Clearview Solar I, LLC

Clearview Solar

Exhibit N

Preliminary Geotechnical Exploration Report

Case No. 20-1362-EL-BGN

PRELIMINARY GEOTECHNICAL EXPLORATION REPORT

CLEARVIEW SOLAR PROJECT
CHAMPAIGN COUNTY, OHIO

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HULL

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1.0 EXECUTIVE SUMMARY

Hull & Associates, LLC (Hull) presents this Preliminary Geotechnical Exploration Report (Report) summarizing the results of our geotechnical engineering services for the proposed Clearview Solar Project located in Champaign County, Ohio (Site). This Report is provided to satisfy the requirements of the Ohio Power Sitting Board (OPSB) Rule 4906-4-08(A)(5)(c) of the Ohio Administrative Code (OAC).

The project, as currently envisioned, will be a utility-scale solar project on approximately 1,200 acres of agricultural land, consisting of solar fields with arrays of ground-mounted photovoltaic (PV) panels, an electrical substation, associated equipment assemblies, and private access roads.

Hull completed a geotechnical field investigation at the Site that included drilling and sampling 12 borings and laboratory testing on select soil samples considered representative of the Site for preliminary design purposes. The intent of the information and recommendations provided in this Report is for planning and preliminary foundation (e.g. pile foundations) design purposes, with the understanding that pile load tests and additional geotechnical explorations would be completed to support the final design for the project, as appropriate.

We conclude that the planned construction can be successfully completed from a geotechnical perspective, provided the considerations presented in this Report are incorporated into the project planning, design, and construction phases. A summary of key geotechnical considerations for the Site is provided below.

- The borings completed at the Site generally encountered medium stiff to very stiff clayey soils with variable sand and gravel and loose to medium dense clayey/silty sand with variable gravel down to termination depth of the borings. Topsoil or tilled soil (i.e., fill/modified land), with thicknesses ranging from about 6 inches to 3 feet were observed in the borings at the surface.
- Bedrock was not encountered in the borings; however, we anticipate that bedrock is on the order of 150 feet below the existing site grades, or deeper, based on the logs of several domestic water wells in the Site vicinity and available regional bedrock elevation mapping.
- Groundwater was encountered at depths ranging between 5 and 15 feet in four of the borings completed at the Site and interpreted to be seepage from a nearby ditch and/or perched groundwater. Consequently, the groundwater observed within these borings is likely not hydraulically connected to any potable use wells/production wells near the Site. Our review of geologic publications and publicly available water well logs indicates that the static water level (i.e. regional groundwater table) across the Site is in estimated to generally be deeper than 15 feet below the existing Site grades. Groundwater levels at the Site should be expected to fluctuate as a function of the season, precipitation, and other factors.
- The soils at the Site expected to be encountered during construction generally contain a high percentage of fines (silt and clay) and are generally highly moisture sensitive. Debris, cobbles, and boulders may be encountered within the soils at the Site, including encountering potential obstructions during pile installation.
- A design frost penetration depth of 40 inches is recommend for the Site.
- Pursuant to ASCE/SEI 7-10 and the International Building Code (IBC), Site Class D (for stiff soil) is recommended for seismic design at the Site.
- The risk for corrosion potential for uncoated galvanized steel and ductile iron pipe is considered low to moderate and the risk for corrosion potential for concrete is considered low based on the results of the laboratory corrosion testing. If ductile iron pipes, rebar, or other buried steel is to be placed

in or on the subgrade material, it is recommended that a polyethylene encasement, or an acceptable equivalent protective measure, be considered to mitigate against the corrosion potential of the subgrade soils at the Site.

- In our opinion, steel piles (e.g. W6 and W8 wide flange beam sections) will be a suitable foundation system to support the PV Panels at the Site.
- Shallow foundations are considered suitable support for electrical equipment at the substation and for lightly loaded structures throughout the Site. We recommend that shallow foundations bear on medium stiff to stiff clay/silty clay or medium dense clayey sand and may be designed for a maximum net allowable bearing pressure of 2,500 pounds per square foot (psf). We recommend individual column footings and continuous wall footings have minimum widths of 30 and 18 inches, respectively. We recommend that all exterior footings be founded a minimum of 40 inches below the lowest adjacent grade for frost protection.
- We recommend that on-grade slabs be founded on medium stiff or stiffer subgrade or structural fill over medium stiff or stiffer subgrade. Where slab-on-grade construction is planned in areas with soft subgrade conditions, overexcavation and replacement of unsuitable soils will likely be required. For planning purposes, Hull recommends a minimum 2-foot overexcavation and replacement with gravel be considered for "settlement sensitive" on-grade slabs to mitigate settlement potential.
- For structures/appurtenances within the substation which have large loads and/or are sensitive to movement that are supported on drilled shaft foundations, we recommended that each drilled shaft element be at least 1.5 feet in diameter. It is recommended that drilled shafts have a minimum shaft length of 10 feet or at least 3 times the shaft diameter, whichever is greater, and bear on native stiff (or stiffer) or dense (or denser) soils.

The preceding summary is presented for introductory purposes and should be used in conjunction with the preliminary recommendations presented in this Report. These and other geotechnical considerations are discussed further, and preliminary recommendations for the geotechnical aspects of the project are presented in the following sections of this Report.

2.0 INTRODUCTION AND PROJECT DESCRIPTION

2.1 Introduction

This Report presents the results of our geotechnical engineering services performed for the proposed Clearview Solar Project located in Adams Township, Champaign County, Ohio (Site). The Site is located approximately 35 miles north-northeast of Dayton, Ohio. The project location is shown relative to surrounding physical features on the Site Plan, Figure 1.

The purpose of our services is to evaluate the subsurface conditions at the Site as a basis for developing preliminary geotechnical recommendations for the design and construction of shallow and pile foundations support for the proposed solar photovoltaic (PV) panels and substation improvements at the Site. The borings completed as part of our geotechnical engineering services are considered to generally represent the subsurface conditions at the Site for preliminary design purposes. The intent of the information and recommendations provided in this Report is for planning and preliminary foundation design purposes, with the understanding that pile load tests and additional geotechnical explorations be completed to support the final design for project, as appropriate.

This Report is provided to satisfy the requirements of the Ohio Power Sitting Board (OPSB) Rule 4906-4-08(A)(5)(c) of the Ohio Administrative Code for providing the test boring logs and the following information to the board:

- Subsurface soil properties
- Static water level
- Rock quality description
- Percent recovery
- Depth and description of bedrock contact

2.2 Project Description

The project, as currently envisioned, will be a utility-scale solar project on approximately 1,200 acres of agricultural land, consisting of solar fields with arrays of ground-mounted photovoltaic (PV) panels, an electrical substation, associated equipment assemblies, and private access roads. We understand that the proposed solar PV Panels will be supported by driven steel piles (e.g., W6 and W8 wide flange beam sections). Proposed grading plans, panel locations, and foundation loads were not available at the time this Report was prepared, but it is anticipated that minimal site grading will be needed at for the Site development at the PV Panel locations, and minor grading and earthwork may be required at the substation area. It is also anticipated that uplift from winds and lateral loads are likely the controlling load forces for the design of the PV Panel foundations.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

3.1 Field Exploration

Subsurface conditions at the Site were evaluated by drilling and sampling 12 borings, designated B20-01 through B20-12, on August 12 and August 13, 2020. The borings were advanced to depths ranging between 15 and 50 feet below the ground surface (bgs) with a track-mounted drill rig utilizing continuous-flight, hollow-stem augers.

The approximate locations of the borings are shown on the Site Plan, Figure 1. Details of the field exploration program and logs of the borings are presented in Appendix A.

3.2 Laboratory Testing

The soil samples obtained from the borings were sealed to reduce moisture loss, labeled for identification, and transported to Geotechnics, Inc.'s laboratory for further examination, testing, and classification. Representative soil samples were tested for the determination of moisture content, grain size distribution (sieve analysis), percent passing #200 by washing, plasticity characteristics (Atterberg limits), and corrosivity (soil pH, chlorides, sulfates, and minimum resistivity).

The laboratory testing was performed in general accordance with test methods of ASTM International or other applicable procedures. The laboratory test results are presented in Appendix B and presented on the boring logs in Appendix A at the representative samples depths, where appropriate.

3.2.1 Moisture Content and Plasticity Characteristics

Moisture content of tested soil samples as received by the laboratory ranged from 6.8 to 22.7 percent. Atterberg limit testing of select soil samples had liquid limits that ranged from 0 to 41 and plasticity indices that ranged from 0 to 18.

3.2.2 Corrosion Testing Suite

Corrosion testing suites were performed on composite samples from Borings B20-04 and B20-09 at depths from 1 to 5 feet bgs to determine the corrosion potential for pipes and reactivity potential for concrete structures below grade. The corrosion testing included soil pH, chlorides, sulfates, and minimum resistivity. The laboratory test results are summarized in Table 1.

Table 1 – Summary of Corrosion Test Results

Boring	Material Description	Sample Depth (feet)	pH	Chlorides (mg/kg)	Sulfates[1] (mg/kg)	Minimum Resistivity[2] (omh-cm)
B20-04	Lean Clay (CL)	1 to 5	8.12	11.63	56.3	5100
B20-09	Sandy Lean Clay (CL)	1 to 5	7.55	25.59	62.0	1800

Notes: [1] corrected for moisture.
[2] resistivity at approx. in-situ moisture content.

4.0 SITE CONDITIONS

4.1 Site Location

The Site is located on approximately 1,200 acres of agricultural land in Adams Township, Champaign County, Ohio, about 35 miles north-northeast of Dayton. The Site is bounded to the north by Champaign-Logan Road, to the east by SR 235, to the south by Shanley Road, and to the west by Champaign Logan Shelby Road.

4.2 Geology

The Site is located within the Till Plains Section of the Central Lowlands Province, and locally lies within the Southern Ohio Loamy Till Plain physiographic region of Ohio. The Till Plain Region is characterized by a loamy till surface, end and recessional moraines, commonly associated with boulder belts, between relatively flat-lying ground moraine, cut by steep-valleyed large streams, and stream valleys filled with outwash and alternating between broad floodplains and narrows.

A review of geologic publications, including the Soil Survey of Champaign County (1971) and the Ohio Division of Geological Survey (1998), suggest that the surficial soils at the Site are mainly comprised of loamy, high-lime Wisconsinan-age till, outwash, and loess over Lower Paleozoic-age carbonite rocks, derived mainly from glacial deposits (i.e., mainly glacial till and glacial outwash). Further review also suggests that boulders may also be present at the Site.

Mapped bedrock elevations range from about 500 to 920 feet across the Site (approximately 150 to 600 feet below the existing site grades). The bedrock consists mainly of the Cincinnati Group (Upper Ordovician), which is predominantly comprised of gray and olive interbedded shale, limestone, and dolomite, laid down during the late Ordovician period (Bedrock Geologic Map of Ohio, 2006).

4.3 Geologic Hazards and Sensitive Areas

Based on review of geologic hazard maps (i.e., ODNR Mine Locator GIS system, USGS U.S. Landslide Inventory, ODNR Known and Probable Karst in Ohio Revised 2006), the Site is not located within areas mapped as active and abandoned surface or underground mines, landslides, or known and probable karst.

A review of published FEMA and ODNR Flood Maps indicates that there are no 100-year floodplain areas mapped within the Site.

4.4 Surface Conditions

The area in and surrounding the Site mostly consists of wooded and open, rural-residential, agricultural land and pastures with nominal forested patches. Indian Creek stream bisects the eastern portion of the Site and flows in a general south to north direction. Numerous roadside and agricultural ditches are also present at the Site.

The Site topography is relatively flat with elevations ranging from about 1072 feet to 1102 feet (NAVD88) The surficial soils generally consist of tilled soil (i.e., fill/modified land) or topsoil with thicknesses ranging from about 6 inches to 3 feet as observed in the borings completed as part of this study.

4.5 Utilities

Buried utilities are not anticipated within the undeveloped areas of the Site; however, utilities should be expected within the right-of-way corridors. We understand that there are drain tiles at the Site from active and previous agriculture operations and their locations should be verified during design and/or prior to construction.

4.6 Subsurface Conditions

The subsurface conditions at the Site were evaluated by completing 12 borings, B20-01 through B20-12. The logs of the borings are presented in Appendix A and their approximate locations are shown on the Site Plan, Figure 1.

Table 2 summarizes the approximate locations, existing ground surface elevations, groundwater depths observed during drilling, and the termination depths of each boring. The subsurface conditions encountered at the respective boring locations, including detailed descriptions of the subsurface materials, sample data, SPT results, groundwater conditions, and other pertinent information, are indicated on the boring logs presented in Appendix A.

Table 2 – Summary of Borings

Boring	Planned Use	Ground Surface Elevation (feet, NAVD88)	Topsoil/Tilled Soil Thickness (feet)	Observed Groundwater/Seepage	
				Depth (feet)	Elevation (feet, NAVD88)
B20-01	PV Panels	1078	0.8	5.0	1071
B20-02	PV Panels	1080	0.8	--	--
B20-03	PV Panels	1089	3.0	--	--
B20-04	PV Panels	1102	1.0	--	--
B20-05	PV Panels	1098	0.8	--	--
B20-06	PV Panels	1077	0.5	8.5	1068.5
B20-07	Substation	1072	1.6	15.0	1057
B20-08	Substation	1073	3.0	10.0	1063
B20-09	PV Panels	1084	1.0	--	--
B20-10	PV Panels	1083	1.0	--	--
B20-11	PV Panels	1082	1.0	--	--
B20-12	PV Panels	1087	1.0	--	--

Notes: Elevations for borings are approximate and estimated based on publicly available topographic mapping.
Groundwater observations represent conditions at the time of or end of drilling.
-- Denotes parameter not observed.

4.6.1 Soil

At the ground surface, a 0.5- to 3.0-foot-thick topsoil or tilled soil (i.e. fill/modified land) layer was encountered in the borings. Below this surficial layer, the borings generally encountered medium stiff to very stiff clayey soils with variable sand and gravel and loose to medium dense clayey/silty sand with variable gravel down to termination depth of the borings.

4.6.2 Bedrock

Bedrock was not encountered in the borings; however, bedrock was encountered at approximately 180 feet bgs during installation of several domestic water wells in the general vicinity of the Site. Published mapped bedrock elevations show that bedrock is deeper than 150 feet bgs across the Site.

4.6.3 Groundwater

The presence and level of groundwater was observed during drilling in borings B20-01, B20-06, B20-07, and B20-08 at depths ranging from approximately 5 to 15 feet bgs. Groundwater was not observed in the other eight borings at the time of drilling. Notably, the four borings which did encounter groundwater were located close to a surface water ditch along the eastern portion of the Site and our groundwater observations made in these borings is interpreted to be seepage and/or perched groundwater. Consequently, the groundwater observed within these borings is likely not hydraulically connected to any potable use wells/production wells near the Site. Zones of groundwater seepage and/or notable moisture changes observed during drilling are noted in the boring logs in Appendix A.

Our review of geologic publications and publicly available water well logs (water well locations are shown on the Site Plan, Figure 1) indicates that the primary groundwater source for Site is a limestone aquifer at approximately 170 feet bgs with recent records (c.2008-2018) showing water wells completed at depths ranging from about 170 to 205 feet bgs in this limestone unit. Historical records (c.1940-1970) show multiple wells in the Site vicinity that were completed at depths ranging between about 20 to 80 feet bgs in gravel deposits closer to the ground surface. An estimated regional static groundwater table of Elev. 1085±15 feet is associated with water wells completed in the consolidated (bedrock) aquifers in the Site vicinity. Accordingly, the static water level (i.e. regional groundwater table) across the Site is estimated to generally be in excess of 15 feet below the existing Site grades; however, we anticipate that groundwater levels will fluctuate as a function of the season, precipitation, and other factors.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 General Geotechnical Considerations

We conclude that the planned improvements can be successfully completed from a geotechnical perspective provided the considerations presented in this report are incorporated into the project planning and design.

5.1.1 Corrosion Protection

The risk for corrosion potential for uncoated galvanized steel and ductile iron pipe is considered low to moderate and the risk for corrosion potential for concrete is considered low based on the results of the laboratory corrosion testing. If ductile iron pipes, rebar, or other buried steel is to be placed in or on the subgrade material, it is recommended that a polyethylene encasement, or an acceptable equivalent protective measure, be considered to mitigate against the corrosion potential of the subgrade soils at the Site.

5.1.2 Frost Depth

A minimum design frost penetration depth of 40 inches is recommended for the Site, although applicable building codes should also be consulted for minimum design frost depths.

5.1.3 Seismic Site Class

Pursuant to ASCE/SEI 7-10 and the International Building Code (IBC), Site Class D (for stiff soil) is recommended for seismic design at the Site. All structures should be designed in accordance with the most current Ohio Building Code as well as local building codes, as appropriate.

5.1.4 Site Drainage

Adequate drainage should be established at the Site to minimize any increase in the moisture content of the subgrade material. Positive drainage of the Site should be created by gently sloping the surface away from the active construction equipment and towards drainage swales, ditches, and/or appropriate discharge locations. It should be noted that the subgrade soils are subject to shrinking and swelling due to changes in moisture content. Accordingly, the Client should be prepared to manage groundwater and surface water and remove soft material form foundation excavations.

5.1.5 Groundwater Control

The Client should be prepared to deal with groundwater seepage and/or surface water that may accumulate in excavations. Groundwater was encountered at depths ranging between 5 and 15 feet bgs in four of the borings completed at the Site and interpreted to be seepage from a nearby ditch and/or perched groundwater. As such, dewatering may be required during construction where excavations extend below these or other saturated zones. Fluctuations in groundwater zones should be expected to occur seasonally and due to variations in rainfall, construction activity, surface runoff, and other factors. Since such variations are anticipated, we recommend that design drawings and specifications accommodate such possibilities and that construction planning be based on the assumption that such variations can occur.

5.2 Earthwork

Earthwork is most efficiently accomplished using large, heavy-duty equipment, unimpeded by obstacles. Consequently, it is preferable to complete as much of this work as is possible prior to initiating other phases of construction, such as footing excavation and installation of underground utilities.

We anticipate that the soils observed in the explorations can be excavated with conventional grading equipment, such as track excavators or dozers. The Client should be prepared to deal with debris, cobbles, and boulders within the soils at the Site, including encountering obstructions during pile installation.

5.2.1 Clearing and Grubbing

Significant clearing and grubbing are not expected to be needed with the current improvements as planned, and these activities are expected to be limited to the removal of existing vegetation and tilled soil or topsoil in areas of proposed structural fill placement, foundation construction, planned equipment placement, and other construction activities.

Removal and demolition of existing structures/pavements should include removal of below-grade elements. Existing voids or new depressions created during site preparation should be cleaned of loose soil or debris and backfilled with structural fill. The work areas should be cleared of all surface and subsurface deleterious matter, including debris, trees, shrubs, and associated stumps and root wads, and should be stripped of any sod and organic soil. The woody debris should be removed from the Site for disposal.

Removal and/or relocation of any "to be abandoned" utilities (i.e., existing drain tiles) should also be performed prior to rough site grading activities. We do not anticipate buried utilities within the undeveloped areas of the Site; however, utilities should be expected the within right-of-way corridors and drain tile from previous agriculture operations should be clear prior to Site grading activities.

5.2.2 Erosions and Sedimentation Control

Potential sources or causes of erosion and sedimentation depend upon construction methods, slope length, and gradient, amount of soil exposed and/or disturbed, soil type, construction sequencing and weather. The project's impact on erosion-prone areas can be reduced by implementing an erosion and sedimentation control plan. Hull recommends the plan be designed in accordance with applicable township and/or county standards and incorporate the following basic planning principles:

- Scheduling grading and construction to reduce soil exposure;
- Retaining existing vegetation whenever feasible;
- Revegetating or mulching denuded areas;
- Directing runoff away from denuded areas;
- Minimizing the length and steepness of slopes with exposed soils;
- Decreasing runoff velocities;
- Confining sediment to the Site;
- Inspecting and maintaining control measures frequently;
- Covering soil stockpiles; and
- Implementing proper erosion control best management practices (BMPs).

5.2.3 Subgrade Preparation

We recommend that the exposed subgrade areas be evaluated prior to the placement of structural fill and/or foundation elements by proof-rolling to locate areas of loose, soft or pumping soils. Proof-rolling can be completed using heavy tire-mounted equipment or a loaded dump truck. If soft or pumping soils are observed, we recommend that unsuitable subgrade soils be recompacted or overexcavated and replaced with properly compacted structural fill.

Subgrade disturbance or deterioration could occur if the subgrade is wet and cannot be dried. If the subgrade deteriorates during proof-rolling or compaction, it may become necessary to modify the proof-rolling or compaction criteria or methods.

If deep pockets of soft or pumping soils are encountered, it may be possible to limit the depth of overexcavation by placing a geotextile for separation/soil stabilization on the overexcavated subgrade and covering the geotextile with structural fill. The geotextile will provide additional support by bridging over the soft material and will help reduce fines contamination into the structural fill. The need for geotextile fabric and overexcavation should be evaluated on a case-by-case basis.

5.2.4 Structural Fill

Materials used to construct roadways and embankments, placed to support structures, placed as backfill, or placed as drainage material, are classified as structural fill for the purpose of this Report.

On-Site Soils

The near surface on-site soils generally contain a high percentage of fines (silt and clay) and are generally highly moisture sensitive. On-site soils, with the exception of any topsoil or tilled soil, organic contaminated soil or other deleterious materials, may be used as structural fill, provided the material meets the requirements for structural fill.

Materials

Soils having slickensides, reclaimed asphalt concrete pavement, and/or slag are not considered suitable for use as structural fill. Soils having a maximum dry density of less than 100 pounds per cubic foot as determined by ASTM D698 (Standard Proctor) are also not considered suitable for use as structural fill. We recommend that rocks larger than 6 inches, slickenside material, and clay with a LL>50 be removed from structural fill material.

Placement and Compaction Criteria

Hull recommends that all structural fill be uniformly compacted to a firm, non-yielding condition to the specified density before placing subsequent lifts pursuant to the following compaction criteria:

1. 98 percent of maximum dry density as established by ASTM procedure D 698 (Standard Proctor), in all areas; and
2. 100 percent of maximum dry density as established by ASTM procedure D 698 in all areas subject to vehicular traffic loads.

For planning purposes, we recommend that that structural fill is placed in loose lifts not exceeding 8 inches at or near optimum moisture content (i.e. ±3%). Actual lift thickness should be adjusted in the field based on the actual size and weight of the equipment used to ensure full depth compaction. Cohesive soils will best be compacted using a sheepsfoot compactor, while granular soils will be best compacted using a vibratory

smooth drum compactor. We recommend that monitoring the placement of structural fill be provided to ensure that required compaction criteria are being met, the proper materials are used for structural fill, and that the material is placed in appropriate lifts for the compaction equipment being used.

5.2.5 Site Safety

Site safety is the sole responsibility of the parties performing the work. All excavations must comply with applicable local, state, and federal safety regulations including the current Occupational Safety and Health Administration (OSHA) Excavation and Trench Safety Standards (29 CFR Part 1926).

5.3 Solar PV Panel Pile Foundations

It is anticipated that driven steel piles (e.g. W6 and W8 wide flange beam sections) will be suitable to support the PV Panels and racking at the Site. If other foundation systems (e.g., auger cast piles, helical piles, concrete, ballasted) are evaluated, consideration should be given to the installation methods, as groundwater seepage may be encountered above foundation embedment depths and standing water and poor surface water drainage conditions should be anticipated at the Site, especially if construction is completed during periods wet or inclement weather.

The following sections provide preliminary recommendations for sizing piles to support PV Panels at the Site.

5.3.1 Axial Pile Capacity

Hull recommends the piles be designed to consider skin friction only. An allowable skin friction coefficient (e.g., angle of friction between the soil and a steel pile/internal friction angle of the soil) of 0.67 can be assumed for preliminary design. Recommended preliminary pile design parameters are presented in Table 3.

5.3.2 Lateral Capacity

An Active Earth Pressure Coefficient (K_a) and Passive Earth Pressure Coefficient (K_p) of 0.59 and 1.7, respectively, is recommended for calculating the lateral earth pressures for preliminary pile design.

5.3.3 Preliminary Geotechnical Design Parameters

It is anticipated that uplift and lateral loads (e.g. wind) will likely the control the design rather than vertical loads from the dead weight of the PV Panels and racking. Table 3 presents recommended geotechnical soil parameters to be used for the preliminary design of driven steel piles (e.g. W6 and W8 wide flange beam sections) at each boring location. It is understood that pile load tests will be completed to support the final design.

Table 3 – Preliminary PV Panel Pile Design Parameters

Boring	Material	Depth (feet)		Total Unit Weight (pcf)	Undrained Shear Strength (psf)	Friction Angle (deg)
		Top	Bottom			
B20-01	Modified Land	0	1	115	200	
	Stiff Clay	1	6.5	130	2,000	
	Medium Dense Sand	6.5	15	125		34
B20-02	Modified Land	0	1	115	200	
	Stiff Clay	1	15	128	1,700	
B20-03	Modified Land	0	3	115	200	
	Medium Stiff Clay	3	6.5	125	1,200	
	Very Stiff Clay	6.5	15	132	3,700	
B20-04	Modified Land	0	1	115	200	
	Medium Stiff Clay	1	15	127	1,300	
B20-05	Modified Land	0	1	115	200	
	Loose to Medium Dense Sand	1	12	122		33
	Medium Dense Sand	12	15	130		36
B20-06	Modified Land	0	1	115	200	
	Stiff Clay	1	5.5	128	1,625	
	Very Stiff to Hard Clay	5.5	15	130	4,000	
B20-07	Modified Land	0	1	115	200	
	Very Stiff to Hard Clay	1	15	130	4,000	
	Very Dense Sand	15	25	132		37
B20-08	Modified Land	0	3	115	200	
	Medium Stiff Clay	3	5.5	124	750	
	Stiff Clay	5.5	18.5	129	1,875	
	Very Stiff to Hard Clay	18.5	42	130	4,000	
	Loose Sand	42	50	120		32
B20-09	Modified Land	0	1	115	200	
	Stiff Clay	1	12	131	2,500	
	Medium Dense Sand	12	15	123		33
B20-10	Modified Land	0	1	115	200	
	Stiff Clay	1	11	130	2,250	
	Loose Sand	11	15	120		32
B20-11	Modified Land	0	1	115	200	
	Stiff Clay	1	12	130	2,000	
	Medium Dense Sand	12	15	123		33
B20-12	Modified Land	0	1	115	250	
	Medium Stiff Clay	1	5.5	125	1,000	
	Stiff Clay	5.5	13	132	2,250	
	Loose Sand	13	15	120		32

5.3.4 Pile Load Testing

Prior to installing service piles, Hull recommends static pile load testing be completed to evaluate pile embedment, pile installation production, axial capacity, lateral capacity, and a pile refusal protocol for the project. Lateral testing is typically accomplished using reaction piles, or an adequate dead load. Vertical and lateral pile load testing is typically accomplished using a hydraulic pull jack and a calibrated electronic load cell connected to the piles with chains and clamps.

Hull recommends that the pile load testing program includes the installation of W6x9 and/or W6X12 (or other appropriate section(s)) across the Site, with two test piles at each test location. Typically, test piles are advanced with a rubber-tracked Vermeer PD10 or equivalent pile driving equipment. The actual pile size and range of embedment depths should be determined once the racking model has been selected for the project. Hull recommends that the pile load testing commence following a minimum 72-hour setup period following the installation of the test piles. Lateral and axial (uplift) load testing should utilize portable testing apparatus rated to a 10 kips minimum capacity, or appropriately rated for the testing protocol.

5.4 Shallow Foundations

Shallow foundations are considered suitable support for electrical equipment at the substation and for lightly loaded structures throughout the Site. The Site near-surface conditions generally consist of medium stiff to stiff clay/silty clay or medium dense clayey sand. Some portions of the Site may require overexcavation or ground improvement for typical shallow foundations. Preliminary shallow foundation recommendations presented in the following sections are based on inferred soils profiles and should be verified and revised, as appropriate, during final design.

5.4.1 Design Considerations

Hull recommends that conventional strip or isolated spread foundations be founded on the undisturbed medium stiff or stiffer native clay/silt soils encountered in the borings completed at the Site. We recommend that individual column footings and continuous wall footings have minimum widths of 30 and 18 inches, respectively. We recommend that all exterior footings be founded a minimum of 40 inches below the lowest adjacent grade for frost protection; although, local building codes should be consulted for minimum footing depths below finished grade.

Footings bearing on native medium stiff or stiffer clay soils or medium dense or denser sand soils may be designed for a maximum net allowable bearing pressure of 2,500 pounds per square foot (psf), when the subgrade preparation and structural fill procedures outlined in other sections of this Report are followed. This allowable bearing capacity may be increased by one-third to account for short-term live loads such as induced wind or seismic forces. Interior footings in heated areas may be placed at a convenient depth below building floor slab level, provided they bear on suitable material.

Hull recommends that footings subgrades consisting of native loose or soft soils, as encountered near the ground surface in borings B20-05 and B20-08, for example, be overexcavated to a suitable subgrade of medium stiff (or stiffer) or medium dense (or denser) soils and backfilled with structural fill to support shallow foundations or otherwise designed using a reduced bearing capacity.

5.4.2 Settlement Potential

Total postconstruction settlement for shallow foundations founded on medium stiff (or stiffer soils), medium dense (or denser), or on structural fill extended to these soils, as recommended, is estimated to be less than 1-inch. Differential settlement between comparably loaded column footings or along a 25-foot section of continuous wall footing is estimated to be less than ½-inch. We expect that most the footing settlements will occur as loads are applied. Unsuitable subgrade conditions or loose, soft, or disturbed soils not removed from footing excavations prior to placing concrete could result in additional settlement.

5.4.3 Construction Considerations

Hull recommends that all footing excavations be cut to vertical side walls and flat bottoms with the bottoms being firm soil undisturbed by the method of excavation or softened by standing water and/or organic matter. Conventional backhoe type equipment may be used, except in the last few inches when hand excavation methods may be required. Before the placement of backfill or concrete, we recommend that accumulated water, organics, loose/soft soil and/or debris be removed from the excavations. Concrete placement should follow excavation and bearing surface inspection should be conducted as soon as practical.

5.5 On-Grade Slabs

Based on the subsurface conditions encountered in the borings, typical slab-on-grade construction is anticipated to be adequate for Site development. For slabs designed as a beam on an elastic foundation, a modulus of subgrade reaction of 100 pounds per cubic inch (pci) may be used for subgrade soils prepared as recommended (i.e. founded on medium stiff/dense subgrade or structural fill over medium stiff/dense subgrade).

Where slab-on-grade construction is planned in areas with soft subgrade conditions, as encountered in some of the borings, overexcavation and replacement of unsuitable soils will likely be required. For planning purposes, we recommend a minimum 2-foot overexcavation and replacement with gravel be considered for "settlement sensitive" on-grade slabs to mitigate settlement potential.

5.6 Drilled Shaft Foundations

It is anticipated that some of the structures/appurtenances within the substation which have large loads and/or are sensitive to movement will be supported on drilled shaft foundations. We recommend that each drilled shaft element be at least 1.5 feet in diameter. For preliminary design, we recommended that drilled shafts have a minimum shaft length of 10 feet or at least 3 times the shaft diameter, whichever is greater, and bear on native stiff (or stiffer) or dense (or denser) soils.

Hull recommends that drilled shaft design incorporate a factor of safety of 3.0 for end bearing and 2.5 for side resistance, when subjected to axial compression loading; a factor of safety of 3.0 is recommended for side resistance against uplift loading.

5.6.1 Axial Design Parameters for Drilled Shafts

Recommended soil parameters for preliminary analysis and design of drilled shafts to support axial loading at the substation are provided in Table 4.

Table 4 – Axial Drilled Shaft Design Parameters (based on boring B20-08)

Soil Layer No.	Soil Type	Top of Layer Depth (feet)	Bottom of Layer Depth (feet)	Total Unit Weight (pcf)	Undrained Shear Strength (psf)	Adhesion Factor	Friction Angle (deg)	Horiz. Stress Coeff.	Deform. Modulus (ksi)	Bearing Capacity Factors	
										N_c	N_q
1	Modified Land	0	3	115	200	0.55	--	--	--	7	--
2	Medium Stiff Clay	3	5.5	124	750	0.55	--	--	--	7	--
3	Stiff Clay	5.5	18.5	129	1,875	0.55	--	--	1.5	7	--
4	Very Stiff to Hard Clay	18.5	42	130	4,000	0.40	--	--	3.5	7	--
5	Loose Sand	42	50	120	--	--	32	0.45	0.9	--	42

Notes:
1 The side resistance of the uppermost 2 feet of the soil should be ignored due to the potential for disturbance caused during drilling/construction.
2. Depths referenced from the ground surface.

5.6.2 Lateral Design Parameters for Drilled Shafts

Recommended preliminary soil parameters for lateral load analysis and design of drilled shafts at the substation using the computer program LPile for soil profile encountered in boring B20-08 are provided in Table 5.

Table 5 – Lateral Drilled Shaft Design Parameters for LPile (based on boring B20-08)

Soil Layer No.	Soil Type	Depth (feet) [1]		p-y Curve [2]	Total Unit Weight (pcf) [3]	Undrained Cohesion (psf)	Friction Angle (deg)
		Top	Bottom				
1[4]	Modified Land	0	3	Soft Clay (Matlock)	124	1,300	--
2	Medium Stiff Clay	3	5.5	Stiff Clay w/o Free Water (Reese)	133	8,000	--
3	Stiff Clay	5.5	18.5	Stiff Clay w/o Free Water (Reese)	133	5,900	--
4	Very Stiff to Hard Clay	18.5	42	Stiff Clay w/o Free Water (Reese)	120	--	32
5	Loose Sand	42	50	Sand (Reese)	133	8,000	--

Notes:
[1] Depths referenced from the ground surface.
[2] Use LPile default input for Strain Factor (ε50) and k-value.
[3] Input total unit weight above the groundwater table and effective unit weight below the groundwater table.
[4] The side resistance of the uppermost 2 feet of the soil should be ignored due to potential for disturbance caused during drilled shaft construction.

5.7 Subgrade Chemical Stabilization

The access roads and gravel equipment pads will be subjected to significant vehicle traffic and equipment loads during construction and operations of the solar arrays. As previously discussed, the near surface clayey subgrade soils are soft and poorly drained. To improve long-term stability of the subgrade, chemical stabilization (or modification) of the upper 12 inches may be necessary. If the subgrade is to be improved with chemical stabilization, we recommended that the type of chemical to be used (e.g., lime, quick lime, Portland cement), proposed spreading percentage rate, and pre-qualification testing that demonstrates the Site soils will achieve the designer's specified subgrade strength when mixed at the proposed spreading rate be reviewed and approved prior to construction. We recommend that testing be performed by a qualified testing laboratory on samples considered representative of the actual subgrade material that will be chemically stabilized. If the subgrade is chemically stabilized to a minimum of 12 inches, the gravel for equipment pads can potentially be reduced.

We recommend that the chemical stabilization work be performed when the air temperature is 40°F or above and when the soil is not frozen. Chemical stabilization work should not be performed during wet or inclement weather. The stabilization chemical should be uniformly spread on the subgrade using a mechanical spreader at the approved rate and at a constant slow rate of speed. Dusting should be minimized when spreading the chemical. Immediately after spreading the chemical, the chemical and soil should be mixed using a power-driven transverse type mixer until the chemical is thoroughly incorporated into the soil and is a uniform color, and the clod sizes are less than 1 inch, exclusive of aggregate pieces. Water should be added as needed to bring the mixed material to at least the optimum moisture content. Water should be uniformly distributed in sufficient quantity to hydrate the chemical and for proper compaction control. Compacting and shaping should be completed within 4 hours from the initial mixing.

We recommend that chemically modified subgrade be compacted using a vibratory footed roller weighting at least 10 tons to a minimum of 98 percent of the maximum dry density as established by moisture-density curves of mixed specimens based on Standard Proctor (ASTM D698) testing, Field One Point Method, or the maximum dry density obtained by a test section method. We recommend that final rolling of the subgrade surface be performed using a smooth drum roller; do not use vibration during the final rolling.

We recommend that chemically stabilized subgrade be allowed to cure for at least 3 days, but no more than 7 days, before placement of the overlying aggregate layer. If air temperatures are forecasted to be at or below freezing during the curing period, cover the completed chemically modified subgrade with the aggregate layer prior to freezing conditions for insulation and to minimize frost damage. Do not operate heavy equipment directly on the chemically stabilized subgrade until the aggregate layer can be placed. The aggregate layer should be placed in a manner that does not require equipment to operate directly on the chemically stabilized subgrade. Utilize track mounted equipment to the extent practical.

After the field curing period, we recommend the subgrade be proof-rolled to verify the chemical stabilization performs satisfactorily. Areas identified as "not properly stabilized" during the proof-roll should be repaired.

5.8 Additional Geotechnical Services

We recommend that sufficient monitoring, testing and consultation be provided by a geotechnical engineer during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work

differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. It is our opinion that retaining Hull for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions. Hull cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Throughout this Report, recommendations are provided where we consider additional geotechnical services to be appropriate. These additional services are summarized below:

- The conclusions and recommendations provided in this report should be considered preliminary. Final geotechnical recommendation s should be provided based on the actual site development, structures, and layouts developed during the design phase.
- Additional subsurface explorations may be needed to better characterize subsurface conditions at the Site for final design.
- We recommend that the pile testing be completed once the Site development layout and a grading plan has been finalized and the racking model is selected, so that final design and construction recommendations can be developed for the PV Panel foundations. Prior to installing piles to support PV Piles at the Site, we recommend that static pile load testing be completed to evaluate pile embedment, pile installation production, axial capacity, lateral capacity, and to establish a pile refusal protocol for the project. The selection of test pile locations and monitoring of the test pile program should be completed under the supervision of a geotechnical engineer.
- We recommend that Hull be retained to review the project plans and specifications when complete to confirm that our design recommendations have been implemented as intended.
- During construction, a geotechnical engineer should observe earthwork, evaluate subgrades, and perform necessary tests during the placement and compaction of structural fill.

6.0 STANDARD OF CARE AND LIMITATIONS

Hull has prepared this Report for the sole use of Clearview Solar I, LLC for the Clearview Solar Project in Champaign County, Ohio. The contents thereof may not be used or relied upon by any other person or entity, without the express written consent and authorization of Clearview Solar I, LLC and Hull & Associates, LLC.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Hull's interpretations of subsurface conditions are based on conditions observed from a limited number of borings and field observations. The field and laboratory data along with our professional judgement was applied to render an opinion about subsurface conditions throughout the site. The findings and conclusions presented in this report are based in part on the assumption that certain natural conditions will actually be encountered and not be altered during construction and that actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, interpretations, conclusions, and recommendations should not be construed as a warranty of the subsurface conditions at the Site.

Our scope of services does not include, either specifically or by implication, an evaluation of past or present compliance with federal, state, or local environmental, or land use laws or regulations. It should be noted that no environmental or biological services were performed as part of this scope of work, and, as such, no recommendations relative to environmental and/or biological considerations are included in the report.

Our geotechnical recommendations are not intended to direct the procedures, methods, schedule, or management of the work site. Under no circumstance should the information presented in this Report be interpreted to imply Hull is assuming responsibility for job site safety.

0 600 1,200 2,400 Feet

1:14,400

CR 3
JOHNSTON RD
TWP 3
LOGAN CHAMPAIGN RD
LOGAN SHELBY RD
CHAMPAIGN-LOGAN-SHELBY RD
SNAPPTOWN RD
STATE RT 235
FLOWING WELL RD
TAWAWA MAPLEWOOD RD
ELM TREE RD

220337
B20-11
28882
392921
229928
B20-07
B20-08
120133
B20-09
B20-10
B20-05
120130
B20-04
229929
432494
B20-03
2019329
B20-06
2045200
100809
B20-01
220305
B20-02
906435
2062238
2062239
2071795
9911026
2033845
9911008
B20-12
906381

Potential Solar Array Area
Substation
Boring Location
Water Well Location (ODNR)

Note:
The aerial photo was acquired through the Esri Imagery web service. Aerial photography dated 2017.

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September 2020

Clearview Solar Project
Clearview Solar I, LLC

Site Plan

Champaign County, Ohio

Figure 1

Produced using ArcGIS 10.7
File Name: ORR025_02_Fig01_SitePlan.mxd
Edited: 9/30/2020 By: rkaip

APPENDIX A

FIELD EXPLORATION

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GENERAL INFORMATION, DRILLING PROCEDURES AND LOGS OF BORINGS

Subsurface conditions at the Site were explored by drilling and sampling 12 borings, designated B20-01 through B20-12. The borings were completed to depths ranging between 15 and 50 feet below the ground surface (bgs). The drilling was performed by Envirocore, Inc. under subcontract to Hull on August 12 and August 13, 2020. The borings were drilled with a track-mounted Mobile B-57 drill rig utilizing 3¼-inch inside diameter hollow-stem augers. The borings were continuously monitored by a geologist from our firm who examined and classified the soils encountered, obtained representative soil samples, observed groundwater conditions, and prepared a detailed log of each exploration.

The soils encountered in the borings were sampled at 2½- or 5-foot vertical intervals with a 2-inch outside diameter split-barrel standard penetration test (SPT) sampler. The samples were obtained by driving the sampler 18 inches into the soil with a 140-pound hammer free-falling 30 inches. The number of blows required for each 6 inches of penetration was recorded. The blow count ("N-value") of the soil was calculated as the number of blows required for the final 12 inches of penetration. This resistance, or N-value, provides a measure of the relative density of granular soils and the relative consistency of cohesive soils. Where very dense or hard soil conditions precluded driving the full 18 inches, the penetration resistance for the partial penetration was entered on the logs. The blow counts are shown on the boring logs at the respective sample depths. It should be noted that the SPT blow counts reported on the boring logs are uncorrected, field-recorded blow counts and have not been adjusted/corrected for field procedures, hammer efficiency, etc. Additionally, the SPT sampler is limited to the collection of material that is smaller than its nominal 1.4-inch inside diameter. Therefore, the presence of larger gravels, cobbles, and boulders noted on the boring logs is general inferred rather than through actual collection of these larger constituents by typical sampling procedures.

The boring logs included in this Appendix are based on our interpretation of the field and laboratory data and indicate the various types of soils encountered and therefore contain both factual and interpretative information and are not an exact copy of the field log. In the field and/or laboratory, all samples were described based on the visual-manual examination soil classification system in general accordance with ASTM D2488 or based on the laboratory test results in general accordance with ASTM D2487. The logs also indicate the depths at which these soils or their characteristics change, although the change may actually be gradual. If the change occurred between samples, it was interpreted. The densities noted on the boring logs are based on the blow count data obtained in the borings and judgment based on the conditions encountered.

The depth of water recorded on the boring logs were measured from the top of the existing ground surface to the top of the water level.. The groundwater observations, or lack thereof, represent only conditions observed during or at the end of drilling, and may not represent the true static groundwater level because it can take hours or even days for the groundwater level observed in a borehole to reach equilibrium. Consequently, the groundwater observations shown on the boring logs only represent conditions at the time the readings were collected. Furthermore, the use of drilling fluids (e.g. mud) added to the boreholes can alter the observed groundwater levels or otherwise make observations of groundwater within the borehole not possible.

Although we believe that the borings have disclosed information generally representative of actual site conditions, it should be expected that between borings conditions may occur which are not precisely represented by any one of the borings. Soil deposition processes and natural geologic forces are such that soil and rock types and conditions may change in short vertical intervals and horizontal distances.

Soil samples obtained from the borings will be stored for a period of 6 months for future testing during the design phase of the project. After this period of time, they will be discarded, unless notified to the contrary by the Client.

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DEFINITION OF TERMS USED TO DESCRIBE SUBSURFACE MATERIALS ON BORING LOGS

DESCRIPTION OF SOILS

The material descriptions of the soils on the boring logs are based on visual-manual examination (ASTM D2488), Standard Penetration Test (ASTM D1586) results, and the results of laboratory testing on selected soil samples. Soils are described as to color, moisture condition, density or consistency, and other pertinent properties, in that order. SAA indicates material can be described as "Same as Above", with any differences noted. Soil descriptions are according to the following criteria, with the principal constituent, written in capital letters.

Standard Penetration Test (ASTM D1586)

In the Standard Penetration Test (SPT), a 2.0-inch outside diameter, 1.375-inch inside diameter split-spoon sampler is driven 18 inches into soil with a 140-pound hammer dropped 30 inches. The sampler is normally driven in three successive 6-inch increments. The total number of blows required to drive the split spoon sampler over 12 inches of penetration during the second and third successive increments is the SPT "N-Value". Where very dense or hard soil conditions precluded driving the full 18 inches, the penetration resistance for the partial penetration was entered on the logs (e.g., 50/3 indicates 50 blows were recorded for a 3-inch penetration).

Sampling Method Abbreviations

Methods by which soil samples are collected for analysis are abbreviated as follows:

AS	Auger Sample (sample collected directly from auger flight)
SPT	Standard Penetration Test (1.375-inch I.D. Split Spoon)
MC	Modified California Sampler (2.4-inch I.D. Split Spoon)
ST	Shelby Tube Sample
PS	Piston Sample (Shelby Tube Sample)
DP	Direct Push Sample
RC	Rock Core

Density of Cohesionless Soils

Density of cohesionless soils (i.e. sand and gravel) is based upon SPT results as indicated below:

Density	**SPT N-Value** (blows per foot)
Very loose	0 to 4
Loose	4 to 10
Medium Dense	10 to 30
Dense	30 to 50
Very Dense	Over 50

Consistency of Cohesive Soils

Consistency of cohesive soils (i.e. silt and clay) is based on SPT results and unconfined compressive strength.

Consistency	**SPT N-Value** (blows per foot)	**Unconfined Compressive Strength** (tons per square foot)
Very soft	0 to 2	< 0.25
Soft	2 to 4	0.25 to 0.5
Medium stiff	4 to 8	0.5 to 1.0
Stiff	8 to 16	1.0 to 2.0
Very stiff	16 to 30	2.0 to4.0
Hard	Over 30	> 4.0

Color

Soil color is described in basic terms, such as brown, black, red, grey, and yellow. If the soil is a uniform color throughout, the term is single, modified by adjectives such as light and dark. If the predominant color is shaded by a secondary color, the secondary color precedes the primary color. If two major and distinct colors are swirled throughout the soil, the colors are modified by the term "mottled".

Component Definitions by Grain Size (ASTM D653)

Material	Definition		Size Range	
			Upper	Lower
Boulders	Material too large to pass through an opening 12 in. square.			12 inches
Cobbles	Material passing through a 12 in. square opening and retained on the 3-inch sieve.		12 inches	3 inches
Gravel	Material passing the 3 in. sieve and retained on ¼ in. (No. 4) sieve.	Coarse Fine	3 inches ¾ inch	¾ inches No. 4 (¼ inch)
Sand	Material passing the No. 4 sieve and retained on the No. 200 Sieve.	Coarse Medium Fine	No. 4 (¼ inch) No. 10 (⅛ inch) No. 40 (1/32 inch)	No. 10 (⅛ inch) No. 40 (1/32 inch) No. 200
Silt	Material passing the No. 200 sieve, which is usually non-plastic or very slightly plastic in character and exhibits little or no strength when air dried.		No. 200	
Clay	Material passing the No. 200 sieve, which can also be made to exhibit plasticity within a certain range of moisture contents and which exhibits considerable strength when air dried.		No. 200	

Soil Constituents

Soil constituents may be stated in terms of percentages (by weight) of gravel, sand, and fines, as follows:

Trace	particles of a given size range present, but present at <5%
Few	5 to 15%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

Moisture Condition

Moisture condition may be written as dry, moist, or wet as described below:

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible moisture
Wet	Visible free water, usually soil below the water table

DESCRIPTION OF ROCK

Degree of Weathering

The following terms are used to describe the degree of weathering of the rock specimen relative to that of the comparable unweathered parent rock (relative strength/hardness should not be confused with degree of weathering.):

Unweathered	No evidence of any chemical or mechanical alternation of the rock mass. Mineral crystals have a bright appearance with no discoloration. Fractures show little or no staining on surfaces.
Slightly Weathered	<10% of rock volume altered. Slight discoloration of the surface w/minor alterations along open fractures.
Moderately Weathered	Portions of the rock mass are discolored as evident by a dull appearance. Surfaces may have a pitted appearance. Isolated zones of varying rock strengths due to alteration may be present. 10 to 15 percent of the rock volume presents alterations.
Highly Weathered	Entire rock mass appears discolored and dull. Some pockets of slightly to moderately weathered rock may be present and some areas of severely weathered materials may be present.
Severely Weathered	Majority of the rock mass reduced to a soil-like state with visible relict rock texture. Zones of more resistant rock may be present, but the material can generally be molded and crumbled by hand pressures.

Relative Strength/Hardness

The following terms are used to describe the relative strength/hardness of the bedrock:

Very Weak	Can be easily scratched by fingernail or knife. Pieces 1 inch (25 mm) or more in thickness can be broken by finger pressure.
Weak	Can be grooved or gouged readily by a knife or pick. Can be excavated in small fragments by moderate blows of a pick point. Small, thin pieces can be broken by finger pressure.
Moderately Strong	Can be scratched with a knife or pick. Grooves or gouges to ¼ inch (6 mm) deep can be excavated by hand blows of a geologist's pick. Requires moderate hammer blows to detach specimen.
Strong	Can be scratched with a knife or pick only with difficulty. Requires hard hammer blows to detach specimen.
Very Strong	Cannot be scratched by a knife or sharp pick. Breaking of hand specimens requires hard repeated blows of the geologist hammer.

Rock Quality Designation (RQD)

RQD is expressed in percent and is an indirect measure of rock soundness. It is obtained by summing the total length of all core pieces which are at least four inches long, and then dividing this sum by the total length of the core recovered.

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BORING NUMBER B20-01

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH
DATE STARTED 8/12/20 **COMPLETED** 8/12/20
GROUND ELEVATION 1078 ft NAVD88
DRILLING CONTRACTOR Envirocore, Inc.
GROUND WATER LEVELS:
RIG TYPE Mobile Drill B-57 **DRILLING METHOD** 3¼-in ID HSA
AT TIME OF DRILLING 7.00 ft / Elev 1071.00 ft
LOGGED BY J. Conner **CHECKED BY** S. Aboulhosn
AT END OF DRILLING 5.00 ft / Elev 1073.00 ft
COORDINATES 40.258643°, -83.980969°
AFTER DRILLING ---

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			10 inches TILLED SOIL (Fill/Modified Land)										
			LEAN CLAY, (CL) brown, moist, stiff, trace gravel	SPT 1	100	3-5-5 (10)			21.2	41	23	18	
	1075												
				SPT 2	67	7-7-7 (14)							
5			▼										
			SANDY LEAN CLAY, (CL) gray, moist, stiff, trace gravel										
				SPT 3	67	3-7-8 (15)							
	1070		▽ POORLY GRADED SAND WITH CLAY AND GRAVEL, (SP-SC) gray to brown, wet, medium dense										
				SPT 4	100	1-9-9 (18)			12.2				12
10													
	1065												
				SPT 5	100	9-9-9 (18)							
15													

Bottom of borehole at 15 feet.

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BORING NUMBER B20-02

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH
DATE STARTED 8/12/20 **COMPLETED** 8/12/20
GROUND ELEVATION 1080 ft NAVD88
DRILLING CONTRACTOR Envirocore, Inc.
GROUND WATER LEVELS:
RIG TYPE Mobile B-57 Drill Rig **DRILLING METHOD** 3¼-in ID HSA
AT TIME OF DRILLING --- None Observed
LOGGED BY J. Conner **CHECKED BY** S. Aboulhosn
AT END OF DRILLING --- None Observed
COORDINATES 40.257017°, -83.981072°
AFTER DRILLING ---

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0	1080		10 inches TILLED SOIL (Fill/Modified Land)										
			SILTY CLAY (CL-ML), brown, moist, medium stiff to stiff, trace gravel	SPT 1	100	3-3-5 (8)							
				SPT 2	67	4-5-4 (9)			12.2	19	13	6	
5	1075			SPT 3	100	6-6-6 (12)							
			LEAN CLAY, (CL) dark brown, moist, stiff, trace gravel	SPT 4	100	3-5-5 (10)			14.2				
10	1070												
				SPT 5	100	4-5-5 (10)							
15	1065												

Bottom of borehole at 15 feet.

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BORING NUMBER B20-03

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH
DATE STARTED 8/12/20 **COMPLETED** 8/12/20
GROUND ELEVATION 1089 ft NAVD88
DRILLING CONTRACTOR Envirocore, Inc.
GROUND WATER LEVELS:
RIG TYPE Mobile Drill B-57 **DRILLING METHOD** 3¼-in ID HSA
AT TIME OF DRILLING --- None Observed
LOGGED BY J. Conner **CHECKED BY** S. Aboulhosn
AT END OF DRILLING --- None Observed
COORDINATES 40.263994°, -83.981446°
AFTER DRILLING ---

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			36 inches TILLED SOIL (Fill/Modified Land)										
				SPT 1	60	3-4-7 (11)							
	1085		SANDY LEAN CLAY, (CL) brown, moist, medium stiff, trace gravel										
				SPT 2	67	3-4-3 (7)			19.4				
5													
			LEAN CLAY, (CL) brown, moist, stiff to very stiff, trace gravel										
				SPT 3	100	3-7-7 (14)			14.3	23	15	8	
	1080												
				SPT 4	100	5-12-18 (30)							
10													
	1075		SILTY CLAY (CL-ML), gray, moist, very stiff, trace gravel										
				SPT 5	100	3-9-10 (19)							
15													

Bottom of borehole at 15 feet.

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BORING NUMBER B20-04

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH
DATE STARTED 8/12/20 **COMPLETED** 8/12/20
GROUND ELEVATION 1102 ft NAVD88
DRILLING CONTRACTOR Envirocore, Inc.
GROUND WATER LEVELS:
RIG TYPE Mobile Drill B-57 **DRILLING METHOD** 3¼-in ID HSA
AT TIME OF DRILLING --- None Observed
LOGGED BY J. Conner **CHECKED BY** S. Aboulhosn
AT END OF DRILLING --- None Observed
COORDINATES 40.266905°, -83.981281°
AFTER DRILLING ---

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			12 inches TILLED SOIL (Fill/Modified Land)										
	1100		LEAN CLAY, (CL) brown, moist, medium stiff to stiff, trace gravel	SPT 1	67	5-2-4 (6)			17.4				
5				SPT 2	100	3-2-5 (7)			13.6	20	11	9	
	1095			SPT 3	100	4-4-4 (8)							
10			SILTY CLAY (CL-ML), brown, moist, medium stiff to stiff, few sand, trace gravel	SPT 4	93	2-3-5 (8)			11.9	19	13	6	
	1090		LEAN CLAY WITH GRAVEL, (CL) brown, moist, hard, trace sand, (assumed description - no recovery)										
15				SPT 5	0	23-41-38 (79)							

Bottom of borehole at 15 feet.
Laboratory Corrosion Testing Suite performed on a composite sample, Samples 1 and 2.

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BORING NUMBER B20-05

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH
DATE STARTED 8/12/20 **COMPLETED** 8/12/20
GROUND ELEVATION 1098 ft NAVD88
DRILLING CONTRACTOR Envirocore, Inc.
GROUND WATER LEVELS:
RIG TYPE Mobile Drill B-57 **DRILLING METHOD** 3¼-in ID HSA
AT TIME OF DRILLING --- None Observed
LOGGED BY J. Conner **CHECKED BY** S. Aboulhosn
AT END OF DRILLING --- None Observed
COORDINATES 40.269332°, -83.980914°
AFTER DRILLING ---

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			10 inches TILLED SOIL (Fill/Modified Land)										
	1095		CLAYEY SAND, (SC) brown, moist, loose to medium dense, trace to few gravel	SPT 1	100	4-4-4 (8)			22.3				
5				SPT 2	47	5-5-6 (11)			12.1	21	11	10	45
	1090			SPT 3	67	5-6-6 (12)							
10				SPT 4	67	2-3-5 (8)							
	1085												
15				SPT 5	67	4-12-14 (26)			10.2				43

Bottom of borehole at 15 feet.

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BORING NUMBER B20-06

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH
DATE STARTED 8/12/20 **COMPLETED** 8/12/20
GROUND ELEVATION 1077 ft NAVD88
DRILLING CONTRACTOR Envirocore, Inc.
GROUND WATER LEVELS:
RIG TYPE Mobile Drill B-57 **DRILLING METHOD** 3¼-in ID HSA
AT TIME OF DRILLING 8.50 ft / Elev 1068.50 ft
LOGGED BY J. Conner **CHECKED BY** S. Aboulhosn
AT END OF DRILLING 11.50 ft / Elev 1065.50 ft
COORDINATES 40.261249°, -83.983112°
AFTER DRILLING ---

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			6 inches TILLED SOIL (Fill/Modified Land)										
	1075		LEAN CLAY, (CL) brown, moist, stiff, trace sand, trace gravel	SPT 1	67	3-5-4 (9)			20.6				85
5				SPT 2	67	5-4-5 (9)			15.7				
	1070		GRAVELLY LEAN CLAY, (CL) brown, moist to wet, very stiff to hard, trace sand	SPT 3	0	6-12-15 (27)							
10				SPT 4	100	5-33-50/5 (83/11)							
	1065			SPT 5	100	19-30-43 (73)							
15			Bottom of borehole at 15 feet.										

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BORING NUMBER B20-07

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH
DATE STARTED 8/13/20 **COMPLETED** 8/13/20
GROUND ELEVATION 1072 ft NAVD88
DRILLING CONTRACTOR Envirocore, Inc.
GROUND WATER LEVELS:
RIG TYPE Mobile Drill B-57 **DRILLING METHOD** 3¼-in ID HSA
AT TIME OF DRILLING 15.00 ft / Elev 1057.00 ft
LOGGED BY J. Conner **CHECKED BY** S. Aboulhosn
AT END OF DRILLING 15.00 ft / Elev 1057.00 ft
COORDINATES 40.271112°, -83.983343°
AFTER DRILLING ---

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			20 inches TOPSOIL										
	1070		SANDY SILTY CLAY WITH GRAVEL (CL-ML), brown, moist, very stiff to hard	SPT 1	67	8-8-16 (24)			12.0				
5				SPT 2	33	7-15-13 (28)							
	1065			SPT 3	67	8-8-9 (17)			10.0	17	12	5	53
10				SPT 4	73	9-14-21 (35)							
	1060		SANDY SILTY CLAY (CL-ML), gray, moist, very stiff										
15				SPT 5	100	6-8-12 (20)			8.1	18	12	6	
	1055		CLAYEY SAND WITH GRAVEL, (SC) brown, wet, very dense										
20				SPT 6	67	15-37-30 (67)			6.8				23
	1050												
25				SPT 7	27	19-28-34 (62)							

Bottom of borehole at 25 feet.

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BORING NUMBER B20-08

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH
DATE STARTED 8/12/20 **COMPLETED** 8/13/20
GROUND ELEVATION 1073 ft NAVD88
DRILLING CONTRACTOR Envirocore, Inc.
GROUND WATER LEVELS:
RIG TYPE Mobile Drill B-57 **DRILLING METHOD** 3¼-in ID HSA
AT TIME OF DRILLING 10.00 ft / Elev 1063.00 ft
LOGGED BY J. Conner **CHECKED BY** S. Aboulhosn
AT END OF DRILLING 10.00 ft / Elev 1063.00 ft
COORDINATES 40.269926°, -83.983402°
AFTER DRILLING ---

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			36 inches TOPSOIL										
				SPT 1	67	3-2-4 (6)							
	1070		SANDY SILTY CLAY (CL-ML), brown, moist, soft to medium stiff, trace gravel										
5				SPT 2	67	2-2-2 (4)			17.6	25	18	7	58
			LEAN CLAY, (CL) brown to gray, moist, stiff, trace gravel, trace sand										
				SPT 3	67	0-4-6 (10)			8.4				
	1065		LEAN CLAY WITH GRAVEL, (CL) gray, moist, hard, trace sand										
				SPT 4	100	6-17-27 (44)							
10		▼											
	1060												
			SANDY LEAN CLAY, (CL) gray, moist, stiff to very stiff, trace gravel	SPT 5	67	4-7-9 (16)			9.6				
15													
	1055												
				SPT 6	100	5-10-16 (26)			11.2	21	13	8	57
20													
	1050												
				SPT 7	100	4-5-14 (19)							
25													

(Continued Next Page)

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BORING NUMBER B20-08

CLIENT Clearview Solar I, LLC **PROJECT NAME** Clearview Solar Project

PROJECT NUMBER ORR025 **PROJECT LOCATION** Champaign County, OH

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
25			SANDY LEAN CLAY, (CL) gray, moist, stiff to very stiff, trace gravel *(continued)*										
			SAA, wet										
	1045			SPT 8	100	6-12-22 (34)			10.7	20	12	8	57
30													
	1040			SPT 9	100	8-12-20 (32)							
35													
	1035			SPT 10	100	5-15-21 (36)			10.8	21	13	8	59
40													
	1030		SILTY SAND, (SM) brown, wet, loose, trace gravel	SPT 11	67	0-0-8 (8)			16.3	NP	NP	NP	48
45													
	1025		POORLY GRADED SAND WITH GRAVEL, (SP) gray, wet, medium dense to dense										
50			SILT, (ML) gray, wet, hard, trace gravel	SPT 12	67	15-30-45 (75)							

Bottom of borehole at 50 feet.

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BORING NUMBER B20-09

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH
DATE STARTED 8/13/20 **COMPLETED** 8/13/20
GROUND ELEVATION 1084 ft NAVD88
DRILLING CONTRACTOR Envirocore, Inc.
GROUND WATER LEVELS:
RIG TYPE Mobile Drill B-57 **DRILLING METHOD** 3¼-in ID HSA
AT TIME OF DRILLING --- None Observed
LOGGED BY J. Conner **CHECKED BY** S. Aboulhosn
AT END OF DRILLING --- None Observed
COORDINATES 40.269208°, -84.003515°
AFTER DRILLING ---

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			12 inches TOPSOIL										
			SANDY LEAN CLAY, (CL) brown, moist, stiff to very stiff, trace gravel	SPT 1	67	5-6-8 (14)			19.7				
	1080			SPT 2	100	2-5-5 (10)			18.9	41	16	25	
5				SPT 3	100	7-8-8 (16)			11.1	22	14	8	65
	1075			SPT 4	100	5-7-7 (14)							
10													
			SILTY SAND, (SM) brown, moist, medium dense, trace gravel										
	1070			SPT 5	100	1-5-7 (12)							
15													

Bottom of borehole at 15 feet.
Borehole cave-in at 12 feet following auger removal.
Laboratory Corrosion Testing Suite Performed on a composite sample, Samples 1 and 2.

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BORING NUMBER B20-10

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH
DATE STARTED 8/13/20 **COMPLETED** 8/13/20
GROUND ELEVATION 1083 ft NAVD88
DRILLING CONTRACTOR Envirocore, Inc.
GROUND WATER LEVELS:
RIG TYPE Mobile Drill B-57 **DRILLING METHOD** 3¼-in ID HSA
AT TIME OF DRILLING --- None Observed
LOGGED BY J. Conner **CHECKED BY** S. Aboulhosn
AT END OF DRILLING --- None Observed
COORDINATES 40.268960 , -83.999749°
AFTER DRILLING ---

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			12 inches TILLED SOIL (Fill/Modified Land)										
	1080		SANDY LEAN CLAY, (CL) brown to gray, moist, medium stiff to stiff, trace gravel	SPT 1	67	6-6-7 (13)			10.1				
5				SPT 2	67	7-7-8 (15)							
	1075			SPT 3	100	4-2-4 (6)			12.3	23	15	8	
10				SPT 4	100	3-7-8 (15)							
	1070		SILTY SAND, (SM) brown to gray, moist, loose, trace gravel	SPT 5	100	4-3-5 (8)							
15													

Bottom of borehole at 15 feet.
Borehole cave-in at 11 feet following auger removal.

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BORING NUMBER B20-11

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH
DATE STARTED 8/13/20 **COMPLETED** 8/13/20
GROUND ELEVATION 1082 ft NAVD88
DRILLING CONTRACTOR Envirocore, Inc.
GROUND WATER LEVELS:
RIG TYPE Mobile Drill B-57 **DRILLING METHOD** 3¼-in ID HSA
AT TIME OF DRILLING --- None Observed
LOGGED BY J. Conner **CHECKED BY** S. Aboulhosn
AT END OF DRILLING --- None Observed
COORDINATES 40.272594°, -84.003154°
AFTER DRILLING ---

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			12 inches TOPSOIL										
	1080		LEAN CLAY WITH SAND, (CL) brown to yellowish brown, moist, stiff to very stiff, few gravel	SPT 1	50	3-5-7 (12)			21.5				
5				SPT 2	67	3-5-5 (10)			22.7	32	17	15	75
	1075			SPT 3	13	2-6-5 (11)							
10				SPT 4	100	4-8-9 (17)							
	1070		SILTY SAND, (SM) brown to gray, moist, medium dense, trace gravel										
15				SPT 5	100	1-4-7 (11)			9.8	15	12	3	50

Bottom of borehole at 15 feet.
Borehole cave-in at 12 feet following auger removal.

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BORING NUMBER B20-12

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH
DATE STARTED 8/13/20 **COMPLETED** 8/13/20
GROUND ELEVATION 1087 ft NAVD88
DRILLING CONTRACTOR Envirocore, Inc.
GROUND WATER LEVELS:
RIG TYPE Mobile Drill B-57 **DRILLING METHOD** 3¼-in ID HSA
AT TIME OF DRILLING --- None Observed
LOGGED BY J. Conner **CHECKED BY** S. Aboulhosn
AT END OF DRILLING --- None Observed
COORDINATES 40.251617°, -84.006580°
AFTER DRILLING ---

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0			12 inches TILLED SOIL (Fill/Modified Land)										
	1085		LEAN CLAY WITH SAND, (CL) brown, moist, medium stiff, trace gravel	SPT 1	100	2-2-3 (5)			20.4	29	17	12	74
5			SANDY LEAN CLAY, (CL) brown to gray, moist, medium stiff to very stiff, trace gravel	SPT 2	100	1-2-4 (6)			14.7				
	1080			SPT 3	100	3-7-11 (18)			11.1	22	14	8	63
10				SPT 4	80	5-6-6 (12)			11.8				
	1075												
15			SILTY SAND, (SM) brown to gray, moist, loose	SPT 5	100	3-4-5 (9)							

Bottom of borehole at 15 feet.
Borehole cave-in at 13 feet following auger removal.

APPENDIX B

LABORATORY TEST RESULTS

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SUMMARY OF LABORATORY RESULTS (ASTM D2487 / D2488)

CLIENT Clearview Solar I, LLC
PROJECT NAME Clearview Solar Project
PROJECT NUMBER ORR025
PROJECT LOCATION Champaign County, OH

BORING	DEPTH (ft)	MC%	LL	PL	PI	%F	USCS Classification
B20-01	1.0 - 2.5	21.2	41	23	18		LEAN CLAY (CL)
B20-01	8.5 - 10.0	12.2				12	POORLY GRADED SAND with CLAY and GRAVEL (SP-SC)
B20-02	3.5 - 5.0	12.2	19	13	6		SILTY CLAY (CL-ML)
B20-02	8.5 - 10.0	14.2					LEAN CLAY (CL)
B20-03	3.5 - 5.0	19.4					SANDY LEAN CLAY (CL)
B20-03	6.0 - 7.5	14.3	23	15	8		LEAN CLAY (CL)
B20-04	1.0 - 2.5	17.4					LEAN CLAY (CL)
B20-04	3.5 - 5.0	13.6	20	11	9		LEAN CLAY (CL)
B20-04	8.5 - 10.0	11.9	19	13	6		SILTY CLAY (CL-ML)
B20-05	1.0 - 2.5	22.3					CLAYEY SAND (SC)
B20-05	3.5 - 5.0	12.1	21	11	10	45	CLAYEY SAND (SC)
B20-05	13.5 - 15.0	10.2				43	CLAYEY SAND (SC)
B20-06	1.0 - 2.5	20.6				85	LEAN CLAY (CL)
B20-06	3.5 - 5.0	15.7					LEAN CLAY (CL)
B20-07	1.0 - 2.5	12.0					SANDY SILTY CLAY with GRAVEL (CL-ML)
B20-07	6.0 - 7.5	10.0	17	12	5	53	SANDY SILTY CLAY with GRAVEL (CL-ML)
B20-07	13.5 - 15.0	8.1	18	12	6		SANDY SILTY CLAY (CL-ML)
B20-07	18.5 - 20.0	6.8				23	CLAYEY SAND with GRAVEL (SM)
B20-08	3.5 - 5.0	17.6	25	18	7	58	SANDY SILTY CLAY (CL-ML)
B20-08	6.0 - 7.5	8.4					LEAN CLAY (CL)
B20-08	13.5 - 15.0	9.6					SANDY LEAN CLAY (CL)
B20-08	18.5 - 20.0	11.2	21	13	8	57	SANDY LEAN CLAY (CL)
B20-08	28.5 - 30.0	10.7	20	12	8	57	SANDY LEAN CLAY (CL)
B20-08	38.5 - 40.0	10.8	21	13	8	59	SANDY LEAN CLAY (CL)
B20-08	43.5 - 45.0	16.3	NP	NP	NP	48	SILTY SAND (SM)
B20-09	1.0 - 2.5	19.7					SANDY LEAN CLAY (CL)
B20-09	3.5 - 5.0	18.9	41	16	25		SANDY LEAN CLAY (CL)
B20-09	6.0 - 7.5	11.1	22	14	8	65	SANDY LEAN CLAY (CL)
B20-10	1.0 - 2.5	10.1					SANDY LEAN CLAY (CL)
B20-10	6.0 - 7.5	12.3	23	15	8		SANDY LEAN CLAY (CL)
B20-11	1.0 - 2.5	21.5					LEAN CLAY with SAND (CL)
B20-11	3.5 - 5.0	22.7	32	17	15	75	LEAN CLAY with SAND (CL)
B20-11	13.5 - 15.0	9.8	15	12	3	50	SILTY SAND (SM)
B20-12	1.0 - 2.5	20.4	29	17	12	74	LEAN CLAY with SAND (CL)
B20-12	3.5 - 5.0	14.7					SANDY LEAN CLAY (CL)
B20-12	6.0 - 7.5	11.1	22	14	8	63	SANDY LEAN CLAY (CL)
B20-12	8.5 - 10.0	11.8					SANDY LEAN CLAY (CL)

MOISTURE CONTENT

ASTM D 2216-10

Client: Hull & Associates, Inc.
Client Reference: Clearview Solar ORR025
Project No.: 2020-438-001

Lab ID:	001	002	003	004	005
Boring No.:	B20-01	B20-01	B20-02	B20-02	B20-03
Depth (ft):	1.0-2.5'	8.5-10.0'	3.5-5.0'	8.5-10.0'	3.5-5.0'
Sample No.:	1	4	2	4	2
Tare Number	1522	574	1506	11	12
Wt. of Tare & Wet Sample (g)	494.75	865.49	537.07	270.83	261.86
Wt. of Tare & Dry Sample (g)	434.29	804.82	494.50	238.13	220.69
Weight of Tare (g)	148.60	308.12	145.62	8.17	8.19
Weight of Water (g)	60.46	60.67	42.57	32.70	41.17
Weight of Dry Sample (g)	285.69	496.70	348.88	229.96	212.50
Water Content (%)	**21.2**	**12.2**	**12.2**	**14.2**	**19.4**

Lab ID	006	007	008	009	010
Boring No.	B20-03	B20-04	B20-04	B20-04	B20-05
Depth (ft)	6.0-7.5'	1.0-2.5'	3.5-5.0'	8.5-10.0'	1.0-2.5'
Sample No.	3	1	2	4	1
Tare Number	1470	C4	3508	1439	C3
Wt. of Tare & Wet Sample (g)	498.08	267.11	28.57	513.31	197.58
Wt. of Tare & Dry Sample (g)	454.06	228.69	26.11	474.05	163.09
Weight of Tare (g)	146.50	8.18	8.04	144.77	8.18
Weight of Water (g)	44.02	38.42	2.46	39.26	34.49
Weight of Dry Sample (g)	307.56	220.51	18.07	329.28	154.91
Water Content (%)	**14.3**	**17.4**	**13.6**	**11.9**	**22.3**

Notes :

Tested By *JV* *Date* *8/28/20* *Checked By* *NC* *Date* *9/3/20*

DCN: CT-S1 DATE: 3/18/13 REVISION: 4

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MOISTURE CONTENT

ASTM D 2216-10

Client: Hull & Associates, Inc.
Client Reference: Clearview Solar ORR025
Project No.: 2020-438-001

Lab ID:	011	012	013	014	015
Boring No.:	B20-05	B20-05	B20-06	B20-06	B20-07
Depth (ft):	3.5-5.0'	13.5-15.0	1.0-2.5'	3.5-5.0'	1.0-2.5'
Sample No.:	2	5	1	2	1
Tare Number	1519	1566	1482	E1	W2
Wt. of Tare & Wet Sample (g)	497.58	719.26	417.02	315.56	242.24
Wt. of Tare & Dry Sample (g)	459.68	681.31	370.95	273.89	217.11
Weight of Tare (g)	147.58	309.41	147.64	8.21	8.21
Weight of Water (g)	37.90	37.95	46.07	41.67	25.13
Weight of Dry Sample (g)	312.10	371.90	223.31	265.68	208.90
Water Content (%)	**12.1**	**10.2**	**20.6**	**15.7**	**12.0**

Lab ID	016	017	018	019	020
Boring No.	B20-07	B20-07	B20-07	B20-08	B20-08
Depth (ft)	6.0-7.5'	13.5-15.0'	18.5-20.0'	3.5-5.0'	6.0-7.5'
Sample No.	3	5	6	2	3
Tare Number	1537	1490	1562	1545	W3
Wt. of Tare & Wet Sample (g)	630.40	436.50	704.93	411.56	291.50
Wt. of Tare & Dry Sample (g)	586.01	414.72	679.71	372.03	269.57
Weight of Tare (g)	143.83	144.60	310.65	147.42	8.21
Weight of Water (g)	44.39	21.78	25.22	39.53	21.93
Weight of Dry Sample (g)	442.18	270.12	369.06	224.61	261.36
Water Content (%)	**10.0**	**8.1**	**6.8**	**17.6**	**8.4**

Notes :

Tested By JV *Date* 8/28/20 *Checked By* NC *Date* 9/3/20

DCN: CT-S1 DATE: 3/18/13 REVISION: 4

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MOISTURE CONTENT

ASTM D 2216-10

Client: Hull & Associates, Inc.
Client Reference: Clearview Solar ORR025
Project No.: 2020-438-001

Lab ID:	021	022	023	024	025
Boring No.:	B20-08	B20-08	B20-08	B20-08	B20-08
Depth (ft):	13.5-15.0'	18.5-20.0'	28.5-30.0'	38.5-40.0'	43.5-45.0'
Sample No.:	5	6	8	10	11
Tare Number	E3	1416	587	1563	588
Wt. of Tare & Wet Sample (g)	281.31	521.98	662.62	828.54	707.13
Wt. of Tare & Dry Sample (g)	257.36	484.09	628.45	777.40	651.30
Weight of Tare (g)	8.22	145.63	308.71	304.73	308.60
Weight of Water (g)	23.95	37.89	34.17	51.14	55.83
Weight of Dry Sample (g)	249.14	338.46	319.74	472.67	342.70
Water Content (%)	**9.6**	**11.2**	**10.7**	**10.8**	**16.3**

Lab ID	026	027	028	029	030
Boring No.	B20-09	B20-09	B20-09	B20-10	B20-10
Depth (ft)	1.0-2.5'	3.5-5.0'	6.0-7.5'	1.0-2.5'	6.0-7.5'
Sample No.	1	2	3	1	3
Tare Number	4	3388	1570	12	33
Wt. of Tare & Wet Sample (g)	385.84	27.05	676.30	416.41	358.77
Wt. of Tare & Dry Sample (g)	336.84	24.08	639.20	386.36	321.11
Weight of Tare (g)	88.30	8.40	306.34	87.58	15.48
Weight of Water (g)	49.00	2.97	37.10	30.05	37.66
Weight of Dry Sample (g)	248.54	15.68	332.86	298.78	305.63
Water Content (%)	**19.7**	**18.9**	**11.1**	**10.1**	**12.3**

Notes :

Tested By JV *Date* 8/28/20 *Checked By* NC *Date* 9/3/20

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MOISTURE CONTENT

ASTM D 2216-10

Client: Hull & Associates, Inc.
Client Reference: Clearview Solar ORR025
Project No.: 2020-438-001

Lab ID:	031	032	033	034	035
Boring No.:	B20-11	B20-11	B20-11	B20-12	B20-12
Depth (ft):	1.0-2.5'	3.5-5.0'	13.5-15.0'	1.0-2.5'	3.5-5.0'
Sample No.:	1	2	5	1	2
Tare Number	8	44	21	22	7
Wt. of Tare & Wet Sample (g)	351.80	450.97	371.16	264.13	467.83
Wt. of Tare & Dry Sample (g)	305.07	370.27	339.16	221.66	418.99
Weight of Tare (g)	87.41	15.54	13.37	13.51	87.14
Weight of Water (g)	46.73	80.70	32.00	42.47	48.84
Weight of Dry Sample (g)	217.66	354.73	325.79	208.15	331.85
Water Content (%)	**21.5**	**22.7**	**9.8**	**20.4**	**14.7**

Lab ID	036	037
Boring No.	B20-12	B20-12
Depth (ft)	6.0-7.5'	8.5-10.0'
Sample No.	3	4
Tare Number	1565	6
Wt. of Tare & Wet Sample (g)	618.66	433.47
Wt. of Tare & Dry Sample (g)	587.78	396.78
Weight of Tare (g)	308.68	86.08
Weight of Water (g)	30.88	36.69
Weight of Dry Sample (g)	279.10	310.70
Water Content (%)	**11.1**	**11.8**

Notes :

Tested By JV *Date* 8/28/20 *Checked By* NC *Date* 9/3/20

DCN: CT-S1 DATE: 3/18/13 REVISION: 4

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PERCENT PASSING # 200 SIEVE

ASTM D 1140-14

Client	Hull & Associates, Inc.
Client Reference	Clearview Solar ORR025
Project No.	2020-438-001

Lab Id.	011
Boring No.	B20-05
Depth (ft)	3.5-5.0'
Sample No.	2
Tare Number	1519
Wt. of Tare & WS (gm)	456.03
Wt. of Tare & DS (gm)	456.03
Wt. of Tare (gm)	147.58
Wt. of Water (gm)	0
Wt. of DS (gm)	308.45
Water Content (%)	**0.0**
Wt. of Washed Soil & Tare	315.96
Percent Passing #200	**45.4**

Tested By D *Date* 9/2/2020 *Checked By* NC *Date* 9/3/2020

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PERCENT PASSING # 200 SIEVE

ASTM D 1140-14

Client	Hull & Associates, Inc.
Client Reference	Clearview Solar ORR025
Project No.	2020-438-001

Lab Id.	013
Boring No.	B20-06
Depth (ft)	1.0-2.5'
Sample No.	1
Tare Number	1482
Wt. of Tare & WS (gm)	375.10
Wt. of Tare & DS (gm)	375.10
Wt. of Tare (gm)	147.64
Wt. of Water (gm)	0
Wt. of DS (gm)	227.46
Water Content (%)	**0.0**
Wt. of Washed Soil & Tare	181.53
Percent Passing #200	**85.1**

Tested By D *Date* 9/1/2020 *Checked By* NC *Date* 9/3/2020

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PERCENT PASSING # 200 SIEVE

ASTM D 1140-14

Client	Hull & Associates, Inc.
Client Reference	Clearview Solar ORR025
Project No.	2020-438-001

Lab Id.	016
Boring No.	B20-07
Depth (ft)	6.0-7.5'
Sample No.	3
Tare Number	1537
Wt. of Tare & WS (gm)	581.97
Wt. of Tare & DS (gm)	581.97
Wt. of Tare (gm)	143.83
Wt. of Water (gm)	0
Wt. of DS (gm)	438.14
Water Content (%)	**0.0**
Wt. of Washed Soil & Tare	350.20
Percent Passing #200	**52.9**

Tested By D *Date* 9/2/2020 *Checked By* NC *Date* 9/3/2020

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PERCENT PASSING # 200 SIEVE

ASTM D 1140-14

Client	Hull & Associates, Inc.
Client Reference	Clearview Solar ORR025
Project No.	2020-438-001

Lab Id.	019
Boring No.	B20-08
Depth (ft)	3.5-5.0'
Sample No.	2
Tare Number	1545
Wt. of Tare & WS (gm)	369.45
Wt. of Tare & DS (gm)	369.45
Wt. of Tare (gm)	147.42
Wt. of Water (gm)	0
Wt. of DS (gm)	222.03
Water Content (%)	**0.0**
Wt. of Washed Soil & Tare	241.15
Percent Passing #200	**57.8**

Tested By D *Date* 9/2/2020 *Checked By* NC *Date* 9/3/2020

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PERCENT PASSING # 200 SIEVE

ASTM D 1140-14

Client	Hull & Associates, Inc.
Client Reference	Clearview Solar ORR025
Project No.	2020-438-001

Lab Id.	022
Boring No.	B20-08
Depth (ft)	18.5-20.0'
Sample No.	6
Tare Number	1416
Wt. of Tare & WS (gm)	480.19
Wt. of Tare & DS (gm)	480.19
Wt. of Tare (gm)	145.63
Wt. of Water (gm)	0
Wt. of DS (gm)	334.56
Water Content (%)	**0.0**
Wt. of Washed Soil & Tare	288.67
Percent Passing #200	**57.2**

Tested By D *Date* 9/2/2020 *Checked By* NC *Date* 9/3/2020

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PERCENT PASSING # 200 SIEVE

ASTM D 1140-14

Client	Hull & Associates, Inc.
Client Reference	Clearview Solar ORR025
Project No.	2020-438-001

Lab Id.	023
Boring No.	B20-08
Depth (ft)	28.5-30.0'
Sample No.	8
Tare Number	587
Wt. of Tare & WS (gm)	624.82
Wt. of Tare & DS (gm)	624.82
Wt. of Tare (gm)	308.71
Wt. of Water (gm)	0
Wt. of DS (gm)	316.11
Water Content (%)	**0.0**
Wt. of Washed Soil & Tare	444.48
Percent Passing #200	**57.0**

Tested By D *Date* 9/2/2020 *Checked By* NC *Date* 9/3/2020

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PERCENT PASSING # 200 SIEVE

ASTM D 1140-14

Client	Hull & Associates, Inc.
Client Reference	Clearview Solar ORR025
Project No.	2020-438-001

Lab Id.	024
Boring No.	B20-08
Depth (ft)	38.5-40.0'
Sample No.	10
Tare Number	1563
Wt. of Tare & WS (gm)	773.45
Wt. of Tare & DS (gm)	773.45
Wt. of Tare (gm)	304.73
Wt. of Water (gm)	0
Wt. of DS (gm)	468.72
Water Content (%)	**0.0**
Wt. of Washed Soil & Tare	498.82
Percent Passing #200	**58.6**

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PERCENT PASSING # 200 SIEVE

ASTM D 1140-14

Client	Hull & Associates, Inc.
Client Reference	Clearview Solar ORR025
Project No.	2020-438-001

Lab Id.	025
Boring No.	B20-08
Depth (ft)	43.5-45.0'
Sample No.	11
Tare Number	588
Wt. of Tare & WS (gm)	648.21
Wt. of Tare & DS (gm)	648.21
Wt. of Tare (gm)	308.60
Wt. of Water (gm)	0
Wt. of DS (gm)	339.61
Water Content (%)	**0.0**
Wt. of Washed Soil & Tare	485.67
Percent Passing #200	**47.9**

Tested By *D* *Date* *9/2/2020* *Checked By* *NC* *Date* 9/3/2020

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PERCENT PASSING # 200 SIEVE

ASTM D 1140-14

Client	Hull & Associates, Inc.
Client Reference	Clearview Solar ORR025
Project No.	2020-438-001

Lab Id.	032
Boring No.	B20-11
Depth (ft)	3.5-5.0'
Sample No.	2
Tare Number	574
Wt. of Tare & WS (gm)	654.10
Wt. of Tare & DS (gm)	654.10
Wt. of Tare (gm)	308.04
Wt. of Water (gm)	0
Wt. of DS (gm)	346.06
Water Content (%)	**0.0**
Wt. of Washed Soil & Tare	393.09
Percent Passing #200	**75.4**

Tested By D *Date* 9/2/2020 *Checked By* NC *Date* 9/3/2020

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PERCENT PASSING # 200 SIEVE

ASTM D 1140-14

Client	Hull & Associates, Inc.
Client Reference	Clearview Solar ORR025
Project No.	2020-438-001

Lab Id.	033
Boring No.	B20-11
Depth (ft)	13.5-15.0'
Sample No.	5
Tare Number	1562
Wt. of Tare & WS (gm)	631.37
Wt. of Tare & DS (gm)	631.37
Wt. of Tare (gm)	310.77
Wt. of Water (gm)	0
Wt. of DS (gm)	320.6
Water Content (%)	**0.0**
Wt. of Washed Soil & Tare	472.74
Percent Passing #200	**49.5**

Tested By D *Date* 9/2/2020 *Checked By* NC *Date* 9/3/2020

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PERCENT PASSING # 200 SIEVE

ASTM D 1140-14

Client	Hull & Associates, Inc.
Client Reference	Clearview Solar ORR025
Project No.	2020-438-001

Lab Id.	034
Boring No.	B20-12
Depth (ft)	1.0-2.5'
Sample No.	1
Tare Number	1566
Wt. of Tare & WS (gm)	512.52
Wt. of Tare & DS (gm)	512.52
Wt. of Tare (gm)	309.40
Wt. of Water (gm)	0
Wt. of DS (gm)	203.12
Water Content (%)	**0.0**
Wt. of Washed Soil & Tare	361.89
Percent Passing #200	**74.2**

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PERCENT PASSING # 200 SIEVE

ASTM D 1140-14

Client	Hull & Associates, Inc.
Client Reference	Clearview Solar ORR025
Project No.	2020-438-001

Lab Id.	036
Boring No.	B20-12
Depth (ft)	6.0-7.5'
Sample No.	3
Tare Number	1565
Wt. of Tare & WS (gm)	584.39
Wt. of Tare & DS (gm)	584.39
Wt. of Tare (gm)	308.68
Wt. of Water (gm)	0
Wt. of DS (gm)	275.71
Water Content (%)	**0.0**
Wt. of Washed Soil & Tare	411.41
Percent Passing #200	**62.7**

Tested By D *Date* 9/3/2020 *Checked By* NC *Date* 9/3/2020

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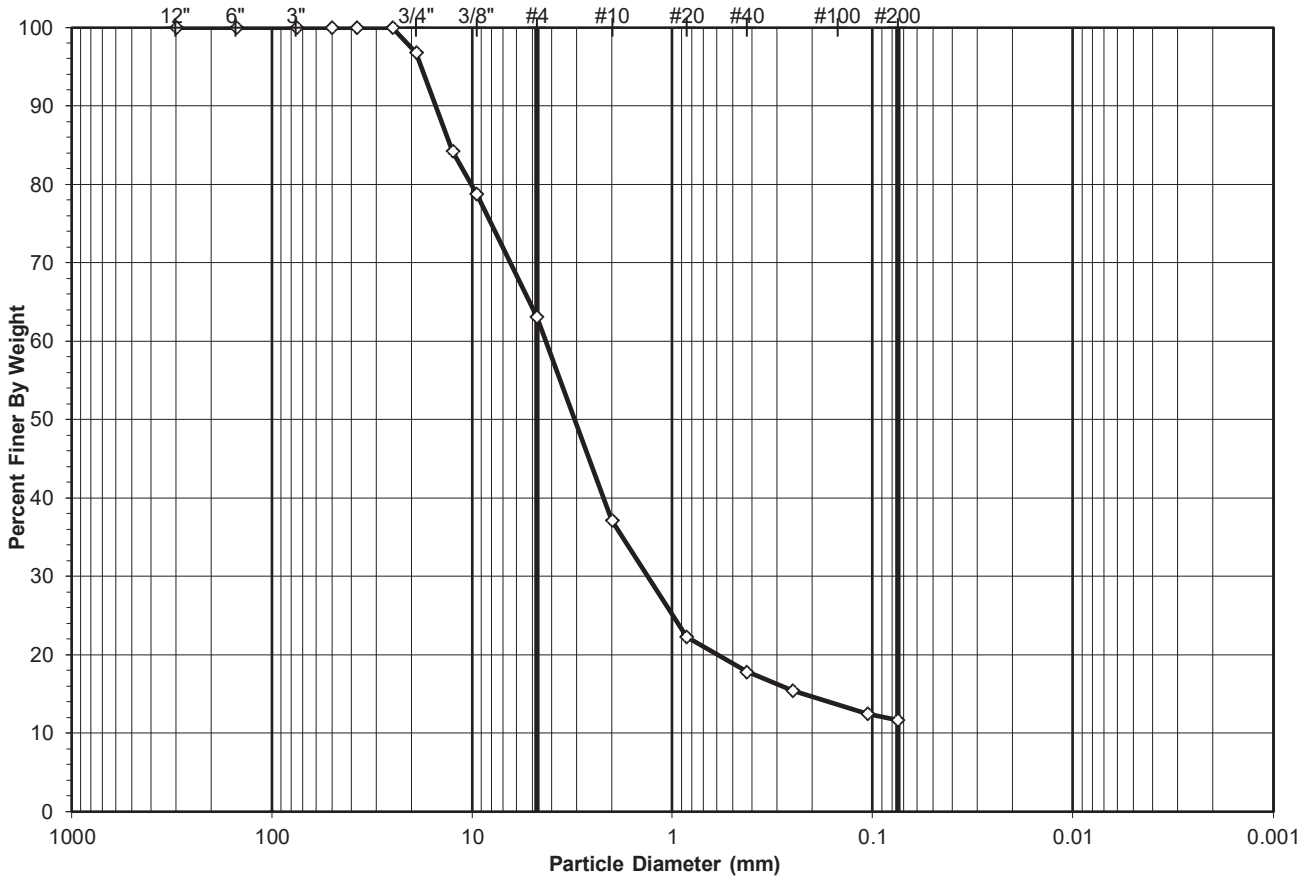
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Hull & Associates, Inc.	Boring No.:	B20-01
Client Reference:	Clearview Solar ORR025	Depth (ft):	8.5-10.0'
Project No.:	2020-438-001	Sample No.:	4
Lab ID:	2020-438-001-002	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	36.93
#4 To #200	*Sand*	51.37
Finer Than #200	*Silt & Clay*	11.70

USCS Symbol:

sp-sc, ASSUMED

USCS Classification:

POORLY GRADED SAND WITH CLAY AND GRAVEL

DCN: CT-S3TW DATE: 8/19/19 REVISION: 0

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Hull & Associates, Inc.	Boring No.:	B20-01
Client Reference:	Clearview Solar ORR025	Depth (ft):	8.5-10.0'
Project No.:	2020-438-001	Sample No.:	4
Lab ID:	2020-438-001-002	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	574	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	865.49	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	804.82	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	308.12	Weight of Tare (g):	NA
Weight of Water (g):	60.67	Weight of Water (g):	NA
Weight of Dry Soil (g):	496.70	Weight of Dry Soil (g):	NA
Moisture Content (%):	**12.2**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	496.70
Dry Weight of - 3/4" Sample (g)	480.75	Weight of Minus #200 Material (g):	58.11
Wet Weight of +3/4" Sample (g)	15.95	Weight of Plus #200 Material (g):	438.59
Dry Weight of + 3/4" Sample (g)	15.95		
Total Dry Weight of Sample (g):	496.70		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	15.95		3.21	3.21	96.79	**96.79**
1/2"	12.5	62.42		12.57	15.78	84.22	**84.22**
3/8"	9.50	27.15		5.47	21.24	78.76	**78.76**
#4	4.75	77.92		15.69	36.93	63.07	**63.07**
#10	2.00	128.76		25.92	62.85	37.15	**37.15**
#20	0.85	73.82	(**)	14.86	77.72	22.28	**22.28**
#40	0.425	22.23		4.48	82.19	17.81	**17.81**
#60	0.250	11.84		2.38	84.58	15.42	**15.42**
#140	0.106	14.55		2.93	87.51	12.49	**12.49**
#200	0.075	3.95		0.80	88.30	11.70	**11.70**
Pan	-	58.11		11.70	100.00	-	-

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By WDS Date 9/1/20 Checked By NC Date 9/3/20

DCN: CT-S3TW DATE: 8/19/19 REVISION: 0 *S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls*

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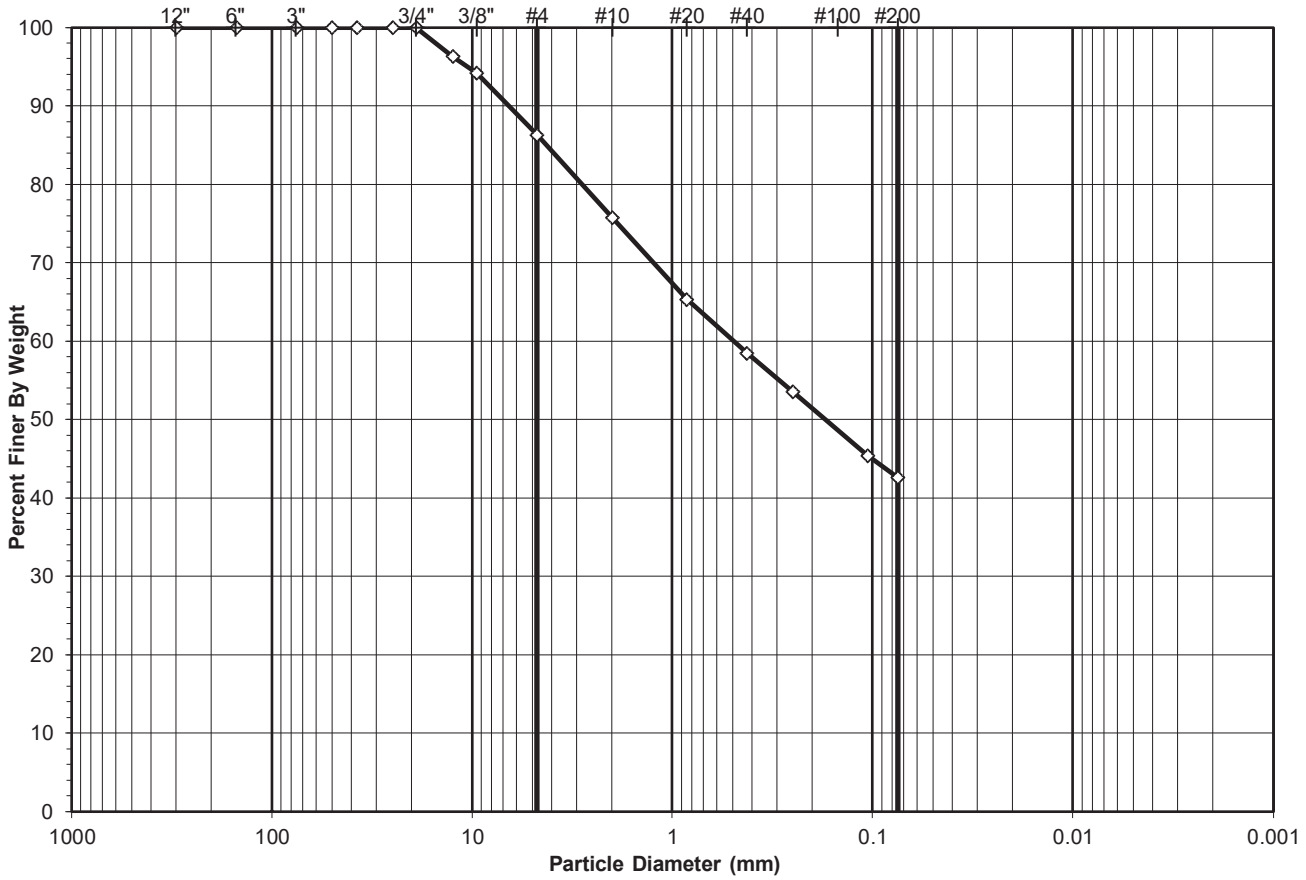
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Hull & Associates, Inc.	Boring No.:	B20-05
Client Reference:	Clearview Solar ORR025	Depth (ft):	13.5-15.0'
Project No.:	2020-438-001	Sample No.:	5
Lab ID:	2020-438-001-012	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*a e*	13.70
#4 To #200	*a d*	43.71
Finer Than #200	*t C ay*	42.59

USCS Symbol:
sc, ASSUMED

USCS Classification:
CLAYEY SAND

DCN: CT-S3TW DATE: 8/19/19 REVISION: 0

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Hull & Associates, Inc.	Boring No.:	B20-05
Client Reference:	Clearview Solar ORR025	Depth (ft):	13.5-15.0'
Project No.:	2020-438-001	Sample No.:	5
Lab ID:	2020-438-001-012	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1566	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	719.26	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	681.31	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	309.41	Weight of Tare (g):	NA
Weight of Water (g):	37.95	Weight of Water (g):	NA
Weight of Dry Soil (g):	371.90	Weight of Dry Soil (g):	NA
Moisture Content (%):	**10.2**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	371.90
Dry Weight of - 3/4" Sample (g)	371.90	Weight of Minus #200 Material (g):	158.40
Wet Weight of +3/4" Sample (g)	0.00	Weight of Plus #200 Material (g):	213.50
Dry Weight of + 3/4" Sample (g)	0.00		
Total Dry Weight of Sample (g):	371.90		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	13.77		3.70	3.70	96.30	**96.30**
3/8"	9.50	7.89		2.12	5.82	94.18	**94.18**
#4	4.75	29.29		7.88	13.70	86.30	**86.30**
#10	2.00	39.12		10.52	24.22	75.78	**75.78**
#20	0.85	38.82	(**)	10.44	34.66	65.34	**65.34**
#40	0.425	25.48		6.85	41.51	58.49	**58.49**
#60	0.250	18.40		4.95	46.46	53.54	**53.54**
#140	0.106	30.23		8.13	54.58	45.42	**45.42**
#200	0.075	10.50		2.82	57.41	42.59	**42.59**
Pan	-	158.40		42.59	100.00	-	-

Notes : *The 3/ s e e a ays s s ased o the Tota D y e ght of the a p e*
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Tested By WDS Date 9/1/20 Checked By NC Date 9/3/20

DCN: CT-S3TW DATE: 8/19/19 REVISION: 0 : ce ce p eadsheets e e ydJ s

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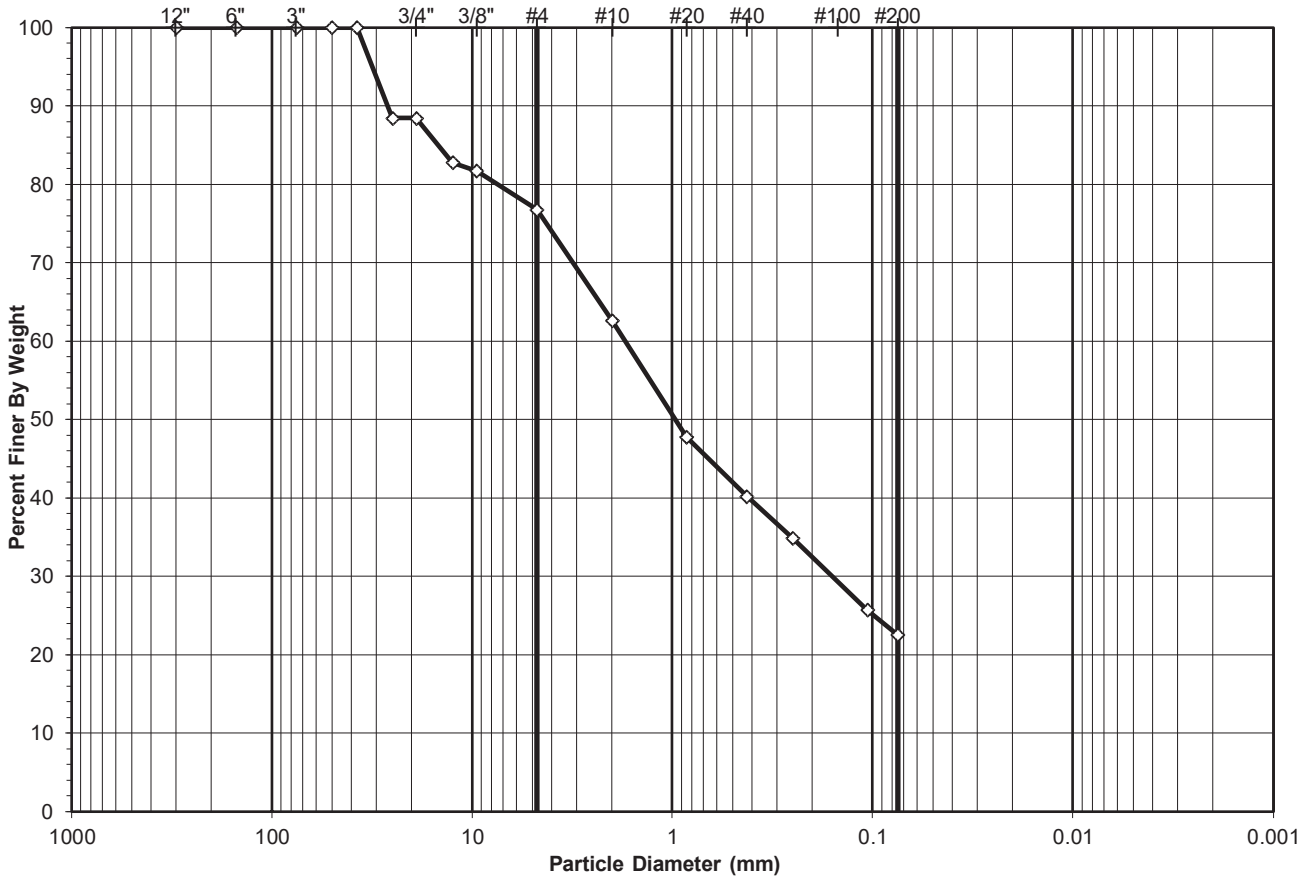
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Hull & Associates, Inc.	Boring No.:	B20-07
Client Reference:	Clearview Solar ORR025	Depth (ft):	18.5-20.0'
Project No.:	2020-438-001	Sample No.:	6
Lab ID:	2020-438-001-018	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	**cobbles**	**gravel**	**sand**	**silt and clay fraction**	
USDA	**cobbles**	**gravel**	**sand**	**silt**	**clay**



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*a e*	23.25
#4 To #200	*a d*	54.18
Finer Than #200	*t C ay*	22.57

USCS Symbol:

sc, ASSUMED

USCS Classification:

CLAYEY SAND WITH GRAVEL

DCN: CT-S3TW DATE: 8/19/19 REVISION: 0

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Hull & Associates, Inc.	Boring No.:	B20-07
Client Reference:	Clearview Solar ORR025	Depth (ft):	18.5-20.0'
Project No.:	2020-438-001	Sample No.:	6
Lab ID:	2020-438-001-018	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1562	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	704.93	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	679.71	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	310.65	Weight of Tare (g):	NA
Weight of Water (g):	25.22	Weight of Water (g):	NA
Weight of Dry Soil (g):	369.06	Weight of Dry Soil (g):	NA
Moisture Content (%):	**6.8**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	369.06
Dry Weight of - 3/4" Sample (g)	326.37	Weight of Minus #200 Material (g):	83.29
Wet Weight of +3/4" Sample (g)	42.69	Weight of Plus #200 Material (g):	285.77
Dry Weight of + 3/4" Sample (g)	42.69		
Total Dry Weight of Sample (g):	369.06		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	42.69		11.57	11.57	88.43	**88.43**
3/4"	19.0	0.00		0.00	11.57	88.43	**88.43**
1/2"	12.5	20.91		5.67	17.23	82.77	**82.77**
3/8"	9.50	4.00		1.08	18.32	81.68	**81.68**
#4	4.75	18.20		4.93	23.25	76.75	**76.75**
#10	2.00	52.15		14.13	37.38	62.62	**62.62**
#20	0.85	54.97	(**)	14.89	52.27	47.73	**47.73**
#40	0.425	27.77		7.52	59.80	40.20	**40.20**
#60	0.250	19.74		5.35	65.15	34.85	**34.85**
#140	0.106	33.72		9.14	74.28	25.72	**25.72**
#200	0.075	11.62		3.15	77.43	22.57	**22.57**
Pan	-	83.29		22.57	100.00	-	-

Notes : *The 3/ s e e a ays s s ased o the Tota D y e ght of the a p e*
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Tested By WDS Date 9/1/20 Checked By NC Date 9/3/20

DCN: CT-S3TW DATE: 8/19/19 REVISION: 0

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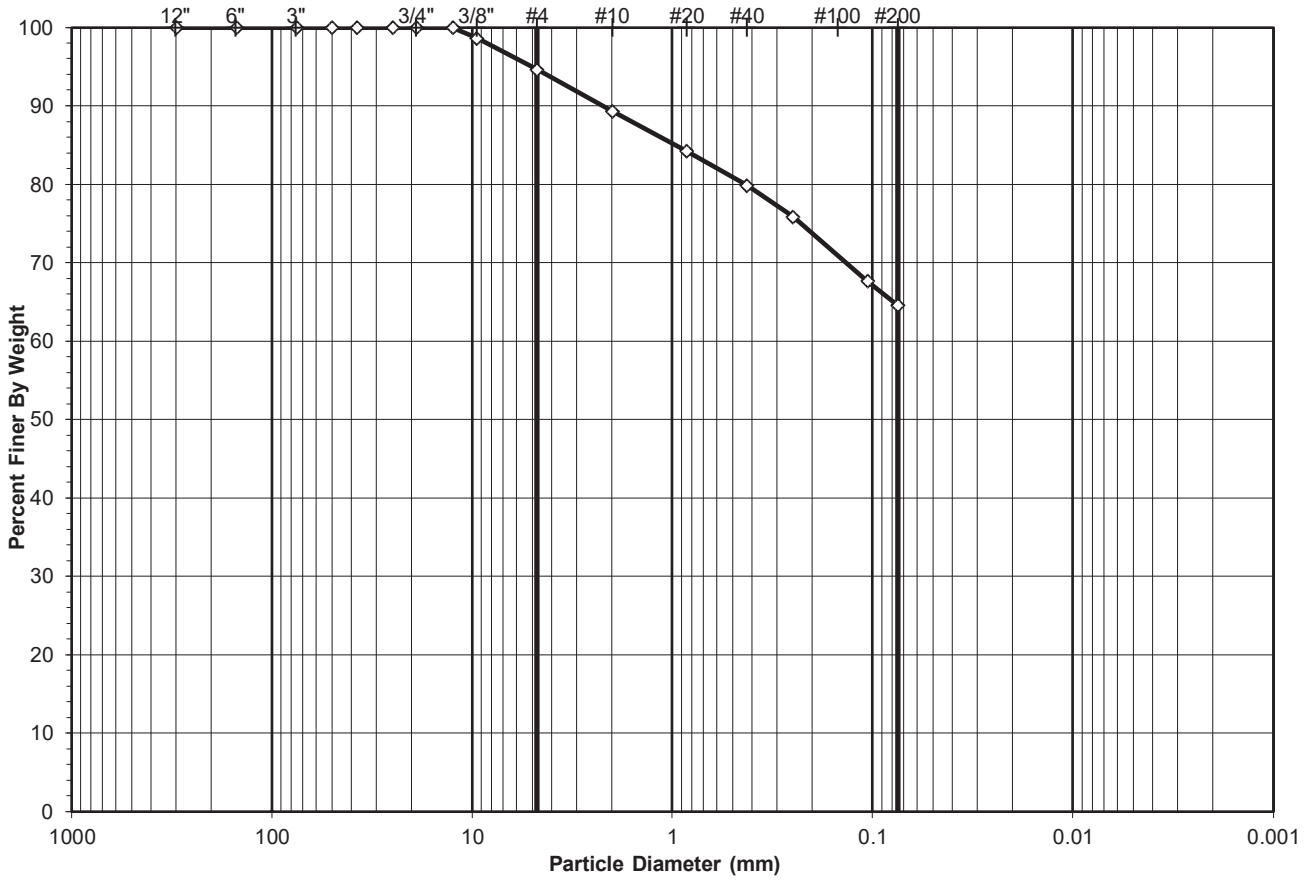
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Hull & Associates, Inc.	Boring No.:	B20-09
Client Reference:	Clearview Solar ORR025	Depth (ft):	6.0-7.5'
Project No.:	2020-438-001	Sample No.:	3
Lab ID:	2020-438-001-028	Soil Color:	Brown

	SIEVE ANALYSIS			*HYDROMETER*	
USCS	**cobbles**	**gravel**	**sand**	**silt and clay fraction**	
USDA	**cobbles**	**gravel**	**sand**	**silt**	**clay**



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*a e*	5.37
#4 To #200	*a d*	30.07
Finer Than #200	*t C ay*	64.56

USCS Symbol:

CL, TESTED

USCS Classification:

SANDY LEAN CLAY

DCN: CT-S3TW DATE: 8/19/19 REVISION: 0

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Hull & Associates, Inc.	Boring No.:	B20-09
Client Reference:	Clearview Solar ORR025	Depth (ft):	6.0-7.5'
Project No.:	2020-438-001	Sample No.:	3
Lab ID:	2020-438-001-028	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1570	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	635.11	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	635.11	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	306.34	Weight of Tare (g):	NA
Weight of Water (g):	0.00	Weight of Water (g):	NA
Weight of Dry Soil (g):	328.77	Weight of Dry Soil (g):	NA
Moisture Content (%):	**0.0**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	328.77
Dry Weight of - 3/4" Sample (g)	328.77	Weight of Minus #200 Material (g):	212.24
Wet Weight of +3/4" Sample (g)	0.00	Weight of Plus #200 Material (g):	116.53
Dry Weight of + 3/4" Sample (g)	0.00		
Total Dry Weight of Sample (g):	328.77		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	4.45		1.35	1.35	98.65	**98.65**
#4	4.75	13.21		4.02	5.37	94.63	**94.63**
#10	2.00	17.48		5.32	10.69	89.31	**89.31**
#20	0.85	16.73	(**)	5.09	15.78	84.22	**84.22**
#40	0.425	14.39		4.38	20.15	79.85	**79.85**
#60	0.250	13.14		4.00	24.15	75.85	**75.85**
#140	0.106	26.90		8.18	32.33	67.67	**67.67**
#200	0.075	10.23		3.11	35.44	64.56	**64.56**
Pan	-	212.24		64.56	100.00	-	-

Notes : *The 3/ s e e a ays s s ased o the Tota D y e ght of the a p e*
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Tested By WDS Date 9/2/20 Checked By NC Date 9/3/20

DCN: CT-S3TW DATE: 8/19/19 REVISION: 0 : ce ce p eadsheets e e ydJ s

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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-01
Client Reference:	Clearview Solar ORR025	Depth (ft):	1.0-2.5'
Project No.:	2020-438-001	Sample No.:	1
Lab ID:	2020-438-001-001	Soil Description:	BROWN LEAN CLAY

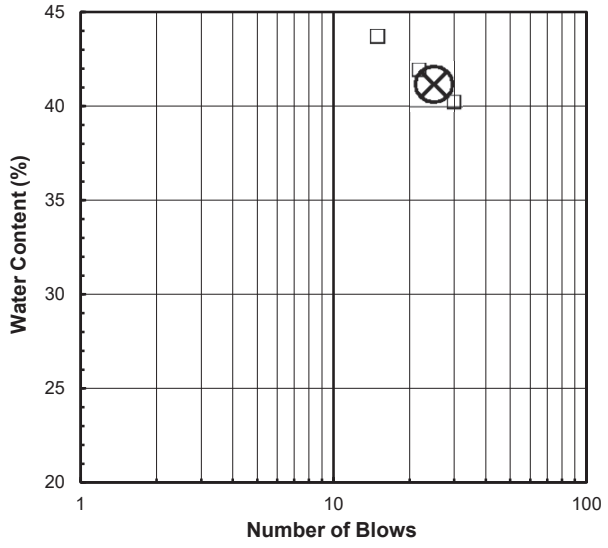
Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		1	2	3	M
Tare Number:	1522	1	2	3	U
Wt. of Tare & Wet Sample (g):	494.75	24.07	26.08	25.94	L
Wt. of Tare & Dry Sample (g):	434.29	22.06	23.82	23.74	T
Weight of Tare (g):	148.60	17.06	18.42	18.70	I
Weight of Water (g):	60.5	2.0	2.3	2.2	P
Weight of Dry Sample (g):	285.7	5.0	5.4	5.0	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**21.2**	**40.2**	**41.9**	**43.7**	N
Number of Blows:		**30**	**22**	**15**	T

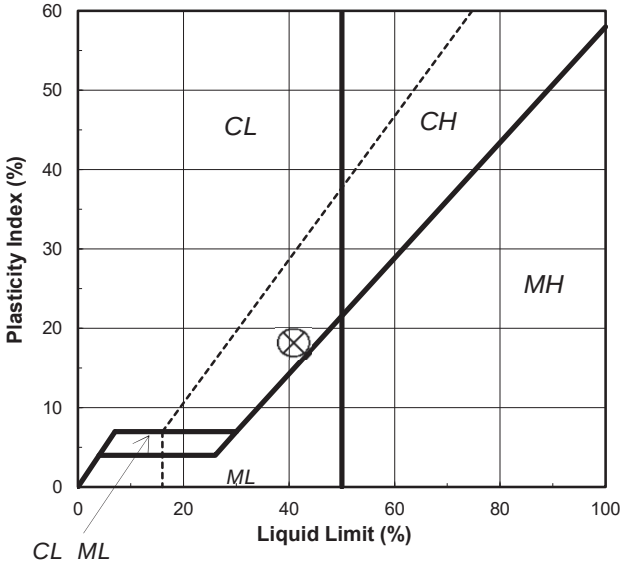
Plastic Limit Test	1	2	Range
Tare Number:	13	14	
Wt. of Tare & Wet Sample (g):	30.16	28.84	
Wt. of Tare & Dry Sample (g):	28.16	26.94	
Weight of Tare (g):	19.34	18.58	
Weight of Water (g):	2.0	1.9	
Weight of Dry Sample (g):	8.8	8.4	
Moisture Content (%):	**22.7**	**22.7**	**-0.1**
Note: The accepta e a ge of the t o o st e Co te ts s			1.12

Test Results	
Liquid Limit (%):	**41**
Plastic Limit (%):	**23**
Plasticity Index (%):	**18**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-02
Client Reference:	Clearview Solar ORR025	Depth (ft):	3.5-5.0'
Project No.:	2020-438-001	Sample No.:	2
Lab ID:	2020-438-001-003	Soil Description:	BROWN SILTY CLAY

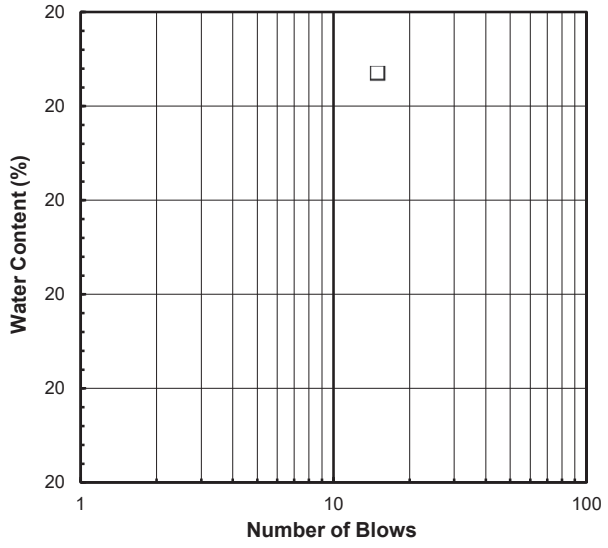
Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		1	2	3	M
Tare Number:	1506	4	5	6	U
Wt. of Tare & Wet Sample (g):	537.07	26.08	27.36	27.53	L
Wt. of Tare & Dry Sample (g):	494.50	24.77	25.93	26.04	T
Weight of Tare (g):	145.62	17.80	18.56	18.67	I
Weight of Water (g):	42.6	1.3	1.4	1.5	P
Weight of Dry Sample (g):	348.9	7.0	7.4	7.4	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**12.2**	**18.8**	**19.4**	**20.2**	N
Number of Blows:		**28**	**22**	**15**	T

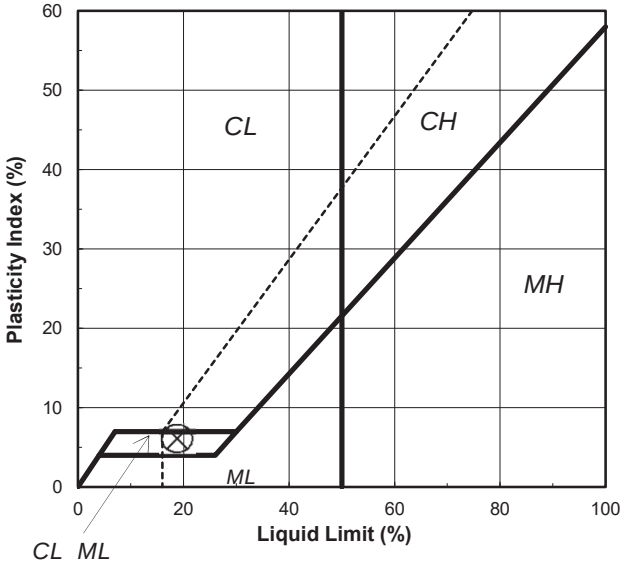
Plastic Limit Test	1	2	Range
Tare Number:	15	16	
Wt. of Tare & Wet Sample (g):	31.25	31.96	
Wt. of Tare & Dry Sample (g):	29.85	30.38	
Weight of Tare (g):	19.30	18.55	
Weight of Water (g):	1.4	1.6	
Weight of Dry Sample (g):	10.6	11.8	
Moisture Content (%):	**13.3**	**13.4**	**-0.1**
Note: The accepta e a ge of the t o o st e Co te ts s			0.84

Test Results	
Liquid Limit (%):	**19**
Plastic Limit (%):	**13**
Plasticity Index (%):	**6**
USCS Symbol:	**CL-ML**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-03
Client Reference:	Clearview Solar ORR025	Depth (ft):	6.0-7.5'
Project No.:	2020-438-001	Sample No.:	3
Lab ID:	2020-438-001-006	Soil Description:	BROWN LEAN CLAY

Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

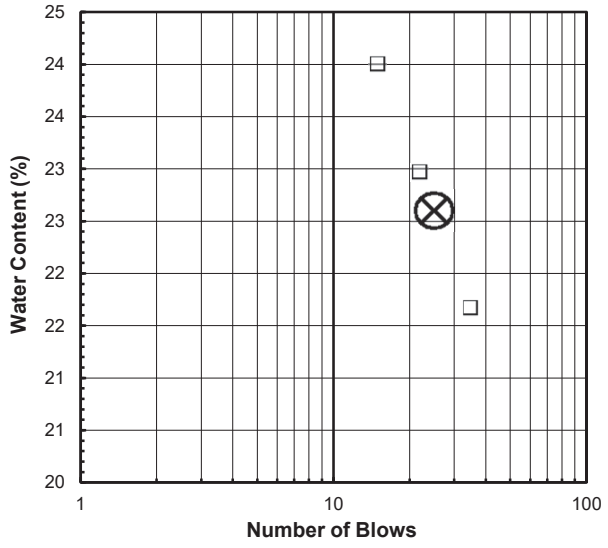
As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		1	2	3	M
Tare Number:	1470	7	8	9	U
Wt. of Tare & Wet Sample (g):	498.08	26.41	26.13	27.02	L
Wt. of Tare & Dry Sample (g):	454.06	25.08	24.69	25.41	T
Weight of Tare (g):	146.50	18.94	18.42	18.70	I
Weight of Water (g):	44.0	1.3	1.4	1.6	P
Weight of Dry Sample (g):	307.6	6.1	6.3	6.7	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**14.3**	**21.7**	**23.0**	**24.0**	N
Number of Blows:		**35**	**22**	**15**	T

Plastic Limit Test	1	2	Range
Tare Number:	17	18	
Wt. of Tare & Wet Sample (g):	32.59	29.58	
Wt. of Tare & Dry Sample (g):	30.77	28.25	
Weight of Tare (g):	18.48	19.21	
Weight of Water (g):	1.8	1.3	
Weight of Dry Sample (g):	12.3	9.0	
Moisture Content (%):	**14.8**	**14.7**	**0.1**

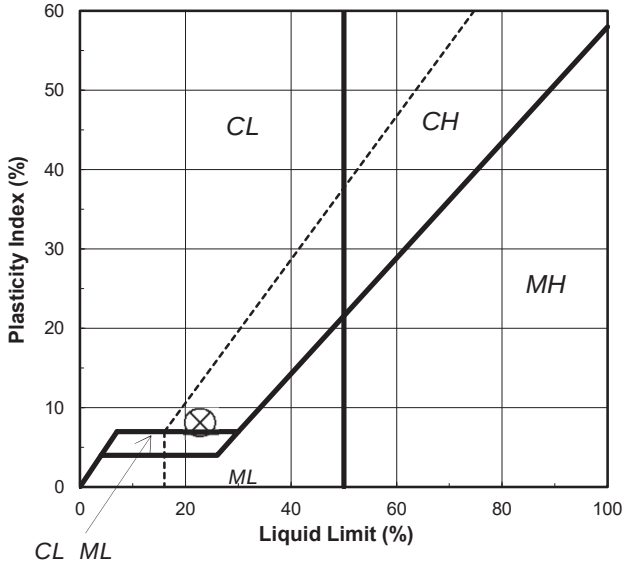
Note: The accepta e a ge of the t o o st e Co te ts s 1.12

Test Results	
Liquid Limit (%):	**23**
Plastic Limit (%):	**15**
Plasticity Index (%):	**8**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-04
Client Reference:	Clearview Solar ORR025	Depth (ft):	3.5-5.0'
Project No.:	2020-438-001	Sample No.:	2
Lab ID:	2020-438-001-008	Soil Description:	BROWN LEAN CLAY

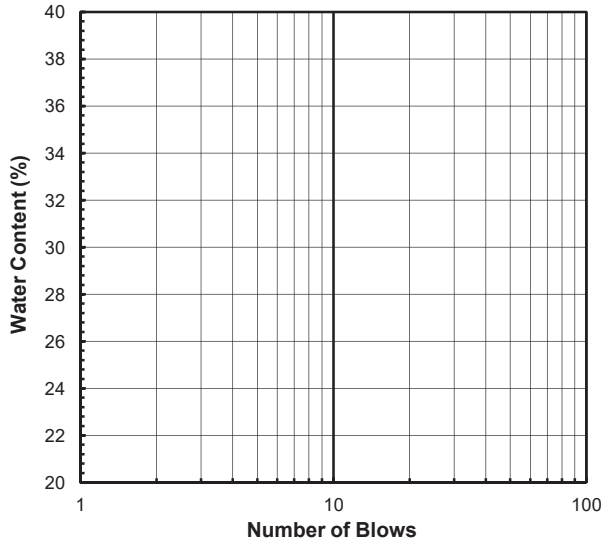
Note: The* USCS *symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Air dried)

As Received Moisture Content ASTM D2216-19		**Liquid Limit Test** 1	2	3	M
Tare Number:	3508	314	221	618	U
Wt. of Tare & Wet Sample (g):	28.57	40.64	40.76	39.37	L
Wt. of Tare & Dry Sample (g):	26.11	37.37	37.42	36.04	T
Weight of Tare (g):	8.04	20.32	20.18	19.34	I
Weight of Water (g):	2.5	3.3	3.3	3.3	P
Weight of Dry Sample (g):	18.1	17.1	17.2	16.7	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**13.6**	**19.2**	**19.4**	**19.9**	N
Number of Blows:		**32**	**26**	**20**	T

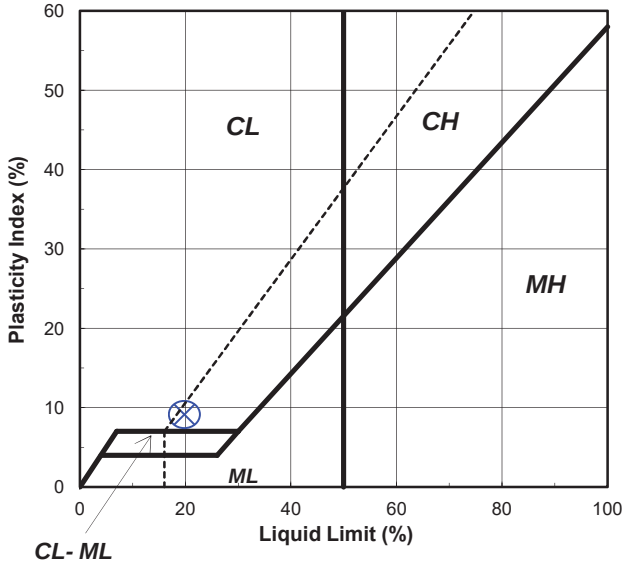
Plastic Limit Test	**1**	**2**	**Range**	
Tare Number:	247	503		
Wt. of Tare & Wet Sample (g):	25.80	25.26		
Wt. of Tare & Dry Sample (g):	25.15	24.68		
Weight of Tare (g):	19.15	19.05		
Weight of Water (g):	0.7	0.6		
Weight of Dry Sample (g):	6.0	5.6		
Moisture Content (%):	**10.8**	**10.3**	**0.5**	
Note: The acceptable range of the two Moisture Contents is ±				1.12

Test Results	
Liquid Limit (%):	**20**
Plastic Limit (%):	**11**
Plasticity Index (%):	**9**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



Tested By FS *Date* 9/16/20 *Checked By* JLK *Date* 9/17/20

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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-04
Client Reference:	Clearview Solar ORR025	Depth (ft):	8.5-10.0'
Project No.:	2020-438-001	Sample No.:	4
Lab ID:	2020-438-001-009	Soil Description:	BROWN SILTY CLAY

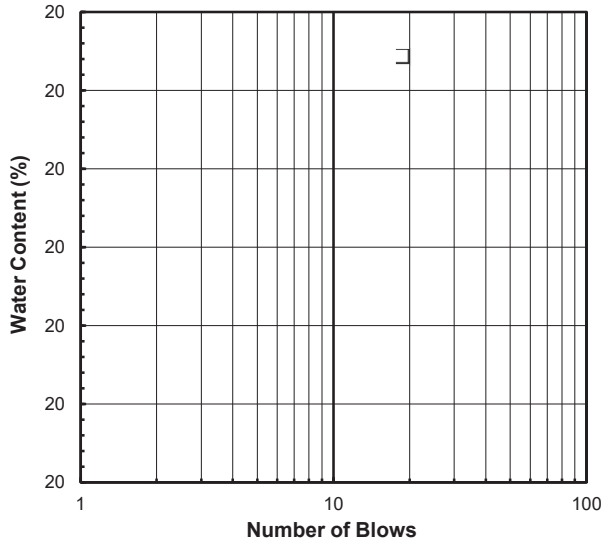
Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

As Received Moisture Content ASTM D2216-19		**Liquid Limit Test** 1	2	3	M
Tare Number:	1439	10	11	12	U
Wt. of Tare & Wet Sample (g):	513.31	26.20	26.29	27.47	L
Wt. of Tare & Dry Sample (g):	474.05	24.99	25.03	25.99	T
Weight of Tare (g):	144.77	18.26	18.44	18.61	I
Weight of Water (g):	39.3	1.2	1.3	1.5	P
Weight of Dry Sample (g):	329.3	6.7	6.6	7.4	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**11.9**	**18.0**	**19.1**	**20.1**	N
Number of Blows:		**30**	**24**	**19**	T

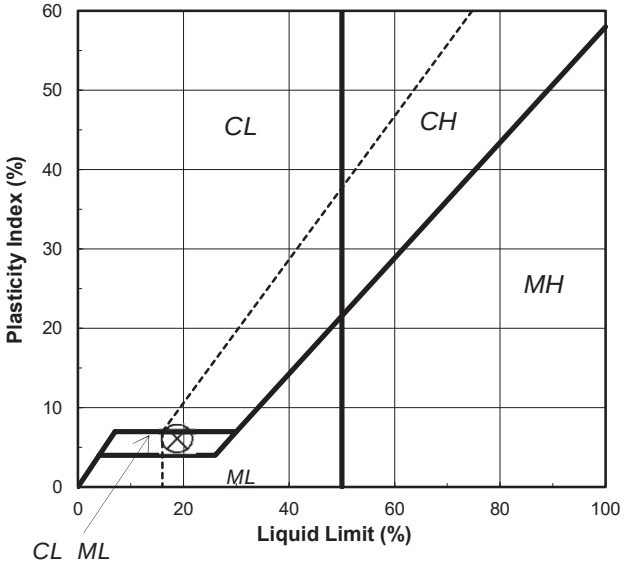
Plastic Limit Test	**1**	**2**	**Range**
Tare Number:	19	20	
Wt. of Tare & Wet Sample (g):	33.13	30.47	
Wt. of Tare & Dry Sample (g):	31.39	29.04	
Weight of Tare (g):	18.47	18.23	
Weight of Water (g):	1.7	1.4	
Weight of Dry Sample (g):	12.9	10.8	
Moisture Content (%):	**13.5**	**13.2**	**0.2**
Note: The accepta e a ge of the t o o st e Co te ts s			0.84

Test Results	
Liquid Limit (%):	**19**
Plastic Limit (%):	**13**
Plasticity Index (%):	**6**
USCS Symbol:	**CL-ML**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-05
Client Reference:	Clearview Solar ORR025	Depth (ft):	3.5-5.0'
Project No.:	2020-438-001	Sample No.:	2
Lab ID:	2020-438-001-011	Soil Description:	BROWN LEAN CLAY

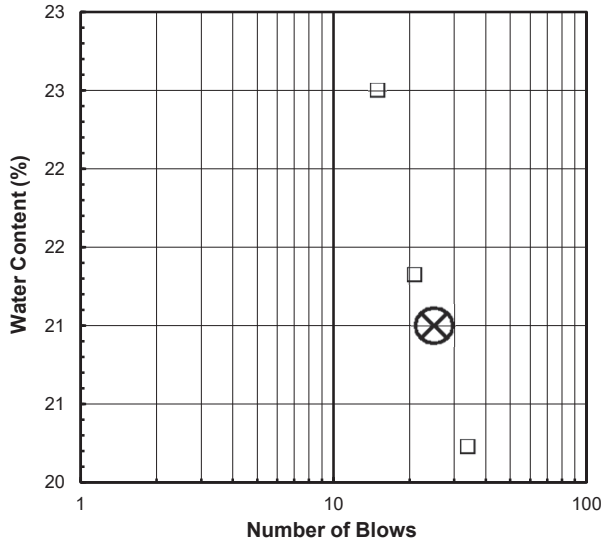
Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		1	2	3	M
Tare Number:	1519	4	5	6	U
Wt. of Tare & Wet Sample (g):	497.58	26.54	28.11	27.50	L
Wt. of Tare & Dry Sample (g):	459.68	25.08	26.43	25.88	T
Weight of Tare (g):	147.58	17.86	18.55	18.68	I
Weight of Water (g):	37.9	1.5	1.7	1.6	P
Weight of Dry Sample (g):	312.1	7.2	7.9	7.2	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**12.1**	**20.2**	**21.3**	**22.5**	N
Number of Blows:		**34**	**21**	**15**	T

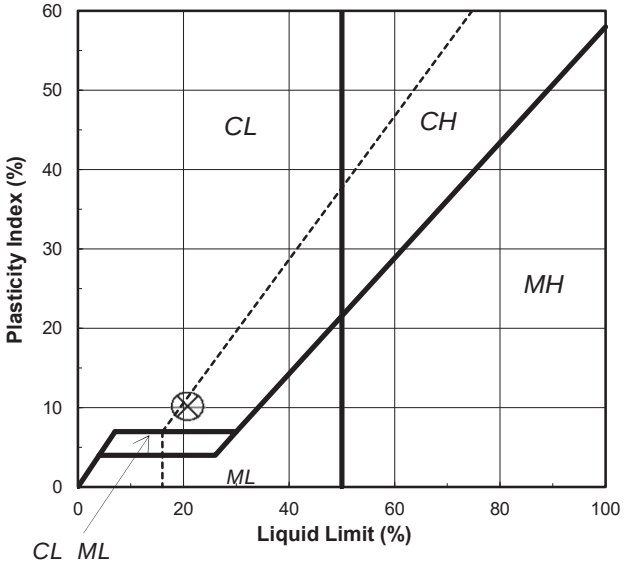
Plastic Limit Test	1	2	Range
Tare Number:	15	16	
Wt. of Tare & Wet Sample (g):	28.91	28.65	
Wt. of Tare & Dry Sample (g):	27.97	27.70	
Weight of Tare (g):	19.30	18.56	
Weight of Water (g):	0.9	0.9	
Weight of Dry Sample (g):	8.7	9.1	
Moisture Content (%):	**10.8**	**10.4**	**0.4**
Note: The accepta e a ge of the t o o st e Co te ts s			1.12

Test Results	
Liquid Limit (%):	**21**
Plastic Limit (%):	**11**
Plasticity Index (%):	**10**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-06
Client Reference:	Clearview Solar ORR025	Depth (ft):	1.0-2.5'
Project No.:	2020-438-001	Sample No.:	1
Lab ID:	2020-438-001-013	Color:	Brown
			(MInus No. 40 sieve material)

Insufficient Minus #40 Material to run Limits

Tested By *Date* *Checked By* *Date*

/DCN: CT-S4C, DATE: 4/27/17, REVISION : 4e

S:\Excel\Excel QA\Spreadsheets\Limit NP.xls

ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-07
Client Reference:	Clearview Solar ORR025	Depth (ft):	6.0-7.5'
Project No.:	2020-438-001	Sample No.:	3
Lab ID:	2020-438-001-016	Soil Description:	BROWN SILTY CLAY

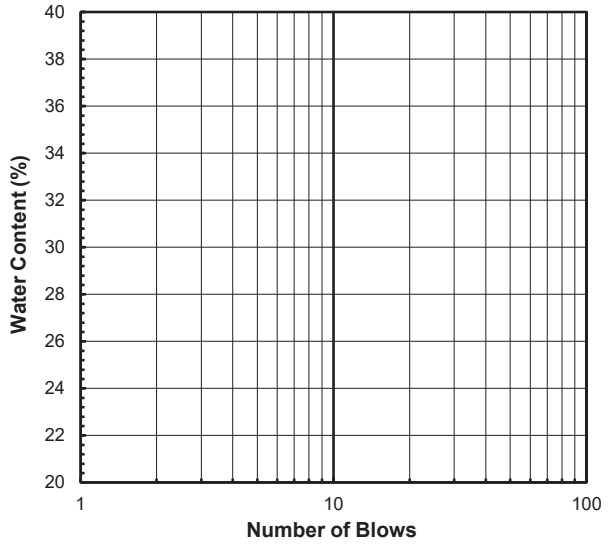
Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

As Received Moisture Content ASTM D2216-19		**Liquid Limit Test**			
		1	**2**	**3**	**M**
Tare Number:	1537	7	8	9	**U**
Wt. of Tare & Wet Sample (g):	630.40	27.80	26.77	25.93	**L**
Wt. of Tare & Dry Sample (g):	586.01	26.54	25.54	24.83	**T**
Weight of Tare (g):	143.83	18.95	18.42	18.70	**I**
Weight of Water (g):	44.4	1.3	1.2	1.1	**P**
Weight of Dry Sample (g):	442.2	7.6	7.1	6.1	**O**
Was As Received MC Preserved:	**Yes**				**I**
Moisture Content (%):	**10.0**	**16.6**	**17.3**	**17.9**	**N**
Number of Blows:		**30**	**22**	**17**	**T**

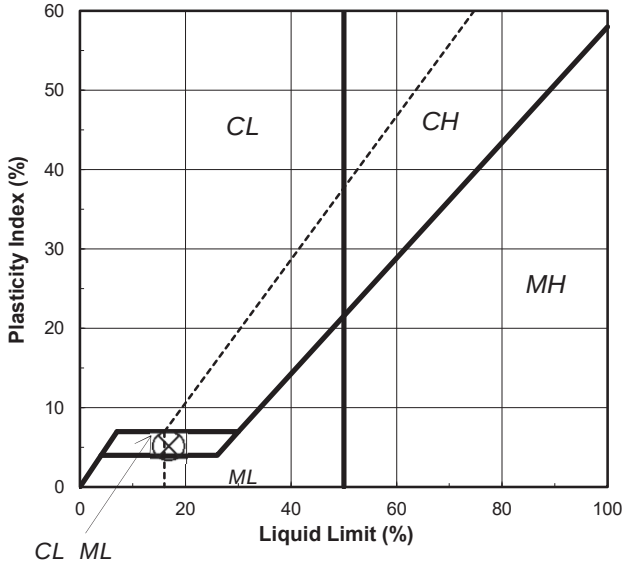
Plastic Limit Test	**1**	**2**	**Range**
Tare Number:	17	18	
Wt. of Tare & Wet Sample (g):	29.63	30.49	
Wt. of Tare & Dry Sample (g):	28.39	29.25	
Weight of Tare (g):	18.49	19.21	
Weight of Water (g):	1.2	1.2	
Weight of Dry Sample (g):	9.9	10.0	
Moisture Content (%):	**12.5**	**12.4**	**0.2**
Note: The accepta e a ge of the t o o st e Co te ts s			0.84

Test Results	
Liquid Limit (%):	**17**
Plastic Limit (%):	**12**
Plasticity Index (%):	**5**
USCS Symbol:	**CL-ML**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-07
Client Reference:	Clearview Solar ORR025	Depth (ft):	13.5-15.0'
Project No.:	2020-438-001	Sample No.:	5
Lab ID:	2020-438-001-017	Soil Description:	BROWN SILTY CLAY

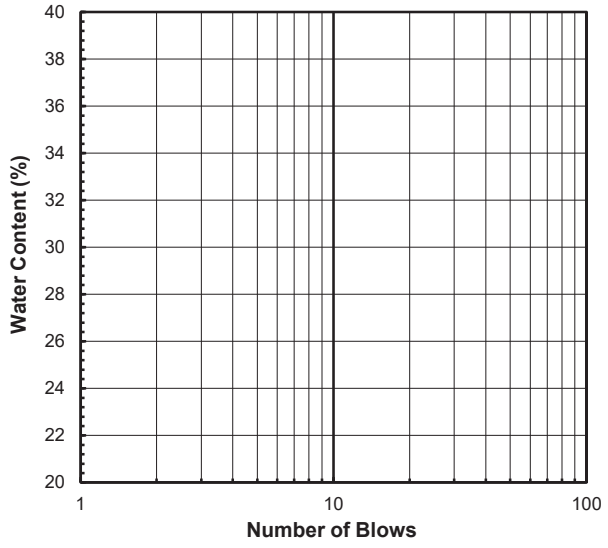
Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		**1**	**2**	**3**	**M**
Tare Number:	1490	1	2	3	**U**
Wt. of Tare & Wet Sample (g):	436.50	26.10	26.07	27.33	**L**
Wt. of Tare & Dry Sample (g):	414.72	24.77	24.91	25.97	**T**
Weight of Tare (g):	144.60	17.06	18.42	18.70	**I**
Weight of Water (g):	21.8	1.3	1.2	1.4	**P**
Weight of Dry Sample (g):	270.1	7.7	6.5	7.3	**O**
Was As Received MC Preserved:	**Yes**				**I**
Moisture Content (%):	**8.1**	**17.3**	**17.9**	**18.7**	**N**
Number of Blows:		**34**	**25**	**18**	**T**

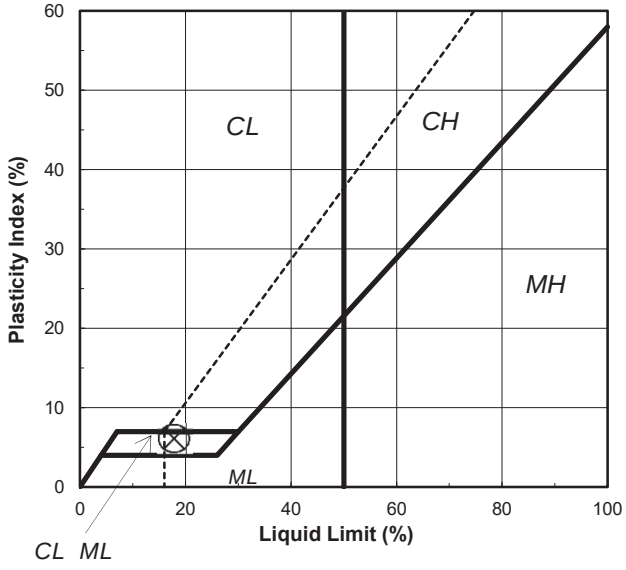
Plastic Limit Test	**1**	**2**	**Range**	
Tare Number:	4	5		
Wt. of Tare & Wet Sample (g):	29.69	31.60		
Wt. of Tare & Dry Sample (g):	28.43	30.21		
Weight of Tare (g):	17.86	18.56		
Weight of Water (g):	1.3	1.4		
Weight of Dry Sample (g):	10.6	11.7		
Moisture Content (%):	**11.9**	**11.9**	**0.0**	
Note: The accepta e a ge of the t o o st e Co te ts s				0.84

Test Results	
Liquid Limit (%):	**18**
Plastic Limit (%):	**12**
Plasticity Index (%):	**6**
USCS Symbol:	**CL-ML**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-08
Client Reference:	Clearview Solar ORR025	Depth (ft):	3.5-5.0'
Project No.:	2020-438-001	Sample No.:	2
Lab ID:	2020-438-001-019	Soil Description:	BROWN SILTY CLAY

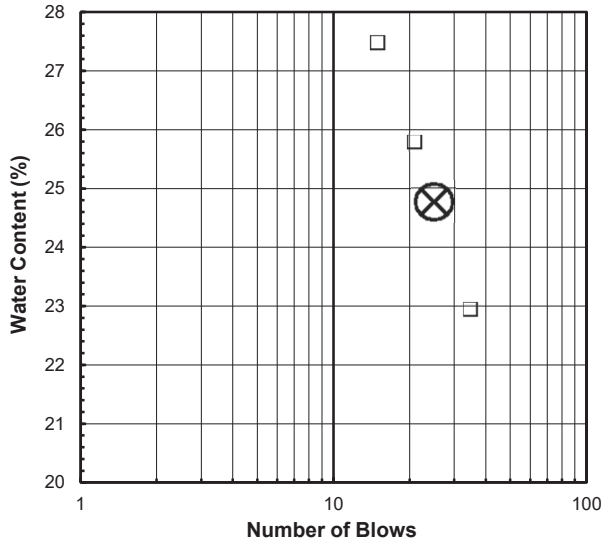
Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		1	2	3	M
Tare Number:	1545	10	11	12	U
Wt. of Tare & Wet Sample (g):	411.56	24.80	25.71	27.29	L
Wt. of Tare & Dry Sample (g):	372.03	23.58	24.22	25.42	T
Weight of Tare (g):	147.42	18.26	18.44	18.61	I
Weight of Water (g):	39.5	1.2	1.5	1.9	P
Weight of Dry Sample (g):	224.6	5.3	5.8	6.8	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**17.6**	**22.9**	**25.8**	**27.5**	N
Number of Blows:		**35**	**21**	**15**	T

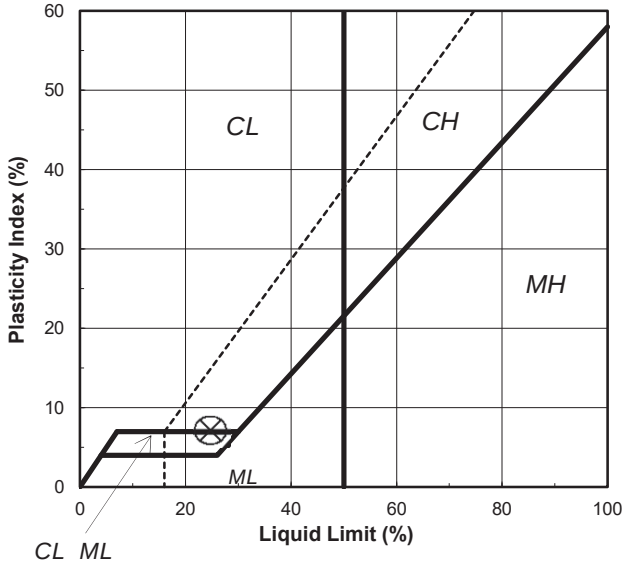
Plastic Limit Test	1	2	Range
Tare Number:	19	20	
Wt. of Tare & Wet Sample (g):	32.30	29.36	
Wt. of Tare & Dry Sample (g):	30.22	27.71	
Weight of Tare (g):	18.48	18.23	
Weight of Water (g):	2.1	1.7	
Weight of Dry Sample (g):	11.7	9.5	
Moisture Content (%):	**17.7**	**17.4**	**0.3**
Note: The accepta e a ge of the t o o st e Co te ts s			0.84

Test Results	
Liquid Limit (%):	**25**
Plastic Limit (%):	**18**
Plasticity Index (%):	**7**
USCS Symbol:	**CL-ML**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-08
Client Reference:	Clearview Solar ORR025	Depth (ft):	18.5-20.0'
Project No.:	2020-438-001	Sample No.:	6
Lab ID:	2020-438-001-022	Soil Description:	BROWN LEAN CLAY

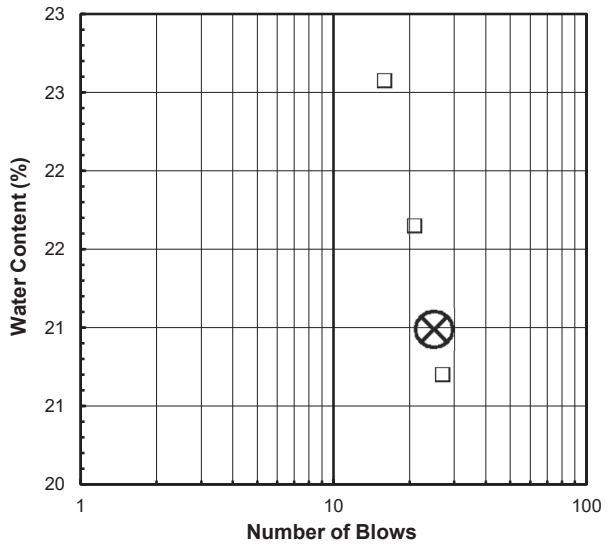
Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

As Received Moisture Content ASTM D2216-19		**Liquid Limit Test**			
		1	**2**	**3**	**M**
Tare Number:	1416	37	38	39	**U**
Wt. of Tare & Wet Sample (g):	521.98	25.00	24.95	25.98	**L**
Wt. of Tare & Dry Sample (g):	484.09	23.75	23.58	24.68	**T**
Weight of Tare (g):	145.63	17.71	17.25	18.92	**I**
Weight of Water (g):	37.9	1.3	1.4	1.3	**P**
Weight of Dry Sample (g):	338.5	6.0	6.3	5.8	**O**
Was As Received MC Preserved:	**Yes**				**I**
Moisture Content (%):	**11.2**	**20.7**	**21.6**	**22.6**	**N**
Number of Blows:		**27**	**21**	**16**	**T**

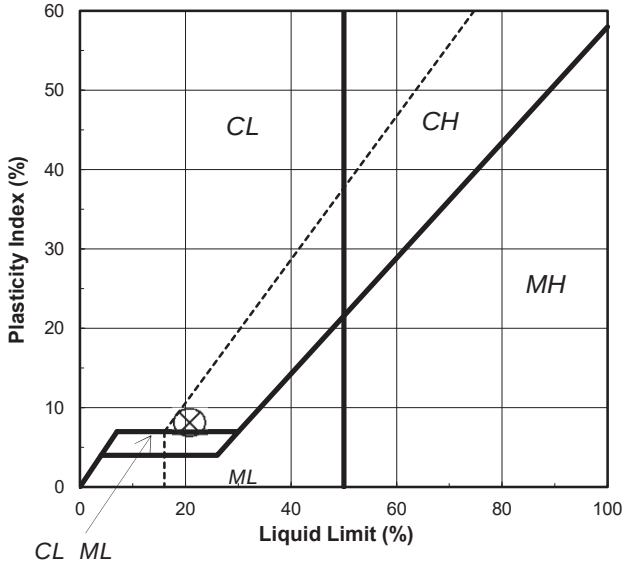
Plastic Limit Test	**1**	**2**	**Range**
Tare Number:	40	41	
Wt. of Tare & Wet Sample (g):	29.68	27.89	
Wt. of Tare & Dry Sample (g):	28.38	26.81	
Weight of Tare (g):	18.10	18.14	
Weight of Water (g):	1.3	1.1	
Weight of Dry Sample (g):	10.3	8.7	
Moisture Content (%):	**12.6**	**12.5**	**0.2**
Note: The accepta e a ge of the t o o st e Co te ts s			1.12

Test Results	
Liquid Limit (%):	**21**
Plastic Limit (%):	**13**
Plasticity Index (%):	**8**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-08
Client Reference:	Clearview Solar ORR025	Depth (ft):	28.5-30.0'
Project No.:	2020-438-001	Sample No.:	8
Lab ID:	2020-438-001-023	Soil Description:	BROWN LEAN CLAY

Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)

s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

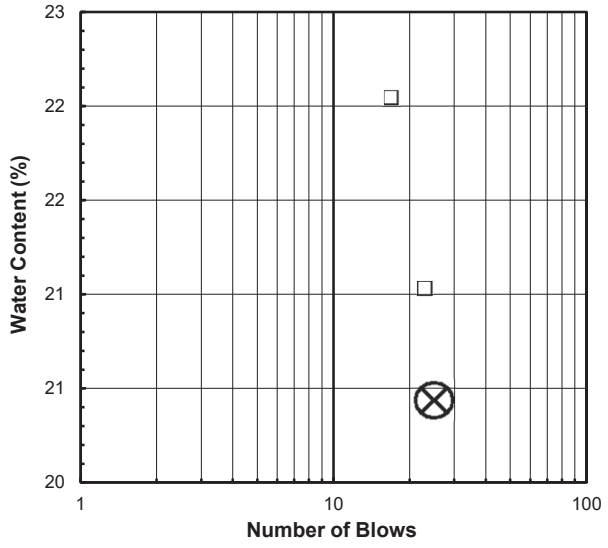
As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		1	2	3	M
Tare Number:	587	21	22	23	U
Wt. of Tare & Wet Sample (g):	662.62	27.70	26.78	26.46	L
Wt. of Tare & Dry Sample (g):	628.45	26.35	25.47	25.12	T
Weight of Tare (g):	308.71	19.38	19.24	19.04	I
Weight of Water (g):	34.2	1.4	1.3	1.3	P
Weight of Dry Sample (g):	319.7	7.0	6.2	6.1	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**10.7**	**19.4**	**21.0**	**22.0**	N
Number of Blows:		**31**	**23**	**17**	T

Plastic Limit Test	1	2	Range
Tare Number:	42	43	
Wt. of Tare & Wet Sample (g):	27.76	30.90	
Wt. of Tare & Dry Sample (g):	26.70	29.57	
Weight of Tare (g):	18.12	18.90	
Weight of Water (g):	1.1	1.3	
Weight of Dry Sample (g):	8.6	10.7	
Moisture Content (%):	**12.4**	**12.5**	**-0.1**

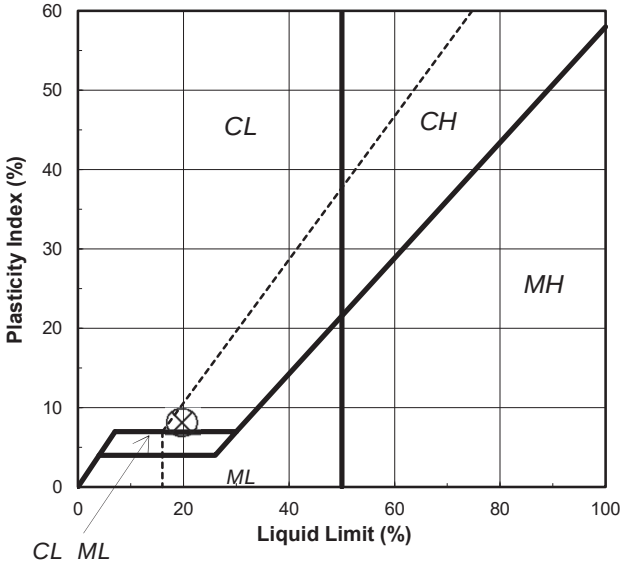
Note: The accepta e a ge of the t o o st e Co te ts s 1.12

Test Results	
Liquid Limit (%):	**20**
Plastic Limit (%):	**12**
Plasticity Index (%):	**8**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



Tested By JV *Date* 8/31/20 *Checked By* NC *Date* 9/3/20

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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-08
Client Reference:	Clearview Solar ORR025	Depth (ft):	38.5-40.0'
Project No.:	2020-438-001	Sample No.:	10
Lab ID:	2020-438-001-024	Soil Description:	BROWN LEAN CLAY

Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

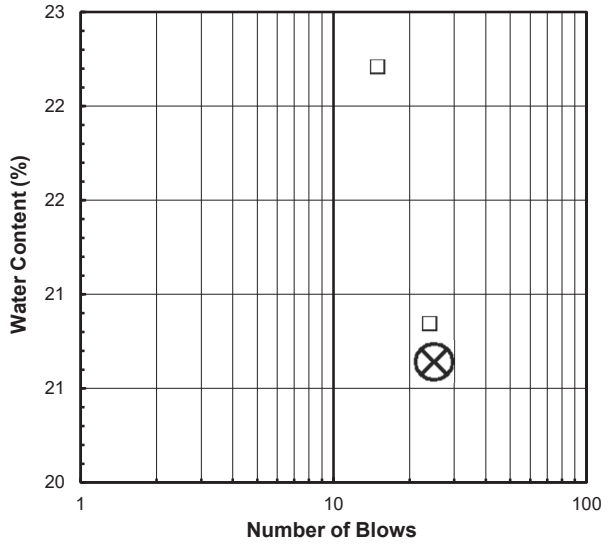
As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		1	2	3	M
Tare Number:	1563	24	25	26	U
Wt. of Tare & Wet Sample (g):	828.54	25.54	27.10	27.98	L
Wt. of Tare & Dry Sample (g):	777.40	24.42	25.81	26.47	T
Weight of Tare (g):	304.73	18.69	19.62	19.67	I
Weight of Water (g):	51.1	1.1	1.3	1.5	P
Weight of Dry Sample (g):	472.7	5.7	6.2	6.8	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**10.8**	**19.5**	**20.8**	**22.2**	N
Number of Blows:		**35**	**24**	**15**	T

Plastic Limit Test	1	2	Range
Tare Number:	44	45	
Wt. of Tare & Wet Sample (g):	29.97	30.39	
Wt. of Tare & Dry Sample (g):	28.62	28.96	
Weight of Tare (g):	18.20	17.76	
Weight of Water (g):	1.4	1.4	
Weight of Dry Sample (g):	10.4	11.2	
Moisture Content (%):	**13.0**	**12.8**	**0.2**

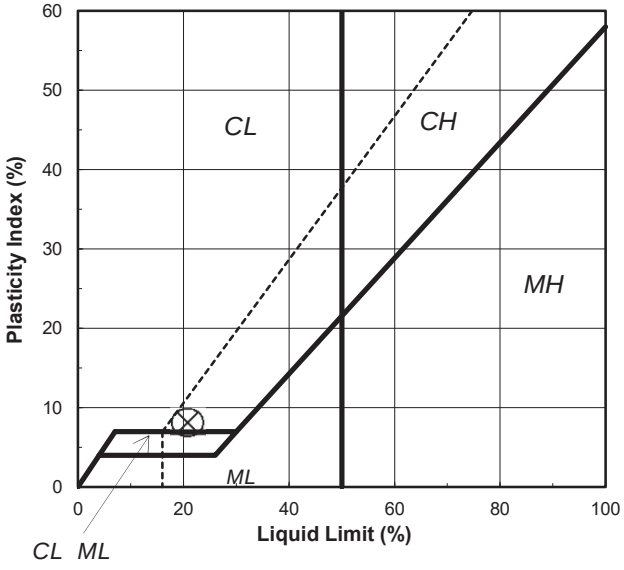
Note: The accepta e a ge of the t o o st e Co te ts s 1.12

Test Results	
Liquid Limit (%):	**21**
Plastic Limit (%):	**13**
Plasticity Index (%):	**8**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-08
Client Reference:	Clearview ORR025	Depth (ft):	43.5-45.0'
Project No.:	2020-438-001	Sample No.:	11
Lab ID:	2020-438-001-025	Color:	Brown
			(MInus No. 40 sieve material)

As Received
Water Content

Tare Number	588
Wt. of Tare & Wet Sample (g)	707.13
Wt. of Tare & Dry Sample (g)	651.30
Weight of Tare (g)	308.60
Weight of Water (g)	55.83
Weight of Dry Sample (g)	342.70
Water Content (%)	**16.3**

NON - PLASTIC MATERIAL

Tested By *JV* *Date* *8/31/20* *Checked By* *NC* *Date* *9/3/20*

/DCN: CT-S4C, DATE: 4/27/17, REVISION : 4e

: ce ce p eadsheets t N s

ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-09
Client Reference:	Clearview Solar ORR025	Depth (ft):	3.5-5.0'
Project No.:	2020-438-001	Sample No.:	2
Lab ID:	2020-438-001-027	Soil Description:	BROWN LEAN CLAY

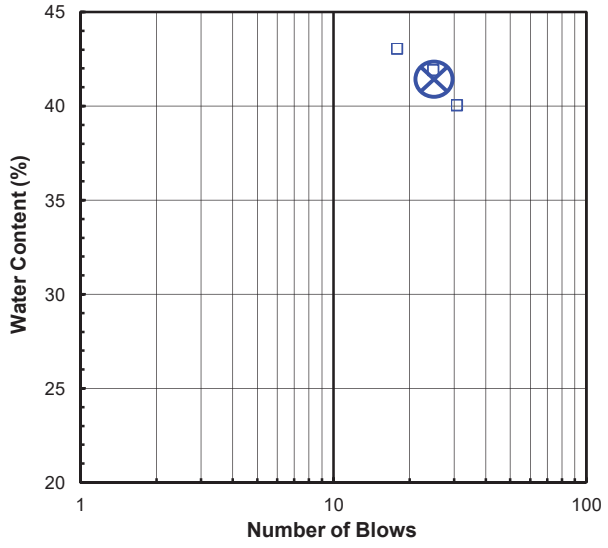
Note: The* USCS *symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Air dried)

As Received Moisture Content ASTM D2216-19		**Liquid Limit Test** 1	2	3	M
Tare Number:	3388	323	621	237	U
Wt. of Tare & Wet Sample (g):	27.05	40.45	39.63	38.82	L
Wt. of Tare & Dry Sample (g):	24.08	34.73	33.69	32.79	T
Weight of Tare (g):	8.40	20.43	19.50	18.77	I
Weight of Water (g):	3.0	5.7	5.9	6.0	P
Weight of Dry Sample (g):	15.7	14.3	14.2	14.0	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**18.9**	**40.0**	**41.9**	**43.0**	N
Number of Blows:		**31**	**25**	**18**	T

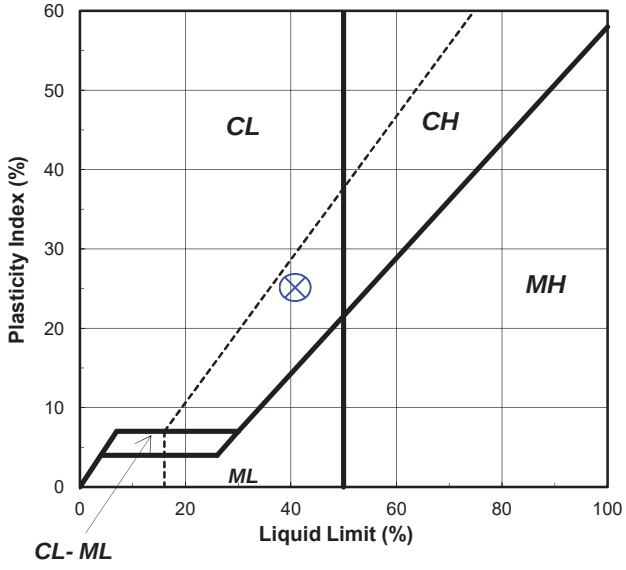
Plastic Limit Test	**1**	**2**	**Range**
Tare Number:	333	307	
Wt. of Tare & Wet Sample (g):	25.52	25.50	
Wt. of Tare & Dry Sample (g):	24.68	24.64	
Weight of Tare (g):	19.47	19.41	
Weight of Water (g):	0.8	0.9	
Weight of Dry Sample (g):	5.2	5.2	
Moisture Content (%):	**16.1**	**16.4**	**-0.3**
Note: The acceptable range of the two Moisture Contents is ±			1.12

Test Results	
Liquid Limit (%):	**41**
Plastic Limit (%):	**16**
Plasticity Index (%):	**25**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



Tested By FS *Date* 9/16/20 *Checked By* JLK *Date* 9/17/20

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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-09
Client Reference:	Clearview Solar ORR025	Depth (ft):	6.0-7.5'
Project No.:	2020-438-001	Sample No.:	3
Lab ID:	2020-438-001-028	Soil Description:	BROWN LEAN CLAY

Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

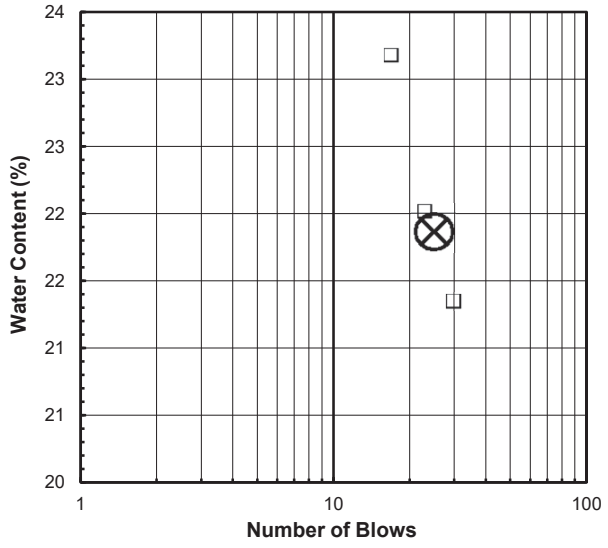
As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		1	2	3	M
Tare Number:	1570	1	2	3	U
Wt. of Tare & Wet Sample (g):	676.30	25.19	25.46	26.47	L
Wt. of Tare & Dry Sample (g):	639.20	23.76	24.19	25.01	T
Weight of Tare (g):	306.34	17.06	18.42	18.71	I
Weight of Water (g):	37.1	1.4	1.3	1.5	P
Weight of Dry Sample (g):	332.9	6.7	5.8	6.3	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**11.1**	**21.3**	**22.0**	**23.2**	N
Number of Blows:		**30**	**23**	**17**	T

Plastic Limit Test	1	2	Range
Tare Number:	13	14	
Wt. of Tare & Wet Sample (g):	29.66	29.70	
Wt. of Tare & Dry Sample (g):	28.41	28.33	
Weight of Tare (g):	19.34	18.58	
Weight of Water (g):	1.3	1.4	
Weight of Dry Sample (g):	9.1	9.8	
Moisture Content (%):	**13.8**	**14.1**	**-0.3**

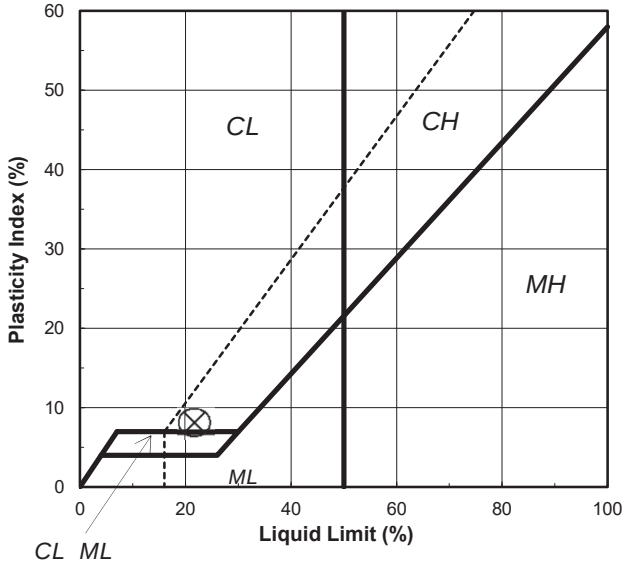
Note: The accepta e a ge of the t o o st e Co te ts s 1.12

Test Results	
Liquid Limit (%):	**22**
Plastic Limit (%):	**14**
Plasticity Index (%):	**8**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-10
Client Reference:	Clearview Solar ORR025	Depth (ft):	6.0-7.5'
Project No.:	2020-438-001	Sample No.:	3
Lab ID:	2020-438-001-030	Soil Description:	BROWN LEAN CLAY

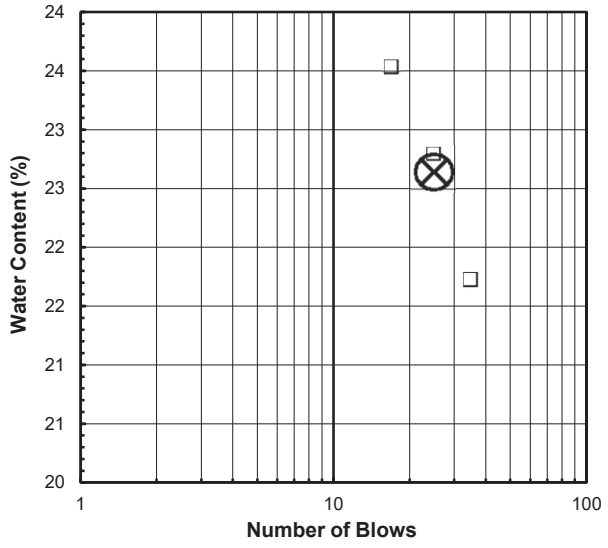
Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		1	2	3	M
Tare Number:	33	6	7	8	U
Wt. of Tare & Wet Sample (g):	358.77	25.91	26.97	26.61	L
Wt. of Tare & Dry Sample (g):	321.11	24.62	25.48	25.05	T
Weight of Tare (g):	15.48	18.68	18.94	18.42	I
Weight of Water (g):	37.7	1.3	1.5	1.6	P
Weight of Dry Sample (g):	305.6	5.9	6.5	6.6	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**12.3**	**21.7**	**22.8**	**23.5**	N
Number of Blows:		**35**	**25**	**17**	T

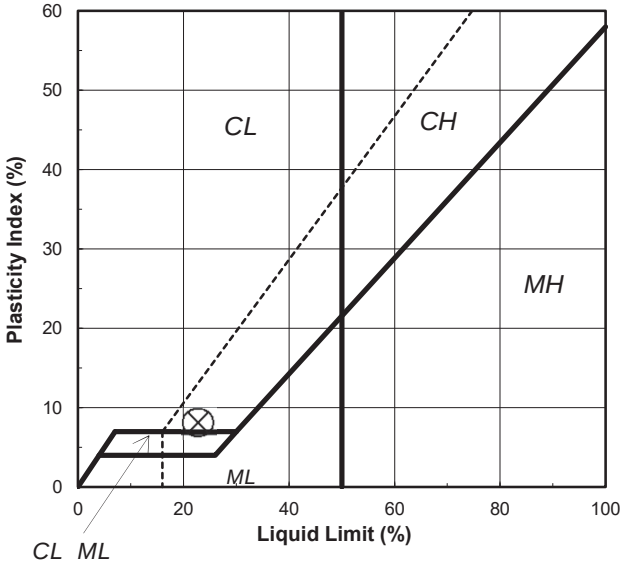
Plastic Limit Test	1	2	Range
Tare Number:	9	10	
Wt. of Tare & Wet Sample (g):	30.50	31.21	
Wt. of Tare & Dry Sample (g):	28.97	29.53	
Weight of Tare (g):	18.70	18.26	
Weight of Water (g):	1.5	1.7	
Weight of Dry Sample (g):	10.3	11.3	
Moisture Content (%):	**14.9**	**14.9**	**0.0**
Note: The accepta e a ge of the t o o st e Co te ts s			1.12

Test Results	
Liquid Limit (%):	**23**
Plastic Limit (%):	**15**
Plasticity Index (%):	**8**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-11
Client Reference:	Clearview Solar ORR025	Depth (ft):	3.5-5.0'
Project No.:	2020-438-001	Sample No.:	2
Lab ID:	2020-438-001-032	Soil Description:	YELLOWISH BROWN LEAN CLAY

Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

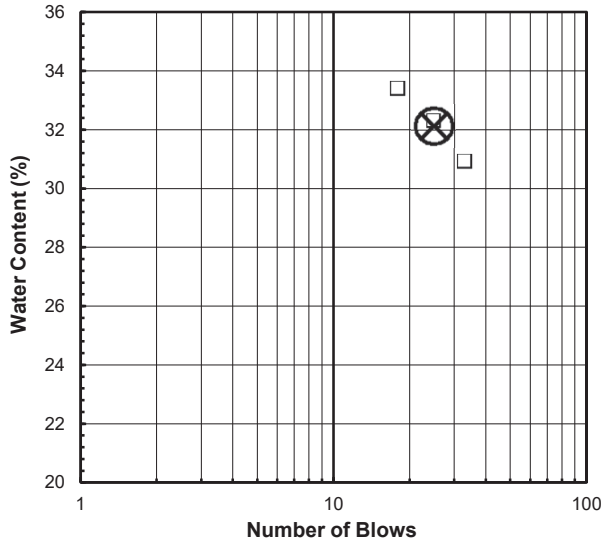
As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		1	2	3	M
Tare Number:	44	27	28	29	U
Wt. of Tare & Wet Sample (g):	450.97	26.89	26.49	26.39	L
Wt. of Tare & Dry Sample (g):	370.27	25.07	24.76	24.37	T
Weight of Tare (g):	15.54	19.18	19.40	18.32	I
Weight of Water (g):	80.7	1.8	1.7	2.0	P
Weight of Dry Sample (g):	354.7	5.9	5.4	6.1	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**22.7**	**30.9**	**32.3**	**33.4**	N
Number of Blows:		**33**	**25**	**18**	T

Plastic Limit Test	1	2	Range
Tare Number:	46	47	
Wt. of Tare & Wet Sample (g):	27.97	29.36	
Wt. of Tare & Dry Sample (g):	26.68	27.76	
Weight of Tare (g):	19.03	18.30	
Weight of Water (g):	1.3	1.6	
Weight of Dry Sample (g):	7.7	9.5	
Moisture Content (%):	**16.9**	**16.9**	**-0.1**

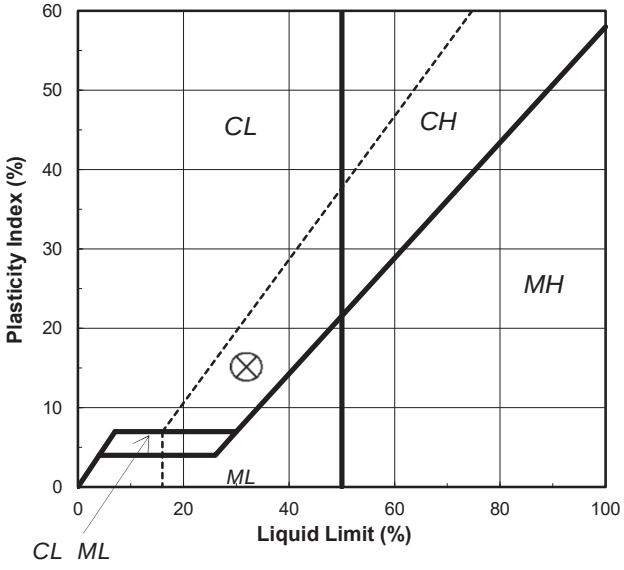
Note: The accepta e a ge of the t o o st e Co te ts s 1.12

Test Results	
Liquid Limit (%):	**32**
Plastic Limit (%):	**17**
Plasticity Index (%):	**15**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-11
Client Reference:	Clearview Solar ORR025	Depth (ft):	13.5-15.0'
Project No.:	2020-438-001	Sample No.:	5
Lab ID:	2020-438-001-033	Soil Description:	BROWN SILT

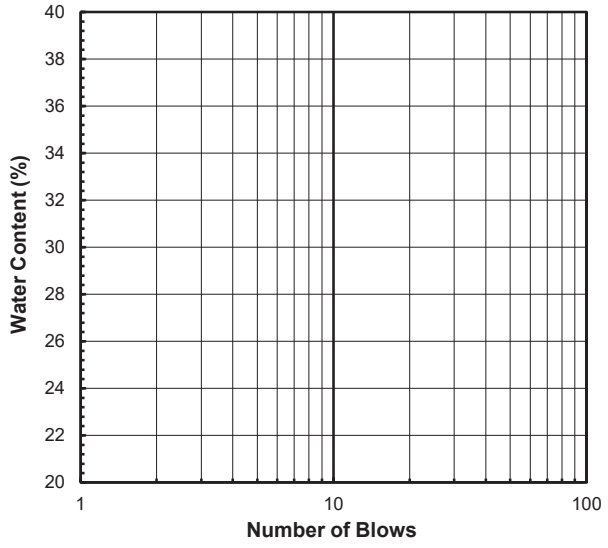
Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

As Received Moisture Content		Liquid Limit Test			
ASTM D2216-19		1	2	3	M
Tare Number:	21	30	31	32	U
Wt. of Tare & Wet Sample (g):	371.16	29.19	26.18	28.98	L
Wt. of Tare & Dry Sample (g):	339.16	28.01	25.12	27.72	T
Weight of Tare (g):	13.37	20.00	18.27	20.00	I
Weight of Water (g):	32.0	1.2	1.1	1.3	P
Weight of Dry Sample (g):	325.8	8.0	6.9	7.7	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**9.8**	**14.7**	**15.5**	**16.3**	N
Number of Blows:		**34**	**22**	**15**	T

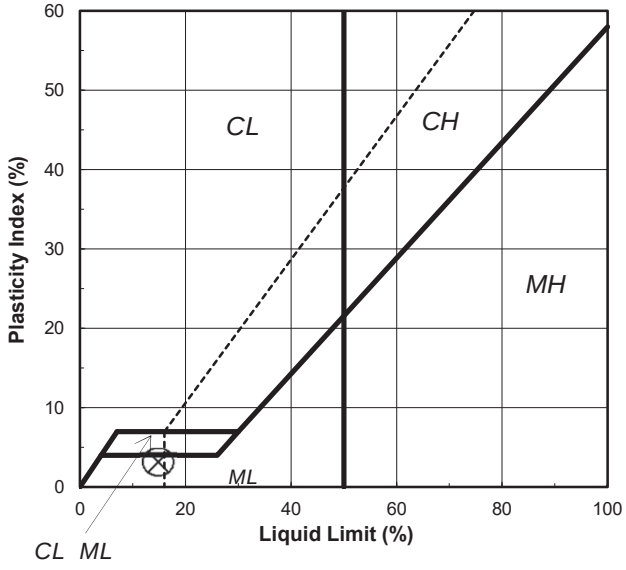
Plastic Limit Test	1	2	Range	
Tare Number:	33	35		
Wt. of Tare & Wet Sample (g):	30.65	29.77		
Wt. of Tare & Dry Sample (g):	29.34	28.60		
Weight of Tare (g):	18.34	18.61		
Weight of Water (g):	1.3	1.2		
Weight of Dry Sample (g):	11.0	10.0		
Moisture Content (%):	**11.9**	**11.7**	**0.2**	
Note: The accepta e a ge of the t o o st e Co te ts s				0.84

Test Results	
Liquid Limit (%):	**15**
Plastic Limit (%):	**12**
Plasticity Index (%):	**3**
USCS Symbol:	**ML**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-12
Client Reference:	Clearview Solar ORR025	Depth (ft):	1.0-2.5'
Project No.:	2020-438-001	Sample No.:	1
Lab ID:	2020-438-001-034	Soil Description:	BROWN LEAN CLAY

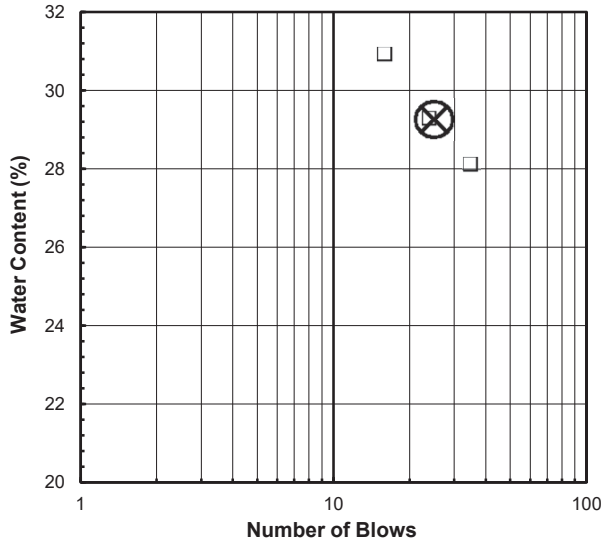
Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

As Received Moisture Content ASTM D2216-19		**Liquid Limit Test**			
		1	**2**	**3**	**M**
Tare Number:	22	1	2	3	**U**
Wt. of Tare & Wet Sample (g):	264.13	24.17	25.00	25.95	**L**
Wt. of Tare & Dry Sample (g):	221.66	22.61	23.51	24.24	**T**
Weight of Tare (g):	13.51	17.06	18.42	18.71	**I**
Weight of Water (g):	42.5	1.6	1.5	1.7	**P**
Weight of Dry Sample (g):	208.2	5.6	5.1	5.5	**O**
Was As Received MC Preserved:	**Yes**				**I**
Moisture Content (%):	**20.4**	**28.1**	**29.3**	**30.9**	**N**
Number of Blows:		**35**	**24**	**16**	**T**

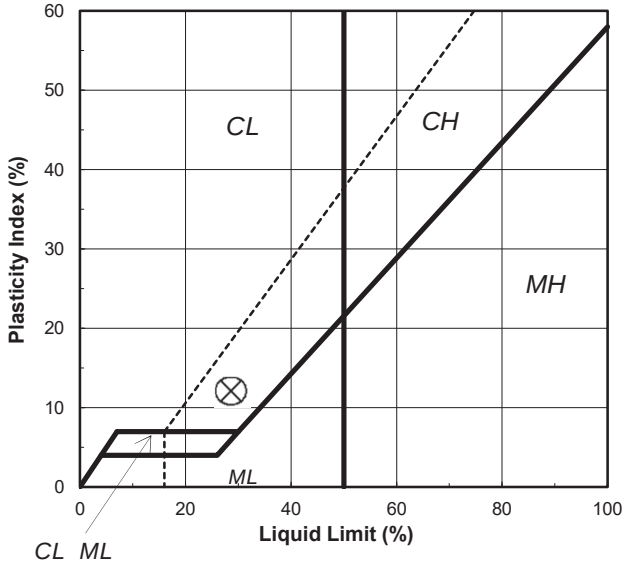
Plastic Limit Test	**1**	**2**	**Range**
Tare Number:	13	14	
Wt. of Tare & Wet Sample (g):	32.99	31.18	
Wt. of Tare & Dry Sample (g):	31.03	29.40	
Weight of Tare (g):	19.34	18.58	
Weight of Water (g):	2.0	1.8	
Weight of Dry Sample (g):	11.7	10.8	
Moisture Content (%):	**16.8**	**16.5**	**0.3**
Note: The accepta e a ge of the t o o st e Co te ts s			1.12

Test Results	
Liquid Limit (%):	**29**
Plastic Limit (%):	**17**
Plasticity Index (%):	**12**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



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ATTERBERG LIMITS

ASTM D 4318-17

Client:	Hull & Associates, Inc.	Boring No.:	B20-12
Client Reference:	Clearview Solar ORR025	Depth (ft):	6.0-7.5'
Project No.:	2020-438-001	Sample No.:	3
Lab ID:	2020-438-001-036	Soil Description:	BROWN LEAN CLAY

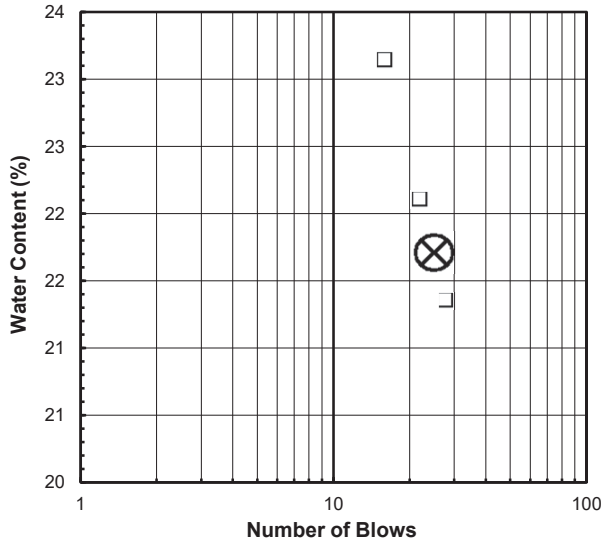
Note: T e **USCS** *s o se t t s test e e s o to t e s No* (Minus No. 40 sieve material, Air dried)
s e e te See t e S e e H o ete A s s e o t e co ete te esc t o

As Received Moisture Content ASTM D2216-19		**Liquid Limit Test** 1	2	3	M
Tare Number:	1565	4	5	6	U
Wt. of Tare & Wet Sample (g):	618.66	25.59	26.68	26.12	L
Wt. of Tare & Dry Sample (g):	587.78	24.23	25.21	24.72	T
Weight of Tare (g):	308.68	17.86	18.56	18.67	I
Weight of Water (g):	30.9	1.4	1.5	1.4	P
Weight of Dry Sample (g):	279.1	6.4	6.7	6.1	O
Was As Received MC Preserved:	**Yes**				I
Moisture Content (%):	**11.1**	**21.4**	**22.1**	**23.1**	N
Number of Blows:		**28**	**22**	**16**	T

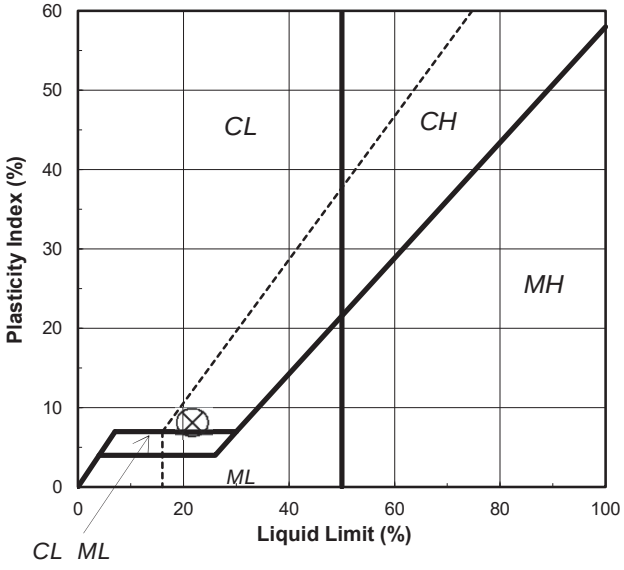
Plastic Limit Test	**1**	**2**	**Range**
Tare Number:	15	16	
Wt. of Tare & Wet Sample (g):	31.51	28.86	
Wt. of Tare & Dry Sample (g):	29.98	27.58	
Weight of Tare (g):	19.30	18.55	
Weight of Water (g):	1.5	1.3	
Weight of Dry Sample (g):	10.7	9.0	
Moisture Content (%):	**14.3**	**14.2**	**0.2**
Note: The accepta e a ge of the t o o st e Co te ts s			1.12

Test Results	
Liquid Limit (%):	**22**
Plastic Limit (%):	**14**
Plasticity Index (%):	**8**
USCS Symbol:	**CL**

Flow Curve



Plasticity Chart



Tested By JV *Date* 9/1/20 *Checked By* NC *Date* 9/3/20

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pH OF SOILS

AASHTO T 289-91 (2013)

Client:	Hull & Associates, Inc.
Client Reference:	Clearview Solar ORR025
Project No.:	2020-438-001

Lab ID:	008
Boring No.:	B20-04
Depth (ft):	1.0-5.0'
Sample No.:	2
Drying Tare No.:	9
Testing Tare No.:	P
Temperature (^{o}C):	21.3
pH of Sample:	**8.12**

Meter Calibration
(as used each day)

Buffer pH	Meter Reading	Meter Model
4.00	4.00	ORION 720A
7.00	7.03	
10.00	10.04	

Tested By JAM Date 9/17/20 Checked By JLK Date 9/18/20

DCN: CT-S36B DATE 6/5/14 REVISION: 1

S:\Excel\Excel QA\Spreadsheets\pH T289.xls

pH OF SOILS

AASHTO T 289-91 (2013)

Client:	Hull & Associates, Inc.
Client Reference:	Clearview Solar ORR025
Project No.:	2020-438-001

Lab ID:	027
Boring No.:	B20-09
Depth (ft):	1.0-5.0'
Sample No.:	2
Drying Tare No.:	22
Testing Tare No.:	G
Temperature (^{o}C):	21.3
pH of Sample:	**7.55**

Meter Calibration
(as used each day)

Buffer pH	Meter Reading	Meter Model
4.00	4.00	ORION 720A
7.00	7.03	
10.00	10.04	

Tested By JAM Date 9/17/20 Checked By JLK Date 9/18/20

DCN: CT-S36B DATE 6/5/14 REVISION: 1

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CHLORIDE ION CONTENT IN SOILS

AASHTO T 291 - 94 (2004) (*Method B*)

Client:	Hull & Associates, Inc.	Boring No.:	B20-04
Client Reference:	Clearview Solar ORR025	Depth (ft):	1.0-5.0'
Project No.:	2020-438-001	Sample No.:	2
Lab ID:	2020-438-001-008	Description:	Brown Clay

(- # 10 Sieve material)

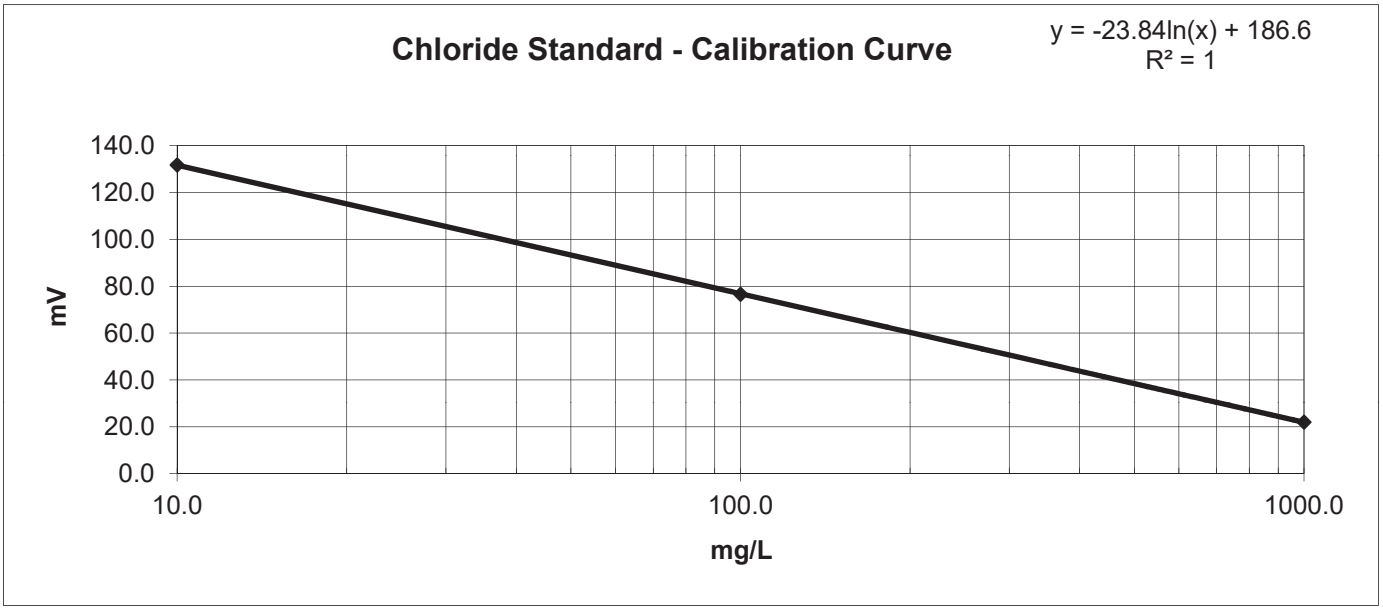
CHLORIDE STANDARD: CALIBRATION CURVE

STANDARD		MILLIVOLTS (mV)
10.0	mg/L	131.8
100.0	mg/L	76.6
1000.0	mg/L	22.0

MEASUREMENT OF CHLORIDES

		CONCENTRATION (mg/L)	CONCENTRATION (mg/kg)
Sample Weight (g):	100.0		
Water added to Sample (ml):	100.0		
Size of Sample Aliquot (ml):	25.0		
Sample Reading (mV):	128.1	11.63	11.63

Notes: 1) Samples and standards were buffered by the addition of an equal volume of the 0.2 M KNO_3 solution (1:1 volume).
2) Samples were dried for a minimum of 12 hours at 110 $^{+}/_{-}$ 5^{o}C.



Notes:

Tested By	JAM	Date	9/17/20	Checked By	JLK	Date	9/18/20

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CHLORIDE ION CONTENT IN SOILS

AASHTO T 291 - 94 (2004) (*Method B*)

Client:	Hull & Associates, Inc.	Boring No.:	B20-09
Client Reference:	Clearview Solar ORR025	Depth (ft):	1.0-5.0'
Project No.:	2020-438-001	Sample No.:	2
Lab ID:	2020-438-001-027	Description:	Brown Clay

(- # 10 Sieve material)

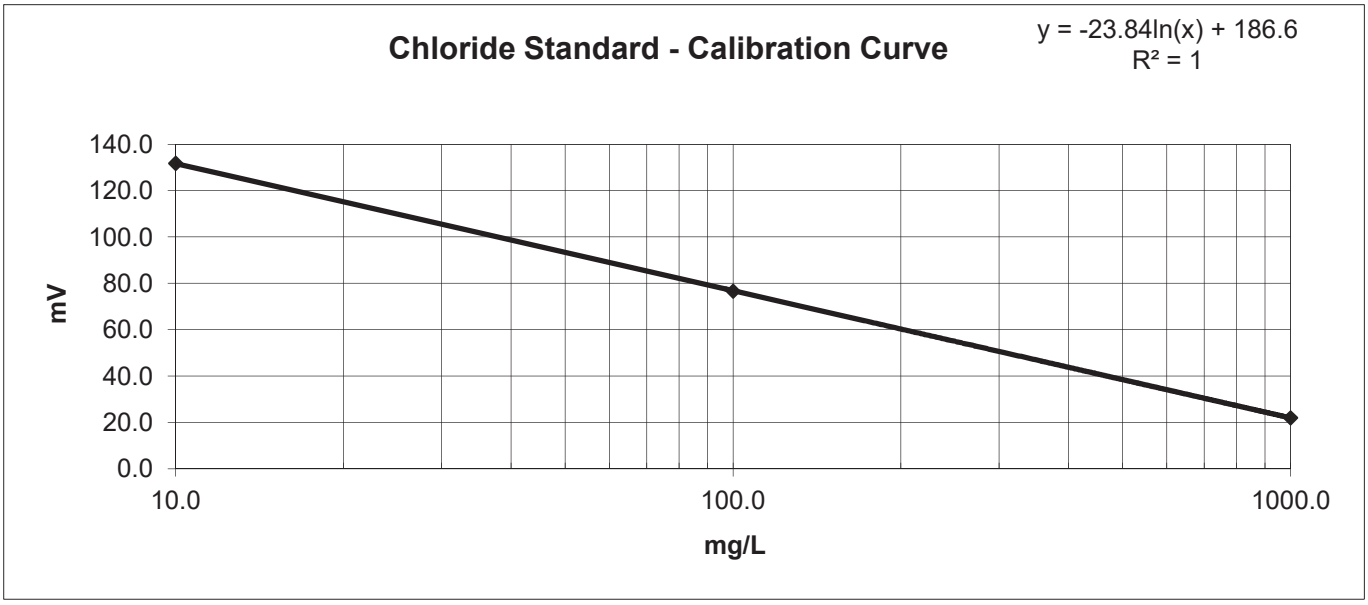
CHLORIDE STANDARD: CALIBRATION CURVE

STANDARD		MILLIVOLTS (mV)
10.0	mg/L	131.8
100.0	mg/L	76.6
1000.0	mg/L	22.0

MEASUREMENT OF CHLORIDES

		CONCENTRATION (mg/L)	CONCENTRATION (mg/kg)
Sample Weight (g):	100.0		
Water added to Sample (ml):	100.0		
Size of Sample Aliquot (ml):	25.0		
Sample Reading (mV):	109.3	25.59	25.59

Notes: 1) Samples and standards were buffered by the addition of an equal volume of the 0.2 M KNO_3 solution (1:1 volume).
2) Samples were dried for a minimum of 12 hours at 110 $^{+}/_{-}$ 5^{o}C.



Notes:

Tested By	JAM	Date	9/17/20	Checked By	JLK	Date	9/18/20

Water-Soluble Sulfate Ion Content in Soil

AASHTO T 290-95 (2012)

Client:	Hull & Associates, Inc.	Boring No.:	B20-04
Client Reference:	Clearview Solar ORR025	Depth (ft):	1.0-5.0'
Project No.:	2020-438-001	Sample No.:	2
Lab ID:	2020-438-001-008	Soil Description:	Brown Clay

Sulfate Standard - Calibration Curve Spectrophotometer Readings

Sulfate Ion Concentrations (mg/L)

0.0	4.0	10.0	20.0	30.0	40.0	60.0	80.0	100.0
Spectrophotometer Readings (FAU)								
Underrange	Underrange	9	25	44	71	139	210	287

Measurement of Barium Chloride Turbidity

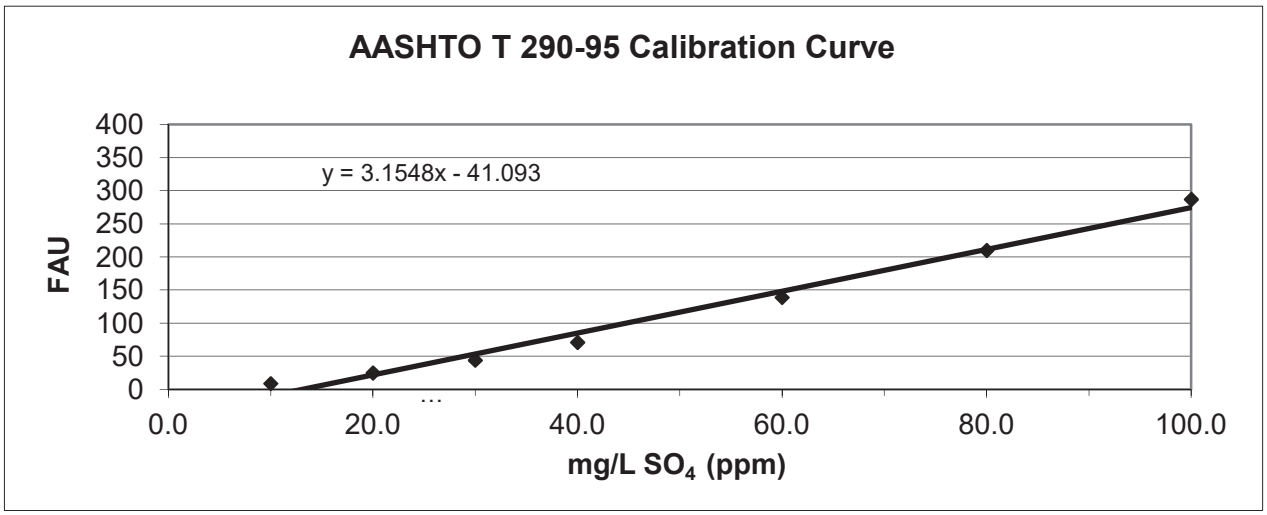
(Sample contains 5.0 mL NaCl solution and 0.3 g $BaCl_2 \cdot 2H_2O$)

Sample Weight (g):	100.0
Water added to Sample (mL):	300.0
Size of Sample Aliquot (mL):	50.0
Sample Reading (FAU):	18
Sample Diluted:	No
Sulfate Solution Added (ml):	0

Sample Moisture Content

Tare Number:	903
Weight of Tare & Wet Sample (g):	210.41
Weight of Tare & Dry Sample (g):	210.30
Weight of Tare (g):	109.33
Weight of Water (g):	0.11
Weight of Dry Sample (g):	100.97
Moisture Content (%):	0.11

Sample Sulfate Ion Concentration:	18.73	**mg/L SO_4 (ppm)**
Sample Sulfate Ion Content:	56.2	**mg/Kg SO_4 (not corrected for moisture)**
Sample Sulfate Ion Content:	56.3	**mg/Kg SO4 (corrected for moisture)**



Tested by: JAM Date: 9/17/20 Checked by: JLK Date: 9/18/20

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Water-Soluble Sulfate Ion Content in Soil

AASHTO T 290-95 (2012)

Client:	Hull & Associates, Inc.	Boring No.:	B20-09
Client Reference:	Clearview Solar ORR025	Depth (ft):	1.0-5.0'
Project No.:	2020-438-001	Sample No.:	2
Lab ID:	2020-438-001-027	Soil Description:	Brown Clay

Sulfate Standard - Calibration Curve Spectrophotometer Readings

Sulfate Ion Concentrations (mg/L)

0.0	4.0	10.0	20.0	30.0	40.0	60.0	80.0	100.0

Spectrophotometer Readings (FAU)

Underrange	Underrange	9	25	44	71	139	210	287

Measurement of Barium Chloride Turbidity

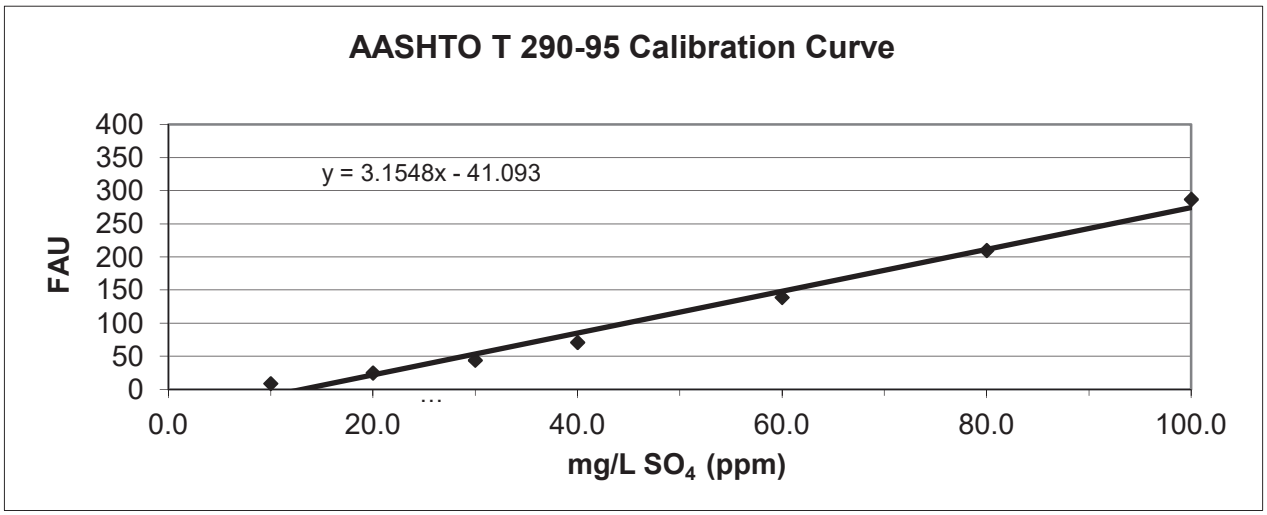
(Sample contains 5.0 mL NaCl solution and 0.3 g $BaCl_2 \cdot 2H_2O$)

Sample Weight (g):	100.0
Water added to Sample (mL):	300.0
Size of Sample Aliquot (mL):	50.0
Sample Reading (FAU):	24
Sample Diluted:	No
Sulfate Solution Added (ml):	0

Sample Moisture Content

Tare Number:	544
Weight of Tare & Wet Sample (g):	183.11
Weight of Tare & Dry Sample (g):	182.94
Weight of Tare (g):	82.65
Weight of Water (g):	0.17
Weight of Dry Sample (g):	100.29
Moisture Content (%):	0.17

Sample Sulfate Ion Concentration:	20.63	**mg/L SO_4 (ppm)**
Sample Sulfate Ion Content:	61.9	**mg/Kg SO_4 (not corrected for moisture)**
Sample Sulfate Ion Content:	62.0	**mg/Kg SO4 (corrected for moisture)**



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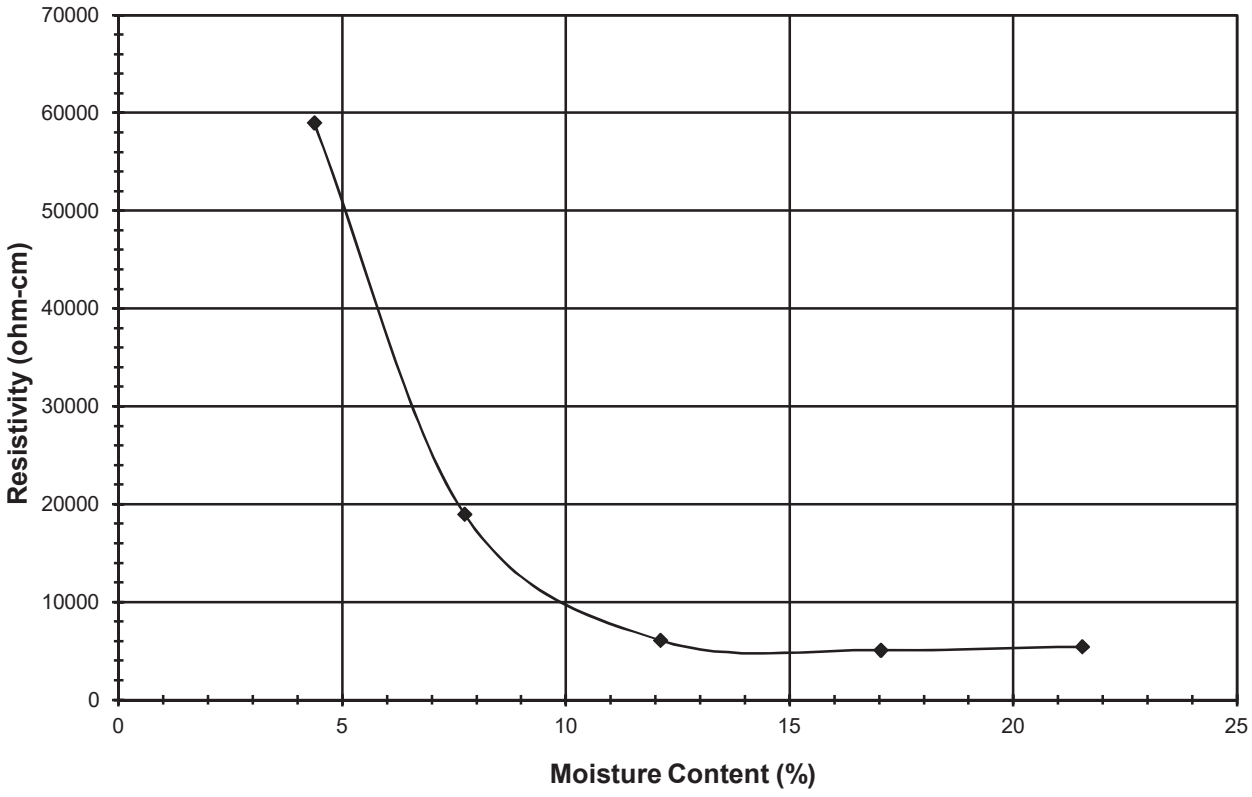
Minimum Resistivity

AASHTO T288-12

Client:	Hull & Associates, Inc.	Boring No.:	B20-04
Client Reference:	Clearview Solar ORR025	Depth (ft):	1.0-5.0'
Project No.:	2020-438-001	Sample No.:	2
Lab ID:	2020-438-001-008	Visual Description:	Brown Clay
		(- #10 Sieve material)	

Tare No.:	241	270	394	256	267
Tare & Wet Specimen (g):	29.22	20.39	23.37	33.99	32.76
Tare & Dry Specimen (g):	28.77	19.76	22.36	32.60	30.80
Tare Weight (g):	18.48	11.61	14.02	24.44	21.70
Moisture Content (%):	**4.4**	**7.7**	**12.1**	**17.0**	**21.5**
Resistance (ohm):	**59000**	**19000**	**6100**	**5100**	**5450**
Resistivity (ohm-cm):	**59000**	**19000**	**6100**	**5100**	**5450**

Note: The ratio of Miller Box area versus distance between electrodes is equal to 1.



Soil Class	*Corrosion Resistance*	*Specific Resistivity (ohm-cm)*
1	Excellent	10,000 - 6,000
2	Good	6,000 - 4,500
3	Fair	4,500 - 2,000
4	Bad	2,000 - 0

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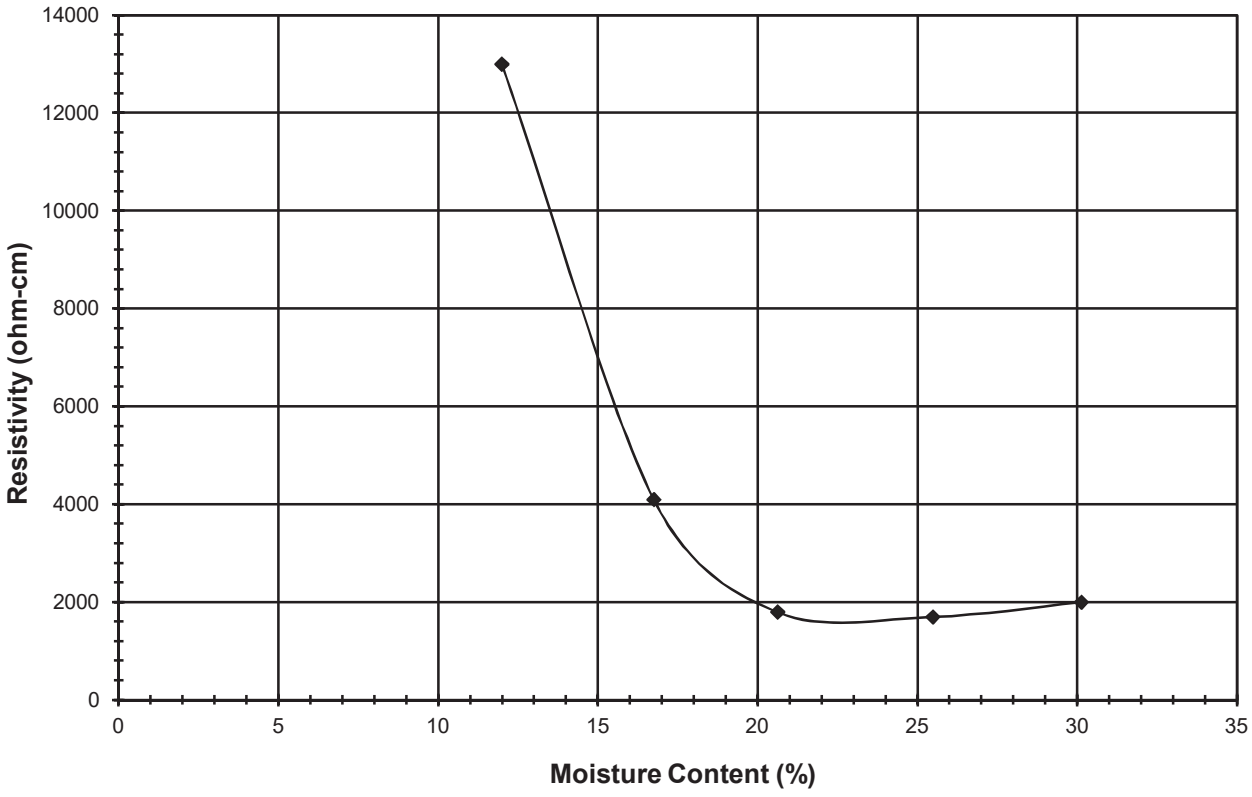
Minimum Resistivity

AASHTO T288-12

Client:	Hull & Associates, Inc.	Boring No.:	B20-09
Client Reference:	Clearview Solar ORR025	Depth (ft):	1.0-2.5' & 3.5-5.0'
Project No.:	2020-438-001	Sample No.:	1 & 2
Lab ID:	2020-438-001-027	Visual Description:	Brown Clay
		(- #10 Sieve material)	

Tare No.:	228	290	158	511	139
Tare & Wet Specimen (g):	26.83	27.89	25.74	28.23	55.22
Tare & Dry Specimen (g):	25.96	26.79	24.33	26.22	46.99
Tare Weight (g):	18.70	20.22	17.49	18.33	19.67
Moisture Content (%):	**12.0**	**16.7**	**20.6**	**25.5**	**30.1**
Resistance (ohm):	**13000**	**4100**	**1800**	**1700**	**2000**
Resistivity (ohm-cm):	**13000**	**4100**	**1800**	**1700**	**2000**

Note: The ratio of Miller Box area versus distance between electrodes is equal to 1.



Soil Class	*Corrosion Resistance*	*Specific Resistivity (ohm-cm)*
1	Excellent	10,000 - 6,000
2	Good	6,000 - 4,500
3	Fair	4,500 - 2,000
4	Bad	2,000 - 0

Tested By JAM *Date* 9/14/20 *Checked By* JLK *Date* 9/16/20

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Summary: Application - Part 18 of 31 Ex. N Preliminary Geotechnical Exploration Report electronically filed by Christine M.T. Pirik on behalf of Clearview Solar I, LLC