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Flat Creek Solar Project
Supplemental Geotechnical Engineering Report

TRC Project No. 427281.2022.GEO2

Date: April 2, 2024

Prepared For:

Cordelio Services LLC

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April 2, 2024

Cordelio Services LLC
c/o Mr. Patrick McCarthy
Vice President, Environmental and Permitting
Flat Creek Solar
Suite 1805 – 55 Fifth Ave.
New York, NY 10003
pmccarthy@cordeliopower.com

Re: Supplemental Geotechnical Engineering Report
Proposed Flat Creek Solar Project
Towns of Root and Canajoharie, Montgomery County, NY
TRC Project #: 427281.2022.GEO2

Dear Mr. McCarthy:

TRC Engineers, Inc. (TRC) is pleased to present Cordelio Services, LLC (Cordelio) our Supplemental Geotechnical Engineering Report for the above referenced project. Our work was initiated in accordance with the signed Work Order, completed in general accordance with the agreed scope of work presented in TRC's revised proposal, submitted to SED Holdings NY LLC (SED) June 7, 2023. A summary of our geotechnical exploration activities, including the laboratory test results, findings and recommendations related to the proposed Flat Creek Solar Project is summarized below.

1.0 INTRODUCTION

This report presents the results of our supplemental geotechnical exploration for the proposed photovoltaic (PV) solar array structures and substation to be constructed at the Flat Creek Solar project site located in the Towns of Root and Canajoharie, Montgomery County, New York (Site). The purpose of our exploration was to evaluate the geologic and subsurface conditions at additional parcel areas added to the Site since completion of the Preliminary Geotechnical Engineering Reports prepared by Terracon Consultants) and TRC, dated November 21, 2021 and September 8, 2022, respectively, to reduce uncertainty with respect to anticipated foundation and site construction, and to provide geotechnical recommendations for design by others of the proposed project.

1.1 Project Description

The additional parcels are located in the northwest corner of the proposed solar development in the Towns of Root and Canajoharie, Montgomery County, New York across approximately 450 additional acres that were not included in previous subsurface explorations for the Site. The Site is primarily an open agricultural land, which was generally clear of crops at the time of the field exploration along with scattered wooded areas. Several existing structures, including houses and barns, are currently located on or adjacent to portions of the proposed lease area parcels. The site is bounded by Route 107 to the North, Carlisle and Cunningham Roads to the West, Route 93 to the South and a combination of partially wooded areas and open agricultural fields to the East. The supplemental substation location identified at the time of the field exploration is located within an open, agricultural fields west of Route 96 south of the existing overhead transmission line right-of-way. Based on our experience with similar projects, we assume that the proposed photovoltaic array would likely be mounted on posts driven into the ground. The anticipated loading conditions for the posts have not been provided to TRC but the posts are anticipated to be driven approximately 7-10 feet below existing ground surface (bgs), which is typical for such construction. Based on site conditions and topography, it is assumed that significant earthwork (cuts and fills) will not be required for the project development and that existing grades will remain relatively unchanged.

1.2 Scope of Services

Based on our geotechnical scope of services as presented in TRC's revised Proposal for Geotechnical Engineering Services dated June 7, 2023, the following services were completed:

- Review of Terracon's Preliminary Geotechnical Engineering Report (dated November 21, 2021) and TRCs' own Geotechnical Report (dated September 8, 2022) for adjacent parcels.
- Exploration of subsurface conditions by drilling and sampling of a total of eight (8) borings: seven (7) supplemental borings onsite spatially distributed across the proposed solar array field development areas and one (1) supplemental boring within the revised substation footprint as shown on Figure 1.
- Evaluation of the physical and geotechnical engineering properties of the subsurface soils within the boring locations based on describing the soils by visual-manual examination by a member of our geotechnical staff.
- Engineering analysis for the proposed foundation systems for the support of the ground-mounted PV solar array and associated development.
- Preparation of this report to summarize our findings, conclusions, and recommendations regarding the following:
    - Foundation support for the proposed solar array structures assuming post foundations, or alternative system as applicable based on subsurface conditions.
    - Bearing capacity parameters for use in foundation design by others.
    - Anticipated excavation conditions and presence of potential rock or other refusal conditions, if applicable.
    - Suitability of on-site soils for reuse in back fills and requirements for imported fills.
    - Recommendations for placement, compaction and testing of fills, if applicable
    - Soil parameters (both above and below ground water table) for active, at rest and passive conditions and L-Pile soil parameters for use in foundation design by others.
    - Anticipated ground water conditions and impacts on the design and construction.
    - Frost penetration depth.
    - Corrosivity potential on buried steel and concrete.
    - Field electrical resistivity results
    - Thermal resistivity laboratory test results
    - Preliminary Seismic Site Class parameters in accordance with ASCE 7-22
    - Other construction-related concerns, as warranted based on site subsurface conditions, details of the proposed construction, and anticipated loading conditions.

2.0 SITE CONDITIONS

2.1 Site Reconnaissance and Boring Stakeout

A limited site reconnaissance was conducted on June 12 and 13, 2023. At the time of the visit, the majority of the Site of the proposed development consisted of open fields with vegetation at the time of the site visit and several tree lines and partially wooded areas. Several dirt access roads and farmers trails were also observed throughout the Site. During the field visit, TRC did not observe any structures, stockpiles or any other man-made obstructions that are likely to interfere with the proposed PV array construction.

During the site visit, TRC also staked out the test boring locations in the field and performed field electrical resistivity testing at the proposed locations. Test boring locations were determined in the field using Google Earth KMZ files and a cellphone-based GPS application at the approximate locations recommended by TRC and approved by SED and Cordelio as shown on the attached Figure 1, *Approximate Test Boring Location Plan*. Prior to drilling, the U-Dig New York One-Call notification system was contacted to notify owners of public utilities in the area of the proposed testing borings for utility mark out and clearance of test boring activities.

2.2 Geotechnical Field Exploration

This investigation is based on a total of Eight (8) borings; Seven (7) borings (Borings B-201 through B-208) across the proposed solar array field development areas and one (1) supplemental boring (Boring B-200) within the revised substation footprint at the locations indicated in Figure 1. The test boring field activities were performed on June 12 and 13, 2023 by TRC's in-house drilling division under the full-time supervision by a member of TRC's geotechnical engineering staff. Drilling and sampling were performed using a track-mounted drill rig. Split spoon sampling was performed continuously through the upper ten (10) ft bgs and at five (5)-ft intervals thereafter to the completion depths in each boring using the Standard Penetration Test (SPT) Method (American Society of Testing and Materials [ASTM] D1586). The samples were obtained by driving the split spoon sampler 24 inches into the soil with a 140-pound automatic hammer free-falling 30 inches. The number of blows required for each 6 inches of penetration was recorded separately. The SPT blow count ("N-value") of the soil was calculated as the number of blows required for the middle 12 inches (6 to 18-inch interval) of penetration or fraction thereof. The SPT N-value serves as an indicator of consistency for cohesive soils and relative density of granular soils. The new substation boring (B-200) extended for 30.0 ft bgs, whereas the borings within the solar array fields were terminated at depths ranging from 6.8 to 15.0 ft bgs after achieving auger refusal or a maximum depth of 15 ft bgs. Upon completion, all test borings were backfilled to the approximate existing ground surface with the auger cuttings. Copies of the test boring logs are attached along with a copy of the approximate test boring location plan.

2.2 Regional Geology

According to available public geological data, the surficial geology at the project site consists of residual soil deposits weathered in place from the underlying parent rock. Locally the majority of the Site is underlain predominantly by carbonate limestone and dolostone of the Beekmantown Gorup from the Lower Ordovician Age. The southwest portion of the supplemental site area and the proposed substation area are underlain predominantly by mudstone and shale of the Utica Shale Formation from the Middle Ordovician Age.

2.3 Subsurface Conditions

Under the 0.7 ft-thick topsoil 1.3 ft-thick silty gravel, Boring B-200, which was drilled within the proposed substation, encountered 11.0 ft of "stiff" to "very stiff" silty clay underlain by 5.0 ft of "medium dense" silt underlain by 12.0 ft of gravel sized rock fragments which extended to the termination depth of the boring.

Below a surficial cultivated topsoil layer, the test borings within the solar array lot revealed that the surficial soils generally consist mostly of low to high plastic combination of silt, clay, clayey silt and silty clay with varying quantities of sand and gravel-sized rock fragments. SPT N-values within the solar array field indicate that the consistency of these soils ranges from "soft" to "stiff" within the upper 6.0 ft followed by "stiff" to "very stiff" layers for the remaining depths.

Laboratory test results performed on representative samples indicate plastic limits ranging from 13% to 23%, liquid limits ranging from 16% to 52%, and plasticity indexes ranging from 3% to 29%. Natural moisture contents as received by the laboratory range from approximately 8% to 19%. Maximum laboratory compacted dry densities of a representative bulk sample of the clay as determined by ASTM D 698 was approximately from 127.5 pounds per cubic foot (pcf) at an optimum moisture content of 8.4%.

Occasional difficult drilling was noted in various borings ranging from the depths of 6 ft to 10 ft bgs. The presence of these dense conditions and possible oversized material inclusions (gravel and or possible cobbles) may pose difficult driving conditions for driven post type foundation during installation.

Below the surficial clayey soil stratum, each test boring with the exception of B-207 encountered a stratum consisting of silty SAND and GRAVEL-SIZED ROCK FRAGMENTS with varying quantities of clay, generally extending to the completion depths. SPT N-values indicate the relative density of this stratum ranges from "medium dense" to "very dense". Laboratory test results indicate that the fine-grained (silt and clay) content of this layer ranges from approximately 35% to 48%. Natural moisture content as received by the laboratory ranged from approximately 6% to 19%.

Auger refusal, which typically represents the apparent top of weathered rock, was encountered in test borings B-205 and B-206 at approximate depths 10.5 ft and 6.8 ft bgs, respectively. Difficult drilling conditions, which are typically indicative of hard or very dense soil conditions and/or the potential presence of oversized rock fragments, were also encountered at 6 of the 8 test boring locations. The depths and locations where difficult drilling and auger refusal were encountered are summarized in Table 1, below.

Table 1. Summary of Difficult Drilling and Auger Refusal Depths

Test Boring Location	Boring Termination Depth, ft	Depth to Hard or Very Dense Soils/Difficult Drilling (ft, bgs[1])	Depth to Auger Refusal (ft, bgs[1])
B-200	30.0	9.5	>30
B-201	15.0	>15	>15
B-202	15.0	9	>15
B-204	13.8	8	>15
B-205	10.5	9.5	10.5
B-206	6.8	5.5	6.0

Test Boring Location	Boring Termination Depth, ft	Depth to Hard or Very Dense Soils/Difficult Drilling (ft, bgs[1])	Depth to Auger Refusal (ft, bgs[1])
B-207	15.0	>15	>15
B-208	15.0	9	>15

ft, bgs = feet below existing ground surface

2.4 Groundwater

Observations for groundwater were attempted during drilling and shortly after completion in each test boring. Free water was not observed on the drilling rods or split-spoon sampler during drilling. Groundwater was only encountered in test boring B-206 at a depth of approximately 5.8 ft bgs after completion of drilling at the time of the field exploration. The water readings recorded on the logs represent the conditions at the time the measurements were taken and do not reflect daily, seasonal, or long-term fluctuations in the groundwater level or development of perched water. Hydrostatic groundwater levels and upper (perched) saturation zones should be expected to fluctuate seasonally due to variations in rainfall, runoff, evapotranspiration, irrigation methods, and other factors, especially within the layers of sand and gravel-sized rock fragment. Consequently, any measured groundwater levels or absence thereof shown on the boring logs only represent conditions at the time the readings were collected and may thus be different at the time of construction. Furthermore, the actual groundwater levels, seepage, and localized saturated conditions may be observed at shallower depths during periods of heavy precipitation. Static daily and seasonal groundwater levels and upper (perched) saturation zones would need to be determined through the installation and monitoring of piezometers, especially in fine-grained soil stratums. This was outside of TRC's scope of work. The boreholes were subsequently backfilled with soil cuttings following water level measurements upon completion of drilling activities.

3.0 CORROSION EVALUATION AND THERMAL RESTIVITY

3.1 Corrosion Evaluation

To evaluate the corrosion potential of the near surface soils at the site, we submitted two (2) representative bulk soil samples from depths of approximately 1 ft to 5 ft bgs, composited from test boring locations during our subsurface exploration to an analytical laboratory for pH, chloride, soluble sulfate, and sulfate content, resistivity and oxidation reduction testing. The results are summarized in Table 2, below.

Table 2. Results of Corrosivity Testing

Sample	Boring No.	pH in (H20)	pH in (CaCl2)	Chlorides (mg/kg)*	Sulfates (mg/kg)*	Sulfides (mg/kg)*	Oxidation Reduction	Resistivity (ohm-cm)**
Bulk 1	B-200 & B-207	6.80	6.11	75	84	Nil	+690	2,645
Bulk 2 & 3	B-201, B-202, B-205, & B-208	6.69	6.06	50	68	Nil	+695	4,510

* *mg/kg = milligrams per kilogram*
** *ohm-cm = ohm-centimeter*

TRC also conducted field resistivity testing using the Wenner Four-Pin method in general accordance with ASTM G57. Testing was centered at boring locations B-200 and B-202 with the test lines oriented in perpendicular to one another at each test location. Measurements were taken along each test line corresponding to electrode spacings of 2.5 ft, 5 ft, 10 ft, 20 ft, and 25 ft. Field resistivity test results are attached, and the results are discussed further in this section.

Many factors can affect the corrosion potential of soil including soil moisture content, resistivity, permeability, and pH, as well as chloride and sulfate concentration. In general, soil resistivity, which is a measure of how easily electrical current flows through soils, is the most influential factor. Based on classification developed by William J. Ellis (1978), the approximate relationship between soil corrosiveness was developed as shown in Table 3 below.

Table 3. Relationship Between Soil Resistivity and Soil Corrosivity

Soil Resistivity (ohm-cm)*	Classification of Soil Corrosiveness
0 to 900	Very Severely Corrosive
900 to 2,300	Severely Corrosive
2,300 to 5,000	Moderately Corrosive
5,000 to 10,000	Mildly Corrosive
10,000 to >100,000	Very Mildly Corrosive

** ohm-cm = ohm-centimeter*

Chloride and sulfate ion concentrations and pH appear to play secondary roles in affecting corrosion potential. High chloride levels tend to reduce soil resistivity and break down otherwise protective surface deposits, which can result in corrosion of buried metallic improvements or reinforced concrete structures. Sulfate ions in the soil can lower the soil resistivity and can be highly aggressive to Portland cement concrete (PCC) by combining chemically with certain constituents of the concrete, principally tricalcium aluminate. This reaction is accompanied by expansion and eventual disruption of the concrete matrix. Soils containing high sulfate content could also cause corrosion of the reinforcing steel in concrete. Table 4.2.1 of the American Concrete Institute (ACI, 2008) provides requirements for concrete exposed to sulfate-containing solutions as summarized in Table 4 below.

Table 4. Relationship Between Sulfate Concentration and Sulfate Exposure (Table 4.2.1 of ACI)

Water-Soluble Sulfate (SO4) in soil (ppm)*	Sulfate Exposure
0 to 1,000	Negligible
1,000 to 2,000	Moderate
2,000 to 20,000	Severe
over 20,000	Very Severe

**ppm = parts per million*

Acidity is an important factor of soil corrosivity. The lower the pH (the more acidic the environment), the higher will the soil corrosivity be with respect to buried metallic structures. As soil pH increases above 7 (the neutral value), the soil is increasingly more alkaline and less corrosive to buried steel structures due to protective surface films which form on steel in high pH environments. A pH between 5 and 8.5 is generally considered relatively passive from a corrosion standpoint.

The laboratory electrical resistivity test completed on the samples of surficial soils indicates values ranging from 2,645 to 4,510 ohm-centimeters, which would be indicative of moderately corrosive potential to buried metallic improvements. Based on the field resistivity testing results the electrical resistivity values for the existing subsoils range from approximately 3,916 to 10,293 ohm-centimeters. Based on these results and the resistivity correlations presented in Table 3, the corrosion potential to buried metallic improvements may be characterized as ranging from moderately to very mildly corrosive.

Based on our previous experience and Table 4.2.1 of the ACI, it is our opinion that sulfate exposure to PCC may be considered negligible for the native subsurface materials tested.

3.2 Thermal Resistivity

Laboratory thermal resistivity test results with the thermal dryout curves, are attached to this report. Thermal Resistivity testing was performed in general accordance with ASTM 5334 on one (1) representative composite sample compacted to density equivalent to approximately 90% of the maximum dry density and at 2% greater than the optimum moisture content as established by ASTM D 698. The sample was then oven dried, and multiple thermal resistivity readings were obtained at various moisture contents. The thermal resistivities decrease with increasing moisture content and ranged from 127.8 °C-cm/W when fully dry to 46.4 °C-cm/W at 2% above optimum moisture.

4.0 FOUNDATIONS AND EARTHWORK

4.1 Site Seismic Coefficients

According to the ASCE 7-22, the site class is within “Site Class D” based on the soil profiles the maximum considered earthquake ground motions in this area for 0.2 second and 1.0 second spectral responses are approximately 22% g and 5.3% g, respectively. For Site Class D, the corresponding 0.2 and 1.0 sec. design spectral response acceleration parameters S_{DS} and S_{D1} are 18% g and 7.4 % g, respectively.

4.2 Foundations

Based on the results of this investigation and our experience with similar structures, a foundation system consisting of driven posts is assumed as generally preferable by the designer for support of the proposed ground-mounted photovoltaic arrays. Based on the results of the test borings, driven posts are mostly feasible and could be supported in the natural soils encountered at this site. However, occasional problematic driving could be encountered based on observed zones of very dense soils, the presence of gravel-sized rock fragments, and occasional refusal to earth drilling equipment in several of the boring locations.

It is our understanding that shallow foundations will be needed to support the proposed relatively light equipment, as well as more heavily loaded equipment such as the transformers and dead-end structures at the Site substation location. A combination of shallow foundations and mats could be utilized for support of various structures or equipment bearing on newly placed, compacted load bearing fill or the existing natural soils after proper subgrade preparation as described below. Drilled piers could also be utilized.

Based on the observed relatively high SPT N-values from very dense and/or gravelly soils encountered drilling, the designer and foundation contractor should be prepared to implement alternative installation methods for achieving sufficient foundation embedment to provide sufficient resistance for uplift and lateral loading conditions within these localized areas, if difficult driving conditions and encountered during installation. The following installation alternatives can be considered at the Site in the event that subsurface obstructions or are encountered at relatively shallow depths (i.e. less than 10 ft bgs):

- The use of predrilling to break up the oversized gravel/cobbles or other obstructions to increase post embedment for vertical and lateral support.
- The use of helical or screw-type piles that could provide increased lateral and uplift capacities at shallower embedment depths and potentially penetrate additional short distances into dense soils.
- The use of larger sized, heavier grade posts or pile driving shoes that will allow harder driving and may provide increased embedment and to achieve sufficient lateral capacity and uplift.

4.2.1 Driven Post/Helical Pile Support System

All posts should be driven or helical piles extended to bear at sufficient depths required to provide adequate axial uplift, and lateral resistances.

Allowable design bearing capacities and recommended geotechnical parameters for use in design analysis, included in Tables 5 and 6 below, can be utilized for evaluation of posts or piles for support of the PV solar array or other design analysis, as required. We recommend that lateral and uplift resistance of soils be reduced by 50% in the upper 4.5 ft (54 inches) below the ground surface to account for disturbance resulting from construction as well as to account for the negative impacts due to frost and thaw action. Allowable capacities assume a factor of safety of 2 for compression loads; a factor of safety equal to 3 was used for determining allowable uplift capacity of piles; a factor of safety equal to 1.5 should be used for transient (wind/seismic) loading conditions. The factor of safety for uplift capacity can be reduced to 2 in conjunction with pile load testing. The use of lower factors of safety is at the sole discretion and risk of the designing engineer.

Current industry experience suggests that the PV panels will prevent an insulating layer of snow from accumulate directly against the foundation posts, therefore TRC recommends using the Atlas of Soil Freezing Depth Extremes maps for snow-free bare soil to determine design frost depth for frost heave evaluation. The use of the 10-year return period for the design in evaluating frost depth, corresponds to approximately 49 inches (4.1 ft). A typical unfactored value of 15 pounds per square inch (psi) can be used for adfreeze for steel piles. While this value tends to be toward a lower bound adfreeze for steel pile, the potential exists for adfreeze forces to be higher than 15 psi, especially for smaller diameter piles and for soils containing higher granular content such as those at the site. Some conservatism is warranted for design of foundation piles for PV arrays due to the fact that vertical (compression) loads on the piles are typically low. Based on laboratory test results, the fines (silt and clay) contents of the soils withing the frost depth zone encountered were greater than 25%, which is generally considered high frost susceptibility (US Army Corps of Engineers), however, the lack of groundwater encountered during the field exploration may indicate a lower potential for development of frost heave. Pile foundations, if designed to fully resist frost heave, should consider the adfreeze stress within the full frost depth. T*he use of alternate adfreeze forces or frost penetration depths from those presented in our report may be considered at the sole discretion and risk of the designing engineer. A reduced frost depth value may be considered if some risk of differential movement of the rack system due to frost heave is acceptable.*

Table 5. Summary of Allowable Soil Bearing Capacities

Soil Description	Relative Density/ Consistency	Cohesion (psf)	Downward Skin Friction (psf) for steel/soil	Upward Skin Friction (psf) for steel/soil	Allowable Bearing Capacity (ksf***)
CLAY/SILT	"Medium" to "Stiff"	1,000	250*	150*	2
Silty SAND & ROCK FRAGEMENTS	"Medium Dense" to "Very Dense"	-	150**	75**	4

* psf – pounds per square foot (over pile length)

** psf – pounds per square foot per foot (triangular distribution over pile length)

*** ksf – kips per square foot

Table 6. Summary of Unfactored Soil Parameters for Lateral Design (reduce by 50% for upper 4.5 ft)

Soil Description	LPILE Soil Type	Consistency/ Relative Density	Total (Submerged) Unit Weight (pcf*)	Friction Angle (degrees)	E_{50}	Cohesion (psf**)	Soil Modulus Above/Below Water Table, k (pci***)
CLAY/ SILT	Clay	"Medium" to "Hard"	125 (NA)	-	0.01	1,000	- / -
Silty SAND &ROCK FRAGMENTS	Sand	"Medium Dense" to "Dense"	125 (NA)	34	-	-	90 / -

* pcf – pounds per cubic foot

** psf – pounds per square foot

*** pci – pounds per cubic inch

Prior to or during construction, we recommend that tension (pull) and lateral load tests be conducted on a minimum of three piles for each combination of size or system to verify the adequacy of the design. Testing should be performed in general accordance with ASTM 3689 and ASTM 3966 or in accordance with current standard practice in the industry. The test locations should coincide with the test boring locations based on the variability of the subsurface conditions. The test piles should be installed with the same means and methods used to install production piles. In the event that the means and methods or embedment depths of pile installation are revised following initial pile testing, additional pile tests should be performed to verify that sufficient resistance can be achieved with the revised means, methods, and embedment. he results should be reviewed and approved by a qualified geotechnical engineer.

4.2.2 Shallow Foundations

Shallow foundation systems such as spread footings or rigid mats can be considered for support of electrical equipment and other lightly loaded ancillary structures. Mats supporting electrical equipment can be designed for an allowable bearing capacity of 2,000 psf when constructed in accordance with the general recommendations presented in the *Earthwork* section of this report. A vertical subgrade modulus of 100 pci may be used in foundation mat design. Shallow spread footing foundations bearing on densified natural soils can be designed using the allowable bearing capacities and other design parameters shown in Tables 5 and 6, above. A typical allowable interface friction coefficient of 0.35 may be used for design of cast in place concrete foundations assuming that they are constructed on grade overlying the densified natural soils.

Transformers, dead-end structures and similar heavily loaded structure foundations or mats bearing on the existing natural soils or newly placed and compacted fill can be designed for an allowable bearing capacity of 3,000 psf, after proper subgrade preparation as follows:

1. Over-excavate the natural soils for a minimum depth of 2.0 feet below bottom of the footing depth. Over-excavation shall extend beyond the perimeter of the foundation 1 foot horizontally for each foot of depth below existing grade.
2. The exposed subgrade shall be densified in the presence of a qualified geotechnical professional to confirm suitability of exposed grade and identify any soft, loose, unstable or unsuitable (biodegradable material or waste) materials that shall be removed.

Foundation subgrades for supporting electrical equipment or other ancillary structures subjected to freezing temperatures during construction and/or the life of the structure should be established at least 4.5 ft below adjacent grades or otherwise protected against frost action. Alternatively, to resist frost heave impacts, mat slabs constructed at grade should be provided a coarse aggregate similar to AASHTO #57 aggregate layer extending to the frost depth below the mat foundations for movement sensitive equipment or minimum 24 inches thick below lightly loaded electrical equipment designed to tolerate the movement associated with potential frost heave. To guard against a punching type shear failure, minimum widths of continuous footings should be 24 inches.

Shallow excavations for foundation slabs and construction of utilities may encounter perched groundwater in low lying areas or during wet periods. If perched groundwater or surface runoff are encountered, sumps and pumps will be sufficient to control groundwater and provide stable working conditions.

4.2.3 Drilled Shafts

<u>Axial Capacity</u>

Alternately, based on the subsurface conditions encountered and on our experience with similar construction, drilled shafts may be considered, particularly for support of the heavier substation or transmission equipment. The bottom of drilled shafts are anticipated to bear within the very stiff to clay or medium dense granular soils. The foundation designer should verify that the overall shaft diameter and length are sufficient to provide the vertical and necessary lateral support based on recommendations presented herein. It is our experience that the required length and diameter of drilled shafts, if used to support structures subjected to high lateral loads (such as the proposed dead end structures) will be controlled by anticipated lateral loading conditions.

Drilled shafts can be designed to derive their load-carrying capacities from shaft sidewall resistance (i.e., “skin friction”), end-bearing, or a combination of the two. The following are noted with respect to axial capacity of drilled shafts:

- Where the shaft length is entirely in soil and the length of the shaft is at least twice the shaft diameter, the embedment length can be checked for adequate axial compression capacity based on the sum of the allowable load in end bearing and side friction.

- Where the shaft length is less than twice the shaft diameter, or where methods of construction preclude consideration for shaft resistance (i.e., permanent casing installed in an oversized hole) the drilled shaft should be sized based on end bearing alone.
- Shaft resistance should not be included in soil within the upper 4 ft from the ground surface to account for disturbance during construction as well as negative impacts from frost action.
- For large diameter shafts, the weight of concrete (including consideration for the effects of buoyancy) might be adequate to resist anticipated uplift (or tension) loads, where applicable. If shaft resistance must be considered in addition to the weight of the shaft, a factor of safety of 3 is recommended for use in estimating allowable uplift capacity.
- Allowable design unit resistances against axial loads are provided in Table 5 above.

Lateral Capacity

Recommended geotechnical parameters for use in LPILE analysis are included in Table 6 above. If drilled shafts are to be constructed within a distance of 3B to 5B, where B is the shaft diameter, reduction factors should be applied as appropriate to account for group effects. We recommend that lateral resistance of soils within 4 ft of the ground surface be neglected to account for disturbance resulting from both drilled shaft construction and the negative impacts due to frost action.

Construction Related Concerns

Temporary casing may be required during shaft construction to maintain sidewall stability through the soft natural soils, where cobble inclusions are present, or in excavations where groundwater and/or perched water zones are encountered.

Intimate contact between the drilled shaft and surrounding soil will be critical to achieve the lateral load resistance predicted by the LPILE models. As such, use of permanent casing in the design and installation of drilled shafts should be avoided. If use of permanent casing is required, the permanent casing should be in intimate contact with the surrounding soil. Permanent casing should not be placed in an oversized hole unless grouting of the exterior annular space is performed to create intimate contact between the casing and soil. If intimate contact is not maintained, lateral deflections will significantly exceed those estimated in the LPILE evaluations. These deflections will be very highly variable and difficult to predict as they will be dependent on the method of construction and the amount of sidewall relaxation and annular space resulting from the construction process.

If the shaft is cased so that the excavation remains stable and free of water infiltration, freefall placement of concrete could be considered, provided the contractor can direct concrete discharge through the center of the shaft and avoid contact with the reinforcement cage during freefall, which could result in unacceptable aggregate separation. In the event of water infiltration into the shaft, the reinforcement cage should be installed followed by installation of a tremie tube to the bottom of the shaft so that the shaft can be concreted using bottom-up tremie techniques. Care will need to be taken to ensure that the tremie remains inserted at the bottom of the shaft during concrete placement.

Final length and diameter of the drilled shafts will be a function of the vertical loads as well as the lateral load and deflection requirements, where applicable. Preferably, shafts should extend into the natural alluvial soils to limit settlements and maximize end bearing capacity.

4.3 Earthwork

Based on our understanding of the proposed construction, significant grading and earthwork operations are not anticipated unless material removal and replacement would be considered for support of equipment foundations. The following recommendations are provided based on the site soils encountered.

Any existing subsurface utilities, including drain tiles, if present, which conflict with the proposed development should be removed or relocated, where applicable. In areas of backfill placement and/or construction of shallow foundations, all topsoil and organic or otherwise deleterious material should be removed before foundation construction or new fill placement. Any obstructions that would interfere with new foundation construction must be removed in their entirety from a foundation location. After stripping residual topsoil and excavation to the proposed bearing elevations for shallow mat foundations, the exposed subgrade areas should be vigorously densified with as large a compactor as is practical to improve overall performance and reduce impacts of settlements within the disturbed surficial soil. Loose, soft, or otherwise unstable areas identified during the course of excavation should be densified in-place or excavated and replaced with compacted load bearing fill.

The surficial fill soils are suitable for re-use as fill/backfill, however they contain significant fine-grained (silt or clay) content and will be highly sensitive to moisture and disturbance. Therefore, they may lose strength when wet or disturbed by construction equipment and could be difficult to work with during cold or wet weather. Some moisture conditioning (wetting or drying) of the onsite soils used for backfilling should be anticipated before reuse in compacted backfills, particularly during wet seasons. Existing surficial soils with organic inclusions should be excluded from reuse as load-bearing fill. Once a subgrade has been prepared, construction traffic should be controlled in such a fashion as to minimize subgrade disturbance.

Imported load-bearing fill, if required, should consist of well-graded granular material similar to SP, SM, SW, GP, GM or GW as identified by the Unified Soil Classification System (USCS) or PADOT 2A which is not excessively moist and is free from ice and snow, roots, surface coatings, sod, loam, clay, rubbish, other deleterious or organic matter, and any particles larger than four (4) inches in diameter. Imported fill for use as load-bearing fill should have less than 65% by weight passing the No. 200 sieve, liquid limits less than 50, & Plasticity Index less than 35. Alternatively, an AASHTO No. 57 or NYSDOT Type 2 coarse aggregate layer (minimum 24 inches thick) could be considered below mat foundations supporting electrical equipment to reduce frost impacts. Imported fills for general site grading may consist of materials similar in gradation to GW, GP, GC, GM, SW, SP, SC, SM, CL, ML, CH, & MH as identified by the USCS with no index property limitations. However, imported fill materials with greater than 25% by weight passing the No. 200 sieve should be considered high frost susceptibility.

All backfills fills should be placed in relatively horizontal layers not exceeding 8 inches loose thickness. This criterion may be modified in the field depending on the conditions present at the time of construction and on the compaction equipment used. Load-bearing fills for the support of foundations should be compacted to not less than 98% of maximum dry density (ASTM D 698). All newly placed fills and backfills, if utilized for areas of the solar array posts or piles, should be compacted to not less the 95% of maximum dry density (ASTM D 698). Fills in paved areas, if planned, or areas supporting access roads should be compacted to not less than 95% of maximum dry density. Fills in landscaped areas should be compacted to at least 90% of maximum dry density (ASTM D 698).

The sidewalls of any confined excavations deeper than 4 ft must be sloped, benched or adequately shored per OSHA 29 CFR 1926 regulations. The onsite near surface soils are classified as Type B soils according to OSHA 29 CFR 1926. Short-term open excavations in the existing Type B clayey soils that are greater than 4 feet in depth shall have a maximum allowable slope of 1H:1V (45°) if dry and 1.5H:1V (34°) if submerged or where wet conditions are observed, such as perched water or significant surface runoff. The deeper onsite granular soils (sandy and/or gravelly soils) are classified as Type C soils according to OSHA 29 CFR 1926. Open excavations in the granular soils, if encountered, should not be steeper than 1.5H:1V if dry and 2H:1V if submerged or where considerable wetness if observed. Alternately, trench boxes and/or sheeting could be used in conjunction with open cut slopes when performed in accordance with OSHA 29 CFR 1926.652(b). Sloping or benching for excavations greater than 20 feet deep, if required, shall be designed by a registered professional engineer.

The contractor is solely responsible for designing, constructing, and maintaining stable, temporary excavations and should shore, slope, or bench the sides of any confined excavations deeper than 4 ft as required to maintain stability of both the excavation sides and bottom. All excavations for the project should comply with applicable local, state, and federal safety regulations including the current United States Department of Labor, Occupational Safety and Health Administration (OSHA) guidelines for Excavation and Trench Safety Standards (29 CFR Part 1926, Part P, Excavations) or other applicable jurisdictional codes for permissible temporary side-slope ratios and or shoring requirements. The contractor should avoid stockpiling excavated materials or placing construction equipment immediately adjacent to the excavation unless the excavation sidewalls are braced to withstand the anticipated surcharge load.

Daily inspections of open excavations, adjacent areas and protective systems by a “competent person” should be performed for evidence of situations that could result in cave-ins, indications of failure of a protective system, or other hazardous conditions, as applicable. The information in this report is being provided solely as a service to our client. Under no circumstance should the information provided be interpreted to mean TRC is assuming responsibility for construction Site safety.

4.4 Trench Backfill

Bedding and pipe embedment materials to be used around underground utility or electrical conduit pipes should be well graded sand or gravel conforming to the pipe manufacturer’s recommendations and should be placed and compacted in accordance with project specifications, local requirements, or governing jurisdiction. General fill to be used above pipe embedment materials should be placed and compacted in accordance with the recommendations contained in this section.

Utility trenches located adjacent to footings or foundations should not extend below an imaginary 1H:1V (horizontal:vertical) plane projected downward from the foundation bearing surface to the bottom edge of the trench. Where utility trenches will cross beneath footing bearing planes, the footing concrete should be deepened to encase the pipe, or the utility trench should be backfilled with sand/cement slurry or lean concrete within the foundation-bearing plane.

4.5 Gravel Access Roadways

After stripping of the existing topsoil proposed access roads should be proof-rolled with a heavily loaded pneumatic-tired vehicle such as a loaded water truck or tri-axle dump truck. Soft, loose or unstable areas, identified by significant pumping, rutting or similar deformation under wheel loads must be removed and replaced with compacted fill or aggregate material to achieve a stable subgrade prior to placing common fill for site grading, if required, or fill aggregate surfacing. A layer of a geogrid should be installed directly over the subgrade with adjacent rolls lapped in accordance with manufacturer's recommendations in general accordance with NYSDEC standard for limited Use Pervious Haul Roads. A layer of aggregate similar in gradation to NYSDOT Item 703-02, Size Designation 3-5 of Table 703-4 material should be placed directly over the geogrid in a single 8-inch thick layer and spread with tracked equipment in accordance with NYSDEC standards. During construction, the access road may need to be occasionally re-graded and re-densified. Any electric cables crossing below the roadway should be installed in heavy duty rigid steel conduits or installed a minimum 3 ft below finished grade to prevent damage to the cables.

4.6 Surface Drainage

Positive surface water drainage gradients at least 2 percent should be provided to direct surface water away from foundations and mat slabs towards suitable discharge facilities. Ponding of surface water should not be allowed on or adjacent to structures, slabs-on-grade, or pavements. Any rain runoff should be directed away from foundation and slabs-on-grade such as equipment pads, as applicable.

In addition, a sufficiently thick velocity dissipater, such as layer of coarse drainage aggregate of at least 3 to 4 inches in size, should be placed along water flow paths to dissipate concentrated flow of runoff water in order to minimize surface erosion.

4.7 Plans, Specifications, and Construction Review

We recommend that TRC perform a plan review of the geotechnical aspects of the project design for general conformance with the recommendations presented in this report. In addition, subsurface materials encountered in the relatively small diameter, widely spaced borings may vary significantly from other subsurface materials on the site. Therefore, we also recommend that a representative of our firm observe and confirm the geotechnical specifications of the project construction. This will allow us to form an opinion about the general conformance of the project plans and construction with our recommendations. In addition, our observations during construction will enable us to note subsurface conditions that may vary from the conditions encountered during our investigation and, if needed, provide supplemental recommendations. For the above reasons, the recommendations provided in this report are based on the assumption that TRC will be retained to provide observation and testing services during construction to confirm that conditions are similar to that assumed for design and to form an opinion as to whether the work has been performed in general accordance with the project plans and specifications. If we are not retained for these services, TRC cannot assume any responsibility for any potential claims that may arise during or after construction as a result of misuse or misinterpretation of TRC's report by others. These services are not included as part of TRC's current scope of work.

4.8 Construction Observation

TRC recommends that a qualified geotechnical professional should observe the geotechnical aspects of the earthwork for general conformance with our recommendations including site preparation, selection of fill materials, pile installation, and the placement and compaction of fill. To facilitate your construction schedule and if you wish TRC to perform these services, we request sufficient notification (72 hours in advance) for site visits. The project plans and specifications should incorporate all recommendations contained in the text of this report. These services are not included as part of TRC's current scope of work.

5.0 LIMITATIONS

This report has been prepared for Cordelio Services LLC, specifically for design of the proposed solar array and associated development to be constructed at the Flat Creek Solar project site located in the Towns of Root and Canajoharie, Montgomery County, NY as identified herein. Transfer of this report or included information is at the sole discretion of Cordelio Services LLC. TRC's contractual relationship remains with Cordelio Services LLC and limitations stated herein remain applicable regardless of end user. The opinions, conclusions, and recommendations presented in this report have been formulated in accordance with accepted geotechnical engineering practices that exist in the area at the time this report was written. No other warranty, expressed or implied, is made or should be inferred.

The opinions, conclusions and recommendations contained in this report are based upon the information obtained from our investigation, which includes data from a limited number of widely separated discrete locations, visual observations from our site reconnaissance, and review of other geotechnical data provided to us, along with local experience and engineering judgment. An attempt has been made to provide for normal contingencies; however, the possibility remains that differing or unexpected conditions may be encountered during construction. If this should occur, or if additional or contradictory data are revealed in the future, TRC should be notified so that modifications to this report can be made, if necessary. TRC is not responsible for any conclusions or opinions drawn from the data included herein, other than those specifically stated, nor are the recommendations presented in this report intended for direct use as construction specifications.

TRC should be retained to review the geotechnical aspects of the final plans and specifications for conformance with our recommendations. The recommendations provided in this report are based on the assumption that TRC will be retained to provide observation and testing services during construction to confirm that conditions are similar to that assumed for design and to form an opinion as to whether the work has been performed in accordance with the project plans and specifications. If we are not retained for these services, TRC cannot assume any responsibility for any potential claims that may arise during or after construction as a result of misuse or misinterpretation of TRC's report by others. Furthermore, TRC will cease to be the Geotechnical Engineer-of-Record at the time another consultant is retained for follow up service to this report, if applicable.

The opinions presented in this report are valid as of the present date for the property evaluated. Changes in the condition of the property will likely occur with the passage of time due to natural processes and/or the works of man. In addition, changes in applicable standards of practice can occur as a result of legislation and/or the broadening of knowledge. Furthermore, geotechnical issues may arise that were not apparent at the time of our investigation. Accordingly, the opinions presented in this report may be invalidated, wholly or partially, by changes outside of our control. Therefore, this report is subject to review and should not be relied upon after a period of three years. Similarly, this report should not be used, nor are its recommendation applicable, for any other properties or alternate developments.

We trust this report contains the information you require and thank you for the opportunity to work on this project. Please consider our firm for future geotechnical services as needed.

Sincerely,

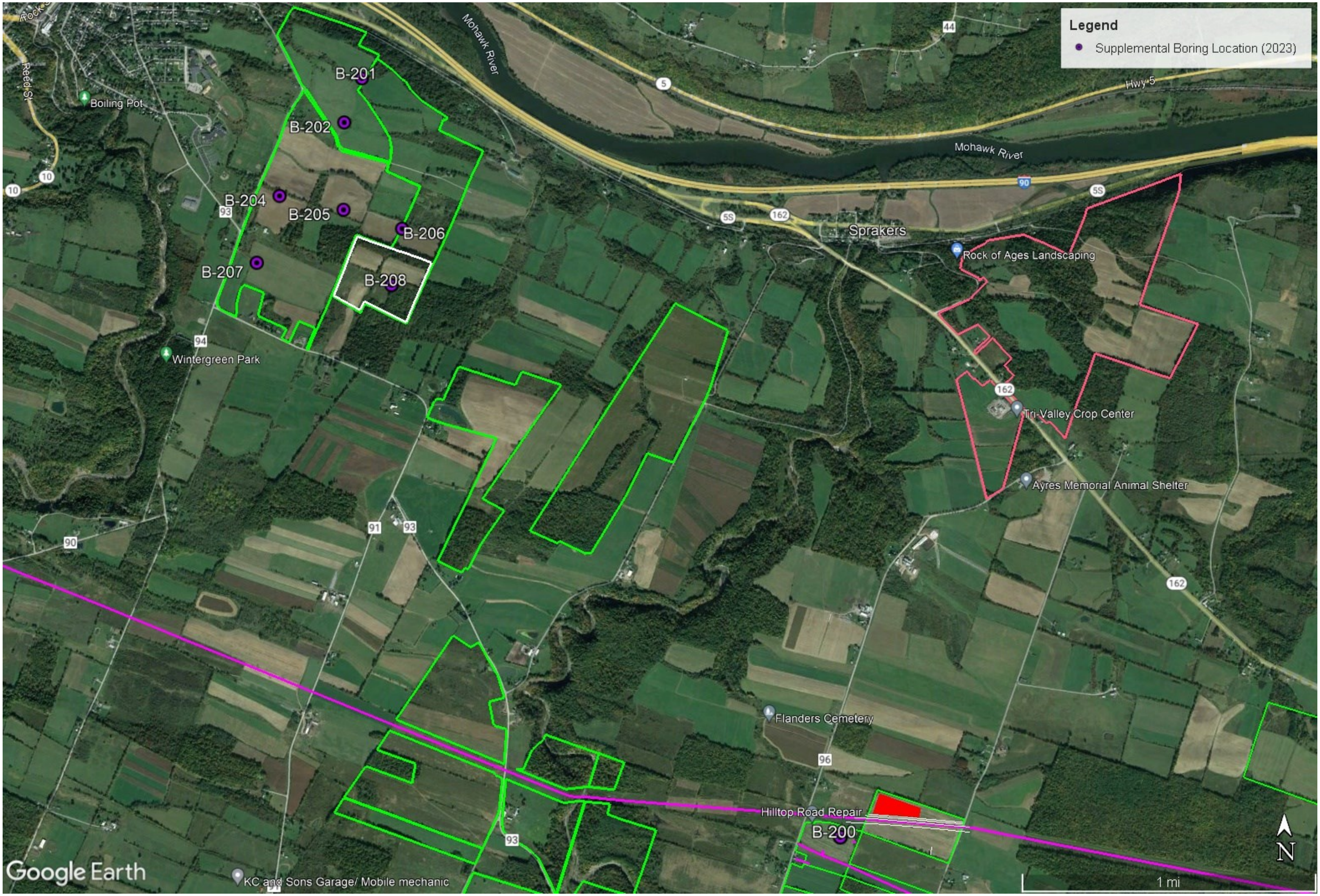
TRC Engineers, Inc.

James P. Benjamin, PE*
Geotechnical Project Manager
*NJ, PA

Izzaldin Al Mohd, PhD, PE
Chief Geotechnical Engineer
NY License No.: 105780

cc: Samantha Kranes, TRC

FIGURES



Project No.	427281.2022.GEOT
Date:	October 30,2023
For:	SED NY Holdings LLC

TRC
16000 Commerce Parkway, Mt. Laurel, New Jersey 08054
PH. (856) 273-1224 FAX. (856) 273-9244

APPROXIMATE TEST BORING LOCATIONS

Flat Creek Solar –Supplemental

Town of Root, Montgomery County, New York

FIGURE 1

FIELD DATA

TEST BORING LOGS

TEST BORING LOG

TRC

PROJECT: FLAT CREEK SOLAR - SUPPLEMENTAL
LOCATION: MONTOGOMERY COUNTY, NY

BORING	**B-200**
G.S. ELEV.	
FILE	427281.2022.GEO2
SHEET	1 OF 1

GROUNDWATER DATA			
FIRST ENCOUNTERED NE			
DEPTH	HOUR	DATE	ELAPSED TIME

METHOD OF ADVANCING BOREHOLE				
a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	30.0 '

DRILLER	R. CRUM
HELPER	D. CRUM
INSPECTOR	J. MATHEW
DATE STARTED	06/12/2023
DATE COMPLETED	06/12/2023

DEPTH	A	B	C	DESCRIPTION	Wc	REMARKS
0.7				***TOPSOIL***		
2.0	S-1	2 4 13 9		***BROWN SILTY GRAVEL, TR TO SM F/M/C SAND, TR CLAY***		
	S-2	6 6 3 5				
5	S-3	9 4 2 6				
	S-4	6 7 10 11		***BROWN SILTY CLAY, TR TO SM F/M/C SAND, TR GRAVEL***		
	S-5	16 19 50/0.2'				AUGER REFUSAL AT 9.2 FT (POSSIBLE BOULDER); BORING OFFSET AND CONTINUED
10						
13.0						
15	S-6	10 12 11 24		***BROWN SILT, TR CLAY, TR GRAVEL-SIZED ROCK FRAGMENTS***		
18.0						
20	S-7	8 10 11 13		***GRAY GRAVEL-SIZED ROCK FRAGMENTS, SM F/M/C SAND, TR CLAY***		
23.0						
25	S-8	5 8 9 15		***GRAY GRAVEL-SIZED ROCK FRAGMENTS, SM F/M/C SAND, SM SILT, TR CLAY***		
30.0	S-9	8 12 10 6				
				END OF BORING AT 30'		
35						

DRN.	ERJ
CKD.	JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR - SUPPLEMENTAL
LOCATION: MONTOGOMERY COUNTY, NY

BORING	**B-201**
G.S. ELEV.	
FILE	427281.2022.GEO2
SHEET	1 OF 1

GROUNDWATER DATA

FIRST ENCOUNTERED NE

DEPTH	HOUR	DATE	ELAPSED TIME

METHOD OF ADVANCING BOREHOLE

a	FROM 0.0 '	TO	10.0 '
d	FROM 10.0 '	TO	15.0 '

DRILLER	R. CRUM
HELPER	D. CRUM
INSPECTOR	J. MATHEW
DATE STARTED	06/13/2023
DATE COMPLETED	06/13/2023

DEPTH	A	B	C	DESCRIPTION	Wc	REMARKS
	S-1	1 3 4 4	2.0	***BROWN CLAYEY F/M/C SAND, TR TO SM GRAVEL***		
	S-2	4 4 2 4		***BROWN SILT, SM CLAY, TR GRAVEL, TR F/M/C SAND***		
5	S-3	4 4 5 5	6.0			
	S-4	5 6 9 16				
10	S-5	15 17 18 26	13.0	***BROWN SILT, TR TO SM F/M/C SAND, TR CLAY, TR GRAVEL***		
15	S-6	5 7 8 9	15.0	***BLACK SILT, SM F/M/C SAND, TR TO SM CLAY, TR GRAVEL***		
				END OF BORING AT 15'		
20						
25						
30						
35						

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DRN.	ERJ
CKD.	JPB

NEW PROJECTS TEST BORING LOG 427281.2022.GEO2 FLAT CREEK SUPPLEMENTAL.GPJ SITE BLAUVELT.GDT 3/26/24

TRC TEST BORING LOG

PROJECT: FLAT CREEK SOLAR - SUPPLEMENTAL

LOCATION: MONTOGOMERY COUNTY, NY

BORING	**B-202**
G.S. ELEV.	
FILE	427281.2022.GEO2
SHEET	1 OF 1

GROUNDWATER DATA			
FIRST ENCOUNTERED NE			
DEPTH	HOUR	DATE	ELAPSED TIME

METHOD OF ADVANCING BOREHOLE				
a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	15.0 '

DRILLER	R. CRUM
HELPER	D. CRUM
INSPECTOR	J. MATHEW
DATE STARTED	06/13/2023
DATE COMPLETED	06/13/2023

DEPTH	A	B	C	DESCRIPTION	Wc	REMARKS
	S-1	1 1 3 4		***BROWN CLAYEY F/M/C SAND, TR TO SM GRAVEL***		
	S-2	3 3 2 3	4.0			
5	S-3	4 3 8 12	6.0	***BROWN SILT, SM GRAVEL, TR TO SM SAND, TR TO SM CLAY***		
	S-4	14 25 19 25		***BLACK SILTY F/M/C SAND, TR TO SM GRAVEL SIZED ROCK FRAGMENTS, TR CLAY***		
10	S-5	39 33 40 28				
15	S-6	6 10 12 16	15.0			
				END OF BORING AT 15'		
20						
25						
30						
35						

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DRN. ERJ

CKD. JPB

TRC TEST BORING LOG

PROJECT: FLAT CREEK SOLAR - SUPPLEMENTAL
LOCATION: MONTOGOMERY COUNTY, NY

BORING	**B-204**
G.S. ELEV.	
FILE	427281.2022.GEO2
SHEET	1 OF 1

GROUNDWATER DATA

FIRST ENCOUNTERED NE

DEPTH	HOUR	DATE	ELAPSED TIME

METHOD OF ADVANCING BOREHOLE

a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	13.8 '

DRILLER	R. CRUM
HELPER	D. CRUM
INSPECTOR	J. MATHEW
DATE STARTED	06/12/2023
DATE COMPLETED	06/12/2023

DEPTH	A	B	C	DESCRIPTION	Wc	REMARKS
	S-1	WH 2 4 5		***BROWN CLAY, TR F/M/C SAND***		
	S-2	5 6 5 4	4.0			
5	S-3	3 4 6 5		***BROWN SILT, TR TO SM GRAVEL, TR TO SM CLAY***		
	S-4	5 11 2 50/0.3'	8.0			AUGER REFUSAL AT 8 FT; BORING OFFSET 10 FT AND CONTINUED
10	S-5	21 36 38 41		***GRAY BROWN GRAVEL-SIZED ROCK FRAGMENTS AND F/M/C SAND, TR TO SM SILT***		
	S-6	27 50/0.3'	13.8			
15				***END OF BORING AT 13.8'***		
20						
25						
30						
35						

WH = WEIGHT OF HAMMER
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DRN.	ERJ
CKD.	JPB

NEW PROJECTS TEST BORING LOG 427281.2022.GEO2 FLAT CREEK SUPPLEMENTAL.GPJ SITE BLAUVELT.GDT 3/26/24

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR - SUPPLEMENTAL
LOCATION: MONTOGOMERY COUNTY, NY

BORING	B-205
G.S. ELEV.	
FILE	427281.2022.GEO2
SHEET	1 OF 1

GROUNDWATER DATA

FIRST ENCOUNTERED NE

DEPTH	HOUR	DATE	ELAPSED TIME

METHOD OF ADVANCING BOREHOLE

a	FROM	0.0 '	TO	9.5 '
d	FROM	9.5 '	TO	10.5 '

DRILLER	R. CRUM
HELPER	D. CRUM
INSPECTOR	J. MATHEW
DATE STARTED	06/12/2023
DATE COMPLETED	06/12/2023

DEPTH	A	B	C	DESCRIPTION	Wc	REMARKS
				0.5 ***TOPSOIL***		
	S-1	1 2 4 6		***BROWN CLAYEY F/M/C SAND, TR TO SM GRAVEL*** 2.0		
	S-2	6 4 4 2		***BROWN SILTY CLAY, TR TO SM F/M/C SAND, TR GRAVEL*** 4.0		
5	S-3	4 3 4 7		***BLACK GRAVEL SIZED ROCK FRAGMENTS AND SILT, TR TO SM F/M/C SAND*** 6.0		
	S-4	6 8 15 14		***BROWN SILTY CLAY, TR TO SM F/M/C SAND, TR GRAVEL***		
10	S-5	11 10 15 50/0.0'		10.5		AUGER REFUSAL AT 10.5 FT
				END OF BORING AT 10.5'		
15						
20						
25						
30						
35						

DRN.	ERJ
CKD.	JPB

TEST BORING LOG

BORING	B-206
G.S. ELEV.	
FILE	427281.2022.GEO2
SHEET	1 OF 1

PROJECT: FLAT CREEK SOLAR - SUPPLEMENTAL

LOCATION: MONTOGOMERY COUNTY, NY

GROUNDWATER DATA			
FIRST ENCOUNTERED N/A			
DEPTH	HOUR	DATE	ELAPSED TIME
5.8'	AD	6/12	0 HR
NE	0	6/12	1

METHOD OF ADVANCING BOREHOLE	
a	FROM 0.0 ' TO 6.8 '

DRILLER	R. CRUM
HELPER	D. CRUM
INSPECTOR	J. MATHEW
DATE STARTED	06/12/2023
DATE COMPLETED	06/12/2023

DEPTH	A	B	C	DESCRIPTION	Wc	REMARKS
	S-1	4 6 4 7		***BROWN CLAYEY F/M/C SAND, TR TO SM GRAVEL*** 2.0		
	S-2	5 4 3 5		***BROWN SILTY CLAYEY F/M/C SAND, TR TO SM GRAVEL***		
5	S-3	3 4 2 50/0.2'				AUGER REFUSAL AT 6 FT
	S-4	16 50/0.3'		6.8		
				END OF BORING AT 6.8'		
10						
15						
20						
25						
30						
35						

NEW PROJECTS TEST BORING LOG 427281.2022.GEO2 FLAT CREEK SUPPLEMENTAL.GPJ SITE BLAUVELT.GDT 3/26/24

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DRN.	ERJ
CKD.	JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR - SUPPLEMENTAL
LOCATION: MONTOGOMERY COUNTY, NY

BORING	**B-207**
G.S. ELEV.	
FILE	427281.2022.GEO2
SHEET	1 OF 1

GROUNDWATER DATA			
FIRST ENCOUNTERED NE			
DEPTH	HOUR	DATE	ELAPSED TIME

METHOD OF ADVANCING BOREHOLE				
a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	15.0 '

DRILLER	R. CRUM
HELPER	D. CRUM
INSPECTOR	J. MATHEW
DATE STARTED	06/11/2023
DATE COMPLETED	06/11/2023

DEPTH	A	B				C	DESCRIPTION	Wc	REMARKS
						0.5	***TOPSOIL (0.0 - 6.0")***		
	S-1	3	3	4	4	2.0	***BROWN CLAY, TR TO SM F/M/C SAND, TR GRAVEL***		
	S-2	5	6	9	10	4.0	***BROWN SILTY CLAY***		
5	S-3	17	13	13	15	6.0	***BROWN SILT, SM CLAY, TR F/M/C SAND***		S-3: HYDROCARBON LIKE ODOR
	S-4	6	7	10	12				
10	S-5	11	10	11	14		***BROWN SILT, TR TO SM CLAY, TR F/M/C SAND***		
15	S-6	5	9	10	13	15.0			
							END OF BORING AT 15'		
20									
25									
30									
35									

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DRN.	ERJ
CKD.	JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR - SUPPLEMENTAL
LOCATION: MONTOGOMERY COUNTY, NY

BORING	**B-208**
G.S. ELEV.	
FILE	427281.2022.GEO2
SHEET	1 OF 1

GROUNDWATER DATA

FIRST ENCOUNTERED NE

DEPTH	HOUR	DATE	ELAPSED TIME

METHOD OF ADVANCING BOREHOLE

a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	15.0 '

DRILLER	R. CRUM
HELPER	D. CRUM
INSPECTOR	J. MATHEW
DATE STARTED	06/12/2023
DATE COMPLETED	06/12/2023

DEPTH	A	B	C	DESCRIPTION	Wc	REMARKS
			0.5	***TOPSOIL***		SURFICIAL BOULDERS OBSERVED
	S-1	1 6 8 15		***BROWN CLAYEY F/M/C SAND, TR TO SM GRAVEL***		
	S-2	14 5 6 5	4.0			
5	S-3	5 5 6 9		***BROWN SILT, SM F/M/C SAND, TR TO SM GRAVEL, TR CLAY***		DIFFICULT AUGERING FROM 6 FT
	S-4	12 12 14 7	8.0			
10	S-5	23 37 43 46		***BLACK GRAVELLY SILT, TR TO SM F/M/C SAND, TR CLAY***		
			13.0			
15	S-6	5 7 12 15	15.0	***BLACKSILTY F/M/C SAND, SM GRAVEL***		
				END OF BORING AT 15'		
20						
25						
30						
35						

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DRN.	ERJ
CKD.	JPB

KEY TO SYMBOLS

Symbol Description

Strata symbols

Clay with High Plasticity	USCS Gravelly Silt
Clay with Low Plasticity	USCS Sandy Silt
Silty Clay	Clayey Sand
Silty Gravel	Silty, Clayey Sand
Poorly-graded Gravel with Clay	Silty Sand
Poorly-graded Sandy Gravel	Topsoil
Silt with Low Plasticity	

Symbol Description

Misc. Symbols

Water table first encountered
Water table first reading after drilling
Water table second reading after drilling
Water table third reading after drilling
NR Not Recorded
MH Moh's Hardness

Sample Type

Split Barrel

Lab Symbols

FINES = Fines %

LL = Liquid Limit %

PI = Plasticity Index %

U_c = Unconfined Compressive Strength

W/V = Unit Weight

Notes:

COLUMN A) Soil sample number.

COLUMN B) FOR SOIL SAMPLE (ASTM D 1586): indicates number of blows obtained for each 6 ins. penetration of the standard split-barrel sampler. FOR ROCK CORING (ASTM D2113): indicates percent recovery (REC) per run and rock quality designation (RQD). RQD is the % of rock pieces that are 4 ins. or greater in length in a core run.

COLUMN C) Strata symbol as assigned by the geotechnical engineer.

DESCRIPTION) Description including color, texture and classification of subsurface material as applicable (see Descriptive Terms). Estimated depths to bottom of strata as interpolated from the borings are also shown.

DESCRIPTIVE TERMS: F = fine M = medium C = coarse

RELATIVE PROPORTIONS:

-Descriptive Term-	-Symbol-	-Est. Percentages-
Trace	TR	1-10
Trace to Some	TR to SM	10-15
Some	SM	15-30
Silty, Sandy, Clayey, Gravelly	-	30-40
And	and	40-50

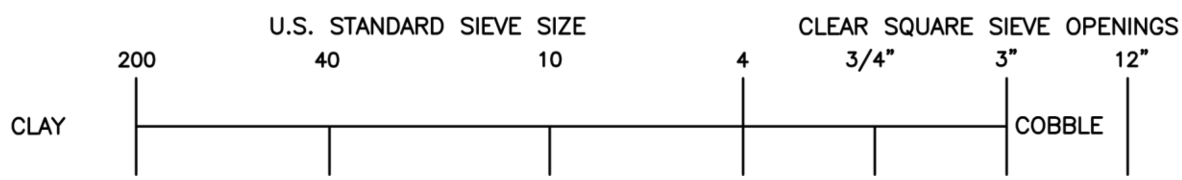
REMARKS) Special conditions or test data as noted during investigation. Note that W.O.P. indicates water observation pipes.

* Free water level as noted may not be indicative of daily, seasonal, tidal, flood, and/or long term fluctuations.

SILTS AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

PRIMARY DIVISIONS			SOIL TYPE		SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (Less than 5% Fines)	GW		Well graded gravels, gravel–sand mixtures, little or no fines
			GP		Poorly graded gravels or gravel–sand mixtures, little or no fines
		GRAVEL WITH FINES	GM		Silty gravels, gravel–sand–silt mixtures, plastic fines
			GC		Clayey gravels, gravel–sand–clay mixtures, plastic fines
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (Less than 5% Fines)	SW		Well graded sands, gravelly sands, little or no fines
			SP		Poorly graded sands or gravelly sands, little or no fines
		SANDS WITH FINES	SM		Silty sands, sand–silt–mixtures, non–plastic fines
			SC		Clayey sands, sand–clay mixtures, plastic fines
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50 %		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50 %		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT		Peat and other highly organic soils

DEFINITION OF TERMS



METHODS AND TOOLS FOR **ADVANCING BOREHOLES**

a - Continuous Sampling

b - Finger type rotary cutter head 6 in. diameter (open hole)

d - Drilled in casing 3 3/8 in. ID; 8 in. OD (hollow-stem auger)

e - Drilled in casing 2 1/2 in. ID; 6 1/4 in. OD (hollow-stem auger)

f - Driven flush joint casing (BW) - 2 3/8 in. ID; 2 7/8 in. OD (300 lb. hammer, 18 in. drop)

g - Driven flush joint casing (NW) - 3 in. ID; 3 1/2 in. OD (300 lb. hammer, 18 in. drop)

h - Tricone Roller Bit - 2 3/8 in. or 2 7/8 in.

i - Drilling Mud (Slurry Method)

c_1 - Double tube diamond core barrel (BX) : core size: 1.6 in.
hole size: 2.36 in.

c_2 - Double tube diamond core barrel (NX) : core size: 2.0 in.
hole size: 2.98 in.

c_3 - 4 in. thin walled diamond bit

c_4 - 6 in. thin walled diamond bit

METHODS AND TOOLS FOR **TESTING AND SAMPLING SOILS AND/OR ROCKS**

Penetration test and split-barrel sampling of soils, ASTM D1586

140 lb. hammer, 30 in. drop. recording number of blows obtained for each 6 in. penetration usually for a total of 18 in. penetration of the standard 2 in. O.D. and 1 3/8 in. I.D. split-barrel sampler. Penetration resistance (N) is the total number of blows required for the second and third 6 in. penetration.

Thin walled tube sampling, ASTM D1587

Samples are obtained by pressing thin-walled steel, brass or aluminum tubes into soil. Standard thin-walled steel tubes:

O.D. in.	2	3
I.D. in.	1.94	2.87

Diamond core drilling, ASTM D2113

Diamond core drilling is used to recover intact samples of rock and some hard soils generally with the use of a:

BWM double tube core barrel
NWM double tube core barrel

FIELD RESISTIVITY DATA

TRC Engineers, Inc.
Field Resistivity Testing
Wenner Method

Project:	Flat Creek Solar	Project No.:	427281.2022.GEO2
Location:	Montgomery Co., NY	Client:	SED NY Holdings, LLC
Site Conditions:	_X_ Dry ___Wet __ Ideal	Date Completed:	6/12/2023
Ambient Temperature:	83˚F	Operator:	J. Mathew
Rain storms previous day- No		Helper:	NA

Test	Electrode Spacing (ft)	Resistance ⌖ (Ohms)	Apparent Resistivity (Ohm-cm)	Remarks
Line 1	2.5	14.5	6,942	
	5.0	7.14	6,837	
	10.0	3.74	7,162	
	20.0	2.30	8,809	
	25.0	2.15	10,293	

Line 1 Direction: ___X___ N-S
_______ NE_SW
_______ E-W
_______ NW-SE

Test Location B-200

TRC Engineers, Inc.
Field Resistivity Testing
Wenner Method

Project:	Flat Creek Solar	Project No.:	427281.2022.GEO2
Location:	Montgomery Co., NY	Client:	SED NY Holdings, LLC
Site Conditions:	_X_ Dry __Wet __ Ideal	Date Completed:	6/12/2023
Ambient Temperature:	83°F	Operator:	J. Mathew
Rain storms previous day- No		Helper:	NA

Test	Electrode Spacing (ft)	Resistance ⌖ (Ohms)	Apparent Resistivity (Ohm-cm)	Remarks
Line 2	2.5	14.0	6,683	
	5.0	7.35	7,038	
	10.0	4.01	7,679	
	20.0	2.24	8,579	
	25.0	1.96	9,384	

Line 2 Direction: _______ N-S
_______ NE_SW
___X___ E-W
_______ NW-SE

Test Location B-200

TRC Engineers, Inc.
Field Resistivity Testing
Wenner Method

Project:	Flat Creek Solar	Project No.:	427281.2022.GEO2
Location:	Montgomery Co., NY	Client:	SED NY Holdings, LLC
Site Conditions:	__ Dry _X_Wet __ Ideal	Date Completed:	6/13/2023
Ambient Temperature:	78˚F	Operator:	J. Mathew
Rain storms previous day- Yes		Helper:	NA

Test	Electrode Spacing (ft)	Resistance ϕ (Ohms)	Apparent Resistivity (Ohm-cm)	Remarks
Line 1	2.5	8.18	3,916	
	5.0	5.17	4,950	
	10.0	3.05	5,841	
	20.0	1.78	6,817	
	25.0	1.64	7,852	

Line 1 Direction:
- X N-S
- ___ NE_SW
- ___ E-W
- ___ NW-SE

Test Location B-202

TRC Engineers, Inc.
Field Resistivity Testing
Wenner Method

Project:	Flat Creek Solar	Project No.:	427281.2022.GEO2
Location:	Montgomery Co., NY	Client:	SED NY Holdings, LLC
Site Conditions:	__ Dry _X_ Wet __ Ideal	Date Completed:	6/13/2023
Ambient Temperature:	78°F	Operator:	J. Mathew
Rain storms previous day- Yes		Helper:	NA

Test	Electrode Spacing (ft)	Resistance ϕ (Ohms)	Apparent Resistivity (Ohm-cm)	Remarks
Line 2	2.5	9.09	4,352	
	5.0	5.49	5,257	
	10.0	2.99	5,726	
	20.0	1.89	7,239	
	25.0	1.73	8,282	

Line 2 Direction:
- ___ N-S
- ___ NE_SW
- X E-W
- ___ NW-SE

Test Location B-202

LABORATORY DATA

SUMMARY OF LABORATORY TEST DATA

Project Name: Flat Creek Solar
Montgomery Co., NY
Client Name: Sun East Development, LLC
TRC Project #: 427281.2022.GEO2

SAMPLE IDENTIFICATION			USCS Group	Moisture Content (%)	GRAIN SIZE DISTRIBUTION USCS GRADATION				PLASTICITY			
Source #	Sample #	Depth (ft)			Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)
B-200	S-3 & S-4	4.0-8.0	CL-ML[1]	11.2	-	-	-		21	15	6	-0.6
B-200	S-8 & S-9	23.0-30.0	GC[2]	7.0	32.7	29.9	37.4		-	-	-	-
B-200 & B-207	BULK 1	0.0-5.0	CH	17.9	3.6	13.1	83.3		52	23	29	-0.2
B-201	S-2 & S-3	2.0-6.0	ML[1]	11.7	-	-	-		16	13	3	-0.4
B-201, 202, 205 to 208	BULK 2 & 3	0.0-5.0	SC	7.8	12.2	40.0	47.8		20	12	8	-0.5
B-202	S-4 & S-5	6.0-10.0	SM[2]	6.1	13.2	51.3	35.5		-	-	-	-
B-204	S-2	2.0-4.0	CL[1]	18.6	-	-	-		27	18	9	0.1
B-205	S-4 & S-5	6.0-10.0	CL-ML[1]	11.6	-	-	-		18	14	4	-0.6
B-206	S-2 & S-3	2.0-6.0	SC-SM[2]	19.2	11.6	51.0	37.4		-	-	-	-
B-208	S-6	13.0-15.0	SM[2]	7.9	18.0	37.3	44.7		-	-	-	-

Notes:

(1) USCS Group based on fines only. No gradation was requested to be completed.

(2) USCS Group based on grain size distribution and visual classification. An Atterberg was not requested to be completed.

DRAWN BY: TBT 07/20/23

CHECKED BY: JPB 07/20/23

SUMMARY OF LABORATORY TEST DATA

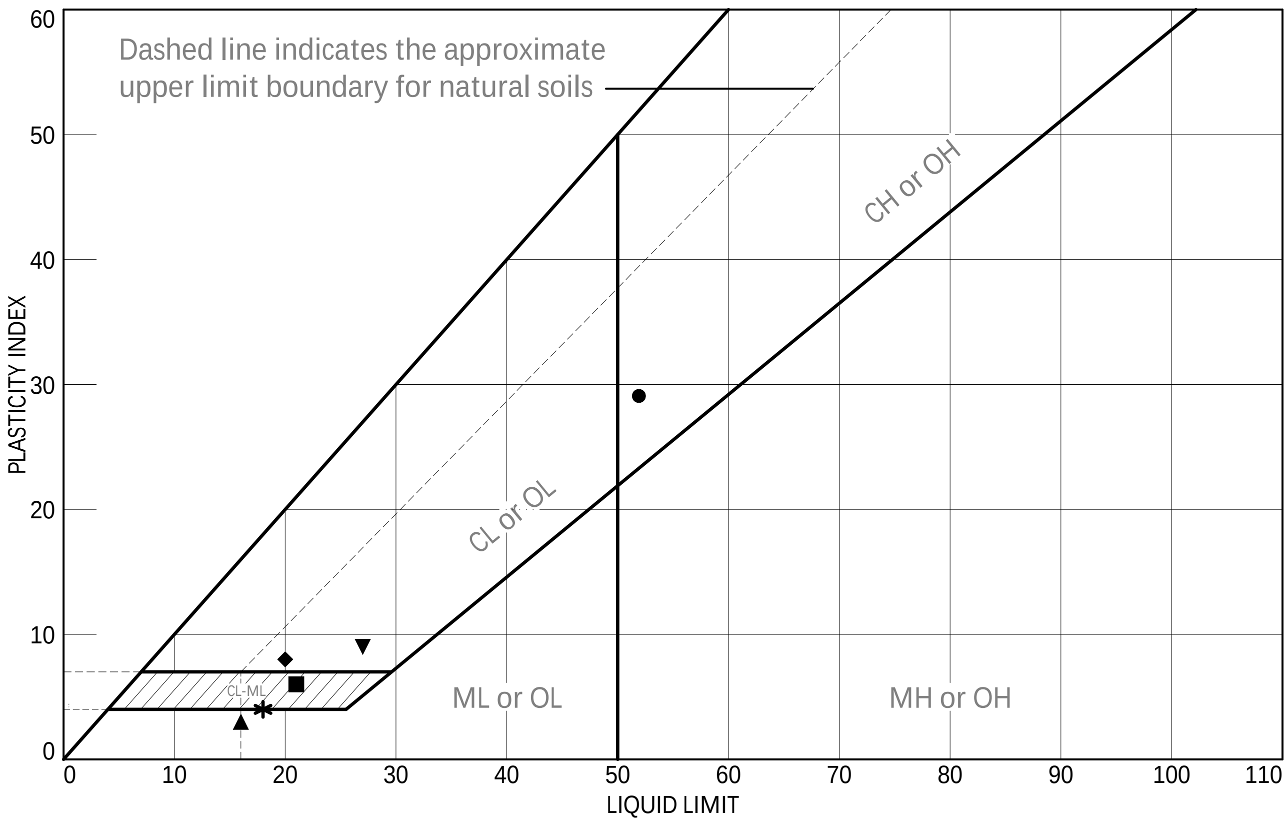
Project Name: Flat Creek Solar
Montgomery Co., NY
Client Name: Sun East Development, LLC
TRC Project #: 427281.2022.GEO2

SAMPLE IDENTIFICATION			COMPACTION CHARACTERISTICS			Thermal Resistivity (°C-cm/W)			
Source #	Sample #	Depth (ft)	Type of Test	Maximum Density (PCF)	Optimum Moisture Content (%)	Wet	Dry	Moisture Content (%)	Dry Density (pcf)
B-201, 202, 205 to 208	BULK 2 & 3	0.0-5.0	ASTM D698, C	127.5	8.4	46.4	127.8	10.4	114.8

DRAWN BY: TBT 07/20/23

CHECKED BY: JPB 07/20/23

Atterberg Limits and Moisture Content Report



	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LIQUIDITY INDEX	USCS
●	B-200 & B-207	BULK 1	0.0-5.0 FT	17.9	23	52	29	-0.2	CH
■	B-200	S-3 & S-4	4.0-8.0 FT	11.2	15	21	6	-0.6	CL-ML*
▲	B-201	S-2 & S-3	2.0-6.0 FT	11.7	13	16	3	-0.4	ML*
◆	B-201, 202, 204, 206, & 208	BULK 2 & 3	0.0-5.0 FT	7.8	12	20	8	-0.5	SC
▼	B-204	S-2	2.0-4.0 FT	18.6	18	27	9	0.1	CL*
✱	B-205	S-4 & S-5	6.0-10.0 FT	11.6	14	18	4	-0.6	CL-ML*

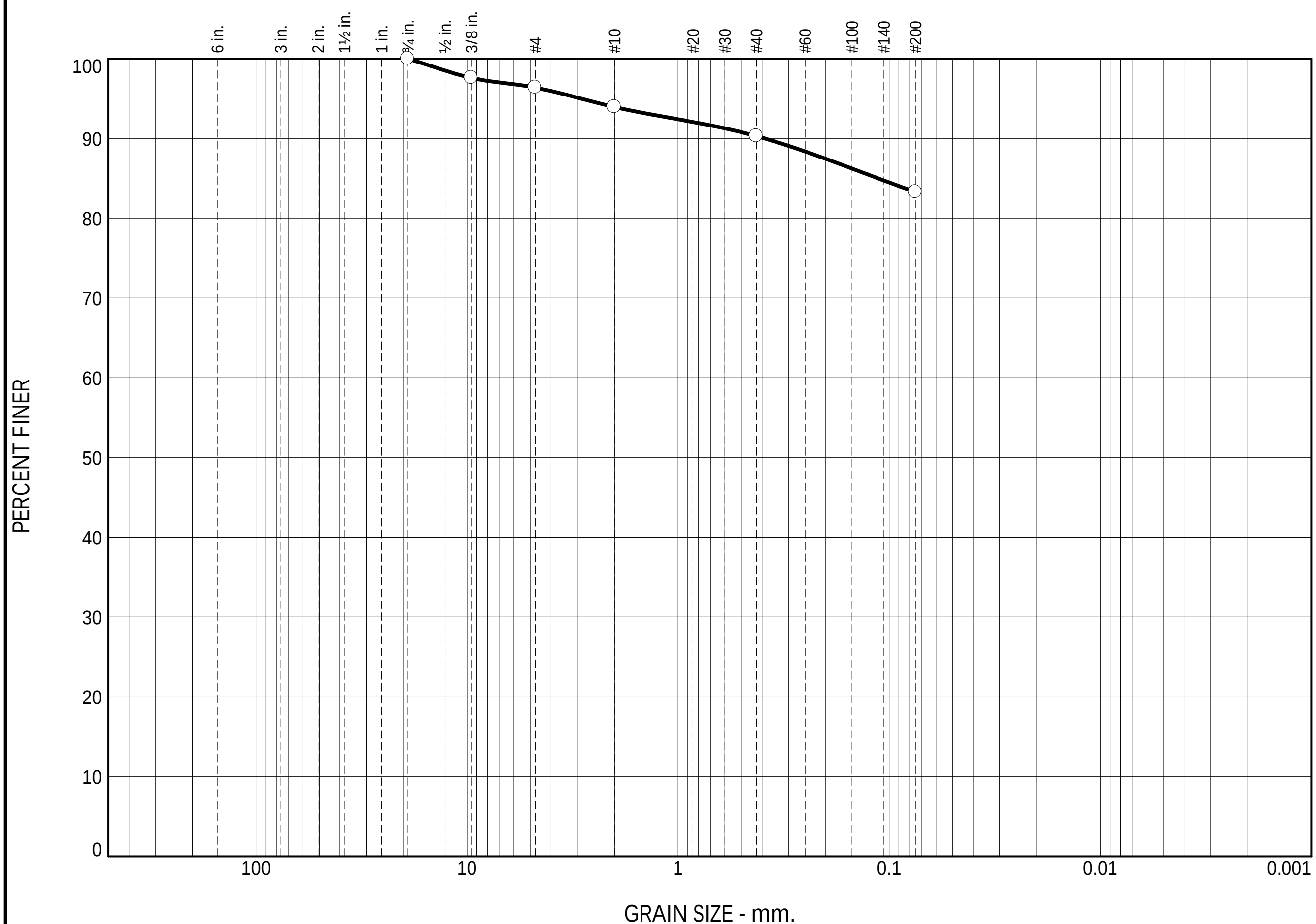
TRC
Engineers, Inc.
Mt. Laurel, NJ

Client: SUNEAST DEVELOPMENT, LLC
Project: SUNEAST - FLAT CREEK SOLAR

Project No.: 427281.2022.GEO2

Figure 1

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	3.6	2.5	3.6	7.0	83.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	52	23	0.1129							

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BROWN FAT CLAY WITH SAND	06/29/23	CH	17.9

Project No. 427281.2022.GEO2 Client: SUNEAST DEVELOPMENT, LLC

Project: SUNEAST - FLAT CREEK SOLAR

○ Source: B-200 & B-207 Depth: 0.0-5.0 FT Sample No.: BULK 1

Remarks:

○SAMPLE DESCRIPTION BASED ON USCS

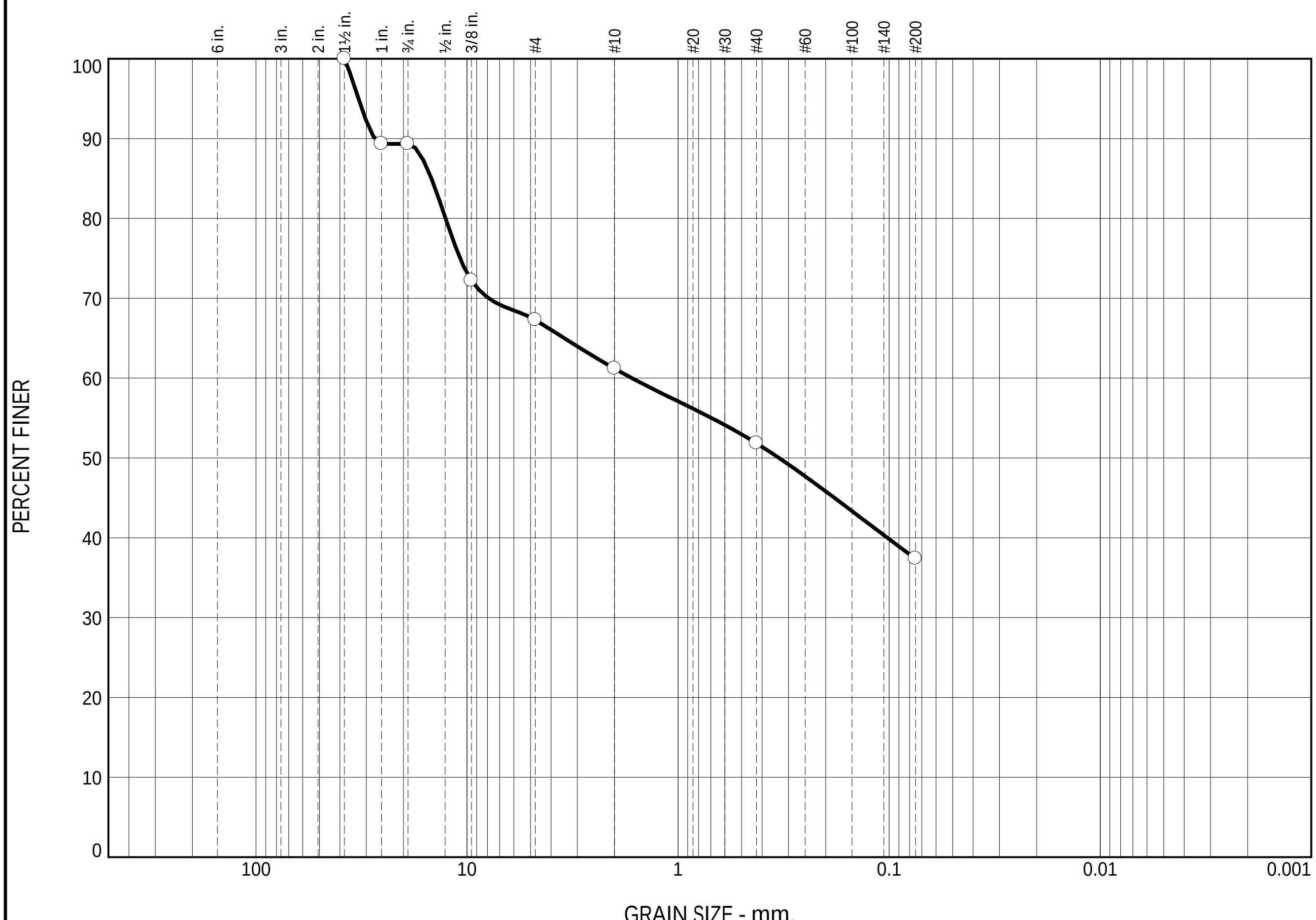
TRC Engineers, Inc.

Mt. Laurel, NJ

Figure 2

Tested By: JC 06/29/23 Checked By: JPB 07/05/23

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	10.7	22.0	6.1	9.4	14.4	37.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			14.7448	1.6558	0.3328					

	MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○	BLACK CLAYEY GRAVEL WITH SAND	07/14/23	GC	7.0

Project No. 427281.2022.GEO2 Client: SUNEAST DEVELOPMENT, LLC

Project: SUNEAST - FLAT CREEK SOLAR

○ Source of Sample: B-200 Depth: 23.0-30.0 FT Sample Number: S-8 & S-9

Remarks:

○SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION

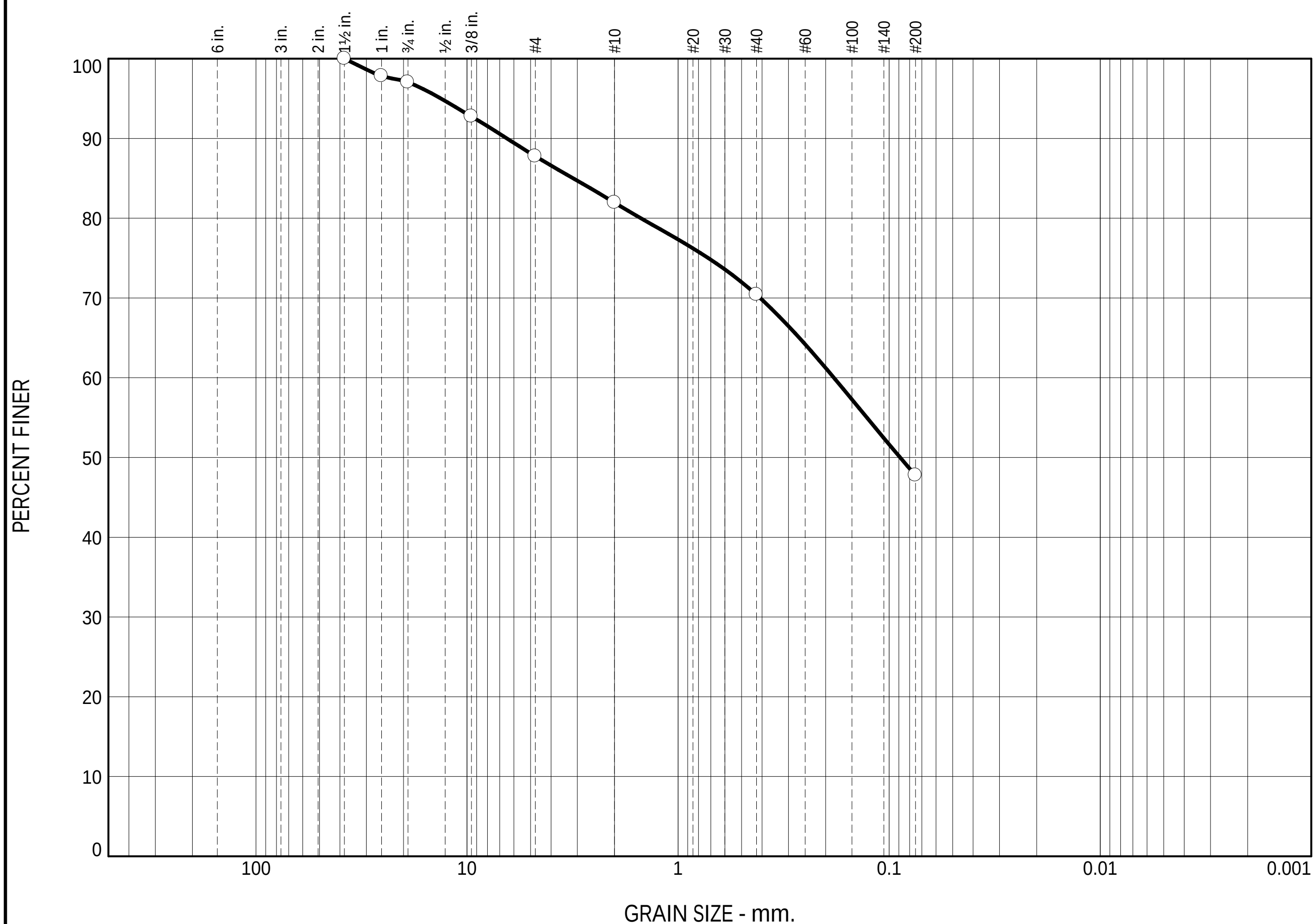
TRC Engineers, Inc.

Mt. Laurel, NJ

Figure 3

Tested By: EJ 07/14/23 Checked By: JPB 07/20/23

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	3.0	9.2	5.9	11.5	22.6	47.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	20	12	3.1402	0.1826	0.0887					

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BROWN CLAYEY SAND	06/29/23	SC	7.8

Project No. 427281.2022.GEO2 Client: SUNEAST DEVELOPMENT, LLC

Project: SUNEAST - FLAT CREEK SOLAR

○ Source: B-201, 202, 204, 206, & 208 Depth: 0.0-5.0 FT Sample No.: BULK 2 & 3

Remarks:

○SAMPLE DESCRIPTION BASED ON USCS

TRC Engineers, Inc.

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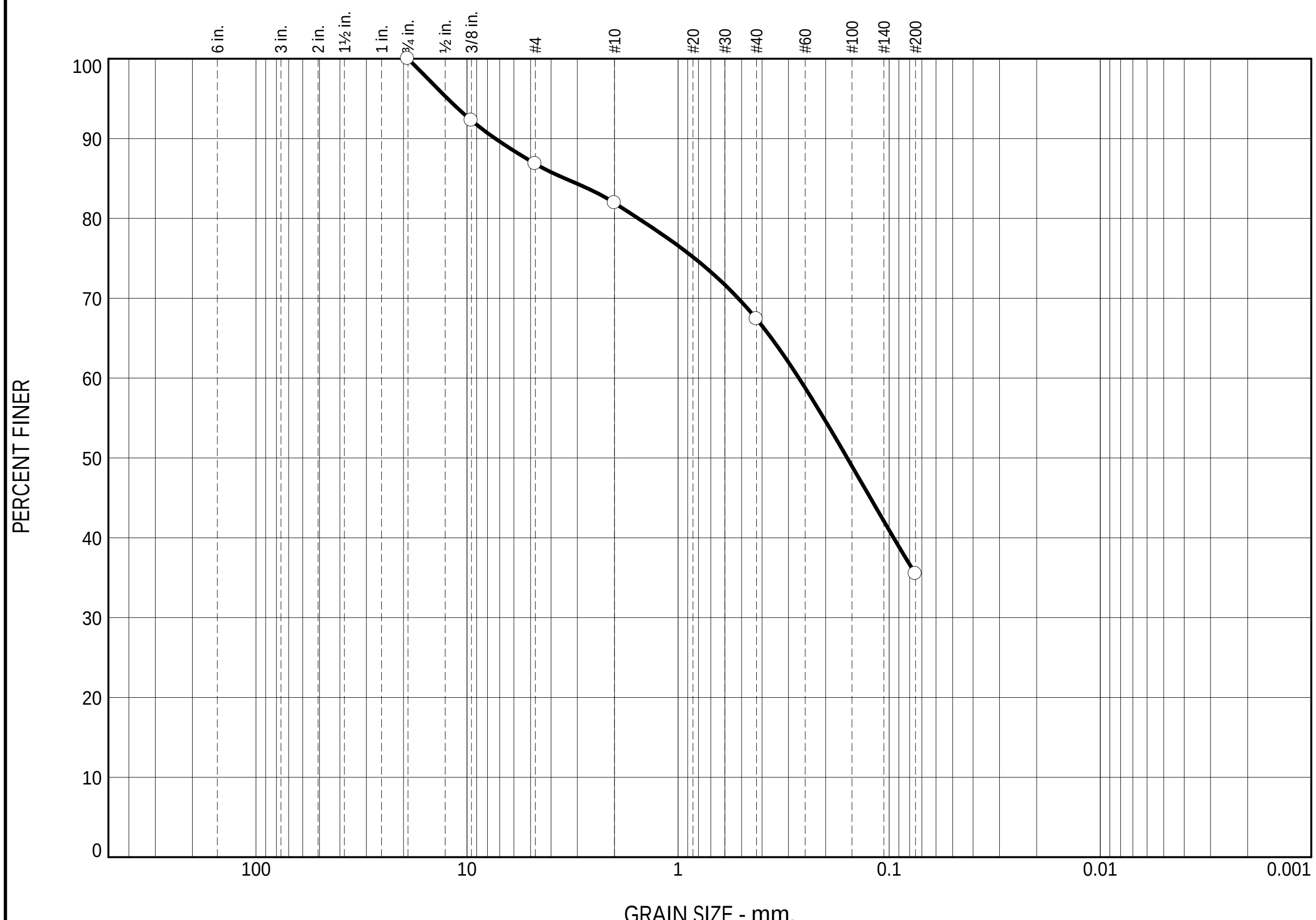
Figure 4

Tested By: JC 06/29/23 Checked By: JPB 07/05/23

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	13.2	4.9	14.5	31.9	35.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			3.4285	0.2675	0.1579					

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BLACK SILTY SAND	07/14/23	SM	6.1

Project No. 427281.2022.GEO2 Client: SUNEAST DEVELOPMENT, LLC
Project: SUNEAST - FLAT CREEK SOLAR

○ Source of Sample: B-202 Depth: 6.0-10.0 FT Sample Number: S-4 & S-5

Remarks:
○SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION

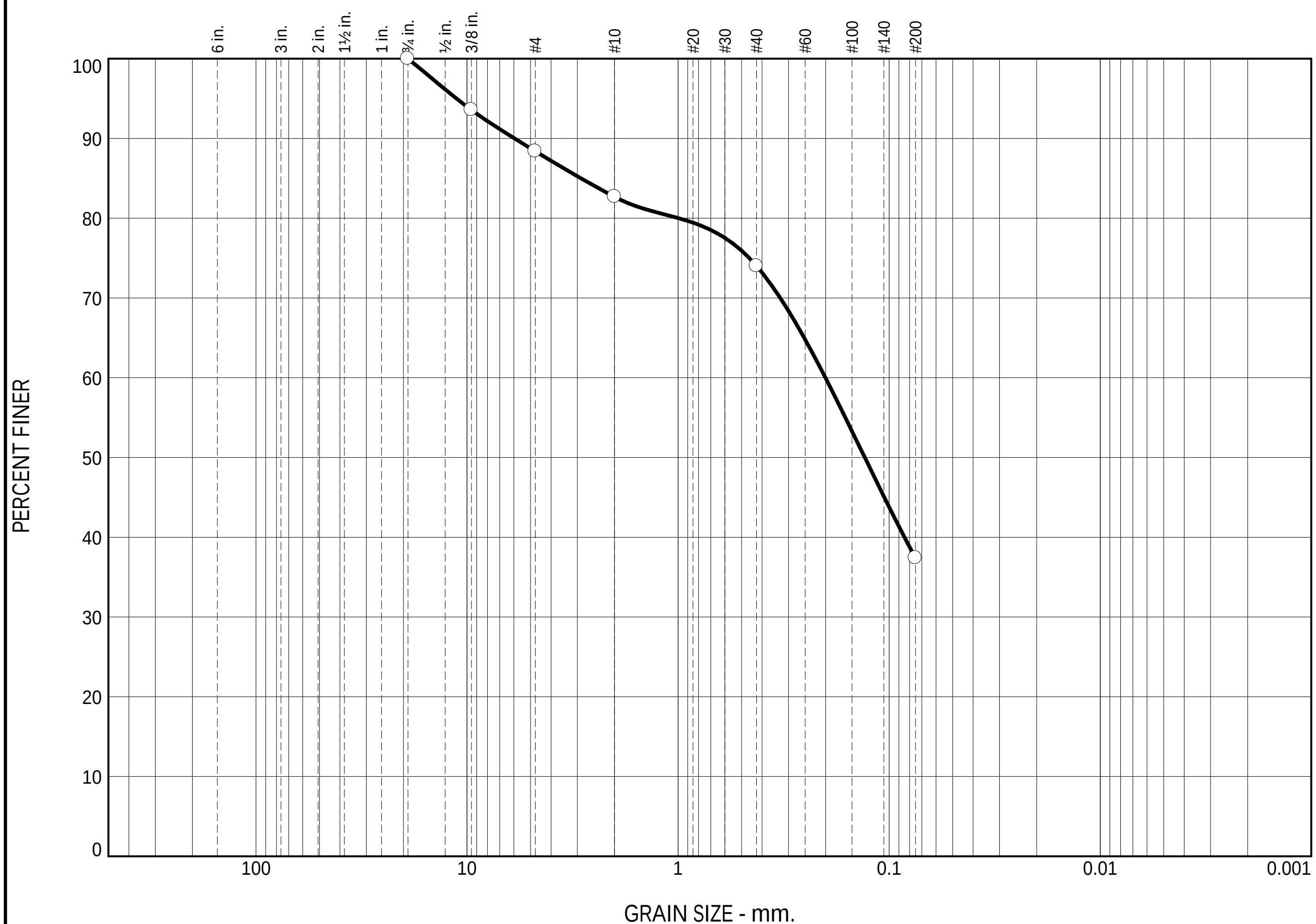
TRC Engineers, Inc.

Mt. Laurel, NJ

Figure 5

Tested By: EJ 07/14/23 Checked By: JPB 07/20/23

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	11.6	5.7	8.7	36.6	37.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			2.8845	0.2003	0.1304					

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BROWN SILTY, CLAYEY SAND	07/14/23	SC-SM	19.2

Project No. 427281.2022.GEO2 Client: SUNEAST DEVELOPMENT, LLC

Project: SUNEAST - FLAT CREEK SOLAR

○ Source of Sample: B-206 Depth: 2.0-6.0 FT Sample Number: S-2 & S-3

Remarks:

○SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION

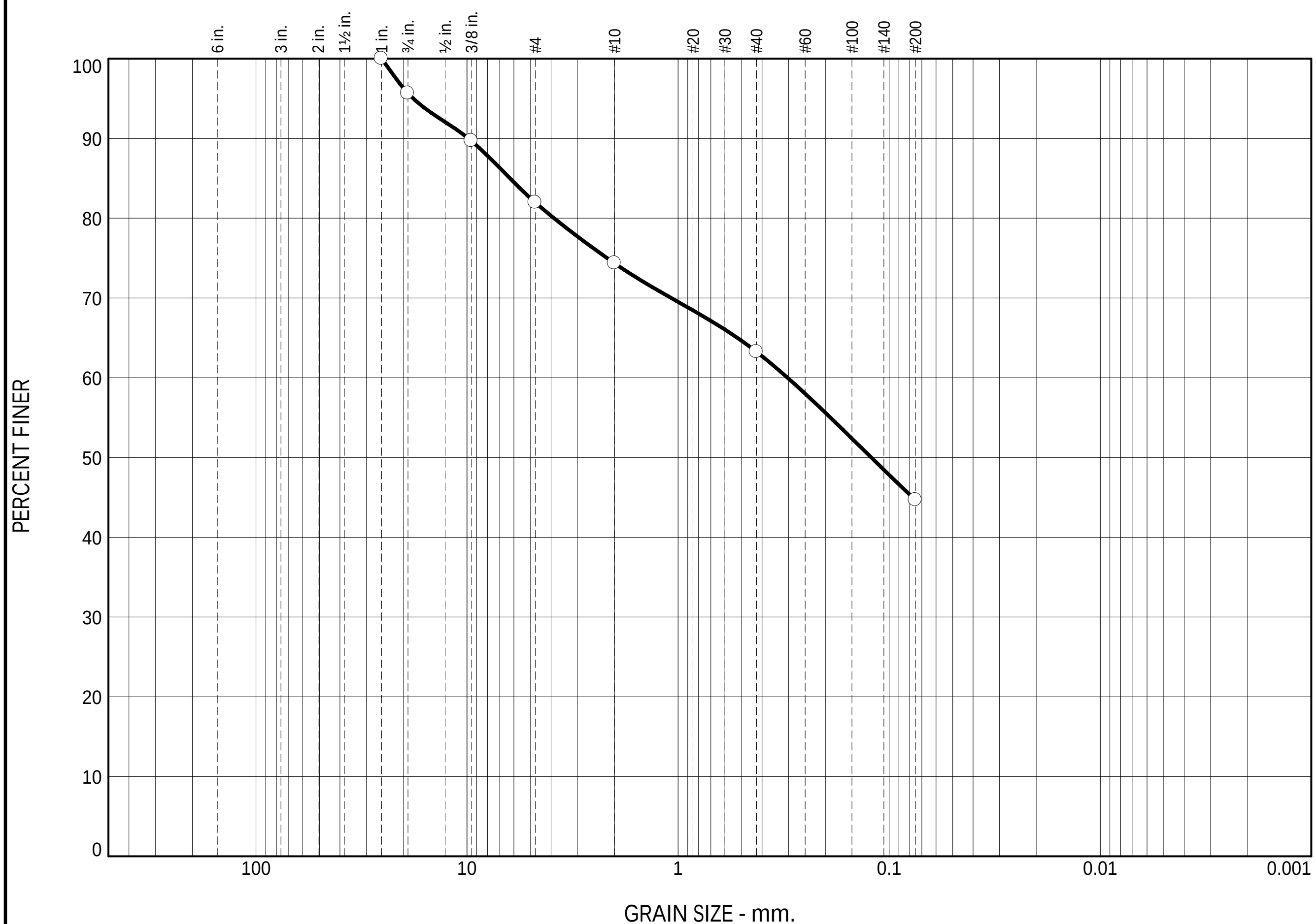
TRC Engineers, Inc.

Mt. Laurel, NJ

Figure 6

Tested By: EJ 07/14/23 Checked By: JPB 07/20/23

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	4.3	13.7	7.6	11.2	18.5	44.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			6.2612	0.3029	0.1216					

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BLACK SILTY SAND WITH GRAVEL	07/17/23	SM	7.9

Project No. 427281.2022.GEO2 Client: SUNEAST DEVELOPMENT, LLC
Project: SUNEAST - FLAT CREEK SOLAR

○ Source of Sample: B-208 Depth: 13.0-15.0 FT Sample Number: S-6

Remarks:
○SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION

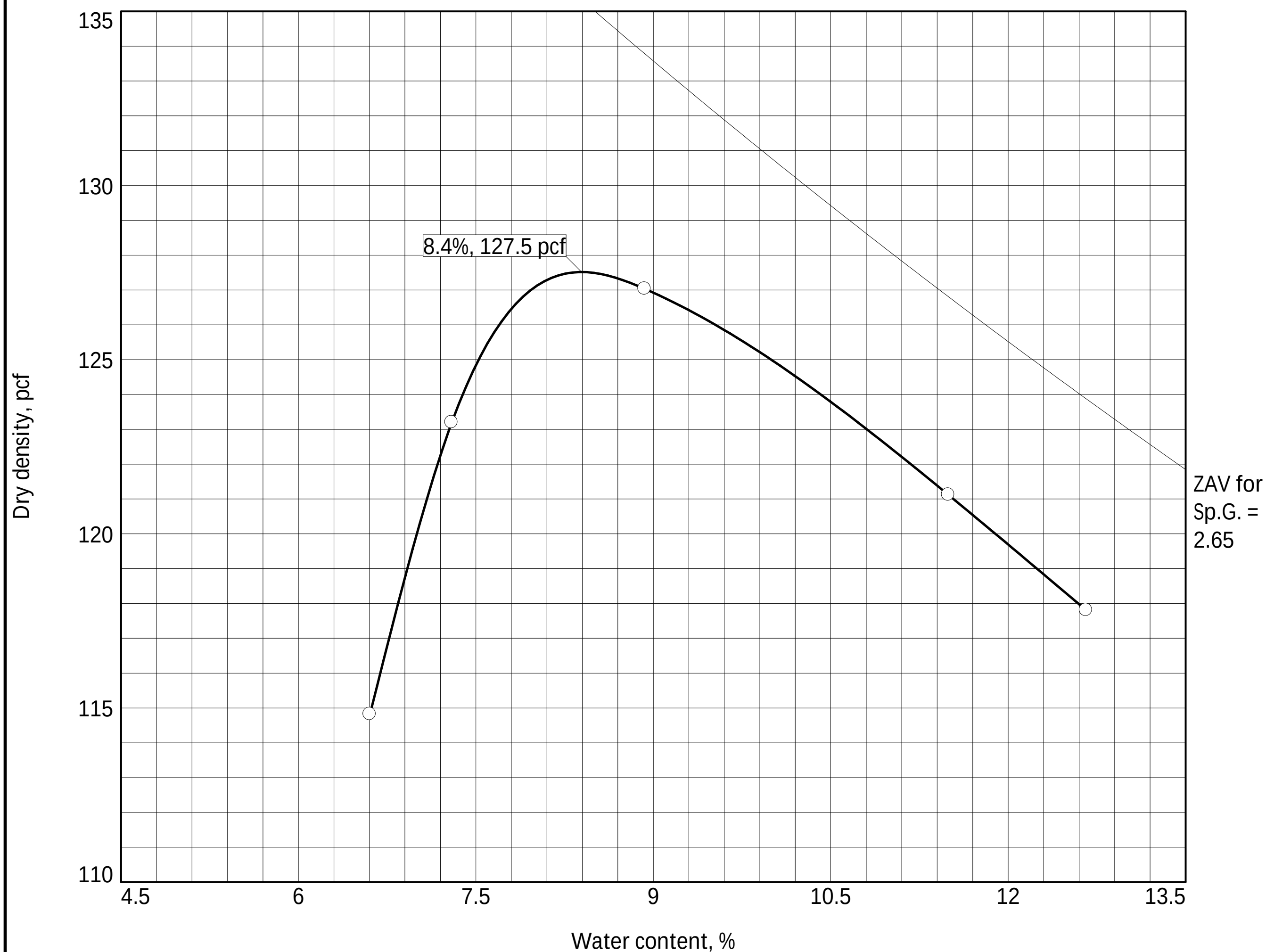
TRC Engineers, Inc.

Mt. Laurel, NJ

Figure 7

Tested By: EJ 07/17/23 Checked By: JPB 07/20/23

COMPACTION TEST REPORT



Test specification: ASTM D 698-12 Method C Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
0.0-5.0 FT	SC	A-4(1)	7.8		20	8	3.0	47.8

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 127.5 pcf Optimum moisture = 8.4 %	BROWN CLAYEY SAND

Project No. 427281.2022.GEO2 Client: SUNEAST DEVELOPMENT, LLC

Project: SUNEAST - FLAT CREEK SOLAR

Date:

○ Source: B-201, 202, 204, 206, & 208 Sample No.: BULK 2 & 3

TRC Engineers, Inc.

Mt. Laurel, NJ

Remarks:

SAMPLE DESCRIPTION BASED ON VISUAL CLASSIFICATION

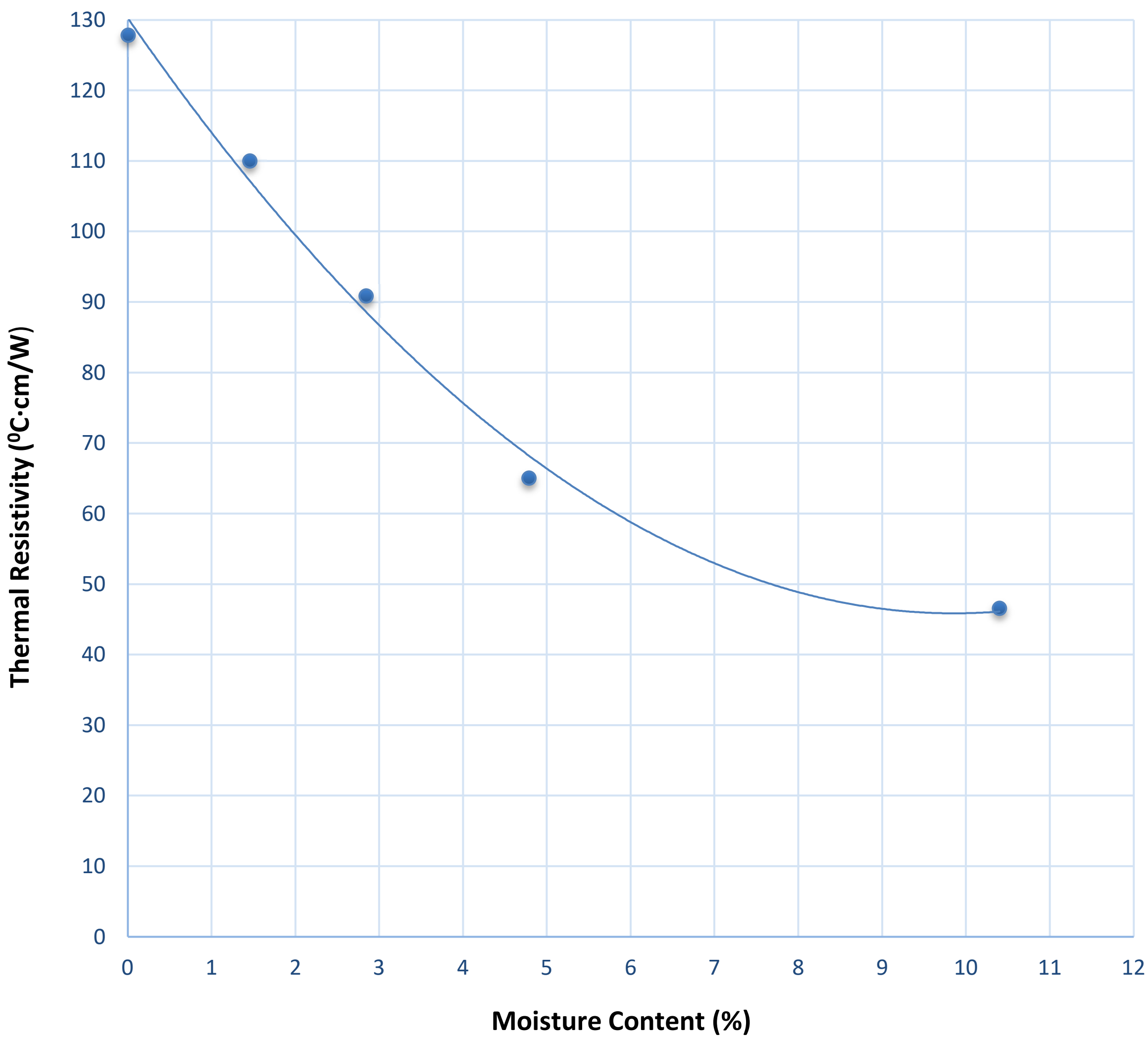
Figure 8

Tested By: EJ 06/23/23 Checked By: JPB 07/05/23

B-201, 202, 205, 206, & 206, BULK 2 & 3, 0.0-5.0 FT

THERMAL RESISTIVITY DRY-OUT CURVES

427281.2022.GEO2: FLAT CREEK SOLAR



Specimen ID:	B-201, 202, 205, 206, & 208, Bulk 2 & 3, 0.0-5.0 ft
USCS:	-
Received Moisture (avg):	7.1
LL:	-
PI:	-
P200:	-
Max. Dry Dens.:	127.5 PCF
Optimum Moisture:	8.4 %

Specimen was prepared at 2% greater than optimum moisture content and at approximate 90% of the maximum dry density determined by a modified proctor (ASTM D1557).

KE CORROSION

3028 ALDON AVE. LAS VEGAS, NV 89121

702-340-1186 KDE@KECORROSION.COM

CLIENT
TRC Solutions, Inc.
16000 Commerce Parkway, Suite B
Mount Laurel, NJ 08054

PROJECT NO: 427281.2002.GEOT2
Phase 200Lab

PROJECT
Flat Creek Solar Supplemental

DATE: June 29, 2023

LAB ID: 23-0090

Sample By: Client

Analyzed By: Kurt D. Ergun

RESULTS FOR CORROSIVITY ANALYSIS OF SOILS

Sample Number:	200, 207	201,202,205,208
Sample Location:	B-1	B-2 & B-3
Sample Depth:	0.0-5.0	0.0-5.0
Laboratory Testing Methods		
pH Analysis, ASTM D4972(in H2O)	6.80	6.69
PH Analysis, ASTM D4972(in CaCl2)	6.11	6.06
Water Soluble Sulfates, ASTM D516 (mg/kg)	84	68
Clorides, ASTM D512 (mg/kg)	75	50
Sulfides, AWWA 4500-S D (mg/kg)	Nil	Nil
Oxidation-Reduction, AWWA D1498 (mV)	+690	+695
Resistivity, ASTM G187 (ohm-cm)	2645	4510

Nil = <1.0 mg/kg

Kurt D. Ergun
Chemist

Note: The tests were performed in accordance with applicable ASTM, AASHTO, or AWWA methods. Test results submitted are only applicable to samples tested at referenced locations and are not indicative of the results of similar materials.