

APPENDIX 10-A

Geotechnical Report





Geotechnical Report (Rev. 1)

AES – Somerset Solar Project



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Table of Contents

1	Intro	roduction1					
2	Met	hodology	1				
	2.1	Soil Borings	1				
	2.2	Electrical Resistivity Testing	1				
	2.3	Pile Load Testing	2				
	2.3.1	Test Pile Installation	2				
	2.3.2	Uplift Load Testing	2				
	2.3.3	Lateral Load Testing	2				
3	Geo	ology and Subsurface Conditions	2				
	3.1	Groundwater	3				
4	Lab	oratory Results	4				
	4.1	Soil Index Testing	4				
	4.2	Thermal Resistivity Testing	4				
	4.3	Corrosivity Testing	5				
	4.4	California Bearing Ratio	5				
5	Pile	Load Testing Results	7				
6	Seis	smic Site Classification	9				
	6.1	Preliminary Seismic Evaluation	9				
7	Fou	ndation Considerations	9				
	7.1	Corrosion Considerations	9				
	7.2	Frost & Adfreeze Considerations 1	0				
	7.3	Soil Shrink & Swell Potential 1	1				
	7.4	Recommended Soil Parameters for Pile Design 1	1				
8	Cor	struction Recommendations 1	2				
	8.1	Excavation 1	2				
	8.2	Dewatering 1	2				
	8.3	Subgrade Preparation	13				
	8.4	Backfilling and Re-use of Native Soils 1	13				
	8.5	Access Roads 1	4				
	8.6	Pile Drivability 1	15				
9	Lim	itations1	6				

1 Introduction

ANS Geo, Inc. is pleased to provide this Geotechnical Report (Report) to AES to summarize the results of our geotechnical field investigation in support of the proposed Somerset Solar Energy Generation project located in Somerset, New York. To guide the design and construction of the proposed solar facility, ANS Geo developed and implemented a geotechnical investigation program which encompassed a desktop study of local geologic conditions, soil borings, field electrical resistivity testing, pile load testing, laboratory thermal resistivity and corrosion testing, California Bearing Ratio (CBR) and laboratory soil material testing.

ANS Geo notes that this document includes updates from a second mobilization (November 2021) which included additional explorations at the revised substation location (soil boring and electrical resistivity test) and the existing "mound" location south of the central railroad loop (soil boring).

2 Methodology

2.1 Soil Borings

ANS Geo retained Earth Dimensions, Inc., (EDI) of Elma, New York to advance 42 soil borings (B-01 through B-39, B-M1, and B-SS-1 through B-SS-2) completed at select locations across the project site between March 15 and 23, 2021 and again on November 4, 2021. The soil boring locations are depicted in the Investigation Location Plan, provided as **Attachment A**.

The 39 array-area soil borings were advanced to approximately 20 feet below ground surface (BGS) or until practical refusal, whichever was encountered first. The substation borings (B-SS-1 & B-SS-2) were advanced until practical refusal which was encountered at approximately 28.5 feet and 25.9 feet BGS, respectively. A CME-550x ATV-mounted drill rig was used to collect soil samples using the Standard Penetration Test (SPT) Method through hollow-stem augers in accordance with ASTM Standard D1586. Soil samples were generally collected continuously within the upper 10 feet in each boring, then in five-foot intervals thereafter to the termination depth. In one location (B-29), rock coring was conducted in accordance with ASTM D2113 to confirm the presence, type, and quality of bedrock. Soil borings, proposed by ANS Geo and confirmed by AES review, were located at relatively evenly spread locations throughout the project's array area(s). All soil borings were overseen and logged by an ANS Geo representative under the direction of a Professional Engineer licensed in the State of New York. Typed soil boring logs are presented as **Attachment B**.

At select soil boring locations, auger cuttings were collected from near-surface soils with the purpose of obtaining bulk soil samples for laboratory California Bearing Ratio (CBR), thermal resistivity testing (TRT), and corrosivity testing. Upon completion, each borehole was backfilled to its existing grade with soil cuttings.

2.2 Electrical Resistivity Testing

As part of our field investigation program, ANS Geo performed field Electrical Resistivity Tomography (ERT) testing on May 10 and 11, 2021 and again on November 4, 2021. Testing was conducted at seven (7) locations within the proposed array area(s) and two (2) locations withing the proposed substation areas. In-situ soil resistivity measurements were obtained by utilizing the Wenner 4-Pin Method in accordance with ASTM G57 and IEEE Standard 80. Two (2) mutually perpendicular traverses were collected at each array area location utilizing "a"-spacings of 2, 5, 10, 25, and 50 feet, "a"-spacings of 2, 5, 10, 25, 50, and 100 feet at the first substation area location, and "a"-spacings of 1, 2, 3, 5, 10, 25, 50, 75, 100, 150, and 188 feet at the second substation area location. Test results are presented as **Attachment C**.



2.3 Pile Load Testing

2.3.1 Test Pile Installation

As part of our scope of work, ANS Geo conducted pile load testing at 38 accessible locations across the proposed solar array area(s) between April 7 and 25, 2021. Each test location included a pair of test piles, totaling 76 piles tested for both uplift and lateral capacities. At each test location, W6x9x15 steel sections ("piles") were installed to varying depths between 6.8 and 11 feet BGS through the overburden via direct push to significant resistance, then driven to their targeted depths using a GAYK HRE 4000 Pile Driver. Per-pile installation rates varied up to 12.3 seconds per foot, with an average of approximately 6.2 seconds per foot. The installation and load testing program was overseen and logged by an ANS Geo geotechnical representative under the direction of a Professional Engineer licensed in the State of New York.

2.3.2 Uplift Load Testing

Once driven to the targeted embedment depth, an uplift load test was performed on each test pile in accordance with the ASTM D3689 (uplift) test method. The tension load was generally applied through hydraulic load cell attached to a rigid tripod reaction frame. Uplift loads were generally applied in one-minute, 1,000-pound increments up to 10,000 pounds, where feasible. Once achieved, the load was then unloaded to measure residual deflection. After the tension was fully released, the piles were reloaded up to a maximum uplift load of roughly 10,000 pounds or one-inch of deflection. ANS Geo notes that several uplift tests were limited in the maximum force applied, not due to excessive pile movement, but rather the reaction points settling into the soft surrounding ground surface.

2.3.3 Lateral Load Testing

A lateral load test was also performed at each test location, following each uplift load test, in accordance with ASTM D3966 (lateral) test method. Horizontal loads were applied at approximately three (3) feet above grade on each pile with the pulling force a hydraulic load cell. Test loads were applied cyclically in one-minute, 500-pound increments up to 4,000 pounds, where feasible. Once achieved, the load was immediately released and reloaded up to a targeted maximum deflection of approximately one-inch, if not already achieved.

The location of each pile load test is depicted in the Investigation Location Plan, provided as **Attachment A**. Results of the pile load testing program are summarized within **Section 5**.

3 Geology and Subsurface Conditions

ANS Geo conducted a brief, desktop review of surficial and bedrock geology maps and reports made available by the New York State Geological Survey (NYSGS) and the New York State Education Department (NYSED) prior to conducting our field investigation. The available mapping indicates that the native surficial soils are predominantly classified as "lacustrine silt and clay" which are described as laminated, calcareous, silts and clays. A small portion (approximately 5 percent) of the project resides within soils classified as "till moraine" which are described as variable textured material. Bedrock geological mapping indicates the project site is underlain entirely by the Queenston formation which predominantly consists of shale, sandstone, and siltstone bedrock.

ANS Geo additional reviewed overburden soil information made available by the USDA's Natural Resources Conservation Service (NRCS). The NRCS classifies the upper six (6) feet of soil primarily as material of the Callamer silt loam, Niagara silt loam, and Rhinebeck silt loam units. The full NRCS soil report is provided as **Attachment G**.

ANS Geo has provided the generalized subsurface conditions within Table 1 below based upon the observations made during our geotechnical investigation for the solar project. ANS Geo notes that this profile



is highly generalized and that soil boring logs, been provided as **Attachment B**, should be reviewed for location-specific subsurface conditions.

Avg. Depth (ft)	Material	Avg. Consistency	Description
0' – 0.5'	Topsoil	-	Two (2) to 10 inches of topsoil existed at surface across most of the project area.
0.5' – 4'	Clay / Silt	Medium stiff	Clays and silts of low to medium plasticity were generally encountered underlying the topsoil layer. This material frequently included some sand content and exhibited average pocket penetrometer values of 1.5 tons per square foot.
4' – 10'+	Glacial Till	Dense	Heterogeneous soils, typical of glacial till geology, were encountered throughout several of the boring locations. This layer generally includes varying proportions of gravels, sands, clays, and silts. It should also be noted that cobbles and boulders are typical of glacial till geology which regularly render drilling refusal.

Table 1 – Generalized Subsurface Profile

The mapped soil formations identified within our desktop study are consistent with the findings of our field investigations. ANS Geo notes that weathered rock material was encountered within 10 feet of grade within one of the soil boring locations (B-31).

3.1 Groundwater

Water was encountered within a small portion (20 percent) of the soil boring locations between three (3) and 20 feet below grade at the time of our investigation program. It is our opinion, however, that these water levels likely represent perched water conditions rather than static groundwater.



4 Results

4.1 Soil Index Testing

Representative soil samples were collected during our investigation and submitted to ANS's accredited materials testing laboratory. A summary of the index laboratory test results is provided within Table 2. As-received laboratory test results are included within **Attachment D**.

Sieve Analysis Samples									
Boring Sample ID		Denth (feed)	N/ Orrest	0/ O are d	% F	ines	% Moisture		
ID	Sample ID	Depth (feet)	% Gravei	% Sand	% Silt	% Clay	% IVIOI	sture	
B-06	S-3	4 - 6	0.0	21.9	42.3	35.8	17	17.4	
B-21	S-4	6 – 8	0.0	26.0	33.0	41.0	14	.7	
B-24	S-7	18 – 20	3.0	27.7	30.3	39.0	2.	0	
B-26	S-4	6 – 8	31.5	23.6	18.1	26.8	8.	5	
B-M1	S-6	13-15	0.0	17.6	82	2.4	19	.6	
B-SS-1	S-1	0 – 2	8.6	12.6	40.3	38.5	15	.6	
			Atter	berg Samples					
Boring ID	Sample ID	Depth (feet)	Liquid Limit	Plastic Limit	Plastici	ty Index	% Moisture	USCS Symbol	
B-01	S-2	2-4	28.1	19.5	8	.6	21.1	CL	
B-03	S-1	0 – 2	29.8	20.4	9	.4	24.1	CL	
B-05	S-3	4 - 6	27.8	19.2	8	.6	16.4	CL	
B-07	S-5	8 – 10	28.0	20.4	7	.6	12.1	CL	
B-10	S-4	6 – 8	30.3	20.6	9	.7	24.5	CL	
B-12	S-4	6 – 8	29.2	19.7	9	.5	23.1	CL	
B-14	S-5	8 – 10	30.0	20.9	9	.1	20.2	CL	
B-15	S-5	8 – 10	28.6	20.6	8	.0	11.2	CL	
B-18	S-6	13 – 15	29.6	20.0	9	.6	18.9	CL	
B-19	S-2	2-4	30.7	20.7	10	0.0	19.4	CL	
B-20	S-1	0 – 2	31.2	20.0	11	.2	21.1	CL	
B-23	S-4	6 – 8	32.6	20.5	12	2.1	34.2	CL	
B-27	S-6	13 – 15	29.2	19.9	9	.3	35.4	CL	
B-29	S-2	2-4	30.2	20.4	9	.8	19.2	CL	
B-33	S-2	2 – 4	30.3	19.7	10).6	24.4	CL	
B-34	S-6	13 – 15	30.7	19.7	11	.0	33.6	CL	
B-37	S-5	8 – 10	33.3	20.0	13	3.3	26.6	CL	
B-38	S-1	0-2	29.6	19.9	9	.7	19.2	CL	
B-SS2	S-3	4-6	25.2	18.4	6	.8	22.1	CL-ML	

Table 2 – Soil Index Testing Summary

4.2 Thermal Resistivity Testing

ANS Geo collected bulk samples from four (4) locations throughout the project area for laboratory testing of Thermal Resistivity. Soils were collected in a five-gallon bucket and delivered to ANS Consultants' accredited laboratory for testing. The soil was compacted to 85 percent of its Standard Proctor Density in accordance with ASTM D698, and Thermal Resistivity Testing was conducted in accordance with IEEE Standard 442-2017. Results of the thermal testing are summarized within Table 3. Complete, as-received results have been provided within **Attachment D**.



		Therma	al Resistivity V	Received	Re-Molded			
Location ID	Material Type	% water	% water	% water	% water	% water	Moisture Content (%)	Dry Density (lb/ft³)
	- 7	(°C-cm/W)	(°C-cm/W)	(°C-cm/W)	(°C-cm/W)	(°C-cm/W)		
B-06	Clay	0	4	8	12	16.6	25	01.4
(3'-5')	Clay	665	271	118	88	79	25	91.4
B-20	Clay	0	3.5	7	10.5	14.9	21.2	<u>00 2</u>
(3'-5')		753	298	115	83	74	21.2	09.5
B-29	Clay	0	3.5	7	10.5	14.8	01.0	04.2
(3'-5')	Clay	698	283	116	86	77	21.3	94.2
B-SS2	Silt	0	3	5.9	8.9	11.8	10.2	07.6
(3'-5')	Silt	363	219	115	72	59	19.2	97.0

Table 3 – Thermal Resistivity Testing Summary

4.3 Corrosivity Testing

ANS Geo collected soil samples at five (5) locations for corrosivity testing. The results of the testing, completed by ANS Consultants, have been summarized within Table 4a and are detailed within **Attachment D**.

Location ID	рН	Sulfate (mg/kg)	Chloride (mg/kg)	Soil Box (Calc. Resistivity) (Ω/cm)	Redox Potential (mV)
B-03 (2'-3')	7.12	18	40	7,000	115
B-12 (2'-3')	6.88	6	20	7,000	109
B-27 (2'-3')	7.76	3	25	6,500	111
B-35 (2'-3')	7.38	12	45	8,500	120
B-SS2 (2'-3')	8.23	39	45	3,000	108

Table 4a – Corrosivity Testing Summary – Soil

Given the project area's close proximity to Lake Ontario, ANS Geo additionally collected groundwater samples from four (4) existing site monitoring wells for corrosivity testing. The results of the testing, completed by Alpha Analytical, are summarized within Table 4b and are detailed within **Attachment D**.

Well ID	Acidity (mg CACO3/L)	Alkalinity (mg CACO3/L)	Sulfide (mg/l)	Redox Potential (mV)	Chloride (mg/l)	Sulfate (mg/l)	
SA9122D	11	22.1	ND	-16	9,960	2,070	
SA9132S	ND	420	ND	84	41.0	860	
SO8305	ND	244	ND	40	315	874	
SO8823	ND	542	ND	100	15.4	171	

Table 4b - Corrosivity Testing Summary - Groundwater

ND = Not Detected



4.4 California Bearing Ratio

ANS Geo collected an additional sample at three (3) locations from one (1) to three (3) feet below grade for testing of California Bearing Ratio (CBR) in accordance with ASTM D1883 at approximately 90 percent of its Standard Proctor Density (ASTM D698). Bulk samples were collected at varying depth intervals to provide representative data based on material type observed. The results of the testing, completed by ANS Consultants, have been summarized within Table 5 and are detailed within **Attachment D**.

Location ID	CBR Ratio (%)
B-04	0.7
B-18	1.4
B-31	0.7

Table 5 – California Bearing Ratio Summary



5 Pile Load Testing Results

Table 6 presents the summarized results of the pile load testing program at each test location. Complete Load Testing Logs are provided as **Attachment E** and should be referenced for detailed information.

Load Test ID	Embedment Depth (ft.)	Avg. Pile Installation Rate (sec/ft)	Approx. Uplift Load at 1-inch Deflection (lbs)	Approx. Lateral Load at 1-inch Deflection (lbs)
PT-01A	10.6	6.1	> 10,000	4,100
PT-01B	10.5	6.8	> 10,000	4,100
PT-02A	9.5	11.5	> 10,000	4,000
PT-02B	9.1	11.8	> 10,000	3,800
PT-03A	8	4.7	> 10,000	3,200
PT-03B	7.8	6.6	> 10,100	3,300
PT-04A	9	11.6	> 8,800	4,200
PT-04B	9	10.6	> 9,000	4,300
PT-05A	7	5.2	> 10,000	4,200
PT-05B	7	5.3	> 10,000	4,500
PT-06A	9	4.0	> 9,900	3,600
PT-06B	9	6.6	> 10,800	3,600
PT-07A	10	6.1	> 13,000	4,800
PT-07B	10	5.5	> 13,000	4,900
PT-08A	8	5.7	> 10,800	4,800
PT-08B	8.2	5.0	> 10,800	4,900
PT-09A	7	7.4	> 11,000	4,100
PT-09B	7	5.6	> 11,000	4,100
PT-10A	9	7.7	> 10,000	4,600
PT-10B	9	9.6	> 9,500	4,600
PT-11A	10	11.7	> 10,800	3,600
PT-11B	10	6.6	> 10,000	3,400
PT-12A	9	9.0	> 10,000	4,300
PT-12B	9	5.3	> 11,500	4,600
PT-13A	8	5.3	> 10,000	3,600
PT-13B	8	5.7	> 11,800	3,700
PT-14A	10.7	10.0	> 13,000	4,300
PT-14B	10.7	9.4	> 13,000	4,200
PT-15A	7	4.9	> 10,000	3,800
PT-15B	/	5.1	> 8,900	3,600
PT-16A	9	5.4	> 13,000	5,900
PT-16B	9	4.6	> 13,000	6,000
P1-1/A	7.1	7.3	> 10,000	4,500
PT-17B	/	0.9	> 10,000	4,500
	0	5.9	> 10,000	4,400
PT-10D	0	5.5	> 10,000	4,700
PT_10R	10	J.U 1 3	> 10,000	4,100
PT_20A	10	7.8	> 10,000	3,700
PT-20R	10	7.0	> 9 300	3,700
PT_21A	a	12.3	> 11 000	3,700
PT-21R	G G	7 1	> 8 000	3,700
PT-220	7	37	> 13 000	4 000
PT-22B	7	3.0	> 13.000	3,800

Table 6 – Pile Load Testing Summary



Load Test ID	Embedment Depth (ft.)	Avg. Pile Installation Rate (sec/ft)	Approx. Uplift Load at 1-inch Deflection (lbs)	Approx. Lateral Load at 1-inch Deflection (lbs)
PT-23A	10	5.8	> 10,600	4,000
PT-23B	10	5.2	> 10,200	4,000
PT-24A	10.7	5.8	> 11,200	4,200
PT-24B	10.3	6.1	> 11,200	4,200
PT-25A	6.8	6.6	7,200	3,600
PT-25B	7	5.7	> 10,100	3,700
PT-26A	9	2.8	9,500	3,600
PT-26B	9	3.7	9,800	3,500
PT-27A	10	2.1	> 8,800	4,100
PT-27B	10	1.7	> 10,200	4,300
PT-28A	7	5.1	> 10,000	3,700
PT-28B	7	3.5	9,000	3,800
PT-29A	8	6.9	6,000	3,800
PT-29B	8	4.2	9,500	3,800
PT-30A	9	6.1	> 10,000	3,700
PT-30B	9	6.0	> 8,800	3,400
PT-31A	7	3.5	7,100	3,300
PT-31B	7	3.9	> 10,000	3,600
PT-32A	11	8.3	> 10,000	3,600
PT-32B	10.4	5.2	> 5,000	3,400
PT-33A	7	4.6	> 10,000	3,800
PT-33B	7	3.0	> 10,000	3,700
PT-34A	9	9.7	> 9,700	4,200
PT-34B	9	9.0	> 10,000	4,000
PT-35A	10	3.7	> 8,500	3,500
PT-35B	10	3.6	> 9,100	3,700
PT-36A	8	2.9	> 10,000	4,300
PT-36B	8	3.6	> 10,000	4,400
PT-38A	10.6	6.4	> 10,000	4,000
PT-38B	10.2	5.6	> 10,000	3,900
PT-SSA	8	8.2	> 12,500	4,800
PT-SSB	8	8.9	> 12,500	4,800

Table 6 (cont.) – Pile Load Testing Summary



6 Seismic Site Classification

Based on the observations recorded within our subsurface investigation program and utilizing the N-Value method as prescribed in Chapter 20 of ASCE 7-16, Site Class D can be assumed as the average condition across the project site.

The seismic ground motion values for this this were obtained from the USGS Seismic Hazard Maps, referenced in ASCE 7-16 Standard and provided as **Attachment F**, and are as follows:

- 0.2 second spectral response acceleration, S_S = 0.167 g
- 1 second spectral response acceleration, S1= 0.046 g
- Maximum spectral acceleration for short periods, S_{MS} = 0.267 g
- Maximum spectral acceleration for a 1-second period, S_{M1} = 0.111 g
- 5% damped design spectral acceleration at short periods, S_{DS}= 0.178 g
- 5% damped design spectral acceleration at 1-second period, S_{D1} = 0.074 g

6.1 Preliminary Seismic Evaluation

The designated seismic site class is anticipated based on results from our investigation program and using select areas of the site which have been investigated by ANS Geo. Seismic support data is provided as **Attachment F**. Based on our observation of subsurface conditions, estimated Site Class ratings, and review of USGS's 2018 National Seismic Hazard Map, ANS Geo concludes that there is a low risk of significant seismic activity which may impact the proposed solar facility.

7 Foundation Considerations

ANS Geo anticipates that, as typical with solar farm construction, embedded posts, such as W6x9 H-piles, will be used to support the proposed solar panels. Conventional shallow foundations such as sonotubes, spread footings, or similar systems may also be utilized for equipment pads and associated support structures.

7.1 Corrosion Considerations

Given limited testing results measuring the soil and groundwater's measured acidity, sulfate and chloride concentrations, resistivity, and redox potential summarized in **Section 4.3** (Tables 4a and 4b), in consideration with the soil and moisture conditions observed, the in-situ soil conditions are anticipated to be "moderately" corrosive to embedded steel piles. Typically, a zinc coating of 1.7 oz/ft² (3 mil, or approximately 75 micrometers) is the minimum thickness for Grade 75 steel (W6x9) as specified by ASTM A123. As such, we expect that such piles would generally maintain an approximate lifespan of at least 20 to 30 years.

In addition, the average chloride concentration obtained from soil and groundwater testing across all discrete samples (with the exception of Well SA 9122D which should be considered individually) is roughly 70 partsper-million (ppm, or mg/kg). The concentration of chloride ions affects the corrosion rate of embedded steel¹. Based on empirical studies performed, the relationship between corrosion rate and chloride concentrations can be estimated as:

CR = 16.28 * ln(CL) - 83.8

¹ J. B. Decker, K.M. Rollins, J.C. Ellsworth, "Corrosion Rate Evaluation and Prediction for Piles Based on Long-Term Field Performance", American Society of Civil Engineers Journal of Geotechnical and Geoenvironmental Engineering, 134(4), pp. 341-351 (2008)



Where CR is defined as the "corrosion rate" of steel (in micrometers per year), and CL is the chloride concentration in parts-per-million. Using the equation above, and considering an average chloride concentration of 70 ppm, the corrosion rate is nearly zero across the planned service life of the facility, with the exception of the northeastern area in the vicinity of Well SA9122D. Given the well's proximity to Lake Ontario, groundwater within this area of the site may be brackish and a particularly higher corrosion risk to steel foundation posts and concrete foundations (as observed within the sampling results). ANS Geo recommends that additional soil corrosivity testing be completed at the northernmost panel locations to confirm these findings as additional coating and/or sacrificial steel thickness may be warranted.

7.2 Frost & Adfreeze Considerations

Given the location of the project and soils encountered, the potential for frost heave against post foundations should be considered. Fine-grained soils, or granular soils with greater than 10 percent fine-grained content are frost-susceptible due to the inability of entrapped moisture from infiltrating or evaporating prior to freezing. Trapped moisture will begin to create ice lenses, which will grip the steel posts or embedded structures, followed by ice-jacking due to frost heave. The phenomenon is more commonly referred to as "adfreeze stress", which can be considered as an external, upward force applied to the post. The magnitude of the upward force will depend on the depth of the frost zone, the interface bond stress between embedded structure/material and the surrounding area, and the surface area of the structure/material in contact with this bond stress.

Several methods exist to evaluate frost susceptibility of soils, including determination of fine-grained content of near-surface soils, evaluation of air freezing index, and local, empirical correlations such as the Atlas of Soil Freezing Depth Extremes for the Northeastern United States.

The first evaluation is to determine frost susceptibility of the site soils. The earliest method was developed by Arthur Casagrande that uses percentage of fine fraction less than 0.02 mm by weight, in which silts and very fine sands are considered to have medium to very high frost susceptibility. The method was further expanded by the US Army Corps of Engineers (1965) into a widely-used classification system which categorizes soils into frost groups F1 through F4. Classification is made in order of increasing frost-susceptibility (ie. worse soils are F4), and loss of strength during thaw. Based on the predominant, near-surface soil type at the site (silts and clays), the site can be classified as frost group F4.

Frost penetration depth may be calculated in multiple ways, including local, County, or State building code frost depths, the US Army Corps of Engineers method using the modified Berggren Equation, and empirical data.

Within Niagara County, New York, frost depth is mapped to exist at approximately 54 inches (4.5 feet) below grade. However, we recognize that fluctuations in air temperature, snow cover and insulation, and historic freezing indices have shown empirical correlations of shallower frost depth. Based on the Atlas of Soil Freezing Depth Extremes for the Northeastern United States, for a return period of 25 years, the maximum depth of freezing under sod is approximately 30 inches.

Using the modified Berggren Equation, frost penetration depth can also be calculated as follows:

$$X = \lambda \sqrt{\frac{48 k_f nF}{L_s}}$$

Where each variable is defined as follows:

X = depth of frost penetration [m]

- Λ = dimensionless coefficient based on dry density and water content
- n = dimensionless conversion factor from air index to surface freezing index
- k_f = thermal conductivity of frozen soil [BTU/ft-hr-°F]
- F = air freezing index [°F-days]
- L_s = volumetric latent heat of soil [BTU/ft³]



Using this relationship, it is recognized that frost penetration depth is directly proportional to the square root of thermal conductivity of the frozen soil and surface freezing index, and inversely proportional to the square root of volumetric latent heat of the soil. The thermal conductivity of frozen soil is a function of soil type (ie. fine-grained or coarse-grained), moisture content, and dry density. The following assumptions are made to calculate frost depth at this site:

- 1. Mean annual air temperature (MAAT) of 48.4°F from the 1981 2020 Climate Normals data taken from the National Oceanic and Atmospheric Administration (NOAA)
- 2. The average annual number of frost days assumed was 119 days
- 3. An air freezing index of 1,037 °F-days for a 25-year return period using NOAA data (Buffalo)
- 4. The ratio of surface index to air index (n) of 0.7 for bare soil without any overlying soil or ice
- 5. A dry density of 100 lb/ft³ for fine-grained, near-surface soils
- 6. An average water content of 25% based on laboratory results for samples within the frost zone

Using the assumptions above, and input into the modified Berggren Equation, the calculated frost penetration depth for a 25-year return period is approximately 32 inches.

Based on our evaluation, since conditions may exist where snow cover is not present during low temperature extremes, and using a calculated depth of frost penetration, ANS Geo recommends that all structural foundations be founded at 32 inches (2.7 feet) below grade or deeper, for a 25-year design life, to ensure adequate protection from frost conditions which may jeopardize the integrity of subgrade soils and associated substructure.

As predominantly silty and/or clayey soils were observed near grade, ANS Geo recommends that an unfactored adfreeze (uplift) stress of 1,500 pounds per square foot (10.4 psi) be considered within the 32-inch frost penetration depth of posts for panel foundation sizing and design.

7.3 Soil Shrink & Swell Potential

Shrinkage and swelling of soils refer to the volumetric change (decrease and increase) exhibited in primarily fine-grained soils due to a change in moisture conditions. The extent of shrinking and swelling is largely influenced by the type and amount of clay present in the native near-surface soils. Higher-risk soils generally include fine-grained material with a high clay content, greater than 50 percent by weight, and liquid limits of 50 percent or higher (fat clays). Based on our observed soil conditions and results of laboratory testing, it is our professional opinion that the native on-site soils exhibit a low to negligible shrink and/or swell potential in the event of significant moisture fluctuation.

7.4 Recommended Soil Parameters for Pile Design

Based on our interpretation of the subsurface conditions observed within our investigation programs and results of pile load testing, ANS Geo recommends that the soil parameters, as depicted within Table 7, be considered for foundation post design purposes.



Depth	Material	Effective Unit Weight	Internal Friction Angle	Cohesion	Soil Modulus (k)	Soil Strain (E₅₀)	Allowable Bearing Capacity	Allowable Side Resistance
0' - 0.5'	Topsoil (Soft Clay [Matlock])	100 lb/ft ³		300 lb/ft ²		0.020		
0.5' – 2.7'	Clay / Silt (Mod Stiff Clay w/o Free Water)	110 lb/ft ³		1,200 lb/ft ²	100 lb/in ³	0.010	500 lb/ft ²	
2.7' – 4'	Clay / Silt (Mod Stiff Clay w/o Free Water)	110 lb/ft ³		1,200 lb/ft ²	100 lb/in ³	0.010	1,500 lb/ft ²	500 lb/ft ²
4' – 7'	Glacial Till (Sand [Reese])	120 lb/ft ³	37°		200 lb/in ³		2,500 lb/ft ²	350 lb/ft ²
7' – 10'+	Glacial Till (Sand [Reese])	125 lb/ft ³	38°		250 lb/in ³		3,500 lb/ft ²	450 lb/ft ²

Table 7 – Recommended LPILE Soil Parameters

Note: Italicized material types represent our recommended LPILE soil models.

ANS Geo recommends that allowable side resistance within the upper 2.7 feet be neglected due to frost impact, and adfreeze stresses, as noted in Section 7.2, be considered. Pile load testing results and subsurface observations were evaluated by ANS Geo using LPILE software to provide these refined soil parameters. ANS Geo notes that the soil parameters depicted within Table 7 represent values calibrated to curve-fit our lateral load test data; these parameters (effective unit weight and internal friction angle) should not be relied upon for other site foundation designs. It is our recommendation that verification load testing and detailed structural calculations be performed prior to construction to confirm these recommendations.

8 Construction Recommendations

8.1 Excavation

Depending on proposed foundation configurations, degree of earthwork, and depth of utilities, some excavations may extend deeper than four feet below grade. Excavations deeper than four feet should be shored or sloped and benched, in accordance with OSHA regulations, to ensure safe working conditions within the excavations. For benching purposes, overburden soils may be considered as "Type B" material and should be sloped no steeper than 1H:1V (horizontal to vertical). All OSHA soil classifications should be field-determined by the contractor's "competent person" prior to excavation. Any proposed shoring systems should be designed by the contractor's "competent person", be certified by a Professional Engineer licensed in the State of New York, and should be submitted to the engineer for review. As typical of till geology, the contractor should anticipate occasional cobbles or boulders within excavations and earthwork activities.

8.2 Dewatering

ANS Geo observed perched water as shallow as three (3) feet below grade at the time of our investigation program. Although this does not represent static groundwater levels, the contractor should be prepared to manage groundwater, perched water, and/or infiltrated stormwater as needed using localized pump-and-sump or similar techniques to allow for concrete foundation construction in-the-dry. Water discharge should be managed in compliance with applicable state and local regulations. The contractor should be sure to grade the surface as necessary to divert stormwater away from open excavation to the extent possible.



8.3 Subgrade Preparation

Prior to the installation of shallow concrete foundations, ANS Geo recommends overexcavating the subgrade by at least six (6) inches, lining the exposed material with a geotextile separation fabric, and bringing the subgrade back up to the design foundation elevation with compacted structural fill as specified within Table 8. Native material beneath the separation fabric should be inspected for unsatisfactory conditions such as standing water, frozen soil, organics, protruding cobbles or boulders, or deleterious materials. Should any unsatisfactory conditions exist within the native subgrade, the excavation should be undercut an additional six inches (12 total inches beneath proposed foundation depth) prior to placement of the geotextile separation fabric.

Sieve Size	Percent Passing
3-inch	100
1 ¹ ⁄ ₂ -inch	60 – 100
No. 4	30 – 60
No. 200	0 – 10

Table 8 – Recommended Gradation of Structural Fill

Structural fill material should be placed in loose lifts not exceeding eight (8) inches in height and be compacted to at least 95 percent of its Modified Proctor Density in accordance with ASTM D1557.

8.4 Backfilling and Re-use of Native Soils

ANS Geo notes that native fine-grained soils (silts and clays) on site will likely be difficult to handle, place, and compact without proper moisture conditioning and protection. ANS Geo recommends the following measures be considered to reduce the adverse impacts of moisture-sensitive soils:

- Positive measure should be implemented and maintained to intercept and direct surface water away from moisture-sensitive subgrade surfaces.
- Subgrade surfaces should be sloped and, as appropriate, seal-rolled to facilitate proper drainage. Surfaces should be properly prepared in anticipation of inclement weather. Moisture should not be allowed to collect on subgrade surfaces.
- To the extent practical, the limits of exposed subgrade soils should be minimized.
- Construction traffic should be limited to properly constructed haul roads.
- Disturbed soils should be removed and replaced with compacted controlled fill material.
- In place moisture contents should be maintained with two percent wet/dry of the optimum moisture content as determined by the Modified Proctor Test (ASTM D1557).

These soils may be re-used across the project area for fill in landscaped areas; however, it should not be used under or above foundations or load-bearing structures where typically imported structural fill is used. Native material used as backfill for cable trenches should be handled and placed at a moisture content at or above its optimum value to ensure representative thermal properties are maintained.

In areas around and above installed foundations, large utilities, and other buried site features, ANS Geo recommends importing a clean granular material with less than 15 percent fine-grained content for use as general backfill. General backfill material should be screened of any cobbles, boulders, and any particles larger than 3 inches in diameter, and should not be used beneath any load-bearing structures. General backfill should be placed in loose lift thicknesses not exceeding 12 inches and be compacted to at least 95 percent of its Modified Proctor Density (ASTM D1557). Soil used as backfill should not be handled when frozen and should be free of excessive moisture, organics, and deleterious material.

In fill areas beneath foundations, access roads, and load-bearing structures, ANS Geo recommends structural fill as described in **Section 8.3** and Table 8.



8.4.1 Re-use of Existing "Mound" Soils

As part of our second phase of investigations at the project site, completed in November 2021, ANS Geo advanced a soil boring at/near the top of the existing soil "mound" situated south of the existing central railroad "loop" at the project site, bounded to the south by Lake Road. This soil boring is identified as "B-M1" and is depicted in the Investigation Location plan, provided as **Attachment A**. The purpose of this additional data point was to identify the composition of the mounded material, as well as assess its suitability as re-use across the project site during construction.

Upon recovery of the soil material, this "mound" was visually classified as maintaining predominately silt and clay material within the upper (approximately) 35 feet, underlain by dense sand and likely bedrock around 45 feet below grade. The upper fine-grained soil horizon was observed to be largely consistent in composition and include no debris or deleterious material. Furthermore, laboratory testing on a discrete sample within this layer confirmed an organic matter content of approximately 3.3 percent. Productive agricultural soils typically contain 3 to 6 percent organic composition. Based on our findings, it is our professional opinion that the observed upper soils (within 35 feet of grade) would be suitable for use as topsoil material across the project site. It should be noted that this recommendation is based on a single soil boring advanced within this "mound" and may not be representative of the entire area. Additional inspection and testing of these soils during construction is recommended.

8.5 Access Roads

ANS Geo understands that unpaved, stone access roads will be required during construction to facilitate access for construction vehicles and heavy equipment deliveries (ie. transformers). Post-construction, permanent access roads will be required to enter and exit the project site as well as provide access to the equipment pad locations for routine maintenance.

ANS Geo has performed a preliminary evaluation of the required, final access road thickness considering infrequent emergency access for firefighting vehicles, as well as occasional light vehicular traffic such as utility pickup truck or similar maintenance vehicle. Assuming a two-inch allowable rut depth, ANS Geo recommends access roads be constructed to include at least 12 inches of compacted crushed stone as specified below:

Sieve Size	Percent Passing
1 ¹ ⁄ ₂ -inch	100
³∕₄-inch	55 – 90
No. 4	25 – 50
No. 50	5 – 20
No. 200	3 – 10

Fable 8 – Recommended Gradation of Crushed St	one
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Our preliminary road evaluation for a post-construction access road assumed the following:

- Allowable rut depth: 2-inches
- *Vehicle(s) considered*: Standard aerial ladder firefighting rig and light-duty pick-up truck
- Frequency of passes: 20 passes per day (light-duty pick-up vehicle)
- Service life: 25 years
- Number of axles: 3
- Axle load: 54,000 lb (maximum rear GAWR, for firefighting rig)
- Subgrade Soil: Very stiff, proof-rolled silty clay
- Assumed CBR: 2% (considering proof-rolling with at least three passes of loaded tandem)

If a biaxial geogrid is placed atop the proof-rolled and prepared subgrade, access road thickness may be reduced by two inches. A biaxial geogrid such as Tensar BX1200 or equal is recommended.



Prior to permanent roadway construction, the subgrade should be stripped of vegetation and topsoil, and be proof-rolled with at least three (3) roundtrip passes of a smooth-drum roller with a minimum operating weight of eight (8) tons. The prepared subgrade should be confirmed to maintain a minimum CBR value of 2. If required, additional stabilization may be obtained through chemical treatment of the subgrade including introduction of lime or cement. Crushed stone should be placed in loose lifts not exceeding eight (8) inches in height and be compacted to at least 95 percent of its Modified Proctor Density (ASTM D1557).

Temporary construction roads may also be left in place as permanent access roads, where appropriate. These re-purposed roadways should be back-bladed post-construction and graded to an even, level surface with maximum permissible longitudinal and cross slopes in accordance with the site's civil design criteria.

As part of the project construction, the contractor should be prepared to design, construct, and maintain access roadways for the duration of site activities. During construction, the delivery and movement of heavier loads such as transformers, inverters, delivery of steel and concrete, and transportation of modules is expected. It should be understood that these loads and vehicles are larger than what has been considered in the preliminary access road design evaluation, which is focused on post-construction condition including infrequent fire-fighting rigs and routine light-duty trucks and maintenance vehicles. The contractor should complete an independent access road evaluation considering the construction-phase loading and the contractors means and methods. It is possible that the construction-phase access road may require a thicker, temporary access road, the use of geogrid, and/or considerations for routine maintenance of the access roads after heavier traffic. The contractor will be required to maintain serviceable access roads throughout construction and at turn-over of the facility, including backfill ruts, back-blading and re-compacting soft and rutted areas, re-shaping roads to promote drainage and safe passage of traffic, and other improvements.

8.6 Pile Drivability

ANS Geo anticipates that, as typical with solar farm construction, solar panels will be supported by steel H-Piles (wide-flanged sections) driven to approximately 10 to 12 feet below grade. It is ANS Geo's professional opinion that the parameters provided in **Section 7.3** may be used to preliminarily size the proposed piles, however, we recommend verification load testing prior to construction using final design loads, the intended pile profile, and the planned pile depth. These steel piles are typically installed via direct-push, vibration, and/or percussive hammer methods.

Based on our observations within our limited investigation program, we anticipate that occasional refusals (cobbles and/or boulders) may be encountered at the foundation post locations within the anticipated embedment depths, however, we expect this frequency to be approximately 10 to 20 percent of pile locations, or less. It should be noted that this is a high-level estimate based on a limited number of test pile installations across the site.

ANS Geo recommends that the contractor be prepared to pre-drill at proposed post locations to clear obstructions, as needed. We recommend that, if required, pre-drilled holes be completed to a diameter slightly smaller than the diagonal dimension of the proposed pile section to ensure a tight fit once the pile is driven to its targeted depth. For example, a six (6)-inch diameter hole may be drilled and utilized for W6x9 section (approx. 7.1-inch diagonal measurement). The contractor should be aware, however, that heavier sections (ie. W6x12 or W6x15) may have limiting "bending" capacity in its flanges, and therefore require a hole of a slightly larger proportion.



9 Limitations

ANS Geo notes that the findings and recommendations presented within this Geotechnical Report are based on our investigation program conducted in March through May 2021 and our engineering judgment. Should the scope of the project or proposed site layout change, ANS Geo should be given the opportunity to review the applicability of the collected information and modify our recommendations, as needed.

We sincerely appreciate the opportunity to support this project, and please feel free to contact us should you have any questions regarding the findings of this Report.

Attachments

Attachment A – Location Plans	
Attachment B – Soil Boring Logs	

- Attachment C Electrical Resistivity Testing Results
- Attachment D Laboratory Results
- Attachment E Pile Load Testing Logs
- Attachment F Seismic Support Data
- Attachment G NRCS Soil Report





Attachment A

Location Plan





Client:



INVESTIGATION LOCATION PLAN

AES SOMERSET SOLAR PROJECT SOMERSET, NEW YORK

Legend

- Site Boundaries
- ↔ Soil Boring and Pile Test Location
- Soil Boring Only
- Pile Test Only
- Electrical Resistivity Location

Monitoring Well Sample Location

0 1,500 3,000 ft

Absolute Scale: 1 inch = 1,500 feet Scale at 11" x 17" AS SHOWN

Prepared by: Kyle Hansen Date: April 27, 2021 Drawing Number: ILP-1 Rev.0



Attachment B

Soil Boring Logs

A		1	5 C	GEO	C			S	oil Borin	g Lo	bg						B-01
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, Laub	Solar F New Y	Projec ′ork	t		Drilling Firm: Drill Crew: Boring Start: Boring End:	EDI Phil / Jason 3/22/2021 3/22/2021					Coordin Horiz. D Elevatio Vert. Da	ates: atum: on: itum:	4 : N G N	3.364365 N, -78.576699 E IAD 83 Grade I/A
Rig Rig Drill Ham Drill	Mode Type: Meth mer ⁻ ing Fl	l: od: ſype: uid:	CME ATV Hollo Autor	-550X w Ster matic	m Auç	ger		Sampler Type: Sampler Lengt Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon h: 24 inches 1.375 inches 140 pounds 30 inches					Casing Casing Casing Hamme Hamme	Type: Lengt I.D.: r Wt.: r Fall:	h:	HSA 5 feet 2 inches 140 pounds 30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classific	cation	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-V a 10 20	alue 30 40)	Drilling & Strata Notes
-	S-1	14	1 2 4 3	6	ML	<u><u><u></u><u><u></u><u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u></u></u></u>	6" - TO Mediun fine Gra	PSOIL n stiff, brown Sandy S avel, moist (ML)	ILT, little coarse to	L	м			Ţ		-	
-	S-2	22	2 4 5 6	9	CL		Stiff, br little Sil	own to greenish brow t, moist (CL)	n Sandy CLAY,	L	L	0.5	0.05			-	Oxidized material present
5	S-3	20	6 12 12 10	24	SM		Mediun SAND,	n dense, green Silty m moist (SM)	nedium to fine								Oxidized material present
-	S-4	23	13 37 42 57	> 50			Very de GRAVE	ense, reddish brown S EL, little Silt, moist to c	andy coarse to fine dry (GM)	2						>>	Glacial till
-	S-5	20	10 38 35 41	> 50	GM		Very de coarse	ense, gray to reddish l to fine GRAVEL, little	brown Sandy Silt, dry (GM)							>>+	Glacial till
10	S-6	10	20 50/6	> 50	-	$\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 $	Very de GRAVE	ense, reddish brown S :L, little coarse to fine ense, reddish brown S :L, little coarse to fine boring at 18.3 feet BG le backfilled with cutti	silty coarse to fine Sand, dry (GM) Silty coarse to fine Sand, dry (GM) SS ngs								-10 Heavy auger grinding from 11 to 18 feet BGS Glacial till -15 Glacial till -20
	Dat/	In-E	Boreho	ole Wa	sing	evels Bot. of	Water	👤 = Water Level (i	General Notes					Toughne	ss:Low	/ (L),	Medium (M), High (H)
					<u>o (ft)</u>	Hole (ft) Lvl (ft)	BGS = Below Groun	nd Surface					Plasticity PP = Pock TV = Torv	r:Non-F ket Pen rane (S	Plastic letron hear	c (NP), Low (L), Medium (M), High (H) neter, measured in tons per square ft. Vane), measured in tons per square ft.

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Rig Rig Drill Ham Drill	Model Type: Meth Imer 1 ing Fl	l: od: Гуре: uid:	CME- ATV Hollow Autor	-550X w Ster natic	m Aug	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type:HSACasing Length:5 feetCasing I.D.:2 inchesHammer Wt.:140 poundsHammer Fall:30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value Drilling & Strata Notes
-	S-1	12	WH 2 2 5	4	CL		4" - TC Mediur	DPSOIL m stiff, brown CLAY, trace Silt, mosit (CL)	M	м	1.5	0.1	
-	S-2	22	5 11 14 21	25	SM		Mediur SAND,	m dense, brown Silty coarse to fine , little coarse to fine Gravel, moist (SM)					
5	S-3	24	7 17 26 30	43			Dense little Si	, brown Sandy coarse to fine GRAVEL, lt, moist (GM)					5
-	S-4	3	41 49 50/5	> 50	GM		Very de Silt, dry	ense, gray coarse to fine GRAVEL, little y (GM)					Heavy auger grinding from 6 to 14 fee BGS
- - 10	S-5	22	17 25 36 45	> 50	-		Very de GRAVI trace C	ense, reddish brown coarse to fine EL, some Silt, little coarse to fine Sand, Clay, dry (GM)					Glacial till
- - 15—	S-6	20	8 16 12 13	28	GC		Mediur coarse Sand, d	m dense, reddish brown to brown Clayey to fine GRAVEL, little coarse to fine dry (GC)	_				Transition layer from glacial till to Clar
	S-7		6 5 4 12	9	CL		Stiff, gi	ray Gravelly CLAY, moist (CL)	L	м	0.25	0.2	
-							End of Boreho	boring at 20 feet BGS ble backfilled with cuttings					
\vdash	D-4-	In-E	Boreho	le Wa	sing	evels Bot. of	Water	General Notes					Toughness:Low (L), Medium (M), Hiah (H)
		= / IIM6	<u>,</u>	Tip	o (ft)	Hole (ft)	Lvl (ft)	BGS = Below Ground Surface					Plasticity: Non-Plastic (NP), Low (L), Medium (M), High (H) PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft.

A		1	50	GEO	0			Soil Boring	Lc	bg								B-03
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Rig Rig Drill Han Drill	Mode Type: Meth Imer T ing Fl	l: od: Type: luid:	CME ATV Hollo Autor	-550X w Ster matic	m Aug	jer		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Ca Ca Ca Ha	ising Ising Ising Imm	g Ty g Le g I.I ner V ner I	/pe eng D.: Wt.: Fall	: th: :	HSA 5 feet 2 inches 140 pounds 30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	1	N - 0 2	- Valı 0 3	Je 0 4	10	Drilling & Strata Notes
-	S-1	14	WH 1 3 4	4	CL		5" - TO Mediur moist (DPSOIL n stiff, yellowish brown CLAY, little Silt, CL)	L	м	1.25	0.45	•					5 inches of topsoil
-	S-2	12	1 6 7 9	13	sc		Mediur SAND,	n dense, green Clayey medium to fine moist (SC)										-
5	S-3	18	4 8 17 19	25	CI		Very st fine Gr	tiff, brown Sandy CLAY, trace coarse to avel, moist (CL)	L	м	> 4.5	50.475						- 5
-	S-4	18	9 12 16 20	28			Very st	tiff, brown Gravelly CLAY, moist (CL)	м	м	2.25	0.65						-
-	S-5	20	6 19 10 7	29			Very st trace c	tiff, gray CLAY, little medium to fine Sand, warse to fine Gravel, moist (CL)	L	м	1.5	0.35						-
10— - -																		
- 15—	S-6	8	21 50/3	> 50	_		Hard, y mediur Gravel	yellow to reddish brown CLAY, little n to fine Sand, trace coarse to fine , moist to dry (CL)	м	м	1.25	0.45					>>	-15
-							Ļ											-
-	S-7		22 50/4	> 50		°00 •V	Very de (GP) End of Boreho	ense, gray coarse to fine GRAVEL, dry boring at 18.8 feet BGS ble backfilled with cuttings									>>	Heavy auger grinding from 14 to 18 feet BGS Shale rock fragments Water observed at 17 feet BGS
								-										
		In-E	Boreho	ole Wa	ater Lo	evels	Water	General Notes					Te	ugh-				Modium (M) High (H)
	3/2	e / Time 3/2021	<u>}</u>		5 (ft) 18	Hole (ft)	17	BGS = Below Ground Surface					Pla PP TV	= Pc = Tc	ity:Nocke	t Pe	Plas Plas netro Shea	, Medium (M), High (H) tic (NP), Low (L), Medium (M), High (H) meter, measured in tons per square ft. r Vane), measured in tons per square ft.

Δ		1	5 6	GEO	C			Soil Boring	j Lo	bg				B-04
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som Som : Matt	erset \$ erset, Laub	Solar F New Y	^o roject ′ork	t		Drilling Firm:EDIDrill Crew:Phil / BrianBoring Start:3/23/2021Boring End:3/23/2021					Coordinates: Horiz. Datum: Elevation: Vert. Datum:	43.352216 N, -78.575396 E NAD 83 Grade N/A
Rig Rig Drill Ham Drill	Mode Type: Meth Imer 1 ing Fl	l: od: ſype: uid:	CME ATV Hollo Autor	-550X w Ster matic	m Aug	jer		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches 140 pounds 30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value	Drilling & Strata Notes
-	S-1	14	WH 2 5 7	7			5" - TC Mediur	DPSOIL n stiff, brown Silty CLAY, moist (CL)	M	м	2	0.525	•	-
-	S-2	22	4 8 15 17	23	CL		Very st moist (iff, brown to gray CLAY, little Silt, wet to CL)	м	м	> 4.5	0.45		-
5	S-3	24	4 11 16 21	27			Very st (CL)	iff, brown to gray CLAY, little Silt, dry	М	м	4	0.55		-5
-	S-4	20	6 10 16 19	26			Very st	iff, brown Sandy CLAY, dry (CL)	м	м	> 4.5	0.55		-
-	S-5	24	4 11 27 30	38			Hard, g	gray Sandy CLAY, dry (CL)	L	м	> 4.5	0.3		-
-									_					-
-	S-6	14	16 22 50/4	> 50	GM		Very de GRAVI	ense, reddish brown coarse to fine EL, little Silt, little medium toSand, trace poist (GM)					>:	Auger grinding from 11 to 14.6 feet BGS Auger refusal at 14.6 feet BGS glacial
15—						949	End of Boreho	boring at 14.6 feet BGS ble backfilled with cuttings	_					-15
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┣──	I	l In-F	Boreho	ole Wa	l Iter Lø	l evels		General Notes		1	1	<u> </u>		<u> </u>
⊢	Date	e / Time)	Ca	sing	Bot. of	Water	▼ = Water Level (if observed)					Toughness:Low (I	.), Medium (M), High (H)
	3/2	3/2021 3/2021		14 14	4.6 4.6	Hole (ft)	LVI (ft) 12.2 14	BGS = Below Ground Surface					Plasticity: Non-Pla PP = Pocket Penetr TV = Torvane (She	stic (NP), Low (L), Medium (M), High (H) rometer, measured in tons per square ft. ar Vane), measured in tons per square ft.

ľ		15	5 G	GE(C			So	il Boring	Lo	bg							B-05
Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, Laub	Solar F New Y	Projec ′ork	t		Drilling Firm: El Drill Crew: Pl Boring Start: 3/ Boring End: 3/	DI hil / Brian /23/2021 /23/2021					Coordi Horiz. I Elevati Vert. D	nates: Datum: on: atum:	43.3 NAD Grac N/A	49141 N, -78.5752) 83 de	289 E
Rig Rig Drill Han Drill	Mode Type: Meth nmer 1 ing Fl	l: od: Type: luid:	CME ATV Hollo Autor None	-550X w Ster matic	m Aug	ger		Sampler Type: Sampler Length: Sampler L.D.: Sampler I.D.: Hammer Wt.: Hammer Fall: S	Split Spoon 24 inches 1.375 inches 140 pounds 30 inches					Casing Casing Casing Hamme Hamme	Type: Lengt I.D.: er Wt.: er Fall:	HS 1: 5 fe 2 in 140 30 f	A eet nches) pounds feet	
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log	0) 	Visual Classificati	on	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-\ 10 20	/alue 30 40		Drilling & Str	ata Notes
-	S-1	16	WH 1 3 2	4	SM		5" - 1 Very trace	OPSOIL loose, brown Silty coarse to coarse to fine Gravel, mois	o fine SAND, st (SM)					Ţ		-		
-	S-2	20	2 3 6 6	9			Stiff, Grav	brown to gray CLAY, trace el, moist (CL)	coarse to fine	L	м	3.25	0.4			-		
5-	S-3	24	4 8 17 16	25	CL		Very Sand	stiff, brown CLAY, little mee , trace Silt, moist (CL)	dium to fine	L	м	> 4.5	ō 0.4		.	5		
-	S-4	24	7 20 22 23	42			Hard trace	, brown SILT, trace medium Clay, dry (ML)	n to fine Sand,	L	м	> 4.5	0.5					
-	S-5	24	6 18 16 17	34	ML		Hard Sanc dry (l	, brown to gray SILT, trace , trace Clay, trace coarse to ML)	medium to fine o fine Gravel,	м	м	> 4.5	50.47			-		
10					 					-						- 10		
-	S-6	24	6 8 11	10	SM		Medi SAN	um dense, brown Silty coar D, moist (SM)	se to fine									
15—		24	19		-									·····	<u>\</u>			
-										-								
-	S-7	16	15 26 50/5	> 50			Very to fin mois	dense, reddish brown to gr e GRAVEL, trace medium t : (GM)	ay Silty coarse o fine Sand,							>>	Auger grinding fron BGS	n 16.5 to 18 feet
20							End Bore	of boring at 19.4 feet BGS nole backfilled with cuttings								20 -		
																-		
		In-E	Boreho	ole Wa	sing I	evels Bot.	of Water	V = Water Level (if of	Seneral Notes					Tougho	ss:1 ow	(L) Mer	dium (M) High (H)	
		= / IIM6	;	Tip	o (ft)	Hole	(ft) Lvl (ft)	BGS = Below Ground S	Surface					Plasticit PP = Poo TV = Tor	y :Non-F ket Pen vane (St	lastic (N etromete near Van	P), Low (L), Medium r, measured in tons e), measured in tons	(M), High (H) per square ft. per square ft.

A		15	G	EE(C			Soil Borin	g Lo	bg				B-06
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, l Laub	Solar F New Y	Projec ′ork	t		Drilling Firm: EDI Drill Crew: Phil / Jason Boring Start: 3/15/2021 Boring End: 3/15/2021					Coordinates: Horiz. Datum: Elevation: Vert. Datum:	43.349468 N, -78.581278 E NAD 83 Grade N/A
Rig Rig Drill Ham Drill	Model Type: Meth mer 1 ing Fl	l: od: Type: luid:	CME- ATV Hollov Autor None	-550X w Ster matic	n Aug	jer		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches 140 pounds 30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value	Drilling & Strata Notes
-	S-1	12	2 2 3 2	5			Medium Sand, ti	n stiff, brown CLAY, trace medium to fin race Silt, moist (CL)	e L	м			•	-
-	S-2	16	3 3 6 11	9	CL		Stiff, bro trace Si	own Sandy CLAY, trace fine Gravel, ilt, moist (CL)	L	м				-
5—	S-3	20	5 6 8 13	14	ML		Stiff, bro (ML)	own Clayey SILT, some fine Sand, mois	st					5
-	S-4	22	17 17 19 27	36	sм		Dense, moist (S	brown medium to fine SAND, little Silt, SM)						-
- 10—	S-5	24	13 20 26 30	46	SP		Dense, moist (S	brown medium to fine SAND, trace Silt, SP)						
-	S-6	16	7 20 21	41	CL		Gray Cl	LAY, little fine Sand, little Silt, moist (CL)) м	м				-
15— - -			28		SC		Reddisl Clay, lit	h brown medium to fine SAND, some tle fine Gravel, moist (SC)						
- 20—	S-7	1	50/4	> 50			Very de SAND, trace Si End of Boreho	ense, reddish brown coarse to fine some Clay, trace coarse to fine Gravel, ilt, moist (SC) boring at 18.3 feet BGS le backfilled with cuttings						
-														-
┣—		In-E	Boreho	ble Wa	ter Le	evels	Water	General Notes					Toughnosed are d) Medium (M) High (L)
	Date	e / Time			o (ft)	Hole (ft)		 Water Level (If observed) BGS = Below Ground Surface 					Plasticity: Non-Plas PP = Pocket Penetr TV = Torvane (Shea	,, weaturn (w), nign (π) stic (NP), Low (L), Medium (M), High (H) ometer, measured in tons per square ft. ar Vane), measured in tons per square ft.

A		1	50	GEO	C			Soil Boring	Lo	bg				B-07
Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset erset, Laub	Solar F New Y	Projec ⁄ork	t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/15/2021Boring End:3/15/2021					Coordinates: Horiz. Datum: Elevation: Vert. Datum:	43.351942 N, -78.585629 E NAD 83 Grade N/A
Rig Rig Drill Ham Drill	Mode Type: Meth mer ⁻ ing Fl	l: od: Type: luid:	CME ATV Hollo Auto	-550X ow Ster matic e	m Aug	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type: Casing Length Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches 140 pounds 30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value	Drilling & Strata Notes
-	S-1	12	5 4 4 7	8	CL		4" - TO Stiff, br little co	PSOIL rownish yellow CLAY, some fine Sand, arse to fine Gravel, trace Silt, moist (CL)	н	м				-
-	S-2	18	4 11 7 9	18	sc		Mediur mediur to fine	n dense, light brown to reddish brown n to fine SAND, some Clay, trace coarse Gravel, moist (SC)						-
5	S-3	24	4 6 7 7	13	сн		Stiff, lig (CH)	ght brown CLAY, little Silt, trace Sand	н	н				5
-	S-4	12	12 22 22 41	44	sc		Light b trace S Reddis	rown CLAY, little fine Gravel, little Sand, bilt, moist (CH) th brown coarse to fine SAND, little to fine Crawle little Claw trace Site maint						Glacial till
-	S-5	16	8 17 25 26	42	CL		(SC) Hard, li fine Gr	ight brown Sandy CLAY, trace coarse to avel, trace Silt, moist (CL)						Light auger grinding from 8 to 10.5 feet BGS
- 10														-
-	S-6	20	21 28 44 40	> 50	sc		Very de little co	ense, reddish brown Clayey fine SAND, arse to fine Gravel, trace Silt, moist (SC)					>	Heavy auger grinding from 11 to 15.5 feet BGS
- 15														
-	S-7	8	10 80 50/3	> 50	SP		Reddis moist (h brown Clayey fine SAND, trace Silt, SC) Travelly SAND, trace Clay, dry (SP)					>	-
20					-		End of Boreho	boring at 19.6 feet BGS ble backfilled with cuttings						-20
-														-
-														-
		In-E	Boreh	ole Wa	ater L	evels	1011	General Notes						
	Date	e / Time	÷	Ca Tip	o (ft)	Bot. of Hole (ft)	Water Lvl (ft)	✓ = Water Level (if observed) BGS = Below Ground Surface					Toughness:Low (Plasticity: Non-Pla PP = Pocket Penel TV = Torvane (She	L), Medium (M), High (H) stic (NP), Low (L), Medium (M), High (H) rometer, measured in tons per square ft. ar Vane), measured in tons per square ft.

A		15	G	EE(C			Soil Boring	Lo	bg			B-08
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, l Laub	Solar F New Y	Projec ⁄ork	t		Drilling Firm: EDI Drill Crew: Phil / Jason Boring Start: 3/15/2021 Boring End: 3/15/2021					Coordinates:43.354415 N, -78.589578 EHoriz. Datum:NAD 83Elevation:GradeVert. Datum:N/A
Rig Rig Drill Ham Drill	Mode Type: Meth mer T ing Fl	l: od: Type: luid:	CME- ATV Hollov Autor None	-550X w Ster matic	m Aug	jer		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type:HSACasing Length:5 feetCasing I.D.:2 inchesHammer Wt.:140 poundsHammer Fall:30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value Drilling & Strata Notes
-	S-1	12	1 3 3 6	6		<u>, </u>	2" - TOI Medium Sand, n	PSOIL n stiff, brown SILT, some medium to fine noist (ML)	L	м			
-	S-2	24	7 6 11 10	17	ML		Very sti	ff, brown Sandy SILT, moist (ML)	L	м			
5	S-3	24	6 6 9 10	15	-		Very sti	ff, brown Sandy SILT, moist (ML)					
-	S-4	20	7 5 6 9	11	CL		Stiff, bro	own Sandy CLAY, moist (CL)					
- - 10-	S-5	16	7 10 10 15	20	ML		Very sti Sand, n	ff, brown SILT, little medium to fine noist (ML)	L	м			-10
-	S-6	18	3 7 5 7	12	CL		Stiff, gra Sand, ti	ayish green CLAY, little medium to fine race Silt, moist (CL)	L	М			
15— - -					-								
- 20-	· S-7	24	4 2 2 3	4			Medium	n stiff, gray CLAY, trace Silt, wet (CL)	L	м			
-							End of I Borehol	boring at 20 feet BGS le backfilled with cuttings					
┣—	D-1	In-E	Boreho	le Wa	sing I	evels Bot. o	f Water	General Notes					Toughness:Low (L), Medium (M), High (H)
	Date	= / IIM6	;	Tip	o (ft)	Hole (f	t) Lvl (ft)	BGS = Below Ground Surface					Plasticity: Non-Plastic (NP), Low (L), Medium (M), High (H) PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft.

A		15	G	EC	C			Soil Boring	Lo	bg			B-09
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, I Laub	olar F New Y	Projec ′ork	t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/15/2021Boring End:3/15/2021					Coordinates:43.350017 N, -78.590457 EHoriz. Datum:NAD 83Elevation:GradeVert. Datum:N/A
Rig Rig Drill Ham Drill	Mode Type: Meth mer 1 ing Fl	l: od: Type: luid:	CME- ATV Hollov Auton None	-550X w Ster natic	m Aug	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type:HSACasing Length:5 feetCasing I.D.:2 inchesHammer Wt.:140 poundsHammer Fall:30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value Drilling & Strata Notes
-	S-1	14	WH 2 3 7	5			4" - TO Mediun moist ((PSOIL n stiff, brown Silty CLAY, little fine Sand, CL)	L	м		0.15	5 • -
-	S-2	24	3 6 9 12	15			Very st trace S	iff, gray to brown CLAY, little fine Sand, ilt, moist (CL)	м	н		0.25	5 • -
5	S-3	24	6 10 12 17	22			Very st trace fi	iff, brown Silty CLAY, trace fine Sand, ne Gravel, moist (CL)	м	н		0.3	- - -5
-	S-4	24	11 14 13 15	27			Mediun trace fi	n dense, brown fine SAND, some Clay, ne Gravel, moist (SC)					
-	S-5	18	3 5 9 13	14	SC		Mediun some C	n dense, brown medium to fine SAND, Clay, moist (SC)					
-													-
- 15—	S-6	24	14 14 13 13	27			SAND,	race Silt, moist (SC)					
-													
- 20	S-7	18	7 14 18 21	32			Dense, Clay, se	brown medium to fine SAND, some ome coarse to fine Gravel, moist (SC)					-20
-							End of Boreho	boring at 20 feet BGS le backfilled with cuttings					
				1. 17		L_		• ••••					
	Date	In-E	soreho	Cas Tip	sing (ft)	Bot. of Hole (ft)	Water Lvl (ft)	General Notes = Water Level (if observed) BGS = Below Ground Surface					Toughness:Low (L), Medium (M), High (H) Plasticity:Non-Plastic (NP), Low (L), Medium (M), High (H) PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft.

ľ		1	5 6	GEO	С			So	oil Boring	g Lo	bg							B-1	0
Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset \$ erset, Laub	Solar F New Y	Projec ′ork	t		Drilling Firm: Drill Crew: Boring Start: Boring End:	EDI Phil / Jason 3/16/2021 3/16/2021					Coordir Horiz. D Elevatic Vert. Da	nates:)atum: on: atum:	43.35 NAD Grad N/A	53046 N, -78 83 e	8.593969 E	
Rig Rig Drill Han Drill	Mode Type: Meth mer	l: od: Type: luid:	CME ATV Hollo Autor	-550X w Ster matic	m Auç	ger		Sampler Type: Sampler Length Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon 24 inches 1.375 inches 140 pounds 30 inches					Casing Casing Casing Hamme Hamme	Type: Length I.D.: r Wt.: r Fall:	HSA 5 fe 2 in 140 30 f	A et ches pounds eet		
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classifica	ation	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-V	alue		Drilling	& Strata Note	s
-	S-1	18	WH 3 6 8	9			2" - TO Stiff, br	PSOIL own CLAY, little Silt, m	oist (CL)	н	м	2.75	0.125	•	00 40	-			
-	S-2	24	3 9 12 11	21	CL		Very st Sand, t	iff, brown CLAY, little n race Silt, moist (CL)	nedium to fine	м	м	> 4.5	0.65			-			
5-	S-3	24	4 11 12 10	23	-		Very st Sand, t	iff, brown CLAY, little c race Silt, moist (CL)	oarse to fine	м	м	> 4.5	0.45			5			
-	S-4	10	12 38 20 12	> 50			Brown (CL) Green	CLAY, little medium to Clayey SAND, moist (S	fine Sand, moist			3	0.35		>	- >-			
- - 10—	S-5	24	4 4 5 4	9	CL		Stiff, gr (CL)	ay Sandy CLAY, trace	Gravel, moist							- - 			
-	• S-6	4	7 20 25 26	45			Dense, SAND,	reddish brown Silty co some fine Gravel, dry	arse to fine (SM)	_						-	Auger grindi Glacial till	ng from 12 to 13	feet BGS
	· S-7	1	50/4	> 50	GP		Very de End of Boreho	ense, gray coarse Grav boring at 18.3 feet BG le backfilled with cuttin	rel, dry (GP) S gs	_					>		Auger grindi BGS	ng from 17.5 to 1	8 feet
-																-			
⊢	Date	In-E	Boreho	Ca	sing	evels Bot. of	Water	👤 = Water Level (if	General Notes observed)					Toughne	ss:Low (L), Med	ium (M), High	ı (H)	
					o (ft)	Hole (ft)	LVI (ft)	BGS = Below Groun	d Surface					Plasticity PP = Poc TV = Torv	/:Non-Pla ket Pene /ane (She	astic (NF rometer ear Vane	 P), Low (L), M , measured in), measured 	ledium (M), High n tons per square in tons per squar	(H) eft. reft.

A		1	50	GEO	0			Soil Boring	j Lo	bg									B-1	1	
Client: AES Project: Somerset Solar Project Location: Somerset, New York Inspector: Matt Laub								Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/16/2021Boring End:3/16/2021	Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/16/2021Boring End:3/16/2021								Coordinates:43.350778 N, -78.59616 EHoriz. Datum:NAD 83Elevation:GradeVert. Datum:N/A				
Rig Rig Drill Ham Drill	Rig Model: Rig Type: Drill Method: Hammer Type: Drilling Fluid:			-550X ow Ster matic	m Aug	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches	Sampler Type: Split Spoon Sampler Length: 24 inches Sampler I.D.: 1.375 inches Hammer Wt.: 140 pounds Hammer Fall: 30 inches					Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:				es ounds et			
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value			40	Drilling & Strata Notes		s		
-	S-1	10	WH 1 2 5	3	ML		3" - TC Soft, b trace C	PPSOIL rown SILT, little medium to fine Sand, Clay, moist (ML)	L	м	3.25	5 0.5					-				
-	S-2	20	4 9 13 22	22	CL		Very st (CL)	iff, brown Sandy CLAY, trace Silt, moist	м	м	4.25	5					-				
5-	S-3	24	13 17 23 19	40	sc		Dense Clay, n	, brown medium to fine SAND, some noist (SC)							\ 		5				
-	S-4	24	21 34 47 46	> 50			Very d moist (ense, brown Silty medium to fine SAND, SM)								>>	*				
- 10-	S-5	22	8 26 31 26	> 50	- SM		Very d trace C	ense, brown Silty medium to fine SAND, Clay, moist (SM)								>>					
-									-								-				
	S-6	24	6 33 56 43	> 50	- SP		Very den fine Grav	nse, gray medium to fine SAND, little ıvel, little Clay, moist (SP)								>>	- 				
-																	-				
-	S-7	22	29 57 45 45	> 50			Very d trace C	ense, gray Gravelly coarse to fine SAND, Clay, dry (SP)								>>	- A	uger grinding	from 16 to 18	feet BGS	
20							End of Boreho	boring at 20 feet BGS le backfilled with cuttings								•••••	-20				
-																					
		In-E	Boreh	ole Wa	ter L	evels	\A/-+	General Notes	-												
Date / Time			Casing Bot. of Water Tip (ft) Hole (ft) Lvl (ft) B				vvater Lvl (ft)	 Water Level (if observed) BGS = Below Ground Surface 	: Water Level (if observed) } = Below Ground Surface						Toughness:Low (L), Medium (M), High (H) Plasticity: Non-Plastic (NP), Low (L), Medium (M), High (H) PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft.					(H) + ft. e ft.	

A	15	5 G	GE(C			Soil Boring	Lo	og				B-12	
Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som Som : Matt	erset S erset, Laub	Solar F New Y	Projec ′ork	t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/16/2021Boring End:3/16/2021			Coordinates:43.350868 N, -78.6Horiz. Datum:NAD 83Elevation:GradeVert. Datum:N/A	503699 E		
Rig Rig Drill Ham Drill	Model Type: Meth Imer 1 ing Fl	l: od: Гуре: uid:	CME ATV Hollo Autor None	-550X w Ster matic	m Aug	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches	Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value Drilling &	Strata Notes
-	- S-1 1	12	WH 3 10 17	13			Mediun SAND,	n dense, brown Clayey medium to fine trace Silt, moist (SC)					•	
-	S-2	24	10 10 8 9	18	SC		Mediun SAND,	n dense, brown Clayey medium to fine little Silt, moist (SC)					-	
5—	S-3	20	3 5 5 6	10			Mediun SAND,	n dense, brown Clayey medium to fine little Silt, moist (SC)						
-	S-4	22	5 6 7	12	CL		Stiff, br trace S	rown CLAY, little medium to fine Sand, silt, moist (CL)	м	м	2.75	0.37	•	
- - 10	S-5	24	4 12 14 14	26	-		Mediun moist (n dense, brown Clayey SAND, trace Silt, SC)						
-					SC			reddish brown to gray coarse to fine some Clay, little Silt, moist (SC)						
- 15—	S-6	16	7 18 22 25	40			Dense, SAND, s							
-													-	
-	S-7	12	13 40 22 18	> 50	-		Very de mediun moist (:	ense, reddish brown to gray Clayey n to fine SAND, some Silt, some Gravel, SC)					- Glacial till	
-							End of Boreho	boring at 20 feet BGS ole backfilled with cuttings					-	
-														
⊢	I	l In-F	Boreho	ole Wa	l ter la	l evels		General Notes	1					
Date / Time			Casing Bot. of Water Tip (ft) Hole (ft) Lvl (ft)			Bot. of Hole (ft)	Water Lvl (ft)	▼ = Water Level (if observed) BGS = Below Ground Surface			Toughness:Low (L), Medium (M), High (H) Plasticity:Non-Plastic (NP), Low (L), Medium (M), High (H) PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft.			

P		15	5 G	GE(C			Soil Boring	Soil Boring Log					
Clie Proj Loc Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, Laub	Solar F New Y	Projec ′ork	t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/15/2021Boring End:3/15/2021	Drilling Firm:EDICoordinDrill Crew:Phil / JasonHoriz. D.Boring Start:3/15/2021ElevationBoring End:3/15/2021Vert. Date					
Rig Rig Drill Han Drill	Mode Type: Meth Imer T ing Fl	l: od: Гуре: uid:	CME ATV Hollo Autor None	-550X w Ster matic	m Aug	jer		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches			Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches 140 pounds 30 feet		
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value	Drilling & Strata Notes
-	S-1	5	WH WH 2 5				Soft, bro fine Gra	own CLAY, little Sand, little Silt, trace avel, moist (CL)	L	м				-
-	S-2	10	4 3 6 9	9	CL		Stiff, bro Sand, m	own to gray CLAY, trace medium to fine noist (CL)	м	М				-
5-	S-3	14	5 8 8 10	16	-		Very stit medium	iff, brown to yellow Silty CLAY, trace n to fine Sand, moist (CL)	м	м				- 5
-	S-4	22	8 16 19 11	35			Hard, bi to fine S	rown to yellow Silty CLAY, trace medium Sand, moist (CL)	м	м				-
- 10-	S-5	24	5 4 3 2	7			Medium to fine G	n stiff, reddish brown CLAY, trace coarse Gravel, wet (CL)	L	м				- - 10
-									_					-
- 15—	S-6	18	13 17 20 19	37	58		Dense (SAND, (SP)	<pre>see green to reddish brown medium to fine ND, little coarse to fine Gravel, trace Silt, wet ')</pre>					·····	
-									_					-
- 20-	S-7	2	50/3	> 50			Weathe End of t Borehol	ered rock fragments boring at 18.3 feet BGS le backfilled with cuttings					>>	Weathered rock material recovered
-														-
\vdash	_	In-E	Boreho	ole Wa	iter Lo sina T	Bot. of	Water	General Notes) Medium (M) High (H)		
Date / Time			Tip (ft) Hole			Hole (ft)		BGS = Below Ground Surface					Plasticity: Non-Pla PP = Pocket Penetr TV = Torvane (Shea	, measured (w), rught (r) stic (NP), Low (L), Medium (M), High (H) orneter, measured in tons per square ft. ar Vane), measured in tons per square ft.

ANS GEO Soil Boring Log												B-14					
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, N Laub	olar F New Y	Projec ′ork	t		Drilling Firm: EDI Drill Crew: Phil / Jason Boring Start: 3/15/2021 Boring End: 3/15/2021	Drilling Firm:EDICoordinDrill Crew:Phil / JasonHoriz. DBoring Start:3/15/2021ElevationBoring End:3/15/2021Vert. Date								
Rig Rig Drill Ham Drill	Mode Type: Meth Imer T ing Fl	l: od: Гуре: uid:	CME- ATV Hollov Auton None	550X v Ster natic	n Aug	jer		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches			Casing Type:HSACasing Length:5 feetCasing I.D.:2 inchesHammer Wt.:140 poundsHammer Fall:30 feet						
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value Drilling & Strata Notes				
-	S-1	10	1 1 2 14	3			6" - TO Soft, br Sand, r	PSOIL rown Silty CLAY, trace medium to fine noist (CL)	L	м			6 inches of topsoil				
-	S-2	14	5 10 12 11	22	CL		Very st fine Sa	iff, brown Silty CLAY, trace medium to nd, moist (CL)	L	м							
5	S-3	24	7 10 14 12	24			Very st Sand, r	iff, brown Silty CLAY, little medium to fine noist (CL)	м	м			5				
-	S-4	24	8 9 10 12	19	-		Very st fine Sa (CL)	iff, reddish brown CLAY, little medium to nd, trace fine Gravel, trace Silt, moist	м	м							
-	S-5	24	7 8 10 23	18			Very st	iff, yellowish brown CLAY, little Silt, little n to fine Sand, moist (CL)	м	м			•				
10— - - 15—	S-6	10	4 3 12 24	15			Brown fine Sa	to gray CLAY, little Silt, little medium to nd, moist (CL)					Weathered rock in spoon				
-	S-7	6	15 37 23 31	> 50			Weathe	ered rock material recovered, wet					Weathered rock material recovered				
							End of Boreho	boring at 20 feet BGS le backfilled with cuttings									
		In-E	Boreho	le Wa	iter Le	evels Bot. of	Water	General Notes					Toughness: Low (L) Medium (M) High (H)				
	3/1: 3/1:	5/2021 5/2021	;	1 1	9 (ft) 8 8	Hole (ft)	Lvl (ft) 8.8 19	BGS = Below Ground Surface					Plasticity: Non-Plastic (NP), Low (L), Medium (M), High (H) PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft.				
A		15	50	GEC	С			Soil Boring	Lo	bg				B-15			
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Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, Laub	Solar F New Y	Projec (ork	t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/16/2021Boring End:3/16/2021					Coordinates: Horiz. Datum: Elevation: Vert. Datum:	43.354708 N, -78.610828 E NAD 83 Grade N/A			
Rig Rig Drill Ham Drill	Mode Type: Meth Imer ⁻ ing Fl	l: od: Type: luid:	CME ATV Hollo Autor	-550X w Ster matic	m Auç	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches 140 pounds 30 feet			
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value	Drilling & Strata Notes			
-	S-1	18	1 2 4 5	6	sc		3" - TC Loose, trace S	PPSOIL brown Clayey medium to fine SAND, silt, moist (SC)						-			
-	S-2	24	2 6 12 11	18	SM		Mediur SAND,	n dense, green Silty medium to fine moist to wet (SM)						-			
5—	- S-3 24 25 38 SC Dense, SAND, Dense, SAND,							, green to brown Clayey medium to fine little coarse to fine Gravel, moist (SC)						-5			
-	S-4	6	21 25 23 26	48	SC		Dense, SAND, moist (, green to reddish brown medium to fine little Clay, trace coarse to fine Gravel, SC)						Auger grinding from 6 to 7.5 feet BGS			
- - 10-	S-5	8	7 37 50/1	> 50	CL		Hard, t Gravel	prown Sandy CLAY, little coarse to fine , trace Silt, moist (CL)	L	м	> 4.5	0.45		-10			
-									-					-			
- 15—	S-6	20	11 45 23 21	> 50			Very de trace S	ense, gray Gravelly coarse to fine SAND, illt, dry (SP)					>:	Auger grinding from 10 to 12 feet BGS			
-														-			
- 20-	$\begin{array}{c c c c c c c c c c c c c c c c c c c $						Very de moist (ense, gray Gravelly coarse to fine SAND, SP)					>:	Auger grinding from 16 to 18 geet BGS			
- End of bo Borehole							End of Boreho	boring at 20 feet BGS ble backfilled with cuttings						-			
		In-E	Boreho	ole Wa	iter L	evels Bot. of	Water	General Notes) Medium (M) High (H)			
	Date	= / 11me	;	Tip	<u>) (ft)</u>	Hole (ft)	Lvl (ft)	BGS = Below Ground Surface					Plasticity: Non-Pla PP = Pocket Penetr TV = Torvane (She	sic (NP), Low (L), Medium (M), High (H) ometer, measured in tons per square ft. ar Vane), measured in tons per square ft.			

A		1	S G	FE	C				Soil Borin	g L	og								B-16
Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som Som	erset S erset, I Laub	Solar F New Y	Projec ′ork	rt			Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/17/2021Boring End:3/17/2021					Co Ho Ele Ve	oord oriz. evat ert. [lina Da tion Dati	ites itum 1: um:	: 1:	43.35108 N, -78.610621 E NAD 83 Grade N/A
Rig Rig Drill Ham Drill	Mode Type: Meth Imer 1 ing Fl	l: od: Гуре: uid:	CME ATV Hollo Autor	-550X w Ster natic	m Au	ger			Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Ca Ca Ca Ha Ha	asin asin asin amm amm	g T g L g I. ner ner	ype eng D.: Wt. Fall	: th: :	HSA 5 feet 2 inches 140 pounds 30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Granhic	Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	1	N 10 2	- Val	ue 30 4	10	Drilling & Strata Notes
-	S-1	10	1 1 3 8	4		<u>.</u>		6" - TO Mediun Sand, r	PSOIL n stiff, brown SILT, some medium to fine noist (ML)	° M	М	4.2	5 0.4						-
-	S-2	12	5 8 10 15	18	ML			Very st Sand, r	iff, brown SILT, some medium to fine noist (ML)	м	м	2	0.4						-
5	S-3	16	7 9 5 7	14	-			Stiff, br Sand, r	own to black SILT, some medium to find moist (ML)	9		2	0.3						 Organic material recovered, looks to be burnt wood 5
-	S-4	20	7 5 9 12	14	-			Stiff, br moist (l	own Sandy SILT, trace Clay, wet to ML)			1.5	5 0.2	5					-
- 10-	S-5	22	6 10 12 16	22				Mediun Sand, I	n dense, brown Clayey medium to fine ittle Silt, moist (SC)										
-	S-6	22	6 13 21	34	sc			Dense, little Cla	brown to gray medium to fine SAND, ay, trace Silt, moist (SC)										-
15—			19																15
-	S-7		6 25 23 30	48	SM			Dense, little co	reddish brown Silty, SAND, little Clay, arse to fine Gravel, dry (SM)										Auger grinding from 16 to 17.5 feet BGS Glacial till
20							1,	End of Boreho	boring at 20 feet BGS le backfilled with cuttings										
		In-E	Boreho	ole Wa	l Iter L	.eve	els		General Notes					┢					
	Date / Time Casing Tip (ft) Hole (1						ot. of ble (ft)	Water) Lvl (ft)	= Water Level (if observed) BGS = Below Ground Surface					To Pla PP TV	eughi astic = Po / = To	ness ity: I ocke orva	s:Lo Non- et Pe ne (\$	w (L Plas netro Shea	(L), Medium (M), High (H) astic (NP), Low (L), Medium (M), High (H) trometer, measured in tons per square ft. ear Vane), measured in tons per square ft.

ľ		1	G	EC	C			So	oil Boring	Lo	g			B-1	7
Clie Proj Loc Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, N Laub	olar F New Y	Projec ′ork	t		Drilling Firm: F Drill Crew: F Boring Start: 3 Boring End: 3	EDI Phil / Jason 3/17/2021 3/17/2021					Coordinates: 43.355757 N, -78.613453 E Horiz. Datum: NAD 83 Elevation: Grade Vert. Datum: N/A	
Rig Rig Drill Han Drill	Mode Type: Meth Imer T ing Fl	l: od: Type: luid:	CME- ATV Hollov Auton None	·550X w Ster natic	n Aug	jer		Sampler Type: Sampler Length: Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon 24 inches 1.375 inches 140 pounds 30 inches					Casing Type:HSACasing Length:5 feetCasing I.D.:2 inchesHammer Wt.:140 poundsHammer Fall:30 feet	
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classificat	tion	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value Drilling & Strata Note	s
-	S-1	12	3 2 4 3	6		<u>x 1</u> 2	4" - TOP Loose, bi little Silt,	SOIL rown Gravelly coarse t moist (SP)	to fine SAND,	-				•	
-	S-2	16	5 7 10 17	17	SP		Medium (SAND, lit	dense, brown Gravelly ttle Silt, trace Clay, mo	/ coarse to fine bist to wet (SP)					Auger grinding from 3 to 4 fe	et BGS
5-	$- \begin{array}{c c} S-3 & 16 & 2 \\ 23 \\ 26 & 49 \\ 26 & 26 \end{array} \begin{array}{c} Dense, \\ coarse \\ Very de \\ SAND, \end{array}$							prown medium to fine S o fine Gravel, trace Cla	SAND, little ay, dry (SP)					5	
-	S-4	16	19 53 50/4	> 50			Very den SAND, d	ise, brown Gravelly co ry (SP)	arse to fine					Heavy auger grinding from 6 feet BGS	to 17.5
- 10-	S-5	3	50/6	> 50			Very den medium	nse, gray coarse to fine to fine Sand, dry (GP)	e GRAVEL, trace					Soil cuttings were Gravel, lirr	estone
-			14		GP		Dense, g	ray Coarse GRAVEL,	dry (GP)						
- 15— -	S-6	1	15 16 23	31											
-							Medium SAND, lit	dense, gray Clayey m ttle Gravel, moist (SC)	edium to fine						
	20 - End o Boreh							oring at 20 feet BGS e backfilled with cutting	js					-	
F	Det	In-E	Boreho	le Wa	iter Le	evels Bot. of	Water	= Water Level (if c	General Notes					Toughness:Low (L). Medium (M), High (H)	
	Date / Time Casing E Tip (ft) H						Lvl (ft)	BGS = Below Ground	I Surface					Plasticity: Non-Plastic (NP), Low (L), Medium (M), High PP = Pocket Penetrometer, measured in tons per squar TV = Torvane (Shear Vane), measured in tons per squa	(H) ∋ ft. re ft.

Δ		15	G	EE(C			Soil Boring	g Lo	bg			B-18
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, l Laub	Solar F New Y	Projec ′ork	t		Drilling Firm: EDI Drill Crew: Phil / Jason Boring Start: 3/17/2021 Boring End: 3/17/2021					Coordinates:43.352009 N, -78.61416 EHoriz. Datum:NAD 83Elevation:GradeVert. Datum:N/A
Rig Rig Drill Ham Drill	Model Type: Meth Imer 1 ing Fl	l: od: Гуре: uid:	CME- ATV Hollov Autor None	-550X w Ster natic	m Auç	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type:HSACasing Length:5 feetCasing I.D.:2 inchesHammer Wt.:140 poundsHammer Fall:30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value Drilling & Strata Notes
-	S-1	18	1 1 3 5	4	ML	<u>x</u> 1 _z . x	4" - TOF Medium Gravel,	PSOIL stiff, brown Sandy SILT, trace fine moist (ML)	L	м	2	0.35	5 • -
-	S-2	22	3 4 6 10	10			Medium SAND, t	dense, brown Silty medium to fine race Clay, moist (SM)					
5	S-3	20	12 14 14 10	28	SM		Medium SAND, t	dense, brown Silty medium to fine trace Clay, moist (SM)					-5
-	S-4	16	5 6 8	12			Stiff, bro Sand, m	own to gray CLAY, little medium to fine noist (CL)	L	м	3.25	0.35	5 -
- 10	S-5 24 10 16 CL Very still S-5 24 10 16 Sand, m							ff, gray CLAY, some medium to fine noist (CL)	м	м	3	0.2	2
- - - 15—	S-6	24	3 3 3 8	6			Medium Sand, m	stiff, gray CLAY, some medium to fine toist (CL)	м	м	1	0.175	νε •
-	GP GP Medium of coarse to moist (GF						Medium coarse t moist (G	dense, gray to reddish brown Sandy o fine GRAVEL, little Clay, trace Silt, SP)					Glacial till
-							End of b Borehol	poring at 20 feet BGS e backfilled with cuttings					-
<u> </u>	Data	In-E	Boreho	le Wa	sing	evels Bot. of	Water	General Notes V = Water Level (if observed)					Toughness:Low (L), Medium (M), High (H)
	Date / Time Tip (ft)) Lvl (ft)	BGS = Below Ground Surface					Plasticity: Non-Plastic (NP), Lòw (L), Medium (M), High (H) PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft.

A		J	50	GEO	0			Soil Boring	Lo	bg				B-19
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset \$ erset, Laub	Solar F New Y	Projec ⁄ork	>t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/17/2021Boring End:3/17/2021					Coordinates: Horiz. Datum: Elevation: Vert. Datum:	43.358434 N, -78.616321 E NAD 83 Grade N/A
Rig Rig Drill Ham Drill	Mode Type: Meth Imer ⊺ ing Fl	l: od: Type: luid:	CME ATV Hollo Autor	-550X w Ster matic	m Au	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type: Casing Lengt Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 1: 5 feet 2 inches 140 pounds 30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value	Drilling & Strata Notes
-	S-1	16	1 1 3 5	4	ML		– 4" - TC Mediur	DPSOIL m stiff, brown Sandy SILT, moist (ML)	L	м	2.5	3.5	•	-
-	S-2	24	3 6 8 10	14	CL		Stiff, g	reen to gray CLAY, trace Silt, moist (CL)	н	м	> 4.5	5.5		-
5	S-3	24	17 17 13 22	30	sc		Dense (SC)	, green Clayey SAND, trace Silt, moist						
-	S-4	22	11 20 21 23	41	ML		Hard, g fine Gr	green to gray Sandy SILT, trace coarse to avel, moist (ML)	L	м	1.5	2		
- 10	S-5	22	4 18 30 26	48	SP		Dense trace S	, green to gray coarse to fine SAND, Silt, trace coarse to fine Gravel, moist (Sp)						
-			6 14				Hard, g	gray CLAY, little coarse to fine Gravel, Silt, moist (CL)						Heavy auger grinding from 10 to 12.5 feet BGS
- 15— -	S-6	20	16 17	30	_				м	м	3.5	5.5		-15
-							Very d coarse	ense, Silty coarse to fine SAND, little to fine Gravel, trace Clay, dry (SM)						- Auger grinding from 15.5 to 17 feet BGS
- 20—	- S-7 18 60 104 20							boring at 19.6 feet BGS ble backfilled with cuttings						-20
-														-
-														F
		In-E	Boreho	ole Wa	ater L	evels		General Notes		L	1			
	Date / Time					Bot. of Hole (fi	Water Lvl (ft)	✓ = Water Level (if observed) BGS = Below Ground Surface					Toughness:Low Plasticity:Non-F PP = Pocket Pen TV = Torvane (SI	(L), Medium (M), High (H) lastic (NP), Low (L), Medium (M), High (H) etrometer, measured in tons per square ft. lear Vane), measured in tons per square ft.

A		15	5 G	GE(C			Soil Boring	Lo	bg				B-20
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, Laub	Solar F New Y	Projec ′ork	t		Drilling Firm: EDI Drill Crew: Phil / Jason Boring Start: 3/17/2021 Boring End: 3/17/2021					Coordinates:43Horiz. Datum:N.Elevation:GVert. Datum:N.	3.354158 N, -78.618303 E AD 83 irade /A
Rig Rig Drill Ham Drill	Mode Type: Meth mer 1 ing Fl	l: od: Гуре: uid:	CME ATV Hollo Autor None	-550X w Ster matic	n Auç	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type: H Casing Length: 2 Casing I.D.: 2 Hammer Wt.: 4 Hammer Fall: 3	HSA 5 feet 2 inches 140 pounds 30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value 10 20 30 40	Drilling & Strata Notes
-	S-1	18	1 3 4 5	7			2" - TO Mediun fine Sa	PSOIL n stiff, brown Silty CLAY, little medium to nd, moist (CL)	L	м	2	0.1	-	
-	S-2	24	4 3 5 5	8	CL		Stiff, br	own Sandy CLAY, trace Silt, moist (CL)	L	м	1.5	0.35	• -	
5—	S-3	20	4 4 4 4	8	sc		Loose, trace fi	brown coarse to fine SAND, little Clay, ne Gravel, moist (SC)						5
-	S-4	22	8 12 19 26	31	CL		Hard, b	rown Sandy CLAY, moist (CL)	М	м	3.75	0.15		
- 10—	S-5	20	15 31 32 40	> 50	SP		Very de Silt, mo	ense, brown coarse to fine SAND, trace ist to wet (SP)					>>+	-10
-	S-6	20	11 9 11	20			Very st	iff, gray Sandy SILT, moist (ML)	M	м	3.5	0.25		
15— - -			10		-									-15
-	S-7 22 4 7 4 7 Medium						Mediun fine Gra	n stiff, gray Sandy SILT, little coarse to avel, wet (ML)	L	н	1	0.25	-	
20							End of Boreho	boring at 20 feet BGS le backfilled with cuttings						-20
<u> </u>	Date	In-E	soreho	Ca: Tin	sing (ft)	Bot. of Hole (ft	Water) Lvl (ft)	General Notes V = Water Level (if observed) POD = Delaw 2 = 12 for					Toughness:Low (L), M	Medium (M), High (H) ; (NP), Low (L), Medium (M), High (H)
					/			BGS = Below Ground Surface					PP = Pocket Penetrom TV = Torvane (Shear \	Vane), newsured in tons per square ft. Vane), measured in tons per square ft.

A		15	5 G	GE(C			Soil Boring	Lo	bg			B-21	
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, Laub	Solar F New Y	Projec ⁄ork	t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/18/2021Boring End:3/18/2021					Coordinates:43.346817 N, -78.613543 EHoriz. Datum:NAD 83Elevation:GradeVert. Datum:N/A	
Rig Rig Drill Ham Drill	Mode Type: Meth mer 1 ing Fl	l: od: Type: luid:	CME ATV Hollo Autor None	-550X w Ster matic	m Aug	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type:HSACasing Length:5 feetCasing I.D.:2 inchesHammer Wt.:140 poundsHammer Fall:30 feet	
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value Drilling & Strata Notes	
-	S-1	18	1 2 3 4	5			6" - TO Loose, moist (PSOIL brown coarse to fine SAND, little Clay, SC)	-				• -	
-	S-2	20	2 2 3 3	5	SC		Loose, moist (brown coarse to fine SAND, little Clay, SC)						
5	S-3	22	11 19 25 25	44	-		Dense, trace S	, brown medium to fine SAND, little Clay, ilt, moist to dry (SC)					5	
-	S-4	18	15 31 36 18	67	CI		Hard, b (CL)	prown Silty CLAY, some fine Sand, moist	-				>>	
-	S-5	12	1 10 14 10	24			Very st dry (CL	iff, gray CLAY, little medium to fine Sand, -)						
-														
- 15—	S-6	24	4 7 8 6	15			Very st	iff, gray Sandy CLAY, dry (CL)	м	м	1.25	2.5	Fleavy auger grinding from 15 to feet BGS	18
-														
-	- S-7 - S-7						Dense, little me	, gray Clayey coarse to fine GRAVEL, edium to fine Sand, moist (GC)	_					
20— - - -					-		End of Boreho	boring at 19.7 feet BGS ble backfilled with cuttings						
	Det	In-E	Boreho	ole Wa	sing	evels Bot. of	Water	General Notes					Toughness:Low (L). Medium (M), High (H)	
	Date / Time Tip (ft)						Lvl (ft)	BGS = Below Ground Surface					Plasticity: Non-Plastic (NP), Low (L), Medium (M), High (H) PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft	

Δ		15	5 (GEO	С			Soil Boring	Lo	bg				B-22
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som Som : Matt	erset s erset, Laub	Solar F New Y	^o rojec ⁄ork	t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/18/2021Boring End:3/18/2021					Coordinates: Horiz. Datum: Elevation: Vert. Datum:	43.343799 N, -78.612293 E NAD 83 Grade N/A
Rig Rig Drill Ham Drill	Mode Type: Meth Imer 1 ing Fl	l: od: Гуре: uid:	CME ATV Hollo Auto	-550X ow Ster matic	m Aug	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches 140 pounds 30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value	Drilling & Strata Notes
	S-1	16	1 1 5	6		<u>\\ 1</u> / /\-/	10" - T Loose,	OPSOIL brown coarse to fine SAND, trace Silt,					•	-
-			4 5 3		SP		Loose, Silt, we	SP) brown to black coarse to fine SAND, little et (SM)						-
-	S-2	20	3 2 8 10	6	SM		Mediur little Si	m dense, brown coarse to fine SAND,						-
5	S-3	22	18 8	28										5
-	S-4	20	5 5 6 6	11			Stiff, gi moist t	ray CLAY, trace medium to fine Sand, o wet (CL)	м	н	2.75	0.3		-
-	S-5	24	4 3 8 6	11			Stiff, gr moist (ray CLAY, trace medium to fine Sand, CL)	м	м	2.25	0.45		-
10														-10
-			31		GP		Very de	ense, reddish brown to gray Sandy						- Heavy auger grinding from 10.5 to 17
- 15—	S-6	18	51 49 24	> 50			coarse	to fine GRAVEL, trace Silt, dry (GP)					>>	feet BGS Glacial till 15
-						000								-
-			16 50/5		-	000	Very de	ense, reddish brown Sandy coarse to fine						– Glacial till
- 20—	- S-7 50/5 C GRAVEL 20 Solution Solutio						End of Boreho	boring at 18.9 feet BGS ble backfilled with cuttings						
-														-
-														-
-														-
		In-E	Boreh	ole Wa	ater L	evels		General Notes			·			·
	Date / Time Casing Tip (ft					Bot. of Hole (ft)	Water Lvl (ft)	▼ = Water Level (if observed) BGS = Below Ground Surface					Toughness:Low (L Plasticity:Non-Plas PP = Pocket Penetr TV = Torvane (Shea), Medium (M), High (H) stic (NP), Low (L), Medium (M), High (H) ometer, measured in tons per square ft. ar Vane), measured in tons per square ft.
L							1							

A		J	50	GEO	C			Soil Boring	Lo	og				B-23
Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset \$ erset, Laub	Solar F New Y	Projec ′ork	t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/17/2021Boring End:3/17/2021					Coordinates: 4 Horiz. Datum: 4 Elevation: 6 Vert. Datum: 4	43.341196 N, -78.613566 E NAD 83 Grade N/A
Rig Rig Drill Ham Drill	Mode Type: Meth mer 1 ing Fl	l: od: Type: luid:	CME ATV Hollo Autor	-550X w Ster matic	m Aug	jer		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches 140 pounds 30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value	Drilling & Strata Notes
-	S-1	18	WH 4 3 4	7	SM		3" - TO Loose, little Sil	DPSOIL brown Gravelly coarse to fine SAND, lt, moist (SM)					<u> </u>	-
-	S-2	22	4 9 13 15	22	SP		Mediur trace S	n dense, brown medium to fine SAND, Silt, moist to wet (SP)						-
5—	S-3	20	9 14 12 8	26	ML		Very st wet (M	tiff, brown Sandy SILT, little Clay, moist to L)	L	м	2.25	0.375		5
-	S-4	24	5 3 3 4	6	C		Mediur	n stiff, gray CLAY, moist to wet (CL)	L	м	0.5	0.2		-
- 10	S-5	24	1 1 2 4	3			Soft, gr	ray CLAY, moist to wet (CL)	L	м	0.75	0.05		
-														-
-	S-6	18	14 29 21 19	50	SP		Very de fine SA	ense, reddish brown Gravelly medium to AND, little Silt, trace Clay, moist (SP)						Heavy auger grinding from 11.5 to 18 feet BGS glacial till
15— -						0 0								
-							Very de	ense, reddish brown Sandy coarse to fine – EL, little Silt, trace Clay, moist (GP)						- Glacial till
20	20 - S-7 > 50 End of E Borehold							boring at 18.3 feet BGS ole backfilled with cuttings					>>• 	
-														-
														-
<u> </u>	Date	In-E	oreno	Ca	sing	Bot. of	Water	General Notes					Toughness:Low (L).	, Medium (M), High (H)
	Date / Time Tip (ft) Ho						Lvl (ft)	BGS = Below Ground Surface					Plasticity: Non-Plast PP = Pocket Penetro TV = Torvane (Shear	ic (NP), Low (L), Medium (M), High (H) meter, measured in tons per square ft. Vane), measured in tons per square ft.

A		1	G	EE(C			Soi	l Boring	Lc	g				B-24
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, Laub	Solar F New Y	Project ′ork	t		Drilling Firm: ED Drill Crew: Ph Boring Start: 3/ Boring End: 3/2	DI nil / Jason 19/2021 19/2021					Coordinates: 4 Horiz. Datum: N Elevation: 0 Vert. Datum: N	43.347428 N, -78.606744 E NAD 83 Grade N/A
Rig Rig Drill Ham Drill	Mode Type: Meth mer 1 ing Fl	l: od: Type: luid:	CME- ATV Hollo Autor None	-550X w Ster matic	n Aug	ler		Sampler Type: S Sampler Length: 2 Sampler I.D.: 1 Hammer Wt.: 1 Hammer Fall: 3	Split Spoon 24 inches 1.375 inches 140 pounds 30 inches					Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches 140 pounds 30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic	Log	Visual Classificatio	on	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value 10 20 30 40	Drilling & Strata Notes
-	S-1	16	1 2 5 7	7		<u> </u>	5" - TO Medium fine Gra	PSOIL a stiff, brown Sandy SILT, avel, moist (ML)	trace coarse to	L	М	1.5	0.3	-	-
-	S-2	22	2 4 4 4	8	ML		Stiff, bro	own Sandy SILT, little Cla	ay, moist (ML)	L	М	3.25	0.175		
5—	S-3	22	7 9 6 7	15			Very sti (ML)	ff, brown Sandy SILT, littl	e Clay, moist			1.5	0.2		5
-	S-4	20	3 6 12 16	18	C		Very sti fine Sar	ff, gray to green CLAY, lit nd, moist (CL)	ttle medium to	М	М	3	0.2	•	-
-	S-5	22	5 10 18 20	28			Very sti (CL)	ff, gray to green CLAY, tra	ace Silt, dry	М	М	> 4.5	0.2		
-															
-	S-6	20	14 16 35 24	> 50	ML		Hard, g Sand, n	ray to brown Clayey SILT noist (ML)	, trace coarse	L	м	3.5	0.375	>>	
- 15															-15 -
-	S-7 20 17 29 CL Very stiff some co moist to							ff, gray to reddish brown s parse to fine Sand, trace t o dry (CL)	Silty CLAY, fine Gravel,						
20							End of Boreho	ooring at 20 feet BGS e backfilled with cuttings							-20
-															
<u> </u>		In-F	Boreha	ole Wa	 ter 4		<u> </u>	<u>م</u>	eneral Notes						
	Date	e / Time))	Ca	sing o (ft)	Bot. Hole	of Water (ft) Lvl (ft)	▼ = Water Level (if ob: BGS = Below Ground S	served) Surface					Toughness:Low (L), Plasticity:Non-Plasti PP = Pocket Penetron TV = Torvane (Shear	Medium (M), High (H) ic (NP), Low (L), Medium (M), High (H) meter, measured in tons per square ft. Vane), measured in tons per square ft.

A		15	5 6	GE(C			S	oil Boring	g Lo	bg						B-25
Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som Som : Matt	erset \$ erset, Laub	Solar F New Y	Project ′ork	t		Drilling Firm: Drill Crew: Boring Start: Boring End:	EDI Phil / Jason 3/19/2021 3/19/2021					Coordin Horiz. D Elevatio Vert. Da	ates: atum: n: tum:	43.34 NAD Grad N/A	I3072 N, -78.605453 E 83 e
Rig Rig Drill Ham Drill	Mode Type: Meth Imer 1 ing Fl	l: od: Гуре: uid:	CME ATV Hollo Autor	-550X w Ster matic	n Aug	jer		Sampler Type: Sampler Lengt Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon h: 24 inches 1.375 inches 140 pounds 30 inches					Casing Casing I Casing I Hammer Hammer	Type: Length: .D.: r Wt.: r Fall:	HSA 5 fe 2 in 140 30 fe	A et ches pounds eet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classific	cation	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Va 10 20	alue 30 40		Drilling & Strata Notes
-	S-1	6	3 7 4 1	11	ML	<u>x //</u>	4" - TO Stiff, br	PSOIL rown SILT, little Grave	I, moist (ML)			3	0.35	ſ		-	
-	S-2	14	10 6 10 10	16	CL		Very st	iff, brown CLAY, trace	e Silt, moist (CL)			3.5	0.2			-	
5	5- S-3 20 15 24 18 GM GM GM GM GM GRAVE							n dense, reddish brow AVEL, trace medium	n Silty coarse to to fine Sand, dry							5	Glacial till
-	S-4	23	12 18 24 18	42	GM		Dense, GRAVI	reddish brown Silty c EL, trace coarse to fine	oarse to fine e Sand, dry (GM)							-	Glacial till
- - 10-	S-5	8	8 50/5	> 50	ML		Hard, r Gravel	eddish brown SILT, lit trace Sand, dry (ML)	tle coarse to fine			4	0.175		>	>− >− 10	Glacial till
-					GM											-	
- 15—	S-6	2	50/4	> 50			Very de GRAVE (GM) End of Boreho	ense, reddish brown c EL, little coarse to fine boring at 14 feet BGS le backfilled with cutti	oarse to fine Sand, little Silt, dry	_					>	15	Heavy auger grinding from 10-14 feet BGS Auger refusal at 14 feet BGS
-		S-6 2 50 (GM) End of b Borehole														-	
- 20— -																-20	
-																-	
	·	In-E	Boreho	ole Wa	iter Le	evels			General Notes								
	In-Boreh Date / Time				sing o (ft)	Bot. o Hole (f	f Water t) Lvl (ft)	▼ = Water Level (i BGS = Below Grou	if observed) nd Surface					Toughnes Plasticity PP = Pock TV = Torv	ss:Low (:Non-Pla tet Penet ane (She	L), Medi astic (NF trometer ear Vane	ium (M), High (H) 2), Low (L), Medium (M), High (H) r, measured in tons per square ft. e), measured in tons per square ft.

ľ		15	56	GE(C			S	oil Borir	ng	Lo	g				B-26	
Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som Som	erset S erset, Laub	Solar F New Y	Project ′ork	t		Drilling Firm: Drill Crew: Boring Start: Boring End:	EDI Phil / Jason 3/18/2021 3/18/2021						Coordinates: Horiz. Datum: Elevation: Vert. Datum:	43.336843 N, -78.605293 E NAD 83 Grade N/A	
Rig Rig Drill Han Drill	Mode Type: Meth Imer ⁻ ing Fl	l: od: ſype: uid:	CME ATV Hollo Autor None	-550X w Ster matic	m Aug	ler		Sampler Type: Sampler Lengt Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon h: 24 inches 1.375 inches 140 pounds 30 inches						Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches 140 pounds 30 feet	
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classific	cation		Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value	Drilling & Strata Notes	
-	S-1	16	WH 2 4 4	6	sc		6" - TO Loose, trace fi	PSOIL brown medium to fine ne Gravel, moist (SC)	SAND, little Clay	у,						-	
-	S-2	16	2 3 2 3	5			Loose, SAND,	brown to black Grave trace Clay, moist to w	lly coarse to fine /et (SP)						-	- Water encountered at 3 feet BGS	3
5-	S-3	18	2 2 3 3	5	SP		Loose, trace C	brown to black coarse lay, moist to wet (SP)	∍ to fine SAND,							- 5	
-	S-4	18	6 44 43 38	> 50	GC		Very de GRAVE Clay, lit	ense, reddish brown c EL, some coarse to fin tle Silt, wet (GC)	oarse to fine le Sand, some						**	Glacial till	
-	S-5	38 9 Dense, r i-5 14 20 48						reddish brown Grave little Clay, wet (SC)	lly coarse to fine							Glacial till	
10— - -			50/5		sc		Very de	ense, reddish brown G	Gravelly coarse tc)						- 10 - - - - Auger grinding from 10 to 18 feet	t BGS
- 15—	S-6	3		> 50			fine SA	ND, little Clay, moist ((SC)						>>	Glacial till	
-					 GP											-	
-	- S-7 > 50 0 Very den GRAVEL wet (GP) End of bo Borehole					ense, reddish brown c EL, trace Silt, trace fin >) boring at 18.3 feet BG le backfilled with cutti	oarse to fine e Sand, trace Cla SS ngs	ay,					>>	Glacial till			
	In-Borehole Water Levels								ŭ							- - -	
		In-E	Boreho	ble Wa	ter Le	evels	Water	_ \\/_± ! ''	General Notes	s					Tourshares I) Modium (M) Link (L)	
	Date / Time Casing Tip (ft) 3/18/2021 18.3						Lvl (ft)	y = vvater Level (i BGS = Below Ground BGS = BE BGS = BE BG	r observed) nd Surface						Plasticity: Non-Plas PP = Pocket Penetr TV = Torvane (Shea	ן, היפמונות (או), רוקה (H) stic (NP), Low (L), Medium (M), High (H) ometer, measured in tons per square ft. ar Vane), measured in tons per square ft	

[1	5 G	GE(C			So	oil Borin	g Lo	bg										в-2	27
Clie Proj Loc Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, Laub	Solar F New Y	Projec ′ork	t		Drilling Firm: Drill Crew: Boring Start: Boring End:	EDI Phil / Jason 3/18/2021 3/18/2021					Co Ho Ele Ve	ordii oriz. [ovatio rt. Da	nate Datu on: atur	es: um: n:	43.3 NAD Grad N/A	34032 83 Ie	N, -78.60	06934 E	
Rig Rig Drill Han Drill	Mode Type: Meth mer	l: od: Type: luid:	CME ATV Hollo Autor	-550X w Ster matic	m Aug	jer		Sampler Type: Sampler Length Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon 24 inches 1.375 inches 140 pounds 30 inches					Ca Ca Ca Ha	sing sing sing mme mme	Typ Ler I.D. er W er Fa	pe: ngth .: /t.: all:	HS/ 5 fe 2 in 140 30 f	A eet Iches) pound feet	ls		
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classifica	ation	Toughness	Plasticity	PP (tsf)	TV (tsf)	1	N-V	alue	e 40		Dri	lling & S	Strata No	tes
-	S-1	22	1 4 4 6	8		<u>, 17</u>	4" - TO Loose, coarse	PSOIL brown medium to fine s to fine Gravel, trace Sil	SAND, trace lt, moist (SP)					•				-				
.	S-2	22	4 5 5 5	10	SP		Mediun trace C	n dense, brown mediun lay, trace Silt, moist (Sl	n to fine SAND, P)									-				
5	S-3	18	2 7 9 12	16			Mediun trace C	n dense, brown mediun lay, trace Silt, moist (Si	n to fine SAND, P)						\ 			5				
-	S-4	14	4 7 5 11	12	GP		Mediun fine GF	n dense, brown to gray RAVEL, trace Silt, wet ((Sandy coarse to GP)									-				
- 10-	S-5	20	6 3 5 5	8	-		Stiff, gr moist (ay CLAY, little medium CL)	to fine Sand,	L	м	1	0.25									
-					CL		Ţ											-				
- 15—	S-6	24	2 1 1 1	2	-		Soft, gr wet (Cl	ay CLAY, trace mediur -)	n to fine Sand,	L	м	0.25	0.2					- 15				
-																		-				
-	S-7	12	7 29 50/5	> 50			Very de fine SA Gravel,	ense, brown to reddish ND, little Clay, trace co trace Silt, moist to wet	brown coarse to parse to fine : (SC)								>	×	Auger	grinding f	rom 16 to	17 feet BGS
20 - - -							End of Boreho	boring at 19.4 feet BGS le backfilled with cutting	S gs									-20 - - -				
		In-E	Boreho	ole Wa	iter Lo sing T	evels	f Water	V - Water Lovel /f	General Notes	•			•	Ta	uaber) Med	lium (M)	High (나)		
	3/1	e / Time 8/2021		1	o (ft) 18	Hole (ft	t) Lvl (ft) 10.5	BGS = Below Ground	d Surface					Pla PP TV	= Poo	y:No ket I vane	Pene (She	astic (Ni tromete ear Van	P), Low r, measu e), measu	(L), Mediu ured in tor sured in to	um (M), Hig ns per squ ons per squ	gh (H) are ft. µare ft.

Δ		15	5 C	GEC	C			Soil Bori	ng	Lo	g						B-28			
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, Laub	Solar F New Y	Projec ′ork	t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/18/2021Boring End:3/18/2021						Coor Horiz Eleva Vert.	dinate . Datu tion: Datun	s: m: 1:	43.330929 N, -78.605417 E NAD 83 Grade N/A			
Rig Rig Drill Ham Drill	Mode Type: Meth mer 1 ing Fl	l: od: Гуре: uid:	CME ATV Hollo Autor	-550X w Ster matic	m Aug	ler		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches	;					Casir Casir Casir Hamr Hamr	ng Typ ng Len ng I.D.: ner Wi ner Fa	e: gth: :.: II:	HSA 5 feet 2 inches 140 pounds 30 feet			
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification		Toughness	Plasticity	PP (tsf)	TV (tsf)	N 10	I-Value	40	Drilling & Strata Notes			
-	S-1	14	1 3 4 9	7	ML		Mediur fine Gr	n stiff, brown Sandy SILT, little coarse avel, moist (ML)	⊧ to	L	М	2.75	0.25				-			
-	S-2	14	10 18 19 30	37	GP		Dense fine GF	, brown reddish brown, Sandy coarse RAVEL, little Silt, dry (GP)	to							•	-			
5	S-3	18	8 24 28 23	> 50			Very de fine SA	ense, reddish brown Gravelly medium ND, little Silt, moist (SP)	to								Auger grinding from 4 to 18 feet BGS			
-	S-4	20	15 21 22 44	43	SP		Dense, SAND,	reddish brown Gravelly coarse to fin- little Silt, dry (SP)	Э								/- Glacial till -			
-	S-5	14	21 59 50/5	> 50	GP	000	Very de GRAVI	ense, reddish brown Sandy coarse to EL, little Silt, dry (GP)	fine							>>	Glacial till			
-																	-			
-	S-6	22	19 27 24	> 50	GC		Very de fine GF Silt. dr	ense, reddish brown Clayey coarse to RAVEL, little coarse to fine Sand, trac / (GC)	9							>>	- Glacial till			
15—			28				,	(())												
-																				
- 20	S-7		22 28 35 40	> 50			to wet	to fine GRAVEL, little Clay, trace Silt (GC)	dry							>>	-20			
-							End of Boreho	boring at 20 feet BGS le backfilled with cuttings									-			
-																	-			
\vdash		In-E	Boreho	ole Wa	ter Le	evels	Water	General Not	es					T		ov: //) Modium (M) Hist (U)			
	Date	e / Time	•		o (ft)	Hole (ft)	Lvl (ft)	 vater Level (it observed) BGS = Below Ground Surface 						Plastic PP = P TV = T	iness:L city:No locket F orvane	Low (L), Medium (M), High (H) n-Plastic (NP), Low (L), Medium (M), High (H) Penetrometer, measured in tons per square ft. (Shear Vane), measured in tons per square ft.				

4		1	S G	GE (C			S	oil Borin	g Lo	bg							B-29
Clie Proj Loc Insp	nt: ect: ation: pector	AES Som Som Som : Matt	erset S erset, I Laub	Solar F New Y	Projec ′ork	t		Drilling Firm: Drill Crew: Boring Start: Boring End:	EDI Phil / Jason 3/18/2021 3/18/2021					Coor Horiz Eleva Vert.	dinat z. Dat ation: Datu	es: um: m:	4 : N G N	3.346827 N, -78.602745 E IAD 83 Grade I/A
Rig Rig Drill Han Drill	Model Type: Meth mer 1 ing Fl	l: od: ſype: uid:	CME ATV Hollo Autor None	-550X w Ster matic	m Aug	jer		Sampler Type: Sampler Lengt Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon h: 24 inches 1.375 inches 140 pounds 30 inches					Casi Casi Casi Ham Ham	ng Ty ng Le ng I.D mer V mer F	rpe: engt).: Vt.: fall:	h:	HSA 5 feet 2 inches 140 pounds 30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classific	cation	Toughness	Plasticity	PP (tsf)	TV (tsf)	ا 10	N-Valu 20 30	i e) 4()	Drilling & Strata Notes
-	S-1	12	3 3 3 7	6			8" - TO Mediur Sand, i	PSOIL n stiff, brown to yellow noist (CL)	CLAY, little fine	м	м	1.75	0.375	ſ			-	
-	S-2	14	4 7 5 5	12	CL		Stiff, gr	een to brown Sandy (CLAY, moist (CL)	L	L	1.75	0.15				-	
5-	S-3	24	2 5 5 5	10			Stiff, br	own CLAY, little fine (Gravel, moist (CL)	м	м	2.5	0.4				-	-5
-	S-4	22	7 12 10 7	22	GP		Mediur GRAV	n dense, brown Sandy L, trace Silt, moist (G	/ coarse to fine P)								-	
- 10-	$\begin{array}{c c c c c c c c c c c c c c c c c c c $							ense, reddish brown C AVEL, trace medium	Clayey coarse to to fine Sand, wet								>>-	Auger grinding from 10 to 10.5 feet BGS Auger refusal at 10.5 feet BGS
-	-					<u>\$791</u>	Begin r core log	ock coring at 10.5 fee J.	t BGS; see rock								-	
-	-																-	
15—	-																	-15
-	-																-	
- 20—	-																	-20
-	-																-	
-	-																	
	-	In-E	Boreho	ole Wa	ter Lo	evels			General Notes			·						
	Date 3/18	e / Time 8/2021)	Ca Tip 10	sing o (ft) 0.5	Bot. of Hole (ft)	Water Lvl (ft) 10.5	▼ = Water Level (i BGS = Below Grou	f observed) nd Surface					Toug Plasti PP = 1 TV =	hness city:N Pocket Forvan	Low: lon-F Pen e (Sl	/ (L), Plastic letron hear	Medium (M), High (H) c (NP), Low (L), Medium (M), High (H) neter, measured in tons per square ft. Vane), measured in tons per square ft.

Α	Ν	S	G]	EO)			C	ore Bo	oring Log	I							B-29
Client Projec Locat Inspe	: Al ct: So ion: So ctor: M	ES omers omers latt La	et Sol et, Ne	lar Pro ew Yor	oject k			Drilling Firm: Drill Crew: Boring Start: Boring End:	EDI Phil / Jaso 3/18/2021 3/18/2021	n			Coor Horiz Eleva Vert.	dina z. Da ation Dati	ites: itum: i: um:	4: N G N	3.346 AD 8 irade /A	827 N, -78.602745 E 3
Rig M Rig Ty Drill N	odel: /pe: lethod:	C A H	ME-58 TV ollow	50X Stem	Auge	r	Casing Casing Casing	Type: HSA Length: 5 feet I.D.: 2 inches		Core Barrel Type Core Barrel Leng Core Barrel I.D.:	: th: 5	feet				Core Core Core	e Bit e Bit e Bit	Type: Length: I.D.:
Depth (ft)	Avg Core Rate (min/ft)	Run No.	Recovery (in. / %)	RQD (in. / %)	Hardness	Weathering	Graphic Log	Visual	Classificati	on	Depth (ft.)	Type	Dip Angle	scon Roughness	Veathering Veathering	ties Aberture	Infilling	Drilling & Strata Notes
	Let	R-1	60 100%	38 63%	R0	SL		Sandstone, brown, r weathered, extreme discontinuities	5 feet BGS. with soil cutt	ings and	11.6 12.4 13.6		0 0 15	P,R P,R P,R	s DS FR FR	0 T 0		
	 	n-Bor	ehole	Wate	r Lev	els					Gen	eral	Note) S				
	Date / T 3/18/20	īme)21		Casin Tip (f 10.5	ig E	Bot. of	Water Lvl (ft) 10.5	¥ = Water Level (i	f observed)	BGS = Belo	ow Gro	und S	Surfa	ice				

A		15	S G	GE(C			Soil Boring	Lo	bg			B-30
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, Laub	Solar F New Y	Project ′ork	t		Drilling Firm: EDI Drill Crew: Phil / Jason Boring Start: 3/19/2021 Boring End: 3/19/2021					Coordinates: 43.346986 N, -78.592067 E Horiz. Datum: NAD 83 Elevation: Grade Vert. Datum: N/A
Rig Rig Drill Ham Drill	Model Type: Meth Imer 1 ing Fl	l: od: ſype: uid:	CME ATV Hollo Autor None	-550X w Ster matic	n Aug	ler		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type:HSACasing Length:5 feetCasing I.D.:2 inchesHammer Wt.:140 poundsHammer Fall:30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value Drilling & Strata Notes
-	S-1	20	2 2 3 4	5	ML	<u>74 1</u> 8. 1	5" - TO Medium Sand, n	PSOIL n stiff, brown SILT, little medium to fine noist (ML)	L	м	1.25	0.25	, , , , , , , , , , , , , , , , , , ,
-	S-2	24	6 7 14 18	21	CL		Very sti Gravel,	iff, brown CLAY, trace coarse to fine dry (CL)	L	м	3.75	0.35	
5	S-3	18	7 13 17 10	30	ML		Hard, b	rown Sandy SILT, little Clay, dry (ML)	L	м	3	0.35	55
-	S-4	22	7 7 5 11	12			Stiff, bro	own to gray CLAY, trace Silt, moist (CL)	м	м	> 4.5	0.375	
-	S-5	24	5 6 4 4	10	CL		Stiff, bro	own to gray CLAY, moist to wet (CL)	L	L	0.25	0.15	j • · · · · · · · · · · · · · · · · · ·
10									_				Light to heavy auger grinding from 10.5 to 18 feet BGS
-	S-6	23	10 23 22 46	45	ML		Hard, b coarse	rown to reddish brown Sandy SILT, little to fine GRAVEL, mosit to dry (ML)	L	м	> 4.5	0.35	5
15— -													
-	S-7	1	50/4	> 50	GP		Very de GRAVE	ense, gray to reddish brown coarse EL, dry (GP)					-
20							Boreho	le backfilled with cuttings					-20
-													
\vdash	Data	IN-E	orenc	Ca:	sing	Bot. of	Water	General Notes					Toughness:Low (L), Medium (M), High (H)
		= / IIM6	; 	Tip	o (ft)	Hole (ft)	Lvl (ft)	BGS = Below Ground Surface					Plasticity: Non-Plastic (NP), Low (L), Medium (M), High (H) PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft.

Δ		15	50	GEO	C			Sc	oil Boring	j Lo	bg									B-31
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset \$ erset, Laub	Solar F New Y	Projec ′ork	t		Drilling Firm: Drill Crew: Boring Start: Boring End:	EDI Phil / Jason 3/19/2021 3/19/2021					Coo Hor Elev Ver	ordi 'iz. I vati t. D	nates Datur on: atum	s: n: :	43.3454 NAD 83 Grade N/A	488 N, -78 3	.595301 E
Rig Rig Drill Ham Drill	Mode Type: Meth Imer T ing Fl	l: od: ſype: uid:	CME ATV Hollo Autor	-550X w Ster matic	m Aug	ger		Sampler Type: Sampler Length: Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon 24 inches 1.375 inches 140 pounds 30 inches					Cas Cas Cas Har Har	sing sing sing mme	Type Leng I.D.: er Wt er Fa	e: gth: .: II:	HSA 5 feet 2 inche 140 pc 30 fee	es ounds t	
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classifica	tion	Toughness	Plasticity	PP (tsf)	TV (tsf)	10	N-\ 20	/alue 30	40		Drilling &	& Strata Notes
-	S-1	10	3 3 5	6			Mediur	n stiff, brown, Sandy CL	AY, moist (CL)	L	м	3	0.225					_		
-	S-2	20	5 7 8 16	15	CL		Very st fine Gr	iff, brown, Sandy CLAY avel, moist (CL)	, trace coarse to	L	м	1.25	0.225					-		
5	S-3	20	12 15 15 16	30	SM		Dense, little Sil	brown, Gravelly coarse t, moist (SM)	e to fine SAND,									- Au B(uger grindin GS	g from 4.5 to 10.7 feet
-	S-4	20	9 12 70 85	> 50			Weathe	ered ROCK materal									>>	- *		
- 10	S-5	6	13 55 50/3	> 50			Weathered ROCK material													
-							End of Boreho	boring at 10.7 feet BGS le backfilled with cutting		_								- AI	uger refusal	at 10.7 feet BGS
- - 15—																		- - 		
- 20-																	• • • • •	- - 20		
-																		-		
<u> </u>			Boroh	ale \//-	ter				General Notes											
	Date	e / Time	•		sing o (ft)	Bot. of Hole (ft)	Water Lvl (ft)	✓ = Water Level (if c BGS = Below Ground	observed) I Surface					Toughness:Low (L), Medium (M), High (H) Plasticity:Non-Plastic (NP), Low (L), Medium (M), High (H) PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft.						

A		1	5 G	FE	C			Soil Boring	g Lo	bg			B-32
Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, Laub	Solar F New Y	Projec ′ork	t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/19/2021Boring End:3/19/2021					Coordinates: 43.343187 N, -78.593056 E Horiz. Datum: NAD 83 Elevation: Grade Vert. Datum: N/A
Rig Rig Drill Ham Drill	Mode Type: Meth Imer	l: od: Type: luid:	CME ATV Hollo Autor	-550X w Stei natic	m Aug	jer		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type:HSACasing Length:5 feetCasing I.D.:2 inchesHammer Wt.:140 poundsHammer Fall:30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value Drilling & Strata Notes
-	S-1	14	2 2 5 5	7			4" - TO Mediur	PSOIL n stiff, brown Silty CLAY, moist (CL)	м	м	2.25	5 0.45	5
-	S-2	8	4 2 5 6	7	CL		Mediur fine Gr	n stiff, brown Silty CLAY, little coarse to avel, moist (CL)	L	м	1.5	0.3	
5-	S-3	2	3 3 3 5	6	ML		Mediur Sand, ı	n stiff, brown Clayey SILT, trace fine moist to wet (ML)	м	м			-5
-	S-4	24	3 34 10 15	44	CL		Stiff, br Gravel	rown Sandy CLAY, trace coarse to fine , moist (CL)	L	м	2	0.275	
-	S-5	12	6 21 17 10	38			Gray C Reddis fine Sa	LAY, trace Silt, moist (CL) h brown Silty GRAVEL, little medium to nd, dry (GM)	L	м	0.75	5 0.45	5 10
-					GМ — —				_				
-	S-6	3	50/3		GP		Very de	ense, gray coarse GRAVEL, dry (GP)					Auger grinding from 10 to 14.8 feet BGS
15—						01	End of Boreho	boring at 14.8 feet BGS le backfilled with cuttings					- 15 Augfer refusal at 14.8 feet BGS
-													-
- 20—													
-													-
-													-
<u> </u>		l In-F	Boreha	le Wa	l Iter L	l		General Notes		1	1	1	
	Date	e / Time	2	Ca Tip	sing o (ft)	Bot. of Hole (ft)	Water Lvl (ft)	▼ = Water Level (if observed) BGS = Below Ground Surface					Toughness:Low (L), Medium (M), High (H) Plasticity:Non-Plastic (NP), Low (L), Medium (M), High (H) PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft.
\vdash				-	_								

P		15	5 (GEC	C			S	oil Boring	j Lo	og								B-33	
Clie Proj Loc Insp	nt: ect: ation: ector	AES Som Som : Matt	erset s erset, Laub	Solar F New Y	Projec ′ork	t		Drilling Firm: Drill Crew: Boring Start: Boring End:	EDI Phil / Jason 3/19/2021 3/19/2021					Coo Hori Elev Vert	ordina iz. Da vation t. Datu	tes: tum: : .um:	2 : (43.340066 N, - NAD 83 Grade N/A	78.595529 E	
Rig Rig Drill Han Drill	Mode Type: Meth Imer T ing Fl	l: od: Гуре: uid:	CME ATV Hollo Auto	-550X w Ster matic	m Aug	jer		Sampler Type: Sampler Lengt Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon h: 24 inches 1.375 inches 140 pounds 30 inches					Cas Cas Cas Han Han	ing Ty ing Lo ing I.I nmer nmer	/pe: engt D.: Wt.: Fall:	h:	HSA 5 feet 2 inches 140 pounds 30 feet		
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classific	cation	Toughness	Plasticity	PP (tsf)	TV (tsf)	10	N-Val	ле 0 40	,	Drillin	g & Strata Notes	
-	S-1	10	2 3 3 5	6	ML		Mediun moist (l	n stiff, brown Sandy S ML)	ILT, little Clay,	L	м	1.25	0.25	Ţ				_		
-	S-2	14	2 5 5 7	10	CL		Stiff, br (CL)	own Silty CLAY, trace	e fine Sand, moist	L	м	2.75	0.4					-		
5-	S-3	16	4 4 4 5	8			Loose, (SM)	brown Silty medium t	o fine SAND, moist									− Organic m −−5	aterial recovered	
-	S-4	14	7 7 12 25	19	SM		Mediun SAND,	n dense, brown Silty o little coarse to fine Gi	coarse to fine ravel, dry (SM)									-		
-	S-5	22	16 31 45 52	> 50			Very de SAND, dry (SM	ense, reddish brown S little coarse to fine Gi 1)	Silty coarse to fine ravel, trace Clay,								>>	Glacial till		
10										_								—10 - -		
- - 15—	S-6	2	50/2	> 50	GM		Very de GRAVE	ense, reddish brown c EL, little Silt, dry (GM)	coarse to fine								>>	_ Auger grin Limestone ←	ding from 10-18 feet BGS fragments	
-																		-		
- 20—	S-7		50/4	> 50	-		Very de GRAVE End of Boreho	ense, reddish brown S EL, dry (GM) boring at 18.3 feet BC le backfilled with cutti	Silty coarse to fine GS ngs								>>	- 		
-																		-		
-									_									-		
		In-E	Boreho	ole Wa	ter Le	Bot of	Water		General Notes					T	where -		. /1 `	Modium (M)	~h (니)	
	Date	e / Time	÷		o (ft)	Hole (fi	LVI (ft)	 vvater Level (BGS = Below Grou 	nd Surface					Plas PP = TV =	ghness:Low (L), Medium (M), High (H) ticity:Non-Plastic (NP), Low (L), Medium (M), High (H) Pocket Penetrometer, measured in tons per square ft. Torvane (Shear Vane), measured in tons per square ft.					

A		1	S G	EE(C			Soil Boring	Lo	g			B-34
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, I Laub	Solar F New Y	Project ′ork	t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/22/2021Boring End:3/22/2021					Coordinates:43.34712 N, -78.586322 EHoriz. Datum:NAD 83Elevation:GradeVert. Datum:N/A
Rig Rig Drill Ham Drill	Mode Type: Meth mer T ing Fl	l: od: Type: luid:	CME- ATV Hollo Autor None	-550X w Ster matic	n Aug	jer		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type:HSACasing Length:5 feetCasing I.D.:2 inchesHammer Wt.:140 poundsHammer Fall:30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value Drilling & Strata Notes
_	S-1	12	3 4 5 6	9	CL		2" - TO Stiff, gr fine Sa	PSOIL ray to brown Silty CLAY, trace medium to nd, moist (CL)	м	м	3	0.45	5 • -
-	S-2	24	10 10 13 14	23			Very st trace C	iff, brown SILT, little coarse to fine Sand, lay, moist (ML)	L	м	2.5	0.3	
5	S-3	18	11 17 18 20	35	ML		Hard, g moist (l	reen to brown Sandy SILT, trace Clay, ML)	L	L	1.25	0.15	5 ······
-	S-4	18	12 12 19 25	31			Dense, (SM)	brown Silty medium to fine SAND, dry					
-	S-5	14	3 21 28 45	49	SM		Dense, to dry (, brown Silty medium to fine SAND, moist SM)					
10					 								-
-		10	9		CL		Stiff, gr	ray CLAY, moist (CL)			0.05		
15—	5-0	12	5	13	-						0.25	0.1	-15
_									·				
-	S-7	16	13 12 28 23	40	GC		Dense, GRAVE fine Sa	, gray to reddish brown coarse to fine EL, little Clay, little Silt, trace medium to nd, dry (GC)					
-							End of Boreho	boring at 20 feet BGS le backfilled with cuttings					
-													
		In-E	Boreho	ole Wa	iter Le	evels		General Notes	<u> </u>	·		1	
	Date	e / Time)	Ca: Tip	sing o (ft)	Bot. of Hole (ft)	Water Lvl (ft)	EVALUATE STATE					Toughness:Low (L), Medium (M), High (H) Plasticity:Non-Plastic (NP), Low (L), Medium (M), High (H)
	3/2	2/2021 2/2021		1	8		8 20						PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft.

2
43.343807 N, -78.587658 E NAD 83 Grade N/A
HSA 1: 5 feet 2 inches 140 pounds 30 feet
Drilling & Strata Notes
-
-
Glacial till >>
Heavy to light auger grinding from 12.5 to 17 feet BGS
-
Water encountered at 18 feet BGS
-
-
(L), Medium (M), High (H) lastic (NP), Low (L), Medium (M), High (H) strometer, measured in tons per square ft. lear Vane), measured in tons per square ft.

A		1	56	FE	C			Soil Boring	Lo	bg			B-36
Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset \$ erset, Laub	Solar F New Y	Projec ⁄ork	t		Drilling Firm:EDIDrill Crew:Phil / JasonBoring Start:3/22/2021Boring End:3/22/2021					Coordinates:43.347036 N, -78.581398 EHoriz. Datum:NAD 83Elevation:GradeVert. Datum:N/A
Rig Rig Drill Ham Drill	Mode Type: Meth mer 1 ing Fl	l: od: Type: luid:	CME ATV Hollo Autor	-550X w Ster matic	m Aug	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type:HSACasing Length:5 feetCasing I.D.:2 inchesHammer Wt.:140 poundsHammer Fall:30 feet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value Drilling & Strata Notes
-	S-1	14	WH 1 2 4	3			3" - TC Stiff, bi moist (PSOIL rown SILT, trace medium to fine Sand, ML)	L	L	1.25	0.125	3 inches of topsoil
-	S-2	20	7 9 12 14	21	ML		Very st Clay, n	iff, brown SILT, trace fine Sand, trace noist (ML)					
5	S-3	18	11 14 15 13	29	-		Very st	iff, brown Sandy SILT, moist (ML)	L	м	2.5	0.4	۰ ······
-	S-4	14	7 8 6 5	14			Stiff, bi Sand, i	rown to gray CLAY, some Silt, trace fine moist (CL)	L	м	0.75	0.3	3 -
- - 10-	S-5	18	3 3 3 4	6	CL		Mediur	n stiff, gray CLAY, moist (CL)			0.5	0.375	7ε •
-		10	3 8 5	13	-		Stiff, gı (CL)	ay Sandy CLAY, trace Silt, moist to wet	L	м	1.5	1.5	5
15			2										
-	S-7		9 7 18 50/3	25	_		Weath	ered rock material					Weathered rock material recovered
							End of Boreho	boring at 19.8 feet BGS le backfilled with cuttings					
	D-/	In-E	Boreho	ole Wa	sing I	evels Bot. of	Water	General Notes					Toughness:Low (L), Medium (M), High (H)
		= / 11me	<u>,</u>		o (ft)	Hole (ft)	Lvl (ft)	BGS = Below Ground Surface					Plasticity: Non-Plastic (NP), Low (L), Medium (M), High (H) PP = Pocket Penetrometer, measured in tons per square ft. TV = Torvane (Shear Vane), measured in tons per square ft.

Δ		15	5 0	GEO	C			Sc	oil Boring	g Lo	bg				E	3-37
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset s erset, Laub	Solar F New Y	^o roject (ork	t		Drilling Firm: Drill Crew: Boring Start: Boring End:	EDI Phil / Jason 3/22/2021 3/22/2021					Coordinates: Horiz. Datum: Elevation: Vert. Datum:	43.344003 N, -78.581289 NAD 83 Grade N/A	θE
Rig Rig Drill Ham Drill	Model Type: Meth mer 1 ing Fl	l: od: Гуре: uid:	CME ATV Hollo Auto	-550X ow Ster matic	m Aug	ler		Sampler Type: Sampler Length: Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon 24 inches 1.375 inches 140 pounds 30 inches					Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches 140 pounds 30 feet	
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classifica	ition	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value	Drilling & Strata	Notes
-	S-1	24	1 2 2 4	4			3" - TOF Very loo Silt, moi	PSOIL se, brown coarse to fir st (SM)	ne SAND, little					•	-	
-	S-2	22	4 5 13 18	18	SM		Medium SAND, r	dense, brown Silty me noist (SM)	edium to fine						-	
5—	S-3	22	9 12 19 19	31	ML		Hard, br	own Sandy SILT, dry ((ML)	L	м	2.5	0.2			
-	S-4	24	7 5 7 8	12			Stiff, bro	wn to gray Silty CLAY	′, moist (CL)	м	м	1.25	0.375		-	
- 10-	S-5	14	2 5 6	11			Stiff, gra moist (C	ny CLAY, trace Silt, trac L)	ce fine Sand,			1.5	0.25			
-					 - SM					_					-	
- 15—	S-6	21	4 13 13 14	26	-		Medium SAND, s trace Cli	dense, reddish brown some Silt, little coarse f ay, moist (CL)	coarse to fine to fine Gravel,					·····	Auger grinding from 10 Glacial till	0 to 18 feet BGS
-										_					-	
- 20-	S-7	3	50/3	> 50	GM	.07	Very der to fine G End of b Borehold	nse, gray to reddish br RAVEL, little Clay, mo oring at 18.3 feet BGS e backfilled with cutting	rown Silty coarse pist (GM) S gs	_				>	Glacial till	
-															-	
-															-	
<u> </u>		In-E	Boreho	ole Wa	L ater Lo	evels	T		General Notes		1	I	1		1	
	Date	e / Time	•	Ca Tip	sing (ft)	Bot. of Hole (ft)	Water Lvl (ft)		observed) d Surface					Toughness:Low (Plasticity:Non-Pla PP = Pocket Penet TV = Torvane (She	L), Medium (M), High (H) stic (NP), Low (L), Medium (M rometer, measured in tons per ar Vane), measured in tons pe), High (H) square ft. r square ft.

A		15	5 6	GE(C				S	oil Borin	ng L	_0	g					B-38
Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset \$ erset, Laub	Solar F New Y	Projec ′ork	t			Drilling Firm: Drill Crew: Boring Start: Boring End:	EDI Phil / Jason 3/22/2021 3/22/2021						Coordinates: Horiz. Datum: Elevation: Vert. Datum:	43.346457 N, NAD 83 Grade N/A	-78.575894 E
Rig Rig Drill Ham Drill	Mode Type: Meth mer 1 ing Fl	l: od: Type: luid:	CME ATV Hollo Autor	-550X w Ster matic	m Aug	ger			Sampler Type: Sampler Lengt Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon h: 24 inches 1.375 inches 140 pounds 30 inches						Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches 140 pounds 30 feet	
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic	Log		Visual Classific	cation		Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value	Drillin	ng & Strata Notes
-	S-1	12	WH 2 2 5	4	CL			4" - TC Mediur mediur	PSOIL n stiff, brown to gray S n to fine Sand, moist (Silty CLAY, little CL)	~	L	М	1.5	0.275		-	
-	- S-2 10 8 13 SP							Mediur trace S	n dense, brown coarse ilt, moist (SP)	e to fine SAND,							-	
- 5—	S-3 20 9 15 SP Medium 10 15 V Hard b							Mediur trace S	n dense, brown coarse ilt, moist (SP)	e to fine SAND,							5	
-	S-4	20	15 27 27 31	> 50				Hard, b dry (MI	prown SILT, little media _)	um to fine Sand,		L	М	2	0.25	>>	– Water en	countered at 6.5 feet BGS
	S-5	20	11 24 21 23	45	ML			Hard, b dry (Ml	orown SILT, little media -)	um to fine Sand,		L	М	1.75	0.275	5		
-																	-	
- - 15—	S-6	24	9 22 30 25	> 50	SM			Very de moist t	ense, brown Silty med o dry (SM)	ium to fine SAND	,					>:	- 	
-						600	20										-	
-	- S-7 18 16 26 - C C Medium							Mediur fine GF Clay, w	n dense, reddish brow RAVEL, little medium to ret to moist (GM)	n Silty coarse to o fine Sand, trace							Glacial til	I
								End of Borehc	boring at 20 feet BGS le backfilled with cutti	ngs								
	In-Borehole Water Levels Date / Time Casing Tip (ft) Bot. of Hole (ft) Water Lvl (ft)						Is ot. of le (ft)	Water Lvl (ft)		General Notes f observed) nd Surface	5					Toughness:Low (L Plasticity: Non-Pla PP = Pocket Penetr TV = Torvane (She	.), Medium (M), H stic (NP), Low (L) ometer, measure ar Vane), measur	ligh (H) , Medium (M), High (H) d in tons per square ft. ed in tons per square ft.

Δ		1	S G	JE (C				S	oil Borin	g Lo	bg									B-39
Clie Proj Loca Insp	nt: ect: ation: ector	AES Som Som Som	erset S erset, I Laub	3olar F New Y	²rojec ′ork	t			Drilling Firm: Drill Crew: Boring Start: Boring End:	EDI Phil / Jason 3/22/2021 3/22/2021					Coo Hoi Ele Ver	ordin riz. D vatio rt. Da	ates atun n: tum:	:: n:	43.34 NAD Grade N/A	13876 N, -7 83 e	78.578499 E
Rig Rig Drill Ham Drill	Mode Type: Meth mer 1 ing Fl	l: od: ſype: uid:	CME ATV Hollo Autor None	-550X w Ster natic	m Auç	ger			Sampler Type: Sampler Lengtl Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon h: 24 inches 1.375 inches 140 pounds 30 inches					Cas Cas Cas Har Har	sing sing sing mme mme	Type Leng I.D.: r Wt. r Fal): gth: :: I:	HSA 5 fee 2 inc 140 30 fe	A et ches pounds eet	
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic	Log		Visual Classific	cation	Toughness	Plasticity	PP (tsf)	TV (tsf)	10	N-V a	alue 30 4	40		Drilling	g & Strata Notes
_	S-1	16	WH 3 3 5	6		<u>71</u>		5" - TC Mediur trace c	PSOIL n stiff, brown Sandy Sl parse to fine Gravel, m	ILT, trace Clay, noist (ML)	L	М	0.75	0.225	•				-		
-	S-2	20	6 14 16 21	30	ML			Hard, t moist (rown Sandy SILT, trac ML)	ce fine Gravel,	L	М	0.75	0.15					-		
5—	S-3	18	8 19 20 18	39	ѕм			Dense, coarse	brown Silty coarse to to fine Gravel, moist (fine SAND, trace SM)							\	•	- 5	Auger grind	ling from 4 to 17 feet BGS
-	S-4	22	10 16 24 30	40	GM	0000		Dense GRAVI moist (reddish brown Silty co EL, little coarse to fine GM)	oarse to fine Sand, trace Clay,									_	Glacial till	
-	S-5	14	18 24 34 50/5	> 50	Givi	0000000		Very de GRAVI	ense, reddish brown S EL, little Silt, moist (GN	andy coarse to fine /)								>>	-10	Glacial till	
-											_								-		
-	S-6	8	44 50/4	> 50				Weath	ered SHALE rock mate	erial								>>	-		
15—																			—15 -		
-	- End of I Borehol							End of Boreho	boring at 17 feet BGS le backfilled with cuttir	ngs									-	Auger refus	sal at 17 feet BGS
20—																			20 -		
-																		_ _			
-	-																		-		
	_	In-E	Boreho	ole Wa	iter L	eve	ls			General Notes											
	Date / Time Casing Bot. of Water Tip (ft) Hole (ft) Lvl (ft)					✓ = Water Level (if BGS = Below Grour	f observed) nd Surface					Tou Plas PP = TV =	ighne: sticity = Pocł = Torv	ss:Lo :Non ket Pe ane (i	ow (L -Plas enetr Shea), Medi stic (NF ometer ar Vane	ium (M), Hig ?), Low (L), I ;, measured e), measured	h (H) Medium (M), High (H) in tons per square ft. I in tons per square ft.			

P		1	G	EE(0				Soil Bori	ng L	.0	g				B-M1
Clier Proj Loca Insp	nt: ect: ation: ector:	AES Som Som : Nick	erset S erset, l Walke	Solar NY er					Drilling Firm: Earth Dimens Drill Crew: Phil Bence / V Boring Start: 11/4/2021 Boring End: 11/4/2021	sions, Inc Wayne F	c. arri:	5			Coordinates: Horiz. Datum: Elevation: Vert. Datum:	, NAD83 Grade N/A
Rig Rig Drill Harr Drill	Model Type: Meth Imer T	l: od: Гуре: uid:	CME ATV Hollor Safet	550x w Ster y	m Auç	ger			Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches	S					Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches N/A N/A
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic	Log		Visual Classification		Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value 10 20 30 40	Drilling & Strata Notes
-	S-1	14	3 8 8 10	16		<u></u>		4" - To Very st coarse	osoil ff, dark brown Clayey SILT, trace Gravel, dry (ML)		L	м	4.5	0.25	ſ	-
-	S-2	24	10 9 9 12	18	- ML			Very st	ff, dark brown Clayey SILT, dry (ML)		L	м	4.0	0.2		-
5	S-3	24	6 7 10 14	17				Very st	ff, dark brown Clayey SILT, dry (ML)		L	м	4.5	0.3		
-	S-4	24	6 7 8 11	15				Stiff, bl	ackish gray Clayey SILT, dry (ML)		L	м	4.5	0.45		-
-	S-5	24	5 6 8 8	14				Stiff, bl	ack Clayey SILT, dry (ML)		L	м	3.5	0.25		-
10— - -								0.15								
- 15—	S-6	24	5 6 8 9	14	_			Stiff, Di	ack Clayey SIL I , dry (ML)		L	М	3.5	0.3	•	- 15 -
-	\$ 7	22	3 4		_			Stiff, da dry (ML	ark gray Clayey SILT, trace fine Grave .)	əl,			4.0			-
20— -		20	6	3	-						L	171	4.0	0.4		
-	S-8	20	5 8 10 10	18				Very st Gravel,	ff, dark gray Clayey SILT, trace fine dry (ML)		L	м	4.5	0.4		-
<u> </u>	Date	In-E	oreho	Ca:	sing	Bot	. of	Water	General Not	es					Toughness: Low (L), Medium (M), High (H)
	Tip (ft) Hole (ft) Lvi (ft)							L VI (IL)	BGS = Below Ground Surface						PF = Pocket Penetr TV = Torvane (Shea	suc (urr), Low (L), Meaulim (M), High (H) ometer, measured in tons per square ft. r Vane), measured in tons per square ft.

P		15	50	GEO	0			S	Soil Borin	g Lo	bg					B-M1 (Continued)
Clie Proj Loca Insp	nt: ect: ation: ector:	AES Som Som Nick	erset S erset, Walke	Solar NY er				Drilling Firm: Drill Crew: Boring Start: Boring End:	Earth Dimensior Phil Bence / Wa 11/4/2021 11/4/2021	ns, Inc. Iyne Far	ris			Coordinates: Horiz. Datum: Elevation: Vert. Datum:	, NAD83 Grade N/A	
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classific	cation	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value 10 20 30 40		Drilling & Strata Notes
- - - 30 —	- S-9	22	3 5 7 12	12	 - CL		Stiff, gu	rayish brown Silty CL/ Sand, moist (CL)	AY, some coarse		I M	4.0	0.85		- - - -30	
- - - 35 —	-S-10 24 $\frac{2}{6}$ -S-10 24 $\frac{2}{6}$ S-10						Stiff, bi Sand, l	rown Silty CLAY, little moist (CL)	coarse to fine	м	н	2.5	0.65	•	- - 35	
- - 40	• S-11	12	13 18 22 23	40	- sc		Dense SAND,	, reddish brown Claye little fine Gravel, moi	ey coarse to fine ist (SC)	-	NF		-		- - 40	
- - 45—	S-12	12	19 40 50/1"	> 50			Very do fine SA	ense, reddish brown (ND, little Clay, little S 	Gravelly coarse to Silt, moist (SC)		NP		-	>:	- - 	
-								boring at 44.5 feet B0 ble backfilled with cutt	3S tings						- Ai	uger refusal at 44.5' BGS
- 50 — -															- -50 -	
		In-E	oreho	le Wa	iter Le	evels	144 -	_	General Notes		-	1			•	
	In-Borehole Water Levels Date / Time Casing Tip (ft) Bot. of Hole (vvater Lvl (ft)	¥ = Water Level (BGS = Below Grou	(it observed) ind Surface					roughness: Low (I Plasticity: Non-Pla PP = Pocket Penet TV = Torvane (Shea	.), Medium stic (NP), I ometer, m ar Vane), r	n (M), High (H) Low (L), Medium (M), High (H) neasured in tons per square ft. neasured in tons per square ft.

Δ		J	S G	EE(C			Soil Boring	Lo	bg				B-SS-1
Clier Proj Loca Insp	nt: ect: ation: ector	AES Som Som : Matt	erset S erset, I Laub	Solar F New Y	Projec ′ork	t		Drilling Firm: EDI Drill Crew: Phil / Jason Boring Start: 3/16/2021 Boring End: 3/16/2021					Coordinates:43.35Horiz. Datum:NADElevation:GradVert. Datum:N/A	54314 N, -78.607859 E 83 e
Rig Rig Drill Ham Drill	Mode Type: Meth mer 1 ing Fl	l: od: Гуре: uid:	CME- ATV Hollo Autor	-550X w Ster natic	n Aug	ger		Sampler Type:Split SpoonSampler Length:24 inchesSampler I.D.:1.375 inchesHammer Wt.:140 poundsHammer Fall:30 inches					Casing Type:HSACasing Length:5 ferCasing I.D.:2 incHammer Wt.:140Hammer Fall:30 fr	A et ches pounds eet
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classification	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value 10 20 30 40	Drilling & Strata Notes
-	S-1	18	1 2 10 6	12	SM		4" - TC Stiff, br fine Sa (ML)	PSOIL rown to green Clayey SILT, little coarse to nd, trace coarse to fine Gravel, moist					•	
_	S-2	24	7 7 13 15	20	0		Very st	iff, gray Sandy CLAY, moist (CL)	м	м	> 4.5	0.225	•	
5	S-3	20	6 5 8 10	13			Stiff, bl	ack to green Sandy CLAY, moist (CL)	м	м	3.25	0.275		
-	S-4	24	8 10 12 22	22			Very st (CL)	iff, greenish brown Sandy CLAY,moist	м	м	2.75	0.45		
- - 10—	S-5	24	13 23 19 16	42	sc		Dense moist (green Clayey coarse to fine SAND, SC)					-10	
-			5		CL			n stiff, gray CLAY, little coarse to fine						Auger grinding from 11 to 11.5 feet
- 15—	S-6	12	4 3 4	7	-		Gravel	trace Sand, moist (CL)	L	м	0.5	0.2	-15	BGS
-					SP									
- 20—	S-7	2	19 22 18 21	40			Dense (SP)	gray Gravelly medium to fine SAND, dry					-20	Rock fragment in tip of spoon
-	S-8	24	WH 1 1 2	2	CL		Soft, gi Gravel	ay Sandy CLAY, little coarse to fine moist (CL)	L	н	0.25	0.2		
		In-E	Boreho	le Wa	ter L	evels	Water	General Notes					Toughpoord ov (1) M.	um (M) High (L)
	Date / Time Casing Tip (ft) Bot. of Hole (ft) Water Lvl (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) Image: Casing trap (ft) <						Lvi (ft)	F voter Level (it observed) BGS = Below Ground Surface					Plasticity: Non-Plastic (NF PP = Pocket Penetrometer TV = Torvane (Shear Vane	 Initian (H) Low (L), Medium (M), High (H) measured in tons per square ft. measured in tons per square ft.



A		15	G	EC	С			So	oil Boring	j Lo	g				В	-SS2
Clier Proje Loca Insp	nt: ect: ntion: ector:	AES Som Som Nick	erset S erset, N Walke	iolar NY r				Drilling Firm: Drill Crew: Boring Start: Boring End:	Earth Dimensions Phil Bence / Wayr 11/4/2021 11/4/2021	, Inc. ne Farri	S			Coordinates: Horiz. Datum: Elevation: Vert. Datum:	, NAD83 Grade N/A	
Rig Rig Drill Ham Drill	Nodel Type: Methe mer T	: od: ſype: uid:	CME SATV Hollow Safety None	550x w Ster /	m Aug	jer		Sampler Type: Sampler Length: Sampler I.D.: Hammer Wt.: Hammer Fall:	Split Spoon 24 inches 1.375 inches 140 pounds 30 inches					Casing Type: Casing Length: Casing I.D.: Hammer Wt.: Hammer Fall:	HSA 5 feet 2 inches N/A N/A	
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classifica	tion	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value	Drilling & Strata	Notes
-	S-1	18	2 2 7 8	9			Stiff, da Sand, d	ark brown SILT, some (Iry (ML)	Clay, trace fine	L	L	3.5	0.35		-	
-	S-2	24	7 13 17 17	30	ML		Very st Sand, o	iff, brown SILT, some C Iry (ML)	Clay, trace fine	L	L	4.5	0.45		-	
5—	S-3	24	7 7 8 17	15			Stiff, br	own Sandy SILT, some	e Clay, dry (ML)	L	L	3.5	0.3		5	
-	S-4	24	10 10 17 19	27			Very st (ML)	ff, brown Sandy SILT, t	trace Clay, dry	L	L	4	0.35		-	
- 10-	S-5	24	7 7 6 8	13			Top 13 (ML) Bottom	" - brown Sandy SILT, t 11" - gray Silty CLAY,	trace Clay, dry moist (CH)	L L	L H	4.5 1	0.35 0.4		Till material beggining	g at 9' BGS
-	S-6		5 7 12	19	сн		Very st moist (iff, gray Silty CLAY, trac CH)	ce fine Sand,	м	Н	4	0.2		-	
15 — - -			16				<u> </u>								- —15 -	
- 20—	S-7	16	2 2 2 3	4			Soft, gr Gravel,	ay Silty CLAY, trace co moist (CH)	parse to fine	L	н	1.5	0.2			
-			4		 		Mediun	dense, reddish browr	Silty coarse to	_					Auger chatter at 22' E	GS
-	S-8	18	9 12 10	21			fine SA	ND, some fine Gravel,	wet (SM)		NP	-	-			
		In-B	orehol	e Wat	ter Le	vels			General Notes							
	Date	/ Time		Cas Tip	sing (ft)	воt. of Hole (ft	VVater Lvl (ft)	I = Water Level (if BGS = Below Groups	observed) d Surface					Toughness: Low (Plasticity: Non-Pla	_), Medium (M), High (H) stic (NP), Low (L), Medium (M), High (H)
11/ 11/	11/4/2021 1:20:00 PM 25.9 17 11/4/2021 1:00:00 PM 22 20						17 20							PP = Pocket Pene TV = Torvane (She	rometer, measured in tons pe ar Vane), measured in tons pe	r square ft. er square ft.

P		15	50	GE (0			S	oil Boring	Lo	g				B-SS2 (Continued)
Clie Proj Loca Insp	nt: ect: ation: ector:	AES Som Som Nick	erset : erset, Walke	Solar NY er				Drilling Firm: Drill Crew: Boring Start: Boring End:	Earth Dimensions, Ir Phil Bence / Wayne 11/4/2021 11/4/2021	ic. Farris	6			Coordinates: Horiz. Datum: Elevation: Vert. Datum:	, NAD83 Grade N/A
Depth (ft)	Sample No.	Rec. (in)	Blows per 6"	N-Value	USCS Symbol	Graphic Log		Visual Classific	cation	Toughness	Plasticity	PP (tsf)	TV (tsf)	N-Value 10 20 30 40	Drilling & Strata Notes
-							End of Boreho	boring at 25.9 feet BC	GS ings						Auger refusal at 25.9' BGS
30 — - -															
- 35 — -															
- 40 -															-
- 45 -															-
- 50															-
	_	In-E	oreho	le Wa	ter Le	Bot of	Water	V - Motor Love /	General Notes) Medium (M) High (H)
11 11	In-Borehole Water Levels Date / Time Casing Tip (ft) Bot of Hole (11/4/2021 1:20:00 PM 25.5 11/4/2021 1:00:00 PM 22 Integration Integration					Hole (ft) 25.9 22	Lvi (ft) 17 20	BGS = Below Grou	ind Surface					Plasticity: Non-Pla PP = Pocket Peneti TV = Torvane (Shea	stic (NP), Low (L), Medium (M), High (H) ometer, measured in tons per square ft. ar Vane), measured in tons per square ft.



Attachment C

Electrical Resistivity Testing Results

A N S GEO

Soil Resistivity Results

Client:	AES	Date:	5/10/2021 - 5/11/2021					
Project Name:	Somerset Solar Project	Weather:	Sunny					
Project Location:	Somerset, New York	Temperature:	50°F					
Equipment:	AGI MiniSting							
Test Method: Wenner 4 Electrode Array								

٨٣	r21/	Data			Array sp	acing (ft)		
AI	Tay	Data	2	5	10	25	50	100
	NLS	Measured Resistance (Ω)	14.82	4.157	1.879	0.7436	0.3028	0.07
EDT CC1	N-5	Apparent Resistivity (Ω-m)	56.75	39.81	36.00	35.60	29.00	13.32
ERI-331	E \//	Measured Resistance (Ω)	13.68	4.37	1.681	0.7034	0.3966	0.09
	E-VV	Apparent Resistivity (Ω-m)	52.40	41.85	32.19	33.68	37.98	17.49
	NC	Measured Resistance (Ω)	18.4	7.487	3.947	1.576	0.6464	-
	IN-3	Apparent Resistivity (Ω-m)	70.47	71.69	75.59	75.47	61.90	-
ERI-UI	E \\/	Measured Resistance (Ω)	17.27	7.145	4.161	1.582	0.6344	-
	E-VV	Apparent Resistivity (Ω-m)	66.14	68.43	79.67	75.74	60.75	-
	NC	Measured Resistance (Ω)	7.655	3.586	1.886	0.8251	0.5202	-
	IN-3	Apparent Resistivity (Ω-m)	29.32	34.32	36.12	39.50	49.80	-
ERI-UZ		Measured Resistance (Ω)	7.293	3.656	1.798	0.835	0.5257	-
	E-VV	Apparent Resistivity (Ω-m)	27.93	35.02	34.44	39.99	50.32	-
	NC	Measured Resistance (Ω)	13.59	6.371	3.971	1.76	0.7963	-
	IN-S	Apparent Resistivity (Ω-m)	15.87	18.60	23.18	25.69	23.24	-
ERI-US	E \\/	Measured Resistance (Ω)	13.51	7.208	3.935	1.757	0.7893	-
	E-VV	Apparent Resistivity (Ω-m)	51.76	69.01	75.35	84.12	75.59	-
	NC	Measured Resistance (Ω)	47.78	7.941	3.044	1.498	0.8585	-
	N-3	Apparent Resistivity (Ω-m)	183.00	76.05	58.31	71.72	82.20	-
ER1-04	E \\/	Measured Resistance (Ω)	40.98	8.294	2.832	1.559	0.8877	-
	E-VV	Apparent Resistivity (Ω-m)	156.94	79.43	54.25	74.65	85.01	-
	NC	Measured Resistance (Ω)	12.23	3.968	2.447	1.153	0.484	-
	N-3	Apparent Resistivity (Ω-m)	46.82	38.01	46.85	55.20	45.99	-
ERI-US	E \\/	Measured Resistance (Ω)	12.2	3.493	2.479	1.146	0.5139	-
	E-VV	Apparent Resistivity (Ω-m)	46.73	33.44	47.49	54.86	49.19	-
	NC	Measured Resistance (Ω)	9.721	3.736	2.373	1.241	0.5674	-
	IN-3	Apparent Resistivity (Ω-m)	37.25	35.78	45.45	59.44	54.32	-
ERI-00		Measured Resistance (Ω)	7.387	3.655	2.425	1.296	0.5748	-
	E-VV	Apparent Resistivity (Ω-m)	28.29	34.99	46.45	62.06	55.05	-
	NC	Measured Resistance (Ω)	10.15	2.543	1.91	1.005	0.5269	-
	IN-S	Apparent Resistivity (Ω-m)	38.89	24.35	36.58	48.10	50.44	-
ERI-U/	E \A/	Measured Resistance (Ω)	11.23	4.493	2.105	0.8871	0.5061	-
	E-VV	Apparent Resistivity (Ω-m)	43.01	43.01	40.33	42.46	48.46	-
		Site Average (Ω)	22.17	5.86	2.81	1.25	0.59	0.08
		Site Average (Ω-m)	84.91	56.09	53.79	59.62	56.50	15.40

A N S GEO

Soil Resistivity Results

Client:	AES	Date:	11/4/2021								
Project Name:	Somerset Solar	Weather:	Overcast								
Project Location:	Somerset, New York	Temperature:	50°F								
Equipment:	AGI MiniSting										
Test Method:	Wenner 4 Electrode Array										

Arro		Data						Array spacing (ft)					
Alla	ay	Data	1	2	3	5	10	25	50	75	100	150	188
	NLS.	Measured Resistance (Ω)	41.89	23.27	15	9.421	4.113	1.192	0.5243	0.3119	0.2051	0.1053	0.06466
EDT CC D	14-3	Apparent Resistivity (Ω-m)	80.22	89.12	86.17	90.22	78.76	57.06	50.20	44.81	39.29	30.24	23.28
ER1-33-2	E-\//	Measured Resistance (Ω)	48.6	21.87	16.05	10.47	5.338	1.125	0.5409	0.3165	0.2159	-	-
	L-VV	Apparent Resistivity (Ω-m)	93.09	83.79	92.23	100.25	102.23	53.86	51.79	45.48	41.36	-	-
·		Site Average (Ω)	45.25	22.57	15.53	9.95	4.73	1.16	0.53	0.31	0.21	0.11	0.06
		Site Average (Ω-m)	86.65	86.46	89.20	95.23	90.50	55.46	50.99	45.14	40.33	30.24	23.28

Note: East-West electrode spacings limited to 100 feet due to site obstructions (fencelines, trees, roadways, etc.)



Attachment D

Laboratory Results
SIEVE ANALYSIS

RESULTS













ATTERBERG LIMITS

RESULTS







































THERMAL RESISTIVITY

RESULTS



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THERMAL CONDUCTIVITY OF SOIL & SOFT ROCK BY THERMAL NEEDLE PROBE -IEEE 442

CLIENT: ANS Geo, Inc. 4405 South Clinton Avenue, Suite#A South Plainfield, NJ 07080

DATE: 04/05/2021

Kind Attn: Dr. Vatsal A. Shah. PE. Ph. D, D.GE

FILE NO: AOV-5632

PROJECT: <u>AES – Somerset Solar</u> Somerset, NY **REPORT NO: S-14**

Test Data- Sample No. S-1 (B-06, Ther., 3'- 5')

Standard Proctor Value: 107.5 Remolded Dry Density: 91.375(85%) Optimum Moisture Content: 16.6% In-Situ Moisture Content: 25.0 %

Moisture Content (%)	Initial Soil Temperature (°C)	Thermal Resistivity (°C-cm/W)	
0	26.5	665	
4	26.3	271	
8	26.2	118	
12	26.1	88	
16.6	26	79	



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THERMAL CONDUCTIVITY OF SOIL & SOFT ROCK BY THERMAL NEEDLE PROBE -IEEE 442

CLIENT: ANS Geo, Inc. 4405 South Clinton Avenue, Suite#A South Plainfield, NJ 07080 DATE: 04/05/2021

Kind Attn: Dr. Vatsal A. Shah. PE. Ph. D, D.GE

FILE NO: AOV-5632

PROJECT: <u>AES – Somerset Solar</u> Somerset, NY **REPORT NO: S-15**

Test Data- Sample No. S-2 (B-20, Ther., 3'- 5')

Standard Proctor Value: 105.0 Remolded Dry Density: 89.25(85%) Optimum Moisture Content: 14.9% In-Situ Moisture Content: 21.2 %

Moisture Content (%)	Initial Soil Temperature (°C)	Thermal Resistivity (°C-cm/W)
0	25.6	753
3.5	25.2	298
7	25	115
10.5	24.9	83
14.9	24.8	74







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THERMAL CONDUCTIVITY OF SOIL & SOFT ROCK BY THERMAL NEEDLE PROBE -IEEE 442

CLIENT: ANS Geo, Inc. 4405 South Clinton Avenue, Suite#A South Plainfield, NJ 07080 DATE: 04/05/2021

Kind Attn: Dr. Vatsal A. Shah. PE. Ph. D, D.GE

FILE NO: AOV-5632

PROJECT: <u>AES – Somerset Solar</u> Somerset, NY **REPORT NO: S-16**

Test Data- Sample No. S-3 (B-29, Ther., 3'- 5')

Standard Proctor Value: 110.8 Remolded Dry Density: 94.18(85%) Optimum Moisture Content: 14.8% In-Situ Moisture Content: 21.34%

Moisture Content (%)	Initial Soil Temperature (°C)	Thermal Resistivity (°C-cm/W)
0	26.4	698
3.5	26.1	283
7	25.9	116
10.5	25.8	86
14.8	25.7	77







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THERMAL CONDUCTIVITY OF SOIL & SOFT ROCK BY THERMAL NEEDLE PROBE –ASTM D5334

CLIENT: ANS Geo, Inc. 4405 South Clinton Avenue, Suite#A South Plainfield, NJ 07080

Kind Attn: Dr. Vatsal A. Shah. PE. Ph. D, D.GE

FILE NO: AOV - 5632

DATE: 11/13/2021

PROJECT: AES-Somerset Solar Somerset, NY

REPORT NO: S – 34

Test Data- Sample No. S - 34 (B-SS2, G-1, 3'- 5') Standard Proctor Value: 114.8 Remolded Dry Density: 97.58(85%)

Optimum Moisture Content: 20.7% In-Situ Moisture Content: 19.2%

Moisture Content (%)	Initial Soil Temperature (°C)	Thermal Resistivity (°C-cm/W)
0	30.2	363
3	28.8	219
5.9	25.4	115
8.9	24.8	72
11.8	24.2	59




CORROSIVITY SUITE

RESULTS



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CERTIFICATE OF TEST - CORROSION ANALYSIS

CLIENT: ANS Geo, Inc. 4405 South Clinton Avenue South Plainfield, NJ 07080

DATE: 04/05/2021

FILE NO: AOV-5632

Kind Attn: Dr. Vatsal A. Shah. PE. Ph. D, D.GE

PROJECT: <u>AES - Somerset Solar</u> Somerset, NY

REPORT NO: S-20 to S-23

TEST PERFORMED: 1) Standard Test Method for Water Soluble Sulfate in Soil AS PER ASTM C-1580

- 2) Standard Test Method for measuring pH of Soil for use in Corrosion Testing AS PER ASTM G51-18
- 3) Standard Test Method for Measurement of Oxidation-Reduction Potential (ORP) of Soil AS PER ASTM G-200
- 4) Standard Method for Test for Determining Water Soluble Chloride Ion AS PER AASHTO T-291
- 5) Standard Test Method for Measuring Soil Resistivity using two-Electrode AS PER ASTM G187-18

Sample No.	Sample ID	Sulfate (mg/Kg)	рН	ORP (mV)	Chloride (mg/Kg)	Resistivity (Ohm-cm)
S-20	B-03, Corr., 2'-3'	18	7.12	+115	40	7,000
S-21	B-35, Corr., 2'-3'	12	7.38	+120	45	8,500
S-22	B-27, Corr., 2'-3'	3	7.76	+111	25	6,500
S-23	B-12, Corr., 2'-3'	6	6.88	+109	20	7,000



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CERTIFICATE OF TEST - CORROSION ANALYSIS

CLIENT: ANS Geo, Inc. 4405 South Clinton Avenue South Plainfield, NJ 07080

DATE: 11/15/2021

FILE NO: AOV - 5632

Kind Attn: Dr. Vatsal A. Shah. PE. Ph. D, D.GE

PROJECT: <u>AES - Somerset Solar</u> Somerset, NY

REPORT NO: S – 35

TEST PERFORMED: 1) Standard Test Method for Water Soluble Sulfate in Soil

- AS PER ASTM C-1580
- 2) Standard Test Method for measuring pH of Soil for use in Corrosion Testing AS PER ASTM G51-18
- 3) Standard Test Method for Measurement of Oxidation-Reduction Potential (ORP) of Soil AS PER ASTM G-200
- 4) Standard Method for Test for Determining Water Soluble Chloride Ion AS PER AASHTO T-291
- 5) Standard Test Method for Measuring Soil Resistivity using two-Electrode AS PER ASTM G187-18

Sample No.	Sample ID	Sulfate (mg/Kg)	рН	ORP (mV)	Chloride (mg/Kg)	Resistivity (Ohm-cm)
S-34	B-SS2, G-1., 2'-3'	39	8.23	+108	45	3,000



GROUNDWATER SAMPLING RESULTS

ANALYTICAL REPORT

Lab Number:	L2124373
Client:	ANS Deo Inc. 4475 South Clinton Avenue South Plainfield, NJ 07080
ATTN:	Eric Pauli
Phone:	(908) 754-8800
Project Name:	SOMERSET
Project Number:	SOMERSET
Report Date:	05/20/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019 508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name:	SOMERSET
Project Number:	SOMERSET

 Lab Number:
 L2124373

 Report Date:
 05/20/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2124373-01	SA 9122D A-E	WATER	SOMERSET, NY	05/11/21 08:30	05/11/21
L2124373-02	SA 9132S A-E	WATER	SOMERSET, NY	05/11/21 09:00	05/11/21
L2124373-03	SO 8305 A-E	WATER	SOMERSET, NY	05/11/21 09:30	05/11/21
L2124373-04	SO 8823 A-E	WATER	SOMERSET, NY	05/11/21 10:00	05/11/21



Project Name: SOMERSET Project Number: SOMERSET

 Lab Number:
 L2124373

 Report Date:
 05/20/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.



Project Name:SOMERSETProject Number:SOMERSET

 Lab Number:
 L2124373

 Report Date:
 05/20/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2124373-01: Headspace was noted in the sample containers submitted for Acidity-CaCO3 eq. - SM 2310.

Acidity

L2124373-02 and -04: The sample has an elevated detection limit due to the dilution required by the sample matrix.

Oxidation/Reduction Potential

The WG1497651-2 Laboratory Duplicate RPD for oxidation/reduction potential (36%), performed on L2124373-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

Anions by Ion Chromatography

The WG1500092-3 MS recoveries for chloride (69%) and sulfate (0%), performed on L2124373-03, do not apply because the sample concentrations are greater than four times the spike amount added.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Cattlin Wallen Caitlin Walukevich

Title: Technical Director/Representative

Date: 05/20/21



INORGANICS & MISCELLANEOUS



Serial	No:05202118:12
--------	----------------

Project Name: SOMERSET

Project Number: SOMERSET

SAMPLE RESULTS

Lab ID:	L2124373-01	Date Collected:	05/11/21 08:30
Client ID:	SA 9122D A-E	Date Received:	05/11/21
Sample Location:	SOMERSET, NY	Field Prep:	Not Specified

Sample Depth: Matrix:

Parameter	Result	Qualifier Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - West	borough La	b							
Acidity	11.	mg CaCO3/L	2.0	NA	1	-	05/20/21 15:45	121,2310B	JT
Alkalinity, Total	22.1	mg CaCO3/L	2.00	NA	1	-	05/18/21 11:19	121,2320B	JB
Sulfide	ND	mg/l	0.10	0.10	1	05/17/21 13:10	05/17/21 20:20	1,9030B	EN
Oxidation/Reduction Potential	-16	mv	-	NA	1	-	05/12/21 07:50	12,1498	KP
Anions by Ion Chromatogr	aphy - Wes	tborough Lab							
Chloride	9960	mg/l	250	42.0	500	-	05/18/21 00:26	44,300.0	SH
Sulfate	2070	mg/l	500	227.	500	-	05/18/21 00:26	44,300.0	SH



Serial	No:05202118:12
--------	----------------

Project Name: SOMERSET

Project Number: SOMERSET

SAMPLE RESULTS

Lab ID:	L2124373-02	Date Collected:	05/11/21 09:00
Client ID:	SA 9132S A-E	Date Received:	05/11/21
Sample Location:	SOMERSET, NY	Field Prep:	Not Specified

Sample Depth: Matrix:

Parameter	Result	Qualifier Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westbo	rough Lab)							
Acidity	ND	mg CaCO3/L	4.0	NA	2	-	05/20/21 15:45	121,2310B	JT
Alkalinity, Total	420.	mg CaCO3/L	2.00	NA	1	-	05/18/21 11:19	121,2320B	JB
Sulfide	ND	mg/l	0.10	0.10	1	05/17/21 13:10	05/17/21 20:21	1,9030B	EN
Oxidation/Reduction Potential	84	mv	-	NA	1	-	05/12/21 07:50	12,1498	KP
Anions by Ion Chromatograp	hy - West	borough Lab							
Chloride	41.0	mg/l	12.5	2.10	25	-	05/18/21 00:38	44,300.0	SH
Sulfate	860.	mg/l	25.0	11.4	25	-	05/18/21 00:38	44,300.0	SH



Serial	No:05202118:12
--------	----------------

Project Name:SOMERSETProject Number:SOMERSET

SAMPLE RESULTS

Lab ID:	L2124373-03	Date Collected:	05/11/21 09:30
Client ID:	SO 8305 A-E	Date Received:	05/11/21
Sample Location:	SOMERSET, NY	Field Prep:	Not Specified

Sample Depth: Matrix:

Parameter	Result	Qualifier Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westh	oorough Lat	0							
Acidity	ND	mg CaCO3/L	2.0	NA	1	-	05/20/21 15:45	121,2310B	JT
Alkalinity, Total	244.	mg CaCO3/L	2.00	NA	1	-	05/18/21 11:19	121,2320B	JB
Sulfide	ND	mg/l	0.10	0.10	1	05/17/21 13:10	05/17/21 20:21	1,9030B	EN
Oxidation/Reduction Potential	40	mv	-	NA	1	-	05/12/21 07:50	12,1498	KP
Anions by Ion Chromatogra	aphy - West	tborough Lab							
Chloride	315.	mg/l	5.00	0.839	10	-	05/18/21 00:14	44,300.0	SH
Sulfate	874.	mg/l	10.0	4.54	10	-	05/18/21 00:14	44,300.0	SH



Serial	No:05202118:12
--------	----------------

Project Name: SOMERSET

Project Number: SOMERSET

SAMPLE RESULTS

Lab ID:	L2124373-04	Date Collected:	05/11/21 10:00
Client ID:	SO 8823 A-E	Date Received:	05/11/21
Sample Location:	SOMERSET, NY	Field Prep:	Not Specified

Sample Depth: Matrix:

Parameter	Result	Qualifier Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westh	oorough Lab)							
Acidity	ND	mg CaCO3/L	4.0	NA	2	-	05/20/21 15:45	121,2310B	JT
Alkalinity, Total	542.	mg CaCO3/L	2.00	NA	1	-	05/18/21 11:19	121,2320B	JB
Sulfide	ND	mg/l	0.10	0.10	1	05/17/21 13:10	05/17/21 20:21	1,9030B	EN
Oxidation/Reduction Potential	100	mv	-	NA	1	-	05/12/21 07:50	12,1498	KP
Anions by Ion Chromatogra	aphy - West	borough Lab							
Chloride	15.4	mg/l	5.00	0.839	10	-	05/18/21 00:51	44,300.0	SH
Sulfate	171.	mg/l	10.0	4.54	10	-	05/18/21 00:51	44,300.0	SH



Project Name:SOMERSETProject Number:SOMERSET

 Lab Number:
 L2124373

 Report Date:
 05/20/21

Method Blank Analysis Batch Quality Control

Parameter	Result Q	ualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - We	stborough Lab	for sam	ple(s): 01-	04 Ba	tch: WC	G1499904-1	1			
Sulfide	ND		mg/l	0.10	0.10	1	05/17/21 13:10	05/17/21 20:19	1,9030B	EN
Anions by Ion Chromato	graphy - West	borough	Lab for sa	mple(s)	: 01-04	Batch: W	/G1500092-1			
Chloride	0.288	J	mg/l	0.500	0.083	1	-	05/17/21 17:07	44,300.0	SH
Sulfate	ND		mg/l	1.00	0.454	1	-	05/17/21 17:07	44,300.0	SH
General Chemistry - We	stborough Lab	for sam	ple(s): 01-	04 Ba	tch: WC	G1500266-1	1			
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	05/18/21 11:19	121,2320B	JB
General Chemistry - We	stborough Lab	for sam	ple(s): 01-	04 Ba	tch: WC	G1501725-	1			
Acidity	ND		mg CaCO3/L	2.0	NA	1	-	05/20/21 15:45	121,2310B	JT



Lab Control Sample Analysis Batch Quality Control

Project Name: SOMERSET Project Number: SOMERSET Lab Number: L2124373 Report Date: 05/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	
General Chemistry - Westborough Lab	Associated sample(s)	: 01-04	Batch: WG1497	651-1					
Oxidation/Reduction Potential	100		-		90-110	-		20	
General Chemistry - Westborough Lab	Associated sample(s)	: 01-04	Batch: WG1499	904-2					
Sulfide	88		-		75-125	-			
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-04 Batch: WG1500092-2									
Chloride	96		-		90-110	-			
Sulfate	94		-		90-110	-			
General Chemistry - Westborough Lab	Associated sample(s)	: 01-04	Batch: WG15002	266-2					
Alkalinity, Total	102		-		90-110	-		10	
General Chemistry - Westborough Lab	Associated sample(s)	: 01-04	Batch: WG1501	725-2					
Acidity	102		-		80-120	-			



Matrix Spike Analysis Batch Quality Control

Project Name:	SOMERSET
Project Number:	SOMERSET

 Lab Number:
 L2124373

 Report Date:
 05/20/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	/ RPD	R Qual Li	RPD imits
General Chemistry - Westbo	rough Lab Asso	ciated samp	ole(s): 01-04	QC Batch II	D: WG1	499904-4	QC Sample:	L21245	16-03 C	lient ID:	MS Sam	ole
Sulfide	ND	0.48	ND	0	Q	-	-		70-130	-		20
Anions by Ion Chromatograp 8305 A-E	ohy - Westborou	gh Lab Asso	ociated samp	ole(s): 01-04	QC Ba	tch ID: WG	1500092-3	QC San	nple: L212	4373-03	Client I	D: SO
Chloride	315.	40	342	69	Q	-	-		90-110	-		18
Sulfate	874.	80	791	0	Q	-	-		90-110	-		20
General Chemistry - Westbo	rough Lab Asso	ciated samp	ole(s): 01-04	QC Batch II	D: WG1	500266-4	QC Sample:	L21238	31-01 C	lient ID:	MS Sam	ole
Alkalinity, Total	55.2	100	158	103		-	-		86-116	-		10



Lab Duplicate Analysis Batch Quality Control

Project Name:SOMERSETProject Number:SOMERSET

Lab

 Lab Number:
 L2124373

 Report Date:
 05/20/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sampl	e(s): 01-04 QC Ba	atch ID: WG1497651-2	QC Sample: L2	2124373-01	Client ID:	SA 9122D A-E
Oxidation/Reduction Potential	-16	-23	mv	36	Q	20
General Chemistry - Westborough Lab Associated sampl	e(s): 01-04 QC Ba	atch ID: WG1499904-3	QC Sample: L2	2124516-01	Client ID:	DUP Sample
Sulfide	ND	ND	mg/l	NC		20
Anions by Ion Chromatography - Westborough Lab Assoc 8305 A-E	ciated sample(s): 01	-04 QC Batch ID: WG	1500092-4 QC	Sample: L	2124373-03	3 Client ID: SO
Chloride	315.	315	mg/l	0		18
Sulfate	874.	875	mg/l	0		20
General Chemistry - Westborough Lab Associated sampl	e(s): 01-04 QC Ba	atch ID: WG1500266-3	QC Sample: L2	2123831-01	Client ID:	DUP Sample
Alkalinity, Total	55.2	54.0	mg CaCO3/L	2		10
General Chemistry - Westborough Lab Associated sampl	e(s): 01-04 QC Ba	atch ID: WG1501725-3	QC Sample: L2	2124373-01	Client ID:	SA 9122D A-E
Acidity	11.	12	mg CaCO3/L	9		20



Project Name: SOMERSET Project Number: SOMERSET

Serial_No:05202118:12 Lab Number: L2124373 Report Date: 05/20/21

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information			Initial	Final	Temp			Frozen		
Container ID	Container Type	Cooler	рН	рН	deg C	Pres	Seal	Date/Time	Analysis(*)	
L2124373-01A	Plastic 250ml unpreserved/No Headspace	А	NA		3.9	Y	Absent		ALK-T-2320(14)	
L2124373-01B	Plastic 250ml unpres/No Hdspace/Acidity	А	NA		3.9	Y	Absent		ACID-2310(14)	
L2124373-01C	Plastic 250ml unpreserved	А	7	7	3.9	Y	Absent		SO4-300(28),ORP(1),CL-300(28)	
L2124373-01D	Plastic 250ml Zn Acetate/NaOH preserved	А	>9	>9	3.9	Y	Absent		SULFIDE-9030(7)	
L2124373-01E	Plastic 250ml Zn Acetate/NaOH preserved	А	>9	>9	3.9	Y	Absent		SULFIDE-9030(7)	
L2124373-02A	Plastic 250ml unpreserved/No Headspace	А	NA		3.9	Y	Absent		ALK-T-2320(14)	
L2124373-02B	Plastic 250ml unpres/No Hdspace/Acidity	А	NA		3.9	Y	Absent		ACID-2310(14)	
L2124373-02C	Plastic 250ml unpreserved	А	7	7	3.9	Y	Absent		SO4-300(28),CL-300(28),ORP(1)	
L2124373-02D	Plastic 250ml Zn Acetate/NaOH preserved	А	>9	>9	3.9	Y	Absent		SULFIDE-9030(7)	
L2124373-02E	Plastic 250ml Zn Acetate/NaOH preserved	А	>9	>9	3.9	Y	Absent		SULFIDE-9030(7)	
L2124373-03A	Plastic 250ml unpreserved/No Headspace	А	NA		3.9	Y	Absent		ALK-T-2320(14)	
L2124373-03B	Plastic 250ml unpres/No Hdspace/Acidity	А	NA		3.9	Y	Absent		ACID-2310(14)	
L2124373-03C	Plastic 250ml unpreserved	А	7	7	3.9	Y	Absent		SO4-300(28),CL-300(28),ORP(1)	
L2124373-03D	Plastic 250ml Zn Acetate/NaOH preserved	А	>9	>9	3.9	Y	Absent		SULFIDE-9030(7)	
L2124373-03E	Plastic 250ml Zn Acetate/NaOH preserved	А	>9	>9	3.9	Y	Absent		SULFIDE-9030(7)	
L2124373-04A	Plastic 250ml unpreserved/No Headspace	А	NA		3.9	Y	Absent		ALK-T-2320(14)	
L2124373-04B	Plastic 250ml unpres/No Hdspace/Acidity	А	NA		3.9	Y	Absent		ACID-2310(14)	
L2124373-04C	Plastic 250ml unpreserved	А	7	7	3.9	Y	Absent		SO4-300(28),ORP(1),CL-300(28)	
L2124373-04D	Plastic 250ml Zn Acetate/NaOH preserved	А	>9	>9	3.9	Y	Absent		SULFIDE-9030(7)	
L2124373-04E	Plastic 250ml Zn Acetate/NaOH preserved	А	>9	>9	3.9	Y	Absent		SULFIDE-9030(7)	



Project Name: SOMERSET

Project Number: SOMERSET

Lab Number: L2124373

Report Date: 05/20/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
	Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: SOMERSET

Project Number: SOMERSET

Lab Number: L2124373

Report Date: 05/20/21

Footnotes

1

- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Waterpreserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'. Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentrations of the analyte at less than ten times (10x) the concentrations of the analyte at less than ten times (10x) the concentrations of the analyte at less than ten times (10x) the concentrations of the analyte at less than ten times (10x) the concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-Air-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- **D** Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- **F** The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
- H The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I The lower value for the two columns has been reported due to obvious interference.
- J Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Serial_No:05202118:12

Project Name:	SOMERSET	Lab Number:	L2124373
Project Number:	SOMERSET	Report Date:	05/20/21

Data Qualifiers

- NJ Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P The RPD between the results for the two columns exceeds the method-specified criteria.
- Q The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- **R** Analytical results are from sample re-analysis.
- **RE** Analytical results are from sample re-extraction.
- **S** Analytical results are from modified screening analysis.



Project Name:SOMERSETProject Number:SOMERSET

 Lab Number:
 L2124373

 Report Date:
 05/20/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 12 Annual Book of ASTM Standards. (American Society for Testing and Materials) ASTM International.
- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpineol

EPA 8260C/8260D: <u>NPW</u>: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; <u>SCM</u>: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: <u>NPW:</u> Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; <u>SCM</u>: Dimethylnaphthalene,1,4-Diphenylhydrazine. **SM4500**: <u>NPW</u>: Amenable Cyanide; <u>SCM</u>: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility

SM 2540D: TSS EPA 8082A: <u>NPW</u>: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187. EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene. Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; EPA 353.2: Nitrate-N, Nitrite-N; SM4500NO3-F: Nitrate-N, Nitrite-N; SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B EPA 332: Perchlorate; EPA 524.2: THMs and VOCs; EPA 504.1: EDB, DBCP. Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, EPA 350.1: Ammonia-N, LACHAT 10-107-06-1-B: Ammonia-N, EPA 351.1, SM4500NO3-F, EPA 353.2: Nitrate-N, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate. EPA 624.1: Volatile Halocarbons & Aromatics, EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II.

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs **EPA 625.1**: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. EPA 200.8: Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. EPA 245.1 Hg. EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn. **EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn. **EPA 245.1** Hg. **SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

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CALIFORNIA BEARING RATIO

RESULTS















Attachment E

Pile Load Testing Logs



Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-01A
Date/Time Installed:	4/10/21 8:55 AM	Date/Time Tested:	4/24/21 10:10 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	64.53
Pushed to Depth (ft.):	0.5	Embedment Depth (ft.):	10.60	Avg. Installation Rate (sec/ft)	6.09

Embedment Data							
Depth (ft.)	Time (s)						
0	0						
1	0.90						
2	1.09						
3	1.10						
4	1.39						
5	1.47						
6	1.65						
7	2.03						
8	3.93						
9	18.39						
10	19.11						
11	13.47						
Total Time (s) =	64.53						

Tensile Testing								
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)			
1	0	0	0.0000	0.0000	0.0000			
1	1,500	1,500	0.0045	0.0010	0.0028			
1	3,000	3,000	0.0065	0.0050	0.0058			
1	4,000	4,000	0.0065	0.0105	0.0085			
1	5,000	5,000	0.0045	0.0145	0.0095			
1	6,000	6,100	0.0040	0.0205	0.0123			
1	7,000	7,000	0.0020	0.0275	0.0148			
1	8,000	8,000	0.0000	0.0360	0.0180			
1	9,000	9,100	-0.0030	0.0420	0.0195			
1	10,000	10,000	-0.0050	0.0495	0.0223			
		U	Inload					
1	0	0	0.0010	0.0070	0.0040			
		R	eload					
1	Max.	10,000	-0.0005	0.0465	0.0230			
		U	Inload					
1	0	0	-0.0015	0.0030	0.0008			

Lateral Testing									
Lateral	Lateral Load Height Deflection Gauge Height								
Above	Above Grade (ft):		(ir	4					
Hold Time	Target Load	Load (lbc)	Deflection 1	Deflection 2	Average				
(min)	(lbs)	Luau (IDS)	(in.)	(in.)	Deflection (in.)				
1	0	0	0.0000	0.0000	0.0000				
1	500	500	0.2290	0.0655	0.1473				
1	1,000	1,000	0.3900	0.1255	0.2578				
1	1,500	1,500	0.5045	0.1955	0.3500				
1	0	0	0.0640	0.0070	0.0355				
1	500	500	0.2915	0.0325	0.1620				
1	1,000	1,000	0.4945	0.1425	0.3185				
1	1,500	1,500	0.6060	0.2150	0.4105				
1	2,000	2,000	0.6105	0.2925	0.4515				
1	2,500	2,500	0.6240	0.3705	0.4973				
1	0	0	0.1045	0.0175	0.0610				
1	2,500	2,500	0.7460	0.3830	0.5645				
1	3,000	3,000	0.7465	0.4555	0.6010				
1	3,500	3,500	0.7760	0.5455	0.6608				
1	4,000	4,000	0.7990	0.6420	0.7205				
			Unload						
1	0	0	0.4190	0.6030	0.5110				
			Reload						
1	Max.	2,160	1.3860	0.9660	1.1760				
		-	Unload						
1	0	0	0.7970	0.5380	0.6675				





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-01B
Date/Time Installed:	4/10/21 9:00 AM	Date/Time Tested:	4/24/21 10:15 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	71.79
Pushed to Depth (ft.):	0.5	Embedment Depth (ft.):	10.50	Avg. Installation Rate (sec/ft)	6.84

Embedment Data							
Time (s)							
0							
0.65							
0.93							
1.56							
1.57							
4.11							
6.25							
11.1							
11.81							
13.14							
12.47							
8.2							
71.79							

Tensile Testing								
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)			
1	0	0	0.0000	0.0000	0.0000			
1	1,500	1,500	0.0000	0.0035	0.0018			
1	3,000	3,000	0.0000	0.0130	0.0065			
1	4,000	4,000	0.0005	0.0195	0.0100			
1	5,000	5,000	0.0010	0.0280	0.0145			
1	6,000	6,000	0.0020	0.0360	0.0190			
1	7,000	7,000	0.0050	0.0520	0.0285			
1	8,000	8,000	0.0090	0.0660	0.0375			
1	9,000	9,000	0.0120	0.0740	0.0430			
1	10,000	10,000	0.0175	0.0860	0.0518			
		U	Inload					
1	0	0	0.0175	0.0220	0.0198			
	-	R	eload					
1	Max.	10,000	0.0185	0.1030	0.0608			
		U	Inload					
1	0	0	0.0215	0.0260	0.0238			

Lateral Testing								
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height n):	4			
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)			
1	0	0	0.0000	0.0000	0.0000			
1	500	500	0.2675	-0.0315	0.1180			
1	1,000	1,000	0.3825	-0.0180	0.1823			
1	1,500	1,500	0.5025	0.0140	0.2583			
1	0	0	0.1135	0.0005	0.0570			
1	500	500	0.2845	-0.0155	0.1345			
1	1,000	1,000	0.4375	-0.0005	0.2185			
1	1,500	1,500	0.5435	0.0295	0.2865			
1	2,000	2,000	0.6340	0.0715	0.3528			
1	2,500	2,500	0.7315	0.1285	0.4300			
1	0	0	0.1130	0.0340	0.0735			
1	2,500	2,500	0.7670	0.1460	0.4565			
1	3,000	3,000	0.8570	0.2060	0.5315			
1	3,500	3,500	0.9640	0.2950	0.6295			
1	4,000	4,000	1.0770	0.4090	0.7430			
			Unload					
1	0	0	0.0720	0.1265	0.0993			
			Reload					
1	Max.	2,160	0.8045	0.2305	0.5175			
			Unload					
1	0	0	0.0380	0.1440	0.0910			





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-02A
Date/Time Installed:	4/10/21 9:15 AM	Date/Time Tested:	4/24/21 9:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	109.57
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.50	Avg. Installation Rate (sec/ft)	11.53

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.03				
3	1.21				
4	3.60				
5	9.35				
6	12.73				
7	18.76				
8	18.68				
9	26.15				
10	18.06				
Total Time (s) =	109.57				

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0010	0.0000	0.0005	
1	3,000	3,000	0.0065	0.0000	0.0033	
1	4,000	4,000	0.0130	-0.0030	0.0050	
1	5,000	5,000	0.0175	-0.0055	0.0060	
1	6,000	6,000	0.0265	-0.0085	0.0090	
1	7,000	7,000	0.0345	-0.0120	0.0113	
1	8,000	8,000	0.0435	-0.0170	0.0133	
1	9,000	9,000	0.0545	-0.0255	0.0145	
1	10,000	10,000	0.0630	-0.0255	0.0188	
		U	Inload			
1	0	0	0.0060	-0.0255	-0.0098	
		R	eload			
1	Max.	10,000	0.0655	-0.0255	0.0200	
	Unload					
1	0	0	0.0030	-0.0030	0.0000	

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0510	0.2045	0.1278		
1	1,000	1,000	0.1010	0.3165	0.2088		
1	1,500	1,500	0.1730	0.4510	0.3120		
1	0	0	0.0690	0.0320	0.0505		
1	500	500	0.1105	0.2315	0.1710		
1	1,000	1,000	0.1495	0.3515	0.2505		
1	1,500	1,500	0.2030	0.4680	0.3355		
1	2,000	2,000	0.2880	0.5955	0.4418		
1	2,500	2,500	0.3910	0.6175	0.5043		
1	0	0	0.1620	-0.0005	0.0808		
1	2,500	2,500	0.4475	0.7015	0.5745		
1	3,000	3,000	0.5400	0.7090	0.6245		
1	3,500	3,500	0.6715	0.7215	0.6965		
1	4,000	3,900	0.8840	0.7320	0.8080		
			Unload				
1	0	0	0.3675	-0.0945	0.1365		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-02B
Date/Time Installed:	4/10/21 9:25 AM	Date/Time Tested:	4/24/21 9:15 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	107.13
Pushed to Depth (ft.):	1.1	Embedment Depth (ft.):	9.10	Avg. Installation Rate (sec/ft)	11.77

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.09				
3	2.96				
4	5.09				
5	7.96				
6	12.02				
7	13.18				
8	21.82				
9	43.01				
Total Time (s) =	107.13				

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0020	0.0000	0.0010	
1	3,000	3,000	0.0030	0.0020	0.0025	
1	4,000	4,100	0.0025	0.0065	0.0045	
1	5,000	5,100	0.0025	0.0120	0.0073	
1	6,000	6,000	0.0025	0.0200	0.0113	
1	7,000	7,000	0.0015	0.0285	0.0150	
1	8,000	8,100	0.0025	0.0385	0.0205	
1	9,000	9,000	0.0020	0.0505	0.0263	
1	10,000	10,000	0.0025	0.0615	0.0320	
		U	Inload			
1	0	0	0.0065	0.0245	0.0155	
		R	eload			
1	Max.	10,000	0.0085	0.0620	0.0353	
		U	Inload			
1	0	0	0.0085	0.0270	0.0178	

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1505	0.1420	0.1463		
1	1,000	1,000	0.2405	0.2640	0.2523		
1	1,500	1,500	0.3380	0.4055	0.3718		
1	0	0	0.0705	0.0400	0.0553		
1	500	500	0.1860	0.1440	0.1650		
1	1,000	1,000	0.2675	0.2845	0.2760		
1	1,500	1,500	0.3500	0.4195	0.3848		
1	2,000	2,000	0.4430	0.5530	0.4980		
1	2,500	2,500	0.5335	0.6765	0.6050		
1	0	0	0.1120	0.0270	0.0695		
1	2,500	2,500	0.5620	0.6990	0.6305		
1	3,000	3,000	0.6355	0.8015	0.7185		
1	3,500	3,500	0.7250	0.9230	0.8240		
1	4,000	3,900	0.9050	1.1375	1.0213		
			Unload				
1	0	0	0.1820	0.0785	0.1303		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-03A
Date/Time Installed:	4/10/21 9:40 AM	Date/Time Tested:	4/24/21 8:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	37.26
Pushed to Depth (ft.):	1.5	Embedment Depth (ft.):	8.00	Avg. Installation Rate (sec/ft)	4.66

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.66				
3	1.46				
4	2.06				
5	6.43				
6	5.29				
7	9.41				
8	11.95				
Total Time (s) =	37.26				

	Tensile Testing							
Hold Time (min)	Target Load (lbs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)			
1	0	0	0.0000	0.0000	0.0000			
1	1,500	1,500	0.0030	-0.0010	0.0010			
1	3,000	3,040	0.0095	-0.0040	0.0028			
1	4,000	4,040	0.0160	-0.0085	0.0038			
1	5,000	5,040	0.0235	-0.0135	0.0050			
1	6,000	6,040	0.0290	-0.0175	0.0058			
1	7,000	7,000	0.0360	-0.0215	0.0073			
1	8,000	8,040	0.0435	-0.0235	0.0100			
1	9,000	9,080	0.0515	-0.0260	0.0128			
1	10,000	10,020	0.061	-0.028	0.0165			
		U	Inload					
1	0	0	0.0120	0.0045	0.0083			
	Reload							
1	Max.	10,000	0.0715	-0.0235	0.0240			
		U	Inload					
1	0	0	0.0165	0.0080	0.0123			

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (lbs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0745	0.1220	0.0983		
1	1,000	1,000	0.1770	0.2450	0.2110		
1	1,500	1,500	0.3025	0.3940	0.3483		
1	0	0	0.0975	0.1190	0.1083		
1	500	500	0.1490	0.2010	0.1750		
1	1,000	1,000	0.2465	0.3215	0.2840		
1	1,500	1,500	0.3275	0.4200	0.3738		
1	2,000	2,000	0.4520	0.5565	0.5043		
1	2,500	2,500	0.5850	0.6925	0.6388		
1	0	0	0.1730	0.2195	0.1963		
1	2,500	2,500	0.6450	0.7655	0.7053		
1	3,000	3,000	0.8130	0.9195	0.8663		
1	3,500	3,200	0.9530	1.0605	1.0068		
			Unload				
1	0	0	0.1845	0.2645	0.2245		




Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-03B
Date/Time Installed:	4/10/21 9:45 AM	Date/Time Tested:	4/24/21 8:15 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	51.57
Pushed to Depth (ft.):	1.8	Embedment Depth (ft.):	7.80	Avg. Installation Rate (sec/ft)	6.61

Embedment Data				
Depth (ft.)	Time (s)			
0	0			
1	0			
2	0.48			
3	1.51			
4	4.48			
5	8.69			
6	9.05			
7	13.16			
8	14.2			
Total Time (s) =	51.57			

		Tensi	le Testing		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)
1	0	0	0.0000	0.0000	0.0000
1	1,500	1,500	0.0150	-0.0030	0.0060
1	3,000	3,040	0.0245	-0.0030	0.0108
1	4,000	4,080	0.0255	0.0000	0.0128
1	5,000	5,020	0.0280	0.0035	0.0158
1	6,000	6,040	0.0305	0.0080	0.0193
1	7,000	7,040	0.0325	0.0135	0.0230
1	8,000	8,120	0.0345	0.0210	0.0278
1	9,000	9,080	0.0380	0.0275	0.0328
1	10,000	10,100	0.0425	0.0360	0.0393
		U	Inload		
1	0	0	0.0125	0.0160	0.0143
		R	eload		
1	Max.	10,140	0.0480	0.0455	0.0468
		U	Inload		
1	0	0	0.0215	0.0230	0.0223

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1740	0.0250	0.0995		
1	1,000	1,000	0.3095	0.1075	0.2085		
1	1,500	1,500	0.4345	0.2145	0.3245		
1	0	0	0.0660	-0.0050	0.0305		
1	500	500	0.2030	0.0210	0.1120		
1	1,000	1,000	0.3490	0.1260	0.2375		
1	1,500	1,500	0.4465	0.2175	0.3320		
1	2,000	2,000	0.5605	0.3365	0.4485		
1	2,500	2,500	0.6670	0.4530	0.5600		
1	0	0	0.1065	0.0045	0.0555		
1	2,500	2,500	0.7065	0.4860	0.5963		
1	3,000	3,000	0.8220	0.6295	0.7258		
1	3,500	3,200	0.8640	0.6870	0.7755		
			Unload				
1	0	0	0.1080	0.0120	0.0600		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-04A
Date/Time Installed:	4/10/21 10:30 AM	Date/Time Tested:	4/23/21 3:30 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	104.26
Pushed to Depth (ft.):	1.5	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	11.58

Embedmen	t Data
Depth (ft.)	Time (s)
0	0
1.5	0
2	0.69
3	3.89
4	8.14
5	12.16
6	16.04
7	22.43
8	16.71
9	24.20
Total Time (s) =	104.26

Tensile Testing					
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)
1	0	0	0.0000	0.0000	0.0000
1	1,500	1,500	0.0020	0.0105	0.0063
1	3,000	3,000	0.0030	0.0115	0.0073
1	4,000	4,000	0.0035	0.0130	0.0083
1	5,000	5,000	0.0045	0.0140	0.0093
1	6,000	6,000	0.0060	0.0165	0.0113
1	7,000	7,000	0.0065	0.0195	0.0130
1	8,000	8,000	0.0075	0.0250	0.0163
1	9,000	8,800	0.0080	0.0290	0.0185
		U	Inload		
1	0	0	0.0165	0.0155	0.0160
		R	eload		
1	Max.	8,800	0.0090	0.0325	0.0208
		U	Inload		
1	0	0	0.0195	0.0180	0.0188

	Lateral Testing						
Lateral	Load Height	з	Deflection G	auge Height	А		
Above	Grade (ft):	3	(ir	n):	-		
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (103)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0545	0.0990	0.0768		
1	1,000	1,000	0.1210	0.1920	0.1565		
1	1,500	1,500	0.1965	0.2880	0.2423		
1	0	0	0.0400	0.0475	0.0438		
1	500	500	0.0840	0.1260	0.1050		
1	1,000	1,000	0.1480	0.2775	0.2128		
1	1,500	1,500	0.2170	0.3090	0.2630		
1	2,000	2,000	0.2925	0.4045	0.3485		
1	2,500	2,500	0.3885	0.5275	0.4580		
1	0	0	0.0670	0.0790	0.0730		
1	2,500	2,500	0.4160	0.5670	0.4915		
1	3,000	3,000	0.5010	0.6830	0.5920		
1	3,500	3,500	0.6440	0.8750	0.7595		
1	4,000	4,000	0.7880	1.0685	0.9283		
			Unload				
1	0	0	0.1185	0.1505	0.1345		
			Reload				
1	Max.	4,300	0.8655	1.1450	1.0053		
			Unload				
1	0	0	0.1045	0.1595	0.1320		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-04B
Date/Time Installed:	4/10/21 10:35 AM	Date/Time Tested:	4/23/21 3:15 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	95.51
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	10.61

Embodmon	t Data
Embedmen	l Dala
Depth (ft.)	Time (s)
0	0
1	0
2	1.49
3	4.38
4	7.51
5	12.45
6	13.84
7	15.57
8	18.42
9	21.85
Total Time (s) =	95.51

Tensile Testing					
Hold Time (min)	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average Deflection (in)
(1111)	(103)	-	(111.)	(111.)	Deficection (iii.)
1	0	0	0.0000	0.0000	0.0000
1	1,500	1,500	-0.0195	-0.0085	-0.0140
1	3,000	3,000	-0.0240	-0.0040	-0.0140
1	4,000	4,000	-0.0250	-0.0010	-0.0130
1	5,000	5,000	-0.0250	0.0015	-0.0118
1	6,000	6,000	-0.0125	0.0005	-0.0060
1	7,000	6,200	-0.0070	0.0000	-0.0035
		U	Inload		
1	0	0	0.0160	0.0105	0.0133
		R	eload		
1	Max.	9,000	-0.0035	0.0220	0.0093
		U	Inload		
1	0	0	-0.0080	-0.0020	-0.0050

	Lateral Testing					
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4	
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	500	500	0.0325	0.0735	0.0530	
1	1,000	1,000	0.0875	0.0735	0.0805	
1	1,500	1,500	0.1535	0.2605	0.2070	
1	0	0	0.0120	0.0280	0.0200	
1	500	500	0.0515	0.1045	0.0780	
1	1,000	1,000	0.1160	0.1885	0.1523	
1	1,500	1,500	0.1855	0.2710	0.2283	
1	2,000	2,000	0.2600	0.3525	0.3063	
1	2,500	2,500	0.3520	0.4510	0.4015	
1	0	0	0.0340	0.0355	0.0348	
1	2,500	2,500	0.3795	0.4860	0.4328	
1	3,000	3,000	0.4660	0.5750	0.5205	
1	3,500	3,500	0.6150	0.7250	0.6700	
1	4,000	4,000	0.8675	0.9670	0.9173	
			Unload			
1	0	0	0.1045	0.1325	0.1185	
			Reload			
1	Max.	4,300	0.9620	0.9880	0.9750	
	Unioad					
1	0	0	0.0930	0.1195	0.1063	



Footing failure during initial uplift.



Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-05A
Date/Time Installed:	4/10/21 10:55 AM	Date/Time Tested:	4/23/21 1:45 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	36.37
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	5.20

Embedment Data						
Depth (ft.)	Time (s)					
0	0					
1	0					
2	0.9					
3	1.46					
4	1.96					
5	5.61					
6	11.8					
7	14.64					
Total Time (s) =	36.37					

Tensile Testing							
 Hold Time (min)	e Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	-0.0045	0.0080	0.0018		
1	3,000	3,000	-0.0035	0.0120	0.0043		
1	4,000	4,000	0.0025	0.0125	0.0075		
1	5,000	5,000	0.0090	0.0140	0.0115		
1	6,000	6,000	0.0165	0.0150	0.0158		
1	7,000	7,000	0.0260	0.0175	0.0218		
	·	U	inload				
1	0	0	0.0185	0.0165	0.0175		
		R	eload				
1	Max.	10,000	0.0480	0.0465	0.0473		
		U	Inload				
1	0	0	0.0290	0.0290	0.0290		

Lateral Testing							
Lateral I Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0250	0.1300	0.0775		
1	1,000	1,000	0.0795	0.2390	0.1593		
1	1,500	1,500	0.1445	0.3380	0.2413		
1	0	0	0.0250	0.0550	0.0400		
1	500	520	0.0460	0.1770	0.1115		
1	1,000	1,000	0.0955	0.2600	0.1778		
1	1,500	1,500	0.1550	0.3505	0.2528		
1	2,000	2,000	0.2300	0.4490	0.3395		
1	2,500	2,500	0.3000	0.5300	0.4150		
1	0	0	0.0480	0.0715	0.0598		
1	2,500	2,500	0.3200	0.5620	0.4410		
1	3,000	3,000	0.4075	0.6660	0.5368		
1	3,500	3,500	0.5740	0.7845	0.6793		
1	4,000	4,000	0.7115	0.9290	0.8203		
			Unload				
1	0	0	0.0805	0.1395	0.1100		
			Reload				
1	Max.	4,400	0.9985	1.1380	1.0683		
			Unload				
1	0	0	0.1385	0.2005	0.1695		



Footing failure on initial uplift.



Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-05B
Date/Time Installed:	4/10/21 11:00 AM	Date/Time Tested:	4/23/21 2:00 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	37.03
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	5.29

Embedment Data						
Depth (ft.)	Time (s)					
0	0					
1	0					
2	1.52					
3	0.77					
4	1.53					
5	5.68					
6	10.75					
7	16.78					
Total Time (s) =	37.03					

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0					
1	1,500	1,500	-0.0100	0.0070	-0.0015	
1	3,000	3,000	-0.0100	0.0150	0.0025	
1	4,000	4,000	-0.0100	0.0185	0.0043	
1	5,000	5,000	-0.0090	0.0215	0.0063	
1	6,000	6,000	-0.0050	0.0240	0.0095	
1	7,000	7,000	0.0010	0.0275	0.0143	
1	8,000	8,000	0.0085	0.0320	0.0203	
1	9,000	9,000	0.0160	0.0365	0.0263	
1	10,000	10,000	0.0250	0.0440	0.0345	
		U	Inload			
1	0	0	0.019	0.0215	0.0203	
	-	R	eload			
1	Max.	10,000	0.0270	0.0490	0.0380	
		U	Inload			
1	0	0	0.0225	0.0245	0.0235	

	Lateral Testing						
Lateral I	Load Height	3	Deflection G	auge Height	4		
Above	Grade (ft):	-	(in):				
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (105)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0325	0.1390	0.0858		
1	1,000	1,000	0.0840	0.2585	0.1713		
1	1,500	1,500	0.1420	0.3565	0.2493		
1	0	0	0.0300	0.0640	0.0470		
1	500	520	0.0485	0.1900	0.1193		
1	1,000	1,000	0.0925	0.2895	0.1910		
1	1,500	1,500	0.1495	0.3750	0.2623		
1	2,000	2,000	0.2205	0.4735	0.3470		
1	2,500	2,500	0.2875	0.5595	0.4235		
1	0	0	0.0520	0.0890	0.0705		
1	2,500	2,500	0.3150	0.5965	0.4558		
1	3,000	3,000	0.3150	0.6975	0.5063		
1	3,500	3,500	0.3150	0.8270	0.5710		
1	4,000	4,000	0.3150	0.9825	0.6488		
			Unload				
1	0	0	0.1065	0.1965	0.1515		
			Reload				
1	Max.	4,400	0.4560	1.1195	0.7878		
			Unload				
1	0	0	0.0865	0.1255	0.1060		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-06A
Date/Time Installed:	4/9/21 8:05 AM	Date/Time Tested:	4/19/21 9:00 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	35.54
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	3.95

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.11				
3	1.00				
4	1.10				
5	3.61				
6	3.39				
7	7.81				
8	8.49				
9	9.03				
Total Time (s) =	35.54				

Tensile Testing						
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average	
(min)	(IDS)		(in.)	(in.)	Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0190	-0.0135	0.0028	
1	3,000	3,020	0.0405	-0.0200	0.0103	
1	4,000	4,000	0.0505	-0.0235	0.0135	
1	5,000	5,000	0.0605	-0.0255	0.0175	
1	6,000	6,020	0.0705	0.0250	0.0478	
1	7,000	7,060	0.0845	-0.0210	0.0318	
1	8,000	8,040	0.1010	-0.0125	0.0443	
1	9,000	9,000	0.1330	0.0075	0.0703	
1	10,000	9,900	0.1340	0.0115	0.0728	
Unload						
1	0	0	0.0310	0.0235	0.0273	
		-	-	-		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0935	0.8800	0.4868		
1	1,000	1,000	0.1975	0.1930	0.1953		
1	1,500	1,500	0.3270	0.3120	0.3195		
1	0	0	0.0665	0.0215	0.0440		
1	500	520	0.1400	0.1235	0.1318		
1	1,000	1,000	0.2380	0.2240	0.2310		
1	1,500	1,500	0.3480	0.3295	0.3388		
1	2,000	2,000	0.4885	0.4530	0.4708		
1	2,500	2,500	0.6161	0.5595	0.5878		
1	0	0	0.1130	0.0640	0.0885		
1	2,500	2,500	0.6810	0.6125	0.6468		
1	3,000	3,000	0.8370	0.7350	0.7860		
1	3,500	3,500	1.0185	0.8805	0.9495		
1	4,000	3,660	1.0990	0.9475	1.0233		
			Unload				
1	0	0	0.1735	0.1155	0.1445		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-06B
Date/Time Installed:	4/9/21 8:10 AM	Date/Time Tested:	4/19/21 9:00 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	59.6
Pushed to Depth (ft.):	2	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	6.62

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0				
3	1.64				
4	2.84				
5	5.65				
6	8.20				
7	12.48				
8	13.15				
9	15.64				
Total Time (s) =	59.6				

	Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,520	-0.0045	0.0050	0.0003		
1	3,000	3,000	-0.0020	0.0010	-0.0005		
1	4,000	4,000	-0.0020	0.0010	-0.0005		
1	5,000	5,040	0.0000	0.0010	0.0005		
1	6,000	6,000	0.0045	0.0010	0.0028		
1	7,000	7,080	0.0110	0.0010	0.0060		
1	8,000	8,040	0.0190	0.0010	0.0100		
1	9,000	9,040	0.0325	0.0000	0.0163		
1	10,000	10,000	0.0520	-0.0005	0.0258		
		U	nload				
1	0	0	0.0470	-0.0015	0.0228		
	-	R	eload	-			
1	Max.	10,800	0.0820	-0.0050	0.0385		
	Unload						
1	0	0	0.0750	-0.0030	0.0360		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4		
Hold Time (min)	Target Load (lbs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0730	0.0935	0.0833		
1	1,000	1,000	0.1665	0.2030	0.1848		
1	1,500	1,500	0.2770	0.2770	0.2770		
1	0	0	0.0160	0.0420	0.0290		
1	500	520	0.0890	0.1235	0.1063		
1	1,000	1,000	0.1860	0.2310	0.2085		
1	1,500	1,500	0.2875	0.3400	0.3138		
1	2,000	2,000	0.4060	0.4215	0.4138		
1	2,500	2,500	0.5080	0.4625	0.4853		
1	0	0	0.0365	0.0875	0.0620		
1	2,500	2,500	0.5515	0.6385	0.5950		
1	3,000	3,000	0.6760	0.7790	0.7275		
1	3,500	3,500	0.8395	0.9845	0.9120		
1	4,000	3,660	0.9005	1.0535	0.9770		
			Unload				
1	0	0	0.0890	0.1615	0.1253		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-07A
Date/Time Installed:	4/9/21 9:00 AM	Date/Time Tested:	4/19/21 11:00 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	60.5
Pushed to Depth (ft.):	0.3	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	6.05

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0.96				
2	1.28				
3	3.49				
4	5.53				
5	5.5				
6	5.6				
7	5.26				
8	10.85				
9	10.51				
10	11.52				
Total Time (s) =	60.5				

Tensile Testing							
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0015	-0.0010	0.0003		
1	3,000	3,040	0.0030	0.0010	0.0020		
1	4,000	4,000	0.0030	0.0045	0.0038		
1	5,000	5,040	0.0030	0.0085	0.0058		
1	6,000	6,040	0.0040	0.0125	0.0083		
1	7,000	7,040	0.0060	0.0175	0.0118		
1	8,000	8,040	0.0080	0.0225	0.0153		
1	9,000	9,020	0.0105	0.0305	0.0205		
1	10,000	10,020	0.0135	0.0375	0.0255		
		U	nload				
1	0	0	0.0080	0.0085	0.0083		
	0.092						
1	Max.	14,020	0.0450	0.0920	0.0685		
	Unload						
1	0	0	0.0405	0.0490	0.0448		

	Lateral Testing						
Lateral	Load Height	2	Deflection Gauge Height		4		
Above	Grade (ft):	5	(in):		4		
Hold Time	Target Load	Load (lbc)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	Luau (IDS)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0635	0.0445	0.0540		
1	1,000	1,000	0.1310	0.1075	0.1193		
1	1,500	1,500	0.2060	0.1835	0.1948		
1	0	0	0.0325	0.0360	0.0343		
1	500	500	0.0860	0.0755	0.0808		
1	1,000	1,000	0.1515	0.1325	0.1420		
1	1,500	1,520	0.2495	0.2885	0.2690		
1	2,000	2,020	0.3225	0.3620	0.3423		
1	2,500	2,520	0.4090	0.4510	0.4300		
1	0	0	0.0850	0.1600	0.1225		
1	2,500	2,500	0.4300	0.4725	0.4513		
1	3,000	3,020	0.5115	0.5555	0.5335		
1	3,500	3,500	0.6380	0.6625	0.6503		
1	4,000	4,000	0.7765	0.7695	0.7730		
			Unload				
1	0	0	0.1445	0.2215	0.1830		
			Reload				
1	Max.	4,880	0.9875	1.0475	1.0175		
			Unload				
1	0	0	0.2170	0.2910	0.2540		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	РТ-07В
Date/Time Installed:	4/9/21 9:05 AM	Date/Time Tested:	4/19/21 11:00 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	55.21
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	5.52

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.19				
3	3.39				
4	3.45				
5	4.86				
6	5.00				
7	5.07				
8	9.67				
9	13.66				
10	8.92				
Total Time (s) =	55.21				

Tensile Testing							
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(11111)	(ius)		(111.)	(111.)	Deflection (III.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0080	-0.0040	0.0020		
1	3,000	3,020	0.0140	-0.0045	0.0048		
1	4,000	4,020	0.0165	-0.0030	0.0068		
1	5,000	5,000	0.0200	-0.0010	0.0095		
1	6,000	6,060	0.0235	0.0015	0.0125		
1	7,000	7,040	0.0265	0.0045	0.0155		
1	8,000	8,100	0.0315	0.0105	0.0210		
1	9,000	9,000	0.0345	0.0140	0.0243		
1	10,000	10,020	0.0415	0.0210	0.0313		
		U	nload				
1	0	0	0.0105	0.008	0.0093		
	Reload						
1	Max.	14,220	0.0920	0.0660	0.0790		
	Unload						
1	0	0	0.0390	0.0360	0.0375		

	Lateral Testing						
Lateral	Load Height	3	Deflection Gauge Height		Λ		
Above	Grade (ft):	5	(in):		4		
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	Load (103)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0045	0.1085	0.0565		
1	1,000	1,000	0.0495	0.2135	0.1315		
1	1,500	1,500	0.1170	0.3105	0.2138		
1	0	0	0.0105	0.0145	0.0125		
1	500	500	0.0125	0.1360	0.0743		
1	1,000	1,000	0.0595	0.2360	0.1478		
1	1,500	1,520	0.1195	0.3205	0.2200		
1	2,000	2,020	0.1910	0.4060	0.2985		
1	2,500	2,520	0.2795	0.4970	0.3883		
1	0	0	0.0270	0.0140	0.0205		
1	2,500	2,500	0.2890	0.5215	0.4053		
1	3,000	3,020	0.3760	0.6060	0.4910		
1	3,500	3,500	0.4765	0.6940	0.5853		
1	4,000	4,000	0.5850	0.7860	0.6855		
			Unload				
1	0	0	0.0545	0.0205	0.0375		
	Reload						
1	Max.	4,880	0.8140	0.9880	0.9010		
			Unload				
1	0	0	0.0920	0.0365	0.0643		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-08A
Date/Time Installed:	4/9/21 10:20 AM	Date/Time Tested:	4/20/21 11:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	45.94
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	8.00	Avg. Installation Rate (sec/ft)	5.74

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.24				
3	4.09				
4	6.12				
5	7.59				
6	8.25				
7	9.32				
8	9.33				
Total Time (s) =	45.94				

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,520	0.0000	-0.0035	-0.0018	
1	3,000	3,040	-0.0030	-0.0070	-0.0050	
1	4,000	4,020	-0.0045	-0.0075	-0.0060	
1	5,000	5,000	0.0025	-0.0060	-0.0018	
1	6,000	6,020	0.0115	-0.0005	0.0055	
1	7,000	7,000	0.0300	0.0140	0.0220	
1	8,000	8,000	0.0455	0.0360	0.0408	
1	9,000	9,000	0.0695	0.0620	0.0658	
1	10,000	10,000	0.1055	0.0975	0.1015	
		U	nload			
1	0	0	0.1630	0.1590	0.1610	
	Reload					
1	Max.	10,800	0.1825	0.1695	0.1760	
		U	nload			
1	0	0	0.2500	0.2470	0.2485	

	Lateral Testing					
Lateral Above	Load Height Grade (ft):	3	Deflection G	auge Height	4	
Hold Time (min)	Target Load	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0,0000	
1	500	520	0.0870	0.8820	0.4845	
1	1,000	1,000	0.1580	0.1490	0.1535	
1	1,500	1,500	0.2400	0.2355	0.2378	
1	0	0	0.0400	0.0250	0.0325	
1	500	500	0.1000	0.0935	0.0968	
1	1,000	1,020	0.1835	0.1775	0.1805	
1	1,500	1,520	0.2485	0.2455	0.2470	
1	2,000	2,060	0.3490	0.3415	0.3453	
1	2,500	2,500	0.4395	0.4235	0.4315	
1	0	0	0.0740	0.0505	0.0623	
1	2,500	2,500	0.4545	0.4415	0.4480	
1	3,000	3,000	0.5795	0.5480	0.5638	
1	3,500	3,500	0.6825	0.6375	0.6600	
1	4,000	4,000	0.8020	0.7385	0.7703	
			Unload			
1	0	0	0.1010	0.0935	0.0973	
			Reload			
1	Max.	4,960	1.0840	0.9840	1.0340	
			Unload		Γ	
1	0	0	0.1400	0.1295	0.1348	





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-08B
Date/Time Installed:	4/9/21 10:25 AM	Date/Time Tested:	4/20/21 11:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	41.18
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	8.20	Avg. Installation Rate (sec/ft)	5.02

E					
Embedmen	t Data				
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.78				
3	3.53				
4	5.9				
5	6.44				
6	7.85				
7	7.36				
8	9.32				
Total Time (s) =	41.18				

lensile lesting						
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average	
(min)	(lbs)	Luau (IDS)	(in.)	(in.)	Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0065	-0.0020	0.0023	
1	3,000	3,060	0.0180	0.0000	0.0090	
1	4,000	4,020	0.0240	0.0010	0.0125	
1	5,000	5,040	0.0330	0.0045	0.0188	
1	6,000	6,040	0.0420	0.0095	0.0258	
1	7,000	7,020	0.0595	0.0250	0.0423	
1	8,000	8,020	0.0810	0.0465	0.0638	
1	9,000	9,040	0.1105	0.0745	0.0925	
1	10,000	10,040	0.1510	0.1105	0.1308	
		U	nload			
1	0	0	0.1235	0.0900	0.1068	
Reload						
1	Max.	10,800	0.1930	0.1690	0.1810	
		U	nload			
1	0	0	0.1845	0.1560	0.1703	

	Lateral Testing						
Lateral	Load Height	3	Deflection G	auge Height	4		
Above	Grade (ft):	_	(in):				
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (103)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	520	0.1175	0.0555	0.0865		
1	1,000	1,000	0.1880	0.1250	0.1565		
1	1,500	1,500	0.2730	0.2085	0.2408		
1	0	0	0.0290	0.0300	0.0295		
1	500	500	0.1145	0.0765	0.0955		
1	1,000	1,020	0.2100	0.1530	0.1815		
1	1,500	1,520	0.2765	0.2185	0.2475		
1	2,000	2,060	0.3720	0.3090	0.3405		
1	2,500	2,500	0.4455	0.3850	0.4153		
1	0	0	0.0465	0.0555	0.0510		
1	2,500	2,500	0.4545	0.3990	0.4268		
1	3,000	3,000	0.5490	0.4995	0.5243		
1	3,500	3,500	0.6325	0.5905	0.6115		
1	4,000	4,000	0.7245	0.6935	0.7090		
			Unload				
1	0	0	0.0685	0.0935	0.0810		
			Reload				
1	Max.	4,960	0.9295	0.9445	0.9370		
			Unload				
1	0	0	0.0870	0.1290	0.1080		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-09A
Date/Time Installed:	4/9/21 9:40 AM	Date/Time Tested:	4/20/21 12:00 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	52.04
Pushed to Depth (ft.):	2	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	7.43

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0				
3	3.2				
4	8.12				
5	9.71				
6	14.16				
7	16.85				
Total Time (s) =	52.04				

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,540	0.0045	-0.0025	0.0010	
1	3,000	2,020	0.0105	-0.0030	0.0038	
1	4,000	4,040	0.0145	-0.0030	0.0058	
1	5,000	5,000	0.0200	-0.0025	0.0088	
1	6,000	6,060	0.0275	-0.0005	0.0135	
1	7,000	7,000	0.0360	0.0025	0.0193	
1	8,000	8,000	0.0475	0.0070	0.0273	
1	9,000	9,040	0.0610	0.0135	0.0373	
1	10,000	10,020	0.077	0.0215	0.0493	
		U	nload			
1	0	0	0.0345	0.0210	0.0278	
		R	eload	-		
1	Max.	11,040	0.1080	0.0370	0.0725	
		U	nload			
1	0	0	0.0545	0.0375	0.0460	

	Lateral Testing						
Lateral	Load Height	3	Deflection G	auge Height	4		
Above	Grade (ft):		(in):				
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	,	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0895	0.0635	0.0765		
1	1,000	1,000	0.1850	0.1470	0.1660		
1	1,500	1,500	0.2800	0.2455	0.2628		
1	0	0	0.0265	0.0420	0.0343		
1	500	520	0.1150	0.1070	0.1110		
1	1,000	1,000	0.1990	0.1795	0.1893		
1	1,500	1,500	0.2810	0.2600	0.2705		
1	2,000	2,000	0.3860	0.3640	0.3750		
1	2,500	2,500	0.5015	0.4825	0.4920		
1	0	0	0.0495	0.0855	0.0675		
1	2,500	2,500	0.5105	0.4975	0.5040		
1	3,000	3,000	0.6235	0.6130	0.6183		
1	3,500	3,500	0.7480	0.7400	0.7440		
1	4,000	4,000	0.8670	0.8605	0.8638		
			Unload				
1	0	0	0.0820	0.1510	0.1165		
			Reload				
1	Max.	4,120	0.9750	0.9790	0.9770		
			Unload				
1	0	0	0.0970	0.1710	0.1340		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	РТ-09В
Date/Time Installed:	4/9/21 9:45 AM	Date/Time Tested:	4/20/21 12:00 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	39.13
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	5.59

E b d	D.1.
Embedmen	t Data
Depth (ft.)	Time (s)
0	0
1	0
2	1.1
3	1.56
4	4.62
5	7.51
6	10.22
7	14.12
Total Time (s) =	39.13

Tensile Testing							
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0005	0.0055	0.0030		
1	3,000	3,020	0.0020	0.0095	0.0058		
1	4,000	4,020	0.0030	0.0115	0.0073		
1	5,000	5,020	0.0060	0.0150	0.0105		
1	6,000	6,000	0.0105	0.0200	0.0153		
1	7,000	7,020	0.0200	0.0315	0.0258		
1	8,000	8,000	0.0315	0.0435	0.0375		
1	9,000	9,000	0.0490	0.0615	0.0553		
1	10,000	10,020	0.0715	0.0835	0.0775		
		U	nload				
1	0	0	0.0675	0.0725	0.0700		
	-	R	eload				
1	Max.	11,000	0.0990	0.1140	0.1065		
	Unload						
1	0	0	0.0970	0.1010	0.0990		

	Lateral Testing						
Lateral	Load Height	2	Deflection G	iauge Height	4		
Above	Grade (ft):	,	(ir	n):	4		
Hold Time	Target Load	Load (lbc)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	Luau (IDS)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0465	0.1055	0.0760		
1	1,000	1,000	0.1250	0.2085	0.1668		
1	1,500	1,500	0.2065	0.3195	0.2630		
1	0	0	0.0150	0.0360	0.0255		
1	500	520	0.0650	0.1400	0.1025		
1	1,000	1,000	0.1330	0.2370	0.1850		
1	1,500	1,500	0.2090	0.3310	0.2700		
1	2,000	2,000	0.3010	0.4475	0.3743		
1	2,500	2,500	0.4070	0.5725	0.4898		
1	0	0	0.0415	0.0775	0.0595		
1	2,500	2,500	0.4105	0.5975	0.5040		
1	3,000	3,000	0.5195	0.7215	0.6205		
1	3,500	3,500	0.6415	0.8655	0.7535		
1	4,000	4,000	0.7615	1.0065	0.8840		
			Unload				
1	0	0	0.0920	0.1320	0.1120		
			Reload				
1	Max.	4,120	0.8775	1.1175	0.9975		
			Unload				
1	0	0	0.1145	0.1775	0.1460		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-10A
Date/Time Installed:	4/13/21 9:05 AM	Date/Time Tested:	4/20/21 3:00 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	69.13
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	7.68

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.35				
3	2.55				
4	5.17				
5	5.7				
6	8.67				
7	12.13				
8	13.05				
9	20.51				
Total Time (s) =	69.13				

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	-0.0155	0.0005	-0.0075	
1	3,000	3,000	-0.0277	0.0015	-0.0131	
1	4,000	4,000	-0.0340	0.0030	-0.0155	
1	5,000	5,000	-0.0405	0.0055	-0.0175	
1	6,000	6,000	-0.0455	0.0080	-0.0188	
1	7,000	7,000	-0.0515	0.0090	-0.0213	
1	8,000	8,000	-0.0555	0.0105	-0.0225	
1	9,000	9,000	-0.0585	0.0105	-0.0240	
1	10,000	10,000	-0.0615	0.0105	-0.0255	
		U	nload			
1	0	0	-0.0020	0.0070	0.0025	
		R	eload			
1	Max.	10,080	-0.0620	0.0120	-0.0250	
		U	nload			
1	0	0	0.0040	0.0110	0.0075	

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1005	0.0650	0.0828		
1	1,000	1,080	0.2225	0.1940	0.2083		
1	1,500	1,500	0.2950	0.2665	0.2808		
1	0	0	0.0245	0.0060	0.0153		
1	500	500	0.1215	0.0745	0.0980		
1	1,000	1,000	0.2200	0.1700	0.1950		
1	1,500	1,500	0.3085	0.2710	0.2898		
1	2,000	2,080	0.4175	0.3905	0.4040		
1	2,500	2,560	0.5130	0.4975	0.5053		
1	0	0	0.0500	0.0205	0.0353		
1	2,500	2,500	0.5310	0.5205	0.5258		
1	3,000	3,000	0.6075	0.6005	0.6040		
1	3,500	3,500	0.6975	0.7115	0.7045		
1	4,000	4,000	0.7970	0.8210	0.8090		
			Unload				
1	0	0	0.0825	0.0475	0.0650		
			Reload				
1	Max.	4,660	0.9665	1.0195	0.9930		
			Unload				
1	0	0	0.0905	0.2115	0.1510		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-10B
Date/Time Installed:	4/13/21 9:10 AM	Date/Time Tested:	4/20/21 3:00 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	86.79
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	9.64

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.47				
3	2.13				
4	4.12				
5	8.23				
6	14.81				
7	11.23				
8	19.16				
9	25.64				
Total Time (s) =	86.79				

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,520	-0.0020	0.0020	0.0000	
1	3,000	3,040	-0.0010	0.0050	0.0020	
1	4,000	4,000	-0.0010	0.0065	0.0028	
1	5,000	5,060	-0.0020	0.0105	0.0043	
1	6,000	6,000	-0.0015	0.0165	0.0075	
1	7,000	7,000	0.0010	0.0270	0.0140	
1	8,000	8,000	0.0060	0.0455	0.0258	
1	9,000	9,000	0.0085	0.0705	0.0395	
1	10,000	9,500	0.0085	0.0750	0.0418	
Unload						
1	0	0	0.0090	0.0565	0.0328	
· · · · · · ·						

		Late	eral Testing		
Lateral Above	Load Height Grade (ft):	3	Deflection Gauge Height (in):		4
Hold Time (min)	Target Load (lbs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)
1	0	0	0.0000	0.0000	0.0000
1	500	500	0.0975	0.0265	0.0620
1	1,000	1,080	0.2410	0.1025	0.1718
1	1,500	1,500	0.3150	0.1550	0.2350
1	0	0	0.0030	0.0270	0.0150
1	500	500	0.1295	0.0515	0.0905
1	1,000	1,000	0.2380	0.1045	0.1713
1	1,500	1,500	0.3365	0.1685	0.2525
1	2,000	2,080	0.4570	0.2635	0.3603
1	2,500	2,560	0.5665	0.3575	0.4620
1	0	0	0.0030	0.0770	0.0400
1	2,500	2,500	0.6160	0.3965	0.5063
1	3,000	3,000	0.7005	0.4715	0.5860
1	3,500	3,500	0.8080	0.5715	0.6898
1	4,000	4,000	0.9310	0.6980	0.8145
			Unload		
1	0	0	0.0040	0.1275	0.0658
			Reload		
1	Max.	4,660	1.1150	0.9145	1.0148
			Unload		
1	0	0	0.0105	0.1640	0.0873





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-11A
Date/Time Installed:	4/13/21 8:45 AM	Date/Time Tested:	4/20/21 1:30 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	117.24
Pushed to Depth (ft.):	1.8	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	11.72

t Data
Time (s)
0
0
0.58
1.46
7.38
10.98
14.09
18.03
21.29
21.48
21.95
117.24

		Tensi	le Testing				
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	-0.0030	-0.0010	-0.0020		
1	3,000	3,000	-0.0065	-0.0015	-0.0040		
1	4,000	4,040	-0.0100	-0.0040	-0.0070		
1	5,000	5,060	-0.0130	-0.0065	-0.0098		
1	6,000	6,060	-0.0155	-0.0085	-0.0120		
1	7,000	7,020	-0.0145	-0.0090	-0.0118		
1	8,000	8,040	-0.0140	-0.0175	-0.0158		
1	9,000	9,080	-0.0065	-0.0205	-0.0135		
1	10,000	10,100	-0.0025	-0.0195	-0.0110		
		U	nload				
1	0	0	0.0105	0.0000	0.0053		
Reload							
1	Max.	10,800	-0.0010	-0.0175	-0.0093		
	Unload						
1	0	0	0.0140	0.0030	0.0085		

	Lateral Testing					
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4	
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	500	520	0.0610	0.0750	0.0680	
1	1,000	1,020	0.1430	0.1780	0.1605	
1	1,500	1,500	0.2435	0.2845	0.2640	
1	0	0	0.0345	0.0325	0.0335	
1	500	500	0.0920	0.1085	0.1003	
1	1,000	1,000	0.1595	0.2010	0.1803	
1	1,500	1,540	0.2535	0.3080	0.2808	
1	2,000	2,020	0.3650	0.4275	0.3963	
1	2,500	2,500	0.4885	0.5580	0.5233	
1	0	0	0.0845	0.0640	0.0743	
1	2,500	2,500	0.5155	0.5915	0.5535	
1	3,000	3,000	0.6195	0.7035	0.6615	
1	3,500	3,400	0.7500	0.8450	0.7975	
			Unload			
1	0	0	0.1300	0.0825	0.1063	





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-11B
Date/Time Installed:	4/13/21 8:55 AM	Date/Time Tested:	4/20/21 1:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	65.93
Pushed to Depth (ft.):	2.5	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	6.59

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0				
3	1.39				
4	2.12				
5	4.06				
6	5.59				
7	10.59				
8	13.68				
9	14.05				
10	14.45				
Total Time (s) =	65.93				

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0010	-0.0020	-0.0005	
1	3,000	3,040	0.0025	-0.0035	-0.0005	
1	4,000	4,020	0.0025	-0.0045	-0.0010	
1	5,000	5,020	0.0025	-0.0045	-0.0010	
1	6,000	6,040	0.0020	-0.0045	-0.0013	
1	7,000	7,000	0.0030	-0.0020	0.0005	
1	8,000	8,020	0.0080	0.0045	0.0063	
1	9,000	9,000	0.0130	0.0115	0.0123	
1	10,000	10,000	0.0195	0.0215	0.0205	
Unload						
1	0	0	0.0215	0.0150	0.0183	
	· · · · · ·					

	Lateral Testing					
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4	
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	500	520	0.1635	0.0605	0.1120	
1	1,000	1,020	0.3195	0.1660	0.2428	
1	1,500	1,500	0.4585	0.2845	0.3715	
1	0	0	0.0705	0.0380	0.0543	
1	500	500	0.2030	0.0940	0.1485	
1	1,000	1,000	0.3445	0.1920	0.2683	
1	1,500	1,540	0.4865	0.3100	0.3983	
1	2,000	2,020	0.6060	0.4335	0.5198	
1	2,500	2,500	0.7545	0.5885	0.6715	
1	0	0	0.1185	0.0865	0.1025	
1	2,500	2,500	0.8035	0.6360	0.7198	
1	3,000	3,000	0.9065	0.7750	0.8408	
1	3,500	3,400	1.0365	0.9785	1.0075	
			Unload			
1	0	0	0.0695	0.1250	0.0973	





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-12A
Date/Time Installed:	4/9/21 11:45 AM	Date/Time Tested:	4/19/21 2:30 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	80.57
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	8.95

Embedmen	t Data
Depth (ft.)	Time (s)
0	0
1	0
2	1.6
3	4.21
4	7.27
5	10.59
6	13.34
7	13.82
8	15.24
9	14.5
Total Time (s) =	80.57

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0055	-0.0010	0.0023	
1	3,000	3,080	0.0085	-0.0015	0.0035	
1	4,000	4,020	0.0095	0.0005	0.0050	
1	5,000	5,020	0.0100	0.0045	0.0073	
1	6,000	6,020	0.0100	0.0085	0.0093	
1	7,000	7,320	0.0105	0.0160	0.0133	
1	8,000	8,060	0.0115	0.0215	0.0165	
1	9,000	9,140	0.0140	0.0285	0.0213	
1	10,000	10,000	0.0180	0.0365	0.0273	
		U	nload			
1	0	0	0.0065	0.0095	0.0080	
		R	eload			
1	Max.	10,040	0.0215	0.0400	0.0308	
	Unload					
1	0	0	0.0090	0.0120	0.0105	

	Lateral Testing						
Lateral I	Lateral Load Height		Deflection Gauge Height		4		
Above	Grade (ft):	0	(ir	<u>ı):</u>			
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (103)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	520	0.0550	0.0355	0.0453		
1	1,000	1,000	0.1280	0.0910	0.1095		
1	1,500	1,500	0.1975	0.1485	0.1730		
1	0	0	0.0140	0.0220	0.0180		
1	500	500	0.0755	0.0620	0.0688		
1	1,000	1,000	0.1360	0.1075	0.1218		
1	1,500	1,520	0.2070	0.1685	0.1878		
1	2,000	2,000	0.5255	0.5120	0.5188		
1	2,500	2,500	0.6095	0.5860	0.5978		
1	0	0	0.2695	0.3215	0.2955		
1	2,500	2,500	0.6345	0.6030	0.6188		
1	3,000	3,000	0.7235	0.6825	0.7030		
1	3,500	3,500	0.8265	0.7745	0.8005		
1	4,000	4,000	0.9510	0.8825	0.9168		
			Unload				
1	0	0	0.3000	0.3605	0.3303		
		-	Reload				
1	Max.	4,460	1.0895	0.9870	1.0383		
			Unload				
1	0	0	0.3340	0.3860	0.3600		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-12B
Date/Time Installed:	4/9/21 11:50 AM	Date/Time Tested:	4/19/21 2:30 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	47.62
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	5.29

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	2.25				
3	3.41				
4	5.47				
5	6.14				
6	6.25				
7	6.87				
8	7.61				
9	9.62				
Total Time (s) =	47.62				

Tensile Testing						
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average	
(min)	(2dl)		(In.)	(In.)	Deflection (In.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,520	0.0035	0.0005	0.0020	
1	3,000	3,000	0.0045	0.0025	0.0035	
1	4,000	4,000	0.0060	0.0045	0.0053	
1	5,000	5,020	0.0085	0.0005	0.0045	
1	6,000	6,040	0.0125	0.0130	0.0128	
1	7,000	7,060	0.0185	0.0200	0.0193	
1	8,000	8,000	0.0290	0.0345	0.0318	
1	9,000	9,020	0.0435	0.0515	0.0475	
1	10,000	10,000	0.0640	0.0755	0.0698	
		U	nload			
1	0	0	0.0550	0.0525	0.0538	
		R	eload			
1	Max.	11,500	0.1225	0.1345	0.1285	
		U	nload			
1	0	0	0.1080	0.1060	0.1070	

	Lateral Testing						
Lateral	Load Height	з	Deflection G	auge Height	4		
Above	Grade (ft):	3	(ir	n):	-		
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (103)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	520	0.0510	0.0000	0.0255		
1	1,000	1,000	0.1320	0.0490	0.0905		
1	1,500	1,500	0.2100	0.1225	0.1663		
1	0	0	0.0145	0.0000	0.0073		
1	500	500	0.0725	0.0025	0.0375		
1	1,000	1,000	0.1470	0.0600	0.1035		
1	1,500	1,520	0.2450	0.1360	0.1905		
1	2,000	2,000	0.3270	0.2140	0.2705		
1	2,500	2,500	0.4020	0.2955	0.3488		
1	0	0	0.0455	0.0000	0.0228		
1	2,500	2,500	0.4175	0.3065	0.3620		
1	3,000	3,000	0.5000	0.3870	0.4435		
1	3,500	3,500	0.5880	0.4735	0.5308		
1	4,000	4,000	0.6900	0.5715	0.6308		
			Unload				
1	0	0	0.0605	0.0000	0.0303		
			Reload				
1	Max.	4,460	0.7900	0.6660	0.7280		
			Unload				
1	0	0	0.0825	0.0105	0.0465		





Project:	Somerset	Site Location	Somerset, NY	Pile ID:	PT-13A
Date/Time Installed:	4/9/21 12:20 PM	Date/Time Tested:	4/20/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	42.47
Pushed to Depth (ft.):	1.5	Embedment Depth (ft.):	8.00	Avg. Installation Rate (sec/ft)	5.31

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.83				
3	2.13				
4	4.45				
5	7.43				
6	8.23				
7	9.01				
8	10.39				
Total Time (s) =	42.47				

Tensile Testing						
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average	
(min)	(lbs)	LUAU (IDS)	(in.)	(in.)	Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0055	0.0015	0.0035	
1	3,000	3,000	0.0115	0.0070	0.0093	
1	4,000	4,040	0.0125	0.0100	0.0113	
1	5,000	5,040	0.0140	0.0145	0.0143	
1	6,000	6,020	0.0160	0.2100	0.1130	
1	7,000	7,000	0.0235	0.0320	0.0278	
1	8,000	8,000	0.0400	0.0435	0.0418	
1	9,000	9,000	0.0870	0.0720	0.0795	
1	10,000	10,040	0.3875	0.3735	0.3805	
		U	Inload			
1	0	0	0.404	0.34	0.3720	
		R	eload			
1	Max.	9140	0.65	0.084	0.3670	
		U	Inload			
1	0	0	0.667	0.0075	0.3373	

	Lateral Testing						
Lateral I	Load Height	2	Deflection G	iauge Height	4		
Above	Grade (ft):	5	(ir	ı):	4		
Hold Time	Target Load		Deflection 1	Deflection 2	Average		
(min)	(lbs)	Load (IDS)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0985	0.1045	0.1015		
1	1,000	1,000	0.2160	0.2140	0.2150		
1	1,500	1,500	0.3485	0.3310	0.3398		
1	0	0	0.0540	0.0345	0.0443		
1	500	500	0.1530	0.1420	0.1475		
1	1,000	1,000	0.2605	0.2400	0.2503		
1	1,500	1,500	0.3800	0.3485	0.3643		
1	2,000	1,820	0.4625	0.4100	0.4363		
1	2,500						
1	0	0	0.0675	0.0380	0.0528		
1	2,500	2,500	0.6860	0.5885	0.6373		
1	3,000	3,000	0.8560	0.7160	0.7860		
1	3,500	3,500	1.0535	0.8605	0.9570		
1	4,000	3,660	1.1290	0.9125	1.0208		
			Unload	-			
1	0	0	0.1815	0.065	0.1233		
			Reload				
1	Max.						
			Unload				
1	0						





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-13B
Date/Time Installed:	4/9/21 12:25 PM	Date/Time Tested:	4/20/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	45.45
Pushed to Depth (ft.):	1.3	Embedment Depth (ft.):	8.00	Avg. Installation Rate (sec/ft)	5.68

t Data
Time (s)
0
0
0.64
2.34
4.21
6.24
8.98
9.33
13.71
45.45

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	-0.0035	0.0030	-0.0003	
1	3,000	3,000	-0.0045	0.0050	0.0003	
1	4,000	4,020	-0.0040	0.0070	0.0015	
1	5,000	5,080	-0.0020	0.0105	0.0043	
1	6,000	6,020	0.0000	0.0150	0.0075	
1	7,000	7,020	0.0040	0.0200	0.0120	
1	8,000	8,080	0.0105	0.0285	0.0195	
1	9,000	9,040	0.0285	0.0400	0.0343	
1	10,000	10,060	0.0480	0.0715	0.0598	
		U	Inload			
1	0	0	0.0615	0.0750	0.0683	
	-	R	leload			
1	Max.	11,800	0.1725	0.2020	0.1873	
		U	Inload			
1	0	0	0.1980	0.2150	0.2065	

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	Deflection Gauge Height (in):			
Hold Time (min)	Target Load (lbs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1675	0.0205	0.0940		
1	1,000	1,000	0.3110	0.0860	0.1985		
1	1,500	1,500	0.4370	0.1740	0.3055		
1	0	0	0.0375	0.0400	0.0388		
1	500	500	0.2030	0.0490	0.1260		
1	1,000	1,000	0.3340	0.1095	0.2218		
1	1,500	1,500	0.4550	0.1985	0.3268		
1	2,000	1,820	0.5255	0.2535	0.3895		
1	0	0	0.3550	0.0500	0.2025		
1	2,500	2,500	0.6900	0.4110	0.5505		
1	3,000	3,000	0.8085	0.5360	0.6723		
1	3,500	3,500	0.9395	0.6880	0.8138		
1	4,000	3,660	0.9880	0.7470	0.8675		
			Unload				
1	0	0	0.0640	0.1205	0.0923		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-14A
Date/Time Installed:	4/9/21 11:20 AM	Date/Time Tested:	4/19/21 1:00 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	106.69
Pushed to Depth (ft.):	1.5	Embedment Depth (ft.):	10.70	Avg. Installation Rate (sec/ft)	9.97

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.42				
3	1.24				
4	6.67				
5	5.85				
6	8.75				
7	11.66				
8	14.36				
9	16.92				
10	21.16				
11	19.66				
Total Time (s) =	106.69				

Tensile Testing							
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,520	0.0205	-0.0035	0.0085		
1	3,000	3,080	0.0510	-0.0065	0.0223		
1	4,000	4,020	0.0620	-0.0075	0.0273		
1	5,000	5,080	0.0735	-0.0085	0.0325		
1	6,000	6,040	0.0840	-0.0085	0.0378		
1	7,000	7,100	0.0920	-0.0100	0.0410		
1	8,000	8,060	0.0990	-0.0105	0.0443		
1	9,000	9,080	0.1075	-0.0120	0.0478		
1	10,000	10,080	0.1150	0.0135	0.0643		
		U	nload				
1	0	0	0.0145	0.0175	0.0160		
	Reload						
1	Max.	17,020	0.2185	0.0350	0.1268		
		U	nload				
1	0	0	0.0620	0.0545	0.0583		

	Lateral Testing						
Lateral	Load Height	3	Deflection G	auge Height	4		
Above	Grade (IL):		(11).				
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	,	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1020	0.0680	0.0850		
1	1,000	1,020	0.2135	0.1490	0.1813		
1	1,500	1,520	0.3210	0.2380	0.2795		
1	0	0	0.0410	0.0115	0.0263		
1	500	500	0.1405	0.0695	0.1050		
1	1,000	1,020	0.2450	0.1455	0.1953		
1	1,500	1,520	0.3415	0.2290	0.2853		
1	2,000	2,000	0.4380	0.3180	0.3780		
1	2,500	2,500	0.5480	0.4195	0.4838		
1	0	0	0.0635	0.0305	0.0470		
1	2,500	2,500	0.5705	0.4510	0.5108		
1	3,000	3,000	0.6800	0.5555	0.6178		
1	3,500	3,500	0.8035	0.6710	0.7373		
1	4,000	4,000	0.9380	0.7945	0.8663		
			Unload				
1	0	0	0.1270	0.0735	0.1003		
			Reload				
1	Max.	4,340	1.0680	0.9030	0.9855		
			Unload				
1	0	0	0.1750	0.0860	0.1305		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-14B
Date/Time Installed:	4/9/21 11:25 AM	Date/Time Tested:	4/19/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	100.79
Pushed to Depth (ft.):	1.5	Embedment Depth (ft.):	10.70	Avg. Installation Rate (sec/ft)	9.42

Embedment Data				
Depth (ft.)	Time (s)			
0	0			
1	0			
2	0.97			
3	2.39			
4	4			
5	5.96			
6	9.26			
7	12.26			
8	14			
9	16.65			
10	18.39			
11	16.91			
Total Time (s) =	100.79			

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,540	0.0215	0.0215	0.0215	
1	3,000	3,280	0.0400	0.0425	0.0413	
1	4,000	4,120	0.0455	0.0505	0.0480	
1	5,000	5,080	0.0500	0.0585	0.0543	
1	6,000	6,060	0.0530	0.0660	0.0595	
1	7,000	7,080	0.0550	0.0740	0.0645	
1	8,000	8,040	0.0570	0.0840	0.0705	
1	9,000	9,120	0.0585	0.0940	0.0763	
1	10,000	10,000	0.0600	0.1055	0.0828	
		U	nload			
1	0	0	0.0025	0.0115	0.0070	
		R	eload			
1	Max.	15,040	0.0315	0.1825	0.1070	
		U	nload			
1	0	0	0.0275	0.0380	0.0328	

	Lateral Testing						
Lateral	Load Height	2	Deflection G	iauge Height	Δ		
Above	Grade (ft):	,	(ir	n):	4		
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	Load (103)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0915	0.0750	0.0833		
1	1,000	1,020	0.2035	0.1790	0.1913		
1	1,500	1,520	0.3115	0.2965	0.3040		
1	0	0	0.0075	0.0155	0.0115		
1	500	500	0.1010	0.0820	0.0915		
1	1,000	1,020	0.2100	0.1850	0.1975		
1	1,500	1,520	0.3135	0.2945	0.3040		
1	2,000	2,000	0.4155	0.4060	0.4108		
1	2,500	2,500	0.5235	0.5315	0.5275		
1	0	0	0.0155	0.0220	0.0188		
1	2,500	2,500	0.5430	0.5515	0.5473		
1	3,000	3,000	0.6475	0.6800	0.6638		
1	3,500	3,500	0.7620	0.8110	0.7865		
1	4,000	4,000	0.8815	0.9490	0.9153		
			Unload				
1	0	0	0.0450	0.0370	0.0410		
			Reload				
1	Max.	4,340	0.9920	1.0710	1.0315		
			Unload				
1	0	0	0.0530	0.0480	0.0505		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-15A
Date/Time Installed:	4/13/21 10:05 AM	Date/Time Tested:	4/21/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	34.21
Pushed to Depth (ft.):	2	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	4.89

Embedment Data					
Time (s)					
0					
0					
0					
1.71					
3.85					
6.44					
11					
11.21					
34.21					

Tensile Testing						
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average	
(min)	(lbs)		(in.)	(in.)	Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,520	0.0075	0.0105	0.0090	
1	3,000	3,020	0.0175	0.0195	0.0185	
1	4,000	4,040	0.0120	0.0245	0.0183	
1	5,000	5,040	0.0125	0.0290	0.0208	
1	6,000	6,000	0.0135	0.0335	0.0235	
1	7,000	7,040	0.0145	0.0400	0.0273	
1	8,000	8,060	0.0170	0.0470	0.0320	
1	9,000	9,080	0.0200	0.0545	0.0373	
1	10,000	10,000	0.0265	0.0655	0.0460	
		U	nload			
1	0	0	0.0190	0.0210	0.0200	
		R	eload			
1	Max.	9,700	0.0315	0.0690	0.0503	
		U	nload			
1	0	0	0.0235	0.0250	0.0243	

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0520	0.1335	0.0928		
1	1,000	1,000	0.1320	0.2640	0.1980		
1	1,500	1,500	0.2355	0.3945	0.3150		
1	0	0	0.0500	0.0480	0.0490		
1	500	500	0.1045	0.1675	0.1360		
1	1,000	1,040	0.1790	0.3110	0.2450		
1	1,500	1,520	0.2565	0.4170	0.3368		
1	2,000	2,000	0.3740	0.5480	0.4610		
1	2,500	2,500	0.4965	0.6795	0.5880		
1	0	0	0.0955	0.0595	0.0775		
1	2,500	2,500	0.5255	0.7065	0.6160		
1	3,000	3,000	0.6485	0.8395	0.7440		
1	3,500	3,500	0.8010	0.9970	0.8990		
1	4,000	3,860	0.9240	1.1240	1.0240		
			Unload				
1	0	0	0.1525	0.0725	0.1125		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-15B
Date/Time Installed:	4/13/21 10:15 AM	Date/Time Tested:	4/21/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	35.66
Pushed to Depth (ft.):	2	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	5.09

t Data
Time (s)
0
0
0
1.49
4.11
6.43
9.8
13.83
35.66

	Tensile Testing					
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,540	-0.0045	-0.0015	-0.0030	
1	3,000	3,060	-0.0045	-0.0010	-0.0028	
1	4,000	4,020	0.0010	-0.0005	0.0003	
1	5,000	5,040	0.0140	0.0040	0.0090	
1	6,000	6,060	0.0054	0.0400	0.0227	
1	7,000	7,020	0.1310	0.1175	0.1243	
1	8,000	8,040	0.2165	0.2025	0.2095	
1	9,000	8,940	0.3590	0.3410	0.3500	
		U	nload			
1	0	0	0.3390	0.3250	0.3320	
	Reload					
1	Max.	8,820	0.4075	0.3915	0.3995	
	Unload					
1	0	0	0.3915	0.3765	0.3840	

	Lateral Testing					
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4	
Hold Time (min)	Target Load (lbs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	500	500	0.1550	0.0775	0.1163	
1	1,000	1,000	0.3265	0.1585	0.2425	
1	1,500	1,500	0.4640	0.2660	0.3650	
1	0	0	0.0465	0.0675	0.0570	
1	500	500	0.1930	0.1245	0.1588	
1	1,000	1,040	0.3670	0.2060	0.2865	
1	1,500	1,520	0.4845	0.2870	0.3858	
1	2,000	2,000	0.6140	0.4040	0.5090	
1	2,500	2,500	0.7275	0.5345	0.6310	
1	0	0	0.0450	0.1370	0.0910	
1	2,500	2,500	0.7460	0.5805	0.6633	
1	3,000	3,000	0.8650	0.7090	0.7870	
1	3,500	3,500	0.9990	0.8790	0.9390	
1	4,000	3,860	1.1045	1.0185	1.0615	
			Unload			
1	0	0	0.0165	0.2480	0.1323	





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-16A
Date/Time Installed:	4/7/21 8:20 AM	Date/Time Tested:	4/17/21 11:55 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	48.55
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	5.39

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	2.46				
3	3.35				
4	4.31				
5	6.36				
6	6.93				
7	6.64				
8	8.93				
9	9.57				
Total Time (s) =	48.55				

Hold Time (min) Target Load (lbs) Load (lbs) Deflection 1 (in.) Deflection 2 (in.) Average Deflection (in.) 1 0 0 0.0000 0.0000 0.0000 1 1,500 1,520 -0.0005 0.0015 0.0005 1 3,000 3,020 0.0000 0.0020 0.0010 1 4,000 4,000 0.0060 0.0025 0.0043 1 5,000 5,060 0.0160 0.0070 0.0115 1 6,000 6,080 0.0235 0.0065 0.0150 1 7,000 7,080 0.0335 0.0100 0.0218 1 8,000 8,040 0.0460 0.0140 0.0300 1 9,000 9,060 0.0620 0.0215 0.0418 1 10,000 10,020 0.0790 0.0315 0.0553 Eload Unload Unload Unload		Tensile Testing					
1 0 0 0.0000 0.0000 0.0000 1 1,500 1,520 -0.0005 0.0015 0.0005 1 3,000 3,020 0.0000 0.0020 0.0010 1 4,000 4,000 0.0060 0.0025 0.0043 1 5,000 5,060 0.0160 0.0070 0.0115 1 6,000 6,080 0.0235 0.0065 0.0150 1 7,000 7,080 0.0335 0.0100 0.0218 1 8,000 8,040 0.0460 0.0140 0.0300 1 9,000 9,060 0.0620 0.0215 0.0418 1 10,000 10,020 0.0790 0.0315 0.0553 Unload 1 0 0 0.1530 0.0870 0.1200 Unload Unload	Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1 1,500 1,520 -0.0005 0.0015 0.0005 1 3,000 3,020 0.0000 0.0020 0.0010 1 4,000 4,000 0.0060 0.0025 0.0043 1 5,000 5,060 0.0160 0.0070 0.0115 1 6,000 6,080 0.0235 0.0065 0.0150 1 7,000 7,080 0.0335 0.0100 0.0218 1 8,000 8,040 0.0460 0.0140 0.0300 1 9,000 9,060 0.0620 0.0215 0.0418 1 10,000 10,020 0.0790 0.0315 0.0553 Unload 1 0 0 0.1530 0.0870 0.1200 Unload Unload Unload Unload	1	0	0	0.0000	0.0000	0.0000	
1 3,000 3,020 0.0000 0.0020 0.0010 1 4,000 4,000 0.0060 0.0025 0.0043 1 5,000 5,060 0.0160 0.0070 0.0115 1 6,000 6,080 0.0235 0.0065 0.0150 1 7,000 7,080 0.0335 0.0100 0.0218 1 8,000 8,040 0.0460 0.0140 0.0300 1 9,000 9,060 0.0620 0.0215 0.0418 1 10,000 10,020 0.0790 0.0315 0.0553 Unload 1 0 0 0.1530 0.0870 0.1200 Unload 1 0 0 0.1530 0.0870 0.1200	1	1,500	1,520	-0.0005	0.0015	0.0005	
1 4,000 4,000 0.0060 0.0025 0.0043 1 5,000 5,060 0.0160 0.0070 0.0115 1 6,000 6,080 0.0235 0.0065 0.0150 1 7,000 7,080 0.0335 0.0100 0.0218 1 8,000 8,040 0.0460 0.0140 0.0300 1 9,000 9,060 0.0620 0.0215 0.0418 1 10,000 10,020 0.0790 0.0315 0.0553 Unload Linead Unload Unload Unload Unload Unload Unload Unload	1	3,000	3,020	0.0000	0.0020	0.0010	
1 5,000 5,060 0.0160 0.0070 0.0115 1 6,000 6,080 0.0235 0.0065 0.0150 1 7,000 7,080 0.0335 0.0100 0.0218 1 8,000 8,040 0.0460 0.0140 0.0300 1 9,000 9,060 0.0620 0.0215 0.0418 1 10,000 10,020 0.0790 0.0315 0.0553 Unload	1	4,000	4,000	0.0060	0.0025	0.0043	
1 6,000 6,080 0.0235 0.0065 0.0150 1 7,000 7,080 0.0335 0.0100 0.0218 1 8,000 8,040 0.0460 0.0140 0.0300 1 9,000 9,060 0.0620 0.0215 0.0418 1 10,000 10,020 0.0790 0.0315 0.0553 Unload Reload Unload Unload Unload Unload Unload Unload Unload Unload Unload	1	5,000	5,060	0.0160	0.0070	0.0115	
1 7,000 7,080 0.0335 0.0100 0.0218 1 8,000 8,040 0.0460 0.0140 0.0300 1 9,000 9,060 0.0620 0.0215 0.0418 1 10,000 10,020 0.0790 0.0315 0.0553 Unload Reload Unload	1	6,000	6,080	0.0235	0.0065	0.0150	
1 8,000 8,040 0.0460 0.0140 0.0300 1 9,000 9,060 0.0620 0.0215 0.0418 1 10,000 10,020 0.0790 0.0315 0.0553 Unload 1 0 0 0.0455 0.0380 0.0418 Reload Unload Unload Unload Unload Unload Unload Unload Unload	1	7,000	7,080	0.0335	0.0100	0.0218	
1 9,000 9,060 0.0620 0.0215 0.0418 1 10,000 10,020 0.0790 0.0315 0.0553 Unload 1 0 0 0.0455 0.0380 0.0418 Reload 1 Max. 13,000 0.1530 0.0870 0.1200 Unload 1 0 0 0.1065 0.0990 0.1028	1	8,000	8,040	0.0460	0.0140	0.0300	
1 10,000 10,020 0.0790 0.0315 0.0553 Unload 1 0 0 0.0455 0.0380 0.0418 Reload 1 Max. 13,000 0.1530 0.0870 0.1200 Unload 1 0 0 0.1065 0.0990 0.1028	1	9,000	9,060	0.0620	0.0215	0.0418	
Unload 1 0 0 0.0455 0.0380 0.0418 Reload 1 Max. 13,000 0.1530 0.0870 0.1200 Unload 1 0 0 0.1065 0.0990 0.1028	1	10,000	10,020	0.0790	0.0315	0.0553	
1 0 0 0.0455 0.0380 0.0418 Reload 1 Max. 13,000 0.1530 0.0870 0.1200 Unload 1 0 0 0.1065 0.0990 0.1028			U	Inload			
Reload 1 Max. 13,000 0.1530 0.0870 0.1200 Unload 1 0 0 0.1065 0.0990 0.1028	1	0	0	0.0455	0.0380	0.0418	
1 Max. 13,000 0.1530 0.0870 0.1200 Unload 1 0 0 0.1065 0.0990 0.1028		Reload					
Unload 1 0 0 0.1065 0.0990 0.1028	1	Max.	13,000	0.1530	0.0870	0.1200	
1 0 0 0.1065 0.0990 0.1028		Unload					
	1	0	0	0.1065	0.0990	0.1028	

	Lateral Testing					
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4	
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	500	500	0.0475	0.0625	0.0550	
1	1,000	1,000	0.1030	0.1340	0.1185	
1	1,500	1,500	0.1695	0.2130	0.1913	
1	0	0	0.0120	0.0300	0.0210	
1	500	500	0.0570	0.0905	0.0738	
1	1,000	1,000	0.1120	0.1540	0.1330	
1	1,500	1,500	0.1735	0.2175	0.1955	
1	2,000	2,000	0.2470	0.2935	0.2703	
1	2,500	2,500	0.3265	0.3715	0.3490	
1	0	0	0.0305	0.0580	0.0443	
1	2,500	2,500	0.3445	0.3900	0.3673	
1	3,000	3,000	0.4250	0.4630	0.4440	
1	3,500	3,500	0.5205	0.5495	0.5350	
1	4,000	4,000	0.6225	0.6395	0.6310	
			Unload			
1	0	0	0.0425	0.0625	0.0525	
	Reload					
1	Max.	6,000	1.0040	1.0150	1.0095	
	Unload					
1	0	0	0.0860	0.1085	0.0973	





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-16B
Date/Time Installed:	4/7/21 8:30 AM	Date/Time Tested:	4/17/21 11:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	41.03
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	4.56

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.96				
3	3.55				
4	3.6				
5	5.59				
6	6.53				
7	6.25				
8	6.11				
9	7.44				
Total Time (s) =	41.03				

	Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	-0.0220	0.0215	-0.0003		
1	3,000	3,000	-0.0355	0.0415	0.0030		
1	4,000	4,120	-0.0400	0.0530	0.0065		
1	5,000	5,340	-0.0240	0.0540	0.0150		
1	6,000	6,060	-0.0220	0.0610	0.0195		
1	7,000	7,060	-0.0170	0.0690	0.0260		
1	8,000	8,060	-0.0115	0.0765	0.0325		
1	9,000	9,040	-0.0010	0.0895	0.0443		
1	10,000	10,060	0.0105	0.1035	0.0570		
		U	Inload				
1	0	0	0.0385	0.0495	0.0440		
	Reload						
1	Max.	13,140	0.0965	0.1950	0.1458		
	Unload						
1	0	0	0.1130	0.1290	0.1210		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height n):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0290	0.0815	0.0553		
1	1,000	1,000	0.0790	0.1630	0.1210		
1	1,500	1,500	0.1445	0.2450	0.1948		
1	0	0	0.0290	0.0315	0.0303		
1	500	500	0.0485	0.1120	0.0803		
1	1,000	1,000	0.0905	0.1855	0.1380		
1	1,500	1,500	0.1450	0.2530	0.1990		
1	2,000	2,000	0.2085	0.3305	0.2695		
1	2,500	2,500	0.2770	0.4105	0.3438		
1	0	0	0.0455	0.0555	0.0505		
1	2,500	2,500	0.2905	0.4250	0.3578		
1	3,000	3,000	0.3580	0.5045	0.4313		
1	3,500	3,500	0.4335	0.5925	0.5130		
1	4,000	4,000	0.5180	0.6865	0.6023		
			Unload	-			
1	0	0	0.0580	0.6500	0.3540		
	Reload						
1	Max.	6,000	0.8465	1.0600	0.9533		
			Unload				
1	0	0	0.1010	0.1325	0.1168		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-17A
Date/Time Installed:	4/7/21 9:35 AM	Date/Time Tested:	4/25/21 9:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	52.11
Pushed to Depth (ft.):	1.4	Embedment Depth (ft.):	7.10	Avg. Installation Rate (sec/ft)	7.34

Embedment	t Data
Depth (ft.)	Time (s)
0	0
1	0
2	1.01
3	3.68
4	7.47
5	9.6
6	13.2
7	17.15
Total Time (s) =	52.11

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0080	-0.0110	-0.0015	
1	3,000	3,000	0.0210	-0.0175	0.0018	
1	4,000	4,000	0.0420	-0.0260	0.0080	
1	5,000	5,000	0.0580	-0.0300	0.0140	
1	6,000	6,000	0.0825	-0.0340	0.0243	
1	7,000	7,000	0.1080	-0.0325	0.0378	
1	8,000	8,000	0.1360	-0.0310	0.0525	
1	9,000	9,000	0.1655	-0.0290	0.0683	
1	10,000	10,000	0.2025	-0.018	0.0923	
		U	Inload			
1	0	0	0.0575	0.0475	0.0525	
Reload						
1	Max.	9,700	0.2190	0.0010	0.1100	
	Unload					
1	0	0	0.0735	0.0655	0.0695	

	Lateral Testing						
Lateral	Load Height	3	Deflection G	auge Height	4		
Above	Grade (ft):	_	(ir	ו):			
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (105)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1085	0.0235	0.0660		
1	1,000	1,000	0.2495	0.1005	0.1750		
1	1,500	1,500	0.3530	0.1820	0.2675		
1	0	0	0.0735	0.0025	0.0380		
1	500	500	0.1785	0.0400	0.1093		
1	1,000	1,000	0.3005	0.1185	0.2095		
1	1,500	1,500	0.3895	0.1805	0.2850		
1	2,000	2,000	0.4685	0.2805	0.3745		
1	2,500	2,500	0.5565	0.3695	0.4630		
1	0	0	0.1330	0.0080	0.0705		
1	2,500	2,500	0.6010	0.3895	0.4953		
1	3,000	3,000	0.6715	0.4745	0.5730		
1	3,500	3,500	0.7405	0.5925	0.6665		
1	4,000	3,960	0.7935	0.6685	0.7310		
			Unload				
1	0	0	0.1585	0.0390	0.0988		
			Reload				
1	Max.	4,540	1.0075	1.0205	1.0140		
	Unload						
1	0	0	0.1815	0.1475	0.1645		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PY-17B
Date/Time Installed:	4/7/21 9:45 AM	Date/Time Tested:	4/25/21 9:40 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	48.59
Pushed to Depth (ft.):	1.6	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	6.94

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.97				
3	1.3				
4	5.5				
5	9.3				
6	13.9				
7	17.62				
Total Time (s) =	48.59				

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0045	-0.0035	0.0005	
1	3,000	3,000	0.0110	0.0020	0.0065	
1	4,000	4,000	0.0175	0.0125	0.0150	
1	5,000	5,000	0.0275	0.0290	0.0283	
1	6,000	6,000	0.0455	0.0585	0.0520	
1	7,000	7,000	0.0645	0.0890	0.0768	
1	8,000	8,000	0.0895	0.1290	0.1093	
1	9,000	9,000	0.1240	0.1790	0.1515	
1	10,000	10,000	0.1565	0.2245	0.1905	
		U	Inload			
1	0	0	0.1355	0.1415	0.1385	
	Reload					
1	Max.	10,000	0.2140	0.2770	0.2455	
	Unload					
1	0	0	0.1825	0.1895	0.1860	

	Lateral Testing						
Lateral I	Load Height	3	Deflection Gauge Height		4		
Above	Grade (ft):	-	(in):				
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (105)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0595	0.0905	0.0750		
1	1,000	1,000	0.1810	0.2125	0.1968		
1	1,500	1,500	0.2845	0.3250	0.3048		
1	0	0	-0.0100	0.0475	0.0188		
1	500	500	0.1010	0.1475	0.1243		
1	1,000	1,000	0.2155	0.2630	0.2393		
1	1,500	1,500	0.3000	0.3510	0.3255		
1	2,000	2,000	0.3930	0.4520	0.4225		
1	2,500	2,500	0.4890	0.5535	0.5213		
1	0	0	0.0120	0.0860	0.0490		
1	2,500	2,500	0.5245	0.5800	0.5523		
1	3,000	3,000	0.6050	0.6735	0.6393		
1	3,500	3,500	0.7050	0.7855	0.7453		
1	4,000	3,960	0.7640	0.8590	0.8115		
			Unload				
1	0	0	0.0585	0.1045	0.0815		
			Reload				
1	Max.	4,540	0.9385	1.0936	1.0161		
			Unload				
1	0	0	0.0688	0.1435	0.1062		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-18A
Date/Time Installed:	4/8/21 9:40 AM	Date/Time Tested:	4/25/21 8:20 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	31.23
Pushed to Depth (ft.):	0	Embedment Depth (ft.):	8.00	Avg. Installation Rate (sec/ft)	3.90

Embedmen	t Data
Depth (ft.)	Time (s)
0	0
1	-
2	3.26
3	2.34
4	3.67
5	5.17
6	5.66
7	4.9
8	6.23
Total Time (s) =	31.23

	Tensile Testing					
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	-0.0030	-0.0005	-0.0018	
1	3,000	3,000	-0.0035	0.0010	-0.0013	
1	4,000	4,000	-0.0015	0.0010	-0.0003	
1	5,000	5,000	0.0010	0.0015	0.0013	
1	6,000	6,000	0.0040	0.0025	0.0033	
1	7,000	7,000	0.0080	0.0045	0.0063	
1	8,000	8,000	0.0135	0.0080	0.0108	
1	9,000	9,000	0.0210	0.0135	0.0173	
1	10,000	10,000	0.0325	0.0235	0.0280	
		U	Inload			
1	0	0	0.0225	0.0180	0.0203	
	Reload					
1	Max.	10,000	0.0400	0.0270	0.0335	
		U	Inload	-		
1	0	0	0.0275	0.0225	0.0250	

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G	iauge Height n):	4		
Hold Time (min)	Target Load (lbs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1005	0.1120	0.1063		
1	1,000	1,000	0.1655	0.1790	0.1723		
1	1,500	1,500	0.2490	0.2540	0.2515		
1	0	0	0.0285	0.0455	0.0370		
1	500	500	0.1105	0.1245	0.1175		
1	1,000	1,000	0.1965	0.2140	0.2053		
1	1,500	1,500	0.2435	0.2735	0.2585		
1	2,000	2,000	0.2715	0.3390	0.3053		
1	2,500	2,500	0.2740	0.4235	0.3488		
1	0	0	0.0695	0.0840	0.0768		
1	2,500	2,500	0.4700	0.4765	0.4733		
1	3,000	3,000	0.5540	0.5570	0.5555		
1	3,500	3,500	0.5845	0.6585	0.6215		
1	4,000	4,000	0.7035	0.7825	0.7430		
			Unload				
1	0	0	0.4345	0.2400	0.3373		
	Reload						
1	Max.	4,900	1.1625	1.4085	1.2855		
			Unload				
1	0	0	0.5055	0.3060	0.4058		



No time recorded for the first foot of pounding.



Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-18B
Date/Time Installed:	4/8/21 9:50 AM	Date/Time Tested:	4/25/21 8:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	42.5
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	8.00	Avg. Installation Rate (sec/ft)	5.31

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.94				
3	1.97				
4	4.21				
5	7.17				
6	9.26				
7	8.51				
8	9.44				
Total Time (s) =	42.5				

Tensile Testing					
Hold Time (min)	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average Deflection (in)
(1111)	(103)		(111.)	(111.)	Deficetion (iii.)
1	0	0	0.0000	0.0000	0.0000
1	1,500	1,500	0.0000	-0.0085	-0.0043
1	3,000	3,000	0.0010	-0.0120	-0.0055
1	4,000	4,000	0.0025	-0.0120	-0.0048
1	5,000	5,000	0.0030	-0.0120	-0.0045
1	6,000	6,000	0.0035	-0.0115	-0.0040
1	7,000	6,900	0.0055	-0.0105	-0.0025
		U	nload		
1	0	0	0.0010	-0.0045	-0.0018
Reload					
1	Max.	8,020	0.0140	-0.0085	0.0028
		U	nload		
1	0	0	0.0005	-0.0030	-0.0013

	Lateral Testing					
Lateral Above	Load Height Grade (ft):	3	Deflection Gauge Height (in):		4	
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	500	500	0.1005	0.1260	0.1133	
1	1,000	1,000	0.1735	0.2105	0.1920	
1	1,500	1,500	0.2490	0.2980	0.2735	
1	0	0	0.0230	0.0195	0.0213	
1	500	500	0.0935	0.1385	0.1160	
1	1,000	1,000	0.1990	0.2575	0.2283	
1	1,500	1,500	0.2670	0.3335	0.3003	
1	2,000	2,000	0.3345	0.4080	0.3713	
1	2,500	2,500	0.4165	0.4955	0.4560	
1	0	0	0.0410	0.0505	0.0458	
1	2,500	2,500	0.4385	0.5310	0.4848	
1	3,000	3,000	0.5280	0.6280	0.5780	
1	3,500	3,500	0.6295	0.7345	0.6820	
1	4,000	4,000	0.7545	0.8560	0.8053	
			Unload			
1	0	0	0.0615	0.0860	0.0738	
			Reload			
1	Max.	4,900	1.0080	1.1160	1.0620	
Unload						
1	0	0	0.1000	0.1105	0.1053	



Footing failure during initial uplift test due to soft soil conditions.



Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-19A
Date/Time Installed:	4/7/21 9:00 AM	Date/Time Tested:	4/25/21 10:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	55.7
Pushed to Depth (ft.):	1.5	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	5.57

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.15				
3	1.95				
4	3.08				
5	5.53				
6	5.73				
7	6.95				
8	9.29				
9	10.18				
10	11.84				
Total Time (s) =	55.7				

Tensile Testing						
Hold Time (min)	Target Load (lbs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	-0.0005	0.0035	0.0015	
1	3,000	3,000	0.0015	0.0055	0.0035	
1	4,000	4,000	0.0055	0.0065	0.0060	
1	5,000	5,000	0.0090	0.0070	0.0080	
1	6,000	6,000	0.0130	0.0085	0.0108	
1	7,000	7,000	0.0190	0.0120	0.0155	
1	8,000	8,000	0.0260	0.0170	0.0215	
1	9,000	9,000	0.0325	0.0225	0.0275	
1	10,000	10,000	0.0400	0.0310	0.0355	
		U	Inload			
1	0	0	0.0175	0.0160	0.0168	
		R	eload			
1	Max.	10,000	0.0490	0.0330	0.0410	
	Unload					
1	0	0	0.0200	0.0170	0.0185	

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (lbs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1035	0.0910	0.0973		
1	1,000	1,000	0.2385	0.2055	0.2220		
1	1,500	1,500	0.3255	0.2900	0.3078		
1	0	0	0.0400	0.0730	0.0565		
1	500	500	0.1580	0.1530	0.1555		
1	1,000	1,000	0.2595	0.2390	0.2493		
1	1,500	1,500	0.3475	0.3350	0.3413		
1	2,000	2,000	0.4285	0.4115	0.4200		
1	2,500	2,500	0.5470	0.5275	0.5373		
1	0	0	0.0505	0.1005	0.0755		
1	2,500	2,500	0.6065	0.5625	0.5845		
1	3,000	3,000	0.7075	0.6765	0.6920		
1	3,500	3,500	0.8835	0.8195	0.8515		
1	4,000	4,180	1.0265	0.9855	1.0060		
			Unload				
1	0	0	0.0855	0.1580	0.1218		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-19B
Date/Time Installed:	4/7/21 9:10 AM	Date/Time Tested:	4/25/21 10:35 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	43.43
Pushed to Depth (ft.):	1.2	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	4.34

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.92				
3	1.3				
4	3.41				
5	5.33				
6	4.07				
7	4.86				
8	5.74				
9	7.29				
10	9.51				
Total Time (s) =	43.43				

Tensile Testing							
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0050	-0.0025	0.0013		
1	3,000	3,000	0.0075	-0.0010	0.0033		
1	4,000	4,000	0.0085	0.0015	0.0050		
1	5,000	5,000	0.0095	0.0045	0.0070		
1	6,000	6,000	0.0105	0.0075	0.0090		
1	7,000	7,000	0.0115	0.0125	0.0120		
1	8,000	8,000	0.0125	0.0170	0.0148		
1	9,000	9,000	0.0140	0.0230	0.0185		
1	10,000	10,000	0.0160	0.0300	0.0230		
		U	Inload				
1	0	0	0.0080	0.0105	0.0093		
	Reload						
1	Max.	10,000	0.0145	0.0375	0.0260		
		U	Inload				
1	0	0	0.0095	0.0135	0.0115		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1685	0.0405	0.1045		
1	1,000	1,000	0.3020	0.1245	0.2133		
1	1,500	1,500	0.4060	0.1935	0.2998		
1	0	0	0.0685	0.0270	0.0478		
1	500	500	0.2140	0.0695	0.1418		
1	1,000	1,000	0.3300	0.1360	0.2330		
1	1,500	1,500	0.4420	0.2140	0.3280		
1	2,000	2,000	0.5315	0.2825	0.4070		
1	2,500	2,500	0.6650	0.3935	0.5293		
1	0	0	0.0810	0.0535	0.0673		
1	2,500	2,500	0.7050	0.4125	0.5588		
1	3,000	2,500	0.8480	0.5235	0.6858		
1	3,500	3,500	0.9895	0.6485	0.8190		
1	4,000	4,180	1.1585	0.8255	0.9920		
			Unload				
1	0	0	0.0985	0.0995	0.0990		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-20A
Date/Time Installed:	4/7/21 10:05 AM	Date/Time Tested:	4/25/21 11:15 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	77.99
Pushed to Depth (ft.):	1.6	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	7.80

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.76				
3	1.77				
4	4.02				
5	7.93				
6	9.31				
7	9.65				
8	12.3				
9	13.09				
10	19.16				
Total Time (s) =	77.99				

Tensile Testing							
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	-0.0040	0.0115	0.0038		
1	3,000	3,000	-0.0040	0.0175	0.0068		
1	4,000	4,000	0.0000	0.0180	0.0090		
1	5,000	5,000	0.0035	0.0175	0.0105		
1	6,000	6,000	0.0090	0.0165	0.0128		
1	7,000	7,000	0.0145	0.0150	0.0148		
1	8,000	8,000	0.0230	0.0140	0.0185		
1	9,000	9,000	0.0330	0.0100	0.0215		
1	10,000	10,000	0.0435	0.0065	0.0250		
		U	Inload				
1	0	0	0.0065	0.0045	0.0055		
	Reload						
1	Max.	10,000	0.0345	0.0225	0.0285		
		U	Inload				
1	0	0	0.0065	0.0060	0.0063		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height n):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1605	0.0460	0.1033		
1	1,000	1,000	0.3155	0.1275	0.2215		
1	1,500	1,500	0.4260	0.2035	0.3148		
1	0	0	0.0775	0.0065	0.0420		
1	500	500	0.2345	0.0475	0.1410		
1	1,000	1,000	0.3705	0.1490	0.2598		
1	1,500	1,500	0.4790	0.2380	0.3585		
1	2,000	2,000	0.5835	0.3230	0.4533		
1	2,500	2,500	0.7345	0.4645	0.5995		
1	0	0	0.1345	0.0015	0.0680		
1	2,500	2,500	0.7825	0.4920	0.6373		
1	3,000	3,000	0.9080	0.6160	0.7620		
1	3,500	3,500	1.0805	0.7895	0.9350		
1	4,000	3,700	1.0700	0.8135	0.9418		
			Unload				
1	0	0	0.2045	0.0235	0.1140		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-20B
Date/Time Installed:	4/7/21 10:15 AM	Date/Time Tested:	4/25/21 11:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	69.95
Pushed to Depth (ft.):	1.8	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	7.00

Embedment Data					
Time (s)					
0					
0					
0.34					
1.22					
3.29					
5.79					
8.27					
9.59					
10.9					
11.52					
19.03					
69.95					

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0105	-0.0030	0.0038	
1	3,000	3,000	0.0195	-0.0065	0.0065	
1	4,000	4,000	0.0275	-0.0110	0.0083	
1	5,000	5,000	0.0350	-0.0160	0.0095	
1	6,000	6,000	0.0435	-0.0205	0.0115	
1	7,000	7,000	0.0530	-0.0245	0.0143	
1	8,000	8,000	0.0625	-0.0260	0.0183	
1	9,000	9,000	0.0775	-0.0180	0.0298	
1	10,000	9,300	0.078	-0.0200	0.0290	
		U	Inload			
1	0	0	0.0085	0.0030	0.0058	
		R	eload			
1	Max.	7,700	0.0685	-0.0135	0.0275	
		U	Inload			
1	0	0	0.0085	0.0045	0.0065	

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1695	0.0375	0.1035		
1	1,000	1,000	0.3010	0.1240	0.2125		
1	1,500	1,500	0.3975	0.1970	0.2973		
1	0	0	0.0620	0.0030	0.0325		
1	500	500	0.2085	0.0535	0.1310		
1	1,000	1,000	0.3400	0.1445	0.2423		
1	1,500	1,500	0.4410	0.2280	0.3345		
1	2,000	2,000	0.5425	0.3045	0.4235		
1	2,500	2,500	0.7120	0.4305	0.5713		
1	0	0	0.1235	0.0125	0.0680		
1	2,500	2,500	0.7715	0.4575	0.6145		
1	3,000	3,000	0.9165	0.5740	0.7453		
1	3,500	3,500	1.1160	0.7390	0.9275		
1	4,000	3,700	1.1490	0.7640	0.9565		
			Unload				
1	0	0	0.1985	0.0545	0.1265		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-21A
Date/Time Installed:	4/8/21 12:40 PM	Date/Time Tested:	4/18/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	110.95
Pushed to Depth (ft.):	2.2	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	12.33

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0				
3	1.96				
4	4.48				
5	8.19				
6	10.57				
7	14.96				
8	46.34				
9	24.45				
Total Time (s) =	110.95				

Tensile Testing							
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,540	0.0040	0.0045	0.0043		
1	3,000	3,020	0.0075	0.0140	0.0108		
1	4,000	4,200	0.0060	0.0235	0.0148		
1	5,000	5,000	0.0055	0.0310	0.0183		
1	6,000	6,000	0.0075	0.0400	0.0238		
1	7,000	7,000	0.0095	0.0500	0.0298		
1	8,000	8,000	0.0090	0.0585	0.0338		
1	9,000	9,080	0.0080	0.0675	0.0378		
1	10,000	10,040	0.0180	0.0770	0.0475		
		U	nload				
1	0	0	0.0045	0.0100	0.0073		
	Reload						
1	Max.	11,040	0.0125	0.0750	0.0438		
		U	nload				
1	0	0	0.0095	0.0150	0.0123		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0880	0.1105	0.0993		
1	1,000	1,000	0.1975	0.2375	0.2175		
1	1,500	1,500	0.3215	0.3735	0.3475		
1	0	0	0.0230	0.0360	0.0295		
1	500	500	0.1295	0.1685	0.1490		
1	1,000	1,000	0.2365	0.2825	0.2595		
1	1,500	1,500	0.3440	0.3950	0.3695		
1	2,000	2,000	0.4700	0.5260	0.4980		
1	2,500	2,500	0.6140	0.6740	0.6440		
1	0	0	0.0495	0.0750	0.0623		
1	2,500	2,500	0.6530	0.7030	0.6780		
1	3,000	3,020	0.7885	0.8375	0.8130		
1	3,500	3,500	0.9235	0.9720	0.9478		
1	4,000	3,800	1.0100	1.0640	1.0370		
			Unload				
1	0	0	0.1255	0.1455	0.1355		




Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-21B
Date/Time Installed:	4/8/21 12:45 PM	Date/Time Tested:	4/18/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	63.51
Pushed to Depth (ft.):	1.5	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	7.06

Embedment Data				
Depth (ft.)	Time (s)			
0	0			
1	0			
2	0.63			
3	1.55			
4	4.66			
5	6.47			
6	11			
7	11.93			
8	14.2			
9	13.07			
Total Time (s) =	63.51			

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0010	0.0010	0.0010	
1	3,000	3,020	0.0055	0.0130	0.0093	
1	4,000	4,060	0.0080	0.0230	0.0155	
1	5,000	5,000	0.0110	0.0325	0.0218	
1	6,000	6,000	0.0120	0.0405	0.0263	
1	7,000	7,000	0.0135	0.0450	0.0293	
1	8,000	8,000	0.0150	0.0580	0.0365	
Unload						
1	0	0	0.0045	0.0075	0.0060	

	Lateral Testing						
Lateral I Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0575	0.1715	0.1145		
1	1,000	1,000	0.1575	0.3290	0.2433		
1	1,500	1,500	0.2695	0.4660	0.3678		
1	0	0	0.0045	0.0305	0.0175		
1	500	500	0.0750	0.2190	0.1470		
1	1,000	1,000	0.1740	0.3565	0.2653		
1	1,500	1,500	0.2765	0.4800	0.3783		
1	2,000	2,000	0.3900	0.6030	0.4965		
1	2,500	2,500	0.5070	0.7270	0.6170		
1	0	0	0.0270	0.0455	0.0363		
1	2,500	2,500	0.5305	0.7455	0.6380		
1	3,000	3,020	0.6455	0.8640	0.7548		
1	3,500	3,500	0.7600	0.9450	0.8525		
1	4,000	3,800	0.8430	1.0640	0.9535		
			Unload				
1	0	0	0.0750	0.1135	0.0943		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-22A
Date/Time Installed:	4/8/21 11:20 AM	Date/Time Tested:	4/18/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	25.8
Pushed to Depth (ft.):	0.8	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	3.69

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0.51				
2	0.46				
3	1.89				
4	3.79				
5	5.02				
6	6.5				
7	7.63				
Total Time (s) =	25.8				

Tensile Testing							
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,520	0.0060	0.0030	0.0045		
1	3,000	3,040	0.0105	0.0000	0.0053		
1	4,000	4,060	0.0115	0.0040	0.0078		
1	5,000	5,040	0.0110	0.0095	0.0103		
1	6,000	6,060	0.0120	0.0160	0.0140		
1	7,000	7,040	0.0135	0.0255	0.0195		
1	8,000	8,040	0.0145	0.0365	0.0255		
1	9,000	9,020	0.0195	0.0510	0.0353		
1	10,000	10,020	0.0305	0.066	0.0483		
		U	nload				
1	0	0	0.0215	0.0270	0.0243		
	Reload						
1	Max.	13,960	0.2475	0.3170	0.2823		
		U	nload	-			
1	0	0	0.2250	0.2420	0.2335		

	Lateral Testing						
Lateral I	Load Height	3	Deflection Gauge Height (in):		4		
Above	Grade (ft):						
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (105)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1350	0.0600	0.0975		
1	1,000	1,000	0.2535	0.1490	0.2013		
1	1,500	1,500	0.3525	0.2310	0.2918		
1	0	0	0.0435	0.0465	0.0450		
1	500	500	0.1730	0.1045	0.1388		
1	1,000	1,000	0.2760	0.1755	0.2258		
1	1,500	1,500	0.3665	0.2465	0.3065		
1	2,000	2,000	0.4680	0.3260	0.3970		
1	2,500	2,500	0.5585	0.4160	0.4873		
1	0	0	0.0850	0.0620	0.0735		
1	2,500	2,500	0.5760	0.4360	0.5060		
1	3,000	3,000	0.6710	0.5275	0.5993		
1	3,500	3,500	0.7740	0.6350	0.7045		
1	4,000	4,000	0.8855	0.7490	0.8173		
			Unload				
1	0	0	0.1265	0.1110	0.1188		
			Reload				
1	Max.	3,860	0.8900	0.7790	0.8345		
			Unload				
1	0	0	0.1250	0.1290	0.1270		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-22B
Date/Time Installed:	4/8/21 11:25 AM	Date/Time Tested:	4/18/21 11:00 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	20.84
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	2.98

Embadment Date					
Embedmen	Data				
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.1				
3	1.36				
4	3.21				
5	3.72				
6	5.24				
7	6.21				
Total Time (s) =	20.84				

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,520	-0.0130	0.0145	0.0008	
1	3,000	3,000	-0.0160	0.0270	0.0055	
1	4,000	4,040	-0.0110	0.0385	0.0138	
1	5,000	5,060	0.0010	0.0565	0.0288	
1	6,000	6,000	0.0120	0.0715	0.0418	
1	7,000	7,000	0.0415	0.1070	0.0743	
1	8,000	8,060	0.0825	0.1525	0.1175	
1	9,000	9,040	0.1620	0.2360	0.1990	
1	10,000	10,060	0.2400	0.3195	0.2798	
		U	nload			
1	0	0	0.2380	0.2475	0.2428	
	-	R	eload			
1	Max.	13,220	0.6370	0.7390	0.6880	
	Unload					
1	0	0	0.6250	0.6400	0.6325	

	Lateral Testing						
Lateral	Load Height	2	Deflection G	iauge Height	4		
Above	Grade (ft):	5	(ir	n):	4		
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	Luau (IDS)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1325	0.0775	0.1050		
1	1,000	1,000	0.2625	0.1750	0.2188		
1	1,500	1,500	0.3745	0.2770	0.3258		
1	0	0	0.0900	0.0430	0.0665		
1	500	500	0.2125	0.1300	0.1713		
1	1,000	1,000	0.3100	0.2165	0.2633		
1	1,500	1,500	0.4010	0.3020	0.3515		
1	2,000	2,000	0.5050	0.4045	0.4548		
1	2,500	2,500	0.6235	0.5240	0.5738		
1	0	0	0.1215	0.0840	0.1028		
1	2,500	2,500	0.6615	0.5570	0.6093		
1	3,000	3,000	0.7715	0.6675	0.7195		
1	3,500	3,500	0.8900	0.7950	0.8425		
1	4,000	4,000	1.0170	0.9380	0.9775		
			Unload				
1	0	0	0.2160	0.1665	0.1913		
			Reload				
1	Max.	3,860	1.0620	0.9765	1.0193		
		-	Unload				
1	0	0	0.2305	0.1930	0.2118		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-23A
Date/Time Installed:	4/8/21 11:00 AM	Date/Time Tested:	4/18/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	57.74
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	5.77

Embedment Data				
Depth (ft.)	Time (s)			
0	0			
1	0			
2	1.19			
3	1.76			
4	2.63			
5	5.69			
6	7.62			
7	6.58			
8	6.32			
9	20.24			
10	5.71			
Total Time (s) =	57.74			

	Tensile Testing						
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(11111)	(103)		(111.)	(111.)	Defiection (III.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,520	0.0060	0.0055	0.0058		
1	3,000	3,020	0.0230	0.0190	0.0210		
1	4,000	4,040	0.0295	0.0180	0.0238		
1	5,000	5,020	0.0375	0.0165	0.0270		
1	6,000	6,040	0.0455	0.0170	0.0313		
1	7,000	7,020	0.0565	0.0185	0.0375		
1	8,000	8,040	0.0660	0.0200	0.0430		
1	9,000	9,060	0.0790	0.0255	0.0523		
1	10,000	10,060	0.0930	0.0360	0.0645		
		U	nload				
1	0	0	0.0425	0.0405	0.0415		
	Reload						
1	Max.	10,600	0.1035	0.0695	0.0865		
		U	nload				
1	0	0	0.0565	0.0510	0.0538		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection Gauge Height (in):		4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0620	0.1010	0.0815		
1	1,000	1,020	0.1585	0.2175	0.1880		
1	1,500	1,500	0.2580	0.3215	0.2898		
1	0	0	0.0305	0.0375	0.0340		
1	500	500	0.1030	0.1515	0.1273		
1	1,000	1,020	0.1915	0.2520	0.2218		
1	1,500	1,500	0.2795	0.3420	0.3108		
1	2,000	2,000	0.3820	0.4360	0.4090		
1	2,500	2,500	0.4905	0.5475	0.5190		
1	0	0	0.0555	0.0730	0.0643		
1	2,500	2,500	0.5270	0.5740	0.5505		
1	3,000	3,000	0.6445	0.6810	0.6628		
1	3,500	3,500	0.7785	0.8015	0.7900		
1	4,000	3,780	0.8755	0.8900	0.8828		
			Unload				
1	0	0	0.1345	0.1065	0.1205		
	Reload						
1	Max.	4,040	1.0340	1.0055	1.0198		
		-	Unload				
1	0	0	0.1810	0.1490	0.1650		



Sub contractor stopped pounding during 9 foot increment.



Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-23B
Date/Time Installed:	4/8/21 11:05 AM	Date/Time Tested:	4/18/21 8:45 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	51.62
Pushed to Depth (ft.):	0.8	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	5.16

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0.09				
2	1				
3	1.72				
4	3.11				
5	4.31				
6	6.86				
7	10.03				
8	8.42				
9	8.08				
10	8.00				
Total Time (s) =	51.62				

Time (seconds)

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0085	0.0030	0.0058	
1	3,000	3,020	0.0055	0.0035	0.0045	
1	4,000	4,040	-0.0010	0.0015	0.0003	
1	5,000	5,060	-0.0095	-0.0005	-0.0050	
1	6,000	6,080	-0.0240	-0.0035	-0.0138	
1	7,000	7,080	-0.0355	-0.0045	-0.0200	
1	8,000	8,060	-0.0415	-0.0055	-0.0235	
1	9,000	9,060	-0.0380	-0.0070	-0.0225	
1	10,000	10,020	-0.0325	-0.0085	-0.0205	
		U	nload			
1	0	0	0.0180	-0.0010	0.0085	
	Reload					
1	Max.	10,220	-0.018	-0.0090	-0.0135	
	Unload					
1	0	0	0.0295	-0.0020	0.0138	

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1110	0.1010	0.1060		
1	1,000	1,020	0.2220	0.2250	0.2235		
1	1,500	1,500	0.3195	0.3380	0.3288		
1	0	0	0.0100	0.0380	0.0240		
1	500	500	0.1420	0.1315	0.1368		
1	1,000	1,020	0.2490	0.2435	0.2463		
1	1,500	1,500	0.3380	0.3505	0.3443		
1	2,000	2,000	0.4360	0.4555	0.4458		
1	2,500	2,500	0.5420	0.5675	0.5548		
1	0	0	0.0360	0.0695	0.0528		
1	2,500	2,500	0.5700	0.5850	0.5775		
1	3,000	3,000	0.6800	0.6945	0.6873		
1	3,500	3,500	0.8065	0.8215	0.8140		
1	4,000	3,780	0.8985	0.9175	0.9080		
			Unload				
1	0	0	0.0475	0.0810	0.0643		
	Reload						
1	Max.	4,040	1.0055	1.0150	1.0103		
			Unload				
1	0	0	0.0890	0.1165	0.1028		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-24A
Date/Time Installed:	4/8/21 1:30 PM	Date/Time Tested:	4/18/21 3:30 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	61.53
Pushed to Depth (ft.):	0.9	Embedment Depth (ft.):	10.70	Avg. Installation Rate (sec/ft)	5.75

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0.5				
2	0.91				
3	2.32				
4	5.39				
5	6.89				
6	6.07				
7	7.29				
8	4.42				
9	9.06				
10	11.04				
11	7.64				
Total Time (s) =	61.53				

	Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0120	0.0175	0.0148		
1	3,000	3,000	0.0100	0.0270	0.0185		
1	4,000	4,000	0.0120	0.0310	0.0215		
1	5,000	5,040	0.0145	0.0350	0.0248		
1	6,000	6,060	0.0195	0.0410	0.0303		
1	7,000	7,060	0.0270	0.0475	0.0373		
1	8,000	8,060	0.0390	0.0590	0.0490		
1	9,000	9,060	0.0535	0.0720	0.0628		
1	10,000	10,020	0.0780	0.0950	0.0865		
		U	nload				
1	0	0	0.0650	0.0560	0.0605		
	Reload						
1	Max.	11,240	0.1510	0.1675	0.1593		
		U	nload				
1	0	0	0.1205	0.1125	0.1165		

	Lateral Testing						
Lateral	Load Height	2	Deflection G	iauge Height	4		
Above	Grade (ft):	5	(in):		4		
Hold Time	Target Load	Load (lbc)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	Luau (IDS)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0475	0.1330	0.0903		
1	1,000	1,000	0.1245	0.2550	0.1898		
1	1,500	1,500	0.2305	0.3690	0.2998		
1	0	0	0.0375	0.0475	0.0425		
1	500	520	0.0920	0.1795	0.1358		
1	1,000	1,000	0.1640	0.2860	0.2250		
1	1,500	1,500	0.2410	0.3830	0.3120		
1	2,000	2,000	0.3360	0.4855	0.4108		
1	2,500	2,500	0.4660	0.6030	0.5345		
1	0	0	0.0830	0.0825	0.0828		
1	2,500	2,500	0.5015	0.6290	0.5653		
1	3,000	3,000	0.6105	0.7285	0.6695		
1	3,500	3,500	0.7325	0.8490	0.7908		
1	4,000	4,020	0.8585	0.9630	0.9108		
			Unload				
1	0	0	0.1575	0.1605	0.1590		
			Reload				
1	Max.	4,260	0.9710	1.0950	1.0330		
			Unload				
1	0	0	0.1950	0.1740	0.1845		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-24B
Date/Time Installed:	4/8/21 1:35 PM	Date/Time Tested:	4/18/21 3:30 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	62.38
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	10.30	Avg. Installation Rate (sec/ft)	6.06

Even hand we are	Data
Embedmen	t Data
Depth (ft.)	Time (s)
0	0
1	0
2	1.58
3	1.95
4	5.13
5	5.6
6	6.59
7	7.65
8	8.12
9	8.87
10	11.92
11	4.97
Total Time (s) =	62.38

Time (seconds)

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	-0.0005	0.0085	0.0040	
1	3,000	3,000	0.0030	0.0145	0.0088	
1	4,000	4,000	0.0100	0.0190	0.0145	
1	5,000	5,040	0.0160	0.0235	0.0198	
1	6,000	6,060	0.0240	0.0305	0.0273	
1	7,000	7,060	0.0355	0.0385	0.0370	
1	8,000	8,060	0.0525	0.0530	0.0528	
1	9,000	9,060	0.0755	0.0695	0.0725	
1	10,000	10,020	0.1010	0.091	0.0960	
Unload						
1	0	0	0.0460	0.0510	0.0485	
	Reload					
1	Max.	11,240	0.1695	0.1635	0.1665	
		U	nload			
1	0	0	0.1010	0.1085	0.1048	

Lateral Testing						
Lateral	Load Height	ч	Deflection Gauge Height		4	
Above	Grade (ft):	5	(in):		-	
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average	
(min)	(lbs)	2000 (103)	(in.)	(in.)	Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	500	500	0.1375	0.0620	0.0998	
1	1,000	1,000	0.2645	0.1535	0.2090	
1	1,500	1,500	0.3875	0.2510	0.3193	
1	0	0	0.0485	0.0150	0.0318	
1	500	520	0.1680	0.0845	0.1263	
1	1,000	1,000	0.2865	0.1710	0.2288	
1	1,500	1,500	0.3860	0.2545	0.3203	
1	2,000	2,000	0.4845	0.3425	0.4135	
1	2,500	2,500	0.5990	0.4460	0.5225	
1	0	0	0.0890	0.0350	0.0620	
1	2,500	2,500	0.6110	0.4100	0.5105	
1	3,000	3,000	0.7105	0.5560	0.6333	
1	3,500	3,500	0.8175	0.6495	0.7335	
1	4,000	4,020	0.9220	0.7405	0.8313	
			Unload			
1	0	0	0.1230	0.0630	0.0930	
			Reload			
1	Max.	4,260	1.1010	0.8135	0.9573	
			Unload			
1	0	0	0.1405	0.0825	0.1115	





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-25A
Date/Time Installed:	4/8/21 2:10 PM	Date/Time Tested:	4/21/21 3:00 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	44.91
Pushed to Depth (ft.):	1.5	Embedment Depth (ft.):	6.80	Avg. Installation Rate (sec/ft)	6.60

Embedment Data						
Depth (ft.)	Time (s)					
0	0					
1	0					
2	0.85					
3	2.83					
4	4.43					
5	4.92					
6	11.21					
7	20.67					
Total Time (s) =	44.91					

Tensile Testing							
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0055	0.0255	0.0155		
1	3,000	3,000	0.0120	0.0410	0.0265		
1	4,000	4,060	0.0195	0.0570	0.0383		
1	5,000	5,040	0.0360	0.0815	0.0588		
1	6,000	6,020	0.1755	0.2320	0.2038		
1	7,000	7,040	0.7325	0.8065	0.7695		
1	8,000	7,300	1.0175	1.0915	1.0545		
Unload							
1	0	0	0.9975	1.0135	1.0055		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	520	0.0620	0.1325	0.0973		
1	1,000	1,000	0.1475	0.2660	0.2068		
1	1,500	1,500	0.2545	0.3965	0.3255		
1	0	0	0.0460	0.1035	0.0748		
1	500	500	0.1010	0.2020	0.1515		
1	1,000	1,000	0.1765	0.3080	0.2423		
1	1,500	1,500	0.2710	0.4195	0.3453		
1	2,000	2,000	0.3810	0.5430	0.4620		
1	2,500	2,500	0.5075	0.6825	0.5950		
1	0	0	0.1190	0.1920	0.1555		
1	2,500	2,500	0.5570	0.7300	0.6435		
1	3,000	3,000	0.6885	0.8735	0.7810		
1	3,500	3,500	0.8345	1.0310	0.9328		
1	4,000	3,760	0.9200	1.1285	1.0243		
			Unload				
1	0	0	0.2270	0.3105	0.2688		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-25B
Date/Time Installed:	4/8/21 2:15 PM	Date/Time Tested:	4/21/21 3:00 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	39.9
Pushed to Depth (ft.):	1.2	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	5.70

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.7				
3	2.55				
4	5.38				
5	8.54				
6	10				
7	12.73				
Total Time (s) =	39.9				

Hold Time (min) Target Load (lbs) Load (lbs) Deflection 1 (in.) Deflection 2 (in.) Average Deflection (1 0 0 0.0000 0.0000 0.0000 1 1,500 1,500 0.0105 -0.0045 0.0030 1 3,000 3,080 0.0200 -0.0030 0.0085 1 4,000 4,020 0.0275 0.0005 0.0140 1 5,000 5,080 0.0440 0.0170 0.0305 1 6,000 6,000 0.0550 0.0305 0.0428 1 7,000 7,000 0.0730 0.0525 0.0628 1 8,000 8,060 0.1005 0.0840 0.0923 1 9,000 9,080 0.1350 0.1220 0.1285 1 10,000 10,060 0.1755 0.1685 0.1720	Tensile Testing						
1 0 0 0.0000 0.0000 0.0000 1 1,500 1,500 0.0105 -0.0045 0.0030 1 3,000 3,080 0.0200 -0.0030 0.0085 1 4,000 4,020 0.0275 0.0005 0.0140 1 5,000 5,080 0.0440 0.0170 0.0305 1 6,000 6,000 0.0550 0.0305 0.0428 1 7,000 7,000 0.0730 0.0525 0.0628 1 8,000 8,060 0.1005 0.0840 0.0923 1 9,000 9,080 0.1350 0.1220 0.1285 1 10,000 10,060 0.1755 0.1685 0.1720	Hold Time (min)	arget Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1 1,500 1,500 0.0105 -0.0045 0.0030 1 3,000 3,080 0.0200 -0.0030 0.0085 1 4,000 4,020 0.0275 0.0005 0.0140 1 5,000 5,080 0.0440 0.0170 0.0305 1 6,000 6,000 0.0550 0.0305 0.0428 1 7,000 7,000 0.0730 0.0525 0.0628 1 8,000 8,060 0.1005 0.0840 0.0923 1 9,000 9,080 0.1350 0.1220 0.1285 1 10,000 10,060 0.1755 0.1685 0.1720	1	0	0	0.0000	0.0000	0.0000	
1 3,000 3,080 0.0200 -0.0030 0.0085 1 4,000 4,020 0.0275 0.0005 0.0140 1 5,000 5,080 0.0440 0.0170 0.0305 1 6,000 6,000 0.0550 0.0305 0.0428 1 7,000 7,000 0.0730 0.0525 0.0628 1 8,000 8,060 0.1005 0.0840 0.0923 1 9,000 9,080 0.1350 0.1220 0.1285 1 10,000 10,060 0.1755 0.1685 0.1720	1	1,500	1,500	0.0105	-0.0045	0.0030	
1 4,000 4,020 0.0275 0.0005 0.0140 1 5,000 5,080 0.0440 0.0170 0.0305 1 6,000 6,000 0.0550 0.0305 0.0428 1 7,000 7,000 0.0730 0.0525 0.0628 1 8,000 8,060 0.1005 0.0840 0.0923 1 9,000 9,080 0.1350 0.1220 0.1285 1 10,000 10,060 0.1755 0.1685 0.1720	1	3,000	3,080	0.0200	-0.0030	0.0085	
1 5,000 5,080 0.0440 0.0170 0.0305 1 6,000 6,000 0.0550 0.0305 0.0428 1 7,000 7,000 0.0730 0.0525 0.0628 1 8,000 8,060 0.1005 0.0840 0.0923 1 9,000 9,080 0.1350 0.1220 0.1285 1 10,000 10,060 0.1755 0.1685 0.1720	1	4,000	4,020	0.0275	0.0005	0.0140	
1 6,000 6,000 0.0550 0.0305 0.0428 1 7,000 7,000 0.0730 0.0525 0.0628 1 8,000 8,060 0.1005 0.0840 0.0923 1 9,000 9,080 0.1350 0.1220 0.1285 1 10,000 10,060 0.1755 0.1685 0.1720	1	5,000	5,080	0.0440	0.0170	0.0305	
1 7,000 7,000 0.0730 0.0525 0.0628 1 8,000 8,060 0.1005 0.0840 0.0923 1 9,000 9,080 0.1350 0.1220 0.1285 1 10,000 10,060 0.1755 0.1685 0.1720	1	6,000	6,000	0.0550	0.0305	0.0428	
1 8,000 8,060 0.1005 0.0840 0.0923 1 9,000 9,080 0.1350 0.1220 0.1285 1 10,000 10,060 0.1755 0.1685 0.1720	1	7,000	7,000	0.0730	0.0525	0.0628	
1 9,000 9,080 0.1350 0.1220 0.1285 1 10,000 10,060 0.1755 0.1685 0.1720	1	8,000	8,060	0.1005	0.0840	0.0923	
1 10,000 10,060 0.1755 0.1685 0.1720	1	9,000	9,080	0.1350	0.1220	0.1285	
	1	10,000	10,060	0.1755	0.1685	0.1720	
Unload			U	nload			
1 0 0 0.1285 0.1230 0.1258	1	0	0	0.1285	0.1230	0.1258	
Reload							
1 Max. 10,100 0.2650 0.2760 0.2705	1	Max.	10,100	0.2650	0.2760	0.2705	
Unload			U	nload			
1 0 0 0.2160 0.2275 0.2218	1	0	0	0.2160	0.2275	0.2218	

Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4	
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	500	520	0.0235	0.1490	0.0863	
1	1,000	1,000	0.0780	0.2770	0.1775	
1	1,500	1,500	0.1565	0.4095	0.2830	
1	0	0	0.0195	0.0470	0.0333	
1	500	500	0.0315	0.1750	0.1033	
1	1,000	1,000	0.0880	0.3005	0.1943	
1	1,500	1,500	0.1640	0.4280	0.2960	
1	2,000	2,000	0.2550	0.5555	0.4053	
1	2,500	2,500	0.3715	0.6920	0.5318	
1	0	0	0.0590	0.0995	0.0793	
1	2,500	2,500	0.4070	0.7380	0.5725	
1	3,000	3,000	0.5375	0.8825	0.7100	
1	3,500	3,500	0.6885	1.0420	0.8653	
1	4,000	3,760	0.7850	1.1365	0.9608	
			Unload			
1	0	0	0.1640	0.1735	0.1688	





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-26A
Date/Time Installed:	4/8/21 2:40 PM	Date/Time Tested:	4/21/21 4:20 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	24.85
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	2.76

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.06				
3	1.04				
4	1.92				
5	2.04				
6	2.48				
7	2.74				
8	6.39				
9	7.18				
Total Time (s) =	24.85				

	Tensile Testing					
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,580	0.0085	0.0065	0.0075	
1	3,000	3,000	0.0180	0.0175	0.0178	
1	4,000	4,000	0.0360	0.0355	0.0358	
1	5,000	5,040	0.0620	0.0605	0.0613	
1	6,000	6,080	0.1110	0.1105	0.1108	
1	7,000	7,000	0.1905	0.1900	0.1903	
1	8,000	8,000	0.3600	0.3630	0.3615	
1	9,000	9,000	0.6135	0.6190	0.6163	
1	10,000	9,700	1.0750	1.0785	1.0768	
Unload						
1	0	0	1.0075	1.0085	1.0080	

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0595	0.1100	0.0848		
1	1,000	1,000	0.1235	0.2000	0.1618		
1	1,500	1,500	0.2125	0.3155	0.2640		
1	0	0	0.0405	0.0455	0.0430		
1	500	500	0.1075	0.1770	0.1423		
1	1,000	1,000	0.1620	0.2435	0.2028		
1	1,500	1,500	0.2420	0.3460	0.2940		
1	2,000	2,020	0.3160	0.4315	0.3738		
1	2,500	2,500	0.4345	0.5525	0.4935		
1	0	0	0.0905	0.0780	0.0843		
1	2,500	2,500	0.5525	0.5935	0.5730		
1	3,000	3,020	0.6770	0.7195	0.6983		
1	3,500	3,500	0.8540	0.9120	0.8830		
1	4,000	3,600	0.9725	1.0095	0.9910		
			Unload				
1	0	0	0.1520	0.1490	0.1505		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-26B
Date/Time Installed:	4/8/21 2:45 PM	Date/Time Tested:	4/21/21 4:20 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	33.14
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	3.68

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.63				
3	0.84				
4	3.11				
5	3.09				
6	3.49				
7	3.62				
8	6.46				
9	11.9				
Total Time (s) =	33.14				

	Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0055	0.0110	0.0083		
1	3,000	3,040	0.0105	0.0190	0.0148		
1	4,000	4,080	0.0180	0.0305	0.0243		
1	5,000	5,080	0.0305	0.0460	0.0383		
1	6,000	6,000	0.0505	0.0695	0.0600		
1	7,000	7,080	0.0925	0.1155	0.1040		
1	8,000	8,060	0.1915	0.2180	0.2048		
1	9,000	9,000	0.4075	0.4400	0.4238		
1	10,000	9,800	0.6410	0.6770	0.6590		
		U	nload				
1	0	0	0.5990	0.6050	0.6020		
	Reload						
1	Max.	9,800	0.8085	0.8415	0.8250		
	Unload						
1	0	0	0.7600	0.7735	0.7668		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4		
Hold Time (min)	Target Load (lbs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0750	0.1270	0.1010		
1	1,000	1,000	0.1445	0.2350	0.1898		
1	1,500	1,500	0.2485	0.3685	0.3085		
1	0	0	0.0250	0.0750	0.0500		
1	500	500	0.1185	0.2190	0.1688		
1	1,000	1,000	0.1815	0.2990	0.2403		
1	1,500	1,500	0.2785	0.4145	0.3465		
1	2,000	2,020	0.3680	0.5155	0.4418		
1	2,500	2,500	0.5110	0.6660	0.5885		
1	0	0	0.0635	0.1335	0.0985		
1	2,500	2,500	0.5495	0.7100	0.6298		
1	3,000	3,020	0.7005	0.8695	0.7850		
1	3,500	3,500	0.8805	1.0595	0.9700		
1	4,000	3,600	0.9340	1.1175	1.0258		
			Unload				
1	0	0	0.1445	0.2535	0.1990		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-27A
Date/Time Installed:	4/8/21 3:05 PM	Date/Time Tested:	4/22/21 7:45 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	21.41
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	2.14

Embedmen	t Data
Depth (ft.)	Time (s)
0	0
1	0
2	0.96
3	4.1
4	3.57
5	1.73
6	1.93
7	2.31
8	2.41
9	2.08
10	2.32
Total Time (s) =	21.41

	Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,580	-0.0010	0.0035	0.0013		
1	3,000	3,040	0.0080	0.0105	0.0093		
1	4,000	4,020	0.0140	0.0160	0.0150		
1	5,000	5,060	0.0270	0.0280	0.0275		
1	6,000	6,020	0.0420	0.0420	0.0420		
1	7,000	7,020	0.0725	0.0710	0.0718		
1	8,000	8,000	0.1360	0.1340	0.1350		
1	9,000	8,800	0.1920	0.1885	0.1903		
		U	nload				
1	0	0	0.1480	0.1490	0.1485		
	Reload						
1	Max.	5,000	0.1715	0.1685	0.1700		
		U	nload				
1	0	0	0.1515	0.1445	0.1480		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1120	0.0390	0.0755		
1	1,000	1,000	0.2205	0.1115	0.1660		
1	1,500	1,500	0.3365	0.2030	0.2698		
1	0	0	0.0805	0.0360	0.0583		
1	500	500	0.1530	0.0725	0.1128		
1	1,000	1,000	0.2525	0.1340	0.1933		
1	1,500	1,500	0.3440	0.2065	0.2753		
1	2,000	2,000	0.4500	0.3030	0.3765		
1	2,500	2,500	0.5735	0.4115	0.4925		
1	0	0	0.0860	0.0615	0.0738		
1	2,500	2,500	0.6150	0.4350	0.5250		
1	3,000	3,000	0.7250	0.5310	0.6280		
1	3,500	3,500	0.8620	0.6545	0.7583		
1	4,000	4,000	1.0090	0.7925	0.9008		
			Unload				
1	0	0	0.1470	0.0990	0.1230		
	Reload						
1	Max.	4,220	1.1530	0.9235	1.0383		
	Unioad						
1	0	0	0.1370	0.1160	0.1265		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	РТ-27В
Date/Time Installed:	4/8/21 3:10 PM	Date/Time Tested:	4/22/21 7:45 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	16.72
Pushed to Depth (ft.):	0.8	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	1.67

Embedment Data				
Depth (ft.)	Time (s)			
0	0			
1	0.38			
2	0.72			
3	1.76			
4	2.49			
5	2.15			
6	1.76			
7	1.93			
8	2.11			
9	1.7			
10	1.72			
Total Time (s) =	16.72			

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0,0000	0.0000	0,0000	
1	1 500	1 520	-0.0005	-0.0010	-0.0008	
1	3,000	3,000	0.0005	0.0010	0.0023	
1	4,000	4 040	0.0023	0.0020	0.0023	
1	5,000	5 020	0.0070	0.0035	0.0005	
1	6,000	6,060	0.0260	0.0125	0.0260	
1	7,000	7,060	0.0435	0.0435	0.0435	
1	8.000	8.080	0.0755	0.0760	0.0758	
1	9,000	9,080	0.1360	0.1355	0.1358	
1	10,000	10,040	0.1920	0.1920	0.1920	
I		U	nload			
1	0	0	0.1585	0.1565	0.1575	
•	Reload					
1	Max.	10,280	0.2568	0.2570	0.2569	
		U	nload			
1	0	0	0.2210	0.2200	0.2205	

	Lateral Testing						
Lateral	Load Height	3	Deflection G	auge Height	4		
Above	Grade (ft):		(in):		-		
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (103)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0030	0.1710	0.0870		
1	1,000	1,000	0.0605	0.2950	0.1778		
1	1,500	1,500	0.1355	0.4010	0.2683		
1	0	0	0.0240	0.0585	0.0413		
1	500	500	0.0205	0.1965	0.1085		
1	1,000	1,000	0.0735	0.3100	0.1918		
1	1,500	1,500	0.1360	0.4000	0.2680		
1	2,000	2,000	0.2070	0.4935	0.3503		
1	2,500	2,500	0.2810	0.5900	0.4355		
1	0	0	0.0400	0.0360	0.0380		
1	2,500	2,500	0.2955	0.6100	0.4528		
1	3,000	3,000	0.3670	0.6980	0.5325		
1	3,500	3,500	0.4565	0.8190	0.6378		
1	4,000	4,000	0.5560	0.9585	0.7573		
			Unload				
1	0	0	0.0665	0.0655	0.0660		
	Reload						
1	Max.	4,220	0.6490	1.1020	0.8755		
			Unload				
1	0	0	0.0910	0.0425	0.0668		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-28A
Date/Time Installed:	4/8/21 3:25 PM	Date/Time Tested:	4/22/21 9:05 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	35.4
Pushed to Depth (ft.):	0.9	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	5.06

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0.66				
2	1.06				
3	4.35				
4	5.87				
5	6.98				
6	8.17				
7	8.31				
Total Time (s) =	35.4				

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,540	0.0040	0.0030	0.0035	
1	3,000	3,000	0.0105	0.0110	0.0108	
1	4,000	4,000	0.0265	0.0295	0.0280	
1	5,000	5,000	0.0525	0.0590	0.0558	
1	6,000	6,100	0.0900	0.1000	0.0950	
1	7,000	7,080	0.1370	0.1510	0.1440	
1	8,000	8,080	0.2005	0.2205	0.2105	
1	9,000	9,040	0.2600	0.2825	0.2713	
1	10,000	10,000	0.3160	0.3410	0.3285	
		U	nload			
1	0	0	0.2950	0.2965	0.2958	
	Reload					
1	Max.	10,000	0.3985	0.4290	0.4138	
		U	nload			
1	0	0	0.3735	0.3740	0.3738	

	Lateral Testing						
Lateral	Lateral Load Height		Deflection G	iauge Height	4		
Above	Grade (ft):	5	(in):		4		
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	LOAU (IDS)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0725	0.0505	0.0615		
1	1,000	1,000	0.1630	0.1400	0.1515		
1	1,500	1,500	0.2740	0.2545	0.2643		
1	0	0	0.0925	0.0570	0.0748		
1	500	500	0.1475	0.0750	0.1113		
1	1,000	1,000	0.2160	0.1860	0.2010		
1	1,500	1,500	0.3010	0.2770	0.2890		
1	2,000	2,020	0.4130	0.3900	0.4015		
1	2,500	2,500	0.5390	0.5065	0.5228		
1	0	0	0.1770	0.0680	0.1225		
1	2,500	2,520	0.6200	0.5540	0.5870		
1	3,000	3,000	0.7300	0.6605	0.6953		
1	3,500	3,500	0.8800	0.7860	0.8330		
1	4,000	3,600	0.9155	0.8465	0.8810		
		-	Unload	-			
1	0	0	0.3180	0.0660	0.1920		
	Reload						
1	Max.	3,820	1.0900	0.9950	1.0425		
			Unload				
1	0	0	0.4050	0.0955	0.2503		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-28B
Date/Time Installed:	4/8/21 3:30 PM	Date/Time Tested:	4/22/21 9:05 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	24.6
Pushed to Depth (ft.):	0.9	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	3.51

Embedment Data				
Depth (ft.)	Time (s)			
0	0			
1	0.27			
2	1.05			
3	1.96			
4	3.79			
5	5.16			
6	5.59			
7	6.78			
Total Time (s) =	24.6			

Tensile Testing							
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,560	0.0045	0.0065	0.0055		
1	3,000	3,000	0.0160	0.0140	0.0150		
1	4,000	4,040	0.0350	0.0325	0.0338		
1	5,000	5,080	0.0745	0.0710	0.0728		
1	6,000	6,100	0.1780	0.1775	0.1778		
1	7,000	7,000	0.2825	0.2855	0.2840		
1	8,000	8,000	0.4065	0.4270	0.4168		
1	9,000	9,000	0.5785	0.5970	0.5878		
1	10,000	10,000	0.5955	0.618	0.6068		
		U	nload				
1	0	0	0.5600	0.5620	0.5610		
	Reload						
1	Max.	9,260	1.2460	1.2740	1.2600		
		U	nload				
1	0	0	1.1925	1.1945	1.1935		

	Lateral Testing						
Lateral	Load Height	2	Deflection Gauge Height		4		
Above	Grade (ft):	5	(in):		4		
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	Luau (IDS)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1345	0.0040	0.0693		
1	1,000	1,000	0.2855	0.0735	0.1795		
1	1,500	1,500	0.4130	0.1665	0.2898		
1	0	0	0.1065	0.0455	0.0760		
1	500	500	0.2180	0.0625	0.1403		
1	1,000	1,000	0.3280	0.1145	0.2213		
1	1,500	1,500	0.4300	0.1860	0.3080		
1	2,000	2,020	0.5310	0.2735	0.4023		
1	2,500	2,500	0.6270	0.3660	0.4965		
1	0	0	0.1240	0.1030	0.1135		
1	2,500	2,520	0.6750	0.4135	0.5443		
1	3,000	3,000	0.7690	0.5045	0.6368		
1	3,500	3,500	0.8895	0.6320	0.7608		
1	4,000	3,600	0.9155	0.7530	0.8343		
			Unload				
1	0	0	0.4750	0.1845	0.3298		
	Reload						
1	Max.	3,820	1.0600	0.7930	0.9265		
		-	Unload				
1	0	0	0.1640	0.2345	0.1993		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-29A
Date/Time Installed:	4/8/21 4:00 PM	Date/Time Tested:	4/17/21 2:15 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	55.13
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	8.00	Avg. Installation Rate (sec/ft)	6.89

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.38				
3	2.95				
4	5.9				
5	7.5				
6	8.51				
7	13.92				
8	14.97				
Total Time (s) =	55.13				

Tensile Testing							
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0005	0.0070	0.0038		
1	3,000	3,040	0.0610	0.0825	0.0718		
1	4,000	4,040	0.2235	0.2445	0.2340		
1	5,000	5,080	0.4210	0.4380	0.4295		
1	6,000	6,000	0.8260	0.8415	0.8338		
1	7,000	6,080	1.0010	1.0175	1.0093		
Unload							
1	0	0	0.9505	0.9565	0.9535		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0650	0.0860	0.0755		
1	1,000	1,000	0.1685	0.1915	0.1800		
1	1,500	1,500	0.2975	0.3140	0.3058		
1	0	0	0.0135	0.0530	0.0333		
1	500	500	0.0940	0.1410	0.1175		
1	1,000	1,000	0.1915	0.2295	0.2105		
1	1,500	1,500	0.3065	0.3320	0.3193		
1	2,000	2,000	0.4345	0.4460	0.4403		
1	2,500	2,500	0.5755	0.5825	0.5790		
1	0	0	0.0525	0.1330	0.0928		
1	2,500	2,500	0.6010	0.6245	0.6128		
1	3,000	3,000	0.7350	0.7530	0.7440		
1	3,500	3,500	0.8855	0.8980	0.8918		
1	4,000	3,820	1.0010	1.0075	1.0043		
			Unload				
1	0	0	0.1140	0.2545	0.1843		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-29B
Date/Time Installed:	4/8/21 4:00 PM	Date/Time Tested:	4/17/21 1:55 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	33.75
Pushed to Depth (ft.):	0.8	Embedment Depth (ft.):	8.00	Avg. Installation Rate (sec/ft)	4.22

Embedment Data						
Depth (ft.)	Time (s)					
0	0					
1	0.58					
2	1.05					
3	1.56					
4	4.67					
5	4.22					
6	6.84					
7	7.66					
8	7.17					
Total Time (s) =	33.75					

Hold Time (min) Target Load (ls) Deflection 1 (m) Deflection 2 (m) Average (m) 1 0 0 0.0000 0.0000 0.0000 1 0 0 0.0000 0.0000 0.0000 1 1,500 1,500 0.0080 0.0010 0.0045 1 3,000 3,020 0.0240 0.0055 0.0163 1 4,000 4,060 0.0400 0.0250 0.0325 1 4,000 5,080 0.0660 0.0535 0.0598 1 5,000 5,080 0.1235 0.1140 0.1188 1 6,000 7,060 0.1330 0.2955 0.2993 1 8,000 8,040 0.3030 0.2955 0.5703 1 9,000 9,560 1.0170 1.0085 1.0128 1 10,000 9,560 1.0170 1.0855 0.9555	Tensile Testing						
1 0 0 0.0000 0.0000 0.0000 1 1,500 1,500 0.080 0.0010 0.0045 1 3,000 3,020 0.0240 0.0085 0.0163 1 4,000 4,060 0.0400 0.0250 0.0325 1 5,000 5,080 0.0660 0.0535 0.0598 1 6,000 6,040 0.1235 0.1140 0.1188 1 7,000 7,060 0.1930 0.1840 0.1885 1 8,000 8,040 0.3030 0.2955 0.2993 1 9,000 9,560 1.0170 1.0085 1.0128 Unload Unload	Hold Time (min)	Target Load (lbs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1 1,500 1,500 0.0080 0.0010 0.0045 1 3,000 3,020 0.0240 0.0085 0.0163 1 4,000 4,060 0.0400 0.0250 0.0325 1 5,000 5,080 0.0660 0.0535 0.0598 1 6,000 6,040 0.1235 0.1140 0.1188 1 7,000 7,060 0.1930 0.1840 0.1885 1 8,000 8,040 0.3030 0.2955 0.2993 1 9,000 9,560 1.0170 1.0085 1.0128 1 10,000 9,560 1.0170 1.0085 1.0128 Ubut 1 0 0 0.9545 0.9565 0.9555	1	0	0	0.0000	0.0000	0.0000	
1 3,000 3,020 0.0240 0.0085 0.0163 1 4,000 4,060 0.0400 0.0250 0.0325 1 5,000 5,080 0.0660 0.0535 0.0598 1 6,000 6,040 0.1235 0.1140 0.1188 1 7,000 7,060 0.1930 0.1840 0.1885 1 8,000 8,040 0.3030 0.2955 0.2993 1 9,000 9,060 0.5735 0.5670 0.5703 1 10,000 9,560 1.0170 1.0085 1.0128 UNUCAU 1 0 0 0.9545 0.9565 0.9555	1	1,500	1,500	0.0080	0.0010	0.0045	
1 4,000 4,060 0.0400 0.0250 0.0325 1 5,000 5,080 0.0660 0.0535 0.0598 1 6,000 6,040 0.1235 0.1140 0.1188 1 7,000 7,060 0.1930 0.1840 0.1885 1 8,000 8,040 0.3030 0.2955 0.2993 1 9,000 9,060 0.5735 0.5670 0.5703 1 10,000 9,560 1.0170 1.0085 1.0128 UNUCAT 1 0 0 0.9545 0.9565 0.9555	1	3,000	3,020	0.0240	0.0085	0.0163	
1 5,000 5,080 0.0660 0.0535 0.0598 1 6,000 6,040 0.1235 0.1140 0.1188 1 7,000 7,060 0.1930 0.1840 0.1885 1 8,000 8,040 0.3030 0.2955 0.2993 1 9,000 9,060 0.5735 0.5670 0.5703 1 10,000 9,560 1.0170 1.0085 1.0128 UNIDAM 1 1 0 0 0.9545 0.9565 0.95555	1	4,000	4,060	0.0400	0.0250	0.0325	
1 6,000 6,040 0.1235 0.1140 0.1188 1 7,000 7,060 0.1930 0.1840 0.1885 1 8,000 8,040 0.3030 0.2955 0.2993 1 9,000 9,060 0.5735 0.5670 0.5703 1 10,000 9,560 1.0170 1.0085 1.0128 UNIOR 1 0 0 0.9545 0.9565 0.9555	1	5,000	5,080	0.0660	0.0535	0.0598	
1 7,000 7,060 0.1930 0.1840 0.1885 1 8,000 8,040 0.3030 0.2955 0.2993 1 9,000 9,060 0.5735 0.5670 0.5703 1 10,000 9,560 1.0170 1.0085 1.0128 Unload 1 0 0 0.9545 0.9565 0.95555	1	6,000	6,040	0.1235	0.1140	0.1188	
1 8,000 8,040 0.3030 0.2955 0.2993 1 9,000 9,060 0.5735 0.5670 0.5703 1 10,000 9,560 1.0170 1.0085 1.0128 Unload 1 0 0 0.9545 0.9565 0.9555	1	7,000	7,060	0.1930	0.1840	0.1885	
1 9,000 9,060 0.5735 0.5670 0.5703 1 10,000 9,560 1.0170 1.0085 1.0128 Unload 1 0 0 0.9545 0.9565 0.9555	1	8,000	8,040	0.3030	0.2955	0.2993	
1 10,000 9,560 1.0170 1.0085 1.0128 Unload 1 0 0 0.9545 0.9565 0.9555	1	9,000	9,060	0.5735	0.5670	0.5703	
Unload 1 0 0.9545 0.9565 0.9555	1	10,000	9,560	1.0170	1.0085	1.0128	
1 0 0 0.9545 0.9565 0.9555	Unload						
	1	0	0	0.9545	0.9565	0.9555	

Lateral Testing						
Lateral I Above	Load Height Grade (ft):	3	Deflection Gauge Height (in):		4	
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	500	500	0.0410	0.1350	0.0880	
1	1,000	1,000	0.1190	0.2590	0.1890	
1	1,500	1,500	0.2155	0.3790	0.2973	
1	0	0	0.0415	0.0160	0.0288	
1	500	500	0.0695	0.1695	0.1195	
1	1,000	1,000	0.1370	0.2795	0.2083	
1	1,500	1,500	0.2210	0.3900	0.3055	
1	2,000	2,000	0.3135	0.4960	0.4048	
1	2,500	2,500	0.4255	0.6075	0.5165	
1	0	0	0.0710	0.0605	0.0658	
1	2,500	2,500	0.4500	0.6360	0.5430	
1	3,000	3,000	0.5650	0.7475	0.6563	
1	3,500	3,500	0.7075	0.8745	0.7910	
1	4,000	4,000	0.8950	1.0300	0.9625	
			Unload			
1	0	0	0.1775	0.0970	0.1373	
Reload						
1	Max.	3,840	0.9480	1.0625	1.0053	
Unload						
1	0	0	0.2455	0.1225	0.1840	





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-30A
Date/Time Installed:	4/12/21 10:55 AM	Date/Time Tested:	4/22/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	54.64
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	6.07

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.02				
3	2.02				
4	5.08				
5	6.61				
6	8.37				
7	9.75				
8	11.92				
9	9.87				
Total Time (s) =	54.64				

Tensile Testing					
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)
1	0	0	0.0000	0.0000	0.0000
1	1,500	1,500	0.0005	0.0090	0.0048
1	3,000	3,000	0.0000	0.0000	0.0000
1	4,000	4,000	0.0025	0.0000	0.0013
1	5,000	5,000	0.0105	0.0000	0.0053
1	6,000	6,000	0.0185	0.0000	0.0093
1	7,000	7,000	0.0270	0.0045	0.0158
1	8,000	8,000	0.0385	0.0085	0.0235
1	9,000	9,100	0.0510	0.0140	0.0325
1	10,000	10,000	0.0645	0.0230	0.0438
		U	nload		
1	0	0	0.0125	0.0210	0.0168
		R	eload		
1	Max.	10,000	0.0680	0.0235	0.0458
		U	nload	-	
1	0	0	0.0125	0.0150	0.0138

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4		
Hold Time (min)	Target Load (lbs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1040	0.0860	0.0950		
1	1,000	1,000	0.1970	0.1710	0.1840		
1	1,500	1,500	0.2840	0.2650	0.2745		
1	0	0	0.0550	0.0660	0.0605		
1	500	560	0.1500	0.1455	0.1478		
1	1,000	1,000	0.2270	0.2195	0.2233		
1	1,500	1,500	0.2965	0.2990	0.2978		
1	2,000	2,000	0.3790	0.3955	0.3873		
1	2,500	2,500	0.4750	0.5085	0.4918		
1	0	0	0.0820	0.1045	0.0933		
1	2,500	2,500	0.5190	0.5600	0.5395		
1	3,000	3,000	0.6250	0.6845	0.6548		
1	3,500	3,500	0.7490	0.8270	0.7880		
1	4,000	3,660	0.7875	0.8680	0.8278		
			Unload				
1	0	0	0.0920	0.1520	0.1220		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-30B
Date/Time Installed:	4/12/21 11:00 AM	Date/Time Tested:	4/22/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	53.82
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	5.98

Embedment Data				
Depth (ft.)	Time (s)			
0	0			
1	0			
2	1.05			
3	1.06			
4	3.72			
5	5.8			
6	9.1			
7	10.02			
8	12.35			
9	10.72			
Total Time (s) =	53.82			

Tensile Testing					
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)
1	0	0	0.0000	0.0000	0.0000
1	1,500	1,500	0.0010	0.0030	0.0020
1	3,000	3,000	-0.0090	0.0130	0.0020
1	4,000	4,000	-0.0260	0.0310	0.0025
1	5,000	5,000	-0.0415	0.0520	0.0053
1	6,000	6,000	-0.0560	0.0690	0.0065
		U	nload		
1	0	0	-0.0035	0.0040	0.0003
Reload					
1	Max.	8800	-0.5585	0.0830	-0.2378
Unload					
1	0	0	-0.0045	0.0065	0.0010

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1660	0.1350	0.1505		
1	1,000	1,000	0.3115	0.2985	0.3050		
1	1,500	1,500	0.4425	0.4490	0.4458		
1	0	0	0.0750	0.0695	0.0723		
1	500	560	0.2130	0.1930	0.2030		
1	1,000	1,000	0.3430	0.3380	0.3405		
1	1,500	1,500	0.4625	0.4620	0.4623		
1	2,000	2,000	0.5845	0.5910	0.5878		
1	2,500	2,500	0.7095	0.7250	0.7173		
1	0	0	0.0900	0.1015	0.0958		
1	2,500	2,500	0.7400	0.7510	0.7455		
1	3,000	3,000	0.8640	0.8860	0.8750		
1	3,500	3,500	0.9850	1.0195	1.0023		
1	4,000	3,660	1.0140	1.0495	1.0318		
			Unload				
1	0	0	0.0660	0.1160	0.0910		



Footing failure during initial uplift test.



Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-31A
Date/Time Installed:	4/12/21 11:10 AM	Date/Time Tested:	4/22/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	24.18
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	3.45

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.55				
3	2.06				
4	4.44				
5	5.9				
6	5.3				
7	4.93				
Total Time (s) =	24.18				

Tensile Testing							
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0085	0.0290	0.0188		
1	3,000	3,000	0.0410	0.0280	0.0345		
1	4,000	4,060	0.0930	0.0105	0.0518		
1	5,000	5,000	0.1075	0.1065	0.1070		
1	6,000	6,000	0.4520	0.3420	0.3970		
1	7,000	7,000	0.8195	0.6905	0.7550		
1	8,000	7,200	1.1575	1.0285	1.0930		
	Unload						
1	0	0	1.0515	1.0155	1.0335		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0545	0.0695	0.0620		
1	1,000	1,000	0.1710	0.1455	0.1583		
1	1,500	1,500	0.3155	0.2535	0.2845		
1	0	0	0.1860	0.0455	0.1158		
1	500	600	0.2380	0.0705	0.1543		
1	1,000	1,040	0.2830	0.1380	0.2105		
1	1,500	1,500	0.3585	0.2330	0.2958		
1	2,000	2,000	0.4895	0.3595	0.4245		
1	2,500	2,500	0.7025	0.5275	0.6150		
1	0	0	0.4825	0.0970	0.2898		
1	2,500	2,500	0.8395	0.5415	0.6905		
1	3,000	3,000	1.0490	0.6965	0.8728		
1	3,500	3,480	1.2770	0.8510	1.0640		
Unload							
1	0	0	0.0970	0.0805	0.0888		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-31B
Date/Time Installed:	4/12/21 11:15 AM	Date/Time Tested:	4/22/2021	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	27.09
Pushed to Depth (ft.):	1.3	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	3.87

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.85				
3	2.08				
4	2.57				
5	8.91				
6	6.83				
7	5.85				
Total Time (s) =	27.09				

	Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0345	-0.0035	0.0155		
1	3,000	3,000	0.0410	-0.0060	0.0175		
1	4,000	4,000	0.0435	-0.0045	0.0195		
1	5,000	5,000	0.0455	-0.0020	0.0218		
1	6,000	6,000	0.0485	0.0035	0.0260		
1	7,000	7,000	0.0530	0.0125	0.0328		
1	8,000	8,000	0.0575	0.0210	0.0393		
1	9,000	9,000	0.0660	0.0345	0.0503		
1	10,000	10,000	0.0785	0.0515	0.0650		
		U	nload				
1	0	0	0.0630	0.0320	0.0475		
		R	eload				
1	Max.	10,000	0.0890	0.0545	0.0718		
	Unload						
1	0	0	0.0665	0.0375	0.0520		

	Lateral Testing						
Lateral I Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0985	0.0510	0.0748		
1	1,000	1,000	0.1990	0.1225	0.1608		
1	1,500	1,500	0.3020	0.2000	0.2510		
1	0	0	0.0615	0.0340	0.0478		
1	500	600	0.1705	0.1065	0.1385		
1	1,000	1,040	0.2300	0.1490	0.1895		
1	1,500	1,500	0.3645	0.2025	0.2835		
1	2,000	2,000	0.4000	0.2750	0.3375		
1	2,500	2,500	0.5240	0.3720	0.4480		
1	0	0	0.1115	0.0730	0.0923		
1	2,500	2,500	0.5565	0.4000	0.4783		
1	3,000	3,000	0.6730	0.5000	0.5865		
1	3,500	3,480	0.7885	0.6025	0.6955		
			Unload				
1	0	0	0.9880	0.3105	0.6493		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-32A
Date/Time Installed:	4/12/21 10:25 AM	Date/Time Tested:	4/22/21 11:00 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	91.69
Pushed to Depth (ft.):	1.4	Embedment Depth (ft.):	11.00	Avg. Installation Rate (sec/ft)	8.34

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.92				
3	1.97				
4	4.02				
5	4.85				
6	6.83				
7	8.41				
8	9.87				
9	12.84				
10	16.81				
11	25.17				
Total Time (s) =	91.69				

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0060	-0.0075	-0.0008	
1	3,000	3,000	0.0125	-0.0110	0.0008	
1	4,000	4,000	0.0160	-0.0120	0.0020	
1	5,000	5,000	0.0195	-0.0115	0.0040	
1	6,000	6,000	0.0235	-0.0110	0.0063	
1	7,000	7,000	0.0260	-0.0105	0.0078	
1	8,000	8,000	0.0305	-0.0090	0.0108	
1	9,000	9,000	0.0350	-0.0085	0.0133	
1	10,000	10,000	0.0400	-0.0065	0.0168	
		U	nload			
1	0	0	0.0100	-0.0035	0.0033	
		R	eload			
1	Max.	10,000	0.0450	-0.0050	0.0200	
		U	nload			
1	0	0	0.0125	0.0050	0.0088	

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0735	0.1040	0.0888		
1	1,000	1,000	0.1790	0.2250	0.2020		
1	1,500	1,500	0.2860	0.2475	0.2668		
1	0	0	0.0640	0.0755	0.0698		
1	500	520	0.1360	0.1730	0.1545		
1	1,000	1,000	0.2225	0.2750	0.2488		
1	1,500	1,500	0.3130	0.3770	0.3450		
1	2,000	2,000	0.4290	0.5060	0.4675		
1	2,500	2,500	0.5615	0.6540	0.6078		
1	0	0	0.1310	0.1350	0.1330		
1	2,500	2,500	0.5960	0.6935	0.6448		
1	3,000	3,000	0.7260	0.8335	0.7798		
1	3,500	3,500	0.8945	1.0110	0.9528		
1	4,000	3,700	0.9525	1.0705	1.0115		
			Unload				
1	0	0	0.1750	0.1620	0.1685		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-32B
Date/Time Installed:	4/12/21 10:35 AM	Date/Time Tested:	4/22/21 11:00 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	54.01
Pushed to Depth (ft.):	1.2	Embedment Depth (ft.):	10.40	Avg. Installation Rate (sec/ft)	5.19

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.93				
3	4.01				
4	2.75				
5	4.52				
6	6.36				
7	6.77				
8	7.59				
9	10.38				
10.4	10.7				
Total Time (s) =	54.01				

Tensile Testing						
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average	
(min)	(lbs)	Load (IDS)	(in.)	(in.)	Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,580	0.0025	-0.0050	-0.0013	
1	3,000	3,040	0.0090	0.0030	0.0060	
1	4,000	4,000	0.0195	0.0080	0.0138	
1	5,000	5,000	0.0310	0.0160	0.0235	
		U	nload			
1	0	0	0.0060	0.0060	0.0060	
Reload						
1	Max.	4,020	0.0290	0.0150	0.0220	
Unload						
1	0	0	0.0070	0.0075	0.0073	

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0955	0.0675	0.0815		
1	1,000	1,000	0.2025	0.1490	0.1758		
1	1,500	1,500	0.3110	0.1955	0.2533		
1	0	0	0.0735	0.0435	0.0585		
1	500	500	0.1545	0.1035	0.1290		
1	1,000	1,000	0.2475	0.1800	0.2138		
1	1,500	1,500	0.3445	0.2400	0.2923		
1	2,000	2,000	0.4770	0.2510	0.3640		
1	2,500	2,500	0.6480	0.2510	0.4495		
1	0	0	0.1620	0.0975	0.1298		
1	2,500	2,500	0.7065	0.3080	0.5073		
1	3,000	3,000	0.8720	0.7010	0.7865		
1	3,500	3,500	1.1120	0.9595	1.0358		
			Unload				
1	0	0	0.2695	0.1490	0.2093		



REFUSAL at 10.4 feet BGS



Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-33A
Date/Time Installed:	4/12/21 10:05 AM	Date/Time Tested:	4/22/21 11:00 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	32.45
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	4.64

Ever harden and	L Data
Embedmen	t Data
Depth (ft.)	Time (s)
0	0
1	0
2	1.69
3	2.81
4	4.7
5	6.24
6	8.46
7	8.55
Total Time (s) =	32.45

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0035	-0.0010	0.0013	
1	3,000	3,000	0.0110	0.0055	0.0083	
1	4,000	4,000	0.0235	0.0170	0.0203	
1	5,000	5,000	0.0465	0.0305	0.0385	
1	6,000	6,000	0.0795	0.0705	0.0750	
1	7,000	7,000	0.1330	0.1220	0.1275	
1	8,000	8,000	0.1875	0.1750	0.1813	
1	9,000	9,000	0.2505	0.2420	0.2463	
1	10,000	10,000	0.3550	0.3370	0.3460	
		U	nload			
1	0	0	0.2975	0.2925	0.2950	
	Reload					
1	Max.	10,000	0.4865	0.4660	0.4763	
		U	nload			
1	0	0	0.4275	0.4185	0.4230	

Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4	
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	500	500	0.0705	0.0620	0.0663	
1	1,000	1,000	0.1700	0.1300	0.1500	
1	1,500	1,500	0.2770	0.2230	0.2500	
1	0	0	0.0525	0.0605	0.0565	
1	500	500	0.1235	0.0985	0.1110	
1	1,000	1,080	0.2195	0.1685	0.1940	
1	1,500	1,500	0.2940	0.2345	0.2643	
1	2,000	2,020	0.3980	0.3270	0.3625	
1	2,500	2,500	0.5270	0.4420	0.4845	
1	0	0	0.1065	0.1050	0.1058	
1	2,500	2,500	0.5580	0.4675	0.5128	
1	3,000	3,000	0.6770	0.5705	0.6238	
1	3,500	3,500	0.8250	0.7045	0.7648	
1	4,000	3,780	0.8975	0.7695	0.8335	
			Unload			
1	0	0	0.1770	0.1585	0.1678	





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-33B
Date/Time Installed:	4/12/21 10:15 AM	Date/Time Tested:	4/22/21 11:00 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	21.24
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	7.00	Avg. Installation Rate (sec/ft)	3.03

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.07				
3	3.42				
4	3.2				
5	3.87				
6	3.22				
7	6.46				
Total Time (s) =	21.24				

	Tensile Testing						
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	Luau (IDS)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	-0.0045	0.0020	-0.0013		
1	3,000	3,000	-0.0060	-0.0025	-0.0043		
1	4,000	4,000	-0.0060	-0.0015	-0.0038		
1	5,000	5,000	-0.0050	0.0005	-0.0023		
1	6,000	5,900	0.0000	0.0085	0.0043		
		U	nload				
1	0	0	0.0040	0.0380	0.0210		
Reload							
1	Max.	10,000	0.5235	0.5260	0.5248		
Unload							
1	0	0	0.5140	0.5060	0.5100		
		-			-		

	Lateral Testing						
Lateral I Above	Load Height Grade (ft):	3	Deflection Gauge Height (in):		4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0690	0.0600	0.0645		
1	1,000	1,000	0.1610	0.1350	0.1480		
1	1,500	1,500	0.2640	0.2340	0.2490		
1	0	0	0.0750	0.0105	0.0428		
1	500	500	0.1220	0.0770	0.0995		
1	1,000	1,080	0.2110	0.1670	0.1890		
1	1,500	1,500	0.2835	0.2405	0.2620		
1	2,000	2,020	0.3935	0.3535	0.3735		
1	2,500	2,500	0.5360	0.5000	0.5180		
1	0	0	0.1510	0.0680	0.1095		
1	2,500	2,500	0.5850	0.5580	0.5715		
1	3,000	3,000	0.7250	0.7075	0.7163		
1	3,500	3,500	0.9235	0.9180	0.9208		
1	4,000	3,780	1.0210	1.0150	1.0180		
			Unload				
1	0	0	0.2055	0.1675	0.1865		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-34A
Date/Time Installed:	4/12/21 8:55 AM	Date/Time Tested:	4/23/21 9:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	87.16
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	9.68

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	1.76				
3	3.21				
4	5.5				
5	9.18				
6	12.17				
7	14.61				
8	17.83				
9	22.9				
Total Time (s) =	87.16				

	Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0150	-0.0025	0.0063		
1	3,000	3,000	0.0250	-0.0065	0.0093		
1	4,000	4,000	0.0295	-0.0080	0.0108		
1	5,000	5,000	0.0355	-0.0085	0.0135		
1	6,000	6,000	0.0420	-0.0095	0.0163		
1	7,000	7,000	0.0500	-0.0105	0.0198		
1	8,000	8,000	0.0560	-0.0120	0.0220		
		U	Inload				
1	0	0	0.0140	0.0080	0.0110		
Reload							
1	Max.	9,700	0.0720	-0.0095	0.0313		
		U	Inload				
1	0	0	0.0210	0.0120	0.0165		

	Lateral Testing					
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	iauge Height 1):	4	
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	500	500	0.0820	0.0660	0.0740	
1	1,000	1,000	0.1955	0.1585	0.1770	
1	1,500	1,520	0.3090	0.2505	0.2798	
1	0	0	0.0290	0.0710	0.0500	
1	500	500	0.1250	0.1360	0.1305	
1	1,000	1,000	0.2305	0.2075	0.2190	
1	1,500	1,540	0.3275	0.2805	0.3040	
1	2,000	2,040	0.4485	0.3770	0.4128	
1	2,500	2,500	0.5545	0.4640	0.5093	
1	0	0	0.0615	0.1270	0.0943	
1	2,500	2,500	0.5820	0.4980	0.5400	
1	3,000	3,000	0.6985	0.5955	0.6470	
1	3,500	3,520	0.8325	0.7070	0.7698	
1	4,000	4,000	0.9835	0.8285	0.9060	
			Unload			
1	0	0	0.1075	0.1915	0.1495	
Reload						
1	Max.	4,100	0.9505	0.8225	0.8865	
Unload						
1	0	0	0.0325	0.1530	0.0928	



Footing failure during uplift.



Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-34B
Date/Time Installed:	4/12/21 9:00 AM	Date/Time Tested:	4/23/21 9:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	80.87
Pushed to Depth (ft.):	1	Embedment Depth (ft.):	9.00	Avg. Installation Rate (sec/ft)	8.99

Embedmen	t Data
Depth (ft.)	Time (s)
0	0
1	0
2	1.17
3	4.06
4	7.14
5	9.11
6	10.68
7	8.87
8	17.09
9	22.75
Total Time (s) =	80.87

	Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	-0.0040	0.0065	0.0013		
1	3,000	3,100	-0.0060	0.0150	0.0045		
1	4,000	4,000	-0.0050	0.0200	0.0075		
1	5,000	5,000	-0.0045	0.0250	0.0103		
1	6,000	6,000	-0.0035	0.0305	0.0135		
1	7,000	7,000	-0.0030	0.0355	0.0163		
1	8,000	8,000	-0.0015	0.0420	0.0203		
1	9,000	9,000	-0.0025	0.0500	0.0238		
1	10,000	10,000	-0.0030	0.0630	0.0300		
		U	Inload				
1	0	0	0.0085	0.0105	0.0095		
	Reload						
1	Max.	10,000	0.0000	0.0640	0.0320		
	Unload						
1	0	0	0.0110	0.0110	0.0110		

	Lateral Testing						
Lateral	Load Height	з	Deflection Gauge Height		Λ		
Above	Grade (ft):	3	(in):				
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (103)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0930	0.1270	0.1100		
1	1,000	1,000	0.2255	0.2565	0.2410		
1	1,500	1,520	0.3445	0.3770	0.3608		
1	0	0	0.0540	0.0335	0.0438		
1	500	500	0.1510	0.1705	0.1608		
1	1,000	1,000	0.2650	0.2925	0.2788		
1	1,500	1,540	0.3660	0.3980	0.3820		
1	2,000	2,040	0.4840	0.5120	0.4980		
1	2,500	2,500	0.5845	0.6020	0.5933		
1	0	0	0.1015	0.0585	0.0800		
1	2,500	2,500	0.6100	0.6120	0.6110		
1	3,000	3,000	0.7180	0.7105	0.7143		
1	3,500	3,520	0.8375	0.8200	0.8288		
1	4,000	4,000	0.9640	0.9580	0.9610		
			Unload				
1	0	0	0.1620	0.0970	0.1295		
			Reload				
1	Max.	4,100	1.0120	1.0150	1.0135		
			Unload				
1	0	0	0.1210	0.0330	0.0770		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-35A
Date/Time Installed:	4/12/21 8:40 AM	Date/Time Tested:	4/23/21 8:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	36.6
Pushed to Depth (ft.):	1.8	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	3.66

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.2				
3	1.47				
4	2.32				
5	2.26				
6	2.44				
7	2.93				
8	3.72				
9	3.76				
10	17.5				
Total Time (s) =	36.6				

	Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0005	0.0060	0.0033		
1	3,000	3,000	-0.0035	0.0105	0.0035		
1	4,000	4,000	-0.0040	0.0130	0.0045		
1	5,000	5,000	-0.0040	0.0160	0.0060		
1	6,000	6,000	-0.0040	0.0220	0.0090		
1	7,000	7,000	-0.0040	0.0325	0.0143		
1	8,000	8,000	-0.0040	0.0500	0.0230		
1	9,000	8,500	-0.0040	0.0580	0.0270		
		U	Inload				
1	0	0	-0.0040	0.0325	0.0143		
	Reload						
1	Max.	8,300	-0.0040	0.0605	0.0283		
		U	Inload				
1	0	0	0.0305	0.0365	0.0335		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0695	0.1305	0.1000		
1	1,000	1,000	0.1645	0.2435	0.2040		
1	1,500	1,500	0.2860	0.3770	0.3315		
1	0	0	0.0690	0.0625	0.0658		
1	500	500	0.1405	0.1845	0.1625		
1	1,000	1,000	0.2160	0.2875	0.2518		
1	1,500	1,500	0.3130	0.3975	0.3553		
1	2,000	2,000	0.4360	0.5260	0.4810		
1	2,500	2,500	0.5690	0.6660	0.6175		
1	0	0	0.1200	0.0970	0.1085		
1	2,500	2,500	0.6265	0.7265	0.6765		
1	3,000	3,000	0.7540	0.8600	0.8070		
1	3,500	3,500	0.9160	1.0360	0.9760		
1	4,000	3,660	0.9930	1.1175	1.0553		
			Unload				
1	0	0	0.162	0.121	0.1415		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-35B
Date/Time Installed:	4/12/21 8:45 AM	Date/Time Tested:	4/23/21 8:30 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	36.08
Pushed to Depth (ft.):	1.8	Embedment Depth (ft.):	10.00	Avg. Installation Rate (sec/ft)	3.61

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0				
2	0.52				
3	1.91				
4	3.68				
5	4.16				
6	4.89				
7	3.63				
8	4.68				
9	6.99				
10	5.62				
Total Time (s) =	36.08				

	Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	-0.0045	0.0170	0.0063		
1	3,000	3,000	-0.0060	0.0250	0.0095		
1	4,000	4,000	-0.0030	0.0290	0.0130		
1	5,000	5,000	0.0015	0.0330	0.0173		
1	6,000	6,000	0.0110	0.0390	0.0250		
1	7,000	7,000	0.0240	0.0445	0.0343		
1	8,000	8,000	0.0440	0.0545	0.0493		
1	9,000	9,000	0.0665	0.0675	0.0670		
		U	Inload				
1	0	0	0.0490	0.0475	0.0483		
	Reload						
1	Max.	9,100	0.0885	0.0860	0.0873		
		U	Inload				
1	0	0	0.0640	0.0605	0.0623		

	Lateral Testing						
Lateral Above	Load Height Grade (ft):	3	Deflection G (ir	auge Height 1):	4		
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1315	0.0815	0.1065		
1	1,000	1,000	0.2445	0.1695	0.2070		
1	1,500	1,500	0.3580	0.2695	0.3138		
1	0	0	0.0915	0.0450	0.0683		
1	500	500	0.1865	0.1135	0.1500		
1	1,000	1,000	0.2795	0.1910	0.2353		
1	1,500	1,500	0.3800	0.2790	0.3295		
1	2,000	2,000	0.4955	0.3735	0.4345		
1	2,500	2,500	0.6215	0.4790	0.5503		
1	0	0	0.1315	0.0715	0.1015		
1	2,500	2,500	0.6640	0.5100	0.5870		
1	3,000	3,000	0.7825	0.6155	0.6990		
1	3,500	3,500	0.9290	0.7490	0.8390		
1	4,000	3,660	0.9915	0.8075	0.8995		
			Unload				
1	0	0	0.1610	0.0955	0.1283		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-36A
Date/Time Installed:	4/10/21 3:55 PM	Date/Time Tested:	4/23/21 10:45 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	23
Pushed to Depth (ft.):	0.5	Embedment Depth (ft.):	8.00	Avg. Installation Rate (sec/ft)	2.88

Embedmen	t Data
Depth (ft.)	Time (s)
0	0
1	0.77
2	1.23
3	1.49
4	2.67
5	3.59
6	4.18
7	4.11
8	4.96
Total Time (s) =	23

Hold Time T	Target Load		Deflection 1		
()	(ibs)	Load (lbs)	(in.)	Deflection 2 (in.)	Average Deflection (in.)
1	0	0	0.0000	0.0000	0.0000
1	1,500	1,500	-0.0170	0.0160	-0.0005
1	3,000	3,000	-0.0215	0.0290	0.0038
1	4,000	4,000	-0.0225	0.0420	0.0098
1	5,000	5,000	-0.0175	0.0545	0.0185
1	6,000	6,000	-0.0120	0.0680	0.0280
1	7,000	7,000	0.0035	0.0950	0.0493
1	8,000	8,000	0.0280	0.1360	0.0820
1	9,000	9,000	0.0540	0.1740	0.1140
1	10,000	10,000	0.1010	0.2325	0.1668
		U	nload		
1	0	0	0.1250	0.1620	0.1435
		R	eload		
1	Max.	10,000	0.1285	0.2590	0.1938
		U	nload		
1	0	0	0.1515	0.184	0.1678

	Lateral Testing						
Lateral	Load Height	2	Deflection G	auge Height	4		
Above	Grade (ft):	5	(ir	ו):	4		
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	Luau (IDS)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0650	0.0900	0.0775		
1	1,000	1,000	0.1470	0.1850	0.1660		
1	1,500	1,500	0.2460	0.2828	0.2644		
1	0	0	0.0520	0.0610	0.0565		
1	500	500	0.1165	0.1530	0.1348		
1	1,000	1,000	0.1820	0.2260	0.2040		
1	1,500	1,500	0.2605	0.3030	0.2818		
1	2,000	2,000	0.3540	0.3940	0.3740		
1	2,500	2,500	0.4750	0.5080	0.4915		
1	0	0	0.0820	0.0950	0.0885		
1	2,500	2,500	0.5120	0.5340	0.5230		
1	3,000	3,000	0.6150	0.6330	0.6240		
1	3,500	3,500	0.7590	0.7660	0.7625		
1	4,000	4,000	0.8900	0.8835	0.8868		
		-	Unload				
1	0	0	0.1850	0.1880	0.1865		
	Reload						
1	Max.	4,320	1.0290	1.0095	1.0193		
			Unload				
1	0	0	0.1340	0.1545	0.1443		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-36B
Date/Time Installed:	4/10/21 4:00 PM	Date/Time Tested:	4/23/21 10:45 AM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	29.08
Pushed to Depth (ft.):	0.8	Embedment Depth (ft.):	8.00	Avg. Installation Rate (sec/ft)	3.64

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	0.7				
2	1.09				
3	2.49				
4	3.54				
5	5.07				
6	6.47				
7	5.48				
8	4.24				
Total Time (s) =	29.08				

Time (seconds)

Tensile Testing					
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)
1	0	0	0.0000	0.0000	0.0000
1	1,500	1,500	0.0045	0.0000	0.0023
1	3,000	3,000	0.0085	0.0015	0.0050
1	4,000	4,000	0.0105	0.0080	0.0093
1	5,000	5,000	0.0140	0.0210	0.0175
1	6,000	6,000	0.0240	0.0365	0.0303
1	7,000	7,000	0.0360	0.0580	0.0470
1	8,000	8,000	0.0540	0.0855	0.0698
1	9,000	9,000	0.0820	0.1325	0.1073
1	10,000	10,000	0.1145	0.1785	0.1465
		U	nload		
1	0	0	0.1230	0.1365	0.1298
		R	eload		
1	Max.	10,000	0.1375	0.1900	0.1638
		U	nload		
1	0	0	0.1365	0.1525	0.1445

	Lateral Testing						
Lateral	Load Height	з	Deflection G	iauge Height	Д		
Above	Grade (ft):	3	(ir	n):			
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (103)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.1135	0.0420	0.0778		
1	1,000	1,000	0.2165	0.1195	0.1680		
1	1,500	1,500	0.3215	0.2060	0.2638		
1	0	0	0.0575	0.0290	0.0433		
1	500	500	0.1675	0.0800	0.1238		
1	1,000	1,000	0.2480	0.1420	0.1950		
1	1,500	1,500	0.3315	0.2125	0.2720		
1	2,000	2,000	0.4205	0.2955	0.3580		
1	2,500	2,500	0.5235	0.3975	0.4605		
1	0	0	0.0705	0.0510	0.0608		
1	2,500	2,500	0.5480	0.4155	0.4818		
1	3,000	3,000	0.6350	0.5055	0.5703		
1	3,500	3,500	0.7480	0.6285	0.6883		
1	4,000	4,000	0.8435	0.7380	0.7908		
			Unload				
1	0	0	0.1505	0.1070	0.1288		
			Reload				
1	Max.	4,320	0.9430	0.8460	0.8945		
			Unload				
1	0	0	0.0875	0.1005	0.0940		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-38A
Date/Time Installed:	4/10/21 11:20 AM	Date/Time Tested:	4/23/21 12:30 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	67.83
Pushed to Depth (ft.):	3	Embedment Depth (ft.):	10.60	Avg. Installation Rate (sec/ft)	6.40

Embedment Data				
Depth (ft.)	Time (s)			
0	0			
1	0			
2	0			
3	0			
4	1.3			
5	2.65			
6	8.62			
7	10.6			
8	10.86			
9	11.8			
10	13.74			
11	8.26			
Total Time (s) =	67.83			

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,600	0.0030	0.0045	0.0038	
1	3,000	3,000	0.0125	0.0030	0.0078	
1	4,000	4,000	0.0255	-0.0015	0.0120	
1	5,000	5,000	0.0420	-0.0050	0.0185	
1	6,000	6,000	0.0605	-0.0085	0.0260	
1	7,000	7,000	0.0795	-0.0090	0.0353	
1	8,000	8,000	0.1030	-0.0105	0.0463	
1	9,000	9,000	0.1195	-0.0100	0.0548	
1	10,000	10,000	0.1410	-0.0100	0.0655	
		U	Inload			
1	0	0	0.0530	0.0385	0.0458	
		R	eload			
1	Max.	10,000	0.1545	-0.0010	0.0768	
		U	Inload			
1	0	0	0.0640	0.0480	0.0560	

	Lateral Testing						
Lateral I	Load Height	3	Deflection Gauge Height		4		
Above	Grade (ft):		(11).				
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	. ,	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0510	0.1660	0.1085		
1	1,000	1,000	0.1310	0.2875	0.2093		
1	1,500	1,500	0.2250	0.3985	0.3118		
1	0	0	0.0305	0.1050	0.0678		
1	500	500	0.1015	0.2305	0.1660		
1	1,000	1,000	0.1790	0.3440	0.2615		
1	1,500	1,500	0.2480	0.4335	0.3408		
1	2,000	2,000	0.3395	0.5395	0.4395		
1	2,500	2,500	0.4350	0.6480	0.5415		
1	0	0	0.0750	0.1420	0.1085		
1	2,500	2,500	0.4605	0.6890	0.5748		
1	3,000	3,000	0.5500	0.7900	0.6700		
1	3,500	3,500	0.6790	0.9340	0.8065		
1	4,000	4,000	0.8225	1.1085	0.9655		
			Unload				
1	0	0	0.1310	0.2250	0.1780		
			Reload				
1	Max.	4,080	0.8680	1.1825	1.0253		
			Unload				
1	0	0	0.1585	0.2145	0.1865		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-38B
Date/Time Installed:	4/10/21 11:25 AM	Date/Time Tested:	4/23/21 12:15 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	56.84
Pushed to Depth (ft.):	1.2	Embedment Depth (ft.):	10.20	Avg. Installation Rate (sec/ft)	5.57

Embedment Data				
Depth (ft.)	Time (s)			
0	0			
1	0			
2	1			
3	1.26			
4	1.7			
5	2.37			
6	3.39			
7	7.9			
8	9.59			
9	11.63			
10	12.84			
11	5.16			
Total Time (s) =	56.84			

Tensile Testing							
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	1,500	1,500	0.0015	0.0065	0.0040		
1	3,000	3,000	0.0075	0.0065	0.0070		
1	4,000	4,000	0.0175	0.0025	0.0100		
1	5,000	5,000	0.0300	-0.0010	0.0145		
1	6,000	6,000	0.0420	-0.0050	0.0185		
1	7,000	7,000	0.0585	-0.0075	0.0255		
1	8,000	8,000	0.0755	-0.0100	0.0328		
1	9,000	9,000	0.0920	-0.0125	0.0398		
1	10,000	10,000	0.1120	-0.0145	0.0488		
		U	Inload				
1	0	0	0.0475	0.0310	0.0393		
	Reload						
1	Max.	10,000	0.1235	-0.0065	0.0585		
		U	Inload				
1	0	0	0.0585	0.0390	0.0488		

	Lateral Testing						
Lateral	Load Height	з	Deflection G	iauge Height	4		
Above	Grade (ft):	3	(in):				
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	Luau (103)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.2205	0.0140	0.1173		
1	1,000	1,000	0.3030	0.1610	0.2320		
1	1,500	1,500	0.4030	0.2275	0.3153		
1	0	0	0.0735	0.0040	0.0388		
1	500	500	0.2325	0.1250	0.1788		
1	1,000	1,000	0.3505	0.2815	0.3160		
1	1,500	1,500	0.4330	0.3330	0.3830		
1	2,000	2,000	0.5250	0.3945	0.4598		
1	2,500	2,500	0.6625	0.4605	0.5615		
1	0	0	0.1275	0.0990	0.1133		
1	2,500	2,500	0.6920	0.4695	0.5808		
1	3,000	3,000	0.7765	0.6365	0.7065		
1	3,500	3,500	0.8920	0.7365	0.8143		
1	4,000	4,000	1.0320	0.9585	0.9953		
			Unload				
1	0	0	0.1830	0.0355	0.1093		
			Reload	-			
1	Max.	4,080	1.1990	0.9895	1.0943		
			Unload				
1	0	0	0.1585	0.5950	0.3768		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-SS-01
Date/Time Installed:	4/13/21 9:50 AM	Date/Time Tested:	4/20/21 4:30 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	65.92
Pushed to Depth (ft.):	0.2	Embedment Depth (ft.):	8.00	Avg. Installation Rate (sec/ft)	8.24

Embedment Data					
Depth (ft.)	Time (s)				
0	0				
1	1.05				
2	1.83				
3	5.9				
4	6.48				
5	8.98				
6	11.44				
7	14.72				
8	15.52				
Total Time (s) =	65.92				

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	0.0055	-0.0050	0.0003	
1	3,000	3,000	0.0090	-0.0085	0.0002	
1	4,000	4,000	0.0100	-0.0085	0.0008	
1	5,000	5,060	0.0115	-0.0085	0.0015	
1	6,000	6,060	0.0140	-0.0085	0.0028	
1	7,000	7,020	0.0175	-0.0075	0.0050	
1	8,000	8,020	0.0250	-0.0045	0.0103	
1	9,000	9,020	0.0320	-0.0020	0.0150	
1	10,000	10,080	0.0410	-0.0005	0.0203	
		U	nload			
1	0	0	0.0190	0.0105	0.0148	
Reload						
1	Max.	12,500	0.0740	0.0090	0.0415	
	Unload					
1	0	0	0.0420	0.0275	0.0348	

	Lateral Testing						
Lateral Load Height		2	Deflection G	4			
Above Grade (ft):		5	(in):				
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (103)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0735	0.0705	0.0720		
1	1,000	1,000	0.1595	0.1460	0.1528		
1	1,500	1,500	0.2350	0.2270	0.2310		
1	0	0	0.0345	0.0455	0.0400		
1	500	500	0.1130	0.1160	0.1145		
1	1,000	1,000	0.1735	0.1920	0.1828		
1	1,500	1,500	0.2315	0.2465	0.2390		
1	2,000	2,040	0.3160	0.3160	0.3160		
1	2,500	2,500	0.3975	0.3880	0.3928		
1	0	0	0.0500	0.0805	0.0653		
1	2,500	2,500	0.4135	0.4055	0.4095		
1	3,000	3,000	0.5000	0.4815	0.4908		
1	3,500	3,100	0.5815	0.5545	0.5680		
1	4,000	4,000	0.6675	0.6320	0.6498		
			Unload				
1	0	0	0.0615	0.1030	0.0823		
	Reload						
1	Max.	4,740	0.8330	0.7845	0.8088		
Unload							
1	0	0	0.0850	0.1320	0.1085		





Project:	AES - Somerset Solar	Site Location	Somerset, NY	Pile ID:	PT-SS-01
Date/Time Installed:	4/13/21 9:55 AM	Date/Time Tested:	4/20/21 4:30 PM	Pile Type/Size:	W6x9
Pre-Auger/Pre-Drill (Y/N)?:	Ν	Pre-Auger Depth (ft):	N/A	Pile Length:	15
Pre-Drill Depth (ft):	N/A	Pre-Drill Diameter (in):	N/A	Total Drive Time (sec):	71.1
Pushed to Depth (ft.):	0.5	Embedment Depth (ft.):	8.00	Avg. Installation Rate (sec/ft)	8.89

Embedment	t Data
Depth (ft.)	Time (s)
0	0
1	0.45
2	1.98
3	5.76
4	6.37
5	10.3
6	16.51
7	11.97
8	17.76
Total Time (s) =	71.1

Tensile Testing						
Hold Time (min)	Target Load (Ibs)	Load (lbs)	Deflection 1 (in.)	Deflection 2 (in.)	Average Deflection (in.)	
1	0	0	0.0000	0.0000	0.0000	
1	1,500	1,500	-0.0060	0.0170	0.0055	
1	3,000	3,020	-0.0085	0.0205	0.0060	
1	4,000	4,020	-0.0085	0.0335	0.0125	
1	5,000	5,160	-0.0065	0.0410	0.0173	
1	6,000	6,060	-0.0045	0.0475	0.0215	
1	7,000	7,060	-0.0015	0.0560	0.0273	
1	8,000	8,020	0.0030	0.0640	0.0335	
1	9,000	9,280	0.0080	0.0765	0.0423	
1	10,000	10,060	0.0135	0.0860	0.0498	
		U	nload			
1	0	0	0.0200	0.0330	0.0265	
Reload						
1	Max.	12,500	0.0565	0.1225	0.0895	
	Unload					
1	0	0	0.0390	0.0535	0.0463	

Lateral Testing							
Lateral I	Lateral Load Height		Deflection G	4			
Above	Above Grade (ft):		(ir	n):			
Hold Time	Target Load	Load (lbs)	Deflection 1	Deflection 2	Average		
(min)	(lbs)	2000 (105)	(in.)	(in.)	Deflection (in.)		
1	0	0	0.0000	0.0000	0.0000		
1	500	500	0.0810	0.0510	0.0660		
1	1,000	1,000	0.1520	0.1105	0.1313		
1	1,500	1,500	0.2270	0.1760	0.2015		
1	0	0	0.0235	0.1200	0.0718		
1	500	500	0.1030	0.0585	0.0808		
1	1,000	1,000	0.1825	0.1195	0.1510		
1	1,500	1,500	0.2370	0.1770	0.2070		
1	2,000	2,040	0.3060	0.2400	0.2730		
1	2,500	2,520	0.3760	0.3085	0.3423		
1	0	0	0.0410	0.0205	0.0308		
1	2,500	2,500	0.3855	0.3175	0.3515		
1	3,000	3,000	0.4675	0.3960	0.4318		
1	3,500	3,500	0.5325	0.4585	0.4955		
1	4,000	4,000	0.6595	0.5335	0.5965		
			Unload				
1	0	0	0.0600	0.0265	0.0433		
	Reload						
1	Max.	4,740	0.7610	0.6650	0.7130		
	Unload						
1	0	0	0.0750	0.0335	0.0543		





Attachment F

Seismic Support Data


Location

ASCE 7 Hazards Report

Standard:ASCE/SEI 7-16Risk Category:IISoil Class:D - Stiff Soil

 Elevation:
 299.97 ft (NAVD 88)

 Latitude:
 43.354122

 Longitude:
 -78.599429





Site Soil Class: Results:	D - Stiff Soil		
S _S :	0.167	S _{D1} :	0.074
S_1 :	0.046	T _L :	6
F _a :	1.6	PGA :	0.093
F _v :	2.4	PGA M:	0.149
S _{MS} :	0.267	F _{PGA} :	1.6
S _{M1} :	0.111	l _e :	1
S _{DS} :	0.178	C _v :	0.7
Seismic Design Category	В		

Seismic Design Category





Data Accessed: Date Source:

Wed Apr 21 2021 USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.



The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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Client:



SEISMIC HAZARD MAP

AES SOMERSET SOLAR PROJECT SOMERSET, NEW YORK

Legend

 Historical Earthquake (Labeled as year of event)

Seismic Hazard (from 2018 USGS Long-term National Seismic Hazard Map)

Lowest Risk Highest Risk 0 40 80 mi

> Absolute Scale: 1 inch = 40 miles Scale at 11" x 17" AS SHOWN

Prepared by: Kyle Hansen Date: April 25, 2021 Drawing Number: SHM-1 Rev.0





Attachment G

NRCS Soil Report





Client:



NRCS SOIL UNITS MAP

AES SOMERSET SOLAR PROJECT SOMERSET, NEW YORK





United States Department of Agriculture

Natural Resources Conservation Service A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for **Niagara County Area, New York**

Somerset Solar



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/? cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface	2
How Soil Surveys Are Made	6
Soil Map	9
Soil Map (Somerset Solar)	. 10
Legend	11
Map Unit Legend (Somerset Solar)	. 12
Map Unit Descriptions (Somerset Solar)	. 13
Niagara County Area, New York	. 15
ApA—Appleton silt loam, 0 to 3 percent slopes	. 15
ArB—Arkport very fine sandy loam, 0 to 6 percent slopes	.16
ArC—Arkport very fine sandy loam, 6 to 12 percent slopes	18
Ca—Canandaigua silt loam	19
CcB—Cayuga and Cazenovia silt loams, 2 to 6 percent slopes	. 21
CmA—Claverack loamy fine sand, 0 to 2 percent slopes	. 23
CmB—Claverack loamy fine sand, 2 to 6 percent slopes	. 24
CnA—Collamer silt loam, 0 to 2 percent slopes	.26
CnB—Collamer silt loam, 2 to 6 percent slopes	.27
CoB—Colonie loamy fine sand, 0 to 6 percent slopes	.29
Cs—Cosad fine sandy loam	.30
DuB—Dunkirk silt loam, 2 to 6 percent slopes	. 32
DuC3—Dunkirk silt loam, 6 to 12 percent slopes, eroded	33
DvD3—Dunkirk and Arkport soils, 12 to 20 percent slopes, eroded	. 34
EIA—Elnora loamy fine sand, 0 to 2 percent slopes	. 36
EIB—Elnora loamy fine sand, 2 to 6 percent slopes	. 38
Fr—Fredon gravelly loam	.39
GnA—Galen very fine sandy loam, 0 to 2 percent slopes	41
GnB—Galen very fine sandy loam, 2 to 6 percent slopes	43
Ha—Hamlin silt loam	.44
HgB—Hilton gravelly loam, 3 to 8 percent slopes	.46
HIA—Hilton silt loam, 0 to 3 percent slopes	. 47
HIB—Hilton silt loam, 3 to 8 percent slopes	. 49
HsB—Hudson silt loam, 2 to 6 percent slopes	. 51
Ma—Madalin silt loam, 0 to 3 percent slopes	52
Md—Madalin silt loam, loamy subsoil variant	. 54
Mn—Minoa very fine sandy loam	. 56
NaA—Niagara silt loam, 0 to 2 percent slopes	57
NaB—Niagara silt loam, 2 to 6 percent slopes	59
OnD3—Ontario loam, 15 to 30 percent slopes	. 60
OvA—Ovid silt loam, 0 to 2 percent slopes	.62
OvB—Ovid silt loam, 2 to 6 percent slopes	.63
RbA—Rhinebeck silt loam, 0 to 2 percent slopes	. 65
RbB—Rhinebeck silt loam, 2 to 6 percent slopes	. 66
vv—vvater	.68
vva—Wayland soils complex, 0 to 3 percent slopes, frequently flooded	. 68

Soil Information for All Uses	71
Suitabilities and Limitations for Use	71
Building Site Development	71
Corrosion of Concrete (Somerset Solar)	71
Corrosion of Steel (Somerset Solar)	75
Land Management	80
Erosion Hazard (Off-Road, Off-Trail) (Somerset Solar)	81
References	

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



MAP LEGEND)	MAP INFORMATION	
Area of In	iterest (AOI) Area of Interest (AOI)	8	Spoil Area Stony Spot	The soil surveys that comprise your AOI were mapped at 1:15,800.
Soils	Soil Map Unit Polygons	Ő	Very Stony Spot	Please rely on the bar scale on each map sheet for map measurements.
$\tilde{\mathbf{a}}$	Soil Map Unit Lines Soil Map Unit Points	v ∆	Other	Source of Map: Natural Resources Conservation Service Web Soil Survey URL:
Special Point Features Special Line Features Special Line Features		Special Line Features atures	Coordinate System: Web Mercator (EPSG:3857)	
×	Borrow Pit	~~ Transport	Streams and Canals tation	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
¥ ♦	Clay Spot Closed Depression	···· ~	Rails Interstate Highways	Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.
* *	Gravel Pit Gravelly Spot	~	US Routes	This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.
0	Landfill	~	Local Roads	Soil Survey Area: Niagara County Area, New York
<u>بلہ</u>	Marsh or swamp	Backgrou	Ind Aerial Photography	Soil map units are labeled (as space allows) for map scales
☆ ©	Mine or Quarry Miscellaneous Water			1:50,000 or larger.
0	Perennial Water Rock Outcrop			18, 2016
÷	Saline Spot			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
:: +	Sandy Spot Severely Eroded Spot			shifting of map unit boundaries may be evident.
۵ ۵	Sinkhole Slide or Slip			
ø	Sodic Spot			

Map Unit Legend (Somerset Solar)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
АрА	Appleton silt loam, 0 to 3 percent slopes	17.8	1.0%
ArB	Arkport very fine sandy loam, 0 to 6 percent slopes	22.4	1.3%
ArC	Arkport very fine sandy loam, 6 to 12 percent slopes	10.1	0.6%
Са	Canandaigua silt loam	2.0	0.1%
СсВ	Cayuga and Cazenovia silt loams, 2 to 6 percent slopes	5.2	0.3%
CmA	Claverack loamy fine sand, 0 to 2 percent slopes	41.0	2.3%
CmB	Claverack loamy fine sand, 2 to 6 percent slopes	32.3	1.8%
CnA	Collamer silt loam, 0 to 2 percent slopes	129.3	7.2%
CnB	Collamer silt loam, 2 to 6 percent slopes	491.0	27.5%
СоВ	Colonie loamy fine sand, 0 to 6 percent slopes	6.1	0.3%
Cs	Cosad fine sandy loam	10.2	0.6%
DuB	Dunkirk silt loam, 2 to 6 percent slopes	20.5	1.1%
DuC3	Dunkirk silt loam, 6 to 12 percent slopes, eroded	34.1	1.9%
DvD3	Dunkirk and Arkport soils, 12 to 20 percent slopes, eroded	3.5	0.2%
EIA	Elnora loamy fine sand, 0 to 2 percent slopes	1.9	0.1%
EIB	Elnora loamy fine sand, 2 to 6 percent slopes	6.0	0.3%
Fr	Fredon gravelly loam	2.6	0.1%
GnA	Galen very fine sandy loam, 0 to 2 percent slopes	7.6	0.4%
GnB	Galen very fine sandy loam, 2 to 6 percent slopes	5.6	0.3%
На	Hamlin silt loam	26.4	1.5%
HgB	Hilton gravelly loam, 3 to 8 percent slopes	14.6	0.8%
HIA	Hilton silt loam, 0 to 3 percent slopes	26.9	1.5%
HIB	Hilton silt loam, 3 to 8 percent slopes	79.1	4.4%
HsB	Hudson silt loam, 2 to 6 percent slopes	32.9	1.8%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ма	Madalin silt loam, 0 to 3 percent slopes	12.7	0.7%
Md	Madalin silt loam, loamy subsoil variant	11.5	0.6%
Mn	Minoa very fine sandy loam	9.0	0.5%
NaA	Niagara silt loam, 0 to 2 percent slopes	374.8	21.0%
NaB	Niagara silt loam, 2 to 6 percent slopes	32.9	1.8%
OnD3	Ontario loam, 15 to 30 percent slopes	7.6	0.4%
OvA	Ovid silt loam, 0 to 2 percent slopes	13.5	0.8%
OvB	Ovid silt loam, 2 to 6 percent slopes	4.3	0.2%
RbA	Rhinebeck silt loam, 0 to 2 percent slopes	224.4	12.5%
RbB	Rhinebeck silt loam, 2 to 6 percent slopes	28.5	1.6%
W	Water	14.5	0.8%
Wa	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	20.3	1.1%
Totals for Area of Interest		1,788.4	100.0%

Map Unit Descriptions (Somerset Solar)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They

generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Niagara County Area, New York

ApA—Appleton silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2w5hn Elevation: 260 to 1,740 feet Mean annual precipitation: 31 to 57 inches Mean annual air temperature: 41 to 50 degrees F Frost-free period: 100 to 190 days Farmland classification: Prime farmland if drained

Map Unit Composition

Appleton and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Appleton

Setting

Landform: Drumlins, ridges, till plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope Down-slope shape: Concave Across-slope shape: Linear Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 8 inches: silt loam E - 8 to 16 inches: loam Bt - 16 to 30 inches: gravelly silt loam C1 - 30 to 54 inches: gravelly loam C2 - 54 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water capacity: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3w Hydrologic Soil Group: B/D Ecological site: F101XY013NY - Moist Till Hydric soil rating: No

Minor Components

Lima

Percent of map unit: 5 percent Landform: Drumlins, till plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Crest Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Lyons

Percent of map unit: 4 percent Landform: Drainageways, depressions Landform position (two-dimensional): Toeslope Landform position (three-dimensional): Base slope Down-slope shape: Concave Across-slope shape: Concave Hydric soil rating: Yes

Churchville

Percent of map unit: 3 percent Landform: Lake plains, till plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope, rise, talf Down-slope shape: Concave Across-slope shape: Linear Hydric soil rating: No

Darien

Percent of map unit: 3 percent Landform: Drainageways, till plains Landform position (two-dimensional): Footslope, summit Landform position (three-dimensional): Base slope Down-slope shape: Concave Across-slope shape: Linear Hydric soil rating: No

ArB—Arkport very fine sandy loam, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9tvf Elevation: 300 to 900 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Arkport and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arkport

Setting

Landform: Deltas on lake plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Convex Across-slope shape: Convex Parent material: Glaciofluvial or deltaic deposits with a high content of fine and very fine sand

Typical profile

H1 - 0 to 8 inches: very fine sandy loam

H2 - 8 to 20 inches: loamy very fine sand

H3 - 20 to 48 inches: loamy fine sand

H4 - 48 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e Hydrologic Soil Group: A Ecological site: F101XY005NY - Dry Outwash Hydric soil rating: No

Minor Components

Unnamed soils

Percent of map unit: 4 percent Hydric soil rating: No

Claverack

Percent of map unit: 4 percent Hydric soil rating: No

Collamer

Percent of map unit: 4 percent *Hydric soil rating:* No

Dunkirk

Percent of map unit: 4 percent Hydric soil rating: No

Galen

Percent of map unit: 4 percent

Hydric soil rating: No

ArC—Arkport very fine sandy loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 9tvg Elevation: 300 to 900 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Arkport and similar soils: 80 percent *Minor components:* 20 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Arkport

Setting

Landform: Deltas on lake plains Landform position (two-dimensional): Shoulder Landform position (three-dimensional): Tread Down-slope shape: Convex Across-slope shape: Convex Parent material: Glaciofluvial or deltaic deposits with a high content of fine and very fine sand

Typical profile

- H1 0 to 8 inches: very fine sandy loam
- H2 8 to 20 inches: loamy very fine sand
- H3 20 to 48 inches: loamy fine sand
- H4 48 to 60 inches: fine sand

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3e Hydrologic Soil Group: A Ecological site: F101XY005NY - Dry Outwash Hydric soil rating: No

Minor Components

Colonie

Percent of map unit: 4 percent Hydric soil rating: No

Unnamed soils

Percent of map unit: 4 percent Hydric soil rating: No

Collamer

Percent of map unit: 4 percent Hydric soil rating: No

Dunkirk

Percent of map unit: 4 percent Hydric soil rating: No

Galen

Percent of map unit: 4 percent Hydric soil rating: No

Ca—Canandaigua silt loam

Map Unit Setting

National map unit symbol: 9tvn Elevation: 100 to 1,000 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Not prime farmland

Map Unit Composition

Canandaigua and similar soils: 75 percent *Minor components:* 25 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Canandaigua

Setting

Landform: Depressions Landform position (two-dimensional): Toeslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Concave Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 7 inches: silt loam *H2 - 7 to 24 inches:* silty clay loam H3 - 24 to 60 inches: stratified loamy fine sand to silt to clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Available water capacity: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 5w Hydrologic Soil Group: C/D Ecological site: F101XY010NY - Wet Lake Plain Depression Hydric soil rating: Yes

Minor Components

Rhinebeck

Percent of map unit: 5 percent Hydric soil rating: No

Raynham

Percent of map unit: 5 percent Hydric soil rating: No

Appleton

Percent of map unit: 4 percent Hydric soil rating: No

Lakemont

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Madalin

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Sun

Percent of map unit: 3 percent Landform: Depressions Hydric soil rating: Yes

CcB—Cayuga and Cazenovia silt loams, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9tvr Elevation: 250 to 660 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Cayuga and similar soils: 40 percent Cazenovia and similar soils: 35 percent Minor components: 25 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cayuga

Setting

Landform: Till plains, lake plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Crest, tread Down-slope shape: Concave Across-slope shape: Convex Parent material: Clayey glaciolacustrine deposits over loamy till derived from limestone, dolomite, sandstone, or shale

Typical profile

H1 - 0 to 8 inches: silt loam

H2 - 8 to 25 inches: silty clay

H3 - 25 to 60 inches: gravelly loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e Hydrologic Soil Group: D Ecological site: F101XY009NY - Moist Lake Plain Hydric soil rating: No

Description of Cazenovia

Setting

Landform: Reworked lake plains, till plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Crest Down-slope shape: Concave Across-slope shape: Convex Parent material: Loamy till that contains limestone with an admixture of reddish lake-laid clays or reddish clay shale

Typical profile

H1 - 0 to 11 inches: silt loam H2 - 11 to 28 inches: silty clay loam

H3 - 28 to 60 inches: silt loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e Hydrologic Soil Group: C Ecological site: F101XY013NY - Moist Till Hydric soil rating: No

Minor Components

Ovid

Percent of map unit: 5 percent Hydric soil rating: No

Hilton

Percent of map unit: 5 percent Hydric soil rating: No

Hudson

Percent of map unit: 5 percent Hydric soil rating: No

Collamer

Percent of map unit: 5 percent Hydric soil rating: No

Churchville

Percent of map unit: 5 percent Hydric soil rating: No

CmA—Claverack loamy fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9tw1 Elevation: 600 to 1,800 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Claverack and similar soils: 80 percent *Minor components:* 20 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Claverack

Setting

Landform: Lake plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Convex Parent material: Sandy glaciolacustrine deposits, derived primarily from noncalcareous sandstone or granite, that overlie clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 8 inches: loamy fine sand

H2 - 8 to 32 inches: loamy fine sand

H3 - 32 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent *Depth to restrictive feature:* 20 to 40 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 18 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water capacity: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2w Hydrologic Soil Group: C/D Ecological site: F101XY006NY - Moist Outwash Hydric soil rating: No

Minor Components

Cosad

Percent of map unit: 5 percent Hydric soil rating: No

Elnora

Percent of map unit: 3 percent Hydric soil rating: No

Rhinebeck

Percent of map unit: 3 percent Hydric soil rating: No

Galen

Percent of map unit: 3 percent Hydric soil rating: No

Unnamed soils

Percent of map unit: 3 percent *Hydric soil rating:* No

Hudson

Percent of map unit: 3 percent Hydric soil rating: No

CmB—Claverack loamy fine sand, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9tw2 Elevation: 600 to 1,800 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Claverack and similar soils: 80 percent *Minor components:* 20 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Claverack

Setting

Landform: Lake plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Convex Parent material: Sandy glaciolacustrine deposits, derived primarily from noncalcareous sandstone or granite, that overlie clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 8 inches: loamy fine sand

- H2 8 to 32 inches: loamy fine sand
- H3 32 to 60 inches: silty clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2w Hydrologic Soil Group: C/D Ecological site: F101XY006NY - Moist Outwash Hydric soil rating: No

Minor Components

Colonie

Percent of map unit: 4 percent Hydric soil rating: No

Elnora

Percent of map unit: 4 percent Hydric soil rating: No

Galen

Percent of map unit: 4 percent Hydric soil rating: No

Arkport

Percent of map unit: 4 percent Hydric soil rating: No

Cosad

Percent of map unit: 2 percent Hydric soil rating: No

Unnamed soils

Percent of map unit: 2 percent Hydric soil rating: No

CnA—Collamer silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9tw3 Elevation: 250 to 640 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Collamer and similar soils: 75 percent Minor components: 25 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Collamer

Setting

Landform: Lake plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Convex Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 8 inches: silt loam H2 - 8 to 19 inches: silt loam H3 - 19 to 29 inches: silt loam H4 - 29 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2w Hydrologic Soil Group: C/D Ecological site: F101XY009NY - Moist Lake Plain Hydric soil rating: No

Minor Components

Minoa

Percent of map unit: 4 percent Hydric soil rating: No

Rhinebeck

Percent of map unit: 4 percent Hydric soil rating: No

Hudson

Percent of map unit: 4 percent Hydric soil rating: No

Galen

Percent of map unit: 4 percent Hydric soil rating: No

Unnamed soils

Percent of map unit: 3 percent Hydric soil rating: No

Niagara

Percent of map unit: 3 percent Hydric soil rating: No

Dunkirk

Percent of map unit: 3 percent Hydric soil rating: No

CnB—Collamer silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9tw4 Elevation: 250 to 640 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Collamer and similar soils: 75 percent *Minor components:* 25 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Collamer

Setting

Landform: Lake plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Convex Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 8 inches: silt loam

H2 - 8 to 19 inches: silt loam

H3 - 19 to 29 inches: silt loam

H4 - 29 to 60 inches: silt loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e Hydrologic Soil Group: C/D Ecological site: F101XY009NY - Moist Lake Plain Hydric soil rating: No

Minor Components

Dunkirk

Percent of map unit: 5 percent Hydric soil rating: No

Niagara

Percent of map unit: 4 percent Hydric soil rating: No

Canandaigua

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Hudson

Percent of map unit: 3 percent Hydric soil rating: No

Arkport

Percent of map unit: 3 percent Hydric soil rating: No

Galen

Percent of map unit: 3 percent Hydric soil rating: No

Unnamed soils

Percent of map unit: 3 percent Hydric soil rating: No

CoB—Colonie loamy fine sand, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9tw5 Elevation: 150 to 1,000 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Colonie and similar soils: 80 percent Minor components: 20 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Colonie

Setting

Landform: Beach ridges, deltas Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Convex Across-slope shape: Convex Parent material: Sandy glaciofluvial or eolian deposits

Typical profile

H1 - 0 to 8 inches: loamy fine sand H2 - 8 to 50 inches: fine sand H3 - 50 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2s Hydrologic Soil Group: A Ecological site: F101XY005NY - Dry Outwash Hydric soil rating: No
Minor Components

Elnora

Percent of map unit: 4 percent Hydric soil rating: No

Arkport

Percent of map unit: 4 percent Hydric soil rating: No

Claverack

Percent of map unit: 4 percent Hydric soil rating: No

Unnamed soils

Percent of map unit: 4 percent Hydric soil rating: No

Otisville

Percent of map unit: 4 percent Hydric soil rating: No

Cs—Cosad fine sandy loam

Map Unit Setting

National map unit symbol: 9tw6 Elevation: 200 to 800 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Prime farmland if drained

Map Unit Composition

Cosad and similar soils: 70 percent Minor components: 30 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cosad

Setting

Landform: Lake plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Linear Parent material: Sandy glaciofluvial or deltaic deposits over clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: fine sandy loam *H2 - 9 to 14 inches:* loamy fine sand

H3 - 14 to 26 inches: loamy fine sand H4 - 26 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3w Hydrologic Soil Group: C/D Ecological site: F101XY006NY - Moist Outwash Hydric soil rating: No

Minor Components

Minoa

Percent of map unit: 4 percent Hydric soil rating: No

Claverack

Percent of map unit: 4 percent Hydric soil rating: No

Cheektowaga

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Lakemont

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Rhinebeck

Percent of map unit: 3 percent Hydric soil rating: No

Madalin

Percent of map unit: 3 percent Landform: Depressions Hydric soil rating: Yes

Odessa

Percent of map unit: 3 percent Hydric soil rating: No

Stafford

Percent of map unit: 3 percent Hydric soil rating: No

Unnamed soils

Percent of map unit: 2 percent Hydric soil rating: No

DuB—Dunkirk silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9tw8 Elevation: 100 to 1,000 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Dunkirk and similar soils: 80 percent *Minor components:* 20 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Dunkirk

Setting

Landform: Lake plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Convex Across-slope shape: Convex Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: silt loam H2 - 9 to 17 inches: silt loam H3 - 17 to 32 inches: silt loam H4 - 32 to 70 inches: silt loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C Hydric soil rating: No

Minor Components

Galen

Percent of map unit: 4 percent Hydric soil rating: No

Niagara

Percent of map unit: 4 percent Hydric soil rating: No

Hudson

Percent of map unit: 4 percent Hydric soil rating: No

Collamer

Percent of map unit: 4 percent Hydric soil rating: No

Arkport

Percent of map unit: 4 percent Hydric soil rating: No

DuC3—Dunkirk silt loam, 6 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: 9tw9 Elevation: 100 to 1,000 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Not prime farmland

Map Unit Composition

Dunkirk, eroded, and similar soils: 80 percent *Minor components:* 20 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Dunkirk, Eroded

Setting

Landform: Lake plains Landform position (two-dimensional): Shoulder Landform position (three-dimensional): Tread Down-slope shape: Convex Across-slope shape: Convex Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: silt loam

H2 - 9 to 17 inches: silt loam

H3 - 17 to 32 inches: silt loam

H4 - 32 to 70 inches: silt loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 4e Hydrologic Soil Group: C Hydric soil rating: No

Minor Components

Arkport

Percent of map unit: 5 percent Hydric soil rating: No

Galen

Percent of map unit: 5 percent *Hydric soil rating:* No

Collamer

Percent of map unit: 5 percent Hydric soil rating: No

Hudson

Percent of map unit: 5 percent Hydric soil rating: No

DvD3—Dunkirk and Arkport soils, 12 to 20 percent slopes, eroded

Map Unit Setting

National map unit symbol: 9twb Elevation: 100 to 1,000 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Not prime farmland

Map Unit Composition

Dunkirk, eroded, and similar soils: 41 percent

Arkport and similar soils: 39 percent *Minor components:* 20 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Dunkirk, Eroded

Setting

Landform: Lake plains Landform position (two-dimensional): Backslope Landform position (three-dimensional): Riser Down-slope shape: Convex Across-slope shape: Convex Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: silt loam H2 - 9 to 17 inches: silt loam H3 - 17 to 32 inches: silt loam H4 - 32 to 70 inches: silt loam

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 4e Hydrologic Soil Group: C Hydric soil rating: No

Description of Arkport

Setting

Landform: Deltas on lake plains Landform position (two-dimensional): Backslope Landform position (three-dimensional): Riser Down-slope shape: Convex Across-slope shape: Convex Parent material: Glaciofluvial or deltaic deposits with a high content of fine and very fine sand

Typical profile

H1 - 0 to 8 inches: very fine sandy loam H2 - 8 to 20 inches: loamy very fine sand

- H3 20 to 48 inches: loamy fine sand
- H4 48 to 60 inches: fine sand

Properties and qualities

Slope: 12 to 20 percent *Depth to restrictive feature:* More than 80 inches

Drainage class: Well drained Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr) Depth to water table: More than 80 inches Frequency of flooding: None Frequency of ponding: None Calcium carbonate, maximum content: 15 percent Available water capacity: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 4e Hydrologic Soil Group: A Ecological site: F101XY005NY - Dry Outwash Hydric soil rating: No

Minor Components

Otisville

Percent of map unit: 4 percent Hydric soil rating: No

Colonie

Percent of map unit: 4 percent Hydric soil rating: No

Hudson

Percent of map unit: 4 percent Hydric soil rating: No

Howard

Percent of map unit: 4 percent Hydric soil rating: No

Collamer

Percent of map unit: 2 percent Hydric soil rating: No

Galen

Percent of map unit: 2 percent Hydric soil rating: No

EIA—Elnora loamy fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9twc Elevation: 250 to 620 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Elnora and similar soils: 75 percent *Minor components:* 25 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Elnora

Setting

Landform: Beach ridges, deltas Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Convex Parent material: Sandy glaciofluvial, eolian, or deltaic deposits

Typical profile

H1 - 0 to 6 inches: loamy fine sand
H2 - 6 to 20 inches: loamy fine sand
H3 - 20 to 60 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2w Hydrologic Soil Group: A/D Hydric soil rating: No

Minor Components

Galen

Percent of map unit: 4 percent Hydric soil rating: No

Colonie

Percent of map unit: 4 percent Hydric soil rating: No

Stafford

Percent of map unit: 4 percent Hydric soil rating: No

Minoa

Percent of map unit: 4 percent Hydric soil rating: No

Unnamed soils

Percent of map unit: 3 percent Hydric soil rating: No

Claverack

Percent of map unit: 3 percent Hydric soil rating: No

Cosad

Percent of map unit: 3 percent Hydric soil rating: No

EIB—Elnora loamy fine sand, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9twd Elevation: 260 to 620 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Elnora and similar soils: 75 percent *Minor components:* 25 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Elnora

Setting

Landform: Beach ridges, deltas Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Convex Parent material: Sandy glaciofluvial, eolian, or deltaic deposits

Typical profile

H1 - 0 to 6 inches: loamy fine sand H2 - 6 to 20 inches: loamy fine sand H3 - 20 to 60 inches: loamy fine sand

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w Hydrologic Soil Group: A/D Hydric soil rating: No

Minor Components

Altmar

Percent of map unit: 4 percent Hydric soil rating: No

Fredon

Percent of map unit: 4 percent Hydric soil rating: No

Minoa

Percent of map unit: 4 percent Hydric soil rating: No

Stafford

Percent of map unit: 4 percent Hydric soil rating: No

Unnamed soils

Percent of map unit: 3 percent Hydric soil rating: No

Colonie

Percent of map unit: 3 percent Hydric soil rating: No

Galen

Percent of map unit: 3 percent Hydric soil rating: No

Fr—Fredon gravelly loam

Map Unit Setting

National map unit symbol: 9twh Elevation: 250 to 1,200 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Prime farmland if drained

Map Unit Composition

Fredon, poorly drained, and similar soils: 50 percent *Fredon, somewhat poorly drained, and similar soils:* 25 percent *Minor components:* 25 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Fredon, Poorly Drained

Setting

Landform: Valley trains, terraces Landform position (two-dimensional): Footslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Linear Parent material: Loamy over sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: gravelly loam

H2 - 8 to 22 inches: gravelly loam

H3 - 22 to 60 inches: stratified very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 4w Hydrologic Soil Group: B/D Hydric soil rating: Yes

Description of Fredon, Somewhat Poorly Drained

Setting

Landform: Valley trains, terraces Landform position (two-dimensional): Footslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Linear Parent material: Loamy over sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: gravelly loam H2 - 8 to 22 inches: gravelly loam H3 - 22 to 60 inches: stratified very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent *Available water capacity:* Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3w Hydrologic Soil Group: B/D Hydric soil rating: No

Minor Components

Phelps

Percent of map unit: 4 percent Hydric soil rating: No

Stafford

Percent of map unit: 4 percent Hydric soil rating: No

Altmar

Percent of map unit: 4 percent Hydric soil rating: No

Hilton

Percent of map unit: 4 percent Hydric soil rating: No

Appleton

Percent of map unit: 3 percent Hydric soil rating: No

Lamson

Percent of map unit: 3 percent Landform: Depressions Hydric soil rating: Yes

Unnamed soils

Percent of map unit: 3 percent Hydric soil rating: No

GnA—Galen very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9twk Elevation: 250 to 610 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Galen and similar soils: 70 percent

Minor components: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Galen

Setting

Landform: Deltas on lake plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Convex Parent material: Deltaic deposits with a high content of fine and very fine sand

Typical profile

H1 - 0 to 8 inches: very fine sandy loam

H2 - 8 to 27 inches: very fine sandy loam

H3 - 27 to 35 inches: loamy fine sand

H4 - 35 to 60 inches: stratified loamy very fine sand to silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water capacity: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2w Hydrologic Soil Group: A/D Hydric soil rating: No

Minor Components

Collamer

Percent of map unit: 4 percent Hydric soil rating: No

Minoa

Percent of map unit: 4 percent Hydric soil rating: No

Colonie

Percent of map unit: 4 percent Hydric soil rating: No

Arkport

Percent of map unit: 4 percent Hydric soil rating: No

Elnora

Percent of map unit: 4 percent *Hydric soil rating:* No

Claverack

Percent of map unit: 4 percent Hydric soil rating: No

Altmar

Percent of map unit: 3 percent Hydric soil rating: No

Phelps

Percent of map unit: 3 percent Hydric soil rating: No

GnB—Galen very fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9twl Elevation: 250 to 640 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Galen and similar soils: 70 percent Minor components: 30 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Galen

Setting

Landform: Deltas on lake plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Convex Parent material: Deltaic deposits with a high content of fine and very fine sand

Typical profile

- H1 0 to 8 inches: very fine sandy loam
- H2 8 to 27 inches: very fine sandy loam
- H3 27 to 35 inches: loamy fine sand
- H4 35 to 60 inches: stratified loamy very fine sand to silt loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 18 to 24 inches

Frequency of flooding: None

Frequency of ponding: None *Calcium carbonate, maximum content:* 1 percent *Available water capacity:* Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2w Hydrologic Soil Group: A/D Hydric soil rating: No

Minor Components

Elnora

Percent of map unit: 4 percent Hydric soil rating: No

Colonie

Percent of map unit: 4 percent Hydric soil rating: No

Niagara

Percent of map unit: 4 percent Hydric soil rating: No

Claverack

Percent of map unit: 4 percent Hydric soil rating: No

Arkport

Percent of map unit: 4 percent Hydric soil rating: No

Minoa

Percent of map unit: 4 percent Hydric soil rating: No

Altmar

Percent of map unit: 3 percent Hydric soil rating: No

Collamer

Percent of map unit: 3 percent Hydric soil rating: No

Ha—Hamlin silt loam

Map Unit Setting

National map unit symbol: 9twm Elevation: 250 to 640 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Hamlin and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Hamlin

Setting

Landform: Flood plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Rise Down-slope shape: Convex Across-slope shape: Convex Parent material: Silty alluvium mainly from areas of siltstone, shale, and limestone

Typical profile

H1 - 0 to 8 inches: silt loam H2 - 8 to 29 inches: silt loam H3 - 29 to 40 inches: silt loam H4 - 40 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water capacity: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 1 Hydrologic Soil Group: B Hydric soil rating: No

Minor Components

Unnamed soils

Percent of map unit: 5 percent Hydric soil rating: No

Phelps

Percent of map unit: 4 percent Hydric soil rating: No

Raynham

Percent of map unit: 3 percent Hydric soil rating: No

Wayland

Percent of map unit: 3 percent Landform: Flood plains Hydric soil rating: Yes

HgB—Hilton gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w3lb Elevation: 260 to 1,050 feet Mean annual precipitation: 31 to 57 inches Mean annual air temperature: 41 to 50 degrees F Frost-free period: 100 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Hilton and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Hilton

Setting

Landform: Till plains, drumlins, ridges Landform position (two-dimensional): Summit, shoulder Landform position (three-dimensional): Crest Down-slope shape: Linear Across-slope shape: Convex, concave Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: gravelly loam E - 9 to 17 inches: loam Bt/E - 17 to 24 inches: gravelly loam Bt - 24 to 36 inches: gravelly loam C1 - 36 to 54 inches: gravelly loam C2 - 54 to 79 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water capacity: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B/D Hydric soil rating: No

Minor Components

Appleton

Percent of map unit: 5 percent Landform: Drumlins, ridges, till plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope Down-slope shape: Concave Across-slope shape: Linear Hydric soil rating: No

Ontario

Percent of map unit: 5 percent Landform: Drumlins, ridges, till plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Crest Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Bombay

Percent of map unit: 3 percent Landform: Drumlinoid ridges Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Crest, side slope Down-slope shape: Concave Across-slope shape: Convex Hydric soil rating: No

Cayuga

Percent of map unit: 2 percent Landform: Drumlinoid ridges Landform position (two-dimensional): Shoulder, summit Landform position (three-dimensional): Crest, side slope Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

HIA—Hilton silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2w3kz Elevation: 260 to 660 feet Mean annual precipitation: 31 to 57 inches Mean annual air temperature: 41 to 50 degrees F Frost-free period: 100 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Hilton and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Hilton

Setting

Landform: Drumlins, ridges, till plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Crest Down-slope shape: Linear Across-slope shape: Concave, convex Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: silt loam E - 9 to 17 inches: loam Bt/E - 17 to 24 inches: gravelly loam Bt - 24 to 36 inches: gravelly loam C1 - 36 to 54 inches: gravelly loam C2 - 54 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water capacity: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2w Hydrologic Soil Group: B/D Hydric soil rating: No

Minor Components

Ontario

Percent of map unit: 5 percent Landform: Till plains, drumlins, ridges Landform position (two-dimensional): Summit Landform position (three-dimensional): Crest Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Appleton

Percent of map unit: 5 percent

Landform: Drumlins, ridges, till plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope Down-slope shape: Concave Across-slope shape: Linear Hydric soil rating: No

Bombay

Percent of map unit: 3 percent Landform: Drumlinoid ridges Landform position (two-dimensional): Shoulder, backslope, summit Landform position (three-dimensional): Crest, side slope Down-slope shape: Concave Across-slope shape: Convex Hydric soil rating: No

Cayuga

Percent of map unit: 2 percent Landform: Drumlinoid ridges Landform position (two-dimensional): Shoulder, summit Landform position (three-dimensional): Crest, side slope Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

HIB—Hilton silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w3l9 Elevation: 260 to 1,640 feet Mean annual precipitation: 31 to 57 inches Mean annual air temperature: 41 to 50 degrees F Frost-free period: 100 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Hilton and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Hilton

Setting

Landform: Drumlins, ridges, till plains Landform position (two-dimensional): Summit, shoulder Landform position (three-dimensional): Crest Down-slope shape: Linear Across-slope shape: Concave, convex Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: silt loam E - 9 to 17 inches: loam Bt/E - 17 to 24 inches: gravelly loam Bt - 24 to 36 inches: gravelly loam C1 - 36 to 54 inches: gravelly loam C2 - 54 to 79 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water capacity: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e Hydrologic Soil Group: B/D Hydric soil rating: No

Minor Components

Ontario

Percent of map unit: 5 percent Landform: Drumlins, ridges, till plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Crest Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Appleton

Percent of map unit: 5 percent Landform: Drumlins, ridges, till plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope Down-slope shape: Concave Across-slope shape: Linear Hydric soil rating: No

Bombay

Percent of map unit: 3 percent Landform: Drumlinoid ridges Landform position (two-dimensional): Shoulder, backslope, summit Landform position (three-dimensional): Crest, side slope Down-slope shape: Concave Across-slope shape: Convex Hydric soil rating: No

Cayuga

Percent of map unit: 2 percent Landform: Drumlinoid ridges Landform position (two-dimensional): Shoulder, summit Landform position (three-dimensional): Crest, side slope Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

HsB—Hudson silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9twy Elevation: 300 to 1,800 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: All areas are prime farmland

Map Unit Composition

Hudson and similar soils: 70 percent *Minor components:* 30 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Hudson

Setting

Landform: Lake plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Convex Parent material: Clayey and silty glaciolacustrine deposits

Typical profile

H1 - 0 to 12 inches: silt loam *H2 - 12 to 20 inches:* silty clay loam *H3 - 20 to 30 inches:* silty clay *H4 - 30 to 60 inches:* silt loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent

Available water capacity: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 2e Hydrologic Soil Group: C/D Hydric soil rating: No

Minor Components

Ovid

Percent of map unit: 4 percent Hydric soil rating: No

Dunkirk

Percent of map unit: 4 percent Hydric soil rating: No

Rhinebeck

Percent of map unit: 4 percent Hydric soil rating: No

Collamer

Percent of map unit: 4 percent Hydric soil rating: No

Niagara

Percent of map unit: 4 percent Hydric soil rating: No

Cayuga

Percent of map unit: 3 percent Hydric soil rating: No

Churchville

Percent of map unit: 3 percent Hydric soil rating: No

Claverack

Percent of map unit: 2 percent Hydric soil rating: No

Cazenovia

Percent of map unit: 2 percent Hydric soil rating: No

Ma—Madalin silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2spk0 Elevation: 230 to 930 feet Mean annual precipitation: 31 to 57 inches Mean annual air temperature: 41 to 50 degrees F Frost-free period: 100 to 190 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Madalin and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Madalin

Setting

Landform: Depressions Landform position (two-dimensional): Toeslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Concave Parent material: Brown clayey glaciolacustrine deposits derived from calcareous shale

Typical profile

Ap - 0 to 8 inches: silt loam Btg1 - 8 to 16 inches: silty clay loam Btg2 - 16 to 25 inches: silty clay Btg3 - 25 to 33 inches: silty clay C - 33 to 79 inches: stratified silt to clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 8 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Available water capacity: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 4w Hydrologic Soil Group: C/D Ecological site: F101XY010NY - Wet Lake Plain Depression Hydric soil rating: Yes

Minor Components

Rhinebeck

Percent of map unit: 5 percent Landform: Lake plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Linear Hydric soil rating: No

Canandaigua

Percent of map unit: 4 percent Landform: Depressions Landform position (two-dimensional): Toeslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Concave Hydric soil rating: Yes

Fonda

Percent of map unit: 4 percent Landform: Depressions Landform position (two-dimensional): Toeslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Concave Hydric soil rating: Yes

Cosad

Percent of map unit: 2 percent Landform: Lake plains Landform position (two-dimensional): Summit, shoulder Landform position (three-dimensional): Tread Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Md—Madalin silt loam, loamy subsoil variant

Map Unit Setting

National map unit symbol: 9tx8 Elevation: 260 to 640 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Madalin variant, loamy substratum, and similar soils: 75 percent Minor components: 25 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Madalin Variant, Loamy Substratum

Setting

Landform: Depressions Landform position (two-dimensional): Toeslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Concave Parent material: Clayey and silty glaciolacustrine deposits

Typical profile

H1 - 0 to 8 inches: silt loam

H2 - 8 to 26 inches: silty clay

H3 - 26 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Available water capacity: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 4w Hydrologic Soil Group: C/D Ecological site: F101XY010NY - Wet Lake Plain Depression Hydric soil rating: Yes

Minor Components

Churchville

Percent of map unit: 5 percent *Hydric soil rating:* No

Sun

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Ovid

Percent of map unit: 4 percent *Hydric soil rating:* No

Odessa

Percent of map unit: 4 percent Hydric soil rating: No

Rhinebeck

Percent of map unit: 3 percent Hydric soil rating: No

Lakemont

Percent of map unit: 3 percent Landform: Depressions Hydric soil rating: Yes

Unnamed soils

Percent of map unit: 2 percent Hydric soil rating: No

Mn—Minoa very fine sandy loam

Map Unit Setting

National map unit symbol: 9txc Elevation: 250 to 800 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Prime farmland if drained

Map Unit Composition

Minoa and similar soils: 70 percent *Minor components:* 30 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Minoa

Setting

Landform: Deltas on lake plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Linear Parent material: Deltaic or glaciolacustrine deposits with a high content of fine and very fine sand

Typical profile

- H1 0 to 8 inches: very fine sandy loam
- H2 8 to 20 inches: very fine sandy loam
- H3 20 to 30 inches: loamy very fine sand
- H4 30 to 60 inches: stratified very fine sand to silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3w Hydrologic Soil Group: B/D Ecological site: F101XY006NY - Moist Outwash Hydric soil rating: No

Minor Components

Cosad

Percent of map unit: 4 percent Hydric soil rating: No

Niagara

Percent of map unit: 4 percent Hydric soil rating: No

Massena

Percent of map unit: 4 percent Hydric soil rating: Yes

Elnora

Percent of map unit: 4 percent Hydric soil rating: No

Galen

Percent of map unit: 4 percent Hydric soil rating: No

Lamson

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Canandaigua

Percent of map unit: 3 percent Landform: Depressions Hydric soil rating: Yes

Stafford

Percent of map unit: 3 percent Hydric soil rating: No

NaA—Niagara silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9txf Elevation: 250 to 660 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Prime farmland if drained

Map Unit Composition

Niagara and similar soils: 70 percent *Minor components:* 30 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Niagara

Setting

Landform: Lake plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Linear Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 13 inches: silt loam

H2 - 13 to 30 inches: silt loam

H3 - 30 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3w Hydrologic Soil Group: C/D Ecological site: F101XY009NY - Moist Lake Plain Hydric soil rating: No

Minor Components

Collamer

Percent of map unit: 4 percent Hydric soil rating: No

Galen

Percent of map unit: 4 percent Hydric soil rating: No

Canandaigua

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Rhinebeck

Percent of map unit: 4 percent *Hydric soil rating:* No

Minoa

Percent of map unit: 4 percent Hydric soil rating: No

Odessa

Percent of map unit: 4 percent Hydric soil rating: No

Hilton

Percent of map unit: 3 percent Hydric soil rating: No

Appleton

Percent of map unit: 3 percent Hydric soil rating: No

NaB—Niagara silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9txg Elevation: 250 to 510 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Prime farmland if drained

Map Unit Composition

Niagara and similar soils: 80 percent *Minor components:* 20 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Niagara

Setting

Landform: Lake plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Linear Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 13 inches: silt loam *H2 - 13 to 30 inches:* silt loam *H3 - 30 to 60 inches:* silt loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent *Available water capacity:* High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3w Hydrologic Soil Group: C/D Ecological site: F101XY009NY - Moist Lake Plain Hydric soil rating: No

Minor Components

Canandaigua

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Claverack

Percent of map unit: 4 percent Hydric soil rating: No

Collamer

Percent of map unit: 4 percent Hydric soil rating: No

Hilton

Percent of map unit: 4 percent Hydric soil rating: No

Galen

Percent of map unit: 4 percent Hydric soil rating: No

OnD3—Ontario loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2w3q5 Elevation: 250 to 1,310 feet Mean annual precipitation: 31 to 57 inches Mean annual air temperature: 41 to 50 degrees F Frost-free period: 100 to 190 days Farmland classification: Not prime farmland

Map Unit Composition

Ontario and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Ontario

Setting

Landform: Ridges, till plains, drumlins

Landform position (two-dimensional): Backslope, summit Landform position (three-dimensional): Side slope, crest Down-slope shape: Convex Across-slope shape: Convex Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 8 inches: loam E - 8 to 14 inches: loam Bt/E - 14 to 21 inches: loam Bt - 21 to 39 inches: gravelly loam C1 - 39 to 48 inches: gravelly loam C2 - 48 to 79 inches: gravelly loam

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 4e Hydrologic Soil Group: B Ecological site: F101XY012NY - Till Upland Hydric soil rating: No

Minor Components

Cazenovia

Percent of map unit: 5 percent Landform: Till plains, reworked lake plains Landform position (two-dimensional): Summit Landform position (three-dimensional): Crest Down-slope shape: Concave Across-slope shape: Convex Hydric soil rating: No

Honeoye

Percent of map unit: 5 percent Landform: Till plains, drumlins, ridges Landform position (two-dimensional): Backslope, shoulder, summit Landform position (three-dimensional): Side slope, crest Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Hilton

Percent of map unit: 3 percent

Landform: Till plains, drumlins, ridges Landform position (two-dimensional): Summit Landform position (three-dimensional): Crest Down-slope shape: Linear Across-slope shape: Convex, concave Hydric soil rating: No

Appleton

Percent of map unit: 2 percent Landform: Drumlins, ridges, till plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope Down-slope shape: Concave Across-slope shape: Linear Hydric soil rating: No

OvA—Ovid silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9txt Elevation: 250 to 1,000 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Prime farmland if drained

Map Unit Composition

Ovid and similar soils: 75 percent Minor components: 25 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ovid

Setting

Landform: Reworked lake plains, till plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope Down-slope shape: Concave Across-slope shape: Linear Parent material: Loamy till with a significant component of reddish shale or reddish glaciolacustrine clays, mixed with limestone and some sandstone

Typical profile

H1 - 0 to 11 inches: silt loam H2 - 11 to 24 inches: silty clay loam H3 - 24 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent *Depth to restrictive feature:* More than 80 inches *Drainage class:* Somewhat poorly drained

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr) Depth to water table: About 6 to 18 inches Frequency of flooding: None Frequency of ponding: None Calcium carbonate, maximum content: 15 percent Available water capacity: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3w Hydrologic Soil Group: C/D Ecological site: F101XY013NY - Moist Till Hydric soil rating: No

Minor Components

Appleton

Percent of map unit: 5 percent Hydric soil rating: No

Cayuga

Percent of map unit: 4 percent Hydric soil rating: No

Cazenovia

Percent of map unit: 4 percent Hydric soil rating: No

Churchville

Percent of map unit: 4 percent Hydric soil rating: No

Sun

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Unnamed soils

Percent of map unit: 4 percent Hydric soil rating: No

OvB—Ovid silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9txv Elevation: 250 to 1,000 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Prime farmland if drained

Map Unit Composition

Ovid and similar soils: 75 percent *Minor components:* 25 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Ovid

Setting

Landform: Reworked lake plains, till plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope Down-slope shape: Concave Across-slope shape: Linear Parent material: Loamy till with a significant component of reddish shale or reddish glaciolacustrine clays, mixed with limestone and some sandstone

Typical profile

H1 - 0 to 11 inches: silt loam H2 - 11 to 24 inches: silty clay loam H3 - 24 to 60 inches: loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3w Hydrologic Soil Group: C/D Ecological site: F101XY013NY - Moist Till Hydric soil rating: No

Minor Components

Cazenovia

Percent of map unit: 5 percent Hydric soil rating: No

Churchville

Percent of map unit: 5 percent Hydric soil rating: No

Cayuga

Percent of map unit: 5 percent Hydric soil rating: No

Hilton

Percent of map unit: 3 percent Hydric soil rating: No

Appleton

Percent of map unit: 3 percent Hydric soil rating: No

Madalin

Percent of map unit: 2 percent Landform: Depressions Hydric soil rating: Yes

Unnamed soils

Percent of map unit: 2 percent Hydric soil rating: No

RbA—Rhinebeck silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9ty1 Elevation: 80 to 1,000 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Prime farmland if drained

Map Unit Composition

Rhinebeck and similar soils: 70 percent Minor components: 30 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rhinebeck

Setting

Landform: Lake plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Linear Parent material: Clayey and silty glaciolacustrine deposits

Typical profile

H1 - 0 to 10 inches: silt loam H2 - 10 to 23 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent *Available water capacity:* Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3w Hydrologic Soil Group: C/D Hydric soil rating: No

Minor Components

Madalin

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Collamer

Percent of map unit: 4 percent Hydric soil rating: No

Canandaigua

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Hudson

Percent of map unit: 4 percent Hydric soil rating: No

Niagara

Percent of map unit: 4 percent Hydric soil rating: No

Cayuga

Percent of map unit: 4 percent Hydric soil rating: No

Churchville

Percent of map unit: 3 percent Hydric soil rating: No

Ovid

Percent of map unit: 3 percent Hydric soil rating: No

RbB—Rhinebeck silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9ty2 Elevation: 80 to 1,000 feet Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Prime farmland if drained

Map Unit Composition

Rhinebeck and similar soils: 70 percent Minor components: 30 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rhinebeck

Setting

Landform: Lake plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Linear Parent material: Clayey and silty glaciolacustrine deposits

Typical profile

H1 - 0 to 10 inches: silt loam H2 - 10 to 23 inches: silty clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3w Hydrologic Soil Group: C/D Hydric soil rating: No

Minor Components

Canandaigua

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Churchville

Percent of map unit: 4 percent Hydric soil rating: No

Collamer

Percent of map unit: 4 percent Hydric soil rating: No

Hudson

Percent of map unit: 4 percent Hydric soil rating: No

Madalin

Percent of map unit: 4 percent Landform: Depressions Hydric soil rating: Yes

Cayuga

Percent of map unit: 3 percent Hydric soil rating: No

Niagara

Percent of map unit: 3 percent Hydric soil rating: No

Cazenovia

Percent of map unit: 2 percent Hydric soil rating: No

Ovid

Percent of map unit: 2 percent Hydric soil rating: No

W-Water

Map Unit Setting

National map unit symbol: 9tyg Mean annual precipitation: 31 to 37 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 145 to 190 days Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Wa—Wayland soils complex, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2srgv Elevation: 160 to 1,970 feet Mean annual precipitation: 31 to 68 inches Mean annual air temperature: 43 to 52 degrees F Frost-free period: 105 to 180 days Farmland classification: Not prime farmland

Map Unit Composition

Wayland and similar soils: 60 percent *Wayland, very poorly drained, and similar soils:* 30 percent *Minor components:* 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wayland

Setting

Landform: Flood plains Landform position (three-dimensional): Tread Down-slope shape: Linear Across-slope shape: Linear Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 6 inches: silt loam Bg1 - 6 to 12 inches: silt loam Bg2 - 12 to 18 inches: silt loam C1 - 18 to 46 inches: silt loam C2 - 46 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Very high (about 12.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 5w Hydrologic Soil Group: B/D Ecological site: F139XY009OH - Wet Floodplain Hydric soil rating: Yes

Description of Wayland, Very Poorly Drained

Setting

Landform: Flood plains Landform position (three-dimensional): Tread Down-slope shape: Concave Across-slope shape: Concave Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 6 inches: mucky silt loam Bg1 - 6 to 12 inches: silt loam Bg2 - 12 to 18 inches: silt loam C1 - 18 to 46 inches: silt loam C2 - 46 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches Drainage class: Very poorly drained Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr) Depth to water table: About 0 inches Frequency of flooding: FrequentNone

Frequency of ponding: Frequent Calcium carbonate, maximum content: 15 percent Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm) Available water capacity: Very high (about 12.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 5w Hydrologic Soil Group: B/D Ecological site: F139XY009OH - Wet Floodplain Hydric soil rating: Yes

Minor Components

Wakeville

Percent of map unit: 10 percent Landform: Flood plains Landform position (two-dimensional): Footslope Landform position (three-dimensional): Talf Down-slope shape: Concave Across-slope shape: Linear Hydric soil rating: No

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Building Site Development

Building site development interpretations are designed to be used as tools for evaluating soil suitability and identifying soil limitations for various construction purposes. As part of the interpretation process, the rating applies to each soil in its described condition and does not consider present land use. Example interpretations can include corrosion of concrete and steel, shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

Corrosion of Concrete (Somerset Solar)

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."



	MAP I	LEGEND	MAP INFORMATION
Area of In	Iterest (AOI) Area of Interest (AOI)	Background Aerial Photography	The soil surveys that comprise your AOI were mapped at 1:15,800.
Soils			Please rely on the har scale on each man sheet for man
Soil Ra	ting Polygons		measurements.
	High		
	Moderate		Source of Map: Natural Resources Conservation Service
	Low		Web Soll Survey URL: Coordinate System: Web Mercator (EPSG:3857)
	Not rated or not available		······································
			Maps from the Web Soil Survey are based on the Web Merc
Soli Ra	High		projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as
	Madarata		Albers equal-area conic projection, should be used if more
· · · · ·	Moderate		accurate calculations of distance or area are required.
~	Low		This product is generated from the USDA-NRCS certified da
1.1	Not rated or not available	ble	of the version date(s) listed below.
Soil Ra	ting Points		
	High		Soil Survey Area: Niagara County Area, New York
	Moderate		Survey Area Data. Version 19, Jun 11, 2020
	Low		Soil map units are labeled (as space allows) for map scales
_	Not rated or not available	he	1:50,000 or larger.
			Data(a) parial images were photographed: Dec 31, 2000
water rea	Streams and Canals		18, 2016
-~~			
ransport	Rails		The orthophoto or other base map on which the soil lines we
	Interatoto I liaburo:		imagery displayed on these maps. As a result, some minor
~	merstate Highways		shifting of map unit boundaries may be evident.
~	US Routes		
\sim	Major Roads		
	Local Roads		

Table—Corrosion of Concrete (Somerset Solar)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
АрА	Appleton silt loam, 0 to 3 percent slopes	Low	17.8	1.0%
ArB	B Arkport very fine sandy loam, 0 to 6 percent slopes		22.4	1.3%
ArC	Arkport very fine sandy loam, 6 to 12 percent slopes	Moderate	10.1	0.6%
Са	Canandaigua silt loam	Low	2.0	0.1%
СсВ	Cayuga and Cazenovia silt loams, 2 to 6 percent slopes	Low	5.2	0.3%
CmA	Claverack loamy fine sand, 0 to 2 percent slopes	Low	41.0	2.3%
CmB	Claverack loamy fine sand, 2 to 6 percent slopes	Low	32.3	1.8%
CnA	Collamer silt loam, 0 to 2 percent slopes	Low	129.3	7.2%
CnB	Collamer silt loam, 2 to 6 percent slopes	Low	491.0	27.5%
СоВ	Colonie loamy fine sand, 0 to 6 percent slopes	Moderate	6.1	0.3%
Cs	Cosad fine sandy loam	Moderate	10.2	0.6%
DuB	Dunkirk silt loam, 2 to 6 percent slopes	Low	20.5	1.1%
DuC3	Dunkirk silt loam, 6 to 12 percent slopes, eroded	Low	34.1	1.9%
DvD3	Dunkirk and Arkport soils, 12 to 20 percent slopes, eroded	Low	3.5	0.2%
EIA	Elnora loamy fine sand, 0 to 2 percent slopes	High	1.9	0.1%
EIB	Elnora loamy fine sand, 2 to 6 percent slopes	High	6.0	0.3%
Fr	Fredon gravelly loam	Moderate	2.6	0.1%
GnA	Galen very fine sandy loam, 0 to 2 percent slopes	Moderate	7.6	0.4%
GnB	Galen very fine sandy loam, 2 to 6 percent slopes	Moderate	5.6	0.3%
На	Hamlin silt loam	Low	26.4	1.5%
HgB	Hilton gravelly loam, 3 to 8 percent slopes	Moderate	14.6	0.8%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HIA	Hilton silt loam, 0 to 3 percent slopes	Moderate	26.9	1.5%
HIB	Hilton silt loam, 3 to 8 percent slopes	Moderate	79.1	4.4%
HsB	Hudson silt loam, 2 to 6 percent slopes	Low	32.9	1.8%
Ма	Madalin silt loam, 0 to 3 percent slopes	Low	12.7	0.7%
Md	Madalin silt loam, loamy subsoil variant	Low	11.5	0.6%
Mn	Minoa very fine sandy loam	Moderate	9.0	0.5%
NaA	Niagara silt loam, 0 to 2 percent slopes	Low	374.8	21.0%
NaB	Niagara silt loam, 2 to 6 percent slopes	Low	32.9	1.8%
OnD3	Ontario loam, 15 to 30 percent slopes	Moderate	7.6	0.4%
OvA	Ovid silt loam, 0 to 2 percent slopes	Low	13.5	0.8%
ОvВ	Ovid silt loam, 2 to 6 percent slopes	Low	4.3	0.2%
RbA	Rhinebeck silt loam, 0 to 2 percent slopes	Low	224.4	12.5%
RbB	Rhinebeck silt loam, 2 to 6 percent slopes	Low	28.5	1.6%
W	Water		14.5	0.8%
Wa	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	Low	20.3	1.1%
Totals for Area of Inter	est		1,788.4	100.0%

Rating Options—Corrosion of Concrete (Somerset Solar)

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher

Corrosion of Steel (Somerset Solar)

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible

to corrosion than the steel in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."



	MAP I	LEGEND	MAP INFORMATION		
Area of In	i terest (AOI) Area of Interest (AOI)	Background Aerial Photography	The soil surveys that comprise your AOI were mapped at 1:15,800.		
Soils			Please roly on the har scale on each man sheet for man		
Soil Ra	ting Polygons		measurements.		
	High				
	Moderate		Source of Map: Natural Resources Conservation Service		
	Low		Web Soil Survey URL: Coordinate System: Web Mercator (EBSG:3857)		
	Not rated or not available	e	Maps from the Web Soil Survey are based on the Web Mer		
Soil Ra	ting Lines		projection, which preserves direction and shape but distorts		
-	High		distance and area. A projection that preserves area, such a Albers equal-area conic projection, should be used if more		
	Moderate		accurate calculations of distance or area are required.		
	Low				
	Not rated or not available	e	This product is generated from the USDA-NRCS certified d		
Soil Pa	ting Points		of the version date(s) listed below.		
	Hiah		Soil Survey Area: Niagara County Area, New York		
_	Modorato		Survey Area Data: Version 19, Jun 11, 2020		
	Moderale				
	Low		Soil map units are labeled (as space allows) for map scales		
	Not rated or not available	e			
Water Fea	atures		Date(s) aerial images were photographed: Dec 31, 2009–		
\sim	Streams and Canals		18, 2016		
Transport	tation		The orthonhoto or other base map on which the soil lines w		
••••	Rails		compiled and digitized probably differs from the background		
~	Interstate Highways		imagery displayed on these maps. As a result, some minor		
~	US Routes		shifting of map unit boundaries may be evident.		
~	Major Roads				

Table—Corrosion of Steel (Somerset Solar)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
АрА	Appleton silt loam, 0 to 3 percent slopes	High	17.8	1.0%
ArB	B Arkport very fine sandy loam, 0 to 6 percent slopes		22.4	1.3%
ArC	Arkport very fine sandy loam, 6 to 12 percent slopes	Low	10.1	0.6%
Са	Canandaigua silt loam	High	2.0	0.1%
СсВ	Cayuga and Cazenovia silt loams, 2 to 6 percent slopes	High	5.2	0.3%
CmA	Claverack loamy fine sand, 0 to 2 percent slopes	High	41.0	2.3%
CmB	Claverack loamy fine sand, 2 to 6 percent slopes	High	32.3	1.8%
CnA	Collamer silt loam, 0 to 2 percent slopes	High	129.3	7.2%
CnB	Collamer silt loam, 2 to 6 percent slopes	High	491.0	27.5%
СоВ	Colonie loamy fine sand, 0 to 6 percent slopes	Low	6.1	0.3%
Cs	Cosad fine sandy loam	High	10.2	0.6%
DuB	Dunkirk silt loam, 2 to 6 percent slopes	Low	20.5	1.1%
DuC3	Dunkirk silt loam, 6 to 12 percent slopes, eroded	Low	34.1	1.9%
DvD3	Dunkirk and Arkport soils, 12 to 20 percent slopes, eroded	Low	3.5	0.2%
EIA	Elnora loamy fine sand, 0 to 2 percent slopes	High	1.9	0.1%
EIB	Elnora loamy fine sand, 2 to 6 percent slopes	High	6.0	0.3%
Fr	Fredon gravelly loam	High	2.6	0.1%
GnA	Galen very fine sandy loam, 0 to 2 percent slopes	High	7.6	0.4%
GnB	Galen very fine sandy loam, 2 to 6 percent slopes	High	5.6	0.3%
На	Hamlin silt loam	High	26.4	1.5%
HgB	Hilton gravelly loam, 3 to 8 percent slopes	High	14.6	0.8%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HIA	Hilton silt loam, 0 to 3 percent slopes	High	26.9	1.5%
HIB	Hilton silt loam, 3 to 8 percent slopes	High	79.1	4.4%
HsB	Hudson silt loam, 2 to 6 percent slopes	High	32.9	1.8%
Ма	Madalin silt loam, 0 to 3 percent slopes	Moderate	12.7	0.7%
Md	Madalin silt loam, loamy subsoil variant	High	11.5	0.6%
Mn	Minoa very fine sandy loam	High	9.0	0.5%
NaA	Niagara silt loam, 0 to 2 percent slopes	High	374.8	21.0%
NaB	Niagara silt loam, 2 to 6 percent slopes	High	32.9	1.8%
OnD3	Ontario loam, 15 to 30 percent slopes	Low	7.6	0.4%
OvA	Ovid silt loam, 0 to 2 percent slopes	High	13.5	0.8%
OvB	Ovid silt loam, 2 to 6 percent slopes	High	4.3	0.2%
RbA	Rhinebeck silt loam, 0 to 2 percent slopes	High	224.4	12.5%
RbB	Rhinebeck silt loam, 2 to 6 percent slopes	High	28.5	1.6%
W	Water		14.5	0.8%
Wa	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	Moderate	20.3	1.1%
Totals for Area of Inter	est		1,788.4	100.0%

Rating Options—Corrosion of Steel (Somerset Solar)

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher

Land Management

Land management interpretations are tools designed to guide the user in evaluating existing conditions in planning and predicting the soil response to various land management practices, for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture, and rangeland. Example interpretations include suitability for a variety of irrigation practices, log landings, haul roads and major skid trails, equipment operability, site preparation, suitability for hand and mechanical

planting, potential erosion hazard associated with various practices, and ratings for fencing and waterline installation.

Erosion Hazard (Off-Road, Off-Trail) (Somerset Solar)

The ratings in this interpretation indicate the hazard of soil loss from off-road and off-trail areas after disturbance activities that expose the soil surface. The ratings are based on slope, soil erosion factor K, and an index of rainfall erosivity (R). The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance.

The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," "severe," or "very severe." A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions; "moderate" indicates that some erosion is likely and that erosion-control measures may be needed; "severe" indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and "very severe" indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.



MAP L	EGEND	MAP INFORMATION		
Area of Interest (AOI) Area of Interest (AOI)	→ US Routes→ Major Roads	The soil surveys that comprise your AOI were mapped at 1:15,800.		
Soils Soil Rating Polygons Very severe Severe	Local Roads Background Aerial Photography	Please rely on the bar scale on each map sheet for map measurements. Source of Map: Natural Resources Conservation Service Web Soil Survey URL:		
Moderate Slight Not rated or not available		Coordinate System: Web Mercator (EPSG:3857) Maps from the Web Soil Survey are based on the Web Merca projection, which preserves direction and shape but distorts distance and area. A projection that preserves area such as t		
Soil Rating Lines Very severe Severe		Albers equal-area conic projection that preserves area, such as a Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.		
 Moderate Slight Not rated or not available 		of the version date(s) listed below. Soil Survey Area: Niagara County Area, New York Survey Area Data: Version 19, Jun 11, 2020		
Soil Rating Points Uery severe Severe		Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.		
 Moderate Slight Not rated or not available 		Date(s) aerial images were photographed: Dec 31, 2009—C 18, 2016 The orthophoto or other base map on which the soil lines were		
Water Features		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.		
Transportation +++ Rails Interstate Highways				

Tables—Erosion Hazard (Off-Road, Off-Trail) (Somerset Solar)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
АрА	Appleton silt	Slight	Appleton (85%)		17.8	1.0%
	loam, 0 to 3 percent slopes		Lima (5%)			
			Lyons (4%)			
			Churchville (3%)			
			Darien (3%)			
ArB	Arkport very fine sandy loam, 0 to 6 percent slopes	Slight	Arkport (80%)		22.4	1.3%
ArC	Arkport very fine sandy loam, 6 to 12 percent slopes	Moderate	Arkport (80%)	Surface kw times slope times R index (0.75)	10.1	0.6%
Са	Canandaigua silt Ioam	Slight	Canandaigua (75%)		2.0	0.1%
СсВ	Cayuga and Cazenovia silt loams, 2 to 6 percent slopes	Moderate	Cayuga (40%)	Surface kw times slope times R index (0.32)	5.2	0.3%
CmA	Claverack loamy fine sand, 0 to 2 percent slopes	Slight	Claverack (80%)		41.0	2.3%
CmB	Claverack loamy fine sand, 2 to 6 percent slopes	Slight	Claverack (80%)		32.3	1.8%
CnA	Collamer silt loam, 0 to 2 percent slopes	Slight	Collamer (75%)		129.3	7.2%
CnB	Collamer silt loam, 2 to 6 percent slopes	Moderate	Collamer (75%)	Surface kw times slope times R index (0.32)	491.0	27.5%
СоВ	Colonie loamy fine sand, 0 to 6 percent slopes	Slight	Colonie (80%)		6.1	0.3%
Cs	Cosad fine sandy loam	Slight	Cosad (70%)		10.2	0.6%
DuB	Dunkirk silt loam, 2 to 6 percent slopes	Moderate	Dunkirk (80%)	Surface kw times slope times R index (0.32)	20.5	1.1%
DuC3	Dunkirk silt loam, 6 to 12 percent slopes, eroded	Severe	Dunkirk, eroded (80%)	Surface kw times slope times R index (0.82)	34.1	1.9%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI				
DvD3	Dunkirk and Arkport soils, 12 to 20	Severe	Dunkirk, eroded (41%)	Surface kw times slope times R index (0.94)	3.5	0.2%				
	eroded		Arkport (39%)	Surface kw times slope times R index (0.88)						
EIA	Elnora loamy fine sand, 0 to 2 percent slopes	Slight	Elnora (75%)		1.9	0.1%				
EIB	Elnora loamy fine sand, 2 to 6 percent slopes	Slight	Elnora (75%)		6.0	0.3%				
Fr	Fredon gravelly loam	Slight	Fredon, poorly drained (50%)		2.6	0.1%				
			Fredon, somewhat poorly drained (25%)							
GnA	Galen very fine sandy loam, 0 to 2 percent slopes	Slight	Galen (70%)		7.6	0.4%				
GnB	Galen very fine sandy loam, 2 to 6 percent slopes	Slight	Galen (70%)		5.6	0.3%				
На	Hamlin silt loam	Slight	Hamlin (85%)		26.4	1.5%				
HgB	Hilton gravelly	Slight	Hilton (85%)		14.6	0.8%				
	percent slopes		Bombay (3%)							
HIA	Hilton silt loam, 0	Slight	Hilton (85%)		26.9	26.9	26.9	26.9	26.9	1.5%
	to 3 percent slopes		Ontario (5%)							
			Appleton (5%)							
			Bombay (3%)							
			Cayuga (2%)							
HIB	Hilton silt loam, 3 to 8 percent slopes	Moderate	Hilton (85%)	Surface kw times slope times R index (0.14)	79.1	4.4%				
			Appleton (5%)	Surface kw times slope times R index (0.04)	es R es R					
			Ontario (5%)	Surface kw times slope times R index (0.04)						
			Cayuga (2%)	Surface kw times slope times R index (0.54)						
HsB	Hudson silt loam, 2 to 6 percent slopes	Moderate	Hudson (70%)	Surface kw times slope times R index (0.32)	32.9	1.8%				

E.

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI									
Ма	Madalin silt loam,	Slight	Madalin (85%)		12.7	0.7%									
	0 to 3 percent slopes		Rhinebeck (5%)												
			Canandaigua (4%)												
			Fonda (4%)												
			Cosad (2%)												
Md	Madalin silt loam, loamy subsoil variant	Slight	Madalin variant, loamy substratum (75%)		11.5	0.6%									
Mn	Minoa very fine sandy loam	Slight	Minoa (70%)		9.0	0.5%									
NaA	Niagara silt loam, 0 to 2 percent slopes	Slight	Niagara (70%)		374.8	21.0%									
NaB	Niagara silt loam, 2 to 6 percent slopes	Moderate	Niagara (80%)	Surface kw times slope times R index (0.32)	32.9	1.8%									
OnD3	Ontario loam, 15 to 30 percent slopes	Severe	Ontario (85%)	Surface kw times slope times R index (0.90)	7.6	0.4%									
			Cazenovia (5%)	Surface kw times slope times R index (0.90)											
			Honeoye (5%)	Surface kw times slope times R index (0.93)											
			Hilton (3%)	Surface kw times slope times R index (0.78)											
			Appleton (2%)	Surface kw times slope times R index (0.78)											
OvA	Ovid silt loam, 0 to 2 percent slopes	Slight	Ovid (75%)		13.5	0.8%									
OvB	Ovid silt loam, 2 to 6 percent slopes	Slight	Ovid (75%)		4.3	0.2%									
RbA	Rhinebeck silt loam, 0 to 2 percent slopes	Slight	Rhinebeck (70%)		224.4	12.5%									
RbB	Rhinebeck silt loam, 2 to 6 percent slopes	Moderate	Rhinebeck (70%)	Surface kw times slope times R index (0.32)	28.5	1.6%									
W	Water	Not rated	Water (100%)		14.5	0.8%									
Wa	Wayland soils complex, 0 to 3 percent slopes,	Slight	Wayland (60%)		20.3	1.1%									

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	frequently flooded		Wayland, very poorly drained (30%)			
			Wakeville (10%)			
Totals for Area of Interest					1,788.4	100.0%

Rating	Acres in AOI	Percent of AOI
Slight	1,023.2	57.2%
Moderate	700.2	39.1%
Severe	45.3	2.5%
Null or Not Rated	14.5	0.8%
Totals for Area of Interest	1,788.4	100.0%

Rating Options—Erosion Hazard (Off-Road, Off-Trail) (Somerset Solar)

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher

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