LGC Geotechnical, Inc.

May 25, 2018 Project No. 16118-01

Mr. Adrian Peters
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Subject: ***Preliminary Geotechnical Evaluation and Design Recommendations for the Proposed Approximately 580-Acre "Menifee Valley" Residential Development, City of Menifee, California***

In accordance with your request, LGC Geotechnical, Inc. has performed a geotechnical evaluation for the proposed approximate 580-acre "Menifee Valley" residential development located in the City of Menifee, California. This report summarizes the results of our background review, subsurface exploration, and geotechnical analyses of the data collected, and presents our findings, conclusions, and preliminary recommendations for the proposed residential project.

If you should have any questions regarding this report, please do not hesitate to contact our office. We appreciate this opportunity to be of service.

Respectfully,

LGC Geotechnical, Inc.

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1.0 INTRODUCTION

1.1 Purpose and Scope of Services

This report presents the results of our recent geotechnical evaluation and previous geotechnical evaluations for the proposed approximately 580-acre "Menifee Valley" residential development in the City of Menifee (see Site Location Map, Figure 1). The purpose of our work was to collect subsurface data in order to prepare a geotechnical report providing preliminary recommendations for design and construction of the proposed project. Our scope of services included:

- Review of pertinent readily available geotechnical background information including existing geotechnical reports, in-house regional geotechnical maps and published geotechnical literature (Appendix A).
- Performed a subsurface evaluation including excavation, sampling, and logging of hollow-stem auger borings, Cone Penetration Test (CPT) soundings and geotechnical backhoe test pits including the following:
  - Eight small-diameter hollow stem borings to characterize the current groundwater conditions, subsurface soil characteristics and infiltration rate.
  - Nine CPT soundings throughout the site to evaluate subsurface geotechnical conditions.
  - Ten exploratory geotechnical trenches throughout the site to aid in estimating the depth of required removals during grading and assist in characterizing the organic content of the near surface "soils".
- Perform infiltration testing in six of the shallow hollow-stem auger borings. In general, the infiltration tests were performed within strategic locations from a water quality perspective per the direction of the project Civil Engineer.
- Laboratory testing of representative samples obtained during our subsurface investigation (Appendix C).
- Geotechnical analysis and evaluation of the data obtained, including:
  - Suitability of the site for the proposed development from a geotechnical standpoint;
  - Description of the site geology, and subsurface soil and groundwater conditions;
  - Preliminary assessment of the organic content of near surface "soils" including preliminary recommendations for offsite organic export and/or mixing;
  - Evaluation of the seismic conditions at the site, including seismic design criteria based on the 2016 California Building Code (CBC); and
  - Recommendations for remedial grading operations and site preparation.
- Preparation of this report presenting our findings, conclusions and preliminary recommendations with respect to the proposed site development.

1.2 Project Description

The irregular shaped site is approximately 580-acres with minor relief throughout the majority of the site. The site is bound to the north by Highway 74, the Southern California Edison (SCE) San Jacinto Valley Service Center and the Heritage Highschool, to the east by Briggs Road and Heritage Highschool, to the south by Case Road and to the west by Menifee Road and the SCE San Jacinto Valley Service Center. Review of topography maps suggests the site slopes gently from east to west with the lowest point at approximately 1,465 feet in the southwestern corner of the site (near the

intersection of Menifee Road and Case Road) and highest point at approximately 1,625 feet in the southeast corner of the site (near the intersection of Case Road and Briggs Road). The southeastern corner of the site contains a granitic hill measuring approximately 120 feet in height with relation to the surrounding gently sloped grades. With exception of the granitic hill in the southeastern corner, the highest point of the gently sloping site is along the eastern edge of the site (near Briggs Road) at approximately 1,520 feet. The site currently contains no noticeable structures and is being used for agricultural farming. The site contains areas of tilled soil, low lying agricultural vegetation, telephone poles, watering equipment, dirt roads and surface water drainage swales. A water holding pond was observed along the southern edge of the site adjacent to Case Road. An existing EMWD sewer line runs east west along the dirt road described as Mc Laughlin Road (future "Green Belt").

Based on the Alternative D Yield Study Plan (UDA, 2018), the proposed approximately 580-acre residential development will consist of approximately 3,096 residential units consisting of single-family lots, townhomes and apartments. Other proposed improvements include an approximately 27-acre sports park, four private amenity areas, an east-west running centrally located "Green Belt", a 6.5-acre "Village Green" center, a 6.5-acre "Active Adult Green" center, a 3.1-acre Civic use site, 10.0-acres of commercial space, a 5.0-acre apartment development, a 9.2-acre water quality basin and approximately 13.2-acres of open space in the southeast corner of the site surrounding the granitic hill. Planned cuts and fills to reach design grades (not including remedial grading) are generally anticipated to be on the order of 5 to 10 feet; however, specific areas throughout the site are anticipated to receive larger design cuts and fills. The proposed water quality basin is located just southeast of the intersection of Menifee Road and McLaughlin Road (dirt). The proposed residential units are anticipated to be at-grade with relatively light building loads (column and wall loads maximum of 30 kips and 3 kips per linear foot, respectively).

The recommendations given in this report are based upon at-grade structures with estimated structural loads and general grading information indicated above. We understand that the project plans and grading plans are not available at this time; therefore, LGC Geotechnical should be provided with any updated project information, plans and/or any structural loads when they become available, in order to either confirm or modify the recommendations provided herein.

1.3 Background

Previously, GANICO Geotechnical, Inc (GANICO) performed two geotechnical investigation studies at the subject site. One investigation focused on the northern portion of the site north of McLaughlin Road (noted as the "Green Belt" on the site map) and the other focused on the southern portion of the site south of McLaughlin Road. Data from the GANICO Reports (2004a & b) consisted of the following:

- 37 small-diameter borings ranging in depth from 15 to 75 feet below existing grade;
- 110 test pits ranging in depth from 4 to 15 feet below existing grade;
- 4 CPT soundings advanced to depths ranging from 9 to 56 feet below existing grade; and
- Laboratory testing consisting of in-situ moisture and density tests, fines content/sieve analysis, Atterberg Limits (liquid limit and plastic limits), consolidation, direct shear, expansion index and corrosion (sulfate, chloride content, pH and minimum resistivity).

Boring logs, trench logs, CPT soundings and laboratory test results are compiled and included in this

report. Boring logs, trench logs and CPT soundings by others are provided in Appendix B and results of the laboratory testing by others are provided in Appendix C.

Review of historic topographic (topo) maps and aerial photographs suggests the following:

1943 Topo Map: The subject site was situated just north of the adjacent Southern California Rail Road tracks, east of Menifee Road, south of Highway 74 and west of Briggs Road. Elevations varied from approximately 1622 in the southeast corner of the site, to approximately 1525 in the northeast corner of the site to approximately 1463 in the southwest corner of the site. One stream appears to be running through the northern half of the site generally in a northeasterly to southwesterly direction.

1967 Aerial Photo: The subject site appears to have been generally used for agricultural farming. A series of separated farming plots are located throughout the site. A series of north to south and east to west trending dirt roads run throughout the site between the individual farming areas. A small drainage stream is apparent in the northern half of the site in approximately the same location stream drawn on the 1943 topo map. The granitic hill in the southeastern corner of the site is visible.

1978 Aerial Photo: The smaller separated farming plots appear to have been blended into one large overall farming operation. One span of overhead telephone/electric lines appear running in a northwesterly to southeasterly direction directly adjacent to Case Road.

1996 Aerial Photo: The drainage stream in the northern half of the site (mentioned previously) appears to have been diverted in a southerly direction to feed a small pond in the central area of the site. The pond appears to be fed by two drainage channels, one from the north and one from the east. Two sets of overhead telephone/electric lines appear running north to south and east to west within the site.

2003 Aerial Photo: Two natural drainage streams appear running in an east-west direction starting from the re-routed northerly stream and the centrally located pond. The natural drainage streams appear to rut through the farming areas in the northern half of the site.

2006 Aerial Photo: The centrally located pond was removed and graded over.

2009 Aerial Photos: Another pond appears to take shape in the central part of the site adjacent to Case Road.

1.4 Subsurface Evaluation

LGC Geotechnical performed a limited subsurface geotechnical evaluation of the southwestern portion of the 580-acre site consisting of the excavation of eight hollow-stem auger borings, ten exploratory geotechnical trenches and nine CPT soundings to evaluate onsite geotechnical and near surface organic conditions.

Eight hollow-stem borings (HS-1 through HS-2 and I-1 through I-6) were drilled to depths ranging from approximately 3 to 50 feet below existing grade. Six of the hollow-stem auger borings (I-1 through I-6) were excavated and used to determine field infiltration rates. An LGC Geotechnical staff geologist observed the drilling operations, logged the borings, collected soil samples for laboratory testing and performed infiltration testing. The borings were excavated using a truck-mounted drill rig

equipped with 8-inch-diameter hollow-stem augers. Driven soil samples were collected by means of the Standard Penetration Test (SPT) and Modified California Drive (MCD) sampler generally obtained at 2.5 to 5-foot vertical increments. The MCD is a split-barrel sampler with a tapered cutting tip and lined with a series of 1-inch-tall brass rings. The SPT sampler and MCD sampler were driven using a 140-pound automatic hammer falling 30 inches to advance the sampler a total depth of 18 inches. The raw blow counts for each 6-inch increment of penetration were recorded on the boring logs. Bulk samples were also collected and logged at select depths for laboratory testing. At the completion of drilling, the borings were backfilled with the native soil cuttings and tamped. Some settlement of the backfill soils may occur over time.

Nine CPT soundings (CPT-1 through CPT-9) were pushed to depths ranging between approximately 14 to 50 feet below existing grade. The CPT soundings were pushed using an electronic cone penetrometer in general accordance with the current ASTM standards (ASTM D5778 and ASTM D3441). The CPT equipment consisted of a cone penetrometer assembly mounted at the end of a series of hollow sounding rods. The interior of the cone penetrometer is instrumented with strain gauges that allow the simultaneous measurement of cone tip and friction sleeve resistance during penetration. The cone penetration assembly is continuously pushed into the soil by a set of hydraulic rams at a standard rate of 0.8 inches per second while the cone tip resistance and sleeve friction resistance are recorded at approximately every 2 inches and stored in digital form. All CPTs were performed using a six-wheel drive truck-mounted CPT rig.

Ten exploratory geotechnical trenches (TP-1 through TP-10) were excavated utilizing a standard backhoe in order to estimate removal depths and obtain samples for laboratory testing. An engineering geologist observed the operation, logged the geotechnical trenches and collected the soil samples. Each exploratory geotechnical trench was also logged and sampled for the organic content of the near surface "soils." Samples were collected at various depths within each trench. In general, based on visual observations, 3 layers of soil were identified. These include; 1) near surface heavily tainted organic "soils" 2) transitional soils and 3) "clean" (organic free) soils. The exploratory geotechnical trenches were subsequently backfilled with tamped native soils.

Infiltration testing was performed within six of the borings (I-1 through I-6) to depths between approximately 4 and 10 feet below existing grade. An LGC Geotechnical staff geologist installed 3-inch diameter perforated PVC pipes, backfilled the borings with crushed rock and pre-soaked the infiltration holes prior to testing. Infiltration testing was performed in general accordance with guidelines set forth by the County of Riverside (2011). The PVC pipes were removed and the holes were subsequently backfilled with native soil at the completion of testing.

The approximate locations of borings, CPT soundings and trenches are shown on the Geotechnical Map (Sheet 1). Boring, CPT and geotechnical trench logs are presented in Appendix B.

1.5 Laboratory Testing

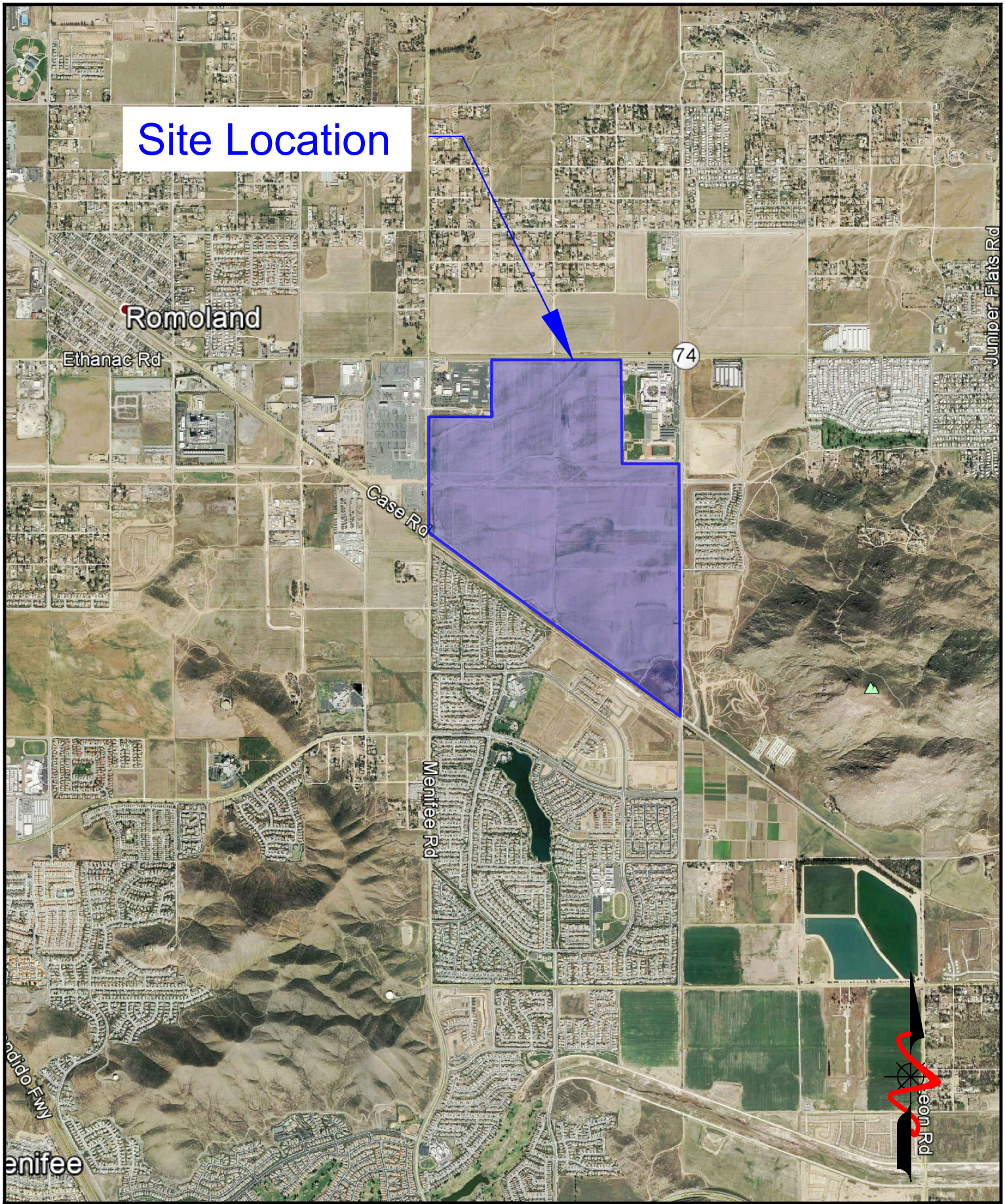
Laboratory testing was performed on representative soil samples obtained from our subsurface evaluation. Laboratory testing included in-situ moisture and density tests, fines content/sieve analysis, Atterberg Limits (liquid limit and plastic limits), consolidation, collapse/swell potential, direct shear, expansion index, laboratory compaction and corrosion (sulfate, chloride content, pH, and minimum

resistivity). Additionally, the near surface geotechnical trench samples were tested for characterization of the organic content (ASTM 2974).

The following is a summary of the laboratory test results.

- Dry density of the samples collected ranged from approximately 116 pounds per cubic foot (pcf) to 134 pcf, with an average of approximately 124 pcf. Field moisture contents ranged from approximately 5.4 percent to 16.4 percent, with an average of 10.0 percent.
- Two samples tested for fines content indicated a fines content (passing No. 200 sieve) of approximately 39 percent to 46 percent. According to the Unified Soils Classification System (USCS), the tested samples are classified as "coarse-grained" soil.
- One Atterberg Limit (liquid limit and plastic limit) test was performed. Results indicated a Plasticity Index value of 5.
- One consolidation test was performed. The deformation versus vertical stress plot is provided in Appendix C.
- Two swell/collapse tests were performed. The plots are provided in Appendix C.
- One direct shear test was performed. The plot is provided in Appendix C.
- Three Expansion Index (EI) tests were performed. Results indicate EI values of 3, 30 and 36, corresponding to "Very Low" to "Low" expansion potential.
- Two laboratory compaction tests of a near surface samples indicated maximum dry densities of 130.5 pcf and 132.0 pcf with optimum moisture contents of 9.5 percent and 8.0 percent, respectively.
- Corrosion testing indicated soluble sulfate contents less than approximately 0.1 percent, chloride contents ranging from approximately 100 to 201 parts per million (ppm), pH values ranging from 6.09 to 7.16 and minimum resistivity values ranging from 770 to 2120 ohm-cm.
- The organic content of the 29 samples ranged from approximately 0.5 to 3.1 percent with an average of approximately 1.5 percent in the upper 3 feet.

A summary of the results is presented in Appendix C. The moisture and dry density test results are presented on the boring logs in Appendix B.



LGC Geotechnical, Inc.

FIGURE 1
Site Location Map

PROJECT NAME	Brookfield - Menifee Valley
PROJECT NO.	16118-01
ENG. / GEOL.	RLD/KTM
SCALE	NTS
DATE	May 2018

2.0 GEOTECHNICAL CONDITIONS

2.1 Regional Geology

The subject site is generally located in the west-central portion of the broad San Bernardino Basin that is bound to the north by the San Gabriel Mountains and to the west by the Santa Ana Mountains. Regional topography is dominated by the presence of the northwest trending faults that define the mountains and hills of the Southern California region. Structurally, the site is located on the west-central portion of the Perris block of the northern Peninsular Ranges of Southern California. The 'Perris block' is bound by the Elsinore fault zone to the west and the San Jacinto fault zone to the east. Despite the surrounding proximal fault systems, the low relief of the Perris block has remained near unchanged and undeformed for hundreds of thousands of years (Morton, 1991; Menifee General Plan, 2012).

Regional geologic mapping and local topographic expressions do not indicate the presence of large-scale landslides within or adjacent to the project area.

2.2 Site-Specific Geology

The subject site covers a large parcel of flat to gently sloped area consisting of older alluvial deposits variably incised with younger alluvial deposits. The furthest south/southeast corner of the site has a moderate size hilly outcrop consisting of the underlying granitic bedrock materials that likely underlie the site at depth.

A brief description of the materials encountered during drilling and trenching is presented in the following section, and the approximate lateral extents are depicted on the Geotechnical Map (Sheet 1). Descriptions of the subsurface conditions are presented on the boring, CPT and geotechnical trench logs presented in Appendix B.

2.2.1 Quaternary Colluvium (Map Symbol – Qcol)

Quaternary colluvium observed at the site was limited to a mantel of soils at the base of the granitic hill outcrop at the south/southeast corner of the site. The material was observed to be dark reddish brown, medium dense and moist silty sand.

2.2.2 Quaternary Alluvium (Map Symbol – Qal)

Quaternary alluvium (young) was observed in broad areas of shallowly incised drainage across the site generally running from northeast to southwest. The material is light brown, dry to very moist, and loose to slightly dense, silty sand and sand.

2.2.3 Quaternary Old Alluvium (Map Symbol – Qalo)

Quaternary old alluvium is exposed at the surface throughout the majority of the site and underlies the younger alluvium. The material consists of variable layers of sand and silty sand, moderate reddish brown, dense to very dense (indurated), generally slightly moist.

2.2.4 Cretaceous Domenigoni Valley Granodiorite (Map Symbol - Kdvg))

The Cretaceous Domenigoni Valley Granodiorite Formation is exposed in a moderate-size hilly outcrop at the south/southeast corner of the site. The material is a relatively uniform, massive hornblende biotite granodiorite grading into tonalite, derived from the Domenigoni Valley pluton. Where observed, the material was a yellowish brown, dry to moist, dense to very dense, weathering as fine to coarse grain size sand.

2.3 Groundwater

Groundwater data collected during the previous site explorations in 2004 (GANICO, 2004a & b) indicated groundwater depths between approximately 37 and 68 feet below existing grade. Two offsite groundwater monitoring wells are located just south of the subject site. The first nearby state monitoring well (Well-1) is located approximately 400 feet south of the site at approximately 950 feet east of Menifee Road, and the second nearby state monitoring well (Well-2) is located approximately 150 feet south of the subject site at approximately 2300 feet east of Menifee Road (CDWR, 2017). The shallowest recorded groundwater depths below Well-1 and Well-2 was approximately 52.0 feet below existing grade in June of 1995 and 47.5 feet below existing grade in March 2013, respectively. These measurements correspond to groundwater elevations of approximately 1425.0 feet for Well-1 and 1437.7 feet for Well-2.

Our recent subsurface evaluation encountered groundwater between approximately 33 and 40 feet below existing grade and groundwater elevations of approximately 1434 to 1449 feet. The following data in Table 1 below lists the groundwater data collected during our subsurface evaluation, collected during previous site investigations and from Menifee Valley Ranch groundwater wells.

TABLE 1

Recent Groundwater Measurement Summary

Exploration Number	Groundwater Measurement Date	*Approximate Ground Surface Elevation (ft)	Groundwater Depth Below Existing Grade (ft)	*Approximate Groundwater Elevation (ft)
LGC-HS-1	10-19-2017	1478	36	1442
LGC-HS-2	10-19-2017	1485	38	1447
LGC-CPT-1	10-20-2017	1467	33	1434
LGC-CPT-5	10-20-2017	1489	40	1449
BB-2	9-2-2003	1466	37	1429

BN-8 (MW-2)	11-20-2003	1480	55	1425
BN-9 (MW-3)	11-20-2003	1466	42	1424
GB-3	7-19-1998	1480	39	1441
BA-4	7-21-2003	1474	38	1436
BA-5	7-21-2003	1511	68	1443
BA-8	9-2-2003	1471	40	1431
MVR-1	1998	1525	73	1452
MVR-2	1998	1519	70	1449
MVR-3	05-2004	1480	59	1421

*Elevations are approximate, LGC Geotechnical elevations taken from most recent topo and elevations on borings by others taken from the boring logs.

In general, the groundwater surface beneath the site appears to slope in a northeast to southwest direction towards Menifee Road and Case Road. The lowest groundwater elevations from all data was measured along the southern edge of the site at an elevation of approximately 1421 feet and the highest groundwater elevation was measured in the northeast corner of the site at an elevation of approximately 1452 feet. The shallowest groundwater level below existing grade was measured at LGC-CPT-1 at a depth of 33 feet below existing grade.

Comparing the GANICO groundwater measurements, groundwater well data, and our recent exploration groundwater elevations, our recent exploration groundwater elevations appear to be the highest. Therefore, our recent exploration groundwater depths were used as the historic high groundwater level for the liquefaction analysis.

Following grading of the site, groundwater is not anticipated to impact the developed portions of the site (i.e., residential structures, parks, roads, etc.). Seasonal fluctuations of groundwater elevations should be expected over time. In general, groundwater levels fluctuate with the seasons and local zones of perched groundwater may be present within the near-surface deposits due to local seepage or during rainy seasons. Local perched groundwater conditions or surface seepage may develop once site development is completed and landscape irrigation commences.

2.4 Faulting and Seismic Hazards

The subject site is not located within a State of California Earthquake Fault Zone (i.e., Alquist-Priolo Earthquake Fault Act Zone) and no active faults are known to cross the site (CDMG, 2000). A fault is considered "active" if evidence of surface rupture in Holocene time (the last approximately 11,000 years) is present. The possibility of damage due to ground rupture is considered low since no active faults are known to cross the site.

Secondary effects of seismic shaking resulting from large earthquakes on the major faults in the Southern California region, which may affect the site, include ground lurching and shallow ground rupture, soil liquefaction, and dynamic settlement. These secondary effects of seismic shaking are a possibility throughout the Southern California region and are dependent on the distance between the site and causative fault and the onsite geology. The closest major active faults that could produce these secondary effects include the San Jacinto, Elsinore and San Andreas Faults, among others. A discussion of theses secondary effects is provided in the following sections.

2.4.1 Liquefaction and Dynamic Settlement

Liquefaction is a seismic phenomenon in which loose, saturated, granular soils behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions coexist: 1) shallow groundwater; 2) low density non-cohesive (granular) soils; and 3) high-intensity ground motion. Studies indicate that loose, saturated, near-surface, cohesionless soils exhibit the highest liquefaction potential, while dry, dense, cohesionless soils, and cohesive soils exhibit low to negligible liquefaction potential. In general, cohesive soils are not considered susceptible to liquefaction. Effects of liquefaction on level ground include settlement, sand boils, and bearing capacity failures below structures. Furthermore, dynamic settlement of dry sands can occur as the sand particles tend to settle and densify as a result of a seismic event.

Based on our review of the City of Menifee General Plan (ECI, 2012b), the subject site is not located in an area where local geological and groundwater conditions suggest a potential for liquefaction. Liquefaction analysis was performed on CPTs and borings based on the seismic criteria (PGA_M) of the 2016 California Building Code (CBC) and high groundwater depth. Liquefaction potential was evaluated using the procedures outlined by NCEER (1997) and Youd et al., (2001). Due to the very dense nature of the soil based on the CPT tip resistance (qt) and SPT blow counts, site soils are generally not considered susceptible to liquefaction. However, isolated layers may be susceptible to dry sand seismic settlement. Seismically induced dry sand settlements were estimated by the procedures outlined by Pradel (Pradel, 1998) using the PGA_M per the 2016 CBC and a moment magnitude of 8.1 (USGS, 2008). Based on the data obtained from our field evaluation, seismic settlement due to dry sands is estimated to be on the order of about 0.5-inch or less. Differential settlement may be estimated as half of the total settlement over a horizontal span of 40 feet. Liquefaction calculations were performed using the program CLiq (GeoLogismiki, 2017) and are provided in Appendix D.

2.4.2 Lateral Spreading

Lateral spreading is a type of liquefaction induced ground failure associated with the lateral displacement of surficial blocks of sediment resulting from liquefaction in a subsurface layer. Once liquefaction transforms the subsurface layer into a fluid mass, gravity plus the earthquake inertial forces may cause the mass to move downslope towards a free face (such as a river channel or an embankment). Lateral spreading may cause large horizontal displacements and such movement typically damages pipelines, utilities, bridges, and structures.

Due to the depth to groundwater, low potential for liquefaction and lack of nearby "free face" conditions, the potential for lateral spreading is considered remote.

2.5 Field Infiltration Testing

Estimation of infiltration rates was performed in general accordance with guidelines set forth by the County of Riverside (2011). In general, a 3-inch diameter perforated PVC pipe was placed in each

borehole to be tested and the annulus was backfilled with gravel, including placement of about 2 inches of gravel at the bottom of the borehole. The infiltration wells were pre-soaked prior to testing and the test procedure for coarse-grained soils was generally followed. Based on the County of Riverside methodology, the calculated infiltration rates, representative of the proposed infiltration basin locations, are provided in Table 2. These infiltration rates do not include any factor of safety (to be determined by the project Civil Engineer); however, they have been normalized to correct the 3-D flow that occurs within the field test to 1-D flow out of the bottom of the boring only. The location and depth of each infiltration test correspond to the proposed water quality basins. The approximate infiltration test locations are shown on the Geotechnical Map (Sheet 1) and the infiltration test data is included in Appendix E and summarized below.

TABLE 2

Summary of Infiltration Testing

Infiltration Test Location	Infiltration Test Depth Below Existing Grade (ft)	Observed Infiltration Rate* (Inch/Hr)
I-1	4.5	0.06
I-2	8.0	0.15
I-3	10.1	0.31
I-4	3.0	0.15
I-5	1.0	0.23
I-6	6.0	0.55

*Normalized to One-Dimensional Flow, does not include any Factor of Safety

It should be emphasized that infiltration test results are only representative of the location and depth where they are performed. Varying subsurface conditions may exist outside of the test locations which could alter the calculated infiltration rates indicated above. Infiltration tests are performed using relatively clean water free of particulates, silt, etc.

2.6 Seismic Design Criteria

The site seismic characteristics were evaluated per the guidelines set forth in Chapter 16, Section 1613 of the 2016 California Building Code (CBC). Representative site coordinates of latitude 33.7357 degrees north and longitude -117.1452 degrees west were utilized in our analyses. Please note that these coordinates are considered representative of the site for preliminary planning purposes, however, their applicability must be verified with respect to a desired specific location within the site. The maximum considered earthquake (MCE) spectral response accelerations (S_{MS} and S_{M1}) and adjusted design spectral response acceleration parameters (S_{DS} and S_{D1}) for Site Class D are provided in Table 3 on the following page.

Section 1803.5.12 of the 2016 CBC (per Section 11.8.3 of ASCE 7) states that the maximum considered earthquake geometric mean (MCE_G) Peak Ground Acceleration (PGA) should be used for liquefaction potential. The PGA_M for the site is equal to 0.50g.

A deaggregation of the PGA based on a 2,475-year average return period indicates that an earthquake magnitude of 8.1 at a distance of approximately 16 km from the site would contribute the most to this ground motion (USGS, 2008).

TABLE 3

Seismic Design Parameters

Selected Parameters from 2016 CBC, Section 1613 - Earthquake Loads	Seismic Design Values
Site Class per Chapter 20 of ASCE 7	D
Risk-Targeted Spectral Acceleration for Short Periods (S_S)*	1.500g
Risk-Targeted Spectral Accelerations for 1-Second Periods (S_1)*	0.600g
Site Coefficient F_a per Table 1613.3.3(1)	1.0
Site Coefficient F_v per Table 1613.3.3(2)	1.5
Site Modified Spectral Acceleration for Short Periods (S_{MS}) for Site Class D [Note: $S_{MS} = F_aS_S$]	1.500g
Site Modified Spectral Acceleration for 1-Second Periods (S_{M1}) for Site Class D [Note: $S_{M1} = F_vS_1$]	0.900g
Design Spectral Acceleration for Short Periods (S_{DS}) for Site Class D [Note: $S_{DS} = (^2/_3)S_{MS}$]	1.000g
Design Spectral Acceleration for 1-Second Periods (S_{D1}) for Site Class D [Note: $S_{D1} = (^2/_3)S_{M1}$]	0.600g
Mapped Risk Coefficient at 0.2 sec Spectral Response Period, C_{RS} (per ASCE 7)	1.055
Mapped Risk Coefficient at 1 sec Spectral Response Period, C_{R1} (per ASCE 7)	1.029

* From USGS, 2018

2.7 Landslides

Document research and field observations of the surficial conditions do not indicate the presence of landslides on the site or in the immediate vicinity. Based on our review of the City of Menifee General Plan (ECI, 2012b), the southeastern-most corner of the subject site, where the granitic hill is located, is mapped as an area where local topographic and geological conditions suggest the potential for earthquake-induced landslides. According to the Alternative D Yield Study Plan (UDA, 2018), proposed development is outside of the limits of the areas mapped as potentially susceptible to

earthquake-induced landslides and therefore beyond the influence of such an event. Assessment of the stability of the granitic hill in the southeastern corner of the site was not a part of this evaluation. The remainder of the site, which is considered the proposed developable area, consists of relatively flat alluvial deposits which are not susceptible to landslides or seismically-induced landslides.

2.8 Settlement and Collapse Potential

Static settlement of the site will be induced by subjecting the existing grades to design grades (adding fill) and by the proposed structural building loads. The underlying alluvial deposits encountered were found to be hard to very dense and are generally not considered susceptible to long term consolidation settlement. The static settlement at the site was analyzed under assumed increases in grades up to 10 feet and our recommended bearing capacity utilizing assumed structural building loads. Due to the primarily coarse-grained nature of the site soils static settlement should occur immediately during increasing grades; therefore, static settlement from increasing grades should not affect the proposed structural improvements. Static foundation settlement due to structural building loads is discussed in Section 4.3 (Soil Bearing and Lateral Resistance).

In addition to static settlement, recent and previous laboratory testing indicates the presence of potentially collapsible native alluvial soils within the upper approximately 10 feet. The collapse potential (or hydro-collapse) of the 13 samples tested ranged from 0 to 1.7 percent while some of the samples experienced swelling or expansion. To reduce the potential for adverse future settlements in the proposed building areas, we recommend implementing our earthwork recommendations provided in Section 4.1.

2.9 Expansion Potential

Based on the results of previous laboratory testing by others and our recent laboratory testing, site soils are anticipated to have a "Low" expansion potential. Final expansion potential of site soils should be determined at the completion of grading. Results of expansion testing at finish grades will be utilized to confirm final foundation design.

2.10 Organic Rich Soils

For a screening level site organic evaluation, a total of 29 bag soil samples were collected in the southwestern corner of the site to determine their organic content (based on ASTM 2974). The organic content of the samples ranged from approximately 0.5 to 3.1 percent. In general, the organic content is higher near existing grade and decreases with depth. The results of the organic matter laboratory testing are presented in Appendix C.

Out of the 29 "screening level" organic tests, no organic test results indicated organic matter content greater than 5.0 percent. Additionally, the average organic content of all soils tested for organic matter (approximately the upper 3 feet of soil) was 1.5 percent. From a geotechnical perspective, soils with an organic content of less than 2 percent are generally considered suitable for use as compacted fill. Additional field work and lab testing in areas of the site that were not explored and tested for organics may be necessary prior to grading. Recommendations regarding the management

of organic rich soils are provided in a subsequent section of this report.

3.0 CONCLUSIONS

Based on the results of our subsurface geotechnical evaluation, it is our opinion that the proposed improvements are feasible from a geotechnical standpoint, provided that the recommendations contained in the following sections are incorporated during site grading and development. A summary of our geotechnical conclusions are as follows:

- The near-surface loose and compressible soils are not suitable for the planned improvements in their present condition (refer to Section 4.1). Organic rich soils (average organic carbon content generally greater than 2 percent) are not suitable for compacted fill soils from a geotechnical perspective.
- Groundwater was encountered in both of our borings and two of our CPTs at depths ranging from 33 to 40 feet below existing ground surface. Earlier investigations by others also encountered groundwater at different locations throughout the site. However, our recent groundwater measurements generally indicate groundwater elevations are higher than those encountered during the earlier site investigation.
- The subject study area is not located within a mapped State of California Earthquake Fault Zone, and based upon our review of published geologic mapping, no known active or potentially active faults are known to exist within or in the immediate vicinity of the site. Therefore, the potential for ground rupture as a result of faulting is considered very low.
- The main seismic hazard that may affect the site is ground shaking from one of the active regional faults. The subject site will likely experience strong seismic ground shaking during its design life.
- The site is not located in a mapped zone for liquefaction potential per the City of Menifee General Plan (ECI, 2012b) and the potential for liquefaction is considered very low. Due to the dense to very dense nature of soils based on CPT tip resistance and SPT blow counts, site soils are not considered susceptible to liquefaction. Total seismic settlement due to dry sands is estimated to be on the order of about ½-inch or less. Differential seismic settlement may be estimated as ¼-inch settlement over a horizontal span of 40 feet.
- Based on our review of the City of Menifee General Plan (ECI, 2012b), the southeastern-most corner of the subject site where the granitic hill is located is mapped as an area where local topographic and geological conditions suggest the potential for earthquake-induced landslides. According to the Alternative D Yield Study Plan (UDA, 2018), proposed development is outside of the limits of the areas mapped as potentially susceptible to earthquake-induced landslides and therefore beyond the influence of such an event. The remainder of the site, which is considered the proposed developable area, consists of relatively flat alluvial deposits which are not susceptible to landslides or seismically-induced landslides.
- Based on the results of preliminary laboratory testing, site soils are anticipated to have "Low" expansion potential. Final design expansion potential must be determined at the completion of grading.
- Based on the corrosion test results, soils are not considered corrosive per the Caltrans criteria (Caltrans, 2015).
- Excavations into the existing site soils should be feasible with heavy construction equipment in good working order. We anticipate that the sandy and silty earth materials generated from the excavations will be generally suitable for re-use as compacted fill, provided they are relatively free of rocks larger than 8 inches in dimension, construction debris, and significant organic material.
- Field testing resulted in unfactored infiltration rates ranging from 0.06 to 0.55 inches per hour. The infiltration rates do not include a factor of safety. The site will consist of compacted fill over shallow dense

formational soils with very low permeability, and therefore the site is anticipated to have very low to non-existent infiltration rates after earthwork is completed.

4.0 RECOMMENDATIONS

The following recommendations are to be considered preliminary and should be confirmed upon completion of grading and earthwork operations. In addition, they should be considered minimal from a geotechnical viewpoint, as there may be more restrictive requirements from the architect, structural engineer, building codes, governing agencies, or the owner.

It should be noted that the following geotechnical recommendations are intended to provide sufficient information to develop the site in general accordance with the 2016 CBC requirements. With regard to the possible occurrence of potentially catastrophic geotechnical hazards such as fault rupture, earthquake-induced landslides, liquefaction, etc. the following geotechnical recommendations should provide adequate protection for the proposed development to the extent required to reduce seismic risk to an "acceptable level." The "acceptable level" of risk is defined by the California Code of Regulations as "that level that provides reasonable protection of the public safety, though it does not necessarily ensure continued structural integrity and functionality of the project" [Section 3721(a)]. Therefore, repair and remedial work of the proposed improvement may be required after a significant seismic event. With regards to the potential for less significant geologic hazards to the proposed development, the recommendations contained herein are intended as a reasonable protection against the potential damaging effects of geotechnical phenomena such as expansive soils, fill settlement, groundwater seepage, etc. It should be understood, however, that our recommendations are intended to maintain the structural integrity of the proposed development and structures given the site geotechnical conditions but cannot preclude the potential for some cosmetic distress or nuisance issues to develop as a result of the site geotechnical conditions.

The geotechnical recommendations contained herein must be confirmed to be suitable or modified based on the actual as-graded conditions.

4.1 Site Earthwork

Rough grading shall include remedial earthwork grading and placement of engineered compacted fill to design grades. Geotechnical recommendations for precise grading and construction of the proposed new improvements will be provided, as necessary.

We recommend that earthwork onsite be performed in accordance with the following recommendations, future grading plan review report(s), the 2016 CBC/City of Menifee requirements, and the General Earthwork and Grading Specifications for Rough Grading included in Appendix D. In case of conflict, the following recommendations shall supersede those included in Appendix D. The following recommendations may be revised within future grading plan review reports or based on the actual conditions encountered during site grading.

4.1.1 Site Preparation

Prior to grading, areas to be developed should undergo the stripping and clearing of vegetation, high organic content soil removal/export and clearing of surface obstructions, pavements, foundation and slab elements from the site. Vegetation, debris, and excessive soft deposits

within previous surficial pond areas should be removed and properly disposed of offsite. Recommendations for mixing or blending organic soils are provided in the following section. Holes resulting from removals of buried obstructions, which extend below proposed remedial and/or finish grades, should be replaced with suitable compacted fill material.

If cesspools or septic systems are encountered they should be removed in their entirety. The resulting excavation should be backfilled with properly compacted fill soils. As an alternative, cesspools can be backfilled with lean sand-cement slurry. Any encountered wells should be properly abandoned in accordance with regulatory requirements.

4.1.2 Preliminary Organic Rich Soil Recommendations

We recommend all soils in the upper 3 feet be adequately mixed or blended with the "clean" soils (soils with organic content less than 2.0 percent) below 3 feet. From a geotechnical perspective, the average organic content of compacted fill soils should not exceed 2 percent. Additional organic testing should be performed throughout the site prior to grading to confirm the recommendations provided herein. Should the results of additional organic testing indicate higher amounts of organics in other parts of the site, updated recommendations for mixing or organic export from the site may be necessary.

4.1.3 Removal Depths and Limits

In order to provide a relatively uniform bearing condition for the planned improvements, we recommend removals and over-excavations be performed and material replaced with compacted fill. We recommend that soils within building pads be removed and recompacted to a minimum depth of 5 feet below existing grade. This is applicable across the entire site, except as noted below where localized deeper removals are recommended. The envelope for over-excavation should extend laterally a minimum distance of 5 feet beyond the edges of the proposed improvements. In areas of design cut, removal and recompaction shall extend a minimum of 5 feet below existing grade or a minimum of 3 feet below finished grade, whichever is deeper. The Remedial Grading Diagram (Figure 2) provides a simplified example of the building pad remedial recommendations.

All topsoil, undocumented fill, colluvium and soft surface pond sediments within the site shall be fully removed to suitable, competent materials prior to placement of fill to design grades. Please note that localized areas of undocumented fill, colluvium and soft surface pond sediments were encountered at depths up to approximately 10, 12 and 5 feet below existing grade, respectively. The majority of undocumented fill was placed along the dirt roads, within the existing EMWD sewer line and as berms throughout the site. Colluvial deposits were encountered at the base of the granitic hill. Soft surface pond deposits should be anticipated in the north central areas of the site and along the southern boundary of the site near Case Road. Deeper removals of unsuitable young alluvial deposits up to approximately 10 feet below existing grade should be anticipated. The deepest sections of unsuitable young alluvium were encountered in the southern portion of the site nearest Case Road, see Sheet 1 map symbol (Qal) for approximate lateral limits.

For minor site structures such as free-standing and screen walls, the removals should extend at least 3 feet beneath the existing grade or 2 feet beneath the base of foundations, whichever is deeper. Hardscape and roadway pavement areas should be over-excavated to a depth of 2 feet below existing grades or 2 feet below future subgrade elevations, whichever is deeper. In general, the envelope for over-excavation should extend laterally a minimum distance of 2 feet beyond the edges of the proposed improvements mentioned above.

For underground structures such as buried septic tanks or alternative waste water disposal systems, the removals should extend at least 2 feet beneath the base of the foundations. In general, the envelope for over-excavation should extend laterally a minimum distance of 2 feet beyond the edges of the proposed underground structures mentioned above.

Local conditions may be encountered during excavation that could require additional over-excavation beyond the above-noted minimum in order to obtain an acceptable subgrade. The actual depths and lateral extents of grading will be determined by the geotechnical consultant, based on subsurface conditions encountered during grading. Areas to be over-excavated should be accurately staked in the field by the Project Surveyor.

4.1.4 Temporary Excavations

Temporary excavations should be performed in accordance with project plans, specifications, and applicable Occupational Safety and Health Administration (OSHA) requirements. Excavations should be laid back or shored in accordance with OSHA requirements before personnel or equipment are allowed to enter. Based on our field investigation, the majority of site soils are anticipated to be OSHA Type "B" soils (refer to the attached boring logs). Sandy soils are present and should be considered susceptible to caving. Soil conditions should be regularly evaluated during construction to verify conditions are as anticipated. The contractor shall be responsible for providing the "competent person" required by OSHA standards to evaluate soil conditions. Close coordination with the geotechnical consultant should be maintained to facilitate construction while providing safe excavations. Excavation safety is the sole responsibility of the contractor.

Vehicular traffic, stockpiles, and equipment storage should be set back from the perimeter of excavations a minimum distance equivalent to a 1:1 projection from the bottom of the excavation or 5 feet, whichever is greater. Once an excavation has been initiated, it should be backfilled as soon as practical. Prolonged exposure of temporary excavations may result in some localized instability. Excavations should be planned so that they are not initiated without sufficient time to shore/fill them prior to weekends, holidays, or forecasted rain.

It should be noted that any excavation that extends below a 1:1 (horizontal to vertical) projection of an existing foundation will remove existing support of the structure foundation. If requested, temporary shoring parameters will be provided.

4.1.5 Removal Bottoms and Subgrade Preparation

In general, removal bottoms, over-excavation bottoms and areas to receive compacted fill should be scarified to a minimum depth of 6 to 8 inches, brought to a near-optimum moisture condition (generally within optimum and 2 percent above optimum moisture content) and re-compacted per project requirements.

Removal bottoms and areas to receive fill should be observed and accepted by the geotechnical consultant prior to subsequent fill placement.

4.1.6 Material for Fill

From a geotechnical perspective, the onsite soils are generally considered suitable for use as general compacted fill, provided they are screened of construction debris and any oversized material (8 inches in greatest dimension). From a geotechnical perspective, compacted fill with an average organic content of less than 2 percent are generally considered acceptable.

From a geotechnical viewpoint, import soils for general fill (i.e., non-retaining wall backfill) should consist of clean, granular soils of Low expansion potential (expansion index 50 or less based on ASTM D4829). Import for retaining wall backfill should meet the criteria outlined in the paragraph below. Source samples should be provided to the geotechnical consultant for laboratory testing a minimum of three working days prior to any planned importation.

Retaining wall backfill should consist of select on-site or imported sandy soils having a minimum sand equivalent of 30. Soils should also be screened of significant organic materials, construction debris, and any material greater than 3 inches in maximum dimension. Large portions of the onsite soil may not be suitable for retaining wall backfill due to their fines content (i.e., silt and clay content) and expansion potential. Therefore, either select grading and stockpiling and/or import of suitable soils meeting the criteria outlined above will be required.

Aggregate base (Class II Aggregate Base) should conform to the requirements of Section 200-2 of the most recent version of the Standard Specifications for Public Works Construction ("Greenbook") for untreated base materials and/or City of Menifee requirements.

4.1.7 Placement and Compaction of Fills

Material to be placed as fill should be brought to near-optimum moisture content (generally within optimum and 2 percent above optimum moisture content) and recompacted to at least 90 percent relative compaction (per ASTM D1557). Moisture conditioning of site soils will be required in order to achieve adequate compaction. Drying and/or mixing the very moist soils will be required prior to reusing the materials in compacted fills. Soils are also present that will require additional moisture in order to achieve the required compaction.

The optimum lift thickness to produce a uniformly compacted fill will depend on the type and size of compaction equipment used. In general, fill should be placed in uniform lifts not exceeding 8 inches in compacted thickness. Each lift should be thoroughly compacted and

accepted prior to subsequent lifts. Generally, placement and compaction of fill should be performed in accordance with local grading ordinances and with observation and testing by LGC Geotechnical. Oversized material as previously defined should be removed from site fills. During backfill of excavations, the fill should be properly benched into firm and competent soils of temporary backcut slopes as it is placed in lifts.

Aggregate base material should be compacted to a minimum of 95 percent relative compaction at or slightly above optimum moisture content per ASTM D1557. Subgrade below aggregate base should be compacted to a minimum of 90 percent relative compaction per ASTM D1557 at near-optimum moisture content (generally within optimum and 2 percent above optimum moisture content).

4.1.8 Slope Construction

Design fill slopes (likely less than 10 feet in height) are anticipated to be both grossly and surficially stable as designed, as long as they are constructed in accordance with the recommendations in our General Earthwork and Grading Specifications for Rough Grading (Appendix D) and are properly landscaped and maintained. As noted, the maximum slope gradient is 2:1.

Given the site's granular soils and assumption any that any design slopes proposed within the sight will be relatively short in height (i.e., less than 10 feet tall), backdrains are not required for stabilization fill slopes. If boundary constraints (property limits, easements, boundaries with sensitive habitat areas, etc.) exist, the width of fill at the "top" of a stabilization fill shall be determined in the field based on the actual constraints and observed conditions. LGC Geotechnical and the contractor should agree on methods of construction prior to initiating work in constrained areas.

Material to be placed as engineered fill should be brought to near-optimum moisture content (generally within optimum and 2 percent above optimum moisture content) and recompacted to at least 90 percent relative compaction (per ASTM D1557). Removal of unsuitable soils and fill placement should be performed in accordance with the recommendations provided in this report.

4.1.9 Natural Slopes

The southern portion of the site development is partially bordered by natural granitic slopes. These slopes will be subject to "natural" phenomena such as erosion, sloughing and surficial instabilities. It is impossible to predict where or when this may happen. Should erosion or localized slippage occur near the proposed development, it should be promptly repaired.

4.1.10 Trench and Retaining Wall Backfill and Compaction

The onsite soils may generally be suitable as trench backfill, provided the soils are screened of rocks and other material greater than 6 inches in diameter and significant organic matter. If

trenches are shallow or the use of conventional equipment may result in damage to the utilities, sand having a sand equivalent (SE) of 30 or greater (per California Test Method [CTM] 217) may be used to bed and shade the pipes. Sand backfill within the pipe bedding zone may be densified by jetting or flooding and then tamping to ensure adequate compaction. Subsequent trench backfill should be compacted in uniform thin lifts by mechanical means to at least the recommended minimum relative compaction (per ASTM D1557).

Retaining wall backfill should consist of sandy soils as outlined in preceding Section 4.1.6. The limits of select sandy backfill should extend at minimum ½ the height of the retaining wall or the width of the heel (if applicable), whichever is greater. Retaining wall backfill soils should be compacted in relatively uniform thin lifts to at least 90 percent relative compaction (per ASTM D1557). Jetting or flooding of retaining wall backfill materials should not be permitted.

A representative from LGC Geotechnical should observe, probe, and test the backfill to verify compliance with the project recommendations.

4.1.11 Shrinkage and Subsidence

Volumetric changes in earth quantities will occur when excavated onsite earth materials are replaced as properly compacted fill. The following is an ESTIMATE of shrinkage factors for the various geologic units found onsite. These estimates are based on in-place densities of the various materials, the estimated average degree of relative compaction achieved during grading and the recommended remedial grading depths.

TABLE 4

Estimated Shrinkage

Geologic Unit*	Allowance	Estimated Range
Quaternary Colluvium (Qcol)	Shrinkage	10% to 15%
Quaternary Young Alluvium (Qal)	Shrinkage	10% to 15%
Quaternary Old Alluvium (Qalo)	Shrinkage	0% to 10%

* See Geotechnical Map for lateral limits.

It should be stressed that these values are only estimates and that an actual shrinkage factor would be extremely difficult to predetermine. Subsidence due to earthwork equipment is expected to be up to 0.1 feet. These values are estimates only and exclude losses due to removal of vegetation or debris. The effective change in volume of onsite soils will depend primarily on the type of compaction equipment, method of compaction used onsite by the contractor, and accuracy of the topographic survey.

The above shrinkage and bulking estimates are intended as an aid for the project civil engineer in determining preliminary earthwork quantities. However, these estimates should be used with some caution since they are not absolute values. Contingencies should be made for balancing earthwork quantities based on actual shrinkage that occurs during grading. Shrinkage and

bulking are also expected to vary with variations in survey accuracy during rough grading.

4.2 Preliminary Foundation Recommendations

Preliminary conventional and post-tensioned foundation recommendations are provided in the following sections. Allowable soil bearing and estimated static settlement are provided in Section 4.3. Estimated site dynamic settlement is provided in Section 2.7.1. Please note that the following foundation recommendations are preliminary and must be confirmed by LGC Geotechnical at the completion project plans (i.e., foundation, grading and site layout plans) as well as completion of earthwork. At the completion of grading, if soils with a different expansion potential (EI greater than 50) are encountered, updated geotechnical foundation recommendations will be provided.

Preliminary foundation recommendations are provided in the following sections. Recommended soil bearing and estimated settlement due to structural loads are provided in Section 4.3.

4.2.1 Provisional Conventional Foundation Design Parameters

Conventional foundations may be designed in accordance with Wire Reinforcement Institute (WRI) procedure for slab-on-ground foundations per Section 1808 of the 2016 CBC to resist expansive soils. The following preliminary soil parameters may be used:

- Effective Plasticity Index: 15
- Climatic Rating: Cw = 15
- Minimum Perimeter Footing Depth: 15 inches below lowest adjacent grade.
- Moisture condition (presoak) slab subgrade to 100% of optimum moisture content to a minimum depth of 12 inches prior to trenching.

The required slab thickness and reinforcement should be determined by the structural designer. The recommended moisture content should be maintained up to the time of concrete placement.

4.2.2 Provisional Post-Tensioned Foundation Design Parameters

The geotechnical parameters provided in Table 4 (Refer to Section 4.2.3 below) may be used for post-tensioned slab foundations. These parameters have been determined in general accordance with the Post-Tensioning Institute (PTI) Standard Requirements for Design of Shallow Post-Tensioned Concrete Foundations on Expansive Soils referenced in Chapter 18 of the 2016 CBC. In utilizing these parameters, the foundation engineer should design the foundation system in accordance with the allowable deflection criteria of applicable codes and the requirements of the structural designer/architect. Other types of stiff slabs may be used in place of the CBC post-tensioned slab design provided that, in the opinion of the foundation structural designer, the alternative type of slab is at least as stiff and strong as that designed by the CBC/PTI method to resist expansive soils.

Our design parameters are based on our experience with similar residential projects and the

anticipated nature of the soil (with respect to expansion potential). Please note that implementation of our recommendations will not eliminate foundation movement (and related distress) should the moisture content of the subgrade soils fluctuate. It is the intent of these recommendations to help maintain the integrity of the proposed structures and reduce (not eliminate) movement, based upon the anticipated site soil conditions. Should future owners not properly maintain the areas surrounding the foundation, for example by overwatering, then we anticipate for highly expansive soils the maximum differential movement of the perimeter of the foundation to the center of the foundation to be on the order of a couple of inches. Soils of lower expansion potential are anticipated to show less movement.

TABLE 5

Provisional Geotechnical Parameters for Post-Tensioned Foundation Slab Design

Parameter	PT Slab with Perimeter Footing	PT Mat with Thickened Edge
Expansion Index	Low[1]	Low[1]
Thornthwaite Moisture Index	-20	-20
Constant Soil Suction	PF 3.9	PF 3.9
Center Lift Edge moisture variation distance, e_m Center lift, y_m	 9.0 feet 0.25 inch	 9.0 feet 0.3 inch
Edge Lift Edge moisture variation distance, e_m Edge lift, y_m	 5.5 feet 0.55 inch	 5.5 feet 0.66 inch
Modulus of Subgrade Reaction, k (assuming presoaking as indicated below)	150 pci	150 pci
Minimum perimeter footing/thickened edge embedment below finish grade	15 inches	6 inches

1. Assumed for preliminary design purposes. Further evaluation is needed at the completion of grading.
2. Recommendations for foundation reinforcement and slab thickness are ultimately the purview of the foundation engineer/structural engineer based upon geotechnical criteria and structural engineering considerations.
3. Recommendations for sand below slabs have traditionally been included with geotechnical foundation recommendations, although they are not the purview of the geotechnical consultant. The sand layer requirements are the purview of the foundation engineer/structural engineer and should be provided in accordance with ACI Publication 302 "Guide for Concrete Floor and Slab Construction".
4. Recommendations for vapor retarders below slabs are also the purview of the foundation engineer/structural engineer and should be provided in accordance with applicable code requirements.
5. Moisture condition to 100 % of optimum moisture content to a depth of 12 inches prior to trenching.

4.2.3 Foundation Subgrade Preparation and Maintenance

Moisture conditioning of the subgrade soils is recommended prior to trenching the foundation. The recommendations specific to the anticipated site soil conditions are presented herein. The subgrade moisture condition of the building pad soils should be maintained at or above-optimum moisture content up to the time of concrete placement. This moisture content should be maintained around the immediate perimeter of the slab during construction and up to occupancy of the homes.

The geotechnical parameters provided herein assume that if the areas adjacent to the foundation are planted and irrigated, these areas will be designed with proper drainage and adequately maintained so that ponding, which causes significant moisture changes below the foundation, does not occur. Our recommendations do not account for excessive irrigation and/or incorrect landscape design. Plants should only be provided with sufficient irrigation for life and not overwatered to saturate subgrade soils. Sunken planters placed adjacent to the foundation, should either be designed with an efficient drainage system or liners to prevent moisture infiltration below the foundation. Some lifting of the perimeter foundation beam should be expected even with properly constructed planters.

In addition to the factors mentioned above, future homeowners should be made aware of the potential negative influences of trees and/or other large vegetation. Roots that extend near the vicinity of foundations can cause distress to foundations. Future homeowners (and the owner's landscape architect) should not plant trees/large shrubs closer to the foundations than a distance equal to half the mature height of the tree or 20 feet, whichever is more conservative unless specifically provided with root barriers to prevent root growth below the house foundation.

It is the homeowner's responsibility to perform periodic maintenance during hot and dry periods to ensure that adequate watering has been provided to keep soils from separating or pulling back from the foundation. Future homeowners should be informed and educated regarding the importance of maintaining a constant level of soil-moisture. The homeowners should be made aware of the potential negative consequences of both excessive watering, as well as allowing potentially expansive soils to become too dry. Expansive soils can undergo shrinkage during drying and swelling during the rainy winter season or when irrigation is resumed. This can result in distress to building structures and hardscape improvements. The builder should provide these recommendations to future homeowners.

4.2.4 Slab Underlayment Guidelines

The following is for informational purposes only since slab underlayment (e.g., moisture retarder, sand or gravel layers for concrete curing and/or capillary break) is unrelated to the geotechnical performance of the foundation and thereby not the purview of the geotechnical consultant. Post-construction moisture migration should be expected below the foundation. The foundation engineer/architect should determine whether the use of a capillary break (sand or gravel layer), in conjunction with the vapor retarder, is necessary or required by code. Sand layer thickness and location (above and/or below vapor retarder) should also be determined by the foundation engineer/architect.

4.3 Soil Bearing and Lateral Resistance

Provided our earthwork recommendations are implemented, an allowable soil bearing pressure of 2,000 pounds per square foot (psf) may be used for the design of footings having a minimum width of 12 inches and minimum embedment of 15 inches below lowest adjacent ground surface. This value may be increased by 300 psf for each additional foot of embedment and 150 psf for each additional foot of foundation width to a maximum value of 3,000 psf. An allowable soil bearing pressure of 1,200 psf may be used for a mat post-tensioned slab a minimum of 6 inches below lowest adjacent grade. These allowable bearing pressures are applicable for level (ground slope equal to or flatter than 5H:1V) conditions only. Bearing values indicated are for total dead loads and frequently applied live loads and may be increased by ⅓ for short duration loading (i.e., wind or seismic loads).

In utilizing the above-mentioned allowable bearing capacity, and provided our earthwork recommendations are implemented, static foundation settlement due to structural loads is anticipated to be 1 inch. Differential settlement may be taken as ½-inch over a horizontal span of 40 feet. Dynamic settlement is provided in Section 2.5.1.

Resistance to lateral loads can be provided by friction acting at the base of foundations and by passive earth pressure. For concrete/soil frictional resistance, an allowable coefficient of friction of 0.35 may be assumed with dead-load forces. An allowable passive lateral earth pressure of 270 psf per foot of depth (or pcf) to a maximum of 2,700 psf may be used for the sides of footings poured against properly compacted fill. Allowable passive pressure may be increased to 360 pcf (maximum of 3,600 psf) for short duration seismic loading. This passive pressure is applicable for level (ground slope equal to or flatter than 5H:1V) conditions only. For a 2:1 (horizontal to vertical) downward sloping condition, a reduced passive lateral earth pressure of 100 pcf to a maximum of 1,000 psf may be used. This allowable passive pressure may be increased to 130 pcf to a maximum of 1,300 psf for short duration seismic loading. We recommend that the upper foot of passive resistance be neglected for all conditions if finished grade will not be covered with concrete or asphalt. Frictional resistance and passive pressure may be used in combination without reduction. The provided allowable passive pressures are based on a factor of safety of 1.5 and 1.1 for static and seismic loading conditions, respectively. The structural designer should incorporate appropriate factors of safety and/or load factors in their design.

4.4 Lateral Earth Pressures for Retaining Walls

The following preliminary lateral earth pressures may be used for site retaining walls. Lateral earth pressures are provided as equivalent fluid unit weights, in pound per square foot (psf) per foot of depth or pcf. These values do not contain an appreciable factor of safety, so the retaining wall designer should apply the applicable factors of safety and/or load factors during design.

The following lateral earth pressures are presented on Table 5 for approved select granular soils having a minimum sand equivalent of 30. Retaining wall backfill should also be limited to fill material not exceeding 3 inches in greatest dimension. The wall designer should clearly indicate on the retaining wall plans the required sandy soil backfill criteria. Large portions of the onsite soil may not be suitable for retaining wall backfill and not meet the minimum sand equivalent criteria mentioned above. Therefore, either select grading and stockpiling and/or import of suitable soils meeting the criteria outlined above will be required.

TABLE 6

Lateral Earth Pressures – Native or Imported Sandy Backfill

Conditions	Equivalent Fluid Unit Weight (pcf) Level Backfill Approved Sandy Backfill	Equivalent Fluid Unit Weight (pcf) 2:1 Sloped Backfill Approved Sandy Backfill
Active	35	55
At-Rest	55	70

If the wall can yield enough to mobilize the full shear strength of the soil, it can be designed for "active" pressure. If the wall cannot yield under the applied load, the earth pressure will be higher. This would include 90-degree corners of retaining walls. Such walls should be designed for "at-rest." The equivalent fluid pressure values assume free-draining conditions. If conditions other than those assumed above are anticipated, the equivalent fluid pressure values should be provided on an individual-case basis by the geotechnical consultant.

Surcharge loading effects from any adjacent structures should be evaluated by the retaining wall designer. In general, structural loads within a 1:1 (horizontal to vertical) upward projection from the bottom of the proposed basement/retaining wall footing will surcharge the proposed retaining structure. In addition to the recommended earth pressure, retaining walls adjacent to streets should be designed to resist vehicular traffic if applicable. Typical vehicular traffic may be estimated as equivalent to 2 feet of compacted fill, a vertical pressure of 240 psf corresponding to a lateral uniform pressure of 85 psf. The retaining wall designer should contact the geotechnical engineer for any required geotechnical input in estimating any applicable surcharge loads.

If required, the retaining wall designer may use a seismic lateral earth pressure increment of 5 pcf for level backfill conditions and 10 pcf for sloping backfill conditions. This increment should be applied in addition to the provided static lateral earth pressure using a "normal" triangular distribution with the resultant acting at H/3 in relation to the base of the retaining structure (where H is the retained height). For the restrained, at-rest condition, the seismic increment may be added to the applicable active lateral earth pressure (in lieu of the at-rest lateral earth pressure) when analyzing short duration seismic loading. Per Section 1803.5.12 of the 2016 CBC, the seismic lateral earth pressure is applicable to structures assigned to Seismic Design Category D through F for retaining wall structures supporting more than 6 feet of backfill height. This seismic lateral earth pressure is estimated using the procedure outlined by the Structural Engineers Association of California (Lew, et al, 2010).

Retaining wall structures should be provided with appropriate drainage and appropriately waterproofed. To reduce, but not eliminate, saturation of near surface (upper approximate 1-foot) soils in front of the retaining walls, the perforated subdrain pipe should be located as low as possible behind the retaining wall. The outlet pipe should be sloped to drain to a suitable outlet. In general, we do not recommend retaining wall outlet pipes be connected to area drains. If subdrains are connected to area drains, special care and information should be provided to homeowners to maintain these drains. Typical retaining wall drainage is illustrated in Figure 3. It should be noted that the

recommended subdrain does not provide protection against seepage through the face of the wall and/or efflorescence. Efflorescence is generally a white crystalline powder (discoloration) that results when water containing soluble salts migrates over a period of time through the face of a retaining wall and evaporates. If such seepage or efflorescence is undesirable, retaining walls should be waterproofed to reduce this potential. Please note that waterproofing and outlet systems are not the purview of the geotechnical consultant.

Soil bearing and lateral resistance (friction coefficient and passive resistance) are provided in Section 4.3. Earthwork considerations (temporary backcuts, backfill, compaction, etc.) for retaining walls are provided in Section 4.1 (Site Earthwork) and the subsequent earthwork related sub-sections.

4.5 Corrosivity to Concrete and Metal

Although not corrosion engineers (LGC Geotechnical is not a corrosion consultant), several governing agencies in Southern California require the geotechnical consultant to determine the corrosion potential of soils to buried concrete and metal facilities. We therefore present the results of our testing with regard to corrosion for the use of the client and other consultants, as they determine necessary.

Corrosion testing of near-surface bulk samples indicated soluble sulfate content ranges from 153 to 720 parts per million (ppm), chloride content ranges from 100 to 460 ppm, pH values ranging from 6.1 to 7.2 and minimum resistivity values ranging from 600 to 2120 ohm-cm. Based on Caltrans Corrosion Guidelines (2015), soils are considered corrosive if the pH is 5.5 or less, or the chloride concentration is 500 ppm or greater, or the sulfate concentration is 2,000 ppm (0.2 percent) or greater. Based on the test results, soils are not considered corrosive using Caltrans criteria.

Based on our laboratory test results of representative site soil samples, onsite soils should be considered as having a severity categorization of "not applicable" and are designated class "S0" per ACI 318, Table 19.3.1.1, sulfate. As a result, the minimum compressive strength of the concrete shall be 2,500 psi.

Laboratory testing may need to be performed at the completion of grading by the project corrosion engineer to further evaluate the as-graded soil corrosivity characteristics. Accordingly, revision of the corrosion potential may be needed, should future test results differ substantially from the conditions reported herein. The client and/or other members of the development team should consider this during the design and planning phase of the project and formulate an appropriate course of action.

4.6 Preliminary Asphalt Concrete Pavement Sections

For the purposes of these preliminary recommendations, we have selected a preliminary design R-value of 40 and calculated pavement sections for Traffic Indices of 5.5, 6.0 and 6.5. R-value testing of the street subgrade will need to be performed to confirm our preliminary testing results/assumptions once the streets have been graded to finish subgrade elevations (after installation of underground utilities) and the final Traffic Index is determined by the Civil Engineer. It is our understanding that the City of Menifee requires that private and local streets have a minimum pavement section consisting of 4 inches of asphalt over 6 inches of aggregate base (AB). If requested, LGC Geotechnical will provide sections

for alternate TI values.

TABLE 7

Paving Section Options

Assumed Traffic Index	5.5 or less	6.0	6.5
R -Value Subgrade	40	40	40
AC Thickness	4.0 inches	4.0 inches	4.0 inches
Base Thickness	6.0 inches	6.0 inches	6.0 inches

Due to anticipated construction traffic prior to the completion of the project, we recommend that the total thickness (base course and capping course) of asphalt concrete be placed at essentially the same time. Construction traffic loading on only the base course of the asphalt concrete will increase the potential for pavement distress. It should be noted that construction traffic such as concrete trucks will likely exceed traffic loading after completion of construction. An alternative (i.e., placement of the asphalt concrete capping course at the completion of construction) is to increase the total asphalt concrete thickness indicated above by 1-inch.

The thicknesses shown are for minimum thicknesses. Increasing the thickness of any or all of the above layers will reduce the likelihood of the pavement experiencing distress during its service life. The above recommendations are based on the assumption that proper maintenance and irrigation of the areas adjacent to the roadway will occur through the design life of the pavement. Failure to maintain a proper maintenance and/or irrigation program may jeopardize the integrity of the pavement.

Earthwork recommendations regarding aggregate base and subgrade are provided in the previous section “Site Earthwork” and the related sub-sections of this report.

4.7 Nonstructural Concrete Flatwork

Nonstructural concrete (such as flatwork, sidewalks, patios, etc.) has a potential for cracking due to changes in soil volume related to soil-moisture fluctuations. To reduce the potential for excessive cracking and lifting, concrete should be designed in accordance with the minimum guidelines outlined in Table 7 on the following page. These guidelines will reduce the potential for irregular cracking and promote cracking along construction joints but will not eliminate all cracking or lifting. Thickening the concrete and/or adding additional reinforcement will further reduce cosmetic distress.

TABLE 8

Preliminary Geotechnical Parameters for Nonstructural Concrete Flatwork Placed on Low Expansion Potential Subgrade

	Homeowner Sidewalks	**Private Drives**	**Patios/Entryways**	**City Sidewalk Curb and Gutters**
Minimum Thickness (in.)	4 (nominal)	4 (full)	4 (full)	City/Agency Standard
Presoaking	Wet down prior to placing	Wet down prior to placing	Wet down prior to placing	City/Agency Standard
Reinforcement	—	No. 3 at 36 inches on centers	No. 3 at 36 inches on centers	City/Agency Standard
Thickened Edge	—	8" wide x 8" total thickness	—	City/Agency Standard
Crack Control Joints	Saw cut or deep open tool joint to a minimum of $^1/_3$ the concrete thickness	Saw cut or deep open tool joint to a minimum of $^1/_3$ the concrete thickness	Saw cut or deep open tool joint to a minimum of $^1/_3$ the concrete thickness	City/Agency Standard
Maximum Joint Spacing	5 feet	10 feet or quarter cut whichever is closer	6 feet	City/Agency Standard
Aggregate Base Thickness (in.)	—	—	—	City/Agency Standard

To reduce the potential for driveways to separate from the garage slab, the builder may elect to install dowels to tie these two elements together. Similarly, future homeowners should consider the use of dowels to connect flatwork to the foundation.

4.8 Control of Surface Water and Drainage Control

From a geotechnical perspective, we recommend that compacted finished grade soils adjacent to proposed structures be sloped away from the proposed structures and towards an approved drainage device or unobstructed swale. Drainage swales, wherever feasible, should not be constructed within 5 feet of buildings. Where lot and building geometry necessitates that drainage swales be routed closer than 5 feet to structural foundations, we recommend the use of area drains together with drainage swales. Drainage swales used in conjunction with area drains should be designed by the project civil engineer so that a properly constructed and maintained system will prevent ponding within 5 feet of the foundation. Code compliance of grades is not the purview of the geotechnical consultant.

Planters with open bottoms adjacent to buildings should be avoided. Planters should not be designed adjacent to buildings unless provisions for drainage, such as catch basins, liners, and/or area drains, are made. Overwatering must be avoided.

4.9 Subsurface Water Infiltration

Recent regulatory changes have occurred that mandate that storm water be infiltrated below grade rather than collected in a conventional storm drain system. Typically, a combination of methods are implemented to reduce surface water runoff and increase infiltration including; permeable pavements/pavers for roadways and walkways, directing surface water runoff to grass-lined swales, retention areas, and/or drywells, etc.

It should be noted that collecting and concentrating surface water for the purpose of intentionally infiltrating below grade, conflicts with the geotechnical engineering objective of directing surface water away from slopes, structures and other improvements. The geotechnical stability and integrity of a site is reliant upon appropriately handling surface water. In general, we do not recommend that surface water be intentionally infiltrated into the subsurface soils.

Given the very low measured field infiltration rates combined with the fact that the developed site will consist of compacted fill over dense native materials, we do not recommend that surface water be intentionally infiltrated into subsurface soils at this site.

4.10 Geotechnical Plan Review

When available, project plans (grading, foundation, etc.) should be reviewed by LGC Geotechnical from a geotechnical viewpoint and updated recommendations shall be provided as necessary such as grading, organic removal and/or mixing of soils and foundation recommendations. Additional field work may be necessary based on the proposed design.

4.11 Geotechnical Observation and Testing

The recommendations provided in this report are based on limited subsurface observations and geotechnical analysis. The interpolated subsurface conditions should be checked in the field during construction by a representative of LGC Geotechnical. Geotechnical observation and testing is required per Section 1705 of the 2016 California Building Code (CBC).

Geotechnical observation and/or testing should be performed by LGC Geotechnical at the following stages:

- During grading (removal bottoms, fill placement, etc.);
- During retaining wall backfill and compaction;
- During utility trench backfill and compaction;
- After presoaking building pad and other concrete-flatwork subgrades, and prior to placement of aggregate base or concrete;

- Preparation of pavement subgrade and placement of aggregate base;
- After building and wall footing excavation and prior to placement of steel reinforcement and/or concrete; and
- When any unusual soil conditions are encountered during any construction operation subsequent to issuance of this report.

5.0 LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

This report is based on data obtained from limited observations of the site, which have been extrapolated to characterize the site. While the scope of services performed is considered suitable to adequately characterize the site geotechnical conditions relative to the proposed development, no practical evaluation can completely eliminate uncertainty regarding the anticipated geotechnical conditions in connection with a subject site. Variations may exist and conditions not observed or described in this report may be encountered during grading and construction.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the other consultants (at a minimum the civil engineer, structural engineer, landscape architect) and incorporated into their plans. The contractor should properly implement the recommendations during construction and notify the owner if they consider any of the recommendations presented herein to be unsafe, or unsuitable.

The findings of this report are valid as of the present date. However, changes in the conditions of a site can and do occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. The findings, conclusions, and recommendations presented in this report can be relied upon only if LGC Geotechnical has the opportunity to observe the subsurface conditions during grading and construction of the project, in order to confirm that our preliminary findings are representative for the site. This report is intended exclusively for use by the client, any use of or reliance on this report by a third party shall be at such party's sole risk.

In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and modification.

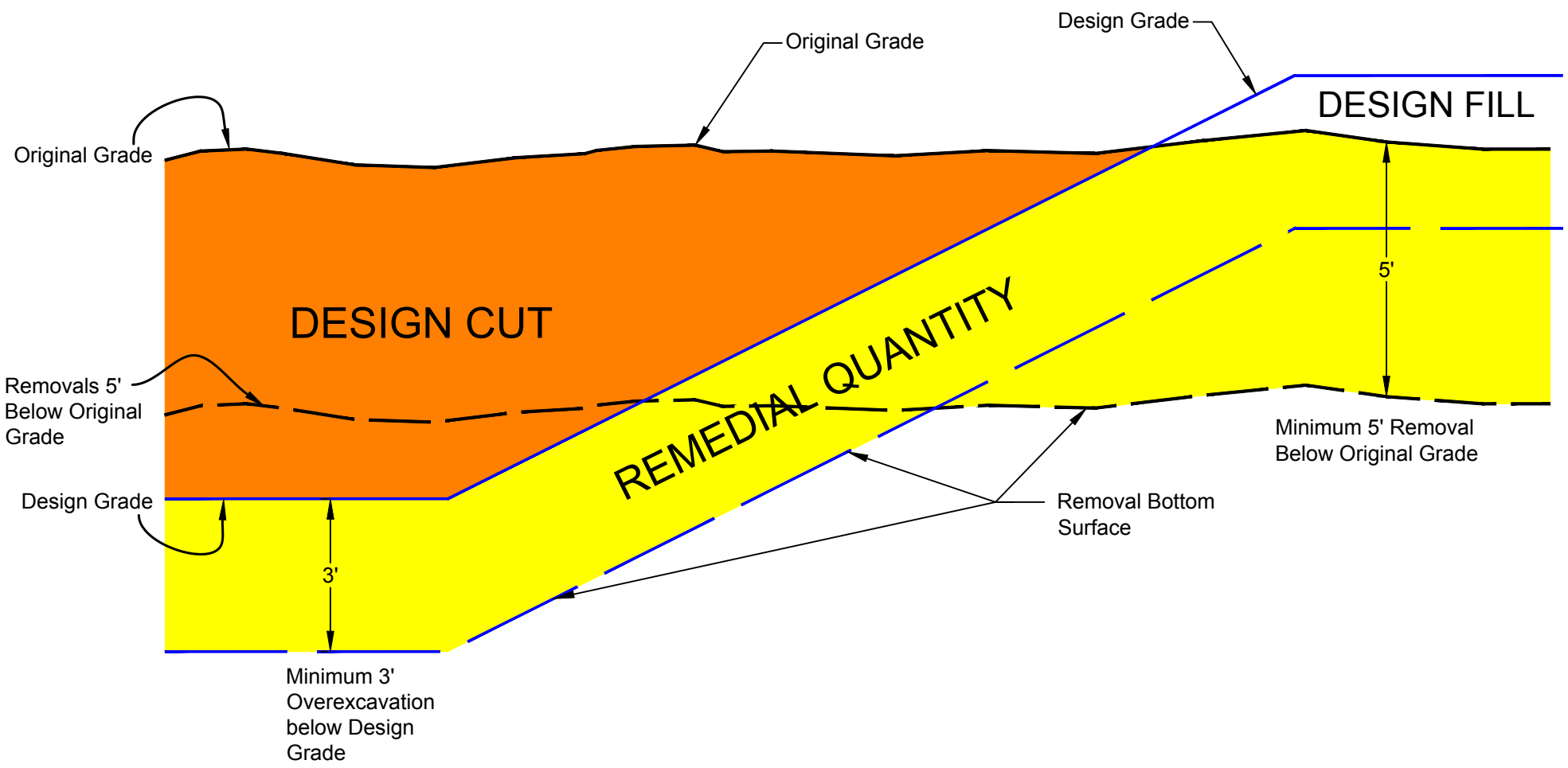


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FIGURE 2
Remedial Grading Diagram

PROJECT NAME	Brookfield - Menifee Valley
PROJECT NO.	16118-01
ENG. / GEOL.	RLD/KTM
SCALE	NTS
DATE	May 2018

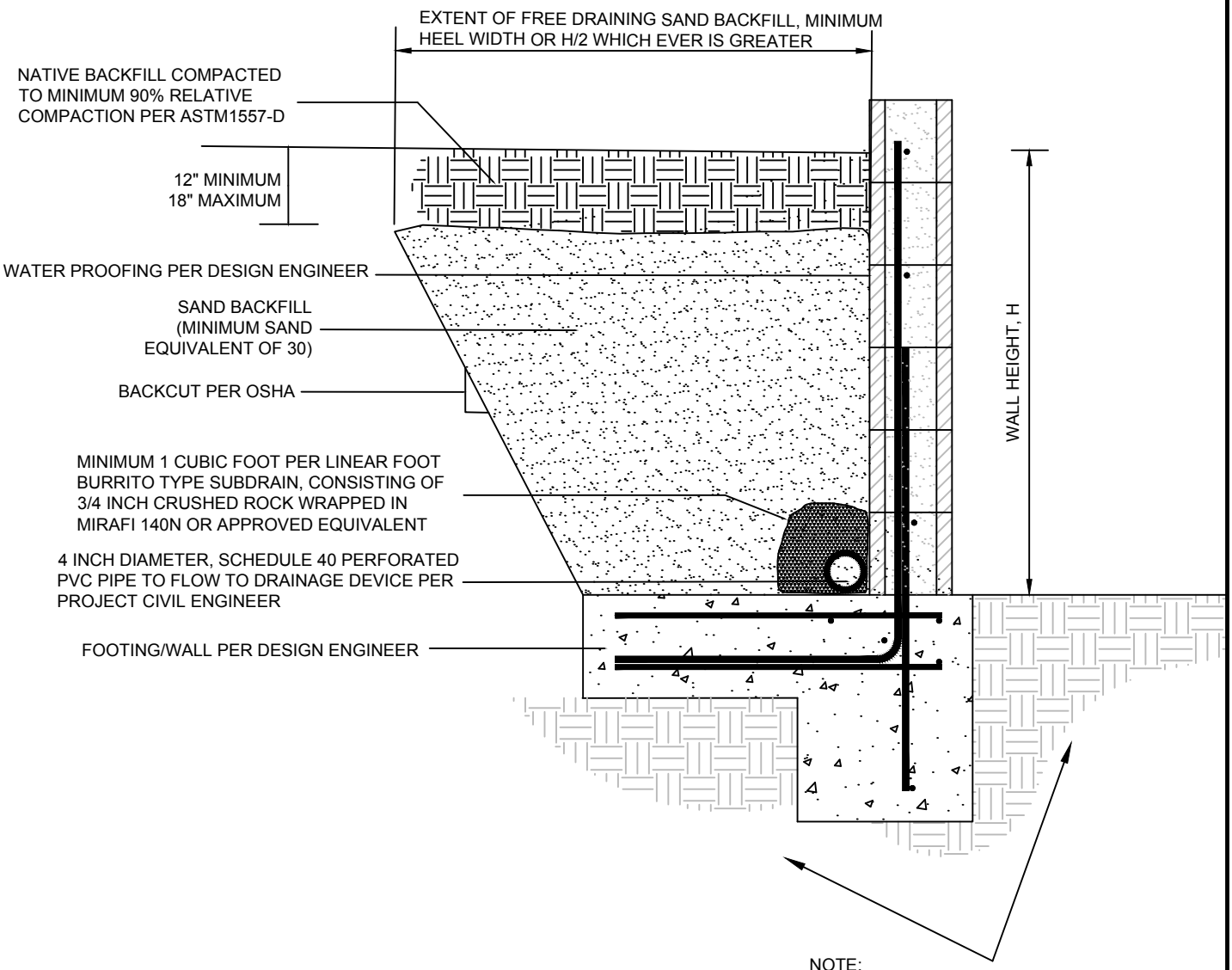

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FIGURE 3

Retaining Wall Backfill Detail

Select Import Backfill (SE≥30)

PROJECT NAME	Brookfield - Menifee Valley
PROJECT NO.	16118-01
ENG.	RLD/KTM
SCALE	Not to Scale
DATE	May 2018

Approximate Project Boundary

Commercial 10.0 ac

Apartments 5.0 ac

Civic 3.1 ac

Private Ammenity 2.2 ac

Private Ammenity 4 ac

Sports Park 26.6 ac

Green Belt

Village Green 6.5 ac

Active Green 6.5 ac

Private Ammenity 9.2 ac

Private Ammenity 1.8 ac

Private Ammenity 2.2 ac

Qal

Qalo

Qcol

Kdvg

13.18 ac

LEGEND

Qal	Quaternary (Young) Alluvium (Qal)
Qalo	Quaternary Old Alluvium (Qalo)
Qcol	Quaternary Colluvium (Qcol)
Kdvg	Cretacous Domenigoni Valley Granodiorite (Kdvg)
	Approximate Location of Geologic Contact, dotted where buried, queried where uncertain
LGC-HS-2 T.D. = 50'	Approximate Location Of Hollow Stem Boring, by LGC Geotechnical, with Approximate Depth in Feet
LGC-TP-10	Approximate Location of Test Pit by LGC Geotechnical
LGC-CPT-9 T.D. = 25'	Approximate Location of Cone Penetration Test by LGC Geotechnical, with Approximate Depth in Feet
LGC-I-6 T.D. = 8'	Approximate Location of Infiltration Test by LGC Geotechnical, with Approximate Depth in Feet

UNIT MIX	
Townhouse	336
45' x 103'	154
45' x 92'	2,431
Apartments	175
Total	3,096

Field Testing By Others:

BA-9 T.D. = 46.5'	Approximate Location of Exploratory Boring, GANICO 2004a
BB-10 T.D. = 21'	Approximate Location of Exploratory Boring, GANICO 2004b
GB-10 T.D. = 27'	Approximate Location of Exploratory Boring, Geo-Soils 1990
B-1 T.D. = 40'	Approximate Location of Exploratory Boring, GANA - PN 83892-01
CPT-4 T.D. = 20'	Approximate Location of Cone Penetration Test, GANICO 2004a
TPN-19	Approximate Location of Test Pit, GANICO 2004a
TPN-25 (S)	Approximate Location of Test Pit, GANICO 2004b, (S) Denotes TPN Test Pits South of McLaughlin Road (Green Belt)
T-13	Approximate Location of Test Pit, GANA - PN B3892-01
TP-6	Approximate Location of Test Pit, GANA - PN B3892-01.1 (appendices PN 4746-07)
GTP-74	Approximate Location of Test Pit, Geo-Soils 1990

SCALE: 1"=200'

200' 0 200' 400'

URBAN DESIGN ASSOCIATES

LGC Geotechnical, Inc.	LGC Geotechnical, Inc. 131 Calle Iglesia, Ste. 200 San Clemente, CA 92672 TEL (949) 369-6141 FAX (949) 369-6142	**Geotechnical Map**	CLIENT: Brookfield Homes 3200 Park Center Drive, Suite 1000 Costa Mesa California, 92626	PROJECT NAME: Brookfield - Menifee Valley PROJECT NO.: 16118-01 ENG. / GEOL.: RLD/KTM SCALE: 1" = 200' DATE: May 2018 **SHEET 1 of 1**

Appendix A
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APPENDIX A

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Appendix B
Boring, CPT & Geotechnical Trench Logs

Geotechnical Boring Log Borehole LGC-HS-1

Date: 10/19/2017 | **Drilling Company:** California Pacific Drilling

Project Name: Brookfield - Menifee Valley | **Type of Rig:** Hollow Stem Auger, CME 75

Project Number: 16118-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~1478' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By BPG
Sampled By BPG
Checked By RLD

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0	B-1						**@0' to T.D. Quaternary Old Alluvium (Qalo)**	DS MD EI CR
1475			R-1	11 50/6"	122.0	8.4	SC	@2.5' Clayey SAND: olive brown, moist, very dense; fine grained sand, scattered gravels	-#200
	5		R-1	17 25 50/6"	125.4	10.4	ML	@5' Sandy SILT: medium brown with some dark brown and gray mottling, moist, hard	
1470			R-3	12 25 45	131.1	9.5	CL-ML	@7.5' Silty CLAY: light olive brown, slightly moist, very dense	CO
	10		R-4	13 24 50/5"	133.8	9.2	SM	@10' Silty SAND: medium brown with some dark brown and gray mottling, moist, very dense; scattered gray and white gravels	
1465									
	15		SPT-1	7 14 28		13.2	ML	@15' Sandy SILT: mottled gray black brown and white, moist, hard	
1460									
	20		R-5	13 50/5"	122.1	10.6	SM	@20' Silty SAND: brown gray and white mottled, moist, very dense; coarse grained sand, abundant mica flakes	
1455									
	25		SPT-2	13 15 32		13.7		@25' Silty SAND: brown gray and white mottled, moist, very dense	
1450									
	30								

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THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 10/25/2017

Geotechnical Boring Log Borehole LGC-HS-1

Date: 10/19/2017	**Drilling Company:** California Pacific Drilling
Project Name: Brookfield - Menifee Valley	**Type of Rig:** Hollow Stem Auger, CME 75
Project Number: 16118-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1478' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Logged By BPG
Sampled By BPG
Checked By RLD

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		R-6	25 50/6"	127.2	7.8	SM	@30' Silty SAND with few Gravel: brown and white mottled, slightly moist, very dense; fine to coarse grained sand	
1445									
	35	▽	SPT-3	18 28 27		9.3		@35' Silty SAND: medium brown, moist, very dense; fine grained sand; common mica flakes	
1440									
	40		R-7	9 20 50/5"	129.0	11.7	SC	@40' Clayey SAND: medium brown, very moist, very dense; fine to medium grained sand	
1435									
	45		SPT-4	16 28 50/6"		11.5	SM	@45' Silty SAND: medium brown, very moist, very dense; fine to medium grained sand	
1430									
	50		R-8	15 50/4"	127.9	11.0		@50' Silty SAND: medium brown, very moist, very dense; fine to medium grained sand	
1425								Total Depth = 50' Groundwater Encountered at Approximately 36' Backfilled with Cuttings on 10/19/2017	
	55								
1420									
	60								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole LGC-HS-2

Date: 10/19/2017	**Drilling Company:** California Pacific Drilling
Project Name: Brookfield - Menifee Valley	**Type of Rig:** Hollow Stem Auger, CME 75
Project Number: 16118-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1485' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 2

Logged By BPG
Sampled By BPG
Checked By RLD

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0	B-1						**@0' to T.D. <u>Quaternary Old Alluvium (Qalo)</u>**	MD EI CR
			R-1	12 14 15	127.9	9.3	SC	@2.5' Clayey SAND: dark brown with some light colored mottling, slightly moist, very stiff; fine grained sand	-#200
1480	5		R-2	14 16 18	122.0	7.3	SM	@5' Silty SAND: medium brown, slightly moist, medium dense; fine grained sand, scattered gravels	
			R-3	11 21 28	119.8	10.3	CL-ML	@7.5' Silty CLAY: medium brown and tan mottled, dry to slightly moist, dense; fine grained sand, scattered gravels	CN AL
1475	10		R-4	12 23 32	120.2	6.7	SM	@10' Silty SAND: medium brown tan streaking/mottling, slightly moist, dense; fine grained sand, scattered gravel	CO
1470	15		SPT-1	20 50/6"		7.1	ML	@15' Sandy SILT: medium brown and tan with white mottling, slightly moist, hard; fine grained sand, scattered gravels	
1465	20		R-5	17 50/6"	116.1	8.3	SM	@20' Silty SAND: medium brown dark gray and tan mottled, moist, very dense; open pores near top of sample, visible old root staining, white caliche veining near tip	
1460	25		SPT-2	19 50/6"		10.1	SM	@25' Silty SAND: medium brown, moist, very dense; scattered gravels, abundant fine mica flakes	
1455	30								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 10/25/2017

Geotechnical Boring Log Borehole LGC-HS-2

Date: 10/19/2017	**Drilling Company:** California Pacific Drilling
Project Name: Brookfield - Menifee Valley	**Type of Rig:** Hollow Stem Auger, CME 75
Project Number: 16118-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~1485' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Logged By BPG
Sampled By BPG
Checked By RLD

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		R-6	30 50/5"	119.4	5.4	SM	@30' Silty SAND: medium brown, slightly moist, very dense; fine grained sand, scattered gravels	
1450	35		SPT-3	15 26 35		8.6	SC	@35' Clayey SAND: medium brown, moist, very dense; fine grained sand, scattered gravels	
1445	40		R-7	50/6"	125.4	9.9	SM	@40' Silty SAND: medium brown, tan, and gray mottled, very moist to wet, very dense; scattered fine to coarse gravels	
1440	45		SPT-4	15 30 50/5"		11.4	SC	@45' Clayey SAND: medium brown, tan, and gray mottled, very moist, very dense; scattered gravels	
1435	50		R-8	17 50/6"	120.2	16.4	ML	@50' Sandy SILT: medium brown, tan, and gray mottled, very moist to wet, hard; trace clays; scattered gravels, abundant mica flakes	
								Total Depth = 50' Groundwater Encountered at Approximately 38' Backfilled with Cuttings on 10/19/2017	
1430	55								
1425	60								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
	GROUNDWATER TABLE

TEST TYPES:

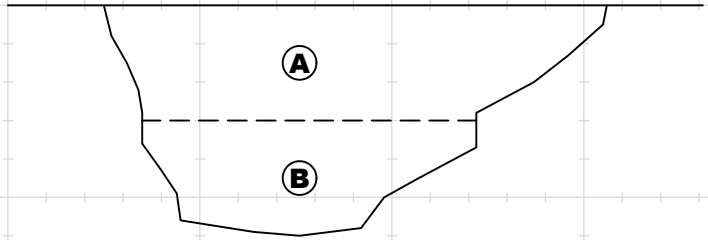
DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Project Name: Menifee Valley	**Logged By: KTM**	**Trench No: TP-1**	
Project Number : 16118-01	**Date : 10/31/2017**	**Engineering Properties:**	
Equipment: Mini-Excavator	**Location: See Geotechnical Map**		

LGC Geotechnical, Inc.

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	0' to T.D. - Quaternary Old Alluvium: @ 0'-3 Silty SAND with trace clay: light to moderate reddish brown, dense to very dense, dry grades to slightly moist; moderately indurated, rootlets, caliche stringers	Qalo		B-1 @ 2' to 5'		
	B	@ 3'-T.D. grades to SAND with Silt : light brown slightly moist, moderately dense; slightly indurated; medium to coarse grain	Qalo				

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1481 ' MSL** **Surface Slope: 0 deg.** **Trend: E-W**



Total Depth: 6'
Groundwater: None
Backfilled: 10/31/2017

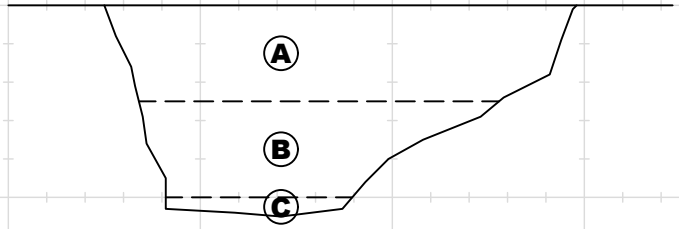
scale : 1 in = 5 ft

Last Edited: 11/9/2017

Project Name: Menifee Valley	Logged By: KTM	Trench No: TP-2	LGC Geotechnical, Inc.
Project Number : 16118-01	Date : 10/31/2017	Engineering Properties:	
Equipment: Mini-Excavator	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	0' to T.D. - Quaternary Old Alluvium: @ 0'-2.5' Silty SAND with some clay: dark brown, moist, moderately dense; slightly indurated; rootlets	Qalo		B-1 @ 0' to 2'		
	B	@ 2.5'-3' Clayey SAND: light reddish brown and off white, moist, hard and dense, caliche	Qalo				
	C	@ 5'-T.D. Silty SAND: greenish gray, very moist, moderately dense to dense	Qalo				

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1468 ' MSL** **Surface Slope: 0 deg.** **Trend: E-W**



Total Depth: 5.5'
Groundwater: None
Backfilled: 10/31/2017

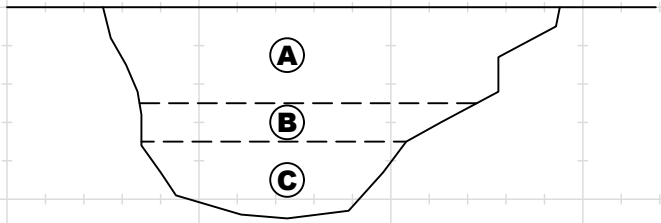
scale : 1 in = 5 ft

Last Edited: 11/9/2017

Project Name: Menifee Valley	Logged By: KTM	Trench No: TP-3	LGC Geotechnical, Inc.
Project Number : 16118-01	Date : 10/31/2017	Engineering Properties:	
Equipment: Mini-Excavator	Location: See Geotechnical Map		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	0' to T.D. - Quaternary Old Alluvium: @ 0'-2.5' CLAY with SAND to Sandy CLAY: light brown grades to moderately brown, dry to slightly moist, hard/dense; few rootlets	Qalo				
	B	@ 2.5'-3.5 Clayey SAND: light reddish brown mottled, moist, very dense; moderately well indurated, few pores, pebble lenses	Qalo				
	C	@ 3.5 -T.D. Silt and Silty SAND: light greenish brown, slightly dense with zones of loose	Qalo				

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1473 ' MSL** **Surface Slope: 0 deg.** **Trend: E-W**



Total Depth: 5.5'
Groundwater: None
Backfilled: 10/31/2017

scale : 1 in = 5 ft

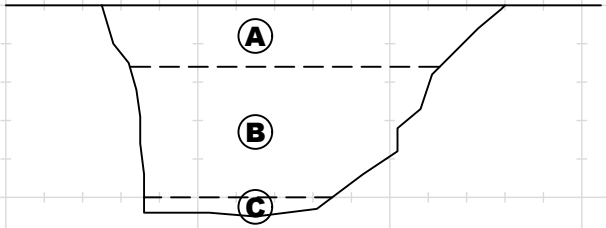
Last Edited: 11/9/2017

Project Name: Menifee Valley	**Logged By: KTM**	**Trench No: TP-4**	
Project Number : 16118-01	**Date : 10/31/2017**	**Engineering Properties:**	
Equipment: Mini-Excavator	**Location: See Geotechnical Map**		

LGC Geotechnical, Inc.

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	0' to T.D. - Quaternary Old Alluvium: @ 0'-1.6' Silty SAND to Clayey SAND: moderate brown to dark brown, very moist, slightly dense; rootlets	Qalo				
	B	@ 1.6'-5' Clayey SAND to SAND with SILT: moderate reddish brown and light reddish brown, moist, dense; moderately indurated zones	Qalo				
	C	@ 5' -T.D. SAND with some SILT: brown, very moist, slightly to moderately dense	Qalo				

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1475 ' MSL** **Surface Slope: 0 deg.** **Trend: E-W**



Total Depth: 5.5'
Groundwater: None
Backfilled: 10/31/2017

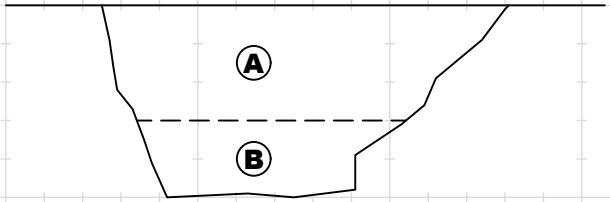
scale : 1 in = 5 ft

Last Edited: 11/9/2017

Project Name: Menifee Valley	**Logged By: KTM**	**Trench No: TP-5**	
Project Number : 16118-01	**Date : 10/31/2017**	**Engineering Properties:**	
Equipment: Mini-Excavator	**Location: See Geotechnical Map**		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	0' to T.D. - Quaternary Old Alluvium:	Qalo				
	B	@ 0'-3' Silty SAND grades to Clayey SAND: light brown grades to moderately brown, dry to moist, dense to moderately dense; few rootlets in upper portion @ 3'- T.D. SAND with Silt: light brown mottled, slightly moist, very dense; moderately indurated, few micropores decrese with depth	Qalo				

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1480 ' MSL** **Surface Slope: 0 deg.** **Trend: E-W**



Total Depth: 5'
Groundwater: None
Backfilled: 10/31/2017

scale : 1 in = 5 ft

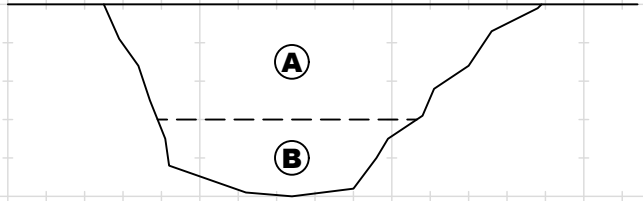
Last Edited: 11/9/2017

Project Name: Menifee Valley	**Logged By: KTM**	**Trench No: TP-6**	
Project Number : 16118-01	**Date : 10/31/2017**	**Engineering Properties:**	
Equipment: Mini-Excavator	**Location: See Geotechnical Map**		

LGC Geotechnical, Inc.

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	0' to T.D. - Quaternary Old Alluvium: @ 0'-3' Silty SAND grades to Clayey SAND: light brown grades to moderately brown, dry to slightly moist, dense to moderately dense; fine rootlets, caliche	Qalo				
	B	@ 3'-T.D. SAND with CLAY: moderate brown mottled, dense, slightly moist	Qalo				

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1483 ' MSL** **Surface Slope: 0 deg.** **Trend: E-W**



Total Depth: 5'
Groundwater: None
Backfilled: 10/31/2017

scale : 1 in = 5 ft

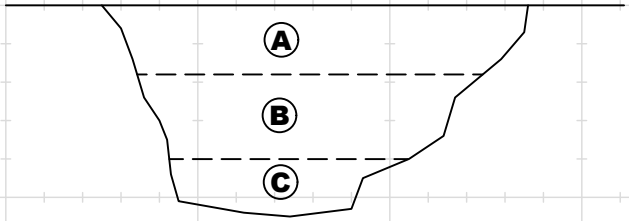
Last Edited: 11/9/2017

Project Name: Menifee Valley	**Logged By: KTM**	**Trench No: TP-7**	
Project Number : 16118-01	**Date : 10/31/2017**	**Engineering Properties:**	
Equipment: Mini-Excavator	**Location: See Geotechnical Map**		

LGC Geotechnical, Inc.

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	0' to T.D. - Quaternary Old Alluvium:	Qalo				
		@ 0'-1.8' Clayey SAND: light to dark brown, moist, loose; fine rootlets	Qalo				
	B	@ 1.8'-4' Clayey SAND to SAND with SILT or CLAY: moderate reddish brown, slightly moist, dense; moderately indurated					
	C	@ 4'-T.D. SAND with some SILT: slightly moist, slightly dense					

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1489 ' MSL** **Surface Slope: 0 deg.** **Trend: E-W**



Total Depth: 5.5'
Groundwater: None
Backfilled: 10/31/2017

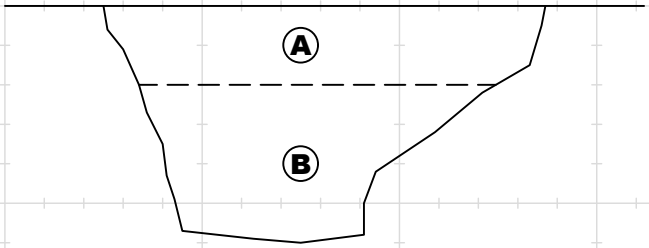
scale : 1 in = 5 ft

Last Edited: 11/9/2017

Project Name: Menifee Valley	**Logged By: KTM**	**Trench No: TP-8**	
Project Number : 16118-01	**Date : 10/31/2017**	**Engineering Properties:**	
Equipment: Mini-Excavator	**Location: See Geotechnical Map**		

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	**0' to T.D. - Quaternary Old Alluvium:** **@ 0'-2' Silty SAND with trace clay: light to moderate reddish brown, loose to dense, dry grades to slightly moist; moderately indurated**	Qalo				
	B	**@ 2'- T.D. Silty SAND to Clayey SAND: slightly moist, dense to very dense; scattered coarse sand**	Qalo				

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1489 ' MSL** **Surface Slope: 0 deg.** **Trend: E-W**



Total Depth: 6'
Groundwater: None
Backfilled: 10/31/2017

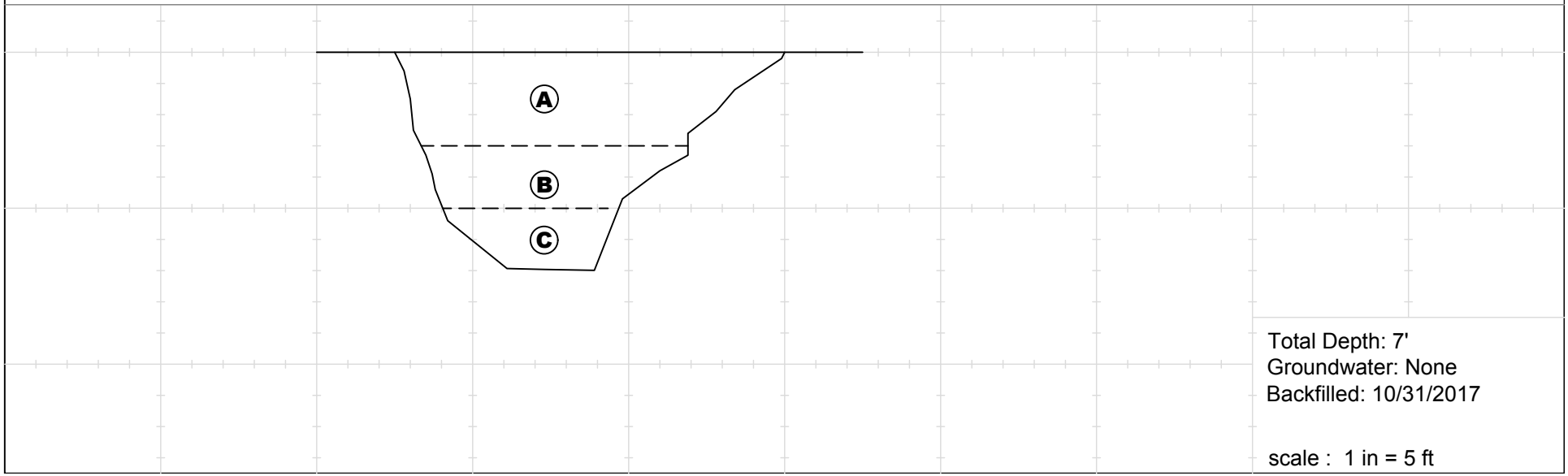
scale : 1 in = 5 ft

Project Name: Menifee Valley	**Logged By: KTM**	**Trench No: TP-9**
Project Number : 16118-01	**Date : 10/31/2017**	**Engineering Properties:**
Equipment: Mini-Excavator	**Location: See Geotechnical Map**	

LGC Geotechnical, Inc.

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	0' to 5' - Quaternary Alluvium: @ 0'-3' Sandy SILT to Silty SAND: moderate brown to moderate reddish brown, dry to slightly moist, slightly dense; minor caliche, few pores	Qal		B-1 @ 2' to 5'		
	B	@ 3'-5' Fine Sandy SILT grades to Clayey SAND: light reddish brown, slightly moist, slightly stiff	Qal				
	C	5' to T.D. - Quaternary Old Alluvium: @ 5' -T.D. Clayey SAND: light reddish brown, slightly moist, slightly dense; indurated, slightly porous	Qalo				

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1488 ' MSL** **Surface Slope: 0 deg.** **Trend: E-W**



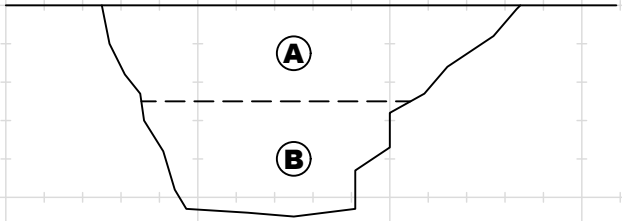
Last Edited: 11/9/2017

Project Name: Menifee Valley	**Logged By: KTM**	**Trench No: TP-10**	
Project Number : 16118-01	**Date : 10/31/2017**	**Engineering Properties:**	
Equipment: Mini-Excavator	**Location: See Geotechnical Map**		

LGC Geotechnical, Inc.

Geologic Attitudes	Unit	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
	A	0' to T.D. - Quaternary Alluvium:	Qal				
		@ 0'-2.5' Fine Sandy SILT: light brown, dry to slightly moist, soft/loose; disturbed by agricultural till	Qal				
	B	@ 2.5 -T.D. Fine Sandy SILT to Silty SAND: light brown, moist, soft/loose. Trench walls caving					

GRAPHICAL REPRESENTATION BELOW: **Elevation : 1485 ' MSL** **Surface Slope: 0 deg.** **Trend: E-W**



Total Depth: 5.5'
Groundwater: None
Backfilled: 10/31/2017

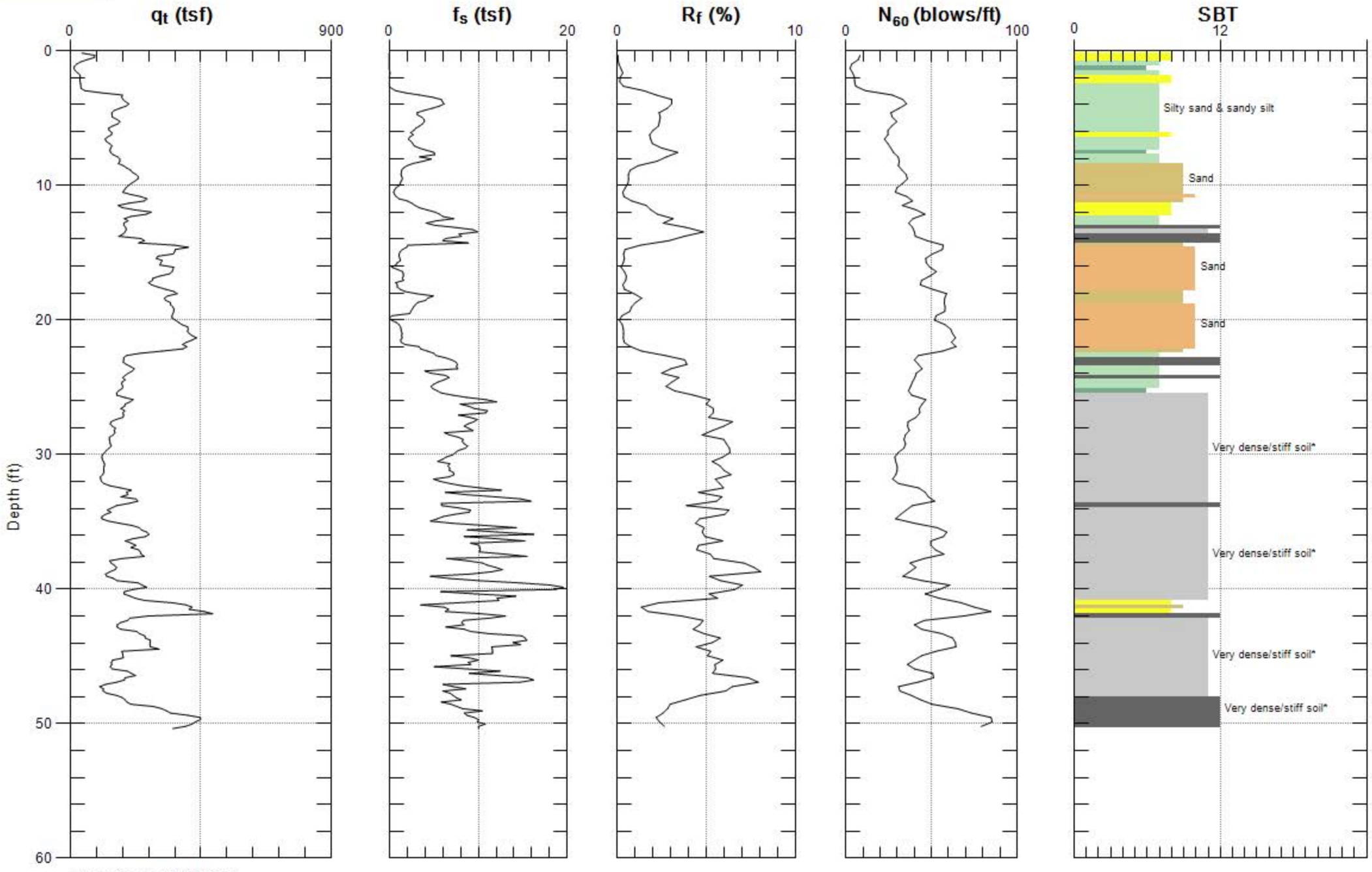
scale : 1 in = 5 ft

Last Edited: 11/9/2017

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-01

Engineer: R.DOUGLAS
Date: 10/20/2017 07:45



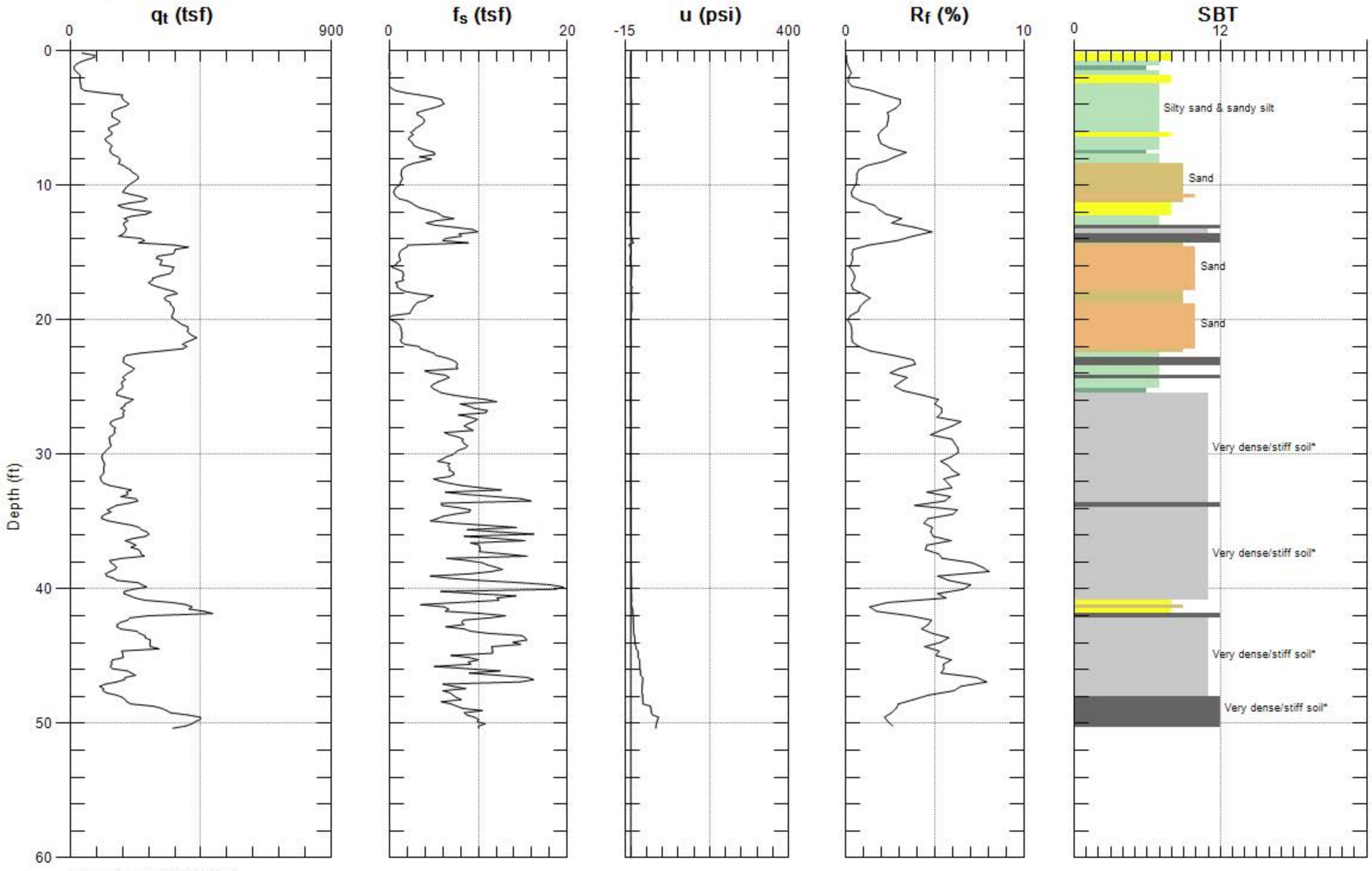
Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-01

Engineer: R.DOUGLAS
Date: 10/20/2017 07:45



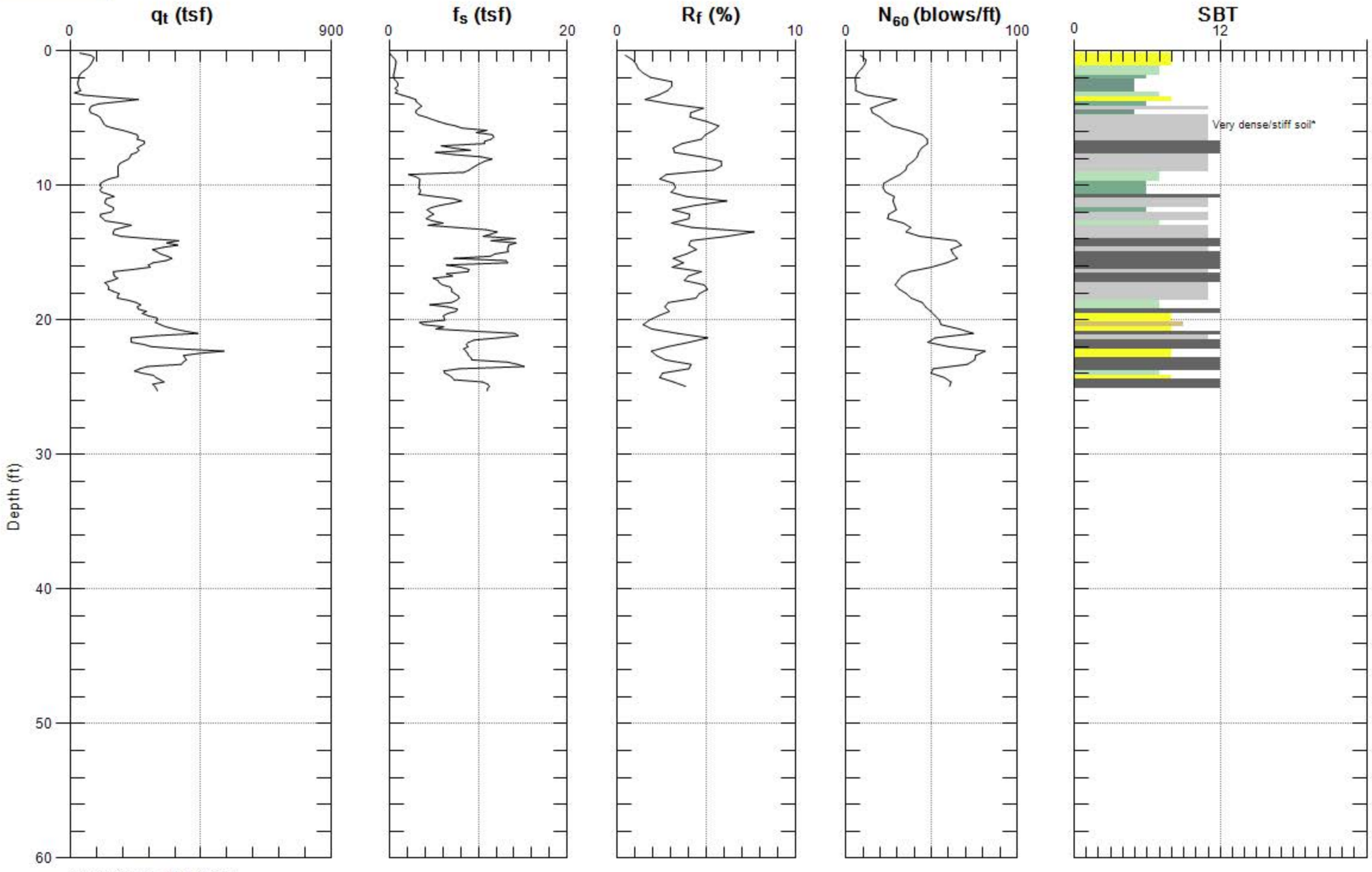
Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-02

Engineer: R.DOUGLAS
Date: 10/20/2017 08:52



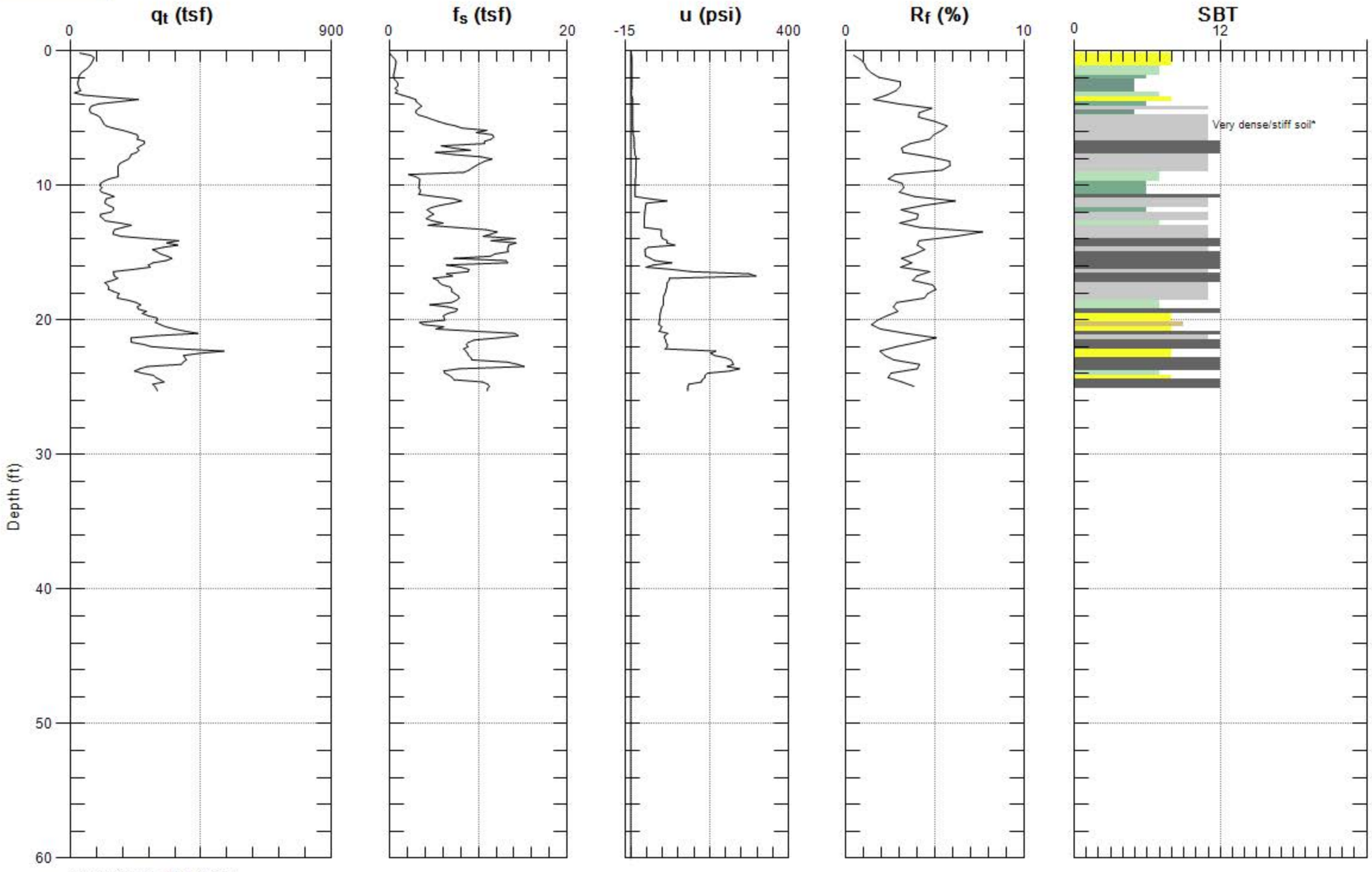
Max. Depth: 25.262 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-02

Engineer: R.DOUGLAS
Date: 10/20/2017 08:52



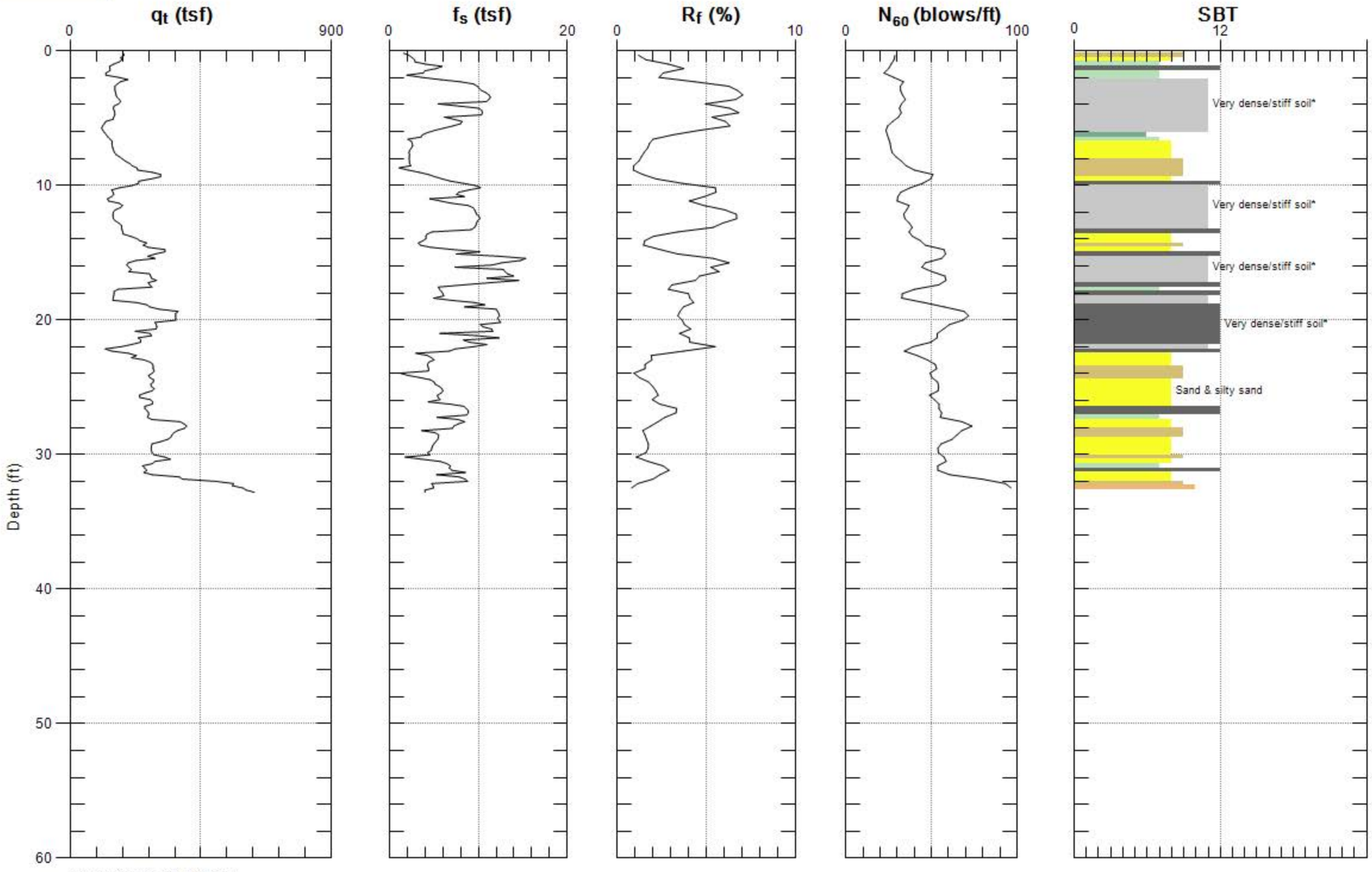
Max. Depth: 25.262 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-03

Engineer: R.DOUGLAS
Date: 10/20/2017 09:43



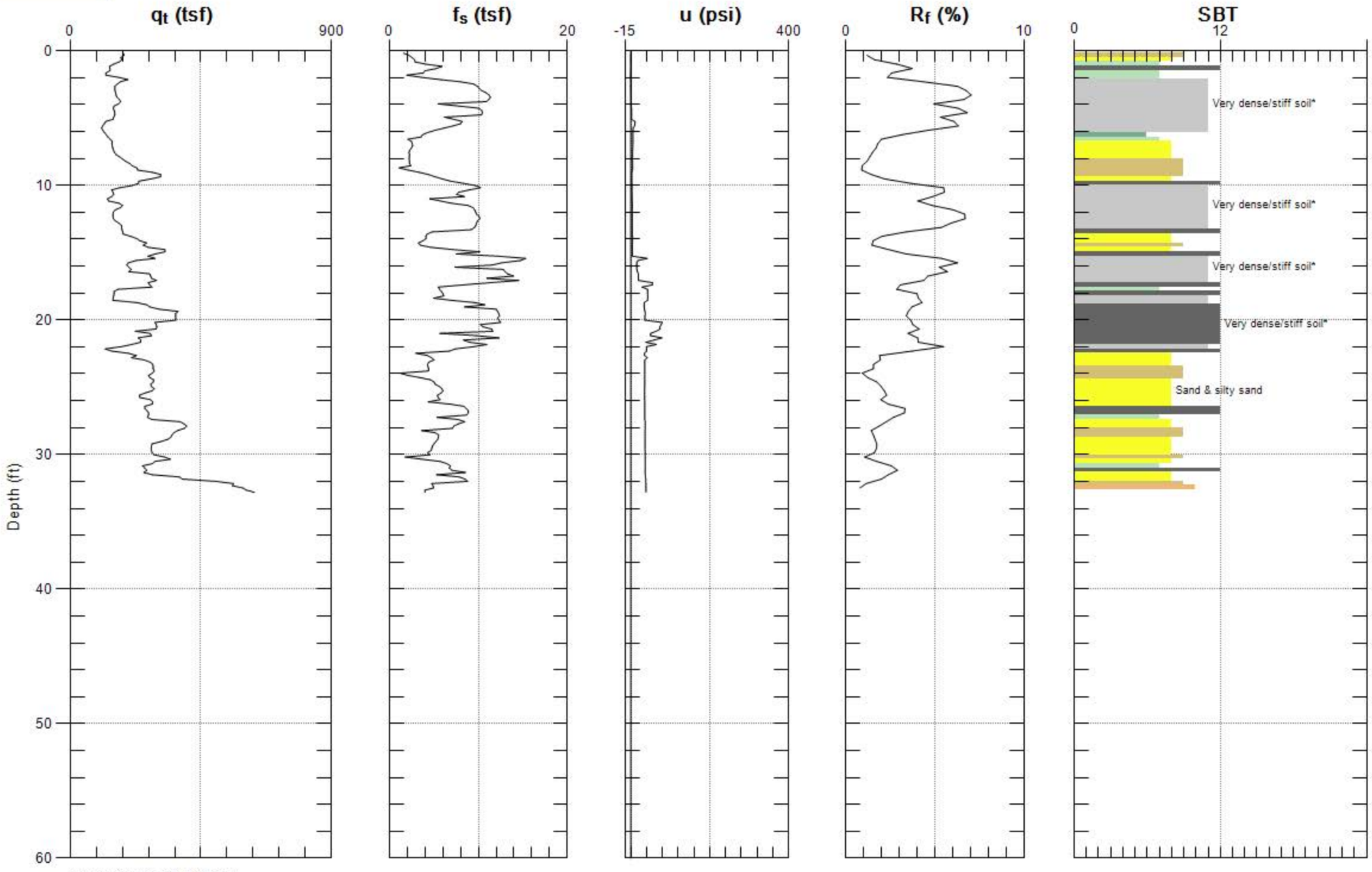
Max. Depth: 32.808 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-03

Engineer: R.DOUGLAS
Date: 10/20/2017 09:43



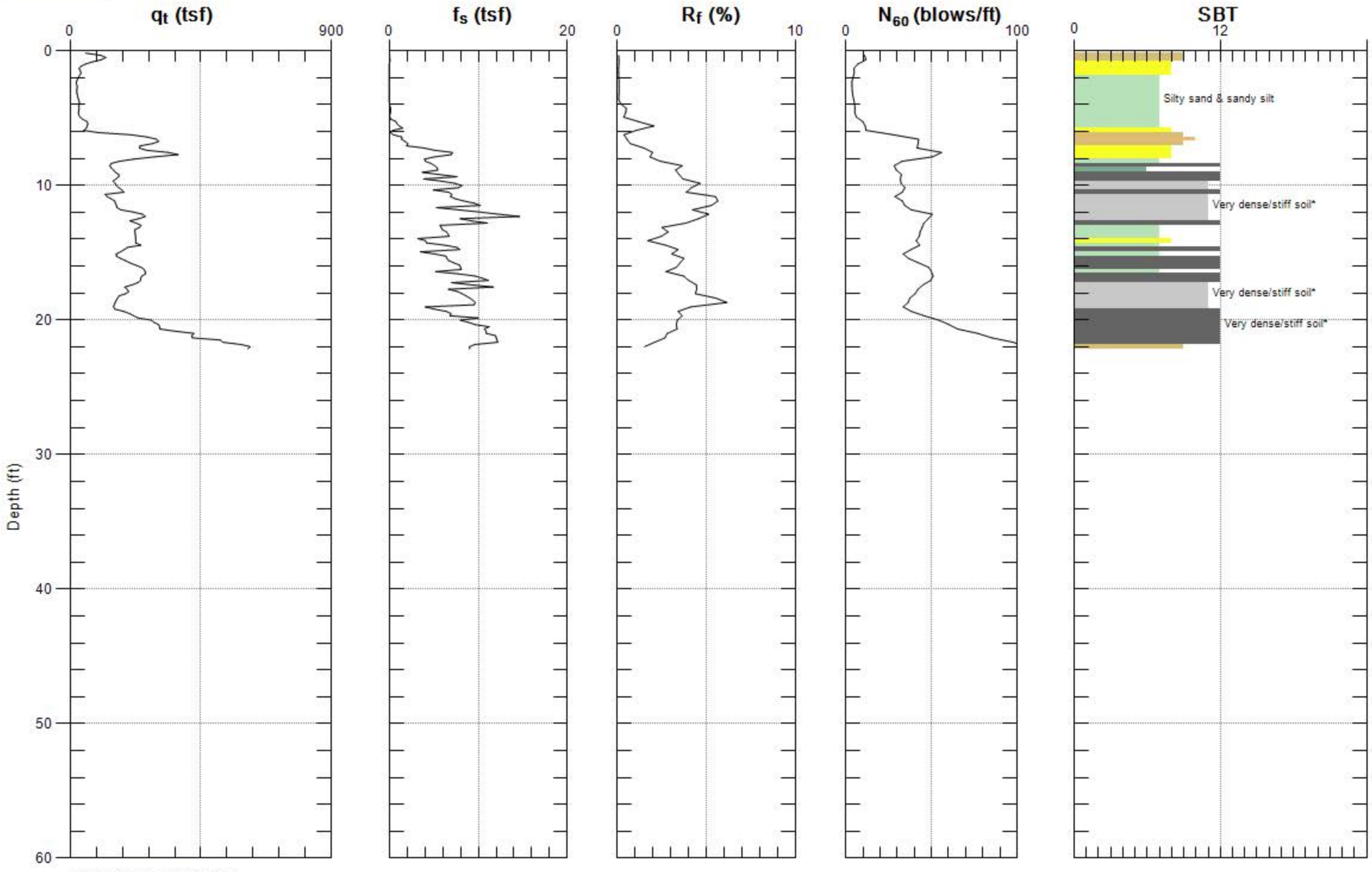
Max. Depth: 32.808 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-04

Engineer: R.DOUGLAS
Date: 10/20/2017 10:38



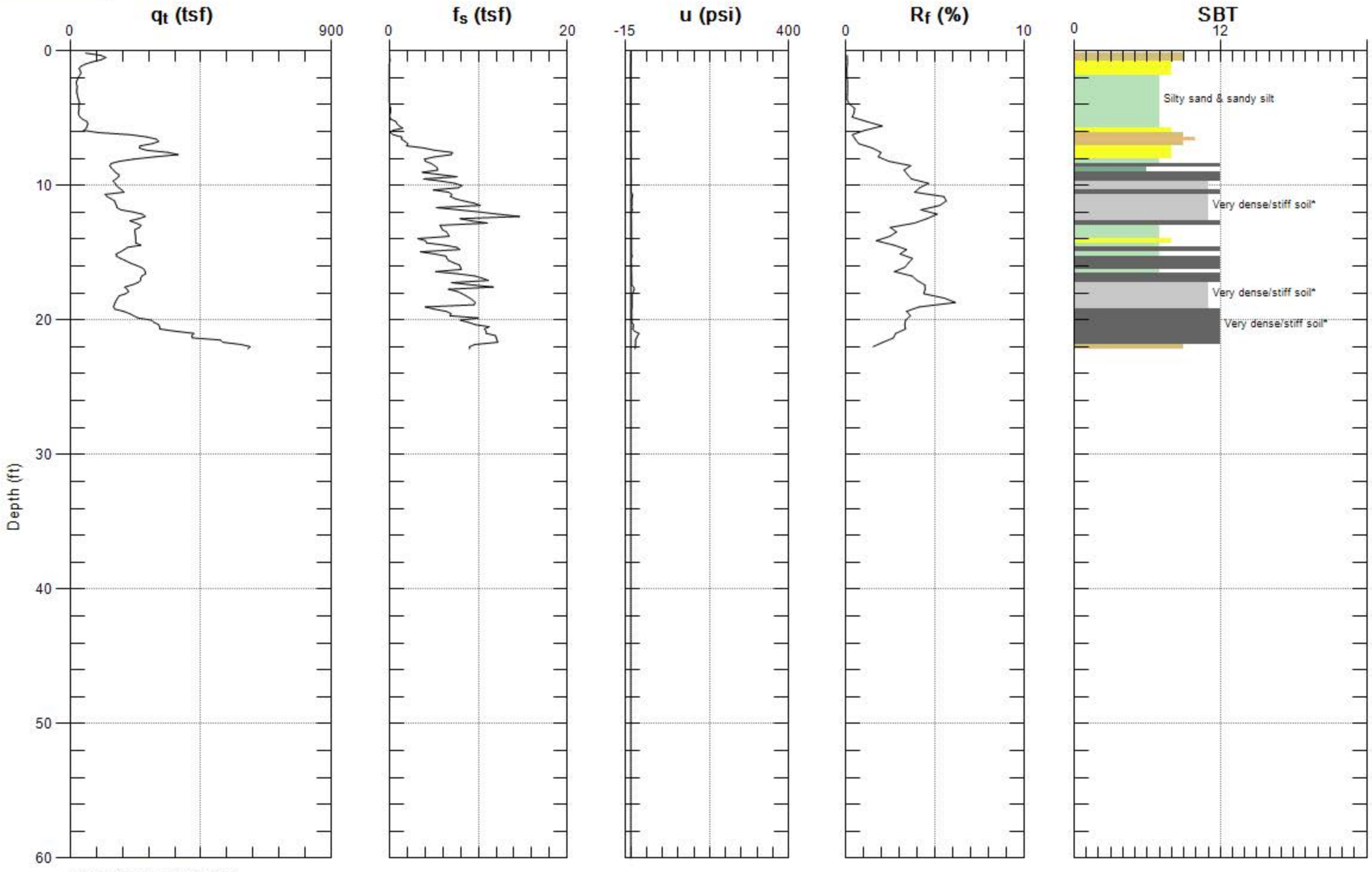
Max. Depth: 22.146 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-04

Engineer: R.DOUGLAS
Date: 10/20/2017 10:38



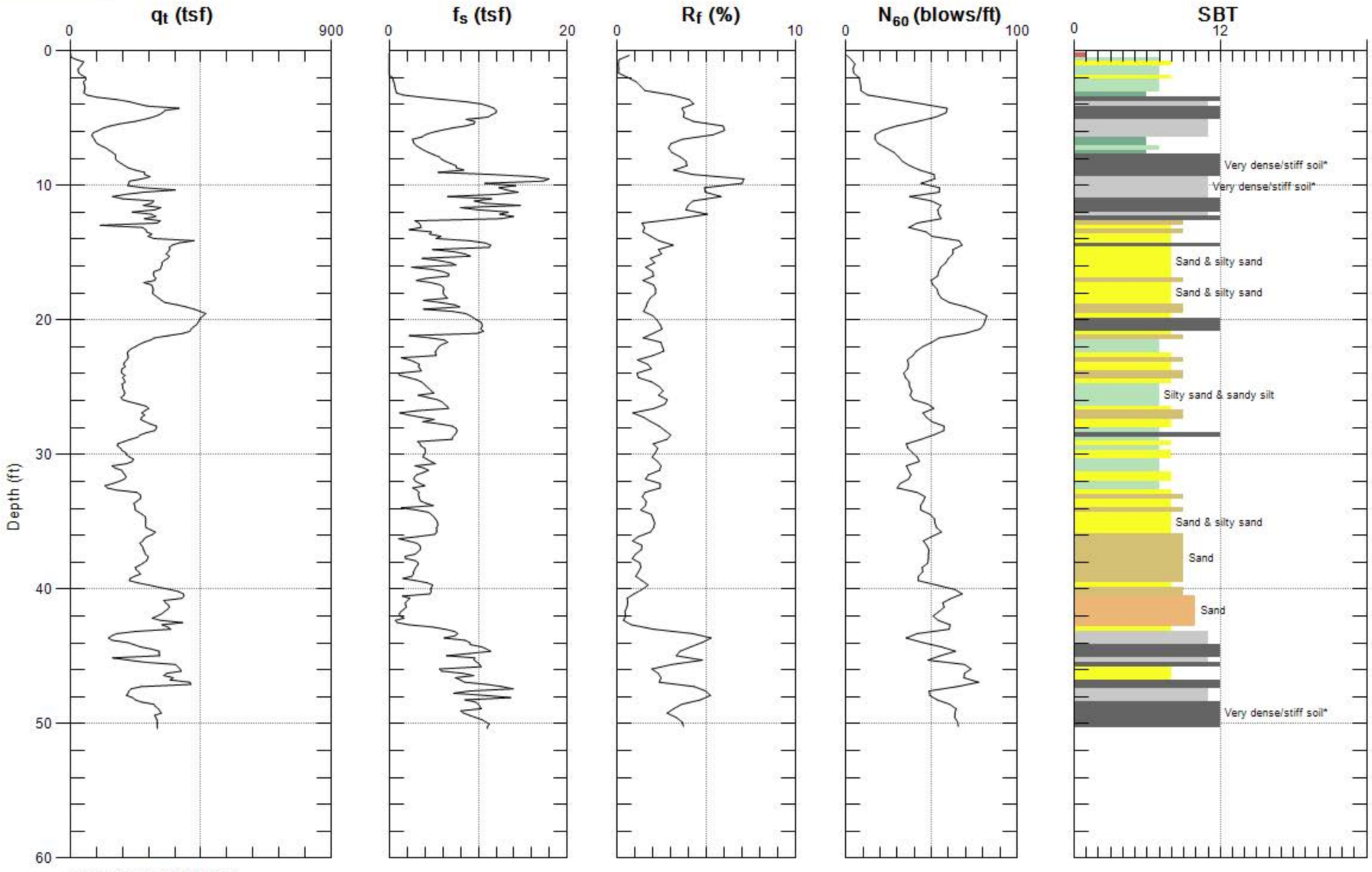
Max. Depth: 22.146 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-05

Engineer: R.DOUGLAS
Date: 10/20/2017 11:12



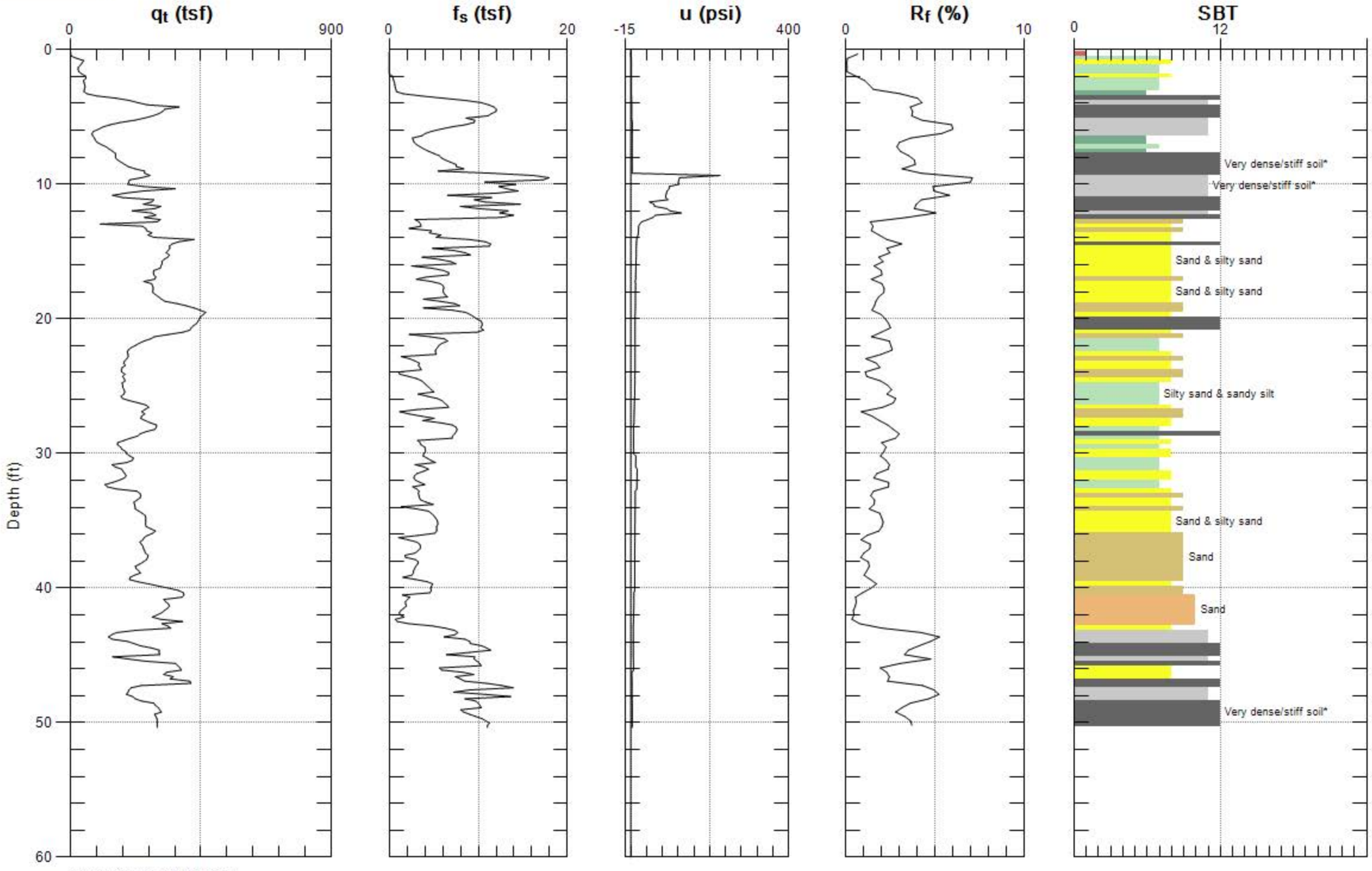
Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-05

Engineer: R.DOUGLAS
Date: 10/20/2017 11:12



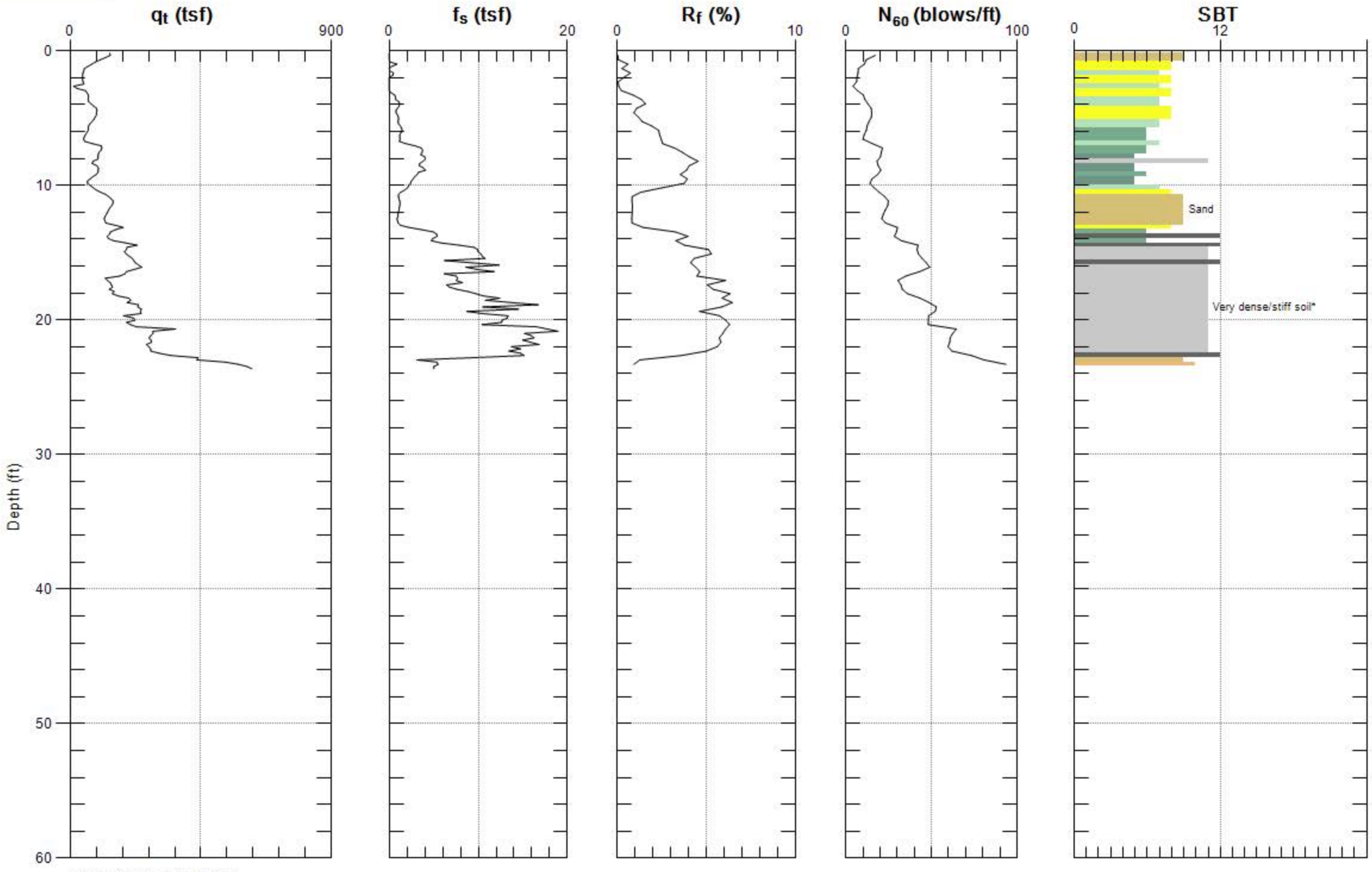
Max. Depth: 50.361 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-06

Engineer: R.DOUGLAS
Date: 10/20/2017 12:31



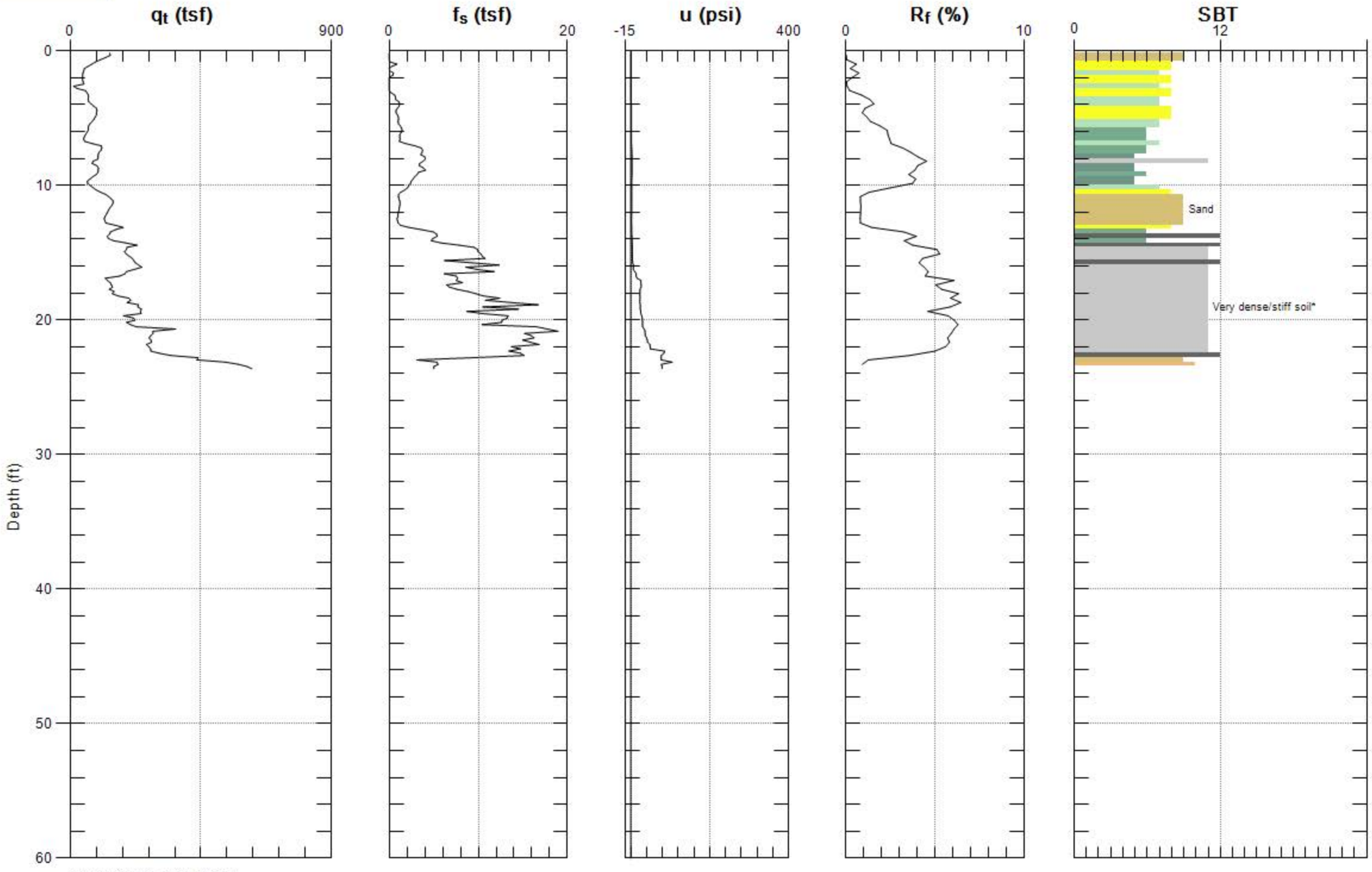
Max. Depth: 23.622 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-06

Engineer: R.DOUGLAS
Date: 10/20/2017 12:31



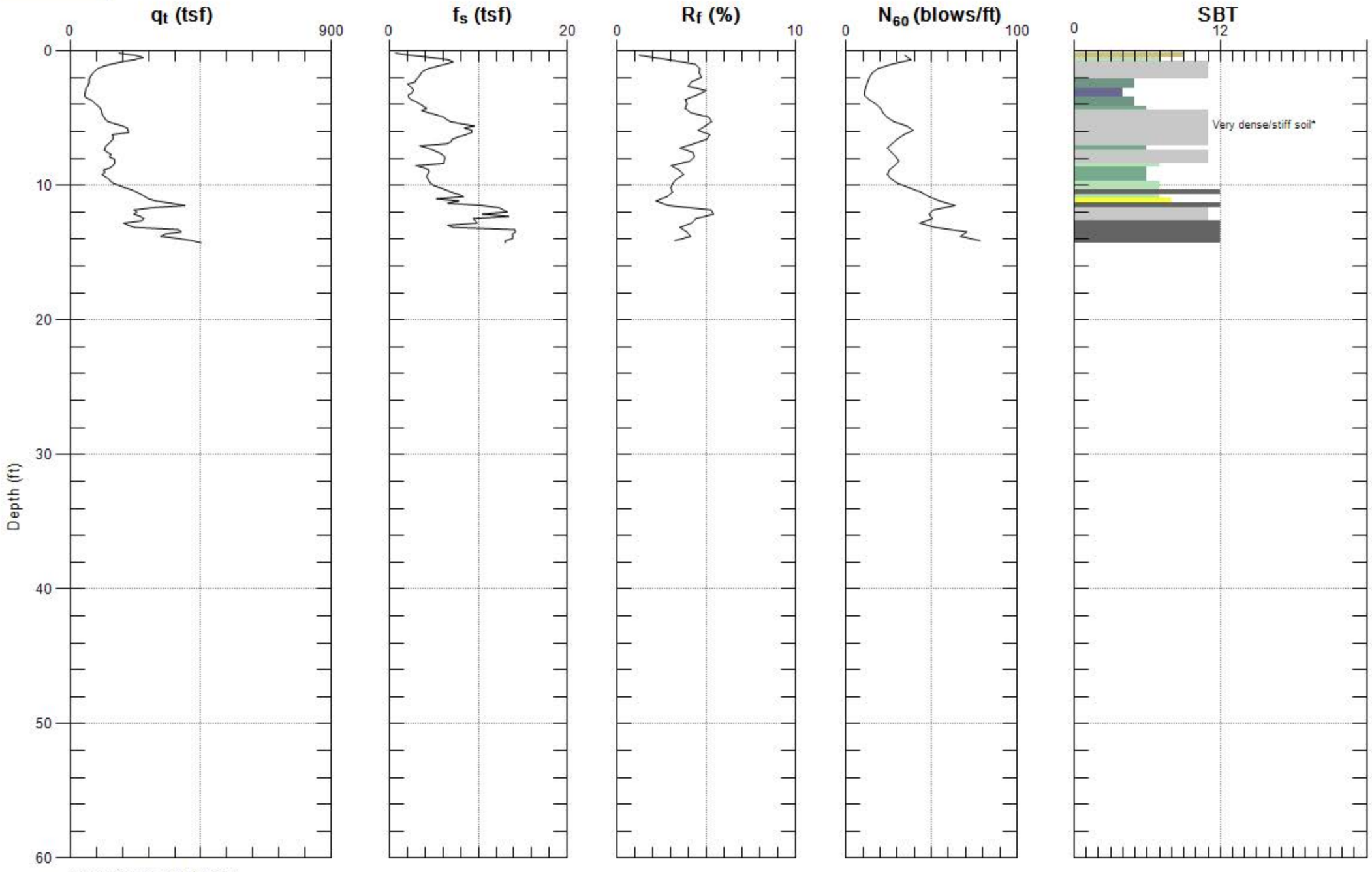
Max. Depth: 23.622 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-07

Engineer: R.DOUGLAS
Date: 10/20/2017 01:10



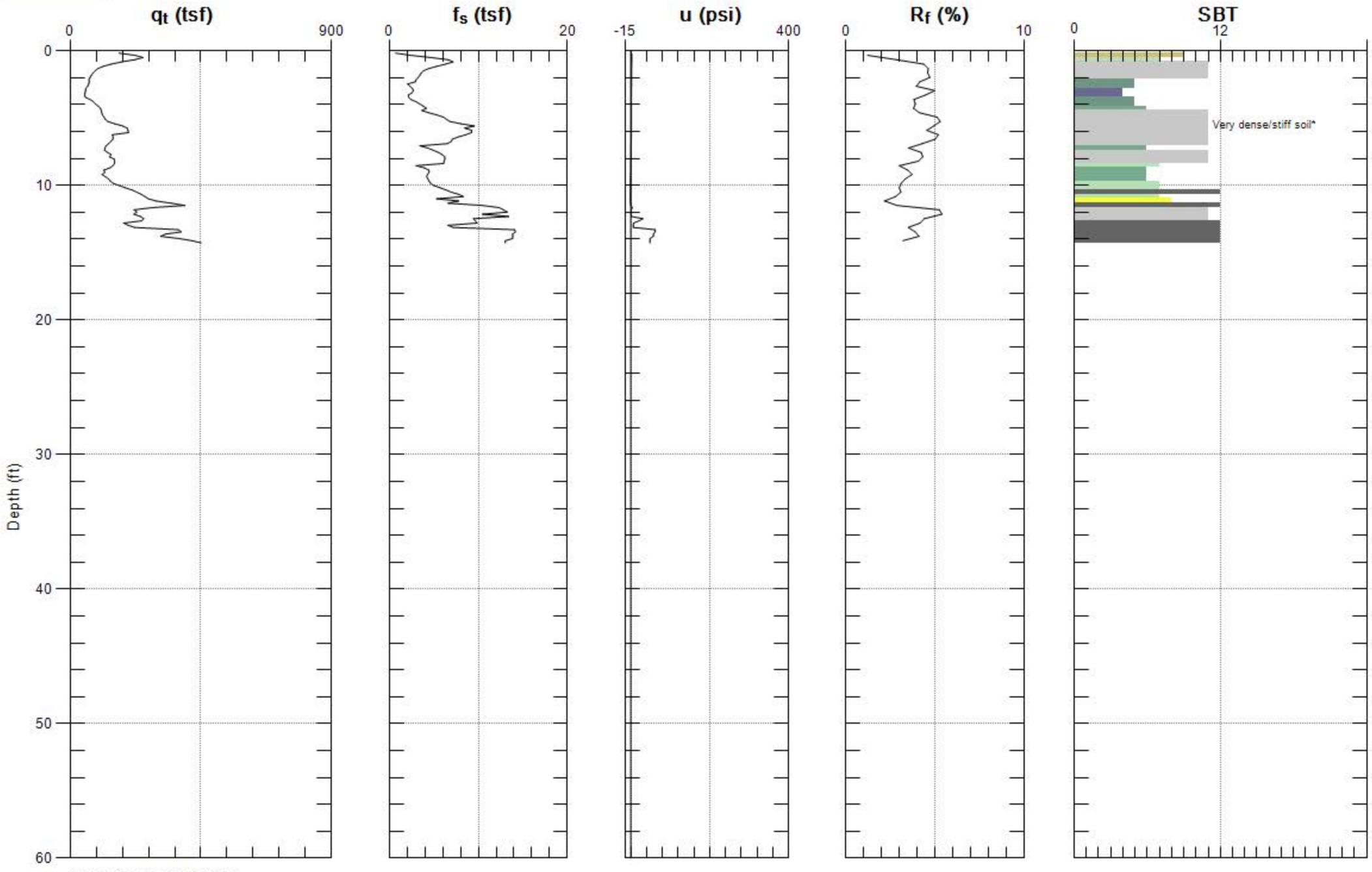
Max. Depth: 14.272 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-07

Engineer: R.DOUGLAS
Date: 10/20/2017 01:10



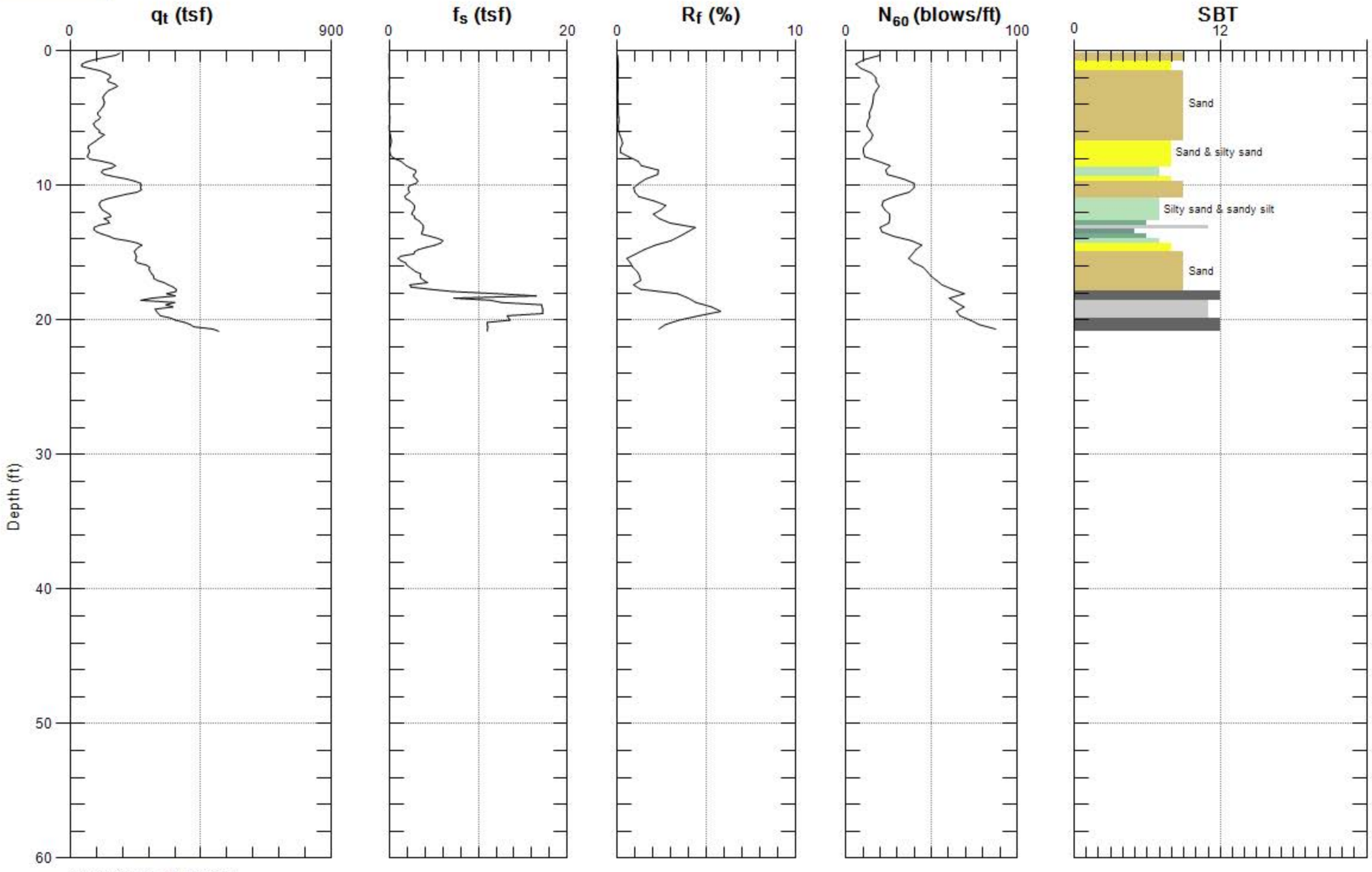
Max. Depth: 14.272 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-08

Engineer: R.DOUGLAS
Date: 10/20/2017 01:42



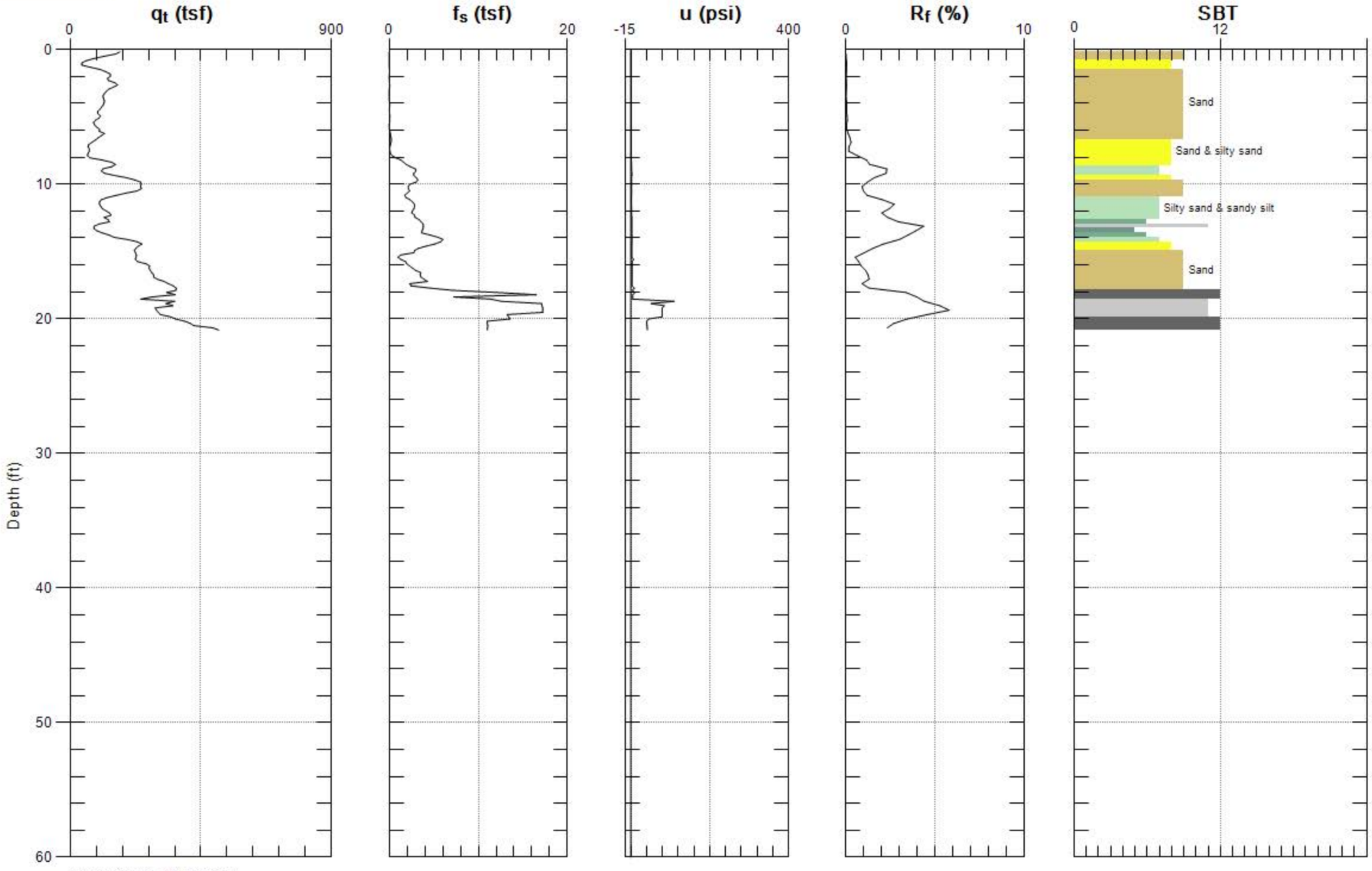
Max. Depth: 20.833 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-08

Engineer: R.DOUGLAS
Date: 10/20/2017 01:42



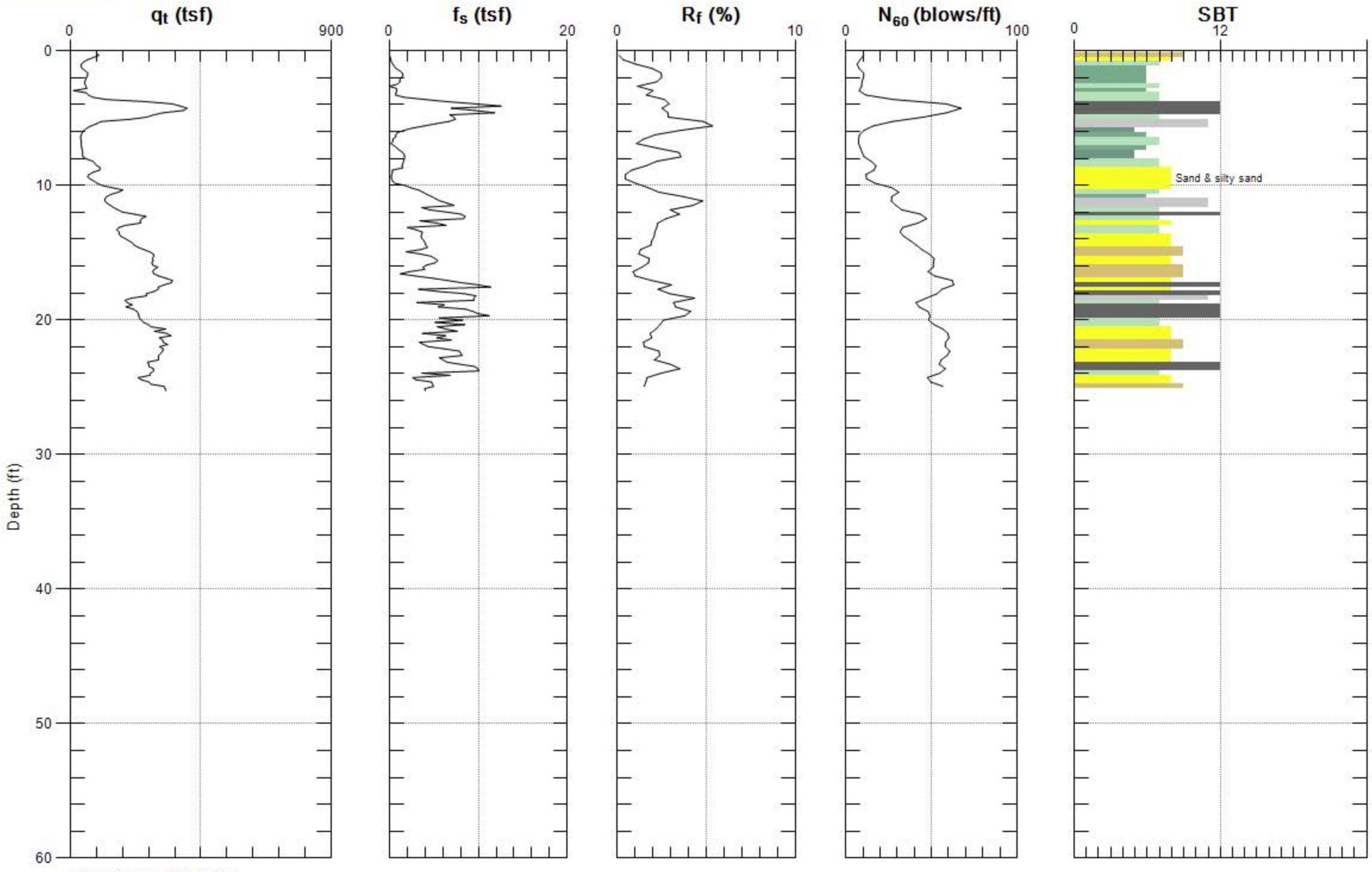
Max. Depth: 20.833 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-09

Engineer: R.DOUGLAS
Date: 10/20/2017 02:16

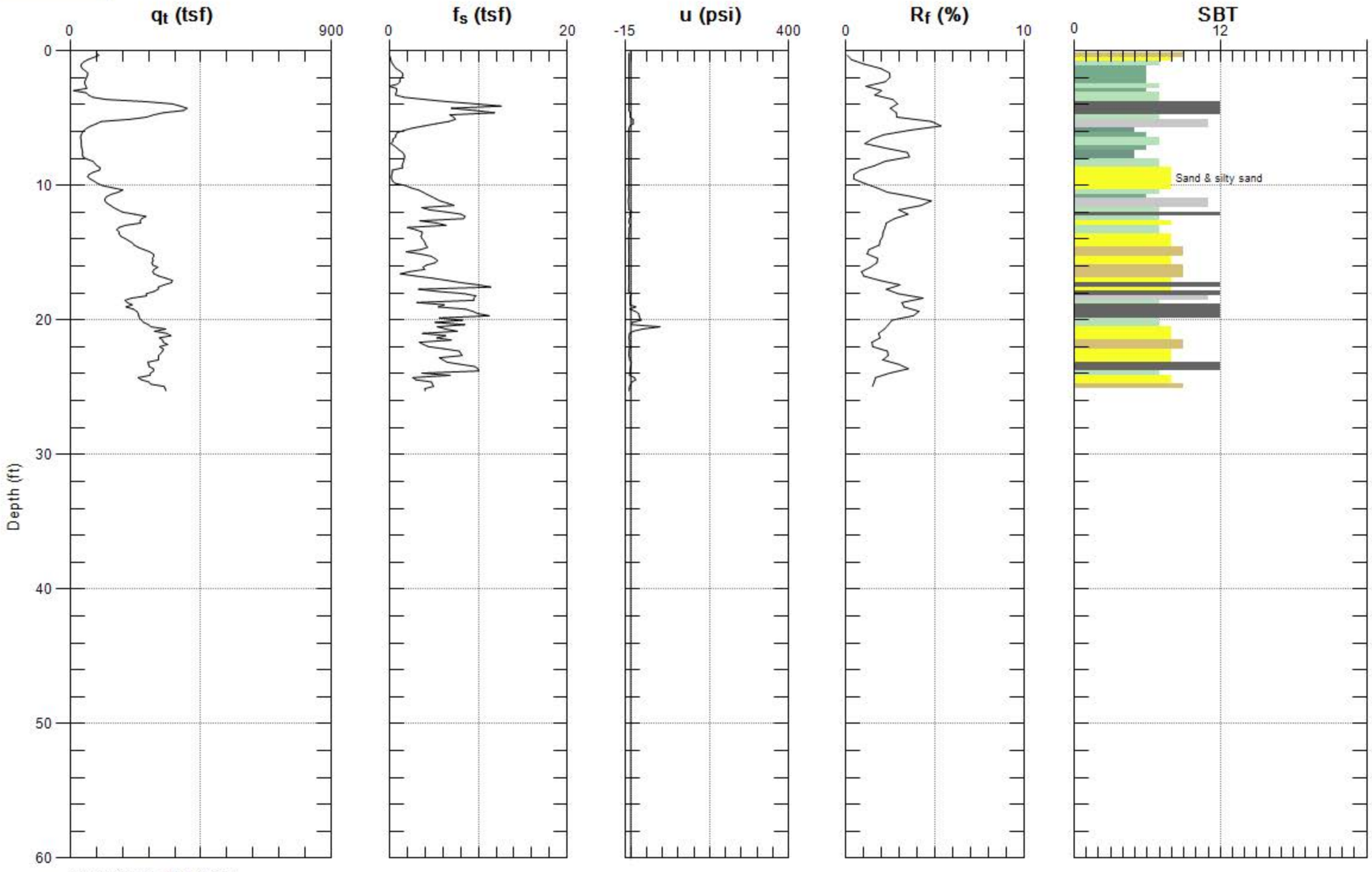


Max. Depth: 25.262 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LGC GEOTECHNICAL, INC.

Site: MENIFEE
Sounding: CPT-09
Engineer: R.DOUGLAS
Date: 10/20/2017 02:16



Max. Depth: 25.262 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

Appendix B
Borings, Test Pits and CPTs by Others

GANICO, 2004a
"North Half"

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
Mobile B53 HSA	8 inches	1497.5 feet	BA-1
Date Drilled: 7/2/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
									Silty SAND with Clay: fine- to coarse-grained, yellowish-brown, slightly moist, upper 2 feet loose and disturbed from tilling
		22	11.4	121.4					@ 2 feet, dark brown (10YR-3/3), moist, dense
									@ 4 feet, less clayey and brown (10YR4/3), slightly less moisture
		30	8.6	122.4		5			
									@ 7 feet, slightly more moisture
		50	9.5	123.4				SM	
						10			
		65	12.0	120.9					@ 10 feet, slightly clayey and dark yellowish-brown (10YR-4/4)
									OLD ALLUVIUM (Qalo)
		50	-	-		15		SP	SAND: fine- to coarse-grained, yellowish-brown (10YR-5/4 to 4/4), slightly moist, dense
		65	-	-		20		SM	Silty SAND: fine- to medium-grained, yellowish-brown, slightly moist to moist, dense
	S P	N=29				25			@ 25 feet, more silty and slightly more moisture; dense

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Project No.:	Figure No.:
G6133-02	B-2.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
Mobile B-53 HSA	8 inches	1497.5 feet	BA-1

Date Drilled: 7/2/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE									
BULK	TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	N=31				35		SM	OLD ALLUVIUM (Qalo)
									Bottom of boring at 35 feet.
									Note:
									1) No ground water encountered.
						40			2) No caving.
									3) Boring backfilled.
						45			
						50			
						55			

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Project No.: G6133-02

Figure No.: B-2.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
Mobile G-53 HSA	8 inches	1505 feet	BA-2
Date Drilled: 7/2/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
								SM	Silty SAND: fine- to medium-grained, yellowish-brown, slightly moist, disturbed at 2 feet
		28	8.3	117.4					@ 2 feet, more silty, dark brown (10YR - 3/3) and moist, some scattered coarse, angular sand, medium dense to dense
						5			@ 5 feet, less silty and coarser, slightly less moisture
		29	3.2	118.5					
		64	7.7	127.9					@ 8 feet, fine- to coarse-grained and less silty and slightly clayey, dense
						10			
		50/3"	5.9	119.7					@ 12 feet, slightly cemented and coarser; slow drilling
									Refusal at 15 feet
						15			OLD ALLUVIUM (Qalo)
									Bottom of boring at 15 feet.
									Note:
									1) No ground water encountered.
						20			2) No caving.
									3) Boring backfilled.
						25			

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PA 1-10

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Project No.:	Figure No.:
G6133-02	B-3

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1488 feet	BA-3

Date Drilled: 7/21/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE

BULK	TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
								SM	Silty SAND: fine- to coarse-grained, yellowish-brown, slightly moist, disturbed to 18 inches
									@ 3 feet, slightly clayey, dense
		30	8.5	123.4					
						5			@ 5 feet, slightly cemented, medium dense
		50/6"	9.9	113.4					
									@ 7 feet, moist, dense
		50/10"	9.7	123.0					
						10			
		50/9"	9.9	125.5					
									@ 15 feet, moist, dense
									@ 15 feet, more sandy
		50/10"	6.6	117.2		15			OLD ALLUVIUM (Qalo)
									Bottom of boring at 16 feet.
									Note:
						20			1) No ground water encountered.
									2) No caving.
									3) Boring backfilled and tamped.
						25			

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Project No.:	Figure No.:
G6133-02	B-4

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75 HSA	8 inches	1473.6 feet	BA-4

Date Drilled: 7/21/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
									Silty SAND: fine- to coarse-grained, yellowish-brown, slightly moist, disturbed to 18 inches; sub-angular grains
		33	9.2	126.0					@ 2 feet, clayey and more silty, darker, moist, dense
		37	8.2	124.9		5			@ 4 feet, less clayey and lighter-colored, dark yellowish-brown to brown (10YR-4/4 to 4/3), dense
		42	8.7	122.3					@ 6 feet, slightly moist to moist, dense
		56	7.2	128.6		10		SM	@ 10 feet, less silty
		75	9.7	123.4		15			@ 12 feet, greenish-brown and more silty (2.5Y-4/4 to 4/3), moist
		40	8.2	118.6		20			@ 15 feet, slightly cemented and less silty and dark yellowish-brown
	S P	N=9				25			@ 20 feet, more silty
									@ 25 feet, 6-inch fine sand layer
									OLD ALLUVIUM (Qalo)
								ML	Sandy SILT: greenish-brown (2.5Y-4/3), moist to very moist

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Project No.:	Figure No.:
G6133-02	B-5.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75 HSA	8 inches	1473.6 feet	BA-4
Date Drilled: 7/21/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	N=18						ML	@ 30 feet, very moist and finely micaceous
	S P	N=53				35			@ 35 feet, thin fine- to medium sand layer; more sandy at 36 feet
	S P	N=35	▽	(7/21/03 - 1/14/04)		40		SM	Silty SAND: fine- to coarse-grained, dark brown (10YR-3/3), very moist, dense, some fine mica @ 40 feet, some fine, angular gravel-size granitic clasts
	S P	>64				45			@ 45 feet, more silty, very moist
	S P	N=75				50			@ 50 feet, less silty, very moist
						55			

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PA 1-10

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Project No.:	Figure No.:
G6133-02	B-5.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75 HSA	8 inches	1473.6 feet	BA-4
Date Drilled: 7/21/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	N=88							@ 61 feet, slightly cemented
									@ 63 feet, cement layer
						65		SM	
						70			
	S P	N>63							OLD ALLUVIUM (Qalo)
									Bottom of boring at 71 feet.
									Note:
						75			1) Ground water level at 38 feet after 8 hours of completion.
									2) Placed 30 feet of 2-inch Schedule 40 slotted pipe and 40 feet of solid casing; backfilled with #3 sand to 30 feet with bentonite chips seal at 31-35 feet; and completed backfill with native materials.
						80			
						85			

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Project No.:	Figure No.:
G6133-02	B-5.3

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75 HSA	8 inches	1510.5 feet	BA-5

Date Drilled: 7/21/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
									Silty SAND: fine- to coarse-grained, yellowish-brown, moist from recent irrigation, disturbed to 18 inches
		10	10.0	113.6					@ 1 foot, dark yellowish-brown, medium dense
									@ 3 feet, slightly less moisture and dense and dark brown (10YR-3/3)
		12	8.2	124.2					
						5			@ 5 feet, less moisture
		28	8.7	126.0					
									@ 7 feet, more silty and moist, dense and brown (10YR-4/3)
		44	6.2	127.0					
									@ 10 feet, cemented and some fine, subangular gravel
		66	8.7	124.4		10			
								SM	@ 15 feet, more moisture
		52	9.3	125.6		15			
									@ 20 feet, moist, greenish-brown (2.5Y-3/3), dense, more silty
		41	7.6	129.6		20			
									@ 25 feet, more silty and finer
	S	P N=43				25			
									@ 27 feet, becomes slightly cemented, slower drilling

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PA 1-10

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Project No.:	Figure No.:
G6133-02	B-6.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75 HSA	8 inches	1510.5 feet	
Date Drilled: 7/21/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		BA-5

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	N=68						SM	@ 30 feet, more sandy and slightly cemented, dark yellowish-brown (10YR-4/4)
									OLD ALLUVIUM (Qalo)
	S P	N=61				35			SAND: fine- to coarse-grained, yellowish-brown, slightly moist, sub-angular grains, slightly silty, dense
	S P	N=79				40		SP	@ 40 feet, less silt, slightly moist and dense
									OLD ALLUVIUM (Qalo)
	S P	N=79				45			Silty SAND: fine- to coarse-grained, dark yellowish-brown, slightly moist, dense
	S P	N=63				50		SM	@ 50 feet, more silty, slightly more moisture, dense
						55			

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PA 1-10

Project No.:	Figure No.:
G6133-02	B-6.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75 HSA	8 inches	1510.5 feet	BA-5

Date Drilled: 7/21/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	N=73							@ 60 feet, more sandy
			▽	(7/21/03)		65		SM	
			▽	(1/14/04)					
	S P	N=64				70			@ 70 feet, very moist to saturated, dense
						75			OLD ALLUVIUM (Qalo)
						80			Bottom of boring at 75 feet. Note: 1) Ground water level at 73 feet and end of drilling. 2) Installed 10"2" diameter Schedule 40 PVC pipe and 65' solid casing; and backfilled to 60' with #3 sand and bentonite seal from 56-60'; and completed backfill wtih native to surface. 3) Ground water level at 67.7' after 4 hours.
						85			

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PA 1-10

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Project No.:	Figure No.:
G6133-02	B-6.3

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75 HSA	8 inches	1483.3 feet	
Date Drilled: 7/21/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		BA-6

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
									Silty SAND: fine- to coarse-grained, slightly moist, yellowish-brown; disturbed to 18 inches
		20	10.7	106.9					@ 2 feet, moist and greenish-brown (2.5Y-4/3)
									@ 4 feet, more sandy
		22	4.8	106.7		5			
		50/8"	12.6	119.9					@ 6 feet, dark yellowish-brown (10YR-4/4) and more silty, medium dense to dense
									@ 10 feet, slightly cemented and more sandy
		50/6"	8.0	106.7		10			
								SM	@ 15 feet, less moisture and medium dense to dense
		50/8"	5.3	116.3		15			
									@ 20 feet, more silty and moist
	S	P	N=65			20			
									@ 25 feet, more sandy and less moist and slightly moist
	S	P	N>75			25			
									@ 29 feet, more silty, grading to Sandy SILT

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PA 1-10

Project No.:	Figure No.:
G6133-02	B-7.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1483.3 feet	BA-6

Date Drilled: 7/21/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE									
BULK	TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	N>74						ML	@ 30 feet, moist, dark yellow-brown, Sandy SILT: finely micaceous
									OLD ALLUVIUM (Qalo)
									Bottom of boring at 31 feet.
						35			Note:
									1) No ground water encountered.
									2) No caving.
									3) Boring backfilled and tamped.
						40			
						45			
						50			
						55			

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PA 1-10

Project No.:	Figure No.:
G6133-02	B-7.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1491.5 feet	BA-7

Date Drilled: 9/2/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
									Silty SAND: fine- to coarse-grained, slightly moist to moist, dark yellowish-brown
									@ 3 feet, medium dense to dense
		14	3.6	118.3					
						5			@ 5 feet, greenish-brown (2.5Y-4/4 to 4/3)
		18	5.6	116.5					
									@ 7 feet, more silty, moist, few pale yellow carbonate stringers, dense
		10	7.0	121.1					
								SM	@ 10 feet, moist and dense
		18	8.8	129.0		10			
		31	6.6	128.3		15			@ 15 feet, dark yellowish-brown (10YR-4/4), dense
									@ 20 feet, moist and dense
		28	9.8	120.3		20			OLD ALLUVIUM
									Bottom of boring at 21 feet.
									Note:
						25			1) No ground water encountered.
									2) No caving.
									3) Boring backfilled and tamped.

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Project No.:	Figure No.:
G6133-02	B-8

LOG OF BORING

	Boring Diameter: 8 inches	Boring Elevation: 1471.2 feet	Boring No.
3 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		BA-8

UNIT WEIGHT %	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
						Silty SAND: fine- to coarse-grained, yellowish-brown, slightly moist, upper 2 feet disturbed
						@ 3 feet, more silty and fine- to medium-grained and greenish-brown (2.5Y-5/3) and some pale yellow carbonate stringers, loose, very moist
	100.6					
			5			@ 5 feet, slightly moist and dense
	123.3					
						@ 7 feet, fi ne- to coarse-grained and slightly cemented, dense
	126.0					
			10			@ 10 feet, less sandy and non-cemented and some fine gravel-size, sub-angular clasts, slightly moist, dense
	118.5					
			15		SM	@ 15 feet, more silty, some brown (7.5YR-4/4) mottling, moist, medium dense to dense
	117.4					
			20			@ 20 feet, dark yellowish-brown (10YR-4/4), slightly moist
	116.7					
			25			@ 25 feet, dark yellowish-brown, dense

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Project No.:	Figure No.:
G6133-02	B-9.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1471.2 feet	BA-8

Date Drilled: 9/2/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE & DRY WEIGHT	DRY DENSITY LB/CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	N=51						ML	@ 30 feet, Sandy SILT: moist, stiff
									@ 31 feet, fine- to coarse-grained Silty SAND: dark yellowish-brown
						35			@ 35 feet, darker (10YR-3/4 to 4/4), moist
	S P	N=25							@ 36 feet, less silty and very moist
			▽			40		SM	@ 40 feet, saturated
	S P	N=27							
						45			@ 46 feet, slightly cemented and less moisture
	S P	N=74							OLD ALLUIVUM
									Bottom of boring at 46.5 feet.
						50			Note:
									1) Ground water level at 40 feet.
									2) Minor caving below 40 feet.
									3) Boring backfilled and tamped.
						55			SP indicates Standard Penetration Test.

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Project No.:	Figure No.:
G6133-02	B-9.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1496 feet	
Date Drilled: 9/2/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling With the passage of time or at any other location, there may be consequential changes in conditions.		BA-9

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
			9.2	105.6				SM	Silty SAND: fine- to coarse-grained, yellowish-brown, moist, very silty, dsiturbed to 24 inches @ 3 feet, mottled to 3.5 feet FILL
		9						SM	Silty SAND: fine- to coarse-grained, dark brown (10YR-3/3), moist
		18	7.0	127.8		5			@ 5 feet, coarse sand layer, dense
									@ 5.5 feet, Silty SAND: moist
		10	10.9	123.2					@ 7 feet, more silty and slightly clayey, more moisture, dense
		11	13.2	117.4		10			@ 10 feet, very moist, very silty, dense
		32	8.4	121.5		15			@ 15 feet, dark yellowish-brown (10YR-4/4), moist and less silty, some fine, sub-angular gravel, dense
		29	6.6	122.1		20			@ 20 feet, some dark brown mottling (7.5YR-4/4), slightly moist to moist, dense
		25	4.1	121.9		25			@ 25 feet, darker, brown (10YR-4/3), slightly moist, dense

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Project No.:	Figure No.:
G6133-02	B-10.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1496 feet	BA-9
Date Drilled: 9/2/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE & DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOILROCK SYMBOL	SOILROCK TYPE	Descriptions and Remarks
	S P	N=37							@ 30 feet, less silty and less moisture, dark yellowish-brown
	S P	N=36				35			@ 35 feet, less silty, dark yellowish-brown
	S P	N=28				40		SM	@ 40 feet, very moist and more silty, still dark yellowish-brown
	S P	N=40				45			@ 45 feet, moist, darker OLD ALLUVIUM (Qalo)
						50			Bottom of boring at 46.5 feet. Note: 1) No ground water enocuntered. 2) No caving. 3) Boring backfilled and tamped.
						55			

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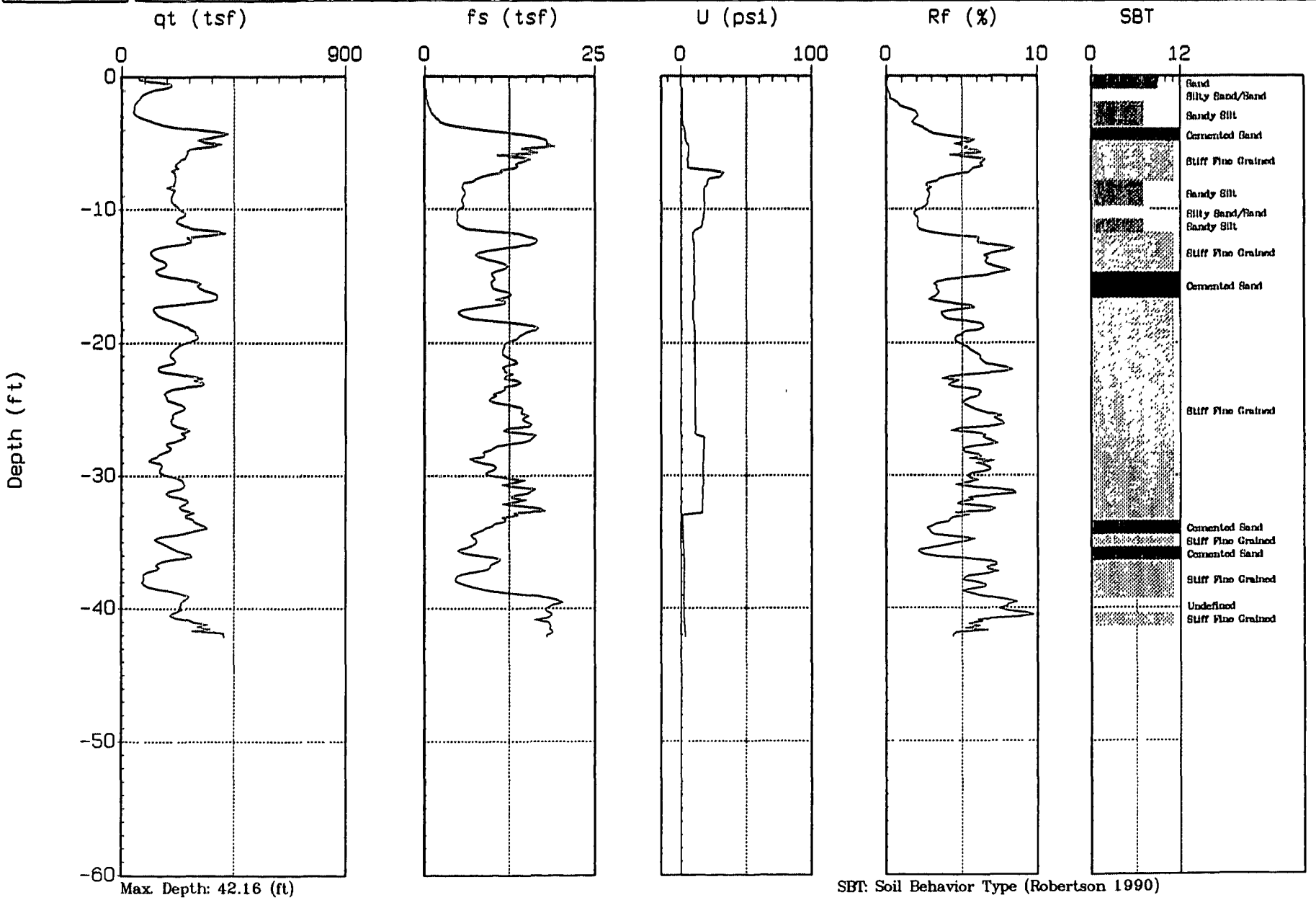
Project No.:	Figure No.:
G6133-02	B-10.2

GREGG

GA NICOL

Site : MUR-PA-1-10
Location : CPT-01

Engineer : G. HORTON
Date : 07:18:03 08:11



Max. Depth: 42.16 (ft)

Depth Inc.: 0.164 (ft)

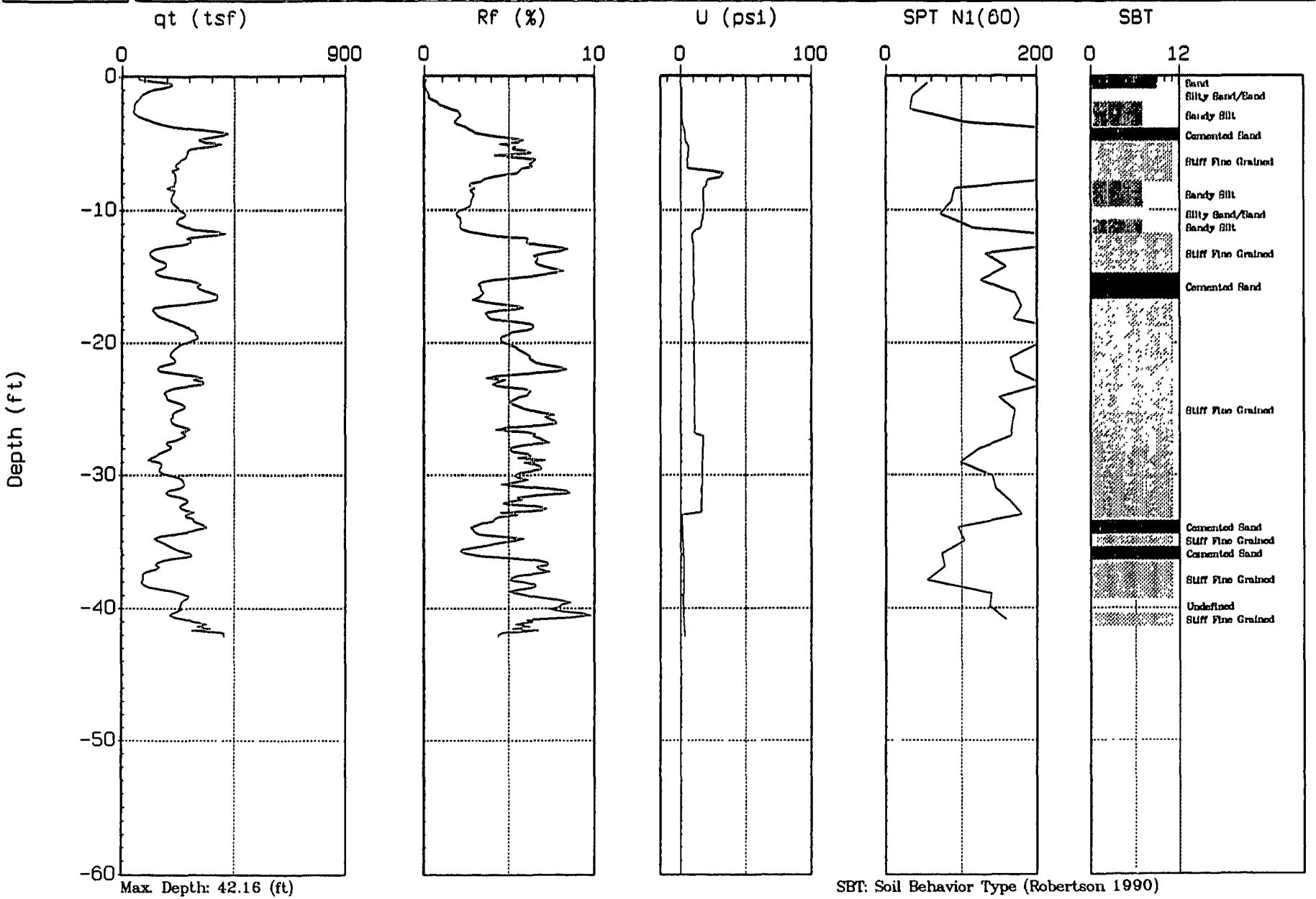
SBT: Soil Behavior Type (Robertson 1990)

GREGG

GA NICOL

Site : MUR-PA-1-10
Location : CPT-01

Engineer : G. HORTON
Date : 07:18:03 08:11



Max. Depth: 42.16 (ft)

Depth Inc.: 0.164 (ft)

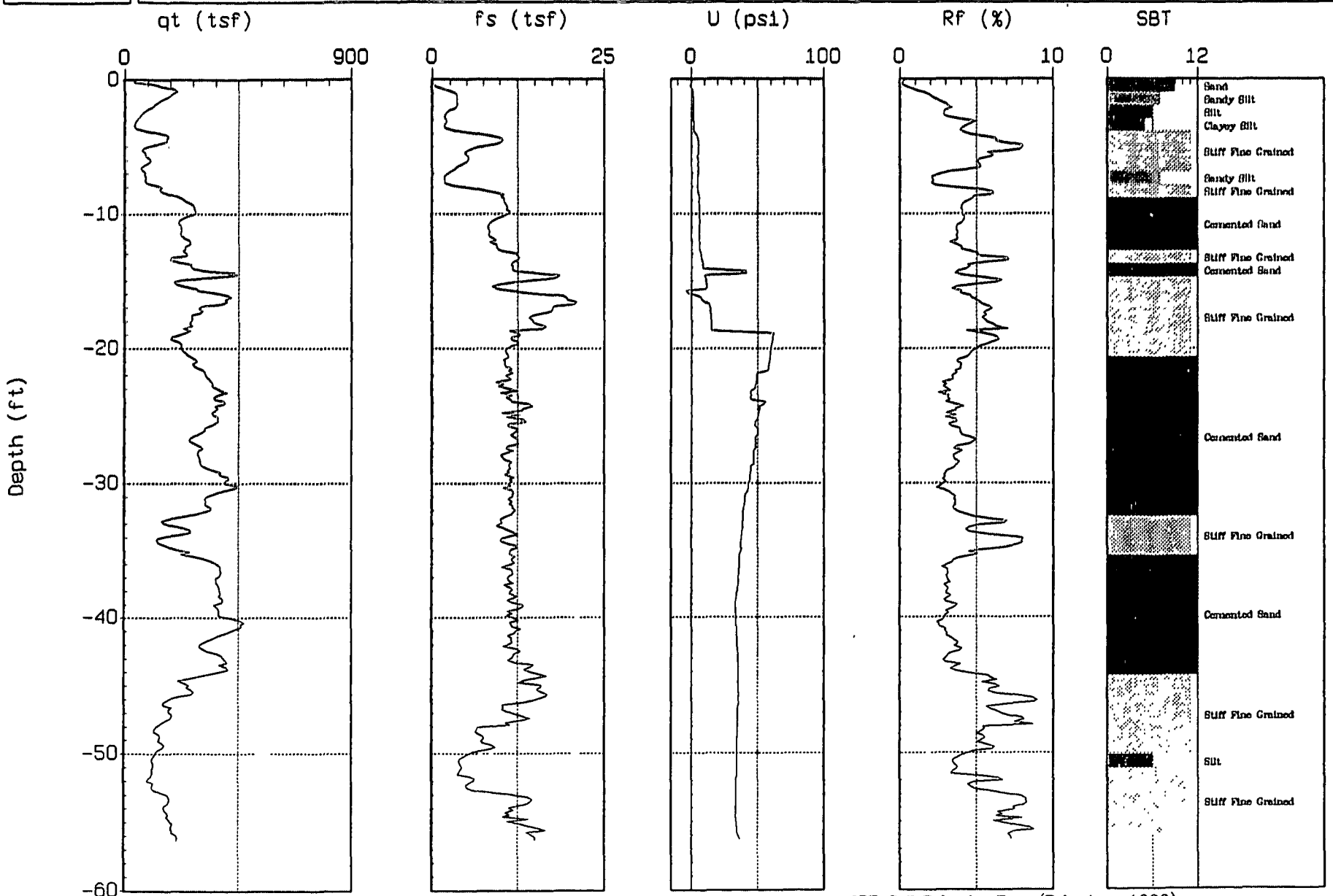
SBT: Soil Behavior Type (Robertson 1990)

GREGG

GA NICOL

Site : MUR-PA-1-10
Location : CPT-02

Engineer : G. HORTON
Date : 07:18:03 08:57



Max. Depth: 56.27 (ft)

Depth Inc.: 0.164 (ft)

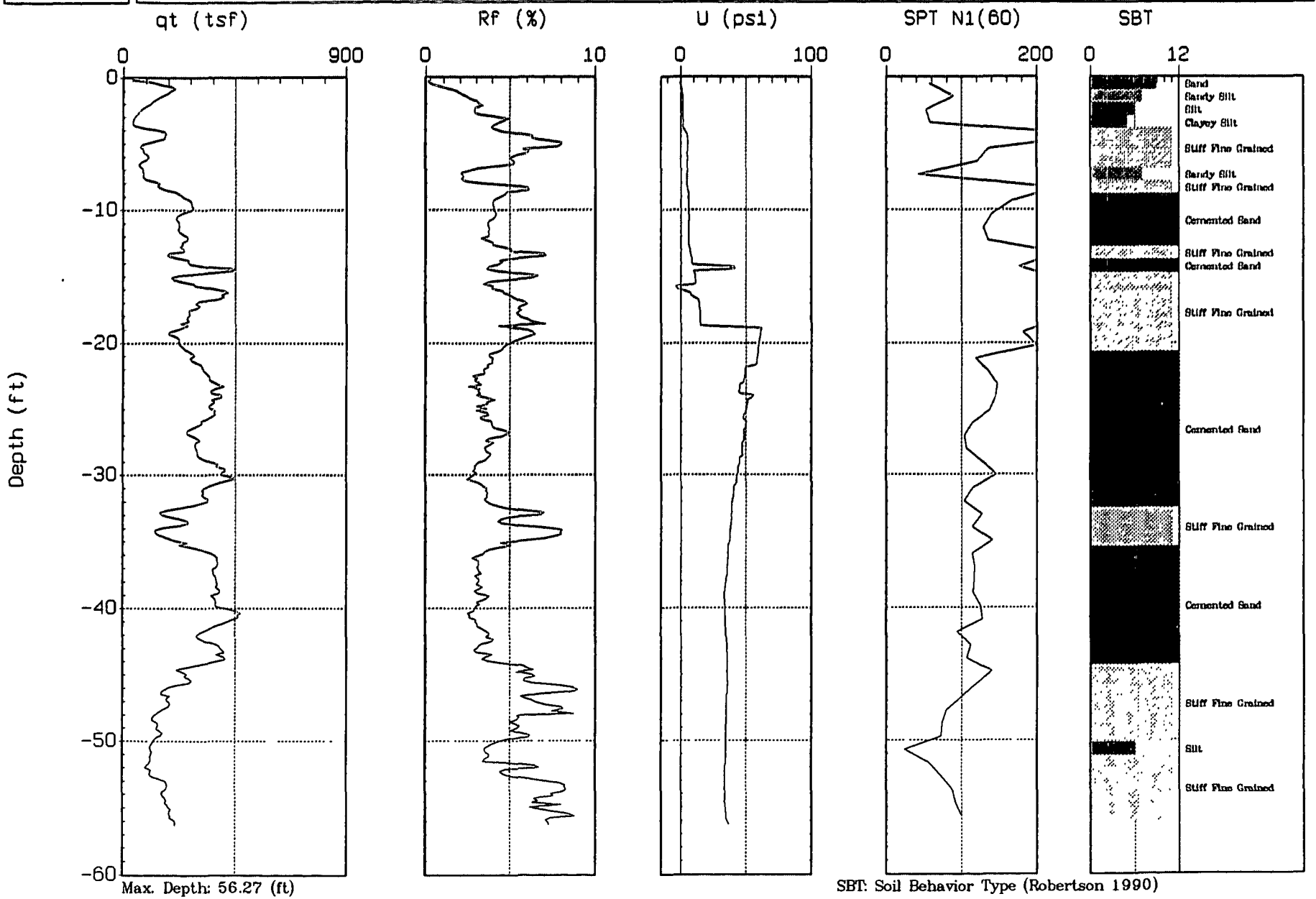
SBT: Soil Behavior Type (Robertson 1990)

GREGG

GA NICOL

Site : MUR-PA-1-10
Location : CPT-02

Engineer : G. HORTON
Date : 07:18:03 08:57



Max. Depth: 56.27 (ft)

Depth Inc.: 0.164 (ft)

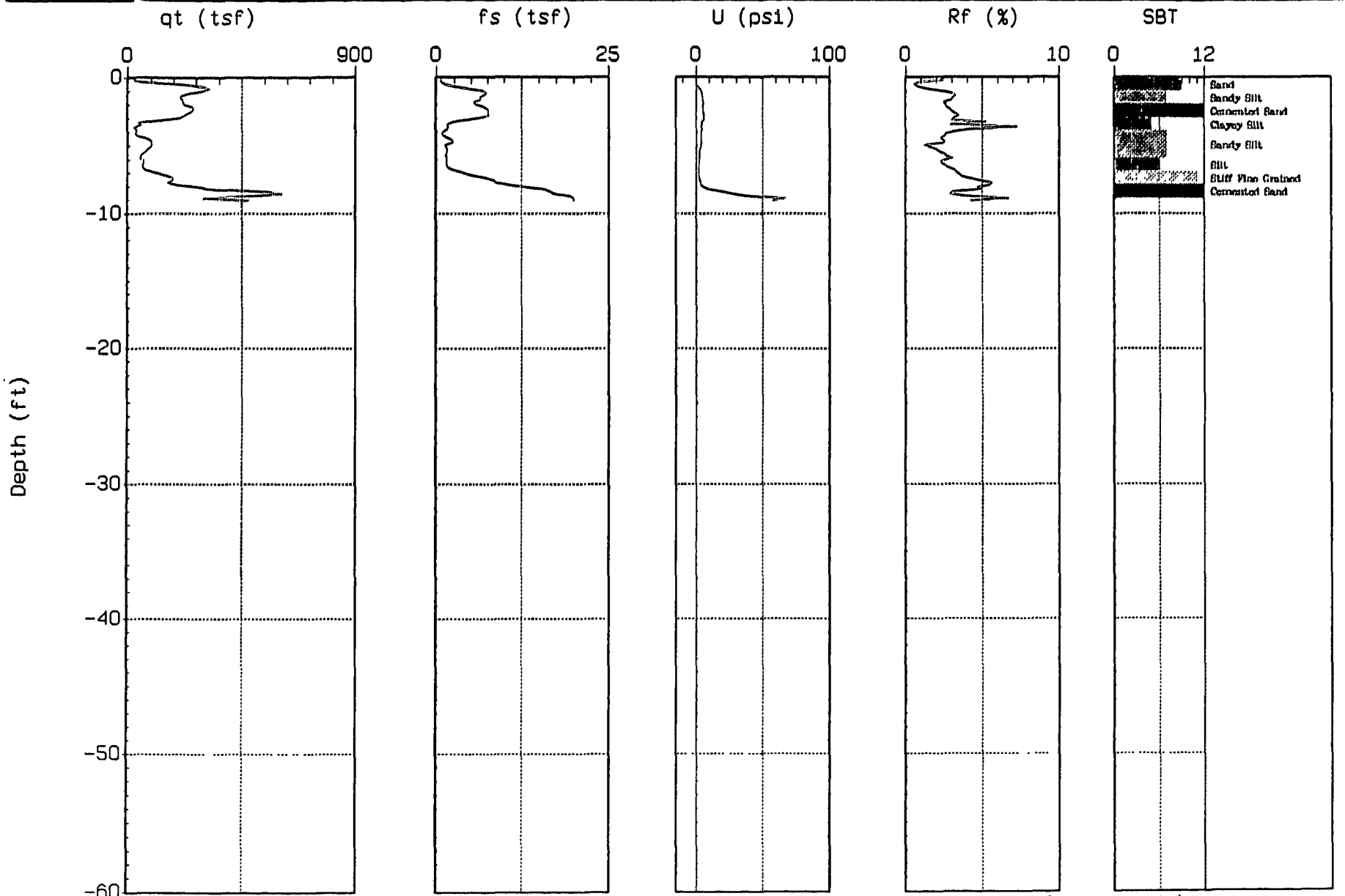
SBT: Soil Behavior Type (Robertson 1990)

GREGG

GA NICOL

Site : MUR-PA-1-10
Location : CPT-03

Engineer : G. HORTON
Date : 07:18:03 09:57



Max. Depth: 9.02 (ft)

Depth Inc.: 0.164 (ft)

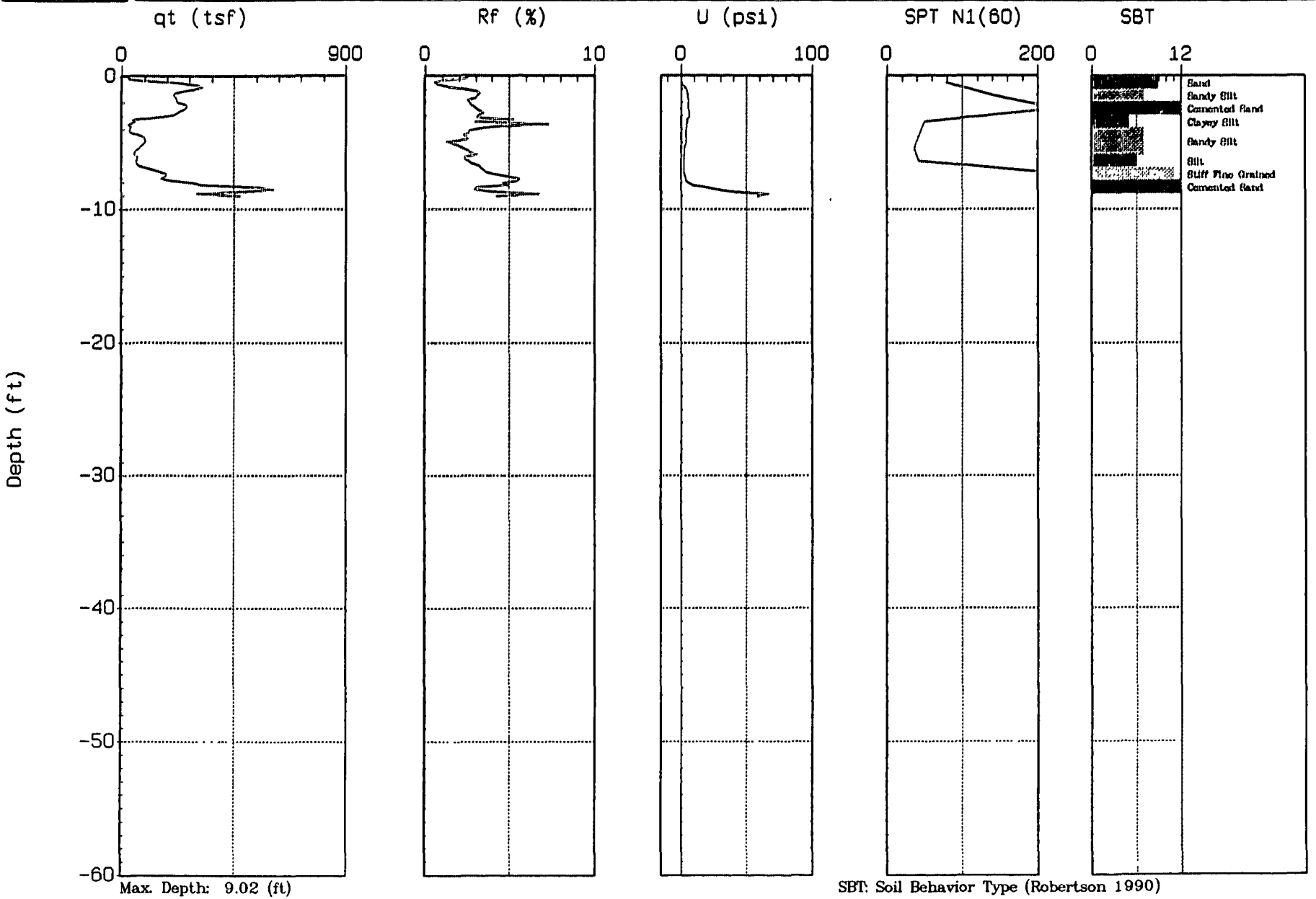
SBT: Soil Behavior Type (Robertson 1990)

GREGG

GA NICOL

Site : MUR-PA-1-10
Location : CPT-03

Engineer : G. HORTON
Date : 07:18:03 09:57



Max. Depth: 9.02 (ft)

Depth Inc.: 0.164 (ft)

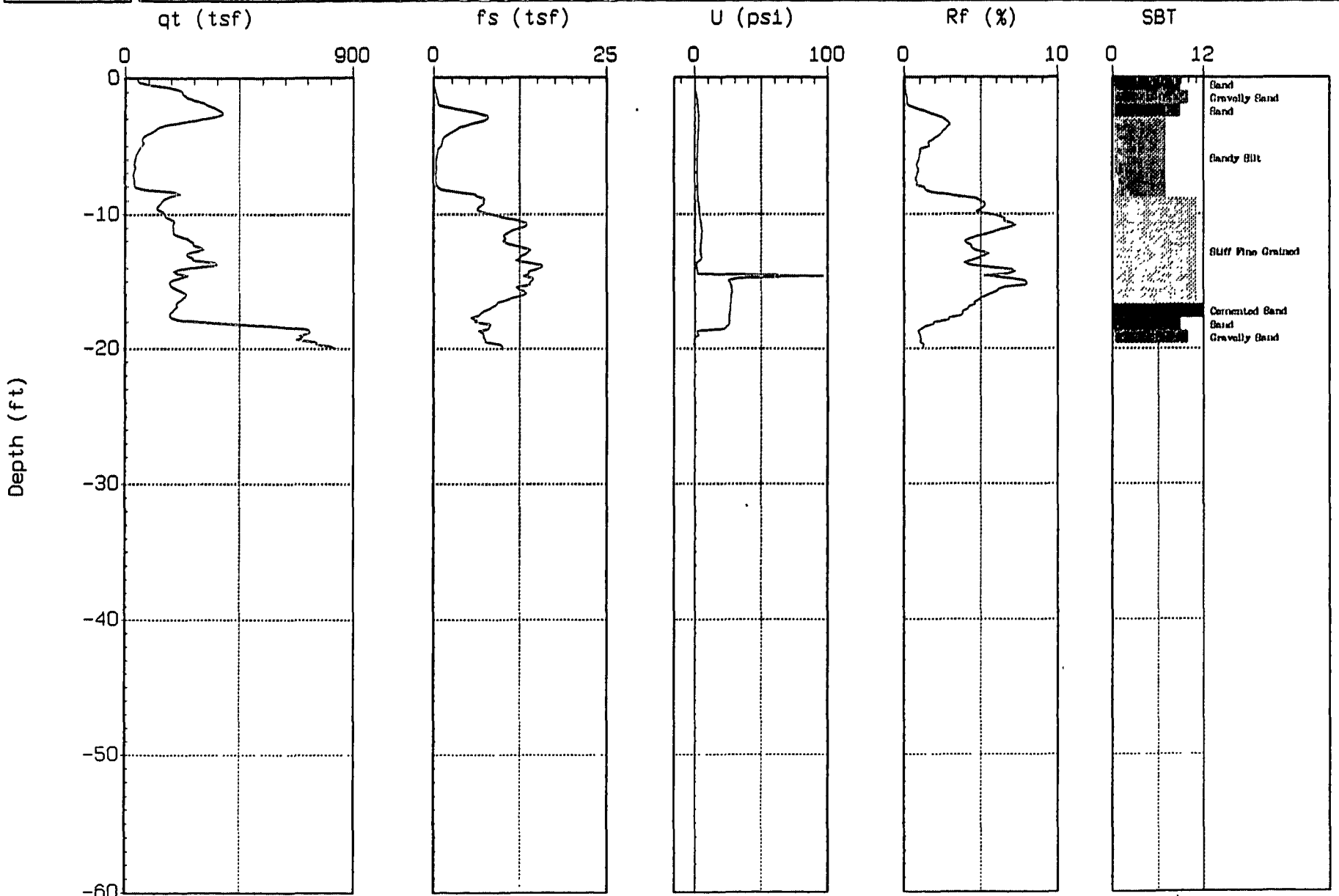
SBT: Soil Behavior Type (Robertson 1990)

GREGG

GA NICOL

Site : MVR-PA-1-10
Location : CPT-04

Engineer : G. HORTON
Date : 07:18:03 10:24



Max. Depth: 20.01 (ft)

Depth Inc.: 0.164 (ft)

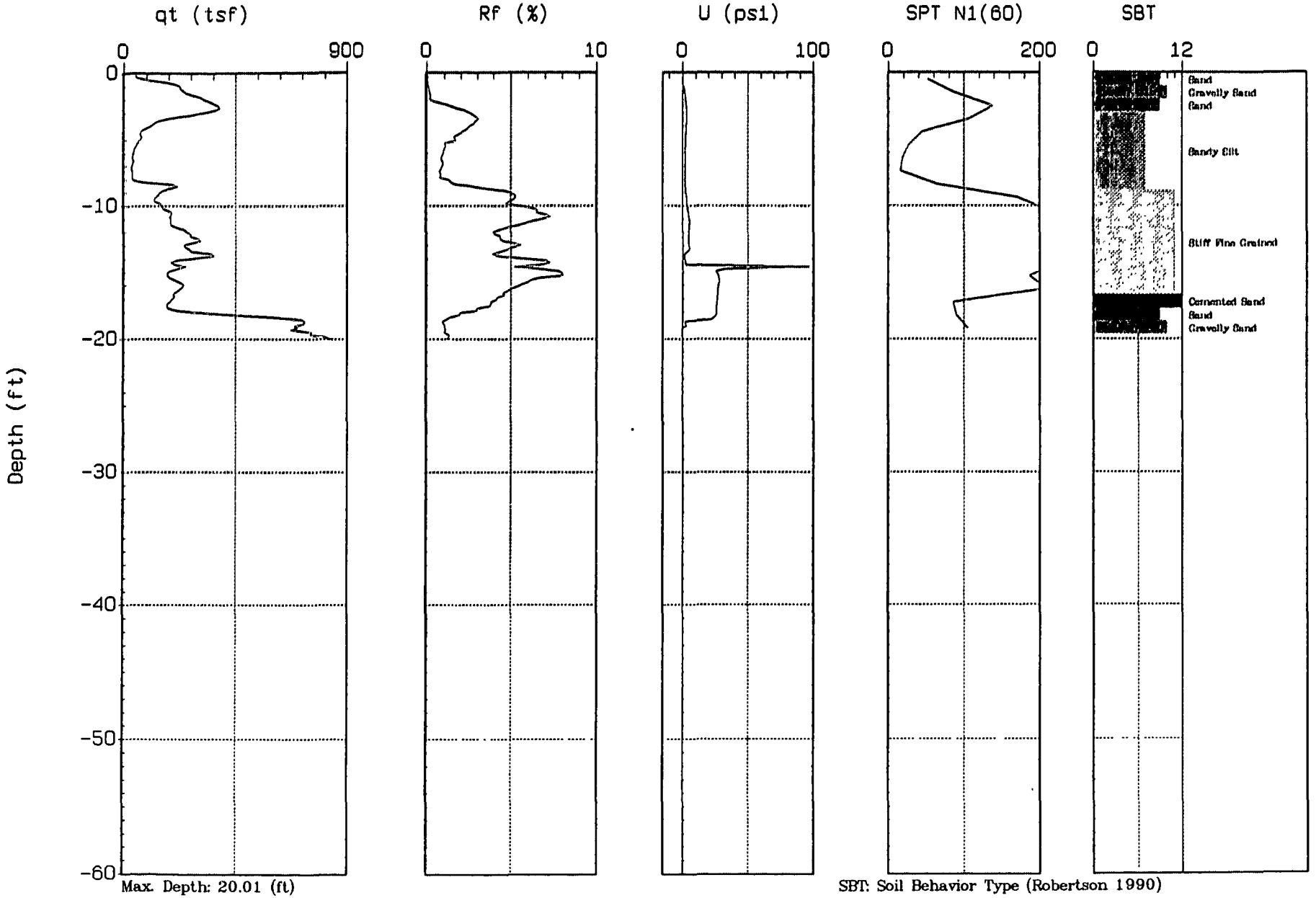
SBT: Soil Behavior Type (Robertson 1990)

GREGG

GA NICOL

Site : MUR-PA-1-10
Location : CPT-04

Engineer : G. HORTON
Date : 07:18:03 10:24



Max. Depth: 20.01 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LOG OF TEST PITS

Surface Elevation: 1502'		Logged By: GDH		**Test Pit Number TPN-1**
Pit Orientation: N-W		Date: 7/8/2003		
Pit Dimensions: 2x10x7'		Equipment: Backhoe		
Ground Water Depth: None Encountered				

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SC	Clayey SAND: fine- to medium-grained, dark brown (10YR-3/3), moist at 1 foot, disturbed to 18"
			8.6	111.5			@ 2 feet, moist and medium dense
							@ 4 feet, less clayey and fine- to coarse-grained and dark yellowish-brown, less moisture, dense
		5	7.4	120		SM	@ 5 feet, slightly cemented
							OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 7 feet. Note: 1) No caving. 2) Pit backfilled and tamped.
		15					

Surface Elevation: 1504.5'		Logged By: GDH		**Test Pit Number TPN-2**
Pit Orientation: E-W		Date: 7/8/2003		
Pit Dimensions: 2x10x6'		Equipment: Backhoe		
Ground Water Depth: None Encountered				

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SC	Clayey SAND: fine- to medium-grained, dark brown (10YR-3/3), moist, disturbed to 18"
							@ 2.5 feet, becomes less clayey and dark yellowish-brown, less moisture and dense
			10.7	104			@ 3 feet, moist, loose to medium dense
		5				SM	
							OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 6 feet. Note: 1) No caving. 2) Pit backfilled and tamped.
		15					

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Date: February-04

Project No: G6133-02

Figure No. B-11

LOG OF TEST PITS

Surface Elevation:	1496'	Logged By:	GDH	**Test Pit Number TPN-3**
Pit Orientation:	N-S	Date:	7/8/2003	
Pit Dimensions:	2x15x8'	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples							
Bulk	Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						ML	Sandy SILT: yellowish-brown, moist, soft, finely micaceous
			18.5	93.7			ALLUVIUM (Qal_2)
						SM	Silty SAND with Clay: fine- to coarse-grained, dark brown to dark greenish-brown (2.5Y-3/3), moist, loose to medium dense
		5	9.1	116.4			@ 5 feet, medium dense to dense and moist OLD ALLUVIUM (Qalo)
			13.2	107.1		SM	Silty SAND: fine- to coarse-grained, greenish-brown (2.5Y-4/3), moist
		10					@ 7 feet, more silty and finer, very moist and medium dense OLD ALLUVIUM (Qalo)
		15					Bottom of pit at 8 feet.
							Note:
							1) No caving.
							2) Pit backfilled and tamped.

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Date: February-04

Project No: G6133-02

Figure No. B-12

LOG OF TEST PITS

Surface Elevation:	1468.8 feet	Logged By:	GDH	**Test Pit Number TPN-4**
Pit Orientation:	E-W	Date:	9/13/2003	
Pit Dimensions:	2x20x6 feet	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples		Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
Bulk	Tube						
						SM	Silty SAND: fine- to medium-grained, yellowish-brown, slightly moist to moist, disturbed
	N		4.8	101.9		ML	Sandy SILT: greenish-brown, moist, stiff, some white carbonate stringers OLD ALLUVIUM
			15.1	96.3		SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown, moist, medium dense to dense
							@ 3-4 feet, very silty, loose and very moist
		5	6.9	109.7			@ 4 feet, more sandy, medium dense OLD ALLUVIUM (Qalo)
							Bottom of pit at 6 feet.
							Note:
		10					1) No caving.
							2) Pit backfilled and tamped.
							3) "N" indicates nuclear gauge test.
		15					

Surface Elevation:	1476.3 feet	Logged By:	GDH	**Test Pit Number TPN-5**
Pit Orientation:	E-W	Date:	9/3/2003	
Pit Dimensions:	2x20x7 feet	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples		Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
Bulk	Tube						
	N		5.3	121.3		SC	Clayey SAND with Silt: fine- to coarse-grained, dark yellow-brown, slightly moist to moist, medium dense, disturbed to 18 inches
	N		5.1	122.6			@ 3 feet, more silty, moist, slightly cemented OLD ALLUVIUM (Qalo)
		5	4.8	110.3		SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown, moist, medium dense to dense
							@ 5 feet, more sandy, slightly moist
							@ 6 feet, coarser OLD ALLUVIUM
							Bottom of pit at 7 feet.
							Note:
		10					1) No caving.
							2) Pit backfilled and tamped.
							3) "N" indicates nuclear gauge test.
		15					

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Date: February-04

Project No: G6133-02

Figure No. B-13

LOG OF TEST PITS

Surface Elevation: 1478.6 feet
Pit Orientation: E-W
Pit Dimensions: 2x18x6 feet
Ground Water Depth: None Encountered

Logged By: GDH
Date: 9/3/2003
Equipment: Backhoe

Test Pit Number TPN-6

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
	N		4.5	122.3		SC	Clayey SAND: fine- to coarse-grained, dark yellowish-brown, moist at 1 foot, disturbed to 24 inches OLD ALLUVIUM (Qalo)
		5	6.9	109.8		SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown, moist, medium dense to dense @ 5'6", lens of coarse sand at east end of pit @ 5.5 feet, more silty — OLD ALLUVIUM
		10					Bottom of pit at 6 feet. Note: 1) No caving. 2) Pit backfilled. 3) "N" indicates nuclear gauge tests.
		15					

Surface Elevation: 1501.2 feet
Pit Orientation: E-W
Pit Dimensions: 2x15x6 feet
Ground Water Depth: None Encountered

Logged By: GDH
Date: 9/3/2003
Equipment: Backhoe

Test Pit Number TPN-7

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown, slightly moist to moist, upper 18 inches disturbed @ 2 to 3 feet, slightly clayey — OLD ALLUVIUM (Qalo)
	N		6.7	114.9		SC	Clayey SAND: fine- to coarse-grained — OLD ALLUVIUM
		5	2	106.6		SP	SAND: fine- to coarse-grained, dark yellowish-brown, slightly silty, sub-angular grains, medium dense, dry to slightly moist
						SM	Silty SAND: fine- to medium-grained, greenish-brown, moist, very silty, dense OLD ALLUVIUM
		10					Bottom of pit at 6 feet. Note: 1) No caving. 2) Pit backfilled. 3) "N" indicates nuclear gauge test.
		15					

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Date: February-04

Project No: G6133-02

Figure No. B-14

LOG OF TEST PITS

Surface Elevation: 1493.5 feet Pit Orientation: E-W Pit Dimensions: 2x20x7 feet Ground Water Depth: None Encountered		Logged By: GDH Date: 9/3/2003 Equipment: Backhoe		**Test Pit Number TPN-8**

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
	N	0	4.5	125.6		SM/SC	Silty SAND with Clay: fine- to coarse-grained, dark yellowish-brown, slightly moist to moist, upper 2 feet disturbed OLD ALLUIVUM (Qalo)
	I	5	3.8	113.6		SM	Silty SAND: fine- to coarse-grained, dark yellowish-rown, slightly moist to moist, medium dense to dense OLD ALLUVIUM
		10					Bottom of pit at 7 feet. Note: 1) No caving. 2) Pit backfilled and tamped. 3) "N" indicates nuclear gauge test.
		15					

Surface Elevation: 1486.3 feet Pit Orientation: E-W Pit Dimensions: 2x15x6 feet Ground Water Depth: None Encountered		Logged By: GDH Date: 9/13/2003 Equipment: Backhoe		**Test Pit Number TPN-9**

	N	0	4.8	114.9		SM/SC	Silty SAND with Clay: fine- to coarse-grained, slightly moist to moist, upper 18 inches disturbed
	I		3.0	102.3		SM	Silty SAND: fine- to medium-grained, dark yellowish-brown, moist, medium dense to dense
	N	5	4.9	119.3			@ 3 to 4 feet, slightly moist and loose to medium dense @ 5.5 feet, lighter-colored and more silty, dense OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 6 feet. Note: 1) No caving. 2) Pit backfilled. 3) "N" indicates nuclear gauge test.
		15					

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PA 1-10

Date: February-04

Project No: G6133-02

Figure No. B-15

LOG OF TEST PITS

Surface Elevation:	1494.5 feet	Logged By:	GDH	**Test Pit Number**	
Pit Orientation:	N-S	Date:	9/3/2003	**TPN-10**	
Pit Dimensions:	2x15x6 feet	Equipment:	Backhoe		
Ground Water Depth:	None Encountered				

Samples		Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						ML	Sandy SILT: brown, slightly moist to moist, laminated, micaceous, soft RECENT ALLUVIUM(Qal)
	N		2.3	117.9		SC	Silty SAND with Clay: fine- to coarse-grained, dark yellowish-brown, slightly moist, medium dense to dense
	N	5	4.2	120.7		SM	@ 4 feet, less clay and more sandy and moist, dense OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 6 feet. Note: 1) No caving. 2) Pit backfilled and tamped. 3) "N" indicates nuclear gauge test.
		15					

Surface Elevation:	1496.5 feet	Logged By:	GDH	**Test Pit Number**	
Pit Orientation:	E-W	Date:	9/3/2003	**TPN-11**	
Pit Dimensions:	2x20x8 feet	Equipment:	Backhoe		
Ground Water Depth:	None Encountered				

						SM	Silty SAND: fine- to coarse-grained, yellowish-brown, slightly moist, loose and disturbed
						SC	Clayey SAND: fine- to coarse-grained, dark to very dark yellowish-brown, moist, medium dense to dense, some poorly developed clay peds OLD ALLUVIUM (Qalo)
	N	5	5.1	125.7		SC/ SM	Silty SAND with Clay: fine- to coarse-grained, dark yellowish-brown, slightly moist to moist, medium dense to dense
	N		4.2	128			@ 6 feet, more sandy, less clay, dense OLD ALLUVIUM
		10					Bottom of pit at 8 feet. Note: 1) No caving. 2) Pit backfilled and tamped. 3) "N" indicates nuclear gauge test.
		15					

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Date: February-04

Project No: G6133-02

Figure No. B-16

LOG OF TEST PITS

Surface Elevation:	1494.5 feet	Logged By:	GDH	**Test Pit Number TPN-12**
Pit Orientation:	N45E	Date:	9/3/2003	
Pit Dimensions:	2x8x5 feet	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples							
Bulk	Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SP	SAND: fine- to coarse-grained, loose RECENT ALLUVIUM (Qal $_2$)
						ML	Clayey SILT: dark greenish-gray (5Y-3/1) saturated, laminated, soft, micaceous, some decaying branches and logs
							@ 3.5 feet, sandy, still soft and saturated PONDED SEDIMENTS (Qps)
						SM	Silty SAND with Clay: grayish-brown, fine- to coarse-grained, moist, dense
		5					@ 4.5 feet, dark yellowish-brown OLD ALLUVIUM (Qalo)
							Bottom of pit at 5 feet.
							Note:
							1) No caving.
		10					2) Pit backfilled.
		15					

Surface Elevation:	1494.5 feet	Logged By:	GDH	**Test Pit Number TPN-13**
Pit Orientation:	N45E	Date:	9/3/2003	
Pit Dimensions:	2x8x5 feet	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

						SM	Silty SAND: fine- to coarse-grained, moist, loose RECENT ALLUVIUM (Qal $_2$)
						ML	Clayey SILT: greenish-gray, very moist, laminated, micaceous, soft, some decaying vegetation
							PONDED SEDIMENTS (Qps)
						SM	Silty SAND with Clay: fine- to coarse-grained, dark gray, moist, dense
		5					@ 4.5 feet, lighter colored
							OLD ALLUVIUM (Qalo)
							Bottom of pit at 5 feet.
							Note:
							1) No caving.
		10					2) Pit backfilled and tamped.
		15					

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PA 1-10

Date: February-04

Project No: G6133-02

Figure No. B-17

LOG OF TEST PITS

Surface Elevation: 1480.5 feet Pit Orientation: N-S Pit Dimensions: 3x15x6' Ground Water Depth: None Encountered		Logged By: GDH Date: 9/17/2003 Equipment: Backhoe		**Test Pit Number TPN-14**

Samples		Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
Bulk	Tube						
		0				SP	SAND: fine- to coarse-grained, grayish-brown, dry to slightly moist, loose, some coarse laminations
	N		19.3	105.7		SM	Silty SAND: fine- to medium-grained, dark yellowish-brown to dark brown, some clay ped development, very moist, medium dense
	N	5	17.1	108.3			@ 5.5 feet, some pale yellow carbonate stringers and slightly cemented
							OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 6 feet. Note: 1) No caving. 2) Pit backfilled and tamped. 3) "N" indicates nuclear gauge test.
		15					

Surface Elevation: 1618 feet Pit Orientation: E-W Pit Dimensions: 2x10x16' Ground Water Depth: None Encountered		Logged By: GDH Date: 2/12/2004 Equipment: Backhoe		**Test Pit Number TPN-15**

		0				SM/ SC	Silty SAND with Clay: fine- to medium-grained, brown, moist, medium, dense at 2 feet
	N		12.3	112.3			@ 4.5 feet, more sandy and coarser
	N	5	10.9	110.0		SM	@ 5.5 feet, slightly cemented and dark yellowish-brown, less moisture
							OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 6 feet. Note: 1) No caving. 2) Pit backfilled and tamped. 3) "N" Indicates nuclear guage test.
		15					

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Date: February-04

Project No: G6133-02

Figure No. B-18

LOG OF TEST PITS

Surface Elevation: 1512.5 feet	Logged By: GDH	**Test Pit Number TPN-16**
Pit Orientation: E-W	Date: 2/12/2004	
Pit Dimensions: 2x10x6'	Equipment: Backhoe	
Ground Water Depth: None Encountered		

Samples							
Bulk	Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SM	Silty SAND: fine- to medium-grained, brown, moist, loose to 2 feet, medium dense below
							@ 2 feet, becomes fine- to coarse-grained, dark yellowish-brown, slightly clayey
						SM/	
	N		10.9	108.7		SC	@ 5 feet, slightly cemented, more dense
	N	5	9.5	115.1			OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 6 feet.
							NOTE:
							1) No caving.
							2) Pit backfilled and tamped.
		15					3) "N" indicates nuclear guage test.

Surface Elevation: 1520 feet	Logged By: GDH	**Test Pit Number TPN-17**
Pit Orientation: E-W	Date: 2/12/2004	
Pit Dimensions: 2x10x7'	Equipment: Backhoe	
Ground Water Depth: None Encountered		

						SM	Silty SAND: fine- to medium-grained, brown, moist, loose to 2 feet, micaceous
							@ 3 feet, more sandy and fine- to coarse-grained, micaceous
	N		8.5	109.3			@ 4.5 feet, grading to medium- to coarse-grained, slightly Silty SAND
		5					OLD ALLUVIUM (Qalo)
	N		3.4	105.5		SP	SAND: medium- to coarse-grained, slightly moist, dark yellow-brown
	N		4.0	112.3			@ 4 to 6 feet, loose to medium dense OLD ALLUVIUM
		10					Bottom of pit at 7 feet.
							Note:
							1) Caving at 1 to 6 feet.
							2) Pit backfilled and tamped.
		15					3) "N" indicates nuclear gauge test.

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Menifee Valley Ranch, LLC
PA-1-10

Date: February-04

Project No: G6133-02

Figure No. B-19

LOG OF TEST PITS

Surface Elevation: 1515.5 feet Pit Orientation: E-W Pit Dimensions: 2x10x6' Ground Water Depth: None Encountered		Logged By: GDH Date: 2/12/2004 Equipment: Backhoe		**Test Pit Number TPN-18**

Samples		Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
	N	5	12.1	118.2		SM	Silty SAND: fine- to medium-grained, brown, moist, loose to 2 feet; micaceous @ 3 feet, medium dense to dense, slightly clayey and coarser-grained @ 4 feet, becomes slightly cemented, dark yellowish-brown (10YR-4/4) some poorly developed clay ped surfaces
	N		8.2	119.2			OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 6 feet. Note: 1) No caving. 2) Pit backfilled. 3) "N" indicates nuclear gauge test.
		15					

Surface Elevation: 1510.5 feet Pit Orientation: E-W Pit Dimensions: 2x10x5' Ground Water Depth: None Encountered		Logged By: GDH Date: 2/12/2004 Equipment: Backhoe		**Test Pit Number TPN-19**

	N	5	8.9	122.2		SM	Silty SAND: fine- to coarse-grained, brown, moist, loose to 2 feet @ 3 feet, slightly cemented and medium dense to dense @ 5 feet, still slightly cemented OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 5 feet. Note: 1) No caving. 2) Pit backfilled and tamped. 3) "N" indicates nuclear gauge test.
		15					

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Date: February-04

Project No: G6133-02

Figure No. B-20

LOGS OF TEST PITS

FROM GANICO PROJECT G6134-02, MVR PA 11-12

LOG OF TEST PITS

Surface Elevation: 1472'
Pit Orientation: E-W
Pit Dimensions: 2x15x6'
Ground Water Depth: None Encountered

Logged By: GDH
Date: 9/4/2003
Equipment: Backhoe

Test Pit Number TPN-1

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
			6.7	118.3		SM/SC	Silty SAND with Clay: dark yellowish-brown, slightly moist to moist, upper 24 inches disturbed OLD ALLUIVUM (Qalo)
	*	5	8.0	109.9		SM/SC	Silty SAND with Clay: fine- to coarse-grained, dark yellowish-brown, slightly moist to moist, dense, some poorly developed clay peds; very silty OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 6 feet. Note: 1) No caving. 2) Pit backfilled and tamped. * Partial recovery
		15					

Surface Elevation: 1466.3'
Pit Orientation: E-W
Pit Dimensions: 2x18x7'
Ground Water Depth: None Encountered

Logged By: GDH
Date: 9/4/2003
Equipment: Backhoe

Test Pit Number TPN-2

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
			6.6	107.5		SM	Silty SAND: fine- to medium-grained, brown (10YR-4/3), moist, medium dense but with some loose pockets to 3 feet
						ML	3 feet, irregular layer and round and oval pods of light greenish-brown Sandy SILT, moist and soft RECENT ALLUVIUM
			11.8	106.8		SM	@ 4 feet, greenish-brown (2.5Y-4/3) YOUNGER ALLUVIUM (Qal_1)?
		5				SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown (10YR-4/4-4/6) slightly moist to moist, dense, some thin cemented layers and lenses, some clay ped development OLD ALLUVIUM
		10					Bottom of pit at 7 feet. Note: 1) No caving. 2) Pit backfilled and tamped.
		15					

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Menifee Valley Ranch, LLC
PA 11-13

Date: February-04

Project No: G6134-02

Figure No. B-12

LOG OF TEST PITS

Surface Elevation:	1468.2'	Logged By:	GDH	**Test Pit Number**
Pit Orientation:	N-S	Date:	9/17/2003	**TPN-25**
Pit Dimensions:	3x12x7'	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples							
Bulk	Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	**DESCRIPTION AND REMARKS**
						SM	Silty SAND: fine- to coarse-grained, yellowish-brown, slightly moist to 1 foot; becomes moist at 1 foot and darker
		5	5.6	111.8		SM/ SC	Silty SAND with Clay: fine- to coarse-grained, dark yellowish-brown, slightly moist to moist, medium dense to dense @ 4 feet, some dark gray-brown, clay fil on poorly developed clay peds @ 5 feet, some isolated --- angular gravel OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 7 feet. Note: 1) No caving. 2) Pit backfilled. 3) "N" indicates nuclear gauge test.
		15					

Surface Elevation:		Logged By:	**Test Pit Number**
Pit Orientation:		Date:	
Pit Dimensions:		Equipment:	
Ground Water Depth:			

5 10 15

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Menifee Valley Ranch, LLC
PA 11-13

Date: February-04

Project No: G6134-02

Figure No. B-24

LOGS OF BORINGS AND TEST PITS

GANA PROJECT 3892-01
REPORT DATED JULY 1989

LOG OF TEST PITS

Surface Elevation: 1514± feet
Pit Orientation: N-S
Pit Dimensions: 2x15x12 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number: T-1

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (p.c.f.)
ALLUVIUM	5		SM			Silty SAND: fine-to medium-grained, grayish-brown (10YR4/2), dry, medium dense; becomes slightly moist at 6 feet		
			SC			Clayey SAND: fine-to coarse-grain, grayish-brown (10YR3/3 with clay films 10YR3/1), slightly moist, medium dense, medium porous		
	10		SM			Silty SAND: fine-to coarse-grain, yellowish-brown (10YR4/3 to 4/4), slightly moist, medium dense to dense, slightly porous, slightly clayey, dark brown at 8 feet		
	15					Bottom of pit at 12 feet. Note: 1) No caving 2) Pit backfilled		

Surface Elevation: 1499½ feet
Pit Orientation: N-S
Pit Dimensions: 2x15x12'
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number: T-2

ALLUVIUM	5		SM			Silty SAND: fine-to medium-grain, brown, dry to 6 inches, slightly moist below 6 inches, medium dense to dense; some lenses of medium-to coarse sand present; at 6 feet, becomes more dense, and dark yellow-brown, still slightly porous at 8 feet, becomes moist	4.9 10.8	111.4 114.7
	10							
	15					Bottom of pit at 12 feet Note: 1) No caving 2) Pit backfilled		

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Myers-Menifee
Date: August, 1988
Project No: 3892-01
Figure No: B-9

LOG OF TEST PITS

Surface Elevation: 1498° feet
Pit Orientation: N-S
Pit Dimensions: 2x15x8 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number: T-3

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (pcf)
ALLUVIUM	5		SC			Clayey SAND: fine-to coarse-grained, grayish- brown, dry and loose in the upper 1 feet due to discing, slightly moist and medium dense to dense below, slightly porous		
			SM			Silty SAND: fine-to coarse-grain, grayish-brown, slightly moist, medium dense to dense		
	10					Bottom of pit at 8 feet Note: 1) No caving 2) Pit backfilled		
	15							

Surface Elevation: 1498± feet
Pit Orientation: N45E
Pit Dimensions: 2x15x8 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number: T-4

ALLUVIUM (very recent)			SM			Silty SAND: fine to medium-grain, yellowish-brown, dry, loose, some sand layers present slightly moist at 2 feet	4.9	110.3
ALLUVIUM	5		SM			Silty SAND: fine-to medium-grain, yellowish-brown to grayish-brown, moist, medium dense, slightly porous	8.2	117.5
	10					Bottom of pit at 8 feet Note: 1) No caving 2) Pit backfilled		
	15							

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Myers-Menifee
Date: August, 1988
Project No: 3892-01
Figure No: B-10

LOG OF TEST PIT

Surface Elevation: 1509± feet
Pit Orientation: N-S
Pit Dimensions: 2x15x12 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number
T-5

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (p.c.f.)
ALLUVIUM	0		SC			Clayey SAND: fine-to medium-grain, grayish-to dark yellowish-brown, dry to 1 feet becoming slightly moist, medium dense, slightly porous, grades to silty sand		
			SM			Silty SAND: fine-to medium-grain, dark yellowish-brown (10YR4/3 to 4/4), slightly moist, becoming moist at 5 feet, medium dense to dense, slightly porous at 8 feet, more moist and coarser grained at 9 feet, dense and fine-to coarse-grain sand		
	5					Bottom of pit at 12 feet Note: 1) No caving 2) Pit backfilled		
	10							
	15							
	20							

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Myers-Menifee
Date: August, 1988
Project No: 3892-01
Figure No: B-11

LOG OF TEST PIT

Surface Elevation: 1509± feet
Pit Orientation: N-S
Pit Dimensions: 2x15x12 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number
T-6

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (p.c.f.)
			SC			Clayey SAND: fine-to coarse-grain, dark brown to dark yellowish-brown, slightly moist, medium dense *upper 1.5 loose); slightly porous		
ALLUVIUM	5		SM			Silty SAND: fine-to medium-grain, dark yellowish-brown, slightly moist, medium dense; becomes moist at 5 feet and more dense and grayish-brown (10YR4/2)) and less porous at 10 feet, moderately well developed peds with clay coating (10YR3/2-3/1) at 11.5 feet, reddish brown (10YR4/4) with grayish-green inclusions (2.5Y4/4)		
	10					Bottom of pit at 15 feet. Note: 1) No caving 2) Pit backfilled		
	15							
	20							

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Myers-Menifee
Date: August, 1988
Project No: 3892-01
Figure No: B-12

LOG OF TEST PITS

Surface Elevation: 1481± feet
Pit Orientation: E-W
Pit Dimensions: 2x15x10 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number T-7

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (pcf)
ALLUVIUM	5		SM			Silty SAND: fine-to medium-grain, yellowish-brown, moist, loose to 2 feet, medium dense below 2 feet	8.4	105.6
						at 4.5 feet, becomes slightly moist		
						at 6 feet, becomes coarser and more dense	9.3	94.4
						at 9 feet, becomes reddish-brown		
	10					Bottom of pit at 10 feet. Not: 1) No caving 2) Pit backfilled		
	15							

Surface Elevation: 1507± feet
Pit Orientation: N-S
Pit Dimensions: 2x15x8 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number T-8

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (pcf)
ALLUVIUM	5		SM			Silty SAND: fine-to medium grain, dark yellowish-brown, slightly moist, upper 1.5 feet disturbed by discing, medium dense below;		
						at 1.5-2.5 feet 12-inch diameter concrete irrigation line, line was previously broken and filled with soil, line trends E-W		
	10					at 5 feet, becomes more moist and dense		
	15					Bottom of pit at 8 feet. Note: 1) No caving 2) Pit backfilled		

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Myers-Menifee
Date: August, 1988
Project No: 3892-01
Figure No: B-13

LOG OF TEST PITS

Surface Elevation: 1468± feet
Pit Orientation: E-W
Pit Dimensions: 2x10x8 feet
Groundwater Depth: None Encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number: T-13

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (pcf)
ALLUVIUM	5		SM			Silty SAND: fine- to medium-grained, yellowish-brown, moist at 1 foot, loose to 1.5 feet @ 3 feet, becomes slightly moist and dense to medium dense and fine to coarse-grained @ 5 feet, dense @ 7 feet, becoming reddish-brown (7.5 YR 4/2), with some dark blue-gray oxide staining on ped surfaces, moist		
	10					Bottom of Pit at 8 feet. Notes: 1) No caving. 2) Pit backfilled.		
	15							

Surface Elevation: 1469± feet
Pit Orientation: E-W
Pit Dimensions: 2x15x10 feet
Groundwater Depth: None Encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number: T-14

ALLUVIUM	5		SM			Silty SAND: fine- to medium-grained, yellowish-brown, dry to slightly moist, loose to 1.5 feet, medium dense below @ 6 feet, becomes moist and more dense @ 8 feet, becoming reddish-brown and more dense		
	10					Bottom of Pit at 10 feet. Notes 1) No caving. 2) Pit backfilled.		
	15							

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EARTH SCIENCE CONSULTANTS

Myers-Menifee
Date: August, 1988
Project No: 3892-01
Figure No: B-16

LOGS OF BORINGS AND TEST PITS

GEO-SOILS GEOTECHNICAL REPORT
DATED SEPTEMBER 1990

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-3 SHEET 1 OF 2

DATE EXCAVATED 7-19-90

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ⛆ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
			47	SM	111.4	3.0	AGRICULTURAL FILL/COLLUVIUM: @ 0', Silty SAND, yellowish brown, dry to damp, dense; fine to coarse
			34	SM	119.8	6.2	
			27	SC	120.5	9.5	ALLUVIUM OLDER: @ 1', Silty SAND, reddish brown, damp, medium dense; fine to medium, occasional coarse
			24		117.6	11.0	
							@ 2', Clayey SAND, reddish brown, moist, medium dense; very fine to coarse
5			38	SM	111.4	13.2	@ 3', Continued as per 2'
							@ 5', Silty SAND, yellowish brown, moist, medium dense; fine to medium, some coarse
10			32	SW		1.8	@ 10', SAND, reddish brown, dry, dense; fine to medium
15			35+ 50/5"	SM	107.3	8.9	@ 15', Silty SAND, yellowish brown, moist, very dense; very fine to fine, occasional coarse
20			71			8.9	@ 20', Silty SAND, reddish brown, moist, very dense; fine to coarse
25			90		125.3	8.2	@ 25', Continued as per 20'

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-3 SHEET 2 OF 2

DATE EXCAVATED 7-19-90

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ⩛ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
35		▨	88			8.9	@ 30', Continued as per 25'
							@ 39', Ground water
40		▨	45+ 50/4"	SW	115.1	9.6	@ 40', SAND, reddish brown, moist, very dense; medium coarse, abundant mica
45							
50		▨	35+ 50/4"	SM	119.2	14.7	@ 50', Silty SAND, reddish brown, moist, very dense; fine to coarse, abundant mica
55							@ 55', no recovery
							Total depth: 57' Ground water encountered @ 39' Backfilled 07-19-90 * - Disturbed sample

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-4 SHEET 1 OF 3

DATE EXCAVATED 7-20-90

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ⩛ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undis-turbed	Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
			61	SM	121.4	1.2	ALLUVIUM (OLDER): @ 0', Silty SAND, light brown, dry, dense; very fine to fine
			28		107.0	6.2	@ 1', Silty SAND, reddish brown, damp, medium dense; fine to coarse
			12		110.0	6.2	@ 2', Continued as per 1'
			9		106.0	6.9	@ 3', Continued as per 2', loose
5			26		120.2	4.9	@ 5', Continued as per 3', medium dense with granitic chuncks in sample
10			72			7.6	@ 10', Silty SAND, reddish brown, damp to moist, very dense; fine to coarse
15			36		111.7	6.2	@ 15', Continued as per 10', damp, medium dense; abundant mica
20			31			11.8	@ 20', Silty SAND, reddish brown, moist, dense; fine to coarse
25			24+ 50/5"	SW	123.8	6.5	@ 25', SAND, yellowish brown, damp, very dense; medium grained to very coarse, abundant white granitic grains, occasional granitic gravel

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Menifee Ranch

BORING B-4 SHEET 2 OF 3

DATE EXCAVATED 7-20-90

SAMPLE METHOD: 140 lb. @ 30" drop

Standard Penetration Test Water Seepage into hole

Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Description of Material
			38	SM		13.2	@ 30', Silty SAND, yellowish brown, moist, very dense; very fine to fine, abundant mica, occasional granitic gravel
35							
40			38+ 50/6"		113.8	6.2	@ 40', Silty SAND, reddish brown, damp, dense; fine to coarse, abundant mica
45							
50			50+ 50/5"			11.8	@ 50', Silty SAND, yellowish brown, very moist, very dense; fine to coarse, abundant granitic grains, abundant mica
55							

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-4 SHEET 3 OF 3

DATE EXCAVATED 7-20-90

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ⛛ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
		▨	35+ 50/6"		127.6	11.7	0 60', Silty SAND, reddish brown, moist, very dense; very fine to fine, abundant mica
							Total depth: 62'
							No ground water encountered
							Backfilled 07-20-90
65							
70							
75							
80							
85							

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-9 SHEET 1 OF 2

DATE EXCAVATED 7-23-90

SAMPLE METHOD: 140 lb. @ 30" drop

Standard Penetration Test Water Seepage into hole

Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
			40	SM	107.9	2.7	AGRICULTURAL FILL/COLLUVIUM: @ 0', Silty SAND, yellowish brown, dry, dense; fine to coarse, common rootlets
					117.9	6.2	
			53	SM	126.3	8.2	@ 1', Continued as per 0', damp
			39		109.6	5.5	ALLUVIUM (OLDER): @ 2', Silty SAND, reddish brown, moist, dense; fine to coarse, abundant granitic
							@ 3', Continued as per 2', damp
5			24		122.2	9.6	@ 5', Silty SAND, reddish brown, moist, medium dense; fine to medium, common mica
10			68			13.2	@ 10', Silty SAND, reddish brown, moist, dense; fine to coarse, occasional granitic grains
15							
20			76		127.0	10.9	@ 20', Silty SAND, yellowish brown, moist, very dense; fine to coarse
25							

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Menifee Ranch

BORING B-9 SHEET 2 OF 2

DATE EXCAVATED 7-23-90

SAMPLE METHOD: 140 lb. @ 30" drop

▩ Standard Penetration Test ∿ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
		▩	65			8.2	@ 30', Continued as per 20'
							Total depth: 32'
							No ground water encountered
							Backfilled 07-23-90
35							
40							
45							
50							
55							

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-10 SHEET 1 OF 1

DATE EXCAVATED 7-23-90

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ⚲ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Description of Material
		▨	33	SM	112.6	4.9	AGRICULTURAL FILL/COLLUVIUM: @ 0', Silty SAND, yellowish brown, damp, loose to medium dense; fine to coarse, occasional rootlets
		▨	36		99.9	13.2	
		▨	39	SM	98.8	19.5	@ 1', Continued as per @', moist to wet
		▨	40		112.4	8.9	ALLUVIUM (OLDER): @ 2', Silty SAND, yellowish brown, wet, dense; fine to coarse, wet
							@ 3', Continued as per 2', moist
5		▨	72		126.3	6.5	@ 6', Silty SAND, reddish brown, damp, dense; fine to very coarse, abundant granitic grains
10		▨	85			14.0	@ 10', Silty SAND, yellowish brown, moist, very dense; fine to coarse
15		▨	75		113.8	3.6	@ 15', Silty SAND, reddish brown, damp, very dense; fine to coarse, abundant mica
20							
25		▨	50			11.8	@ 25', Continued as per 15', moist
							Total depth: 27'
							No ground water encountered
							Backfilled 07-23-90

GEOSOILS, INC. W.O. 392-A-RC

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-58	0-1'	SM	1'	4.6	113.6	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose to medium dense; fine to medium
	1-5'	SM	3' 5'	7.9 11.9	113.9 105.9	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp, dense; fine to medium, moderately porous, slightly cemented
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90
TP-59	0-2'	SM	2'	6.9	107.9	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose to medium dense; fine to medium
	2-4'	SM/SC				ALLUVIUM (OLDER): Clayey Silty SAND, yellowish reddish brown, damp, very dense; fine to coarse, CaCo3 stringers, moderately cemented
						Total depth: 4' No ground water encountered No caving Backfilled 07-24-90

PLATE B-62

GEOSOILS, INC.

W.O. 392-A-RC

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-60	0-1.5'	SM	1'	5.1	118.7	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose to medium dense; fine to coarse
	1.5-5'	SM/SC	3' 5'	10.4 8.8	106.6 102.2	ALLUVIUM (OLDER): Clayey Silty SAND, dark reddish brown, dense; fine to medium, moderately porous, moderately cemented
						Total depth: 5' No ground water encountered No caving Backfilled 07-25-90
TP-61	0-1'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose; fine to medium
	1-4'	SM	2' 4'	5.4 5.6	114.7 106.5	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp, dense; fine to coarse, moderately porous, weakly cemented
						Total depth: 4' No ground water encountered No caving Backfilled 07-25-90

PLATE B-63

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-62	0-1.5'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose; medium to coarse, interbedded sand layers
	1.5-4'	SM/SC	2'	3.9	114.0	ALLUVIUM (OLDER): Clayey Silty SAND, dark reddish brown, very dense; fine to coarse, very porous, well cemented
						Total depth: 4' No ground water encountered No caving Backfilled 07-25-90
TP-63	0-1'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose; fine to medium
	1-5'	SM	1' 3' 5'	3.5 7.7 12.7	118.1 117.2 99.7	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp, dense; fine to coarse, slightly porous, slightly cemented, increasing porosity with depth
						Total depth: 5' No ground water encountered No caving Backfilled 07-25-90

PLATE B-64

GEOSOILS, INC.. W.O. 392-A-RC

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-64	0-1'	SM				ALLUVIUM (YOUNGEST): Silty SAND, grayish brown, damp, loose; very fine to fine, abundant roots
	1-1 3/4'	SP	1'	2.2	95.0	ALLUVIUM (YOUNG): SAND, orangish grayish brown, damp to moist, medium dense to dense; medium
	1 3/4-5'	SM	3' 5' 3-5' bulk	9.4 11.9	123.0 105.1	Silty SAND, dark grayish brown, damp to moist, dense; very fine to fine, micaceous
						Total depth: 5' No ground water encountered No caving Backfilled 07-25-90
TP-65	0-1'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose; fine to medium
	1-4'	SM/SC	2' 4'	2.4 6.5	114.6 117.4	ALLUVIUM (OLDER): Clayey Silty SAND, dark reddish brown, damp, dense; fine to medium, moderately porous, slightly to moderately cemented
						Total depth: 4' No ground water encountered No caving Backfilled 07-25-90

PLATE B-65

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-66	0-1'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose to medium dense; fine to medium
	1-5'	SM/SC	1' 3' 5'	3.3 6.6 9.8	108.8 98.4 113.0	ALLUVIUM (OLDER): Clayey Silty SAND, damp, dense; fine to coarse, increasing porosity with depth, moderately cemented
						Total depth: 5' No ground water encountered No caving Backfilled 07-25-90
TP-67	0-1'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose; fine to medium
	1-4'	SM/SC	2' 4'	7.6 11.7	118.0 106.8	ALLUVIUM (OLDER): Clayey Silty SAND, dark reddish brown, dense to very dense; fine to coarse, slightly porous, moderately cemented
						Total depth: 4' No ground water encountered No caving Backfilled 07-25-90

GEOSOILS, INC. W.O. 392-A-RC

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-68	0-1'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose; fine to coarse
	1-5'	SM/SC	1' 3'	3.5 12.3	113.7 110.0	ALLUVIUM (OLDER): Clayey Silty SAND, dark reddish brown, damp, moist, dense to very dense; medium to coarse, slightly porous, moderately cemented
						Total depth: 5' No ground water encountered No caving Backfilled 07-25-90
TP-69	0-1'	SM				AGRICULTURAL FILL/COLLUVIUM; Silty SAND, grayish brown, damp, loose; fine to medium
	1-5'	SM/SC				ALLUVIUM (OLDER); Clayey Silty SAND, dark reddish brown, damp, dense to very dense; medium to coarse, moderately porous, moderately cemented
						Total depth: 4' No ground water encountered No caving Backfilled 07-25-90

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-70	0-1'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose to medium dense; fine to medium
	1-4'	SM/SC	2' 4'	7.8 10.9	115.9 119.7	ALLUVIUM (OLDER): Clayey Silty SAND, dark reddish brown, moist, dense; fine to coarse, slightly porous, moderately cemented
						Total depth: 4' No ground water encountered No caving Backfilled 07-25-90

PLATE B-68

Appendix B
Borings and Test Pits by Others

GANICO, 2004b
"South Half"

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
Mobile B53	8 Inches	1501 feet	BB-1

Date Drilled: 7/2/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
						0		SC	Clayey SAND: fine- to coarse-grained, dark yellowish-brown, moist at 2 feet; disturbed at 0 to 2 feet
		21	9.5	125.6					@ 2 feet, dark brown (10YR-3/3), moist
									OLD ALLUVIUM (Qalo)
		9	4.3	112.8		5		SP	SAND: fine- to coarse-grained, dark yellow-brown
									OLD ALLUVIUM (Qalo)
		43	7.9	128.8					Silty SAND with Clay: fine- to coarse-grained, brown (10YR-4/3), moist, dense
		50/7"	9.8	123.8		10			@ 10 feet, mostly fine- to medium-grained and more silty, moist, dense, still 10YR-4/3 color
								SM	
		40				15			@ 15 feet, less silty and coarser
		65				20			@ 20 feet, more silty, moist
									@ 20.5 feet, slightly clayey, less silty
						25			OLD ALLUVIUM (Qalo)
		65							Bottom of boring at 30 feet. Note: 1) No ground water encountered. 2) No caving. 3) Boring backfilled.

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Irvine, California

Menifee Valley Ranch, LLC
PA 11-13

Project No.:	Figure No.:
G6134-02	B-2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1466.2 feet	BB-2

Date Drilled: 9/2/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
								SM	Silty SAND: fine- to coarse-grained, slightly moist, upper 24 inches disturbed
		15	8.7	108.2					@ 3 feet, fine- to medium-grained, greenish-brown (2.5Y-4/3-4/4), and more silty
		20	18.1	97.5		5			@ 5.5 to 7.5 feet, Sandy SILT: greenish-brown, moist, stiff
		20	8.7	118.8				ML	
		24	4.6	127.3		10		SM	@ 9 feet, coarse, sand layer @ 10 feet, fine- to coarse-grained Silty SAND
		32	4.0	118.6		15			@ 15 feet, dark yellowish-brown (10YR-4/4)
		36	7.1	119.1		20			@ 20 feet, darker (10YR-4/3) and moist and more silty
	S P	35				25			@ 25 feet, moist, very silty

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Project No.: G6134-02

Figure No.: B-3.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1466.2 feet	BB-2

Date Drilled: 9/2/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	33						ML	Sandy SILT: brown to dark brown (10YR-4/3-3/3), moist to very moist, stiff, micaceous
	S P	31	▽			35			@ 36 feet, very moist to saturated and more sandy, fine to medium micas
									OLD ALLUVIUM (Qalo)
	S P	38				40		SM	Silty SAND: fine- to coarse-grained, dark brown, saturated, dense, fine to medium micas
	S P	59				45			@ 45 feet, less silty, saturated, dense
									OLD ALLUVIUM
						50			Bottom of boring at 46.5 feet.
									Note:
									1) Ground water at 37.5 feet.
									2) Minor caving.
									3) Boring backfilled and tamped.
						55			SP indicates Standard Penetration Test

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Project No.:	Figure No.:
G6134-02	B-3.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1496.5 feet	BB-3

Date Drilled: 9/2/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
									Silty SAND: fine- to coarse-grained, dark yellowish-brown, slightly moist to moist, upper 24 inches disturbed
		12	1.3	115.5					@ 2 feet, slightly clayey
									@ 4 feet, slightly clayey, brown (10YR-4/3)
		16	6.9	113.2		5			
									@ 7 feet, dark yellowish-brown (10YR-4/4)
		28	5.0	128.3					
						10		SM	@ 10 feet, darker and more moisture
		21	8.3	122.9					
						15			@ 15 feet, more sandy
		19	7.7	111.1					
									@ 19 feet, fine- to coarse-grained, slightly moist, dense sand
								SP	
		20	1.2	105.2		20			OLD ALLUVIUM
									Bottom of boring at 21 feet.
									Note:
						25			1) No ground water encountered.
									2) No caving.
									3) Boring backfilled and tamped.

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Project No.:	Figure No.:
G6134-02	B-4

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1474.5 feet	BB-4
Date Drilled: 9/10/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
								SM/ SC	Silty SAND with Clay: fine- to medium-grained, dark yellowish-brown, moist at 2 feet; disturbed to about 24 inches
		12	10.3	122.6					@ 2 feet, coarser
		17	7.8	129.3		5			@ 4 feet, less clayey, fine- to coarse-grained, medium dense to dense
		31	10.6	123.5					@ 6 feet, more silty and few white carbonate stringers
		23	6.4	124.9					@ 8 feet, more sandy, some poorly developed clay peds
						10			OLD ALLUVIUM (Qalo)
		19	10.9	122.6				ML	Sandy SILT: greenish-brown (2.5Y-4/4-4/3), moist, stiff, fine- to medium micas
						15			OLD ALLUVIUM (Qalo)
		50	9.6	125.9				SM	Silty SAND: fine- to medium-grained, dark yellowish-brown to brown (10YR-4/4-4/3) moist, dense, some greenish-brown mottling at 18 feet
						20			OLD ALLUVIUM (Qalo)
									Bottom of boring at 20 feet.
									Note:
									1) No ground water encountered.
						25			2) No caving.
									3) Boring backfilled and tamped.

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Project No.:	Figure No.:
G6134-02	B-5

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1476.4 feet	BB-5
Date Drilled: 9/10/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
								SC	Clayey SAND: fine- to medium-grained, dark yellowish-brown, moist, disturbed to about 24 inches
		10	10.2	117.8					@ 2 feet, less clayey
									OLD ALLUVIUM (Qalo)
		20	7.8	125.5		5		SM/ SC	Silty SAND with Clay: fine- to coarse-grained, dark yellowish-brown (10YR-4/4), moist, dense; few scattered fine, sub-angular gravels
		60	9.1	128.7					@ 6 feet, coarser, slightly less moisture, more dense
									OLD ALLUVIUM (Qalo)
		55	8.2	125.3		10		ML	Sandy SILT: greenish-brown (2.5Y-4/4), moist, very stiff
									OLD ALLUVIUM (Qalo)
		50/9"	6.2	124.1		15		SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown to strong brown (10YR-4/3-7.5YR-4/6) moist, dense
		50	5.0	117.2					@ 18 feet, more silty and less coarse sand and some light gray carbonate stringers
						20			OLD ALLUVIUM (Qalo)
									Bottom of boring at 20 feet.
									Note:
						25			1) No ground water encountered.
									2) No caving.
									3) Boring backfilled and tamped.

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Project No.:	Figure No.:
G6134-02	B-6

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1488 feet	
Date Drilled: 9/10/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		BB-6

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
						0		SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown, moist, disturbed to about 24 inches
		6	3.0	104.1					YOUNGER ALLUVIUM (Qal_1)
		10	1.8	108.6		5		SP	SAND: fine- to coarse-grained, yellowish-brown, slightly moist, medium dense
		10	6.2	100.0					@ 6 feet, dark yellowish-brown, few lenses of brown Silty SAND
		14	2.5	104.2					@ 8 feet, fine- to medium-grained and micaceous, slightly moist and medium dense
						10			YOUNGER ALLUVIUM (Qal_1)
		20	6.8	125.2				SM	Silty SAND: fine- to coarse-grained, greenish-brown (2.5Y-4/3) medium dense to dense, slightly moist to moist
						15			
		41	3.7	112.1					@ 18 feet, less silty and more coarse sand, dense
									@ 18.8 feet, layer of gravelly sand with angular grains
						20			
	S P	45				25			@ 25 feet, fine- to coarse-grained and dark yellowish-brown (10YR-4/4) slightly moist, and dense
									@ 28 feet, slight cement layer
									@ 29 feet, more silty and moist

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Project No.:	Figure No.:
G6134-02	B-7.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1488 feet	BB-6

Date Drilled: 9/10/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
									@ 30 to 31 feet, slightly cemented
									@ 32 feet, becomes slightly cemented again, difficult to drill
	S P	65				35			@ 35 feet, slightly moist to moist, dense
								SM	
	S P	60				40			
						45			OLD ALLUVIUM (Qalo)
									Bottom of boring at 45 feet.
									Note:
									1) No ground water encountered.
						50			2) No caving.
									3) Boring backfilled and tamped.
									4) "SP" indicates Standard Penetration Test.
						55			

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Project No.:	Figure No.:
G6134-02	B-7.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1497.6 feet	BB-7

Date Drilled: 9/10/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
								SM	Silty SAND: fine- to coarse-grained, yellowish-brown, slightly moist to moist, disturbed to about 24 inches
									YOUNGER ALLUVIUM (Qal$_1$)
		13	4.6	115.8				SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown to brown (10YR-4/4-4/3) moist, medium dense to dense
						5			
		19	3.8	124.3					@ 5 feet, slightly clayey and some poorly developed clay peds, darker (10YR-3/3)
		22	5.7	125.1					@ 7 feet, more silty
						10			
		20	3.9	117.7					@ 10 feet, more sandy
						15			
		42	6.2	129.0					@ 15 feet, slightly clayey and brown (10YR-4/3)
									@ 18 feet, more sandy and greenish-brown (2.5Y-4/3)
						20			
		38	3.8	122.4					OLD ALLUVIUM (Qalo)
									Bottom of boimg at 21 feet.
									Note:
						25			1) No ground water encountered.
									2) No caving.
									3) Boring backfilled and tamped.

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Project No.:	Figure No.:
G6134-02	B-8

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1503.5 feet	
Date Drilled: 9/10/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		BB-8

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
									Silty SAND: fine- to coarse-grained, dark yellowish-brown, moist, disturbed to about 24 inches
		16	3.7	116.9					@ 2 feet, moist, medium dense to dense, more silty
		20	5.9	121.6		5			@ 4 feet, darker, more silty
		50	7.3	130.9					@ 6 feet, dense, less silty
									@ 7 feet, more silty
		37	6.8	128.8					@ 8 feet, very silty and more moisture and greenish-brown (2.5Y-4/3-4/4)
						10			
		60	6.1	130.7				SM	@ 12 feet, slightly clayey and slightly cemented, some poorly developed clay peds
						15			
									@ 17 feet, slightly cemented and difficult drilling
		50/9"	4.6	119.0					@ 18 feet, more silty and slightly cemented
						20			OLD ALLUVIUM (Qalo)
								ML	Sandy SILT: greenish-brown (2.5Y-4/3) moist, very stiff, micaceous
	S P	36				25			

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Project No.:	Figure No.:
G6134-02	B-9.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1503.5 feet	BB-8
Date Drilled: 9/10/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOILROCK SYMBOL	SOILROCK TYPE	Descriptions and Remarks
	S P	34							Silty SAND: fine- to coarse-grained, greenish-brown, moist, dense
						35		SM	
	S P	31							@ 35 feet, 6-inch medium to coarse-grained sand layer
									OLD ALLUVIUM (Qalo)
	S P	28				40		SP	SAND: fine- to coarse-grained, dark yellowish-brown, slightly moist, medium dense to dense
								SM	@ 44 feet, layer of Silty SAND
	S P	41				45			
									@ 45 feet, SAND: mostly coarse-grained
								SP	
									OLD ALLUVIUM (Qalo)
						50			Bottom fo boring at 50 feet.
									Note:
									1) No ground water encountered.
						55			2) Minor caving below 40 feet.
									3) Boring backfilled and tamped.
									4) "SP" indicates Standard Penetration Test.

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Project No.:	Figure No.:
G6134-02	B-9.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1486 feet	BB-9

Date Drilled: 9/10/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
								SM	Silty SAND: fine- to medium-grained, greenish-brown, moist, disturbed to 24 inches
		11	6.0	113.4					
									@ 4 feet, very moist and more silty
		8	8.1	109.3		5			YOUNGER ALLUVIUM (Qal_1)
		6	8.5	98.5					Sandy SILT: greenish-brown, moist, firm, micaceous
									@ 7 feet, very moist and dark greyish-brown (2.5Y-3/2), micaceous
		8	17.8	110.4				ML	
						10			
		11	14.4	94.9					@ 13 feet, dark greenish-brown (2.5Y-3/3) very moist, firm, micaceous
									YOUNGER ALLUVIUM (Qal_1)
						15			
								SM	Silty SAND with Clay: fine- to coarse-grained, greenish-brown, moist, medium dense to dense
		16	5.2	113.8				SP	@ 18.5 feet, layer of medium to coarse sand, less clay
						20			
								SM	
						25			
	S	P 17							@ 25 feet, very silty and moist, medium dense and fine- to medium-grained

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Project No.:	Figure No.:
G6134-02	B-10.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1486 feet	BB-9
Date Drilled: 9/10/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	26						SP	SAND: fine- to coarse-grained, greenish-brown (2.5Y-4/4) slightly moist, medium dense to dense, micaceous, slightly silty
		plug in auger				35			@ 35 feet, mostly medium to coarse, sub-angular sand, slightly moist, loose layer at 35 to 37 feet
									@ 40 feet, dense, gravelly, Clayey SAND
						40			@ 40.5 feet, weathered bedrock OLD ALLUVIUM (Qalo)
	S P	723/50-6"						BEDROCK	GRANODIORITE: weathered, coarsely crystalline
	S P	50/2"				45			@ 45 feet, becomes very difficult to drill and less weathered CRYSTALLINE BEDROCK (Kgr)
						50			Bottom of boring at 48 feet. Note: 1) No ground water encountered. 2) No caving. 3) Boring backfilled and tamped. 4) "SP" indicates Standard Penetration Test.
						55			

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Project No.:	Figure No.:
G6134-02	B-10.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1491.5 feet	BB-10

Date Drilled: 9/10/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
						0		SM	Silty SAND: fine- to medium-grained, yellowish-brown, moist at 1 foot disturbed to about 24 inches
		20	6.4	129.8					@ 3 feet, more moisture and greenish-brown (2.5Y4/3-4/4)
		21	8.0	123.8		5			@ 5 feet, more silty
								ML	
		19	5.5	114.5					@ 6 feet, layer of Sandy SILT: greenish-brown, moist, firm, micaceous
		20	5.1	110.7		10		SM	@ 10 feet, more sandy and less moisture, dense
		32	7.9	123.7		15			@ 15 feet, more silty, more moisture
		23	9.7	122.5		20			@ 20 feet, very moist and darker OLD ALLUVIUM (Qalo)
						25			Bottom of boring at 21 feet. Note: 1) No ground water encountered. 2) No caving. 3) Boring backfilled and tamped.

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Project No.:	Figure No.:
G6134-02	B-11

LOG OF TEST PITS

Surface Elevation: 1472'		Logged By: GDH		**Test Pit Number TPN-1**
Pit Orientation: E-W		Date: 9/4/2003		
Pit Dimensions: 2x15x6'		Equipment: Backhoe		
Ground Water Depth: None Encountered				

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
			6.7	118.3		SM/ SC	Silty SAND with Clay: dark yellowish-brown, slightly moist to moist, upper 24 inches disturbed OLD ALLUIVUM (Qalo)
	*	5	8.0	109.9		SM/ SC	Silty SAND with Clay: fine- to coarse-grained, dark yellowish-brown, slightly moist to moist, dense, some poorly developed clay peds; very silty OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 6 feet. Note: 1) No caving. 2) Pit backfilled and tamped. * Partial recovery
		15					

Surface Elevation: 1466.3'		Logged By: GDH		**Test Pit Number TPN-2**
Pit Orientation: E-W		Date: 9/4/2003		
Pit Dimensions: 2x18x7'		Equipment: Backhoe		
Ground Water Depth: None Encountered				

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
			6.6	107.5		SM	Silty SAND: fine- to medium-grained, brown (10YR-4/3), moist, medium dense but with some loose pockets to 3 feet
							3 feet, irregular layer and round and oval pods of light greenish-brown Sandy SILT, moist and soft RECENT ALLUVIUM (Qal)
			11.8	106.8		SM	@ 4 feet, greenish-brown (2.5Y-4/3) YOUNGER ALLUVIUM (Qal$_1$)?
		5				SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown (10YR-4/4-4/6) slightly moist to moist, dense, some thin cemented layers and lenses, some clay ped development OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 7 feet. Note: 1) No caving. 2) Pit backfilled and tamped.
		15					

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Figure No. B-12

LOG OF TEST PITS

Surface Elevation: 1464.4'
Pit Orientation: E-W
Pit Dimensions: 2x15x6'
Ground Water Depth: None Encountered

Logged By: GDH
Date: 9/4/2003
Equipment: Backhoe

Test Pit Number TPN-3

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SC	Clayey SAND: fine- to medium-grained, brown, moist, disturbed to 24 inches
		5				SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown (10YR-4/4) poorly developed ped surfaces, slightly moist to moist, dense OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 6 feet. Note: 1) No caving. 2) Pit backfilled.
		15					

Surface Elevation: 1470'
Pit Orientation: E-W
Pit Dimensions: 2x18x7'
Ground Water Depth: None Encountered

Logged By: GDH
Date: 9/4/2003
Equipment: Backhoe

Test Pit Number TPN-4

			10.8	117.3		SC/CL	Clayey SAND/Sandy CLAY: dark brown, moist, stiff at 2 feet; disturbed to 24 inches
		5	7.9	108.0		SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown, moist, dense, a few thin cemented lenses @ 6 feet, more sandy (less silty) OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 7 feet. Note: 1) No caving. 2) Pit backfilled and tamped.
		15					

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Figure No. B-13

LOG OF TEST PITS

Surface Elevation:	1481'	Logged By:	GDH	**Test Pit Number TPN-5**
Pit Orientation:	E-W	Date:	9/4/2003	
Pit Dimensions:	2x15x7'	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples		Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SM/ SC	Silty SAND with Clay: fine- to coarse-grained, brown (10YR-4/3) moist, medium dense, disturbed to 18 inches
			5.8	105.4			
			5.7	114.0			YOUNGER ALLUVIUM (Qal_1)
		5	4.7	120.2		SM	Silty SAND: dark yellowish-brown to dark brown (10YR-3/4-3/3) slightly moist to moist, some fine, sub-angular gravel and few caorse silty sand lenses
							OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 7 feet. Note: 1) No caving. 2) Pit backfilled and tamped.
		15					

Surface Elevation:	1486.7'	Logged By:	GDH	**Test Pit Number TPN-6**
Pit Orientation:	E-W	Date:	9/4/2003	
Pit Dimensions:	2x18x10'	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

						SM	Silty SAND: fine- to coarse-grained, yellowish-brown, moist at 1 foot; disturbed to 2 feet
			3.2	106.9			@ 3 feet, coarser and more moisture, loose to medium dense
			4.0	104.9			@
		5	4.5	107.0			@ 5 feet, some fine- sub-angular gravel and more coarse sand, loose to medium dense, moist YOUNGER ALLUVIUM(Qal_1)
						SP	SAND: fine- to coarse-grained, light yellowish-brown, dry to slightly moist, mostly medium to coarse, sub-angular sand, some fine gravel YOUNGER ALLUVIUM(Qal_1)
			4.4	106.4		SM	Silty SAND: fine- to coarse-grained, greenish-brown, slightly moist to moist, medium dense YOUNGER ALLUVIUM(Qal_1)
		10					Bottom of pit at 10 feet. Note: 1) Minor caving at 6 to 8 feet. 2) Pit backfilled and tamped.
		15					

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Figure No. B-14

LOG OF TEST PITS

Surface Elevation: 1487'	Logged By: GDH	**Test Pit Number TPN-7**
Pit Orientation: E-W	Date: 9/4/2003	
Pit Dimensions: 2x15x7'	Equipment: Backhoe	
Ground Water Depth: None Encountered		

Samples							
Bulk	Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SC	Clayey SAND: fine- to coarse-grained, dark yellowish-brown, moist, disturbed to 24 inches
		5				SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown, slightly moist to moist, dense, some poorly developed clay peds @ 6 feet, more moisture and more silty OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 7 feet. Note: 1) No caving. 2) Pit backfilled and tamped.
		15					

Surface Elevation: 1484'	Logged By: GDH	**Test Pit Number TPN-8**
Pit Orientation: N-S	Date: 9/4/2003	
Pit Dimensions: 2x12x6'	Equipment: Backhoe	
Ground Water Depth: None Encountered		

			5.5	111.3		SM/SC	Silty SAND with Clay: dark yellowish-brown, moist at 1 foot; fine to coarse-grained, disturbed to 2 feet
		5	4.6	105.9		SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown, moist, dense @ 4.5 feet, finer, more silty, some poorly developed clay peds OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 6 feet. Note: 1) No caving. 2) Pit backfilled and tamped.
		15					

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Figure No. B-15

LOG OF TEST PITS

Surface Elevation:	1482'	Logged By:	GDH	**Test Pit Number TPN-9**
Pit Orientation:	E-W	Date:	9/4/2003	
Pit Dimensions:	2x15x10'	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SM/ SC	Silty SAND with Clay: fine- to coarse-grained, dark yellowish-brown, moist at 1 foot; disturbed to 18 inches
			8.4	119.0			OLD ALLUVIUM (Qalo)
		5	6.9	116.7			Silty SAND: fine- to coarse-grained, dark yellowish-brown to dark brown (10YR-4/3-3/3) moist, dense, some poorly developed clay peds
						SC	@ 7 feet, slightly cemented, coarse-grained sand with clay
						SM	@ 8 feet, Silty SAND: moist, dense
		10					OLD ALLUVIUM (Qalo)
							Bottom of pit at 10 feet.
							Note:
							1) No caving.
		15					2) Pit backfilled and tamped.

Surface Elevation:	1488'	Logged By:	GDH	**Test Pit Number TPN-10**
Pit Orientation:	N40E	Date:	9/16/2003	
Pit Dimensions:	2x12x8'	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SM	Silty SAND: fine- to coarse-grained, slightly moist to moist, yellowish-brown, disturbed to 24 inches, loose to medium dense
			3.7	106.4			YOUNGER ALLUVIUM (Qal$_1$)
		5	8.4	111.7		SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown to dark brown (10YR-3/4-3/3), moist, medium dense to dense, slightly clayey, slightly porous at 4.5 to 5.5 feet
							YOUNGER ALLUVIUM (Qal$_1$)
		10					Bottom of pit at 6 feet.
							Note:
							1) No caving.
		15					2) Pit backfilled and tamped.

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Project No: G6134-02

Figure No. B-16

LOG OF TEST PITS

Surface Elevation: 1491.5'		Logged By: GDH		**Test Pit Number TPN-11**
Pit Orientation: N60W		Date: 9/16/2003		
Pit Dimensions: 3x14x10'		Equipment: Backhoe		
Ground Water Depth: None Encountered				

Samples							
Bulk	Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SM	Silty SAND: fine- to coarse-grained, slightly moist to moist, yellowish-brown, disturbed to 24 inches, loose to medium dense
							@ 4 feet, more sandy and coarser
							YOUNGER ALLUVIUM (Qal_1)
		5					
			3.4	100		SP	SAND: fine- to coarse-grained, dark yellowish-brown (10YR-3/4), slightly moist, losoe to medium dense; some fine, sub-angular gravel; slightly silty YOUNGER ALLUVIUM (Qal_1)
						SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown (10YR-3/4) to brown (10YR-3/3), slightly moist, medium dense to dense, some gravelly sand lenses
		10					OLD ALLUVIUM (Qalo)
							Bottom of pit at 10 feet.
							Note:
							1) No caving.
		15					2) Pit backfilled.

Surface Elevation: 1501-1504'		Logged By: GDH		**Test Pit Number TPN-12**
Pit Orientation: N-S		Date: 9/16/2003		
Pit Dimensions: 3x18x14'		Equipment: Backhoe		
Ground Water Depth: None Encountered				

						SM	Silty SAND: fine- to coarse-grained, yellowish-brown, slightly moist, loose, moderately to very porous, rodent holes to 4 feet deep; some scattered, very weathered granodiorite cobbles and few small boulders
							@ 3 feet, slightly clayey and slightly to moderately porous and dark yellowish-brown (10YR-4/4-3/4)
		5					@ 4 feet, small, soft granodiorite boulder
							@ 7 feet, slightly porous and slightly moist, medium dense
*	*						@ 9 feet, less clayey
		10					@ 10-11 feet, some moderately well rounded, soft to hard, granitic cobbles and boulders with very sandy matrix
							COLLUVIUM (Qcol)
						BEDROCK	GRANODIORITE: coarsely ctystalline, weathered, greenish-brown to light gray
							CRYSTALLINE BEDROCK (Kgr)
							Bottom of pit at 14 feet. Note:
							1) No caving.
		15					2) Pit backfilled and tamped.

* * No Recovery

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Figure No. B-17

LOG OF TEST PITS

Surface Elevation:	1495-1498'	Logged By:	GDH	**Test Pit Number TPN-13**
Pit Orientation:	N35W	Date:	9/16/2003	
Pit Dimensions:	3x12x8'	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
		5				SM	Silty SAND: fine- to coarse-grained, yellowish-brown, slightly moist, loose, porous
							@ 3.5 feet, slightly to moderately porous, dark yellowish-brown and slightly clayey; some scattered, soft weathered granodiorite cobbles and boulders
							COLLUVIUM (Qcol)
						BEDROCK	GRANODIORITE: coarsely crystalline, weathered, yellowish-brown to light gray
							CRYSTALLINE BEDROCK (Kgr)
		10					Bottom of pit at 8 feet.
							Note:
							1) No caving.
		15					2) Pit backfilled and tamped.

Surface Elevation:	1493.4'	Logged By:	GDH	**Test Pit Number TPN-14**
Pit Orientation:	N-S	Date:	9/16/2003	
Pit Dimensions:	3x10x7'	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
					SM	Silty SAND: fine- to coarse-grained, yellowish-brown, slightly moist to moist, disturbed to 24 inches
					SC	@ 2 feet, becomes dark yellowish-brown (10YR-3/4) and slightly clayey with some poorly developed clay ped surfaces; moist, moderately porous
	5	8.9	105.9		SM	@ 4 feet, less clayey, more silty, moist, medium dense and dark brown (10YR-3/3), slightly porous
						@ 6 feet, more sandy and less moisture
						OLD ALLUVIUM (Qalo)
	10					Bottom of pit at 7 feet.
						Note:
						1) No caving.
	15					2) Pit backfilled and tamped.

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Date: June-04

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Figure No. B-18

LOG OF TEST PITS

Surface Elevation:	1498.3'	Logged By:	GDH	**Test Pit Number TPN-15**
Pit Orientation:	E-W	Date:	9/16/2003	
Pit Dimensions:	3x10x7'	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples		Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
Bulk	Tube						
		5	5.8	104.9		SM	Silty SAND: fine- to coarse-grained, yellowish-brown, slightly moist to moist, disturbed to 24 inches @ 2 feet, moist @ 4 to 5.5 feet, some subtile thin lenses of dark brown Silty SAND with Clay @ 5 feet, few sub-angular gravels YOUNGER ALLUVIUM (Qal,)
						SM	Silty SAND: fine- to coarse-grained, greenish-brown (2.5Y-4/3), moist, medium dense to dense OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 7 feet. Note: 1) No caving. 2) Pit backfilled and tamped.
		15					

Surface Elevation:	1490.3'	Logged By:	GDH	**Test Pit Number TPN-16**
Pit Orientation:	N-S	Date:	9/16/2003	
Pit Dimensions:	3x10x7'	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

		5	6.3	106.1		SM	Silty SAND: fine- to coarse-grained, slightly moist to moist, disturbed to 24 inches @ 2 feet, moist, slightly clayey and darker @ 3 feet, less clayey @ 4 to 5 feet, fine to coarse SAND with some very thin clayey sand lenses and some fine, sub-angular gravel YOUNGER ALLUVIUM (Qal,)
						SM/ SC	Silty SAND with Clay: fine- to coarse-grained, dark greenish-brown (2.5Y-4/3), moist, medium dense to dense @ 6 feet, slightly cemented OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 7 feet. Note: 1) No caving. 2) Pit backfilled and tamped.
		15					

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Menifee Valley Ranch, LLC
PA 11-13

Date: June-04

Project No: G6134-02

Figure No. B-19

LOG OF TEST PITS

Surface Elevation: 1488'	Logged By: GDH	**Test Pit Number**
Pit Orientation: N40E	Date: 9/16/2003	**TPN-17**
Pit Dimensions: 3x10x10'	Equipment: Backhoe	
Ground Water Depth: None Encountered		

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SM/ SC	Silty SAND with Clay: dark yellowish-brown, slightly moist to moist, disturbed to 24"
		5	7.1	98.4		SM	Silty SAND: fine- to coarse-grained, moist, dark yellowish-brown (10YR-3/4), medium dense, slightly porous, some tin irregular lenses of dark brown Silty SAND with Clay @ 5 feet, more silty, moist @ 8 feet, 6 to 12-inch layer or lens of fine to corse SAND YOUNGER ALLUVIUM (Qal_1)
		10				SM	@ 9 feet, greenish-brown, more silty and moist OLD ALLUVIUM (Qalo)
		15					Bottom of pit at 10 feet. Note: 1) No caving. 2) Pit backfilled and tamped.

Surface Elevation: 1497.5'	Logged By: GDH	**Test Pit Number**
Pit Orientation: N-S	Date: 9/16/2003	**TPN-18**
Pit Dimensions: 3x12x8'	Equipment: Backhoe	
Ground Water Depth: None Encountered		

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
			4.2	105.8		SM/ SC	Silty SAND with Clay: fine- to coarse-grained, dark yellowish-brown, slightly moist to moist, disturbed to 24 inches YOUNGER ALLUVIUM (Qal_1)
		5	4.2	103.7		SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown (10YR-3/4), slightly moist to moist, medium dense to dense YOUNGER ALLUVIUM (Qal_1)
			7.9	115.5		SM	Silty SAND: fine- to coarse-grained, dark greenish-brown, moist, medium dense to dense OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 8 feet. Note: 1) No caving. 2) Pit backfilled and tamped.
		15					

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Menivee Valley Ranch, LLC
PA 11-13

Date: June-04

Project No: G6134-02

Figure No. B-20

LOG OF TEST PITS

Surface Elevation: 1502.2'
Pit Orientation: N-S
Pit Dimensions: 3x10x7'
Ground Water Depth: None Encountered

Logged By: GDH
Date: 9/16/2003
Equipment: Backhoe

Test Pit Number TPN-19

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
			6.9	102.0		SM	Silty SAND: fine- to coarse-grained, yellowish-brown, disturbed and blocky to 24 inches @ 2 to 3 feet, slightly clayey and slightly to medium porous @ 3 feet, darker and moist; some thin, dark brown lenses YOUNGER ALLUVIUM (Qal_1)
		5				SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown to dark brown (10YR-3/4-3/3) moist, dense, some very poorly developed clay ped: OLD ALLUVIUM
		10					Bottom of boring at 7 feet. Note: 1) No caving. 2) Pit backfilled and tamped.
		15					

Surface Elevation: 1492.1'
Pit Orientation: N-S
Pit Dimensions: 3x12x8'
Ground Water Depth: None Encountered

Logged By: GDH
Date: 9/17/2003
Equipment: Backhoe

Test Pit Number TPN-20

			6.2	100.5		SM	Silty SAND: fine- to medium-grained, dark yellowish-brown, slightly moist to moist, disturbed to 24 inches @ 2 feet, moist, more silty
						ML	@ 3 to 4.5 feet, moist, firm, Sandy SILT
			9.3	96.7		SM	@ 4.5 feet, fine- to medium-grained, dark yellowish-brown
		5					@ 7 feet, more sandy YOUNGER ALLUVIUM (Qal_1)
			4.1	94.6			
		10					Bottom of pit at 8 feet. Note: 1) No caving. 2) Pit backfilled.
		15					

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PA 11-13

Date: June-04

Project No: G6134-02

Figure No. B-21

LOG OF TEST PITS

Surface Elevation: 1483.4'
Pit Orientation: N-S
Pit Dimensions: 3x12x7'
Ground Water Depth: None Encountered

Logged By: GDH
Date: 9/17/2003
Equipment: Backhoe

Test Pit Number TPN-21

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SM/ SC	Silty SAND with Clay: fine- to coarse-grained, dark yellowish-brown, slightly moist, upper 24 inches disturbed
			5.1	111.6			@ 1.5 feet, more clayey and some poorly developed clay peds
							@ 3 feet, less clayey — YOUNGER ALLUVIUM (Qal 1)
		5	9.6	119.2		SM	Silty SAND: fine- to coarse-grained, dark brown (10YR-3/3) moist
							@ 5 feet, more silty, more moist and fine- to medium-grained, some dark gray-brown clay peds
							@ 6 feet, more sandy
							OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 7 feet.
							Note:
							1) No caving.
		15					2) Pit backfilled and tamped.

Surface Elevation: 1501.6'
Pit Orientation: N-S
Pit Dimensions: 3x12x7'
Ground Water Depth: None Encountered

Logged By: GDH
Date: 9/17/2003
Equipment: Backhoe

Test Pit Number TPN-22

						SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown, slightly moist to moist, disturbed to 24 inches, slightly clayey to 2 feet
			5.0	108.0			@ 2.5 feet, more sandy, slightly porous
		5	4.2	112.2			@ 5 feet, more sandy
							OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 7 feet.
							Note:
							1) No caving.
		15					2) Pit backfilled.

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Figure No. B-22

LOG OF TEST PITS

Surface Elevation:	1508.1 feet	Logged By:	GDH	**Test Pit Number TPN-23**
Pit Orientation:	N-S	Date:	9/17/2003	
Pit Dimensions:	3x10x7'	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SM	Silty SAND: fine- to coarse-grained, dark yellowish-brown, slightly moist to moist, disturbed to 24 inches
	N		7.7	95.5			Slightly clayey to 2.5 feet
	N	5	8.9	107.3			@ 5 feet, more silty and dark brown (10YR-3/3) and finely micaceous, more moisture
							YOUNGER ALLUVIUM (Qal_1)
	N X		10.4	114.1			@ 6 feet, more moist and medium dense to dense
							OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 7 feet.
							Note:
							1) No caving.
							2) Pit backfilled and tamped.
							3) "N" indicates nuclear gauge test.
		15					4) "N|X" indicates nuclear gauge test and ring sample.

Surface Elevation:	1492'	Logged By:	GDH	**Test Pit Number TPN-24**
Pit Orientation:	N-S	Date:	9/17/2003	
Pit Dimensions:	3x12x7'	Equipment:	Backhoe	
Ground Water Depth:	None Encountered			

Samples: Bulk	Samples: Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SM	Silty SAND: fine- to medium-grained, yellowish-brown, disturbed to 24 inches, slightly clayey to 2.5 feet
	N		11.5	98.8			@ 2.5 feet, more moisture, slightly porous to 5 feet and more silty
	N X	5	8.9	101.3			@ 6 feet, more sandy
							YOUNGER ALLUVIUM (Qal_1)
		10					Bottom of boring at 7 feet.
							Note:
							1) No caving.
							2) Pit backfilled and tamped.
							3) "N" indicates nuclear gauge test.
		15					4) "N|X" indicates nuclear gauge test and ring sample.

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PA 11-13

Date: June-04

Project No: G6134-02

Figure No. B-23

LOG OF TEST PITS

Surface Elevation: 1468.2'		Logged By: GDH		Test Pit Number
Pit Orientation: N-S		Date: 9/17/2003		TPN-25
Pit Dimensions: 3x12x7'		Equipment: Backhoe		
Ground Water Depth: None Encountered				

Samples							
Bulk	Tube	Depth (ft.)	Moisture (%)	Dry Density (p.c.f.)	Graphic Symbol	Soil Type (USCS)	DESCRIPTION AND REMARKS
						SM	Silty SAND: fine- to coarse-grained, yellowish-brown, slightly moist to 1 foot; becomes moist at 1 foot and darker
		5	5.6	111.8		SM/ SC	Silty SAND with Clay: fine- to coarse-grained, dark yellowish-brown, slightly moist to moist, medium dense to dense @ 4 feet, some dark gray-brown, clay fil on poorly developed clay peds @ 5 feet, some isolated --- angular gravel OLD ALLUVIUM (Qalo)
		10					Bottom of pit at 7 feet. Note: 1) No caving. 2) Pit backfilled. 3) "N" indicates nuclear gauge test.
		15					

Surface Elevation:		Logged By:	Test Pit Number
Pit Orientation:		Date:	
Pit Dimensions:		Equipment:	
Ground Water Depth:			

		5					
		10					
		15					

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Menifee Valley Ranch, LLC
PA 11-13

Date: June-04

Project No: G6134-02

Figure No. B-24

LOGS FROM GANICO INVESTIGATION

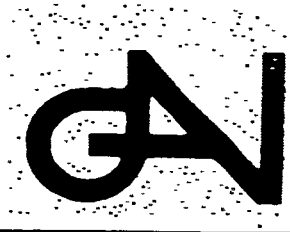
PROJECT G6133-02

DATED 2/25/04

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 Inches	1471.2 feet	
Date Drilled: 9/2/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		BA-8

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
									Silty SAND: fine- to coarse-grained, yellowish-brown, slightly moist, upper 2 feet disturbed
									@ 3 feet, more silty and fine- to medium-grained and greenish-brown (2.5Y-5/3) and some pale yellow carbonate stringers, loose, very moist
		15	15.5	100.6					
						5			@ 5 feet, slightly moist and dense
		14	5.8	123.3					
									@ 7 feet, fi ne- to coarse-grained and slightly cemented, dense
		32	6.7	126.0					
						10			@ 10 feet, less sandy and non-cemented and some fine gravel-size, sub-angular clasts, slightly moist, dense
		21	2.4	118.5					
						15		SM	@ 15 feet, more silty, some brown (7.5YR-4/4) mottling, moist, medium dense to dense
		28	10.6	117.4					
						20			@ 20 feet, dark yellowish-brown (10YR-4/4), slightly moist
		24	3.0	116.7					
						25			@ 25 feet, dark yellowish-brown, dense
	S	P	N=33						



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Irvine, California

Menifee Valley Ranch, LLC
PA 1-10

Project No.:	Figure No.:
G6133-02	B-9.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1471.2 feet	BA-8

Date Drilled: 9/2/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	N=51						ML	@ 30 feet, Sandy SILT: moist, stiff
									@ 31 feet, fine- to coarse-grained Silty SAND: dark yellowish-brown
						35			@ 35 feet, darker (10YR-3/4 to 4/4), moist
	S P	N=25							@ 36 feet, less silty and very moist
			▽						
	S P	N=27				40		SM	@ 40 feet, saturated
						45			@ 46 feet, slightly cemented and less moisture
	S P	N=74							OLD ALLUIVUM
									Bottom of boring at 46.5 feet.
						50			Note:
									1) Ground water level at 40 feet.
									2) Minor caving below 40 feet.
						55			3) Boring backfilled and tamped.
									SP indicates Standard Penetration Test.

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PA 1-10

Project No.:	Figure No.:
G6133-02	B-9.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1496 feet	BA-9
Date Drilled: 9/2/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
			9.2	105.6				SM	Silty SAND: fine- to coarse-grained, yellowish-brown, moist, very silty, dsiturbed to 24 inches @ 3 feet, mottled to 3.5 feet FILL
		9						SM	Silty SAND: fine- to coarse-grained, dark brown (10YR-3/3), moist
		18	7.0	127.8		5			@ 5 feet, coarse sand layer, dense
									@ 5.5 feet, Silty SAND: moist
		10	10.9	123.2					@ 7 feet, more silty and slightly clayey, more moisture, dense
		11	13.2	117.4		10			@ 10 feet, very moist, very silty, dense
		32	8.4	121.5		15			@ 15 feet, dark yellowish-brown (10YR-4/4), moist and less silty, some fine, sub-angular gravel, dense
		29	6.6	122.1		20			@ 20 feet, some dark brown mottling (7.5YR-4/4), slightly moist to moist, dense
		25	4.1	121.9		25			@ 25 feet, darker, brown (10YR-4/3), slightly moist, dense

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PA 1-10

Project No.:	Figure No.:
G6133-02	B-10.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1496 feet	BA-9

Date Drilled: 9/2/2003 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	N=37							@ 30 feet, less silty and less moisture, dark yellowish-brown
	S P	N=36				35			@ 35 feet, less silty, dark yellowish-brown
								SM	
	S P	N=28				40			@ 40 feet, very moist and more silty, still dark yellowish-brown
	S P	N=40				45			@ 45 feet, moist, darker
									OLD ALLUVIUM (Qalo)
						50			Bottom of boring at 46.5 feet. Note: 1) No ground water enocuntered. 2) No caving. 3) Boring backfilled and tamped.
						55			

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Menifee Valley Ranch, LLC
PA 1-10

Project No.:	Figure No.:
G6133-02	B-10.2

LOGS FROM GANICO INVESTIGATION

PROJECT G6130-02

DATED 12/04/03

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
Mobile B-53	8 inches	1474.5 feet	
Date Drilled: 7/7/2003 RTH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		BN-2

SAMPLE									
BULK	TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
		11/12"	2.9	113.1				SM	Silty SAND: yellow-brown to brown, medium dense, damp, micaceous, well graded (fine- to coarse-grained), 1/8-inch Ø mica flakes @ 4.5 feet, brown, coarse-grained, damp to moist ALLUVIUM (Qal)
		20/12"	4.5	119.2		5		SC/ SM	Silty SAND with Clay: reddish-brown, medium-dense to dense, well graded, damp
		50/6"	8.0	115.8					@ 7 feet, scattered, small angular pebbles, more moisture, clayey lenses OLD ALLUVIUM (Qalo)
		46/12"	6.8	126.7		10		SC/ SM	Clayey SAND: brown, medium dense to dense, damp to moist, well graded, slightly micaceous, interbedded with Silty SAND with Clay
		61/12"	10.4	122.0		15		SC/ SM	Silty SAND with Clay: orange-brown, dense, damp to moist, fine- to very coarse-grained, soil angular, micaceous, interbedded with Sandy SILT lenses
		50/9"	10.9	117.4		20			@ 19 feet, moist, fine- to medium-grained, slightly micaceous, interbeds of Clayey SAND
		50/8"	1.8	119.6		25		SM	Silty SAND: yellow-brown, dense, damp, fine- to medium-grained, slightly micaceous, lenses of slightly Silty SAND

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Standard Pacific - Phase II
Menifee Valley Ranch

Project No.:	Figure No.:
G6130-02	B-3.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
Mobile B-53	8 inches	1474.5 feet	BN-2

Date Drilled: 7/17/2003 RTH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE									
BULK	TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
		45	-	-				SM	Silty SAND — OLD ALLUVIUM (Qalo)
									Bottom of boring at 31.5 feet.
									Note:
						35			1) No ground water encountered.
									2) Drills very difficult.
									3) Boring backfilled.
						40			
						45			
						50			
						55			

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Irvine, California

Standard Pacific - Phase II
Menifee Valley Ranch

Project No.:	Figure No.:
G6130-02	B-3.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME 95	8 inches	1480.2 feet0	BN-8 (MW-2)
Date Drilled: 7/11/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
								SM	Silty SAND: fine- to medium-grained, yellowish-brown, slightly moist, 18 inches disturbed, medium dense
		19	4.1	104.5		5			
		18	3.1	106.8					ALLUVIUM (Qal,)
		37	8.4	117.5		10		SM	Silty SAND: fine- to coarse-grained, brown (10YR-4/3 to dark grayish-brown 10YR-4/2), moist, trace of clay, dense
		30	7.0	114.6					@ 12 feet ,more silty and greenish-brown (2.5Y-4/3), moist, dense
						15			@ 15 fe3et, more moisture
		77	9.6	120.7					@ 18 feet, some very dark grayish-brown clay film and some isolated angular, fine gravel; dense
						20			@ 18.5 feet, slightly cemented
		70	10.7	115.7		25			@ 25 feet, dark yellowish-brown and slightly cemented, damp to moist, dense

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Irvine, California

Standard Pacific - Phase II
Menifee Valley Ranch

Project No.:	Figure No.:
G6130-02	B-9.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-95	8 inches	1480.2 feet	BN-8 (MW-2)
Date Drilled: 7/11/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	N=77						SM	@ 30 feet, more silty, slightly cemented, partial SPT sample (12")
						35			OLD ALLUVIUM (Qalo)
	S P	N=50							Sandy SILT: dark yellowish-brown, (10YR-4/4), moist, very stiff, finely micaceous
	S P	N=58				40		ML	@ 40 feet, dark yellow-brown, moist, very stiff (first 12" SPT was plug material); more sandy
						45			
	S P	N=83				50			@ 50 feet, dark yellowish-brown, very sandy, very stiff
						55			

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Standard Pacific - Phase II
Menifee Valley Ranch

Project No.:	Figure No.:
G6130-02	B-9.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1480.2 feet	BN-8 (MW-2)
Date Drilled: 7/14/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	N=>88							@ 60 feet, very moist, trace of clay, very micaceous
	S P	N=>82				65		ML	@ 65 feet, less sandy, very stiff @ 65 feet, sandy and saturated
						70			OLD ALLUVIUM (Qalo)
									Bottom of boring at 70 feet, Note: 1) Seepage at 68 feet. 2) 20-ft. Schedule 40, 2" slotted PVC pipe and 50 feet of solid casing placed and backfilled with #3 sand to 40 feet and 4-ft. bentonite chip seal and backfill completed with native materials. 3) Ground water level at 55 feet on 7/17/03; ground water level at 54.8 feet on 9/10/03; gorund water level on 11/20/03 54.7 feet. SP indicates Standard Penetration Test
						75			
						80			
						85			

GANICO Geotechnical, Inc.
EARTH SCIENCE CONSULTANTS
Irvine, California

Standard Pacific - Phase II
Menifee Valley Ranch

Project No.:	Figure No.:
G6130-02	B-9.3

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75 HSA	8 inches	1466.3 feet	BN-9 (MW-3)
Date Drilled: 7/14/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
									Silty SAND: fine- to medium-grained, yellowish-brown, damp, disturbed to 18 inches
									@ 3 feet, dark yellowish-brown (10YR-4/4), damp to moist
	* *	30	-	-		5			@ 4 feet, very sandy
		87	8.6	119.7					@ 7 feet, dark yellowish-brown to dark brown (10YR-4/3), slightly cemented
		87	8.6	119.6		10			@ 10 feet, fine- to coarse-grained and some dark grayish-brown staining
									@ 10.9 feet, Sandy SILT layer, moist and very stiff
		50/6"	6.1	118.9		15		SM	@ 15 feet, less silty and fine- to coarse-grained, damp, dense, some dark gray-brown staining (10YR-4/2)
	S P	N-77	-	-		20			@ 20 feet, more silty
	S P	N=88	-	-		25			@ 25 feet, very silty and dark yellow-brown, dense, very finely micaceous
									* * Indicates No Recover

GANICO Geotechnical, Inc.
EARTH SCIENCE CONSULTANTS
Irvine, California

Standard Pacific - Phase II
Menifee Valley Ranch

Project No.:	Figure No.:
G6130-02	B-10.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1466.3 feet	BN-9 (MW-3)

Date Drilled: 7/14-15/03 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
	S P	N=>89	-	-				SM	@ 30 feet, very silty, few, coarse angular grains, moist, dense OLD ALLUVIUM (Qalo)
						35			Sandy SILT: dark yellowish-brown (10YR-4/4), moist, very stiff, finely micaceous; some silty sand layers or lenses
	S P	N=83	-	-		40		ML	@ 40 feet, dark yellowish-brown (10YR-4/4) to brown (10YR 4/3), very moist
						45			OLD ALLUVIUM
	S P	N=>74	-	-		50			Silty SAND: fine- to medium-grained, dark yellowish-brown, moist, dense, very silty, micaceous, some scattered, carose sand and lenses or layers
						55		SM	

GANICO Geotechnical, Inc.
EARTH SCIENCE CONSULTANTS
Irvine, California

Standard Pacific - Phase II
Menifee Valley Ranch

Project No.:	Figure No.:
G6130-02	B-10.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring No.
CME-75	8 inches	1466.3 feet	BN-9 (MW-3)
Date Drilled: 7/15/2003 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	BLOWS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Descriptions and Remarks
		N=>100	-	-		65		SM	@ 60 feet, very silty, moist, dense, some dark grayish-brown staining
						70			OLD ALLUVIUM (Qalo)
						75			Bottom of boring at 70 feet. Note: 1) Ground water at 60 feet at end of drilling. 2) 20' of Schedule 40, 2-inch slotted PVC pipe and 50 feet of solid casing placed and backfilled to 40 feet with #3 sand and 4 ft. bentonite seal and then backfilled to surface with native soil. 3) Ground water level at 42.1 feet after 4 hours. 4) Ground water level at 42.4 feet on 7/17/03; ground water level at 42.2 feet on 9/10/03; ground water level on 11/20/03 42.2 feet. SP indicates Standard Penetration Test
						80			
						85			

GANICO Geotechnical, Inc.
EARTH SCIENCE CONSULTANTS
Irvine, California

Standard Pacific - Phase II
Menifee Valley Ranch

Project No.:	Figure No.:
G6130-02	B-10.3

LOGS FROM

G. A. NICOLL & ASSOCIATES, INC. INVESTIGATION

PROJECT B3892-01

DATED 8/26/88

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Mobile B-61	8 inches	1490± feet	B-1
Date Drilled: 8/9/88 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						0			Clayey SAND: fine- to medium-grained, dark yellowish-brown, slightly moist to 4 feet, moist at 5 feet, medium dense to dense; upper 1.5 feet disturbed by discing
	■	4.6	11.6	101.8		5		SC	
	■	10.9	14.0	117.2		10			@ 10 feet, some white carbonate and more dense, still moist, some mottling ALLUVIUM
	■	21.0	5.8	122.1		15		SM	Silty SAND: fine- to coarse-grained, dark yellow to reddish-brown, slightly moist, dense ALLUVIUM
	■*	20.0	3.1	-		20		SP	SAND: medium to coarse-grained, medium yellowish to grayish-brown, slightly moist, dense, generally subangular to angular grains of granitic rock ALLUVIUM
	■	25.2	8.1	115.5		25			Silty SAND: fine- to medium-grained, reddish-brown, slightly moist, dense; some gravel present
						30		SM	
						35			
	■	48.0	4.9	123.4		40			@ 39-40 feet, coarser-grained ALLUVIUM
									Bottom of Boring at 40 feet. Notes: 1) No ground water encountered. 2) * indicates partial recovery. 3) Boring backfilled.

G.A. NICOLL & ASSOCIATES, INC.
EARTH SCIENCE CONSULTANTS
Tustin, California

Myers-Menifee

Project No.:	Figure No.:
3892-01	B-2

LOG OF TEST PIT

Surface Elevation: 1509± feet
Pit Orientation: N-S
Pit Dimensions: 2x15x12 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number T-5

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (p.c.f.)
ALLUVIUM	0		SC			Clayey SAND: fine-to medium-grain, grayish-to dark yellowish-brown, dry to 1 feet becoming slightly moist, medium dense, slightly porous, grades to silty sand		
			SM			Silty SAND: fine-to medium-grain, dark yellowish-brown (10YR4/3 to 4/4), slightly moist, becoming moist at 5 feet, medium dense to dense, slightly porous at 8 feet, more moist and coarser grained at 9 feet, dense and fine-to coarse-grain sand		
	5							
	10					Bottom of pit at 12 feet Note: 1) No caving 2) Pit backfilled		
	15							
	20							

G. A. NICOLL & ASSOCIATES, INC.
EARTH SCIENCE CONSULTANTS

Myers-Menifee
Date: August, 1988
Project No:
Figure No: B-11

LOG OF TEST PIT

Surface Elevation: 1509± feet
Pit Orientation: N-S
Pit Dimensions: 2x15x12 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number T-6

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (p.c.f.)
			SC			Clayey SAND: fine-to coarse-grain, dark brown to dark yellowish-brown, slightly moist, medium dense *upper 1.5 loose), slightly porous		
ALLUVIUM	5					Silty SAND: fine-to medium-grain, dark yellowish-brown, slightly moist, medium dense; becomes moist at 5 feet and more dense and grayish-brown (10YR4/2)) and less porous at 10 feet, moderately well developed peds with clay coating (10YR3/2-3/1) at 11.5 feet, reddish brown (10YR4/4) with grayish-green inclusions (2.5Y4/4)		
	10		SM			Bottom of pit at 15 feet. Note: 1) No caving 2) Pit backfilled		
	15							
	20							

G. A. NICOLL & ASSOCIATES, INC.
EARTH SCIENCE CONSULTANTS

Myers-Menifee
Date: August, 1988
Project No: 3892-01
Figure No: B-12

LOG OF TEST PITS

Surface Elevation: 1481± feet
Pit Orientation: E-W
Pit Dimensions: 2x15x10 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number T-7

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (p.c.f)
ALLUVIUM	5		SM			Silty SAND: fine-to medium-grain, yellowish-brown, moist, loose to 2 feet, medium dense below 2 feet	8.4	105.6
						at 4.5 feet, becomes slightly moist		
						at 6 feet, becomes coarser and more dense	9.3	94.4
						at 9 feet, becomes reddish-brown		
	10					Bottom of pit at 10 feet. Not: 1) No caving 2) Pit backfilled		
	15							

Surface Elevation: 1507± feet
Pit Orientation: N-S
Pit Dimensions: 2x15x8 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number T-8

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (p.c.f)
ALLUVIUM	5		SM			Silty SAND: fine-to medium grain, dark yellowish-brown, slightly moist, upper 1.5 feet disturbed by discing, medium dense below;		
						at 1.5-2.5 feet 12-inch diameter concrete irrigation line, line was previously broken and filled with soil, line trends E-W		
	10					at 5 feet, becomes more moist and dense		
						Bottom of pit at 8 feet. Note: 1) No caving 2) Pit backfilled		
	15							

G. A. NICOLL & ASSOCIATES, INC.
EARTH SCIENCE CONSULTANTS

Myers-Menifee
Date: August, 1988
Project No: 3892-01
Figure No: B-13

LOG OF TEST PITS

Surface Elevation: 1488± feet
Pit Orientation: N-S
Pit Dimensions: 2x15x15 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number: T-9

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (pcf)
ALLUVIUM	0		SC			Clayey SAND: fine-to medium-grain, dark yellowish-brown, slightly moist, loose to medium dense		
	5		SM			Silty SAND: fine-to medium-grain, dark yellowish-brown, slightly moist, medium dense to dense at 5 feet, becomes more moist at 7 feet, becomes lighter colored at 10 feet, becomes reddish-brown and more silty and slightly porous at 12 feet, dense and less porous		
	10							
	15					Bottom of pit at 15 feet. Note: 1) No caving 2) Pit backfilled		

Surface Elevation: 1484± feet
Pit Orientation: N-S
Pit Dimensions: 2x15x15 feet
Groundwater Depth: None encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number: T-10

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (pcf)
ALLUVIUM	0		SM			Silty SAND: fine-to medium-grain, brown, moist, medium dense below 1 feet, disturbed above	11.6	111.8
	5					at 4 feet, becomes more dense at 6 feet, becomes less silty at 9 feet, becoming more moist	10.9	115.9
	10					at 10 feet, becoming more dense and reddish-brwon with some light greenish-brown sandy inclusions		
	15					Bottom of pit at 15 feet. Note: 1) No caving 2) Pit backfilled		

G. A. NICOLL & ASSOCIATES, INC.
EARTH SCIENCE CONSULTANTS

Myers-Menifee
Date: August, 1988
Project No: 3892-01
Figure No: B-14

LOG OF TEST PITS

Surface Elevation: 1496± feet
Pit Orientation: N-S
Pit Dimensions: 2x15x10 feet
Groundwater Depth: None Encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number: T-11

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (p.c.f.)
ALLUVIUM	0		SM			Silty SAND: fine- to medium-grained, brown, moist, at 1 foot, loose to 1.5 feet from discing		
	5		SP			SAND: fine- to coarse-grained, medium yellowish-brown, slightly moist to moist, loose to medium dense, slightly Silty @ 8 feet, becoming more Silty and medium dense and moist	4.7	104.9
	10					Bottom of Pit at 10 feet. Notes: 1) Intense caving at 0-8 feet. 2) Pit backfilled.		
	15							

Surface Elevation: 1500-1503± feet
Pit Orientation: N45E
Pit Dimensions: 2x12x10 feet
Groundwater Depth: None Encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number: T-12

COLLUVIUM	0		SM			Clayey Silty SAND: fine- to coarse-grained, yellowish-brown, dry, loose; some rounded granitic boulders present at base		
GRANITIC BEDROCK	5		BEDROCK			GABBRO: fine- to medium-crystalline, medium greenish-gray and black, weathered @ 9 feet, very difficult to excavate		
	10					Bottom of Pit at 10 feet. Notes: 1) Minor caving at 0-3 feet. 2) Pit backfilled.		
	15							

G. A. NICOLL & ASSOCIATES, INC.
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Myers-Menifee
Date: August, 1988
Project No: 3892-01
Figure No: B-15

LOG OF TEST PITS

Surface Elevation: 1468± feet
Pit Orientation: E-W
Pit Dimensions: 2x10x8 feet
Groundwater Depth: None Encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number: T-13

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (pcf)
ALLUVIUM	5		SM			Silty SAND: fine- to medium-grained, yellowish-brown, moist at 1 foot, loose to 1.5 feet @ 3 feet, becomes slightly moist and dense to medium dense and fine to coarse-grained @ 5 feet, dense @ 7 feet, becoming reddish-brown (7.5 YR 4/2), with some dark blue-gray oxide staining on ped surfaces, moist		
	10					Bottom of Pit at 8 feet. Notes: 1) No caving. 2) Pit backfilled.		
	15							

Surface Elevation: 1469± feet
Pit Orientation: E-W
Pit Dimensions: 2x15x10 feet
Groundwater Depth: None Encountered

Logged By: GDH
Date: 7/28/88
Equipment: Backhoe

Test Pit Number: T-14

ALLUVIUM	5		SM			Silty SAND: fine- to medium-grained, yellowish-brown, dry to slightly moist, loose to 1.5 feet, medium dense below @ 6 feet, becomes moist and more dense @ 8 feet, becoming reddish-brown and more dense.		
	10					Bottom of Pit at 10 feet. Notes 1) No caving. 2) Pit backfilled.		
	15							

G. A. NICOLL & ASSOCIATES, INC.
EARTH SCIENCE CONSULTANTS

Myers-Menifee
Date: August, 1988
Project No: 3892-01
Figure No: B-16

LOGS FROM

G. A. NICOLL & ASSOCIATES, INC. INVESTIGATION

PROJECT 4746-07

DATED MARCH, 1993

LOG OF TEST PITS

Surface Elevation: 1468± feet
Pit Orientation: E-W
Pit Dimensions: 14x2x9
Groundwater Depth: None Encountered

Logged By: KBY
Date: 7/11/89
Equipment: Backhoe

Test Pit Number from (B3892-01.1)
TP-5

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (pcf)
ALLUVIUM	5		SM			Silty SAND: fine-to medium-grained, medium to dark brown, slightly moist, dense, very porous	5.9	-
						@ 2 feet, fine to coarse-grained, reddish to greenish-brown, medium dense	5.9	-
						@ 6 feet, medium to coarse-grained, with some fine sub-angular gravel		
	10					@ 7 feet, fine-grained, dense		
						Bottom of Pit at 9 feet.		
	15					Notes: 1) No caving. 2) Pit backfilled.		

Surface Elevation: 1492± feet
Pit Orientation:
Pit Dimensions: 14x2x9
Groundwater Depth: None Encountered

Logged By: KBY
Date: 7/11/89
Equipment: Backhoe

Test Pit Number
TP-6

GEOLOGICAL Classification and Description	Depth (feet)	Graphic Symbol	Soil Type (USCS)	Samples: Bulk	Samples: In-Situ Density	ENGINEERING Classification and Description	Moisture (%)	Dry Density (pcf)
ALLUVIUM	5		SM			Silty SAND: fine-to medium-grained, greenish-yellow-brown, damp, dense, slightly porous	3.4	-
						@ 4 to 9 feet, reddish-brown, fine to coarse-grained, damp to slightly moist, medium dense to dense		
	10					Bottom of Pit at 9 feet.		
						Notes: 1) No caving. 2) Pit backfilled.		
	15							

G. A. NICOLL & ASSOCIATES, INC.
EARTH SCIENCE CONSULTANTS

Coscan California, Inc.
Date: March, 1993.
Project No: 4746-07
Figure No: B-6

LOGS FROM

GEOSOILS, INC. INVESTIGATION

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Menifee Ranch

BORING B-3 SHEET 1 OF 2

DATE EXCAVATED 7-19-99

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
			47	SM	111.4	3.0	AGRICULTURAL FILL/COLLUVIUM: @ 0', Silty SAND, yellowish brown, dry to damp, dense; fine to coarse
			34	SM	119.8	6.2	
			27	SC	120.5	9.5	ALLUVIUM OLDER: @ 1', Silty SAND, reddish brown, damp, medium dense; fine to medium, occasional coarse
			24		117.6	11.0	@ 2', Clayey SAND, reddish brown, moist, medium dense; very fine to coarse
5			30	SM	111.4	13.2	@ 3', Continued as per 2'
							@ 5', Silty SAND, yellowish brown, moist, medium dense; fine to medium, some coarse
10			32	SW		1.8	@ 10', SAND, reddish brown, dry, dense; fine to medium
15			35+ 50/6"	SM	107.3	8.9	@ 15', Silty SAND, yellowish brown, moist, very dense; very fine to fine, occasional coarse
20			71			8.9	@ 20', Silty SAND, reddish brown, moist, very dense; fine to coarse
25			90		125.3	8.2	@ 25', Continued as per 20'

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-3 SHEET 2 OF 2

DATE EXCAVATED 7-19-98

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ⩛ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undis-turbed	Sample: Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
			80			8.9	@ 30', Continued as per 25'
35							
							@ 39', Ground water
40			45+ 50/4"	SW	115.1	9.6	@ 40', SAND, reddish brown, moist, very dense; medium coarse, abundant mica
45							
50			35+ 50/4"	SM	118.2	14.7	@ 50', Silty SAND, reddish brown, moist, very dense; fine to coarse, abundant mica
55							@ 55', no recovery
							Total depth: 57' Ground water encountered @ 39' Backfilled 07-19-98 * - Disturbed sample

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Menifee Ranch

BORING B-6 SHEET 2 OF 3

DATE EXCAVATED 7-20-90

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ⛆ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
			60	SW		5.6	@ 30', SAND, reddish brown, damp, very dense; medium to coarse grained, abundant granitic grains, common granitic gravel
40			50/6"		100.2	3.8	@ 40', Continued as per 30'
50			50/5"			4.9	@ 50', Continued as per 40'

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-5 SHEET 3 OF 3

DATE EXCAVATED 7-20-90

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ⩛ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
		▨	50/3"			10.3	@ 60', Continued as per 60', moist
							Total depth: 62'
							No ground water encountered
							Backfilled 07-20-90
							* - Disturbed sample
65							
70							
75							
80							
85							

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-11 SHEET 1 OF 2

DATE EXCAVATED 7-23-90

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ▽ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
			36	SM	107.0	2.4	ALLUVIUM (YOUNG): @ 0', Silty SAND, reddish brown, dry, medium dense; fine to coarse, occasional rootlets
			26		118.1	7.5	@ 1', Continued as per 0', moist
			19		113.9	6.9	@ 2', Continued as per 1', occasional granitic grains
			25		119.6	9.6	@ 3', Continued as per 2'
5			22		116.1	4.9	@ 5', Silty SAND, reddish brown, damp, medium dense; fine to very coarse, abundant granitic grains
10			34	SM		8.9	ALLUVIUM (OLDER): @ 10', Silty SAND, reddish brown, moist, dense; fine to medium, occasional coarse
15							
20			30+ 50/4"		127.7	10.3	@ 20', Continued as per 10', very dense
25							

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-11 SHEET 2 OF 2

DATE EXCAVATED 7-23-90

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ▽ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
		▨	68			8.2	@ 30', Silty SAND, reddish brown, moist, dense; fine to coarse
							Total depth: 32'
							No ground water encountered
							Backfilled 07-23-90
35							
40							
45							
50							
55							

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Menifee Ranch

BORING B-12 SHEET 1 OF 1

DATE EXCAVATED 7-23-98

SAMPLE METHOD: 140 lb. @ 30" drop

▩ Standard Penetration Test ⩛ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
			25	SM	114.7	5.6	ALLUVIUM (YOUNG): @ 0', Silty SAND, reddish brown, damp loose to medium dense; fine to coarse
			17		109.2	6.2	@ 1', Continued as per 0', medium dense
			13		116.9	6.2	@ 2', Continued as per 1'
			33				@ 3', No recovery
			46		128.6	8.9	@ 4', Continued as per 4', moist, dense
5			37		122.9	7.6	@ 5', Continued as per 4', common very coarse grains
10			26	SM		11.1	ALLUVIUM (OLDER): @ 10', Silty SAND, yellowish brown, moist, dense; fine to coarse, occasional very coarse grains
15			32	SW		1.2	@ 15', SAND, reddish brwon, dry, medium dense; medium to very coarse, abundant granitic grains
20							
25			38+ 50/6	SM		12.5	@ 25', Silty SAND, reddish brown, moist, very dense; fine to coarse

Total depth: 26'
No ground water encountered
Backfilled @7-23-98
* - Disturbed sample

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Menifee Ranch

BORING B-13 SHEET 1 OF 2

DATE EXCAVATED 7-24-90

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ▽ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Description of Material
			26	SM	121.2	6.2	ALLUVIUM (OLDER): @ 0', Silty SAND, reddish brown, damp, loose to medium dense; fine to coarse
			24		123.2	6.9	@ 1', Continued as per 0'
			33		122.0	6.9	@ 2', Continued as per 1', occasional granitic gravel
			34		138.1	4.1	@ 3', Silty SAND, reddish brown, damp, medium dense; fine to coarse, common granitic grains
5			36		120.0	4.3	@ 5', Continued as per 3'
10			80			10.3	@ 10', Silty SAND, reddish brown, moist, very dense; fine to coarse, common granitic grains
15							
20			50/4"		119.7	12.5	@ 20', Silty SAND, yellowish brown, moist, very dense; fine to coarse, interlayered with blackish brown, dry, very dense; fine to coarse
25							

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-13 SHEET 2 OF 2

DATE EXCAVATED 7-24-98

SAMPLE METHOD: 140 lb. @ 30" drop

Standard Penetration Test Water Seepage into hole

Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
			50/2"			10.3	GRANITICS (Weathered): @ 30', GRANODIORITE, yellowish brown, moist, very dense; fine to coarse

Total depth: 31'
No ground water encountered
Backfilled 07-24-98

35
40
45
50
55

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-14 SHEET 1 OF 2

DATE EXCAVATED 7-24-90

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ⩛ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undis-turbed	Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
			43	SM	114.9	9.7	AGRICULTURAL FILL/COLLUVIUM: @ 0', Silty SAND, reddish brown, moist, loose to medium dense; fine to coarse
			27		113.2	5.6	
			28	SM	112.1	4.9	@ 1', Continued as per 0', damp, medium dense
			31		120.6	7.5	ALLUVIUM (OLDER): @ 2', Silty SAND, reddish brown, damp to moist, medium dense; fine to coarse, common granitic grains
5			35		114.2	4.9	@ 3', Continued as per 2', moist @ 5', Silty SAND, reddish brown, damp, medium dense; fine to coarse
10			68			6.2	@ 10', Continued as per 5', very dense; common granitic grains, occasional gravel
15							
20			42		112.9	2.4	GRANITICS (Weathered): @ 20', GRANODIORITE, yellowish brown, dry, dense; fine to very coarse
25							

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-14 SHEET 2 OF 2

DATE EXCAVATED 7-24-90

SAMPLE METHOD: 140 lb. @ 30" drop

▨ Standard Penetration Test ⩛ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Description of Material
		▨	57			3.8	@ 30', Continued as per 20'
							Total depth: 32'
							No ground water encountered
							Backfilled 07-24-90
35							
40							
45							
50							
55							

BORING LOG

GeoSoils, Inc.

W.O. 392-A-RC

PROJECT:
Manifee Ranch

BORING B-15 SHEET 1 OF 1

DATE EXCAVATED 7-24-90

SAMPLE METHOD: 140 lb. @ 30" drop

▩ Standard Penetration Test ⩛ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit wt. (pcf)	Moisture (%)	Description of Material
		▨	44	SM	117.2	1.8	AGRICULTURAL FILL/COLLUVIUM: @ 0', Silty SAND, reddish brown, dry, loose to medium dense; fine to coars
		▨	28		112.8	3.8	@ 1', Continued as per 0', damp, medium dense
		▨	45	SM	113.1	3.0	ALLUVIUM (OLDER): @ 2', Silty SAND, reddish brown,
		▨	37		120.3	3.6	damp, dense; fine to coarse, occasional granitic gravel
							@ 3', Continued as per 2'
5		▨	43		110.9	6.9	@ 5', Silty SAND, reddish brown, damp, dense; fine to medium
10		▩	70			3.5	@ 10', Continued as per 5', very dense; occasional granitic grains
15		▨	77		116.8	6.2	@ 15', Silty SAND, reddish brown, damp, very dense; fine to coarse
20							
25		▩	28			6.2	@ 25', Silty SAND, yellowish brown, damp, dense; fine to coarse, occasional granitic gravel
							Total depth: 27'
							No ground water encountered
							Backfilled 07-24-90

BORING LOG

GeoSoils, Inc.

W.O. 382-A-RC

PROJECT:
Manifee Ranch

BORING B-19 SHEET 1 OF 1

DATE EXCAVATED 7-24-90

SAMPLE METHOD: 140 lb. @ 30" drop

▩ Standard Penetration Test ⩛ Water Seepage into hole

▨ Undisturbed, Ring Sample

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Description of Material
			4	SM	118.9	4.3	AGRICULTURAL FILL/COLLUVIUM: @ 0', Silty SAND, reddish brown, damp, very loose; fine to coarse, occasional rootlets
			31	SM		6.9	
			46			7.6	
			40			6.2	ALLUVIUM (OLDER): @ 1', Silty SAND, reddish brown, dry to damp, medium dense; very fine to fine, occasional coarse
							@ 2', Continued as per 1', moist, dense
5			16			8.6	@ 3', Continued as per 2', damp, fine to coarse
							@ 5', Silty SAND, reddish brown to yellowish brown, moist, medium dense; very fine to fine
10			80			9.6	@ 10', Silty SAND, reddish brown, moist, very dense; fine to fine
15			49		117.8	13.2	@ 15', Silty SAND, yellowish brown, moist, dense; very fine to fine.
20							
25			87			9.6	@ 25', Silty SAND, reddish brown, moist, very dense; fine to coarse
							Total depth: 27'
							No ground water encountered
							Backfilled 07-24-90
							* - Disturbed sample

GEOSOILS, INC. W.O. 392-A-RC

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-1	0-1'	SM	1'	5.3	103.9	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, dark reddish brown, moist, loose; very fine to medium, slightly clayey
	1-5'	SM	3' 5'	7.2 10.9	110.9 111.8	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, moist, dense; very fine to medium, slightly clayey, moderately cemented, moderately porous
						Total depth: 5' No ground water encountered No caving Backfilled 07-19-90
TP-2	0-1'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, reddish brown, dry to moist, loose; very fine to medium, slightly clayey
	1-5'	SM	2' 4' 1-5' bulk	12.4 12.8	101.0 105.9	ALLUVIUM (OLDER): Silty SAND, reddish brown, moist, dense; very fine to medium, slightly cemented, moderately porous, slightly clayey
						Total depth: 5' No ground water encountered No caving Backfilled 07-19-90

PLATE B-35

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-25	0-5'	SM	1' 3' 5'	1.5 3.6 8.9	97.1 95.2 99.3	ALLUVIUM (YOUNG): Silty SAND, reddish brown, dry to damp, loose; fine to medium grained @ 4', medium dense
						Total depth: 5' No ground water encountered No caving Backfilled 07-20-90
TP-26	0-1.5'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, dark reddish brown, damp to moist, loose to medium dense; very fine to medium
	1.5-10'	SM	2'	6.2	99.2	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp to moist, very dense; very fine to medium, some clay, moderately cemented, porous
	10-15'	SM				Silty SAND, olive reddish brown, moist, dense to very dense; fine to coarse, occasional pebbles
						Total depth: 15' No ground water encountered No caving Backfilled 07-20-90

PLATE B-46

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-27	0-5'	SM				COLLUVIUM: Silty SAND, dark reddish brown, moist, medium dense to dense; fine to medium porous
	5-5.5'					GRANITICS: GRANODIORITE, white and black, damp, very dense; coarse texture @ 5.5', refusal
						Total depth: 5.5' No ground water encountered No caving Backfilled 07-20-90
TP-28	0-1'	SM	1'	13.4	111.4	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, dark reddish brown, moist, loose to medium dense; fine to coarse
	1-5'	SM	3' 5' 1-5' bulk	9.6 7.5	98.8 98.1	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, moist, dense; fine to coarse, slightly cemented, moderately porous
						Total depth: 5' No ground water encountered No caving Backfilled 07-20-90

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-39	0-2.5'	SM	2'	11.4	88.3	ARTIFICIAL FILL/COLLUVIUM: Silty SAND, dark brown, moist, loose to medium dense; fine to coarse
	2.5-4'	SM	4'	9.1	96.5	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp, dense; fine to medium, slightly cemented, slightly porous
						Total depth: 4.5' No ground water encountered No caving Backfilled 07-23-90
TP-40	0-2'	SM	1'	13.4	99.4	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose to medium dense; fine to coarse, porous
	2-4'	SM	3'	12.2	96.9	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp, dense to very dense; fine to medium, moderately cemented and moderately porous
						Total depth: 5' No ground water encountered No caving Backfilled 07-23-90

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-41	0-5'	SM	2' 4'	14.5 10.9	94.2 91.0	ALLUVIUM (YOUNG): Silty SAND, dark brown, moist, loose; fine to medium @ 4', medium dense
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90
TP-42	0-5'	SM	1' 3' 5'	4.7 10.1 13.1	103.2 97.2 95.5	ALLUVIUM (YOUNG): Silty SAND, dark brown, damp to moist, loose; fine to medium @ 3 1/2', medium dense
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90
TP-43	0-1'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose; fine to medium
	1-4'	SM/SC	2' 4' 1-4' bulk	13.4 13.4	99.8 101.2	ALLUVIUM (OLDER): Clayey Silty SAND, dark reddish brown, moist, dense; very fine to fine, very porous (20-30%), moderately cemented
						Total depth: 4' No ground water encountered No caving Backfilled 07-24-90

PLATE B-54

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-44	0-1'	SM	1'	7.7	105.9	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose; fine to medium
		SM/SC	3' 5'	15.8 20.6	91.0 94.8	ALLUVIUM (OLDER): Clayey Silty SAND, dark reddish brown, dense; very fine to fine, moderately porous, moderately cemented
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90
TP-45	0-1'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp to moist, loose; fine to coarse, porous
	1-4'	ML	2' 4' 1-4' bulk	27.1	75.8	ALLUVIUM (OLDER): Sandy SILT, grayish olive brown, damp, very dense; medium to coarse, well cemented, very porous, common CaCo3 stringers
						Total depth: 4' No ground water encountered No caving Backfilled 07-24-90

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-46	0-1'	SM	1'			AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose; fine to coarse
		SC	1' 3' 5'	9.2 16.7 13.4	113.4 104.7 106.6	ALLUVIUM (OLDER): Clayey SAND, dark reddish brown, moist, dense; fine to coarse grained, slightly cemented
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90
TP-47	0-1'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose; fine to medium, occasional coarse
	1-4'	SM	2' 4'	3.7 9.8	117.6 120.4	ALLUVIUM (OLDER): Silty SAND, dark orangish brown, damp to moist, dense; medium, slightly porous and slightly cemented, some clay
						Total depth: 4' No ground water encountered No caving Backfilled 07-24-90

PLATE B-56

GEOSOILS, INC.

W.O. 392-A-RC

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-48	0-2'	SM	1' 3'	5.7 8.2	107.3 111.3	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, reddish brown, damp to moist, loose to medium dense; fine to medium, slightly porous
	2-5'	SM	5'	8.9	115.0	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp, dense; fine to medium, slightly porous, slightly cemented
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90
TP-49	0-2.5'	SM	2'	5.1	97.7	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, dense; fine grained, slightly porous and slightly cemented
	2.5-4'	SM	4'	9.1	111.0	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp, dense; fine, slightly porous and slightly cemented.
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90

PLATE B-57

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-50	0-1.5'	SM	1'	3.3	116.1	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose to medium dense; fine to medium
	1.5-5'	SM/SC	3' 5' 1.5-5'bulk	7.6 10.2	112.0 110.5	ALLUVIUM (OLDER): Clayey Silty SAND, dark reddish brown, damp, dense; fine to medium, slightly cemented, moderately porous
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90
TP-51	0-1.5'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose to medium, dense; fine to medium
	1.5-5'	SM/SC	2' 4'	5.4 7.0	101.2 102.5	ALLUVIUM (OLDER): Clayey Silty SAND, dark reddish brown, damp, dense; fine to medium, slightly cemented, moderately porous
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90

PLATE B-58

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-52	0-1.5'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose to medium dense; fine to medium
	1.5-4'	SM	2' 4'	4.6 7.2	107.9 108.0	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp, dense; fine to coarse, slightly porous, slightly cemented
						Total depth: 4' No ground water encountered No caving Backfilled 07-24-90
TP-53	0-1.5'	SM	1'	3.2	110.5	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, damp, loose to medium dense; fine to coarse
		SM	3' 5'	7.2 11.0	112.3 107.9	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp, dense to very dense; fine to coarse, slightly porous and slightly cemented, slightly clayey
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-54	0-0.5'	SM				AGRICULTURAL FILL/COLLUVIUM: Silty SAND, gray brown, damp, loose; fine to medium
	0.5-4'	SM	2' 4'	5.0 9.6	97.4 94.7	ALLUVIUM (OLDER): Silty SAND, reddish brown, damp to moist, medium dense to dense; fine to medium, moderately porous
						Total depth: 4' No ground water encountered No caving Backfilled 07-24-90
TP-55	0-5'	SM	1' 3' 5'	3.8 6.4 6.3	102.0 100.0 98.4	ALLUVIUM (OLDER): Silty SAND, reddish brown, damp, loose; fine to medium @ 4 1/2', medium dense
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90

PLATE B-60

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-56	0-6'	SM	2' 4' 0-4' bulk	5.6 10.0	89.0 88.3	COLLUVIUM: Silty SAND, gray brown, dry to damp, loose to medium dense; fine to coarse, porous
	6-11.5'	SM				ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp, dense; slightly porous and cemented
	11.5-12'					GRANITICS (Weathered): GRANODIORITE, gray, black and red, damp, very dense; coarse texture, massive
						Total depth: 12' No ground water encountered No caving Backfilled 07-24-90
TP-57	0-1.5'	SM	1'	9.2	107.3	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose to medium dense; fine to coarse
	1.5-5'	SM	3' 5'	7.9 10.2	105.8 100.5	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp, medium dense to dense; fine to coarse, medium porous, slightly cemented
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-58	0-1'	SM	1'	4.6	113.6	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose to medium dense; fine to medium
	1-5'	SM	3' 5'	7.9 11.9	113.9 105.9	ALLUVIUM (OLDER): Silty SAND, dark reddish brown, damp, dense; fine to medium, moderately porous, slightly cemented
						Total depth: 5' No ground water encountered No caving Backfilled 07-24-90
TP-59	0-2'	SM	2'	6.9	107.9	AGRICULTURAL FILL/COLLUVIUM: Silty SAND, grayish brown, damp, loose to medium dense; fine to medium
	2-4'	SM/SC				ALLUVIUM (OLDER): Clayey Silty SAND, yellowish reddish brown, damp, very dense; fine to coarse, CaCo3 stringers, moderately cemented
						Total depth: 4' No ground water encountered No caving Backfilled 07-24-90

TEST PIT LOGS

TEST PIT #	DEPTH (FT.)	U.S.C.S. GROUP SYMBOL	SAMPLE DEPTH	% MOISTURE	DRY DENSITY (pcf)	DESCRIPTION
TP-74	0-4'	SM				ALLUVIUM (YOUNG): Silty SAND, light reddish brown, dry to damp, loose; very fine to fine, occasional coarse
						Total depth: 4' No ground water encountered Slight caving Backfilled 08-28-90

Appendix C
Laboratory Test Results

APPENDIX C

Laboratory Test Results

The laboratory testing program was directed towards providing quantitative data relating to the relevant engineering properties of the site soils. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Moisture and Density Determination Tests: Moisture content (ASTM D2216) and dry density determinations (ASTM D2937) were performed on driven samples obtained from the test borings. The results of these tests are presented in the boring logs. Where applicable, only moisture content was determined from undisturbed or disturbed samples.

Grain Size Distribution/Fines Content: Representative samples were dried, weighed, and soaked in water until individual soil particles were separated (per ASTM D421) and then washed on a No. 200 sieve (ASTM D1140). Where applicable, the portion retained on the No. 200 sieve was dried and then sieved on a U.S. Standard brass sieve set in accordance with ASTM D6913 (sieve).

Sample Location	Description	% Passing # 200 Sieve
HS-1 @ 0-5 ft	Clayey Sand	39
HS-2 @ 0-5 ft	Clayey Sand	46

Atterberg Limits: The liquid and plastic limits ("Atterberg Limits") were determined per ASTM D4318 for engineering classification of fine-grained material and presented in the table below. The USCS soil classification indicated in the table below is based on the portion of sample passing the No. 40 sieve and may not necessarily be representative of the entire sample. The plot is provided in this Appendix.

Sample Location	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	USCS Soil Classification
HS-2 @ 7.5 ft	25	20	5	CL-ML

APPENDIX C

Laboratory Test Results (Continued)

Consolidation: One consolidation test was performed per ASTM D2435. Samples (2.4 inches in diameter and 1-inch in height) were placed in a consolidometer and increasing loads were applied. The samples were allowed to consolidate under "double drainage" and total deformation for each loading step were recorded. The percent consolidation for each load step was recorded as the ratio of the amount of vertical compression to the original sample height. The consolidation pressure curves are provided in this Appendix.

Collapse/Swell Potential: Two collapse tests were performed per ASTM D4546. Samples (2.4 inches in diameter and 1-inch in height) were placed in a consolidometer and loaded to their approximate in-situ effective stress. The curves are presented in this Appendix.

Direct Shear: One direct shear test was performed on a driven sample. The ring samples were soaked for a minimum of 24 hours prior to testing. The samples were tested under various normal loads using a motor-driven, strain-controlled, direct-shear testing apparatus (ASTM D3080). The plot is provided in this Appendix.

Maximum Density Tests: The maximum dry density and optimum moisture content of typical materials were determined in accordance with ASTM D1557. The results of these tests are presented in the table below:

Sample Location	Sample Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
HS-1 @ 0-5 ft	Clayey Sand	130.5	9.5
HS-2 @ 0-5 ft	Clayey Sand	132.0	8.0

Expansion Index: The expansion potential of selected representative samples was evaluated by the Expansion Index Test per ASTM D4829.

Sample Location	Expansion Index	Expansion Potential*
HS-1 @ 0-5 ft	30	Low
HS-2 @ 0-5 ft	36	Low
TP-2 @ 0-2 ft	3	Very Low

* Per ASTM D4829

APPENDIX C

Laboratory Test Results (Continued)

Soluble Sulfates: The soluble sulfate content of select samples was determined by standard geochemical methods (CTM 417). The test results are presented in the table below.

Sample Location	Sulfate Content, ppm
HS-1 @ 0-5 ft	153
HS-2 @ 0-5 ft	553
TP-2 @ 0-2 ft	227

Chloride Content: Chloride content was tested per CTM 422. The results are presented below.

Sample Location	Chloride Content, ppm
HS-1 @ 0-5 ft	201
HS-2 @ 0-5 ft	120
TP-2 @ 0-2 ft	100

Minimum Resistivity and pH Tests: Minimum resistivity and pH tests were performed in general accordance with CTM 643 and standard geochemical methods. The results are presented in the table below.

Sample Location	pH	Minimum Resistivity (ohms-cm)
HS-1 @ 0-5 ft	6.98	1400
HS-2 @ 0-5 ft	7.16	770
TP-2 @ 0-2 ft	6.09	2120

Organic Matter Content of Soils: Organic matter content tests were performed in general accordance with ASTM D 2974 (Test Methods A & C). The results are presented below.

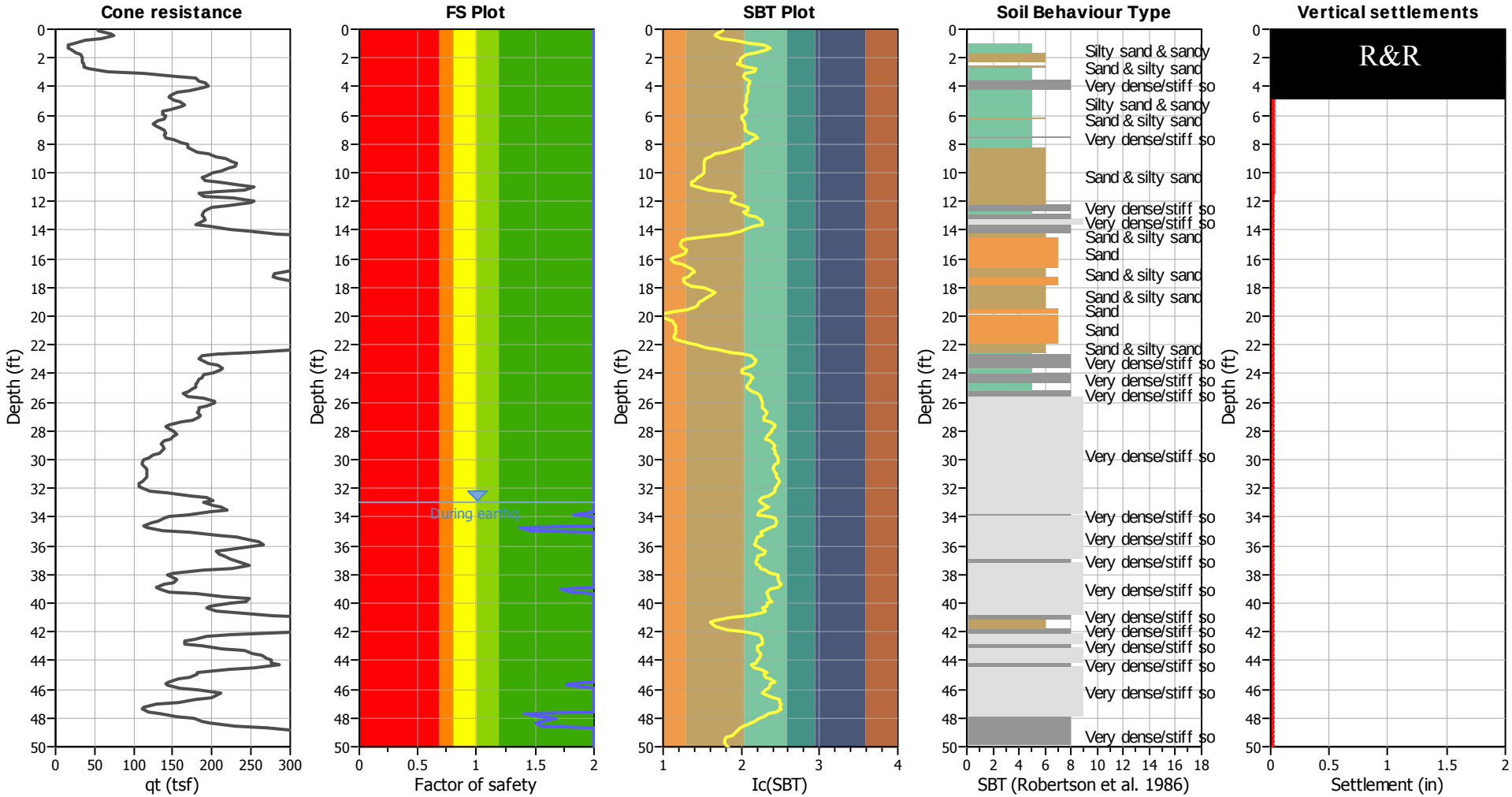
Sample Location	Organic Matter (%)
LGC-TP-1 @ 1.2 ft	1.4
LGC-TP-1 @ 2.0 ft	0.5
LGC-TP-1 @ 3.0 ft	1.2
LGC-TP-2 @ 1.0 ft	0.9
LGC-TP-2 @ 2.0 ft	2.7
LGC-TP-2 @ 3.0 ft	3.1
LGC-TP-3 @ 0.5 ft	1.1
LGC-TP-3 @ 1.8 ft	1.7
LGC-TP-3 @ 2.8 ft	1.7
LGC-TP-4 @ 0.8 ft	1.1
LGC-TP-4 @ 1.4 ft	1.9
LGC-TP-4 @ 2.4 ft	1.4
LGC-TP-5 @ 0.6 ft	0.9
LGC-TP-5 @ 1.5 ft	1.9
LGC-TP-5 @ 2.3 ft	1.5
LGC-TP-6 @ 0.8 ft	0.8
LGC-TP-6 @ 2.8 ft	1.3
LGC-TP-6 @ 3.2 ft	1.1
LGC-TP-7 @ 0.6 ft	1.5
LGC-TP-7 @ 1.6 ft	2.8
LGC-TP-7 @ 2.2 ft	1.3
LGC-TP-8 @ 0.8 ft	1.1
LGC-TP-8 @ 1.8 ft	1.1
LGC-TP-8 @ 2.4 ft	1.9
LGC-TP-9 @ 0.8 ft	2.1
LGC-TP-9 @ 1.8 ft	1.7
LGC-TP-9 @ 3.0 ft	0.9
LGC-TP-10 @ 1.0 ft	1.3
LGC-TP-10 @ 2.0 ft	1.8

Appendix D
Liquefaction Analysis

LGC Geotechnical Inc.
131 Calle Iglesia Ste. 200, San Clemente, CA 92672
949-369-6141
www.lgcgeotechnical.com

Project: Minor Ranch
Location: Menifee

CPT: CPT-01
Total depth: 50.36 ft

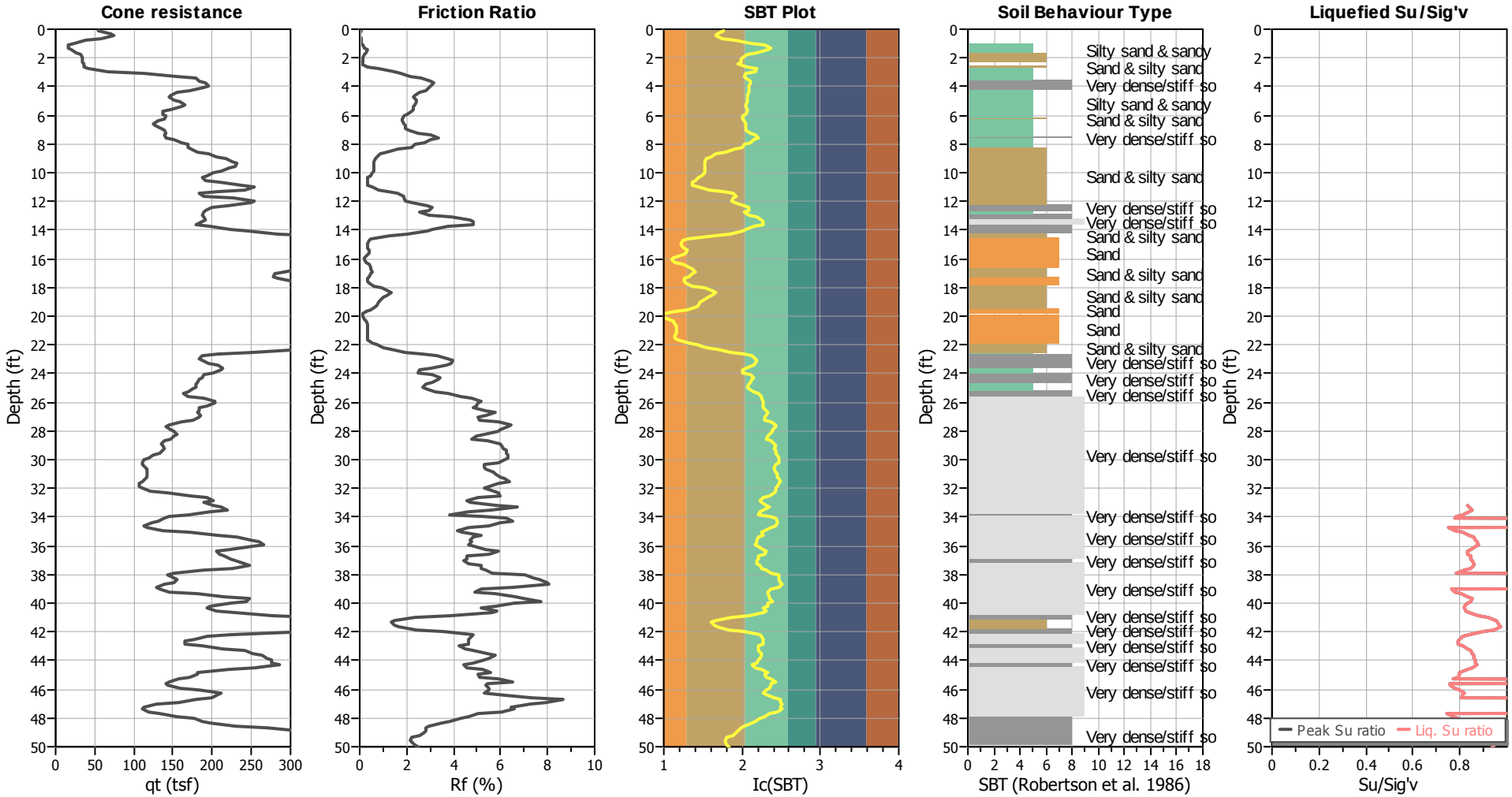


Analysis method:	NCEER (1998)	G.W.T. (in-situ):	33.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	33.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

LGC Geotechnical Inc.
131 Calle Iglesia Ste. 200, San Clemente, CA 92672
949-369-6141
www.lgcgeotechnical.com

Project: Minor Ranch
Location: Menifee

CPT: CPT-01
Total depth: 50.36 ft

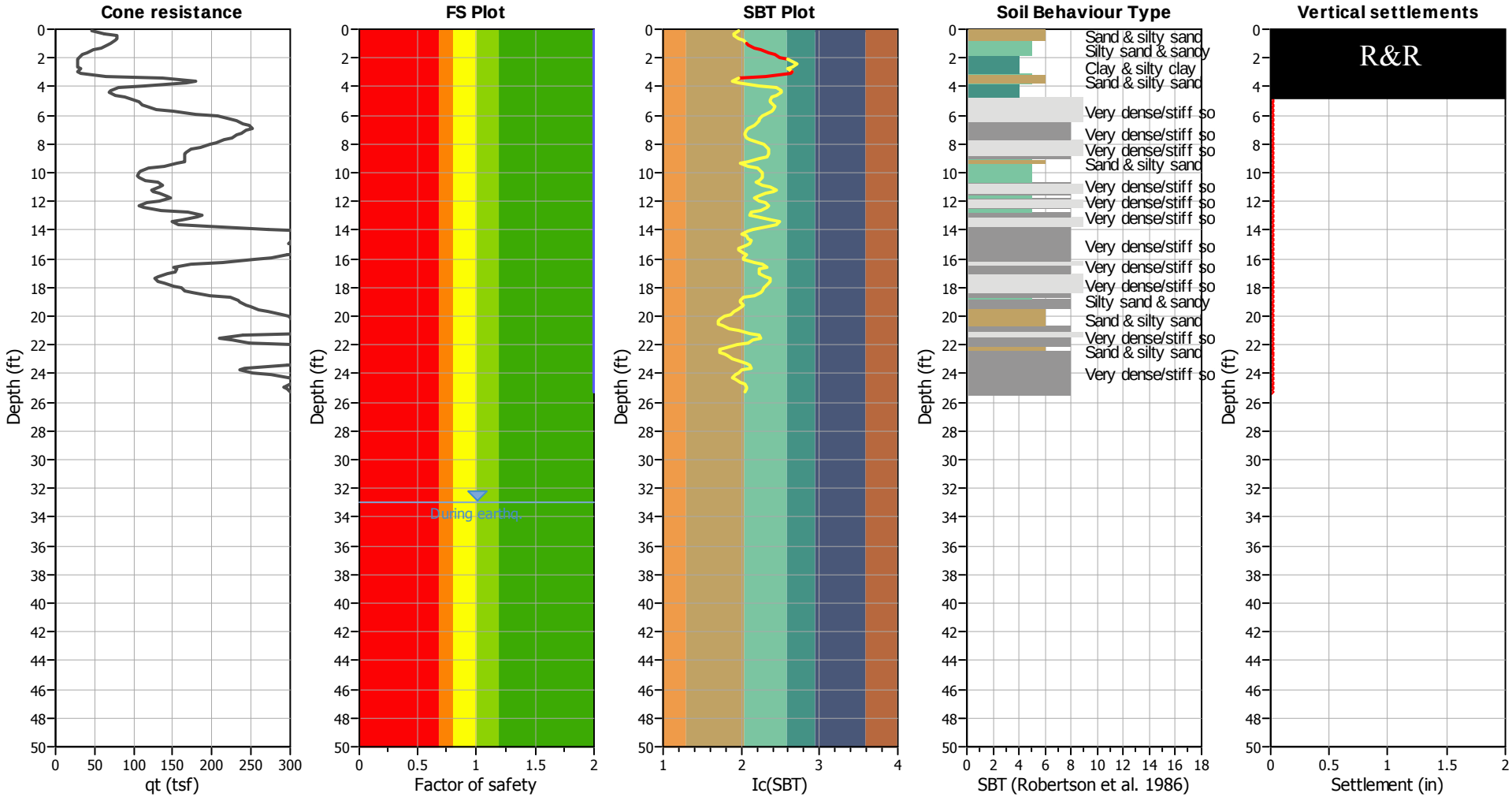


Analysis method:	NCEER (1998)	G.W.T. (in-situ):	33.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	33.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

LGC Geotechnical Inc.
131 Calle Iglesia Ste. 200, San Clemente, CA 92672
949-369-6141
www.lgcgeotechnical.com

Project: Minor Ranch
Location: Menifee

CPT: CPT-02
Total depth: 25.26 ft



Analysis method:	NCEER (1998)	G.W.T. (in-situ):	33.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	33.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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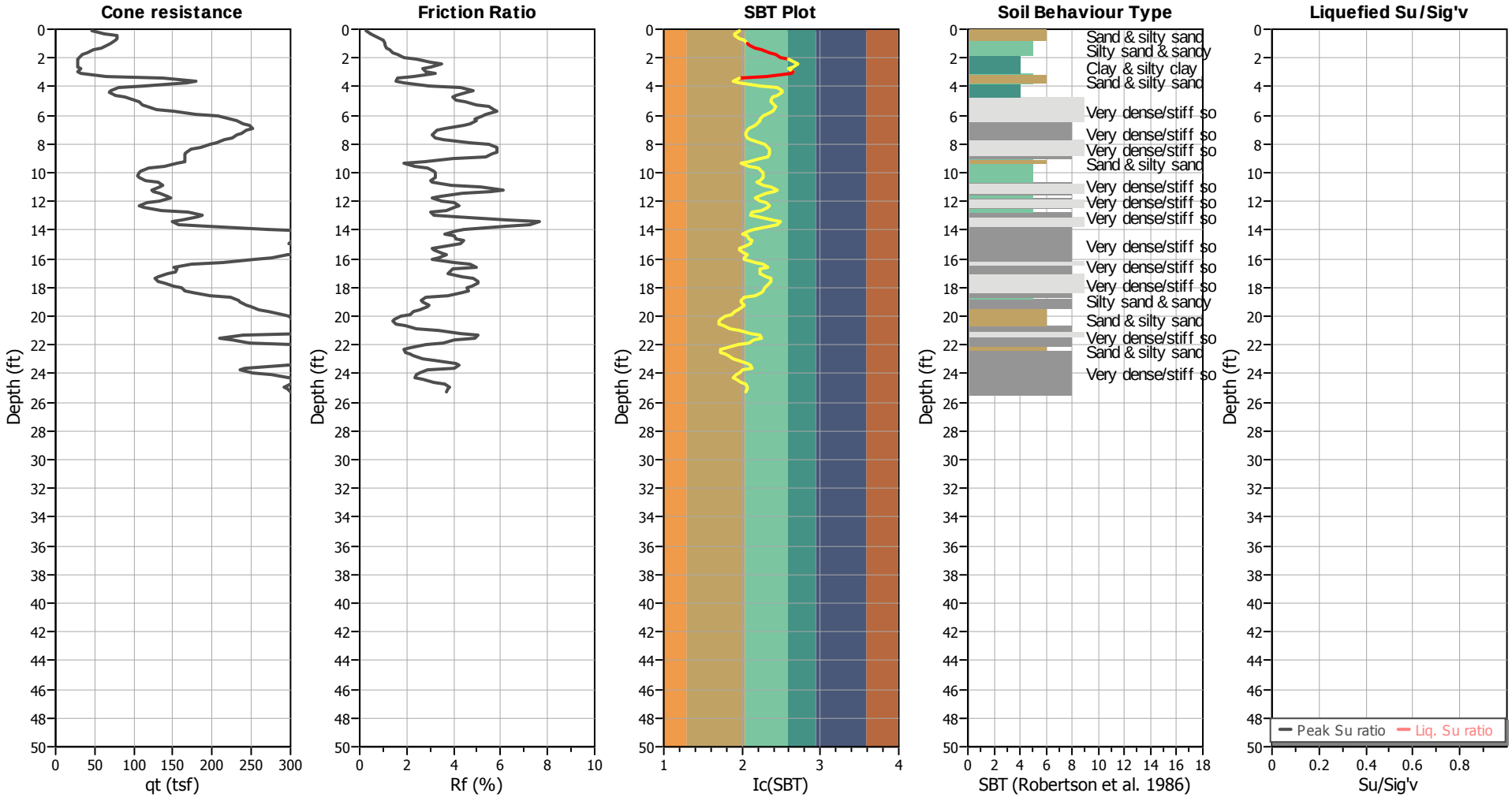
949-369-6141
www.lgcgeotechnical.com

Project: Minor Ranch
Location: Menifee

CPT: CPT-02
Total depth: 25.26 ft



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Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	33.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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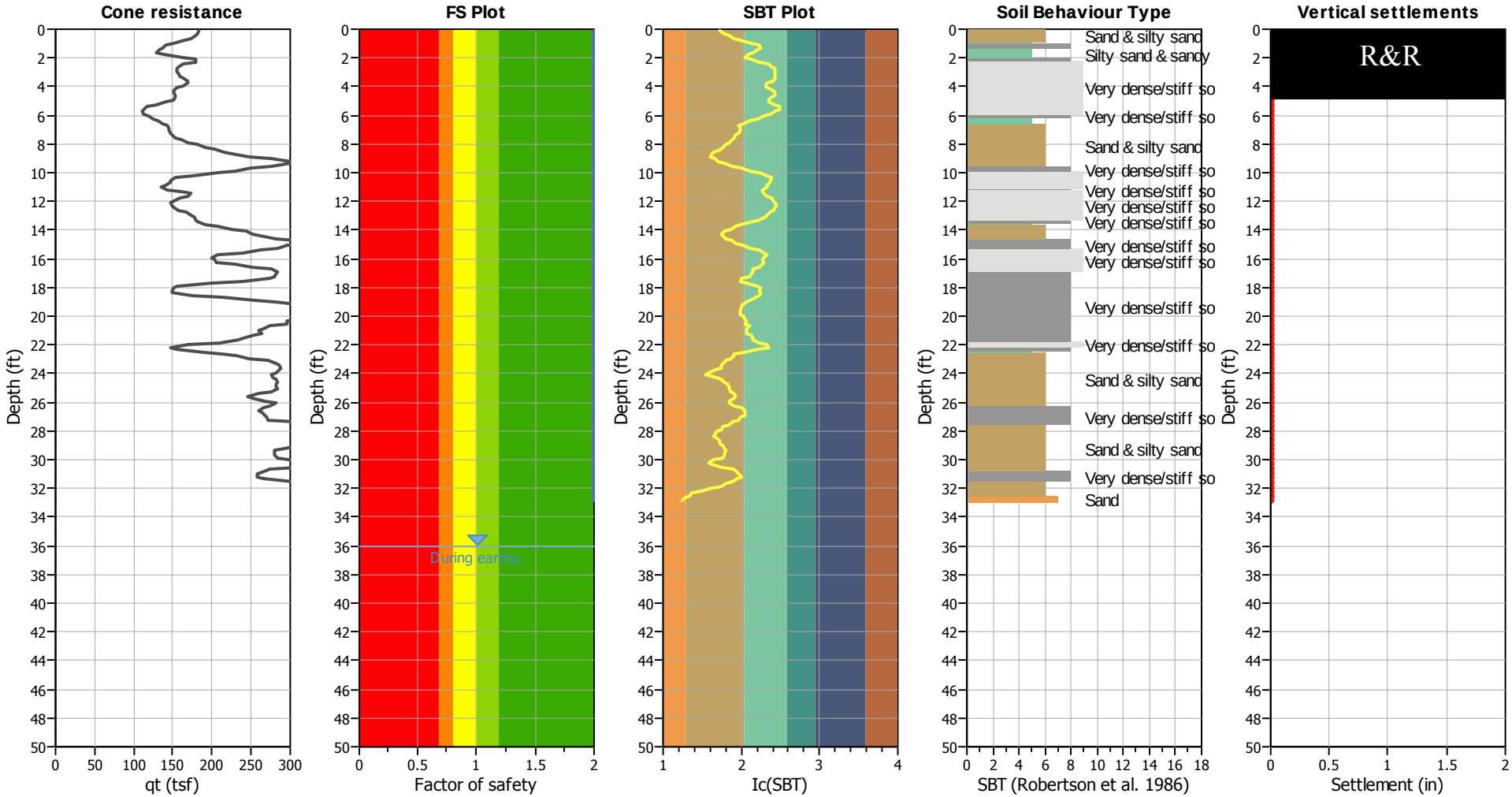
www.lgcgeotechnical.com

Project: Minor Ranch
Location: Menifee

CPT: CPT-03
Total depth: 32.81 ft



Analysis method:	NCEER (1998)	G.W.T. (in-situ):	36.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	36.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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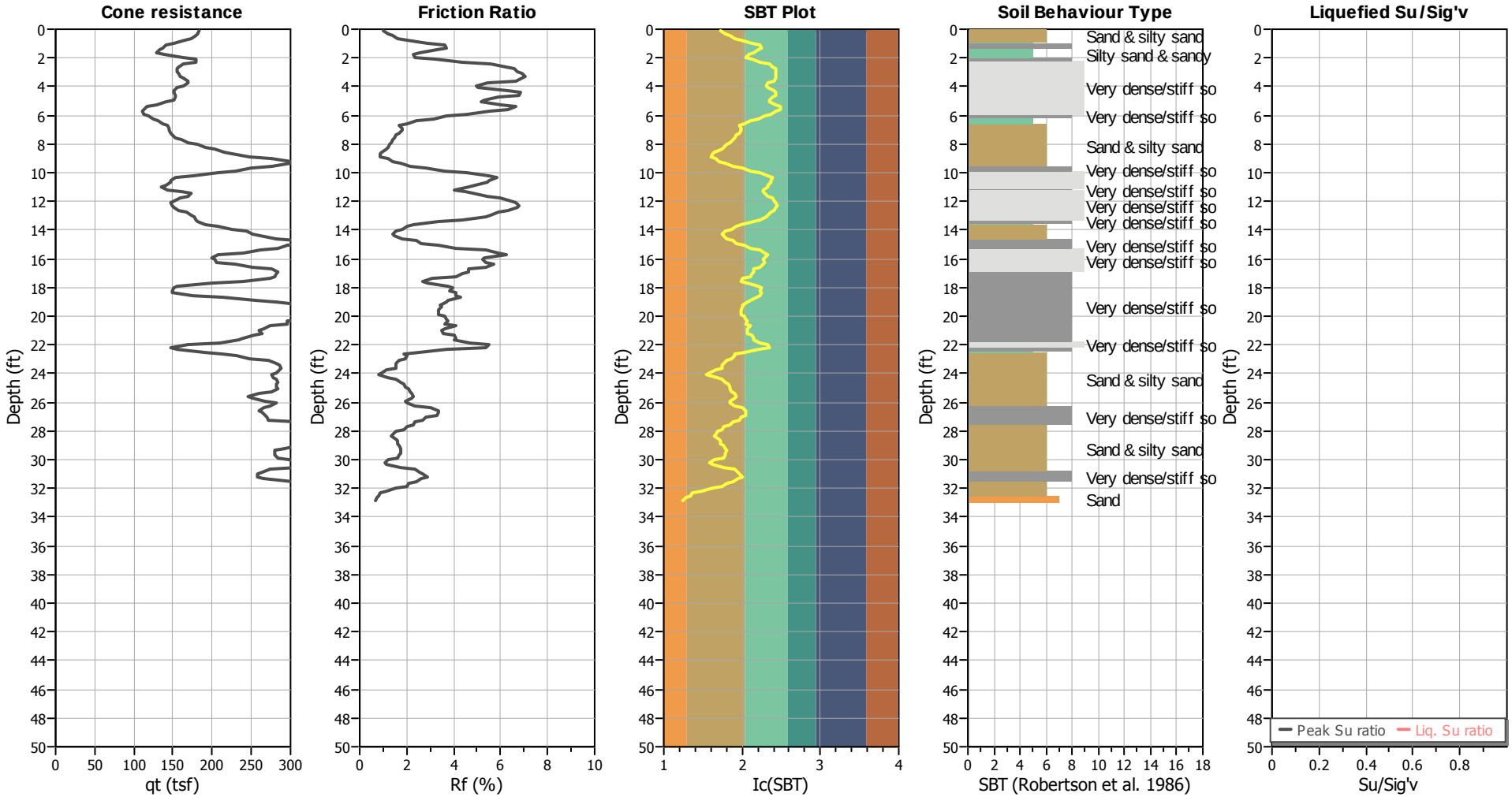
www.lgcgeotechnical.com

Project: Minor Ranch
Location: Menifee

CPT: CPT-03
Total depth: 32.81 ft



Analysis method:	NCEER (1998)	G.W.T. (in-situ):	36.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	36.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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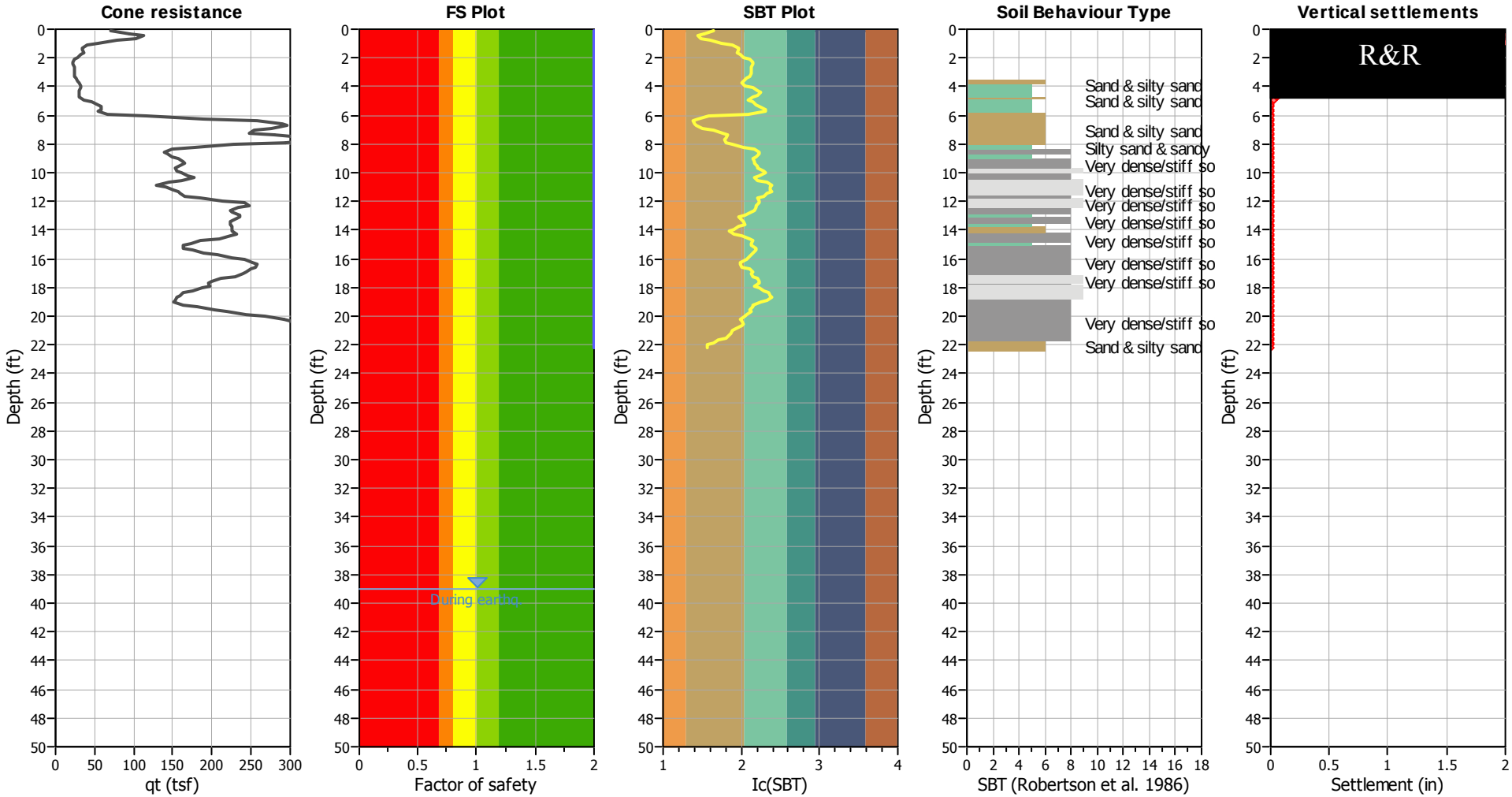
www.lgcgeotechnical.com

Project: Minor Ranch
Location: Menifee

CPT: CPT-04
Total depth: 22.15 ft



Analysis method:	NCEER (1998)	G.W.T. (in-situ):	39.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	39.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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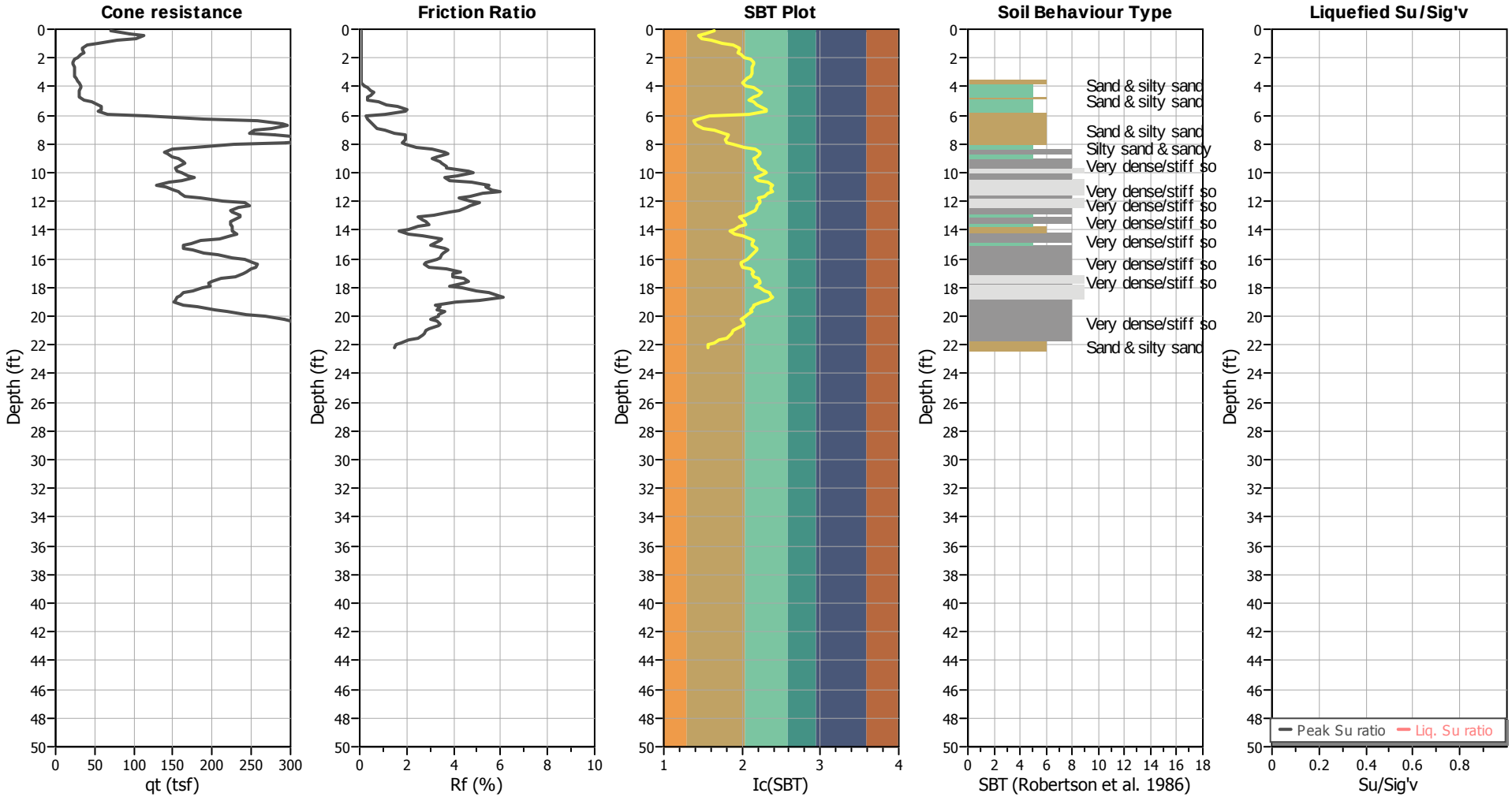
Project: Minor Ranch
Location: Menifee

CPT: CPT-04
Total depth: 22.15 ft



Analysis method:	NCEER (1998)	G.W.T. (in-situ):	39.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	39.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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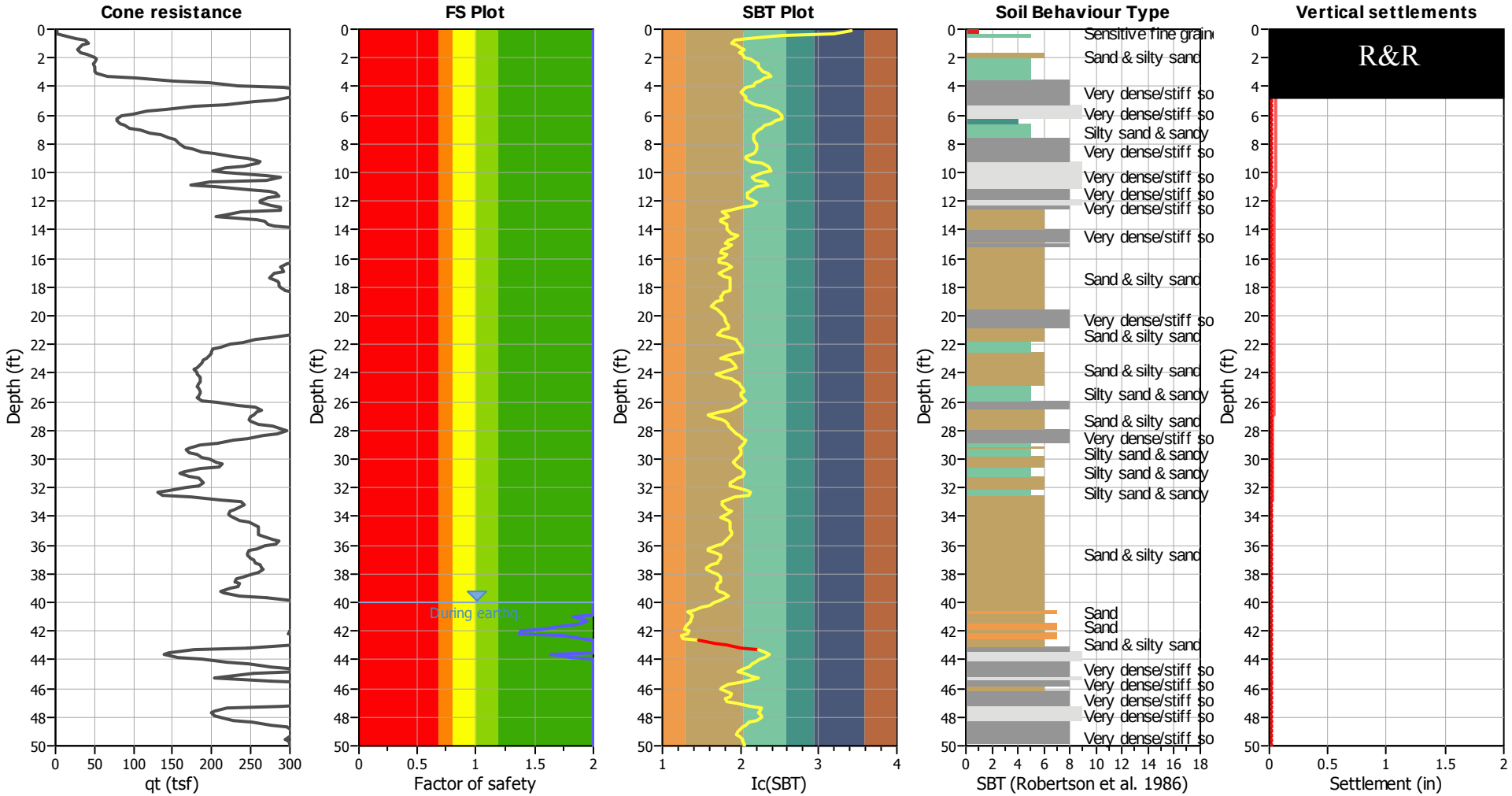
Project: Minor Ranch
Location: Menifee

CPT: CPT-05
Total depth: 50.36 ft



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Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	40.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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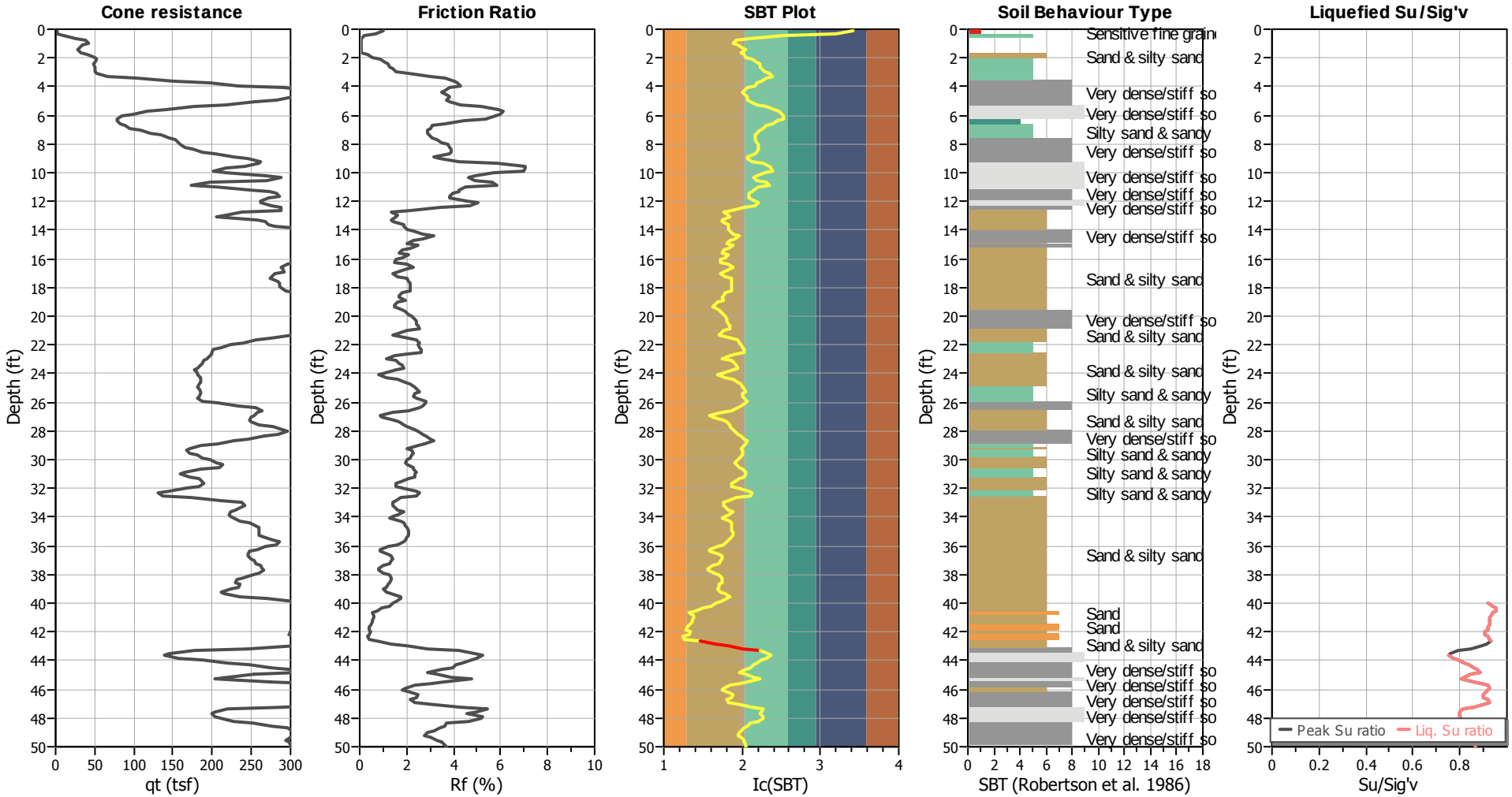
Project: Minor Ranch
Location: Menifee

CPT: CPT-05
Total depth: 50.36 ft



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Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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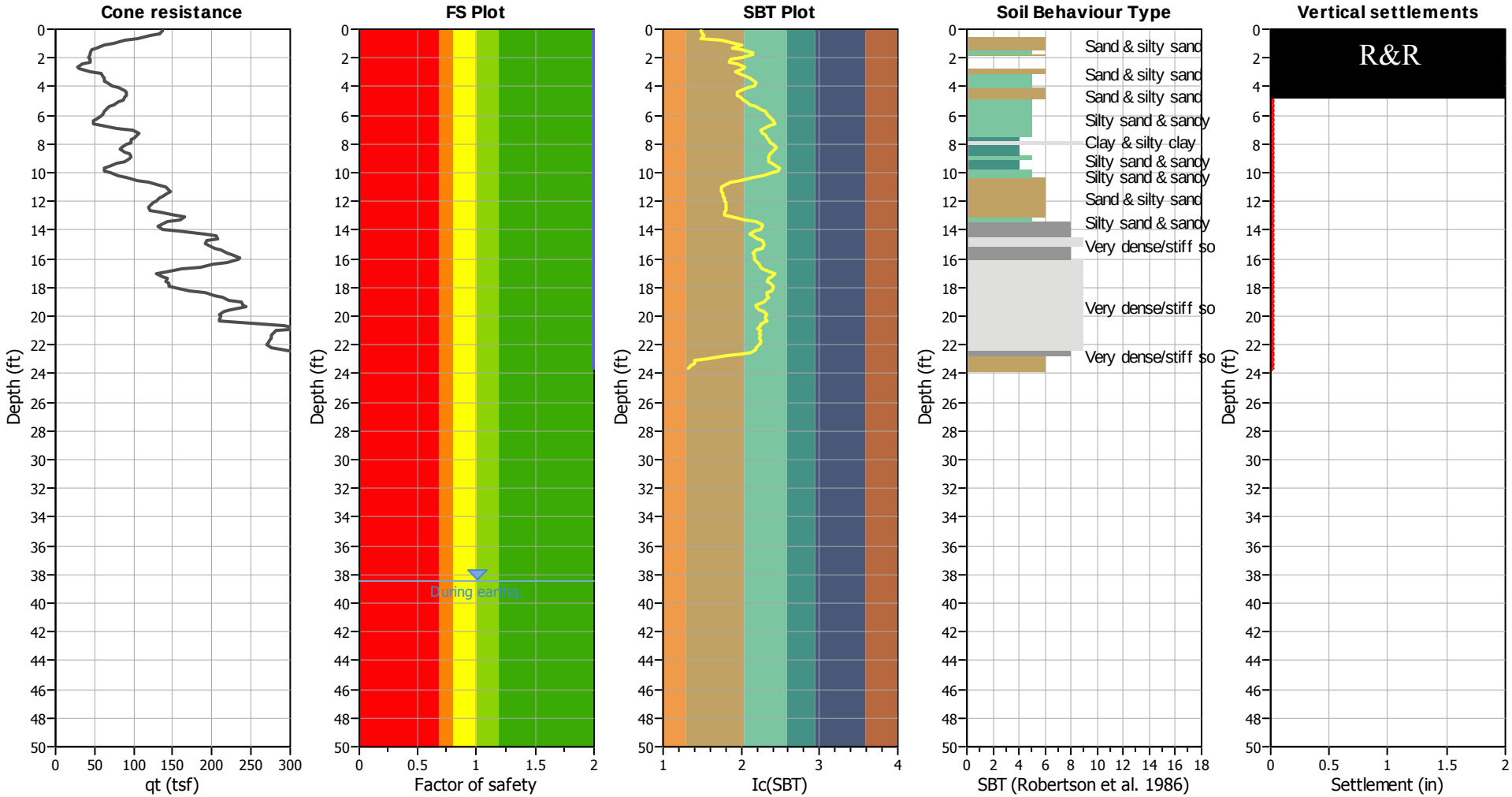
Project: Minor Ranch
Location: Menifee

CPT: CPT-06
Total depth: 23.62 ft



Analysis method:	NCEER (1998)	G.W.T. (in-situ):	38.50 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	38.50 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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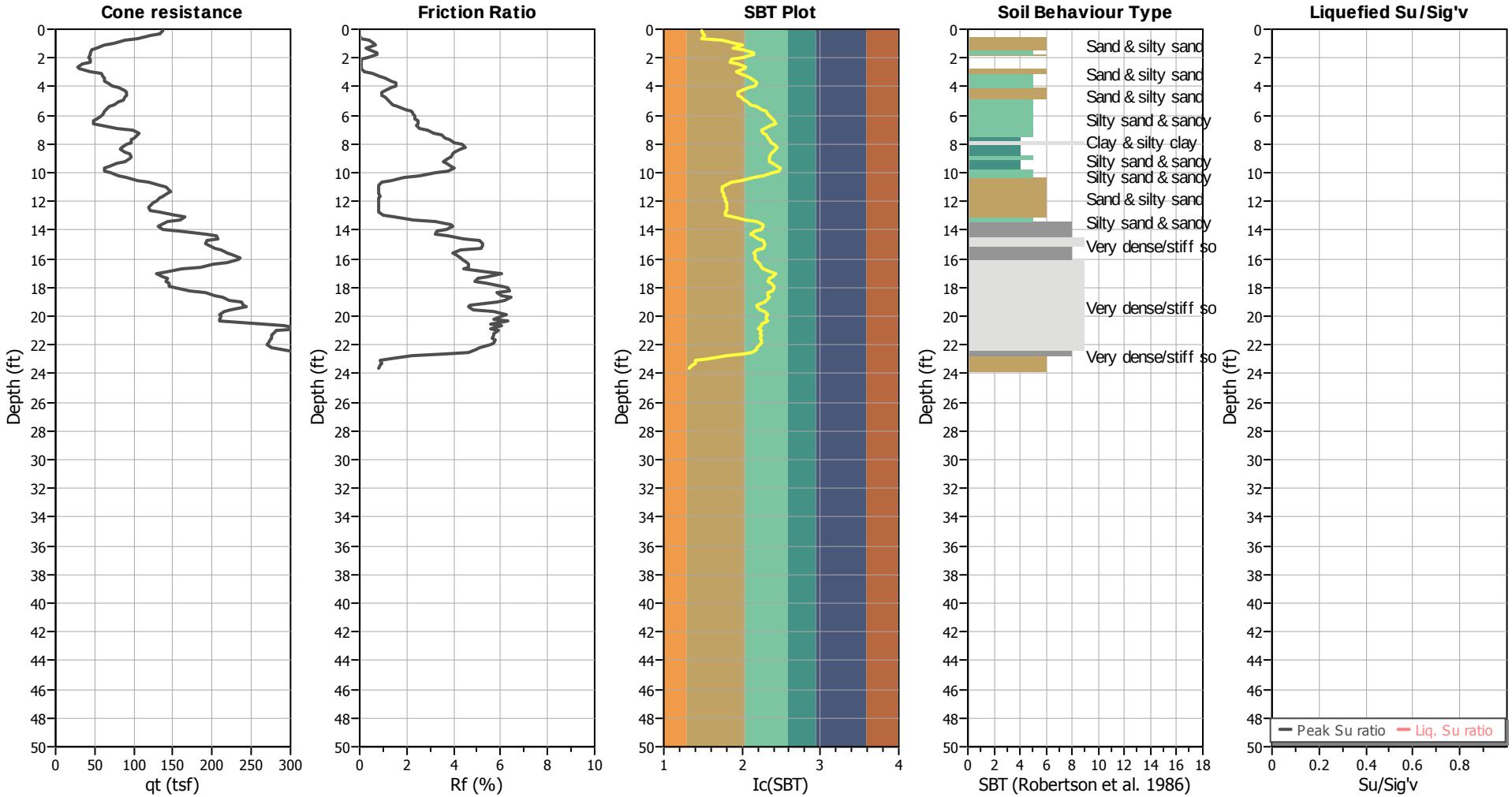
Project: Minor Ranch
Location: Menifee

CPT: CPT-06
Total depth: 23.62 ft



Analysis method:	NCEER (1998)	G.W.T. (in-situ):	38.50 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	38.50 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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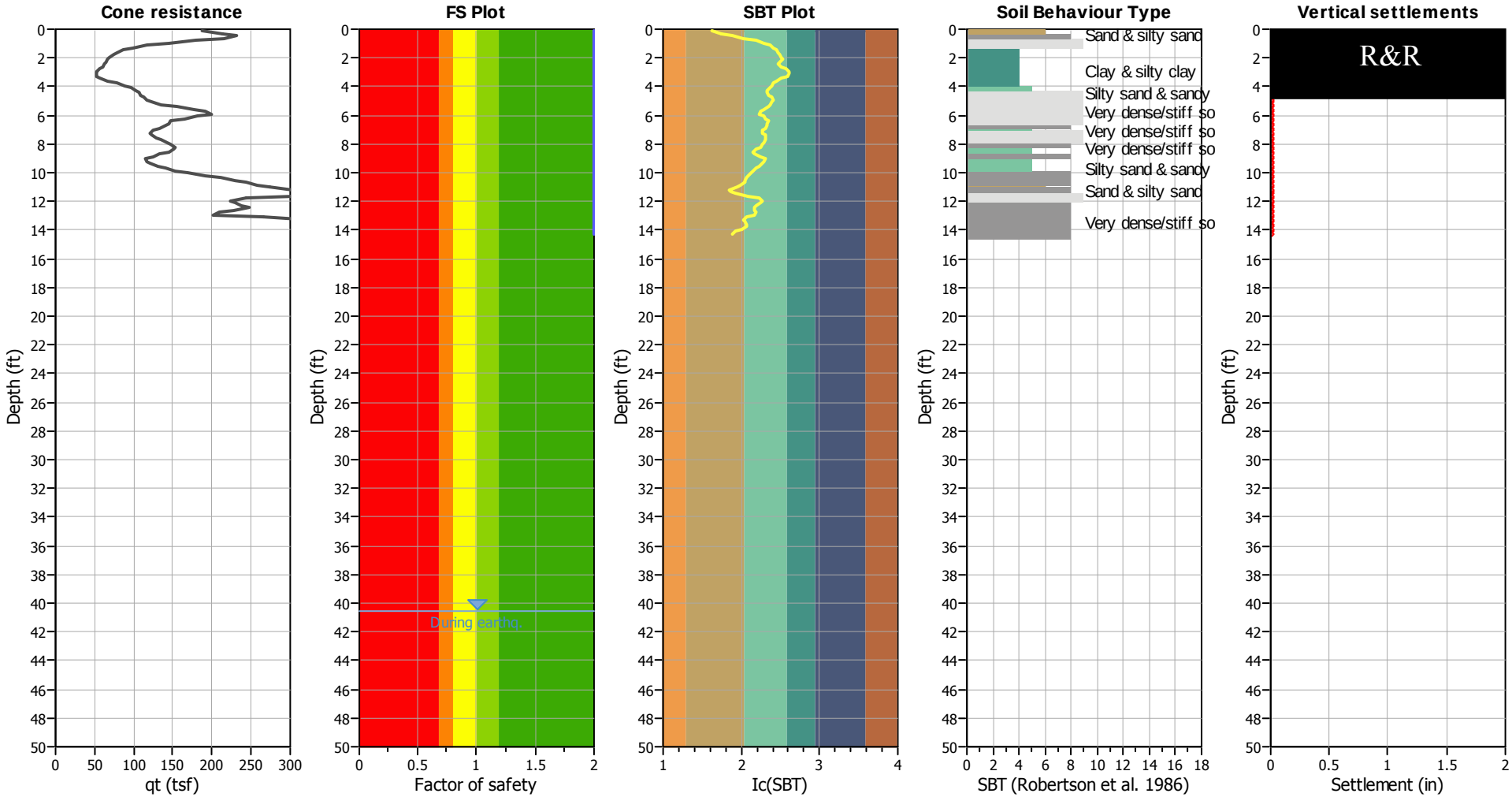
Project: Minor Ranch
Location: Menifee

CPT: CPT-07
Total depth: 14.27 ft



Analysis method:	NCEER (1998)	G.W.T. (in-situ):	40.50 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	40.50 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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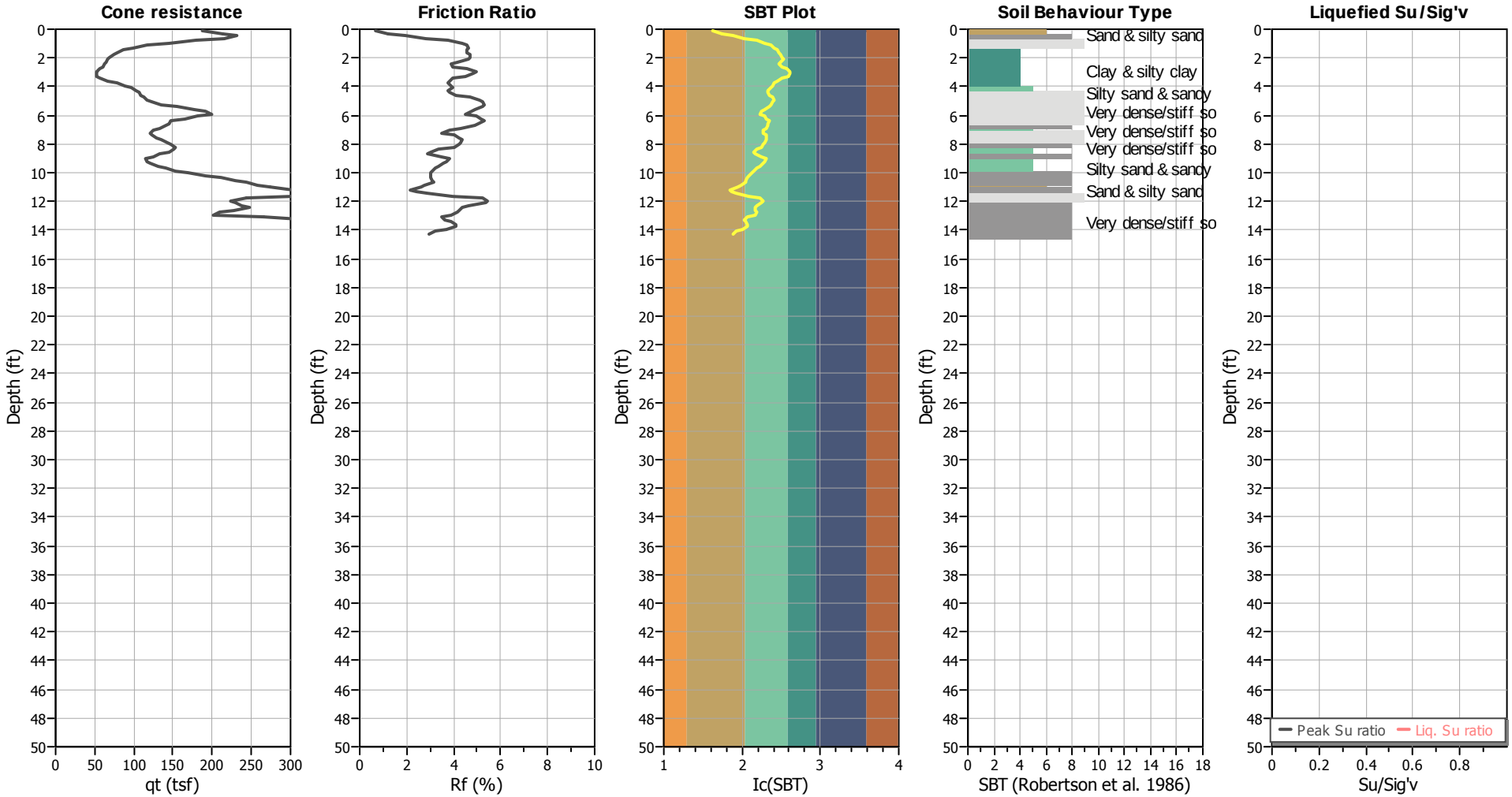
Project: Minor Ranch
Location: Menifee

CPT: CPT-07
Total depth: 14.27 ft



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Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	40.50 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

LGC Geotechnical Inc.
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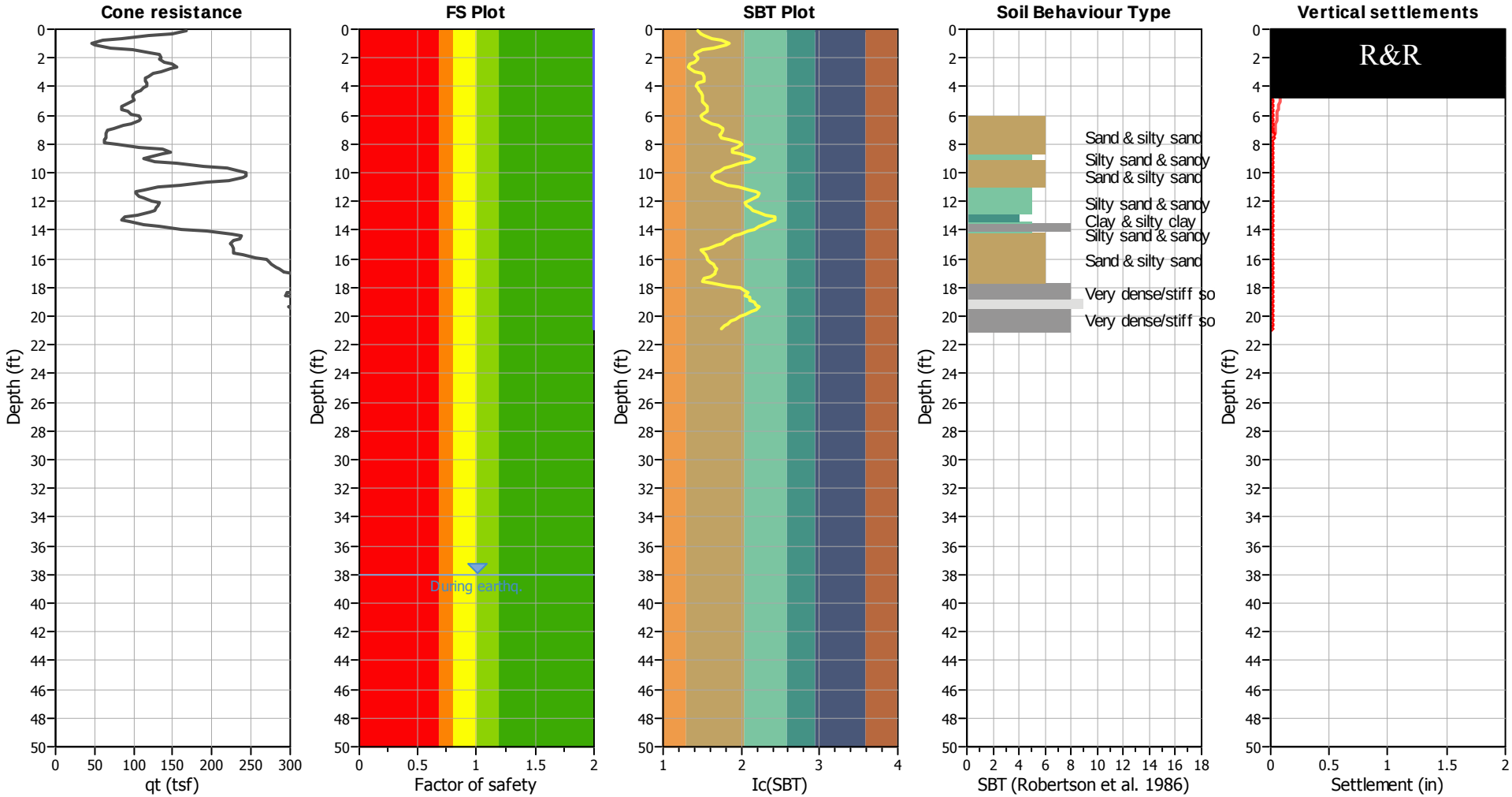
Project: Minor Ranch
Location: Menifee

CPT: CPT-08
Total depth: 20.83 ft



Analysis method:	NCEER (1998)	G.W.T. (in-situ):	38.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	38.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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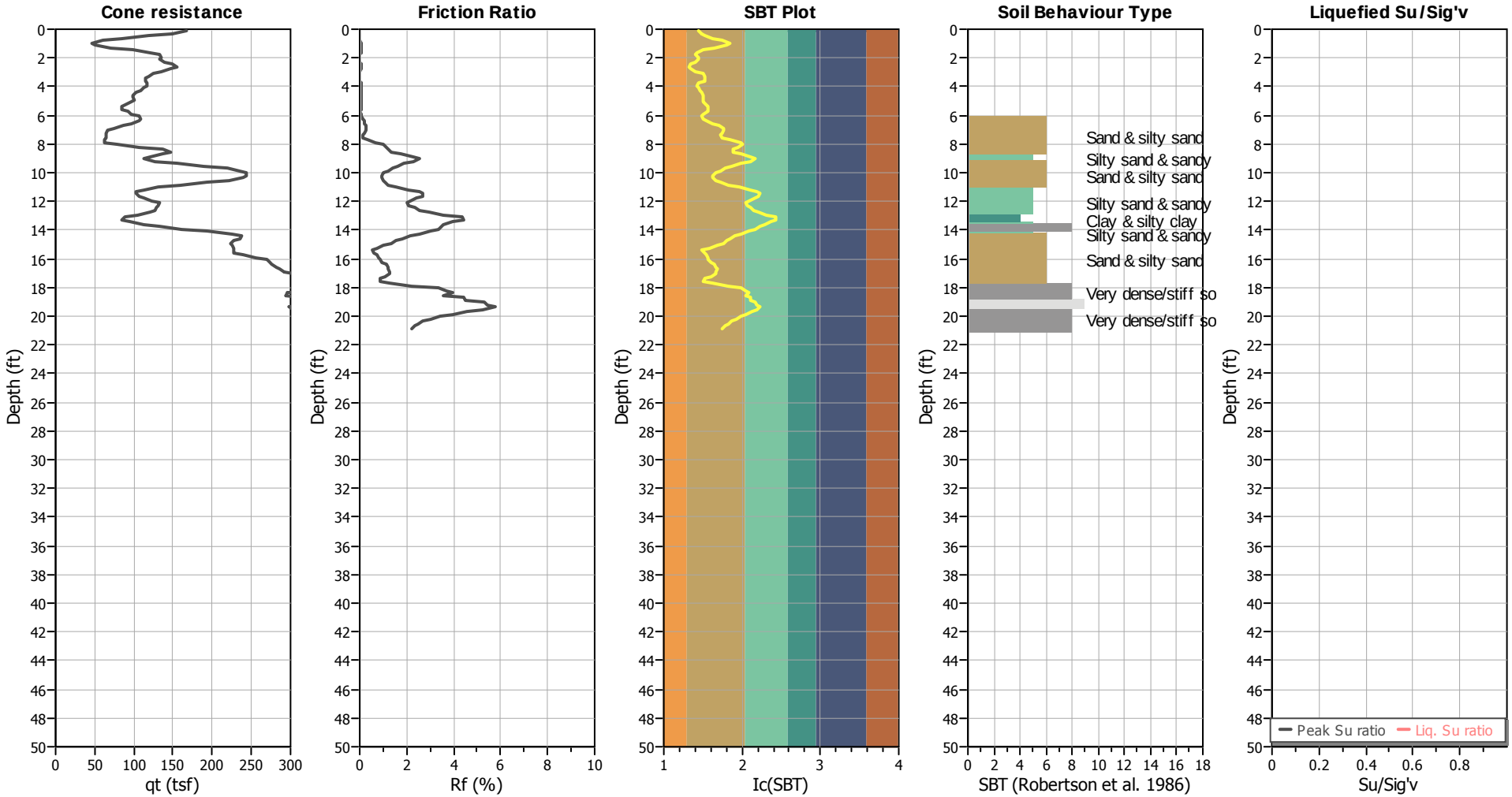
Project: Minor Ranch
Location: Menifee

CPT: CPT-08
Total depth: 20.83 ft



Analysis method:	NCEER (1998)	G.W.T. (in-situ):	38.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	38.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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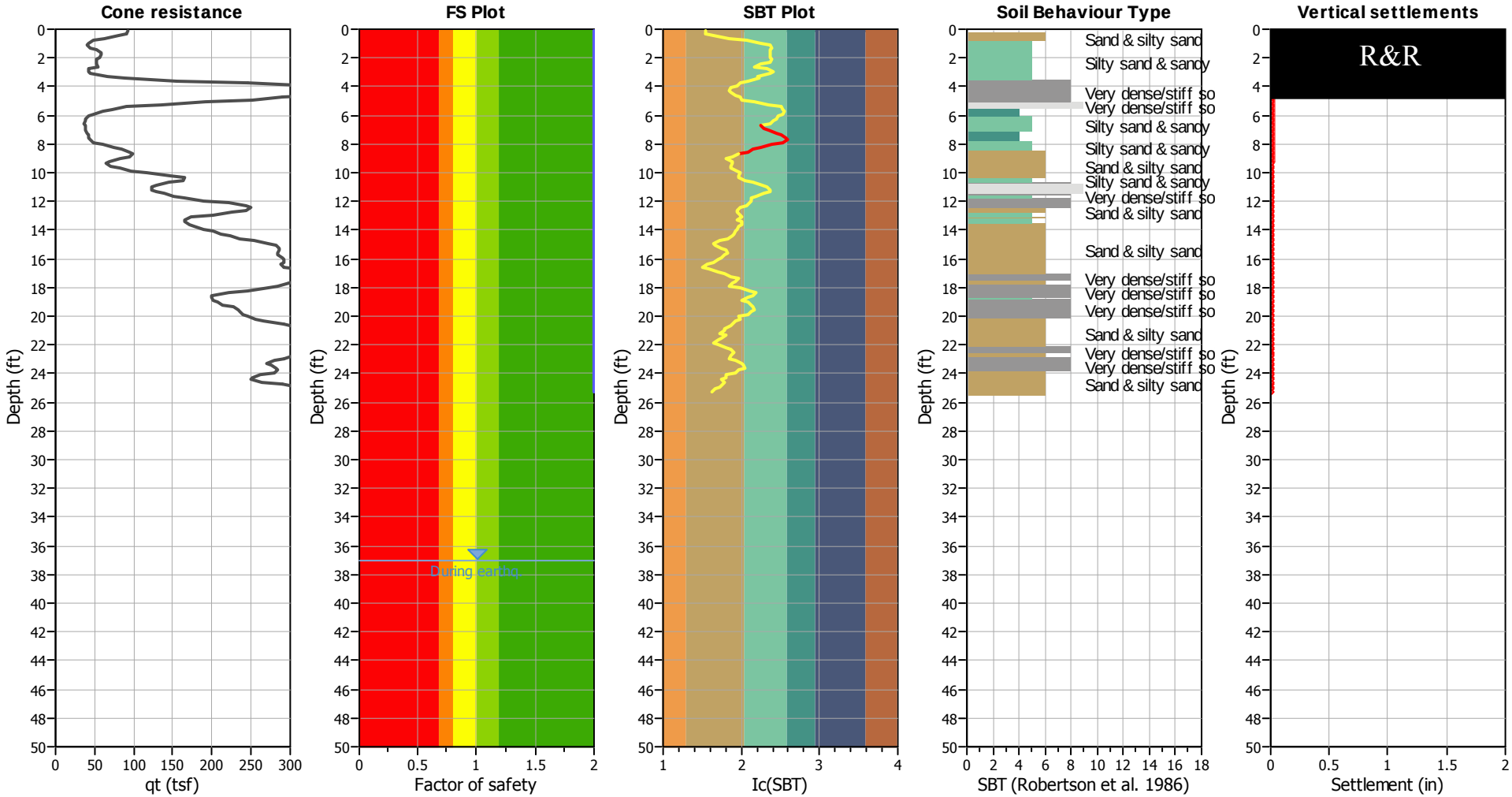
Project: Minor Ranch
Location: Menifee

CPT: CPT-09
Total depth: 25.26 ft



Analysis method:	NCEER (1998)	G.W.T. (in-situ):	37.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	37.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

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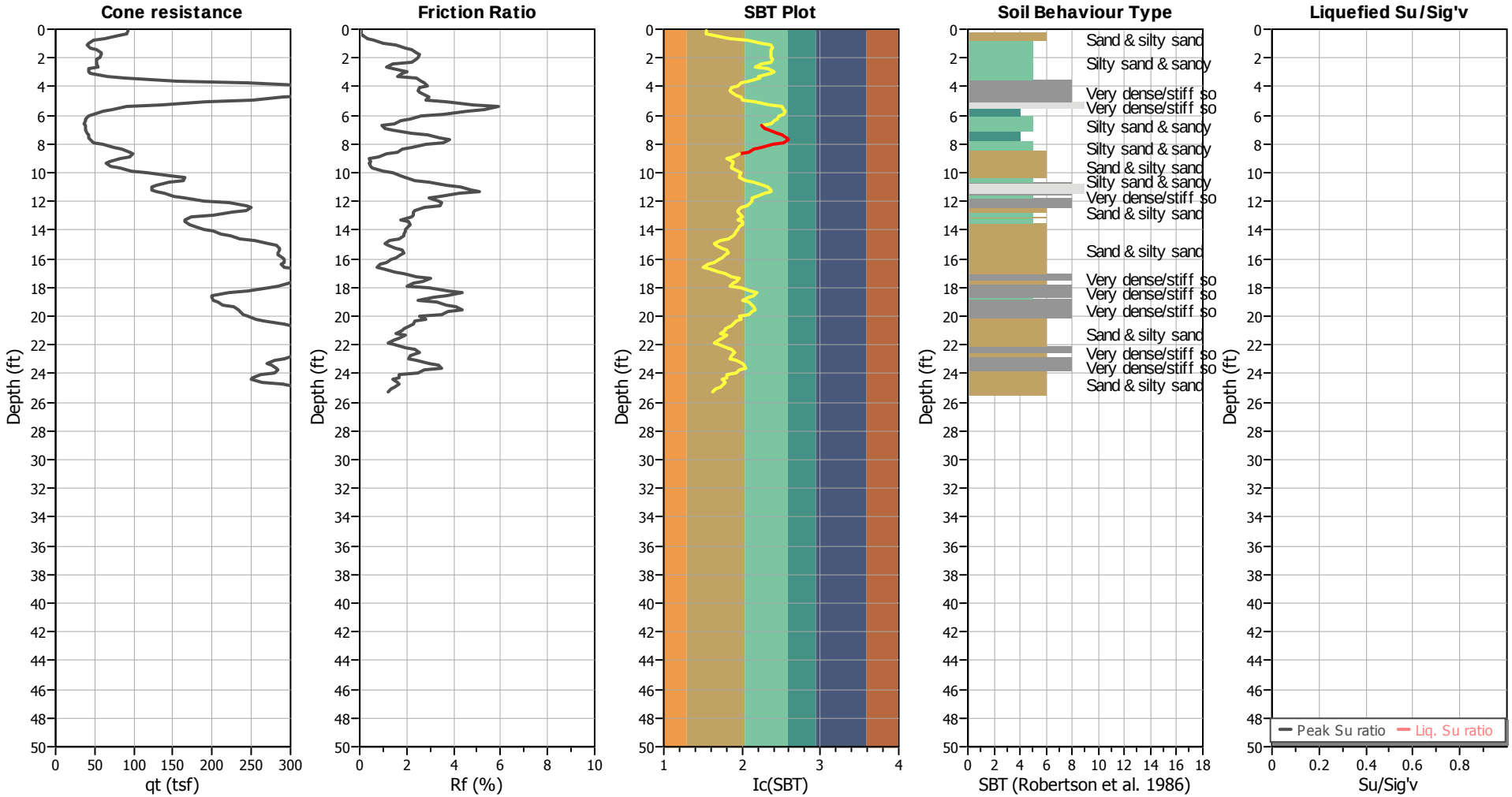
Project: Minor Ranch
Location: Menifee

CPT: CPT-09
Total depth: 25.26 ft



Analysis method:	NCEER (1998)	G.W.T. (in-situ):	37.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	37.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	8.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.50	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

Appendix E
Infiltration Test Data

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Brookfield - Menifee Valley
Project Number: 16118-01
Date: 10/20/2017
Boring Number: LGC-I-1

Test hole dimensions (if circular)	
Boring Depth (feet)*:	5.1
Boring Diameter (inches):	8
Pipe Diameter (inches):	3

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

* Includes height of pipe above ground surface (Hp = 0.6')

Minimum test Head (D_o):

(What the sounder tape should read) Boring Depth - (5 x Boring Radius) 3.5 ft

(Shallow) The value on the sounder tape should be close to this value during testing for **DEEP** testing fill to 4 feet below top of hole

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	8:40	9:05	25.0	2.16	2.24	0.08	No
2	9:12	9:37	25.0	2.2	2.26	0.06	No

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Δt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, ΔD (feet)	Calculated Infiltration Rate(in/hr)
1	8:40	9:10	30.0	2.16	2.25	0.09	0.12
2	9:12	9:42	30.0	2.2	2.27	0.07	0.09
3	9:44	10:14	30.0	2.16	2.23	0.07	0.09
4	10:15	10:45	30.0	2.18	2.23	0.05	0.07
5	10:45	11:15	30.0	2.17	2.22	0.05	0.07
6	11:15	11:45	30.0	2.17	2.23	0.06	0.08
7	11:45	12:15	30.0	2.19	2.24	0.05	0.07
8	12:15	12:45	30.0	2.15	2.21	0.06	0.08
9	12:45	13:15	30.0	2.16	2.21	0.05	0.06
10	13:15	13:45	30.0	2.15	2.21	0.06	0.08
11	13:45	14:15	30.0	2.14	2.19	0.05	0.06
12	14:15	14:45	30.0	2.14	2.19	0.05	0.06

Calculated Infiltration Rate (No factors of safety)	**0.06**
Factor of Safety	**2.0**
Calculated Infiltration Rate (With Factor of Safety)	**0.03**

Sketch:

Notes:

Based on Guidelines from: Riverside County (9/1/2011)
Spreadsheet Revised on: 10/26/2016

LGC Geotechnical, Inc.

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Brookfield - Menifee Valley
Project Number: 16118-01
Date: 10/20/2017
Boring Number: LGC-I-2

Test hole dimensions (if circular)	
Boring Depth (feet)*:	8.5
Boring Diameter (inches):	8
Pipe Diameter (inches):	3

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

* Includes height of pipe above ground surface (Hp = 0.5')

Minimum test Head (D_o):

(What the sounder tape should read) — Boring Depth - (5 x Boring Radius) — 6.9 ft

(Shallow) The value on the sounder tape should be close to this value during testing for **DEEP** testing fill to 4 feet below top of hole

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	8:43	9:08	25.0	6.00	6.1	0.1	No
2	9:16	9:41	25.0	6.01	6.11	0.1	No

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Δt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, ΔD (feet)	Calculated Infiltration Rate(in/hr)
1	8:43	9:13	30.0	6	6.12	0.12	0.18
2	9:16	9:46	30.0	6.01	6.13	0.12	0.18
3	9:47	10:17	30.0	5.99	6.1	0.11	0.17
4	10:17	10:47	30.0	6.02	6.12	0.1	0.15
5	10:47	11:17	30.0	6.02	6.13	0.11	0.17
6	11:17	11:47	30.0	6.05	6.16	0.11	0.17
7	11:47	12:17	30.0	6.04	6.15	0.11	0.17
8	12:17	12:47	30.0	6.02	6.11	0.09	0.14
9	12:47	13:17	30.0	5.97	6.07	0.1	0.15
10	13:17	13:47	30.0	6.02	6.12	0.1	0.15
11	13:47	14:17	30.0	6.01	6.11	0.1	0.15
12	14:17	14:47	30.0	6.01	6.11	0.1	0.15

Calculated Infiltration Rate (No factors of safety)	**0.15**
Factor of Safety	**2.0**
Calculated Infiltration Rate (With Factor of Safety)	**0.08**

Sketch:

Notes:

Based on Guidelines from: Riverside County (9/1/2011)
Spreadsheet Revised on: 10/26/2016

LGC Geotechnical, Inc.

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Brookfield - Menifee Valley
Project Number: 16118-01
Date: 10/20/2017
Boring Number: LGC-I-3

Test hole dimensions (if circular)	
Boring Depth (feet)*:	10.7
Boring Diameter (inches):	8
Pipe Diameter (inches):	3

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

* Includes height of pipe above ground surface (Hp = 0.6')

Minimum test Head (D_o):

(What the sounder tape should read) Boring Depth - (5 x Boring Radius) 9.1 ft

(Shallow) The value on the sounder tape should be close to this value during testing for **DEEP** testing fill to 4 feet below top of hole

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	8:50	9:15	25.0	7.16	7.42	0.26	No
2	9:20	9:45	25.0	7.13	7.39	0.26	No

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Δt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, ΔD (feet)	Calculated Infiltration Rate(in/hr)
1	8:50	9:20	30.0	7.16	7.45	0.29	0.33
2	9:20	9:50	30.0	7.13	7.42	0.29	0.32
3	9:50	10:20	30.0	7.16	7.44	0.28	0.31
4	10:20	10:50	30.0	7.11	7.38	0.27	0.30
5	10:50	11:20	30.0	7.1	7.39	0.29	0.32
6	11:20	11:50	30.0	7.08	7.35	0.27	0.30
7	11:50	12:20	30.0	7.09	7.37	0.28	0.31
8	12:20	12:50	30.0	7.04	7.3	0.26	0.28
9	12:50	13:20	30.0	7.06	7.32	0.26	0.28
10	13:20	13:50	30.0	7.1	7.38	0.28	0.31
11	13:50	14:20	30.0	7.09	7.36	0.27	0.30
12	14:20	14:50	30.0	7.11	7.39	0.28	0.31
						Calculated Infiltration Rate (No factors of safety)	**0.31**
						Factor of Safety	**2.0**
						Calculated Infiltration Rate (With Factor of Safety)	**0.15**

Sketch:

Notes:

Based on Guidelines from: Riverside County (9/1/2011)
Spreadsheet Revised on: 10/26/2016

LGC Geotechnical, Inc.

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Brookfield - Menifee Valley
Project Number: 16118-01
Date: 10/20/2017
Boring Number: LGC-I-4

Test hole dimensions (if circular)	
Boring Depth (feet)*:	3.45
Boring Diameter (inches):	8
Pipe Diameter (inches):	3

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

* Includes height of pipe above ground surface (Hp = 0.45')

Minimum test Head (D_o):

(What the sounder tape should read) Boring Depth - (5 x Boring Radius) 1.8 ft

(Shallow) The value on the sounder tape should be close to this value during testing for **DEEP** testing fill to 4 feet below top of hole

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	8:00	8:25	25.0	0.92	1.15	0.23	No
2	8:32	8:57	25.0	0.7	0.86	0.16	No

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Δt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, ΔD (feet)	Calculated Infiltration Rate(in/hr)
1	8:00	8:30	30.0	0.92	1.2	0.28	0.44
2	8:32	9:02	30.0	0.7	0.89	0.19	0.27
3	9:02	9:32	30.0	0.7	0.86	0.16	0.23
4	9:33	10:03	30.0	0.51	0.68	0.17	0.23
5	10:04	10:34	30.0	0.51	0.65	0.14	0.18
6	10:35	11:05	30.0	0.51	0.65	0.14	0.18
7	11:06	11:36	30.0	0.51	0.66	0.15	0.20
8	11:37	12:07	30.0	0.54	0.65	0.11	0.15
9	12:07	12:37	30.0	0.52	0.66	0.14	0.19
10	12:38	13:08	30.0	0.55	0.66	0.11	0.15
11	13:09	13:39	30.0	0.54	0.66	0.12	0.16
12	13:40	14:10	30.0	0.58	0.69	0.11	0.15

Calculated Infiltration Rate (No factors of safety)	**0.15**
Factor of Safety	**2.0**
Calculated Infiltration Rate (With Factor of Safety)	**0.07**

Sketch:

Notes:

Based on Guidelines from: Riverside County (9/1/2011)
Spreadsheet Revised on: 10/26/2016

LGC Geotechnical, Inc.

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Brookfield - Menifee Valley
Project Number: 16118-01
Date: 10/20/2017
Boring Number: LGC-I-5

Test hole dimensions (if circular)	
Boring Depth (feet)*:	4.1
Boring Diameter (inches):	8
Pipe Diameter (inches):	3

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

* Includes height of pipe above ground surface (Hp = 0.1')

Minimum test Head (D_o):

(What the sounder tape should read) Boring Depth - (5 x Boring Radius) 2.5 ft

(Shallow) The value on the sounder tape should be close to this value during testing for **DEEP** testing fill to 4 feet below top of hole

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:55	8:20	25.0	1.18	1.39	0.21	No
2	8:26	8:51	25.0	1.18	1.32	0.14	No

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Δt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, ΔD (feet)	Calculated Infiltration Rate(in/hr)
1	7:55	8:25	30.0	1.18	1.43	0.25	0.34
2	8:26	8:56	30.0	1.18	1.35	0.17	0.23
3	8:57	9:27	30.0	1.18	1.34	0.16	0.21
4	9:28	9:58	30.0	1.16	1.32	0.16	0.21
5	9:59	10:29	30.0	1.12	1.29	0.17	0.22
6	10:31	11:01	30.0	1.13	1.28	0.15	0.20
7	11:01	11:31	30.0	1.08	1.25	0.17	0.22
8	11:32	12:02	30.0	1.05	1.21	0.16	0.20
9	12:02	12:32	30.0	0.97	1.17	0.2	0.25
10	12:34	13:04	30.0	1	1.16	0.16	0.20
11	13:04	13:34	30.0	1.05	1.21	0.16	0.20
12	13:35	14:05	30.0	1	1.18	0.18	0.23

Calculated Infiltration Rate (No factors of safety)	**0.23**
Factor of Safety	**2.0**
Calculated Infiltration Rate (With Factor of Safety)	**0.11**

Sketch:

Notes:

Based on Guidelines from: Riverside County (9/1/2011)
Spreadsheet Revised on: 10/26/2016

LGC Geotechnical, Inc.

Infiltration Test Data Sheet

LGC Geotechnical, Inc
131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Brookfield - Menifee Valley
Project Number: 16118-01
Date: 10/20/2017
Boring Number: LGC-I-6

Test hole dimensions (if circular)	
Boring Depth (feet)*:	6.42
Boring Diameter (inches):	8
Pipe Diameter (inches):	3

Test pit dimensions (if rectangular)	
Pit Depth (feet):	
Pit Length (feet):	
Pit Breadth (feet):	

* Includes height of pipe above ground surface (Hp = 0.42')

Minimum test Head (D_o):

(What the sounder tape should read) Boring Depth - (5 x Boring Radius) 4.8 ft

(Shallow) The value on the sounder tape should be close to this value during testing for **DEEP** testing fill to 4 feet below top of hole

*Pre-Test (Sandy Soil Criteria)**

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:49	8:14	25.0	3.78	4.27	0.49	No
2	8:21	8:46	25.0	2.95	3.41	0.46	No

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Δt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, ΔD (feet)	Calculated Infiltration Rate(in/hr)
1	7:49	8:19	30.0	3.78	4.37	0.59	0.94
2	8:21	8:51	30.0	2.95	3.5	0.55	0.65
3	8:53	9:23	30.0	3.34	3.83	0.49	0.65
4	9:24	9:54	30.0	3.19	3.67	0.48	0.61
5	9:56	10:26	30.0	3.11	3.58	0.47	0.58
6	10:27	10:57	30.0	2.93	3.43	0.5	0.59
7	10:58	11:28	30.0	3	3.47	0.47	0.56
8	11:28	11:58	30.0	3.03	3.49	0.46	0.55
9	12:00	12:30	30.0	2.95	3.4	0.45	0.53
10	12:30	13:00	30.0	2.88	3.33	0.45	0.52
11	13:00	13:30	30.0	2.85	3.3	0.45	0.51
12	13:30	14:00	30.0	2.81	3.3	0.49	0.55

Calculated Infiltration Rate (No factors of safety)	**0.55**
Factor of Safety	**2.0**
Calculated Infiltration Rate (With Factor of Safety)	**0.28**

Sketch:

Notes:

Based on Guidelines from: Riverside County (9/1/2011)
Spreadsheet Revised on: 10/26/2016

LGC Geotechnical, Inc.

Appendix F
General Earthwork and Grading Specifications for Rough Grading

General Earthwork and Grading Specifications for Rough Grading

1.0 General

1.1 Intent: These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record: Prior to commencement of work, the owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to confirm that the attained level of compaction is being accomplished as specified. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor: The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the project plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "equipment" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the

Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified. It is the contractor's sole responsibility to provide proper fill compaction.

2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing: Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed. The contractor is responsible for all hazardous waste relating to his work. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Client should acquire the services of a qualified environmental assessor.

2.2 Processing: Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free of oversize material and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 ***Overexcavation:*** In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 ***Benching:*** Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

2.5 ***Evaluation/Acceptance of Fill Areas:*** All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 ***General:*** Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 ***Oversize:*** Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 ***Import:*** If importing of fill material is required for grading, proposed import material shall meet the requirements of the geotechnical consultant. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers: Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning: Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557).

4.3 Compaction of Fill: After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes: In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557.

4.5 Compaction Testing: Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing: Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations: The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

7.1 The Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.

7.2 All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.

7.3 The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.

7.4 The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

7.5 Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.