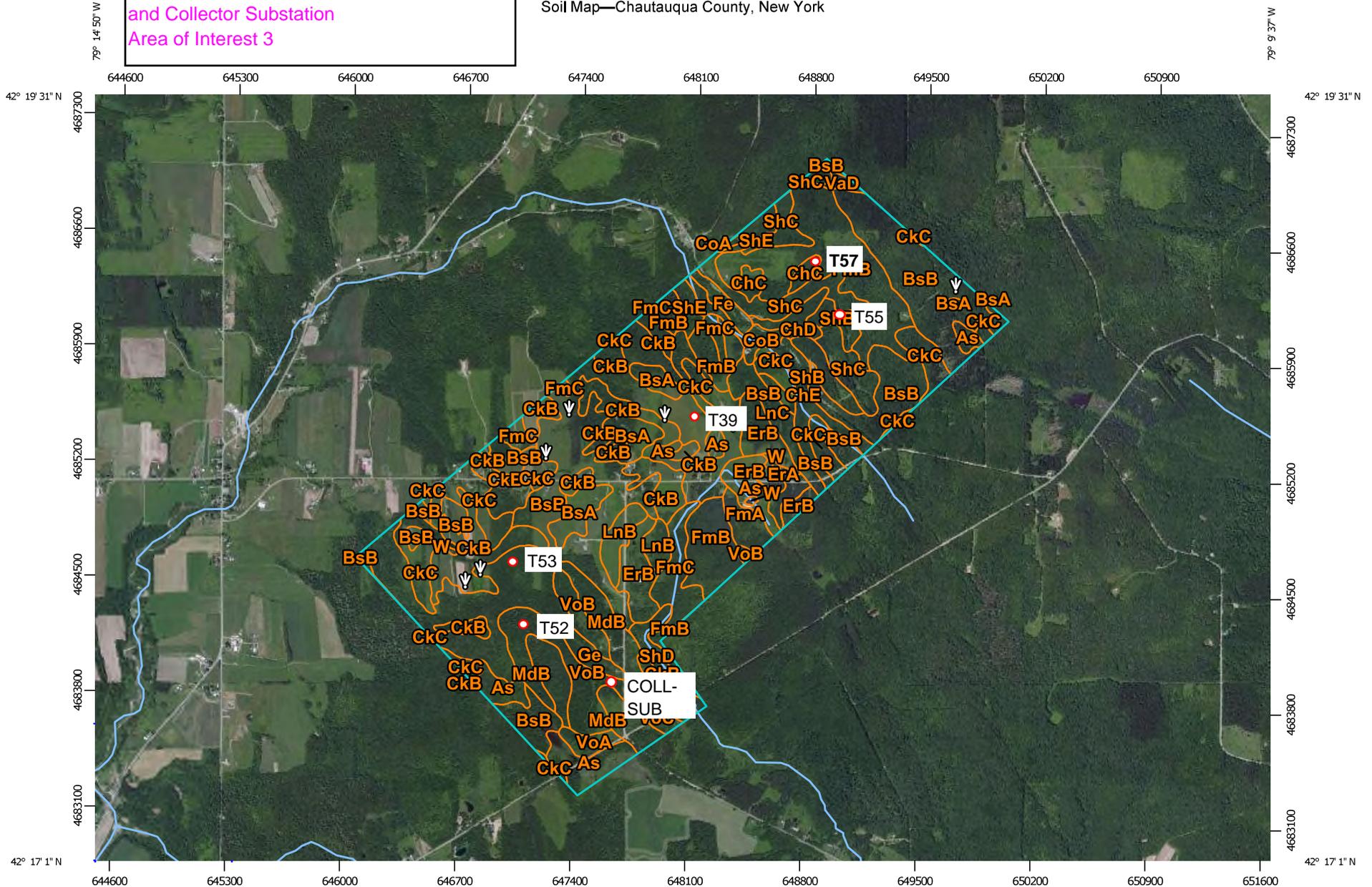
Cassadaga Wind Project
Proposed Turbines T5, T14, T16, T18, T33, T35,
T49, T50, T56 and T54
Area of Interest 2

Chautauqua County, New York (NY013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ad	Alden mucky silt loam	20.7	1.3%
As	Ashville silt loam	27.9	1.8%
BsB	Busti silt loam, 3 to 8 percent slopes	407.8	25.8%
BsC	Busti silt loam, 8 to 15 percent slopes	29.2	1.8%
ChB	Chadakoin silt loam, 3 to 8 percent slopes	0.0	0.0%
ChC	Chadakoin silt loam, 8 to 15 percent slopes	9.2	0.6%
ChD	Chadakoin silt loam, 15 to 25 percent slopes	18.4	1.2%
ChE	Chadakoin silt loam, 25 to 35 percent slopes	7.7	0.5%
CkB	Chautauqua silt loam, 3 to 8 percent slopes	48.8	3.1%
CkC	Chautauqua silt loam, 8 to 15 percent slopes	76.3	4.8%
CkD	Chautauqua silt loam, 15 to 25 percent slopes	0.7	0.0%
CoB	Chenango channery loam, fan, 3 to 8 percent slopes	6.5	0.4%
Fe	Fluvaquents-Udifulvents complex, frequently flooded	27.1	1.7%
FmA	Fremont silt loam, 0 to 3 percent slopes	41.9	2.7%
FmB	Fremont silt loam, 3 to 8 percent slopes	486.4	30.7%
FmC	Fremont silt loam, 8 to 15 percent slopes	163.9	10.4%
OrA	Orpark silt loam, 0 to 3 percent slopes	1.2	0.1%
OrB	Orpark silt loam, 3 to 8 percent slopes	1.9	0.1%
OrC	Orpark silt loam, 8 to 15 percent slopes	4.0	0.3%
ShB	Schuyler silt loam, 3 to 8 percent slopes	67.7	4.3%
ShC	Schuyler silt loam, 8 to 15 percent slopes	100.3	6.3%
ShD	Schuyler silt loam, 15 to 25 percent slopes	29.0	1.8%

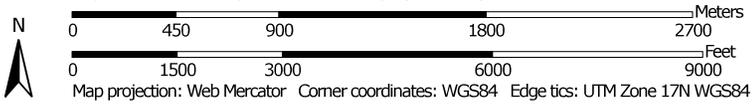
Chautauqua County, New York (NY013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ShE	Schuyler silt loam, 25 to 35 percent slopes	1.7	0.1%
VoB	Volusia channery silt loam, 3 to 8 percent slopes	3.6	0.2%
W	Water	0.7	0.0%
Totals for Area of Interest		1,582.4	100.0%

Cassadaga Wind Project
 Proposed Turbines T39, T52, T53, T55, T57,
 and Collector Substation
 Area of Interest 3

Soil Map—Chautauqua County, New York



Map Scale: 1:32,700 if printed on A landscape (11" x 8.5") sheet.



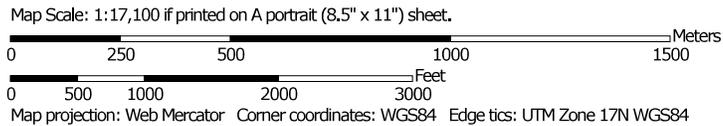
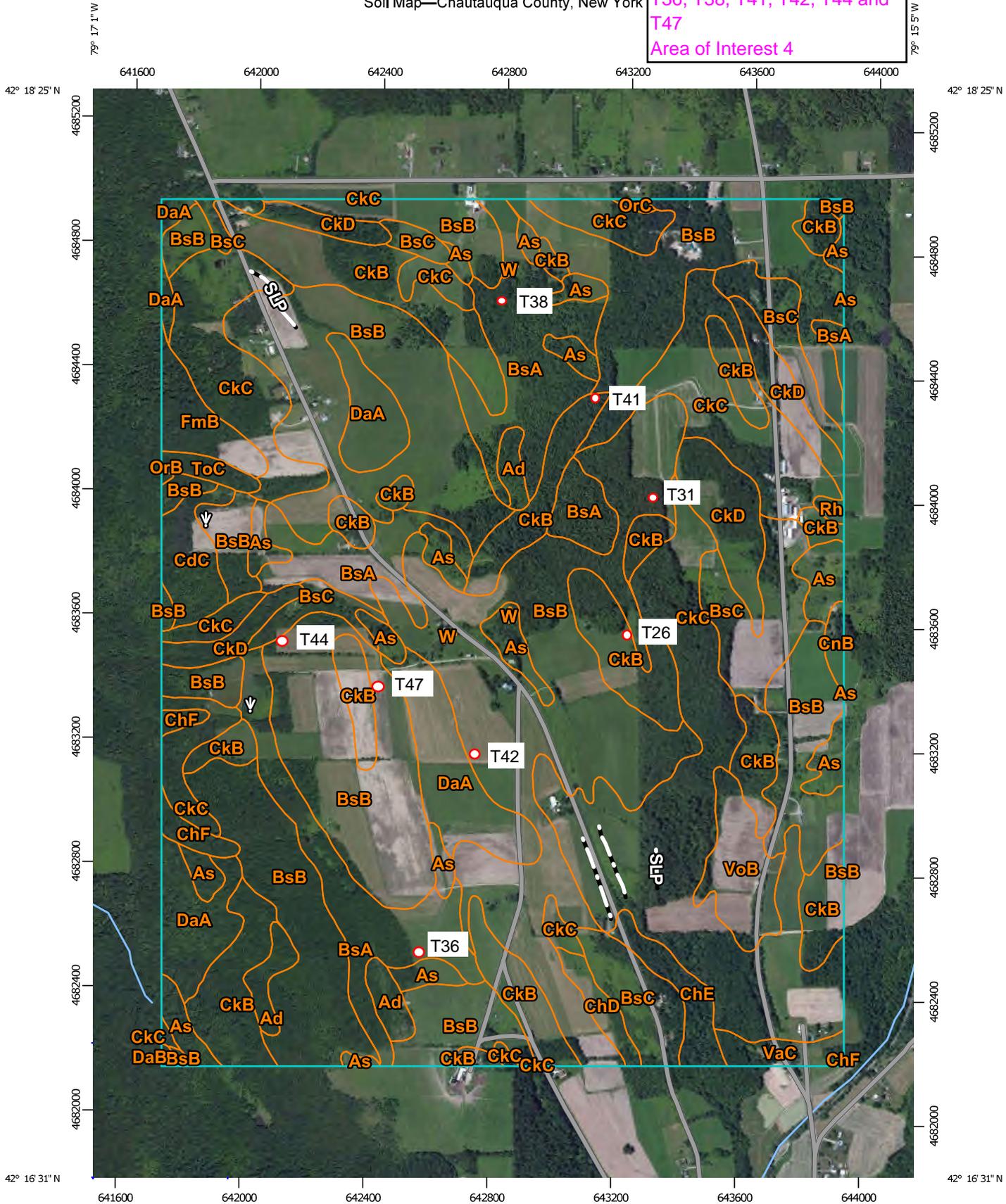
Cassadaga Wind Project
Proposed Turbines T39, T52, T53, T55, T57, and
Collector Substation
Area of Interest 3

Map Unit Legend

Chautauqua County, New York (NY013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
As	Ashville silt loam	73.8	4.7%
BsA	Busti silt loam, 0 to 3 percent slopes	43.6	2.8%
BsB	Busti silt loam, 3 to 8 percent slopes	484.8	31.0%
BsC	Busti silt loam, 8 to 15 percent slopes	0.9	0.1%
ChC	Chadakoin silt loam, 8 to 15 percent slopes	11.2	0.7%
ChD	Chadakoin silt loam, 15 to 25 percent slopes	12.8	0.8%
ChE	Chadakoin silt loam, 25 to 35 percent slopes	23.5	1.5%
CkB	Chautauqua silt loam, 3 to 8 percent slopes	143.4	9.2%
CkC	Chautauqua silt loam, 8 to 15 percent slopes	107.3	6.9%
CoA	Chenango channery loam, fan, 0 to 3 percent slopes	1.3	0.1%
CoB	Chenango channery loam, fan, 3 to 8 percent slopes	8.3	0.5%
ErA	Erie silt loam, 0 to 3 percent slopes	11.4	0.7%
ErB	Erie silt loam, 3 to 8 percent slopes	55.4	3.5%
Fe	Fluvaquents-Udifulvents complex, frequently flooded	10.0	0.6%
FmA	Fremont silt loam, 0 to 3 percent slopes	15.1	1.0%
FmB	Fremont silt loam, 3 to 8 percent slopes	168.0	10.7%
FmC	Fremont silt loam, 8 to 15 percent slopes	45.8	2.9%
Ge	Getzville silt loam	11.6	0.7%
LnB	Langford silt loam, 3 to 8 percent slopes	24.6	1.6%
LnC	Langford silt loam, 8 to 15 percent slopes	25.1	1.6%
MdB	Mardin channery silt loam, 3 to 8 percent slopes	61.9	4.0%
ShB	Schuyler silt loam, 3 to 8 percent slopes	25.7	1.6%

Chautauqua County, New York (NY013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ShC	Schuyler silt loam, 8 to 15 percent slopes	71.9	4.6%
ShD	Schuyler silt loam, 15 to 25 percent slopes	17.3	1.1%
ShE	Schuyler silt loam, 25 to 35 percent slopes	18.1	1.2%
VaD	Valois gravelly silt loam, 15 to 25 percent slopes	3.8	0.2%
VoA	Volusia channery silt loam, 0 to 3 percent slopes	9.9	0.6%
VoB	Volusia channery silt loam, 3 to 8 percent slopes	71.2	4.5%
VoC	Volusia channery silt loam, 8 to 15 percent slopes	6.6	0.4%
W	Water	1.7	0.1%
Totals for Area of Interest		1,565.8	100.0%

Cassadaga Wind Project
Proposed Turbines T26, T31,
T36, T38, T41, T42, T44 and
T47
Area of Interest 4



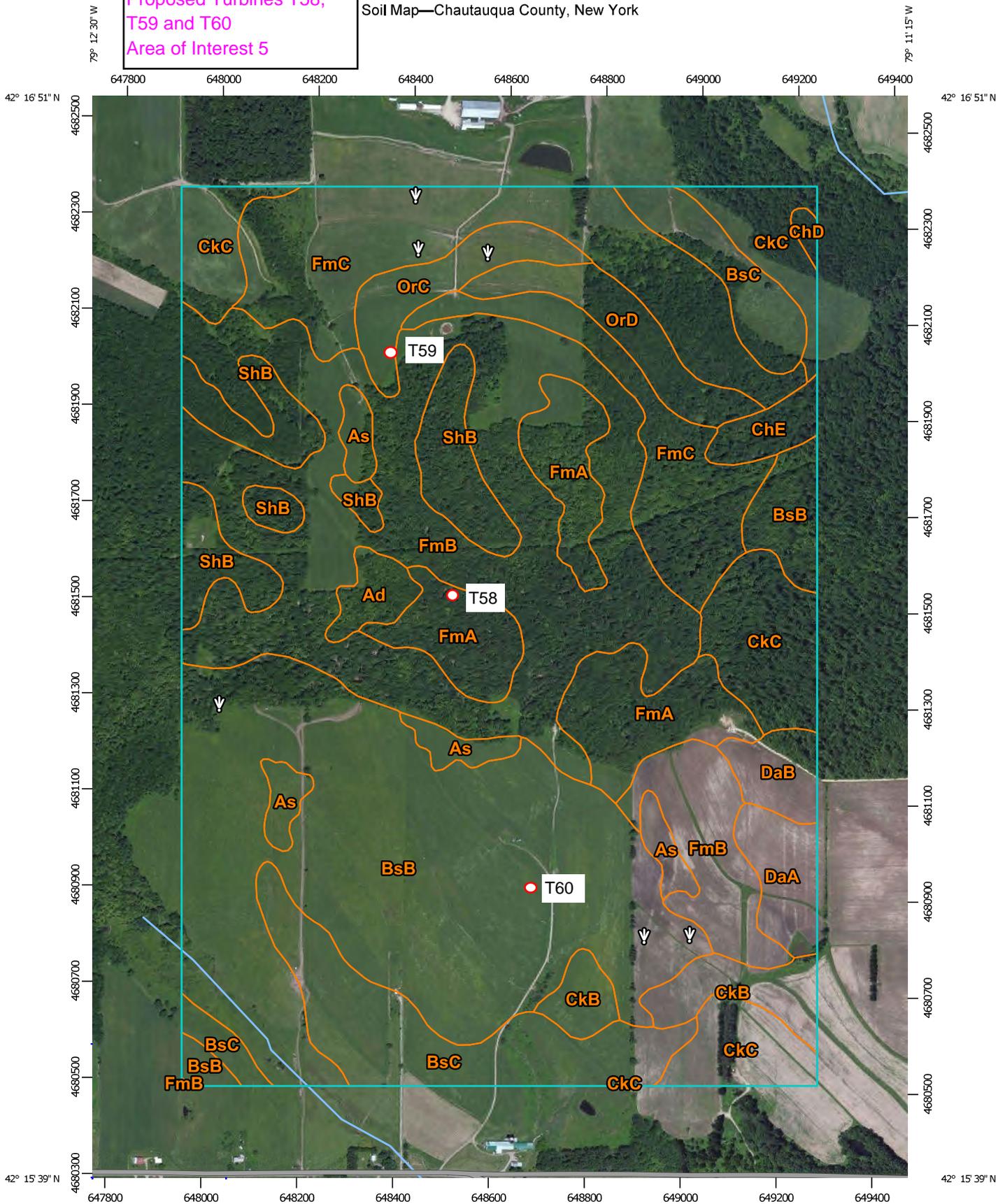
Cassadaga Wind Project
 Proposed Turbines T26, T31, T36, T38, T41, T42,
 T44 and T47
 Area of Interest 4

Map Unit Legend

Chautauqua County, New York (NY013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ad	Alden mucky silt loam	16.6	1.1%
As	Ashville silt loam	57.5	3.8%
BsA	Busti silt loam, 0 to 3 percent slopes	133.0	8.7%
BsB	Busti silt loam, 3 to 8 percent slopes	569.8	37.3%
BsC	Busti silt loam, 8 to 15 percent slopes	81.0	5.3%
CdC	Canaseraga silt loam, 8 to 15 percent slopes	16.5	1.1%
ChD	Chadakoin silt loam, 15 to 25 percent slopes	7.2	0.5%
ChE	Chadakoin silt loam, 25 to 35 percent slopes	13.0	0.8%
ChF	Chadakoin silt loam, 35 to 50 percent slopes	7.1	0.5%
CkB	Chautauqua silt loam, 3 to 8 percent slopes	179.1	11.7%
CkC	Chautauqua silt loam, 8 to 15 percent slopes	263.8	17.3%
CkD	Chautauqua silt loam, 15 to 25 percent slopes	50.2	3.3%
CnB	Chenango gravelly loam, 3 to 8 percent slopes	3.4	0.2%
DaA	Dalton silt loam, 0 to 3 percent slopes	71.4	4.7%
DaB	Dalton silt loam, 3 to 8 percent slopes	0.7	0.0%
FmB	Fremont silt loam, 3 to 8 percent slopes	15.6	1.0%
OrB	Orpark silt loam, 3 to 8 percent slopes	0.3	0.0%
OrC	Orpark silt loam, 8 to 15 percent slopes	0.9	0.1%
Rh	Red Hook silt loam	1.6	0.1%
ToC	Towerville silt loam, 8 to 15 percent slopes	5.5	0.4%
VaC	Valois gravelly silt loam, 8 to 15 percent slopes	8.8	0.6%
VoB	Volusia channery silt loam, 3 to 8 percent slopes	22.7	1.5%
W	Water	0.9	0.1%
Totals for Area of Interest		1,526.3	100.0%

**Cassadaga Wind Project
Proposed Turbines T58,
T59 and T60
Area of Interest 5**

Soil Map—Chautauqua County, New York



Map Scale: 1:11,000 if printed on A portrait (8.5" x 11") sheet.



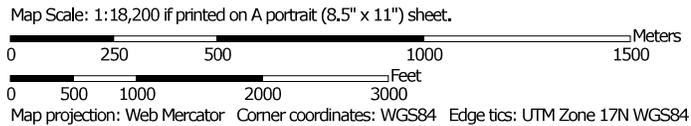
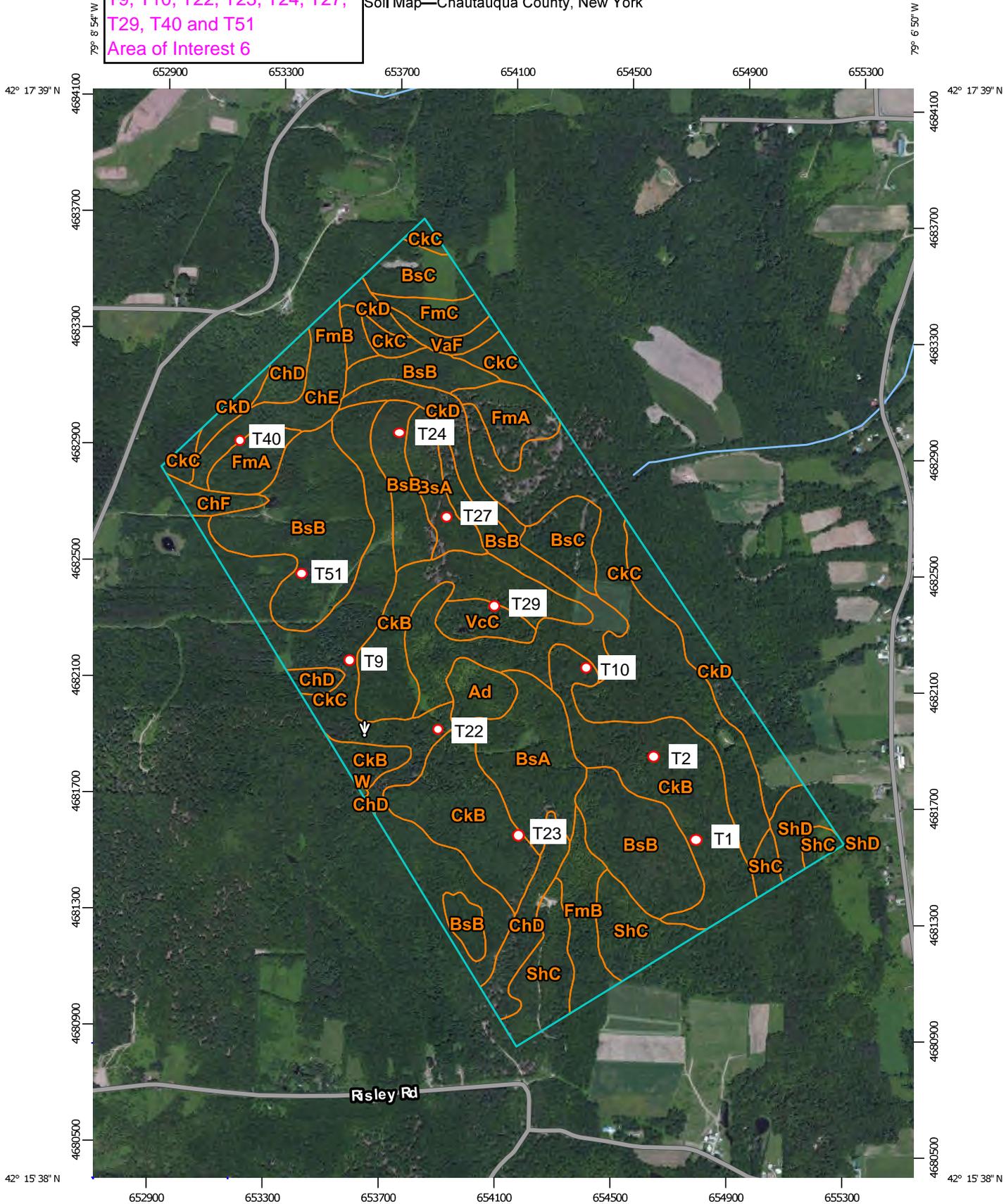
Map Unit Legend

Cassadaga Wind Project
Proposed Turbines T58, T59 and T60
Area of Interest 5

Chautauqua County, New York (NY013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ad	Alden mucky silt loam	5.2	0.8%
As	Ashville silt loam	12.1	2.0%
BsB	Busti silt loam, 3 to 8 percent slopes	151.9	24.7%
BsC	Busti silt loam, 8 to 15 percent slopes	48.3	7.9%
ChD	Chadakoin silt loam, 15 to 25 percent slopes	1.1	0.2%
ChE	Chadakoin silt loam, 25 to 35 percent slopes	5.6	0.9%
CkB	Chautauqua silt loam, 3 to 8 percent slopes	14.1	2.3%
CkC	Chautauqua silt loam, 8 to 15 percent slopes	46.8	7.6%
DaA	Dalton silt loam, 0 to 3 percent slopes	9.5	1.6%
DaB	Dalton silt loam, 3 to 8 percent slopes	7.3	1.2%
FmA	Fremont silt loam, 0 to 3 percent slopes	41.2	6.7%
FmB	Fremont silt loam, 3 to 8 percent slopes	138.8	22.6%
FmC	Fremont silt loam, 8 to 15 percent slopes	76.2	12.4%
OrC	Orpark silt loam, 8 to 15 percent slopes	12.5	2.0%
OrD	Orpark silt loam, 15 to 25 percent slopes	13.6	2.2%
ShB	Schuyler silt loam, 3 to 8 percent slopes	31.0	5.0%
Totals for Area of Interest		615.3	100.0%

**Cassadaga Wind Project
Proposed Turbines T1, T2,
T9, T10, T22, T23, T24, T27,
T29, T40 and T51
Area of Interest 6**

Soil Map—Chautauqua County, New York



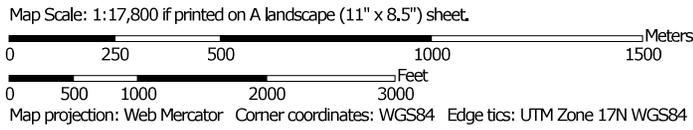
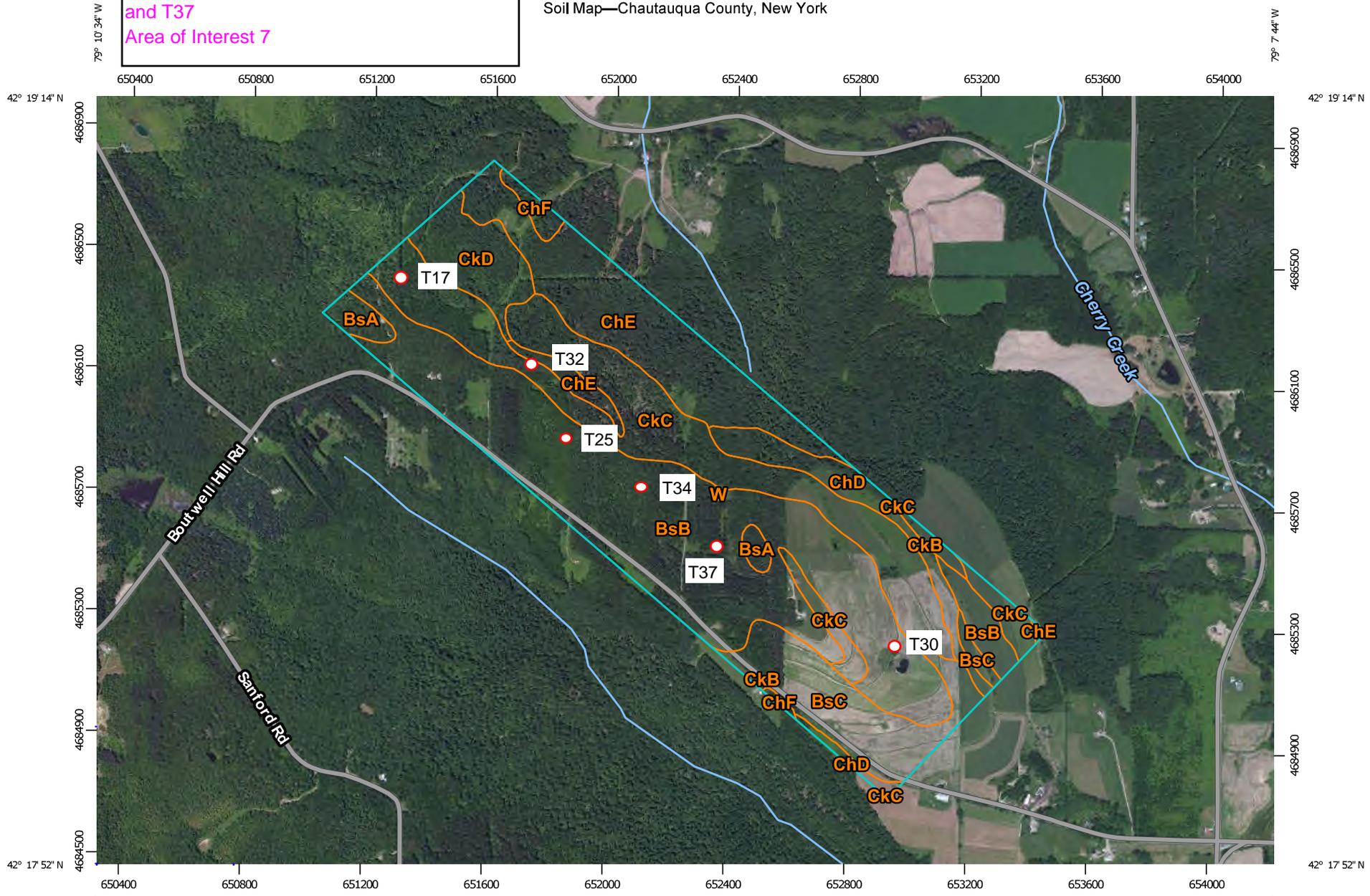
Map Unit Legend

Cassadaga Wind Project
Proposed Turbines T1, T2, T9, T10, T22, T23,
T24, T27, T29, T40 and T51
Area of Interest 6

Chautauqua County, New York (NY013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ad	Alden mucky silt loam	9.8	1.2%
BsA	Busti silt loam, 0 to 3 percent slopes	49.0	6.3%
BsB	Busti silt loam, 3 to 8 percent slopes	163.6	20.9%
BsC	Busti silt loam, 8 to 15 percent slopes	26.3	3.4%
ChD	Chadakoin silt loam, 15 to 25 percent slopes	25.2	3.2%
ChE	Chadakoin silt loam, 25 to 35 percent slopes	21.0	2.7%
ChF	Chadakoin silt loam, 35 to 50 percent slopes	5.5	0.7%
CkB	Chautauqua silt loam, 3 to 8 percent slopes	135.5	17.3%
CkC	Chautauqua silt loam, 8 to 15 percent slopes	177.3	22.7%
CkD	Chautauqua silt loam, 15 to 25 percent slopes	47.4	6.1%
FmA	Fremont silt loam, 0 to 3 percent slopes	25.5	3.3%
FmB	Fremont silt loam, 3 to 8 percent slopes	20.9	2.7%
FmC	Fremont silt loam, 8 to 15 percent slopes	8.5	1.1%
ShC	Schuyler silt loam, 8 to 15 percent slopes	41.9	5.4%
ShD	Schuyler silt loam, 15 to 25 percent slopes	8.9	1.1%
VaF	Valois gravelly silt loam, 35 to 50 percent slopes	5.5	0.7%
VcC	Valois gravelly silt loam, rolling	9.3	1.2%
W	Water	0.2	0.0%
Totals for Area of Interest		781.2	100.0%

Cassadaga Wind Project
 Proposed Turbines T17, T25, T30, T32, T34,
 and T37
 Area of Interest 7

Soil Map—Chautauqua County, New York



Map Unit Legend

Cassadaga Wind Project
Proposed Turbines T17, T25, T30, T32, T34, and
T37
Area of Interest 7

Chautauqua County, New York (NY013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BsA	Busti silt loam, 0 to 3 percent slopes	8.1	1.8%
BsB	Busti silt loam, 3 to 8 percent slopes	178.3	39.3%
BsC	Busti silt loam, 8 to 15 percent slopes	43.8	9.7%
ChD	Chadakoin silt loam, 15 to 25 percent slopes	22.4	4.9%
ChE	Chadakoin silt loam, 25 to 35 percent slopes	69.7	15.4%
ChF	Chadakoin silt loam, 35 to 50 percent slopes	4.5	1.0%
CkB	Chautauqua silt loam, 3 to 8 percent slopes	2.5	0.5%
CkC	Chautauqua silt loam, 8 to 15 percent slopes	101.9	22.5%
CkD	Chautauqua silt loam, 15 to 25 percent slopes	22.4	4.9%
W	Water	0.3	0.1%
Totals for Area of Interest		453.8	100.0%

Map Unit Legend

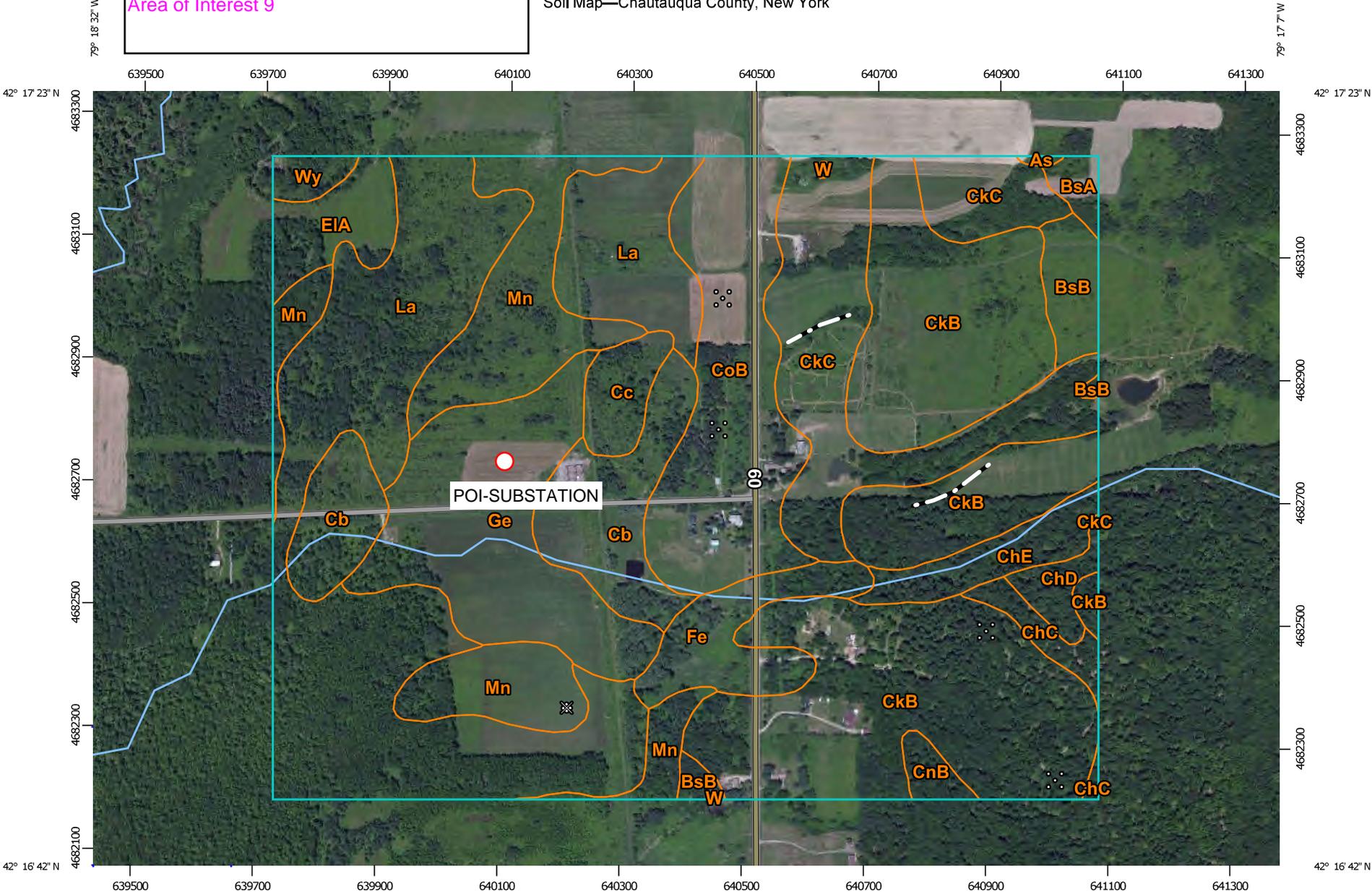
Cassadaga Wind Project
Proposed Turbines T3, T6, T8, T12, T13, T15, T19,
T20, T21, T28, T43, T45, T46 and T48
Area of Interest 8

Chautauqua County, New York (NY013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ad	Alden mucky silt loam	6.8	0.3%
As	Ashville silt loam	86.4	3.9%
BsA	Busti silt loam, 0 to 3 percent slopes	90.7	4.0%
BsB	Busti silt loam, 3 to 8 percent slopes	586.4	26.1%
BsC	Busti silt loam, 8 to 15 percent slopes	43.2	1.9%
Cc	Canandaigua mucky silt loam	3.6	0.2%
ChB	Chadakoin silt loam, 3 to 8 percent slopes	5.3	0.2%
ChC	Chadakoin silt loam, 8 to 15 percent slopes	43.7	1.9%
ChD	Chadakoin silt loam, 15 to 25 percent slopes	75.2	3.4%
ChE	Chadakoin silt loam, 25 to 35 percent slopes	104.1	4.6%
ChF	Chadakoin silt loam, 35 to 50 percent slopes	102.2	4.6%
CkB	Chautauqua silt loam, 3 to 8 percent slopes	256.6	11.4%
CkC	Chautauqua silt loam, 8 to 15 percent slopes	272.6	12.2%
CkD	Chautauqua silt loam, 15 to 25 percent slopes	87.3	3.9%
CnB	Chenango gravelly loam, 3 to 8 percent slopes	3.5	0.2%
CnC	Chenango gravelly loam, 8 to 15 percent slopes	25.5	1.1%
CnD	Chenango gravelly loam, 15 to 25 percent slopes	13.1	0.6%
CnE	Chenango gravelly loam, 25 to 40 percent slopes	3.3	0.1%
CoA	Chenango channery loam, fan, 0 to 3 percent slopes	21.2	0.9%
CoB	Chenango channery loam, fan, 3 to 8 percent slopes	43.2	1.9%
FmB	Fremont silt loam, 3 to 8 percent slopes	89.6	4.0%
FmC	Fremont silt loam, 8 to 15 percent slopes	10.2	0.5%

Chautauqua County, New York (NY013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ho	Holderton silt loam, 0 to 3 percent slopes, occasionally flooded 140	7.7	0.3%
OrB	Orpark silt loam, 3 to 8 percent slopes	59.9	2.7%
OrC	Orpark silt loam, 8 to 15 percent slopes	35.8	1.6%
Po	Pompton silt loam	3.1	0.1%
Rh	Red Hook silt loam	1.0	0.0%
ShB	Schuyler silt loam, 3 to 8 percent slopes	4.8	0.2%
ShC	Schuyler silt loam, 8 to 15 percent slopes	13.6	0.6%
ToB	Towerville silt loam, 3 to 8 percent slopes	3.3	0.1%
ToC	Towerville silt loam, 8 to 15 percent slopes	43.1	1.9%
ToD	Towerville silt loam, 15 to 25 percent slopes	45.8	2.0%
VaB	Valois gravelly silt loam, 3 to 8 percent slopes	5.5	0.2%
VaC	Valois gravelly silt loam, 8 to 15 percent slopes	1.0	0.0%
VaD	Valois gravelly silt loam, 15 to 25 percent slopes	8.8	0.4%
VaE	Valois gravelly silt loam, 25 to 35 percent slopes	15.5	0.7%
W	Water	2.5	0.1%
Wy	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	18.2	0.8%
Totals for Area of Interest		2,243.1	100.0%

Cassadaga Wind Project
 Proposed Point of intersect Substation
 Area of Interest 9

Soil Map—Chautauqua County, New York



Map Scale: 1:8,880 if printed on A landscape (11" x 8.5") sheet.

0 100 200 400 600 Meters

0 400 800 1600 2400 Feet

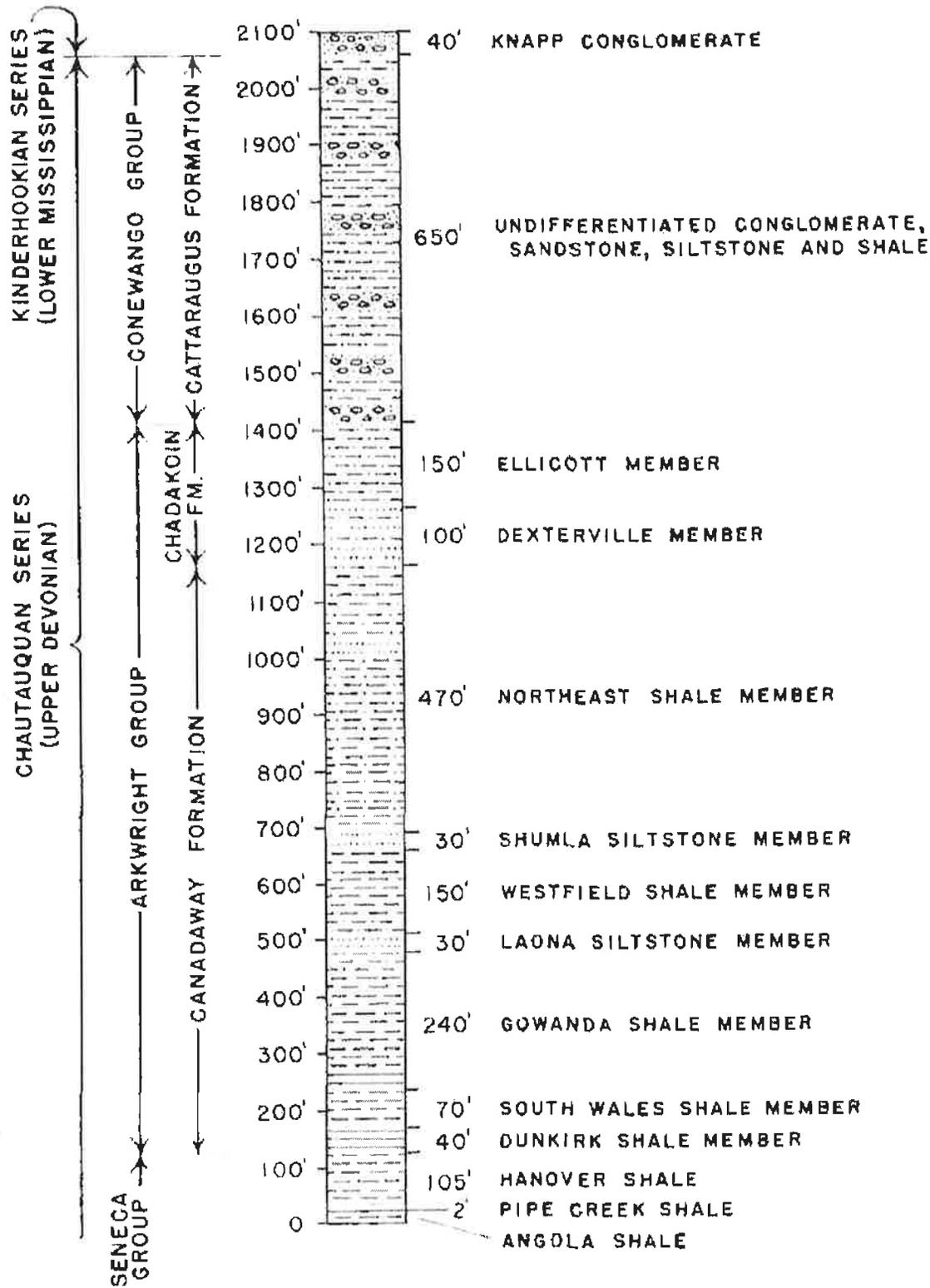
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84



Cassadaga Wind Project
Proposed Point of intersect Substation
Area of Interest 9

Map Unit Legend

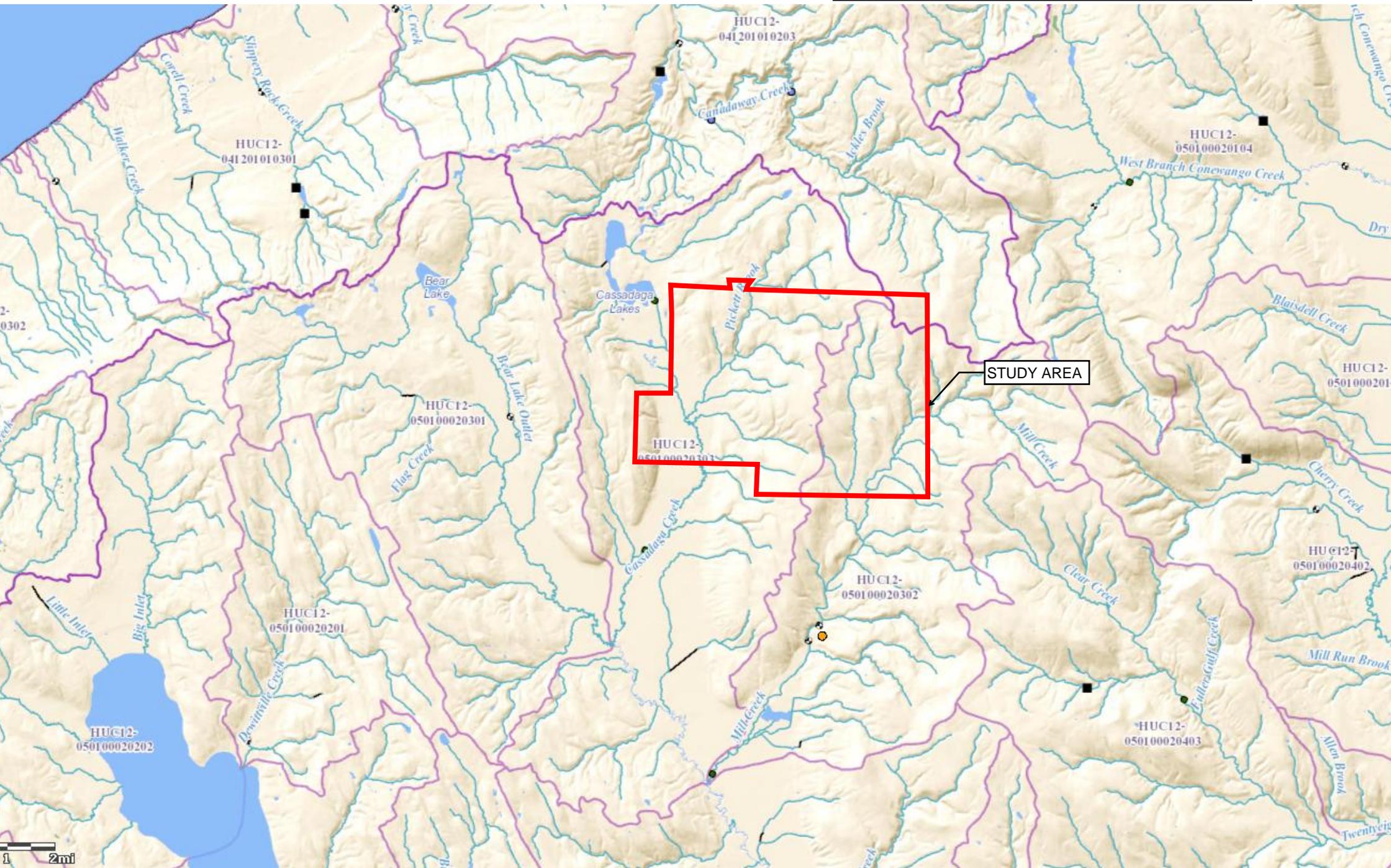
Chautauqua County, New York (NY013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
As	Ashville silt loam	0.2	0.1%
BsA	Busti silt loam, 0 to 3 percent slopes	1.8	0.5%
BsB	Busti silt loam, 3 to 8 percent slopes	5.9	1.7%
Cb	Canandaigua silt loam, loamy substratum	20.9	6.0%
Cc	Canandaigua mucky silt loam	4.9	1.4%
ChC	Chadakoin silt loam, 8 to 15 percent slopes	3.1	0.9%
ChD	Chadakoin silt loam, 15 to 25 percent slopes	2.9	0.8%
ChE	Chadakoin silt loam, 25 to 35 percent slopes	6.8	1.9%
CkB	Chautauqua silt loam, 3 to 8 percent slopes	82.1	23.4%
CkC	Chautauqua silt loam, 8 to 15 percent slopes	34.2	9.8%
CnB	Chenango gravelly loam, 3 to 8 percent slopes	2.0	0.6%
CoB	Chenango channery loam, fan, 3 to 8 percent slopes	30.0	8.5%
EIA	Elnora fine sandy loam, 0 to 3 percent slopes	7.0	2.0%
Fe	Fluvaquents-Udfluvents complex, frequently flooded	10.4	3.0%
Ge	Getzville silt loam	29.9	8.5%
La	Lamson silt loam	75.8	21.6%
Mn	Minoa fine sandy loam	31.1	8.8%
W	Water	0.1	0.0%
Wy	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	2.1	0.6%
Totals for Area of Interest		351.2	100.0%



The National Map

NOTES: Data available from U.S. Geological Survey, National Geospatial Program.

Cassadaga Wind Project
Regional Watershed Map



ATTACHMENT C

SOIL BORING LOGS AND LABORATORY TEST RESULTS



CONTRACTOR		Earth Dimensions, Inc. (EDI)				BORING LOCATION		See Location Plan - Figure 2		
DRILLER		Brian Bartron / Brandon				GROUND SURFACE ELEVATION		1300 DATUM N/A		
START DATE:		11/9/2015		END DATE:		11/9/2015		GZA REPRESENTATIVE		M. Kress
WATER LEVEL DATA						TYPE OF DRILL RIG		Track Mounted Diedrich D50		
DATE		TIME		WATER		CASING (Y/N)		NOTES		
11/9/15		1030 am		3.5'		Y		in augers		
						CASING SIZE AND DIAMETER		3 1/4" I.D. HSA		
						OVERBURDEN SAMPLING METHOD		ASTM 1586		
						ROCK DRILLING METHOD		N/A		
DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION			NOTES	
1	1	S-1	0-2	4	80	Loose, dark brown TOPSOIL, moist			Wet below 2'	
	3					Loose, grayish brown, fine to coarse SAND, trace Silt, moist				
2	4									
	2	S-2	2-4	6	50					
3										
4	3									
	2									
5	1	S-3	4-6	2	60	Very loose, grayish brown, fine to coarse SAND, trace Silt, trace fine Gravel, wet				Sample not holding shape of spoon. Water in spoon
	1									
6	2									
	3	S-4	6-8	4	50	Grades to ... loose				
2										
8	2									
	2									
9	2	S-5	8-10	6	80					
	3									
10	5									
	3	S-6	10-12	13	100	Grades to ... medium dense				
5										
12	8									
	9									
13										
	3	S-7	13-15	16	90	Medium dense, brownish gray, fine to coarse SAND, trace fine Gravel, little Silt, wet			Sands running into auger. Water introduced to augers by driller	
7										
15	9									
	9									
16										
17										
18										
19	4	S-8	18-20	16	80	Medium dense, gray, fine to coarse SAND, trace Silt, wet				
	7									
20	9									
	10									
S = Split Spoon Sample				NOTES: HSA - Hollow Stem Augers						
C = Bedrock Core Sample				Approximate ground surface elevation extrapolated from USGS Topographic Map - See Figure 2						
General										
Notes:										
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.										
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.										

DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES
21							
22							
23							
24	2	S-9	23-25	29	80	Grades to ... dark gray, fine SAND and Silt, wet	
	14						
	15						
25	26						
26							
27							
28							
29	1	S-10	28-30	11	100	Grades to ... little Silt	
	5						
	6						
30	8						
31							
32							
33							
34	1	S-11	33-35	19	90	Medium dense, gray, SILT, trace fine Sand, wet	
	7						
	12						
35	15						
36							
37							
38							
39	12	S-12	38-40	47	90	Grades to ... dense	
	21						
	26						
40	28						
41						End of boring at 40' bgs	
42							
43							
44							
S = Split Spoon Sample C = Bedrock Core Sample				NOTES: Borehole backfilled with cuttings upon completion.			
General				1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.			
Notes:				2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.			



CONTRACTOR		Earth Dimensions, Inc. (EDI)				BORING LOCATION		See Location Plan - Figure 2																					
DRILLER		Brian Bartron / Brandon				GROUND SURFACE ELEVATION		1810 DATUM N/A																					
START DATE:		11/10/15		END DATE:		11/10/15		GZA REPRESENTATIVE		M. Kress																			
WATER LEVEL DATA						TYPE OF DRILL RIG		Track Mounted Diedrich D50																					
						CASING SIZE AND DIAMETER		3 1/4" I.D. HSA																					
						OVERBURDEN SAMPLING METHOD		ASTM 1586																					
						ROCK DRILLING METHOD		N/A																					
DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION			NOTES																				
1	1	S-1	0-2	3	60	Loose, brown TOPSOIL, moist			(Glacial Till)																				
	1					Loose, light brown, SILT, little fine to coarse Sand, moist																							
2	2							(Glacial Till)																					
	9											Medium dense, olive gray, CLAY and SILT, little Sand, little fine Gravel, moist																	
3	7	S-2	2-4	22	65	Grades to ... dense						Increasing gravel fraction with depth																	
	11																												
4	11														(Glacial Till)														
	12																												
5	7	S-3	4-6	21	90													Grades to ... very dense, gray			Increasing gravel fraction with depth								
	10																												
6	11										(Glacial Till)																		
	19																												
7	11	S-4	6-8	35	90				Grades to ... dense															Increasing gravel fraction with depth					
	15																												
8	20							(Glacial Till)																					
	34																												
9	29	S-5	8-10	51	90	Grades to ... very dense								Increasing gravel fraction with depth															
	27																												
10	24																(Glacial Till)												
	27																												
11	14	S-6	10-12	36	95							Grades to ... dense								Increasing gravel fraction with depth									
	17																												
12	19										(Glacial Till)																		
	26																												
13									(Glacial Till)																				
14	6	S-7	13-15	33	100	Grades to ... very dense									Increasing gravel fraction with depth														
	12																												
15	21																	(Glacial Till)											
	33																												
16														(Glacial Till)															
17												(Glacial Till)																	
18									(Glacial Till)																				
19	12	S-8	18-20	81	100	Grades to ... very dense											Increasing gravel fraction with depth												
	21																												
20	60																			(Glacial Till)									
	100/1"																												
S = Split Spoon Sample				NOTES: HSA - Hollow Stem Augers																									
C = Bedrock Core Sample				Approximate ground surface elevation extrapolated from USGS Topographic Map - See Figure 2																									
General																													
Notes:																													
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.																													
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.																													

DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES
21							
22							
23							
24	7	S-9	23-25	54	100		
	21						
	33						
25	37					Very dense, olive brown, Clayey SILT, some fine to coarse Sand, little Gravel, moist	
26							
27							
28							
	14	S-10	28-30	>100	90		
29	28					Very dense, olive brown, fine to coarse SAND, little Gravel, little Clayey Silt, moist	
	78						
30	25						
31							
32							
33							
	60	S-11	33-35	92	60		
34	57					Grades to ... and Clayey Silt, trace Gravel	
	35						
35	42						
36							
37							
38							
	10	S-12	38-40	35	100		
39	15					Grades to ... dense, some Clayey Silt, little Gravel	
	20						
40	25						
41						End of boring at 40' bgs	
42							
43							
44							

S = Split Spoon Sample
 C = Bedrock Core Sample

NOTES: Borehole backfilled with cuttings upon completion.

General 1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
 Notes: 2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



CONTRACTOR		Earth Dimensions, Inc. (EDI)				BORING LOCATION		See Location Plan - Figure 2		
DRILLER		Brian Bartron / Andy				GROUND SURFACE ELEVATION		2055 DATUM N/A		
START DATE:		11/16/15		END DATE:		11/16/15		GZA REPRESENTATIVE		M. Kress
WATER LEVEL DATA						TYPE OF DRILL RIG		Track Mounted Diedrich D50		
DATE		TIME		WATER		CASING (Y/N)		NOTES		
11/16/15		1400 pm		16'		Y		boring completion		
						CASING SIZE AND DIAMETER		3 1/4" I.D. HSA		
						OVERBURDEN SAMPLING METHOD		ASTM 1586		
						ROCK DRILLING METHOD		N/A		
DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION		NOTES		
1	1	S-1	0-2	2	60	Very loose, brown, TOPSOIL and Organics, moist		(Glacial Till)		
2	1					Very loose, brown, SILT and fine to coarse Sand, little Gravel, moist				
3	9					Grades to ... dense		non-cohesive		
4	10	S-2	2-4	27	100					
5	13									
6	14									
7	13									
8	11	S-3	4-6	24	100	Grades to ... some fine to coarse Gravel				
9	12									
10	12									
11	10									
12	3	S-4	6-8	16	70					
13	7									
14	9									
15	7									
16	5	S-5	8-10	12	60	Medium dense, brown, fine to coarse GRAVEL and fine to coarse Sand, some Silt, moist		non-cohesive		
17	6									
18	10									
19	6									
20	5	S-6	10-12	22	60	Grades to ... wet				
21	10									
22	12									
23	9									
24										
25	7	S-7	13-15	31	70					
26	13									
27	18									
28	14									
29										
30										
31										
32										
33										
34										
35										
36										
37										
38										
39	13	S-8	18-20	27	40					
40	9									
41	18									
42	21									
S = Split Spoon Sample				NOTES: HSA - Hollow Stem Augers						
C = Bedrock Core Sample				Approximate ground surface elevation extrapolated from USGS Topographic Map - See Figure 2						
General		1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.								
Notes:		2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.								

DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES
21							
22							
23							
24	28	S-9	23-25	38	60		
	24					Dense, brown, fine to coarse SAND, some Silt, wet	
25	14						
	16						
26							
27							
28							
29	16	S-10	28-30	28	50		
	13						
	15						
30	14					Gray, horizontal, severely WEATHERED BEDROCK fragments, with Sand and Silt, moist	(Weathered Bedrock)
31							
32							
33							
34	91	S-11	33-35	41	80	Grades to ... wet	
	13						
	28						
35	46						
36							
37							
38							
39	79	S-12	38-38.7	R	75		
	100/2"						
40						End of boring at 38.7' bgs	
41							
42							
43							
44							
S = Split Spoon Sample C = Bedrock Core Sample				NOTES: Borehole backfilled with cuttings upon completion. R - Refusal			
General 1) Stratification lines represent approximate boundary between soil types, transitions may be gradual. Notes: 2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.							



CONTRACTOR		Earth Dimensions, Inc. (EDI)				BORING LOCATION		See Location Plan - Figure 2	
DRILLER		Brian Bartron / Brandon				GROUND SURFACE ELEVATION		1910 DATUM N/A	
START DATE:		11/12/15		END DATE:		11/13/15		GZA REPRESENTATIVE	
								M. Kress	
WATER LEVEL DATA						TYPE OF DRILL RIG		Track Mounted Diedrich D50	
DATE		TIME		WATER		CASING (Y/N)		NOTES	
11/13/15		730 am		DRY		Y		Prior to coring	
								open overnight	
								OVERBURDEN SAMPLING METHOD	
								ASTM 1586	
								ROCK DRILLING METHOD	
								NQ	
DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION		NOTES	
1	1	S-1	0-2	6	75	Loose, brown fine SAND, trace clay, trace Organics, moist			
	3								
2	3					Stiff, reddish brown, Silty CLAY, some fine Sand, trace fine Gravel, moist		slightly cohesive (Glacial Till)	
	4								
3	5	S-2	2-4	13	80				
	6								
4	7								
	7								
5	12	S-3	4-6	58	100	Very dense, light brown, SILT, trace fine Sand, trace Clay, moist. 2" thick gravel lens at 5' bgs		sample breaks easily in thin horizontal layers	
	25								
6	33								
	27								
7	30	S-4	6-8	35	80	Hard, brown Silty CLAY, trace fine to coarse Sand, trace Gravel, moist			
	21								
8	14								
	23								
9	11	S-5	8-10	86	40				
	26								
10	60					Light gray, thin horizontal severely WEATHERED BEDROCK fragments, moist		(Weathered Bedrock) easily broken with fingertips	
	68								
11	9	S-6	10-11.6	>100	100				
	64								
12	62								
	100/1"								
13									
14	40	S-7	13-13.4	R	50			Auger refusal at 14'	
	100/2"								
15		C-1	14-19	0	100	Hard, gray, slightly weathered, aphanitic, SHALE, very highly fractured, close horizontal joint spacing with clay and silt deposits within joints. (Ellicott Shale)			
16									
17									
18									
19									
20		C-2	19-24	8	100				
S = Split Spoon Sample				NOTES: HSA - Hollow Stem Augers, R - Refusal					
C = Bedrock Core Sample				Approximate ground surface elevation extrapolated from USGS Topographic Map - See Figure 2					
General									
Notes:									
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.									
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.									

DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES
21							
22							
23							
24							
25						End of boring at 24' bgs	
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
S = Split Spoon Sample C = Bedrock Core Sample				NOTES: Borehole backfilled with cuttings upon completion.			
General				1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.			
Notes:				2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.			



CONTRACTOR		Earth Dimensions, Inc. (EDI)				BORING LOCATION		See Location Plan - Figure 2			
DRILLER		Brian Bartron / Brandon / Andy				GROUND SURFACE ELEVATION		1950 DATUM N/A			
START DATE:		11/13/15		END DATE:		11/16/15		GZA REPRESENTATIVE		M. Kress	
WATER LEVEL DATA						TYPE OF DRILL RIG		Track Mounted Diedrich D50			
DATE		TIME		WATER		CASING (Y/N)		NOTES			
11/16/15		730 am		DRY		Y		Open over weekend			
								CASING SIZE AND DIAMETER		3 1/4" I.D. HSA	
								OVERBURDEN SAMPLING METHOD		ASTM 1586	
								ROCK DRILLING METHOD		N/A	
DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION				NOTES	
1	1	S-1	0-2	8	80	Medium stiff, brown, Clayey SILT, little Gravel, trace Sand, moist				(Glacial Till)	
	3										
2	5										
	6										
3	6	S-2	2-4	19	80	Grades to ... very stiff					
	8										
4	11										
	17										
5	6	S-3	4-6	18	100					>4.5 TSF P.P.	
	8										
6	10										
	15										
7	12	S-4	6-8	57	40	Grades to ... hard, some Gravel				>4.5 TSF P.P.	
	17										
8	40										
	46										
9	15	S-5	8-10	66	100					>4.5 TSF P.P.	
	30										
10	36										
	55										
11	16	S-6	10-12	51	75	Grades to ... gray				>4.5 TSF P.P.	
	26										
12	25										
	47										
13											
14	24	S-7	13-15	38	66	Grades to ... and Gravel				>4.5 TSF P.P.	
	21										
15	17										
	19										
16											
17											
18											
19	96	S-8	18-20	60	60	4" thick Gravel lens at 18' bgs				4.2 TSF P.P.	
	36										
20	24										
	26										
S = Split Spoon Sample		NOTES: P.P. - Pocket Penetrometer, HSA - Hollow Stem Augers, TSF - Tons per Square Foot									
C = Bedrock Core Sample		Approximate ground surface elevation extrapolated from USGS Topographic Map - See Figure 2									
General		1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.									
Notes:		2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.									

DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES
21							
22							
23							
24	6	S-9	23-25	30	80	Hard, brown, Clayey SILT, some fine to coarse Sand, trace Gravel, moist	>4.5 TSF P.P.
	14						
	16						
25	26						
26							
27							
28							
29	23	S-10	28-30	39	100	Grades to ... some Gravel	>4.5 TSF P.P.
	18						
	21						
30	26						
31							
32							
33							
34	11	S-11	33-35	37	100		>4.5 TSF P.P.
	17						
	20						
35	27						
36							Driller introduced water to flush augers
37							
38							
39	19	S-12	38-40	66	100	Grades to ... wet	
	30						
	36						
40	41						
41						End of boring at 40' bgs	
42							
43							
44							

S = Split Spoon Sample
 C = Bedrock Core Sample

NOTES: Borehole backfilled with cuttings upon completion. TSF - Tons per Square Foot

General 1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
 Notes: 2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



CONTRACTOR		Earth Dimensions, Inc. (EDI)				BORING LOCATION		See Location Plan - Figure 2			
DRILLER		Brian Bartron / Brandon				GROUND SURFACE ELEVATION		1925 DATUM N/A			
START DATE:		11/11/15		END DATE:		11/11/15		GZA REPRESENTATIVE		M. Kress	
WATER LEVEL DATA						TYPE OF DRILL RIG		Track Mounted Diedrich D50			
DATE		TIME		WATER		CASING (Y/N)		NOTES			
11/11/15		1000 am		DRY		Y		Prior to coring			
						CASING SIZE AND DIAMETER		3 1/4" I.D. HSA			
						OVERBURDEN SAMPLING METHOD		ASTM 1586			
						ROCK DRILLING METHOD		NQ			
DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION			NOTES		
1	1	S-1	0-2	12	80	Brown TOPSOIL, little Organics, moist			(Glacial Till) 2.5 TSF P.P. 4.2 TSF torvane 2.5 TSF P.P. 3.6 TSF torvane Horizontal depostion crumble with knife point (Weathered Bedrock) Auger cuttings dry Soft rock fragments easily broken with fingers		
	3					Medium dense, brown, fine SAND, trace Clay, trace Gravel, moist					
2	9										
	9										
3	4	S-2	2-4	12	80	Stiff, brown, Clayey SILT, some fine to coarse Sand little fine Gravel, moist					
	7										
4	5										
	5										
5	2	S-3	4-6	42	75	Grades to ... hard, some Gravel					
	12										
6	30										
	27										
7	15	S-4	6-6.8	R	30						
	100/5"										
8											
9	80	S-5	8-8.6	R	2	Light gray, thin horizontal WEATHERED BEDROCK fragments, dry					
	100/1"										
10											
11	14	S-6	10-11.3	R	60						
	43										
12	100/4"										
13											
14	100/5"	S-7	13-13.5	0	100	Auger refusal at 14' bgs					
15		C-1	14-19	10	100	Hard, slightly weathered, gray, aphanitic, interbedded SHALE and SILTSTONE. Very highly fractured, close horizontal joint spacing with clay and silt deposits within joints. Some fossilization. (Cattaraugus Formation)					
16											
17											
18											
19											
20		C-2	19-24	7	95						
S = Split Spoon Sample				NOTES: P.P. - Pocket Penetrometer, HSA - Hollow Stem Augers, TSF - Tons/Square Foot, R - Refusal							
C = Bedrock Core Sample				Approximate ground surface elevation extrapolated from USGS Topographic Map - See Figure 2							
General											
Notes:											
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.											
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.											

DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES
21							
22							
23							
24							
25						End of boring at 24' bgs	
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
S = Split Spoon Sample C = Bedrock Core Sample				NOTES: Borehole backfilled with cuttings upon completion.			
General				1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.			
Notes:				2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.			



CONTRACTOR		Earth Dimensions, Inc. (EDI)				BORING LOCATION		See Location Plan - Figure 2					
DRILLER		Brian Bartron / Andy				GROUND SURFACE ELEVATION		1870 DATUM N/A					
START DATE:		11/17/15		END DATE:		11/17/15		GZA REPRESENTATIVE		M. Kress			
WATER LEVEL DATA						TYPE OF DRILL RIG		Track Mounted Diedrich D50					
DATE		TIME		WATER		CASING (Y/N)		NOTES					
11/17/15		1100 am		12'		Y		boring completion					
								CASING SIZE AND DIAMETER				3 1/4" I.D. HSA	
								OVERBURDEN SAMPLING METHOD				ASTM 1586	
								ROCK DRILLING METHOD				N/A	
DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION				NOTES			
1	1	S-1	0-2	5	100	Loose, brown, fine to coarse SAND and Silt, some Gravel, little Clay, moist				(Glacial Till) non-cohesive			
	2												
2	3					Grades to ... medium dense							
	7												
3	12	S-2	2-4	19	100								
	11												
4	8					Medium dense, brown, Clayey SILT and fine to coarse Gravel, some fine to coarse Sand, moist				non-cohesive			
	8												
5	3	S-3	4-6	10	75								
	4												
6	6					Grades to ... wet							
	5												
7	5	S-4	6-8	11	40								
	6												
8	8					Grades to ... dense				water in spoon			
	4	S-5	8-10	23	40								
9	8									Grades to ... gray, moist			
	15												
10	11												
	3	S-6	10-12	22	50								
11	8												
	14												
12	12												
13													
14	20	S-7	13-15	35	10								
	20												
15	15												
	23												
16													
17													
18													
19	13	S-8	18-20	46	80								
	21												
20	25												
	32												
S = Split Spoon Sample				NOTES: HSA - Hollow Stem Augers									
C = Bedrock Core Sample				Approximate ground surface elevation extrapolated from USGS Topographic Map - See Figure 2									
General											1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.		
Notes:											2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.		

DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES
21						Grades to ... very dense, wet	
22							
23							
24	52	S-9	23-25	>100	10		
	49						
25	53						
	49						
26							
27							
28							
29	17	S-10	28-30	74	70	Very dense, brown, Clayey SILT, some fine to coarse Gravel, some fine to coarse Sand, moist	
	35						
30	39						
	42						
31							
32							
33							
34	53	S-11	33-35	R	90		
	100/1"						
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
S = Split Spoon Sample C = Bedrock Core Sample				NOTES: Borehole backfilled with cuttings upon completion. R - Refusal			
General 1) Stratification lines represent approximate boundary between soil types, transitions may be gradual. Notes: 2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.							



CONTRACTOR		Earth Dimensions, Inc. (EDI)				BORING LOCATION		See Location Plan - Figure 2		
DRILLER		Brian Bartron / Brandon				GROUND SURFACE ELEVATION		1960 DATUM N/A		
START DATE:		11/11/15		END DATE:		11/12/15		GZA REPRESENTATIVE		M. Kress
WATER LEVEL DATA						TYPE OF DRILL RIG		Track Mounted Diedrich D50		
DATE		TIME		WATER		CASING (Y/N)		NOTES		
11/12/15		730 am		DRY		Y		Prior to coring open overnight		
								CASING SIZE AND DIAMETER		3 1/4" I.D. HSA
								OVERBURDEN SAMPLING METHOD		ASTM 1586
								ROCK DRILLING METHOD		NQ
DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION		NOTES		
1	1	S-1	0-2	13	60	Loose, brown TOPSOIL, little Organics, moist		(Glacial Till) >4.5 TSF P.P. Unable to torvane		
	2					Medium dense, gray, GRAVEL and Silty Clay, little fine to coarse Sand, moist				
2	11									
	10									
3	7	S-2	2-4	25	75	Very stiff, brown, Silty CLAY, trace Gravel, trace fine to coarse Sand, trace organics, moist				
	10									
4	15									
	12									
5	7	S-3	4-6	25	100	Grades to ... some Gravel				
	12									
6	13									
	12									
7	6	S-4	6-8	24	100					
	9									
8	15									
	17									
9	11	S-5	8-10	54	100	Grades to ... hard				
	19									
10	35									
	43									
11	10	S-6	10-11.4	R	100					
	20									
12	100/5"									
13										
14	100/5"	S-7	13-13.4	R	100	Light gray, thin horizontal WEATHERED BEDROCK fragments, wet				
15		C-1	14-19	16	88	Hard, slightly weathered, gray, aphanitic, interbedded SHALE and SILTSTONE. Very highly fractured, close horizontal joint spacing with clay and silt deposits within joints. (Cattaraugus Formation)				
16										
17										
18										
19										
20		C-2	19-24	0	73					
S = Split Spoon Sample			NOTES: P.P. - Pocket Penetrometer, HSA - Hollow Stem Augers, TSF - Tons/Square Foot, R - Refusal							
C = Bedrock Core Sample			Approximate ground surface elevation extrapolated from USGS Topographic Map - See Figure 2							
General										
Notes:										
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.										
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.										

DEPTH	BLOWS (/6")	SAMPLE NO.	DEPTH (ft.)	N-VALUE / RQD %	RECOVERY (%)	SAMPLE DESCRIPTION	NOTES
21							
22							
23							
24							
25						End of boring at 24' bgs	
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
S = Split Spoon Sample C = Bedrock Core Sample				NOTES: Borehole backfilled with cuttings upon completion.			
General				1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.			
Notes:				2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.			

EVERPOWER
CASSADAGA WIND PROJECT
CHAUTAUQUA COUNTY, NEW YORK



ROCK CORE AT BORING LOCATION T4



ROCK CORE AT BORING LOCATION T39

EVERPOWER
CASSADAGA WIND PROJECT
CHAUTAUQUA COUNTY, NEW YORK



ROCK CORE AT BORING LOCATION T60

LABORATORY TESTING DATA SHEET

Project Name Cassadaga Wind Project
 Project Location Chautauqua County, NY
 Project No. 21.0056761.00
 Project Manager Daniel Troy

Reviewed By *Matthew DeGly*
 Report Date 12/4/2015
 Date Reviewed 12/4/2015

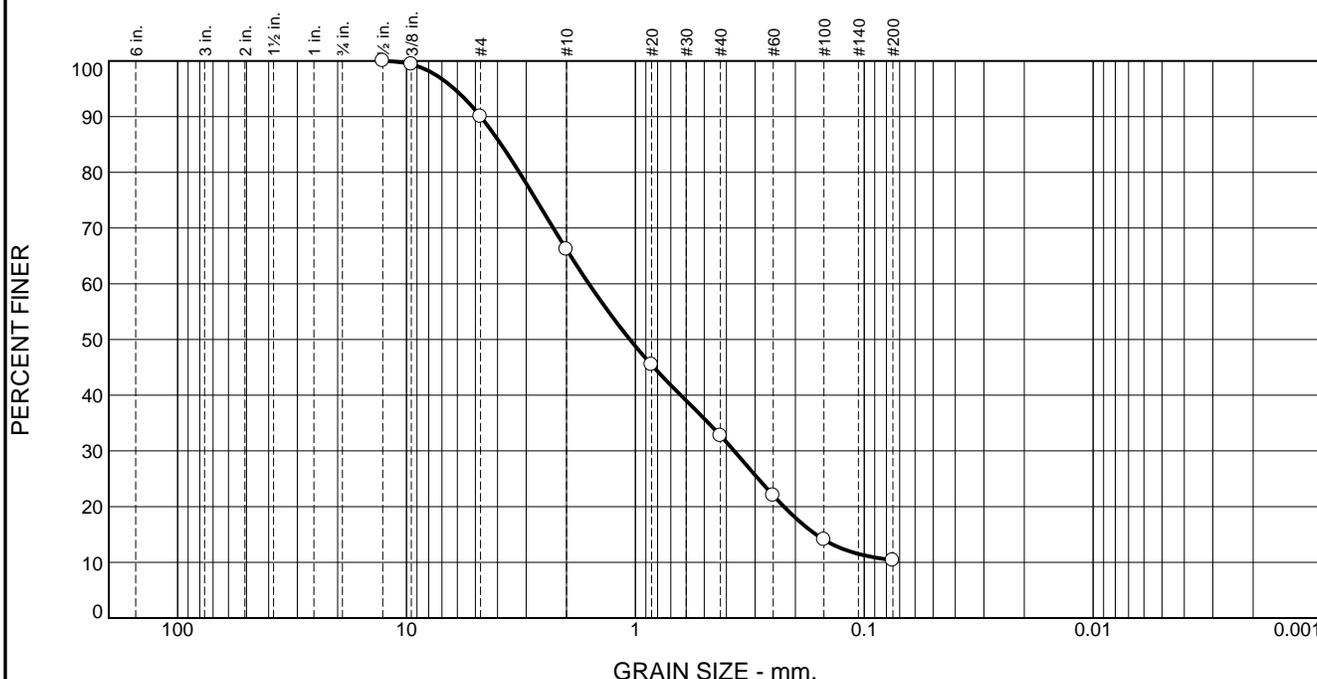
Boring/ Test Pit No.	Sample No.	Depth (ft.)	Lab No.	Identification Tests							Laboratory Log and Soil Description
				Water Content %	LL %	PL %	PI	Grave l %	Sand %	Fines %	
T-60	S-1	0-2	1	10.3							
T-60	S-2	2-4	2	18.6	42	22	20				Gray Silty CLAY, trace Sand
T-60	S-3	4-6	3	13.2							
T-60	S-4	6-8	4	13.2							
T-60	S-5	8-10	5	10.9							
T-60	S-6	10-12	6	10.1							
POI- Substation	S-7	13-15	7	12.7				10.0	79.6	10.4	Brown f-c SAND, little Silt, trace Gravel
T-39	S-2	2-4	8	15.1				15.1	29.9	55.0	Brown Clayey SILT, some f-c Sand, little fine Gravel
T-14	S-10	28-30	9	9.1				24.7	29.0	46.3	Brown Clayey SILT, some f-c Sand, some fine Gravel
T-2	S-6	10-12	10	12.3				42.8	37.2	20.0	Brown f-c GRAVEL and f-c SAND, some Silt
T-43	S-5	8-10	11	12.1				36.1	22.9	41.0	Brown Clayey SILT and f-c GRAVEL, some f-c Sand
T-43	S-10	28-30	12	12.1				32.2	30.9	36.9	Brown Clayey SILT, some f-c Gravel, some f-c Sand
T-14	S-3	4-6	13	14.8	19	14	5				Brown Clayey SILT, trace Gravel, trace Sand
Collector- Substation	S-7	13-15	14	11.6	26	15	11				Gray CLAY & SILT, little fine Gravel, little Sand



195 Frances Avenue
 Cranston, RI 02910

401-467-6454

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	10.0	23.8	33.5	22.3	10.4	

TEST RESULTS (D422)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.5"	100.0		
.375"	99.4		
#4	90.0		
#10	66.2		
#20	45.5		
#40	32.7		
#60	22.0		
#100	14.1		
#200	10.4		

* (no specification provided)

Material Description

Brown f-c SAND, little Silt, trace Gravel

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SP-SM AASHTO (M 145)= A-1-b

Coefficients

D₉₀= 4.7422 D₈₅= 3.8589 D₆₀= 1.5961
D₅₀= 1.0560 D₃₀= 0.3703 D₁₅= 0.1625
D₁₀= C_u= C_c=

Remarks

Date Received: 12/2/15 Date Tested: 12/3/15
Tested By: JE
Checked By: Matthew Polsky
Title: Laboratory Manager

Source of Sample: Borings Depth: 13-15'
Sample Number: POI Substation

Date Sampled:

Thielsch Engineering Inc.

Client: GZA GeoEnvironmental, Inc

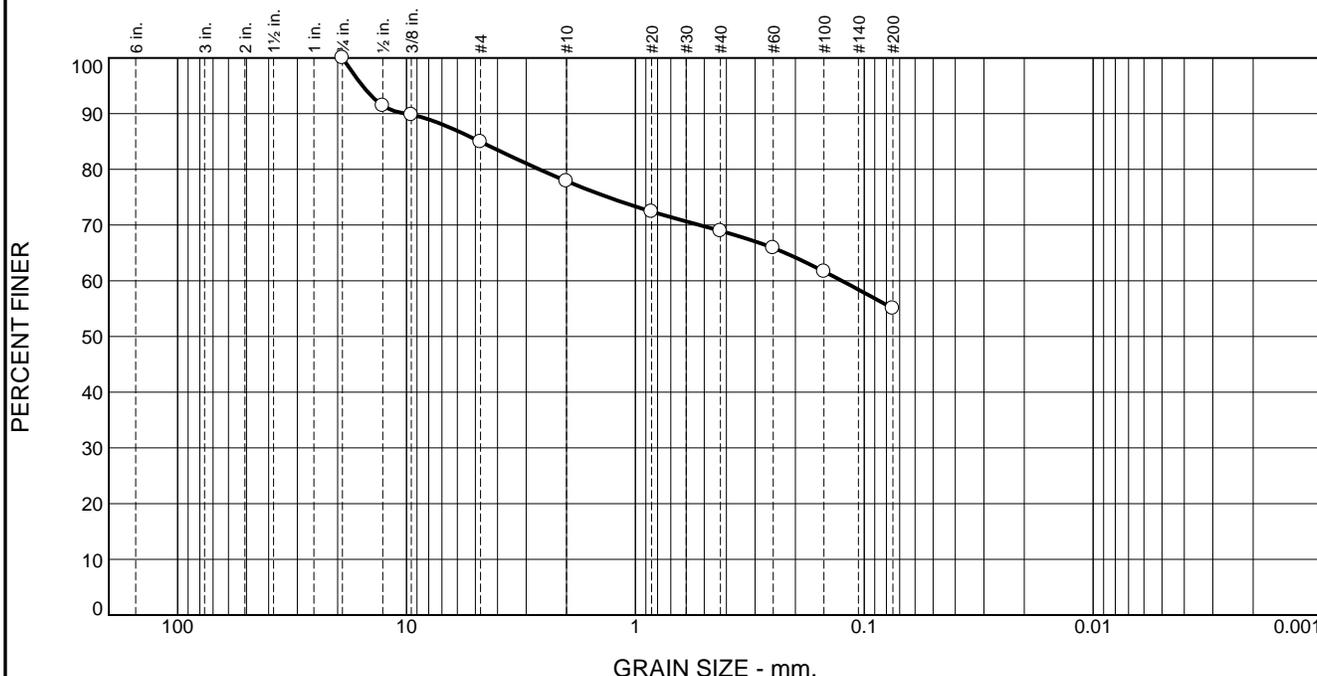
Project: Cassadaga Wind Project
Chautauqua County, NY

Cranston, RI

Project No: 21.0056761.00

Figure 7

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	15.1	7.0	8.9	14.0	55.0	

TEST RESULTS (D422)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.75"	100.0		
.5"	91.4		
.375"	89.8		
#4	84.9		
#10	77.9		
#20	72.4		
#40	69.0		
#60	65.9		
#100	61.7		
#200	55.0		

* (no specification provided)

Material Description

Brown Clayey SILT, some f-c Sand, little fine Gravel

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= ML AASHTO (M 145)= A-4(0)

Coefficients

D₉₀= 10.0963 D₈₅= 4.7797 D₆₀= 0.1253
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Remarks

Date Received: 12/2/15 Date Tested: 12/3/15
Tested By: JE
Checked By: Matthew Polsky
Title: Laboratory Manager

Source of Sample: Borings Depth: 2-4'
Sample Number: T-39: S-2

Date Sampled:

Thielsch Engineering Inc.

Client: GZA GeoEnvironmental, Inc

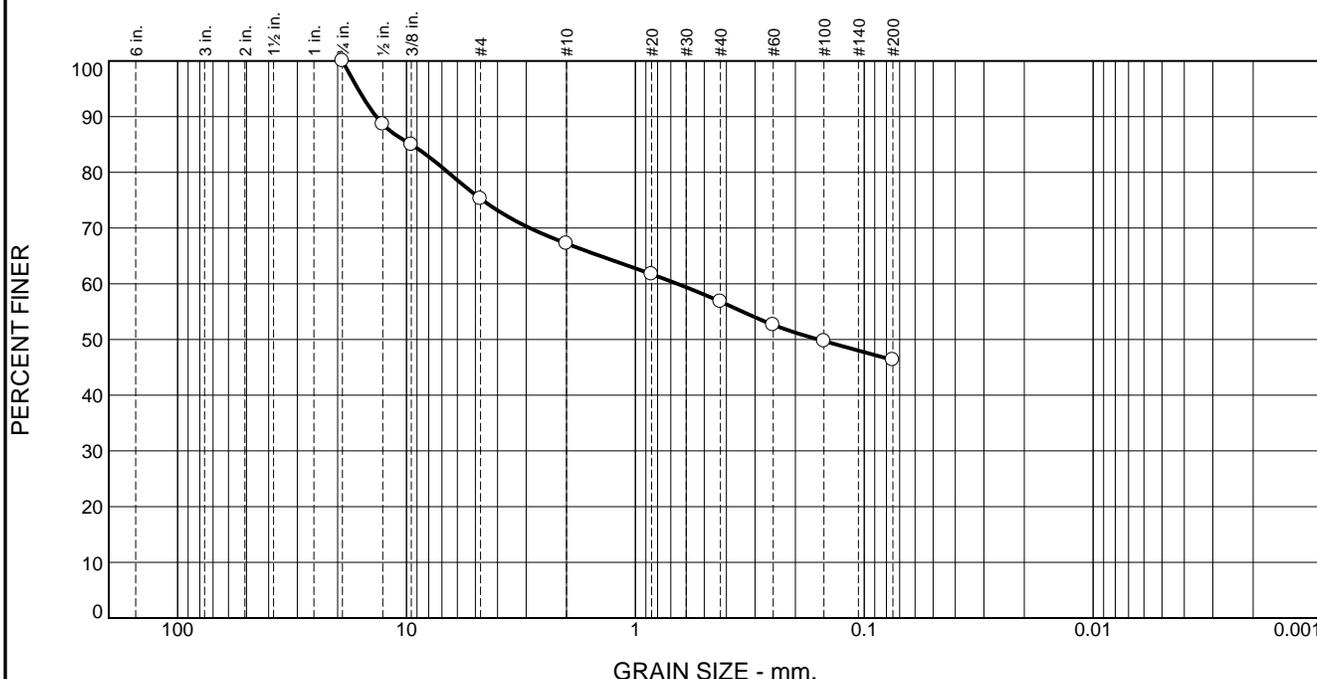
Project: Cassadaga Wind Project
Chautauqua County, NY

Cranston, RI

Project No: 21.0056761.00

Figure 8

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	24.7	8.1	10.4	10.5	46.3	

TEST RESULTS (D422)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.75"	100.0		
.5"	88.6		
.375"	85.0		
#4	75.3		
#10	67.2		
#20	61.7		
#40	56.8		
#60	52.6		
#100	49.7		
#200	46.3		

* (no specification provided)

Material Description

Brown Clayey SILT, some f-c Sand, some fine Gravel

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-4(0)

Coefficients

D₉₀= 13.5652 D₈₅= 9.5291 D₆₀= 0.6559
D₅₀= 0.1585 D₃₀= D₁₅=
D₁₀= C_u= C_c=

Remarks

Date Received: 12/2/15 Date Tested: 12/3/15
Tested By: JE
Checked By: Matthew Polsky
Title: Laboratory Manager

Source of Sample: Borings Depth: 28-30'
Sample Number: T-14: S-10

Date Sampled:

Thielsch Engineering Inc.

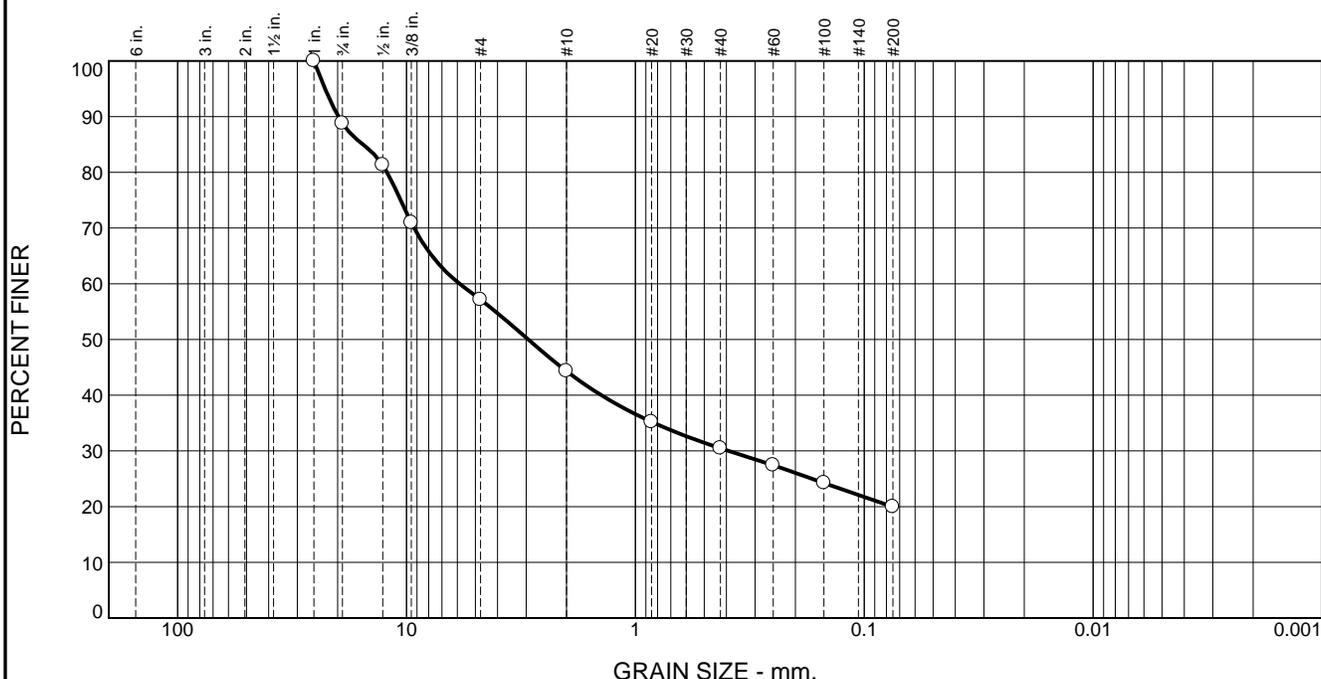
Cranston, RI

Client: GZA GeoEnvironmental, Inc
Project: Cassadaga Wind Project
Chautauqua County, NY

Project No: 21.0056761.00

Figure 9

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	11.2	31.6	12.9	13.8	10.5	20.0	

TEST RESULTS (D422)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1"	100.0		
0.75"	88.8		
.5"	81.3		
.375"	71.0		
#4	57.2		
#10	44.3		
#20	35.2		
#40	30.5		
#60	27.4		
#100	24.2		
#200	20.0		

* (no specification provided)

Material Description

Brown f-c GRAVEL and f-c SAND, some Silt

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= GM AASHTO (M 145)= A-1-b

Coefficients

D₉₀= 19.8471 D₈₅= 15.4920 D₆₀= 5.8592
D₅₀= 2.9381 D₃₀= 0.3914 D₁₅=
D₁₀= C_u= C_c=

Remarks

Date Received: 12/2/15 Date Tested: 12/3/15

Tested By: JE

Checked By: Matthew Polsky

Title: Laboratory Manager

Source of Sample: Borings Depth: 10-12'
Sample Number: T-2: S-6

Date Sampled:

Thielsch Engineering Inc.

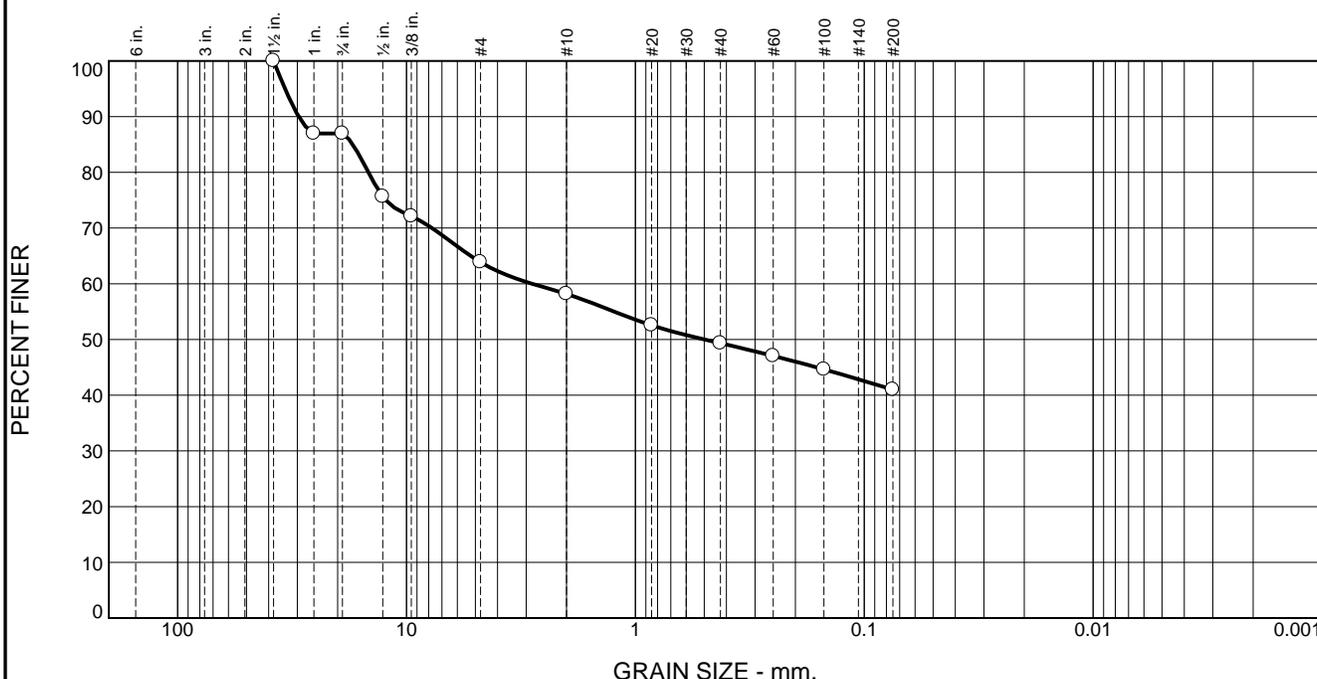
Cranston, RI

Client: GZA GeoEnvironmental, Inc
Project: Cassadaga Wind Project
Chautauqua County, NY

Project No: 21.0056761.00

Figure 10

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	13.0	23.1	5.7	8.9	8.3	41.0	

TEST RESULTS (D422)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5"	100.0		
1"	87.0		
0.75"	87.0		
.5"	75.7		
.375"	72.1		
#4	63.9		
#10	58.2		
#20	52.6		
#40	49.3		
#60	47.1		
#100	44.6		
#200	41.0		

Material Description

Brown Clayey SILT and f-c GRAVEL, some f-c Sand

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= GM AASHTO (M 145)= A-4(0)

Coefficients

D₉₀= 29.5836 D₈₅= 17.1615 D₆₀= 2.8219
D₅₀= 0.4982 D₃₀= D₁₅=
D₁₀= C_u= C_c=

Remarks

Date Received: 12/2/15 Date Tested: 12/3/15

Tested By: JE

Checked By: Matthew Polsky

Title: Laboratory Manager

* (no specification provided)

Source of Sample: Borings Depth: 8-10'
Sample Number: T-43: S-5

Date Sampled:

Thielsch Engineering Inc.

Client: GZA GeoEnvironmental, Inc

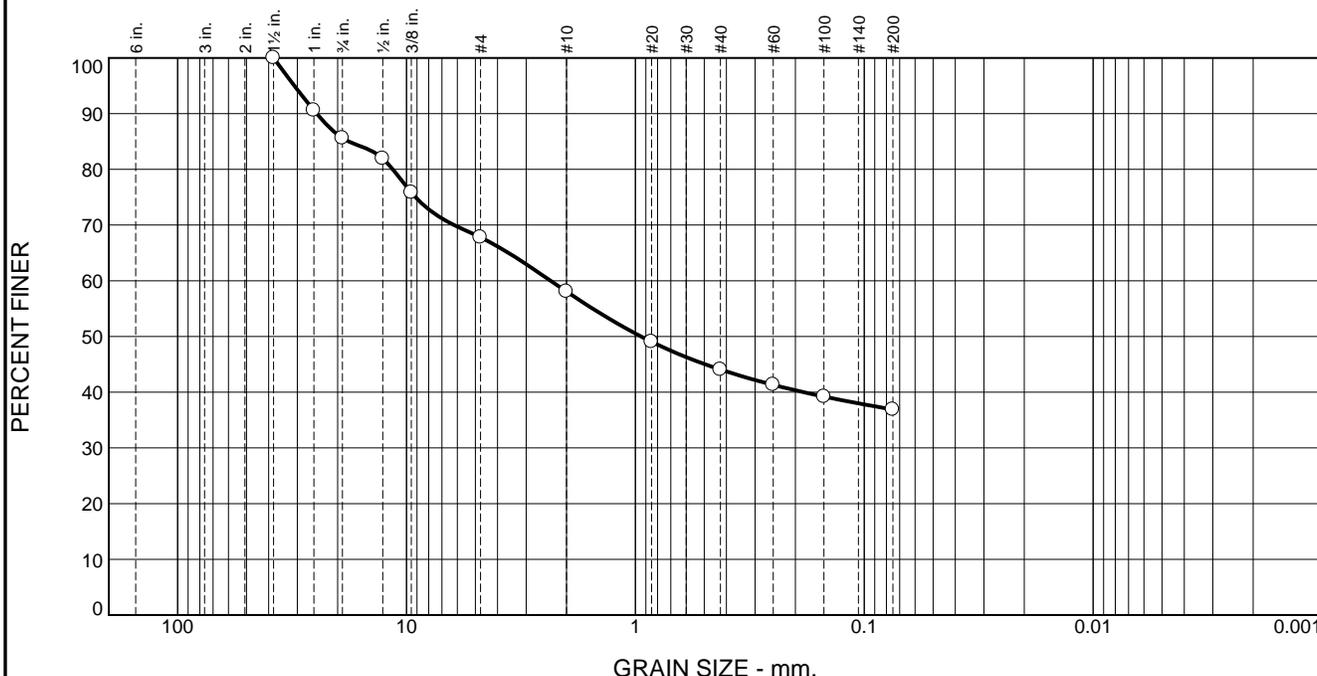
Project: Cassadaga Wind Project
Chautauqua County, NY

Cranston, RI

Project No: 21.0056761.00

Figure 11

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	14.4	17.8	9.7	14.0	7.2	36.9	

TEST RESULTS (D422)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5"	100.0		
1"	90.6		
0.75"	85.6		
.5"	81.9		
.375"	75.8		
#4	67.8		
#10	58.1		
#20	49.1		
#40	44.1		
#60	41.3		
#100	39.2		
#200	36.9		

Material Description

Brown Clayey SILT, some f-c Gravel, some f-c Sand

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= GM AASHTO (M 145)= A-4(0)

Coefficients

D₉₀= 24.6839 D₈₅= 17.8871 D₆₀= 2.3459
D₅₀= 0.9445 D₃₀= D₁₅=
D₁₀= C_u= C_c=

Remarks

Date Received: 12/2/15 Date Tested: 12/3/15

Tested By: JE

Checked By: Matthew Polsky

Title: Laboratory Manager

* (no specification provided)

Source of Sample: Borings Depth: 28-30'
Sample Number: T-43: S-10

Date Sampled:

Thielsch Engineering Inc.

Client: GZA GeoEnvironmental, Inc

Project: Cassadaga Wind Project
Chautauqua County, NY

Cranston, RI

Project No: 21.0056761.00

Figure 12