

REPORT OF GEOTECHNICAL INVESTIGATION

**PROPOSED GROUND-MOUNTED PHOTOVOLTAIC ARRAYS
SCOTT ROAD SOLAR
331 HOUGHTON HILL ROAD
SECTION 45.00, BLOCK 1, PORTION OF LOT 14.000
HOMER, CORTLAND COUNTY, NEW YORK**



Prepared for:

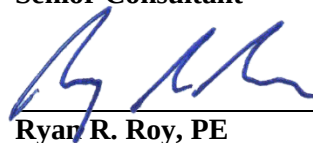
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**Whitestone Project No.: GM2624626.Y00
January 15, 2026**

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SCOTT ROAD SOLAR, LLC

143 West Street
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Attention: Mr. Ryan Clark
Director, Real Estate Development

**Regarding: PROPOSED GROUND-MOUNTED PHOTOVOLTAIC ARRAYS
SCOTT ROAD SOLAR
331 HOUGHTON HILL ROAD
SECTION 45.00, BLOCK 1, PORTION OF LOT 14.000
HOMER, CORTLAND COUNTY, NEW YORK
WHITESTONE PROJECT NO.: GM2624626.Y00**

Dear Mr. Clark:

Whitestone Associates Engineering & Geology NY, PLLC (Whitestone) is pleased to submit the attached *Report of Geotechnical Investigation* (ROGI) for the above-referenced project. The report presents the results of Whitestone's site visit and subsurface exploration and includes design recommendations for the proposed foundations and related earthwork associated with the proposed solar facility.

Whitestone appreciates the opportunity to be of service to Scott Road Solar, LLC. Please contact us with any questions regarding the attached report.

Sincerely,

WHITESTONE

Richard W.M. McLaren
Senior Consultant

Ryan R. Roy, PE
Vice President

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**REPORT OF
GEOTECHNICAL INVESTIGATION
Proposed Ground-Mounted Photovoltaic Arrays
Scott Road Solar
331 Houghton Hill Road
Homer, Cortland County, New York**

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FIGURES

FIGURE 1 Test Location Plan

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APPENDIX B Supplemental Information (USCS, Terms & Symbols)

SECTION 1.0

Summary of Findings

Whitestone has conducted an exploration and evaluation of the subsurface conditions at the site of the proposed Scott Road Solar facility to be located at 331 Houghton Hill Road in the Town of Homer, Cortland County, New York, as shown on the March 25, 2025 (last revised) *Conceptual Site Plan* prepared by Larson Engineering, Inc. (Larson) of Naperville, Illinois. The 28.4-acre subject site is undeveloped, agricultural land.

Based on the Larson *Conceptual Site Plan*, the proposed solar energy facility will include multiple photovoltaic panel arrays supported on steel frames, with a small equipment pad for switchgear and transformers. Design loads for the panel arrays are unknown at this time, however, are anticipated to be less than a few kips. A gravel-covered road will traverse the site and connect the equipment pad to Houghton Hill Road.

The geotechnical investigation included conducting a reconnaissance of the project site, advancing five test pits, and collecting soil samples for laboratory review and characterization. Site subsurface conditions generally consisted of glacial till overlying shallow shale bedrock. Groundwater, probably perched, was encountered in one test pit during the exploration at a depth of approximately 4.0 feet below ground surface (fbgs). Groundwater will also likely perch above the glacial till and bedrock, fluctuating seasonally and after rain events.

The results of the investigation indicate that the site soil/bedrock conditions are unsuitable for driven steel piles because of the dense glacial till with cobbles and boulders and the shallow bedrock. Whitestone therefore recommends that the solar arrays be supported on screw anchors, which may require pre-drilling, especially where the bedrock is shallow. Lightweight structures and slabs/mats may derive support from the glacial till, or a layer of crushed gravel placed over the bedrock, if encountered. The gravel for the proposed roadway should be underlain by a geotextile.

The above summary is intended to provide an overview of the geotechnical findings and recommendations and is not fully developed. Greater detail is presented in the following sections. The entire report must be read for comprehensive understanding of the information contained herein.

SECTION 2.0

Introduction

2.1 AUTHORIZATION

Mr. Ryan Clark, Director, Real Estate Development at Scott Road Solar, LLC, issued authorization to Whitestone to conduct a geotechnical investigation on this site relevant to the construction of the proposed Scott Road Solar facility at 331 Houghton Hill Road in the Town of Homer, Cortland County, New York. The geotechnical investigation was conducted in general accordance with Whitestone's January 12, 2025 proposal.

2.2 PURPOSE

The purpose of this exploration and analysis was to:

- ▶ ascertain the various soil profile components at test locations;
- ▶ estimate the engineering characteristics of the proposed foundation bearing and subgrade materials;
- ▶ provide geotechnical criteria for use by the design engineers in preparing photovoltaic array support;
- ▶ provide recommendations for required earthwork and subgrade preparation;
- ▶ provide gravel access road design parameters;
- ▶ record groundwater and bedrock levels at the time of the investigation and discuss the potential impact on the proposed construction; and
- ▶ recommend additional investigation and/or analysis, if warranted.

2.3 SCOPE

The scope of the exploration and analysis included the subsurface exploration, field testing and sampling, laboratory review, and a geotechnical engineering analysis and evaluation of the subsurface materials. This *Report of Geotechnical Investigation* is limited to addressing the site conditions related to the physical support of the proposed construction.

2.3.1 Field Exploration

Field exploration of the project site was conducted by means of five test pits, identified as TP-1 through TP-5, excavated with a Caterpillar 318 mid-size excavator to termination depths that ranged from 0.9 fbs to

to 5.5 fbg. The test pits were backfilled with excavated soils generated from the investigation. Test locations are shown on the *Test Location Plan* included as Figure 1. *Records of Subsurface Exploration* are provided in Appendix A.

Test locations were based on project information provided to Whitestone at the time of the investigation, including the March 25, 2025 (last revised) *Conceptual Site Plan* prepared by Larson. The subsurface tests were conducted in the presence of a Whitestone representative, who conducted field tests, recorded visual classifications, and collected samples of the various strata encountered. Test locations were established in the field using phone-based GPS. These locations are presumed to be accurate to the degree implied by the method used (± 20 feet).

Groundwater level observations, where encountered, were recorded during, and immediately following the completion of the field operations prior to backfilling the explorations. Seasonal variations, temperature effects, and recent rainfall conditions may influence the levels of groundwater, and observed levels will depend on the permeability of the soils. Additionally, groundwater may perch on the shallow bedrock. Groundwater elevations derived from sources other than seasonally observed groundwater monitoring wells may not be representative of true groundwater levels.

2.3.2 Laboratory Testing

The soils samples were reviewed by a geotechnical engineer in Whitestone's Rochester, New York soils mechanics laboratory.

SECTION 3.0

Site Description

3.1 LOCATION & DESCRIPTION

The subject property is located at 331 Houghton Hill Road in the Town of Homer, Cortland County, New York, Latitude 42.5887 North, Longitude 73.6635 West. The undeveloped site is a 28.4-acre portion of a 431.11-acre property, which is further identified as Section 45.00, Block 1, Lot 14.000.

The irregularly shaped site is bounded by undeveloped, agricultural, or wooded land. Access to the site will be from Houghton Hill Road. The site of the proposed construction is shown on the *Test Location Plan* included as Figure 1.

3.2 EXISTING CONDITIONS

Existing Development: At the time of Whitestone's investigation, the subject site was undeveloped, agricultural land.

Topography: Based on a review of the *USGS 7.5 Minute Series Homer Quadrangle, New York (2023)* and on Whitestone's observations, the site slopes down to the south from approximately 1,805 feet above North American Vertical Datum of 1988 (NAVD) to 1,780 feet above NAVD.

Utilities: The site was not serviced by utilities at the time of the investigation. The utility information contained in this report is presented for general discussion only and is not intended for construction purposes.

Site Drainage: Surface run-off will follow site topography, generally flowing south towards a pond south of the site.

3.3 SITE GEOLOGY

According to the University of the State of New York, The State Education Department *Surficial Geologic Map of New York, Finger Lakes Sheet* (1987), the site is underlain by shallow bedrock. The mapped boundaries with glacial till, which was encountered in the explorations overlying the bedrock, are east and west of the site. The University of the State of New York, The State Education Department *Geologic Map of New York, Finger Lakes Sheet* (1970) indicates that the subject site is underlain by the Upper Devonian-age Genesee Group, consisting of limestone and shale with minor siltstone, and incidental black shale. However, the site is not mapped by USGS as being within a karst area.

3.4 PROPOSED CONSTRUCTION

Based on the aforementioned Larson *Conceptual Site Plan*, the proposed solar energy facility will include multiple photovoltaic panel arrays supported on steel frames, with a small equipment pad for switchgear and transformers. Design loads for the panel arrays are unknown at this time, however, are anticipated to be less than a few kips. A gravel-covered road will traverse the site and connect the equipment pad to Houghton Hill Road.

The scope of Whitestone's investigation and the professional advice contained in this report were generated based on the project details and loading noted herein. Revisions or additions to the design details enumerated in this report should be brought to the attention of Whitestone for additional evaluation as warranted.

SECTION 4.0

Subsurface Conditions

Details of the subsurface materials encountered in the explorations are presented on the *Records of Subsurface Exploration* in Appendix A of this report. The subsurface soil and bedrock conditions encountered in the test locations consisted of the following generalized strata in order of increasing depth.

4.1 SUBSURFACE SOIL CONDITIONS

Existing Fill: At the ground surface, test pit TP-2 encountered existing fill, consisting of brown, sandy silt with gravel (USCS: ML), cobbles. The existing fill, which was associated with a drainage tile, extended to a depth of 1.5 fbgs.

Glacial Till: At the ground surface or beneath the existing fill, the test pits encountered glacial till, consisting of brown, sandy silt with gravel (USCS: ML), frequent cobbles and boulders. The glacial till extended to depths of 0.9 fbgs to 5.5 fbgs.

Bedrock: The test pits encountered shale bedrock at depths ranging from 0.9 fbgs to 5.5 fbgs. The bedrock was not sampled through rock coring efforts. Rock coring techniques would be required to further characterize the nature of the bedrock.

4.2 GROUNDWATER

Groundwater was encountered in one test pit (TP-2) during the exploration at a depth of approximately 4.0 fbgs. Static and perched/trapped water conditions generally will fluctuate seasonally and following periods of precipitation. Groundwater is expected to flow seasonally over the glacial till and bedrock surface and may perch on less permeable zones within the glacial till.

SECTION 5.0

Conclusions & Recommendations

5.1 GENERAL

The results of the investigation indicate that the site soil/bedrock conditions are unsuitable for driven steel piles because of the dense glacial till with cobbles and boulders and the shallow bedrock. Whitestone therefore recommends that the solar arrays be supported on screw anchors, which may require pre-drilling, especially where the bedrock is shallow. Lightweight structures and slabs/mats may derive support from the glacial till, or a layer of crushed gravel placed over the bedrock, if encountered. The gravel for the proposed roadway should be underlain by a geotextile.

5.2 SITE PREPARATION & EARTHWORK

Surface Cover Stripping: Vegetation, topsoil, and organic matter should also be removed before placing any fill. Any tree and brush removal should include the removal of stumps and root material, which will require removal of more than the few inches of topsoil encountered in the explorations.

Excavation Difficulties: The very dense glacial till, which includes cobbles and boulders, will present excavation difficulties at marginal depths below the ground surface. Excavation difficulties will be affected by excavation size and depth. The speed and ease of excavation also will depend on the type of equipment used and the skill of the operator. Excavation will generally be feasible with a large excavator, a “hoe-ram” or other mechanical device may be required to break up larger boulders to facilitate excavation. In addition, the bedrock at the site is shallow. The bedrock surface typically undulates and may be encountered at shallower depths than in the explorations. The upper couple of feet of fractured/weathered bedrock can likely be broken up with the “hoe-ram” and removed with a large excavator. However, removal of harder bedrock below the upper couple of feet will require significant effort, possibly blasting.

Surface Preparation/Proofrolling: Prior to placing any fill, the existing exposed soils should be compacted to a firm surface with several passes in two perpendicular directions of a minimum 10-ton vibratory roller. The surface should then be proofrolled with a loaded tandem axle truck in the presence of the geotechnical engineer to help identify soft or loose pockets that may require removal and replacement, or further evaluation. Proofrolling should be conducted after a suitable period of dry and non-freezing weather to reduce the likelihood of degrading an otherwise stable subgrade. Should construction be started during the winter months, Whitestone should be contacted for alternate surface preparation procedures. Fill should be placed and compacted in accordance with Section 5.3.

Weather Performance Criteria: The site soils are moisture sensitive. Every effort should be made to maintain drainage of surface water runoff away from construction areas by grading and limiting the exposure of excavations and prepared subgrades to precipitation. Accordingly, excavation and fill placement procedures should be conducted during favorable weather conditions. Overexcavation of saturated soils and replacement with controlled structural fill per Section 5.3 of this report may be required prior to resuming work on disturbed subgrade soils.

Subgrade Protection and Maintenance: The site soils are moisture sensitive and will degrade if exposed to inclement weather, freeze-thaw cycles, or repeated construction traffic. However, if properly protected and maintained as recommended herein, the site soils will provide adequate support. The site contractors should employ appropriate means and methods to protect the subgrade including, but not limited to the following:

- ▶ sealing exposed subgrade soils on a daily basis with a smooth drum roller operated in static mode;
- ▶ regrading the site as needed to maintain positive drainage away from open earthwork construction areas and to prevent standing water;
- ▶ removing wet surficial soils and ruts immediately; and
- ▶ limiting exposure to construction traffic and precipitation especially following inclement weather and subgrade thawing.

5.3 STRUCTURAL FILL

Imported Fill Material: Imported material placed as structural fill to raise elevations or restore design grades should consist of clean, relatively well-graded sand or gravel with a maximum particle size of 3.0 inches and up to 15 percent, by weight, of material finer than a #200 sieve. Imported material should be free of clay lumps, organics, and deleterious material. Imported material should be approved by a qualified geotechnical engineer prior to delivery to the site.

On-Site Material Reuse: Whitestone anticipates that only portions of the glacial till will be suitable for selective reuse as structural fill material, provided that soil moisture contents are controlled within 3.0 percent of optimum moisture level, particles larger than 3.0 inches in diameter are either removed or crushed, and objectionable portions, such as organics, are segregated. The glacial till has a relatively high fines content. Prior to reuse, drying may be necessary or mixing with more granular materials. On-site soil reuse should not be attempted during inclement weather or in damp conditions. In addition, cobbles and boulders were encountered in the explorations. Such material will require crushing or disposal, unless placed in areas where foundations are not being installed. Reuse of the glacial till will be contingent on careful review in the field by the owner's geotechnical engineer by visual observation during construction as recommended herein. The site soils should be properly compacted and evaluated during the construction phase, as described herein.

Submerged Fill: In the wet (flooding, perched water, or groundwater), consideration should be given to placing an open-graded, 2.0-inch crushed gravel to provide a working mat, expedite dewatering efforts, and enable subsequent placement of structural fill or backfill in the dry. Prior to placing submerged fill materials, free water and disturbed materials should be removed to the extent recommended by the geotechnical engineer. A fines barrier geotextile, such as *Mirafi 140N* or equivalent, should be placed at the base and sides of the overexcavation to separate the crushed gravel from underlying and adjacent soils. The fabric also should be placed on top of the crushed gravel prior to subsequent fill placement, if fill soils with a substantial amount of fines are to be used to restore grade.

Compaction & Placement Requirements: Fill should be placed in maximum 12-inch-thick loose lifts and compacted using a vibratory drum roller during mass grading activities or a small hand-held vibratory compactor within any excavations. Structural fill should be compacted to at least 95 percent of the maximum dry density within 3.0 percent of the optimum moisture content, as determined by ASTM D1557 (Modified Proctor).

Structural Fill Testing: A sample of any imported fill material or on-site material proposed for reuse as structural fill or backfill should be submitted to the owner's geotechnical engineer for analysis and approval at least one week prior to its use. The placement of fill and backfill should be monitored by a qualified engineering technician, so that the specified material and lift thicknesses are properly installed. A sufficient number of in-place density tests should be conducted, so that the specified compaction is achieved throughout the height of the fill or backfill.

5.4 GROUNDWATER AND SURFACE WATER CONTROL

Groundwater, probably perched, was encountered in only one test pit during the exploration at a depth of approximately 4.0 fbs. Because excavation during array installation will be limited, construction phase dewatering will likely consist of removing surface water runoff, infiltrating water, or trapped water at this site.

Large solar sites, in particular those that are sloping, create pathways for excessive surface runoff between and around panel installations. The runoff, as it flows and gains energy, can cause soil erosion, moving surface material downslope. Measures should therefore be implemented during construction and long term to manage surface water and reduce the likelihood of this erosion. Whitestone recommends that drainage trenches and swales be constructed to control and direct water flow. Swales should be excavated along contour lines at regular intervals on the slope, with steeper sites requiring more swales. Trenches should be excavated to direct runoff into the swales, as appropriate, and to facilitate drainage from swales into adjacent low-lying areas, or to natural wetlands or water courses.

5.5 SOLAR ARRAY FOUNDATIONS

Screw Anchor Design Criteria: Screw anchors, typically used for solar arrays, will be feasible for this site, provided pre-drilling is conducted in the dense glacial till and where the bedrock is shallow. Whitestone expects that screw anchors would require to be installed to a minimum depth of around 5.0 fbgs to 6.0 fbgs, depending on soil/bedrock conditions at each location, in order to provide an adequate capacity. Full-scale testing of screw anchors would be required to determine the appropriate length for production anchors. A test program should therefore be conducted throughout the site to assess the appropriate anchor embedment.

Frost Heave Pressure: Frost heave pressure is the stress acting upwards on the surface of screw anchors from contact with frost-susceptible soil during frost heave, specifically outside permafrost areas. Frost heave requires three conditions to pertain:

- ▶ soil deposit that is frost susceptible;
- ▶ groundwater, including water from capillary action; and
- ▶ freezing temperatures.

Although definitions vary, typically soils with a fines content greater than 25 percent are considered highly frost susceptible, soils with a fines content between 6.0 percent and 25 percent are considered to have a medium to low frost susceptibility, and soils with a fines content below 6.0 percent are not frost susceptible. The glacial till at the Homer site is frost susceptible. Groundwater was encountered within the likely depths of frost penetration, as discussed below. In addition, water would be available above the groundwater table from capillary action and from perched water.

Cornell University's Northeast Regional Climate Center (NRCC) published an *Atlas of Soil Freezing Depth Extremes for the Northeastern United States* (1996). Using a one-dimensional heat flow model, driven primarily by thermal diffusion, frost depths were estimated using only meteorological variables measured at 900 stations in the Northeastern U.S. The frost depths were contoured for return periods of 25, 50, and 100 years. The model assumed soils with clay content of 15 percent and porosity of 45 percent. Clay content was determined to have little effect on calculated frost depth. However, porosity could affect the calculated frost depth by up to around 20 percent, with a higher porosity reducing the frost depth. The range of porosities for USCS: SM soils is approximately 25 percent to 50 percent. The range of porosities for USCS: CL soils is approximately 30 percent to 40 percent. Frost depths were estimated for bare soil and sod (both with snow cover that provides insulation) and for snow-free bare soil, the last of which would be applicable for photovoltaic arrays where the solar panels block the snow from accumulating on the ground around the supporting anchors.

Frost penetration can also be estimated from the *Brown* (1964) relationship between maximum soil frost depth penetration and the air temperature, in terms of the air-freezing index (AFI):

$$Depth_{frost} (meters) = 0.0174(AFI_{Return\ Period\ (^{\circ}C)})^{0.67}$$

In a similar approach to the NRCC model, the calculated depth is the maximum frost penetration for bare ground surfaces with neither vegetation nor snow cover. NOAA publishes a tabulation of the *Air Freezing Index 1981 - 2010 USA Method (Base 32° Fahrenheit)* for the Conterminous United States, with return periods of 1.1 year to 100 years. With the appropriate conversions from metric to U.S. Standard units, the frost penetration in feet may be estimated.

Frost moves down into the ground progressively from the surface. Heaving pressure develops at the ice-water interface in the soil as it freezes. Frost heave is caused by the formation and growth of ice lenses near the descending frost front. The ice lenses are supplied with water from the unfrozen soil below the frost front. With continuing freezing air temperatures, the frost front with active freezing moves down through the soil. The highest frost heavy pressure, which could be in the range of 25 pounds per square inch (psi) to 35 psi based on published field measurements, is being applied to the anchor within the active freezing zone, which is only a fraction of the depth of frost penetration. Within the already frozen zone above the active freezing, the frost heave pressure reduces, probably to around 20 psi and below, because of the relative displacement between soil and anchor and as the bond between anchor and fully frozen ground is broken. For design purposes, an average value of frost heave pressure is typically applied to the surface area of the anchor within the estimated frost depth.

Recommended Design Values: The calculated frost depths based on AFI and those obtained from the NRCC model for the Homer site are tabulated below. The AFI from the NOAA Cortland, New York measuring station, which is approximately 6.5 miles from the site, was used in the calculation. The frost depth values from the NRCC model were interpolated between contours on small scale mapping.

Method	Return Period	10-year	25-year	50-year	100-year
Brown (1964)	Frost Depth (ft)	4.4	4.7	4.8	4.9
NRCC Model		N/A	1.7	2.0	2.2

Guidance from the *Canadian Foundation Engineering Manual* (2006) indicates a 10-year return period for the design freezing index is appropriate in evaluating design frost depth for determining frost heave pressure. Whitestone therefore recommends a design frost depth of at least 4.5 feet. Should a more stringent project-specific return period be used, the frost depths from the Brown AFI algorithm, which are deeper than those calculated from the NRCC model, should be used.

Application of Frost Heave Pressure: The site is underlain by silty soil that is susceptible to frost heave. Groundwater was encountered within the likely depth of frost penetration. In addition, moisture would be available by capillary action. On this basis, Whitestone recommends that frost heavy pressure be applied to the anchors. Following general guidance from the *Canadian Foundation Engineering Manual*, Whitestone recommends that a uniform frost heave pressure of 15 psi be applied to the surface area of the anchor within the frost depth. A load factor of 1.25 should be applied to obtain the factored frost heave pressure.

Frost Coverage: Anchors should derive support from the site soils that are at least 4.0 feet below adjacent exterior grades to provide protection from frost penetration.

Screw Anchor Inspection: Whitestone recommends implementation of a construction control program during the installation of production screw anchors. Load testing should be conducted on a percentage of the production anchors or on anchors specifically installed for testing purposes.

5.6 SHALLOW FOUNDATIONS

Shallow Foundation Design Criteria: Solar facilities typically do not incorporate significant structures. The following recommendations are pertinent only to small, lightly loaded, pre-engineered structures. Conventional spread and continuous strip footings may be designed to bear on the glacial till, or structural fill placed over the glacial till, or on a minimum 12 inches of minus 2.0-inch crushed gravel placed over the bedrock, provided the subgrade is properly evaluated and compacted in accordance with Sections 5.2, 5.3, and 5.13 of this report. Following in-trench compaction of foundation soil subgrades, foundations bearing within these materials may be designed to impart a maximum net allowable bearing pressure of 4,000 psf. Regardless of loading conditions, new foundations should be sized no less than minimum dimensions of 24 inches for continuous strip footings and 36 inches for isolated spread footings.

Footings should be designed such that the maximum toe pressure due to the combined effect of vertical loads (including soil weight) and overturning moment does not exceed the recommended maximum allowable bearing pressure. In addition, positive contact pressure should be maintained throughout the base of the footings such that no uplift or tension exists between the base of the footings and the supporting soil. Uplift loads should be resisted by the weight of the concrete footing. Side friction should be neglected when proportioning the footings, and lateral resistance should be provided by friction resistance at the base of the footings. A coefficient of friction (ultimate) against sliding of 0.4 is recommended for use in the design of concrete foundations bearing within the site soils or imported structural fill/crushed stone.

Foundation Inspection/Overexcavation Criteria: Whitestone recommends that the suitability of the bearing materials along new footing bottoms be reviewed by a geotechnical engineer prior to placing concrete for the footings. In the event that isolated areas of unsuitable materials are encountered in footing excavations, overexcavation and replacement of the materials or deeper foundation embedment may be necessary to provide a suitable footing subgrade. Overexcavation to be restored with structural fill will need to extend at least 1.0 foot laterally beyond footing edges for each vertical foot of overexcavation. Lateral overexcavation may be eliminated if grade is restored with lean concrete.

Settlement: Whitestone estimates post-construction settlements will be on the order of less than 1.0 inch, if the recommendations outlined in this report are properly implemented. Differential settlements should be less than ½ inch.

Frost Coverage: Foundations subject to frost action should be placed at least 48 inches below adjacent exterior grades, unless founded on competent bedrock, in which case there should be at least 18 inches of embedment.

5.7 SLABS & MATS

Following surficial compaction and proofrolling to densify any upper loose zones, Whitestone anticipates that the properly inspected and approved site soils and/or controlled structural fill, or at least 12 inches of minus 2.0-inch crushed gravel placed over the bedrock will be suitable for support of the proposed slabs and mats, provided these materials are properly evaluated, compacted, and proofrolled in accordance with Sections 5.2, 5.3, and 5.13 of this report. Areas of overexcavation should be anticipated if the subgrades are exposed to precipitation. Any areas that become softened or disturbed as a result of wetting and/or repeated exposure to construction traffic should be removed and replaced with compacted structural fill.

Slab/mat subgrades in the glacial till should be compacted in the presence of the geotechnical engineer to densify the subgrade and structural fill.

The properly prepared on-site soils are expected to yield a minimum subgrade modulus (k) of 200 psi/in. A net allowable bearing pressure of 2,000 psf is appropriate for slabs and mats, though this is unlikely to govern design. The net allowable bearing pressure may be increased by one third for transient loading conditions. A coefficient of friction (ultimate) against sliding of 0.4 is recommended for use in the design of concrete bearing within the site soils or imported structural fill. Whitestone estimates post-construction settlements will be on the order of less than 1.0 inch, if the recommendations outlined in this report are properly implemented. Differential settlements should be less than about ½ inch.

A minimum 12-inch layer of New York State Department of Transportation (NYSDOT) *Section 304, Type 2 Subbase Course* (or approved equivalent) should be placed below the slabs and mats to provide a uniform subbase, unless 12 inches of minus 2.0-inch crushed gravel has already been placed over the bedrock. If the slab or mat supports moisture-sensitive equipment, a moisture vapor barrier should be installed beneath the slab or mat in accordance with equipment manufacturer's recommendations.

Slabs and mats constructed as described above may experience a small amount of heave due to frost action, if water is trapped below the concrete. To reduce the likelihood of heave, either the edges of the slab/mat should be turned down and extended below frost depth of 48 inches or the slab/mat should be supported on shallow frost wall foundations. Alternatively, where bedrock is shallow, the slabs/mats could be protected with insulation to provide the equivalent of frost protection from soil burial or anchored to the bedrock.

5.8 GRAVEL ACCESS ROAD

A gravel-covered access road, approximately 20 feet wide, will be constructed through the solar development. The road will connect to Houghton Hill Road. Only maintenance and emergency vehicles will utilize this road after construction, implying traffic loading will be light. Over a 15-year period, Whitestone expects no more than about 10,000 18-kip Equivalent Single Axle Loads (ESALs).

The road subgrade should be prepared in accordance with Sections 5.2 and 5.3 of this report. The subgrade should have a minimum 2.0 percent slope across the road in order to shed water. A shallow ditch pitched to drain should be constructed the full length of the road on the down-gradient side of the road to assist with surface water management. If any section of the roadway blocks seasonal water flow, a culvert pipe should be installed. Site drainage should be reviewed by the project civil engineer.

Whitestone recommends placing a geotextile separation fabric (*Mirafi RS280i* or equal) over the glacial till under the roadway aggregate. This will reduce, but not eliminate, the need for maintenance.

Whitestone recommends that the roadway consist of a minimum 12-inch-thick layer of crushed aggregate meeting the requirements of NYSDOT *Section 304, Type 2 Subbase Course*, which has a maximum particle size of 2.0 inches. Whitestone estimates that, except during the spring thaw (typically March and April), the roadway will support vehicles weighing up to 60,000 pounds without significant maintenance. During spring thaw conditions, the roadway will support vehicles weighing up to 15,000 pounds without significant maintenance. Vehicles over these weights may cause rutting of the roadway, which may need to be repaired to facilitate subsequent use.

5.9 LATERAL EARTH PRESSURES

General: The following parameters may be used for design of any retaining walls, below-grade walls, and other structures reliant on granular materials to provide adequate drainage. However, the parameters are not directly applicable to the design of mechanically stabilized earth (MSE) retaining walls, which require proprietary design methods for the selected earth retention system.

Lateral Earth Pressures: Retaining/below-grade walls should be capable of withstanding active and at-rest earth pressures. With an active earth pressure coefficient (K_a) of 0.33 and assuming a level backfill and an assumed maximum backfill soil unit weight of 140 pounds per cubic foot (pcf), an equivalent fluid pressure of 46 psf per foot of wall height should be used in design of retaining/below-grade walls which are free to rotate.

Retaining/below-grade walls and wall corners that are restrained from lateral movement should be designed using at-rest earth pressures. A coefficient of at-rest earth pressure (K_o) of 0.5, for a level backfill, is recommended for retaining/below-grade walls designed to resist at-rest earth pressures; this value assumes

no lateral movement. With an assumed maximum total unit weight of backfill of approximately 140 pcf, an equivalent fluid pressure of 70 pounds per square foot per foot of wall height should be used in design of restrained retaining/below-grade wall and wall corners. A coefficient of friction of 0.4 against sliding can be used for concrete on the existing site soils. Additional lateral earth pressures from a sloped backfill or any temporary or long-term surcharge loads also should be included in the design. Retaining wall design should include a global stability analysis.

Backfill Criteria: Whitestone recommends that granular soils be used to backfill behind retaining walls. The granular backfill materials should consist of clean, relatively well-graded sand or gravel.

Whitestone recommends that backfill directly behind any walls be compacted with light, hand-held compactors. Heavy compactors and grading equipment should not be allowed to operate within a zone of influence measured at a 45-degree angle from the base of the walls during backfilling to avoid developing excessive temporary or long-term lateral soil pressures.

Positive drainage should be provided at the base of the below-grade walls. Where wall drainage is not provided, the wall should be designed to withstand full hydrostatic pressure.

Whitestone should be notified if any other retaining structures or design considerations requiring lateral earth pressure estimations are proposed. Specific recommendations for temporary retaining structures are beyond Whitestone's scope of work.

5.10 SLOPES

Whitestone's exploration did not include a detailed analysis of slope stability for any temporary or permanent condition. Based upon common local practice and our experience with stable soil slopes, we would recommend permanent soil slopes no steeper than 3:1 (horizontal to vertical). Benches are recommended every 15-feet, or so, of slope height, to facilitate runoff control and slope maintenance. For slopes steeper than 3:1 (horizontal to vertical), riprap covering would likely be required for long-term stability and erosion control. Competent bedrock may be excavated at an angle of 1:6 (horizontal to vertical). A steeper excavation angle in the bedrock may be feasible, if the exposed bedrock is reviewed by a professional engineer or geologist.

Temporary slopes should be regularly evaluated for signs of movement or unsafe conditions. The site soils are prone to erosion by precipitation and runoff. Soil slopes should be covered for protection from rain. Surface runoff should be diverted away from the slopes. For erosion protection, a protective cover of grass or other vegetation should be established on permanent soil slopes as soon as possible. Erosion control matting would provide protection until vegetation is fully established. In places, boulders of significant size may be exposed on the slopes, which should be dressed by removing protruding boulders and placing granular fill before positioning erosion protection.

5.11 SEISMIC & LIQUEFACTION CONSIDERATIONS

The subsurface conditions are most consistent with a Site Class C, as defined by the *New York State Building Code*. The site soils are not susceptible to earthquake induced liquefaction.

5.12 EXCAVATIONS

The site soils encountered during this investigation typically are, at a minimum, consistent with Type C Soil Conditions as defined by 29 CFR Part 1926 (OSHA), which require a maximum unbraced excavation angle of 1.5:1 (horizontal to vertical). Actual conditions encountered during construction should be evaluated by a competent person (as defined by OSHA), so that safe excavation methods and/or shoring and bracing requirements are implemented. Competent bedrock may be excavated at an angle of 1:6 (horizontal to vertical). A steeper temporary excavation angle in the bedrock may be feasible, if the exposed bedrock is reviewed by a professional engineer or geologist.

5.13 SUPPLEMENTAL POST INVESTIGATION SERVICES

Construction Inspection and Monitoring: The owner's geotechnical engineer should conduct inspection, testing, and consultation during construction as described in previous sections of this report. Monitoring and testing should also be conducted to confirm that the existing surface cover materials are properly removed, the anchors are satisfactorily installed, and suitable materials, used for controlled fill, are properly placed, and compacted over suitable subgrade soils. The proofrolling of all subgrades prior to foundation support should be witnessed and documented by the owner's geotechnical engineer.

SECTION 6.0

General Comments/Recommendations

Supplemental comments and/or recommendations may be made after finalization of construction plans or if significant changes are made in or to the characteristics or location of the proposed structure. Whitestone recommends that soil bearing conditions be checked at the appropriate time to ensure consistency with those conditions Whitestone encountered during the geotechnical investigation.

The recommendations presented herein should be utilized by a qualified engineer in preparing the project plans and specifications. Whitestone recommends that the engineer consider these recommendations as minimum physical standards that may be superseded by local and regional building codes and structural considerations. These recommendations are prepared for the sole use of Scott Road Solar, LLC for the specific project detailed and must not be used by any third party, same being strictly prohibited. These recommendations are relevant to the design phase and should not be substituted for construction specifications. The possibility exists that conditions between borings and soil profile pits may differ from those at specific test locations, and conditions may not be as anticipated by the designers or contractors. In addition, the construction process may alter soil and rock conditions. Accordingly, experienced geotechnical personnel should observe and document the construction procedures used and all conditions encountered.

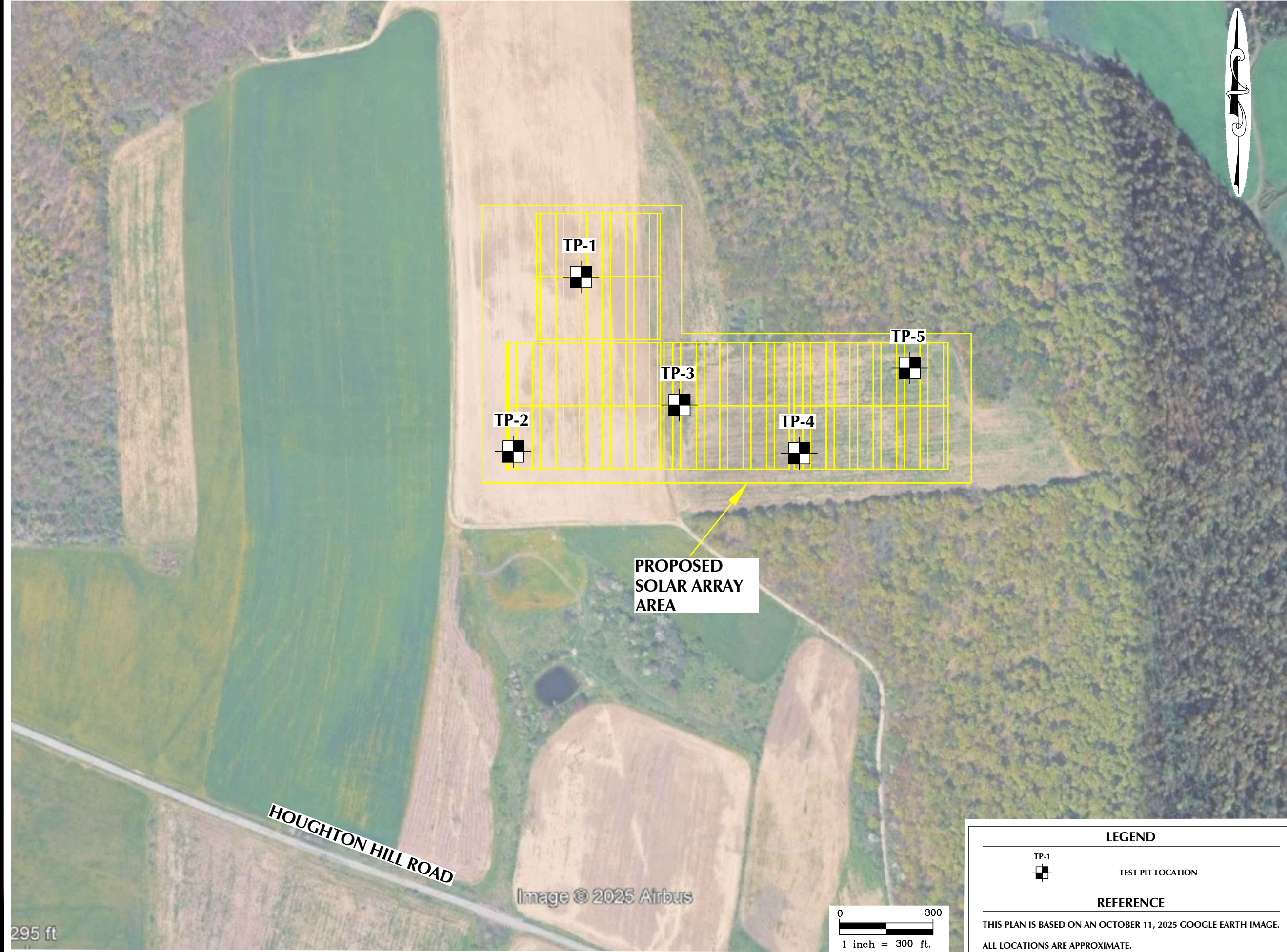
Whitestone assumes that a qualified contractor will be retained and employed, by others, to conduct the construction work, and that contractor must be required to exercise care and operate within the standard of care to ensure that all excavations are conducted in strict accordance with applicable regulations and good, sound practice. Whitestone recommends the contractor pay close attention in order to avoid damaging or in any way undermining adjacent properties and in order to strictly maintain slope stability. Whitestone recommends that the services of the geotechnical engineer be engaged to test and evaluate the soils in the footing excavations prior to concreting in order to evaluate whether the soils will support the bearing capacities. Monitoring and testing also should be conducted to verify that suitable and permissible materials are used for controlled fills and that these materials are properly placed and compacted over suitable subgrade soils.

The exploration and analysis of the foundation conditions reported herein are considered sufficient in detail and scope to form a reasonable basis for the foundation design. The recommendations submitted for the proposed construction are based on the available soil information and the design details Scott Road Solar, LLC furnished. Deviations from the noted subsurface conditions encountered during construction should and must promptly be brought to the attention of the geotechnical engineer.

The geotechnical engineer confirms that the findings, recommendations, specifications, or professional advice contained herein have been promulgated after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology. There are no warranties, either implied or expressed.

FIGURE 1
Test Location Plan

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TP-1

TEST PIT LOCATION

REFERENCE

THIS PLAN IS BASED ON AN OCTOBER 11, 2025 GOOGLE EARTH IMAGE.

ALL LOCATIONS ARE APPROXIMATE.

DRAWING TITLE: TEST LOCATION PLAN	
CLIENT: SEABOARD SOLAR	PROJECT: SOLAR ENERGY PROJECT 331 HOUGHTON HILL ROAD HOMER, CORTLAND COUNTY, NEW YORK
PROJECT #: GM2624626.Y00	
DESIGNED BY: MR	PROJ. MGR.: CG
DATE: 1/15/26	FIGURE: 1
SCALE: 1" = 300'	

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APPENDIX A

Records of Subsurface Exploration



RECORD OF SUBSURFACE EXPLORATION

Test Pit No.: **TP-1**
Page 1 of 1

Project: Proposed Ground-Mounted Photovoltaic Arrays			WAI Project No.: GM2624626.Y00			
Location: 331 Houghton Hill Road, Homer, Cortland County, New York			Client: Scott Road Solar, LLC			
Surface Elevation: ± NS feet NAVD88		Date Started: 12/24/2025		Water Depth Elevation		
Termination Depth: 3.3 feet bgs		Date Completed: 12/24/2025		(feet bgs) (ft NAVD88)		
Proposed Location: Solar Array		Logged By: WJ		During: -- -- ▼		
Excavating Method: Mid-Size Excavator		Contractor: HE		At Completion: -- -- ▼		
Test Method: Visual Observation		Rig Type: Caterpillar 318		At Completion: -- -- ▼		
SAMPLE INFORMATION			DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (ft.)	Number	Type	(feet)			
			0.0			
				GLACIAL TILL	Brown, Sandy Silt with Gravel, Cobbles, Boulders (ML)	
			5.0			
			10.0			
			15.0			
					Test Pit TP-1 Terminated on Shale Bedrock at Depth of 3.3 feet below ground surface.	



RECORD OF SUBSURFACE EXPLORATION

Test Pit No.: **TP-2**
Page 1 of 1

Project: Proposed Ground-Mounted Photovoltaic Arrays			WAI Project No.: GM2624626.Y00		
Location: 331 Houghton Hill Road, Homer, Cortland County, New York			Client: Scott Road Solar, LLC		
Surface Elevation: ± NS feet NAVD88		Date Started: 12/24/2025		Water Depth Elevation (feet bgs) (ft NAVD88)	
Termination Depth: 5.5 feet bgs		Date Completed: 12/24/2025		Cave-In Depth Elevation (feet bgs) (ft NAVD88)	
Proposed Location: Solar Array		Logged By: WJ		During: 4.0 -- ▾	
Excavating Method: Mid-Size Excavator		Contractor: HE		At Completion: -- -- ▾	
Test Method: Visual Observation		Rig Type: Caterpillar 318		24 Hours: -- -- ▾	
At Completion: -- -- ▾					

SAMPLE INFORMATION			DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (ft.)	Number	Type	(feet)			
			0.0			
				EXISTING		
				FILL	Brown, Sandy Silt with Gravel, Cobbles (FILL)	Drainage tile @ 1 fbg.
			1.5			
				GLACIAL		
				TILL	Brown, Sandy Silt with Gravel, Cobbles, Boulders (ML)	
			5.0			
					Test Pit TP-2 Terminated on Shale Bedrock at Depth of 5.5 feet below ground surface.	
			10.0			
			15.0			



RECORD OF SUBSURFACE EXPLORATION

Test Pit No.: **TP-3**
Page 1 of 1

Project: Proposed Ground-Mounted Photovoltaic Arrays			WAI Project No.: GM2624626.Y00		
Location: 331 Houghton Hill Road, Homer, Cortland County, New York			Client: Scott Road Solar, LLC		
Surface Elevation: ± NS feet NAVD88		Date Started: 12/24/2025		Water Depth Elevation (feet bgs) (ft NAVD88)	
Termination Depth: 1.9 feet bgs		Date Completed: 12/24/2025		Cave-In Depth Elevation (feet bgs) (ft NAVD88)	
Proposed Location: Solar Array		Logged By: WJ		During: -- --	
Excavating Method: Mid-Size Excavator		Contractor: HE		At Completion: -- --	
Test Method: Visual Observation		Rig Type: Caterpillar 318		24 Hours: -- --	
At Completion: -- --					

SAMPLE INFORMATION			DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (ft.)	Number	Type	(feet)			
			0.0			
				GLACIAL TILL	Brown, Sandy Silt with Gravel, Cobbles (ML)	
			5.0			
			10.0			
			15.0			
					Test Pit TP-3 Terminated on Shale Bedrock at Depth of 1.9 feet below ground surface.	



RECORD OF SUBSURFACE EXPLORATION

Test Pit No.: **TP-4**
Page 1 of 1

Project: Proposed Ground-Mounted Photovoltaic Arrays			WAI Project No.: GM2624626.Y00		
Location: 331 Houghton Hill Road, Homer, Cortland County, New York			Client: Scott Road Solar, LLC		
Surface Elevation: ± NS feet NAVD88		Date Started: 12/24/2025		Water Depth Elevation (feet bgs) (ft NAVD88)	
Termination Depth: 0.9 feet bgs		Date Completed: 12/24/2025		Cave-In Depth Elevation (feet bgs) (ft NAVD88)	
Proposed Location: Solar Array		Logged By: WJ		During: -- -- ▼	
Excavating Method: Mid-Size Excavator		Contractor: HE		At Completion: -- -- ▼	
Test Method: Visual Observation		Rig Type: Caterpillar 318		24 Hours: -- -- ▼	
At Completion: -- -- ▼					

SAMPLE INFORMATION			DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (ft.)	Number	Type	(feet)			
			0.0			
				GLACIAL TILL	Brown, Sandy Silt with Gravel, Cobbles (ML)	
					Test Pit TP-4 Terminated on Shale Bedrock at Depth of 0.9 feet below ground surface.	
			5.0			
			10.0			
			15.0			



RECORD OF SUBSURFACE EXPLORATION

Test Pit No.: **TP-5**
Page 1 of 1

Project: Proposed Ground-Mounted Photovoltaic Arrays			WAI Project No.: GM2624626.Y00		
Location: 331 Houghton Hill Road, Homer, Cortland County, New York			Client: Scott Road Solar, LLC		
Surface Elevation: ± NS feet NAVD88		Date Started: 12/24/2025		Water Depth Elevation (feet bgs) (ft NAVD88)	
Termination Depth: 2.5 feet bgs		Date Completed: 12/24/2025		Cave-In Depth Elevation (feet bgs) (ft NAVD88)	
Proposed Location: Solar Array		Logged By: WJ		During: -- --	
Excavating Method: Mid-Size Excavator		Contractor: HE		At Completion: -- --	
Test Method: Visual Observation		Rig Type: Caterpillar 318		24 Hours: -- --	

SAMPLE INFORMATION			DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (ft.)	Number	Type	(feet)			
			0.0			
				GLACIAL TILL	Brown, Sandy Silt with Gravel, Cobbles, Boulders (ML)	
			5.0			
			10.0			
			15.0			
					Test Pit TP-5 Terminated on Shale Bedrock at Depth of 2.5 feet below ground surface.	



APPENDIX B

Supplemental Information (USCS, Terms & Symbols)

UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION <u>RETAINED</u> ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		CLEAN SAND (LITTLE OR NO FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	SAND AND SANDY SOILS	MORE THAN 50% OF COARSE FRACTION <u>PASSING</u> NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GC
			SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS <u>LARGER</u> THAN NO. 200 SIEVE SIZE			SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMITS <u>LESS</u> 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
MORE THAN 50% OF MATERIAL IS <u>SMALLER</u> THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMITS <u>GREATER</u> THAN 50	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
HIGHLY ORGANIC SOILS			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS FOR SAMPLES WITH 5% TO 12% FINES

GRADATION*

% FINER BY WEIGHT

TRACE..... 1% TO 10%
LITTLE..... 10% TO 20%
SOME..... 20% TO 35%
AND..... 35% TO 50%

COMPACTNESS* Sand and/or Gravel

RELATIVE DENSITY

LOOSE..... 0% TO 40%
MEDIUM DENSE..... 40% TO 70%
DENSE..... 70% TO 90%
VERY DENSE..... 90% TO 100%

CONSISTENCY* Clay and/or Silt

RANGE OF SHEARING STRENGTH IN POUNDS PER SQUARE FOOT

VERY SOFT..... LESS THAN 250
SOFT..... 250 TO 500
MEDIUM..... 500 TO 1000
STIFF..... 1000 TO 2000
VERY STIFF..... 2000 TO 4000
HARD..... GREATER THAN 4000

* VALUES ARE FROM LABORATORY OR FIELD TEST DATA, WHERE APPLICABLE.
WHEN NO TESTING WAS PERFORMED, VALUES ARE ESTIMATED.

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Office Locations:

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NEW YORK

GEOTECHNICAL TERMS AND SYMBOLS

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

- N: Standard Penetration Value: Blows per ft. of a 140 lb. hammer falling 30" on a 2" O.D. split-spoon.
 Qu: Unconfined compressive strength, TSF.
 Qp: Penetrometer value, unconfined compressive strength, TSF.
 Mc: Moisture content, %.
 LL: Liquid limit, %.
 PI: Plasticity index, %.
 δd: Natural dry density, PCF.
 ▽: Apparent groundwater level at time noted after completion of boring.

DRILLING AND SAMPLING SYMBOLS

- NE: Not Encountered (Groundwater was not encountered).
 SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
 ST: Shelby Tube - 3" O.D., except where noted.
 AU: Auger Sample.
 OB: Diamond Bit.
 CB: Carbide Bit
 WS: Washed Sample.

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

<u>Term (Non-Cohesive Soils)</u>	<u>Standard Penetration Resistance</u>
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

<u>Term (Cohesive Soils)</u>	<u>Qu (TSF)</u>
Very Soft	0 - 0.25
Soft	0.25 - 0.50
Firm (Medium)	0.50 - 1.00
Stiff	1.00 - 2.00
Very Stiff	2.00 - 4.00
Hard	4.00+

PARTICLE SIZE

Boulders	8 in.+	Coarse Sand	5mm-0.6mm	Silt	0.074mm-0.005mm
Cobbles	8 in.-3 in.	Medium Sand	0.6mm-0.2mm	Clay	-0.005mm
Gravel	3 in.-5mm	Fine Sand	0.2mm-0.074mm		

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