Appendix 5.4A
Preliminary Geotechnical Report

PRELIMINARY GEOTECHNICAL EVALUATION
HIDDEN HILLS SOLAR FACILITY
OLD SPANISH TRAIL HIGHWAY AND GOLD STREET
INYO COUNTY, CALIFORNIA

PREPARED FOR:
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March 17, 2011
Project No. 303200001

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Mr. Clay Jensen
BrightSource Energy
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Subject: Preliminary Geotechnical Evaluation
Hidden Hills Solar Facility
Old Spanish Trail Highway and Gold Street
Inyo County, California

Dear Mr. Jensen:

Transmitted herein are the results of Ninyo & Moore's preliminary geotechnical evaluation for the proposed Hidden Hills Solar Facility project to be located north of the Old Spanish Trail Highway and generally west of Gold Street in Inyo County, California. The purpose of our preliminary evaluation was to assess geologic and geotechnically related considerations pertaining to the project site and to provide preliminary conclusions and recommendations. The conclusions and recommendations provided in this report are intended for planning purposes. A design-level geotechnical evaluation, including additional subsurface evaluation and laboratory testing, will need to be performed for the project in the future. We appreciate the opportunity to be of service to you on this project.

Respectfully submitted,
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1. INTRODUCTION

In accordance with your request, Ninyo & Moore has performed a preliminary geotechnical evaluation for the proposed Hidden Hills Solar Facility project to be located north of the Old Spanish Trail Highway and generally west of Gold Street in Inyo County, California. The approximate location of the site is indicated on Figure 1. The purpose of our preliminary evaluation was to assess geologic and geotechnically related considerations pertaining to the project site and to provide preliminary conclusions and recommendations. This report presents the findings of our subsurface exploration, results of our laboratory testing, and preliminary conclusions regarding the subsurface soil and geologic conditions at the site. The conclusions and recommendations provided in this report are intended for planning purposes. A design-level geotechnical evaluation, including additional subsurface evaluation and laboratory testing, will need to be performed for the project in the future.

2. SCOPE OF SERVICES

The scope of our services included the following:

- Review of pertinent background data listed in the References section of this report. The data reviewed included in-house geotechnical data, aerial photographs, hydrogeologic reports, groundwater reports, water well data, and published soils and geologic maps and literature.
- Coordination and mobilization for subsurface exploration. Marking of existing utilities was conducted through Underground Service Alert (USA).
- Performance of a geologic reconnaissance at the subject site to evaluate the possible presence of faults, ground fissures, and other potential geologic hazards that could affect design and construction of the project.
- Drilling, logging, and sampling of 20 exploratory borings to depths of approximately 15 feet. The purposes of the soil borings were to evaluate the subsurface soil profile and groundwater conditions, and to obtain soil samples for laboratory testing.
- Performance of 20 cone penetration tests (CPTs) to depths ranging from approximately 5 to 15 feet adjacent to each of the boring locations.
- Excavation, logging, and sampling of 10 exploratory test pits to depths ranging from approximately 8 to 10 feet to evaluate subsurface conditions and to obtain soil samples for laboratory testing.

- Performance of laboratory tests on selected soil samples obtained from the exploratory excavations to evaluate in-place moisture content and dry density, gradation, plasticity, consolidation characteristics, collapse potential, expansivity, shear strength, resistivity, chloride content, pH, reduction-oxidation potential, sodium content, sulfate content, sodium sulfate content, and solubility potential (total salts).
- Compilation and analysis of the accumulated data.
- Preparation of this geotechnical evaluation report presenting our preliminary findings, conclusions, and recommendations regarding the subject project.

3. PROJECT DESCRIPTION

Based on our discussions with BrightSource Energy personnel, it is our understanding that the project will include design and construction of a concentrated thermal solar facility located on a site approximately 3,900 acres in size in Inyo County, California. It is our understanding that the project is currently in the conceptual stages of design. Accordingly, site plans and/or proposed layouts were not available for our review prior to preparation of this report. However, we understand that the proposed project will generally include two arrays of mirrored heliostats that will concentrate and reflect the sun's energy towards boilers situated on top of two central receiving towers. It is our understanding that driven pylon foundations consisting of 6-inch diameter pipe piles with fins will be used to supports the heliostats. Steam turbines and electrical generators, which will be located at a centralized power block facility, will be used to produce electrical energy. We understand that a transmission line will connect this project to the existing electrical grid. Evaluation of geotechnical conditions along the transmission line alignment was not a part of the evaluation described in this report.

4. GENERAL SITE CONDITIONS

The project site is located in the southern portion of Pahrump Valley in Inyo County, California, along the California-Nevada border (Figure 2). The nearest community to the site is the township of Pahrump, Nevada, which is located approximately 4 miles to the northwest. The site is bordered by paved Old Spanish Trail Highway to the south, unpaved Quartz Street and Gold Street to the west and east, respectively, and the California-Nevada border to the north. An unpaved

road generally extends along the border in this area. Numerous unpaved roads also extend in a roughly north-south and east-west grid pattern across the site.

The subject property is approximately 3,900 acres in size with a high elevation of approximately 2,675 feet on the east side, and low elevation of approximately 2,585 feet on the west side of the property. The topography across the site is generally relatively planar to slightly undulatory.

Several ephemeral (typically dry) drainage washes, generally up to several feet wide and a few feet deep, extend across the project site. Field observations indicate that water runoff generally drains toward the west via sheet-flow and these natural drainage channels.

At the time of our field activities, the site was essentially undeveloped and covered with sparse native desert vegetation. This vegetation consists primarily of shrubs and grasses. Existing improvements in the site area include the asphalt concrete paved, two-lane, Old Spanish Trail Highway, which borders the site to the south, and a previously developed approximately 1-acre orchard area, located on the north side of this highway. The orchard is presently marked by dead trees and other vegetation. Four abandoned groundwater wells are also present on the subject property. Orchard Well (Ninyo & Moore's designation) is located at the abandoned orchard near the site's south boundary, as shown on Figure 4. The three additional abandoned water wells (designated Well #2, Well #3, and Well #4 by Ninyo & Moore) are also located near the site's south boundary, as shown on Figure 4.

Based on field observations, utilities in the site area include an overhead electrical transmission line along Old Spanish Trail Highway. We also understand that an underground electrical line, which is not presently in-use, extends from the transmission line to the well at the previously abandoned orchard site. Although not observed by our personnel or marked by Underground Service Alert, additional utilities may be present.

5. FIELD EXPLORATION AND LABORATORY TESTING

Ninyo & Moore's subsurface exploration of the project site was performed on January 19 through January 21, 2011. This exploration consisted of drilling, logging, and sampling of

20 small-diameter exploratory borings, as well as excavation, logging, and sampling of 10 exploratory test pits. The borings were advanced to depths of approximately 15 feet with a truck-mounted Mayhew 1000 drill rig utilizing 6-inch diameter air-rotary drilling equipment. The test pits were excavated to depths ranging from approximately 8 to 10 feet with a Case 580 Super L backhoe. The purpose of the borings and test pits was to evaluate subsurface conditions at the subject site, as well as to collect bulk and relatively undisturbed soil samples for laboratory testing. The approximate locations of the borings and test pits are shown on Figure 3 and Figure 4.

Laboratory tests were performed on representative soil samples collected from the borings and test pits to evaluate in-place moisture content and dry density, gradation, plasticity, consolidation characteristics, collapse potential, expansivity, shear strength, resistivity, chloride content, pH, reduction-oxidation potential, sodium content, sulfate content, sodium sulfate content, and solubility potential (total salts). Results of in-place moisture content and dry density tests are provided on the boring logs in Appendix A. The other laboratory test results and descriptions of the testing procedures utilized are presented in Appendix B and Appendix C.

Our exploration also included performance of 20 cone penetration tests (CPT) at the subject site adjacent to each of the boring locations. The CPTs were advanced to depths ranging from approximately 5 to 15 feet with a truck-mounted rig using a DSG1104 cone. The CPT results are provided in Appendix D.

6. GEOLOGY AND SUBSURFACE CONDITIONS

Ninyo & Moore's findings regarding the regional geologic setting, potential geologic hazards, ground motions, subsurface soils encountered, and groundwater at the site are provided in the following sections.

6.1. Regional Geologic Setting

Pahrump Valley, which contains the subject property, is located in the southern portion of the Great Basin and is part of the Basin and Range geomorphic province. Pahrump Valley is

bordered by mountain ranges and adjoining valleys. Pahrump Valley is a naturally formed structural basin as a result of block faulting, a fundamental characteristic of the Basin and Range.

Mountain ranges bordering Pahrump Valley are up to approximately 11,000 feet in elevation and composed primarily of Precambrian-age and Paleozoic-age igneous and sedimentary rocks. The Nopah Range and Kingston Range border Pahrump Valley to the west and southwest, respectively, and are composed primarily of igneous rock. The Spring Mountains are composed primarily of sedimentary rock and border Pahrump Valley to the east. Stewart Valley and Mesquite Valley border Pahrump Valley to the northwest and southeast, respectively.

Thick, coalescing, Quaternary-age alluvial fan deposits, comprised primarily of coarse-grained material, generally mantle the base of mountain ranges bordering Pahrump Valley. Surficial soils in the valley generally include Quaternary-age alluvial fan, paleo-spring, lakebed, playa, stream, and eolian deposits. The lower portion of the valley generally contains fine-grained (silty and clayey) soils. Tertiary-age volcanic tuff and Tertiary-age to Pre-Cambrian-age bedrock, composed predominantly of sedimentary, igneous, and metamorphic rocks, underlie the valley sediments.

6.2. Potential Geologic Hazards

Ninyo & Moore performed an evaluation of the possible presence of geologic hazards, such as faults and ground fissures, in the site area. This evaluation included visual observation of the site for indications of adverse geologic features and review of published geologic and soils maps and literature, and other data listed in the References section of this report. Referenced geologic data were also reviewed to evaluate seismic activity levels, and associated potential earthquake hazards, for faults in the site vicinity. Faults, ground fissures, and an aeromagnetic lineation in the site area are discussed in the following subsections. It should be noted that the fault seismic activity levels provided in this report were obtained/interpreted primarily from United States Geological Survey (USGS, 2011b) data.

6.2.1. Faults

Based on our field observations and review of referenced data, no faults traverse the project site. Review of referenced geologic data (Louie, et al., 1997) indicates that the nearest active fault (i.e., a fault that has experienced ground surface rupture within the past 11,000 years) to the site is the Pahrump fault. This fault, which is also referred to as the Pahrump Valley fault zone in some publications, is considered by United States Geological Survey (USGS, 2011b) to be potentially active (i.e., a fault that has experienced ground surface rupture within the past 1.6 million years). Pahrump fault is located in Nevada, approximately 1,500 feet northeast of the project site. The fault extends in a northwest-southeast direction and approximately parallels the northerly site boundary. Louie, et al., (1997) indicates that Pahrump Valley fault zone has the potential to generate an earthquake of moment magnitude 7.2.

Additional active faults in the vicinity of the project site include faults in the Garlock fault zone and Southern Death Valley fault zone. Distances from the site to these active fault zones are provided in the following table.

Table 1 – Faults in the Site Vicinity

Fault Name	Seismic Activity Level *	Approximate Distance From Project Site to Fault
Pahrump fault/Pahrump Valley fault zone	Active/Potentially Active	1,500 feet
Garlock fault zone	Active	36 miles
Southern Death Valley fault zone	Active	38 miles
*From United States Geological Survey (USGS, 2011b) data and Louie, et al. (1997).		

6.2.2. Ground Fissures

Ground fissures occur in numerous valley areas in Nevada and in portions of California. The fissure areas are sometimes associated with nearby faults. Statistical analysis indicates that approximately 90 percent of known ground fissures in Las Vegas Valley, which is located approximately 35 miles northeast of the project site, occur within approximately 2,000 feet of mapped faults in the valley's sediments (Bell, et al., 2001).

Ground fissures can be up to several feet wide and deep, and thousands of feet long. These features generally form due to horizontal tensional forces in the earth and subsequent soil erosion. The initial stage of development of the ground fissure is a narrow crack in the soil, which forms due to tensional forces sometimes related to groundwater withdrawal and associated land subsidence. Erosional processes, such as gullying and subsurface water migration during periods of heavy runoff, widen and deepen the crack into a ground fissure. Due to underground erosion, or piping, tunnel-like features and other subsurface voids form along the ground cracks. When the soils above the voids erode and collapse, sinkholes, linear depressions, and/or trench-like features occur at the ground surface.

Numerous ground fissures and previously mapped ground fissure zones occur in Pahrump Valley. Based on review of referenced data (dePolo, et al., 1999), the nearest mapped ground fissure zone to the project site is located approximately 8 miles north. Ground lineations in Pahrump Valley sediments, which may be indicative of ground fissuring, were also noted approximately 2 miles west and 6 miles northwest of the project site in publications by Hoffard (1991) and dePolo (2003), respectively.

During our geologic reconnaissance of the subject property, Ninyo & Moore personnel observed numerous ground surface lineations, which appear to have been caused by ground fissures. These lineations, which range from a few inches to several feet wide and are up to hundreds of yards long, generally extend in north-south and northwest-southeast directions across the site. The lineations are generally marked by increased vegetation, eroded or loose soil, relatively slight depressions in the ground surface, and, in a few areas, ground cracks up to approximately 2 inches wide and a few inches deep. During our subsurface evaluation of the subject property, two exploratory test pits (TP-6 and TP-7) were excavated across two lineations. No apparent indications of the presence of ground fissures were observed in the excavations.

6.2.3. Aeromagnetic Lineation

Louie, et al., (1997) indicates the presence of an "interpreted aeromagnetic lineation" traversing in a northeast-southwest direction across the central portion of the project site. Although the cause of this lineation is unknown, it may indicate the presence of a possible deep bedrock structure at the base of the valley sediments.

6.3. Ground Motions

Using the referenced United States Geological Survey database (USGS, 2011a), the subject site, which is located at approximately 35.9863 degrees north latitude and -115.8995 degrees west longitude, is located in a zone where the peak ground accelerations that have a 10 percent and 2 percent probability of being exceeded in 50 years are 0.10g, and 0.18g, respectively.

6.4. Subsurface Soils Encountered

Our knowledge of the subsurface conditions at the project site is based on our review of background documents, field exploration, and laboratory testing. The following paragraph provides generalized descriptions of the materials encountered. More detailed descriptions are presented on the excavation logs in Appendix A.

Native alluvial and playa (lake-bed deposits) materials were encountered in the exploratory borings and test pits to the total depths explored. The encountered native soil was comprised primarily of very loose to loose sands generally overlying medium dense to very dense sands with varying amounts of gravel. The loose soils generally ranged from approximately 1 to 10 feet deep and were noted particularly in the northern and western portions of the site. Very loose to loose soils up to approximately 3.5 feet deep were also observed in one of our test pits (TP-5) excavated in a natural drainage channel on the east side of the site. Firm to hard layers of lean to fat clay with varying amounts of sand and gravel were also encountered, particularly in the central portion of the site. Visual observations indicated that

some of the encountered native soils were slightly to moderately gypsiferous and slightly to highly porous, with poreholes up to approximately 1/4-inch in diameter.

Layers of moderately hard to hard, moderately to strongly cemented soil (caliche) were encountered in the exploratory borings and test pits. Caliche is a naturally occurring cemented soil with rock-like characteristics that is considered to be the lithification of fine-grained sediments and coarse-grained sands and gravels through secondary cementation primarily by calcium carbonate. Caliche typically forms from evaporation of lime-rich groundwater moving upward by capillary action, or downward via percolation. The following describes typical properties of caliche.

- Generally occurs in layers a few inches to several feet thick.
- Layers typically vary significantly in thickness, degree of cementation, and hardness over relatively short distances.
- Varies in composition from primarily fine-grained material to primarily coarse-grained material.
- Moderately hard, moderately cemented caliche can generally be gouged with a knife with difficulty and broken with a few hammer blows.
- Hard and very hard, strongly cemented caliche is difficult to scratch with a knife and breaks with difficulty with repeated hammer blows.
- Impedes earthwork operations, including grading and utility line trenching. Rock excavation methods are generally needed.

In the Pahrump Valley, moderately hard to hard caliche typically occurs in layers that are often discontinuous and that vary in thickness, cementation, and hardness over relatively short distances. The following table describes the approximate depth, thickness, and hardness and degree of cementation of relatively indurated caliche layers encountered in the borings and test pits.

Table 2 – Moderately Hard to Hard Caliche Layers Encountered

Exploration	Approximate Depth to Top of Layer (feet)*	Approximate Thickness of Layer (feet)	Hardness and Degree of Cementation
B-4	15.0	0.3**	Moderately hard, moderately cemented
B-5	15.0	1.1**	Moderately hard, moderately cemented
B-6	14.0	1.8**	Moderately hard, moderately cemented
B-11	10.6	4.7**	Moderately hard, moderately cemented
TP-8	7.0	1.0**	Moderately hard to hard, moderately to strongly cemented
TP-9	6.5	0.5	Moderately hard, moderately cemented

*Depth measured from ground surface adjacent to exploration.
**Exploration terminated in caliche.
NOTE: Numerous slightly cemented soil layers were also encountered in the explorations.

In addition to the indurated layers of caliche noted in the table above, zones of subgrade soil containing significant amounts of hard, strongly cemented caliche chunks were encountered at depths as shallow as approximately 3.5 feet in several of our exploratory test pits. The caliche chunks, which were generally interspersed in the soil matrix, ranged from sand- to cobble-size. Zones of subgrade soil containing significant amounts caliche chunks were readily excavated with a backhoe. Due to the limited size of the boreholes (approximately 6 inches in diameter), identifying zones of subgrade soil containing caliche chunks during drilling of our exploratory borings was difficult. However, numerous zones of very dense and hard soil, which were designated as slightly cemented on the boring logs, were noted in the borings. These slightly cemented soil layers were easily drilled and penetrated with our drill rig. It is likely that these slightly cemented soils are similar in composition to the zones of subgrade soil containing significant amounts of caliche chunks that were encountered in the test pits. The following table describes the approximate depth and thickness of these zones, as well as the hardness and size of the encountered caliche chunks and slightly cemented soil layers.

Table 3 – Zones of Subgrade Soil Containing Caliche Chunks and Slightly Cemented Soil Layers

Exploration	Approximate Depth to Top of Layer (feet)*	Approximate Thickness of Layer (feet)	Hardness, Degree of Cementation, and/or Size of Caliche Chunks
B-2	10.5	4.5	Very dense, slightly cemented
B-3	10.0	1.0	Very dense, slightly cemented
B-3	15.5	0.8**	Very dense, slightly cemented
B-4	10.0	5.0	Very dense, slightly cemented
B-7	10.0	5.3**	Very dense, slightly cemented
B-10	5.0	5	Hard, slightly cemented
B-10	15.0	0.8**	Hard, slightly cemented
B-11	5.0	5.6	Hard, slightly cemented
B-12	2.0	14.2**	Dense to very dense, slightly cemented
B-14	2.5	0.5	Very dense, slightly cemented
B-14	15.0	0.7**	Very dense, slightly cemented
B-15	2.0	14.1**	Hard and very dense, slightly cemented
B-16	2.0	13.7**	Very dense, slightly cemented
B-18	10.0	5.8**	Very dense, slightly cemented
B-19	10.0	5.6**	Very dense, slightly cemented
B-20	4.0	3.0**	Very dense, slightly cemented
B-20	15.0	0.4**	Very dense, slightly cemented
TP-3	4.0	5.3**	Hard, strongly cemented, sand- to gravel-size
TP-4	4.0	7.0**	Hard, strongly cemented, sand- to gravel-size
TP-6	5.0	5.0**	Hard, strongly cemented, sand- to gravel-size
TP-7	3.5	1.5	Hard, strongly cemented, sand- to gravel-size
TP-9	3.5	3.0	Hard, strongly cemented, sand- to cobble-size

*Depth measured from ground surface adjacent to exploration.
**Exploration terminated in zone containing caliche chunks.
NOTE: Numerous slightly cemented soil layers were also encountered in the explorations.

Laboratory tests were performed on selected samples of native soil obtained from the borings and test pits. The results of these tests are summarized in the following table. The results of in-place moisture content and dry density tests are also presented on the boring and test pit logs in Appendix A. Additional information regarding the laboratory test procedures and results are provided in Appendix B and Appendix C.

Table 4 – Summary of Laboratory Test Results

Test Type	Test Results	Remarks
In-Place Moisture Content	2.3 to 18.5 percent	--
In-Place Dry Density	79.2 to 114.6 pounds per cubic foot (pcf)	--
Atterberg Limits Liquid Limit Plastic Limit Plasticity Index	 Up to 41 Up to 22 Up to 21	Low to moderate plasticity
Consolidation Collapse Potential Expansion Potential	 0.0 to 7.1 percent collapse 0.0 to 2.0 percent expansion	 Low to high collapse potential Low to high expansion potential
Expansion Index	0 to 28	Very low to low expansion potential
Direct Shear Cohesion Friction Angle	 0 to 750 pounds per square foot (psf) 25 to 37 degrees	 -- --
Resistivity (Saturated Condition)	300 to 10,000 Ohm-cm	Moderately to very severely corrosive to steel
Chloride Content	5.80 to 182 mg/kg	Low corrosive to buried metal
pH	7.66 to 8.60 S.U.	--
Redox Potential	223 to 335 mV	--
Sodium Sulfate Content	0.00 percent	Low chemical heave (salt heave) potential
Sodium Content	0.00 percent	--
Sulfate Content	0.00 to 0.12 percent	Negligibly to moderately deleterious to concrete
Total Salts (Solubility)	0.07 to 0.89 percent	Low to moderate solubility potential

6.5. Groundwater

Groundwater was not encountered in our exploratory borings, which were drilled to depths of up to approximately 20 feet. However, as previously mentioned, four abandoned water wells were observed at the subject site. The locations of these four wells (designated Orchard Well, Well #2, Well #3, and Well #4 by Ninyo & Moore) are shown on Figure 4. Ninyo & Moore measured the groundwater levels in these wells on January 31, 2011. The coordinates of the wells and approximate depths to groundwater levels measured are presented in the following table.

Table 5 – Measured Groundwater Levels

Well	Location	Approximate Depth to Groundwater (feet)*
Orchard Well	35.9725°N, -115.8999°W	110.2
Well #2	35.9793°N, -115.8819°W	130.6
Well #3	35.9724°N, -115.8825°W	131.4
Well #4	35.9722°N, -115.8949°W	113.5
*Measured from top of ground surface adjacent to well.		

Ninyo & Moore's groundwater measurements reflect conditions at the time of our subsurface exploration and do not preclude local and/or seasonal fluctuations in groundwater levels. These fluctuations may be due to variations in ground surface topography, subsurface geologic conditions, rainfall, and other factors. Evaluation of factors associated with groundwater fluctuations was beyond the scope of this study.

7. PRELIMINARY FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Based on the preliminary findings of this evaluation, it is our opinion that there are no known geotechnical or geologic conditions that would preclude development of the proposed project at the subject site. The conclusions provided in this report should be considered preliminary and are intended for planning purposes. A design-level geotechnical evaluation, including additional subsurface evaluation and laboratory testing, will need to be performed for the project in the future. Our preliminary findings and conclusions regarding geotechnical aspects of the proposed project include the following:

- Layers of moderately hard to hard, moderately to strongly cemented soil (caliche) were encountered at depths as shallow as approximately 6.5 feet in a few of our exploratory borings and test pits. Due to its variable nature, caliche may be present in subsurface soils between and beyond our exploratory excavations at the subject site. Excavations and pylon foundation installation will be impeded due to the presence of these relatively indurated layers of caliche, which is rock-like in nature. Rock excavation techniques and predrilling prior to pylon foundation installation should be anticipated for some excavations and foundation installation.

- Numerous layers of slightly cemented soil and zones of subgrade soil containing significant amounts of hard, strongly cemented caliche chunks were encountered in our exploratory

borings and test pits. Relatively shallow refusal was also encountered during CPT testing (see Appendix D). These zones of caliche chunks and slightly cemented soil layers were readily excavated with a backhoe and easily drilled with our drill rig, but their presence in the subgrade soils may contribute to difficult foundation pylon driving conditions. Predrilling prior to pylon foundation installation should be anticipated in some areas of the site.

- Oversized materials will be generated during excavation of caliche layers and other cemented soils at the site. These materials will need to be crushed prior to being used as structural fill or backfill, or removed from the site and disposed of in a suitable manner.

- Very loose to loose, native, coarse-grained soils with relatively low in-place dry densities were encountered in our explorations. These loose soils, which ranged from approximately 1 to 10 feet deep, were noted particularly in the northern and western portions of the site. Relatively loose soils up to approximately 3.5 feet deep were also observed in one of our test pits excavated in a natural drainage channel on the east side of the site. The results of cone penetration tests (CPT) also indicated relatively loose layers of surficial soils.

- Based on the relatively low moisture content and loose, granular nature of native soils encountered in our exploratory excavations, caving of the upper soils should be anticipated during some earthwork operations.

- The results of our subsurface explorations and laboratory tests indicate the presence of soils with high porosity and high collapse potential. These soils are prone to settlement and should be considered unsuitable for support of structures and improvements in their existing condition. Shallow foundations, concrete slabs-on-grade, exterior concrete flatwork, pavement sections, and other improvements will need to be founded on a zone of adequately placed and compacted structural fill. The composition, thickness/depth, lateral extent, and compaction of structural fill will need to be addressed as part of a design-level geotechnical evaluation.

- Based on the findings of our subsurface evaluation and laboratory test results, fill and native soils encountered in our exploratory borings and test pits should generally be suitable for use as structural fill and backfill material for the project. However, zones of slightly to moderately gypsiferous (potentially water-soluble and settlement-prone) soils were encountered in some of the explorations. In addition, our laboratory test results indicated that some of the on-site soils have a moderate solubility potential. Sampling and testing of soil to be utilized as structural fill and backfill for this project should be performed during earthwork operations to evaluate solubility potential. Soils with an elevated solubility potential will need to be either blended with non-soluble soils to adequately reduce the solubility potential, or exported from the project site.

- Due to the relatively loose and moisture sensitive nature of some of the native soils on site, adequate surface drainage should be provided to reduce ponding and infiltration of water into the subsurface soils, as appropriate. Surface runoff should be intercepted, collected, and

not permitted to flow or infiltrate into subsurface soils adjacent to or beneath structures. Consideration should be given to utilization of swales and other drainage devices to reduce the adverse effects of surface water runoff.

- During our site reconnaissance, Ninyo & Moore personnel observed numerous ground surface lineations. These lineations generally ranged from a few inches to several feet wide and were up to hundreds of yards long and were generally marked by increased vegetation, eroded or loose soil, relatively slight depressions in the ground surface, and, in a few areas, ground cracks up to approximately 2 inches wide and a few inches deep. These lineations appear to have been caused by ground fissures. Depending on siting of proposed structures and other considerations, the lineations may need to be further evaluated in a subsequent phase of study.

- Based on our field observations and review of referenced data, no faults traverse the project site. However, Pahrump fault, which is also referred to as the Pahrump Valley fault zone in some publications, is considered by United States Geological Survey (USGS, 2011b) to be potentially active and by others as active. Pahrump fault is located in approximately 1,500 feet northeast of the project site and has the potential to generate an earthquake of moment magnitude 7.2. Peak ground accelerations of 0.10g and 0.18g are anticipated for earthquakes that have a 10 percent and 2 percent probability of being exceeded in 50 years, respectively.

- The results of our resistivity tests indicate the presence of on-site soils that are very severely corrosive to steel. We recommend that corrosion reduction methods be implemented for this project for steel in contact with on-site soils.

- The results of our sulfate content tests indicated that some of the on-site soils were moderately deleterious to normal strength concrete. Therefore, we recommend that concrete in contact with on-site soils contain Type V cement and have a design compressive strength of 4,500 pounds per square inch (psi). The concrete should have a water-cement ratio of 0.45 by weight.

- Based on our review of the referenced geologic and hydrologic literature and the results of our monitoring of existing on-site wells, groundwater at the site should be anticipated to be relatively deep (greater than approximately 100 feet deep). Due to the relatively deep groundwater, it is our opinion that there is a low potential for liquefaction of the subsurface soils at the site.

8. LIMITATIONS

The limited field evaluation, laboratory testing, and geotechnical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty,

expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for planning purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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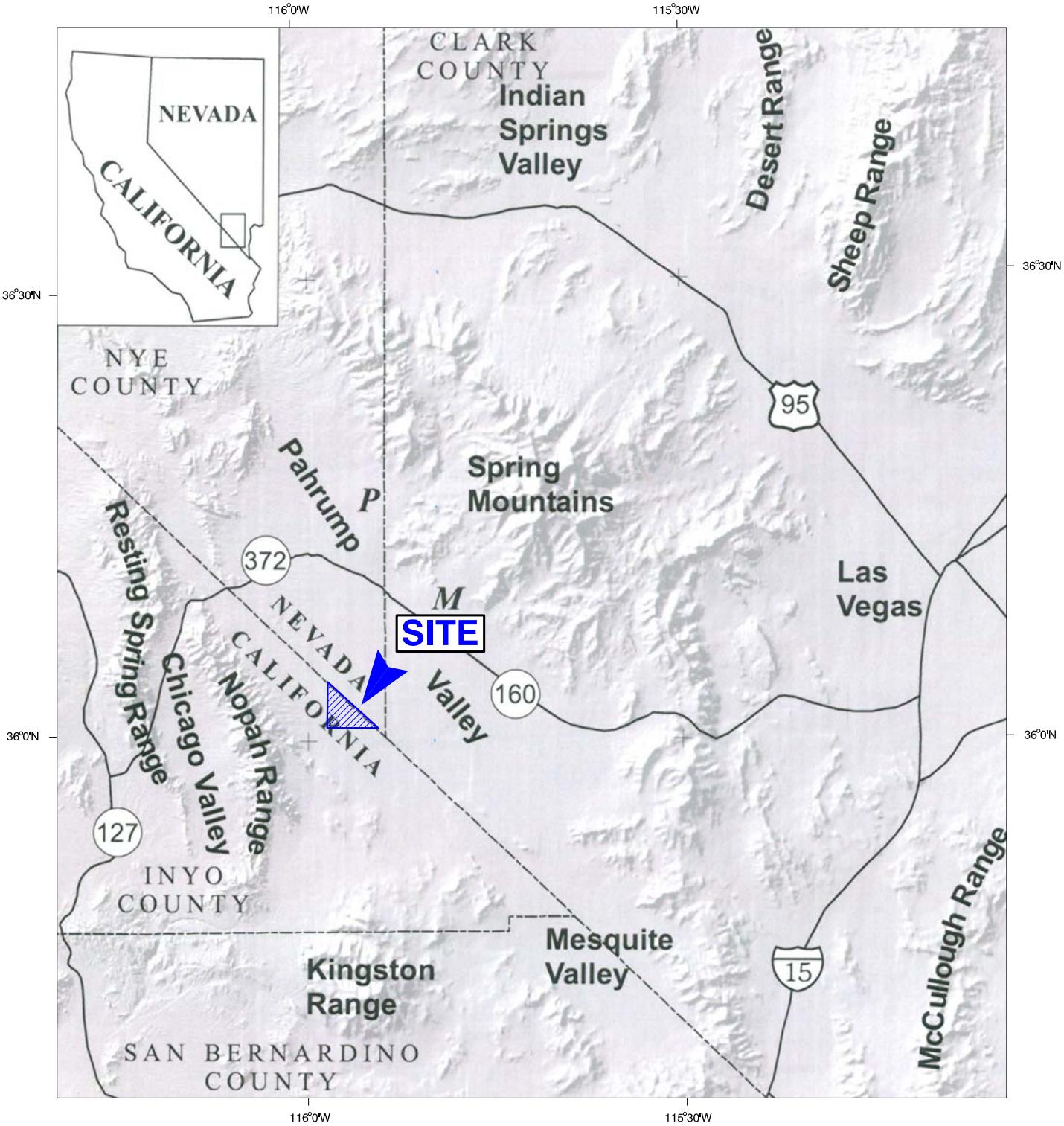

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SCALE IN FEET

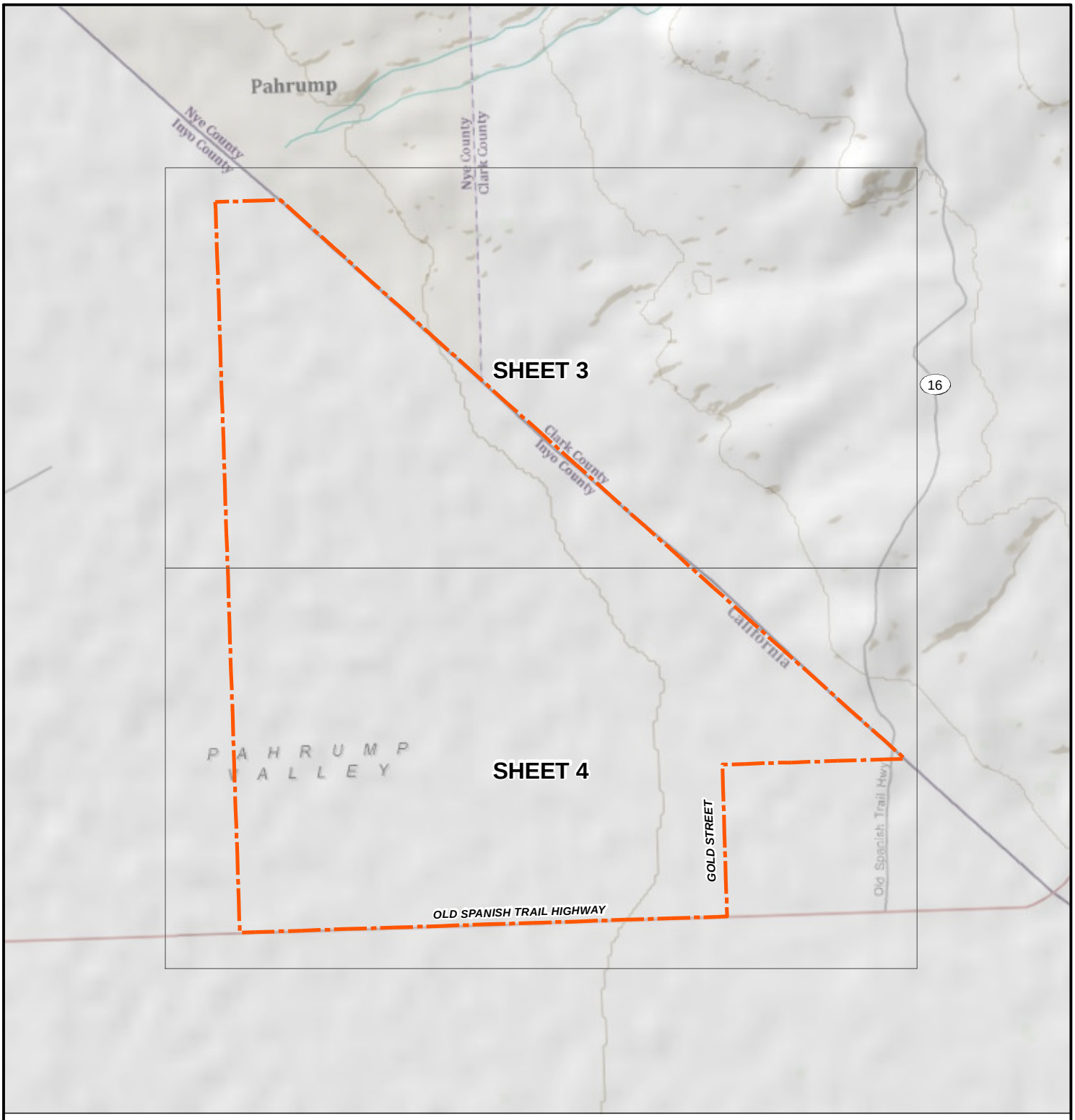
0 50000 100000

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE

N

303200001 site.dwg

Ninyo & Moore	SITE LOCATION	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	1
303200001 / 3/11		



SOURCE: USGS, FAO, NPS, EPA, ESRI, DeLorme, TANA, other suppliers

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

SCALE IN FEET

0 1,500 3,000 6,000

N

Ninyo & Moore		MAP INDEX	FIGURE
PROJECT NO.	DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	2
303200001	3/11		

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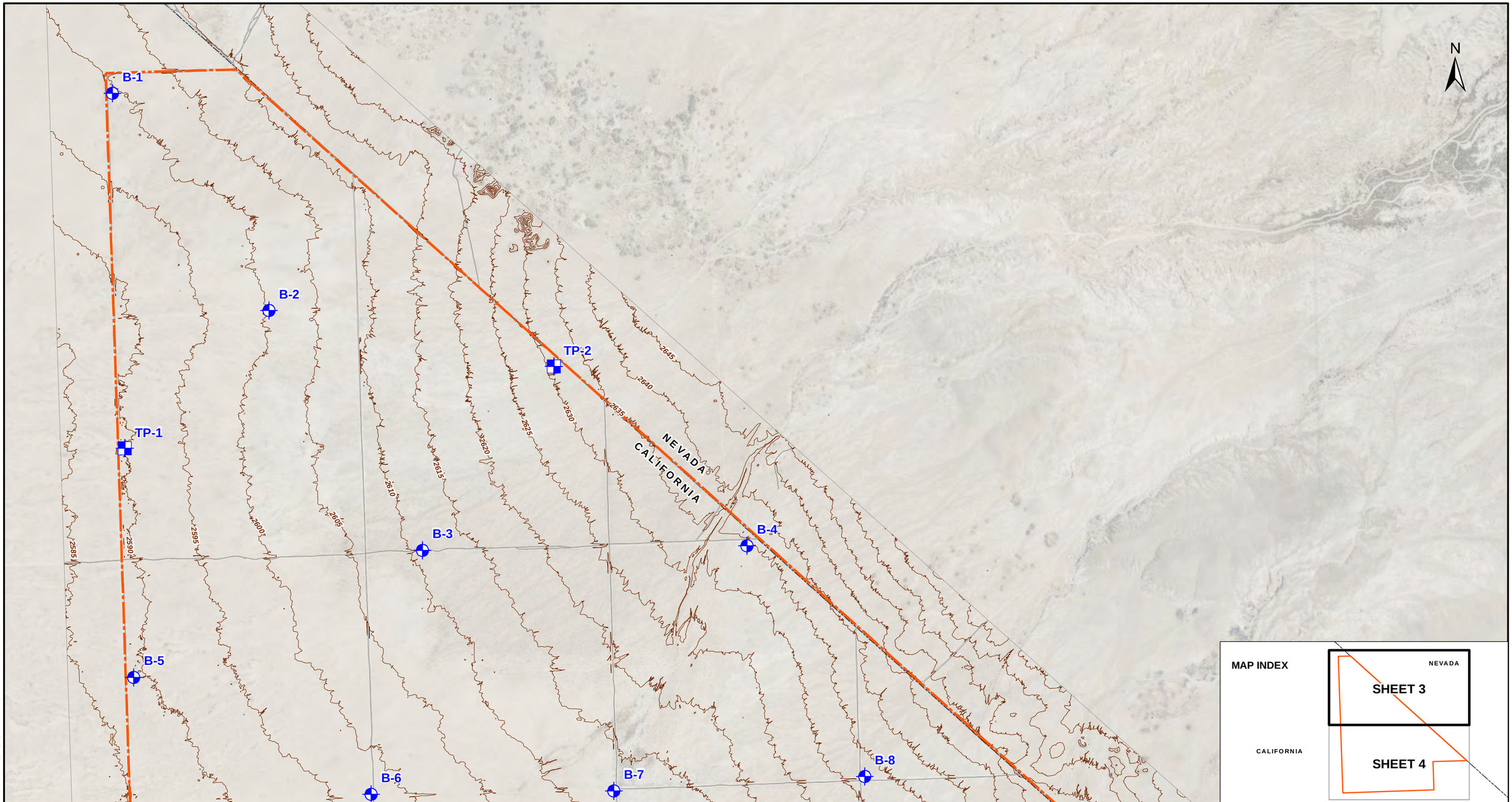

SOURCE: DATA SOURCE

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

LEGEND

B-20	BORING		WELL
TP-10	TEST PIT		SITE BOUNDARY

SCALE IN FEET

0 500 1,000 2,000

Ninyo & Moore	EXPLORATORY EXCAVATIONS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	3
303200001 / 3/11		

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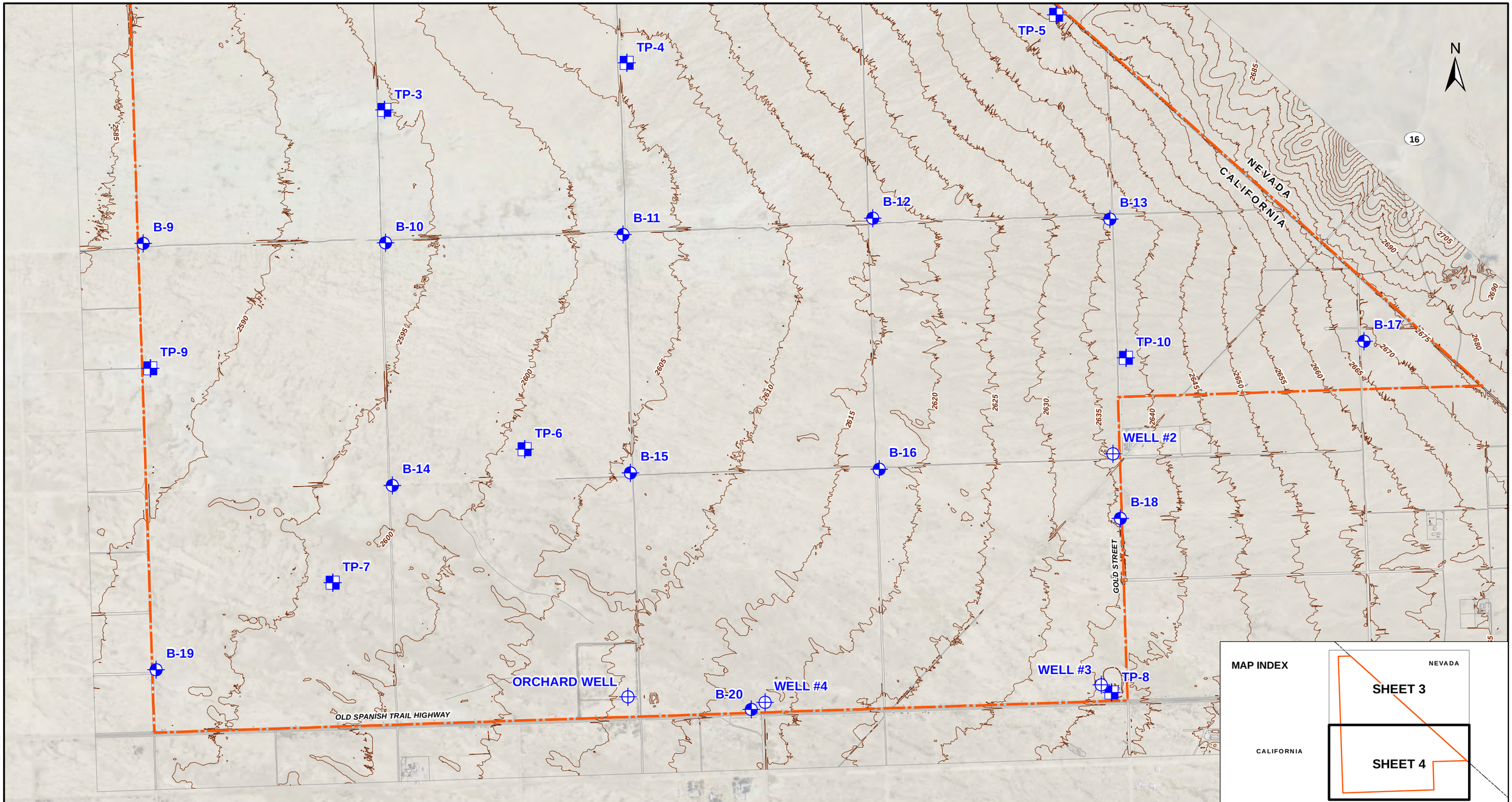

SOURCE: DATA SOURCE

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

LEGEND

B-20	BORING		WELL
TP-10	TEST PIT		SITE BOUNDARY

SCALE IN FEET

0 500 1,000 2,000

Ninyo & Moore	EXPLORATORY EXCAVATIONS	FIGURE
PROJECT NO. 303200001 / DATE 3/11	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	4

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APPENDIX A

EXPLORATORY BORING AND TEST PIT LOGS

Field Procedure for the Collection of Disturbed Samples

Bulk samples of representative earth materials were obtained from the exploratory excavations. The samples were bagged and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples

Relatively undisturbed soil samples were obtained in the field using a modified split-barrel drive sampler. The sampler, with an external diameter of 3.0 inches, was lined with 1-inch long, thin brass rings with inside diameters of 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows during driving are presented on the excavation logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

U.S.C.S. METHOD OF SOIL CLASSIFICATION

MAJOR DIVISIONS		SYMBOL	TYPICAL NAMES
COARSE-GRAINED SOILS (More than 1/2 of soil >No. 200 sieve size)	GRAVELS (More than 1/2 of coarse fraction > No. 4 sieve size)	GW	Well graded gravels or gravel-sand mixtures little or no fines
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS (More than 1/2 of coarse fraction <No. 4 sieve size)	SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (More than 1/2 of soil <No. 200 sieve size)	SILTS & CLAYS Liquid Limit <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 & CLAYS Liquid Limit >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 silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils

GRAIN SIZE CHART		
CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL	3" to No. 4	76.2 to 4.76
Coarse	3" to 3/4"	76.2 to 19.1
Fine	3/4" to No. 4	19.1 to 4.76
SAND	No. 4 to No. 200	4.76 to 0.074
Coarse	No. 4 to No. 10	4.76 to 2.00
Medium	No. 10 to No. 40	2.00 to 0.420
Fine	No. 40 to No. 200	0.420 to 0.074
SILT & CLAY	Below No. 200	Below 0.074

Hardness of Caliche*	
Descriptive Term	Characteristics
Moderately Hard	Can be scratched with a knife with light to moderate pressure; breaks with moderate hammer blow.
Hard	Can be scratched with a knife with difficulty; can be broken with heavy hammer blow.
Very Hard	Cannot be scratched with a knife; can only be broken with repeated heavy hammer blows.

* Rock-like cemented soil

Ninyo & Moore

SOIL CLASSIFICATION

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■							Bulk sample.
		■						Modified split-barrel drive sampler.
		☒						No recovery with modified split-barrel drive sampler.
		▌						Sample retained by others.
		◥						Standard Penetration Test (SPT).
5		◥						No recovery with a SPT.
		▭	XX/XX					Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
		◥						No recovery with Shelby tube sampler.
		▭						Continuous Push Sample.
				♀				Seepage.
10				▽				Groundwater encountered during drilling.
				▼				Groundwater measured after drilling.
						▦	SM	NATIVE SOIL: Solid line denotes unit change.
								Dashed line denotes material change.
15								Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Sheared Bedding Surface
20								The total depth line is a solid line that is drawn at the bottom of the boring.

DATE DRILLED _____ BORING NO. EXPLANATION

GROUND ELEVATION _____ SHEET 1 OF 1

METHOD OF DRILLING _____

DRIVE WEIGHT _____ DROP _____

SAMPLED BY _____ LOGGED BY _____ REVIEWED BY _____

Ninyo & Moore

BORING LOG

EXPLANATION OF BORING LOG SYMBOLS

PROJECT NO.	DATE	FIGURE
	Rev. 01/06	A-0

DATE DRILLED 1/20/11 BORING NO. B-1

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SC	NATIVE SOIL: Light brown, dry, loose, clayey SAND; a few roots in upper few feet of unit. Damp.
		■	4/6" 6/6" 10/6"	5.8	94.0			
5		■	20/6" 20/6" 23/6"	3.9	103.0			Medium dense; trace gravel; moderately gypsiferous.
	■							Increase in gravel content.
10		■	12/6" 31/6" 34/6"	3.0	114.6			Dense.
	■						SM	Light brown, damp, medium dense, silty SAND with gravel.
15		▨	8/6" 14/6" 14/6"					
20								Total depth = 16.5 feet. Groundwater not encountered during drilling. Backfilled on 1/20/11.

NOTE:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

Ninyo & Moore

BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-1

DATE DRILLED 1/20/11 BORING NO. B-2

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	NATIVE SOIL: Light brown, dry, loose, silty SAND; trace gravel; a few roots.
								Damp.
			4/6" 5/6" 10/6"	6.9	90.6		SC	Brown, damp, loose, clayey SAND; a few roots in upper few feet of unit.
5			23/6" 30/6" 50/5"	6.7	89.8			Very dense; trace gravel; slightly gypsiferous; slightly porous; sampler refusal after 17 inches.
10			28/6" 50/3"	7.8	89.8			Slightly cemented; decrease in gypsum content; sampler refusal after 9 inches.
								Trace gravel.
15			11/6" 23/6" 27/6"	9.4	92.2			Medium dense.
								Total depth = 16.5 feet. Groundwater not encountered during drilling. Backfilled on 1/20/11.
								NOTE: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
20								

Ninyo & Moore

BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-2

DATE DRILLED 1/20/11 BORING NO. B-3

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	NATIVE SOIL: Brown, damp, loose, silty SAND; trace gravel; a few roots in upper few feet of unit.
		3/6" 3/6" 8/6"	4.7	103.2			
5		6/6" 8/6" 12/6"	--	--			Increase in gravel content.
10		20/6" 35/6" 50/4"					Very dense; slightly cemented; sampler refusal after 16 inches.
						SC	Light brown, damp, very dense, clayey SAND; trace gravel.
15		27/6" 35/6" 50/3"	6.2	110.4			Slightly cemented; sampler refusal after 15 inches.
20							Total depth = 16.3 feet. Groundwater not encountered during drilling. Backfilled on 1/20/11.

NOTE:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

Ninyo & Moore

BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-3

DATE DRILLED 1/20/11 BORING NO. B-4

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SM	NATIVE SOIL: Brown, damp, loose to medium dense, silty SAND; few gravel; a few roots.
		■	4/6" 8/6" 13/6"	4.5	--		SC	Brown, damp, loose to medium dense, clayey SAND; slightly gypsiferous.
5		■	17/6" 28/6" 30/6"	5.4	106.1			Medium dense.
	■							
10		■	17/6" 48/6" 50/4"	7.7	101.1			Very dense; slightly cemented; slightly porous; sampler refusal after 16 inches.
	■							
15		☒	50/4"					Moderately hard, moderately cemented caliche layer; sampler refusal after 4 inches.
20								

Total depth = 15.3 feet.
Groundwater not encountered during drilling.
Backfilled on 1/20/11.

NOTE:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

Ninyo & Moore

BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-4

DATE DRILLED 1/20/11 BORING NO. B-5

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	NATIVE SOIL: Light brown, dry, loose, silty SAND; trace gravel; a few roots.
		2/6" 3/6" 3/6"	10.5	79.2		SC	Brown, damp, very loose, clayey SAND; a few roots in upper few feet of unit.
5		3/6" 5/6" 12/6"	8.9	102.2			Loose.
10		11/6" 20/6" 31/6"	11.4	101.0			Medium dense; moderately porous.
15		2/6" 2/6" 50/1"	7.5	100.6			Moderately hard, moderately cemented caliche layer; sampler refusal after 13 inches.
20							Total depth = 16.1 feet. Groundwater not encountered during drilling. Backfilled on 1/20/11.

NOTE:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

Ninyo & Moore

BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-5

DATE DRILLED 1/20/11 BORING NO. B-6

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0		2/6" 2/6" 3/6"	5.1	82.2		SC	NATIVE SOIL: Brown, damp, very loose, clayey SAND; a few roots.
5		12/6" 30/6" 50/6"	7.4	108.7		CL	Light gray, damp, hard, sandy lean CLAY; trace gravel.
10		30/6" 50/5"	4.5	103.5			Slightly cemented layer; sampler refusal after 11 inches.
							Light gray, damp, moderately hard, CALICHE; moderately cemented.
15		27/6" 50/4"					Sampler refusal after 10 inches.
							Total depth = 15.8 feet. Groundwater not encountered during drilling. Backfilled on 1/20/11. NOTE: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
20							

Ninyo & Moore

BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-6

DATE DRILLED 1/20/11 BORING NO. B-7

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	NATIVE SOIL: Brown, damp, firm, sandy lean CLAY; a few roots.
		2/6" 2/6" 4/6"	5.7	90.9		SM	Brown, damp, very loose, silty SAND.
5		5/6" 6/6" 11/6"	7.1	86.1		SC	Brown, damp, loose, clayey SAND; slightly porous.
						SM	Brown, damp, medium dense, silty SAND.
10		31/6" 50/5"	6.1	102.2		SC	Light brown, damp, very dense, clayey SAND; trace gravel; slightly cemented. Sampler refusal after 11 inches.
15		50/4"	6.6	96.5			Porous; sampler refusal after 4 inches.
20							Total depth = 15.3 feet. Groundwater not encountered during drilling. Backfilled on 1/20/11.

NOTE:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

Ninyo & Moore

BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-7

DATE DRILLED 1/20/11 BORING NO. B-8

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SM	NATIVE SOIL: Light brown, dry to damp, loose to medium dense, silty SAND; few gravel: a few roots.
		■	13/6" 14/6" 15/6"	4.9	113.1		SP-SM	Brown, damp, medium dense, poorly graded SAND with silt and gravel.
5		■	7/6" 16/6" 28/6"	7.6	95.6		SC	Light brown, damp, medium dense, clayey SAND; trace gravel.
10		■	8/6" 10/6" 16/6"	3.0	110.8		SM	Light brown, damp, medium dense, silty SAND; trace gravel.
	■						SC	Light brown, damp, dense, clayey SAND; trace gravel.
15		■	25/6" 25/6" 46/6"	5.0	102.3			
								Total depth = 16.5 feet. Groundwater not encountered during drilling. Backfilled on 1/20/11.
20								NOTE: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

Ninyo & Moore

BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-8

DATE DRILLED 1/20/11 BORING NO. B-9

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SC	NATIVE SOIL: Light brown, dry, loose, clayey SAND; a few roots in upper few feet of unit.
							Damp.
		5/6" 10/6" 15/6"	8.0	86.5			Medium dense; slightly porous.
5		7/6" 10/6" 19/6"	10.4	91.3			
							Light gray; few gravel; increase in clay content.
10		19/6" 50/3"	9.0	97.3			Very dense; slightly cemented; sampler refusal after 9 inches.
15		20/6" 30/6" 28/6"	3.8	105.9			Medium dense; decrease in clay content.
20							Total depth = 16.5 feet. Groundwater not encountered during drilling. Backfilled on 1/20/11.

NOTE:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

Ninyo & Moore

BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-9

DATE DRILLED 1/20/11 BORING NO. B-10

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							CL	NATIVE SOIL: Brown, damp, very stiff, sandy lean CLAY; a few roots in upper few feet of unit.
			7/6" 10/6" 18/6"	9.6	91.2			
5			17/6" 37/6" 50/4"	10.7	105.7			Hard; slightly cemented; slightly porous; sampler refusal after 16 inches. Light gray.
10			20/6" 20/6" 23/6"	7.8	--			Very stiff; moderately porous.
15			25/6" 50/3"	18.5	80.4			Hard; slightly cemented; sampler refusal after 9 inches.
								Total depth = 15.8 feet. Groundwater not encountered during drilling. Backfilled on 1/20/11.
20								NOTE: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

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BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-10

DATE DRILLED 1/21/11 BORING NO. B-11

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	NATIVE SOIL: Brown, damp, loose, silty SAND; trace gravel; a few roots.
			5/6" 5/6" 10/6"	3.7	105.1		SC	Brown, damp, loose, clayey SAND; slightly porous.
5			20/6" 50/4"	8.4	102.7		CL	Light grayish brown, damp, hard, sandy lean CLAY; slightly cemented; slightly porous. Sampler refusal after 10 inches.
10			37/6" 50/1"	6.3	102.1			Sampler refusal after 7 inches.
								Light gray, damp, moderately hard, CALICHE; moderately cemented; composed primarily of fine-grained material.
15		X	50/4"					Sampler refusal after 4 inches.
								Total depth = 15.3 feet. Groundwater not encountered during drilling. Backfilled on 1/21/11.
								NOTE: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
20								

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BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-11

DATE DRILLED 1/21/11 BORING NO. B-12

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	NATIVE SOIL: Brown, damp, medium dense, silty SAND; trace gravel; a few roots.
			7/6" 27/6" 50/6"	9.4	103.4		SC	Light brown, damp, dense, clayey SAND; trace gravel; slightly cemented; moderately porous.
5			27/6" 50/3"	--	--			Very dense; sampler refusal after 9 inches.
10			17/6" 50/5"				SM	Light brown, damp, very dense, silty SAND with gravel; slightly cemented. Sampler refusal after 11 inches.
15			29/6" 29/6" 50/2"	2.3	114.1			Slightly porous; sampler refusal after 14 inches.
20								Total depth = 16.2 feet. Groundwater not encountered during drilling. Backfilled on 1/21/11. NOTE: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

Ninyo & Moore

BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-12

DATE DRILLED 1/21/11 BORING NO. B-13

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0		17/6" 19/6" 37/6"	7.2	101.6		SM	NATIVE SOIL: Brown, damp, medium dense, silty SAND; few gravel; a few roots.
5		8/6" 18/6" 40/6"	6.2	99.2		SC	Brown, damp, medium dense, clayey SAND; slightly gypsiferous.
10		7/6" 9/6" 15/6"	5.8	94.2		SM	Light brown, damp, medium dense, silty SAND; trace gravel; slightly gypsiferous. Few gravel.
15		20/6" 20/6" 20/6"	7.2	96.9			
20							Total depth = 16.5 feet. Groundwater not encountered during drilling. Backfilled on 1/21/11. NOTE: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

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BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-13

DATE DRILLED 1/20/11 BORING NO. B-14

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SC	NATIVE SOIL: Light brown, damp, loose, clayey SAND; a few roots in upper few feet of unit.
		■	12/6" 40/6" 50/3"	11.4	104.8			Brown; increase in clay content; trace gravel. Very dense; slightly cemented layer a few inches thick; sampler refusal after 15 inches.
5		■	20/6" 21/6" 24/6"	13.3	98.3			Light brown; medium dense; slightly porous.
	■							
10		■	7/6" 10/6" 20/6"	14.3	98.0			
	■							
15		▨	40/6" 50/2"					Very dense; slightly cemented; sampler refusal after 8 inches.
20								Total depth = 15.7 feet. Groundwater not encountered during drilling. Backfilled on 1/20/11.

NOTE:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

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BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-14

DATE DRILLED 1/21/11 BORING NO. B-15

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SC	NATIVE SOIL: Brown, damp, medium dense, clayey SAND; trace gravel; a few roots.
			29/6" 42/6" 50/4"	8.8	102.2		CL	Light gray, damp, hard, sandy lean CLAY; slightly cemented; slightly porous. Sampler refusal after 16 inches.
5			27/6" 37/6" 50/6"	7.8	106.5			
10			20/6" 50/5"	6.5	105.1		SC	Light gray, damp, very dense, clayey SAND; slightly cemented; few gravel; slightly porous. Sampler refusal after 11 inches.
15			30/6" 30/6" 50/1"	8.4	104.5			Sampler refusal after 13 inches.
20								Total depth = 16.1 feet. Groundwater not encountered during drilling. Backfilled on 1/21/11.

NOTE:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

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BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-15

DATE DRILLED 1/21/11 BORING NO. B-16

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	NATIVE SOIL: Brown, damp, medium dense, silty SAND; trace gravel; a few roots.
			17/6" 27/6" 50/5"	7.3	105.9		SC	Light brown, damp, very dense, clayey SAND; slightly cemented; few gravel; slightly porous. Sampler refusal after 17 inches.
5			37/6" 50/5"	7.1	107.0			Moderately porous; sampler refusal after 11 inches.
10			37/6" 50/2"	7.4	84.7			Sampler refusal after 8 inches.
15			37/6" 50/2"					Sampler refusal after 8 inches.
								Total depth = 15.7 feet. Groundwater not encountered during drilling. Backfilled on 1/21/11.
								NOTE: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
20								

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BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-16

DATE DRILLED 1/21/11 BORING NO. B-17

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	NATIVE SOIL: Brown, damp, very loose, silty SAND; a few roots; scattered gravel.
		2/6" 2/6" 2/6"	10.4	96.6			
5		12/6" 24/6" 35/6"	3.2	113.0		SC	Light brown, damp, medium dense, clayey SAND.
						SM	Brown, damp, medium dense, silty SAND with gravel.
10		5/6" 18/6" 34/6"	6.7	107.0		SC	Brown, damp, medium dense, clayey SAND with gravel.
						SM	Brown, damp, medium dense, silty SAND with gravel.
15		12/6" 19/6" 40/6"	7.4	109.8			
							Total depth = 16.5 feet. Groundwater not encountered during drilling. Backfilled on 1/21/11.
20							NOTE: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

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BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-17

DATE DRILLED 1/21/11 BORING NO. B-18

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SM	NATIVE SOIL: Brown, damp, medium dense, silty SAND; trace gravel; a few roots.
		■	13/6" 15/6" 20/6"	7.5	101.7		SC	Brown, damp, medium dense, clayey SAND.
5		■	17/6" 40/6" 44/6"	7.6	111.7			Dense; moderately porous.
	■						SM	Light brown, damp, very dense, silty SAND; few gravel.
10		■	7/6" 50/5"	14.1	96.4			Slightly cemented; sampler refusal after 11 inches.
	■						SC	Light brown, damp, very dense, clayey SAND; trace gravel; slightly porous.
15		■	27/6" 50/3"	--	--			Slightly cemented; sampler refusal after 9 inches.
								Total depth = 15.8 feet. Groundwater not encountered during drilling. Backfilled on 1/21/11.
20								NOTE: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

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BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-18

DATE DRILLED 1/21/11 BORING NO. B-19

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	NATIVE SOIL: Light brown, damp, loose, silty SAND; a few roots; trace gravel.
		6/6" 13/6" 22/6"	17.3	104.9		SC	Brown, damp, medium dense, clayey SAND; trace gravel.
5		6/6" 17/6" 47/6"	15.1	96.6			Dense; light gray.
							Light brown.
10		23/6" 40/6" 50/3"	15.1	102.5			Very dense; slightly cemented; sampler refusal after 15 inches.
15		16/6" 50/1"	18.5	99.3			Slightly porous; sampler refusal after 7 inches.
20							Total depth = 15.6 feet. Groundwater not encountered during drilling. Backfilled on 1/21/11.

NOTE:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

Ninyo & Moore

BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-19

DATE DRILLED 1/21/11 BORING NO. B-20

GROUND ELEVATION Not measured SHEET 1 OF 1

METHOD OF DRILLING Mayhew 1000 air-rotary drill rig

DRIVE WEIGHT 140 lbs. (spooling cable) DROP 30"

SAMPLED BY DJF LOGGED BY DJF REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SM	NATIVE SOIL: Brown, damp, medium dense, silty SAND; trace gravel; a few roots.
		■	9/6" 12/6" 19/6"	2.7	102.2		SC	Brown, damp, medium dense, clayey SAND; trace gravel; slightly porous.
							SM	Light brown, damp, very dense, silty SAND with gravel; slightly cemented.
5		■	16/6" 50/3"	4.9	97.9			Sampler refusal after 9 inches.
	■						SC-SM	Light brown, damp, medium dense, silty, clayey SAND; few gravel.
10		■	23/6" 27/6" 33/6"	6.0	99.9			
	■							
15		■	50/5"	7.1	87.6			Very dense; slightly cemented; slightly porous; sampler refusal after 5 inches.
20								Total depth = 15.4 feet. Groundwater not encountered during drilling. Backfilled on 1/21/11.

NOTE:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

Ninyo & Moore

BORING LOG

HIDDEN HILLS SOLAR FACILITY, OLD SPANISH TRAIL HIGHWAY AND GOLD STREET, INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE	FIGURE
303200001	3/11	A-20

Ninyo & Moore

TEST PIT LOG

HIDDEN HILLS SOLAR FACILITY
OLD SPANISH TRAIL HIGHWAY AND GOLD STREET
INYO COUNTY, CALIFORNIA

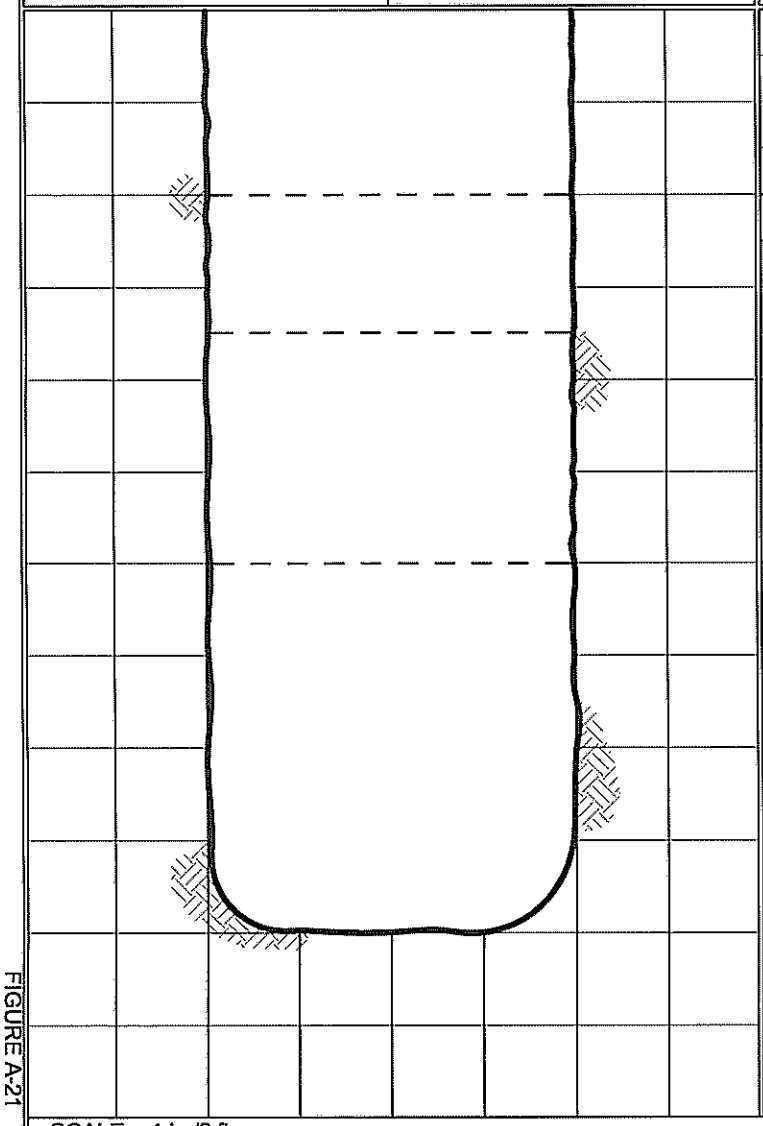
PROJECT NO.	DATE
303200001	3/11

DATE EXCAVATED 1/19/11 TEST PIT NO. TP-1

GROUND ELEVATION Not measured LOGGED BY RCH

METHOD OF EXCAVATION Case 580 Super L Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					CL	NATIVE SOIL: Brown, moist, stiff, sandy lean CLAY.
2	■					SC	@ 2.0': Brown, moist, medium dense, clayey SAND.
4	■					SM	@ 3.5': Light brown, dry to damp, silty SAND; few gravel. @ 4.5': Silty gravel layer a few inches thick.
6	■					SC	@ 6.0': Light brown, dry to damp, medium dense, clayey SAND; trace gravel; slightly cemented; highly porous with pore holes up to approximately 1/16-inch in diameter; slightly gypsiferous. @ 9.5': Very dense; slightly cemented.
8							
10							Total depth = 10.0 feet. Groundwater not encountered during excavation. Backfilled on 1/19/11.
12							

SCALE = 1 in./2 ft.

FIGURE A-21

Ninyo & Moore

TEST PIT LOG

HIDDEN HILLS SOLAR FACILITY
OLD SPANISH TRAIL HIGHWAY AND GOLD STREET
INYO COUNTY, CALIFORNIA

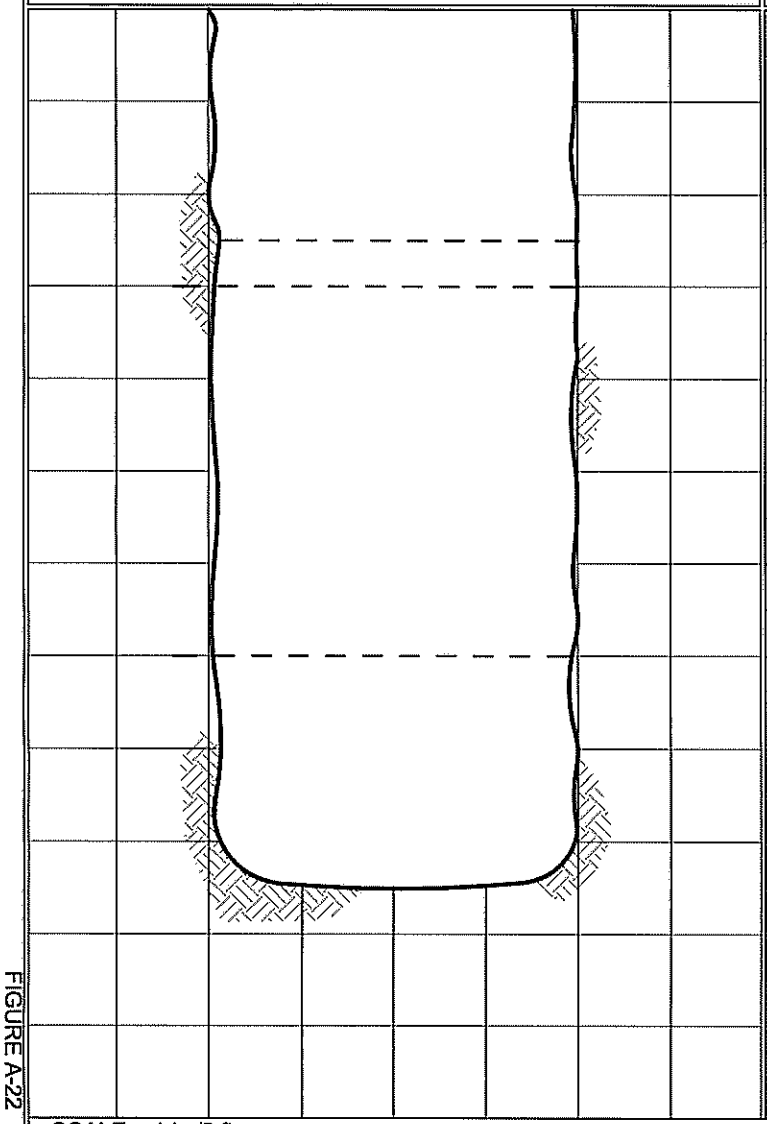
PROJECT NO.	DATE
303200001	3/11

DATE EXCAVATED 1/19/11 TEST PIT NO. TP-2

GROUND ELEVATION Not measured LOGGED BY RCH

METHOD OF EXCAVATION Case 580 Super L Backhoe

LOCATION See Figure 2



SCALE = 1 in./2 ft.

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	NATIVE SOIL: Brown, damp to moist, loose, silty SAND; trace gravel; scattered roots to approximately 1/4-inch in diameter; slightly porous.
2						GM	@ 2.5': Brown, damp, medium dense to dense, silty GRAVEL with sand.
	■					SM	@ 3.0': Light brown, dry to damp, medium dense to dense, silty SAND; few gravel.
4							@ 4.5': Silty gravel layer a few inches thick.
6	■						
						SC	@ 7.0': Brown, dry to damp, medium dense, clayey SAND; moderately porous with pore holes up to approximately 1/16-inch in diameter; moderately gypsiferous.
8							@ 8.5': Orangish brown; slightly oxidized.
10							Total depth = 9.5 feet. Groundwater not encountered during excavation. Backfilled on 1/19/11.
12							

FIGURE A-22

Ninyo & Moore

TEST PIT LOG

HIDDEN HILLS SOLAR FACILITY
OLD SPANISH TRAIL HIGHWAY AND GOLD STREET
INYO COUNTY, CALIFORNIA

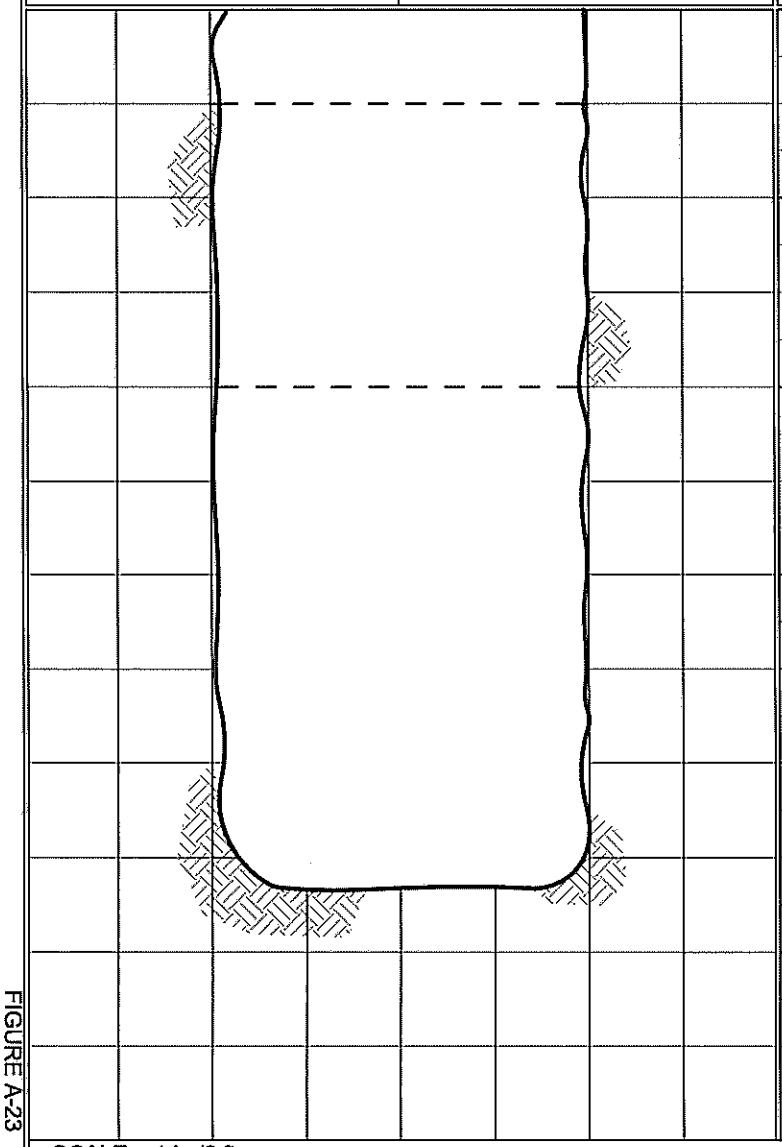
PROJECT NO.	DATE
303200001	3/11

DATE EXCAVATED 1/19/11 TEST PIT NO. TP-3

GROUND ELEVATION Not measured LOGGED BY RCH

METHOD OF EXCAVATION Case 580 Super L Backhoe

LOCATION See Figure 2



SCALE = 1 in./2 ft.

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					CL/CH	NATIVE SOIL: Greenish brown, damp, firm, sandy lean to fat CLAY.
2	■					CL	@ 1.0': Brown and light brown, dry to damp, very stiff, sandy lean CLAY with gravel; gravel generally consists of caliche chunks; highly porous with pore holes up to approximately 1/4-inch in diameter.
4	■					CL/CH	@ 4.0': Light brown, dry to damp, very stiff, sandy lean to fat CLAY; slightly cemented; highly porous; scattered hard, strongly cemented caliche chunks ranging from sand- to gravel-size.
6	■						
8	■						
10							Total depth = 9.3 feet. Groundwater not encountered during excavation. Backfilled on 1/19/11.
12							

FIGURE A-23

Ninyo & Moore

TEST PIT LOG

HIDDEN HILLS SOLAR FACILITY
OLD SPANISH TRAIL HIGHWAY AND GOLD STREET
INYO COUNTY, CALIFORNIA

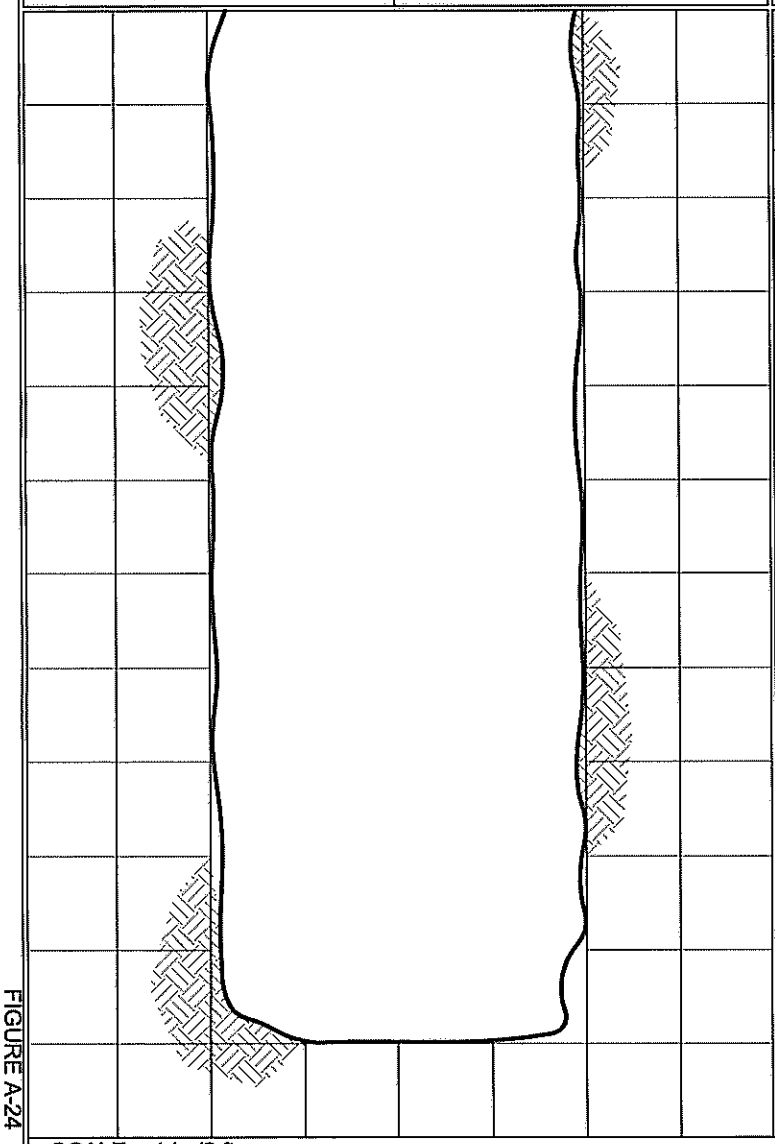
PROJECT NO.	DATE
303200001	3/11

DATE EXCAVATED 1/19/11 TEST PIT NO. TP-4

GROUND ELEVATION Not measured LOGGED BY RCH

METHOD OF EXCAVATION Case 580 Super L Backhoe

LOCATION See Figure 2



SCALE = 1 in./2 ft.

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SC	NATIVE SOIL: Brown, moist, loose, clayey SAND.
2							
							@ 2.8': Light brown; medium dense.
4	■						@ 4.0': Pale brown; dense to very dense; slightly cemented; scattered hard, strongly cemented caliche chunks ranging from sand- to gravel-size; slightly gypsiferous; moderately porous with pore holes up to approximately 1/16-inch in diameter.
6							
8							
	■						@ 9.0': Very dense.
10							
12							Total depth = 11.0 feet. Groundwater not encountered during excavation. Backfilled on 1/19/11.

FIGURE A-24

Ninyo & Moore

TEST PIT LOG

HIDDEN HILLS SOLAR FACILITY
OLD SPANISH TRAIL HIGHWAY AND GOLD STREET
INYO COUNTY, CALIFORNIA

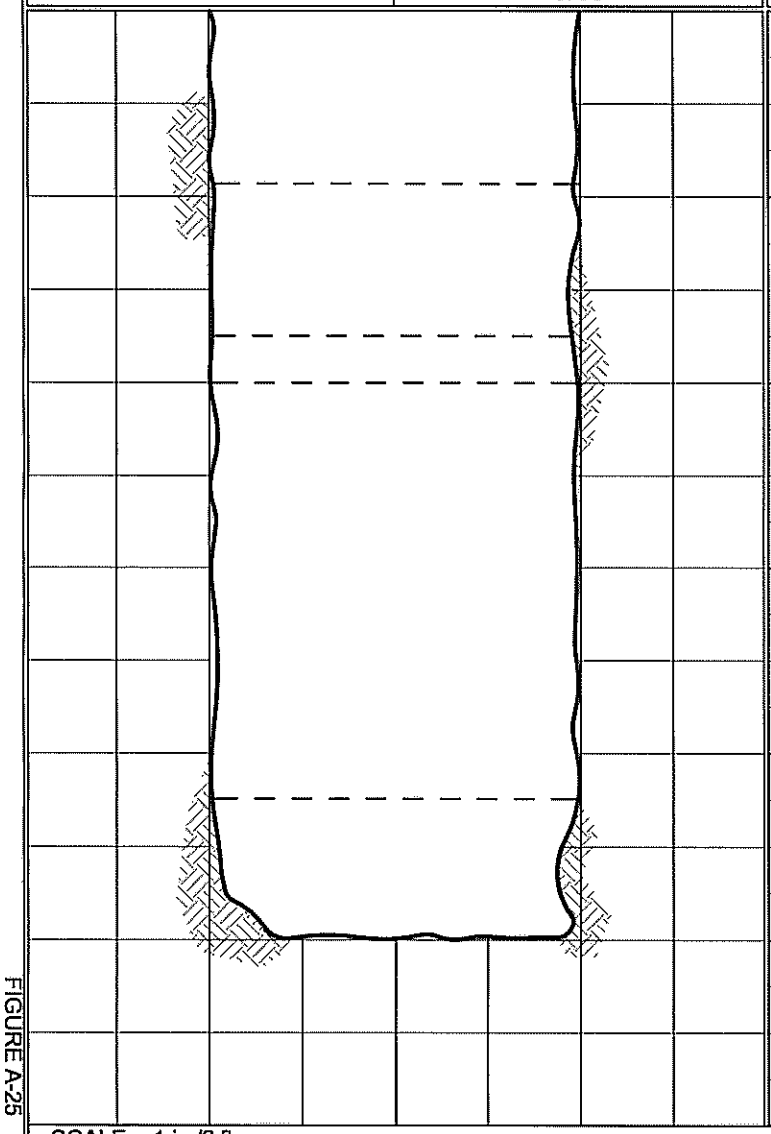
PROJECT NO.	DATE
303200001	3/11

DATE EXCAVATED 1/19/11 TEST PIT NO. TP-5

GROUND ELEVATION Not measured LOGGED BY RCH

METHOD OF EXCAVATION Case 580 Super L Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SP-SM	NATIVE SOIL: Brown, damp, very loose to loose, poorly graded SAND with silt and gravel.
2						SW	@ 1.9': Brown, moist, very loose to loose, well-graded SAND.
						SC	@ 3.5': Light brown, damp, medium dense, clayey SAND with gravel.
4	■					SW-SM	@ 4.0': Brown, damp, medium dense to dense, well-graded SAND with silt and gravel.
6	■						
8						GP-GM	@ 8.5': Brown, damp, dense, poorly graded GRAVEL with silt, sand, and cobbles.
10	■						Total depth = 10.0 feet. Groundwater not encountered during drilling. Backfilled on 1/19/11.
12							

SCALE = 1 in./2 ft.

FIGURE A-25

Ninyo & Moore

TEST PIT LOG

HIDDEN HILLS SOLAR FACILITY
OLD SPANISH TRAIL HIGHWAY AND GOLD STREET
INYO COUNTY, CALIFORNIA

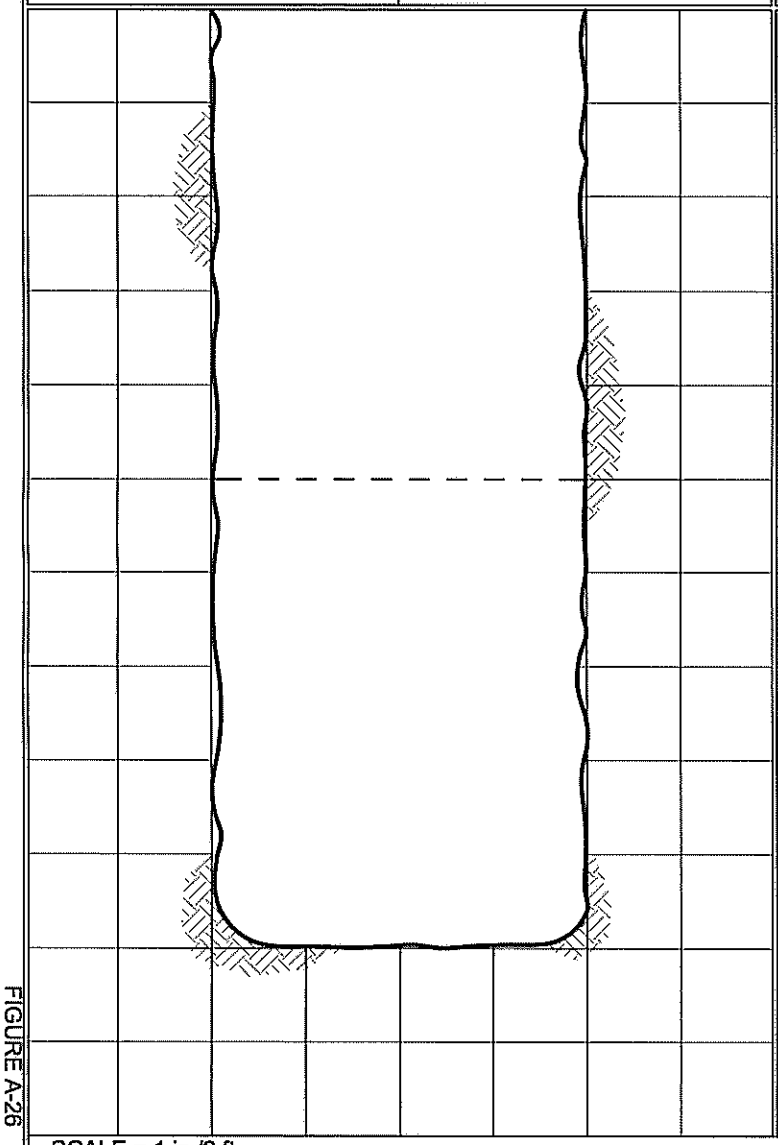
PROJECT NO.	DATE
303200001	3/11

DATE EXCAVATED 1/19/11 TEST PIT NO. TP-6

GROUND ELEVATION Not measured LOGGED BY RCH

METHOD OF EXCAVATION Case 580 Super L Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SC	NATIVE SOIL: Brown, moist, loose, clayey SAND; scattered rootlets.
2							
3	■						@ 3.0': Light greenish brown; damp; medium dense; with caliche gravel.
4							
5	■					CL/CH	@ 5.0': Brown, dry to damp, very stiff, sandy lean to fat CLAY; slightly cemented; highly porous; scattered hard, strongly cemented caliche chunks ranging from sand- to gravel-size.
6							
8	■						
10							Total depth = 10.0 feet. Groundwater not encountered during excavation. Backfilled on 1/19/11.
12							

SCALE = 1 in./2 ft.

FIGURE A-26

Ninyo & Moore

TEST PIT LOG

HIDDEN HILLS SOLAR FACILITY
OLD SPANISH TRAIL HIGHWAY AND GOLD STREET
INYO COUNTY, CALIFORNIA

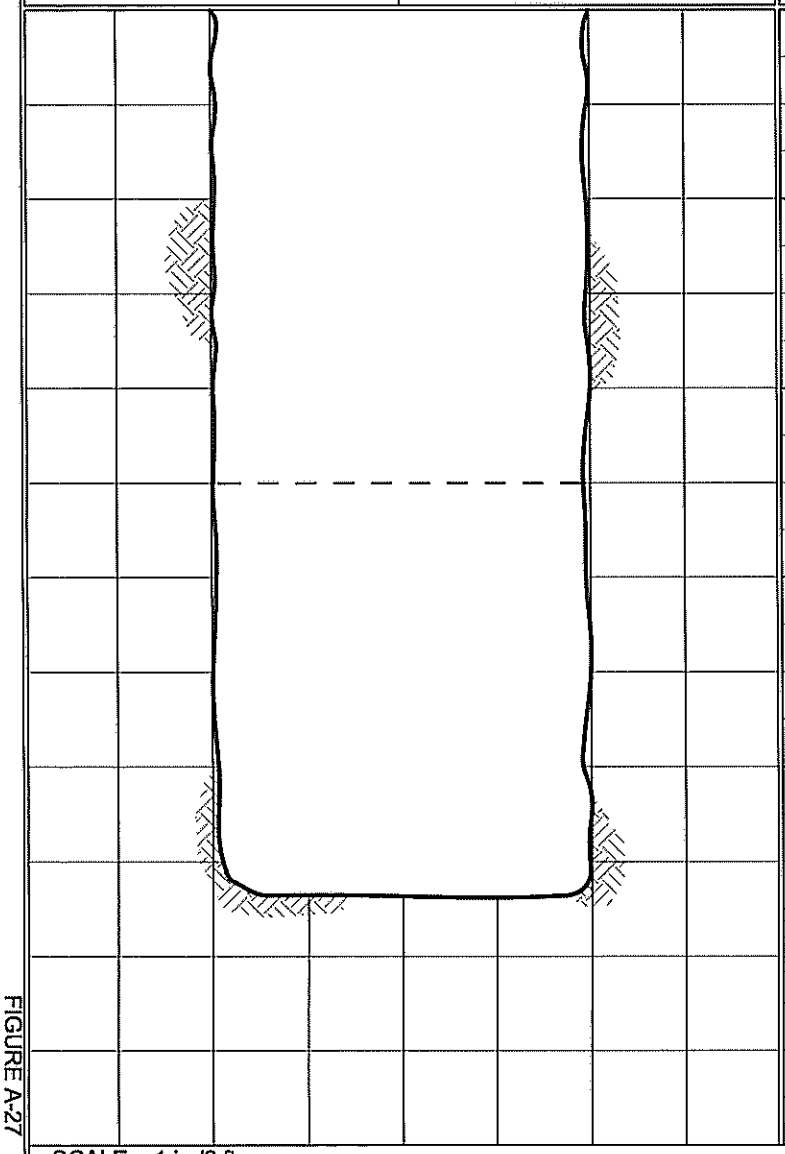
PROJECT NO.	DATE
303200001	3/11

DATE EXCAVATED 1/19/11 TEST PIT NO. TP-7

GROUND ELEVATION Not measured LOGGED BY RCH

METHOD OF EXCAVATION Case 580 Super L Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SC	NATIVE SOIL: Brown, damp, loose, clayey SAND; few gravel.
2							@ 2.0': Mottled greenish brown and reddish brown.
	■						
4							@ 3.5': Light brown; very dense; slightly cemented; scattered hard, strongly cemented caliche chunks ranging from sand- to gravel-size.
	■					CL	@ 5.0': Greenish brown, damp, hard, sandy lean CLAY with gravel; highly porous with pore holes up to approximately 1/4-inch in diameter.
6							
8							@ 8.5': Gravel layer up to a few inches thick.
	■						@ 8.9': Brown.
10							Total depth = 9.4 feet. Groundwater not encountered during excavation. Backfilled on 1/19/11.
12							

SCALE = 1 in./2 ft.

FIGURE A-27

Ninyo & Moore

TEST PIT LOG

HIDDEN HILLS SOLAR FACILITY
OLD SPANISH TRAIL HIGHWAY AND GOLD STREET
INYO COUNTY, CALIFORNIA

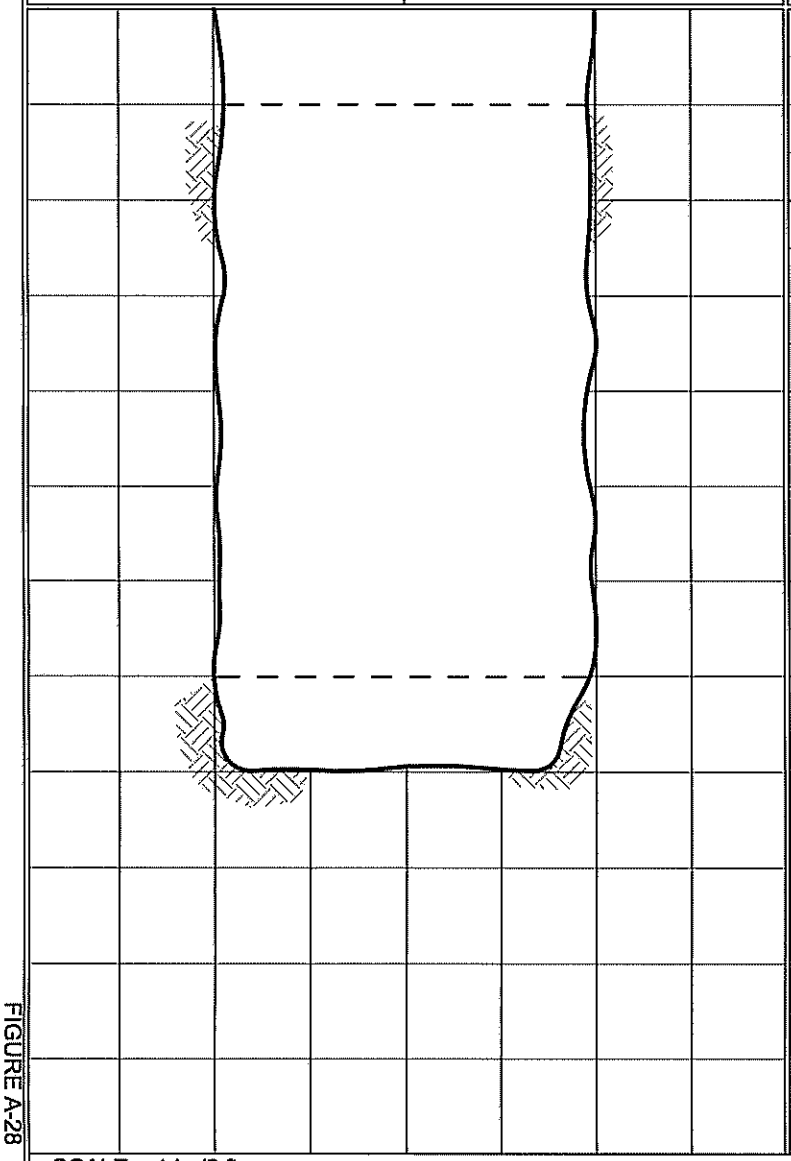
PROJECT NO.	DATE
303200001	3/11

DATE EXCAVATED 1/19/11 TEST PIT NO. TP-8

GROUND ELEVATION Not measured LOGGED BY RCH

METHOD OF EXCAVATION Case 580 Super L Backhoe

LOCATION See Figure 2



SCALE = 1 in./2 ft.

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	NATIVE SOIL: Brown, damp to moist, loose, silty SAND.
						SC	@ 1.0': Brown, moist, loose to medium dense, clayey SAND.
2							
	■						@ 2.8': Damp; medium dense to dense; few gravel.
							@ 3.5' Slightly cemented; highly porous with pore holes up to approximately 1/8-inch in diameter.
4	■						
6							
	■						@ 7.0': Light brown to brown, damp, moderately hard to hard, CALICHE; moderately to strongly cemented; composed of fine- and coarse- grained material; highly porous with pore holes up to approximately 3/16-inch in diameter.
8							Total depth = 8.0 feet (backhoe refusal). Groundwater not encountered during excavation. Backfilled on 1/19/11.
10							
12							

FIGURE A-28

Ninyo & Moore

TEST PIT LOG

HIDDEN HILLS SOLAR FACILITY
OLD SPANISH TRAIL HIGHWAY AND GOLD STREET
INYO COUNTY, CALIFORNIA

PROJECT NO.	DATE
303200001	3/11

DATE EXCAVATED 1/19/11 TEST PIT NO. TP-9

GROUND ELEVATION Not measured LOGGED BY RCH

METHOD OF EXCAVATION Case 580 Super L Backhoe

LOCATION See Figure 2

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						SC	NATIVE SOIL: Brown, damp, loose, clayey SAND.
2	■						
							@ 2.9': Greenish brown; medium dense; moderately porous; slightly gypsiferous.
4	■					CL/CH	@ 3.5': Light brown, dry to damp, hard, sandy lean to fat CLAY; moderately porous with pore holes up to approximately 1/4-inch in diameter; slightly cemented; scattered hard, strongly cemented caliche chunks ranging from sand- to cobble-size.
6							
						SC	@ 6.5': Light brown, moist, moderately hard, CALICHE; moderately cemented; composed of fine- and coarse-grained material; highly porous with pore holes up to approximately 1/4-inch in diameter.
8	■						@ 7.0': Light brown, moist, medium dense to dense, clayey SAND with gravel; gravel generally consists of caliche chunks; highly porous; a few slightly cemented clay layers a few inches thick.
10							Total depth = 10.0 feet. Groundwater not encountered during excavation. Backfilled on 1/19/11.
12							

SCALE = 1 in./2 ft.

FIGURE A-29

Ninyo & Moore

TEST PIT LOG

HIDDEN HILLS SOLAR FACILITY
OLD SPANISH TRAIL HIGHWAY AND GOLD STREET
INYO COUNTY, CALIFORNIA

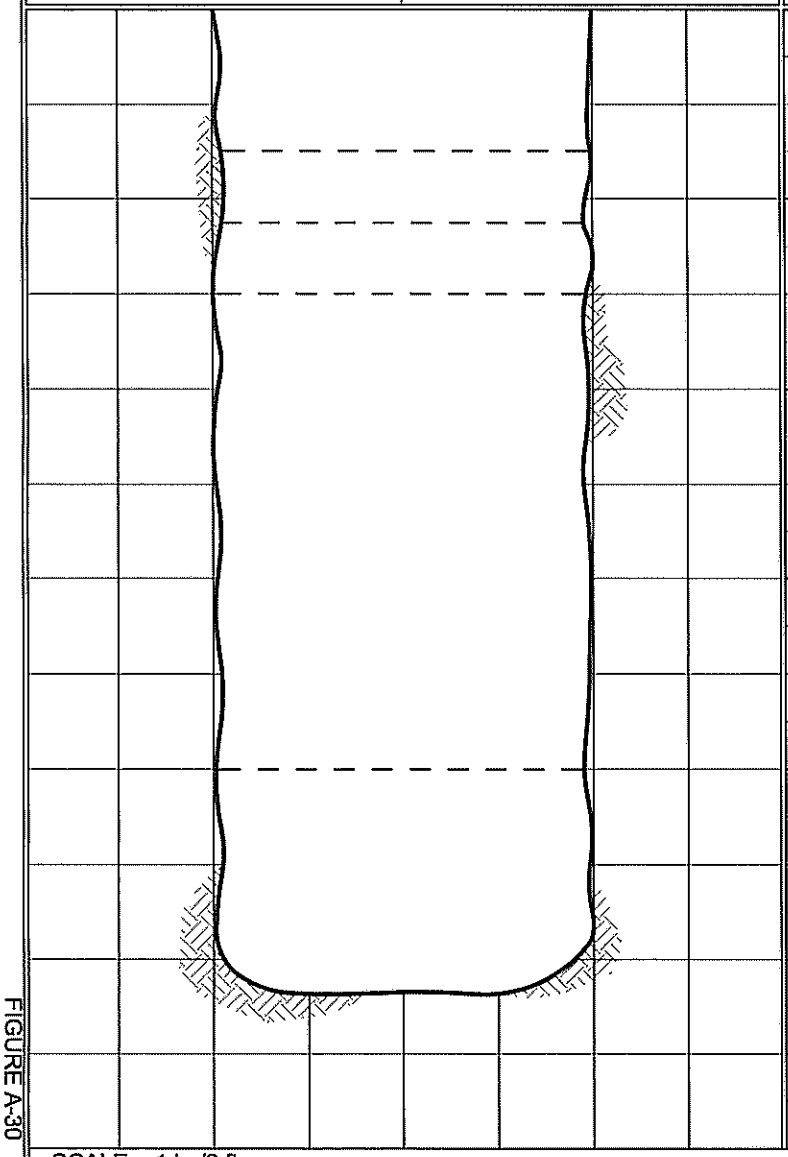
PROJECT NO.	DATE
303200001	3/11

DATE EXCAVATED 1/19/11 TEST PIT NO. TP-10

GROUND ELEVATION Not measured LOGGED BY RCH

METHOD OF EXCAVATION Case 580 Super L Backhoe

LOCATION See Figure 2



SCALE = 1 in./2 ft.

DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	NATIVE SOIL: Brown, moist, loose, silty SAND with gravel; scattered roots to approximately 1/2-inch in diameter.
2	■					GP-GM	@ 1.5': Brown, moist, medium dense, poorly graded GRAVEL with silt and sand.
						SC	@ 2.3': Brown, moist, medium dense, clayey SAND.
						SM	@ 3.0': Light brown, dry to damp, medium dense, silty SAND with gravel.
4	■						
6	■						@ 6.0': Moderately porous with pore holes up to approximately 1/32-inch in diameter.
8	■					SC	@ 8.0': Brown, dry to damp, medium dense, clayey SAND with gravel; highly porous with pore holes up to approximately 3/8-inch in diameter.
10	■						
12							Total depth = 10.3 feet. Groundwater not encountered during excavation. Backfilled on 1/19/11.

FIGURE A-30

APPENDIX B

LABORATORY TESTING

Classification

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory excavations in Appendix A.

Moisture Content

The moisture content of samples obtained from the exploratory excavations was evaluated in accordance with ASTM D 2216. The test results are presented on the logs of the exploratory excavations in Appendix A.

In-Place Moisture and Density

The moisture content and dry density of relatively undisturbed samples obtained from the exploratory excavations were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory excavations in Appendix A.

Gradation Analysis

Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D 422. These test results were utilized in evaluating the soil classifications in accordance with the USCS. The grain-size distribution curves are shown on Figure B-1 through Figure B-14.

Atterberg Limits

Tests were performed on selected representative soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D 4318. These test results were utilized to evaluate the soil classification in accordance with the USCS. The test results and classifications are shown on Figure B-15 and Figure B-16.

Consolidation

Consolidation tests were performed on selected relatively undisturbed soil samples in general accordance with ASTM D 2435. The samples were inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The consolidation test results are summarized graphically on Figure B-17 through Figure B-22 and the expansion/collapse potential results are summarized on Figure B-23.

Collapse Potential

Collapse potential tests were performed on selected relatively undisturbed soil samples in general accordance with ASTM D 5333. The samples were inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The collapse test results are summarized graphically on Figure B-24 through Figure B-30 and the results of the test are summarized on Figure B-31.

Expansion Index

The expansion index of selected materials was evaluated in general accordance with ASTM D 4829. Specimens were molded under a specified compactive energy at approximately 50 percent saturation. The prepared 1-inch thick by 4-inch diameter specimens were loaded with a surcharge of 144 pounds per square foot and were inundated with tap water. Readings of volumetric swell were made for a period of 24 hours. The results of these tests are presented on Figure B-32.

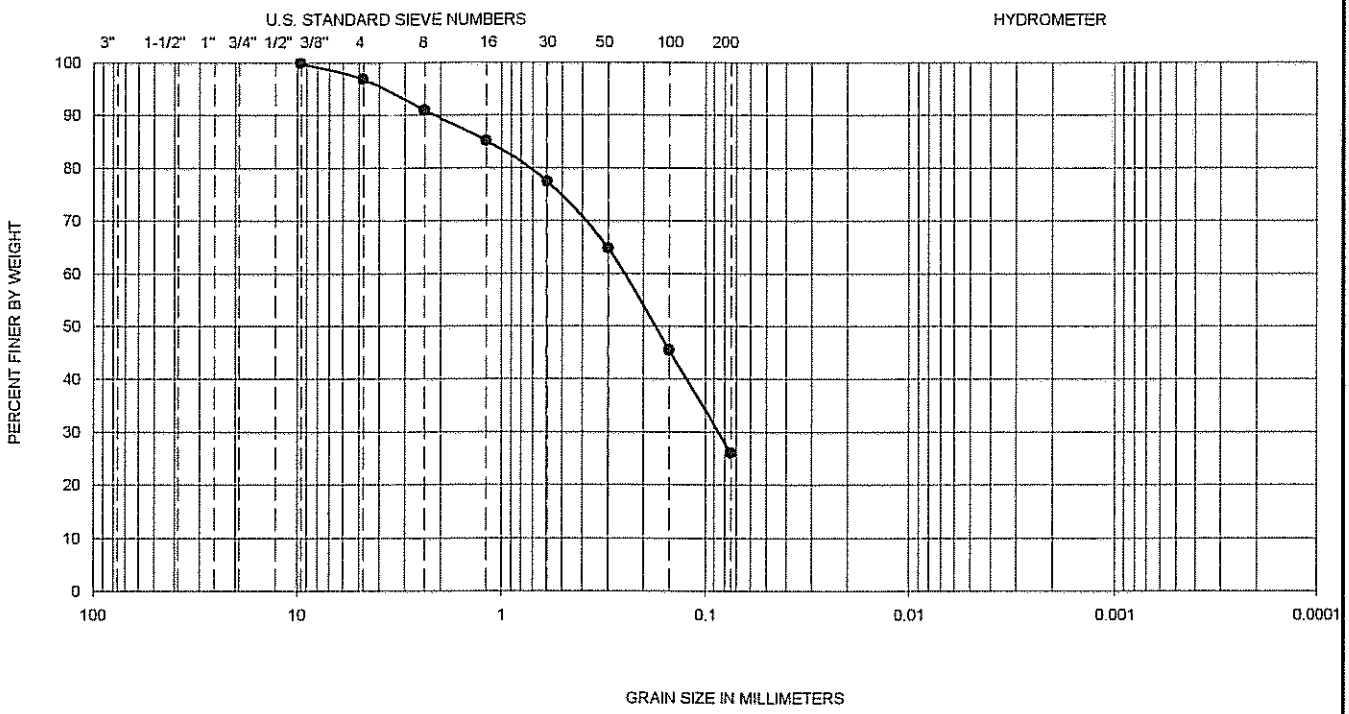
Direct Shear

Direct shear tests were performed on undisturbed samples in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of selected materials. The samples were inundated during shearing to represent adverse field conditions. The results are shown on Figure B-33 through Figure B-42.

Miller Box Resistivity

Miller Box resistivity tests were performed on selected samples to measure the resistivity of the soil as an indication of the relative ability of the soil to carry electrical current. A voltage was impressed between two outer electrodes and the resistance between two inner electrodes was measured using a Nilsson Soil Resistance Meter, Model 400. Samples were tested at increasing moisture contents until saturated. Results of the tests are summarized on Figure B-43.

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



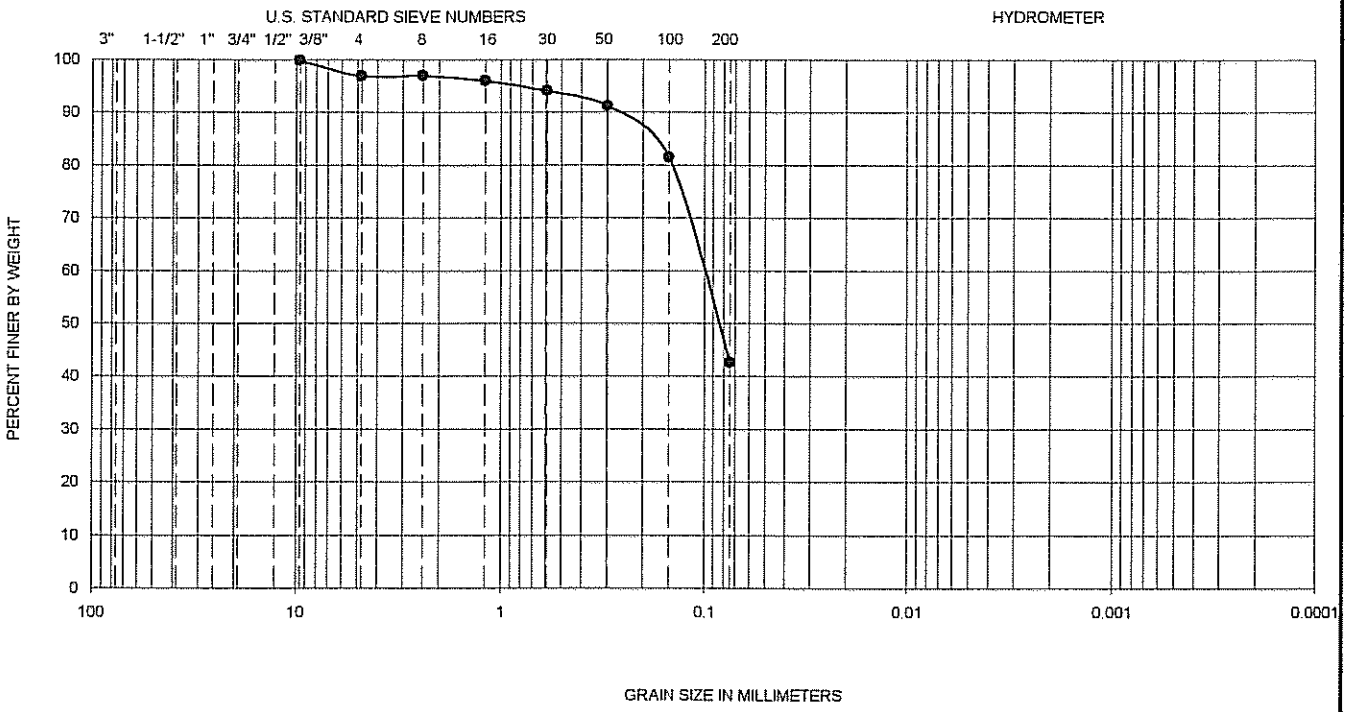
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-2	14.0-15.0	33	21	12	--	--	--	--	--	26	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-1
303200001 / 3/11		

(B-1) 303200001 B-2 14.0-15.0 SA.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



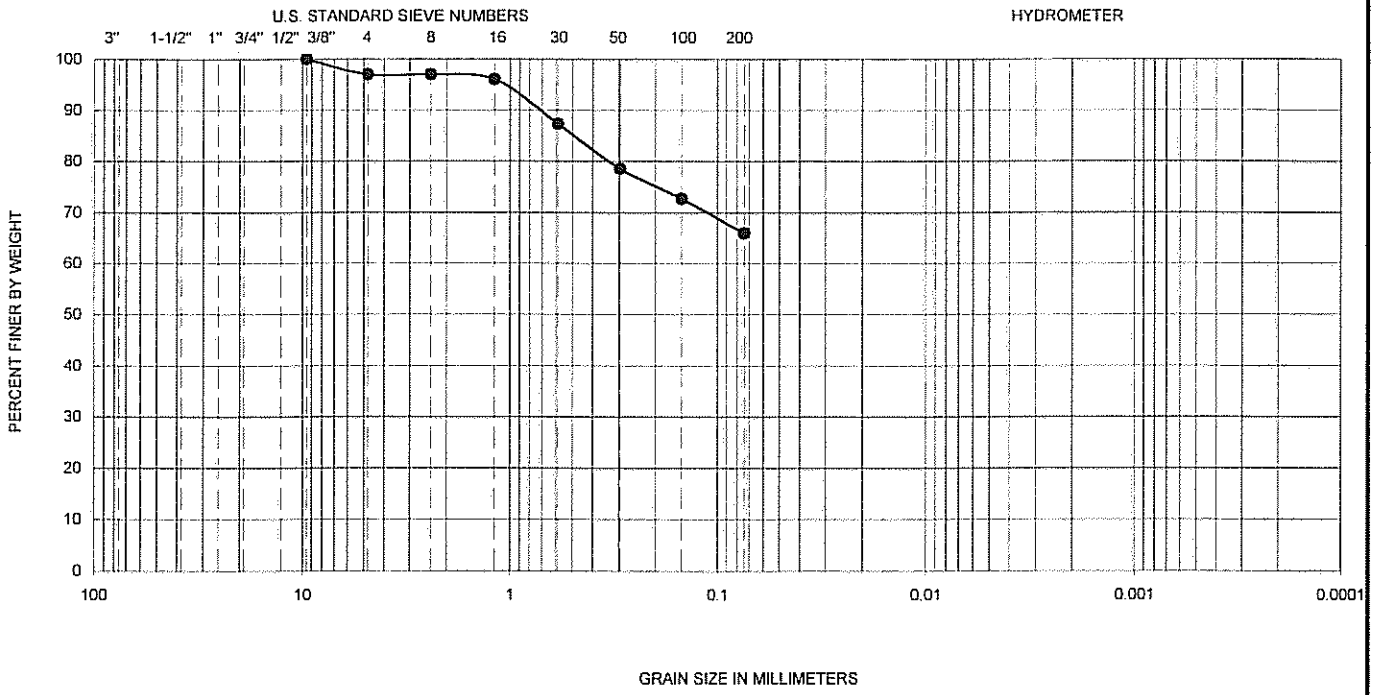
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-5	0.0-1.0	--	--	NP	--	--	--	--	--	43	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-2
303200001 / 3/11		

(B-2) 303200001 B-5 0.0-1.0 SA.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay

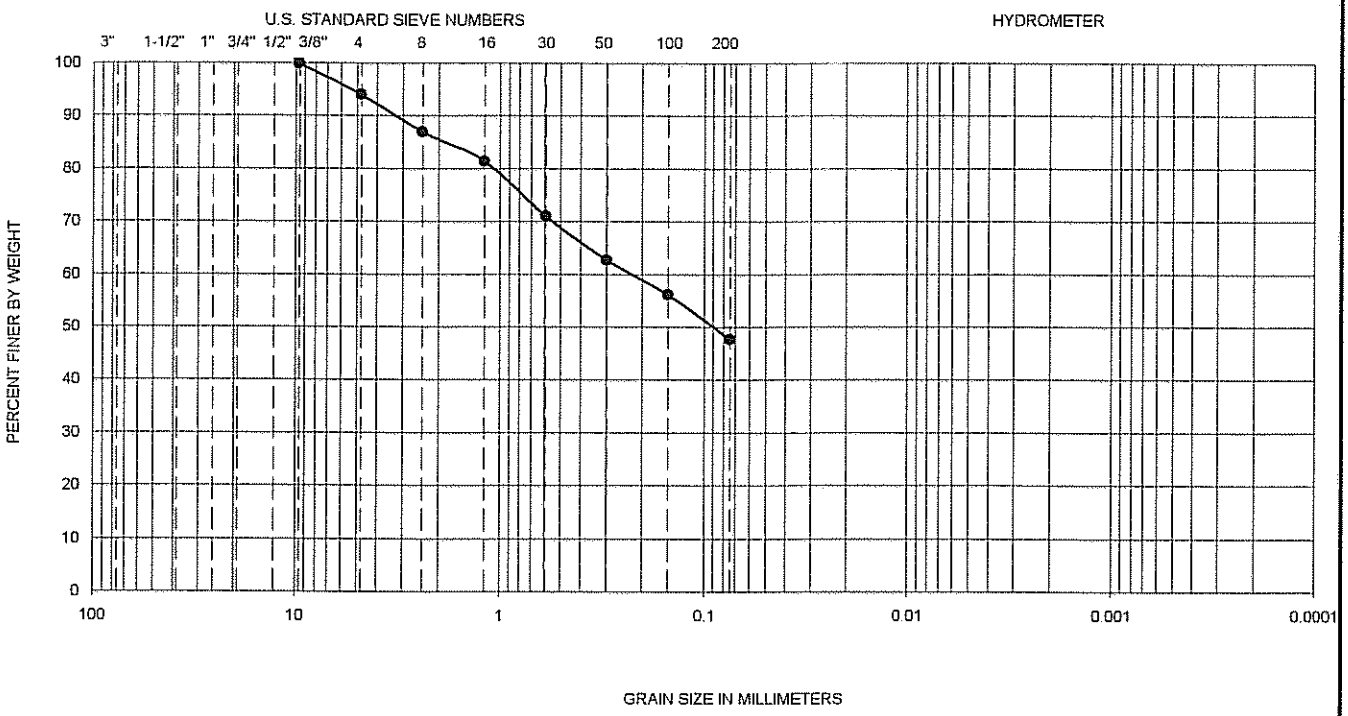


Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-6	9.0-10.0	30	15	15	--	--	--	--	--	66	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-3
303200001 / 3/11		

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



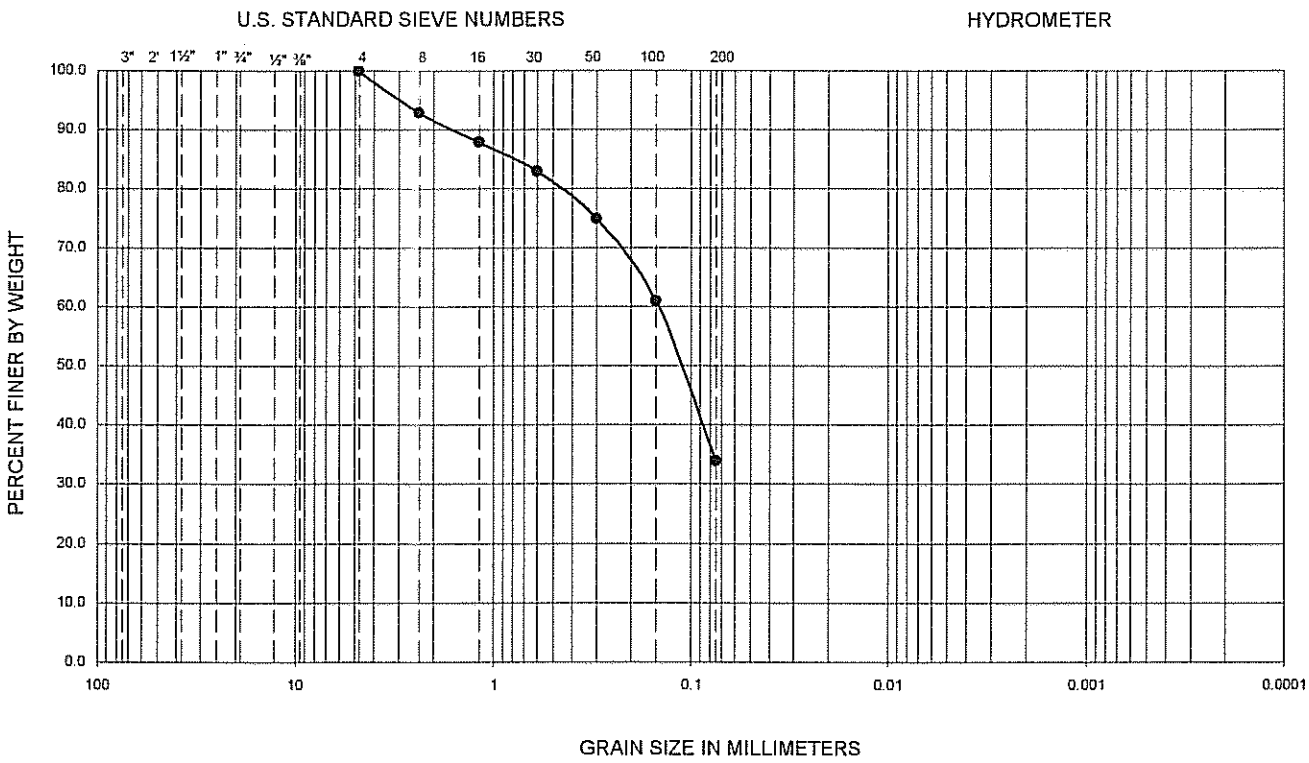
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-9	7.0-8.0	41	22	19	--	--	--	--	--	48	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-4
303200001 / 3/11		

(B-4) 303200001 B-9 7.0-8.0 SA.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



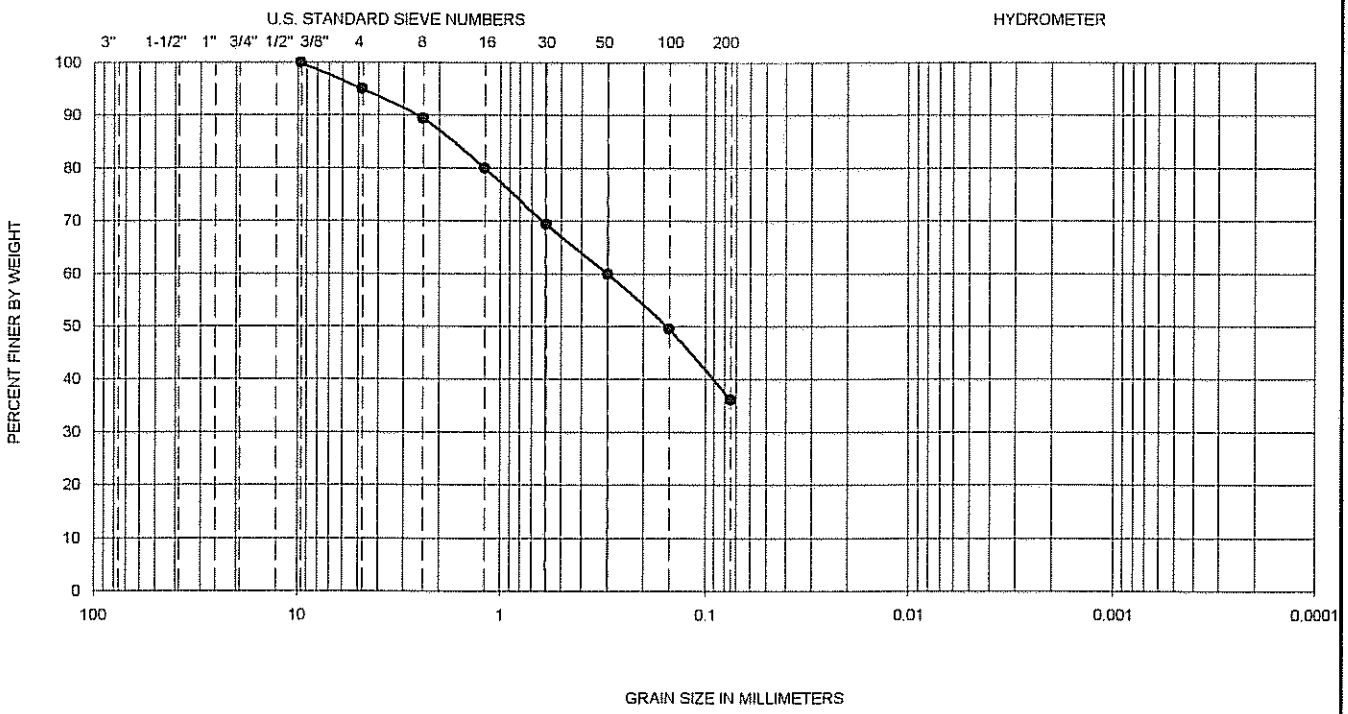
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-13	5.0-6.5	25	14	11	--	--	--	--	--	34	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-5
303200001 / 3/11		

(B-5) 303200001 B-13 5.0-6.5 SA.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



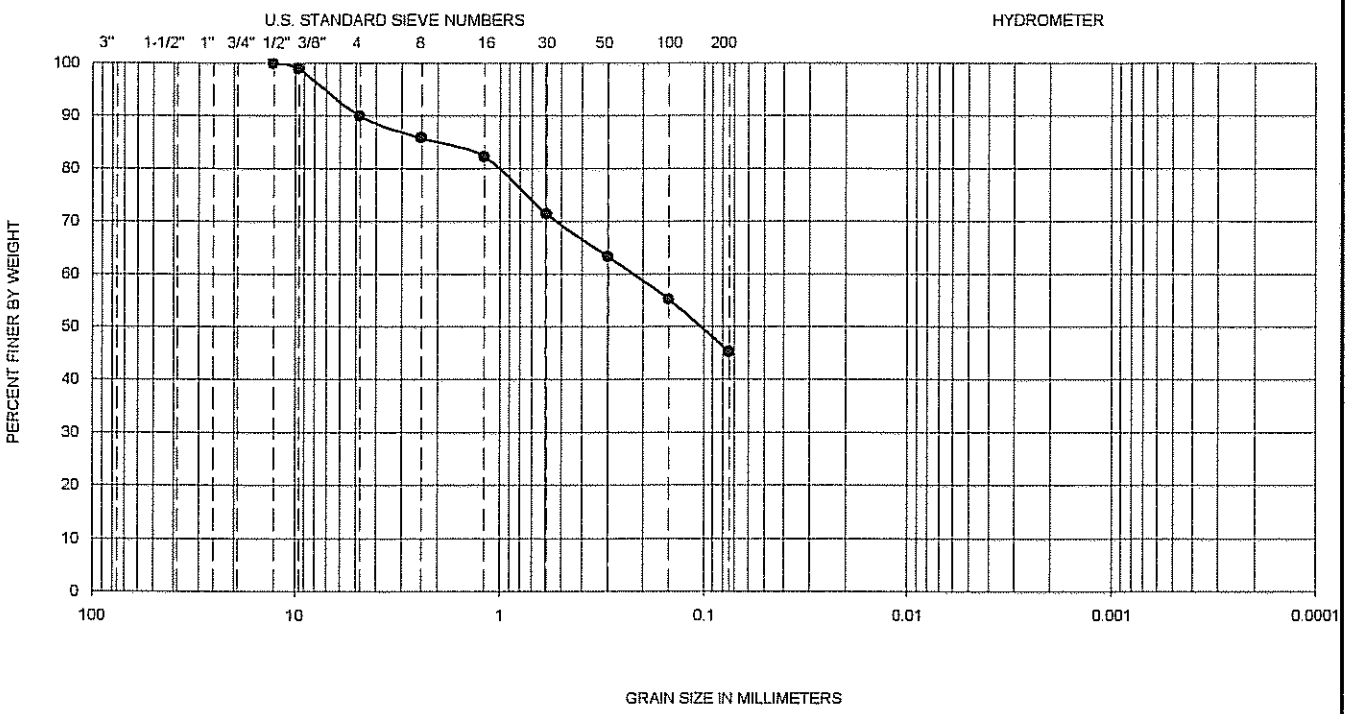
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-14	14.0-15.0	36	20	16	--	--	--	--	--	36	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-6
303200001 / 3/11		

(B-6) 303200001 B-14 14.0-15.0 SA.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



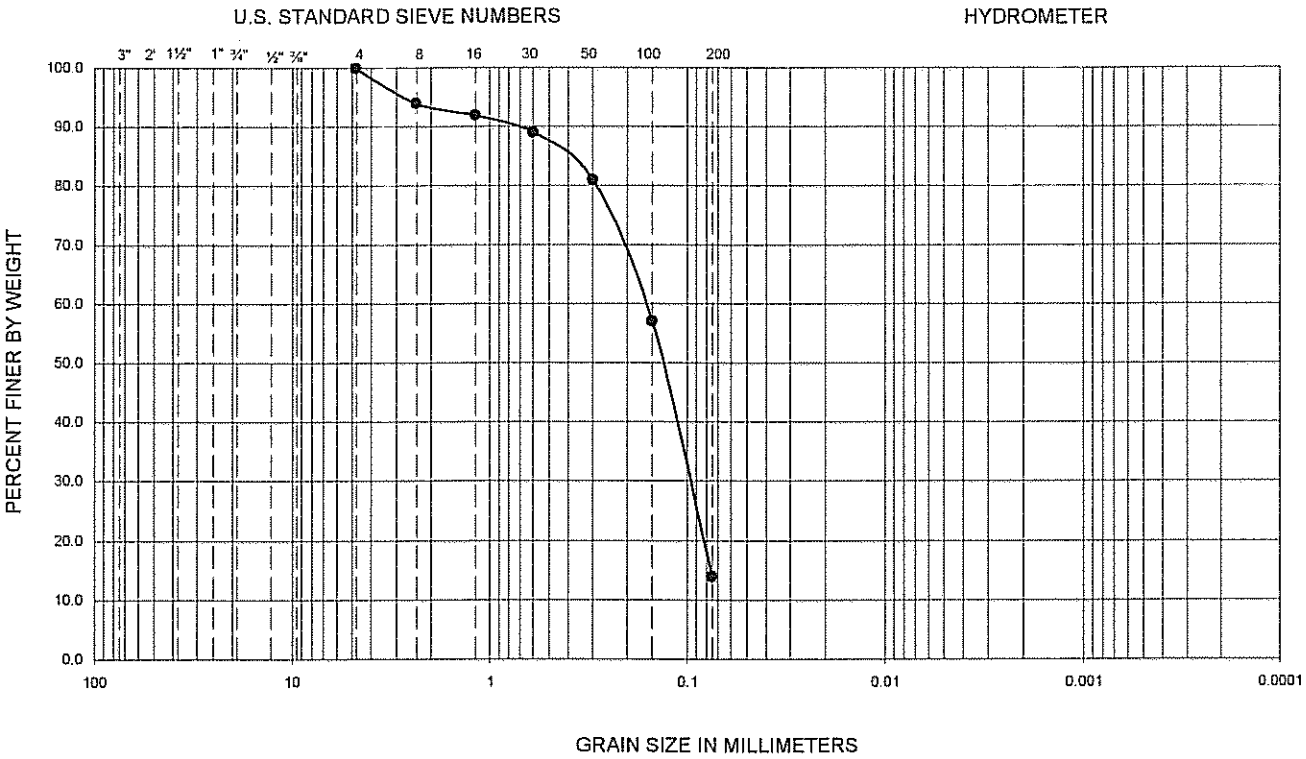
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-16	8.0-10.0	36	20	16	--	--	--	--	--	45	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-7
303200001 / 3/11		

(B-7) 303200001 B-16 8.0-10.0 SA.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



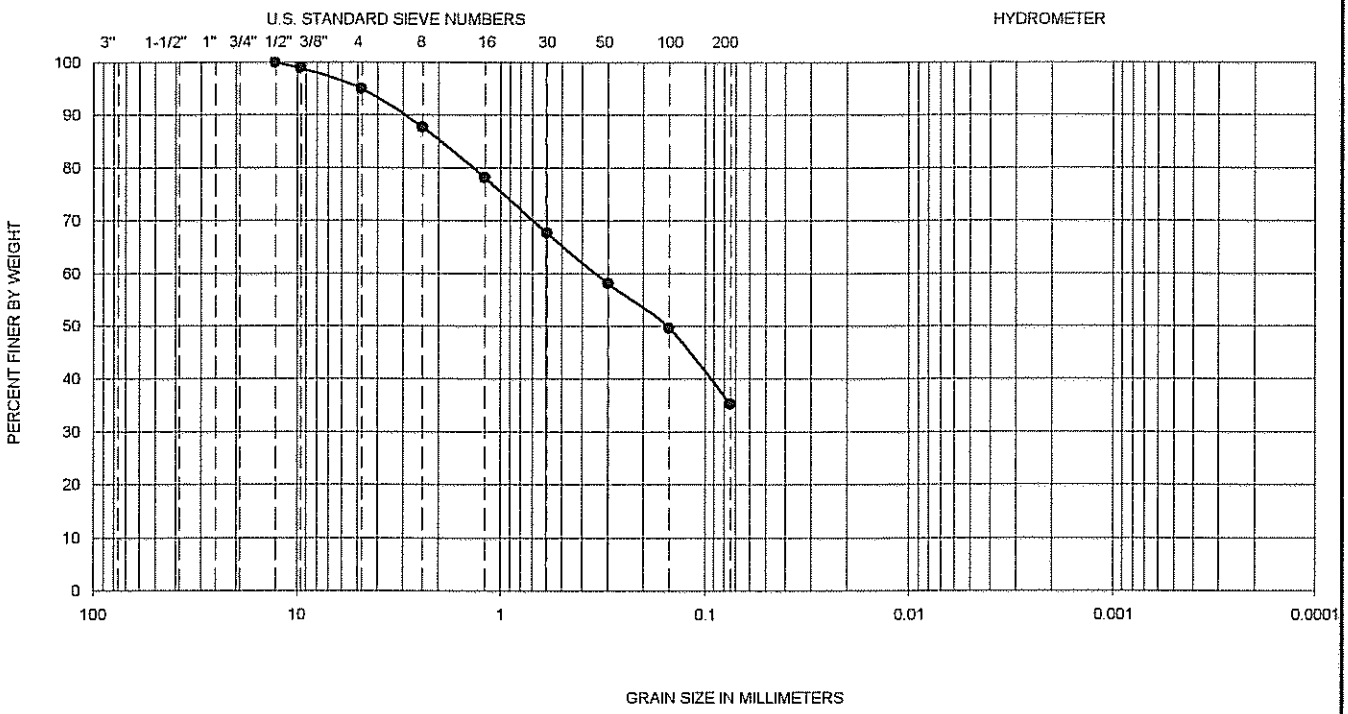
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	B-17	2.0-3.5	--	--	NP	--	--	--	--	--	14	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-8
303200001 / 3/11		

(B-8) 303200001 B-17 2.0-3.5 SA.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



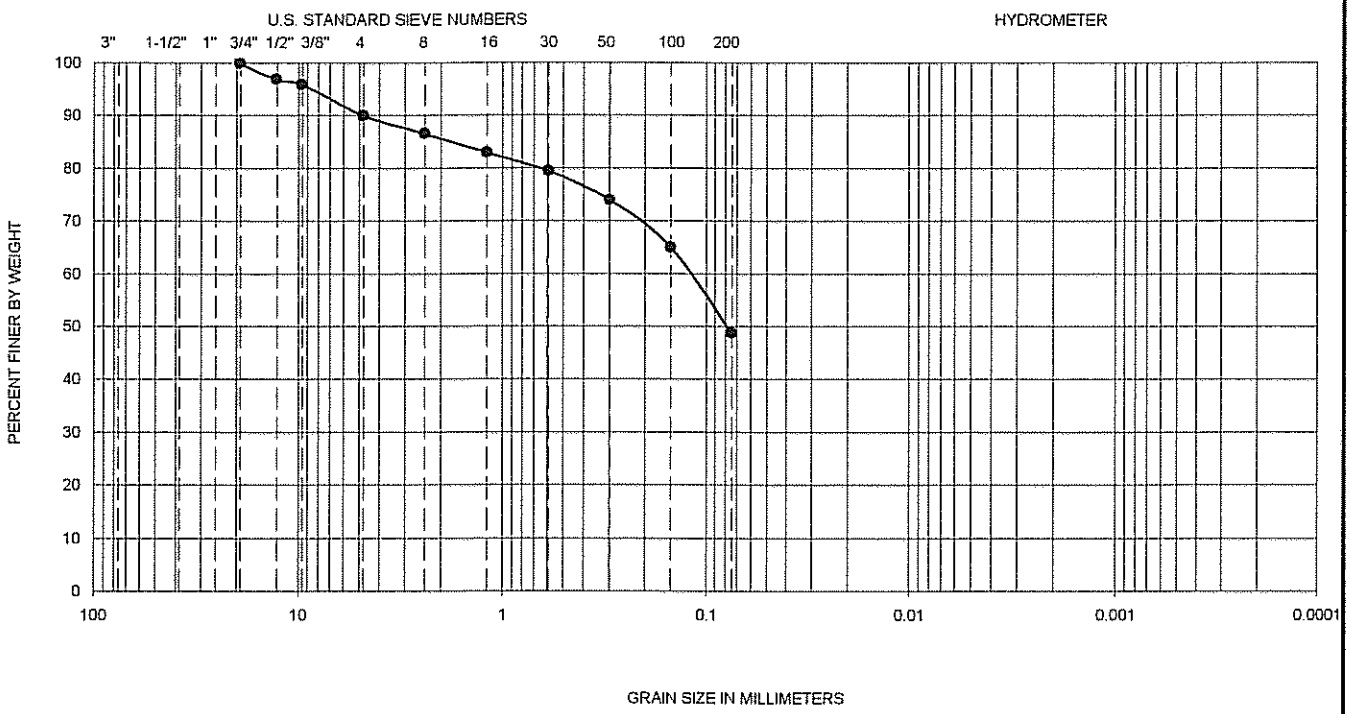
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-19	7.0-8.0	37	16	21	--	--	--	--	--	35	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-9
303200001 / 3/11		

(B-9) 303200001 B-19 7.0-8.0 SA.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



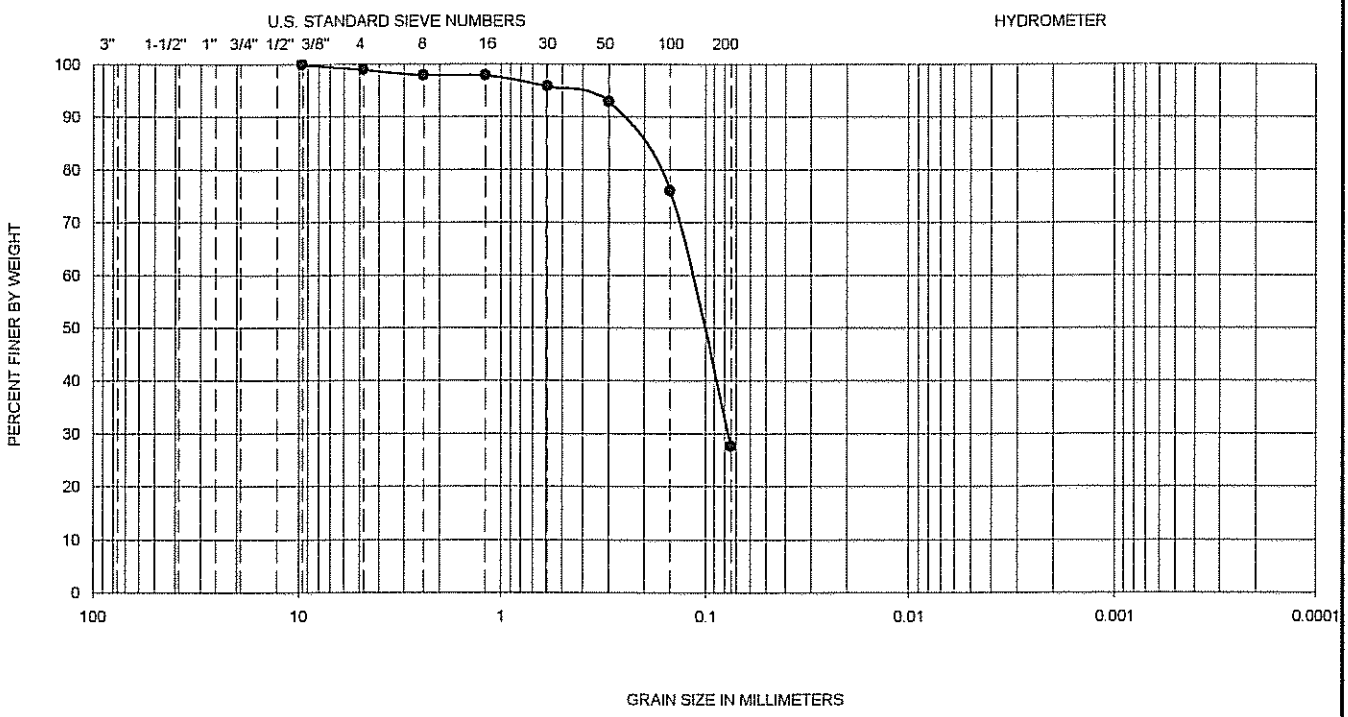
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	B-20	12.0-13.0	24	18	6	--	--	--	--	--	49	SC-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-10
303200001 / 3/11		

(B-10) 303200001 B-20 12.0-13.0 SA.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



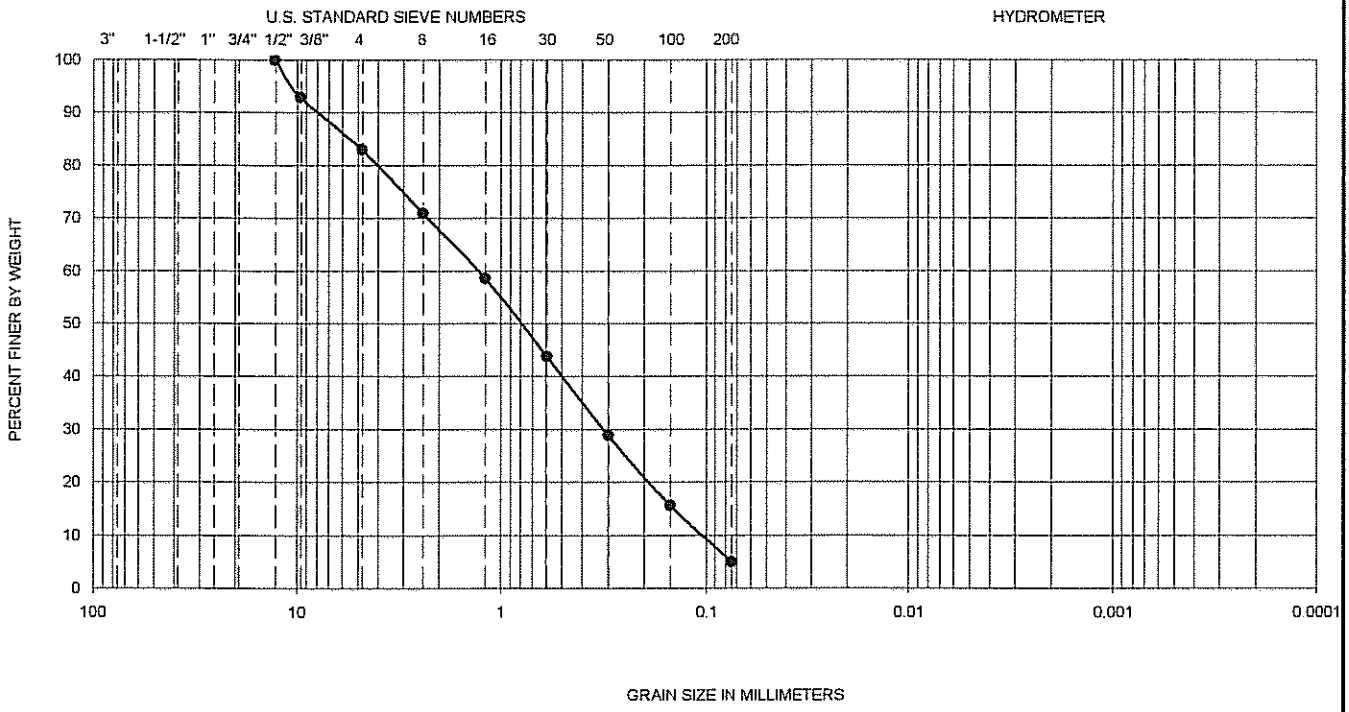
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	TP-2	0.0-1.0	--	--	NP	--	--	--	--	--	28	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-11
303200001 / 3/11		

(B-11) 303200001 TP-2 0.0-1.0 SA.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



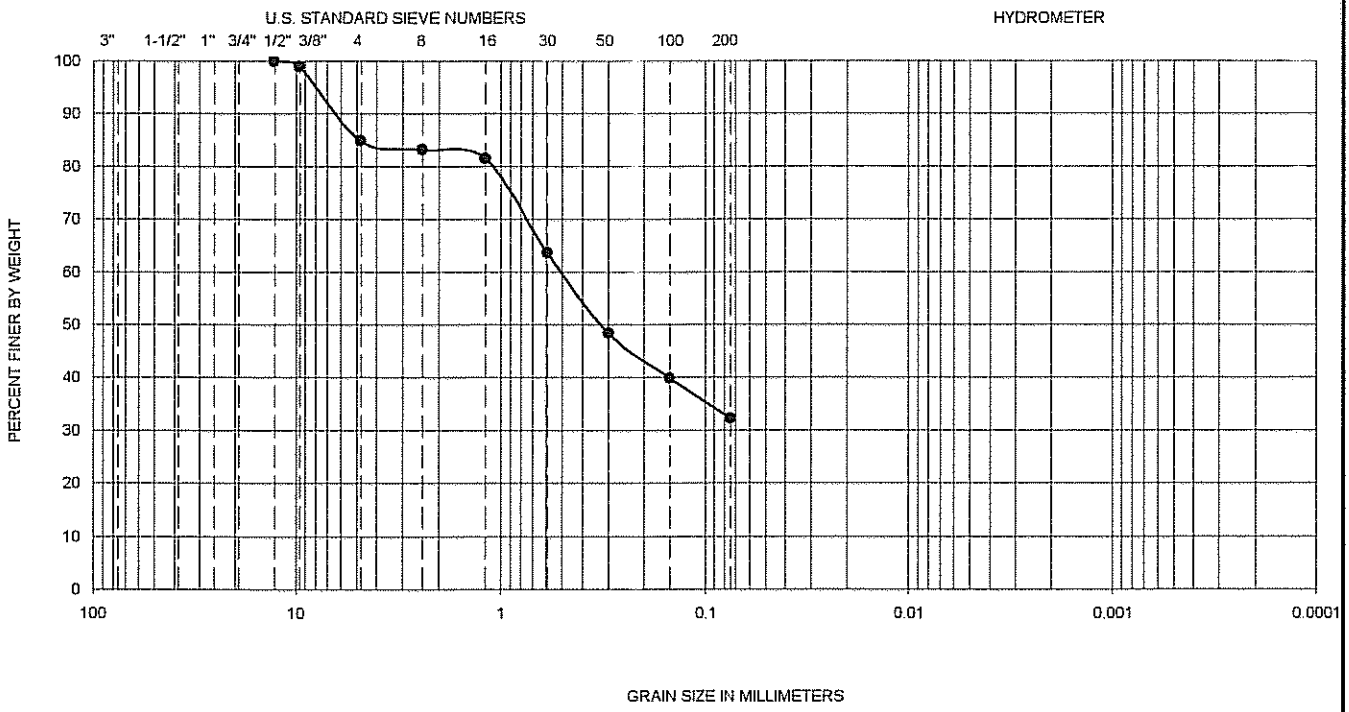
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	TP-5	0.0-2.0	--	--	NP	0.11	0.30	1.20	10.9	0.7	5.0	SP-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-12
303200001 / 3/11		

(B-12) 303200001 TP-5 0.0-2.0 SA.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



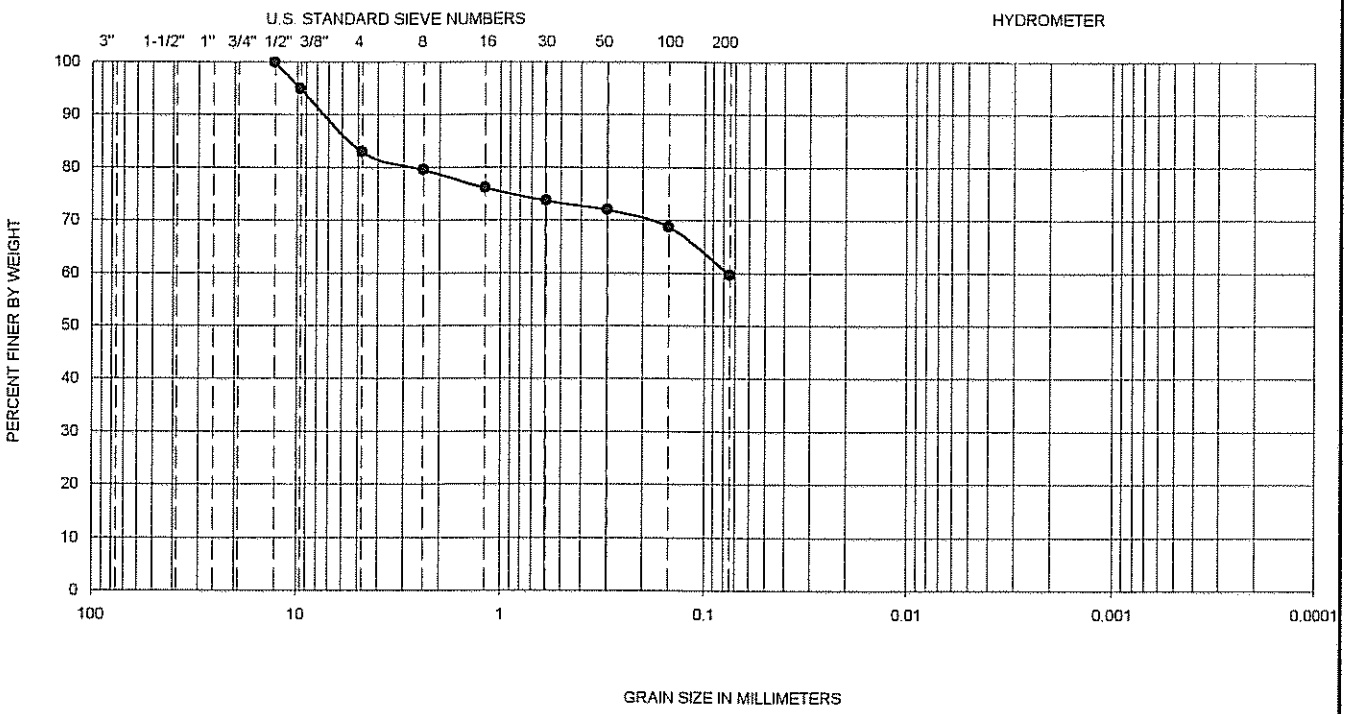
Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	TP-6	3.0-4.0	40	22	18	--	--	--	--	--	32	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-13
303200001 / 3/11		

(B-13) 303200001 TP-6 3.0-4.0 SA.xls

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	U.S.C.S
●	TP-7	5.0-6.0	34	17	17	--	--	--	--	--	60	CL

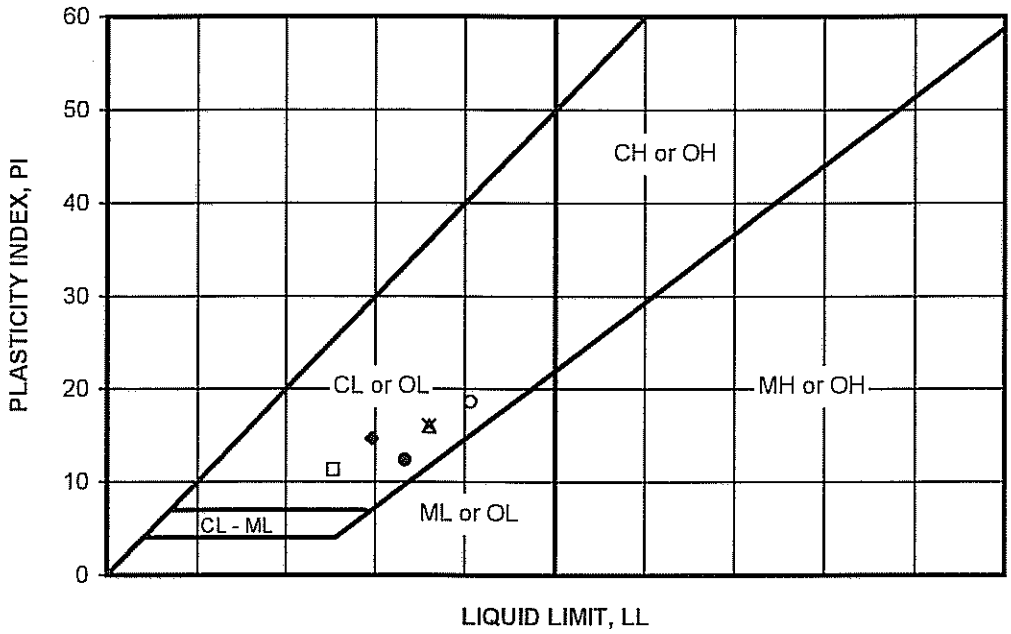
PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore	GRADATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-14
303200001 / 3/11		

(B-14) 303200001 TP-7 5.0-6.0 SA.xls

SYMBOL	LOCATION	DEPTH (FT)	LIQUID LIMIT, LL	PLASTIC LIMIT, PL	PLASTICITY INDEX, PI	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS (Entire Sample)
●	B-2	14.0-15.0	33	21	12	CL	SC
■	B-5	0.0-1.0			NP	ML	SM
◆	B-6	9.0-10.0	30	15	15	CL	CL
○	B-9	7.0-8.0	41	22	19	CL	SC
□	B-13	5.0-6.5	25	14	11	CL	SC
Δ	B-14	14.0-15.0	36	20	16	CL	SC
X	B-16	8.0-10.0	36	20	16	CL	SC
+	B-17	2.0-3.5			NP	ML	SM

NP - INDICATES NON-PLASTIC

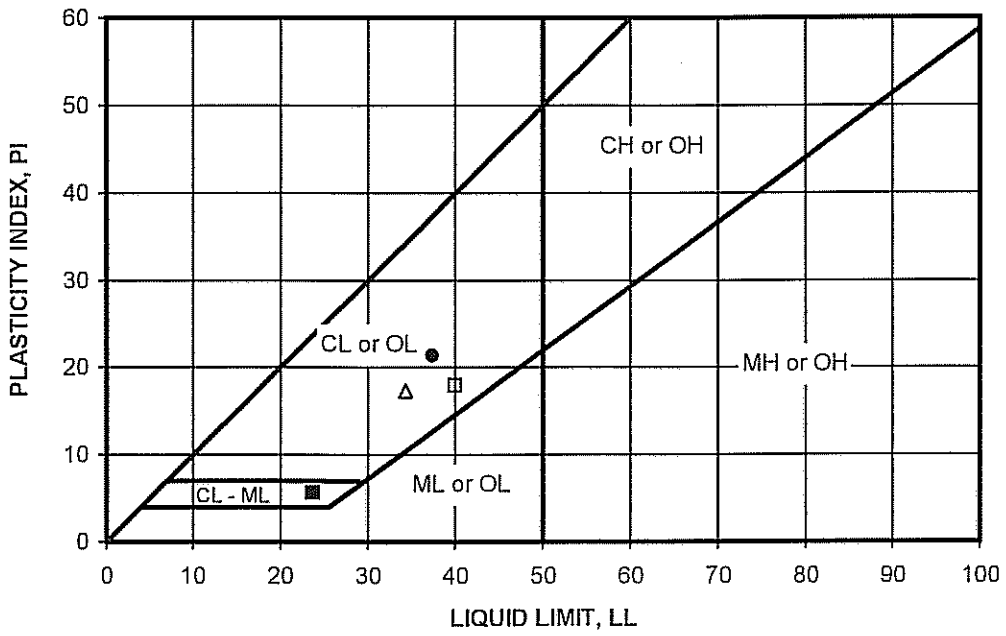


PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

Ninyo & Moore	ATTERBERG LIMITS TEST RESULTS	FIGURE
PROJECT NO. 303200001 / DATE 3/11	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-15

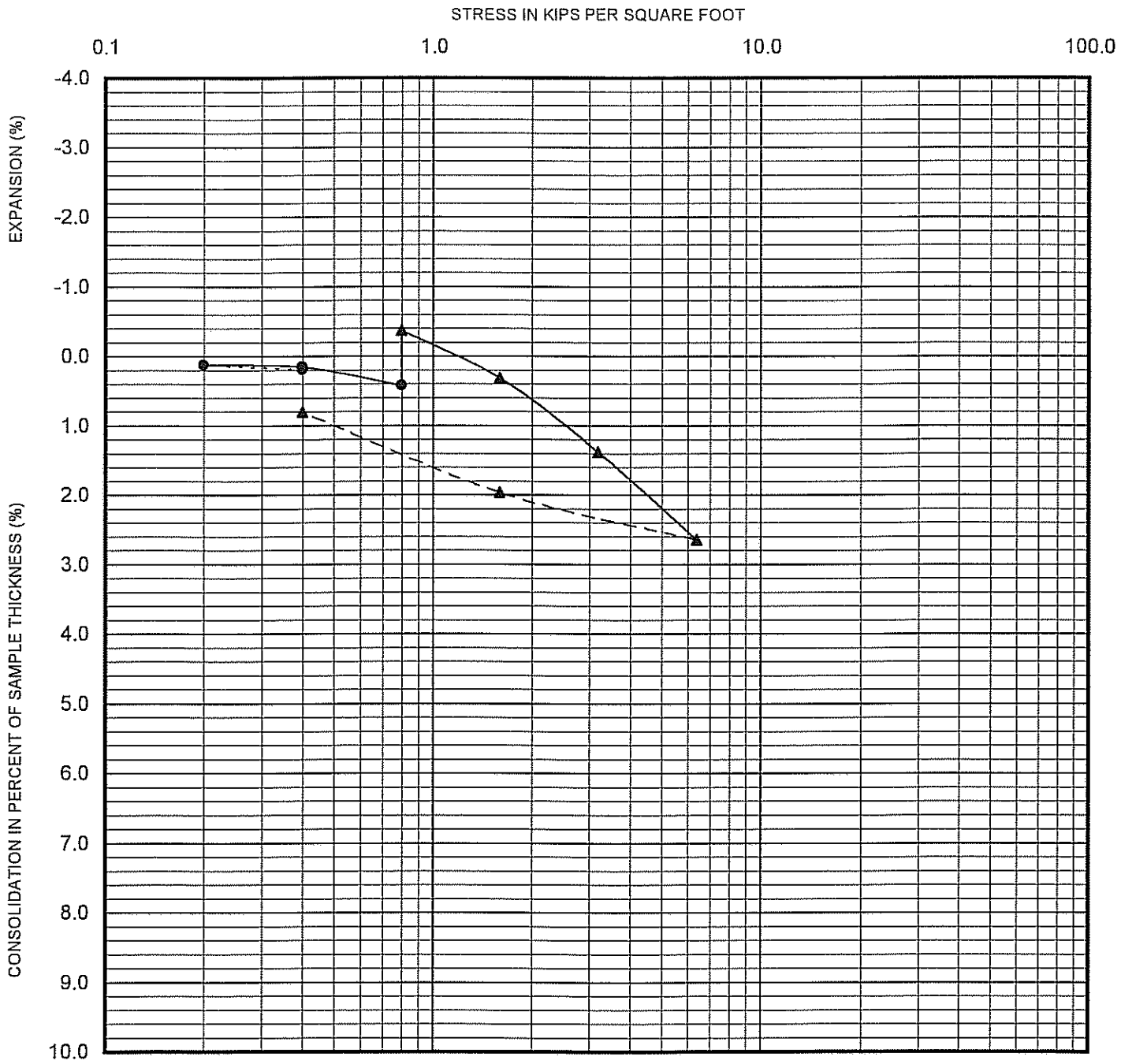
SYMBOL	LOCATION	DEPTH (FT)	LIQUID LIMIT, LL	PLASTIC LIMIT, PL	PLASTICITY INDEX, PI	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS (Entire Sample)
●	B-19	7.0-8.0	37	16	21	CL	SC
■	B-20	12.0-13.0	24	18	6	CL-ML	SC-SM
	TP-2	0.0-1.0	--	--	NP	ML	SM
	TP-5	0.0-2.0	--	--	NP	ML	SP-SM
□	TP-6	3.0-4.0	40	22	18	CL	SC
Δ	TP-7	5.0-6.0	34	17	17	CL	CL

NP - INDICATES NON-PLASTIC



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

Ninyo & Moore	ATTERBERG LIMITS TEST RESULTS	FIGURE
PROJECT NO. 303200001 / DATE 3/11	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-16

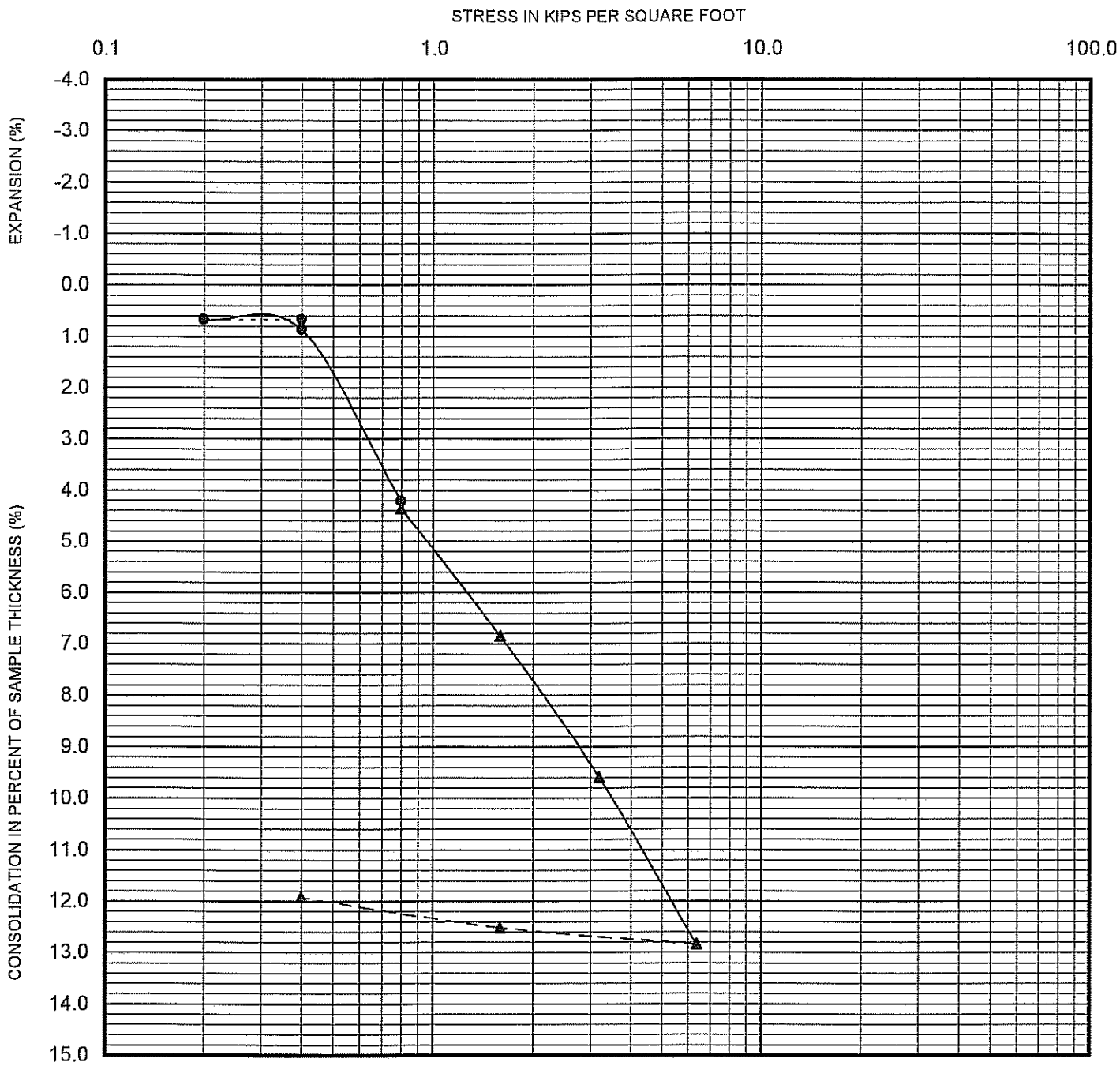


Sample Location	B-6
Depth (ft.)	5.0-6.5
Soil Type	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-17
303200001 / 3/11		

(B-17) 303200001 B-6 5.0-6.5 CN.xls

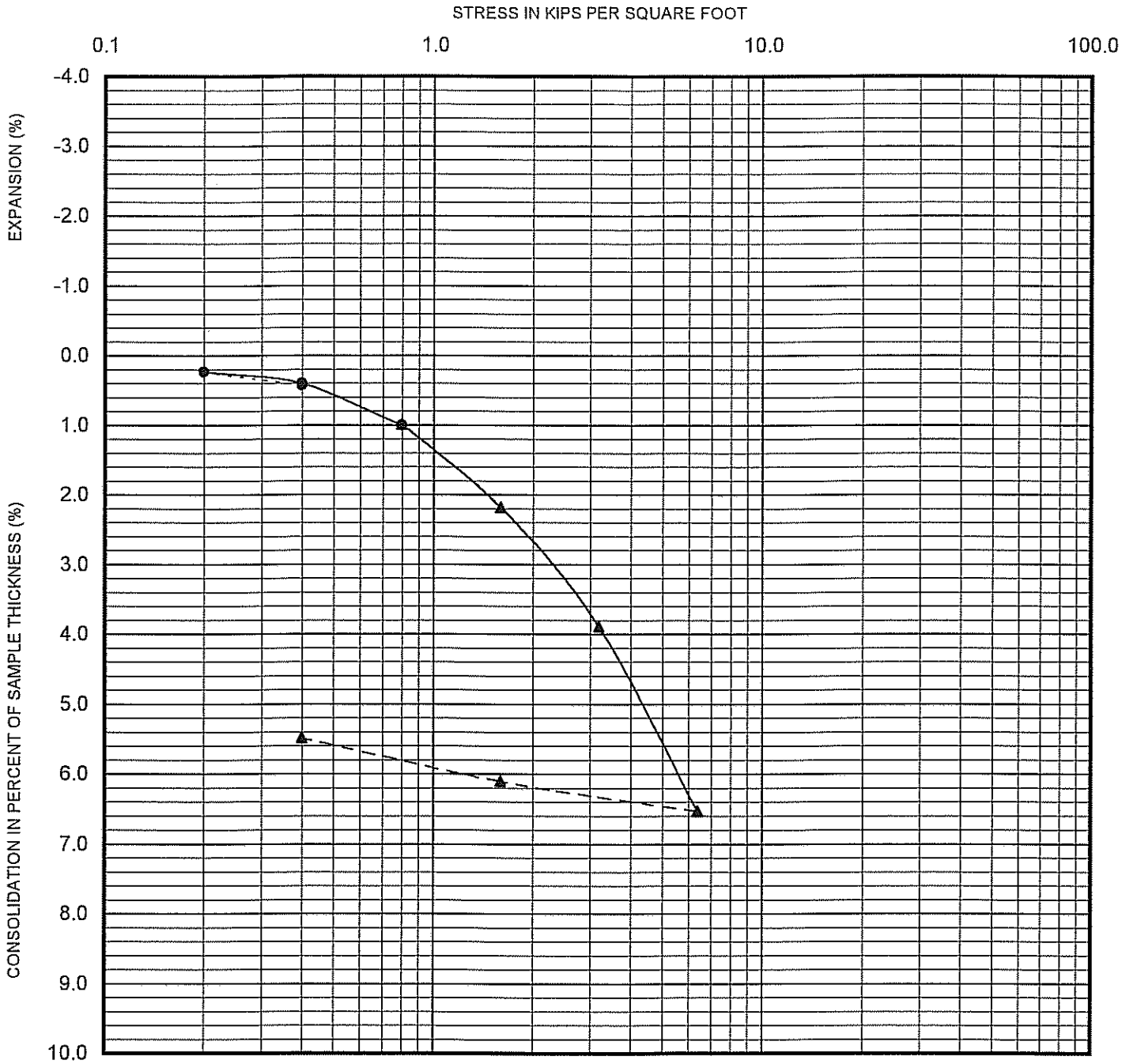


Seating Cycle		Sample Location	B-8
Loading Prior to Inundation		Depth (ft.)	5.0-6.5
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-18
303200001 / 3/11		

(B-18) 303200001 B-8 5.0-6.5 CN.xls

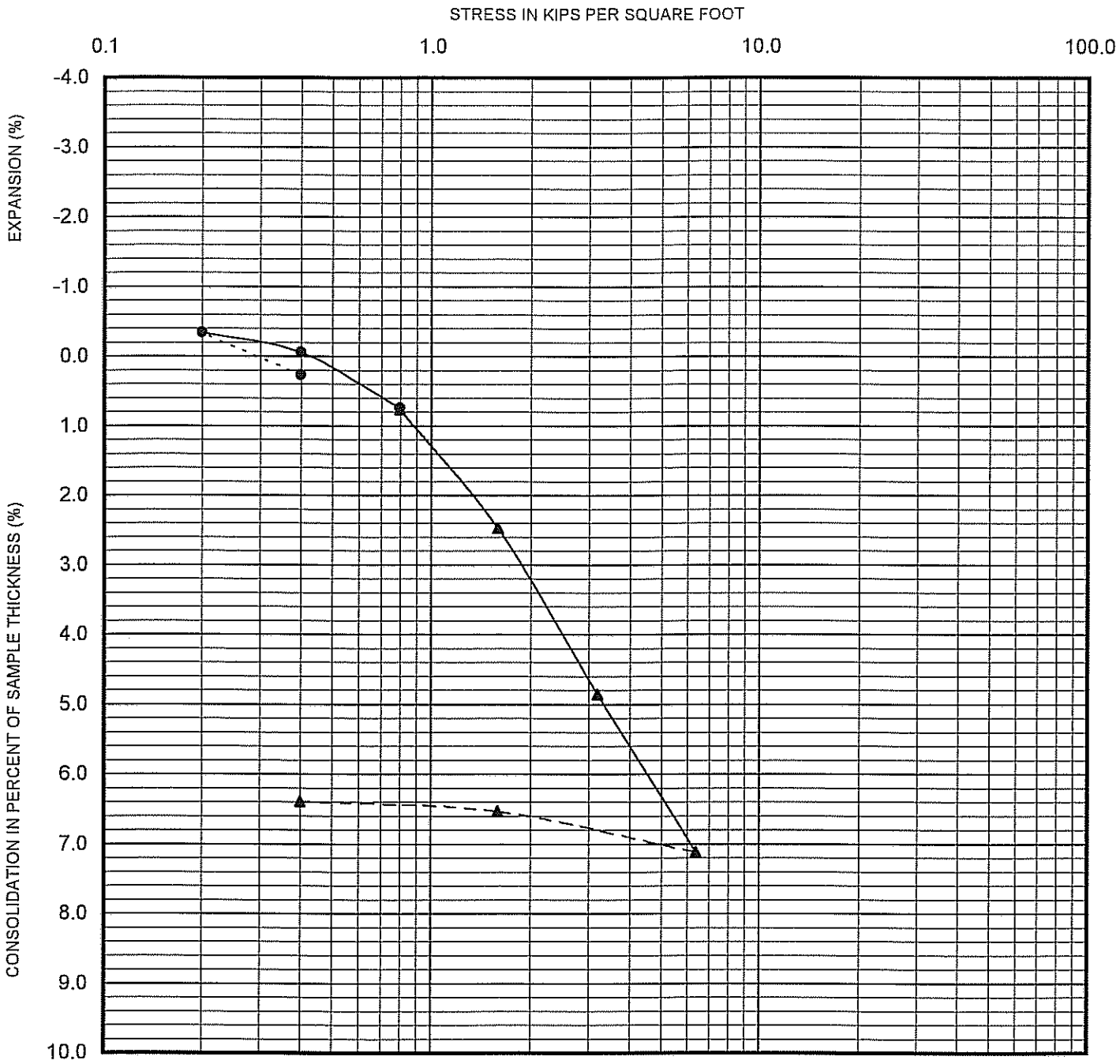


Seating Cycle		Sample Location	B-10
Loading Prior to Inundation		Depth (ft.)	2.0-3.5
Loading After Inundation		Soil Type	CL
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-19
303200001 / 3/11		

(B-19) 303200001 B-10 2.0-3.5 CN.xls

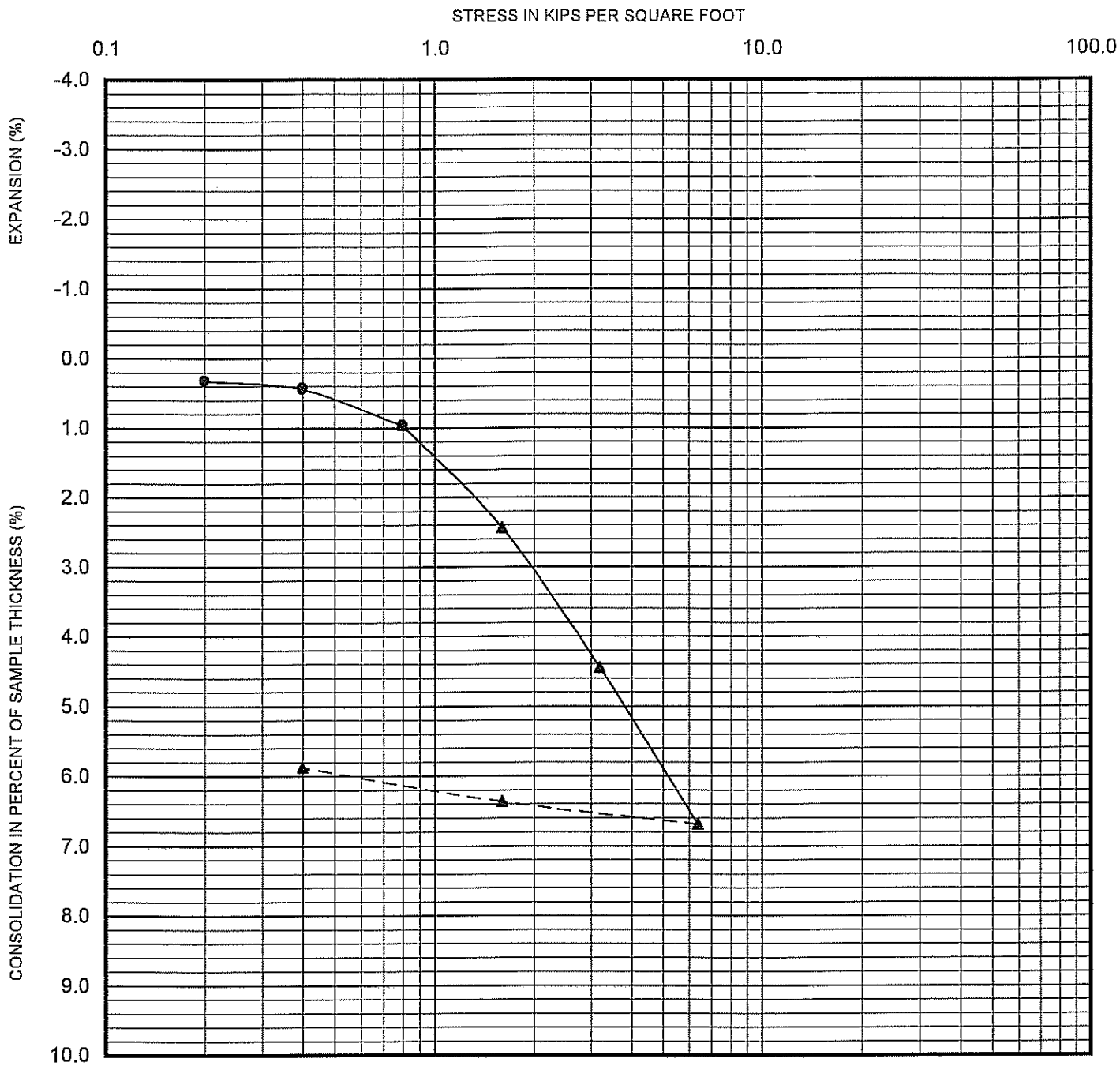


Seating Cycle		Sample Location	B-14
Loading Prior to Inundation		Depth (ft.)	5.0-6.5
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-20
303200001 / 3/11		

(B-20) 303200001 B-14 5.0-6.5 CN.xls

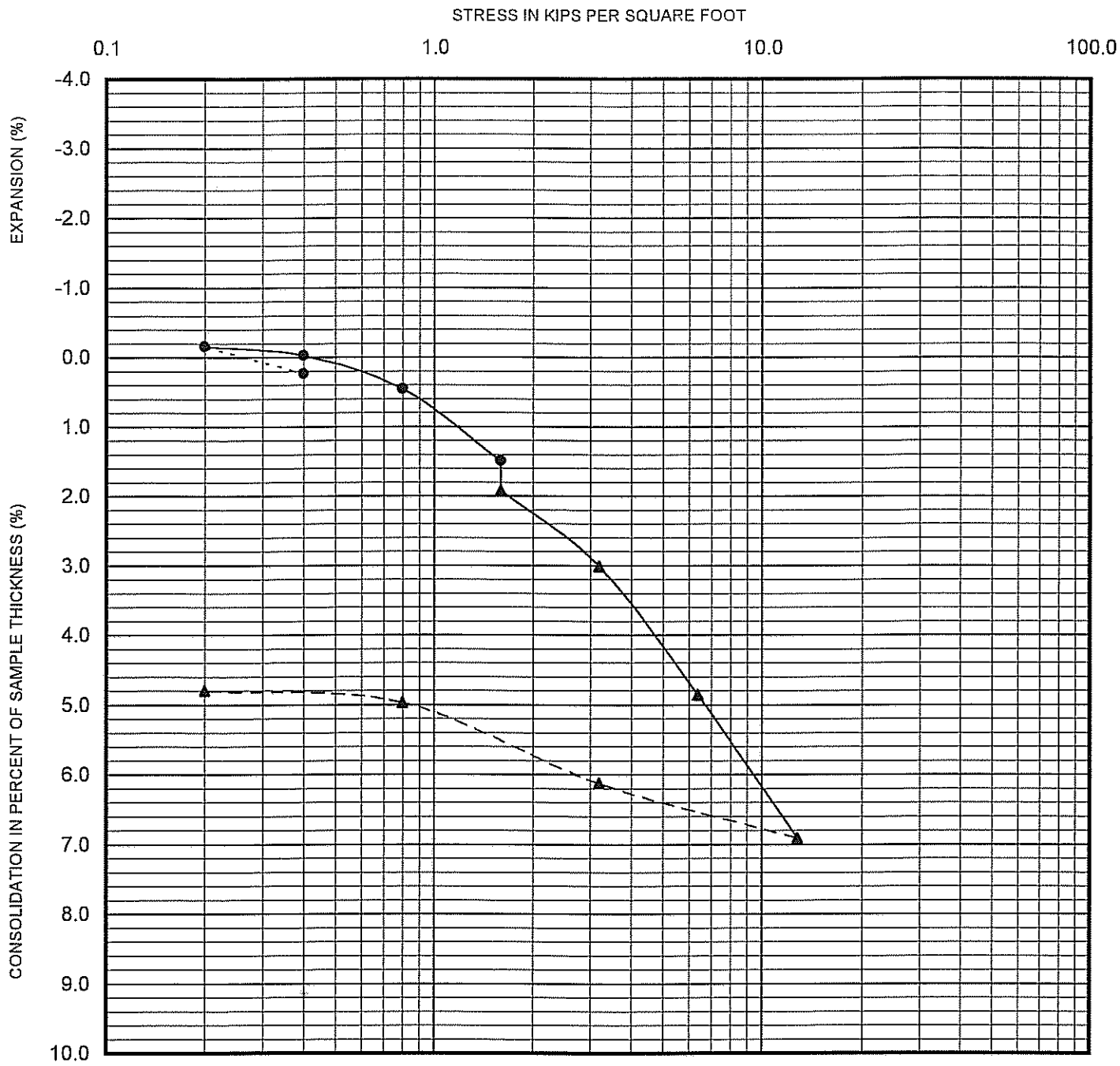


Sample Location	B-15
Depth (ft.)	5.0-6.5
Soil Type	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-21
303200001 / 3/11		

(B-21) 303200001 B-15 5.0-6.5 CN.xls



Sample Location	B-19
Depth (ft.)	10.0-11.5
Soil Type	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

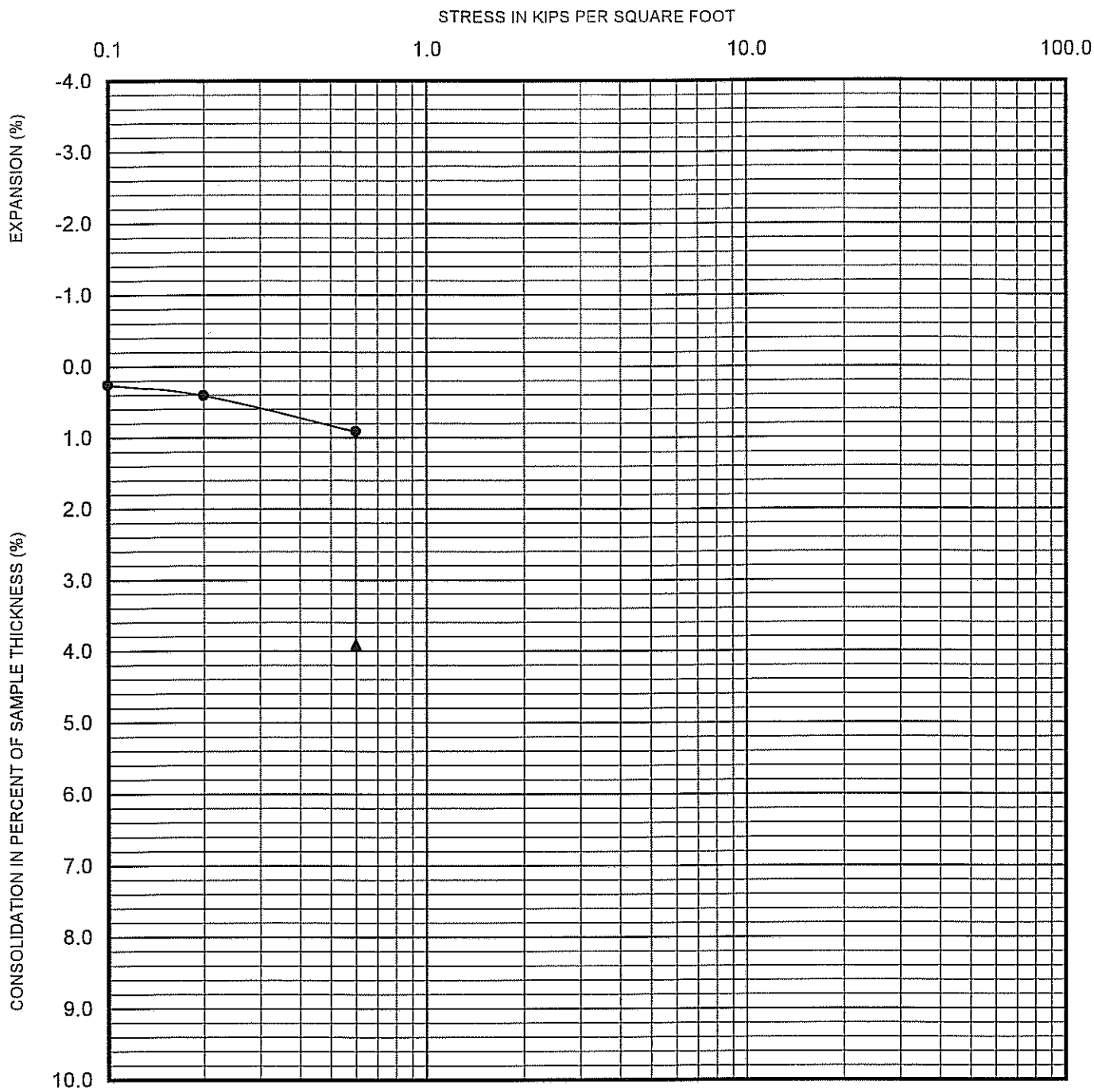
Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-22
303200001 / 3/11		

(B-22) 303200001 B-19 10.0-11.5.xls

SAMPLE LOCATION	DEPTH (FT)	IN-PLACE MOISTURE CONTENT (%)	IN-PLACE DRY DENSITY (PCF)	FINAL MOISTURE CONTENT (%)	SURCHARGE (PSF)	EXPANSION POTENTIAL (%)	COLLAPSE POTENTIAL (%)
B-6	5.0-6.5	9.2	110.4	18.8	800	0.8	--
B-8	5.0-6.5	7.1	98.7	20.1	800	--	0.2
B-10	2.0-3.5	9.5	97.9	22.8	800	0.0	0.0
B-14	5.0-6.5	11.8	100.8	23.5	800	0.0	0.0
B-15	5.0-6.5	8.1	101.0	18.8	800	0.0	0.0
B-19	10.0-11.3	10.6	115.0	17.2	1,600	--	0.4

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore		EXPANSION/COLLAPSE POTENTIAL TEST RESULTS	FIGURE
PROJECT NO.	DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-23
303200001	3/11		

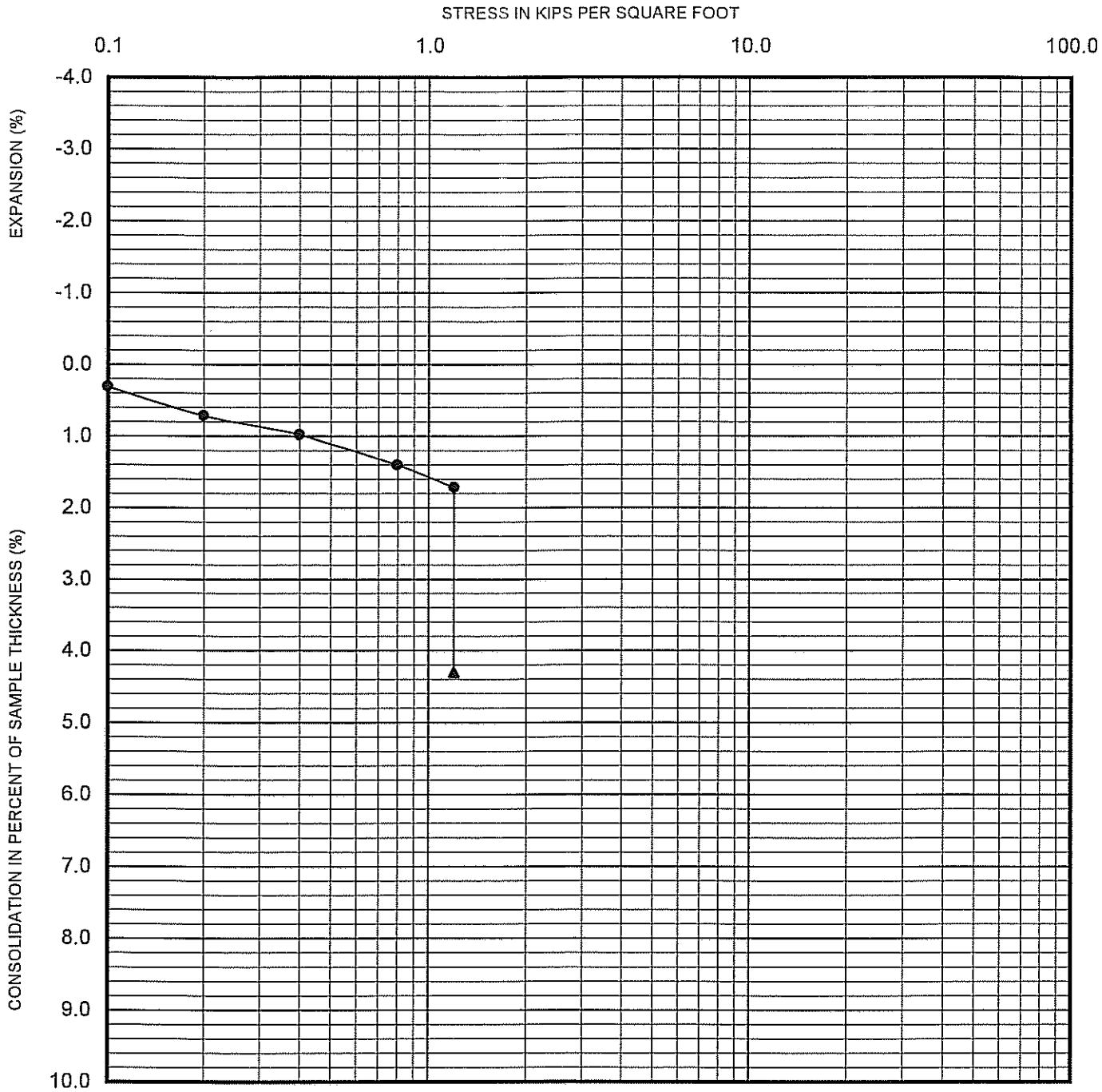


Seating Cycle		Sample Location	B-2
Loading Prior to Inundation		Depth (ft.)	5.0-6.4
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 5333

Ninyo & Moore		COLLAPSE POTENTIAL TEST RESULTS	FIGURE
PROJECT NO.	DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-24
303200001	3/11		

(B-24) 303200001 B-2 5.0-6.4 COL.xls

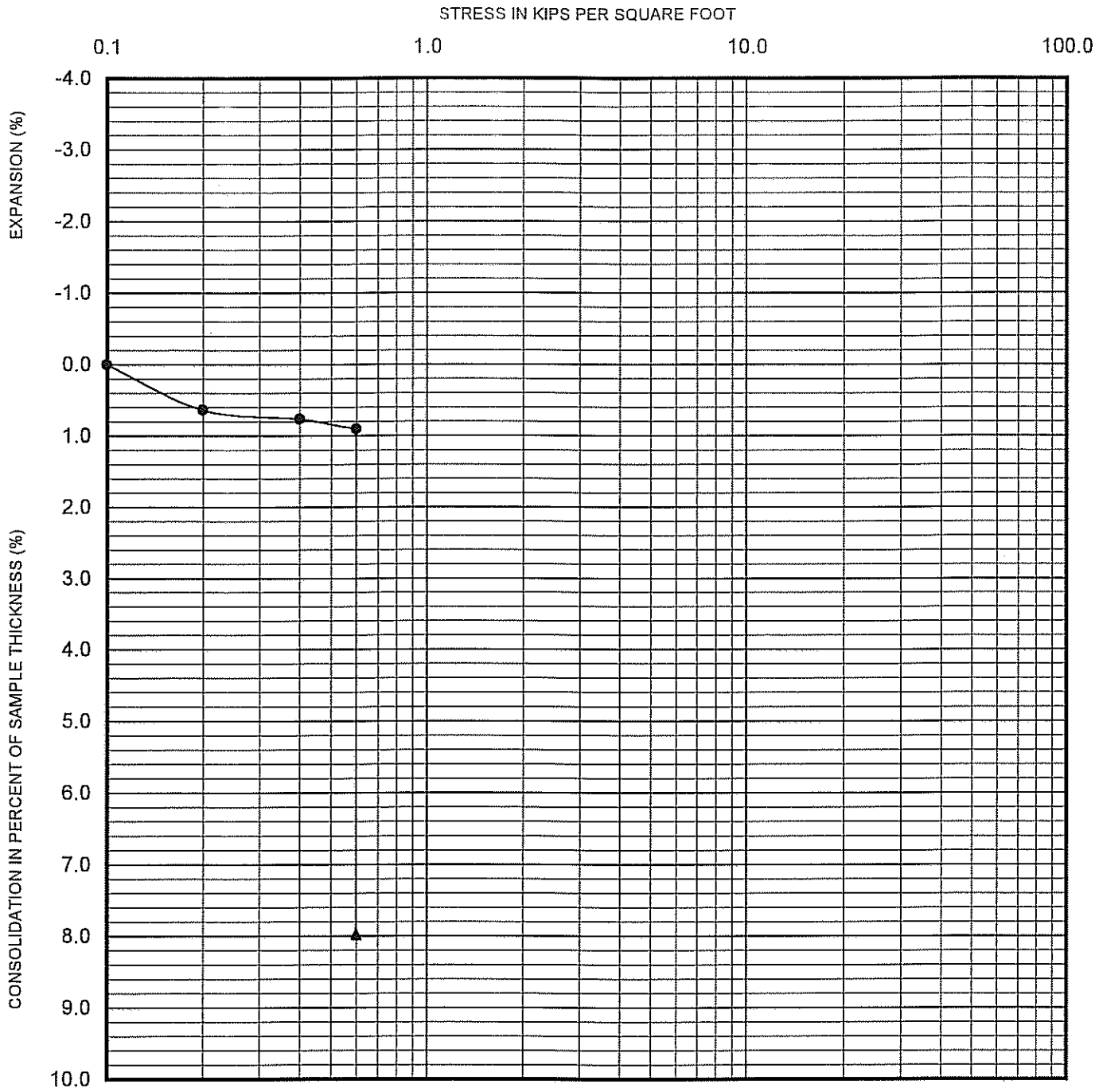


Seating Cycle		Sample Location	B-5
Loading Prior to Inundation		Depth (ft.)	10.0-11.5
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 5333

Ninyo & Moore	COLLAPSE POTENTIAL TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-25
303200001 / 3/11		

(B-25) 303200001 B-5 10.0-11.5 COL.xls

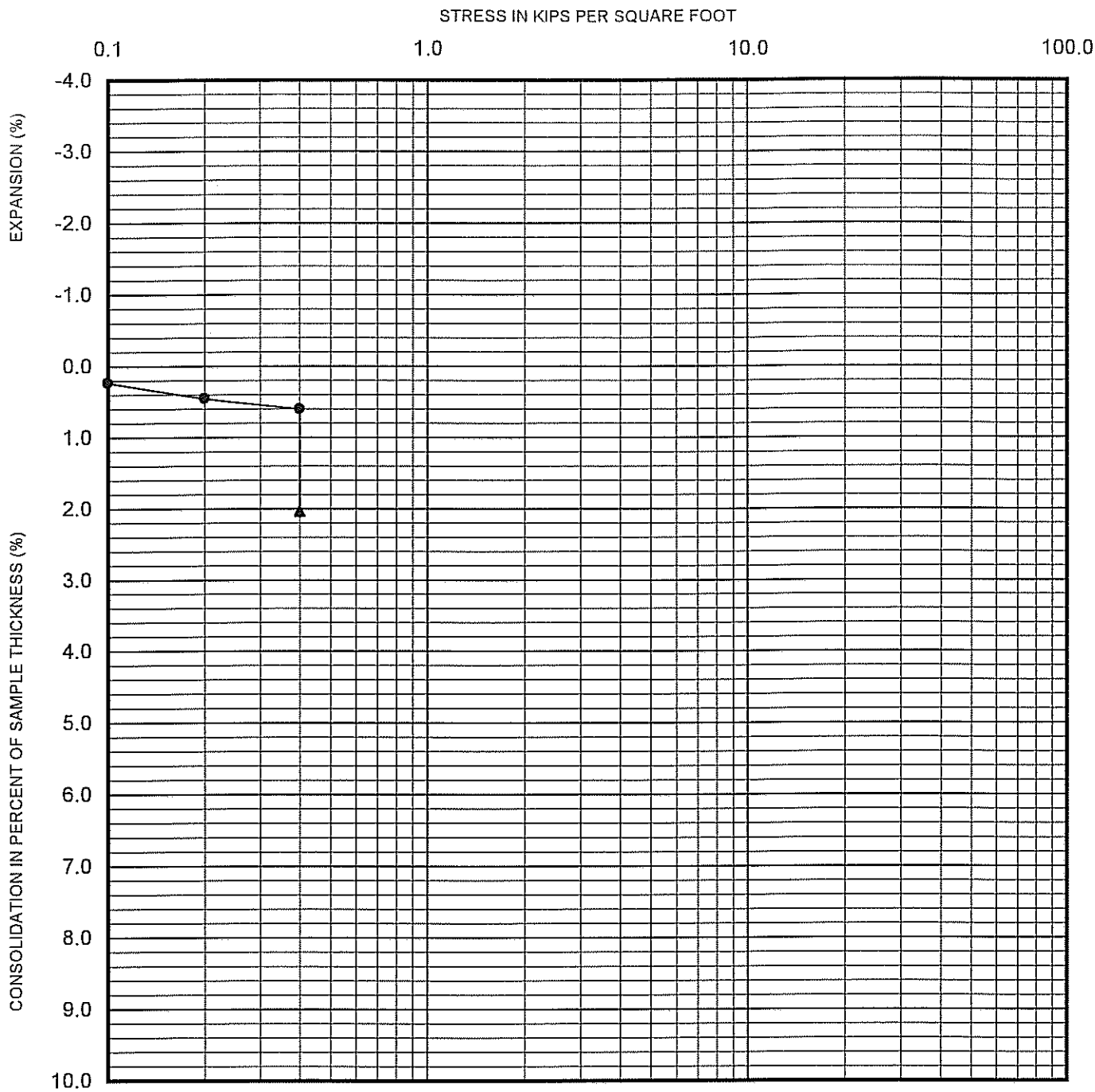


Seating Cycle		Sample Location	B-7
Loading Prior to Inundation		Depth (ft.)	5.0-6.5
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 5333

Ninyo & Moore	COLLAPSE POTENTIAL TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-26
303200001 / 3/11		

(B-26) 303200001 B-7 5.0-6.5 COL.xls

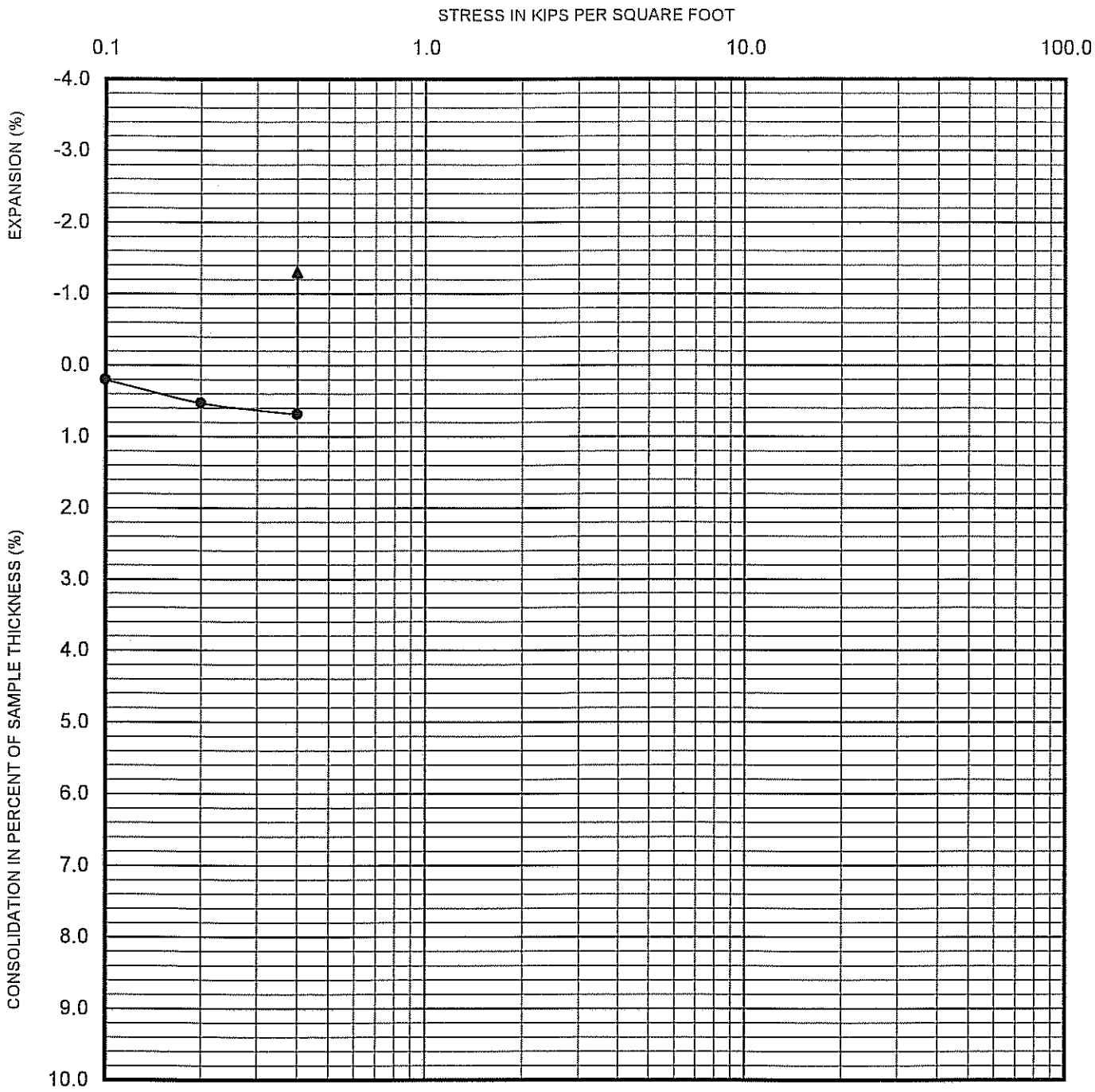


Seating Cycle		Sample Location	B-9
Loading Prior to Inundation		Depth (ft.)	2.0-3.5
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 5333

Ninyo & Moore	COLLAPSE POTENTIAL TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-27
303200001 / 3/11		

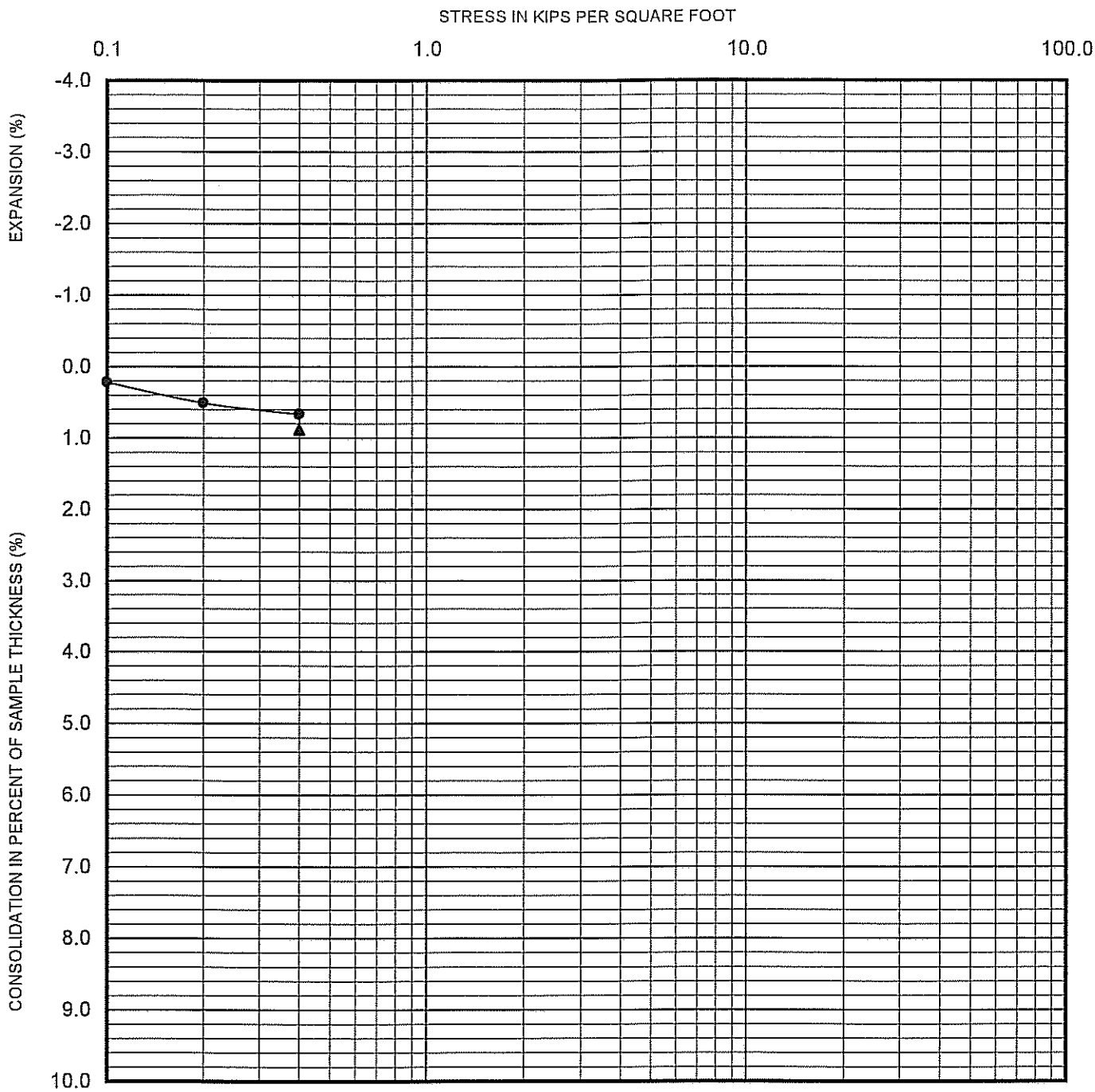
(B-27) 303200001 B-9 2.0-3.5 COL.xls



Seating Cycle		Sample Location	B-12
Loading Prior to Inundation		Depth (ft.)	2.0-3.5
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 5333

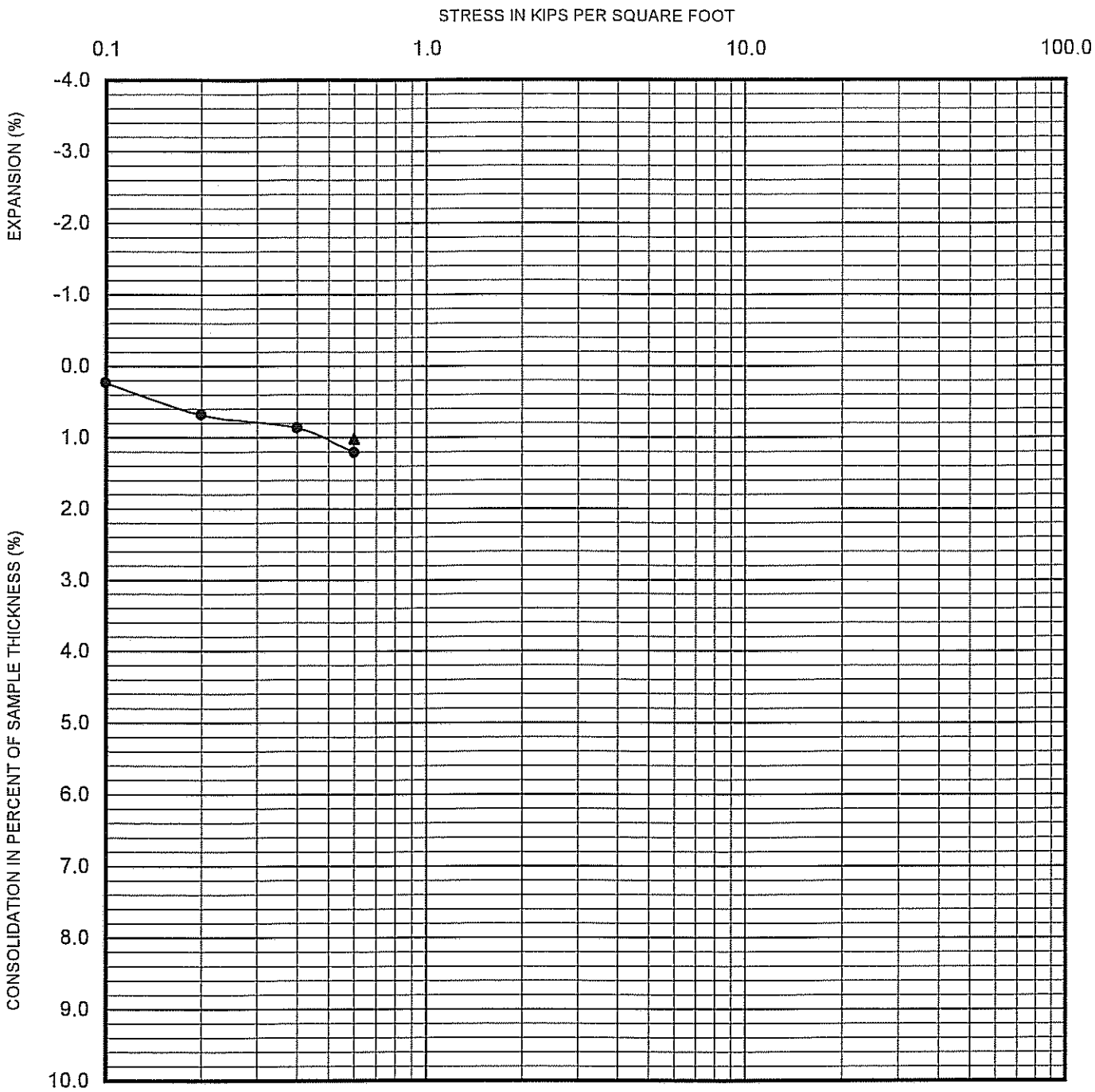
Ninyo & Moore		COLLAPSE POTENTIAL TEST RESULTS	FIGURE
PROJECT NO.	DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-28
303200001	3/11		



Seating Cycle		Sample Location	B-16
Loading Prior to Inundation		Depth (ft.)	2.0-3.4
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 5333

Ninyo & Moore		COLLAPSE POTENTIAL TEST RESULTS	FIGURE
PROJECT NO.	DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-29
303200001	3/11		



Seating Cycle		Sample Location	B-18
Loading Prior to Inundation		Depth (ft.)	5.0-6.5
Loading After Inundation		Soil Type	SC
Rebound Cycle			

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 5333

Ninyo & Moore	COLLAPSE POTENTIAL TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-30
303200001 / 3/11		

(B-30) 303200001 B-18 5.0-6.5 COL.xls

SAMPLE LOCATION	DEPTH (FT)	IN-PLACE MOISTURE CONTENT (%)	IN-PLACE DRY DENSITY (PCF)	FINAL MOISTURE CONTENT (%)	SURCHARGE (PSF)	EXPANSION POTENTIAL (%)	COLLAPSE POTENTIAL (%)
B-2	5.0-6.4	7.8	78.4	33.1	600	--	3.0
B-5	10.0-11.5	8.1	98.0	20.5	1,200	--	2.6
B-7	5.0-6.5	7.6	76.4	31.0	600	--	7.1
B-9	2.0-3.5	10.0	77.2	34.9	400	--	1.4
B-12	2.0-3.5	6.9	107.2	20.5	400	2.0	--
B-16	2.0-3.4	7.0	95.2	23.0	400	--	0.2
B-18	5.0-6.5	7.2	103.4	19.9	600	0.2	--

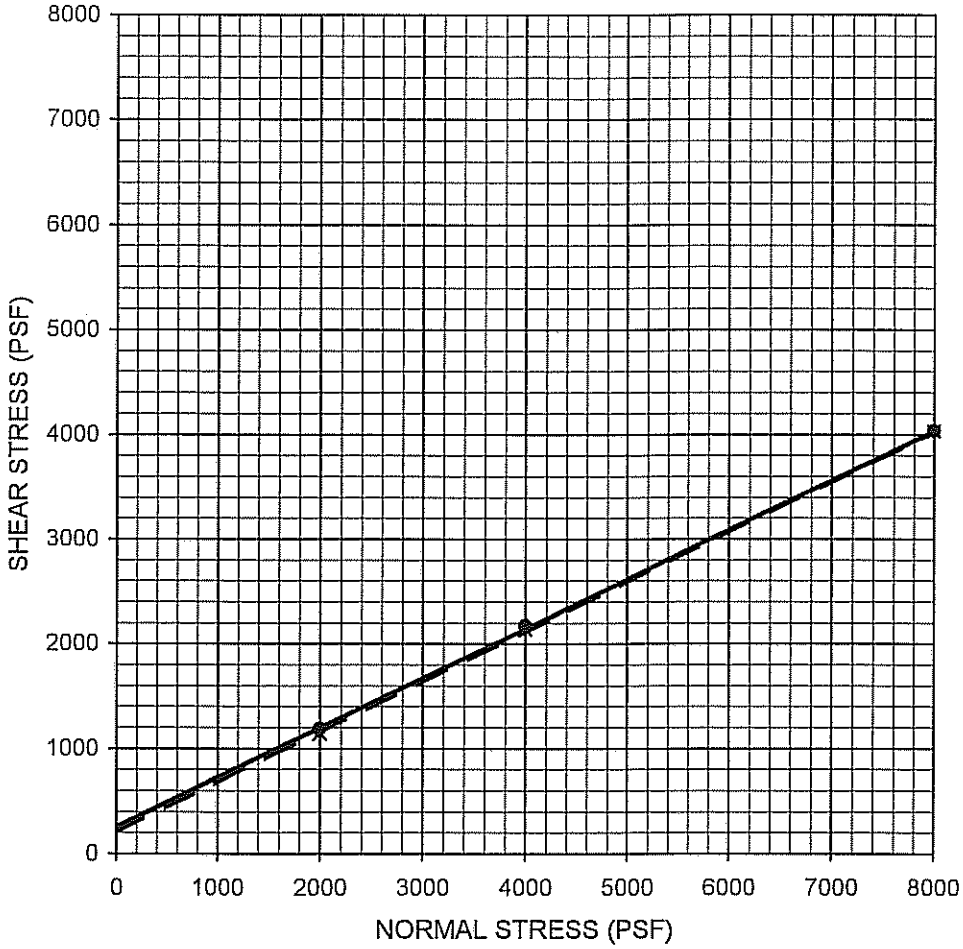
PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 5333

Ninyo & Moore	COLLAPSE POTENTIAL TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-31
303200001 / 3/11		

SAMPLE LOCATION	SAMPLE DEPTH (FT)	INITIAL MOISTURE (%)	COMPACTED DRY DENSITY (PCF)	FINAL MOISTURE (%)	VOLUMETRIC SWELL (IN)	EXPANSION INDEX	POTENTIAL EXPANSION
B-1	7.0-8.0	8.5	107.6	18.2	-0.002	-5	#N/A
B-6	9.0-10.0	10.7	112.5	18.9	0.017	21	Low
B-14	14.0-15.0	14.0	103.3	25.6	0.022	27	Low
TP-6	3.0-4.0	14.9	100.7	25.8	0.023	28	Low

PERFORMED IN GENERAL ACCORDANCE WITH ☐ UBC STANDARD 18-2 ☑ ASTM D 4829

Ninyo & Moore	EXPANSION INDEX TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-32
303200001 / 3/11		

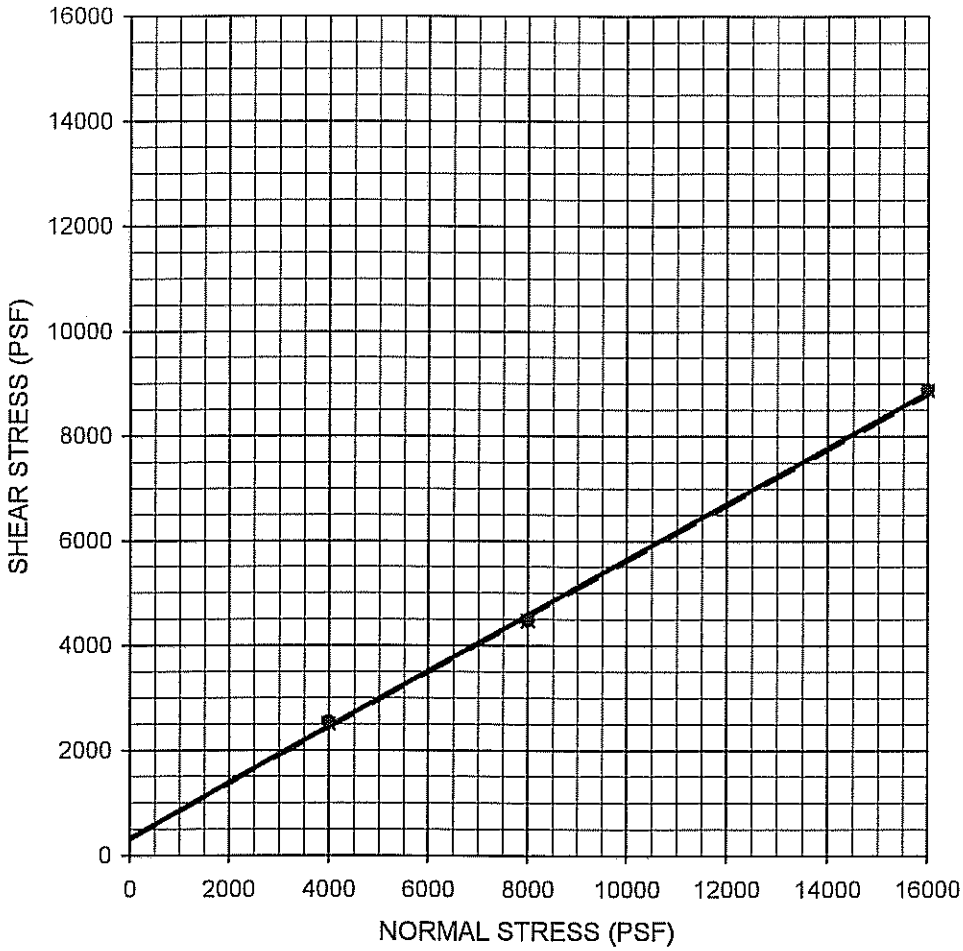


Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Clayey SAND	—●—	B-1	2.0-3.5	Peak	260	25	SC
Clayey SAND	- - X - -	B-1	2.0-3.5	Ultimate	195	26	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

Ninyo & Moore	DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-33
303200001 / 3/11		

(B-33) 303200001 B-1 2 0-3.5 DS.xls

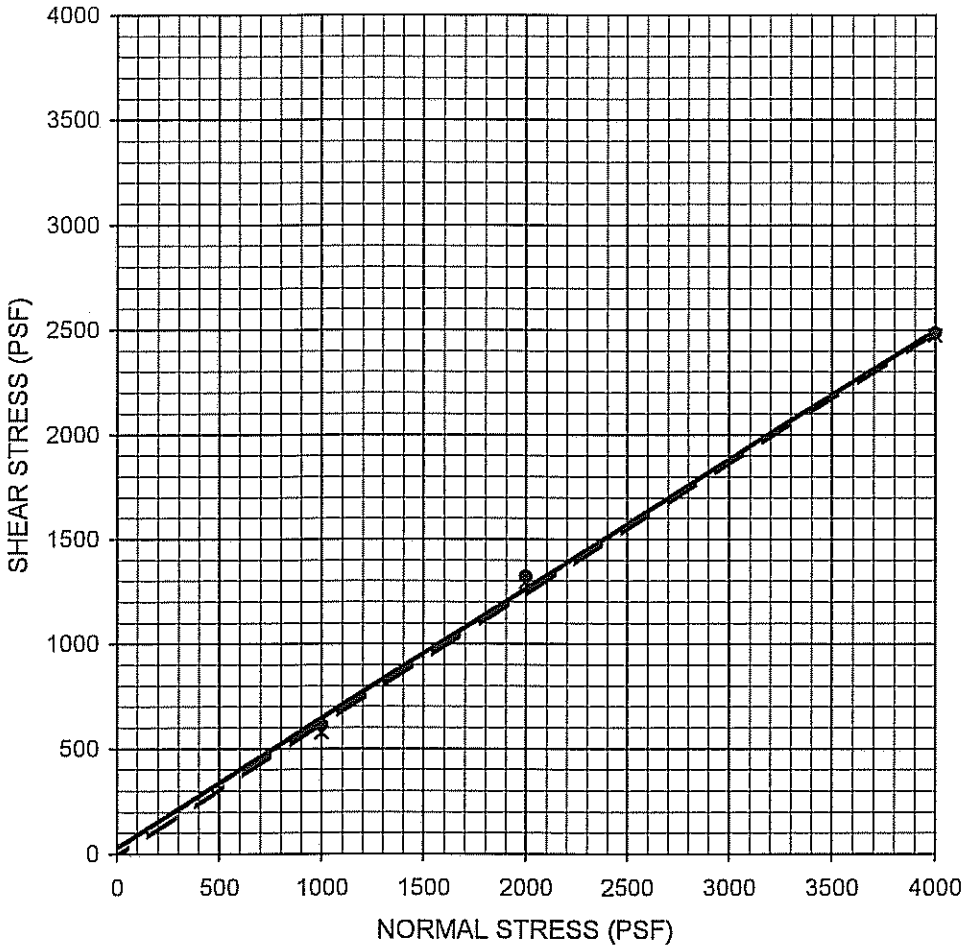


Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Clayey SAND	—●—	B-4	5.0-6.5	Peak	330	28	SC
Clayey SAND	- - X - -	B-4	5.0-6.5	Ultimate	295	28	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

Ninyo & Moore		DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO.	DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-34
303200001	3/11		

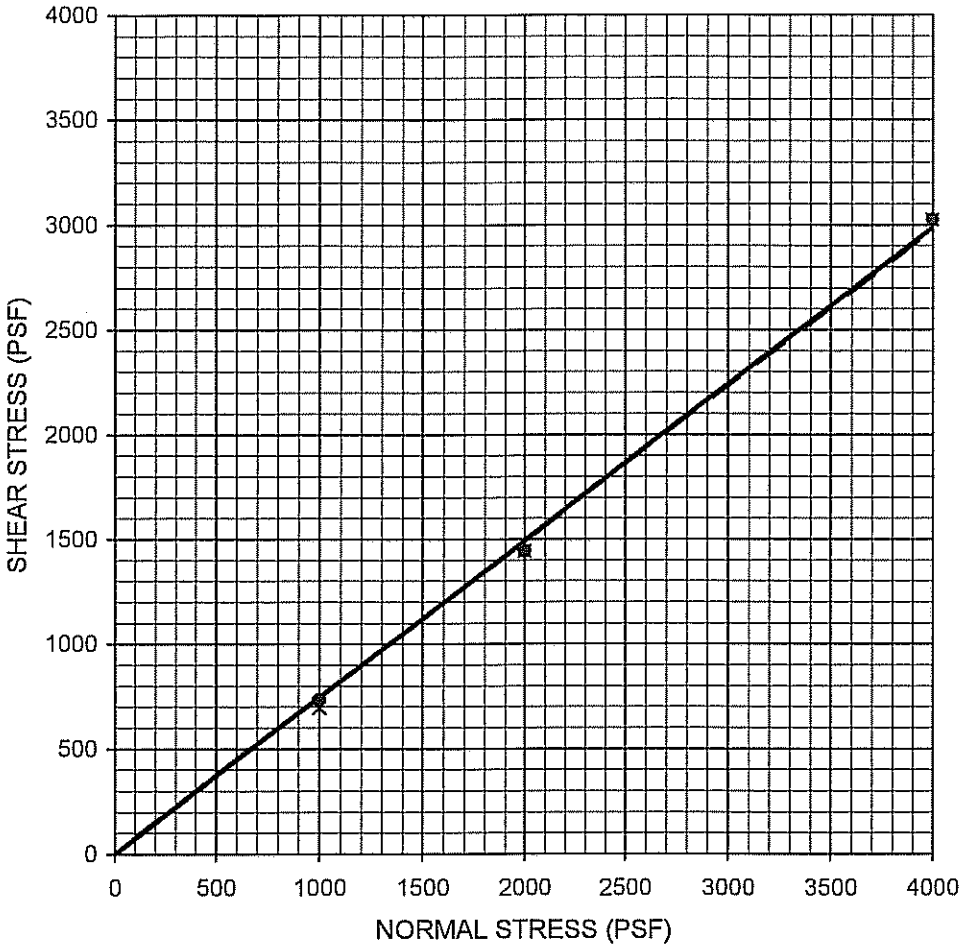
(B-34) 303200001 B-4 5 0-6.5 DS.xls



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Sandy lean CLAY	—●—	B-6	10.0-10.9	Peak	30	32	CL
Sandy lean CLAY	- - X - -	B-6	10.0-10.9	Ultimate	10	32	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

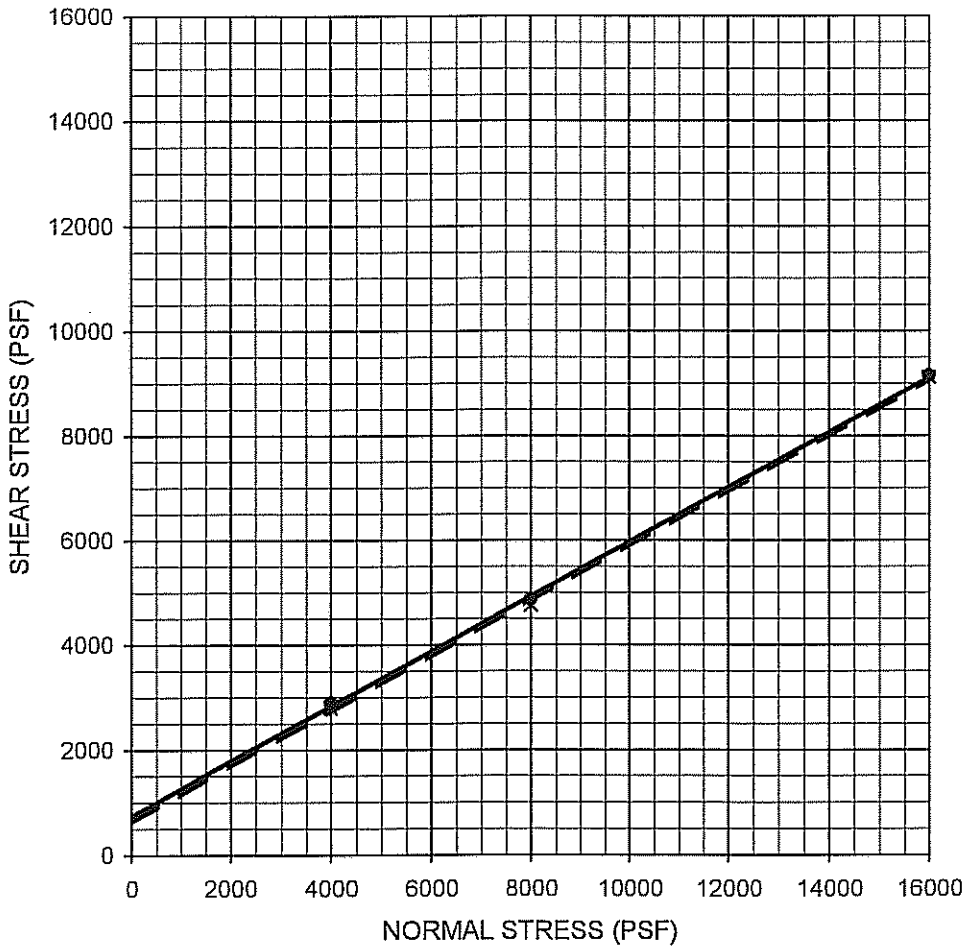
Ninyo & Moore		DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO.	DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-35
303200001	3/11		



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Silty SAND	—●—	B-8	10.0-11.5	Peak	100	37	SM
Silty SAND	- - X - -	B-8	10.0-11.5	Ultimate	60	37	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

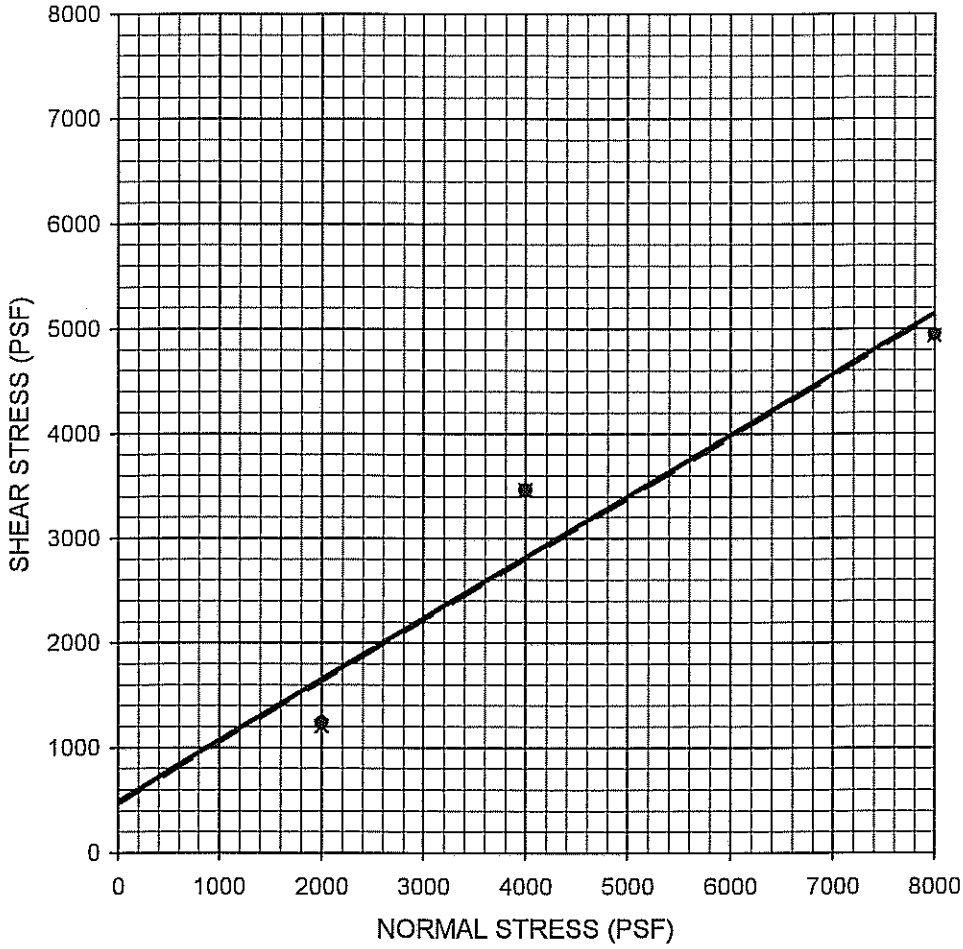
Ninyo & Moore	DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-36
303200001 / 3/11		



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Sandy lean CLAY	—●—	B-10	5.0-6.3	Peak	750	28	CL
Sandy lean CLAY	- - X - -	B-10	5.0-6.3	Ultimate	620	28	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

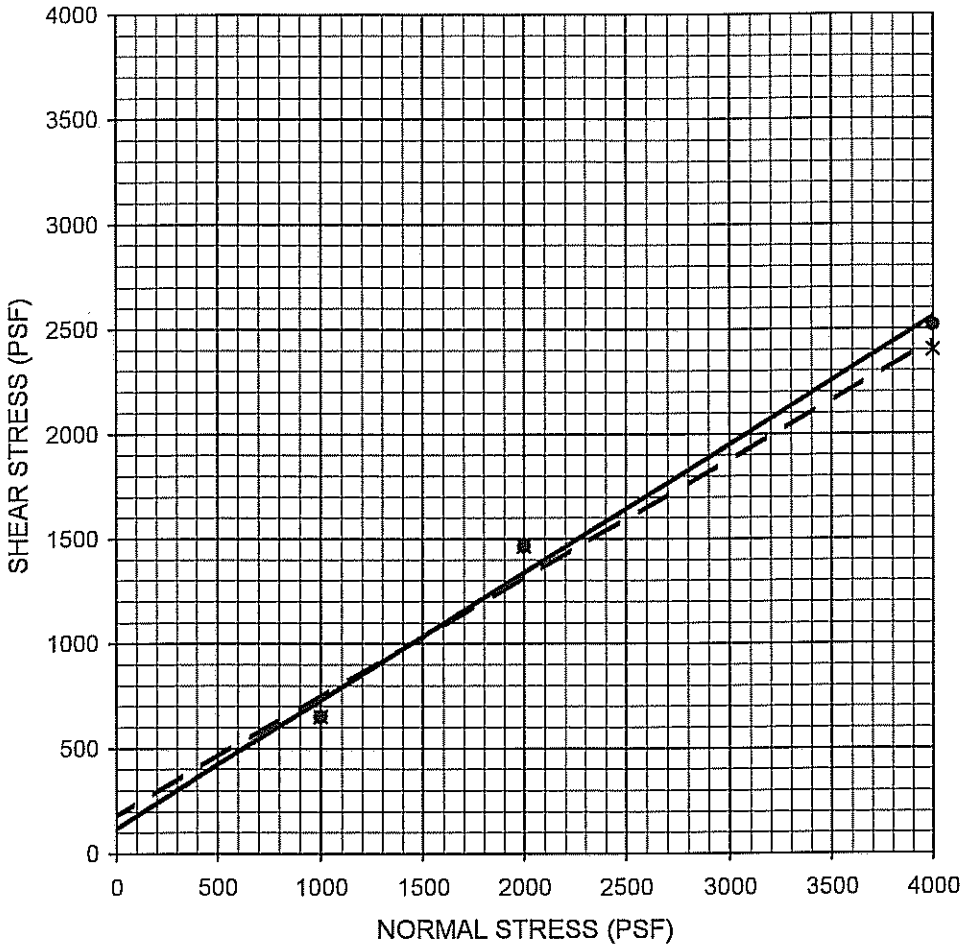
Ninyo & Moore	DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-37
303200001 / 3/11		



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Clayey SAND	—●—	B-12	2.0-3.5	Peak	490	30	SC
Clayey SAND	- - X - -	B-12	2.0-3.5	Ultimate	460	30	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

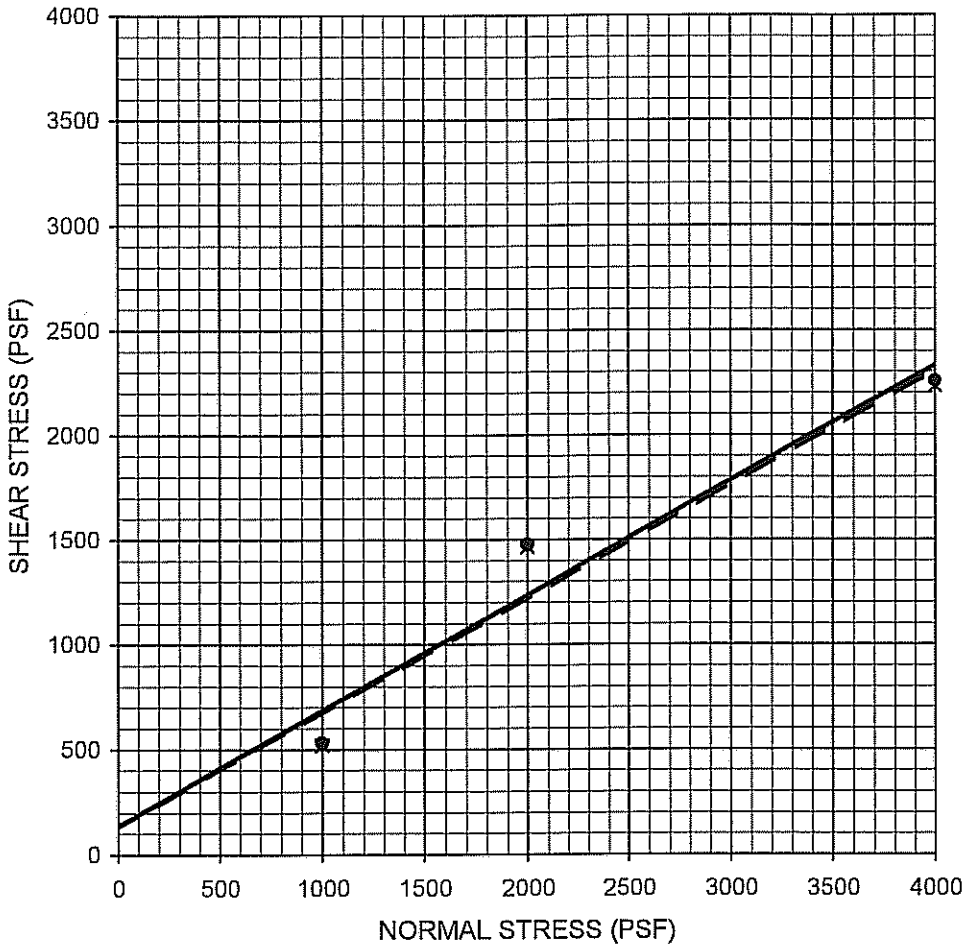
Ninyo & Moore	DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-38
303200001 / 3/11		



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Clayey SAND	—●—	B-14	10.0-11.5	Peak	180	31	SC
Clayey SAND	- - X - -	B-14	10.0-11.5	Ultimate	120	30	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

Ninyo & Moore	DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-39
303200001 / 3/11		

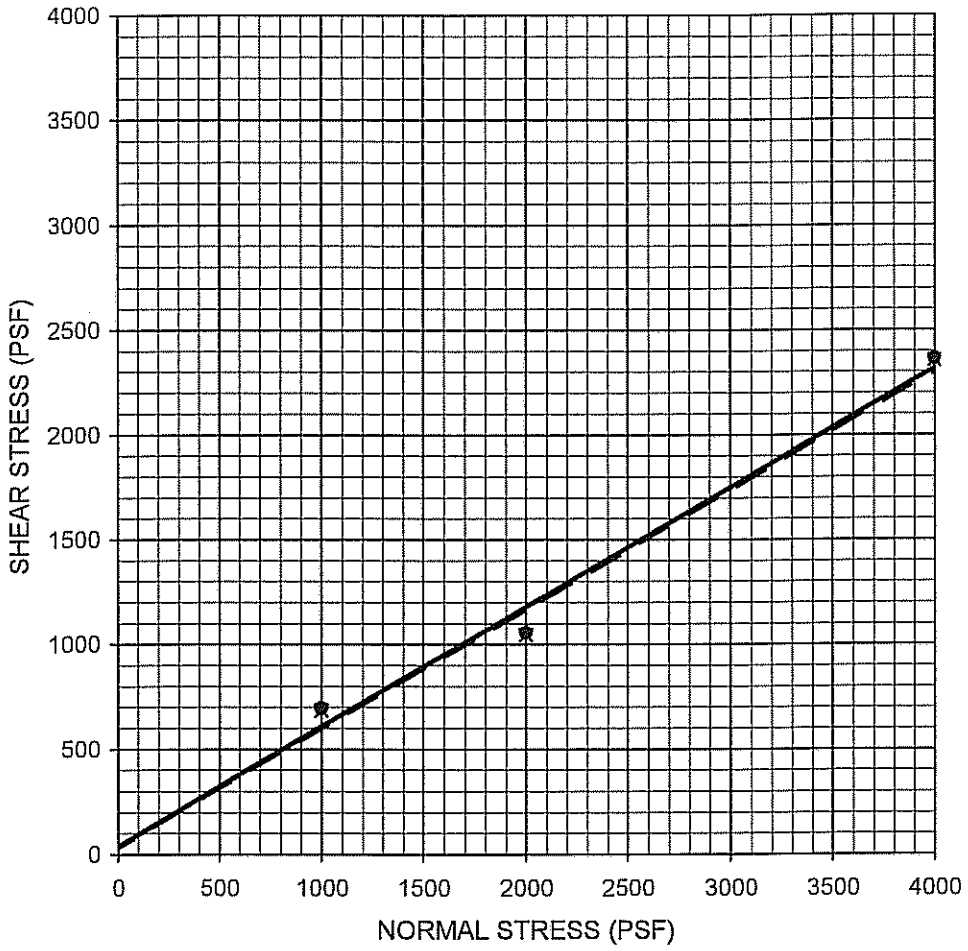


Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Clayey SAND	—●—	B-16	5.0-6.4	Peak	140	29	SC
Clayey SAND	- - X - -	B-16	5.0-6.4	Ultimate	130	29	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

Ninyo & Moore		DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO.	DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-40
303200001	3/11		

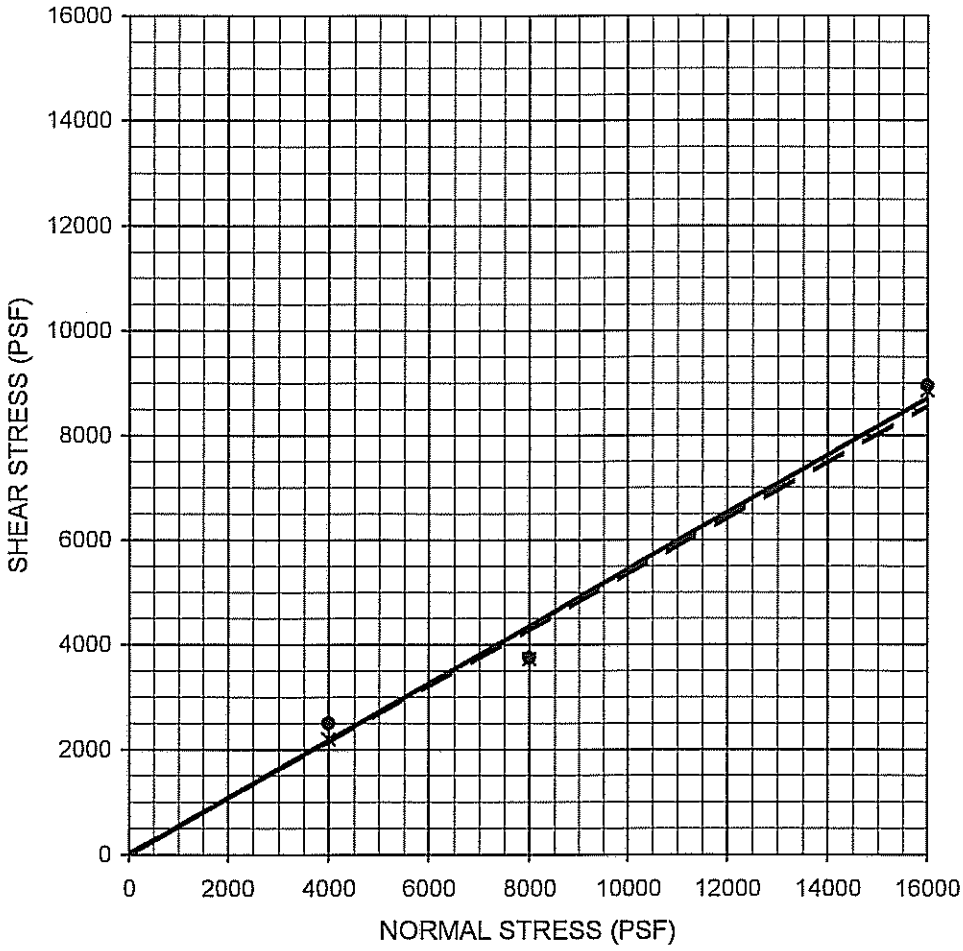
(B-40) 303200001 B-16 5.0-6.5 DS.xls



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Clayey SAND with gravel	—●—	B-17	10.0-11.5	Peak	40	30	SC
Clayey SAND with gravel	- - X - -	B-17	10.0-11.5	Ultimate	30	30	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

Ninyo & Moore	DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-41
303200001 / 3/11		



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion, c (psf)	Friction Angle, ϕ (degrees)	Soil Type
Clayey SAND	—●—	B-19	5.0-6.5	Peak	370	28	SC
Clayey SAND	- - X - -	B-19	5.0-6.5	Ultimate	110	28	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

Ninyo & Moore	DIRECT SHEAR TEST RESULTS	FIGURE
PROJECT NO. / DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-42
303200001 / 3/11		

SAMPLE LOCATION	DEPTH (FT)	SOIL DESCRIPTION	RESISTIVITY (OHM-CM)	
			AT IN-SITU MOISTURE	AT SATURATION
B-1	7.0-8.0	SC	70,000	1,700
B-2	0.0-1.0	SM	30,000	4,500
B-4	0.0-1.0	SM	25,000	6,500
B-6	9.0-10.0	CL	15,000	450
B-8	0.0-1.0	SM	30,000	6,500
B-10	0.0-1.0	CL	25,000	3,000
B-13	8.0-9.0	SM	25,000	700
B-17	0.0-1.0	SM	35,000	10,000
B-19	0.0-1.0	SM	55,000	4,500
TP-3	2.0-3.0	CL	20,000	300
TP-9	1.0-2.0	SC	3,500	500

Ninyo & Moore		MILLER BOX RESISTIVITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	HIDDEN HILLS SOLAR FACILITY OLD SPANISH TRAIL HIGHWAY AND GOLD STREET INYO COUNTY, CALIFORNIA	B-43
303200001	3/11		

APPENDIX C

CHEMICAL TEST RESULTS

The results of chemical tests performed are provided in this appendix.

SilverState
Analytical Laboratories

LABORATORY REPORT

DATE: January 28, 2011

REPORT NUMBER: 11-0357-1

CLIENT: Ninyo & Moore
6700 Paradise Road, Suite E
Las Vegas, NV 89119

PAGE: 1 of 1

CLIENT PROJECT: 303200001

CLIENT PO #:

ANALYST: RL

Sampled By: Client
Date Sampled: --
Time Sampled: --

Date Received: 01/27/11
Time Received: 0929

Sample ID: Hidden Hills B-1 @ 7.0-8.0'

Analysis	Result	Unit	Method
Soluble Soil Chlorides	27.9	mg/kg	SM4500C
pH	7.66	S.U.	SM9045C
Redox	335	mV	SM2580B
Sodium	0.00	%	ASTMD2791
Sulfate	0.10	%	SM4500E
Sodium Sulfate	0.00	%	Calculation
Total Salts (Solubility)	0.89	%	SM2540B

NOTES: The results for each constituent denote the percentage (%) for that particular element which is soluble in a 1:5 (soil to water) extraction ratio and corrected for dilution.

REVIEWED BY:

John Sloan
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SilverState
Analytical Laboratories

LABORATORY REPORT

DATE: January 28, 2011

REPORT NUMBER: 11-0357-2

CLIENT: Ninyo & Moore
6700 Paradise Road, Suite E
Las Vegas, NV 89119

PAGE: 1 of 1

CLIENT PROJECT: 303200001

CLIENT PO #:

ANALYST: RL

Sampled By: Client
Date Sampled: --
Time Sampled: --

Date Received: 01/27/11
Time Received: 0929

Sample ID: Hidden Hills B-2 @ 0.0-1.0'

Analysis	Result	Unit	Method
Soluble Soil Chlorides	7.70	mg/kg	SM4500C
pH	8.12	S.U.	SM9045C
Redox	261	mV	SM2580B
Sodium	0.00	%	ASTMD2791
Sulfate	0.03	%	SM4500E
Sodium Sulfate	0.00	%	Calculation
Total Salts (Solubility)	0.07	%	SM2540B

NOTES: The results for each constituent denote the percentage (%) for that particular element which is soluble in a 1:5 (soil to water) extraction ratio and corrected for dilution.

REVIEWED BY:

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LABORATORY REPORT

DATE: January 28, 2011

REPORT NUMBER: 11-0357-3

CLIENT: Ninyo & Moore
6700 Paradise Road, Suite E
Las Vegas, NV 89119

PAGE: 1 of 1

CLIENT PROJECT: 303200001

CLIENT PO #:

ANALYST: RL

Sampled By: Client
Date Sampled: --
Time Sampled: --

Date Received: 01/27/11
Time Received: 0929

Sample ID: Hidden Hills TP-3 @ 2.0-3.0'

Analysis	Result	Unit	Method
Soluble Soil Chlorides	182	mg/kg	SM4500C
pH	7.76	S.U.	SM9045C
Redox	264	mV	SM2580B
Sodium	0.00	%	ASTMD2791
Sulfate	0.07	%	SM4500E
Sodium Sulfate	0.00	%	Calculation
Total Salts (Solubility)	0.64	%	SM2540B

NOTES: The results for each constituent denote the percentage (%) for that particular element which is soluble in a 1:5 (soil to water) extraction ratio and corrected for dilution.

REVIEWED BY:

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LABORATORY REPORT

DATE: January 28, 2011

REPORT NUMBER: 11-0357-4

CLIENT: Ninyo & Moore
6700 Paradise Road, Suite E
Las Vegas, NV 89119

PAGE: 1 of 1

CLIENT PROJECT: 303200001

CLIENT PO #:

ANALYST: RL

Sampled By: Client
Date Sampled: --
Time Sampled: --

Date Received: 01/27/11
Time Received: 0929

Sample ID: Hidden Hills B-4 @ 0.0-1.0'

Analysis	Result	Unit	Method
Soluble Soil Chlorides	17.0	mg/kg	SM4500C
pH	8.47	S.U.	SM9045C
Redox	245	mV	SM2580B
Sodium	0.00	%	ASTMD2791
Sulfate	0.00	%	SM4500E
Sodium Sulfate	0.00	%	Calculation
Total Salts (Solubility)	0.12	%	SM2540B

NOTES: The results for each constituent denote the percentage (%) for that particular element which is soluble in a 1:5 (soil to water) extraction ratio and corrected for dilution.

REVIEWED BY:

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LABORATORY REPORT

DATE: January 28, 2011

REPORT NUMBER: 11-0357-5

CLIENT: Ninyo & Moore
6700 Paradise Road, Suite E
Las Vegas, NV 89119

PAGE: 1 of 1

CLIENT PROJECT: 303200001

CLIENT PO #:

ANALYST: RL

Sampled By: Client
Date Sampled: --
Time Sampled: --

Date Received: 01/27/11
Time Received: 0929

Sample ID: Hidden Hills B-6 @ 9.0-10.0'

Analysis	Result	Unit	Method
Soluble Soil Chlorides	64.8	mg/kg	SM4500C
pH	7.71	S.U.	SM9045C
Redox	284	mV	SM2580B
Sodium	0.00	%	ASTMD2791
Sulfate	0.03	%	SM4500E
Sodium Sulfate	0.00	%	Calculation
Total Salts (Solubility)	0.34	%	SM2540B

NOTES: The results for each constituent denote the percentage (%) for that particular element which is soluble in a 1:5 (soil to water) extraction ratio and corrected for dilution.

REVIEWED BY:

John Sloan
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SilverState
Analytical Laboratories

LABORATORY REPORT

DATE: January 28, 2011

REPORT NUMBER: 11-0357-6

CLIENT: Ninyo & Moore
6700 Paradise Road, Suite E
Las Vegas, NV 89119

PAGE: 1 of 1

CLIENT PROJECT: 303200001

CLIENT PO #:

ANALYST: RL

Sampled By: Client
Date Sampled: --
Time Sampled: --

Date Received: 01/27/11
Time Received: 0929

Sample ID: Hidden Hills B-8 @ 0.0-1.0'

Analysis	Result	Unit	Method
Soluble Soil Chlorides	14.0	mg/kg	SM4500C
pH	8.60	S.U.	SM9045C
Redox	241	mV	SM2580B
Sodium	0.00	%	ASTMD2791
Sulfate	0.00	%	SM4500E
Sodium Sulfate	0.00	%	Calculation
Total Salts (Solubility)	0.13	%	SM2540B

NOTES: The results for each constituent denote the percentage (%) for that particular element which is soluble in a 1:5 (soil to water) extraction ratio and corrected for dilution.

REVIEWED BY:

John Sloan
Laboratory Director

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SilverState
Analytical Laboratories

LABORATORY REPORT

DATE: January 28, 2011

REPORT NUMBER: 11-0357-7

CLIENT: Ninyo & Moore
6700 Paradise Road, Suite E
Las Vegas, NV 89119

PAGE: 1 of 1

CLIENT PROJECT: 303200001

CLIENT PO #:

ANALYST: RL

Sampled By: Client
Date Sampled: --
Time Sampled: --

Date Received: 01/27/11
Time Received: 0929

Sample ID: Hidden Hills TP-9 @ 1.0-2.0'

Analysis	Result	Unit	Method
Soluble Soil Chlorides	89.2	mg/kg	SM4500C
pH	7.71	S.U.	SM9045C
Redox	261	mV	SM2580B
Sodium	0.00	%	ASTMD2791
Sulfate	0.02	%	SM4500E
Sodium Sulfate	0.00	%	Calculation
Total Salts (Solubility)	0.40	%	SM2540B

NOTES: The results for each constituent denote the percentage (%) for that particular element which is soluble in a 1:5 (soil to water) extraction ratio and corrected for dilution.

REVIEWED BY:

John Sloan
Laboratory Director

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Analytical Laboratories

LABORATORY REPORT

DATE: January 28, 2011

REPORT NUMBER: 11-0357-8

CLIENT: Ninyo & Moore
6700 Paradise Road, Suite E
Las Vegas, NV 89119

PAGE: 1 of 1

CLIENT PROJECT: 303200001

CLIENT PO #:

ANALYST: RL

Sampled By: Client
Date Sampled: --
Time Sampled: --

Date Received: 01/27/11
Time Received: 0929

Sample ID: Hidden Hills B-10 @ 0.0-1.0'

Analysis	Result	Unit	Method
Soluble Soil Chlorides	5.80	mg/kg	SM4500C
pH	8.34	S.U.	SM9045C
Redox	242	mV	SM2580B
Sodium	0.00	%	ASTMD2791
Sulfate	0.00	%	SM4500E
Sodium Sulfate	0.00	%	Calculation
Total Salts (Solubility)	0.18	%	SM2540B

NOTES: The results for each constituent denote the percentage (%) for that particular element which is soluble in a 1:5 (soil to water) extraction ratio and corrected for dilution.

REVIEWED BY:

John Sloan
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Analytical Laboratories

LABORATORY REPORT

DATE: January 28, 2011

REPORT NUMBER: 11-0357-9

CLIENT: Ninyo & Moore
6700 Paradise Road, Suite E
Las Vegas, NV 89119

PAGE: 1 of 1

CLIENT PROJECT: 303200001

CLIENT PO #:

ANALYST: RL

Sampled By: Client
Date Sampled: --
Time Sampled: --

Date Received: 01/27/11
Time Received: 0929

Sample ID: Hidden Hills B-13 @ 8.0-9.0'

Analysis	Result	Unit	Method
Soluble Soil Chlorides	32.8	mg/kg	SM4500C
pH	7.78	S.U.	SM9045C
Redox	266	mV	SM2580B
Sodium	0.00	%	ASTMD2791
Sulfate	0.12	%	SM4500E
Sodium Sulfate	0.00	%	Calculation
Total Salts (Solubility)	0.48	%	SM2540B

NOTES: The results for each constituent denote the percentage (%) for that particular element which is soluble in a 1:5 (soil to water) extraction ratio and corrected for dilution.

REVIEWED BY:

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SilverState
Analytical Laboratories

LABORATORY REPORT

DATE: January 28, 2011

REPORT NUMBER: 11-0357-10

CLIENT: Ninyo & Moore
6700 Paradise Road, Suite E
Las Vegas, NV 89119

PAGE: 1 of 1

CLIENT PROJECT: 303200001

CLIENT PO #:

ANALYST: RL

Sampled By: Client
Date Sampled: --
Time Sampled: --

Date Received: 01/27/11
Time Received: 0929

Sample ID: Hidden Hills B-17 @ 0.0-1.0'

Analysis	Result	Unit	Method
Soluble Soil Chlorides	7.80	mg/kg	SM4500C
pH	7.90	S.U.	SM9045C
Redox	226	mV	SM2580B
Sodium	0.00	%	ASTMD2791
Sulfate	0.00	%	SM4500E
Sodium Sulfate	0.00	%	Calculation
Total Salts (Solubility)	0.08	%	SM2540B

NOTES: The results for each constituent denote the percentage (%) for that particular element which is soluble in a 1:5 (soil to water) extraction ratio and corrected for dilution.

REVIEWED BY:

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SilverState
Analytical Laboratories

LABORATORY REPORT

DATE: January 28, 2011

REPORT NUMBER: 11-0357-11

CLIENT: Ninyo & Moore
6700 Paradise Road, Suite E
Las Vegas, NV 89119

PAGE: 1 of 1

CLIENT PROJECT: 303200001

CLIENT PO #:

ANALYST: RL

Sampled By: Client
Date Sampled: --
Time Sampled: --

Date Received: 01/27/11
Time Received: 0929

Sample ID: Hidden Hills B-19 @ 0.0-1.0'

Analysis	Result	Unit	Method
Soluble Soil Chlorides	10.6	mg/kg	SM4500C
pH	8.44	S.U.	SM9045C
Redox	223	mV	SM2580B
Sodium	0.00	%	ASTMD2791
Sulfate	0.00	%	SM4500E
Sodium Sulfate	0.00	%	Calculation
Total Salts (Solubility)	0.42	%	SM2540B

NOTES: The results for each constituent denote the percentage (%) for that particular element which is soluble in a 1:5 (soil to water) extraction ratio and corrected for dilution.

REVIEWED BY:

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APPENDIX D

CONE PENETRATION TEST RESULTS

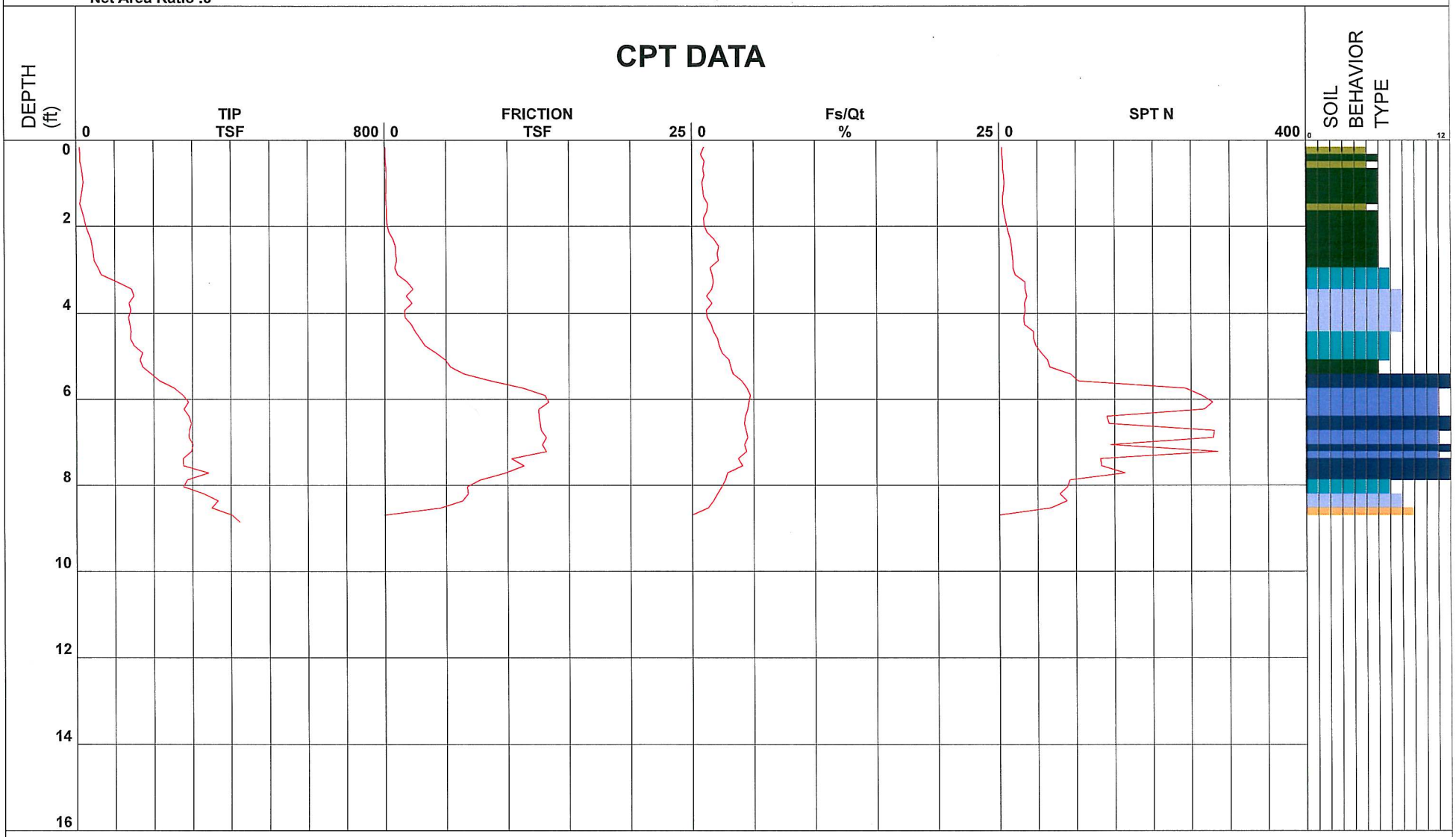
The results of cone penetration tests (CPT) performed are provided in this appendix.

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (748).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B1	Date and Time	1/20/2011 11:03:18 AM	Maximum Depth	8.86 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

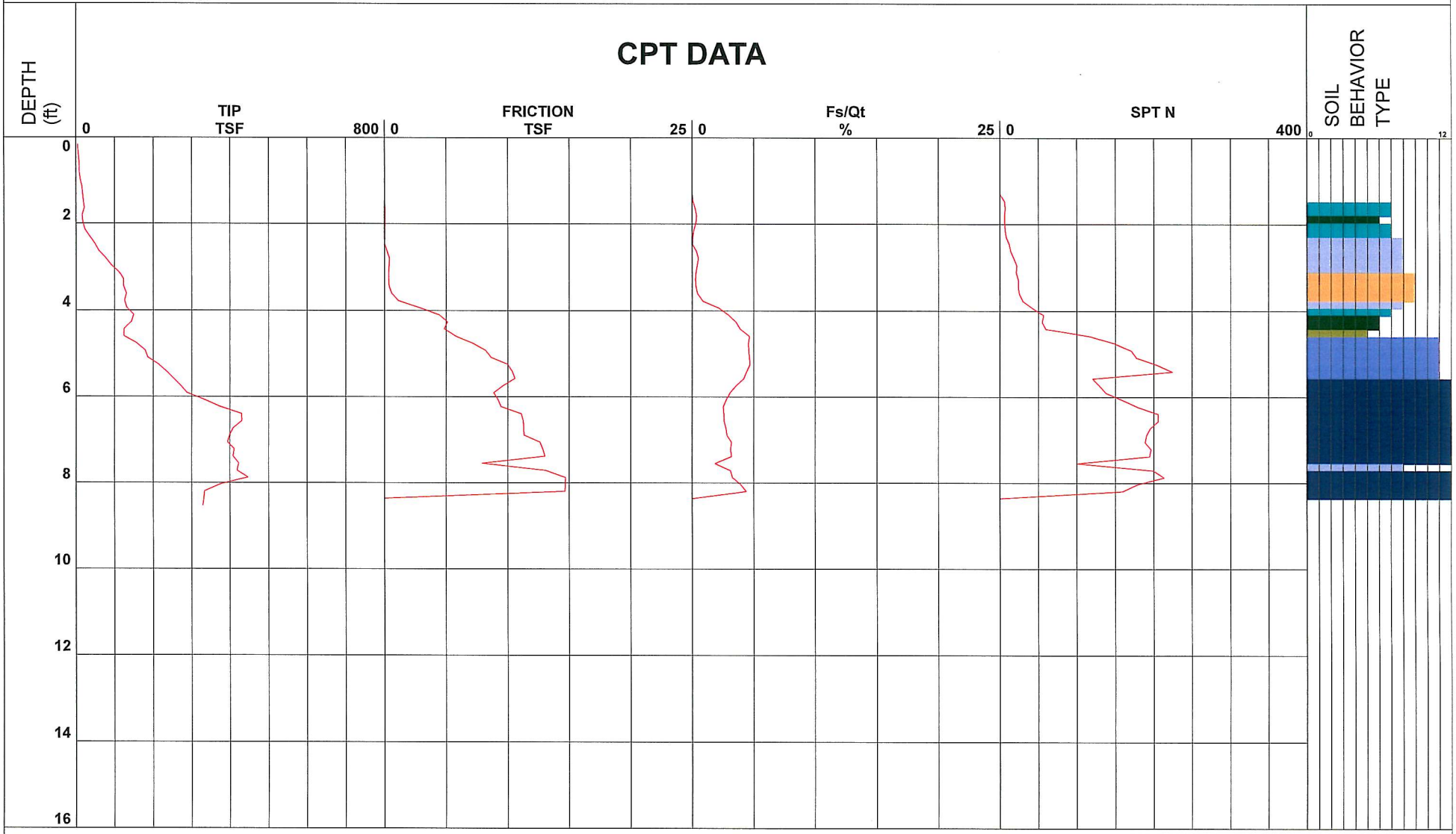
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (749).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B2	Date and Time	1/20/2011 11:31:42 AM	Maximum Depth	8.53 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 10cm squared

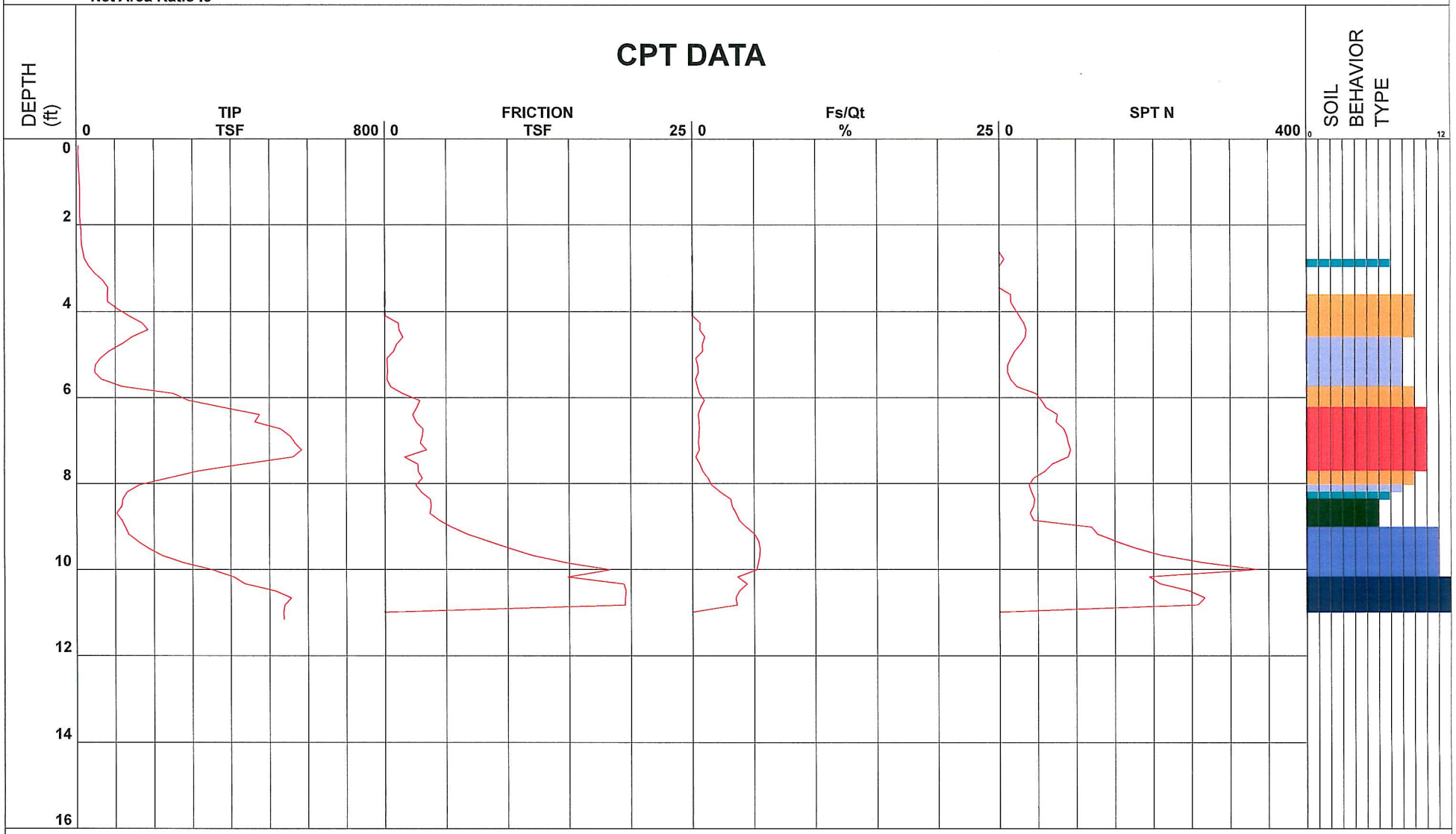
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (750).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B3	Date and Time	1/20/2011 12:02:35 PM	Maximum Depth	11.15 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

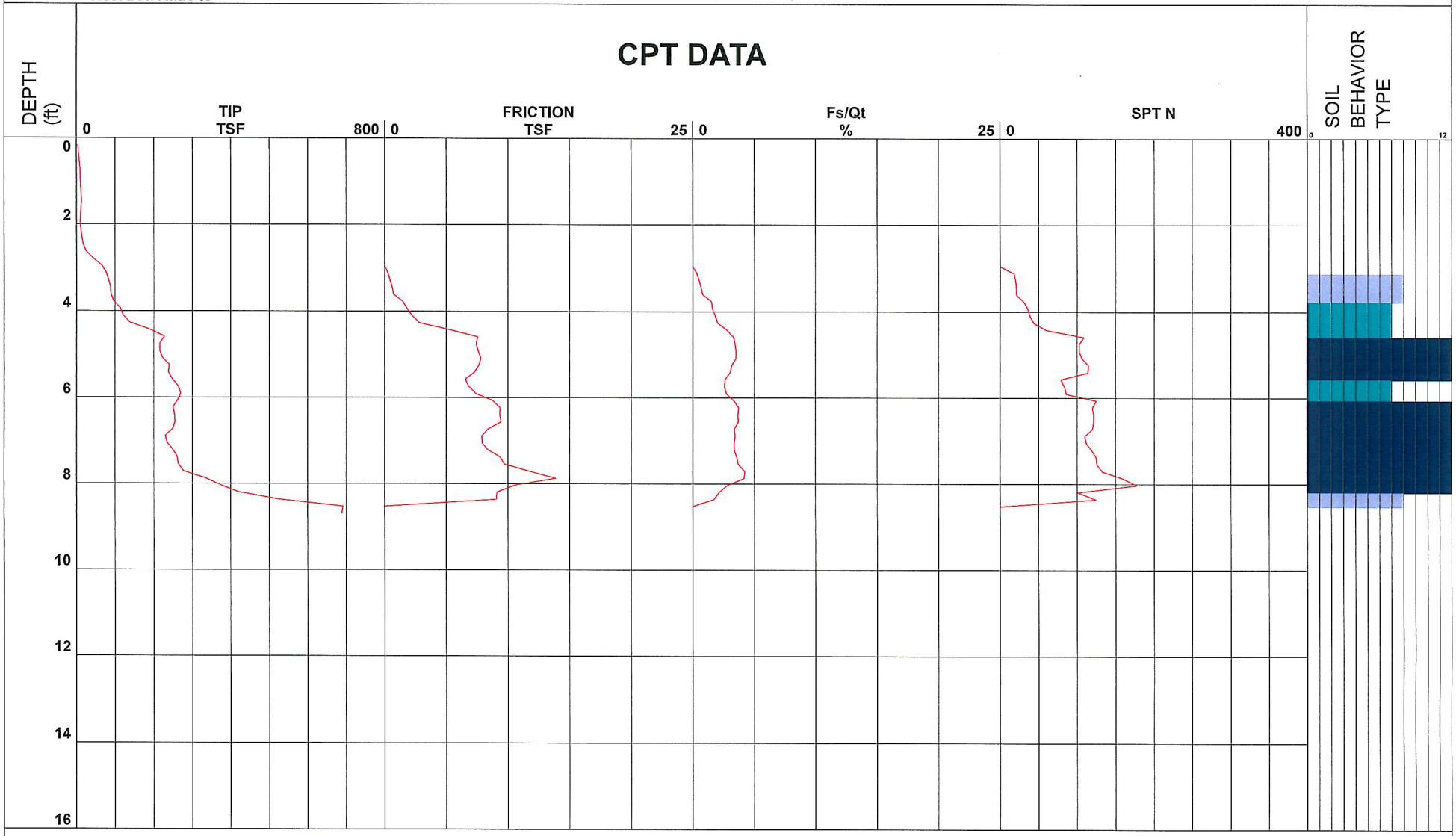
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (757).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B4	Date and Time	1/20/2011 3:15:20 PM	Maximum Depth	8.69 ft
Water Table Depth	0.00 ft				

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

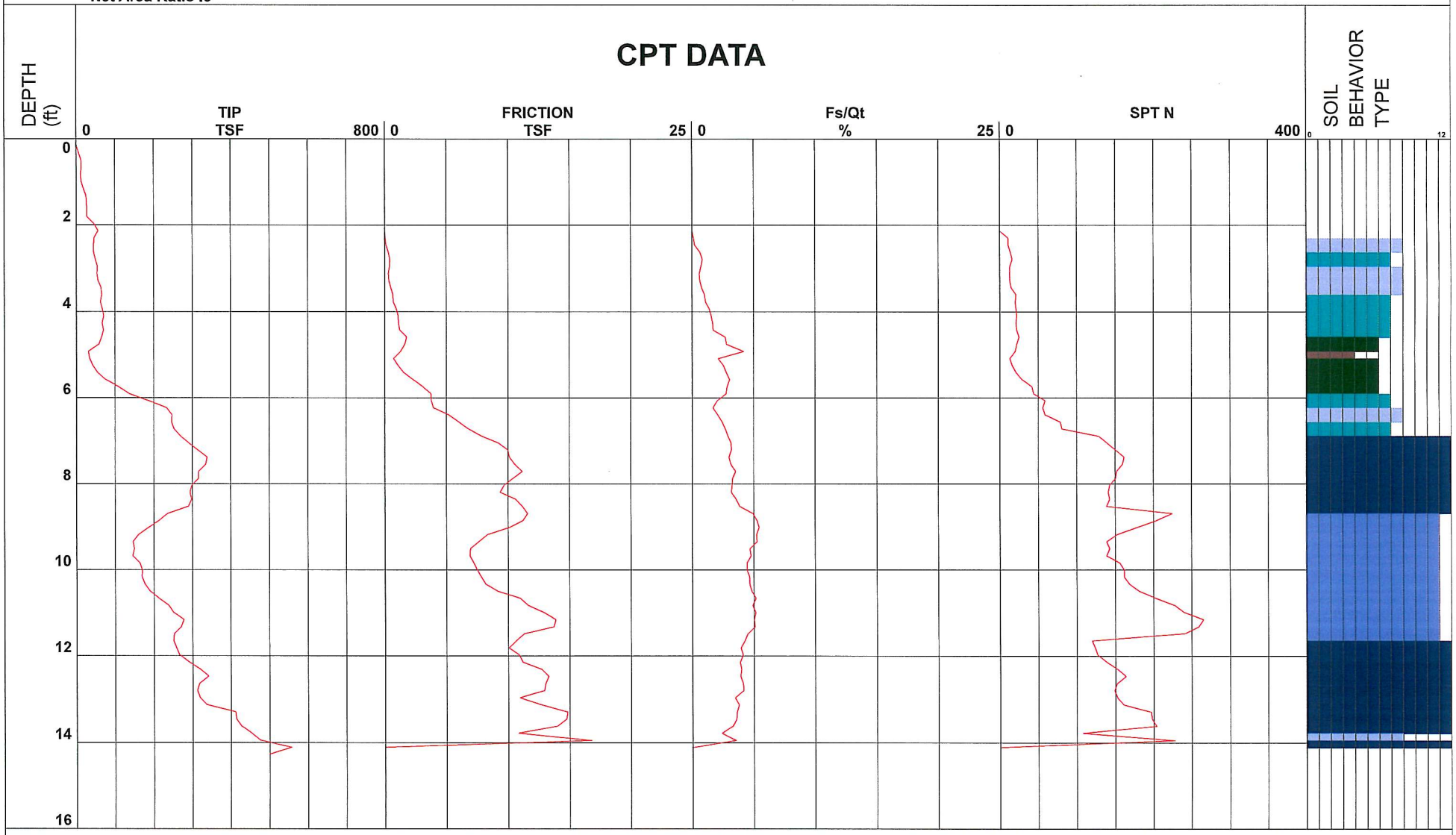
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (747).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B5	Date and Time	1/20/2011 9:56:00 AM	Maximum Depth	14.27 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 10cm squared

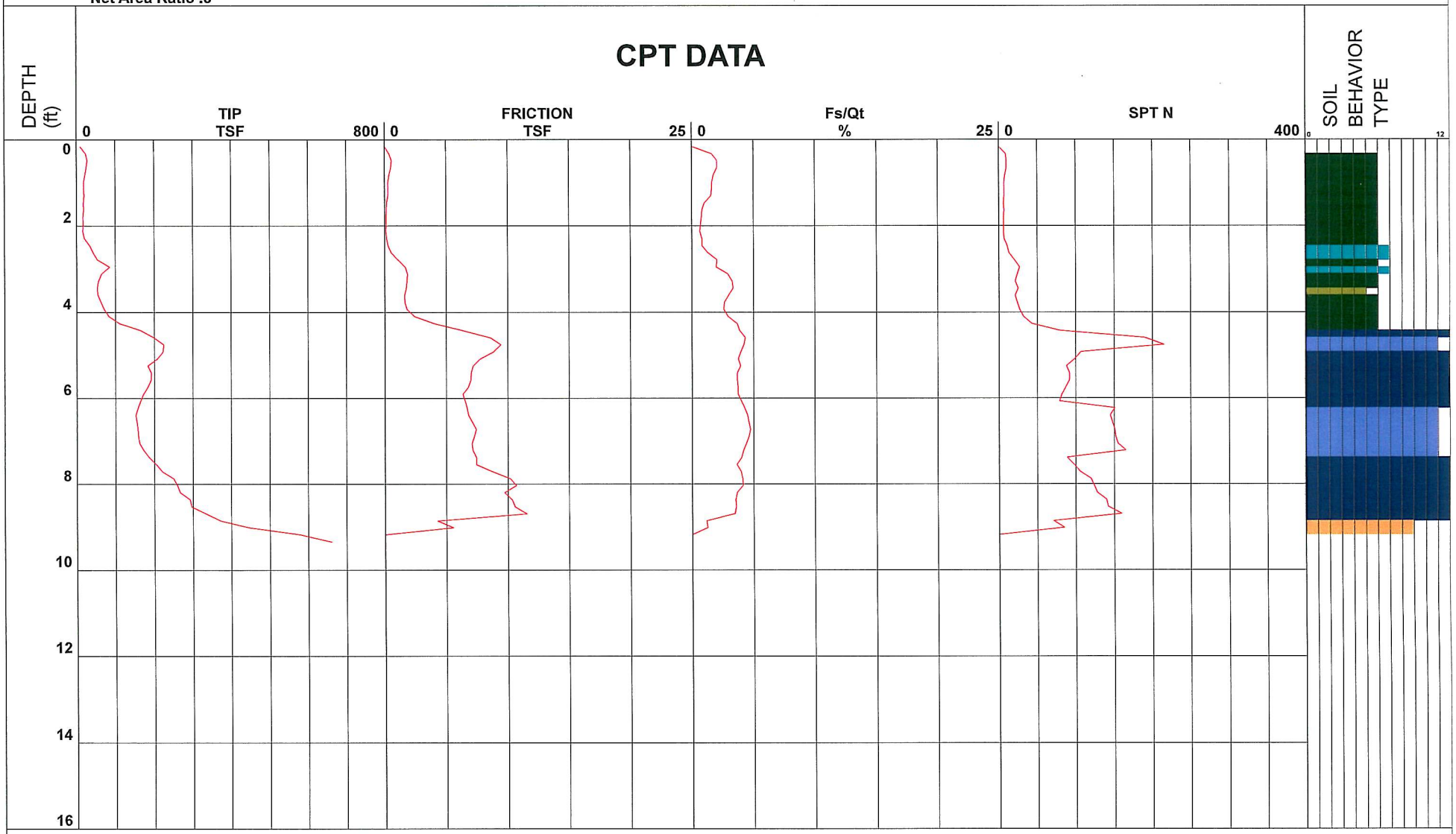
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (751).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B6	Date and Time	1/20/2011 12:26:42 PM	Maximum Depth	9.35 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 10cm squared

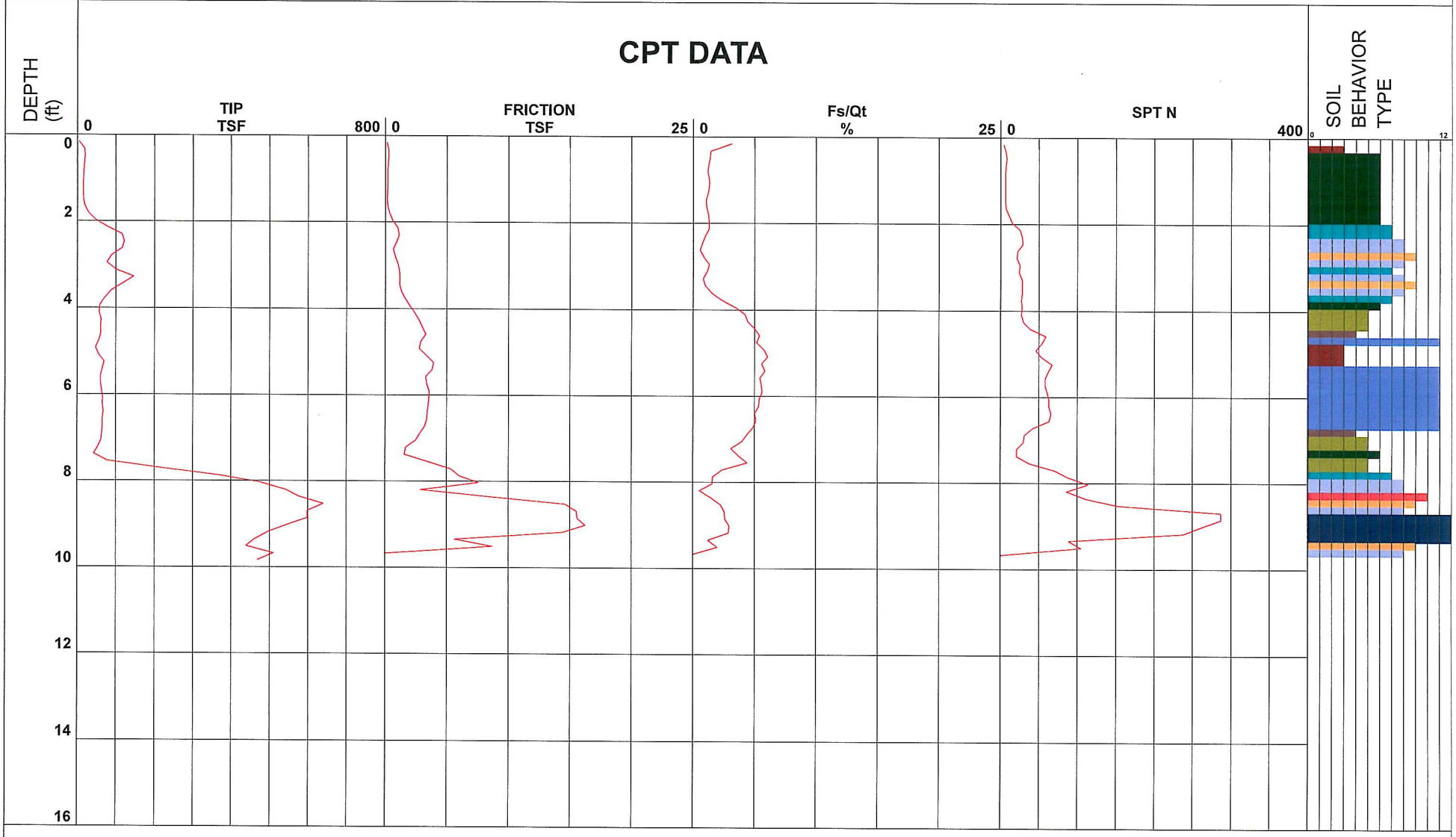
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (759).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B7	Date and Time	1/20/2011 4:19:09 PM	Maximum Depth	9.84 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 10cm squared

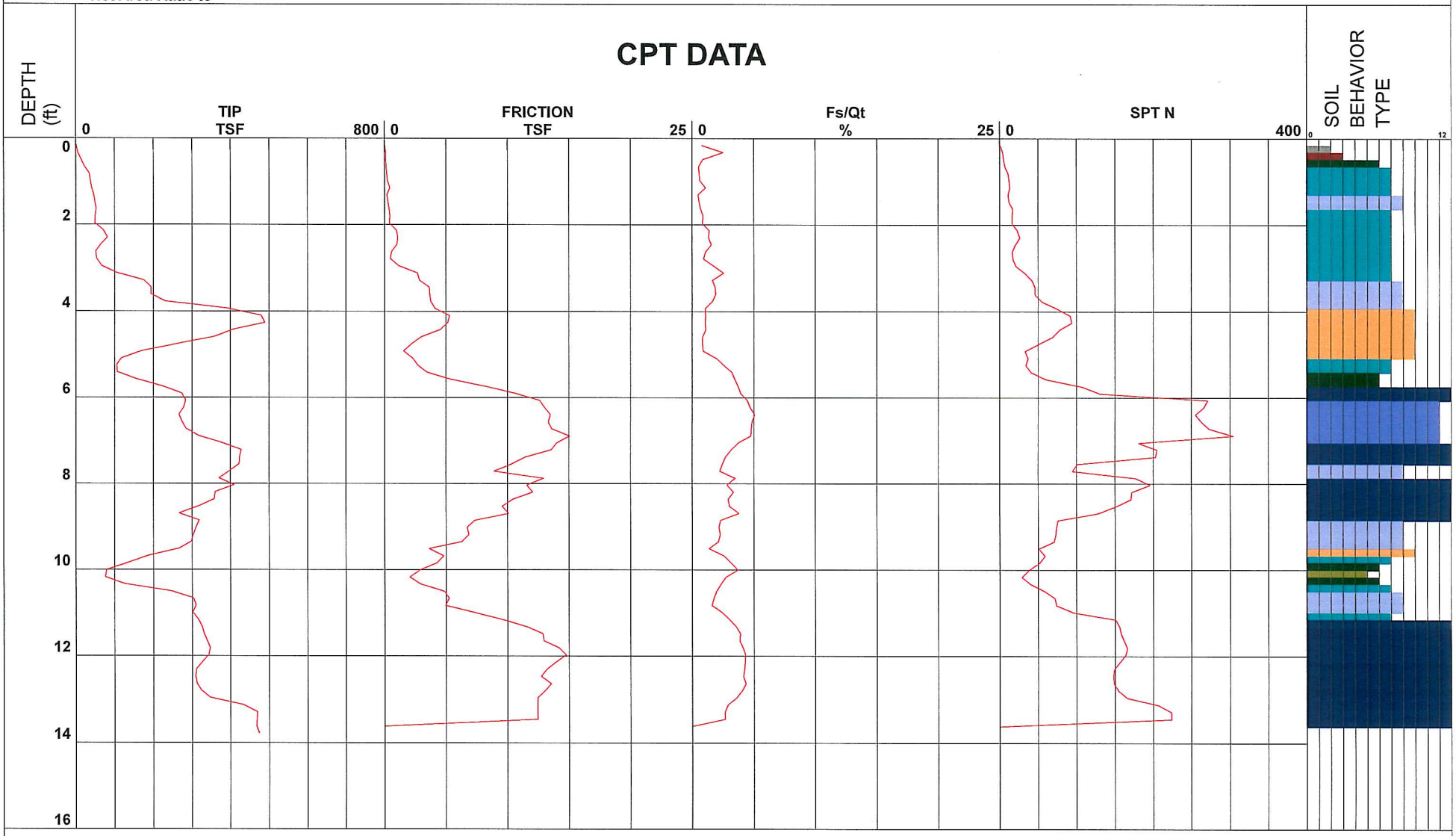
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (758).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B8	Date and Time	1/20/2011 3:42:14 PM	Maximum Depth	13.78 ft
Water Table Depth	0.00 ft				

Net Area Ratio .8

CPT DATA



- 1 - sensitive fine grained
- 2 - organic material
- 3 - clay
- 4 - silty clay to clay
- 5 - clayey silt to silty clay
- 6 - sandy silt to clayey silt
- 7 - silty sand to sandy silt
- 8 - sand to silty sand
- 9 - sand
- 10 - gravelly sand to sand
- 11 - very stiff fine grained (*)
- 12 - sand to clayey sand (*)

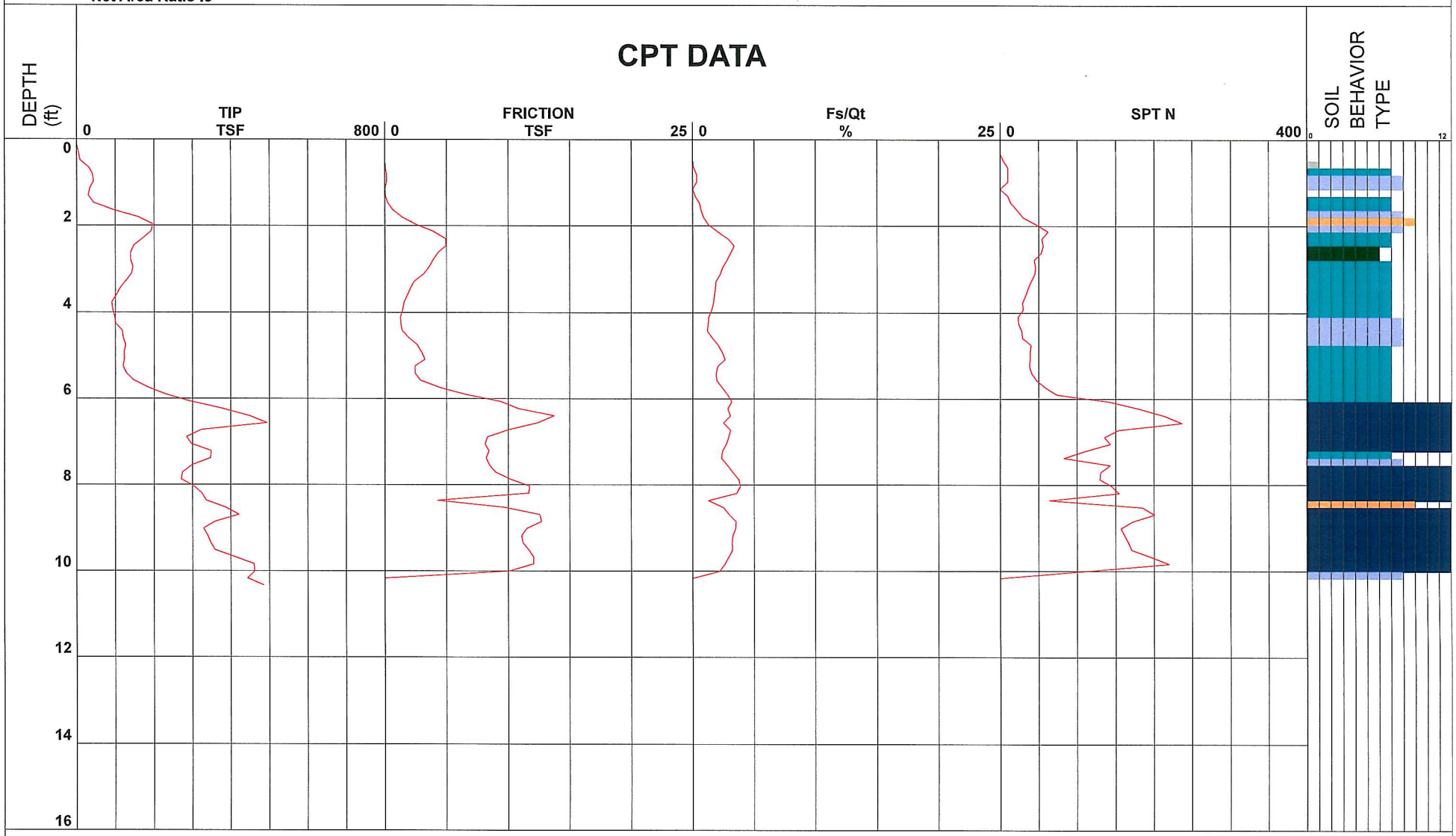
Cone Size 10cm squared

*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (746).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B9	Date and Time	1/20/2011 9:25:46 AM	Maximum Depth	10.33 ft
Water Table Depth	0.00 ft				

Net Area Ratio .8



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

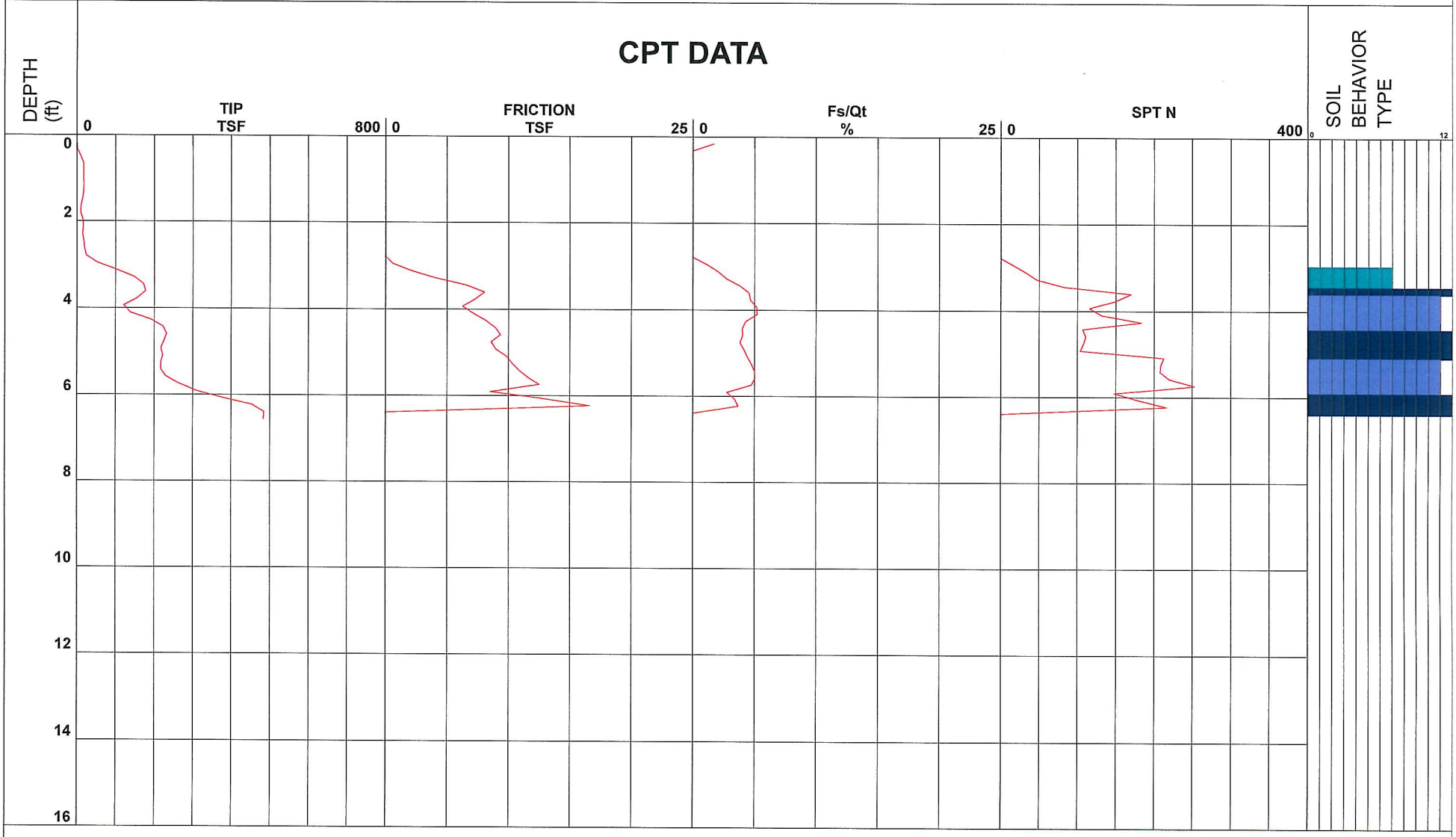
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (752).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B10	Date and Time	1/20/2011 12:55:24 PM	Maximum Depth	6.56 ft
Water Table Depth	0.00 ft				

Net Area Ratio .8

CPT DATA



- 1 - sensitive fine grained
- 2 - organic material
- 3 - clay
- 4 - silty clay to clay
- 5 - clayey silt to silty clay
- 6 - sandy silt to clayey silt
- 7 - silty sand to sandy silt
- 8 - sand to silty sand
- 9 - sand
- 10 - gravelly sand to sand
- 11 - very stiff fine grained (*)
- 12 - sand to clayey sand (*)

Cone Size 10cm squared

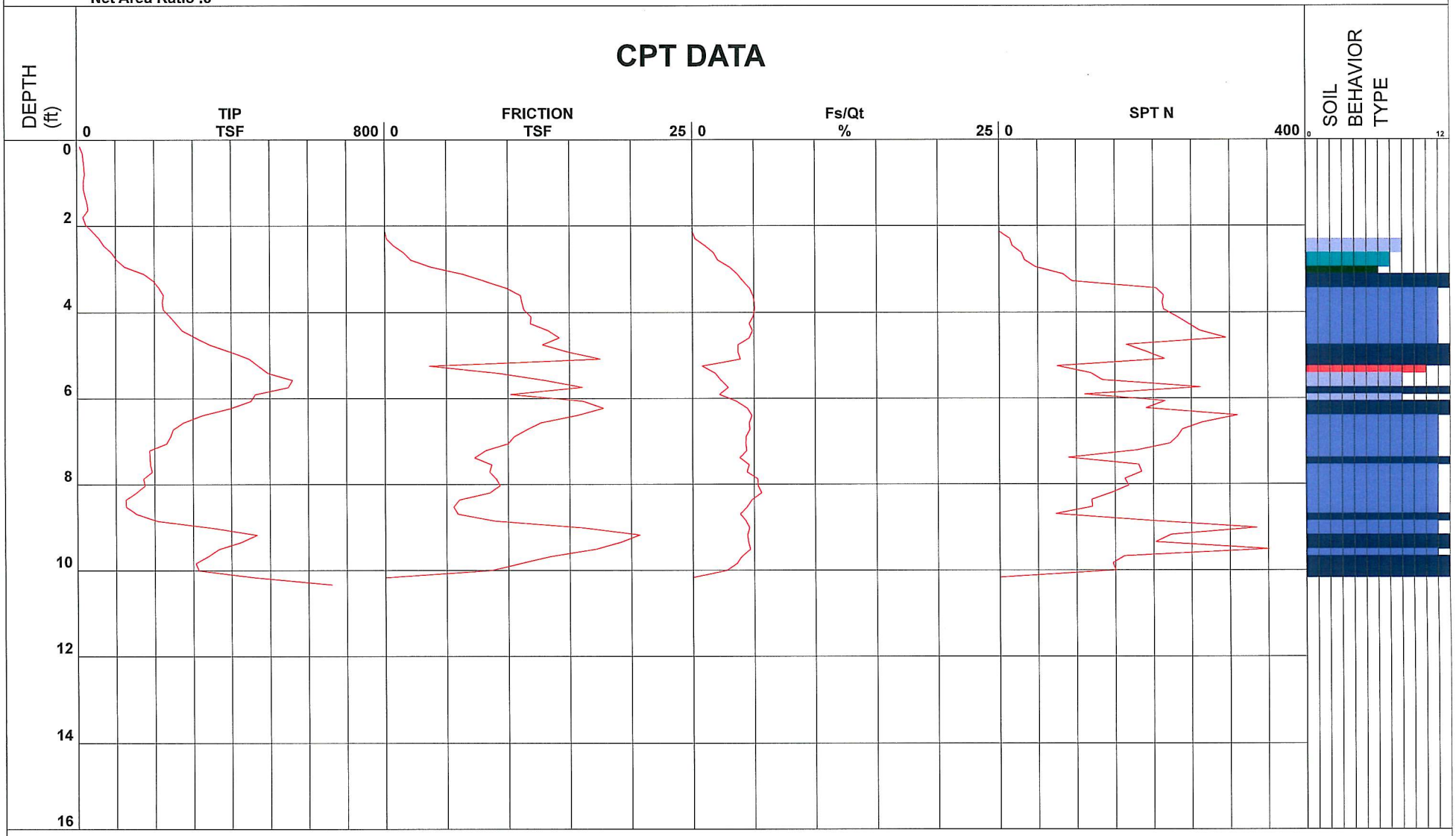
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (762).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B11	Date and Time	1/21/2011 8:31:37 AM	Maximum Depth	10.33 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

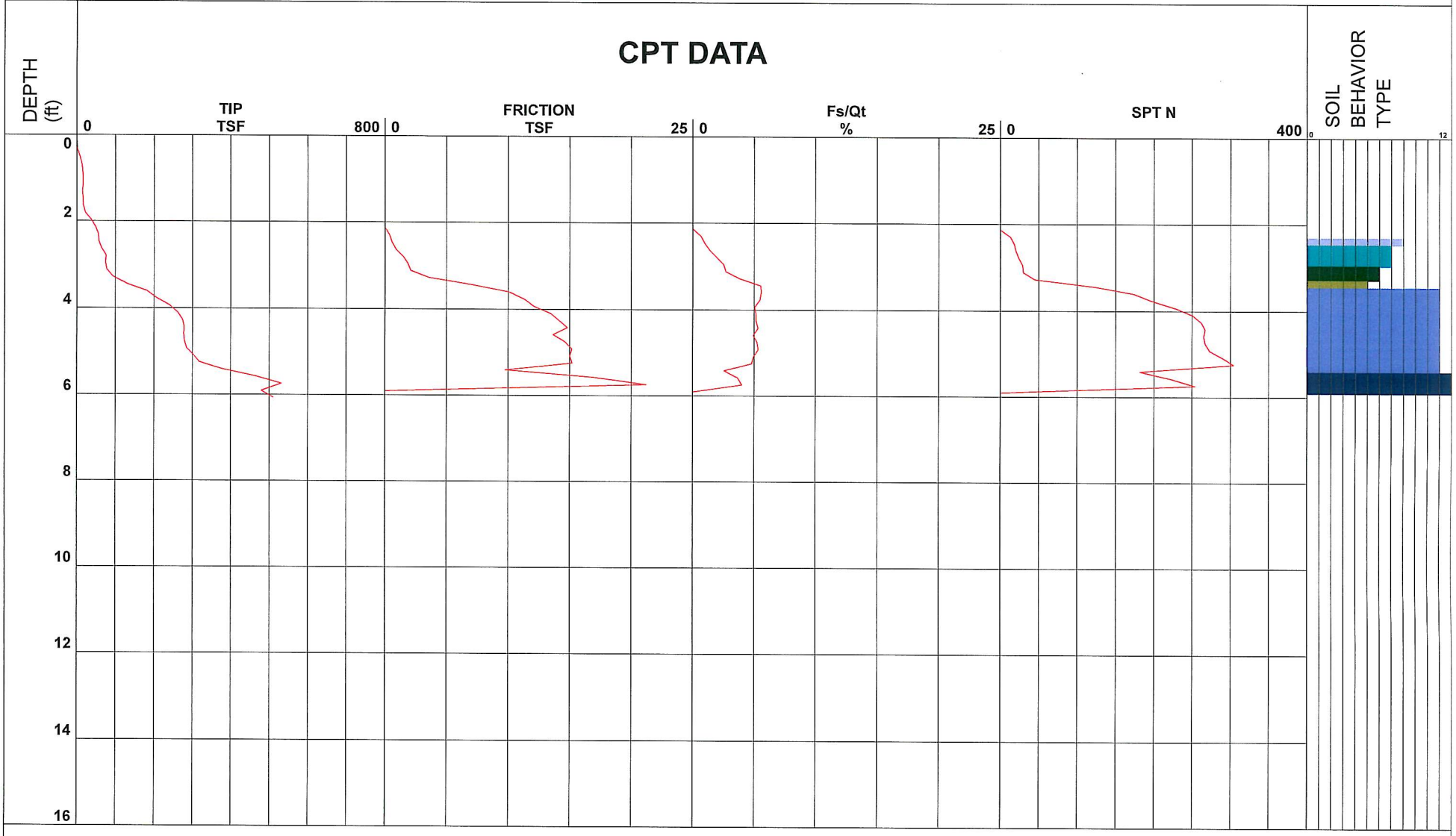
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (763).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B12	Date and Time	1/21/2011 9:12:35 AM	Maximum Depth	6.07 ft
Water Table Depth	0.00 ft				

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

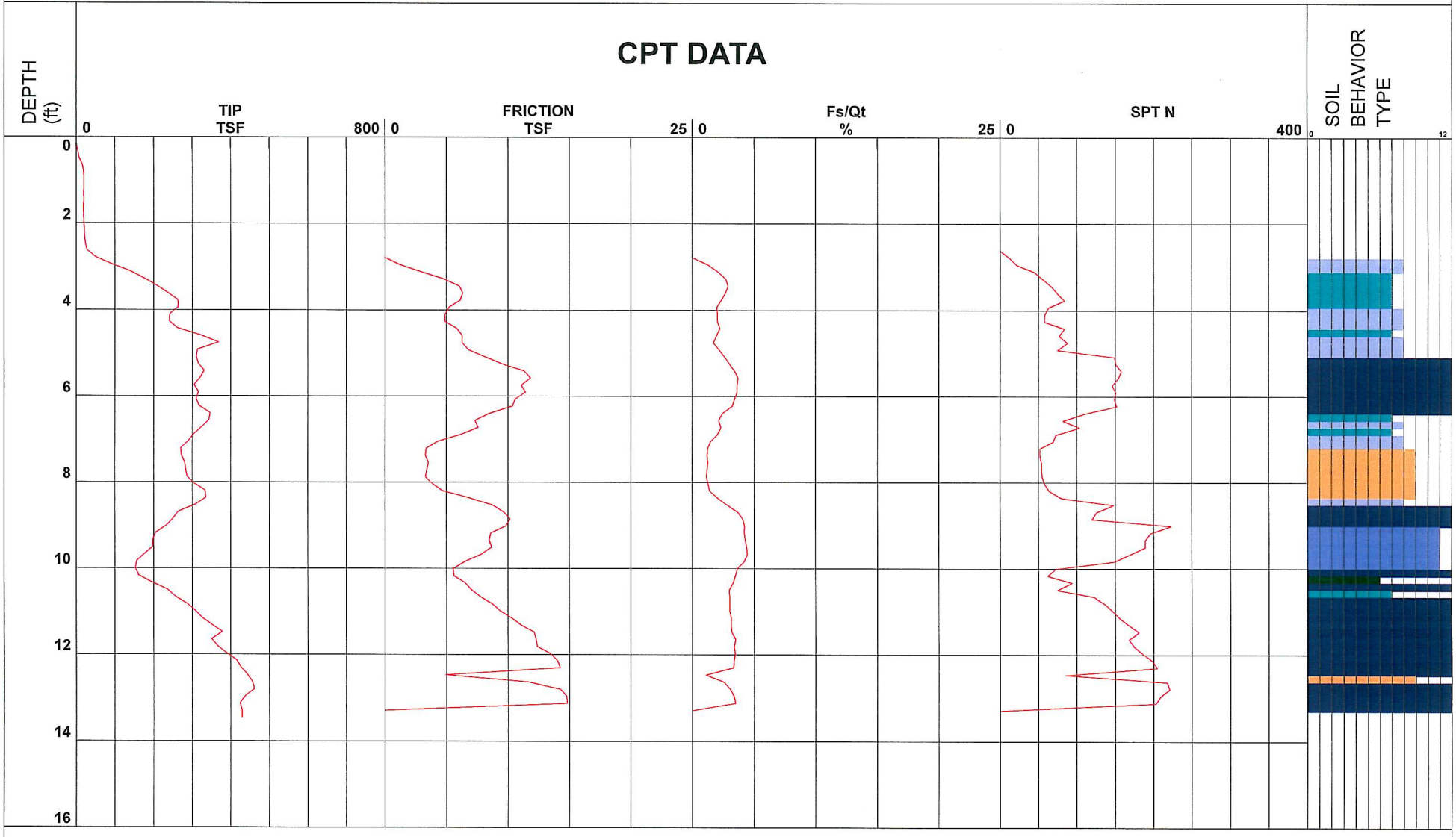
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (764).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B13	Date and Time	1/21/2011 9:52:02 AM	Maximum Depth	13.45 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



- 1 - sensitive fine grained
- 2 - organic material
- 3 - clay
- 4 - silty clay to clay
- 5 - clayey silt to silty clay
- 6 - sandy silt to clayey silt
- 7 - silty sand to sandy silt
- 8 - sand to silty sand
- 9 - sand
- 10 - gravelly sand to sand
- 11 - very stiff fine grained (*)
- 12 - sand to clayey sand (*)

Cone Size 10cm squared

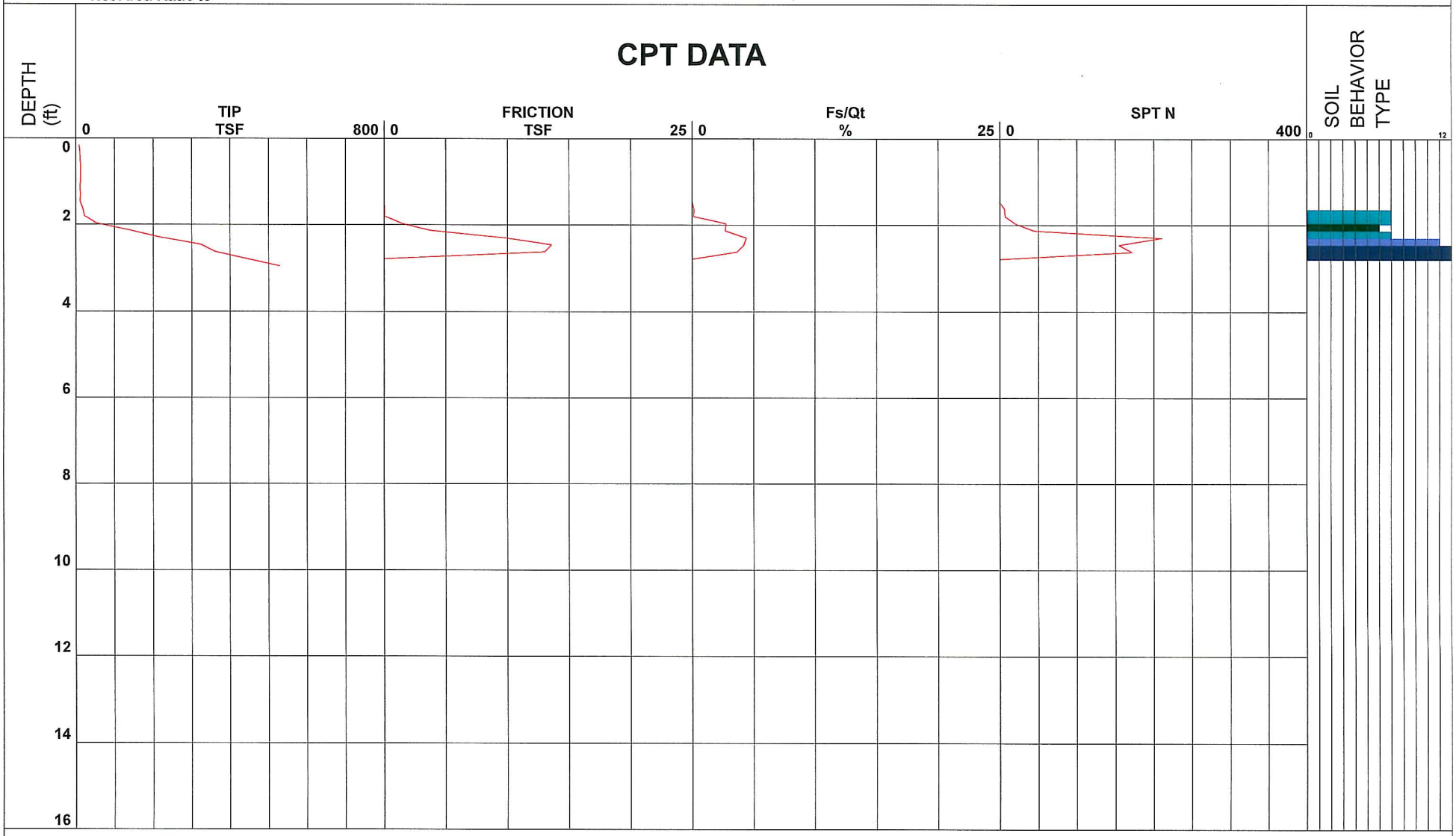
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (753).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B14	Date and Time	1/20/2011 1:20:18 PM	Maximum Depth	2.95 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 10cm squared

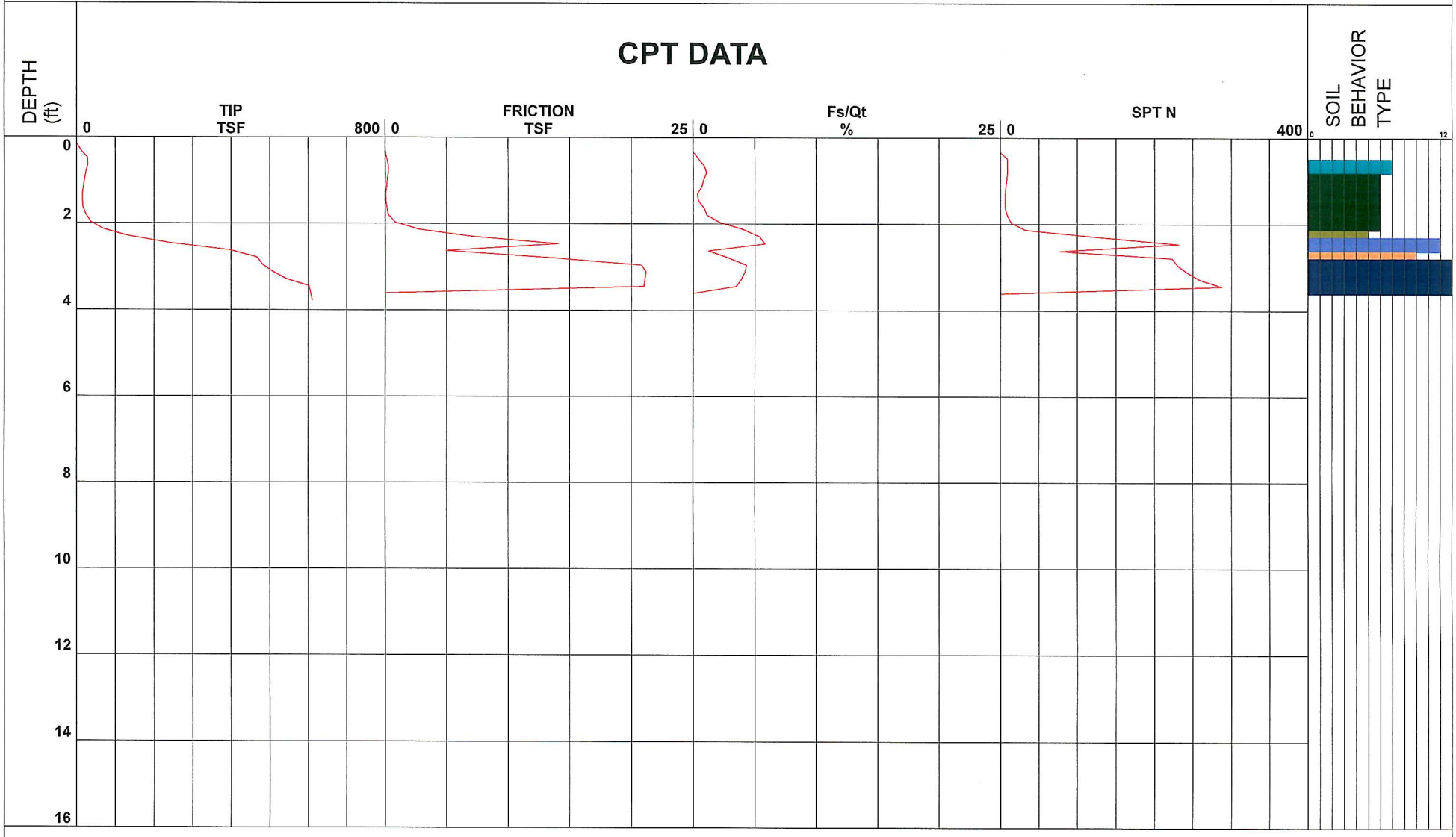
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (754).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B14-A	Date and Time	1/20/2011 1:34:16 PM	Maximum Depth	3.77 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 10cm squared

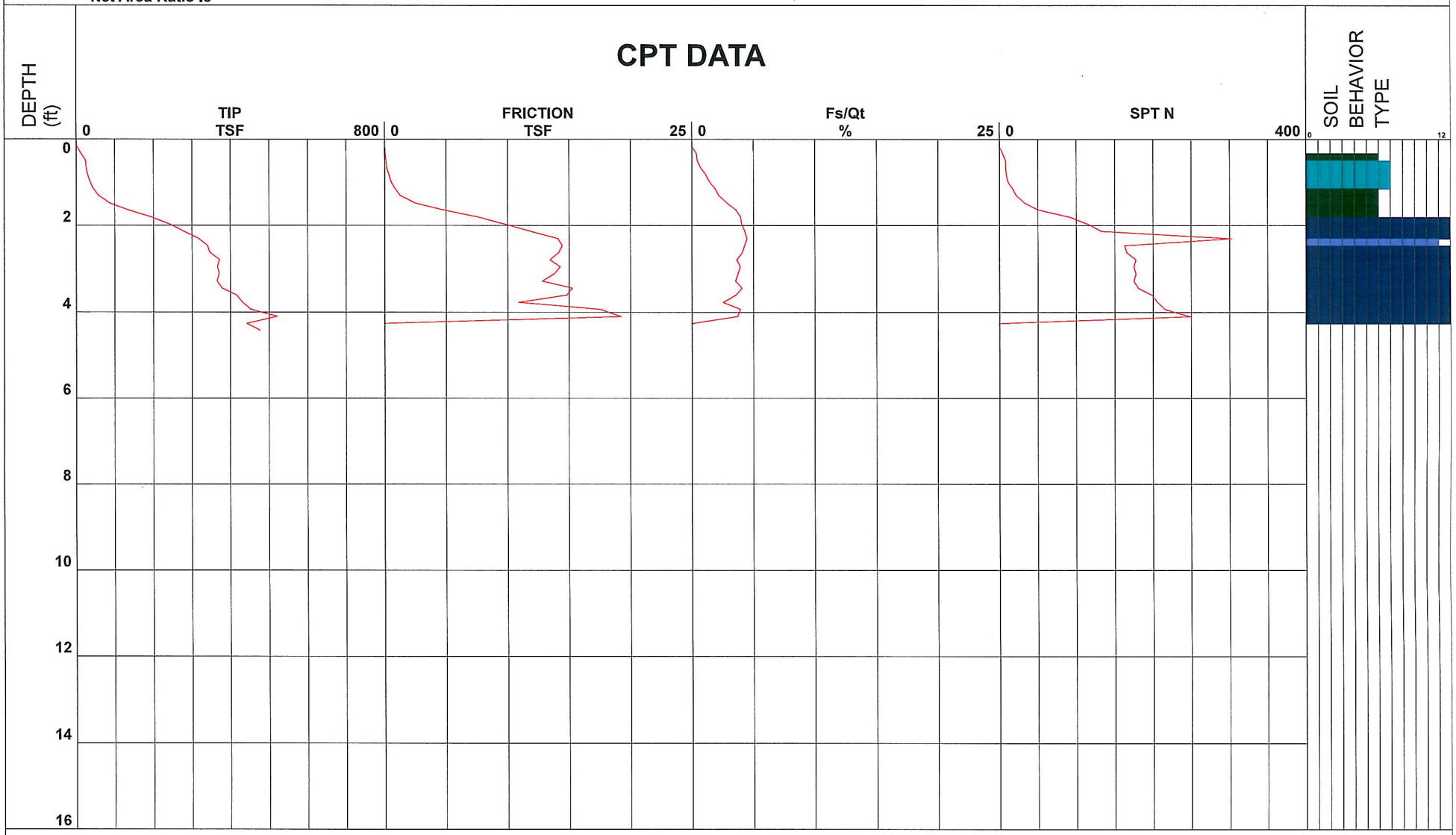
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (761).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B15	Date and Time	1/21/2011 8:09:41 AM	Maximum Depth	4.43 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 10cm squared

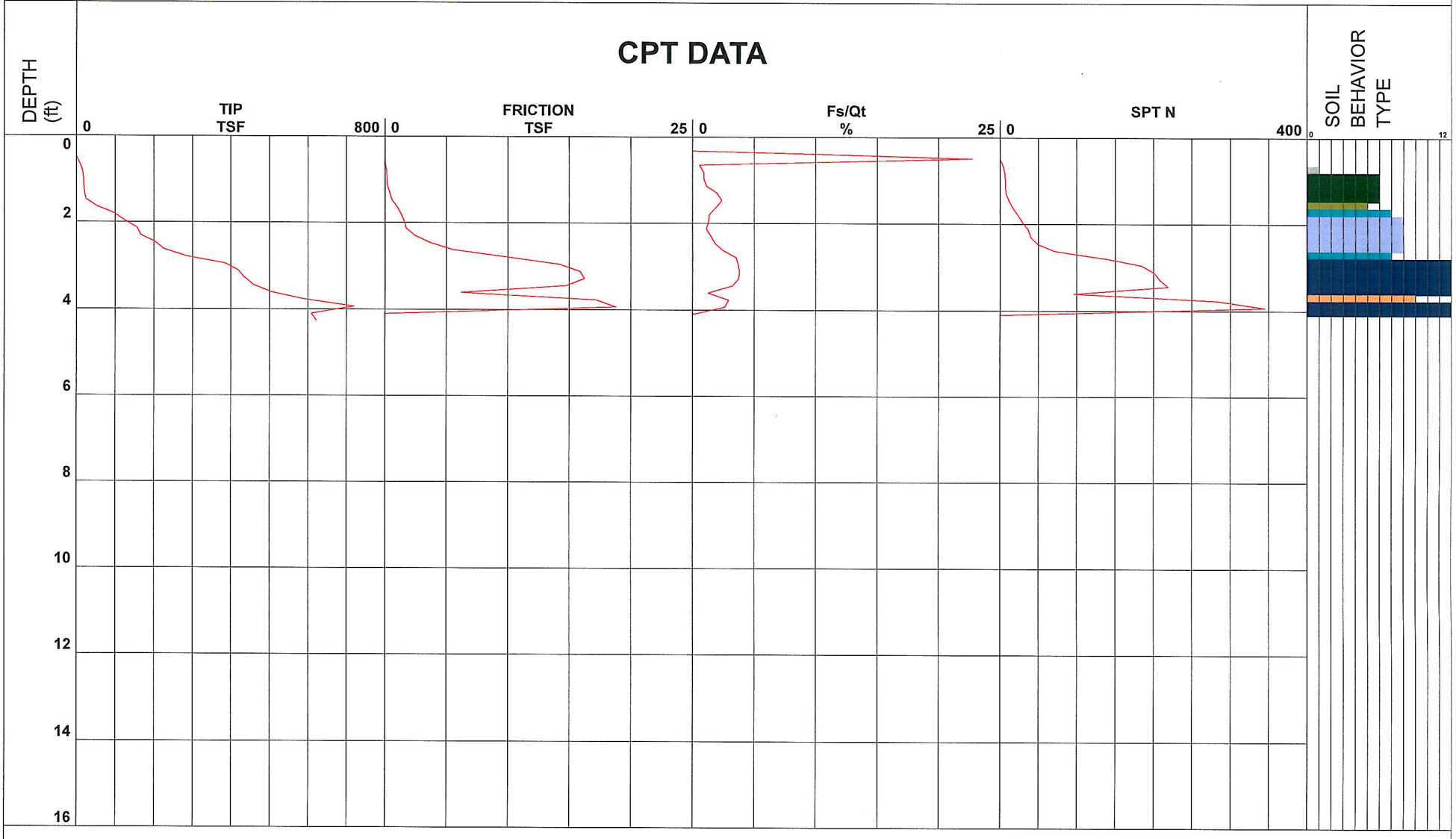
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (760).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B16	Date and Time	1/21/2011 7:42:52 AM	Maximum Depth	4.27 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



- 1 - sensitive fine grained
- 2 - organic material
- 3 - clay
- 4 - silty clay to clay
- 5 - clayey silt to silty clay
- 6 - sandy silt to clayey silt
- 7 - silty sand to sandy silt
- 8 - sand to silty sand
- 9 - sand
- 10 - gravelly sand to sand
- 11 - very stiff fine grained (*)
- 12 - sand to clayey sand (*)

Cone Size 10cm squared

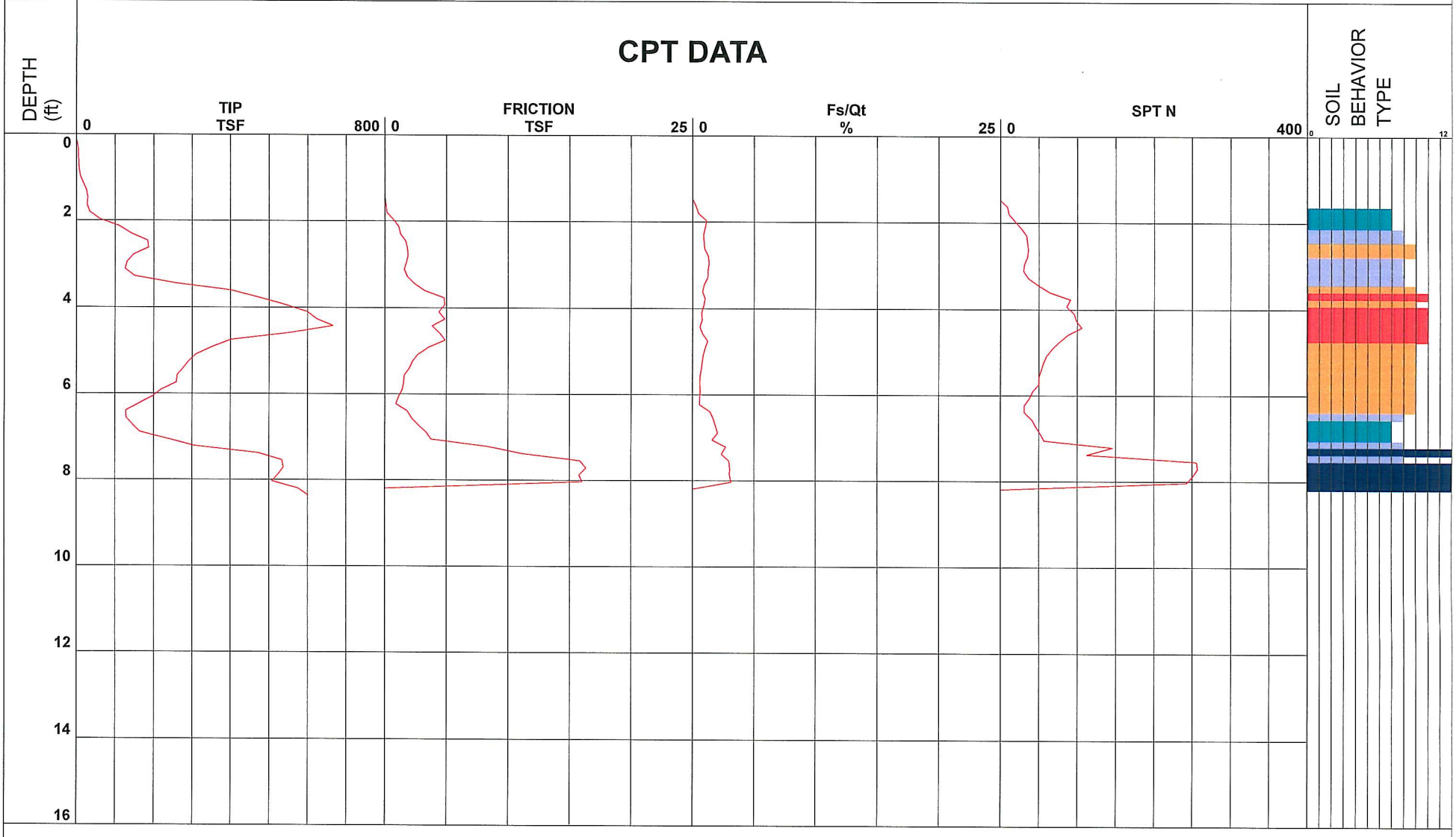
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (756).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B17	Date and Time	1/20/2011 2:41:45 PM	Maximum Depth	8.37 ft
Water Table Depth	0.00 ft				

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

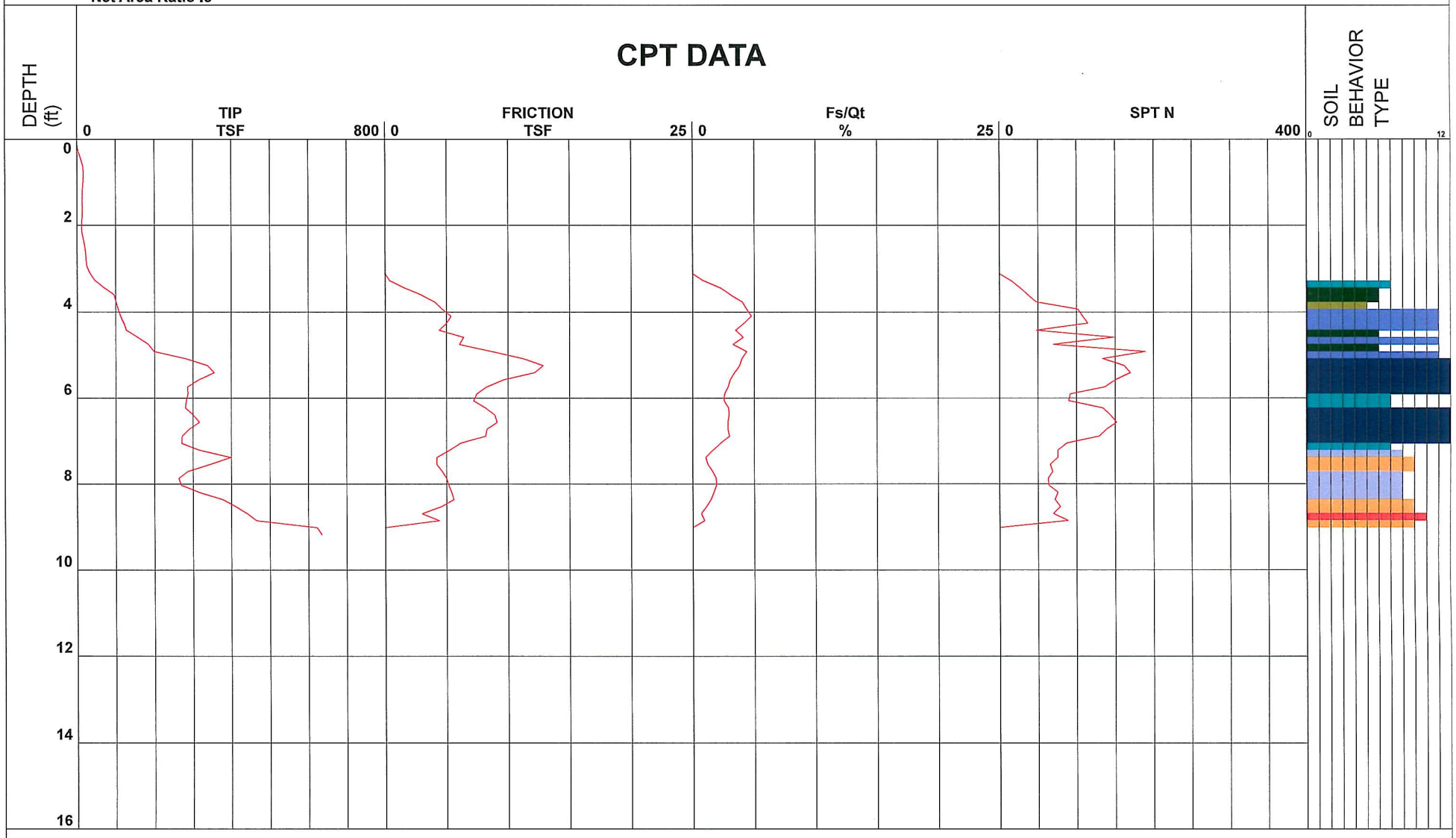
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (765).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B18	Date and Time	1/21/2011 10:20:29 AM	Maximum Depth	9.19 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)

Cone Size 10cm squared

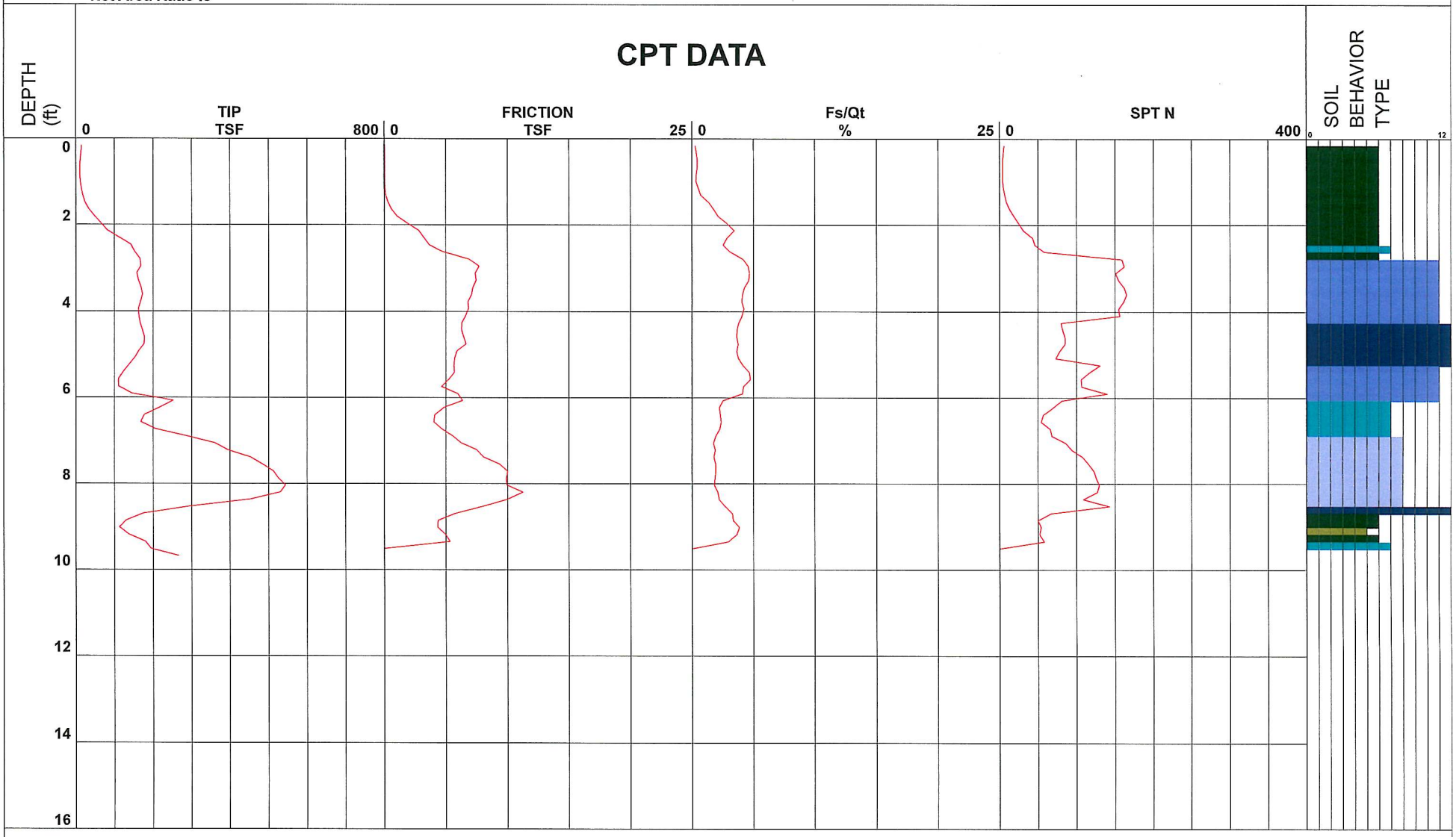
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (745).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B19	Date and Time	1/20/2011 8:52:35 AM	Maximum Depth	9.68 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



- 1 - sensitive fine grained
- 2 - organic material
- 3 - clay
- 4 - silty clay to clay
- 5 - clayey silt to silty clay
- 6 - sandy silt to clayey silt
- 7 - silty sand to sandy silt
- 8 - sand to silty sand
- 9 - sand
- 10 - gravelly sand to sand
- 11 - very stiff fine grained (*)
- 12 - sand to clayey sand (*)

Cone Size 10cm squared

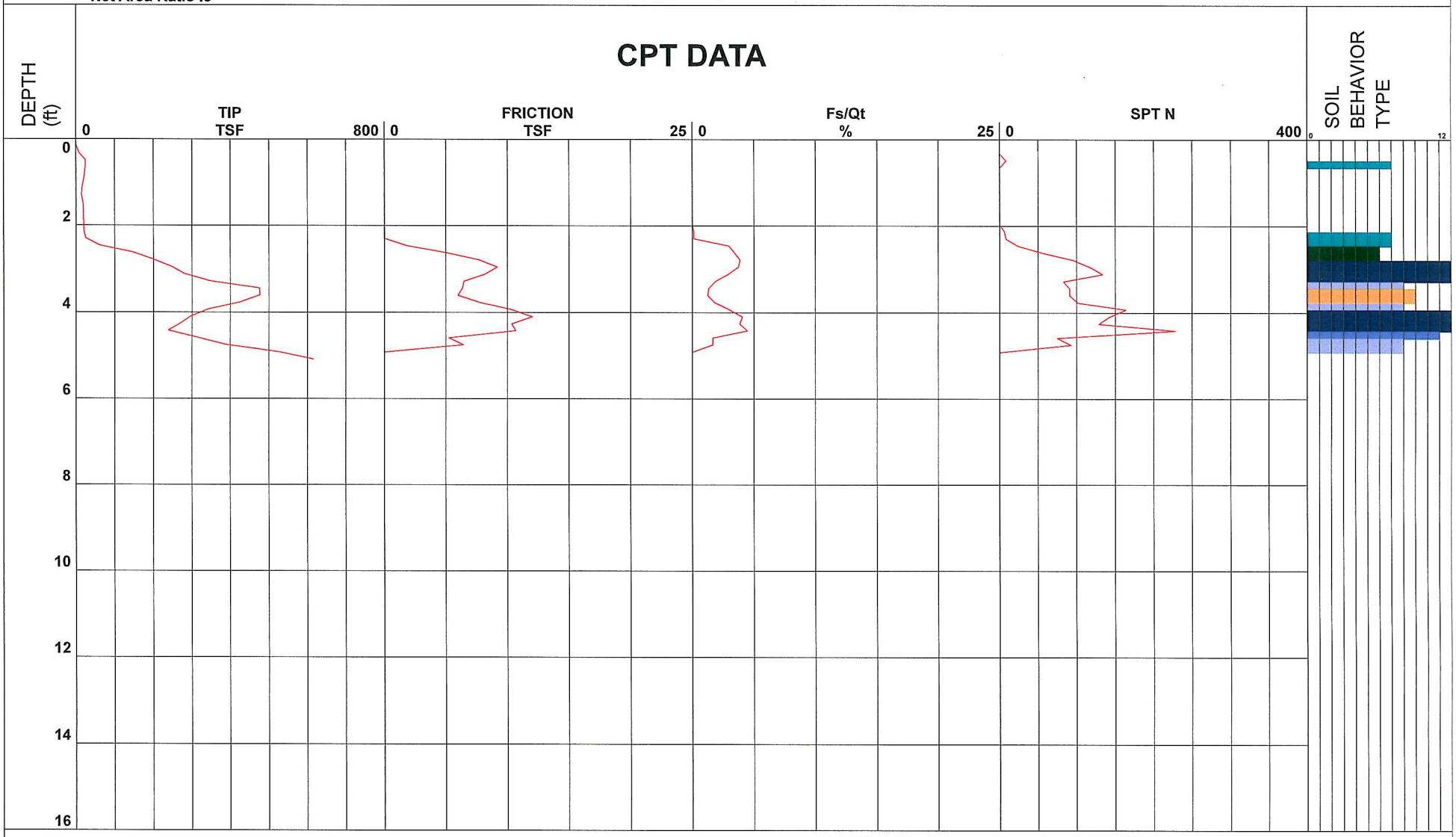
*Soil behavior type and SPT based on data from UBC-1983

Ninyo & Moore

Project	Hidden Hills Solar Facility	Operator	RS/TF	Filename	SDF (755).cpt
Job Number	303200001	Cone Number	DSG1104	GPS	
Hole Number	B20	Date and Time	1/20/2011 2:02:09 PM	Maximum Depth	5.09 ft
Water Table Depth		0.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

*Soil behavior type and SPT based on data from UBC-1983