APPENDIX G Geotechnical and Paleontological Resources Documentation

G-1 2015 Fault Activity Investigation

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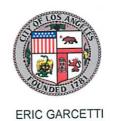
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DEPARTMENT OF **BUILDING AND SAFETY** 201 NORTH FIGUEROA STREET LOS ANGELES, CA 90012

RAYMOND S. CHAN, C.E., S.E. GENERAL MANAGER

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GEOLOGY REPORT APPROVAL LETTER

MAYOR

July 7, 2015

LOG # 87496R SOILS/GEOLOGY FILE - 2 AP

Millennium Hollywood Development, LLC 1680 N. Vine Street Los Angeles, CA 90028

TRACT:

18237 / Hollywood

BLOCK:

-/21

LOT(S):

1 and 2 (arbs 2-4) / 3-5 and 21 (arbs 1&2)

LOCATION: 1731-1741 Argyle Ave, 1720-1750 N Vine St, 1746-1764 N IvarAve & 1749 N Vine St

CURRENT REFERENCE	REPORT	DATE(S) OF	
REPORT/LETTER(S)	No.	DOCUMENT	PREPARED BY
Geologic Response Report	3425	06/03/2015	Earth Consultants International
Oversized Doc(s).	**	**	**
Geologic Response Letter	LA-1191 A	05/17/2015	Group Delta
Third Party Review	3425	03/09/2015	Earth Consultants International
Geology Report	LA-1191 A	03/06/2015	**
Oversized Doc(s).	**	**	33
PREVIOIUS REFERENCE	REPORT	DATE(S) OF	
PREVIOIUS REFERENCE REPORT/LETTER(S)	REPORT No	DATE(S) OF DOCUMENT	PREPARED BY
REPORT/LETTER(S)			PREPARED BY LADBS
REPORT/LETTER(S) Dept. Approval Letter	No.	DOCUMENT	
REPORT/LETTER(S)	<u>No.</u> 77007-01	DOCUMENT 01/31/2013	LADBS
REPORT/LETTER(S) Dept. Approval Letter Geology/Soils Report Fault Investigation Report	<u>No.</u> 77007-01	DOCUMENT 01/31/2013 12/03/2012	LADBS Langan
REPORT/LETTER(S) Dept. Approval Letter Geology/Soils Report	No. 77007-01 700019502	DOCUMENT 01/31/2013 12/03/2012 11/30/2012	LADBS Langan

The Grading Division of the Department of Building and Safety has reviewed the referenced reports that present a fault activity investigation at 1731-1741 Argyle Ave., 1720-1750 N. Vine St., 1746-1754 N. Ivar Ave. and 1749 N. Vine St. for the future devolvement of the property (Millennium project). The site contains two non-contiguous portions; one east of Vine Street and the other on the west. The site is currently occupied mostly by parking lots and some offices, including the CapitaRecords building. The site is located within an Official Earthquake Fault Zone that was established (November 6, 2014) by the California Geological Survey (CGS) for the Hollywood fault (on the USGS 7.5 minute Hollywood Quadrangle). The current reports are considered "stand alone" and do not rely on data from theprevious reports prepared by Langan.

The fault investigation conducted by Group Delta (GDC) concluded that no active (Holocene) faults are known to be present beneath the site.

This investigation included the following:

- 1. A large exploration trench, about 30 to 80 feet wide 12 to 35 feet deep and approximately 278 feet long, located on the eastern side of the site and extended into the property to the north (6230 Yucca Street).
- 2. Several transects of CPT soundings and continuous core borings, which included a total of 78 CPTs and 35 continuous core borings.
- 3. Data from fault investigations adjacent and nearby projects by GDC were incorporated in this investigation including another trench, entirely on 6230 Yucca Street site, about 60 feet wide, 130 feet long and 25 to 30 feet deep.
- 4. A detailed soil stratigraphic/pedological analysis to estimate the age of the soil horizons encountered in the trenches in the eastern part of the site, as well as in two of the continuous cores on the western part of the site by Dr. Roy Shlemon (a well-known expert in soil stratigraphy, age-dating of soils and assessment of geologic hazards).

In addition, Earth Consultants International (ECI), a company well experienced with fault investigations, provided a "Third Party Review" of the GDC report (Appendix E of the report).

Both the western and eastern portions of the Millennium site are underlain by alluvial deposits, which are divided into three general units (see Figure 5 of the report). These units include an upper sandy alluvium that is geologically young (Holocene in age: about 11,000 years old orless); a Pleistocene deposit (about 35,000 to 60,000 years old), referred to as "mudflow"; and, an older Pleistocene deposit, referred to as "older alluvium" (about 200,000 years or older). Bedrock was found below the alluvium in some of the borings.

The investigation documents ancient faulting and folding of Pleistocene older alluvium (about 200,000 years or older). Beneath the northern part of the site, the older alluvium is tilted, dipping southward. Investigations by GDC on nearby and adjacent sites indicate that the geologic structure forms a broad anticline with an axis trending roughly along Yucca Street. The older alluvium on the south side of the site is relatively horizontal and does not appear to be folded. GDC infers that an inactive fault is located between the folded and non-folded older alluvium, where the subsurface data show discontinuous bedding. The inactive fault traverses the site in an approximately east-west trend (see Plate 1 and Figure 8 of the report), roughly along the trend of the "Yucca Strand" as mapped by the California Geological Survey on the January 8, 2014 Preliminary Alquist-Priolo Earthquake Fault Zone map. The inactive fault projects eastward towards a suspected fault scarp on the north side of Carlos Avenue that is likely related.

The "older alluvium" and inactive fault are buried by Pleistocene "mudflow" and Holocene alluvial deposits. The "mudflow" deposits (judged to be at least 35,000 years old) were observed to be continuously overlying the inactive fault at the continuous core/CPT transects. In addition, the inactive fault projects beneath the exploratory trench at the eastern part of the site, where the "mudflow" Pleistocene deposits were observed to be undisturbed.

Two minor anomalies were noted in transect M-M'. The first anomaly is at the location of CPT-29. The second is just north of CPT-29 which was judged to be a possible inactive fault by ECI. As a result, LADBS requested GDC to re-evaluate their data at this southern locality.

Subsequently, both GDC and ECI produced response reports that address the possible anomalous data from the CPT/Continuous Core Boring transects (GDC report dated 05/17/2015 and ECI report dated 06/03/2015). The reports acknowledge inaccurate locations of CPTs shown in the original report (GDC

1731-1741 Argyle Ave., 1720-1750 N. Vine St., 1746-1764 N. Ivar Ave. and 1749 N. Vine St.

03/06/2015). The CPTs and borings were surveyed and the transects were refined accordingly, except for Transect M-M', which had since been re-graded and paved, and therefore the survey of its CPT locations was not possible. The data from CPT-29 in transect M-M' (the firstanomaly) are inconsistent relative to data from adjoining CPTs and the elevation is reportedly ambiguous, and issue was thoroughly addressed in the ECI report.

The second anomaly consists of a minor inferred fault identified by ECI north of CPT-29 located within the older alluvium and lower part of the "mudflow" unit. This inferred fault does not displace the upper part of the "mudflow", which indicates that it would not have been active in the last 80,000 years (based on ECI's age estimate).

Based on the site exploration and analysis described above, no active (Holocene) faults are known to be present beneath the site. GDC, Dr. Roy Shlemon, and ECI concluded that there are active faults at the site and that the main inferred inactive fault is estimated to be about 150,000 years old or older. *Note: The State of California Aquist-Priolo Earthquake Fault Zoning Act precludes construction of structures for human occupancy on "active" faults (those that have ruptured within about 11,000 years)*.

Since exploration did not extend beyond the property boundary, GDC recommends two setback zones where buildings cannot be constructed at the site; one at the northern edge of the western property and another at the southern part of the eastern property. Construction of buildings within these setback zones will be considered if additional geologic exploration is conducted and the areas are found to be free from active faults.

The referenced report is acceptable, provided the following conditions are complied with during site development:

- 1. During construction, the project engineering geologist shall observe and log in detail the proposed basement excavation where the natural alluvial soils are exposed. The project engineering geologist shall post a notice on the job site for the City Grading Inspector/Geologist and the Contractor stating that the excavation (or portion thereof) has been observed and documented and meets the conditions of the report. No fill or lagging shall be placed until the LADBS geologist has verified the documentation. If evidence of active faulting is observed, the Grading Division shall be notified immediately. (Code Section 91.7009)
- 2. A supplemental report that summarizes the geologist's observations (including photographs and logs of excavations) shall be submitted to the Grading Division of the Department upon completion of the excavations.
- 3. Prior to issuance of any permit, a soil engineering report shall be submitted to the Grading Division to provide design recommendations for the proposed grading/construction.

DANIEL C. SCHNEIDEREIT Engineering Geologist I

DCS/dcs Log No. 87496R 213-482-0480

cc: Group Delta, Project Consultant Earth Consultants International LA District Office



Fault Activity Investigation

East and West Millennium Sites
1733-1741 Argyle Avenue;
6236 and 6334 West Yucca Street;
1720-1730, 1740, 1745-1760, and 1762-1770 N. Vine Street;
1746, 1748-1754, 1760, and 1764 N. Ivar Avenue,
Hollywood Area
City of Los Angeles, California

Mr. Philip E. Aarons, VP
Millennium Hollywood Development LLC
1680 N. Vine Street
Los Angeles, California 90028

March 6, 2015 GDC Project No. LA-1191 A



Mr. Philip E. Aarons, VP Millennium Hollywood Development LLC 1680 N. Vine Street Los Angeles, California 90028 March 6, 2015 GDC Project. LA-1191 A

Subject: Fault Activity Investigation

East and West Millennium Sites

1733-1741 Argyle Avenue; 6236 and 6334 W. Yucca Street; 1720-1730, 1740, 1745-1760, and 1762-1770 N. Vine Street; 1746, 1748-1754, 1760, and 1764 N.

Ivar Avenue, Hollywood Area, City of Los Angeles, California

Mr. Aarons:

Group Delta Consultants (GDC) is pleased to submit this Fault Activity Investigation Report for the East and West Millennium Sites east and west of Vine Street between Argyle and Ivar Avenues in the Hollywood area of the City of Los Angeles. The legal descriptions of the sites are provided on Table 1. Both sites are within the California Geological Survey's (CGS) Alquist-Priolo (AP) fault study zone and the city of Los Angeles Preliminary Fault Rupture Study Area (PFRSA) for the Hollywood Fault. GDC completed a standard-of-practice geological investigation in accordance with the procedures required by the City of Los Angeles and the State of California Mining and Geology Board.

The enclosed report represents the most comprehensive subsurface study of any site in the City of Los Angeles. You will find that this comprehensive study has resulted in the following conclusions:

- The inferred Yucca Street Strand of the Hollywood Fault was not found within the East or West Millennium Sites or the other areas reviewed within this report;
- The East and West Millennium Sites are characterized by unbroken Holocene sediments and underlying un-faulted mudflow deposits that are at least 125,000 years old, thereby positively demonstrating that no active fault is present on or within the East and West Millennium Sites or the other areas reviewed within this report; and
- No surface rupture hazard exists on or within the East or West Millennium Sites;
- This report's study area encompasses approximately 187,912 square feet on both the East and West Millennium Site.
- Setback of 50 feet will be required for the southwest portion of the East Millennium Site
 and on the northern portion of the West Millennium Site. Upon submittal of a
 supplemental report, the setback line can be adjusted, upon approval from the LADBS.



GDC appreciates the opportunity to provide geotechnical and geological services for this project.

Should you have any questions, please call at 310-320-5100.

Steven H. Kolthoff, CEG # 1965, exp. 8/31/15

Engineering Geologist Consultant

Michael D. Reader, PE, GE CEO, Principal Engineer

KarlMichael J. Neill, GIT #582

Project Geologist

Distribution: Addressee (1), LADBS (3)

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1.0 INTRODUCTION

This report presents the results of the Group Delta Consultants, Inc. (GDC) Fault Activity Investigation for the East and West Millennium Sites (Plate 1), consistent with current geologic standards-of-practice applicable to an Alquist-Priolo Earthquake Fault Zone Investigation (AP) and the City of Los Angeles Preliminary Fault Rupture Study Areas (PFRSA).

This study was conducted to evaluate the presence or absence of an active fault within the subject sites in accordance with the procedures and guidelines specified by the Los Angeles Department of Building and Safety and the State Mining and Geology Board.

To achieve this goal, Group Delta Consultants, Inc:

- Advanced 37 cone penetrometer tests (CPTs), and collected 19 continuous cores along two transects (Cross-sections M-M' and N-N') within and adjacent to the East Millennium Site in order to identify and date stratigraphic marker beds for local and regional correlation and continuity,
- 2. Advanced 41 CPT tests along two transects (Cross-sections O-O' and P-P'; Plate 1) within the West Millennium Site, as well as 16 boreholes along Cross-section O-O', to identify and date stratigraphic marker beds useful for interpreting geologic structure and the presence or absence of active faults,
- 3. Excavated the East Trench on the East Millennium Site, and the 6230 Yucca Street Site;
- 4. Reviewed and assessed, as appropriate, information from nearby and adjacent geological investigations,
- Constructed cross-sections, geologic maps, trench logs and other standard-of-practice documentation to substantiate the technical conclusions presented in this report for submission to the City of Los Angeles Department of Building and Safety (LADBS), the designated lead agency under the AP act.

As documented in this report, the geologic and geotechnical investigations of the East and West Millennium Sites entail site-specific subsurface exploration, and also take advantage of recent trench exposures, CPTs and continuous cores collected from three adjacent or nearby sites (Plate 1). This report includes information compiled from investigations of other properties. For three of these properties, GDC conducted extensive subsurface investigations culminating in Fault Investigation Reports. These reports were recently approved by the Los Angeles Department of Building and Safety (LADBS). The referenced adjacent properties are the 6230 Yucca Street Site northeast of the East Millennium Site, the Champion Site at 1756 and 1760 Argyle Ave northeast of the East Millennium Site, and the Green Site at 1800 Argyle Avenue, also to the northeast of the East Millennium Site (Plate 1). Combined, these investigations document the most comprehensive geologic and geotechnical studies to date in Hollywood and provide more information about the possible presence and age (time of last surface or near-surface displacement) of the Hollywood Fault Strands than any other study within the City of Los Angeles.



As background to this study, based on a compilation of geotechnical reports and published literature interpretation, the California Geological Survey (CGS) issued a preliminary and supplementary Earthquake Fault Zones and Seismic Hazard Zones, Hollywood 7.5 Minute Quadrangle, Fault Evaluation Report (FER) in early and late 2014 respectively, that portrayed various strands of the Hollywood Fault as inferred "Earthquake Faults" (Holocene displacement) (CGS, 2014a; Plate 1). Two specific strands within or near the East and West Millennium Sites are identified as the "Argyle" and the "Yucca Street," strands respectively, projected across or near the East Millennium Site (Plate 1). However, a 6230 Yucca Street site trench exposure, interpretation of cores and cone penetrometer tests (CPT), and radiocarbon and soil-stratigraphic dating demonstrate that there were no active faults mapped 50 feet to the south of the northern East Millennium Site property line.

Further studies conducted on the East and West Millennium Sites included a trench exposure, analysis of soil cores and cone penetrometer tests, and radiocarbon and soil-stratigraphic dating which also demonstrated that there are no active faults on the East and West Millennium Sites.

This report did not address the geology northwest corner of the West Millennium Site (Enterprise Car Rental Site), a 50 foot setback zone from the furthest northern boring will be required. Further study will be completed when Millennium Hollywood Development LLC completes its acquisition of the Enterprise Car Rental Site. After further study the setback zone requirement will be reevaluated by the LADBS. Upon further study, to the south of the East Millennium Site property line, the setback zone requirement will be reevaluated by the LADBS. The further study for the West and East Millennium Site has not yet commenced due to lack of access to the properties.

2.0 SCOPE OF WORK

This investigation evaluates whether active traces of the Hollywood Fault or any other active faults exist at or in the subsurface of the East and West Millennium Sites. GDC reviewed pertinent aerial photographic, geologic and topographic maps, plus peer-reviewed published maps, papers, and geotechnical reports submitted to reviewing agencies. GDC also reconnoitered the two sites and their environs for tectonic geomorphic expression of fault rupture. The investigation followed current geologic standards-of-practice to demonstrate the possible presence and age of a fault that might impact the proposed development of the East and West Millennium Sites (Figure 1).

Based to a great degree on the CGS (2014a, b) Alquist-Priolo maps, GDC initially used Cone Penetrometer Tests (CPT) soundings and boreholes to evaluate to possible presence or absence of obvious breaks in the subsurface stratigraphy that could be interpreted as fault-related.

To supplement those cores and CPTs, a large (~134 ft. long by ~30 ft. deep) trench (West Trench) was excavated north to south on the 6230 Yucca St Site, GDC (2014a). An additional trench (East Trench) was excavated (~278 ft. long by ~30 ft. deep) east of the West Trench (Plate 1). The East Trench overlapped the West Trench by 95 feet to the north and trended south into the East Millennium Site for a combined total of 317 linear feet of trench exposures.



The trench exposures on the 6230 Yucca Street Site and the East Millennium Site were used to calibrate the cores and CPT lines and exposed the Holocene and late Pleistocene alluvial sequences and stratigraphy. This is useful for both numeric (radiocarbon) and relative soil dating (soil stratigraphy) and for reasonable extrapolation of stratigraphy across the entire East and West Millennium Site. With restrictions on entry to the property to the south of the East Millennium Site, it was not possible to extend the trench to achieve the 50-foot separation distance from the East Millennium Site. That area was investigated by a densely spaced collection of cores and CPT-soundings about 50 feet west of the trench footprint on the East Millennium Site (Plate 1). The cores and

In this report, GDC uses the term soil as a pedogenic (weathering) feature and as a tool for dating sediments, not as an engineering material.

In sum, the investigation included the following:

- Retention of Dr. Roy J. Shlemon to assist GDC with the analysis of the local Quaternary geology, soil stratigraphy and paleoseismology, and to provide an independent QA assessment of the investigation and report (Appendix B).
- GDC review and analysis of relevant geotechnical and geological investigations, and published geologic and geotechnical maps and reports pertaining to the East and West Millennium Site. Specific references are documented in Section 8.
- Interpretation of vertical stereo and oblique aerial photographs from the Continental Aerial Collection and the Spence Collection at UCLA.
- Coordination with the owner of the East and West Millennium Sites, Millennium Hollywood Development LLC, Underground Service Alert (USA), Subsurface Survey, Inc., the City of Los Angeles Department of Public Works and the engineering staff at Capitol Records, Inc., to locate utilities.
- Initial site observations to assess existing conditions relative to the planned development. Prior to drilling the cores or pushing the CPTs, initial advancement of a hand auger to 5 feet was performed to satisfy USA requirements.
- Advancement of 37 cone penetrometer tests (CPT), and collection of 19 continuous cores along two transects (Cross-sections M-M' and N-N') within and adjacent to the East Millennium Site in order to identify and date stratigraphic marker beds for local and regional correlation and continuity.
- Advancement of 41 CPT tests along two transects (Cross-sections O-O' and P-P'; Plate 1) within the West Millennium Site, as well as and collection of 16 continuous cores along Cross-section O-O' identification of and dating of stratigraphic marker beds useful for interpreting geologic structure and the presence or absence of active faults.
- Review and assessment of information from nearby and adjacent geological investigations.



- Excavating two trenches, the West Trench (on the 6230 Yucca Street Site) and East Trench (partially on the 6230 Yucca Street Site) with a continuation of the East Trench southward onto the East Millennium Site (Plate 3 and Plate 4a, 4b and Plate 5).
- Field preparation included brushing and scraping of the trench walls, setting up of level string lines, geologic logging and photographing both trenches across the East Millennium Site from north to south. Both trenches were periodically observed by geologists and staff from the City of Los Angeles Department of Building and Safety and geologists from the California Geological Survey.
- Two charcoal samples from the West Trench and nine from the East Trench were collected for potential radiocarbon dating. All eleven samples were submitted to Beta Analytic, Inc. (Miami, Florida; Appendix C). The Yucca 3 sample was not tested since it lacked datable carbon. The locations of the tested samples are plotted on the trench log (Plate 3, Plate 4A and Plate 5; Table 2).
- Construction of Cross-Sections A-A', E-E', M-M', N-N', O-O', P-P', Q-Q' (Plate 2, Plate 6, Plate 7, Plate 8, Plate 9 and Plate 10) with CPT and core logs and Cross-Sections B-B', C-C' and D-D' (Plate 3, Plate 4a, Plate 4b and Plate 5) trench logs.
- Preparation and summary of GDC findings and opinions with attachments and appendices compiled into this report.
- A third-party review of the data and report by Earth Consultants International, Inc. (ECI) will be presented separately.



3.0 GEOLOGIC INVESTIGATIONS

3.1 PREVIOUS INVESTIGATIONS

Previous geologic mapping and investigations were based mainly on a few outcrops in the area, on geomorphic expression, and on groundwater measurements from groundwater wells and geotechnical borings. Based on the limited, site-specific data (Hoots, 1930; Hoots and Kew, 1931; Dolan et al., 1997, 2000; Dibblee, 1988), the California Geological Survey published and submitted a Draft Fault Evaluation Report (FER 253, 2014b) to complement the Preliminary Alquist-Priolo Map for the Hollywood 7.5' Quadrangle (2014b). In that report, the CGS interpreted two strands of the Hollywood fault, identified as the Argyle and Yucca Street strands, which impacted the 6230 Yucca Street Site (GDC 2014 Yucca). In response, GDC presented preliminary investigation data (GDC 6230 Yucca Street Site report), and facilitated the CGS's review of open trenches at the 6230 Yucca Street Site, resulting in the CGS relocating the Argyle strand 70 feet to the south, just outside of the trench footprints (CGS, 2014b).

The Supplemental FER 253 (CGS, 2014a) still depicts two active (Holocene) traces of the Hollywood Fault (Argyle and Yucca Street Strands) as trending across the 6230 Yucca Street Site and the East Millennium Site respectively. Additionally, other geotechnical investigations in the area similarly addressed the potential impact of the Hollywood Fault and its secondary traces on the local area (Law, 2000; GeoPentech, 2001, 2005; Leighton, 2011; City of Los Angeles, 2009; Langan, 2011, 2012; GDC, 2006, 2014a, 2014b, and 2014c). Where relevant, data from these reports are also used in this analysis.

3.1.1 CONE PENETRATION TESTS

Conclusions and recommendations within this document are based in a large part on assessment of 103 CPT-soundings completed on the East and West Millennium Sites, the adjacent 6230 Yucca Street Site and the Green Site. Cross-section A-A' is a north-south transect on the 6230 Yucca Street Site. Cross-sections E-E', M-M' and N-N' are on the East Millennium site; and Cross-sections O-O', P-P' and Q-Q' are on the West Millennium site. GDC oriented the cross section transects perpendicular to the CGS (2014) inferred Argyle and Yucca strands, except for Cross-section Q-Q' which was constructed east to west. The CPT-soundings were pushed down to approximately 60 to 70 feet below ground surface (bgs) by Middle Earth, Inc. and Gregg In Situ, Inc. Logs and interpretations of the CPT data are given in (Appendix A) and (Plate 2, Plate 6, Plate 7, Plate 8, Plate 9, Plate 10) on Cross-Sections A-A', E-E', M-M', N-N', O-O', P-P' and Q-Q' locations are indicated on Plate 1.

3.1.2 CONTINUOUS CORES

Boreholes on the East Millennium site, including those placed on the 6230 Yucca Street Site and the Green Site, were initially advanced along the CPT traverses as shown on Plate 1 to calibrate and correlate the CPT data with site stratigraphy. GDC supplemented the initial borings with 16 additional boreholes to refine the interpretation of a stratigraphic unconformity near the C-5 of transect/cross-section O-O.'



Boreholes were typically advanced to approximately 60 feet bgs by Gregg Drilling, Inc., and ABC-Liovin Drilling, Inc., utilizing an 8.75-inch diameter hollow stem auger with a 3-inch diameter by 5-foot long split coring barrel down the auger annulus.

The recovered cores were placed in 2.5-foot long cardboard core boxes and transported to the GDC laboratory for further examination. Core logs are provided in Appendix A. Locations are indicated on Plate 1.

3.1.3 TRENCHING INVESTIGATIONS

Fault exploration trenches excavated on the east-adjacent 6230 Yucca Street Site proved useful to the GDC assessment of the absence of active faults on the East and West Millennium Sites in general and the East Millennium Site in particular.

3.1.3.1 WEST TRENCH

The trench was excavated on the 6230 Yucca Street Site. The top 13 feet along the west side of the trench were cut with a 1:1 slope to the first bench. Benches 2 through 4 were excavated with ~4 foot vertical and horizontal intervals to the bottom of the trench. This benching improved the stability of the trench and provided good exposures for logging (Cross-Section B-B'). The eastern side of the trench was sloped at 1:1 horizontal to vertical from top to bottom.

3.1.3.2 EAST TRENCH

The East Trench was excavated and logged in both the East Millennium Site and in the 6230 Yucca Street Site. This trench varied from about 30 to 80 feet wide, 12 to 35 feet deep increasing in depth to the south and around 278 feet long. The East Trench overlapped the southern portion of the West Trench and continued south into the East Millennium Site (Plate 4a, Plate 4b and Plate 5) for about 164 feet. The sides of the trench were benched to about 4 feet wide or greater and 4 feet high, horizontal to vertical (Plate 3, Plate 4a, Plate 4b and Plate 5).



4.0 GEOLOGIC FRAMEWORK

The Santa Monica Mountains began uplift in the Jurassic, and intermittent tectonic movement continues to the present (Hoots, 1930; Hoots and Kew, 1931; Dibblee, 1991). By the middle Miocene, transrotational deformation affected the Topanga sediments, resulting in simple, west-plunging folds. About 5 ma, in response to changes in relative movements of the North American and Pacific Plates and the resultant onset of transpressional stress along the San Andreas and related boundary faults, high-angle normal faults inverted to compression-driven reverse and thrust faults (for example, Wright, 1991). One of such faults/fault zones is the Hollywood Fault that has traditionally been judged to be a left-lateral-reverse feature near the base of the Hollywood Hills.

Transpressional deformation since inversion complicated the regional structural pattern. In the study area, the southeastern limbs of local folds were "down-dropped" along the Hollywood Fault Zone (Dibblee, 1991). By the onset of the Quaternary, many folds were buried by episodic, climatically controlled alluvial deposits that covered most of the study area. Starting at least by mid-Quaternary time, the surface expression of local left-lateral and thrust faults were generally buried by continuing region-wide alluviation. Great relief was generally expressed along major south-trending canyons that incised the alluvial cap(s), only to be filled and again partially filled in response to regional change in climate.

4.1.2 HOLLYWOOD FAULT

The Hollywood Fault Zone is one of several faults that, combined, form the general boundary separating the Transverse Ranges on the north from the Peninsular Ranges (and the Los Angeles Basin) on the south. The Hollywood Fault is generally divided into five segments all characterized by assumed left-lateral oblique (reverse) slip (Figure 4). The eastern terminus of Segment 2 and the western terminus of Segment 3 are northeast of the site that is the focus of this study (CGS, 2014a and b; FER 253). The CGS identified two inferred faults of Segment 2 as the "Argyle" and the "Yucca Street" strands, respectively. The Yucca Street Strand was inferred through the southern portion of the East Millennium Site and near the south boundary of the West Millennium Site; the Argyle inferred strand is north of the East and Millennium Sites and does not trend through the sites.

The locations of and relative activity estimates of the Hollywood Fault segments stem mostly from the interpretations of Dolan et al. (1997, 2000), who based their conclusions mainly on geomorphic expression of a series of interpreted fault scarps, on possible offset of alluvial fans flanking the southern Santa Monica Mountains, on previous geotechnical studies by LA Metro, and on differences in groundwater levels as depicted in geotechnical borings. The principal evidence for a Holocene surface rupturing event is documented in Dolan et al. (2000) where the fault was exposed in a series of overlapping bucket auger borings in front of Ozzie and Harriett's house, 1822 Camino Palmero Road Hollywood, California, about 1.7 miles to the west of the East and West Millennium Sites (Figure 6). From those borings, Dolan and others (2000) estimated that at least one surface-rupturing earthquake took place about 8,500 years ago on the Hollywood Fault placing it within the Holocene (last ~11,500 yrs).



Based on the California Division of Mines and Geology (CDMG, 1999) the historic highest groundwater at the sites was more than 80 feet bgs. Because the sites are underlain by interbedded clayey to coarse sandy sediments, perched groundwater elevations vary widely from place to place. This is well illustrated by trench exposures and geotechnical borings (GDC, 2006) that show groundwater perched on variable-depth clayey sediments, usually old mud and debrisflows (Plate 3, Plate 4a, Plate 4b and Plate 5). The GDC recent investigations thus verify, from the continuous cores and trenches, that local groundwater levels in the 6230 Yucca Street, East Millennium and West Millennium Sites owe their origin to variable depths of clayey sediments and not a groundwater barrier due to fault offset.

5.1.3 TOPOGRAPHIC AND GEOMORPHIC ANALYSIS

GDC analyzed the topography of the East and West Millennium Sites and surrounding area as depicted on the USGS Burbank 7.5' Quadrangle, 1926 edition. Although substantial urban development has already taken place, the map shows a break in topography and ridges as the base of the Hollywood Hills. These ridges have been interpreted by various investigations (see CGS, 2014b) as evidence for active faulting associated with the Hollywood fault. Those truncated ridges, previously deemed to be fault-controlled and described by others as noted in the References, are shown on (Figure 3).

Prior to these investigations, there were no detailed subsurface geologic investigations that demonstrated the geologic origin of the breaks in slope previously attributed to active faulting. The GDC investigations now show that, alternatively, these breaks in slope could reasonably owe their origin at least in part to pre-Holocene uplift stemming from local and regional folding/faulting (GDC, 2014a). And, as the block uplifted, terrace surfaces were imprinted during periods of climatic and geomorphic stability.

The trenches and related subsurface data at the 6230 Yucca Street., Champion and Green Sites (Plate 1) allowed GDC to reconstruct the local paleo-geomorphic history of the area. Accordingly, in a reasonable scenario, GDC infers that the area was once covered by a regionally extensive blanket of alluvial deposits (Appendix B). An Argyle Channel then incised into the older alluvium (Qoal), forming the eastern side of the bluff south of the Champion Site that trends east-southeast away from the east side of the 6230 Yucca Street Site.

The mudflow (Qm) sediments were derived from the erosion of clayey sediments in the older alluvium deposits from distal upstream and local side slope sources. Down channel, the Mud Flow unit capped side slopes, and, locally, the Older Alluvium and Modelo Formation in the Argyle Channel.

4.2 LOCAL GEOLOGIC SETTING

The East and West Millennium Sites lie on five discrete geologic units: Artificial Fill (Af), Argyle and Cahuenga Sands (Qs), Mud Flow (Qm), Older Alluvium (Qoal), and the Modelo and Topanga Formations (Tm, Tt), youngest to oldest, respectively. These fluvial and alluvial fan sediments, excluding the artificial fill and marine Modelo and Topanga Formation, were derived from the



Hollywood Hills to the north (Figure 3). GDC describes the sequences starting from the youngest (artificial fill) to the oldest (Modelo and Topanga Formation) as documented in the trench logs, continuous cores and CPT's (Figure 5, Plates 1 through 10), and as referred to in Appendix D, Photos 9 through 12).

4.2.1 ARTIFICIAL FILL DEPOSITS (Qaf)

The East Millennium Site is capped by artificial fill composed of reworked native soils and detritus (Appendix D, Photo 9).

4.2.2 HOLOCENE SAND UNIT (Qs)

The Argyle Sand deposits consist of loose to moderately dense, gradationally bedded and subrounded to sub-angular sands with local, weakly cemented gravelly sands that were deposited into a channel excavated previously into the underlying Mud Flow and Older Alluvial units. The Argyle Sand deposits unconformably overlie the Mud Flow unit (informally designated as Qm) or sit directly atop the Older Alluvial unit where the pre-Argyle Sands' channelization has removed the mudflow deposits (Appendix D, Photo 10).

Several slightly to moderately developed paleosols occur within the sands and gravels (Appendix B). In the West Trench four paleosols reflect short periods of relative weathering and landscape stability (Table 2, Appendix B).

The East Trench exposures also provide calibration to more confidently identify the lithology and grain size of sediments in adjacent continuous cores and CPT transects. The GDC trench log and extrapolation to adjacent CPTs, cores, and trench logs illustrate that the Argyle Channel overlapping sediments and their underlying clayey marker-bed Mud Flow sediments are continuous and unbroken by any fault.

The Argyle Sands and gravels originated in the Hollywood Hills and were transported south down the Argyle Canyon as broad channel sand and alluvial deposits. The Argyle Sands are poorly to well sorted. The quartz sand grains are generally sub-rounded with frosted grain surfaces that indicate impact with other Argyle Channel sediments during fluvial transportation.

Five conventional radiocarbon samples from the East and West Trenches (Yucca-1, Yucca-2, Yucca-3, Yucca-4 and Mill-1) in the Argyle Channel sediments were collected and retained for the East Millennium Site and the 6230 Yucca Street Site (Plate 1), to evaluate the numeric age of the Argyle Channel sediments (Appendix C). The West Trench samples Y-1 and Y-2 are highly suspect as to the likely re-deposition of older organic sediment (~41,000 ybp) resulting in an unreliable old age. The Y-4 radiocarbon date was ~4170 ybp. The East Trench sample, Yucca-3, proved to be devoid of datable charcoal, and hence did not provide a useful age.



Table 2: Depth and the numerical age for radiocarbon samples from the Argyle Sands in the East Millennium Site (Appendix C).

Sample #	Depth (ft.)	Years (BP)	Sample #	Depth (ft.)	Years (BP)
Y-4	14	4,170	M-2	23	4,310
M-1	15	4,280	M-6	23	4,430
M-3	15	4,170	M-7	23	4,420
M-4	15	4,190	Y-2	25	4,310
M-5	20	4,330	-	-	-
			Y-1	25	41,000
			Y-3	15	No Datable Carbon

The West Millennium Site sand unit is described as the Cahuenga Sand deposits, which consist of loose to moderately dense, gradationally bedded and sub-rounded to sub-angular sands with interbedded silty sand and clayey sand units as well as clay and silt lenses. The Cahuenga Sand deposits uncomformably overlay the Mud Flow unit which was derived from the Cahuenga channel. On the north section of West Millennium Site, the Cahuenga Sand deposits uncomformably overlay or were deposited on top of the Older Alluvium unit. Based on the natures of the deposits observed in the continuous cores, the Cahuenga Sands originated in the Hollywood Hills to the north and were deposited to the south down the Cahuenga fan as broad alluvial deposits. The fan deposits generally are poorly sorted with some well sorted bedding. Frosted grains observed in the cores support our assessment that the depositional environment of this alluvial fan was fluvial in nature.

4.2.3 PLEISTOCENE MUD FLOW (Qm)

An intermediate deposit, labeled as Mud Flow (Qm), is locally present between the Older Alluvial unit (Qoal) and the overlying Argyle Sands (Qs). The Mud Flow unit (Qm) is enriched in clay compared to the Older Alluvium or the Argyle Sands. The mudflow deposits are typically firm with locally abundant sands, silts and few fine gravels within a clay-supported matrix (Appendix D, Photo 11). General grain-size and stratigraphic position indicate the Mud Flow unit mainly consists of mudflows and interbedded sands that filled a previously incised canyon. The mudflows were derived from both the slopes adjacent to the canyon, and from sources upstream, as illustrated on Cross-Section E-E' (Plate 6). The mudflow deposits that comprise the Mud Flow unit are internally horizontal, and thus unconformable with the underlying Older Alluvium. More recent Argyle Channel incision has eroded the upper part of the mud flow unit.

A soil section developed near the top of the Mud Flow unit has pedogenic characteristics consistent with that unit having been exposed to soil-forming processes for a minimum of ~30-



40 ka prior to it being incised into and then buried by the Argyle Sand. This estimate of soil development is a minimum, because the better-developed argillic soil horizons have been eroded (Appendix B). Where the Argyle Sand unit has eroded deeply into the Mud Flow unit, as seen in Cross-Sections A-A' and B-B', and in the West Trench, only the lowest portion of the Mud Flow unit remains. This section of the Mud Flow unit has a poorly preserved, remnant soil section with pedogenic characteristics that suggest between about 12 ka and 15 ka of soil development prior to burial by the mudflow deposits capped with the ~30 ka paleosol (Appendix B). Combined, these paleosols provide a minimum estimate of the Mud Flow unit's exposure to soil forming processes of ~42-55 ka.

Within the East Millennium Site, the mudflow deposits were exposed in the bottom of the East Trench, but at an elevation of 35 feet lower than exposed to the northern portion of the trench. Although it cannot be confirmed that it is the same deposit based on the trench evidence alone, the stratigraphic continuity of the Mud Flow unit in the CPT/Boring transects suggests that this was continuous and at a minimum 12- to 15-foot thick before the last incision of an Argyle Channel. We interpret that the mudflow sediments filled the channel to an elevation similar to the current Argyle Sands. Furthermore we interpret that the remnant mudflow capping the bedding plane fault within the Old Alluvium as near the top of the Mud Flow Unit. Therefore, the original thickness can be constrained by that elevation and the base of the remaining mudflow deposit as recorded in the CPT transect (20 + 15 = 35 feet). This is still a minimum thickness because it is unknown how much was removed from original surface. But relative paleosol development indicates that erosion was not much more than a few feet as documented by the presence of remnant argillic (Bt) horizons. (Plate 2, Plate 6 and Appendix B).

The conceptual model of alternating cutting and filling to essentially the same elevation, verified by the trench exposures, does not support causation by local tectonic activity; but is better explained by regional climatic fluctuations (Chart 1).

CHART 1:

Chart 1 shows generalized sea level curves for the last 200,000 years, showing the rise and fall of marine sea levels reflected by fluctuations of glacial alpine and continental ice sheets (Martinson, and others, 1987). Major coastal stream drainages responded to sea level change by initial channel incision during glacial period followed by channel backfilling and deposition during interglacial periods. Chart 1 shows the timing of the last glacial maximum at 20 ka, the likely maximum incision of Argyle Creek and Cahuenga Creek, followed by deposition of the Argyle Sands and Cahuenga Sands.



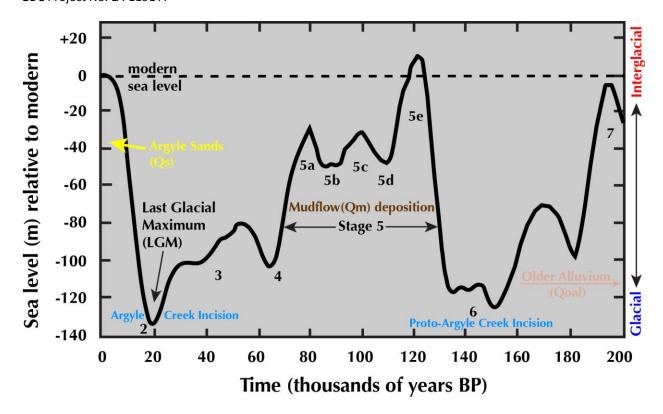


Chart 1 also illustrates the likely age of deposition of Qm, (approx. 80-125 ka) and incision of a proto-Argyle Creek Channel about 150 ka ago. Also shown is an inferred minimal age for the Old Alluvium (Qaol), interpreted as greater than 200 ka

As illustrated in this generalized sea level curve, about 20,000 years ago during the last glacial maximum, Argyle Creek and other major fluvial systems emanating from the Santa Monica Mountains likely responded to the $^{4}50$ foot lowering of worldwide sea levels. At this time of regional incision (base level lowering), mudflow deposits were eroded from the original channel. Reflecting worldwide climatic warming and resulting deglaciation, sea level began to rise $^{1}8,000$ years ago. Inland from the coast, the basal Argyle gravel lenses and interbedded coarse sand began to fill the old channel about 12,000 years ago (Appendix B). This far inland, it would likely have been 10,000 years at the earliest before the base level changes would have occurred, so most of the Argyle Sand deposition would have occurred in the 8,000 - 3,000 year range, an interpretation borne out by the pedogenic and radiocarbon age estimates (Appendices B and C).

By mid-Holocene time, the original Argyle Channel (thalweg) was essentially filled with coarse to medium-grained sands. About this time, based on the trench exposures and ~4,500 year radiocarbon dates, the Argyle sediments bifurcated into at least two distinct distributary channels, unconformably overlying old mudflow deposits as exposed in the East Trench, and conformably with the early Holocene deposits in the main channel as observed in the West Trench (Plate 4a, Plate 4b and Plate 3, respectively).

As shown on Chart 1 two alternative hypotheses reasonably give the approximate time for deposition of the mudflow deposits and for incision of an earlier Argyle channel. On the one



hand, incision of a paleo-Argyle channel may have started with the onset of isotope stage 4 (Last Glacial Maximum; Chart 1). Ostensibly, therefore, the mudflows, emanating from the channel slopes and from upstream, would have then filled the channel during stage 3, about 35,000-40,000 years ago (Chart 1). This comports well with pedogenic age estimates of at least ~30,000 years for the (mudflows) as documented from the East Trench.

On the other hand, and more realistically, the earliest recognized Argyle Channel incision took place during the glacio-eustic lowstand of isotope stage 6, about 150,000 years ago. The stage 6 sea level was comparable in depth to that of stage 2 (Last Glacial Maximum; Chart 1). Accordingly, in this scenario, most regionally extensive mudflows and local debris flows were episodically laid down between ~150,000 and 125,000 years ago as sea level (regional base level) was rising to the substage 5e (last major interglacial) about 120,000 year ago (Chart 1). The age interpretation is better supported by the pedogenic estimates of *at least* ~30,000 years for the mudflow deposits, an age which is inherently minimal owing to erosion of most argillic (Bt) soil horizons (Appendix B).

Based on the similarity in thicknesses of the Mud Flow and Argyle Creek sediment packages, the older scenario is preferred for timing of channel incision and mudflow deposition. Accordingly, as particularly exposed in the East Trench, located to the north of the East Millennium Site, the last local faulting event most likely took place prior to about 125,000 years ago (Chart 1).

The Cahuenga Channel incision possibly formed in a similar manner as the Argyle channel incision, but the Cahuenga Channel was not exposed in CPT or continuous coring transects on the West Millennium Site. Based on the continuous core data, GDC interprets that it is on a distal edge of the fan, based on the inter-fingering sand, clay and silt beds and by comparison of the silt and clay content observed in the Cahuenga Channel sand with the Argyle Channel sand.

4.2.4 PLEISTOCENE OLDER ALLUVIUM (Qoal) DEPOSITS

The Older Alluvium is mostly capped by the Mud Flow unit, except where the mudflow deposits have been eroded by the Argyle Channel and where the Cahuinga fan covers Older Alluvium in the northern area of the West Millennium Site. The Older Alluvium includes many tens of thousands of years of interfingering mudflows, debris flows and local channel fining-upward sequences, with gradational contacts between the beds. The anticline north of Yucca Street (Plate 1) indicates that the Older Alluvium becomes younger and dips more steeply to the south, on the south flank of the anticline (Appendix D, Photo 12). The age of the Older Alluvium is at least 200 ka (Chart 1) and predates the Mud Flow unit and the Argyle Sands.

4.2.5 MIOCENE BEDROCK (Tm and Tt)

The bedrock in the East Millennium Site is the Miocene Modelo Formation as mapped by Hoots and Kew (1931). The Modelo Formation within the Santa Monica Mountains is generally soft, light-gray to brown, well-bedded shale with isolated hard platy siliceous shale and massive to thin beds of sandstone, siltstone, and massive conglomeratic sandstones. The occurrence of volcanic ash beds has been documented by Hoots et al. (1931). At the 6230 Yucca St Site, the



Modelo Formation was observed in cores with thin sequences of gray to greenish gray sandstone, siltstone, and claystone.

Typically, the Modelo was observed about 40 feet bgs between CPT-13a north to CPT-17, at B-4, and deeper from B-5 to B-6 (Plate 2). The Modelo Formation is unconformably overlain by Older Alluvium (Qoal) in the East Millennium Site and by Mud Flow (Qm) deposits north of B-5 (where the Older Alluvium was eroded away) (Cross-Section A-A'). At its upper contact, the Modelo is a strongly weathered clayey to silty clayey shale, dipping about 40 degrees. The direction of dip, however, was not determined since the cores that encountered the Modelo Formation were not orientated. The Upper Modelo sediments are plastic to stiff and lack sedimentary structure. At depth, the Modelo Formation is less weathered, grading to dark gray to black, thinly bedded fine sands and clay, and hard clayey shale. Carbonate-filled macro-fractures were not evident. North of the East Millennium Site, as identified in the CPT's and cores, the Modelo Formation is unconformably overlain by the Mud Flow (Plate 7; Figure 10 and 11).

The bedrock in the West Millennium site is the middle Miocene Topanga Formation as mapped by Hoots and Kew (1931). The Topanga Formation within the Santa Monica Mountains generally consists of a tan to grey conglomerate and sandy conglomerate that is well-cemented and resistant to erosion. The upper section of the Formation consists mostly of light tan to grey, medium to coarse grained, poorly sorted sandstone, concretionary and conglomerate beds with interbeds of massive to poorly bedded olive grey siltstone with basalt clasts.

The Topanga Formation was observed at approximately 50 feet bgs to 65 feet bgs between B-12 and C-9, respectively, to the south across the site (Plate 9). Since the Topanga Formation encountered in the West Millennium site's cores consisted of fractured basalt and olive grey siltstones, the true orientation of the Topanga beds could not be determined.

4.3 LOCAL STRUCTURE

4.3.1 YUCCA STREET ANTICLINE

The Yucca Street Anticline, was interpreted from NE-dipping older alluvial strata at the Green Site (1800 Argyle Avenue), and south-dipping strata at the Champion (1756 and 1760 Argyle Avenue) and 6230 Yucca Street Sites. The crest of the fold trends WNW-ESE approximately through the intersection of Argyle and Yucca Street (Plate 1).

Based on the un-orientated cores at the 6230 Yucca Street Site, the Modelo beds (B-3, B-5, and B-8) have inclinations ranging from about 25 degrees in B-3, to about 20 degrees in B-5, to 35 degrees in B-8. Faulting logged in the three Green Site trenches showed beds in the Older Alluvium dipping in a northeasterly direction at ~21 degrees or less.

The dips of the Modelo beds on the 6230 Yucca Street Site are about the same when projected along strike and correlated to the Qoal beds in the East Trench. This is a good indication that the Modelo and Qoal were folded at the same time. The Modelo beds in core samples along Argyle Avenue (north of Yucca Street) are highly fractured with bedding vertical to near vertical. The older alluvium beds above the Modelo beds along Argyle Avenue have un-orientated core dips of around 20 degrees farthest north and near horizontal close to Yucca Street. Since the



upper Qm overlying the Qoal is not deformed by the folding, this deformation of the older beds ceased before deposition of Qm, at least ~150 ka but likely older as indicated in Section 4.3.2.

4.3.2 ANTICLINE-RELATED FAULTS

Recent explorations on the Green Site at 1800 Argyle Avenue and the Champion Site at 1756 and 1760 Argyle Avenue demonstrate that the normal faulting along the Yucca Street Anticline crest show a series of normal faults that dip toward the anticline axis (GDC, 2014b, 2014c Figure 12). As such, faults terminated in the un-deformed >200 ka upper old alluvium deposits. Accordingly, as documented in Appendix B, a representative soil-stratigraphic section was measured and described on the north wall at Station 00+26.

Two systems of faults rise from a gravelly sand bed at the bottom of the trench and flower upward (Plate 18) until they are truncated in the Pleistocene upper older alluvium and side slope colluvium. In places along their surfaces the faults are clay filled with occasional carbonate coatings which may be post depositional other than fault-cast veins. Slickensides and gouge zones are absent.

On the west and east walls of the East Trench of the 6230 Yucca Street Site, GDC identified a south dipping bedding-plane fault, with apparent reverse movement (Appendix D, Photo 8, west wall, Station 0+79). The fault strikes N34°W and dips 49°S. It is characterized by a thin black clay with modern roots following the sheared bedding plane. The fault does not propagate into the Mud Flow unit, and terminates beneath a remnant paleosol formed within the Mud Flow unit. Since the slip took place along bedding, the total slip could not be determined. No post-pedogenic shearing was present within the secondary paleosol clays, demonstrating that any slip on the fault pre-dated (perhaps significantly pre-dated) the development of the pedogenic weathering horizon, estimated by the remnant pedogenic development to a minimum age of ~30 ka, and a total about of at least 50 ka.

To summarize, the anticline-related faults are shown to be pre-Holocene and > 150 ka, most likely > 200 ka. This conclusion is consistent with earlier studies (GDC, 2014b, 2014c) and the GDC local structural model that shows the faults as pre-Holocene. Further, this test of the GDC (2014c) interpretation validates the inactive anticline-fault model of this area. The anticline and the associated faults are not active according to the State of California Alquist-Priolo definitions and the City of Los Angeles Fault Rupture Study Areas.

Additionally, the faults did not produce any topographic expression on the base of the Mud Flow unit and thus could not have moved vertically since the erosion of the channel was subsequently filled by the Mud Flow unit.

4.3.3 INFERRED SOUTHERN FAULT

The inferred southern fault was interpreted from a structural and stratigraphic unconformity observed on the south end of the East and West Millennium Sites. This unconformity has a break in stratigraphy and bedding structure as seen on Plate 7, Plate 8 and Plate 9 at location B-5, B-4 and C-104 respectively. The unconformity is located on Cross-section O-O' at B-4, Cross-section P-P' at C-104 and on Cross-section M-M' at C-20.



To the north of the aforementioned CPT and borings, the bedding of the lower sediments have an apparent dip of ~20 degrees while the south side sediments are nearly horizontal. The sediments to the north are granular with abundant sands, gravels and some clays and cobbles. To the south, the sediments in the horizontal beds have more abundant silt to clay.

An unbroken mudflow deposit was found overlying the unconformity in both the East and West Millennium Sites. Channels and marine terracing are potential explanations for the unconformity found in Plates 7, 8 and 9. However, to be conservative, the unconformity is assumed to be a north dipping reverse fault.

There are two sources for the mudflow deposit that originated during the deposition of the Cahuenga alluvium in the West Millennium Site and the Argyle alluvium in the East Millennium Site. Both deposits have a pedogenetic soil development with a relative weathering age of ~35 ka to ~40 ka which cumulatively is ~ 80 ka to `125 ka years old and are therefore pre-Holocene in age. Since the inferred southern fault does not break the mudflow deposit, its last movement must have occurred at least ~150ka years ago. It is therefore not active according to City of Los Angeles Fault Rupture Study Areas and the State of California Alquist-Priolo definitions.

5.0 EVALUATION OF FAULT ACTIVITY

5.1 CPT/CORES – EAST MILLENNIUM SITE

Geologic observations of the CPT soundings and cores document the subsurface geology across the East Millennium Site from north to south (Appendix A). The upper 5 feet was not sampled due to the excavation with a hand auger to satisfy USA requirements.

Below the surface, from approximately 3 to 5 feet, the hand-auger encountered silty sands and silts with scattered sand, gravels, and fill consisting of debris from its demolition of the previous building. This sub-unit was weak to moderately dense.

The Argyle Sand deposits (Qs) predominate the upper 25 feet in the northern area but are thin to ~20 feet in the south (Plate 3, Cross-Section B-B'; Station 0+0 to 1+15). This sand, part of the Argyle Channel, unconformably overlies Mud Flows (Qm) and Older Alluvium (Qoal). The Argyle Sands are typically well graded. The cut and fill channels were evident in the trench exposures, but not detectable in the cores.

Both the CPT and continuous core cross-sections and the East Trench encountered the Older Alluvium (Qoal) near the surface in the northern portion of the property but not Older Alluvium at 35 feet in the West Trench. The upslope sediments below the Argyle Sand consist of mudflows deposits over Modelo Formation, whereas the downslope (south) side of the slope has mudflow deposits over Older Alluvium (Qoal). The upper Pleistocene Mud Flow deposits are continuous and clearly unbroken where they overlie the paleoslope. Additionally, the mudflows (between CPT-11 and CPT-13) mark the thalweg of the Argyle Channel and are traceable southwest across the site, eventually observed in the West Trench exposures (Appendix D; Photo 5).

The mudflow deposit depicted on north-south Cross-Section A-A', (Plate 2), is rising in elevation and thinning to the south. Since the Argyle Channel thalweg is trending to the south-southwest, or westerly from the southern portion of Cross-Section A-A', the mudflow is ascending up the



eastern Argyle Channel paleoslope which results are an increase in the elevation and thinning of the Mud Flow deposit along the southern section of the cross-section line.

The CGS Supplemental FER 253 (2014a) moved the inferred trace of the Yucca Street Strand of the Hollywood Fault to the south side of the East Trench and through the alley between the Pantages Theater and the East Millennium Site (Plate 1). To explore the existence of or date the last movement of the supplemental trace of the Yucca Street Strand, a series of CPT's and continuous cores was conducted across the western boundary of the alley to the south of the East Millennium Site and across the inferred fault trace. After plotting the sub-surface data across the alley, the stratigraphy was found to be continuous and not broken by fault activity in the Holocene Argyle Sands and the pre-Holocene Mud Flow unit (Plate 7, Cross-Section N-N').

5.2 CPT/CORES – WEST MILLENNIUM SITE

Two CPT transects were also conducted within the West Millennium Site, (Plate 1 and Figure 8 and Figure 9). The western most transect included 25 CPTs, and the eastern transect included 16 CPTs. Our analysis of these transects indicates that there is an unconformity near the south end of this site referenced in Section 4.3.3 of this report. The Cahuenga sands and mudflow deposits are continuous and unbroken within the cross-section transects (Plate 8, Plate 9 and Plate 10). These preliminary findings are consistent with the detailed data of the East Millennium Site. Accordingly, our assessments indicate that no active faults exist on the West Millennium Site.



6.0 CONCLUSIONS

This report summarizes the results of the geological investigations for the East and West Millennium Sites, incorporating results from the adjacent 6230 Yucca Street Site as well as data from other surrounding sites.

The geologic investigation summarized in this report was based upon 42 continuous-cored borings, 103 Cone Penetrometer probes, and 316 feet of geologically-logged trench walls. In summary, no Holocene-age faults were found on the East and West Millennium Sites. The details of the findings and conclusions are:

- 1. Sediments at the East and West Millennium Sites range downward from the uppermost Holocene Cahuenga and Argyle sands to a Late Pleistocene Mud Flow units unconformably overlying a Mid-Late Pleistocene Older Alluvial unit, all overlying the Modelo and Topanga Formation bedrock.
- 2. Radiocarbon dating and soil pedogenic analysis indicate 8-12 ka maximum age for the Argyle Sands, a minimum age of 50 ka (80-125 ka preferred) for the Mud Flow unit, and an estimate of greater than 200 ka for the Older Alluvial unit.
- 3. An anticlinal structure was defined with the crest trending north of the East Millennium Site but with the southern limb of the fold underlying the East Millennium Site.
- 4. The mudflow unconformably overlies the dipping older alluvial beds, demonstrating the folding predates the channel incision that contains the mudflow deposits.
- 5. Four parallel north-south boring and CPT transects show continuity of the top and bottom of the Mud Flow unit extending across the entire East and West Millennium Sites, including 50+ feet to the north in the east site.
- 6. A bedding plane fault on the adjacent 6230 Yucca Street Site does not extend or affect the East Millennium Site. Furthermore this fault has been shown to be not active.
- 7. An unconformity was found on the south ends of the boring and CPT transects on the West Millennium Site. To be conservative, the unconformity is considered to be a fault although channels and marine terraces are other potential explanations. The fault is pre-Holocene in age, approximately 150 ka and therefore inactive.
- 8. Boring and trench data show that the differential groundwater levels are not fault related, but rather owe their origin to local water perched on underlying impermeable deposits.



- 9. No surface rupture hazard exists on or within the East or West Millennium Sites.
- 10. On the southwest portion of the East Millennium Site and on the northern portion of the West Millennium Site, a 50 foot setback zone is required (see Plate 1 and Figure 8, Boring, CPT, Cross-Section, and Trench Locations and geology map). Additional exploration will need to be conducted south of the East Millennium Site property line and north of B-12 on cross-section O-O', on the West Millennium Site, as shown on the figure and plate. Upon submittal of a supplemental report, the setback line can be adjusted, upon approval from the LADBS.



7.0 LIMITATIONS

The overall assessment of the geologic and fault hazard conditions, in this report, reflects GDC's professional opinions and is intended for use by Millennium Hollywood Development LLC, and its design consultants. This report has been prepared solely for assessing seismic impact of the proposed development and may not contain sufficient information for environmental (hazardous waste) and geotechnical (foundation) purposes. The recommendations shall not be extrapolated to areas not covered by this report, or used for other facilities, without the review and approval of GDC and Millennium Hollywood Development, LLC. This report or any portion of this report may be provided to state, county or city agencies.

GDC's investigation and evaluations were performed in accordance with generally accepted local standards using that degree of care and skill ordinarily exercised under similar circumstances by reputable engineering geology and geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report.



8.0 REFERENCES

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MILLENNIUM HOLLYWOOD PROJECT PROPERTY LEGAL ADDRESSES



TABLE 1:

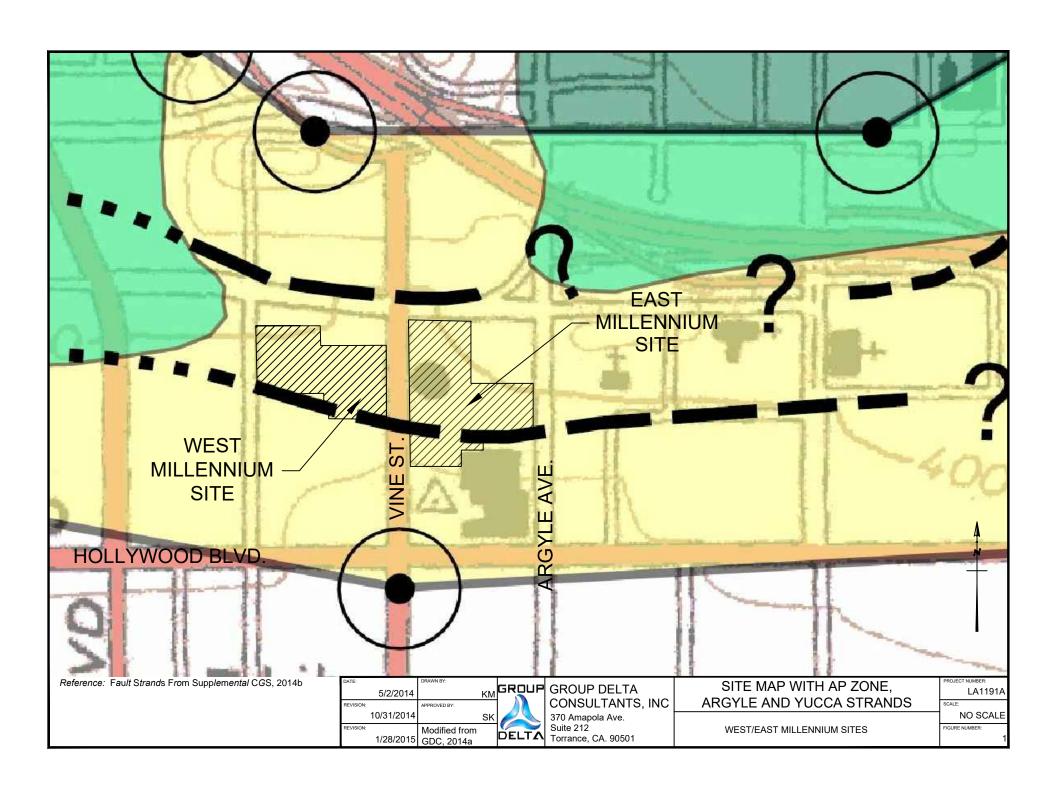
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Address	Tract Number	Block	Lot Number	
1746 North Ivar Avenue			_	
1748 North Ivar Avenue	Hollywood	21	5	
1754 North Ivar Avenue	Hollywood	21	4	
1760 North Ivar Avenue				
1764 North Ivar Avenue	Hollywood	21	3	
1745 North Vine Street	Hallows and	24		
1749 North Vine Street	Hollywood	21	19	
1751 North Vine Street	Hollywood	21	20	
1753 North Vine Street	Hollywood	21	21	
6334 West Yucca Street	Hollywood	21	2	
No Address	Hollywood	21	1	
6236 West Yucca Street				
1740 North Vine Street	TR 18237		LT 1	
1750 North Vine Street				
1760 North Vine Street				
1762 North Vine Street				
1764 North Vine Street	Central Hollywood Tract No. 2		12	
1766 North Vine Street				
1768 North Vine Street				
No Address	Central Hollywood Tract No. 2		13	
1770 North Vine Street	Central Hollywood Tract No. 2		13	
1733 Argyle Avenue	TR 18237		LT 1	
1741 Argyle Avenue	11/10237		F1 T	
1720 Vine Street				
1722 Vine Street	Central Hollywood Tract No. 2		6	
1724 Vine Street				
1730 Vine Street	TR 18237		LT 1	



FIGURES

Figure 1	Site Map Showing Proposed AP Zone
Figure 2	CGS Quaternary Geologic Map
Figure 3	Local Geology Map, Hoots and Kew, (1931)
Figure 4	Hollywood Fault Geomorphic Segments, FER 253
Figure 5	Generalized Stratigraphic Column
Figure 6	Locations of Previous Studies in Reference to the Millennium Sites
Figure 7	Map Illustrating Geomorphic Features near the Millennium Sites
Figure 8	Geology Map







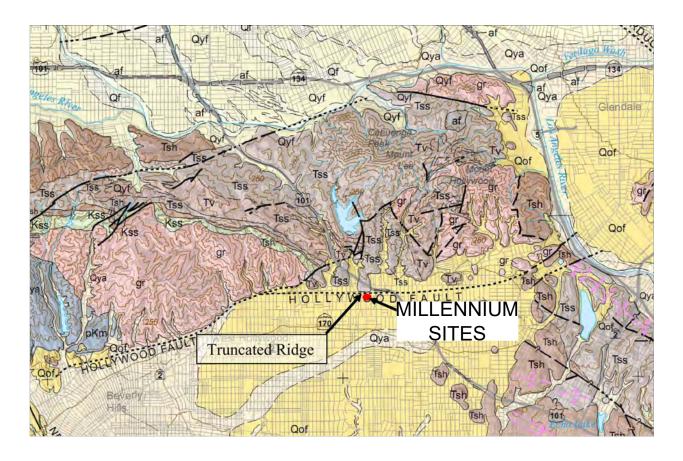
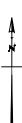


Figure 2: Regional geologic map of the area. Scale $^{\sim}1:100,000$. (California Geological Survey., 2003, "Quaternary Geology Map of the Los Angeles 30x60 Quadrangle").

ı	A/21/2014	DRAWN BY:	MGRQUP	GROUP DELTA	CGS QUATERNARY GEOLOGIC MAP	PROJECT NUMBER: LA1191A
ľ	10/31/2014	APPROVED BY:	к	CONSULTANTS, INC 370 Amapola Ave.		SCALE: NO SCALE
	1/28/2015	Modified from GDC, 2014a	DELTA	Suite 212 Torrance, CA. 90501	WEST/EAST MILLENNIUM SITES	FIGURE NUMBER:



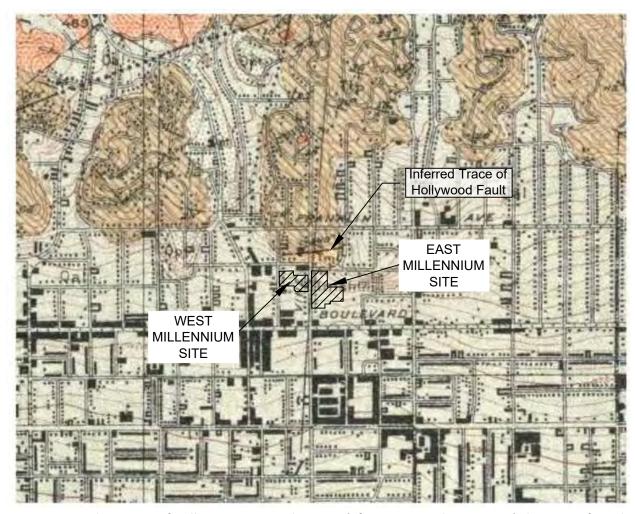
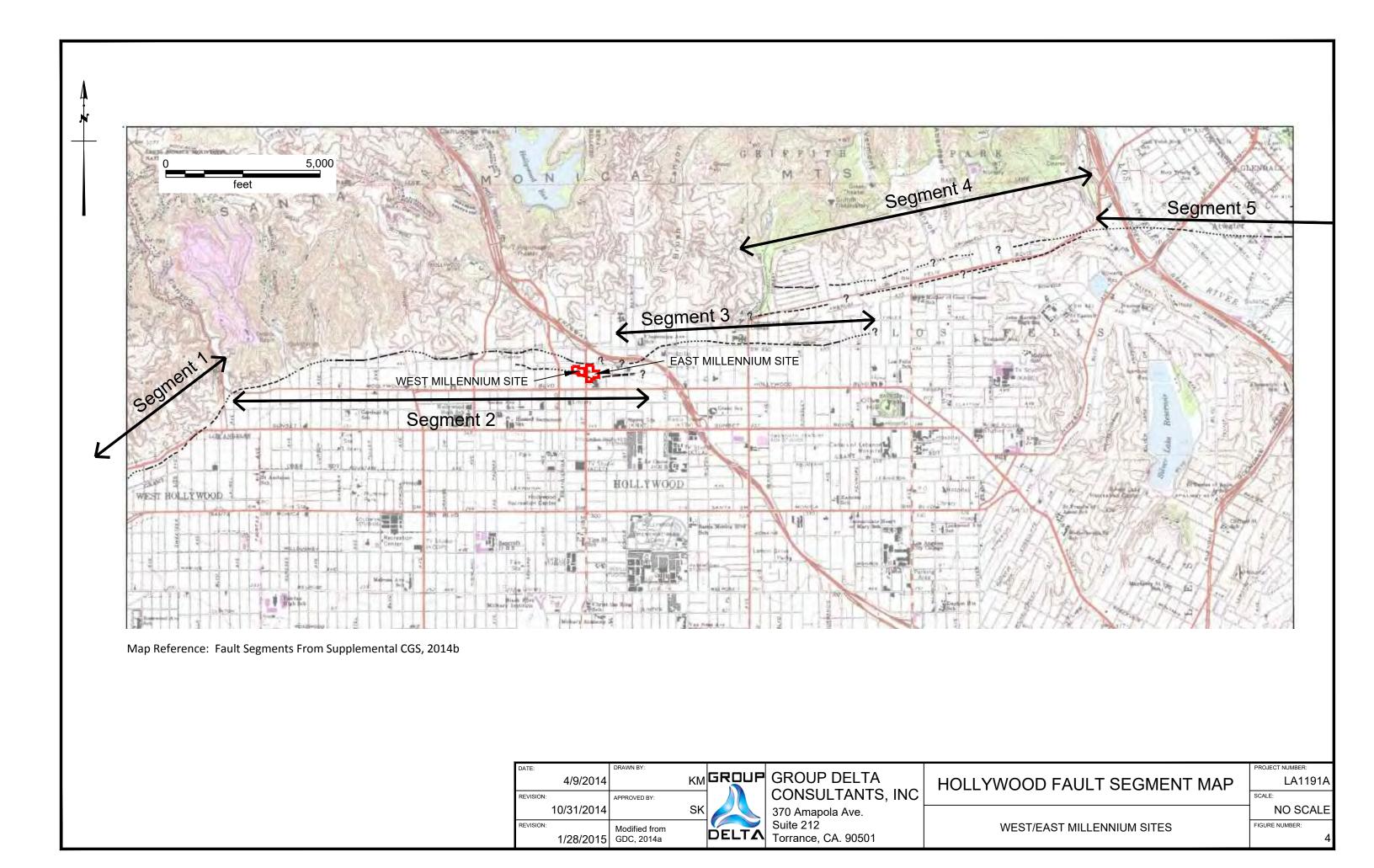
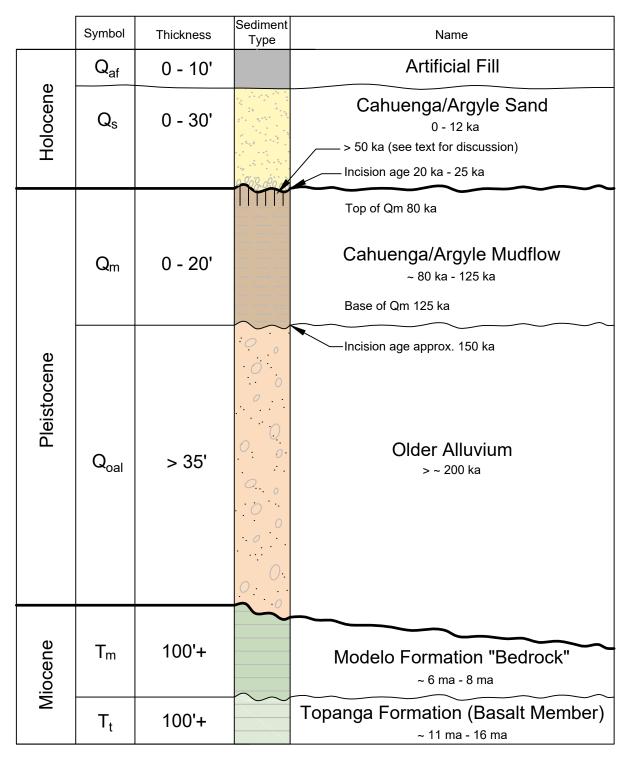


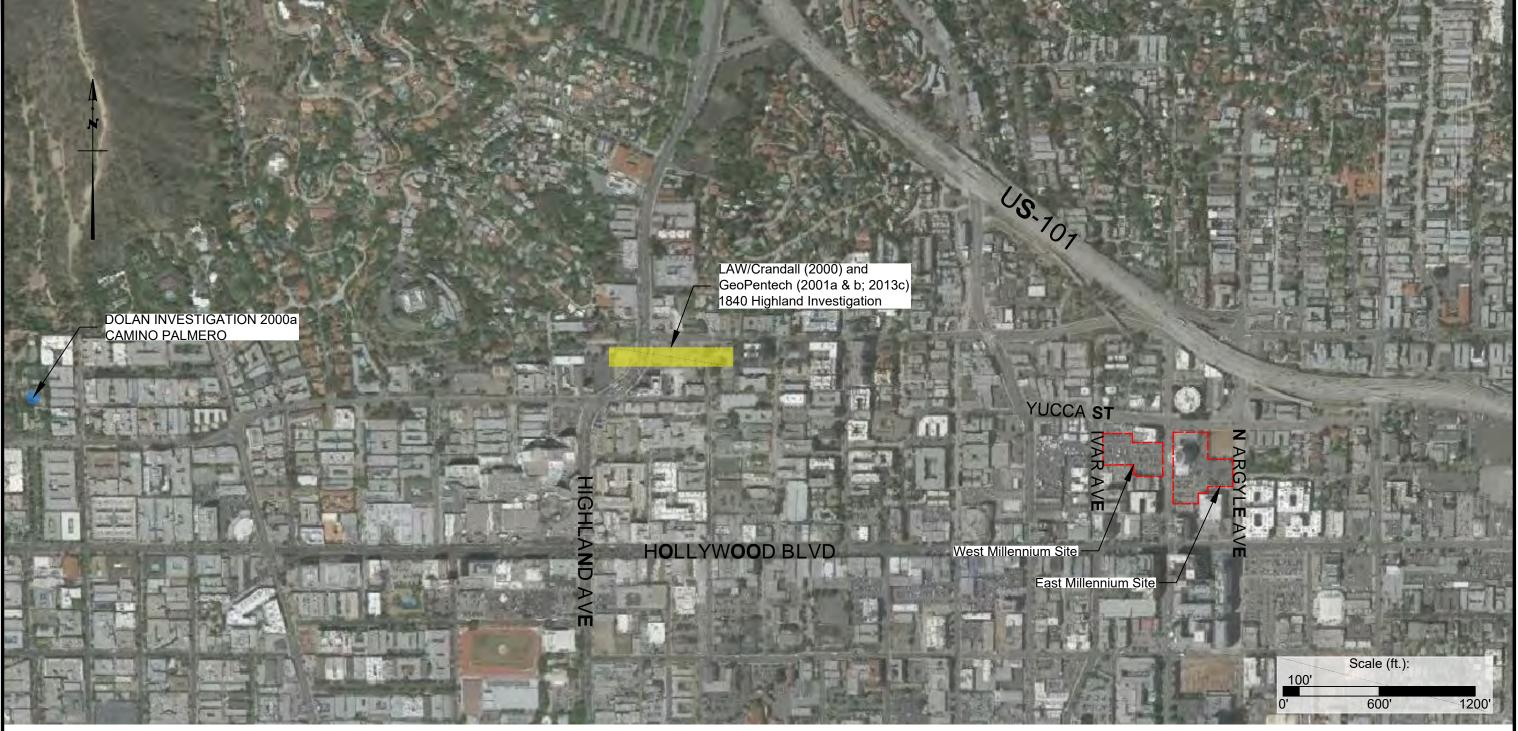
Figure 3: Geologic map of Millennium site and vicinity (after Hoots and Kew, 1931) showing inferred trace of a Hollywood Fault separating Modelo (T_m), and Topanga (T_t) Formations, granite rocks (gr), and alluvium (Q_{al}).

DATE:	DRAWN BY:				PROJECT NUMBER:
4/11/2014	KN		GROUP DELTA	LOCAL GEOLOGIC MAP	LA1191A
	APPROVED BY:		CONSULTANTS, INC		SCALE:
10/31/2014	Sh.		370 Amapola Ave.		NO SCALE
REVISION:	Modified from	DELTA	Suite 212	WEST/EAST MILLENNIUM SITES	FIGURE NUMBER:
1/28/2015	GDC, 2014a	DELTA	Torrance, CA. 90501		3



GENERALIZED STRATIGRAPHIC SECTION





Map Reference: Google Earth

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Most Recent Surface Fault Rupture on the Hollywood Fault, Los
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DATE.	1/12/2015		JMT	GROUE
REVISION:	2/23/2015	APPROVED BY:	SK	
REVISION:				DELTZ

GROUP DELTA
CONSULTANTS, INC
370 Amapola Ave.
Suite 212 Torrance, CA.
90501

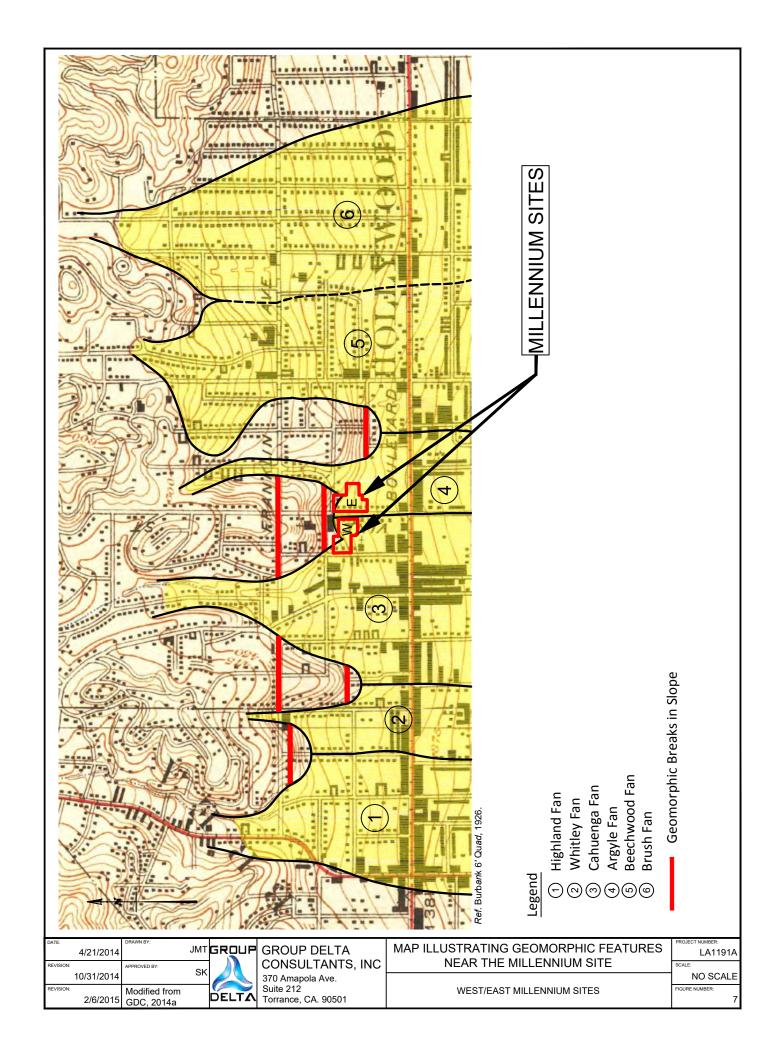
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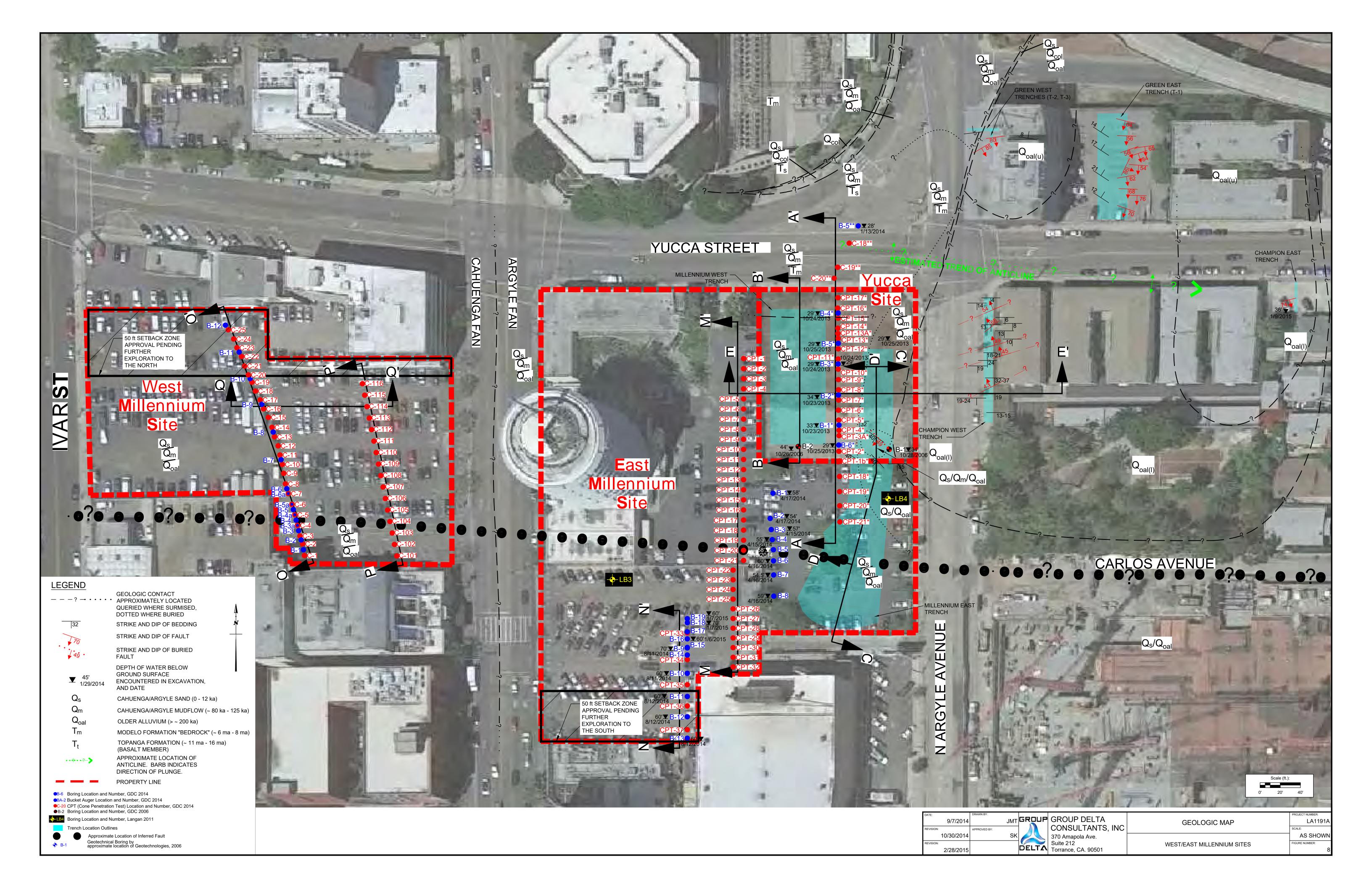
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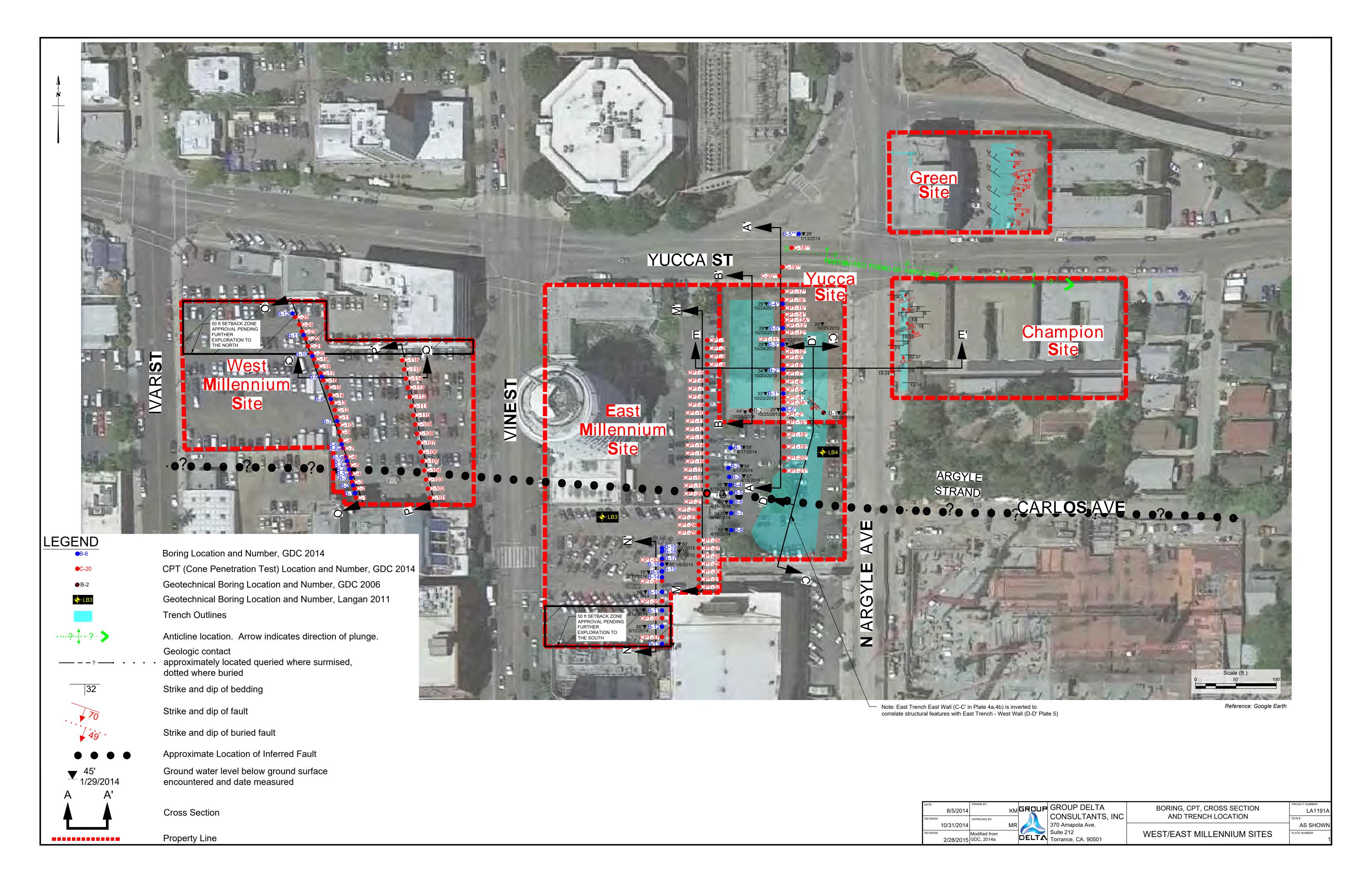


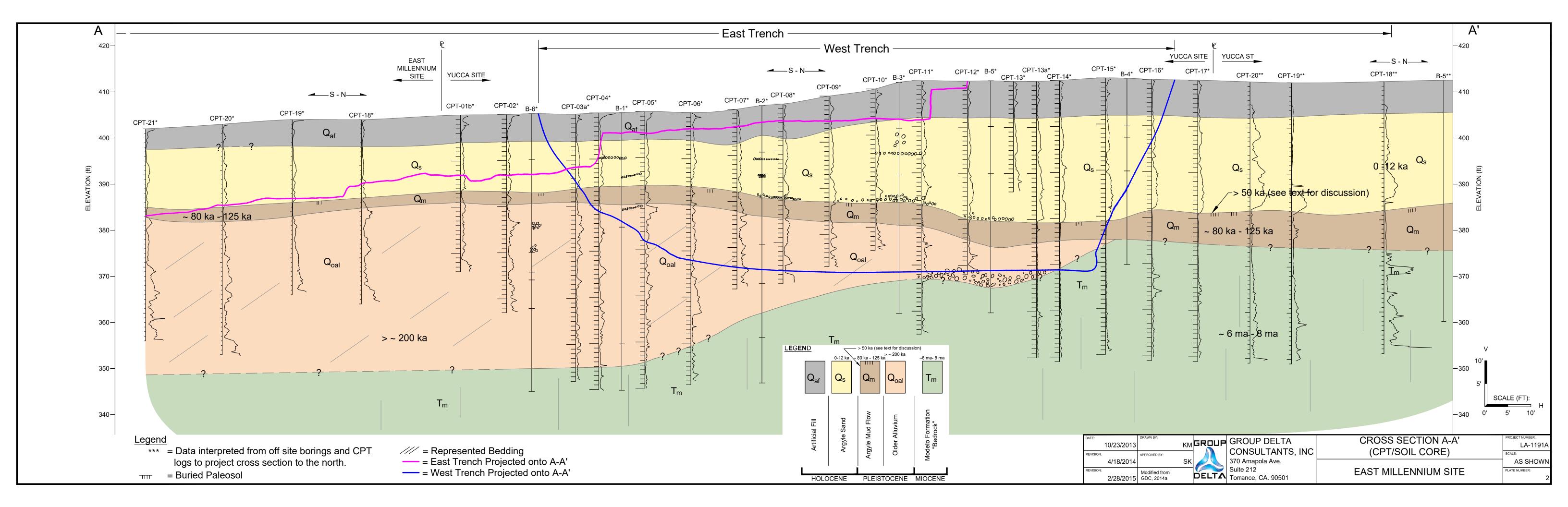


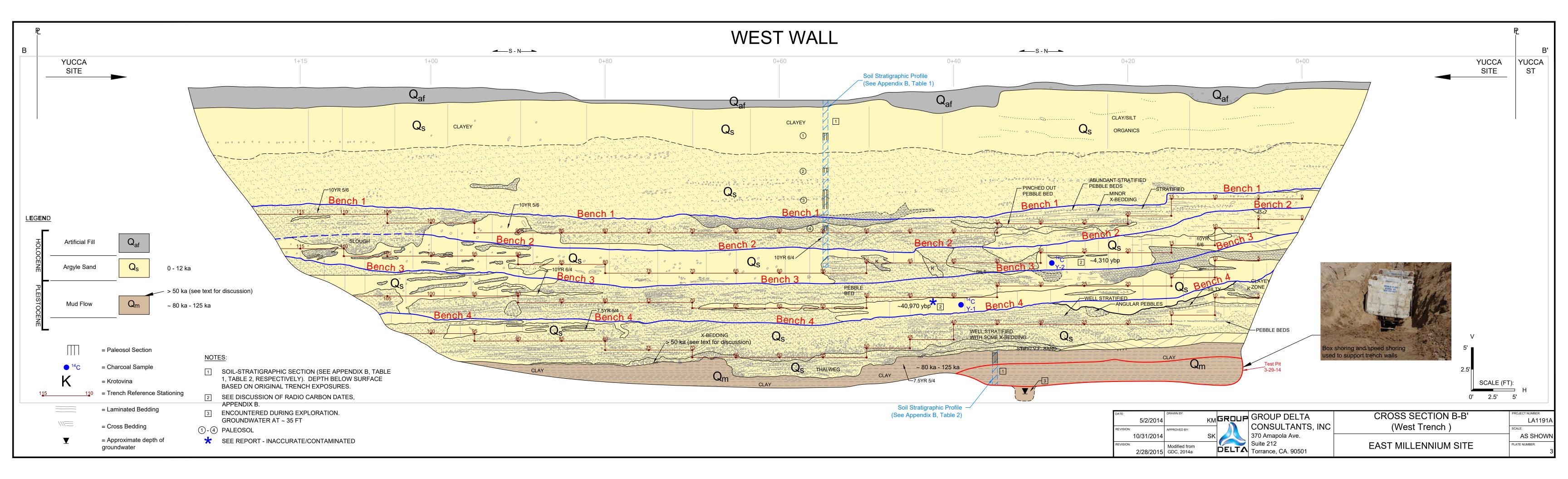
PLATES

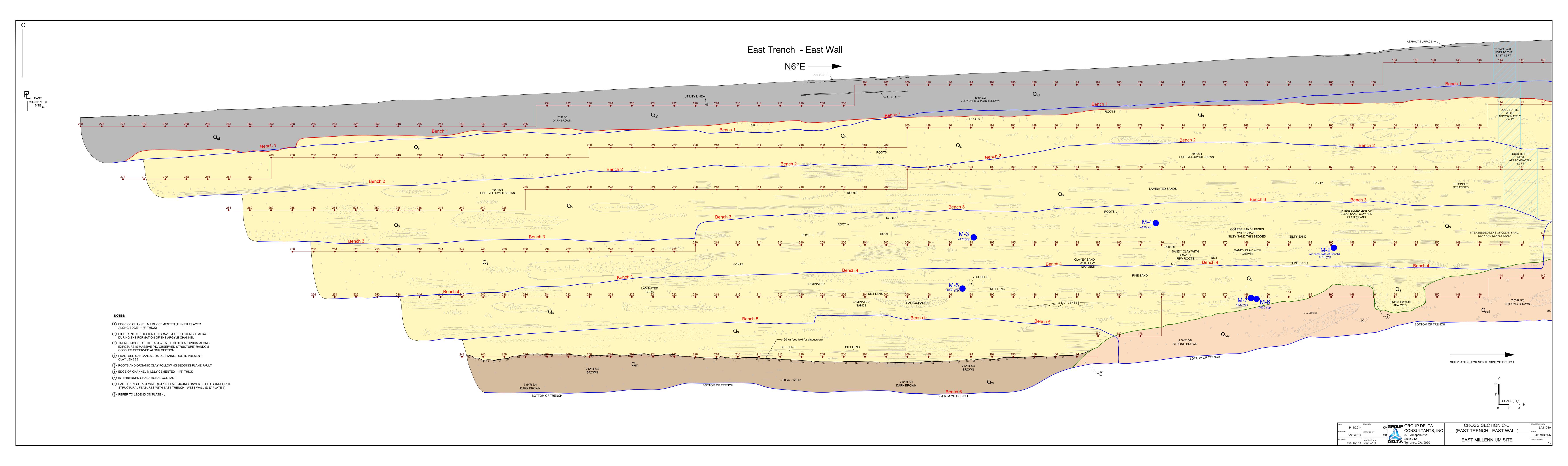
Plate 1	Boring, CPT and Trench Locations: (Back Pocket of Report)
	, , , , , , , , , , , , , , , , , , , ,
Plate 2	Cross-Section A-A' (CPT/Core): (Back Pocket of Report)
Plate 3	Cross-Section B-B' (West Trench): (Back Pocket of Report)
Plate 4a, 4b	Cross-Section C-C' (East Trench – East Side): (Back Pocket of Report)
Plate 5	Cross-Section D-D' (East Trench – West Side): (Back Pocket of Report)
Plate 6	Cross-Section E-E' (East-West)
Plate 7	Cross-Section M-M' and N-N' (Back Pocket of Report)
Plate 8	Cross-Section O-O' (CPT/Core) West Millennium Site
Plate 9	Cross-Section P-P' (CPT) West Millennium Site
Plate 10	Cross-Section Q-Q' West Millennium Site

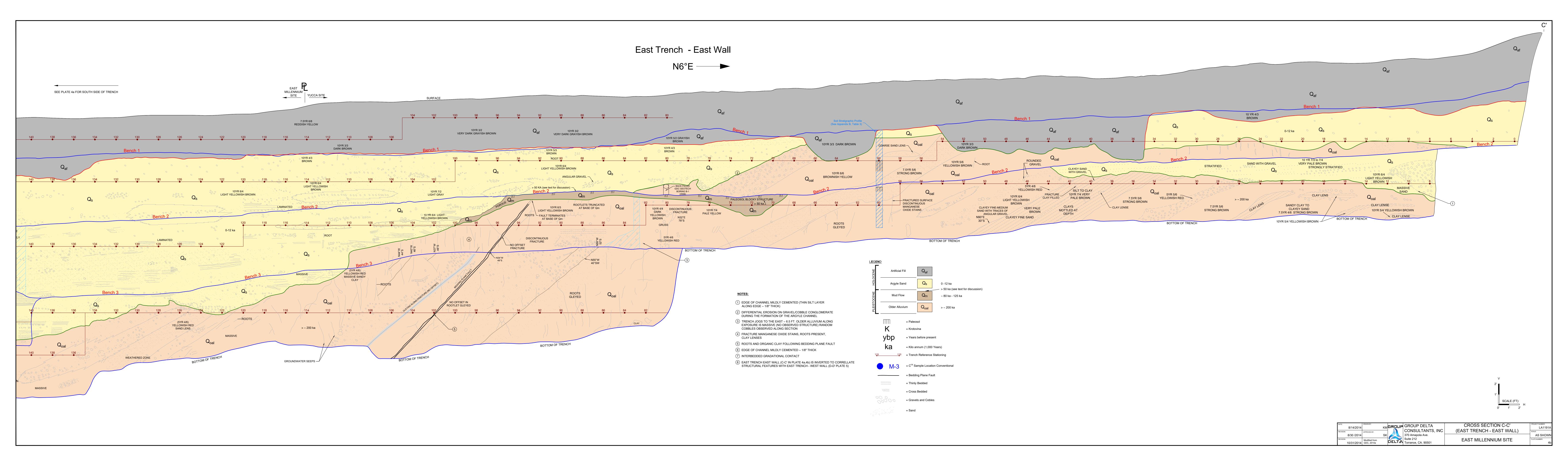


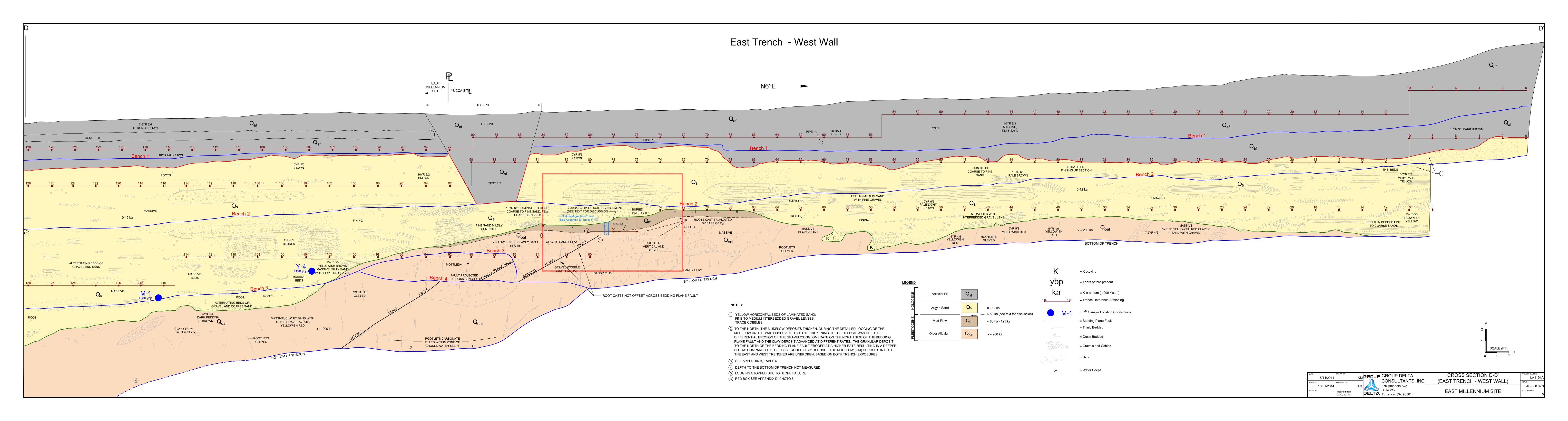


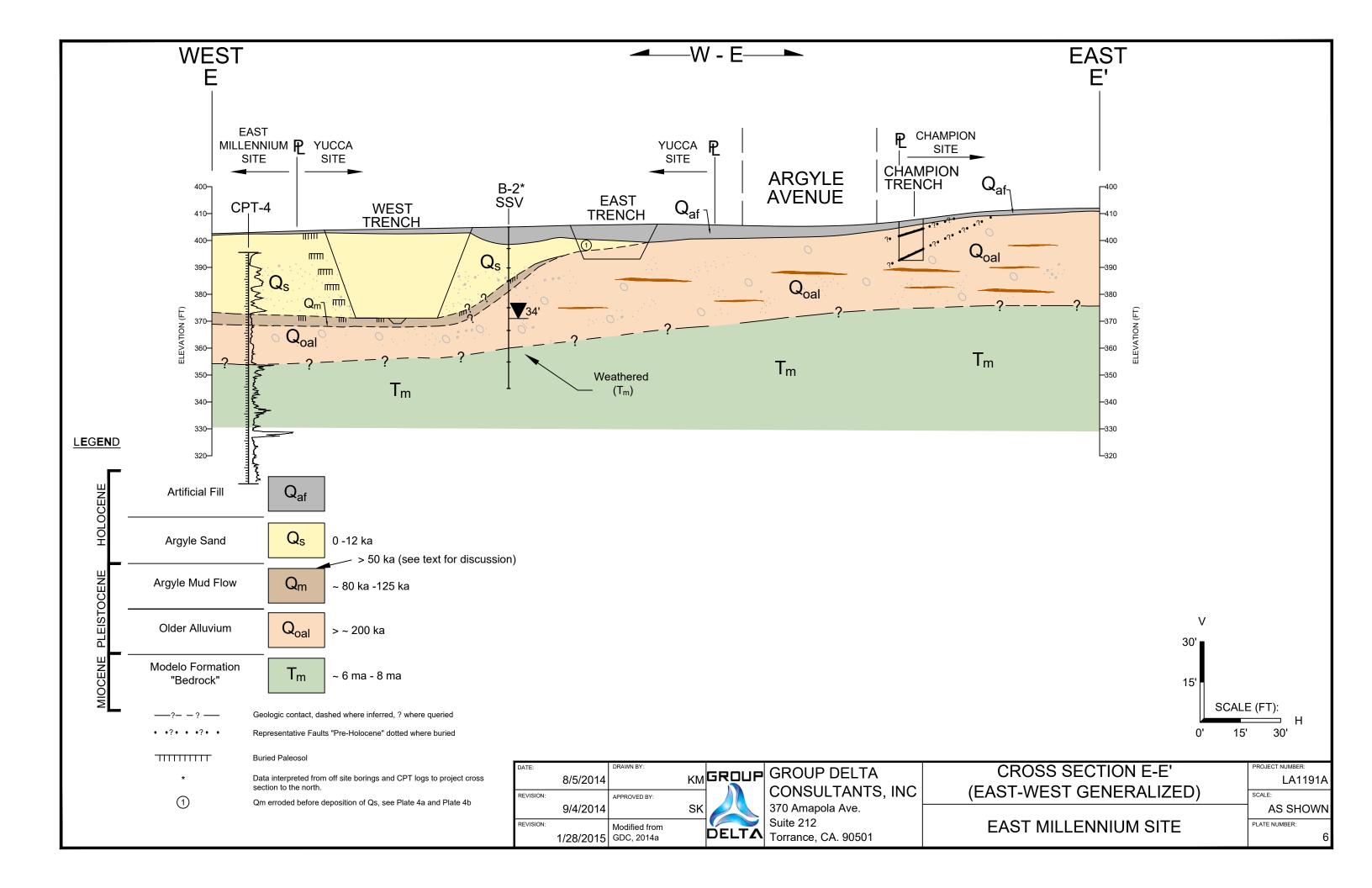


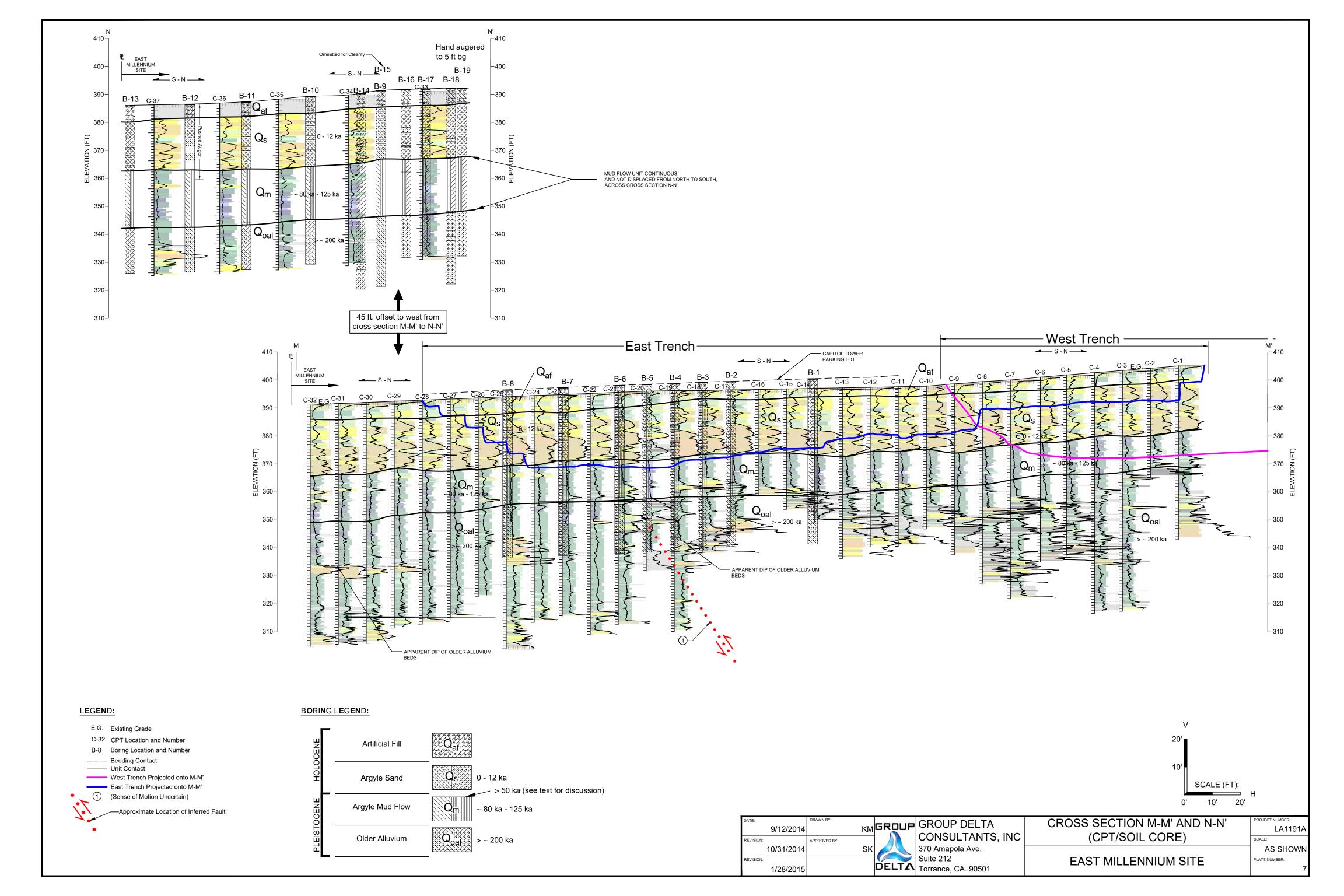


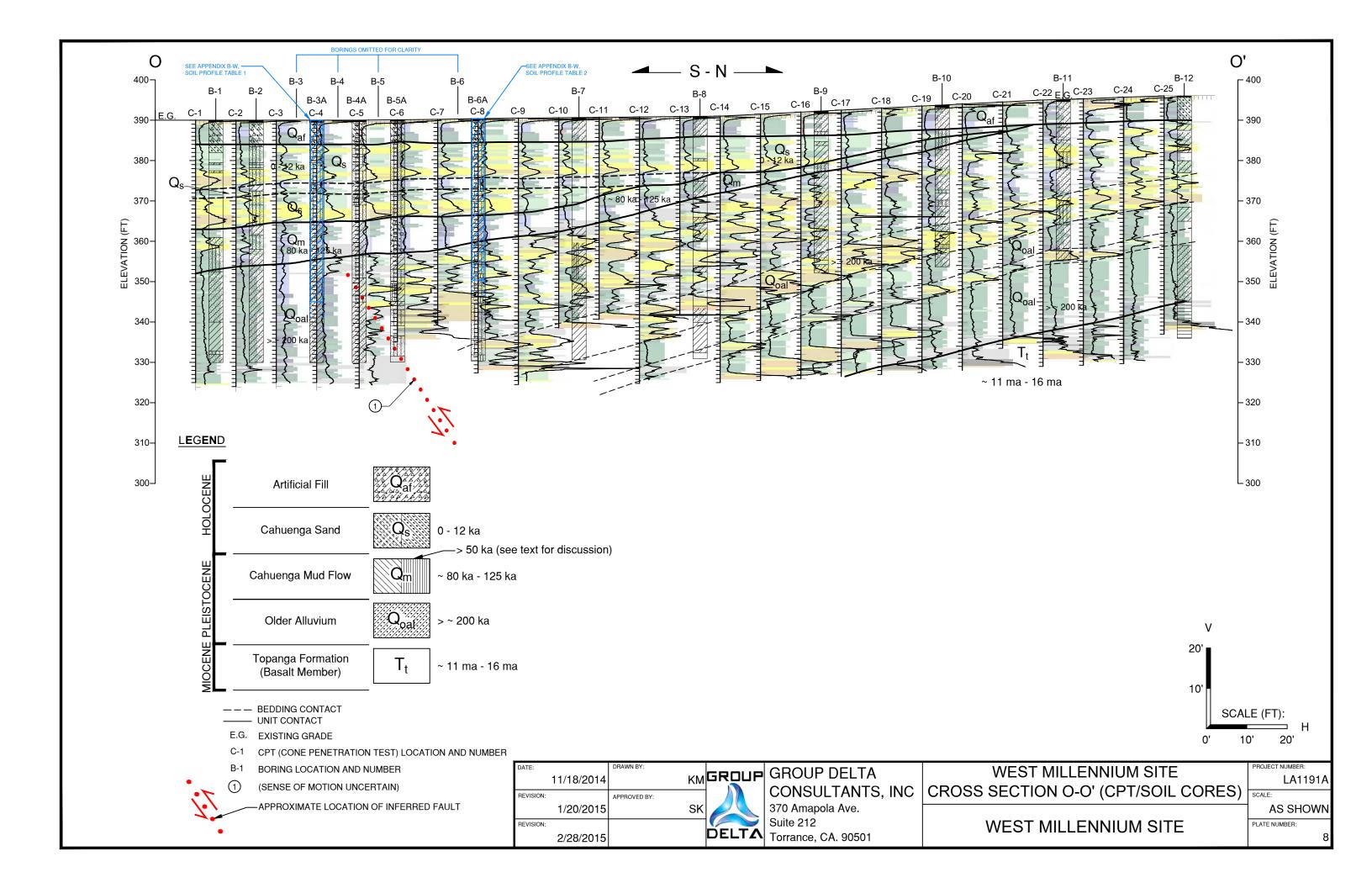


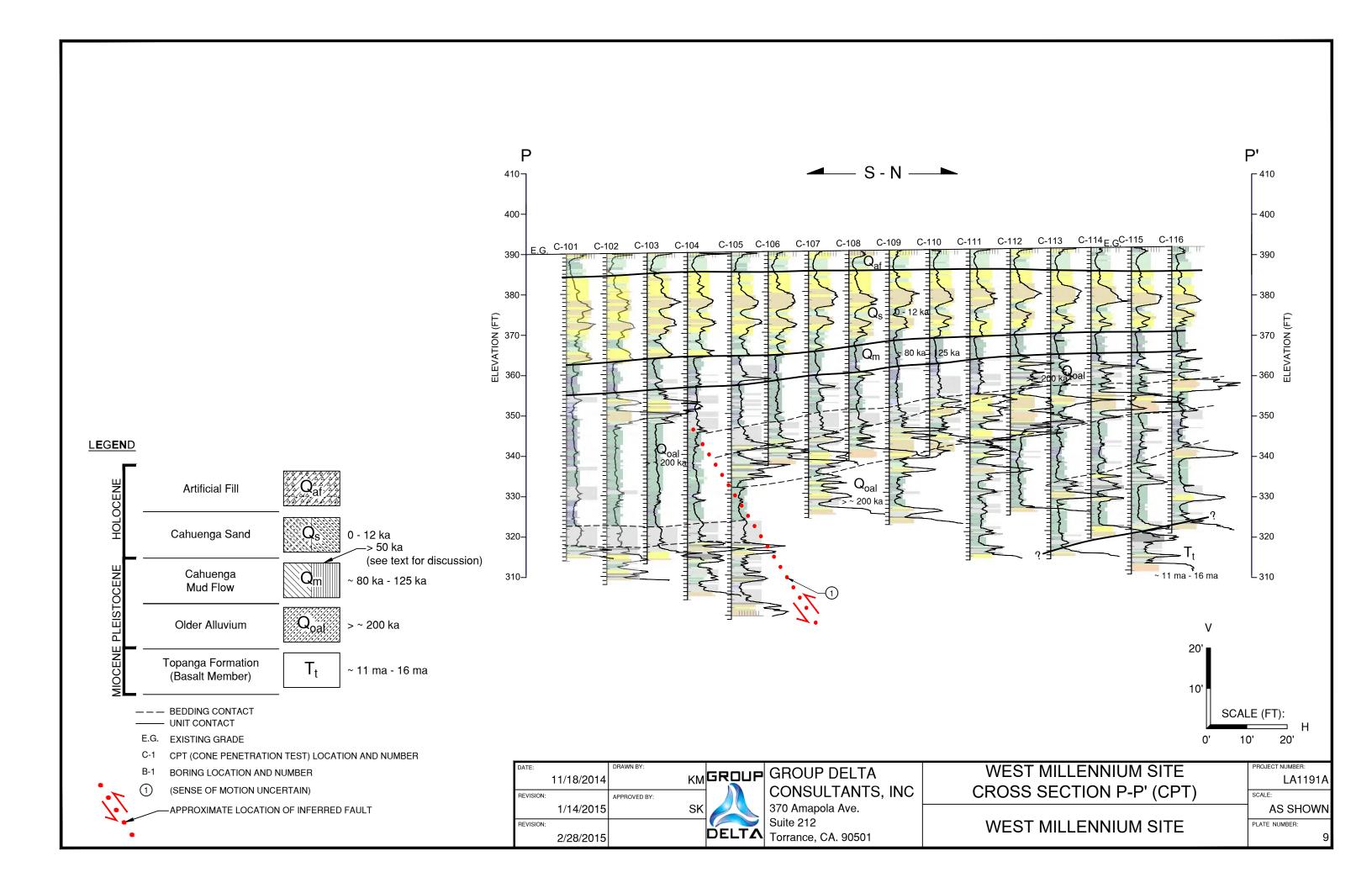


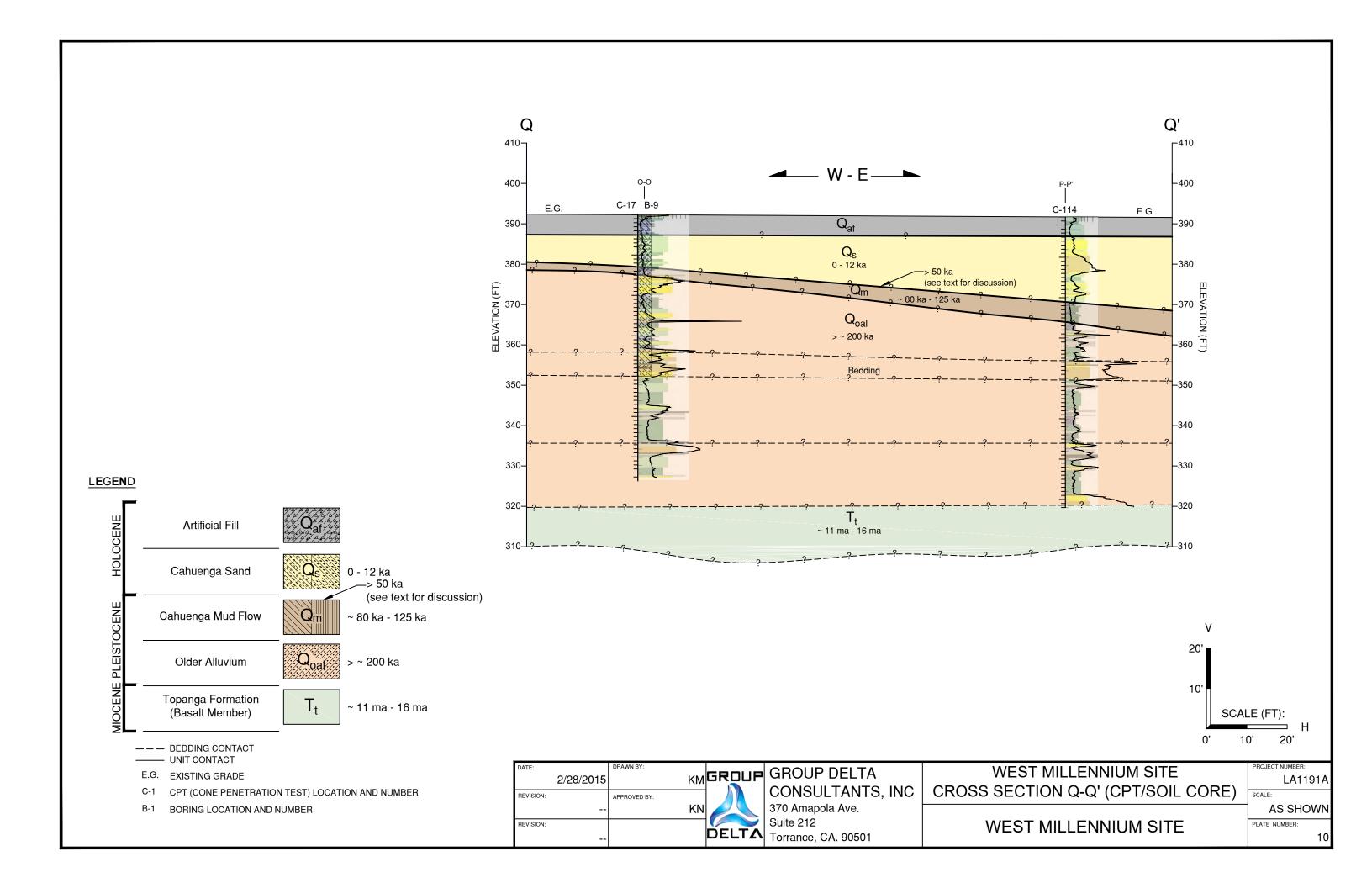












APPENDIX A:

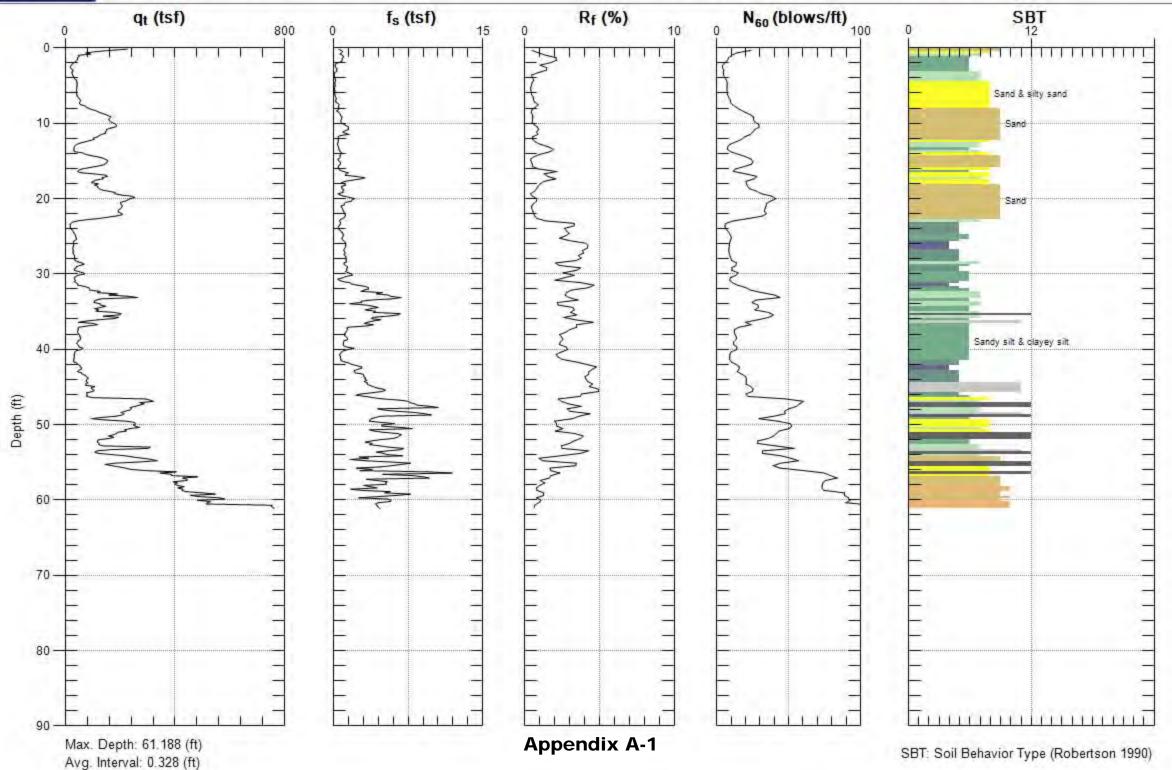
FIELD EXPLORATION – CPT DATA AND CORE LOGS





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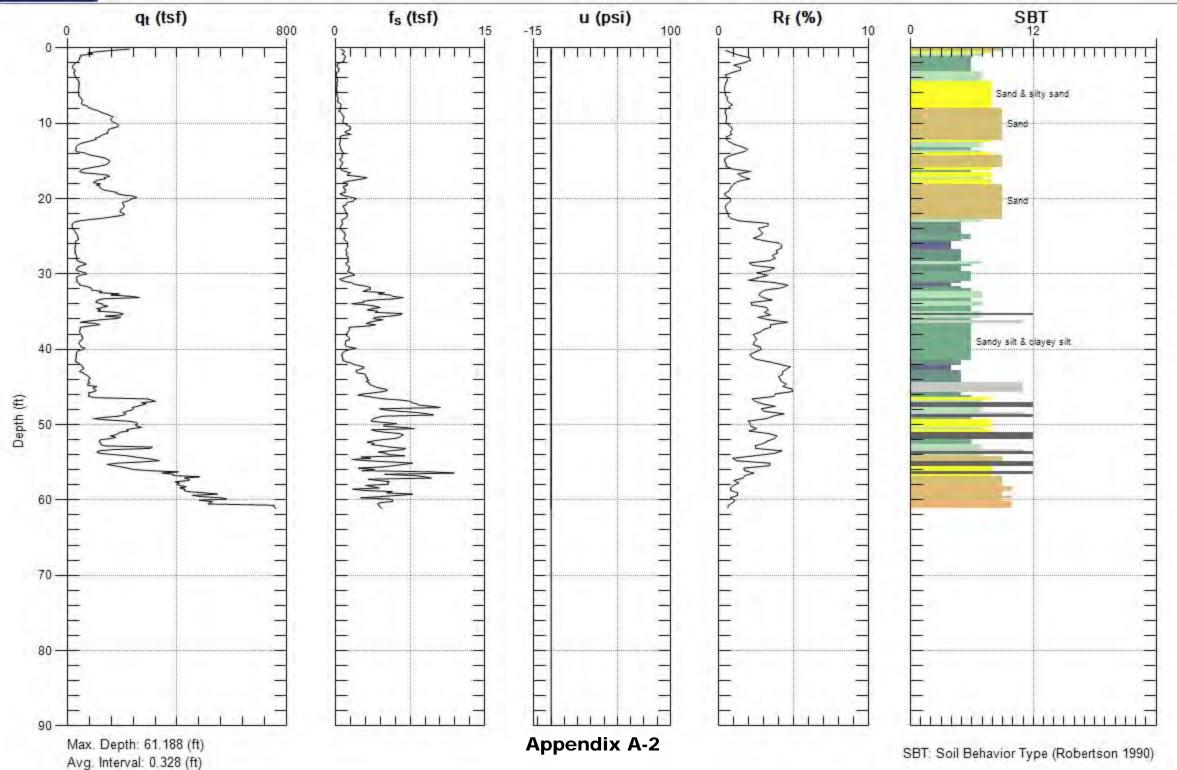
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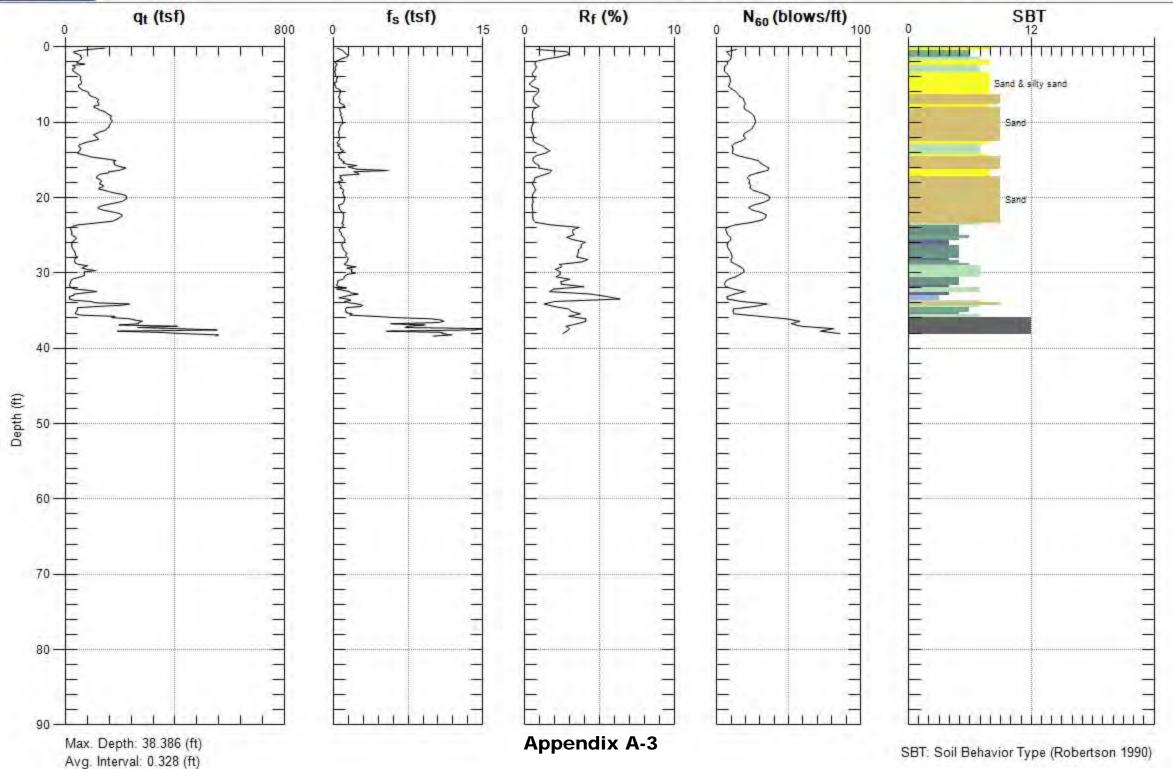
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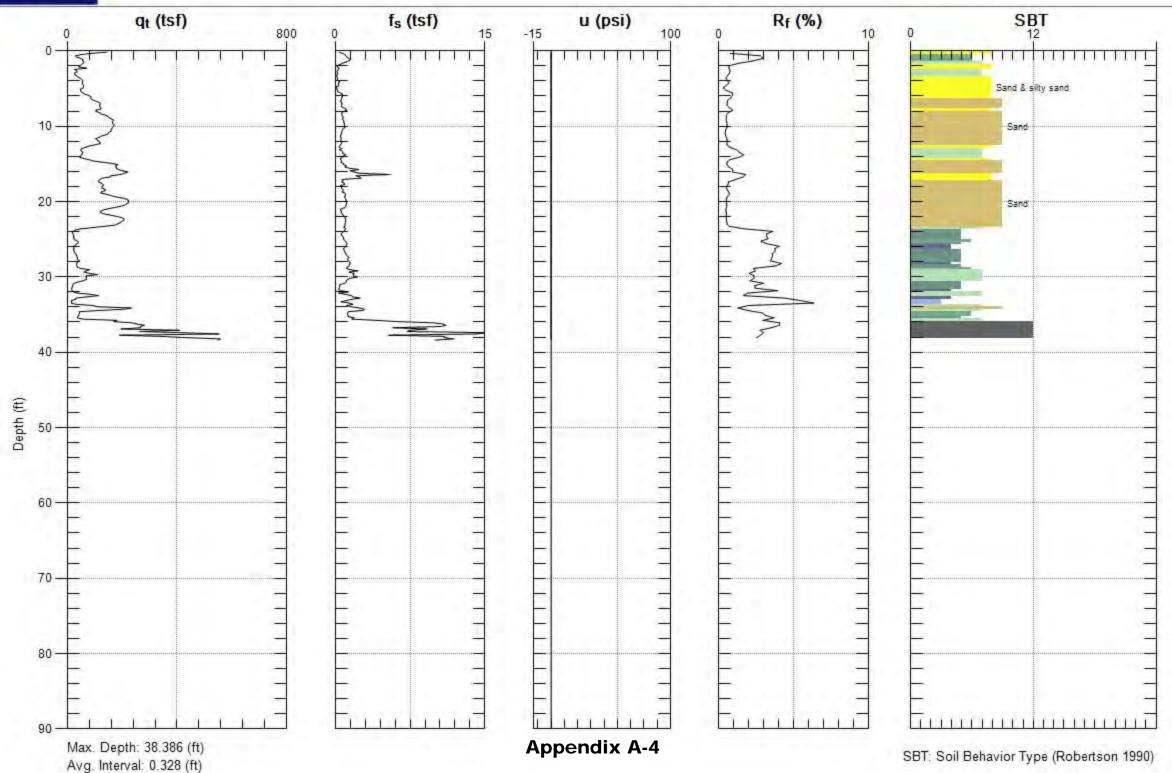
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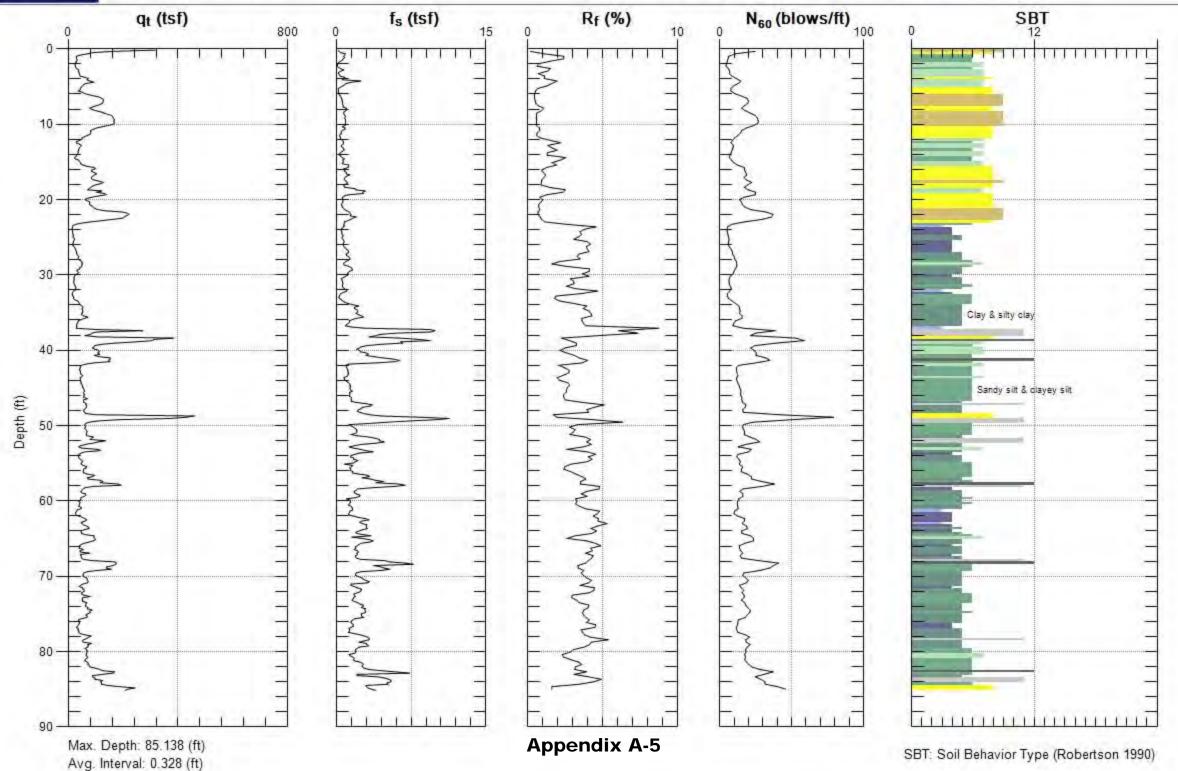
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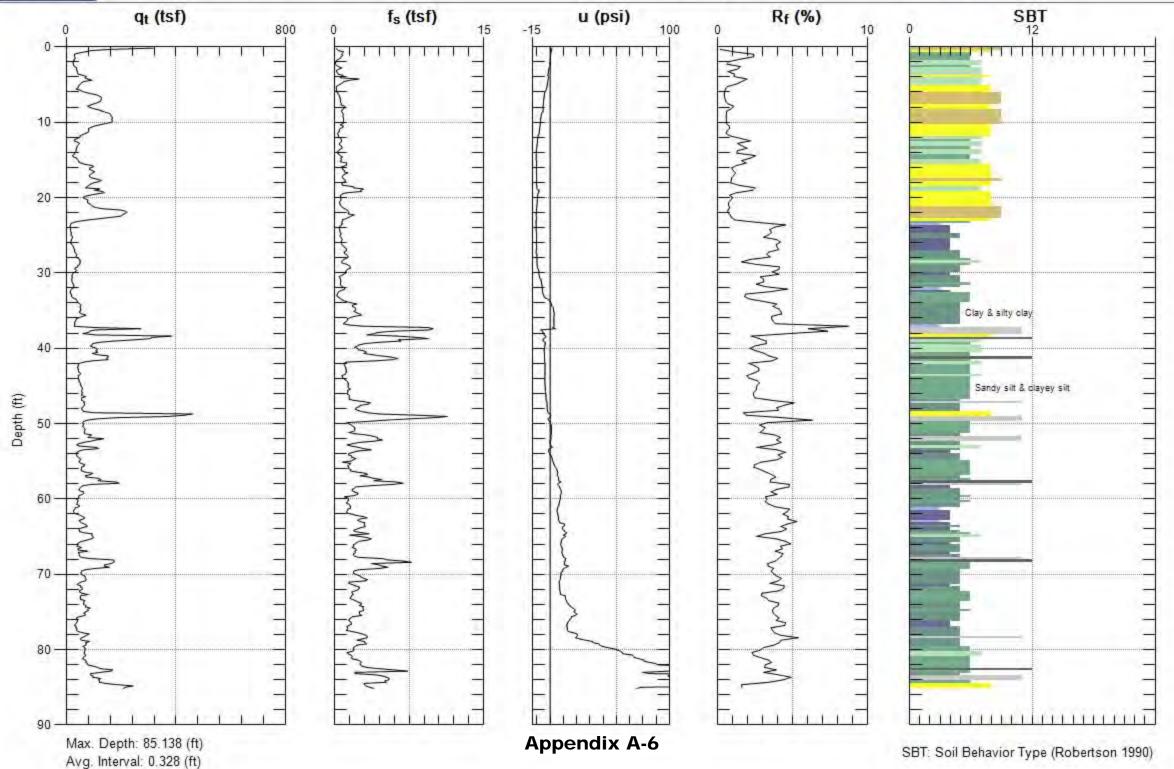
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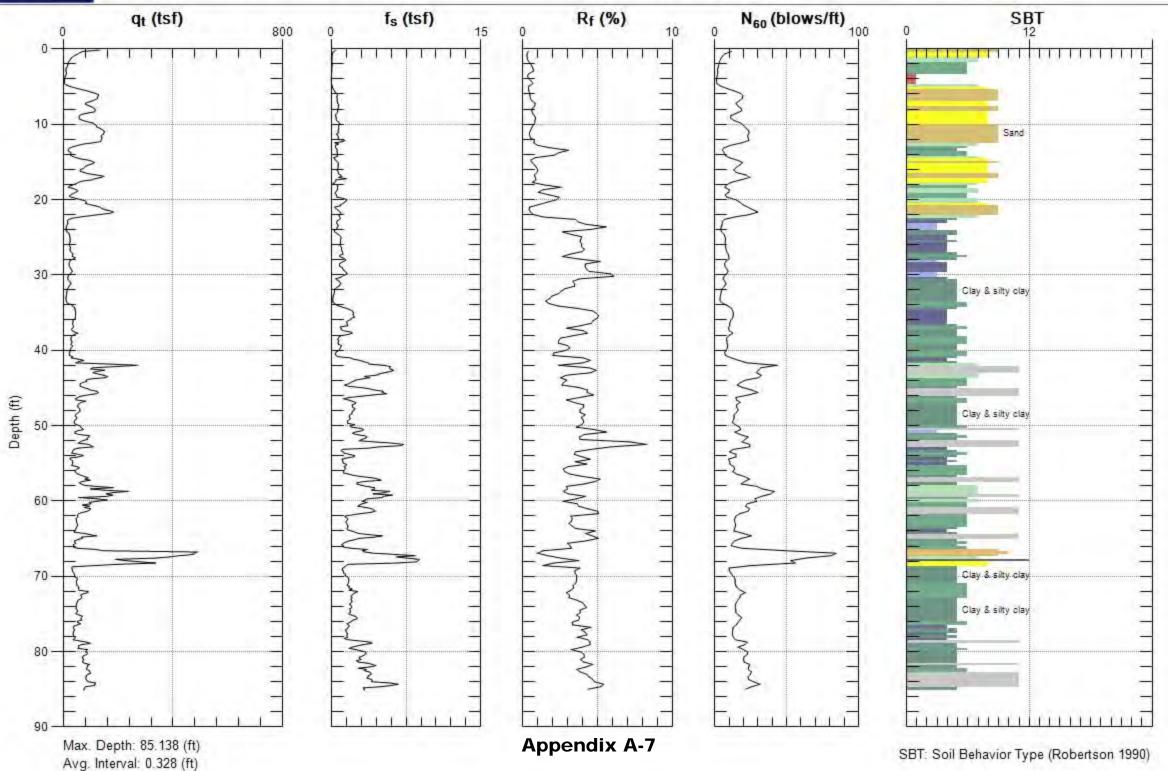
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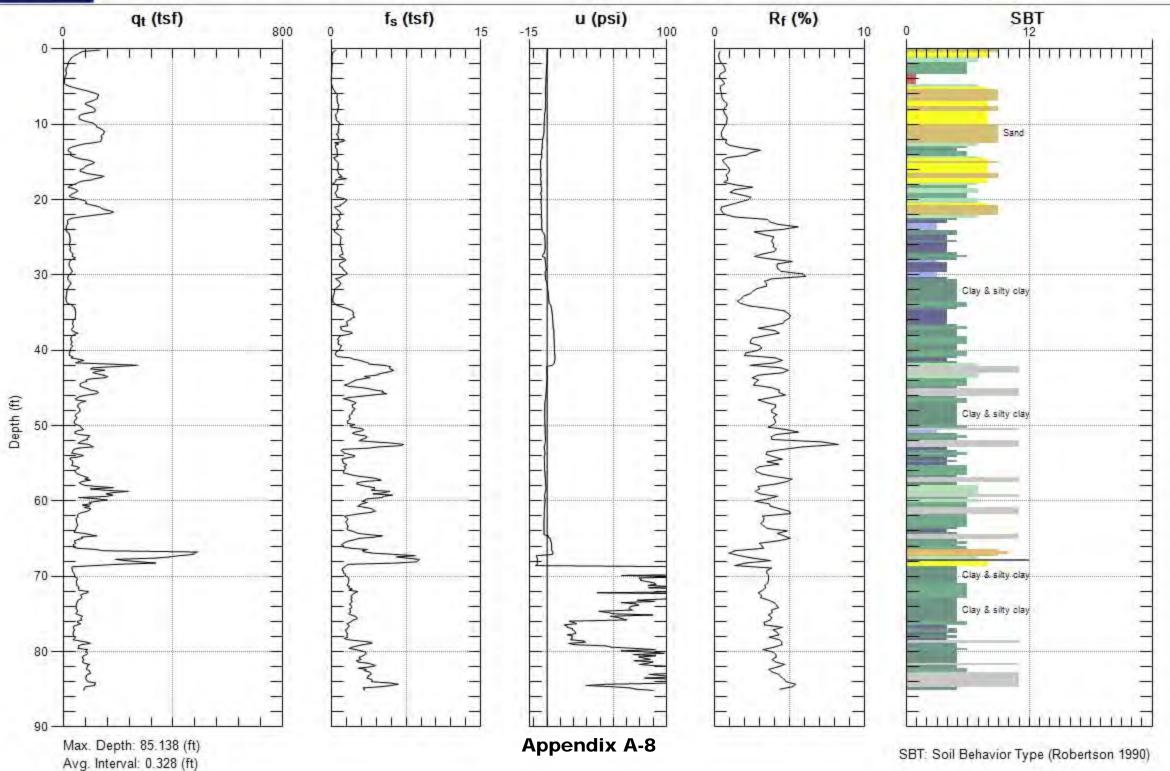
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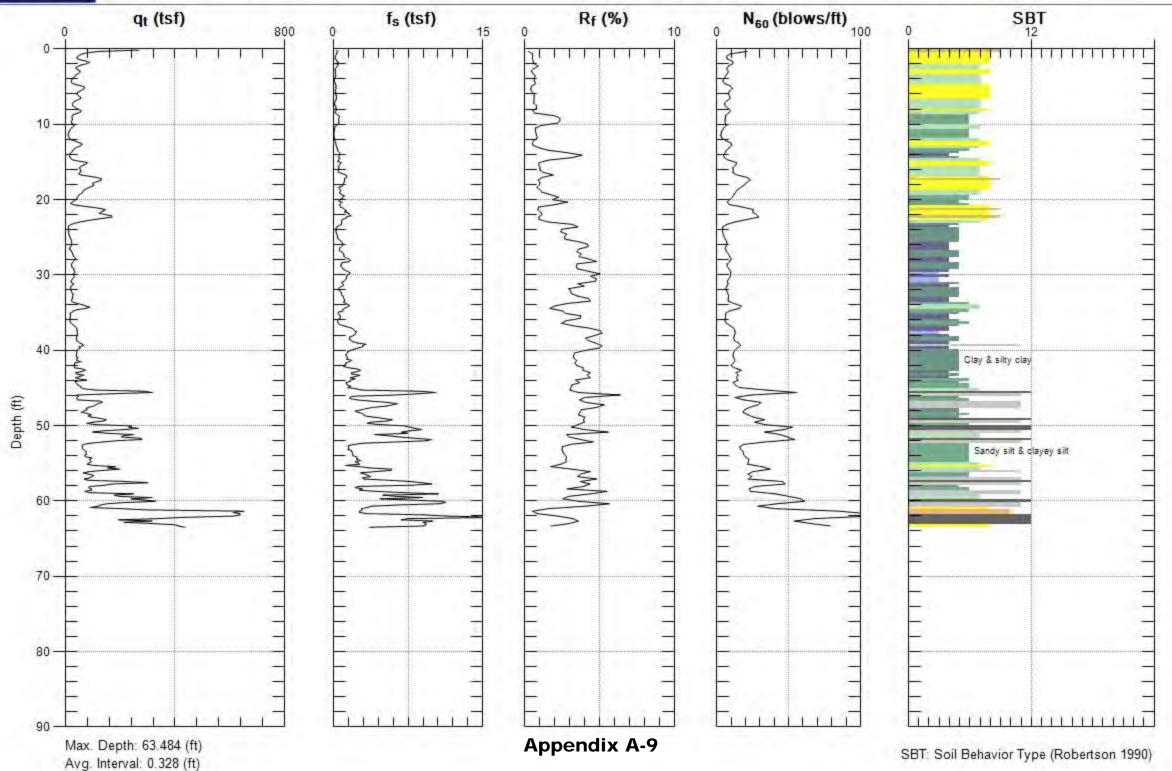
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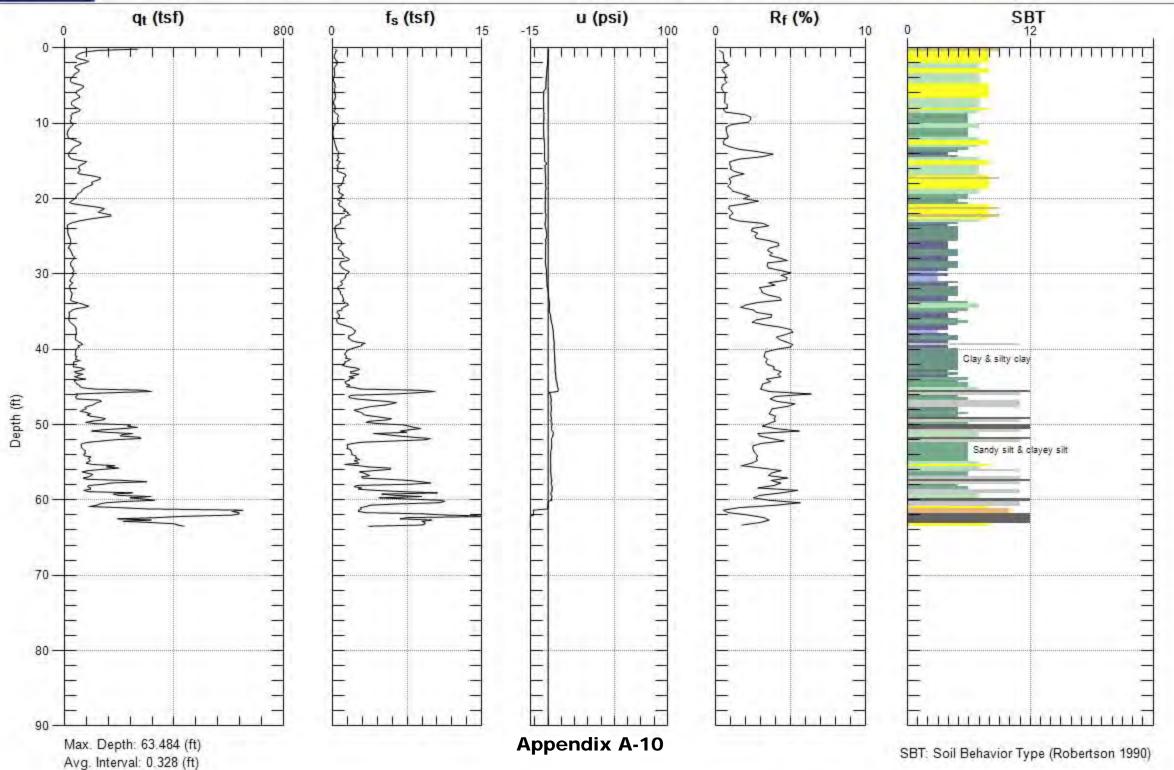
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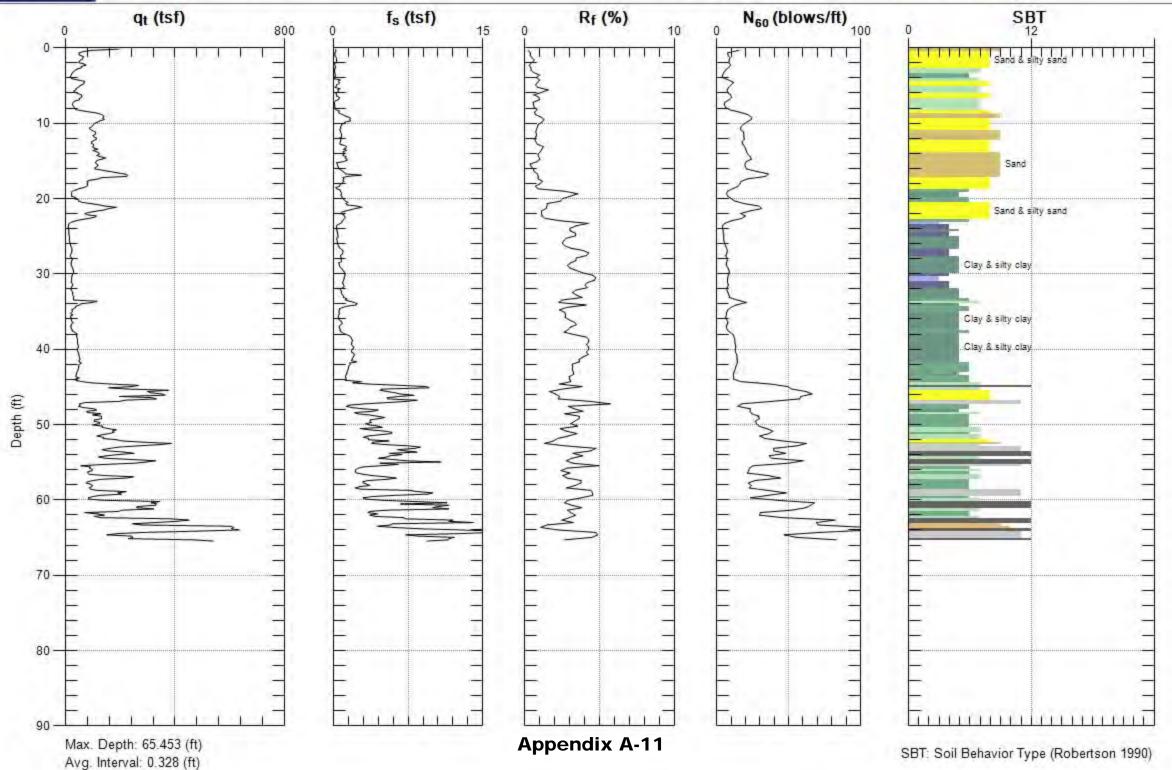
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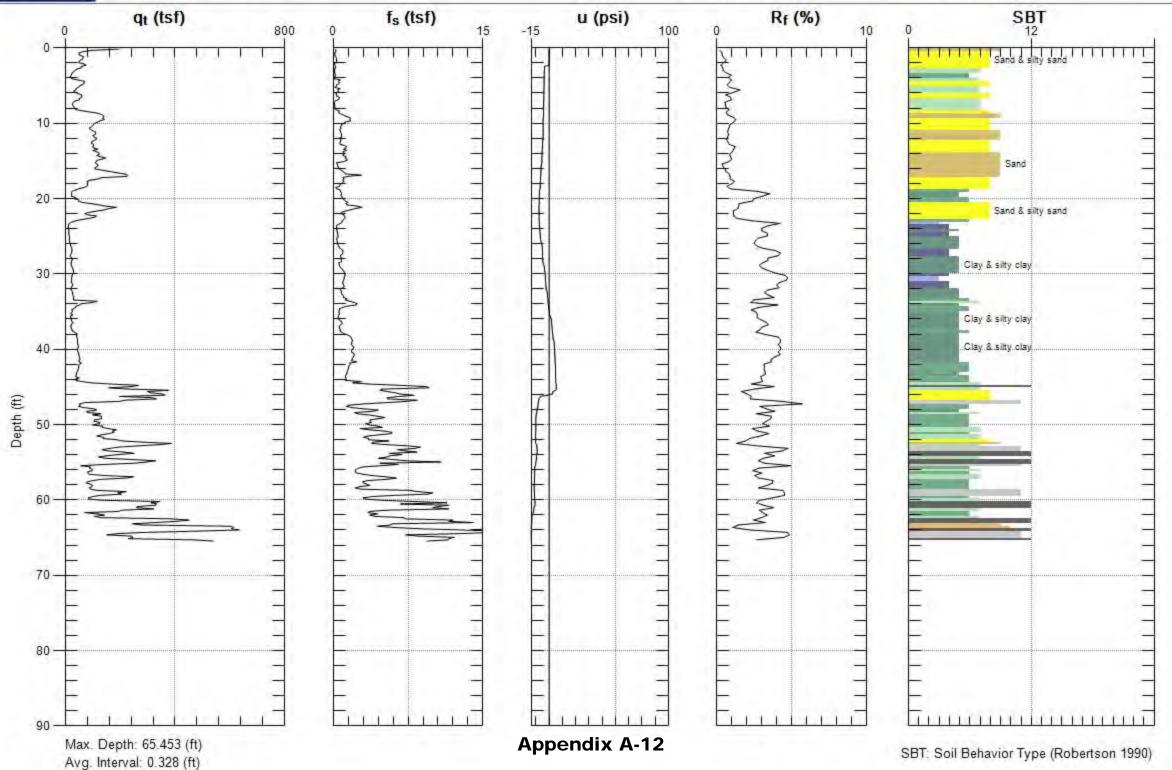
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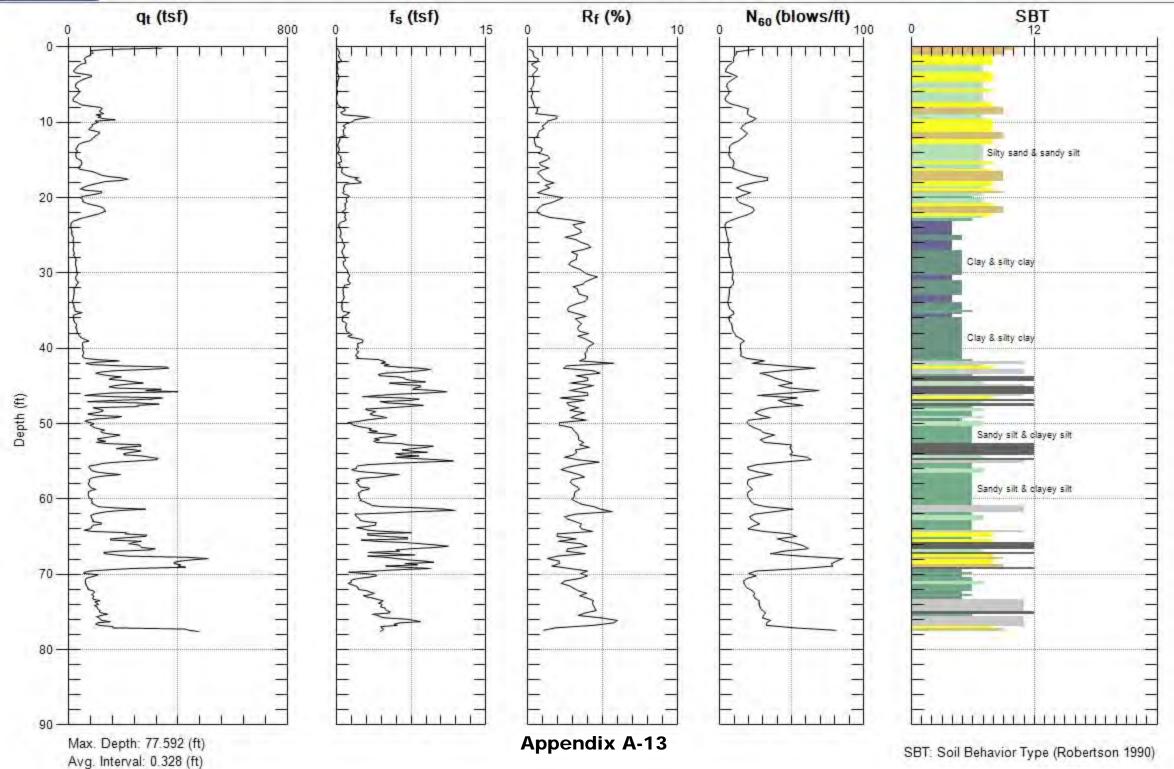
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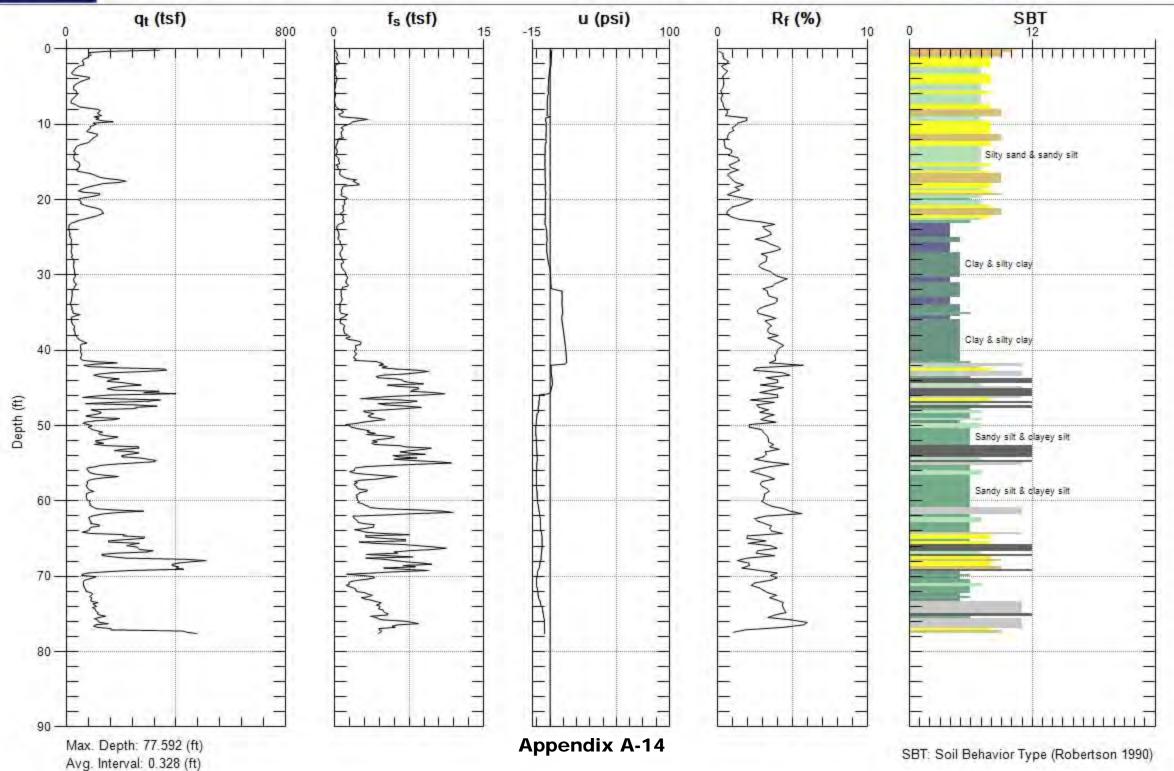
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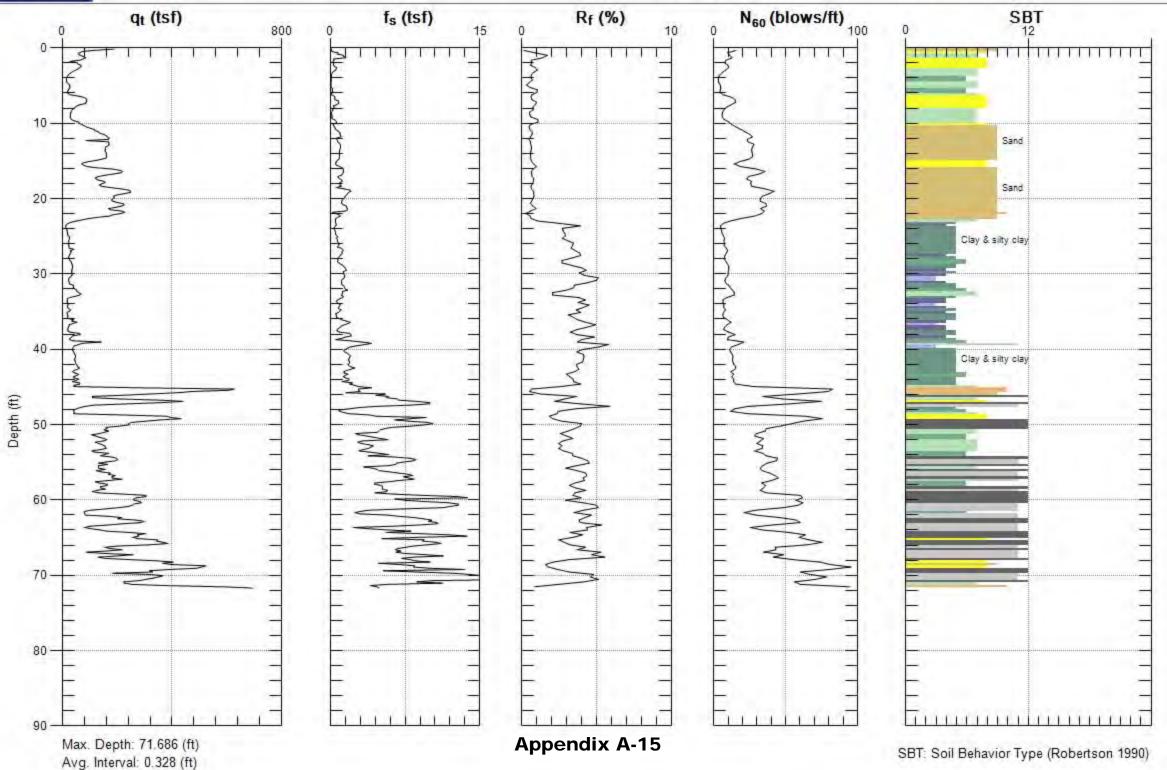
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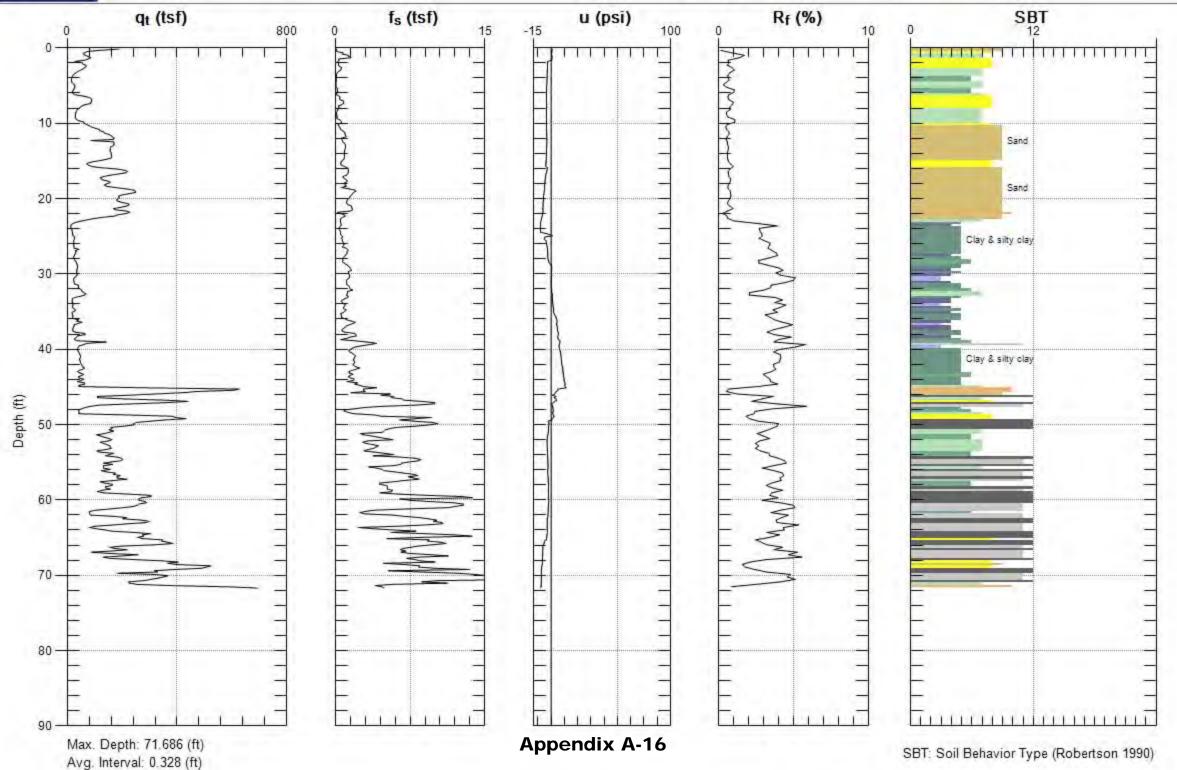
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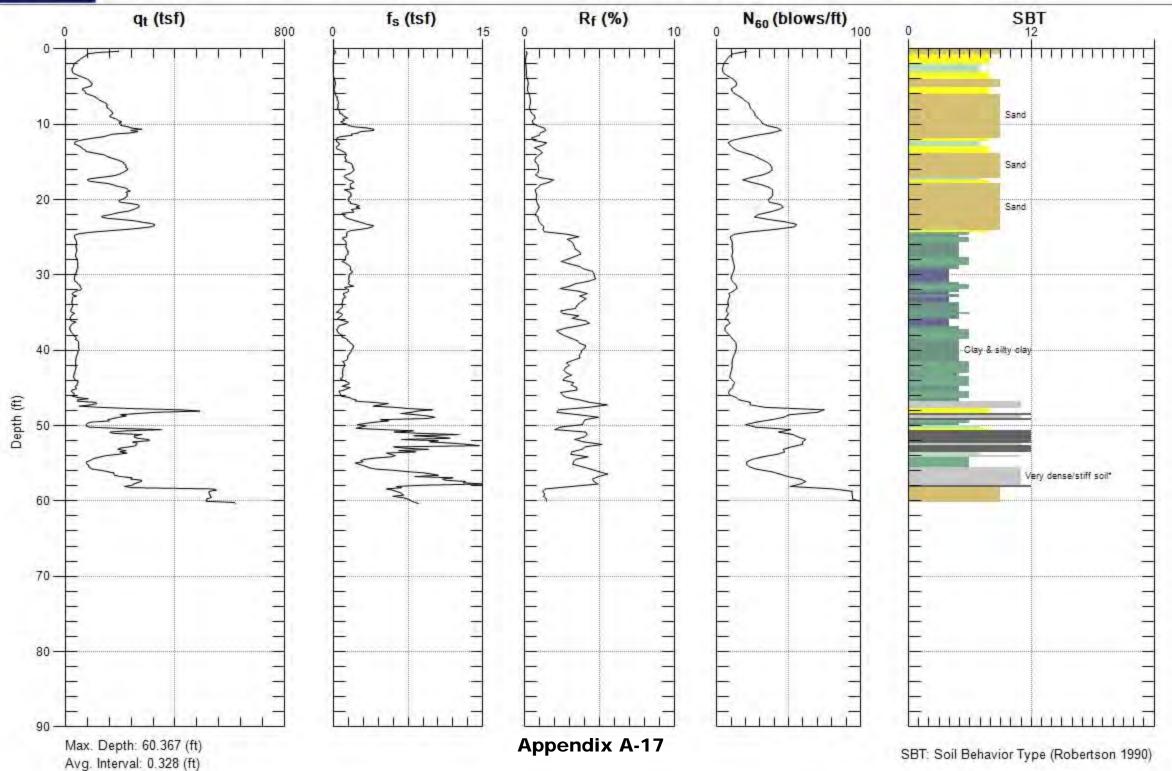
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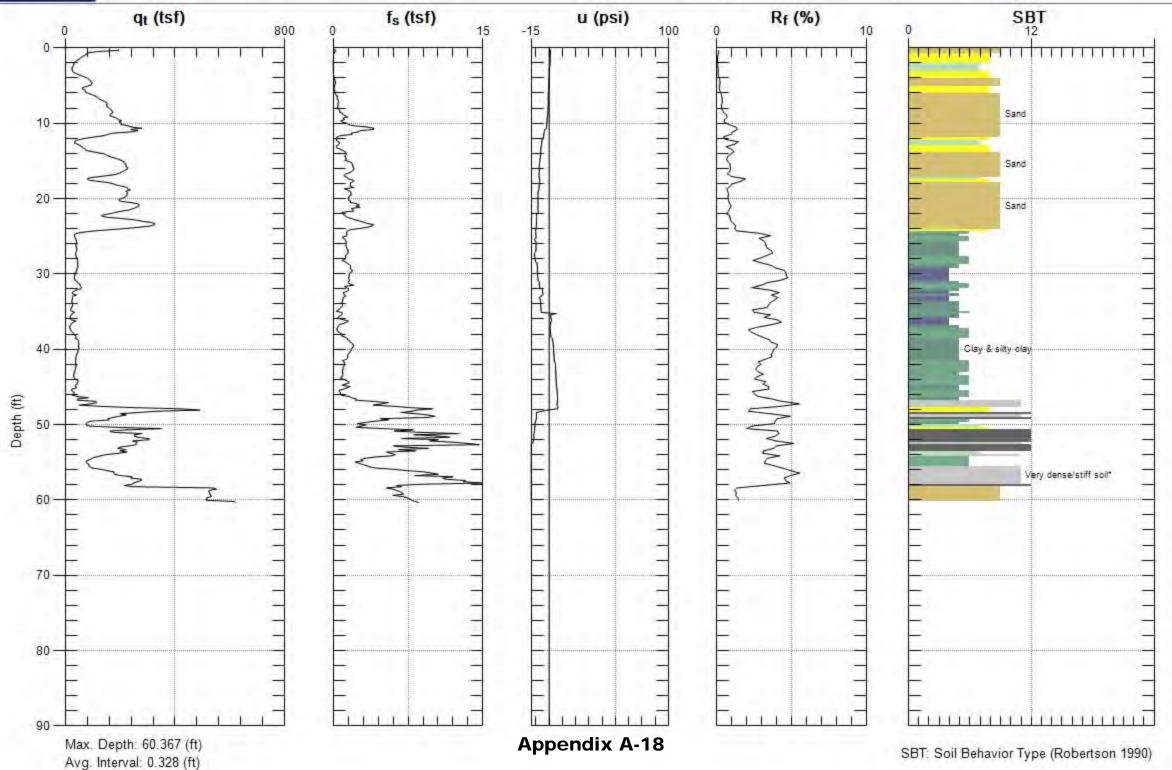
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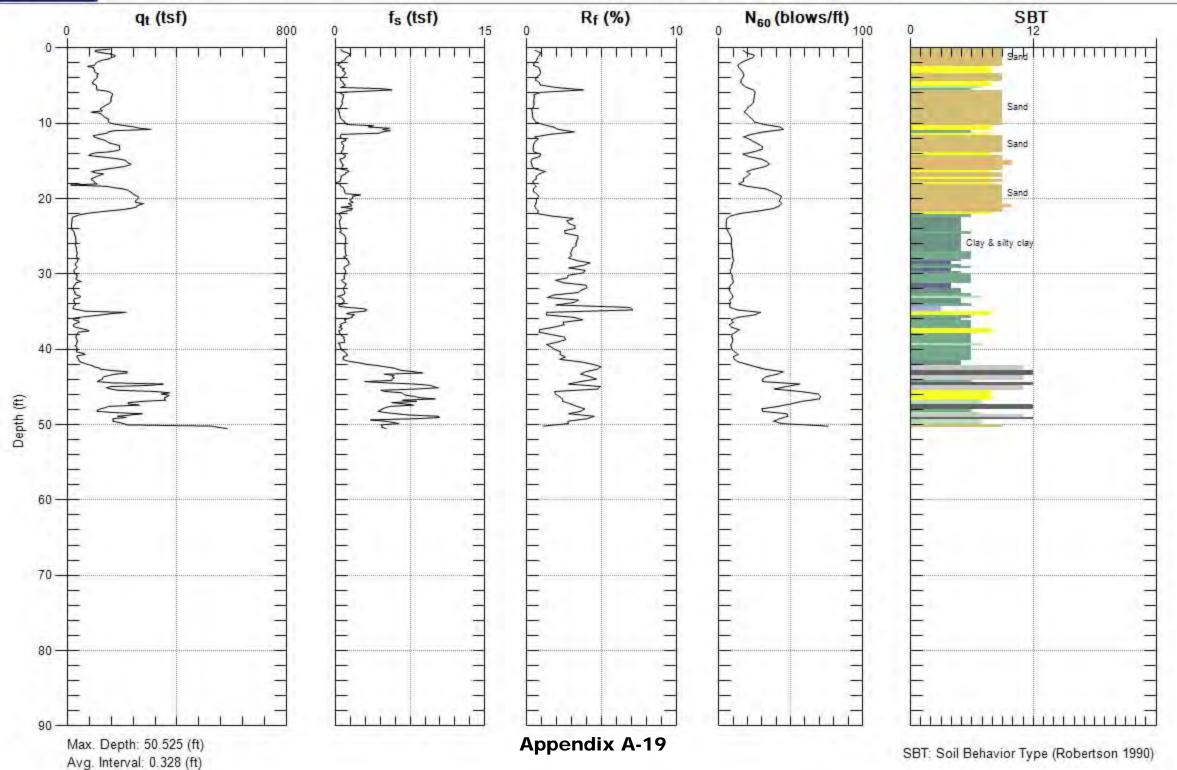
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Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

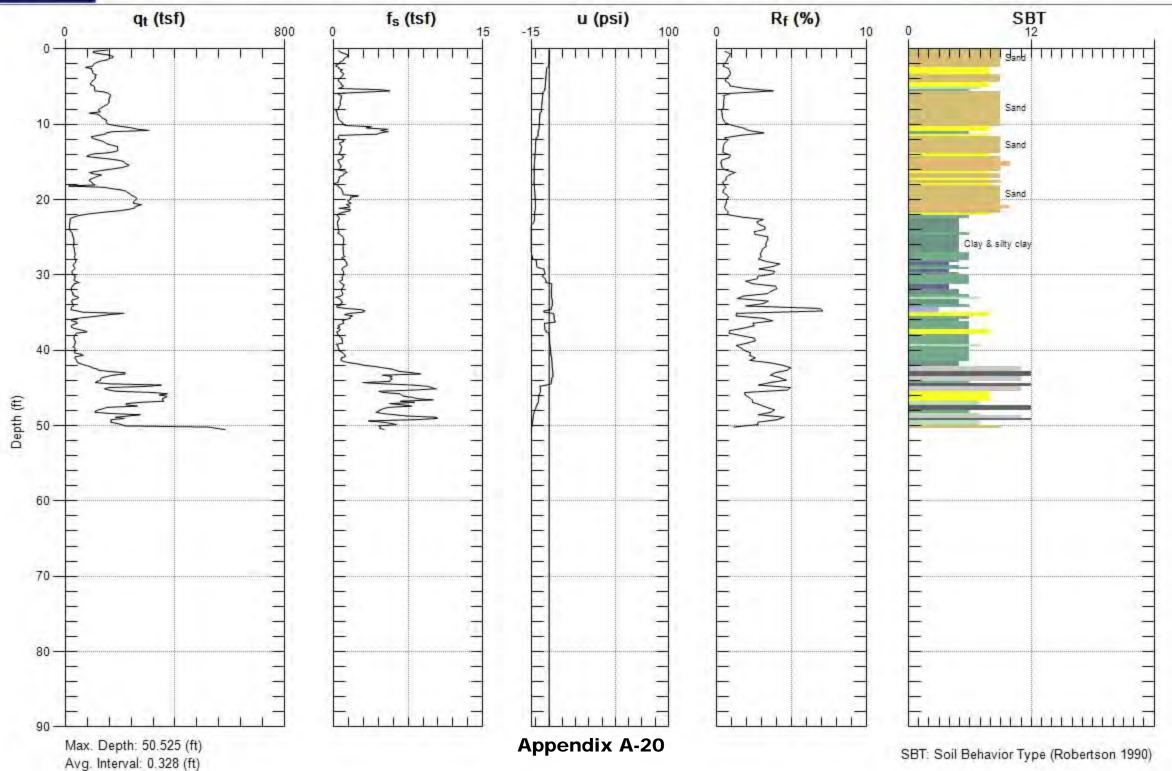
Sounding: CPT-10 Date: 8/2/2012 01:56





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

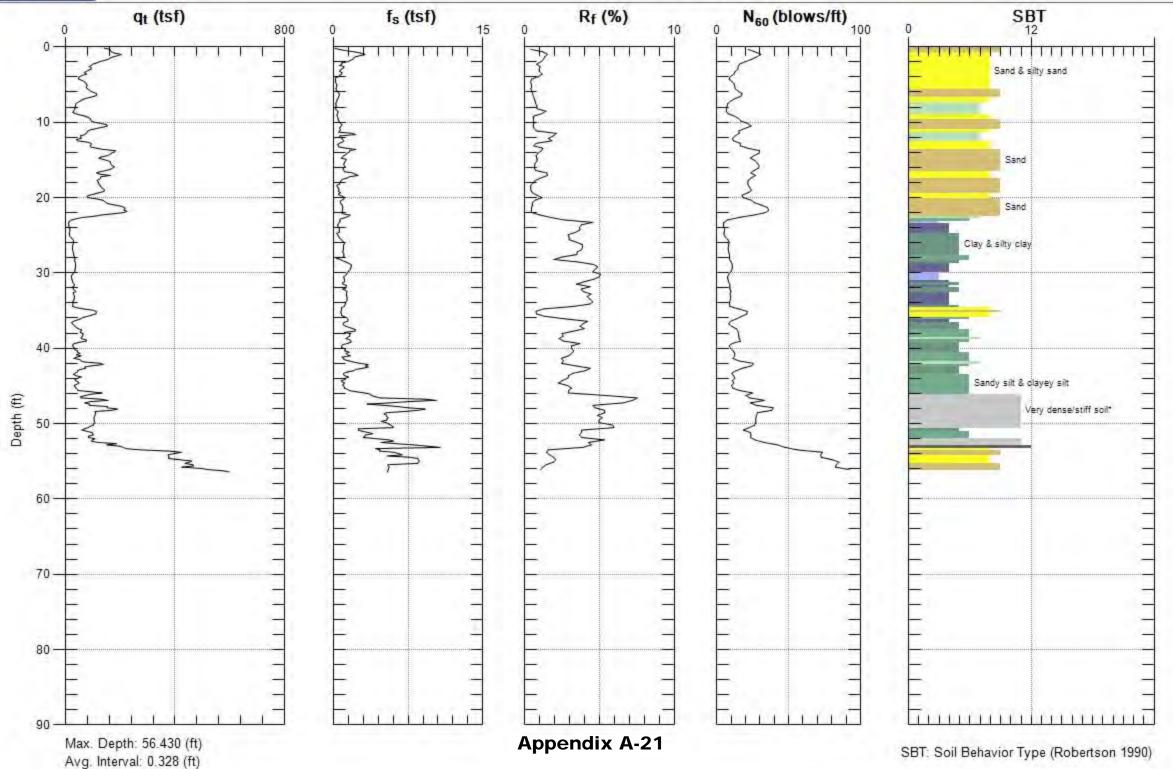
Sounding: CPT-10 Date: 8/2/2012 01:56





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

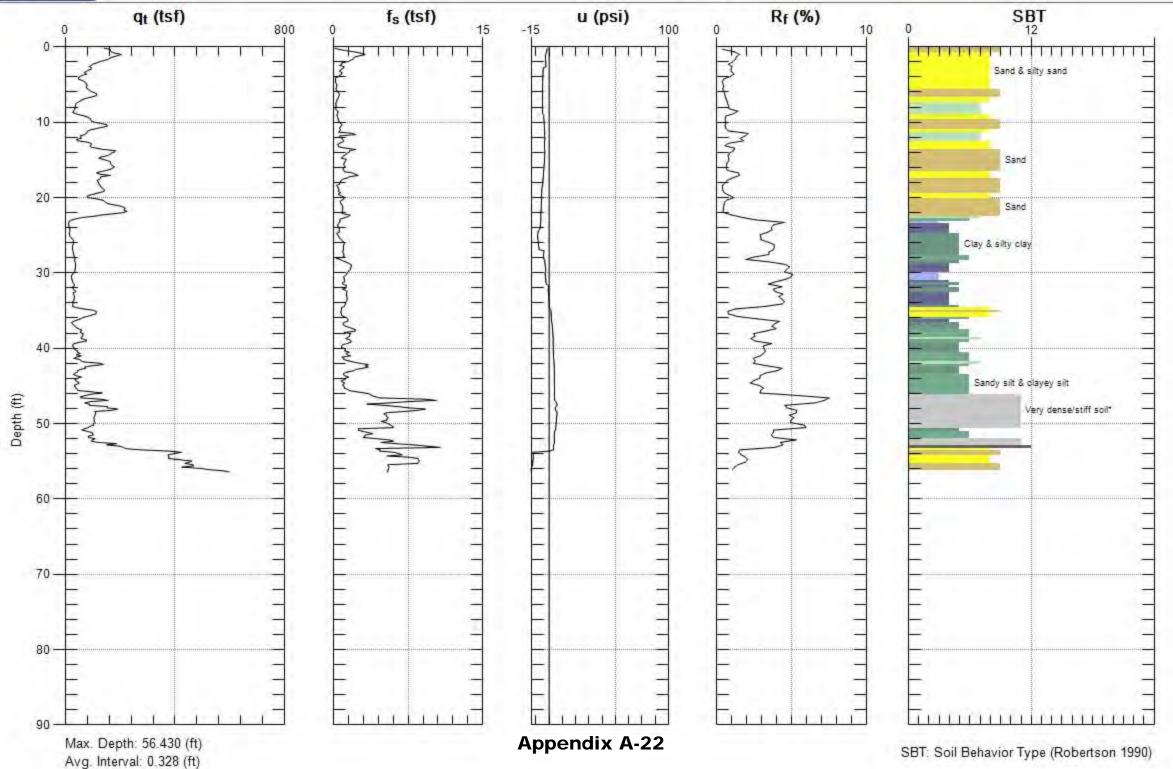
Sounding: CPT-11 Date: 8/2/2012 02:40





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

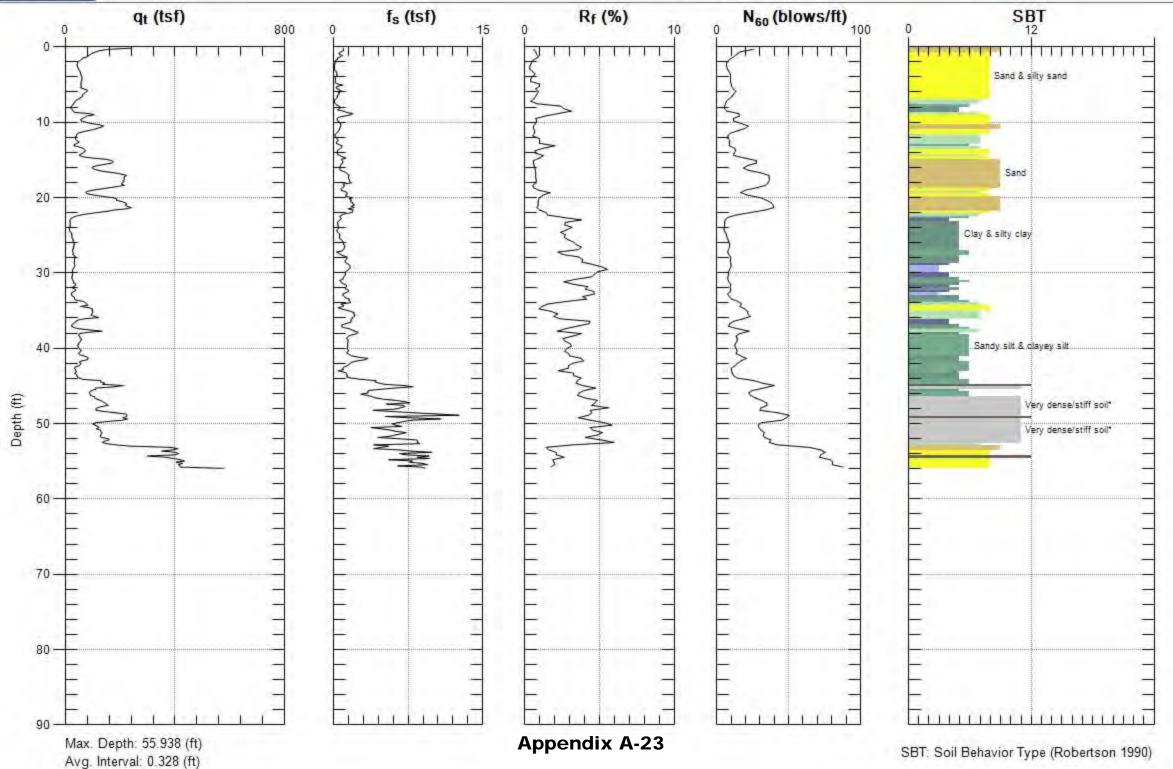
Sounding: CPT-11 Date: 8/2/2012 02:40





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

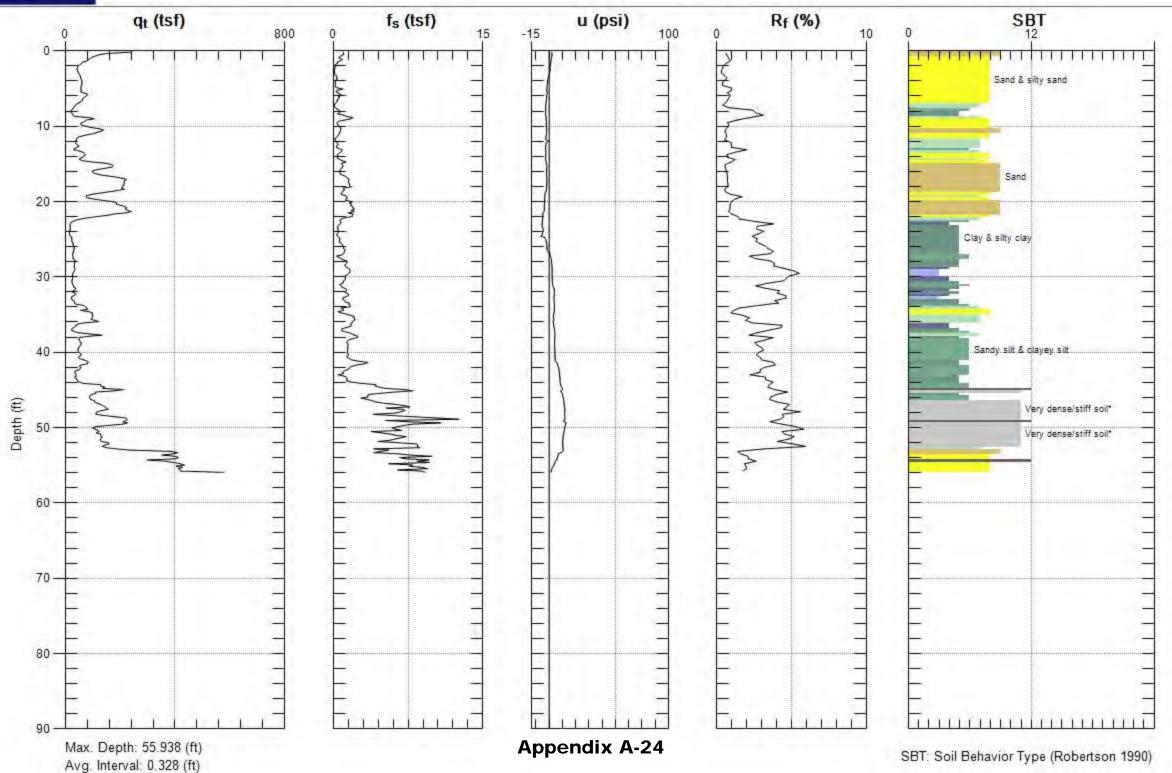
Sounding: CPT-12 Date: 8/2/2012 08:45





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

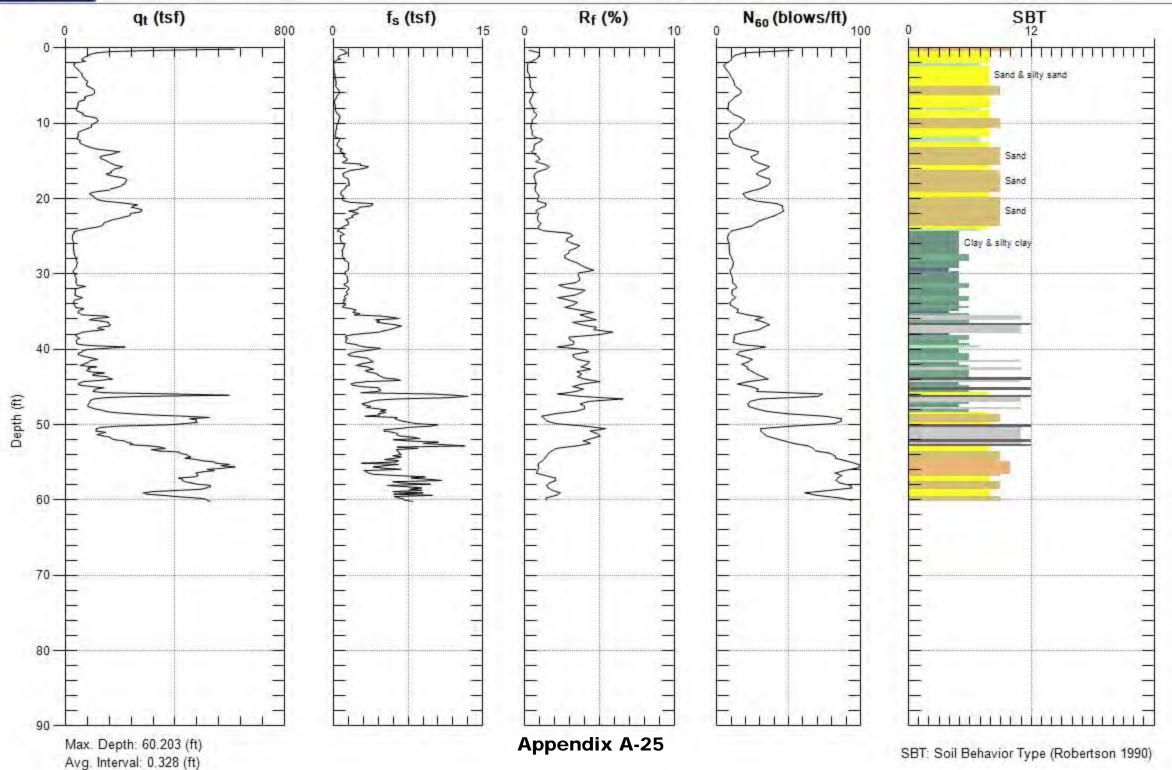
Sounding: CPT-12 Date: 8/2/2012 08:45





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

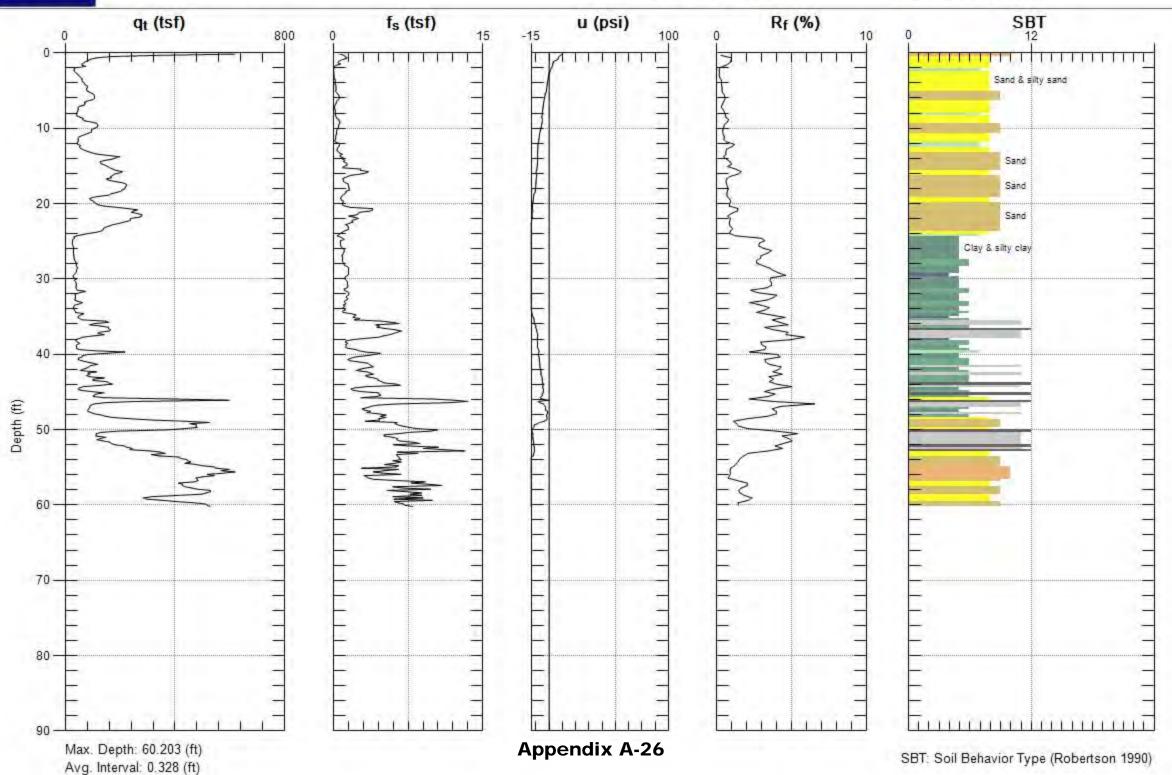
Sounding: CPT-13 Date: 8/2/2012 07:39





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

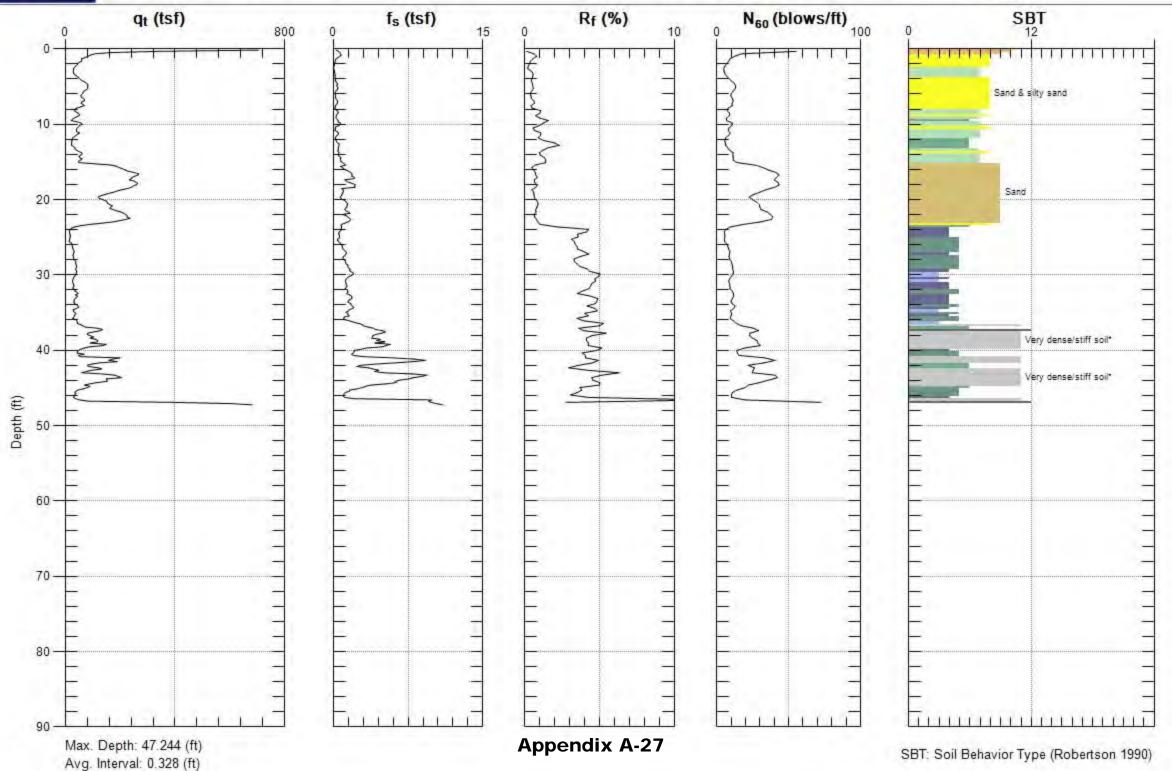
Sounding: CPT-13 Date: 8/2/2012 07:39





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

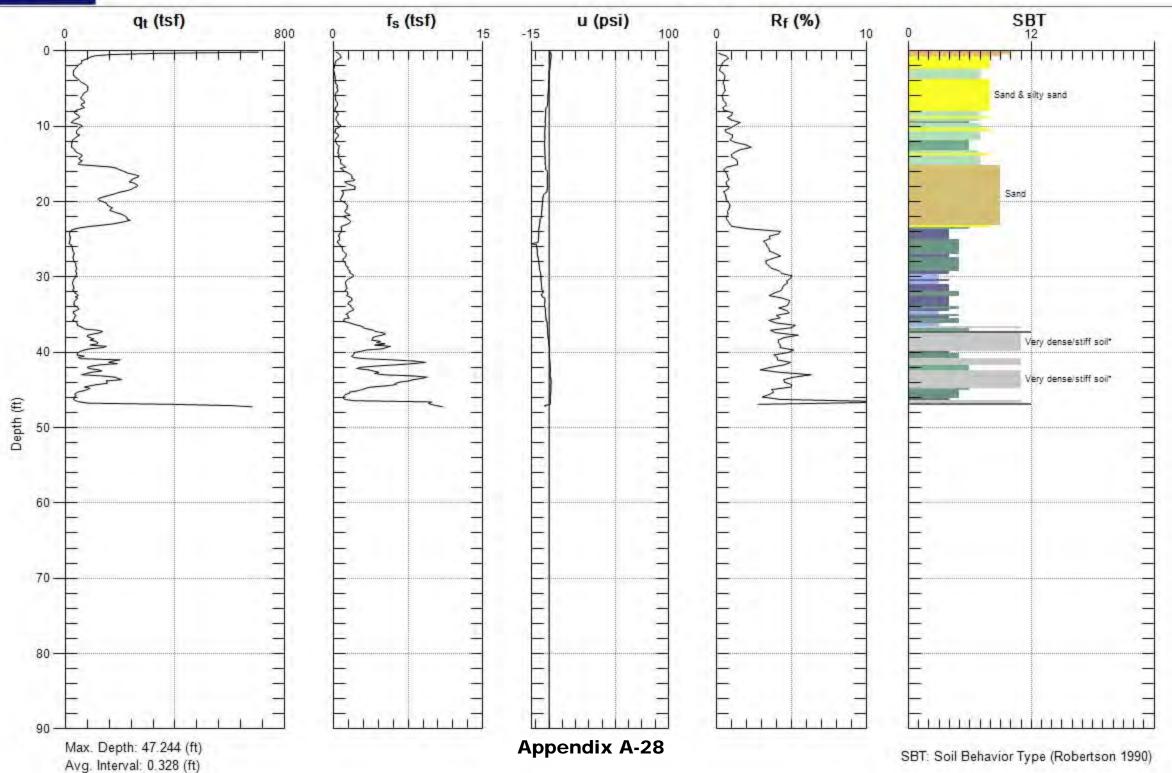
Sounding: CPT-14 Date: 8/2/2012 08:09





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

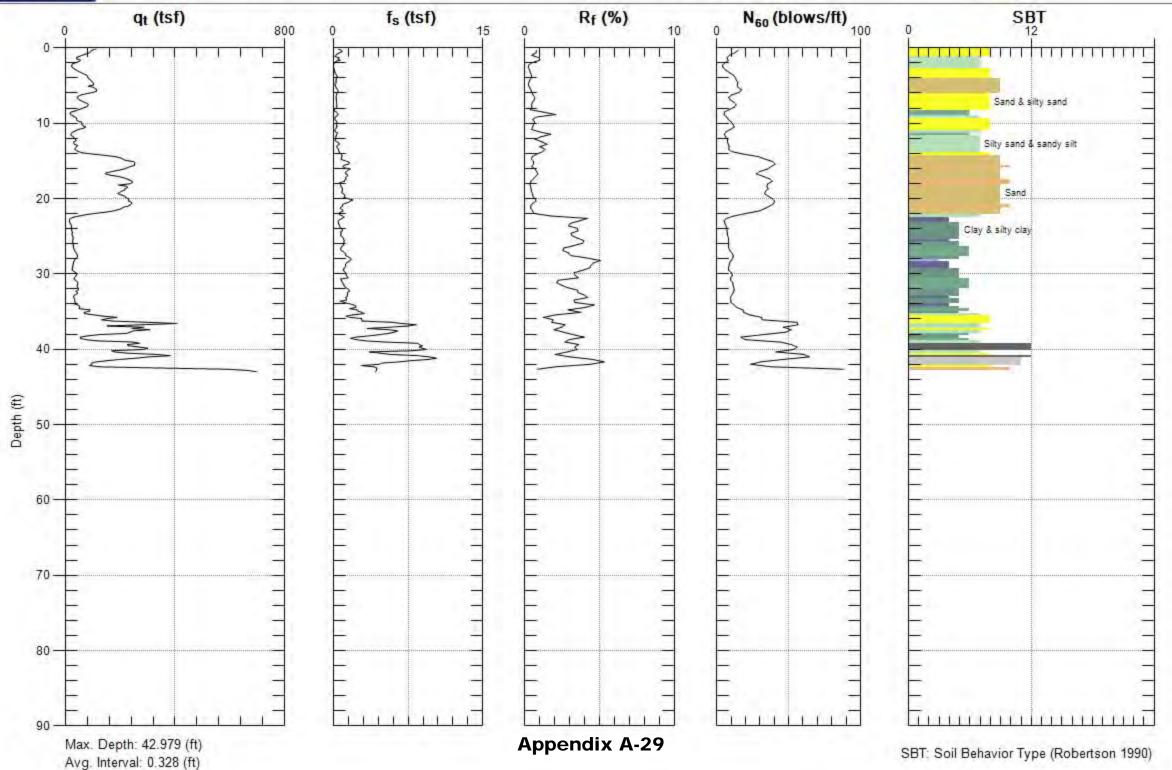
Sounding: CPT-14 Date: 8/2/2012 08:09





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

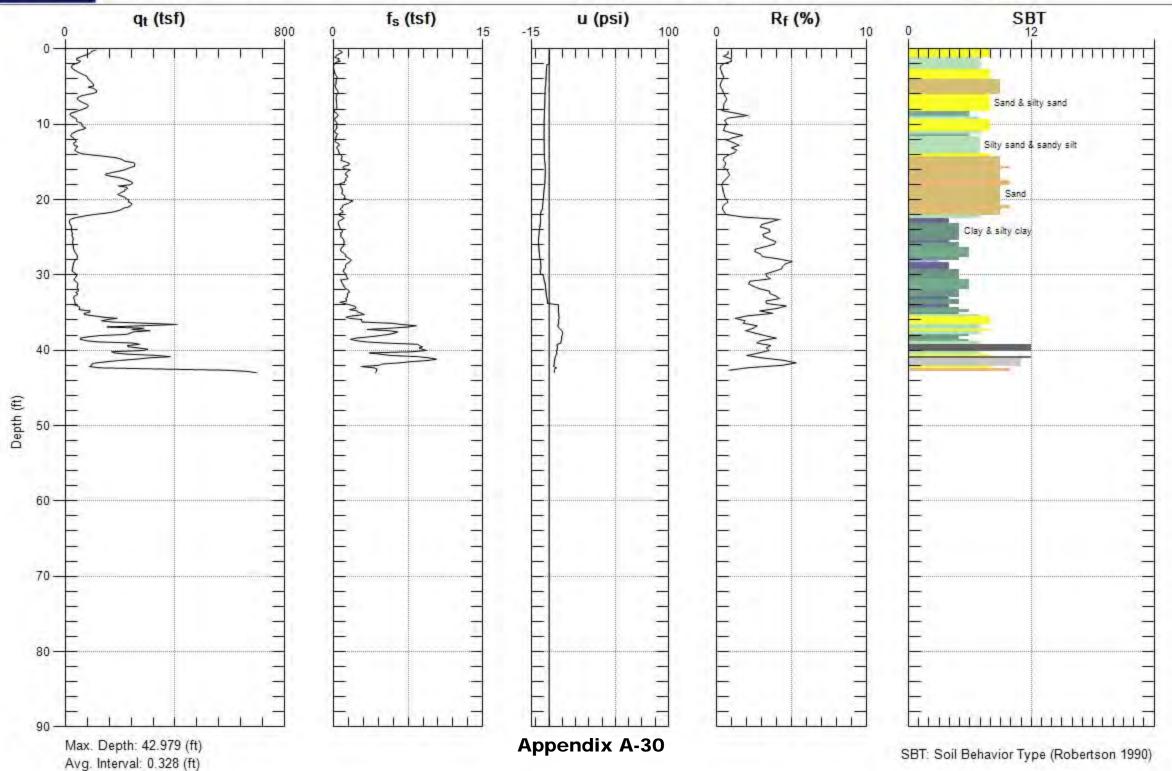
Sounding: CPT-15 Date: 8/2/2012 01:17





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

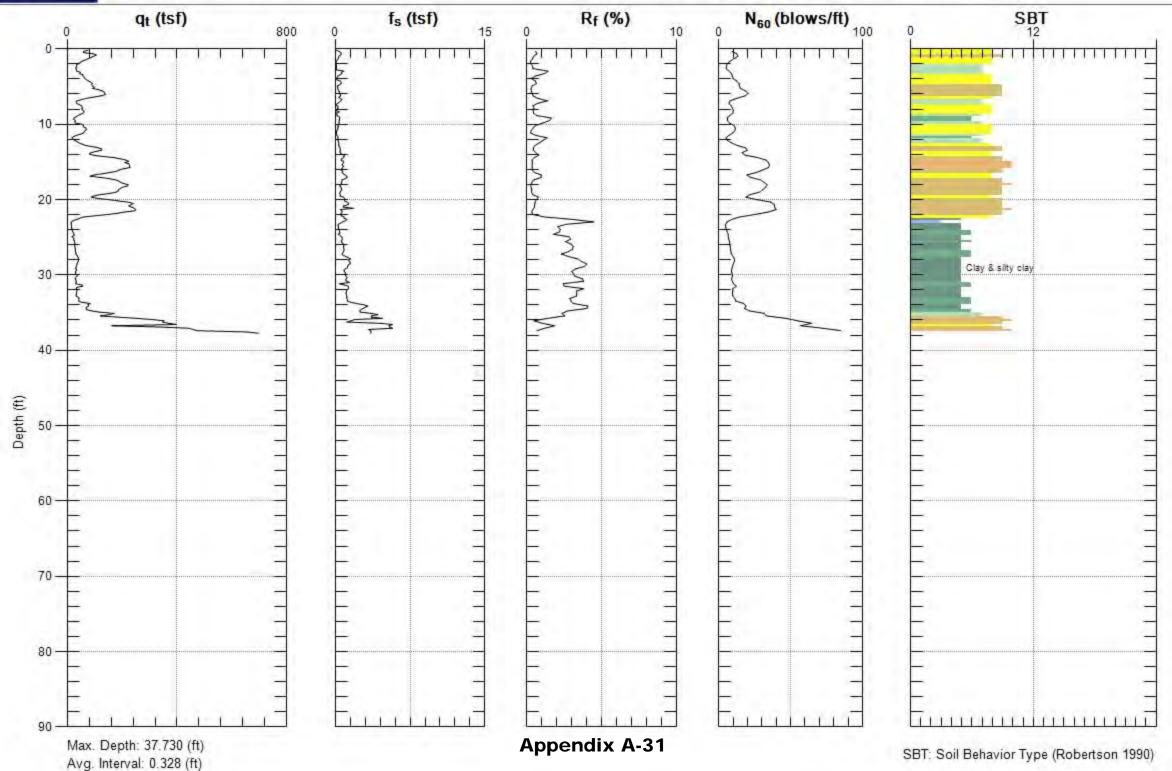
Sounding: CPT-15 Date: 8/2/2012 01:17





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

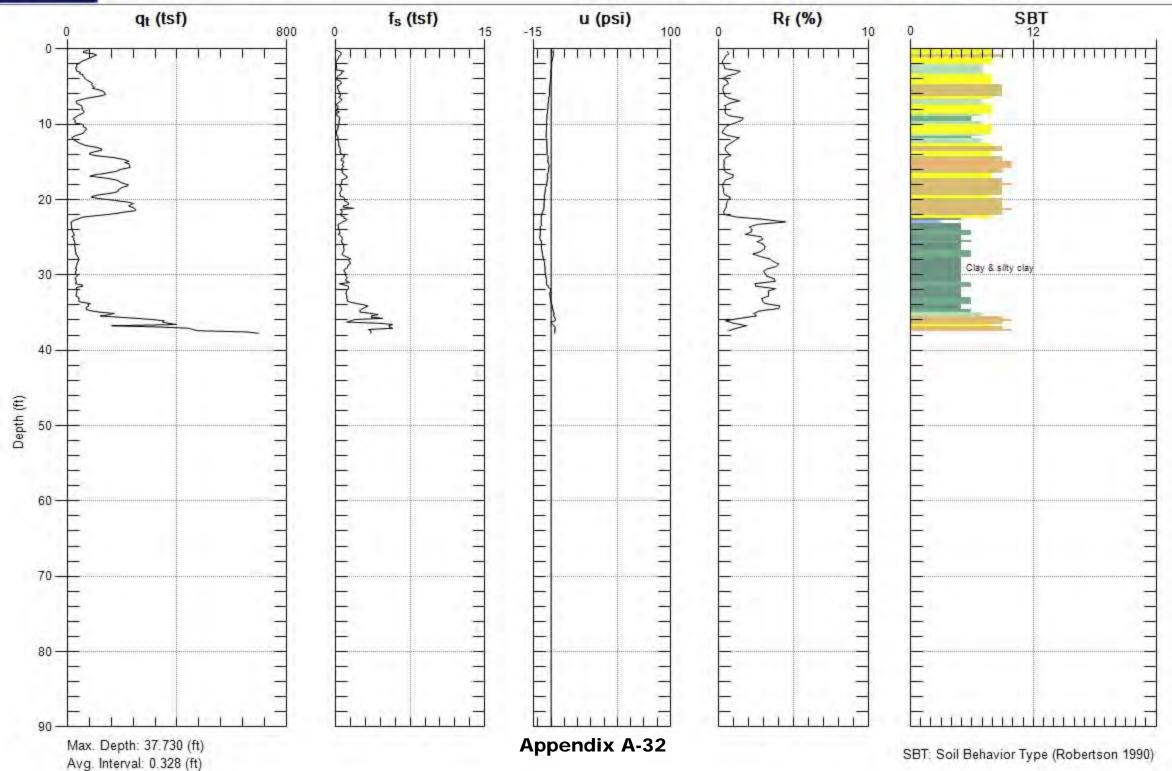
Sounding: CPT-16 Date: 8/2/2012 12:48





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

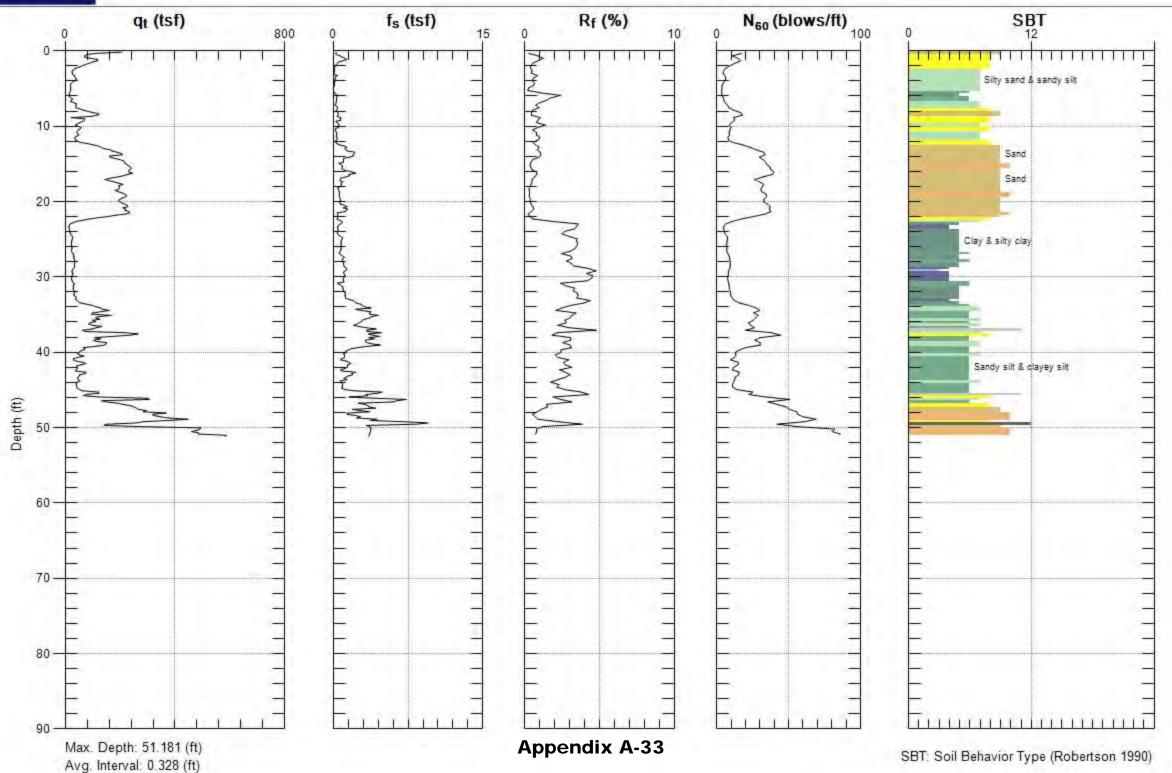
Sounding: CPT-16 Date: 8/2/2012 12:48





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

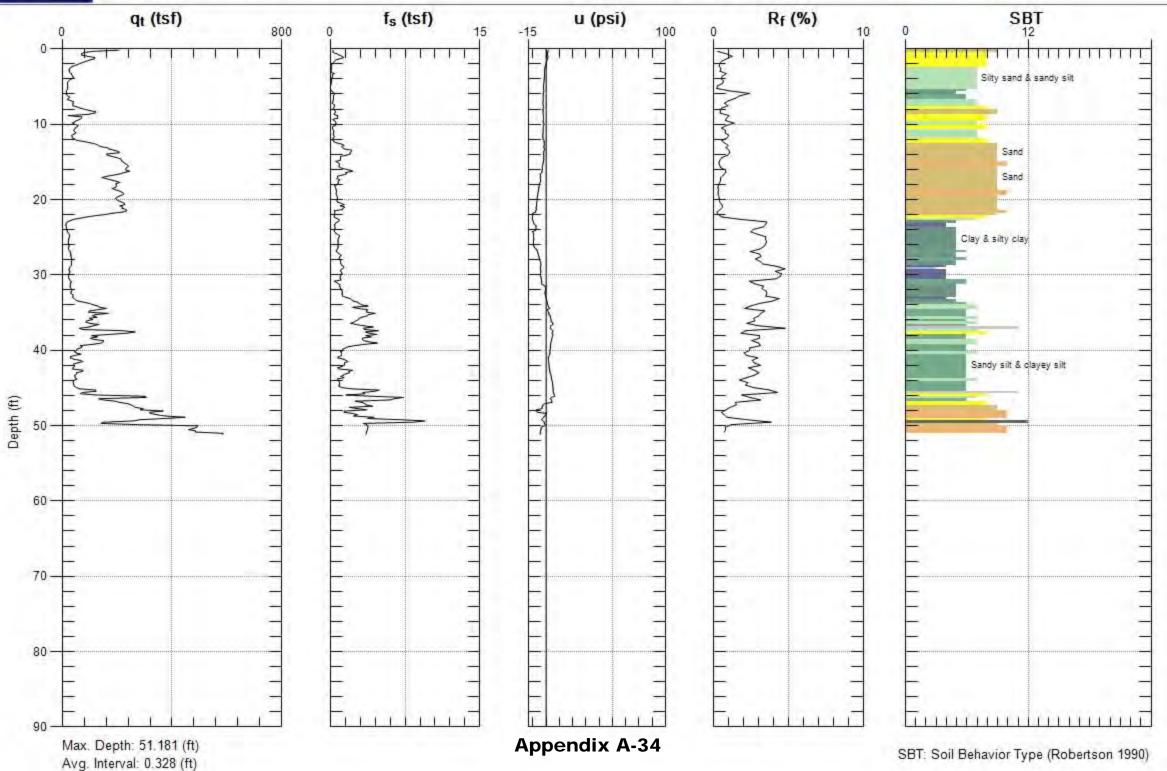
Sounding: CPT-17 Date: 8/2/2012 12:00





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

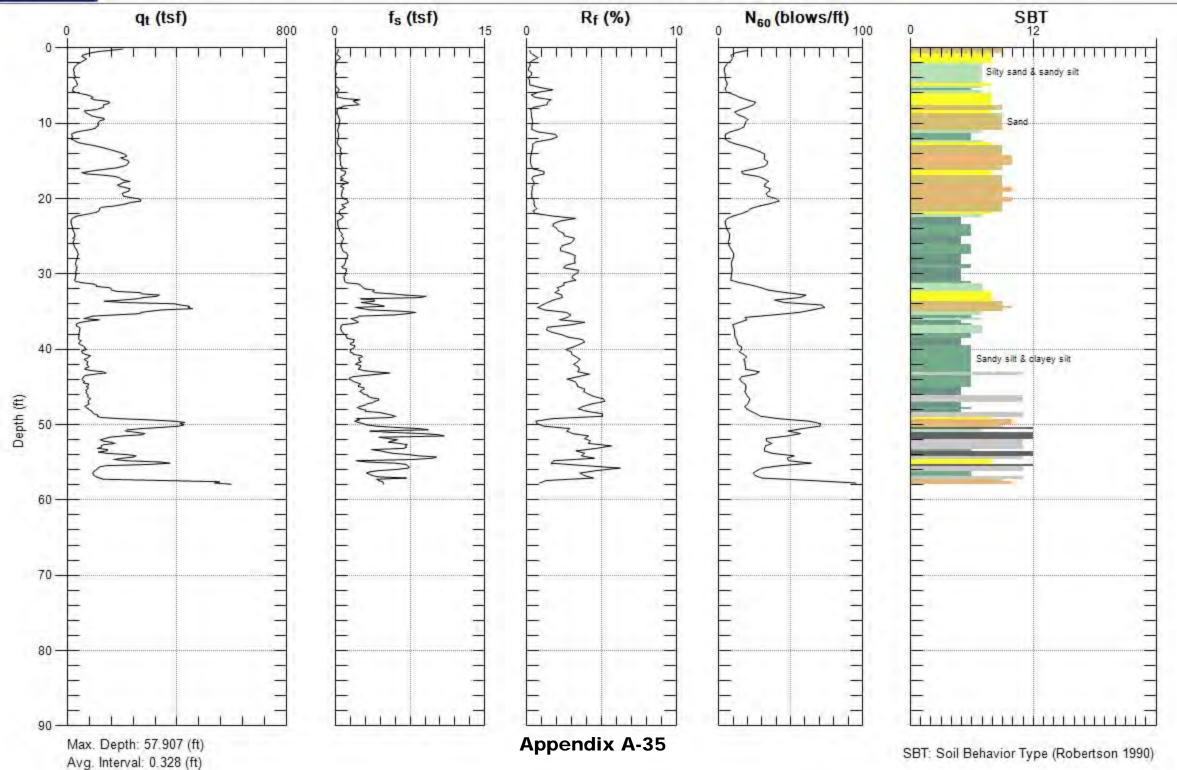
Sounding: CPT-17 Date: 8/2/2012 12:00





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

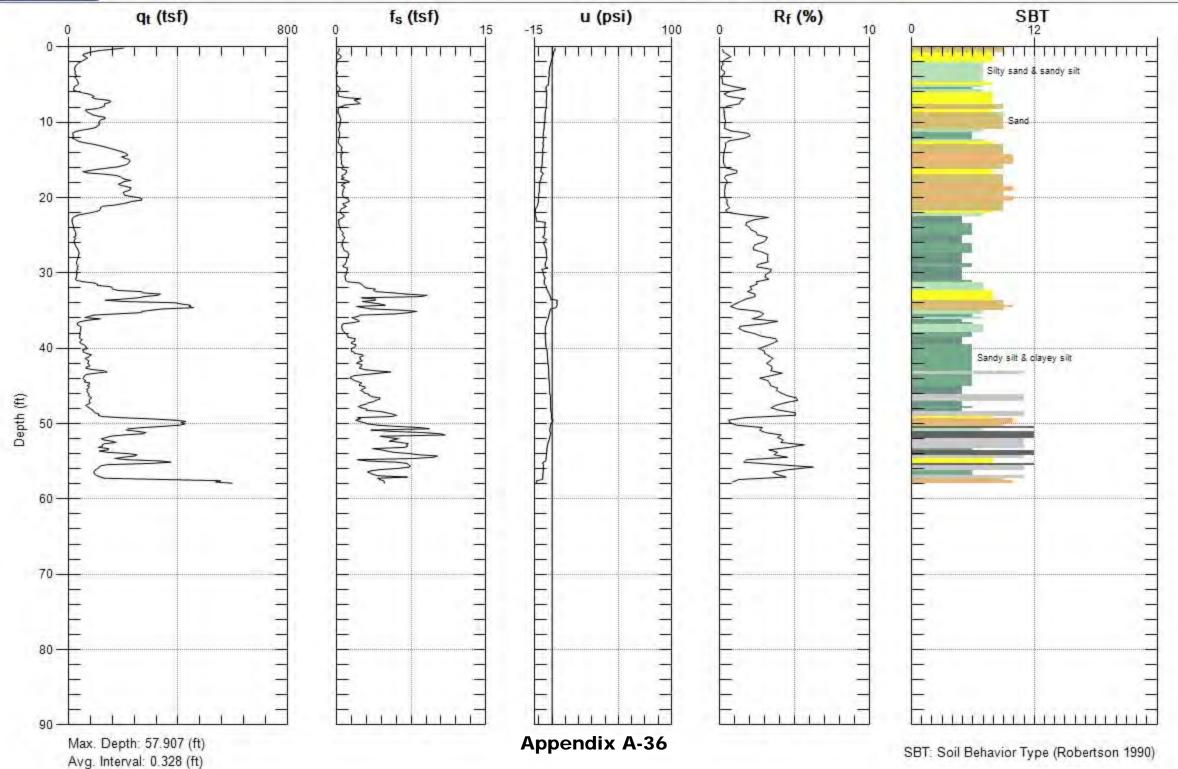
Sounding: CPT-18 Date: 8/2/2012 10:20





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

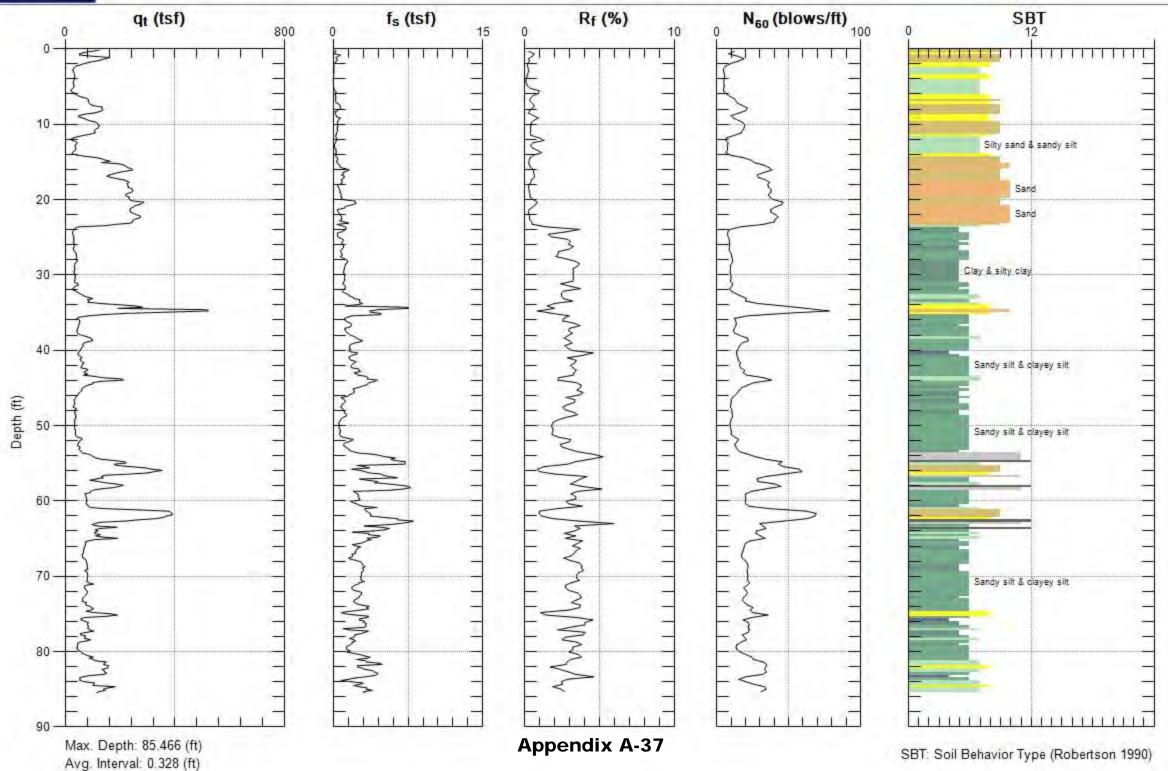
Sounding: CPT-18 Date: 8/2/2012 10:20





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

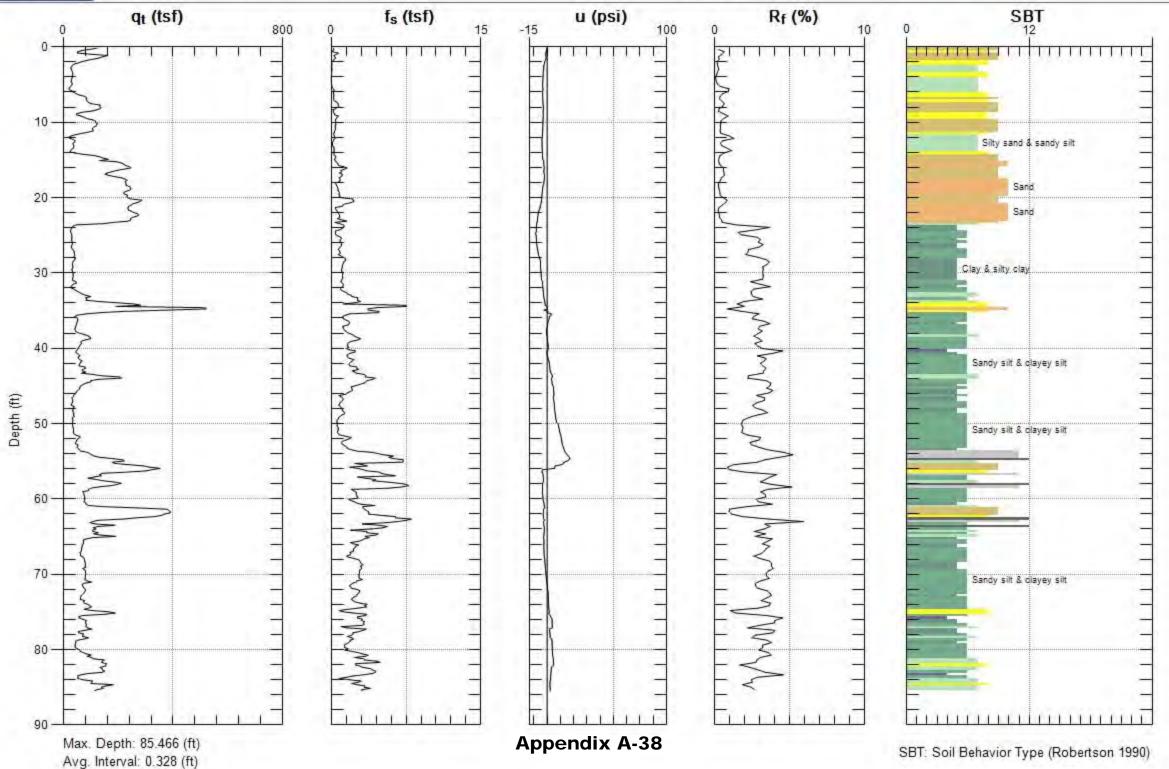
Sounding: CPT-19 Date: 8/2/2012 10:59





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

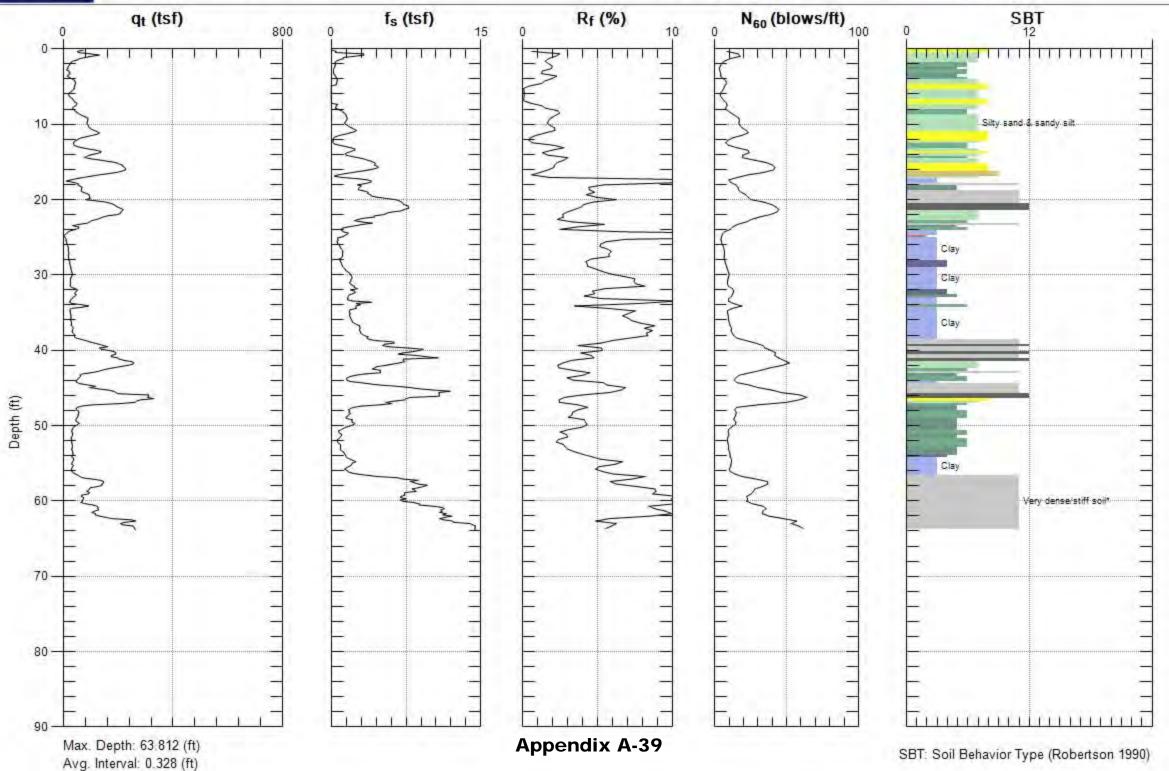
Sounding: CPT-19 Date: 8/2/2012 10:59





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

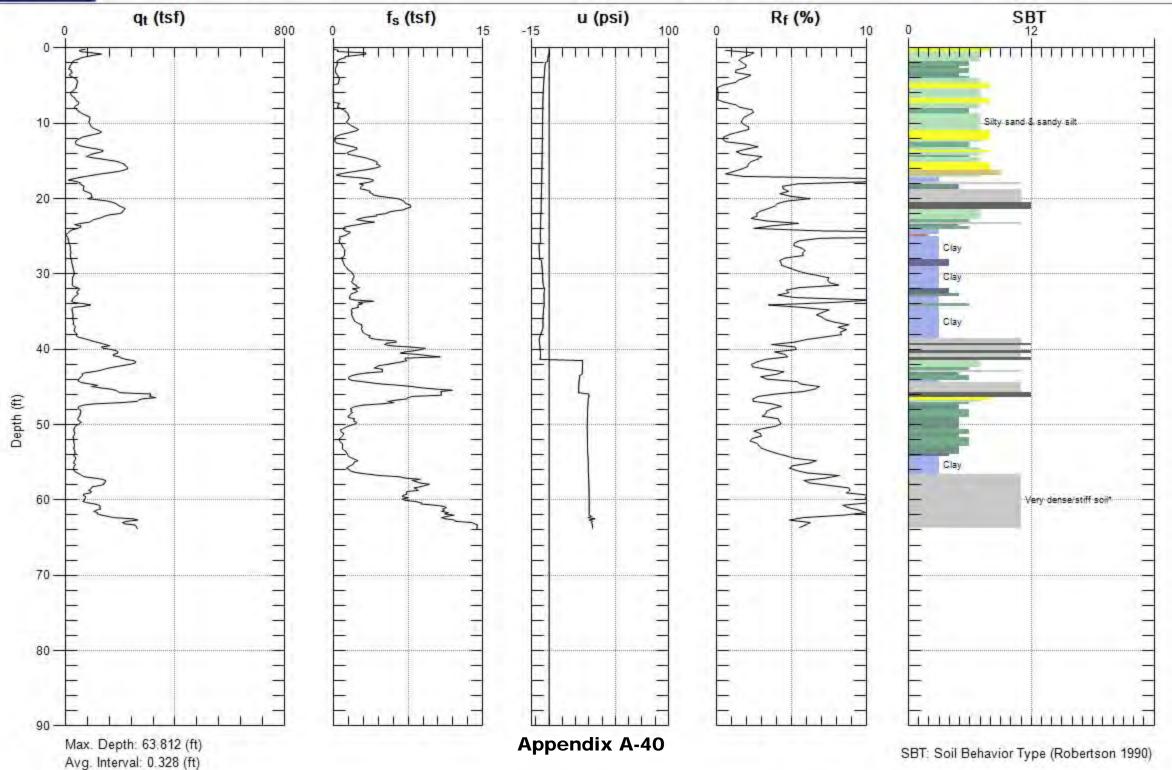
Sounding: CPT-20 Date: 8/2/2012 09:19





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

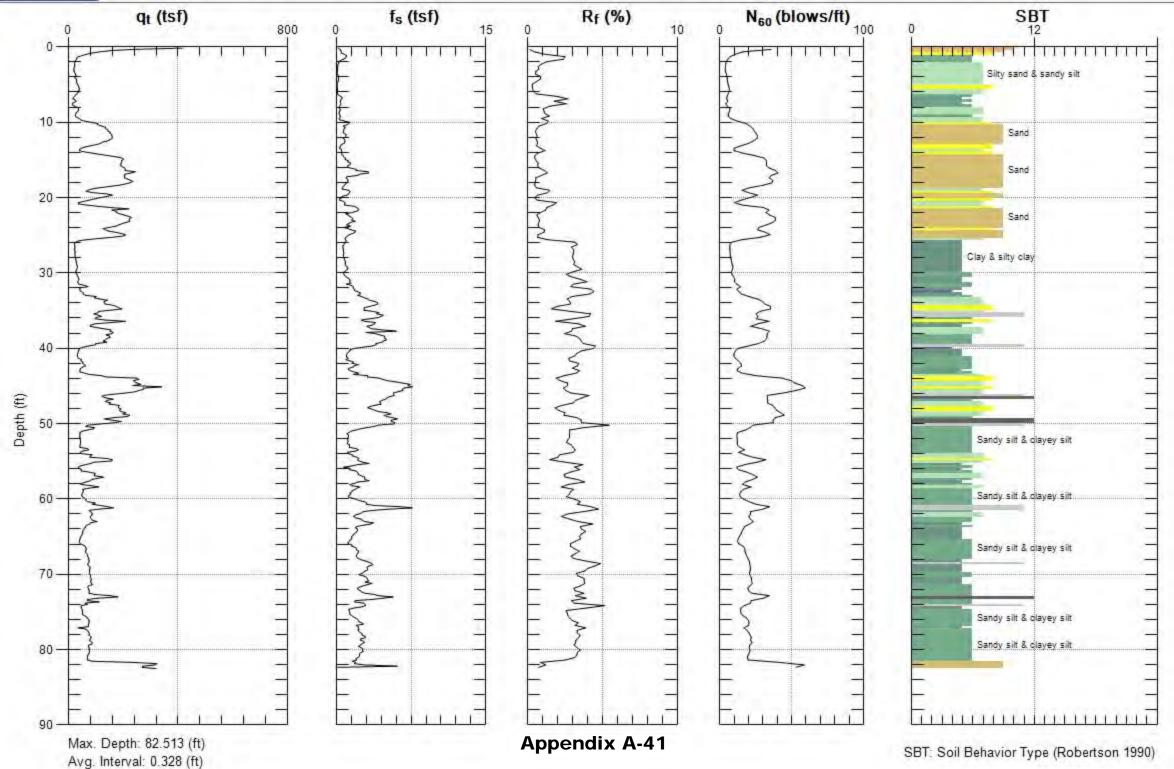
Sounding: CPT-20 Date: 8/2/2012 09:19





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

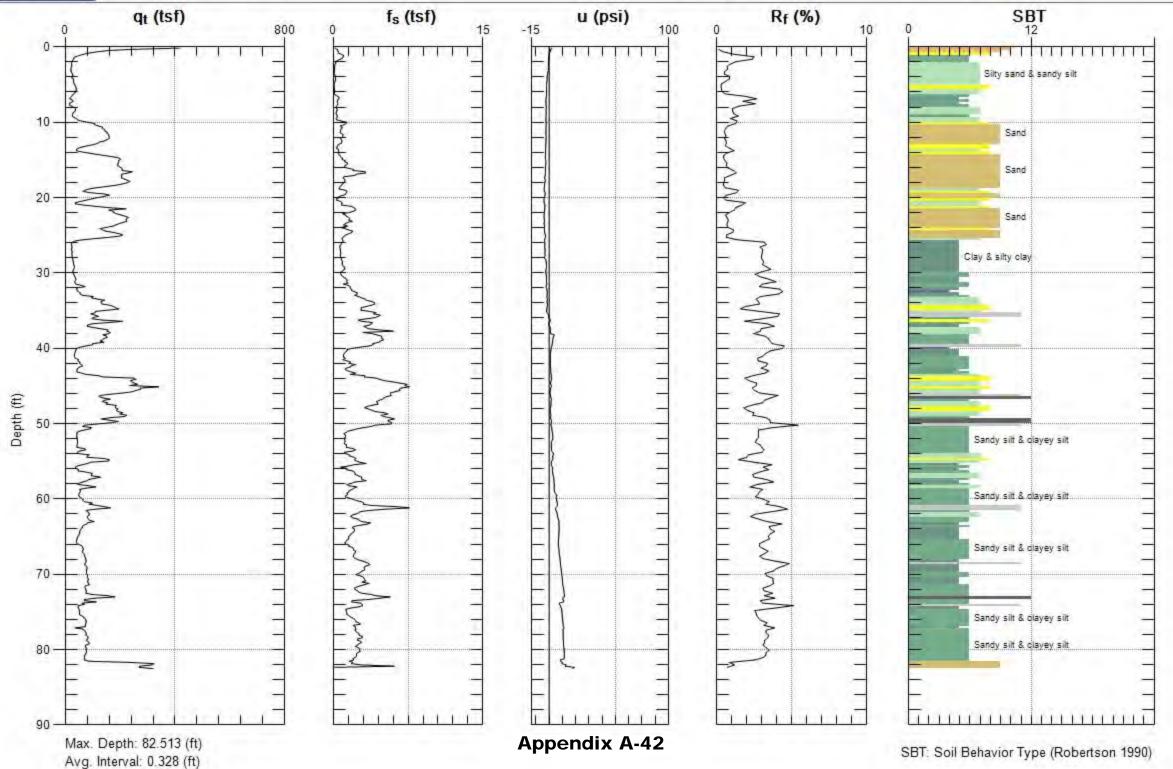
Sounding: CPT-21 Date: 8/2/2012 01:58





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

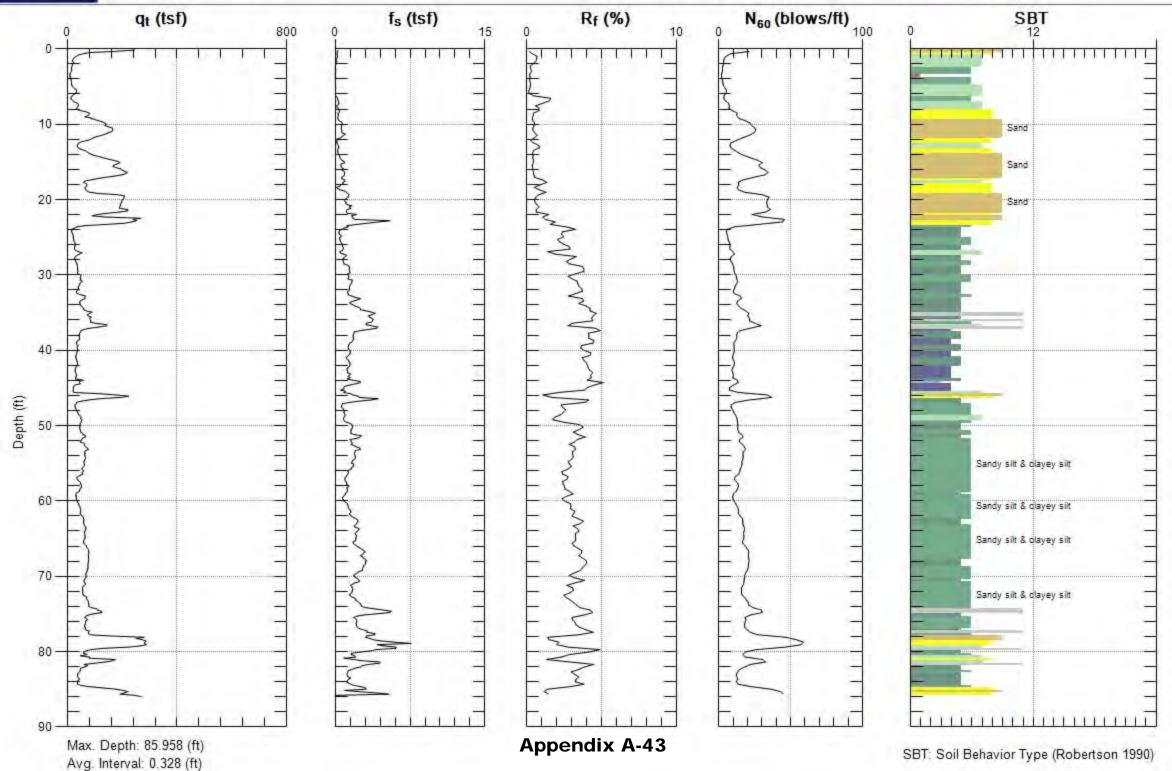
Sounding: CPT-21 Date: 8/2/2012 01:58





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

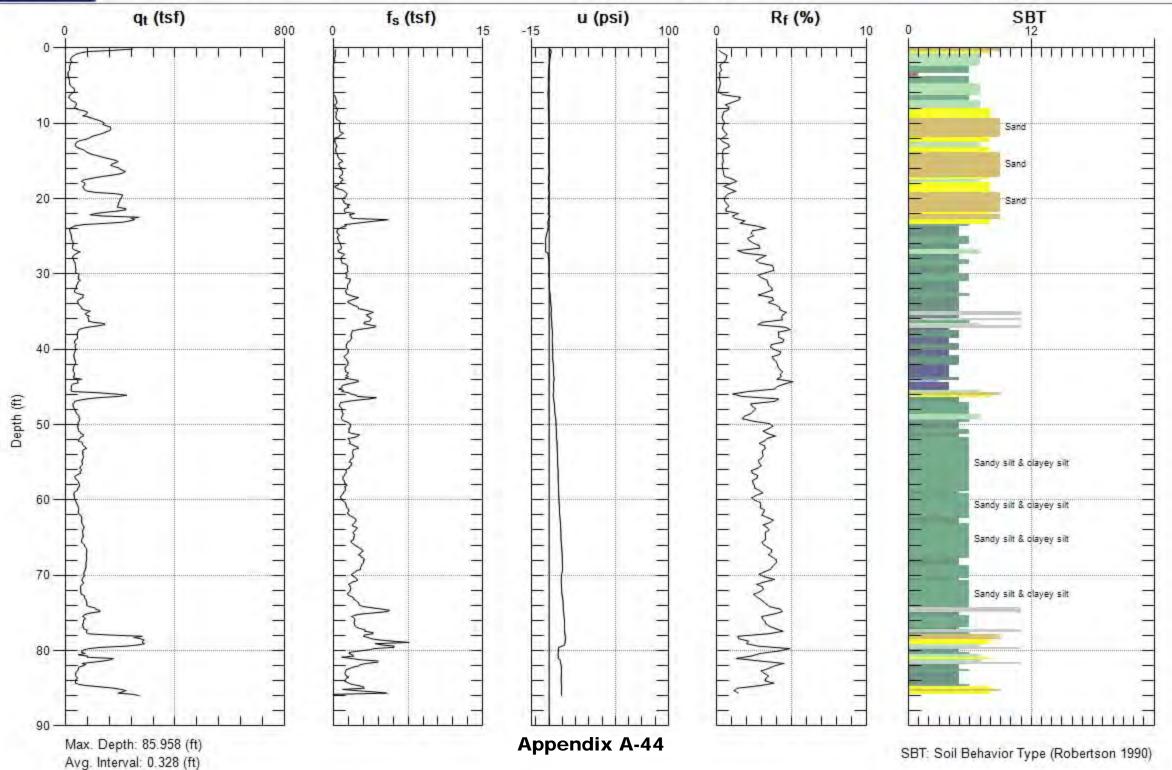
Sounding: CPT-22 Date: 8/2/2012 02:42





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

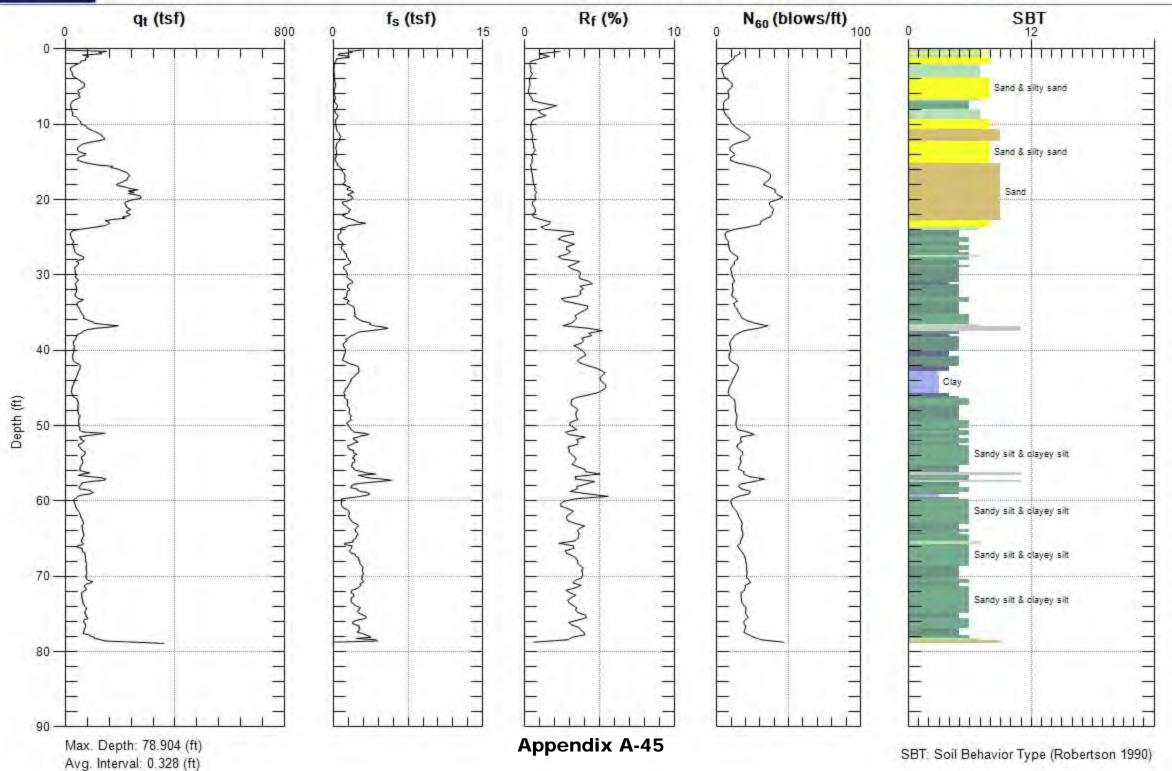
Sounding: CPT-22 Date: 8/2/2012 02:42





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

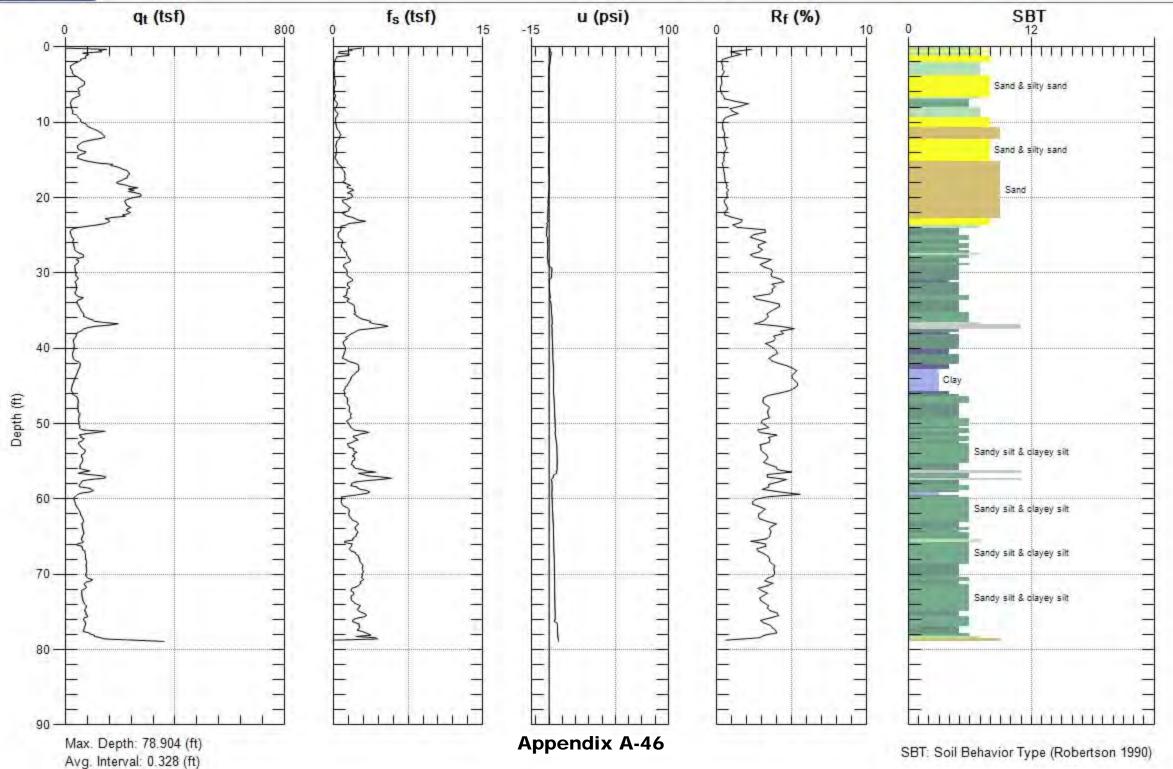
Sounding: CPT-23 Date: 8/2/2012 03:27





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

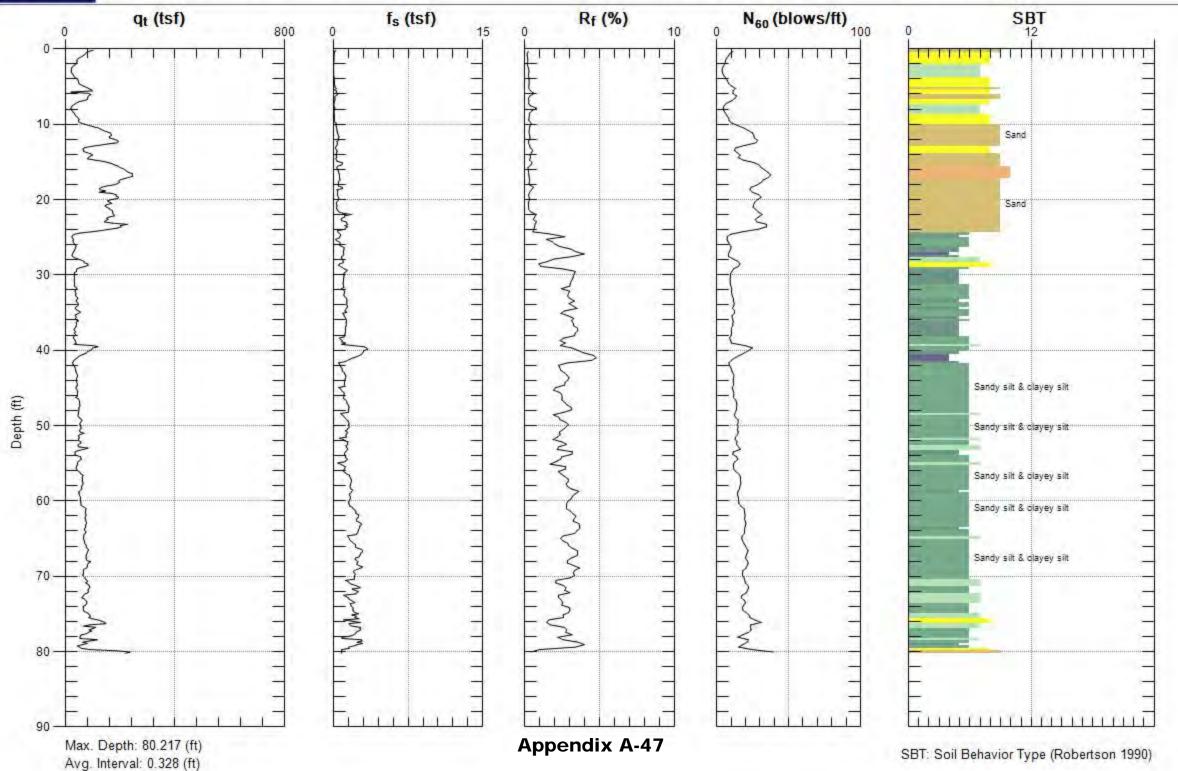
Sounding: CPT-23 Date: 8/2/2012 03:27





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

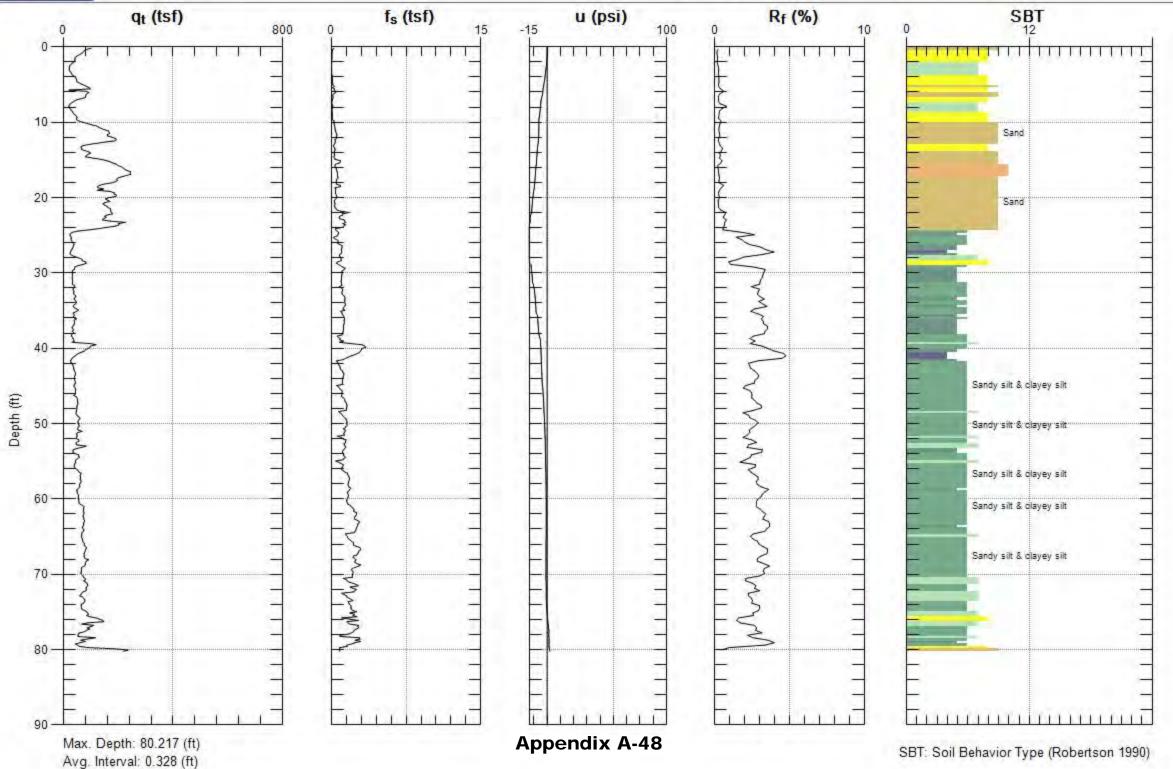
Sounding: CPT-24 Date: 8/3/2012 07:54





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

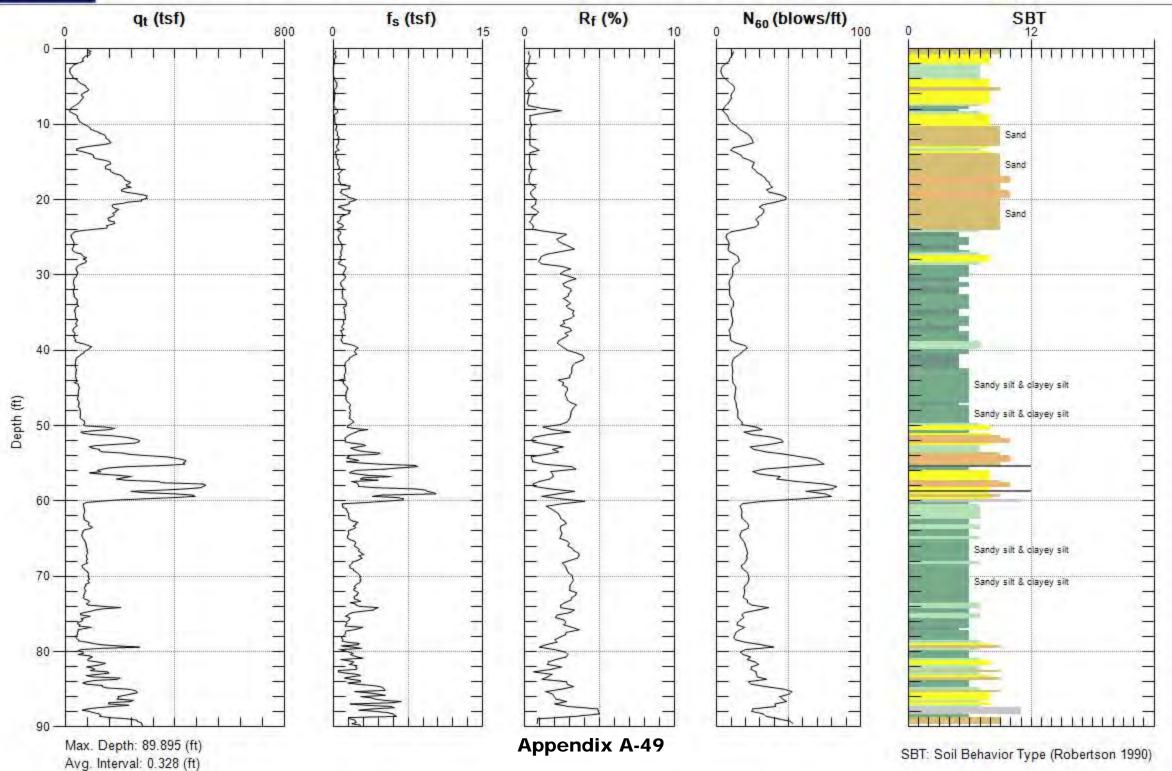
Sounding: CPT-24 Date: 8/3/2012 07:54





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

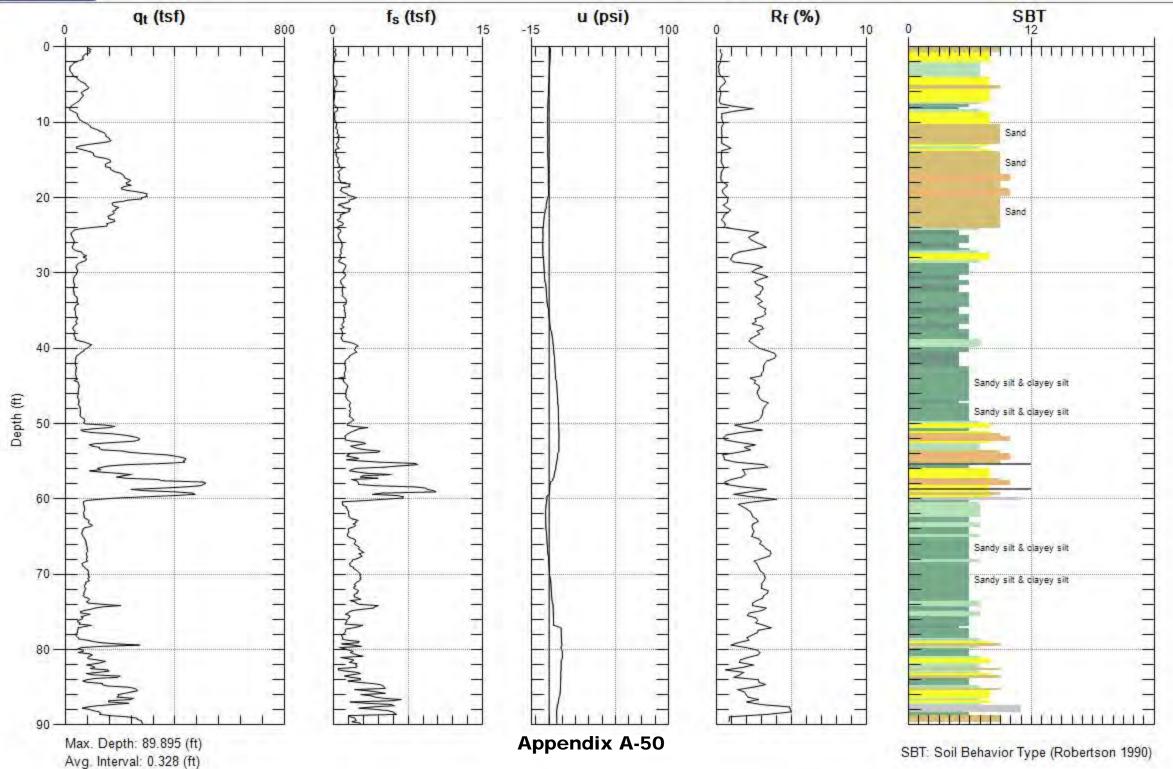
Sounding: CPT-25 Date: 8/3/2012 08:42





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

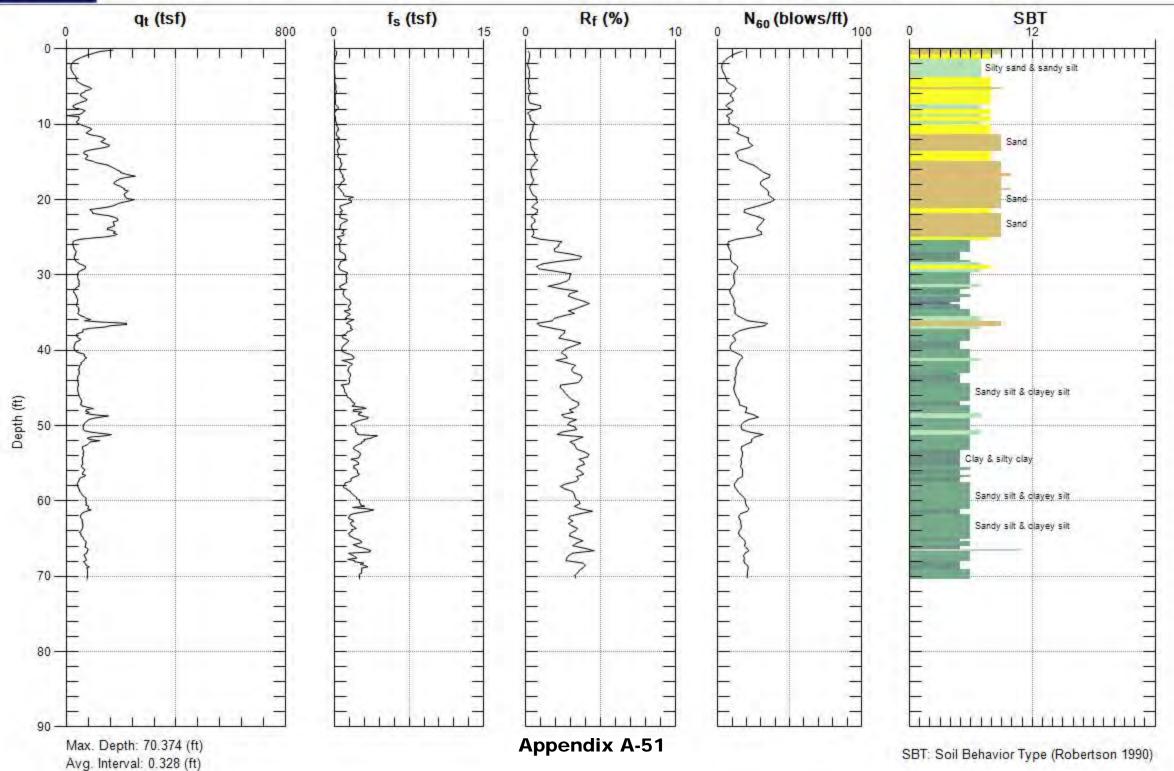
Sounding: CPT-25 Date: 8/3/2012 08:42





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

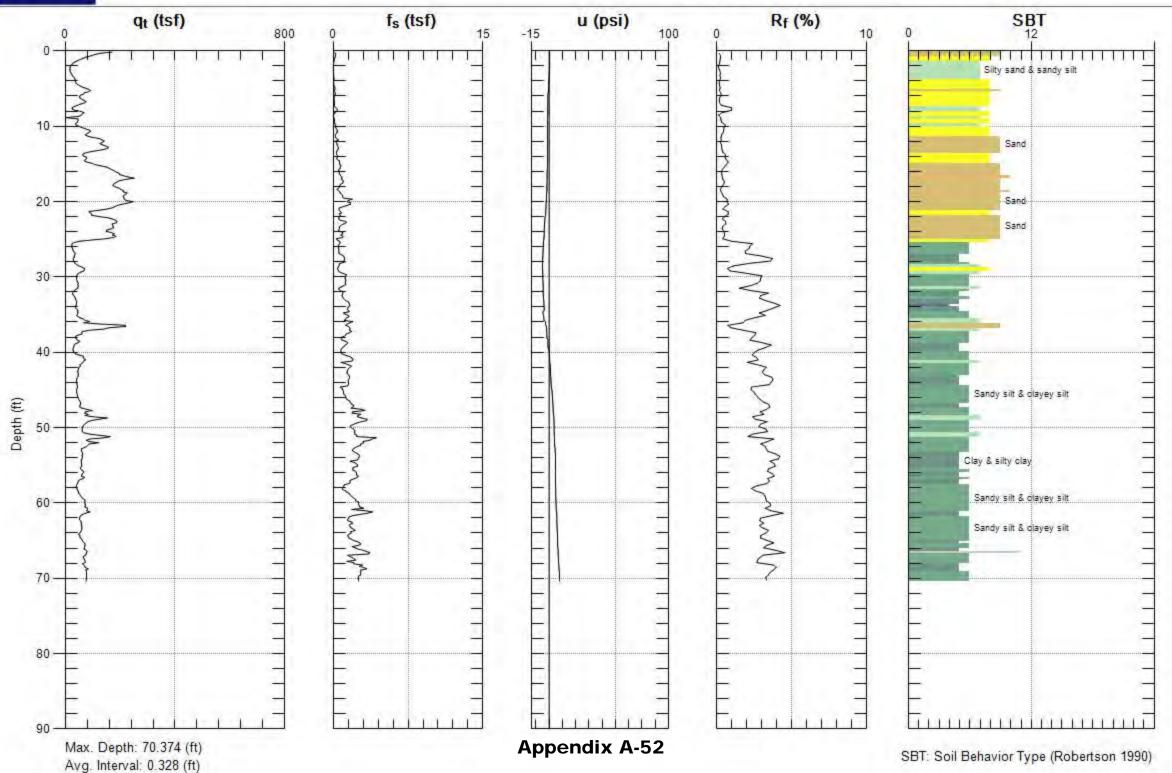
Sounding: CPT-26 Date: 8/3/2012 09:36





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

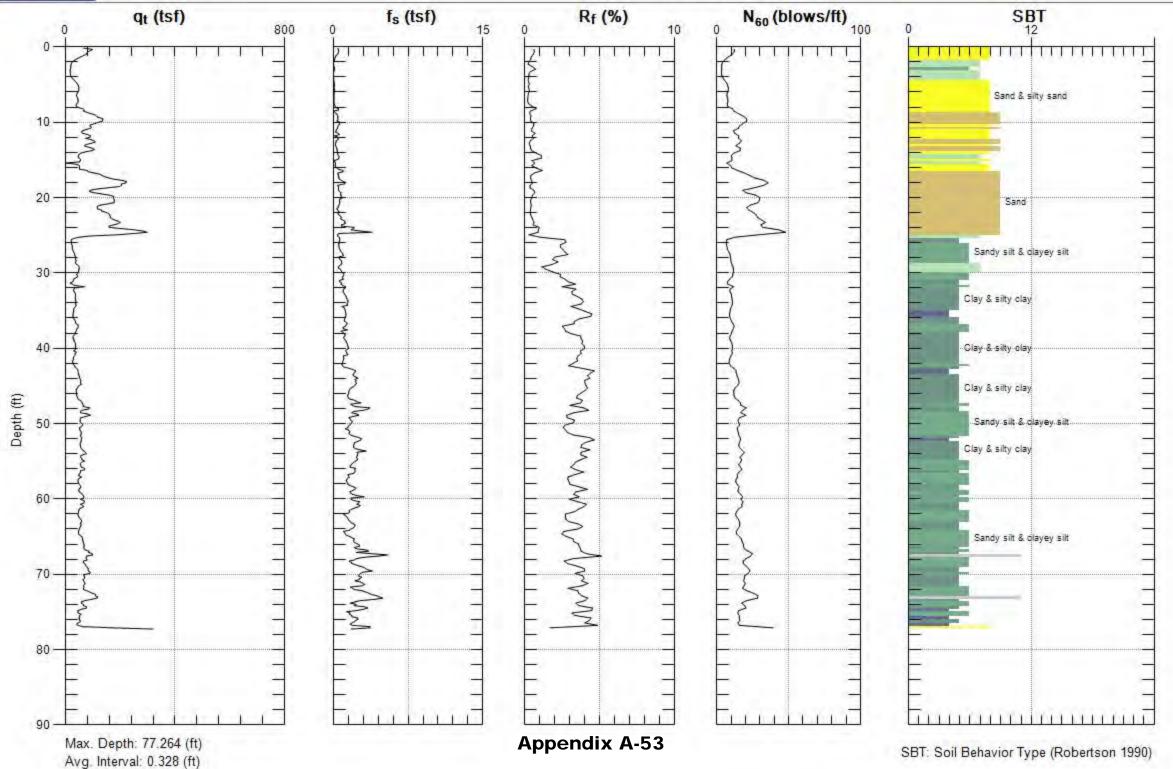
Sounding: CPT-26 Date: 8/3/2012 09:36





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

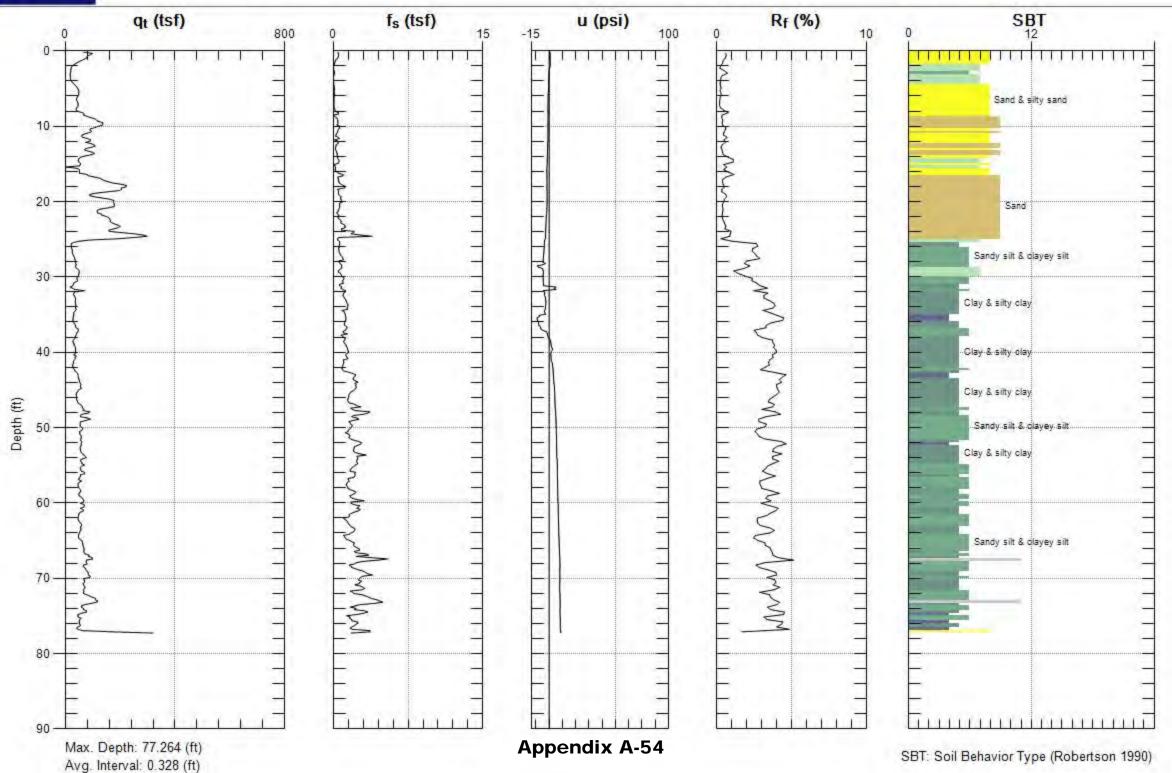
Sounding: CPT-27 Date: 8/3/2012 10:12





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

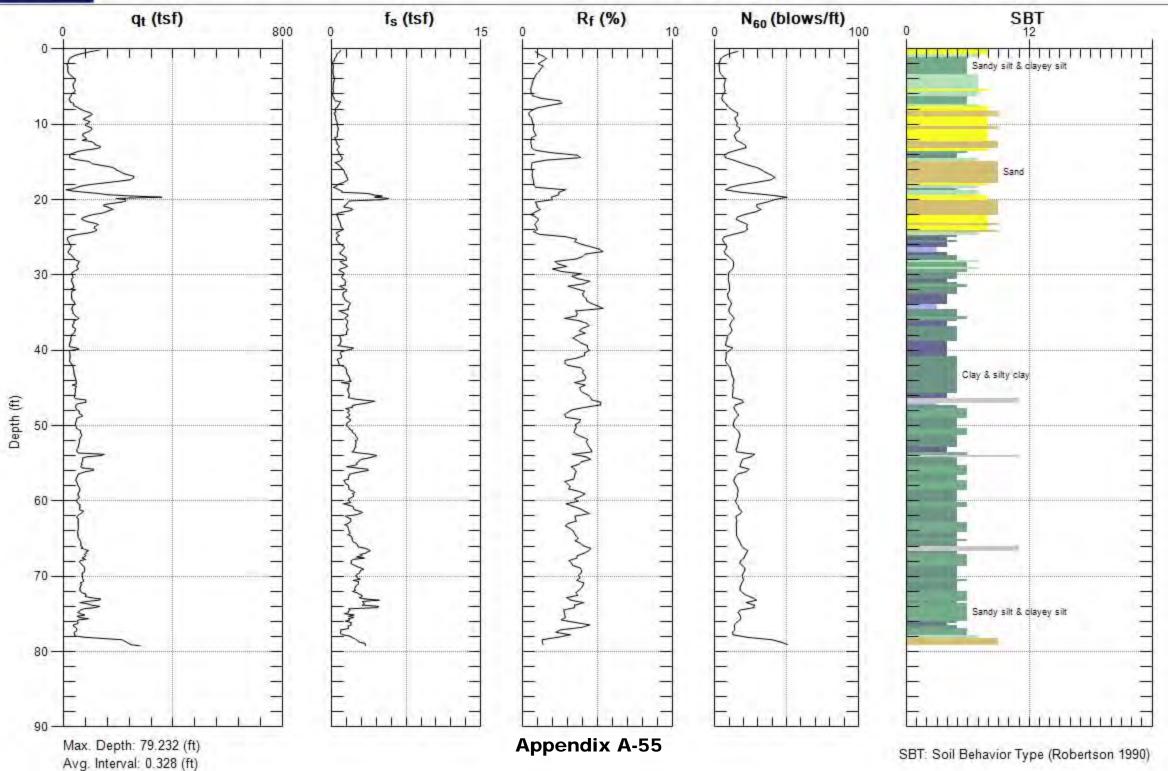
Sounding: CPT-27 Date: 8/3/2012 10:12





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

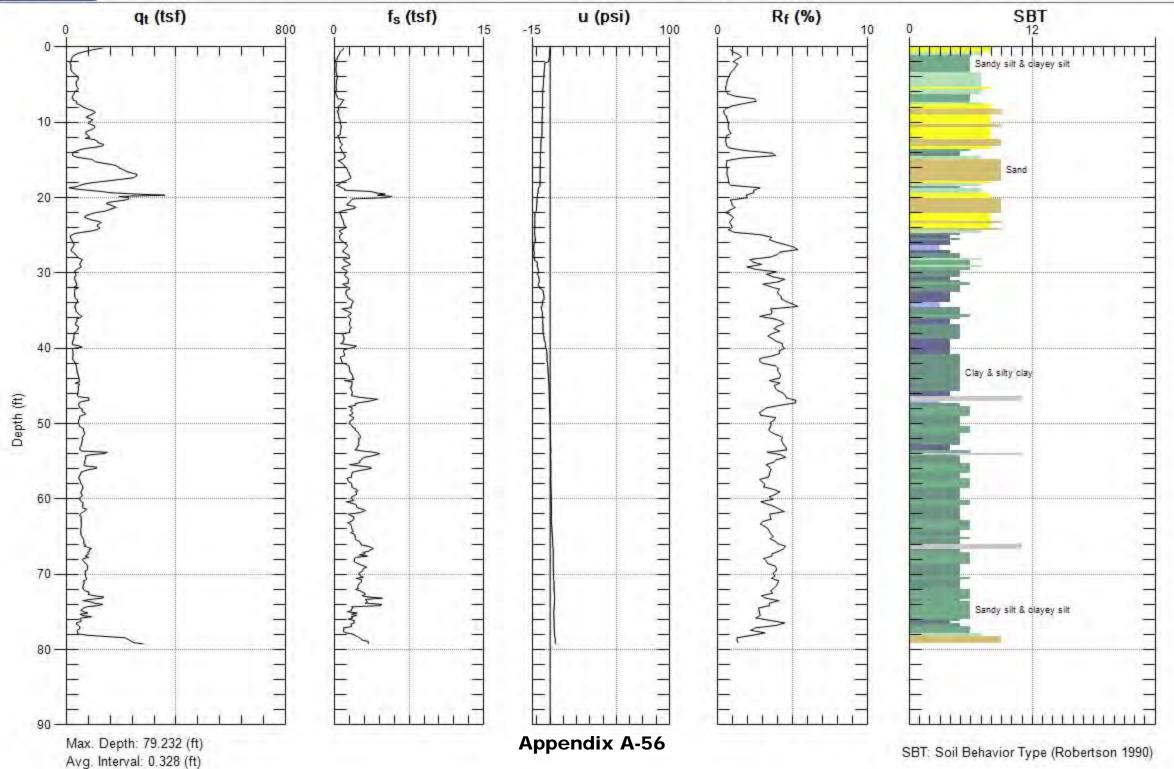
Sounding: CPT-28 Date: 8/2/2012 03:29





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

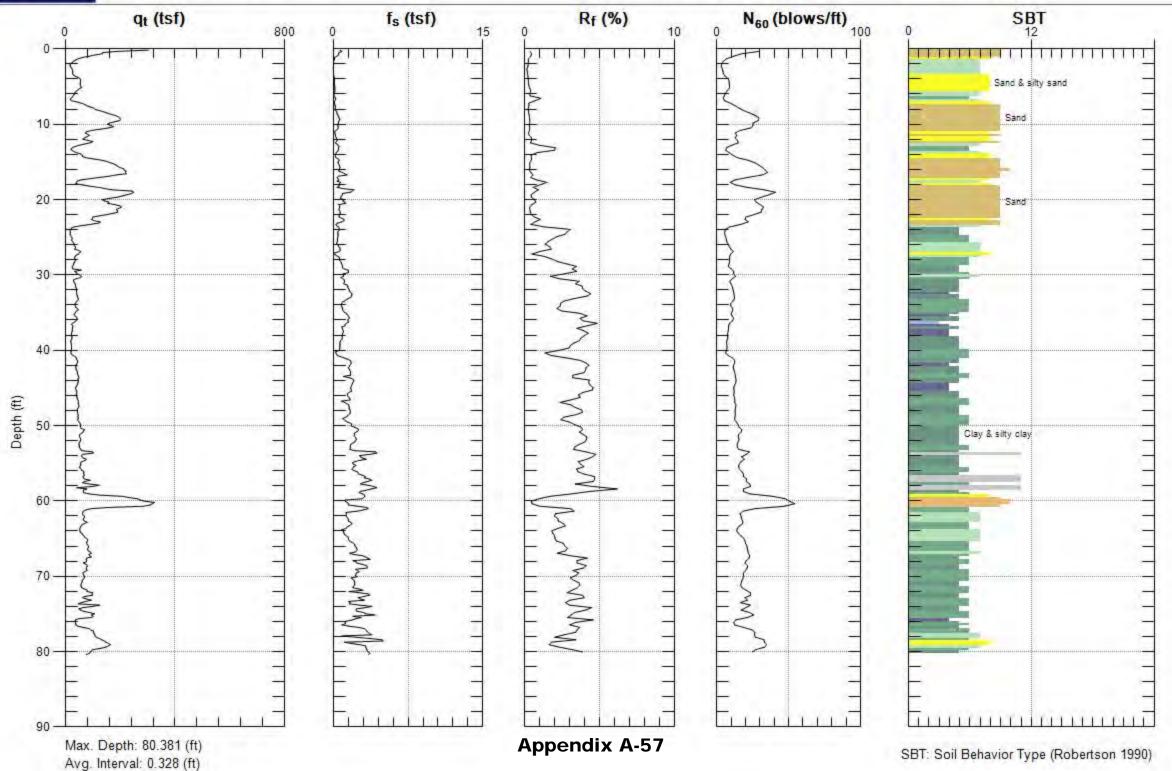
Sounding: CPT-28 Date: 8/2/2012 03:29





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

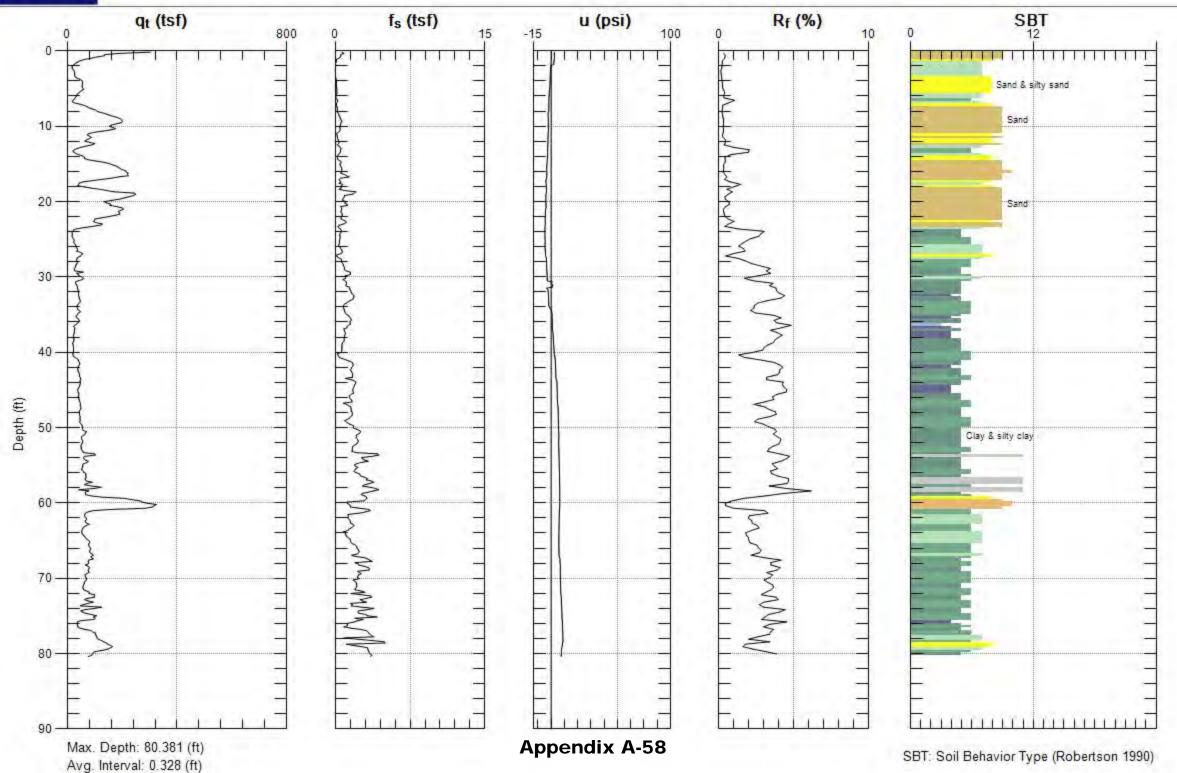
Sounding: CPT-29 Date: 8/3/2012 11:00





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

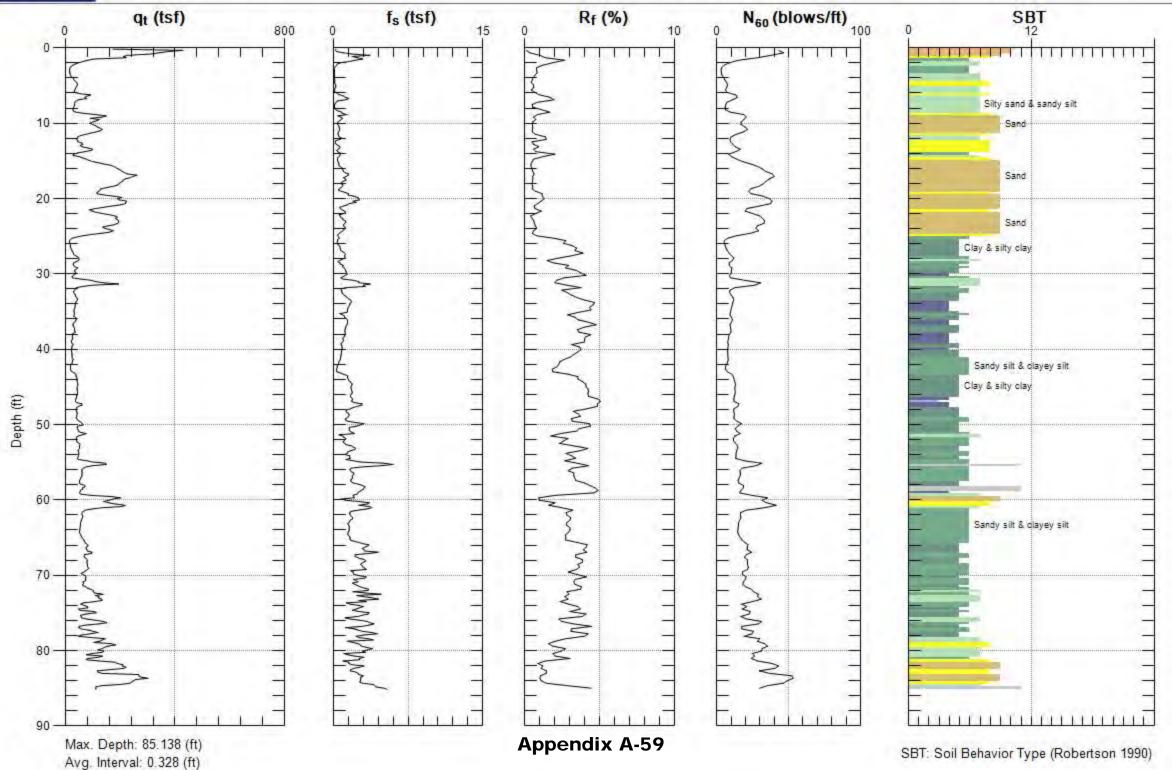
Sounding: CPT-29 Date: 8/3/2012 11:00





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

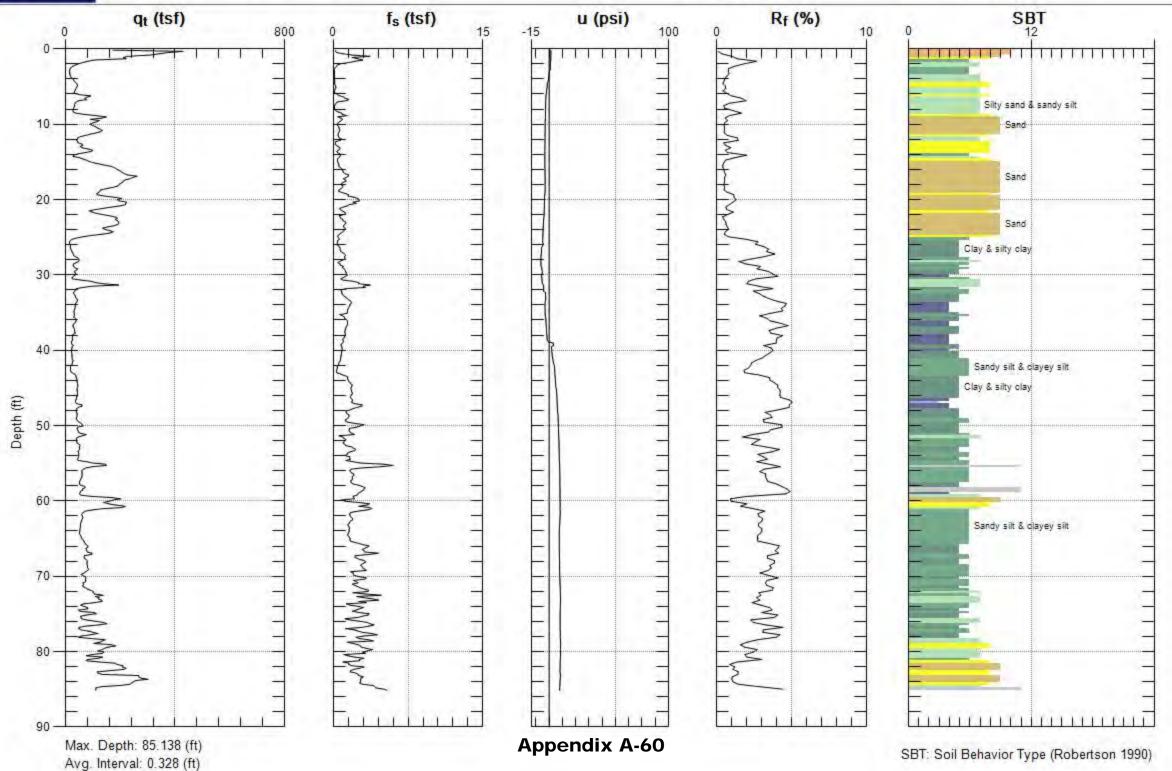
Sounding: CPT-30 Date: 8/3/2012 11:49





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

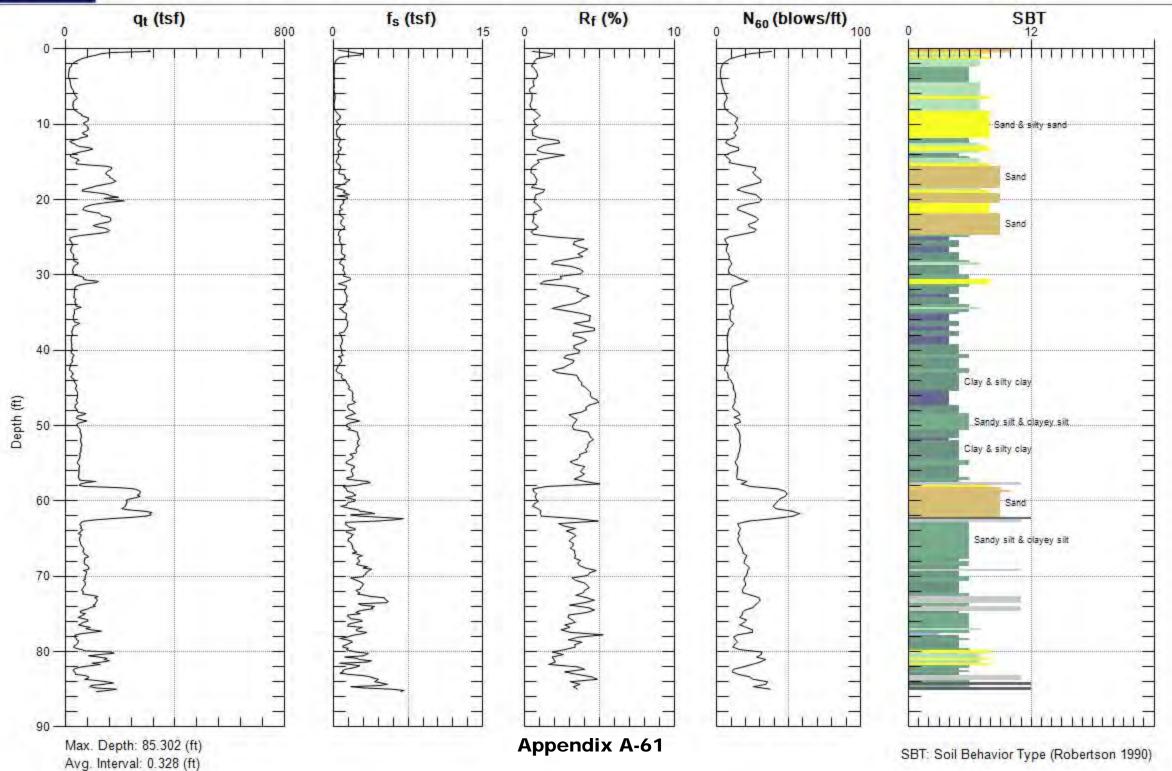
Sounding: CPT-30 Date: 8/3/2012 11:49





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

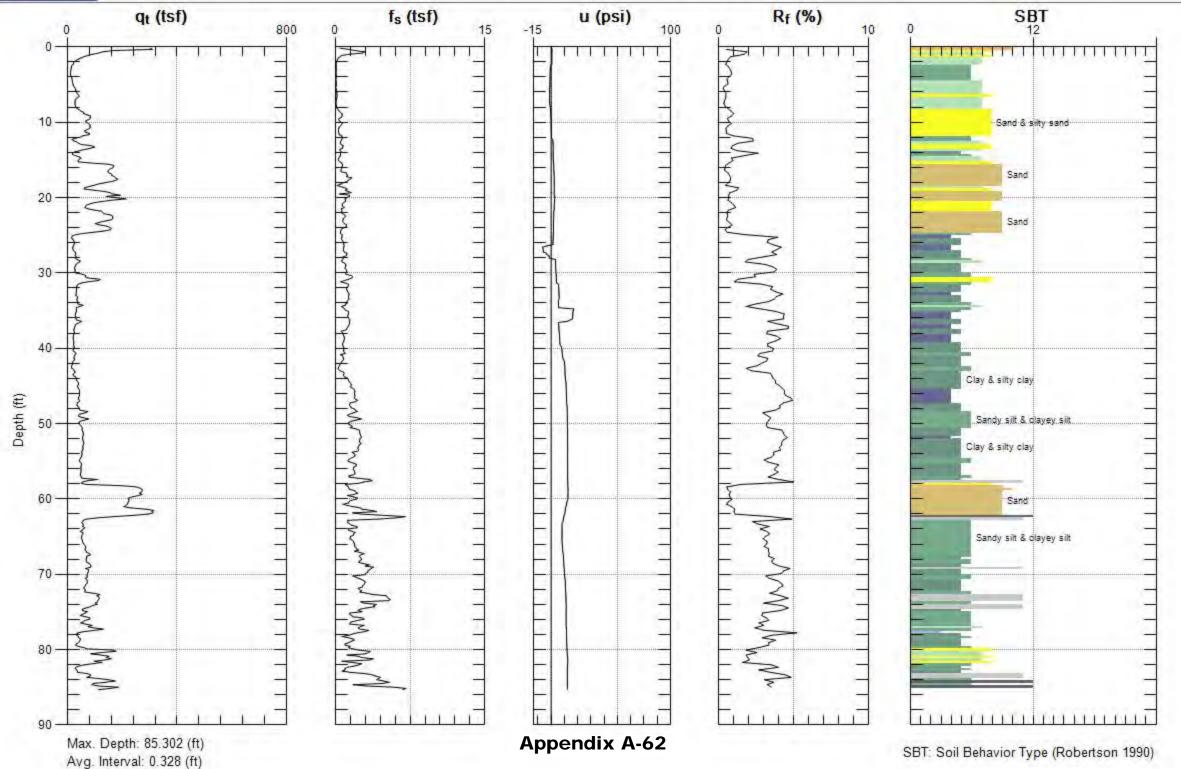
Sounding: CPT-31 Date: 8/3/2012 12:31





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

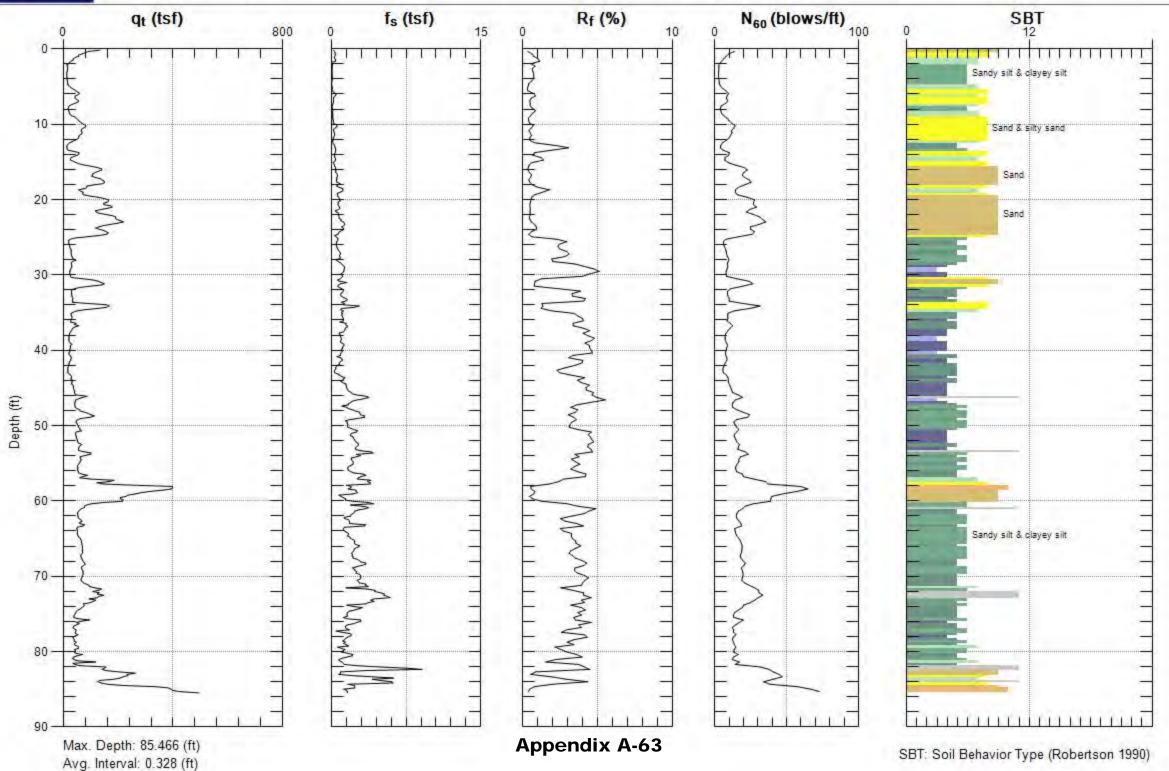
Sounding: CPT-31 Date: 8/3/2012 12:31





Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

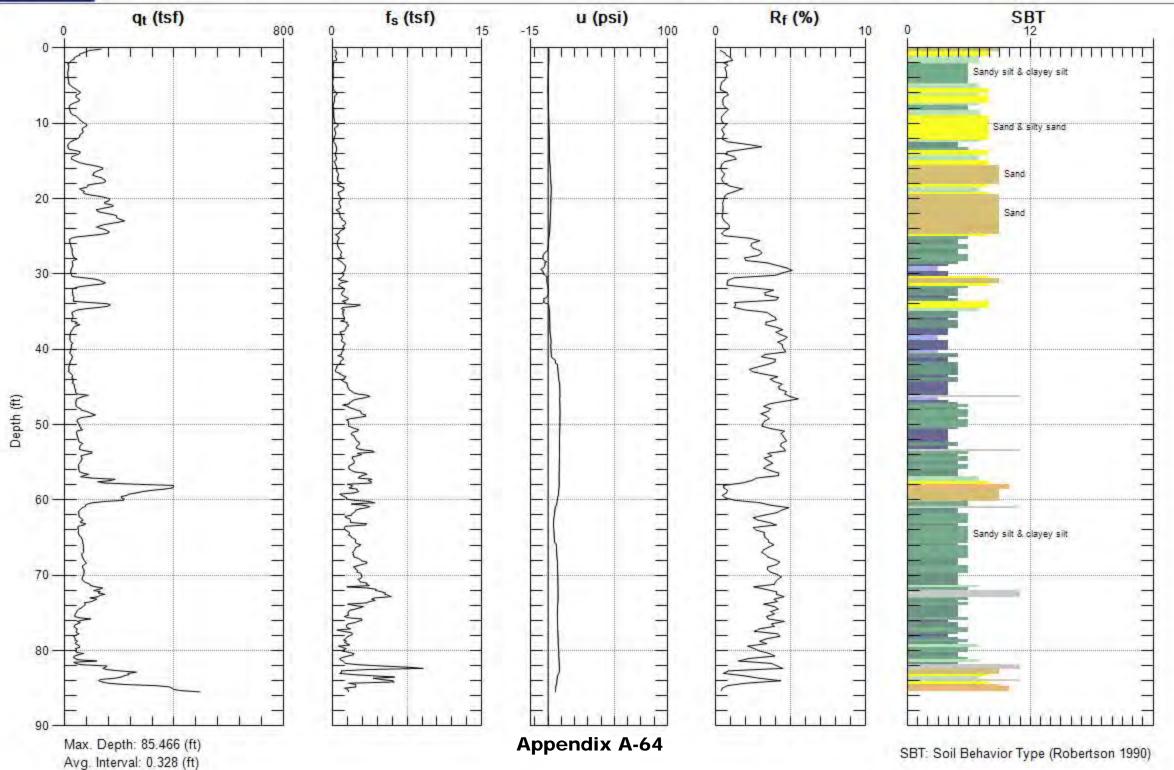
Sounding: CPT-32 Date: 8/3/2012 01:09





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-32 Date: 8/3/2012 01:09



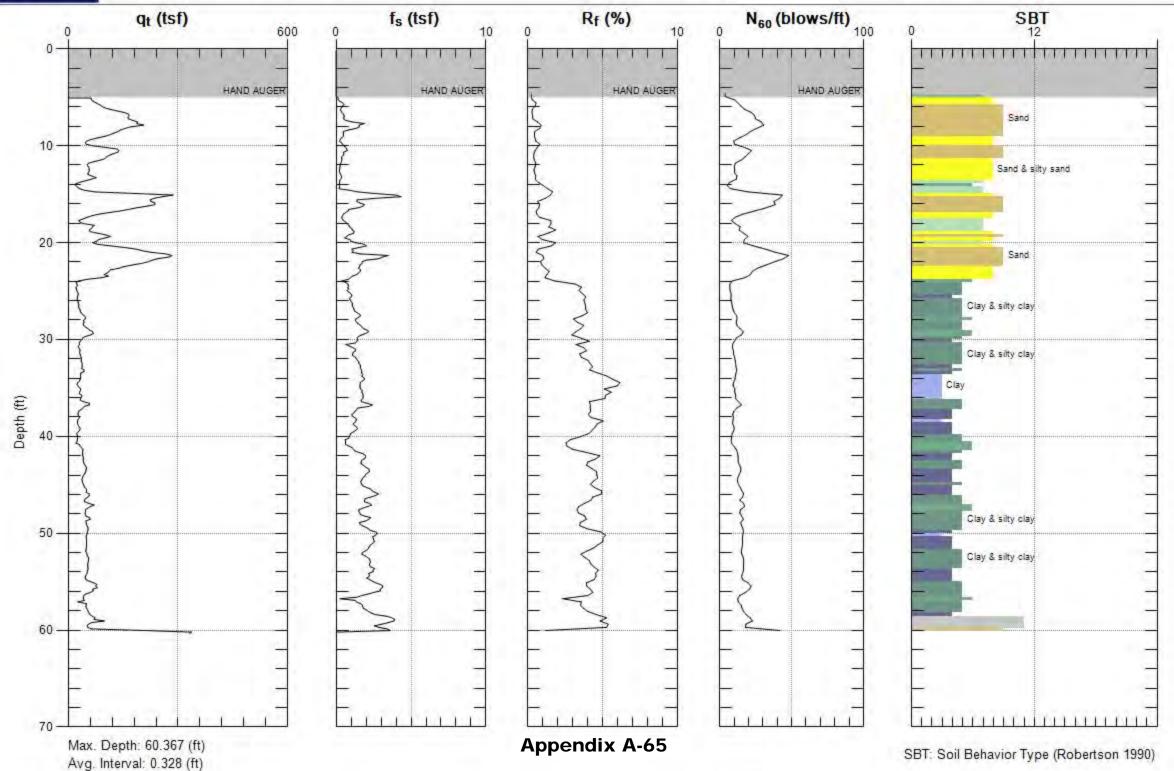


Site: PARKING LOT S

Sounding: CPT-33

Engineer: S.KOLTHOFF

Date: 8/14/2014 11:56



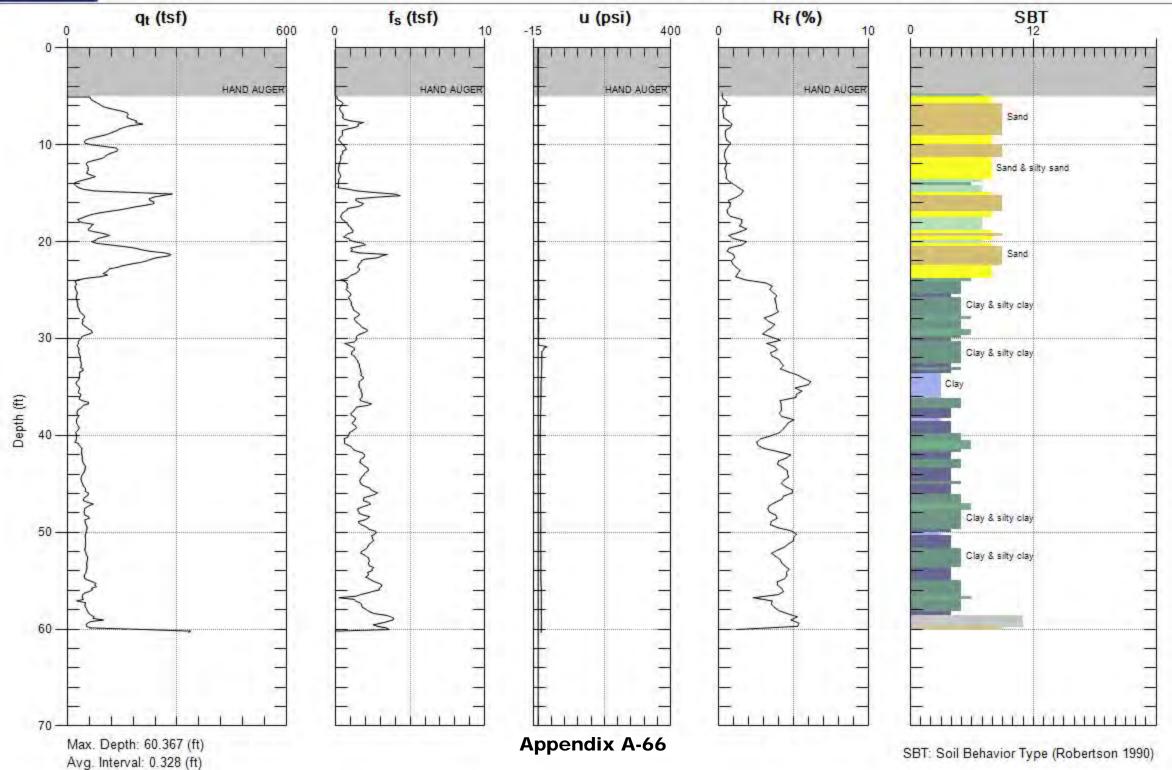


Site: PARKING LOT S

Sounding: CPT-33

Engineer: S.KOLTHOFF

Date: 8/14/2014 11:56



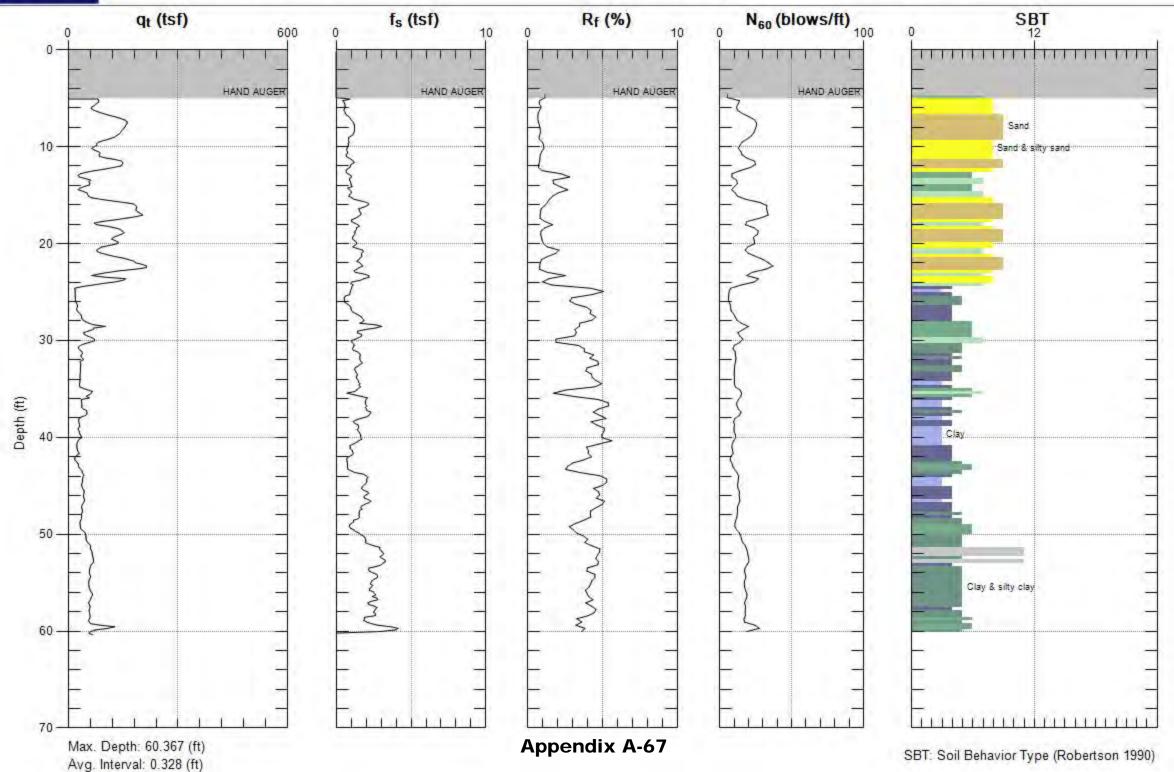


Site: PARKING LOT S

Sounding: CPT-34

Engineer: S.KOLTHOFF

Date: 8/14/2014 10:19



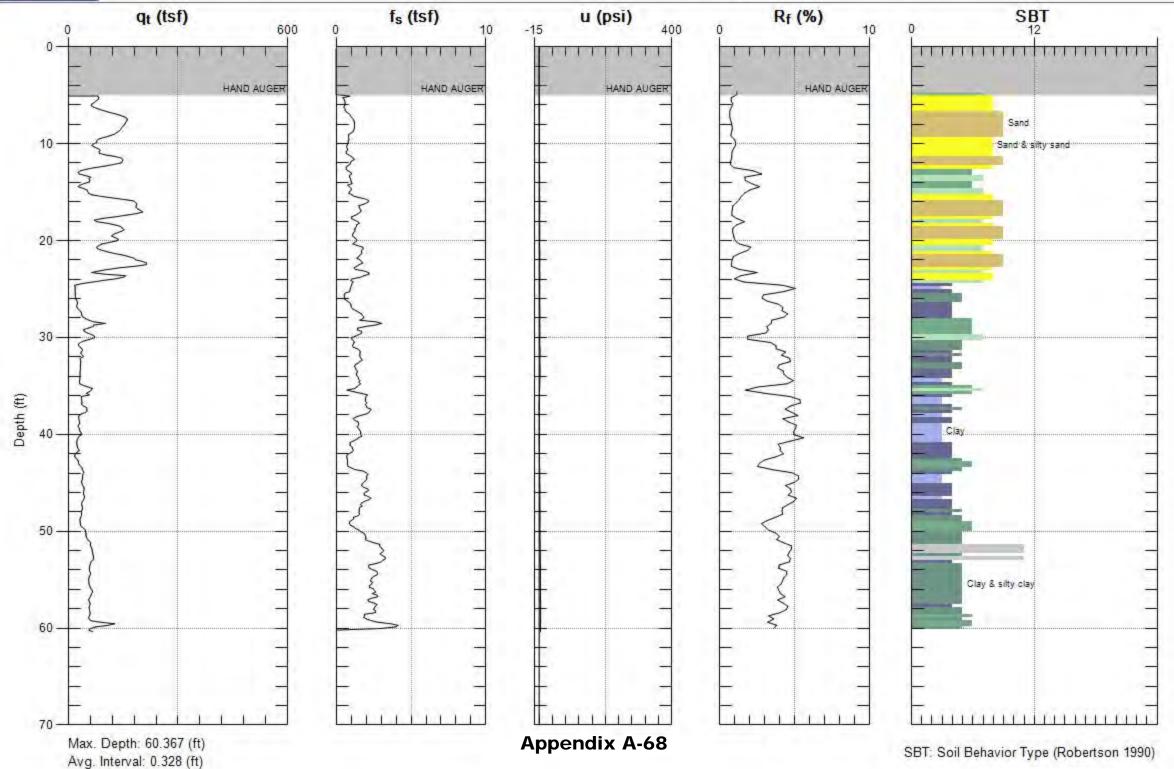


Site: PARKING LOT S

Sounding: CPT-34

Engineer: S.KOLTHOFF

Date: 8/14/2014 10:19



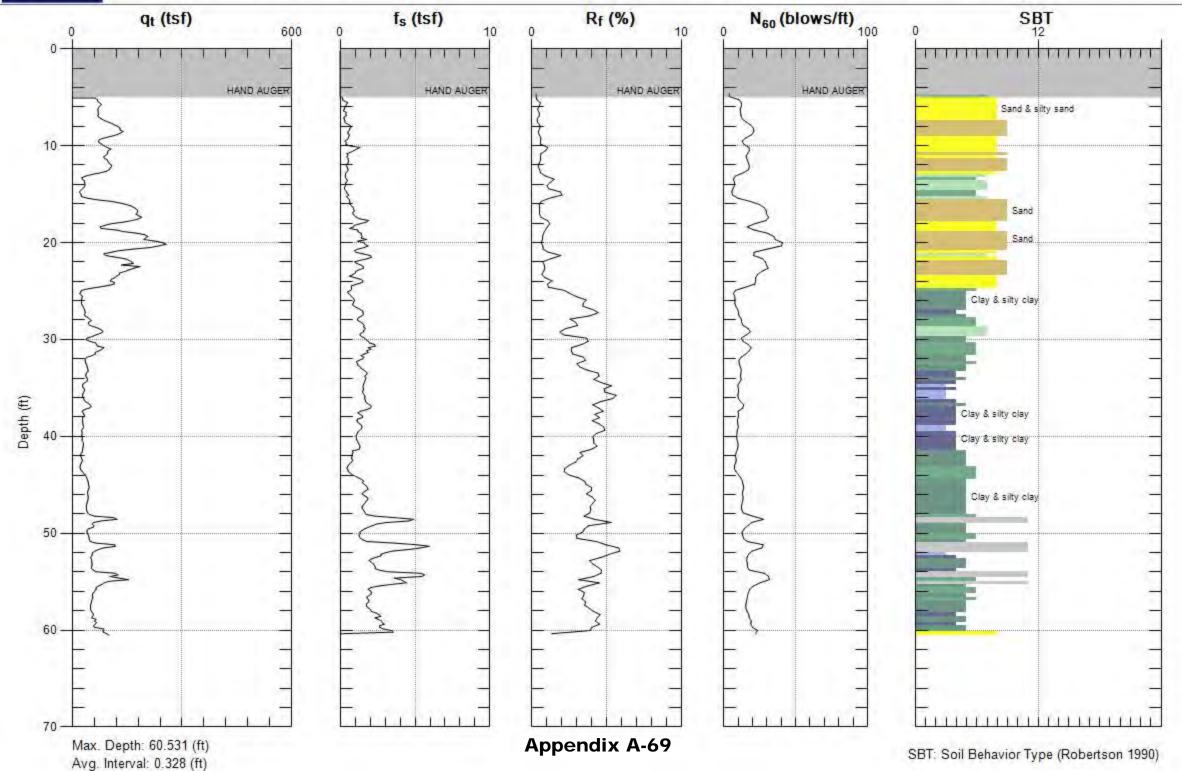


Site: PARKING LOT S

Sounding: CPT-35

Engineer: S.KOLTHOFF

Date: 8/14/2014 09:32



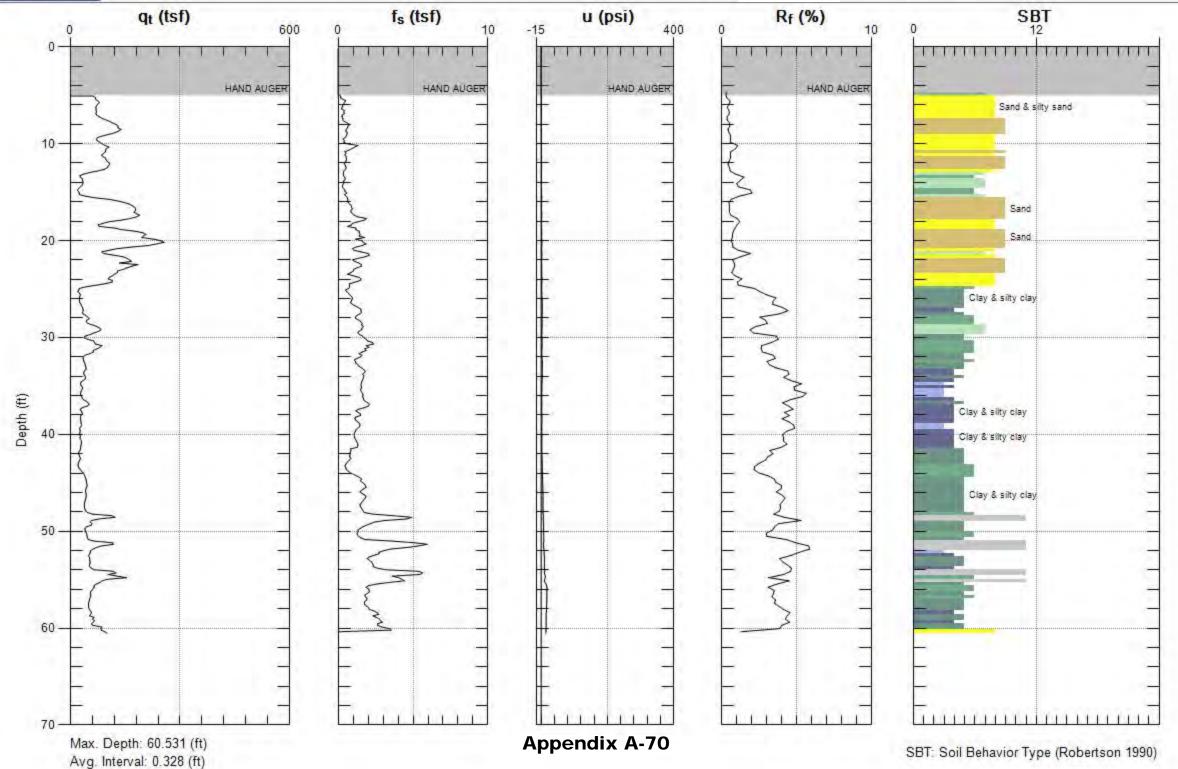


Site: PARKING LOT S

Sounding: CPT-35

Engineer: S.KOLTHOFF

Date: 8/14/2014 09:32



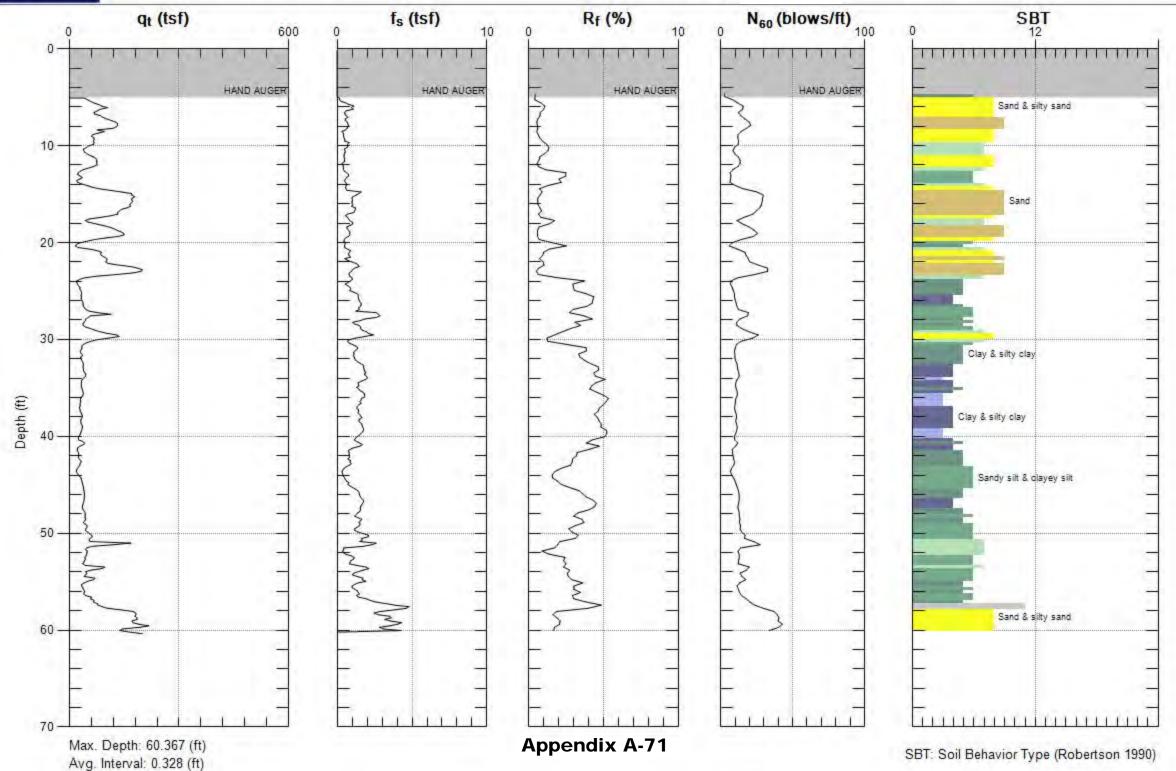


Site: PARKING LOT S

Sounding: CPT-36

Engineer: S.KOLTHOFF

Date: 8/14/2014 08:43

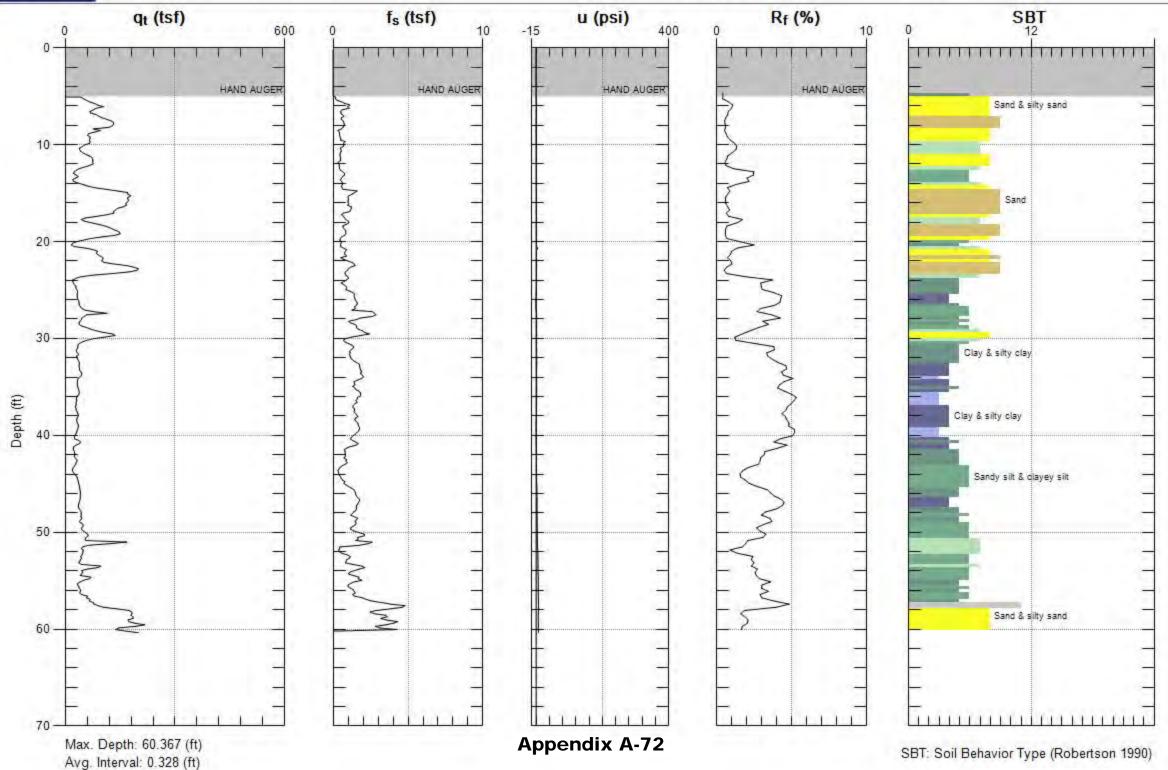




Site: PARKING LOT S Sounding: CPT-36

Engineer: S.KOLTHOFF

Date: 8/14/2014 08:43



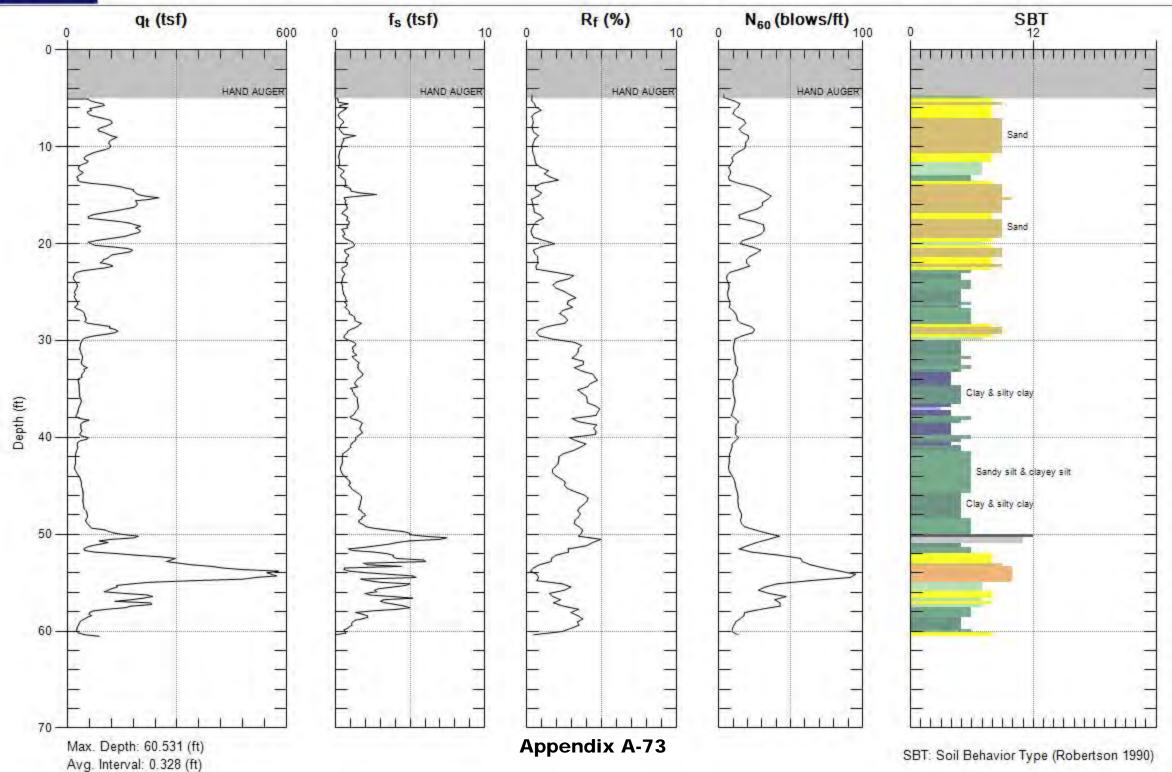


Site: PARKING LOT S

Sounding: CPT-37

Engineer: S.KOLTHOFF

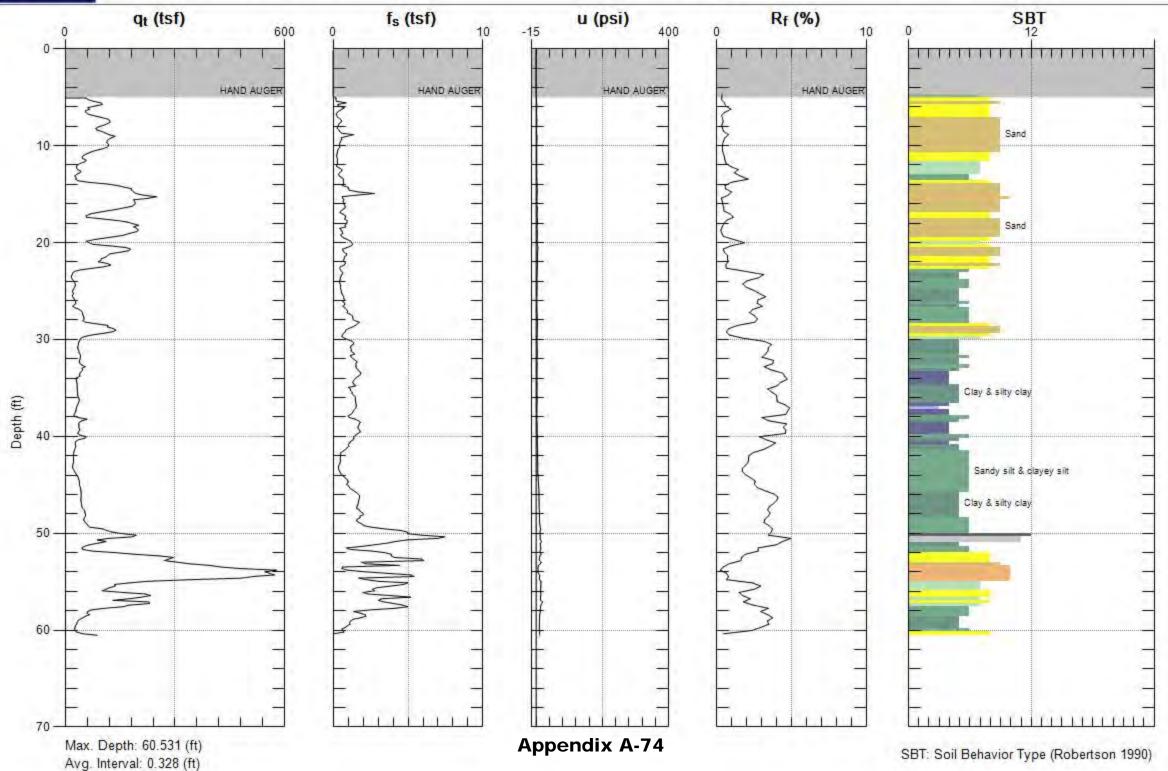
Date: 8/14/2014 07:45





Site: PARKING LOT S Sounding: CPT-37 Engineer: S.KOLTHOFF

Date: 8/14/2014 07:45



	G (ORI	Ε	ВО	RIN	G	PROJECT NA Millenium Tr	ench W Argyle Ave	PROJECT LA-1191A LOGGED				ORING B-1 HEET N	0.
	itol Pa)					4/17/2014 DRILL BIT S		ТО	CHECKED	вү	то		PTH DRILLE
	w Ste								8"			SK INCLINATION)N F	١,	et) /FRTIC/	59 AL/BEARING
CME	. L RIC : 85	ilΥl	'E						ABC Drilling	(INOLINATIO		Degree		AL/BLAKIIIO
	AREN			NDWA	ΓER	DEP	ТН	ı				APPROXIM	ATE	SURF	ACE EL	EVATION
	IMEN		i cu									(feet)		01 CKFII		
												Soil Cutting		J. (1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	_	
	(#)			ROC	K	CORE	.						ည	>		
DEPTH (ft)	ELEVATION (f	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	<u>4</u> 00								ARTIFICI	t surface. lered to 5 feet bgs. AL FILL (Qaf) LT dark brown, moist, fil	ne to medium	n sand.				
_				0/00												
_5	_	1	1	8/30												
_	<u>3</u> 95															
_	_	2		15/30						SAND UNIT (Qs)						
-	-								mostly fin	ID 10 YR 5/6 (yellowish e SAND; few medium S	brown); dry t AND; trace c	o moist; coarse				
- -10		3	2	21/30					SAND wi	ace fine GRAVEL; th SILT10 YR 6/4 (light ist; mostly fine to mediu	yellowish bro	own);				
_10	390								SAND; tra	ace fine GRAVEL.	III SAND, IEV	v coarse				
_		4		14/30	-				Moist; inc	rease in coarse SAND.						
_																
_	_	5	3	12/30												
_15	-									AND 10 YR 5/4 (yellowis e SAND; trace medium		oist;				
_	<u>3</u> 85			40/00					1 		. – – , – .					
-		6		12/30					mostly fin	ID 10 YR 5/6 (yellowish e SAND; trace medium	SAND.	st;				
_									Sandy CI	LAY to Clayey SANDI0	YR 4/4 (darl	<u></u>				
- 20		7	4	12/30					\ yellowish \ medium S	brown); moist; mostly fit SAND; trace coarse SAN	ne SAND; so ND.	me /				
_	<u>3</u> 80								mostly fin	th SILT10 YR 5/6 (yello e to medium SAND; few	wish brown); coarse SAN	moist; ID; trace				
_	L	8		18/30					fine GRAY	AND 10 YR 5/6 (yellowis	sh brown); m	 oist;				
_	_	9	5	26/30					mostly fin Silty SAN mostly fin GRAVEL	ID 10 YR 5/6 (yellowish e SAND; trace medium	brown); mois SAND; trace	t; fine				
GRO		GR(370) Am	ар	ola		Suit	NTS, INC. e 212 0501	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	E a

SITE	LOC	ATIC	N	ORI	Ε	ВС	RIN	G	PROJECT NA Millenium Tr DATE(S) DRI 4/17/2014	ench W Argyle Ave	PROJECT LA-1191A LOGGED TO			s	ORING B-1 HEET N	0.
DRIL	itol Pa LING ow Ste	ME	THOD)					DRILL BIT S	IZE/TYPE	10	CHECKED SK	ВҮ	тс		PTH DRILLE
	L RIC	TYI	PE						DRILLED BY	•		INCLINATIO		_		AL/BEARING
CME		IT C	DO!!	UDVA/A T		DED.	T		ABC Drilling					Degree		
	e enco			NDWAT	IEK	DEP	in.					APPROXIM (feet)		SURF 01	ACE EL	EVATION
COM	IMEN	TS										BOREHOLE Soil Cutting	ВА		L	
	(£)			ROC	K	CORE	=	\ -					STS	۲۶	μîα	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
-	<u>3</u> 75	10		25/30					SAND with mostly fine GRAN	th SILT10 YR 6/6 (brow e to medium SAND; few /EL.	nish yellow); coarse SAN	moist; ID; trace				
-		10		25/50					MUD FLC	OW (Qm)						
									Sandy Cl	AY5 YR 4/3 (reddish b	rown); moist;	some				
		11	6	60/60					Sharp cor	ntact with sand above. el along contact.						
-30	370								Tille glavi	er along contact.						
-	5,0															
_																
-																
35		12	7	60/60												
-00	365								<u> </u>							
									(:) 							
_									Sandy Cl	AY to Clayey SAND7.5	5 YR 4/4 (bro	wn);				
40	L	13	8	36/60					moist; sor GRAVEL.	me fine SAND; few medi	ium SAND; t	race fine				
-	<u>3</u> 60								mostly fin	ID 10 YR 5/6 (yellowish e SAND; some medium ace fine GRAVEL.	brown); mois SAND; trace	e coarse				
-									OLDER A	LLUVIUM (Qoal)						
-									SAND; fe	AND7.5YR 4/4 (brown); w medium SAND; trace	moist; most	y fine D; trace				
- 45		14	9	59/60					GRAVEL.			, - -				
-1 0	355								Cobble la	yer (Clayey GRAVEL m	atrix).					
-											,					
_																
-		15	10	58/60	-				Clayey S. SAND; fev GRAVEL.	AND7.5YR 4/4 (brown); w medium SAND; trace	moist; most coarse SAN	y fine D; trace				
GRO		GR(370) Am	ар	ola		Suit	.NTS, INC. te 212 0501	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OI PRESENTED IS A SIMPI CONDITIONS ENCOUNT	AT THE TIME ONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ξb

	G (ORI	ΕΙ	ВО	RIN	G	PROJECT NAME Millenium Trench W Argyle Ave DATE(S) DRILLED	PROJECT LA-1191A				ORING B-1 HEET N	0.
	itol Pa								4/17/2014	TO			3	of 3	
			rHOD						DRILL BIT SIZE/TYPE 8"		CHECKED	BY		TAL DE et)	PTH DRILLE 59
	w Ste								DRILLED BY		SK INCLINATION)N F	ROM V	/ERTIC	AL/BEARING
СМЕ									ABC Drilling			0	Degree	es	
	AREN enco			IDWA	ΓER	DEP.	TH				APPROXIMA (feet)	ATE	SURF	ACE EL	EVATION
СОМ	MEN	ΓS									BOREHOLE		01 CKFIL	L	
											Soil Cutting	s			
	_			ROC	K C	ORF	=					S			
Œ	ON (ft)							- }				rest:	TORY	ATE, OUR	FIELD
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESC	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	NOTES
	<u>3</u> 50								Sandy CLAYmottled, 7.5 YR 4/15/8 (strong brown), 7.5YR 3/1 (visome fine SAND; trace medium	ery dark gray); moist;				
	-														
	-								@ 53': Cobble lense.						
	_	16	11	54/60					Clayey SAND 10 YR 4/6 (strong mostly fine to medium SAND; fev	brown); mois	t;				
55	 345								fine GRAVEL.	v coarse SAI	ND, liace				
	<u> </u>								Cobble present						
									Silty SAND 10 YR 4/6 (strong brown to medium SAND; few coarse SA	own); wet; mo ND; trace fin	ostly fine				
30									GRAVEL.		/				
	<u>3</u> 40								\-Ground Water Total Depth: 59 feet below ground	nd surface.					
	_														
	_														
	_														
65	_														
	<u>3</u> 35														
	_														
	_														
	-														
70	-														
	<u>3</u> 30														
	-														
	_														
	-														
RO		GRO	370) Am	ар	ola	NSUL Ave. S lifornia	Suite	PRESENTED IS A SIME	AT THE TIME TONS MAY DI CHANGE AT OF TIME. THE PLIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ē c

SITE	LOC	ATIC	N	OR	<u> </u>	ВО	RIN	G	PROJECT NA Millenium Tr DATE(S) DRI 4/17/2014	ench W Argyle Ave	LA-1191A			S	ORING B-2 HEET NO of 3	D .
	itol Pa)					DRILL BIT S	ZE/TYPE	10	CHECKED	BY	то		PTH DRILLEI
	w Ste								8" DRILLED BY	,		SK INCLINATION	ON F	1,		59 L/BEARING
CME		,	_						ABC Drilling				0	Degree	es	
	AREN e enco			IDWA	TER	DEP.	TH					APPROXIM (feet)			ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLE		00 CKFIL	L	
	1	l						1				Soil Cutting	s			
	(£)			ROC	K C	ORE	E	>					STS	≿	யி 🗠	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Asphalt at Hand aug	ered to 5 feet bgs.						
_	L									AL FILL (Qaf)	4					
_	Sandy SILTdark brown; moist; fine to medium											i sanu.				
_		1	1	17/30				*								
_5	<u>3</u> 95							. 4								
_		2		10/30					UPPER	SAND UNIT (Qs)						
_								%	Silty SAN	ID 10 YR 5/6 (yellowish	brown); mois	st;				
_	_	3	2	16/30					mostly fine GRA\	e to medium ŠAND; few /EL.	coarse SAN	ND; trace				
_10	<u>3</u> 90		-	10,00					•							
_	-			45/00					9 •							
-		4		15/30					•							
_																
_ _15	385	5	3	22/30												
_	_									AND 10YR 5/6 (yellowis e SAND; few medium S		oist;				
_	_	6		12/30												
_	-									ID 10 YR 5/6 (yellowish						
_	200	7	4	24/30	-				∫ \ fine GRA\			/-				
- 20	<u>3</u> 80									th SILT10 YR 5/4 (yello e to medium SAND; few /FI						
_		8		17.5/3] j											
_	_								Silty SAN mostly fin GRAVEL.	ID 10 YR 4/4 (dark yello e SAND; trace medium	wish brown); SAND; trace	moist; fine				
_	375	9	5	18/30	-			• • • • • • • • • • • • • • • • • • • •	SAND wit	th SILT10 YR 5/4 (yello e to medium SAND; few			-			
GRO	UP (GRO	370) Am	ар	ola	NSUL Ave. S	Suit	NTS, INC. e 212	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	ES ONLY AT AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (THE LOCATION OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER N	FI	GURI	E a

	G (ORI	E	ВО	RIN	G	PROJECT NA Millenium Tr	ench W Argyle Ave	PROJECT LA-1191A LOGGED			S	ORING B-2 HEET N	0.
DRIL	itol Pa LING w Ste	ME	ГНОД)					4/17/2014 DRILL BIT S 8"	ZE/TYPE	ТО	CHECKED I	вү	то	of 3 TAL DE et)	PTH DRILLE
	L RIC								DRILLED BY	,				ROM V		AL/BEARING
	AREN e enco			NDWA	ΓER	DEP	ТН	•				APPROXIMA (feet)			ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLE Soil Cuttings	ВА	00 CKFIL	L	
	(ft)			ROC	K	CORE						T com commig		>		
DEPTH (ft)	ELEVATION (f	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
								·/	@ 25': co	bble.						
_		10		27/30					MUD FLC	OW (Qm)						
_	_									AY 5 YR 4/4 (reddish b); trace medium to coar						
- -30		11	6	58/30					@ 29': 7.5	5 YR 4/3 (brown).						
- - - - -35	 _ _ _ _ 365	12	7	46/30												
-	_								medium S	D7.5 YR 4/4 (brown); n AND; trace coarse SAN	ID.					
-40 - -	360 	13	8	56/60					fine SANE Clayey S, fine to me GRAVEL. OLDER A Sandy Cl	.AY, 7.5YR 4/6 (strong b); few medium SAND; tr AND7.5 YR 3/4 (dark b) dium SAND; trace coar LLUVIUM (Qoal)	race fine GR. rown); moist; se SAND; tra	MVEL mostly ace fine t; some				
- 45 - -	 355 	14	9	58/60					1	D; few medium SAND; ti ottled, 7.5YR 4/1 (dark g own).						
_	350	15	10	54/60	-				Clayey S	AND5 YR 4/6 (yellowish dium SAND; few coarse	red); moist;	mostly				
GRO	UP (GRO	370) Am	ар	ola	NSUL Ave. S lifornia	Suit	NTS, INC. e 212	THIS SUMMARY APPLIE OF THIS BORNING AND SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	ES ONLY AT THE TIME ONS MAY DICHANGE AT TIME. THE	OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ēb

LO	G	ЭF	C	ORI	Ε	ВО	RIN	G	PROJECT NA Millenium Tr	AME rench W Argyle Ave	PROJECT LA-1191A	NUMBER			ORING B-2	
SITE	LOC	ATIC	N						DATE(S) DR		LOGGED	ВҮ		s	HEET N	0.
Cap	oitol Pa	arkin	g Lot						4/17/2014		ТО				of 3	
	LLING)					DRILL BIT S	IZE/TYPE		CHECKED	BY		DTAL DE et)	PTH DRILLED
_	ow Ste								8"			SK	N F	'		59
DRII	LL RIC	G TY	PE						DRILLED BY			INCLINATIO				AL/BEARING
		IT C	DOLIN	IDWA ⁻	TED	DED.	TU		ABC Drilling					Degre		
	e enco			IDWA	IER	DEP	ın					APPROXIM (feet)		SURF 00	ACE EL	EVATION
CON	MEN	TS										BOREHOLE Soil Cutting	ВА		L	
-				ROC	:K (ORE	•					3011 Cutting	s S			
Œ	E Z				Ι.			_ გ					EST	ORY	VTE,	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TEST	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
_	_								mostly fin	GRAVEL 5 YR 4/6 (yellow the to coarse GRAVEL; fir the coarse SAND.	rish red); moi ne to medium	st; n SAND				
	<u> </u>								Sandy C	LAY7.5 YR 4/6 (strong b	prown); moist	; some				
									GRAVEL	edium SAND; trace coars ;	se SAND; tra	ice fine				
L	L															
55	345	16	11	56/60					Clayey S 7.5YR 5/	AND mottled, 2.5 YR 4/6 1 (gray); wet; mostly fine	s (strong brow to medium S	vn), SAND;				
									few coars	se SAND; trace fine GRA	VEL.	,				
									@ 54': gr	oundwater						
								1								
-																
-	240															
60	340								Total Dep	oth: 59 feet below groun	d surface.					
-	-															
┢	-															
F	-															
_	-															
 65	335															
**																
: 																
<u> </u>	<u>3</u> 30															
L	-															
L																
i -																
?	325															
GRO	DUP (GR	370) Am	nap	ola		Suit	NTS, INC. e 212 0501	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OI PRESENTED IS A SIMPL CONDITIONS ENCOUNTY	AT THE TIME ONS MAY DII CHANGE AT T F TIME. THE LIFICATION C	OF DRILLING. FFER AT OTHE ITHIS LOCATIO DATA	ER N	FI	GURI	E c

SITE	LOC	ATIO	N	ORI	E	ВО	RIN	G	DATE(S) DRI	ench W Argyle Ave	LA-1191A LOGGED			S	ORING B-3 HEET N	0.
DRIL	itol Pa LING w Ste	MET	ГНОД)					4/15/2014 DRILL BIT S 8"	ZE/TYPE	ТО	CHECKED SK		TC (fe	OTAL DE	EPTH DRILLE
	.L RIC M-12		PE						DRILLED BY Gregg In-Situ			INCLINATIO		ROM V Degree		AL/BEARING
APP	AREN	IT GF		NDWA	ΓER	DEP	ГН		Oregg III-OIII	, Drilling		APPROXIM				EVATION
	enco		red									(feet)		99		
СОМ	IMEN	IS										BOREHOLE Soil Cutting		CKFIL	L	
				POC	·k (CORE										
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Asphalt at	t surface. ered to 5 feet bgs.						
									ARTIFICI	AL FILL (Qaf)						
	_								Sandy SI	LTdark brown; moist; fi	ne to mediun	n sand.				
	<u>3</u> 95							1								
5	_	1	1	15/30				. 4								
	-							*	UPPER S	SAND UNIT (Qs)						
-		2		22/30					Silty SAN	ID7.5 YR 5/6 (strong br	own); moist;	mostly				
•	390	2		22/30				***	GRAVEL;	dium SAND; few coarse trace cobbles. YR 6/8 (brownish yellov		. –				
10									to mediun	n SAND; some coarse S trace coarse GRAVEL;	SAND: few fir	ne				
		3	2	17/30					• •	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
-	_							• • • • • • • • • • • • • • • • • • • •								
	_	4		17/30					•							
	<u>3</u> 85							• • • •	Silty SAN	ID 10 YR 5/6 (yellowish	brown); mois	 st;				
15	-	5	3	26/30	-			·	mostly fine fine GRA	e SAND; some medium	to coarse SA	AND; few				
-	-							· · · /	Sand with	h SILT10 YR 5/6 (yellov e to medium SAND; few	vish brown);	moist;				
	_	6		25/30	-				fine GRA		Coarse SAN	iD, ilace				
	380								。 。							
20		_		40/00												
-	_	7	4	19/30				,,,,								
	-							<u>``/</u>	Silty SAN	ID 7.5 YR 4/6 (strong br	own): moist	mostlv				
	 <u>3</u> 75	8		25/30					fine SANE SAND with mostly fine	D; few medium SAND; to th SILT10 YR 6/6 (brown to medium SAND; sor GRAVEL.	race coarse s nish yellow);	SAND moist;				
GRO			370) Am	ар	ola .	NSUL Ave. S	Suite		THIS SUMMARY APPLII OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	E a

LO	G (ЭF	С	OR	ΕI	ВО	RIN	G	PROJECT NA Millenium Tr	AME ench W Argyle Ave	PROJECT LA-1191A	NUMBER			ORING B-3	
	LOC								DATE(S) DRI 4/15/2014	LLED	LOGGED TO	ВҮ			HEET N	0.
DRIL	LING	ME	ГНОГ)					DRILL BIT S	IZE/TYPE		CHECKED SK	BY	1 -	OTAL DE	PTH DRILLE
	L RIC								DRILLED BY	′			ON F	ROM \	/ERTIC	AL/BEARING
	M-12								Gregg In-Situ	u Drilling				Degre		
	AREN e enco			NDWA ⁻	ΓER	DEP	ТН					APPROXIM (feet)		SURF 99	ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLE Soil Cutting	BA		L	
	£			ROC	K C	ORE	<u> </u>					1		>-	. 504	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		9	5	20/30					, ,							
									MUD FLC							
		10		31/30	-				SAND; tra	5 YR 3/4 (dark brown); nace medium to coarseSA	noist; few fin ND.	e				
	370															
30	_	11	6	22/60												
	_	11	6	32/60					1							
-	_															
-	_															
-	<u>3</u> 65								Clavey S.	AND 10 YR 4/4 (dark yel	llowish brow	n)·				
35	_	12	7	33/60					moist; mo SAND.	stly fine SAND; trace me	edium to coa	ırse				
	-															
	_															
-	_															
-	<u>3</u> 60															
40		13	8	37/60	1				1							
-								#	OLDER A	LLUVIUM (Qoal)			-			
									Sandy CI	_AY to CLAY10 YR 3/4 noist; some fine SAND; t	(dark yellow	ish				
-	 355							(;)	coarse SA		race mediun	1 10				
45	333															
45		14	9	32/30					@ 45 5'· r	nottled, 10 YR 3/4 (dark	vellowish br	own) 10				
•								1	YR 5/1 (g GRAVEL	ray); increase in fine gra	nined SAND;	trace fine				
-		15		21/30												
-	350								mostly fin GRAVEL;	AND7.5YR 5/0 (strong be to medium SAND; trace trace cobbles. YR 4/4 (reddish brown).	orown); mois ce fine to coa	t; arse				
GRO		GRO	370	0 Am	ар	ola	NSUL Ave. S lifornia	Suit	NTS, INC. e 212	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OF PRESENTED IS A SIMPI CONDITIONS ENCOUNT	AT THE TIME ONS MAY DI CHANGE AT TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER N	FI	GURI	E b

SITE		ATIC	N	ORI	ΕΙ	ВО	RIN	G	PROJECT NA Millenium Tr DATE(S) DRI 4/15/2014	ench W Argyle Ave	PROJECT LA-1191A LOGGED TO			s	ORING B-3 HEET N	0.
DRIL Hollo	LING w Ste	ME1 m Au	Γ ΗΟD uger	1					DRILL BIT S 8" DRILLED BY			SK INCLINATION		(fe	et)	60 AL/BEARING
Marl			_						Gregg In-Situ				0	Degre	es	
	AREN e enco			IDWA	ΓER	DEP.	TH					APPROXIM	ATE	SURF	ACE EL	EVATION
	MEN.											(feet)		99 CKFII		
		. •										Soil Cutting		O141 IL	_	
(#)	Z (ft)			ROC	K C	ORE	E	GY					ESTS	ORY	TE, UR	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
55	 345 	16	10	34/60					@ 53.5':	7.5 YR 4/6 (strong brow	'n).					
60	 340 				_				thick; wet	ter lense of Silty SAND groundwater. me coarse SAND.	approximate	ely 8"				
65	 335 								Total Dep	th: 60 feet below groun	d surface.					
	 <u>3</u> 30															
-70 - -	_															
	<u>3</u> 25															
SRO		GRO	370) Am	ар	ola		Suit	NTS, INC. e 212 0501	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER N	FI	GURI	Ξ c

				ORI	ΕΙ	ВО	RIN	G		ench W Argyle Ave	LA-1191A				ORING B-4 HEET N	0
	LOC itol Pa								DATE(S) DRI 4/15/2014	LLED	TO TO	BY			of 3	. .
DRIL	LING	MET	HOD)					DRILL BIT SI	ZE/TYPE		CHECKED I	ВҮ		TAL DE	PTH DRILLE
	w Ste							+	DRILLED BY	,		SK INCLINATION	N FI	ROM V	/ERTIC	AL/BEARING
	M-12		_						Gregg In-Situ					Degree		
				IDWA	ΓER	DEP	ГН					APPROXIMA	ATE	SURF	ACE EL	EVATION
	enco		eu									(feet)		99	_	
COM	IMEN [.]	15										Soil Cuttings		CKFIL	L	
				ROC	:K (ORF							(0			
Œ	(£)				١.			- ≥					EST	ORY S	ATE, OUR	FIEL D
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
				_				4	Asphalt at	surface. ered to 5 feet bgs.						
								, 2		AL FILL (Qaf)						
									Sandy SI	LTdark brown; moist; fir	ne to medium	n sand.				
•	395								•							
5								7								
-5		1	1	31/30				×	•							
								1	UPPER S	AND UNIT (Qs)						
		2		19/30				: , ,] \ 	AND7.5 YR 4/6 (strong	brown); mois	st; /				
	390								\ mostly fine	e to medium SAND; trac GRAVEL; micaceous.	ce coarse SA	ND;				
10								: , ,	\ Silty SAN	D 7.5 YR 4/6 (strong bro); some medium SAND:	own); moist; trace coarse	mostly /				
		3	2	20/30					\trace fine			· /				
								·	moist (hur	mid); mostly fine to med ND; trace fine GRAVEI	ium SAND; f	ew				
		4		18/30					g 10': inc	rease in medium to coa		ome fine				
•	385							::/	— SAND. @ 12': col	oble layer. 6" thick.		/				
15								\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	fine SANE		ŕ	-				
10		5	3	29/30				/		D 10 YR 5/6 (yellowish sAND; trace medium						
								·	trace fine			, _				
		6		21/30	-			• • • •	to dry (hui	mid); mostly fine to med	lium SAND; t	trace /				
	380								SAND 10	YR 5/6 (yellowish brow						
20								,,,	SAND; tra	nostly medium to coarse ce fine GRAVEL.	SAND, IEW	IIIIC				
∠∪		7	4	26/30	1			· · · ·	Silty SAN	D 10 YR 5/6 (yellowish	brown): mois	 st;				
									\ mostly fine	e SAND; few medium to	coarse SAN	lĎ; trace /				
-		8		21/30	-			: %	\ Clayey S	AND 10 YR 4/6 (dark ye stly fine SAND; trace m						
-	375	-						*	\SAND.	•		<i>i</i>				
-									mostly fine	D 10 YR 5/6 (yellowish to medium SAND; few	coarse SAN	ND; trace				
SRO DEL			370) Am	ар	ola	NSUL Ave. S	Suit		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATION DATA	ER N	FI	GURI	∃ a

_O	G (ЭF	C	ORI	Ε	ВО	RIN	G	PROJECT NA Millenium Tr	AME ench W Argyle Ave	PROJECT LA-1191A	NUMBER			ORING B-4	
	LOC							T	DATE(S) DRI	LLED	LOGGED	ВҮ			HEET N	0.
	itol Pa LING)				\dashv	4/15/2014 DRILL BIT S	IZE/TYPE	ТО	CHECKED	BY	тс	TAL DE	PTH DRILLE
	w Ste								8"			SK	N F	<u> </u>	et)	60
	L RIC M-12		PE						Gregg In-Situ			INCLINATIO		ROM V Degre		AL/BEARING
				NDWA	ΓER	DEP.	ТН		9 m - m	· · · · · · · · · · ·		APPROXIM				EVATION
	MEN		rea									(feet)		99 CKEII		
CON	IIVILIA	13										Soil Cutting		CKITIL		
				ROC	K C	ORE	<u> </u>						S			
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		9	5	逆 16/30	H.	L"	102	0 0	* fine to cor	arse GRAVEL.						
-	_	9	J	10/30				·	inie to coa	213C UIVAVEL.						
	-								MUD FLC	OW (Qm)						
	 <u>3</u> 70	10		27/30					Sandy Cl fine SAND	; some						
30	-	11	6	60/60												
35 - - -	 360	12	7	60/60					moist; mo	AND10 YR 4/6 (dark ye stly fine to medium SAN w fine GRAVEL; trace c	ND; some coa	arse				
40	-	13	8	54/60							proximately 8	" thick.				
- - -	@ 40': clayey GRAVEL layer; approximately 8" thick. OLDER ALLUVIUM (Qoal) Sandy CLAYmottled, 10 YR 4/4 (dark yellowish brown), 10 YR 6/8 (brownish yellow); moist; some fine SAND; few medium SAND; trace coarse SAND; trace fine GRAVEL.															
-45 -	_	14	9	33/60												
-	-															
-	H															
-	350								@ 49': co	bble layer.						
GRO		GR(370) Am	ар	ola		Suit	NTS, INC. e 212 0501	THIS SUMMARY APPLIE OF THIS BORING AND SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER N	FI	GURI	Ξb

SITE	LOC	ATIO	N	ORI	E 1	ВО	RIN	G	PROJECT NA Millenium Tr DATE(S) DRI 4/15/2014	ench W Argyle Ave	PROJECT LA-1191A LOGGED TO			S	ORING B-4 HEET Notes of 3	0.
DRIL	itol Pa LING ow Ste	MET	HOD)					DRILL BIT SI 8"	ZE/TYPE	10	CHECKED I		TC (fe	OTAL DE	PTH DRILLE
	L RIC M-12		PΕ						DRILLED BY Gregg In-Situ			INCLINATIO		ROM V Degree		AL/BEARING
	AREN e enco			IDWA ⁻	ΓER	DEP ⁻	ТН					APPROXIMA (feet)		SURF. 99	ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLE Soil Cuttings		CKFIL	L	
	(ft)			ROC	K C	ORE	•	\ -					STS	≿	μία	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		15	10	60/60					@ 50': 7.5	SYR 4/6 (strong brown)						
- - -55 - - -	345 	16	11	30/60					\ medium S	AY to Clayey SAND7.5 ome fine SAND; trace c AND; trace fine GRAVI AND7.5 YR 4/6 (strong dium SAND; trace coar oundwater	EL brown): wet:					
	335								Total Dep	th: 60 feet below groun	d surface.					
GRO	325						NSUL Ave. S		NTS, INC. e 212	THIS SUMMARY APPLII OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE	OF DRILLING. FFER AT OTHE THIS LOCATION DATA	ER N	 FI	GURI	= c

0	G (ЭF	C	ORI	ΕΙ	ВО	RING	3	PROJECT NA Millenium Tr	AME ench W Argyle Ave	PROJECT LA-1191A	NUMBER		I	ORING B-5	
	LOC								DATE(S) DRI 4/15/2014	LLED	LOGGED	ВҮ		s	HEET No	0.
DRIL	LING	ME	ГНОГ)					DRILL BIT S	ZE/TYPE	10	CHECKED	вү	1 -	OTAL DE	PTH DRILLE
	w Ste								8" DRILLED BY	,		SK INCLINATION	ON FI	1,		60 AL/BEARING
	M-12								Gregg In-Situ				0 1	Degree	es	
	AREN enco			NDWAT	ΓER	DEP	ГН					APPROXIM (feet)		SURF 98	ACE EL	EVATION
СОМ	MEN ⁻	TS										BOREHOLE	ВА		L	
		Ι										Soil Cutting	s 			
Ð	(ft)			ROC	KC	ORE	<u> </u>	<u>}</u>					STS	RY	μŒ	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TEST	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Asphalt at	surface. ered to 5 feet bgs.						
									ARTIFICI	AL FILL (Qaf)						
	<u>3</u> 95							Silty SAN medium S	fine to							
	_								o o							
5	_	1	1	28/30	-											
	_							·./.	@ 6 E': 7	ED VD 4/6 (strong brown	۵)					
	390	2		24/30					•	5R YR 4/6 (strong browi AND UNIT (Qs)	11).					
									Clayey S	AND 10 YR 4/6 (dark yel	lowish brow	n);				
10		3	2	29/30					moist; mo trace fine	stly fine to medium SAN GRAVEL.	ID; few coars	se SAND;				
	_	3	2	29/30					@ 11'· 10	YR 5/6 (yellowish brown	n)					
	_									nd becomes more coars	,					
	<u>3</u> 85	4		23/30												
	_								SAND 10	YR 5/6 (yellowish browrn SAND; some coarse S	n); moist; mo	stly fine				
15	_	5	3	29/30						AY 10 YR 4/6 (dark yell		ı); moist;				
								%	Silty SAN	D10 YR 4/6 (dark yellow to medium SAND; son	wish brown);	 moist; AND:				
	<u>3</u> 80	6		20/30				°°°	— \ trace fine	GRAVEL. • SILT10 YR 6/6 (brown		(, -				
	_								fine to me	dium SAND; few coarse YR 4/4 dark (yellowish b	SAND.	í				
20	_	7	4	28/30					to coarse	SAND; few fine GRAVE AND 10 YR 5/6 (vellowis	L. sh brown); m	nostly				
	_								fine SANE Silty SAN	0; few medium SAND; tr. D10 YR 4/6 (dark yellov	ace coarse swish brown);	SAND mostly				
	375	8		24/30					–∖ GRAVEL.	arse SAND; few fine GR		//-				
	<u>51</u> 5			27/30					\mostly fine			1				
									mostly fine	D , 10 YR 4/6 (dark yello e to medium SAND; trac	wish brown) e coarse SA	; moist; ND;				
RO		GRO	370) Am	ар	ola .	NSUL Ave. S lifornia	uite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY O WITH THE PASSAGE OF PRESENTED IS A SIMPL CONDITIONS ENCOUNT	AT THE TIME ONS MAY DI CHANGE AT TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	 FI	GURI	≣ a

LO	G ()F	C	ORI	E	BO	RIN	3	PROJECT NA Millenium Tr	AME ench W Argyle Ave	PROJECT LA-1191A	NUMBER			ORING B-5	
	LOC								DATE(S) DRI 4/15/2014	LLED	LOGGED TO	ву			HEET N	0.
	LING)					DRILL BIT S	ZE/TYPE	10	CHECKED	вү	1 -	TAL DE	PTH DRILLE
	w Ste							+	8" DRILLED BY	,		SK	ON FI	`	<u> </u>	60 AL/BEARING
	M-12		_						Gregg In-Situ					Degree		
	AREN e enco			NDWA	ΓER	DEP.	TH					APPROXIMA (feet)			ACE EL	EVATION
СОМ	MEN.	TS										BOREHOLE		98 CKFIL	L	
								1	I			Soil Cutting	s			
_	(#)			ROC	K	CORE	E	<u></u>					STS	Υ	щα	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		9	5	23/30				/	trace fine	GRVEL.						
-									MUD FLC	OW (Qm)						
_	<u>3</u> 70	10		32/30					Sandy Cl some fine	AY 10 YR 4/4 (dark yell SAND; trace medium S	owish brown SAND.); moist;				
_																
_30	_	11	6	74/60												
-	-															
=	365															
_																
_35	_	12	7	37/60					cobbles.	rease in fine to medium	,					
_	-	'-	,	01100					moist; mo	AND10 YR 4/4 (dark ye stly fine SAND; trace m /FI	edium SAND	ri);); trace				
_																
-	<u>3</u> 60								;							
- -40																
		13	8	35/60						cobble lense.						
_	_									LLUVIUM (Qoal)	owiah brown), maint				
_	<u>3</u> 55								some fine GRAVEL.	AY 10 YR 4/4 (dark yell SAND; trace medium S	SAND; trace f	ine				
-	-								@ 44 Fly a	and the second second	d atama					
-4 5		14	9	26/30	-				@ 44.5``	cobble; fine grained sand	u sione.					
_																
_	<u>3</u> 50								No recove	ery due to very hard drill	ing.					
_	_															
		GRO) I I P	DFI	T.	7 CC	NSIII	<u> `.</u> '	NTS, INC.	THIS SUMMARY APPLIE OF THIS BORING AND A			N			
DEL		J111	370) Am	ар	ola	Ave. S lifornia	uit	e 212	SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OI PRESENTED IS A SIMPI CONDITIONS ENCOUNT	ONS MAY DI CHANGE AT F TIME. THE LIFICATION O	FFER AT OTHE THIS LOCATIO DATA	N	FI	GURI	Ξb

SITE	LOC	ATIC	N	ORI	E I	ВО	RIN	G	DATE(S) DRI	ench W Argyle Ave	LA-1191A LOGGED			s	ORING B-5 HEET Notes of 3	0.
DRIL	itol Pa LING ow Ste	MET	THOD)					4/15/2014 DRILL BIT S I 8"	ZE/TYPE	ТО	CHECKED SK		TC (fe	TAL DE	PTH DRILLE
	L RIC M-12		PE						DRILLED BY Gregg In-Situ			INCLINATIO		ROM \ Degree		AL/BEARING
	AREN e enco			IDWA ⁻	ΓER	DEP ⁻	ТН					APPROXIMA (feet)		SURF 98	ACE EL	EVATION
СОМ	IMEN [.]	TS										BOREHOLE Soil Cuttings	ВА		L	
	£			ROC	K C	ORE						Con Cutting		 		
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	 <u>3</u> 45	15	10	32/60					fine to me GRAVEL.	AND5 YR 4/4 (reddish I dium SAND; few coarse 5 YR 4/6 (strong brown)	e SAND; trac	t; mostly e fine				
	 <u>3</u> 40	16	11	30/60	-				few fine G	th SILT 7.5 YR 5/6 (stro ly medium to coarse SA RAVEL. AND 7.5 YR 4/6 (strong b); few medium SAND; ti						
-60 - -					_				trace fine @ 59.9': g	GRAVEL. groundwater th: 60 feet below groun						
- -65 -																
- - -70 -	<u>3</u> 30															
-	<u>3</u> 25															
GRO		 GR(370) Am	ар	ola	NSUL Ave. S lifornia	Suite		THIS SUMMARY APPLII OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ξc

LO	G (OF	С	OR	ΕI	ВО	RIN	G	PROJECT NA Millenium Tr	AME ench W Argyle Ave	PROJECT LA-1191A	NUMBER			ORING B-6	
	LOC								DATE(S) DRI		LOGGED	ВҮ		s	HEET N	0.
	itol Pa)					4/16/2014 DRILL BIT S	IZE/TYPE	ТО	CHECKED	BY	тс	TAL DE	PTH DRILLE
	w Ste							_	8"			SK INCLINATION	N F	<u> </u>	et)	60 AL/BEARING
	L RIC M-12		PE						Gregg In-Situ			INCLINATIO		Degre		KL/BLAKING
	AREN			NDWA	ΓER	DEP.	TH					APPROXIM	ATE	SURF	ACE EL	EVATION
CON	IMEN	TS										BOREHOLE		96 CKFIL	L	
	1	ı						1	1			Soil Cutting	s	ı	<u> </u>	
_	(ft)			ROC	K C	ORE	=	\ _					STS	l ≿	μîα	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	<u>3</u> 95									ered to 5 feet bgs.						
	_									AL FILL (Qaf) ID7.5 YR 3/4 (dark brow	/n): moist: m	oetly				
-	-								fine to me	ice fine to						
-								7								
5	390	1	1	26/30				. 4	3							
-								**	@ 6': 10 `	YR 5/6 (yellowish brown).					
-	-	2		19/30					UPPER S	AND UNIT (Qs)						
-	-								Clayey S	AND to Silty SAND10 Y	R 5/6 (yellov	vish				
-10	385	3	2	23/30					coarse SA	noist; mostly fine SAND; AND; trace fine GRAVEL	trace mediu 	m to				
-										ist; mostly medium to co						
-	L	4		17/30					∖ coarse SA	noist; mostly fine SAND; AND; trace fine GRAVEL		1				
-	-							%	g moist (hui	th SILT10 YR 5/6 (yellomid); mostly fine to coar trace coarse GRAVEL.						
-15	380	5	3	20/30				<u>^</u>	Silty SAN	ID 10 YR 4/6 (dark yellow e to medium SAND; few						
_	300							***	_ ∖ fine GRA\			/_				
-		6		19/30					moist (hui	mid); mostly fine to med AND; trace fine GRAVEL	ium SAND; s 	some				
-	-								(humid); r	ID 10 YR 5/8 (yellowish mostly fine to medium SA	AND; few co					
-20		7	4	24/30	-				SAND; tra	ace fine to coarse GRAV	EL.					
-	<u>3</u> 75								@ 21': mo	ostly fine grained SAND;	trace CLAY					
-		8		24/30	-				moist (hui	th SILT 10 YR 4/6 (brownid); mostly fine to med						
-	-								@ 24': co	AND; few fine GRAVEL. bble.						
GRO		GR(370) Am	ар	ola	NSUL Ave. S lifornia	Suite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OI PRESENTED IS A SIMPI CONDITIONS ENCOUNT	AT THE TIME ONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	<u> </u>

.00	G ()F	C	ORI	Ε	ВО	RIN	G	PROJECT NAME Millenium Trench W Argyle Ave	LA-1191A				ORING B-6	
SITE									DATE(S) DRILLED	LOGGED) BY			HEET No of 3	0.
Capit DRILL				1					4/16/2014 DRILL BIT SIZE/TYPE	ТО	CHECKED	RY			PTH DRILLE
Hollov				•					8"		SK	٠.		et)	60
DRILL									DRILLED BY			N FI	ROM V	/ERTIC	AL/BEARING
Marl N	M-12								Gregg In-Situ Drilling			0 1	Degree	es	
APPA None				IDWA	ΓER	DEP	TH				APPROXIMA	ATE	SURF	ACE EL	EVATION
COM											(feet)		96 CKEII	1	
SOWIII	VILIV I										Soil Cuttings		SKIL	_	
æ	Œ			ROC	KC	CORE	<u> </u>	_ ≿				STS	장	氘尻	
DEPTH (ft)	EVATION		Ċ.	, κ,	EQ.	%	유현조	LITHOLOGY	MATERIAL DES	CRIPTION		R E	STS	-RA-	FIELD
DEP	EVA	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	<u>F</u>				PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	NOTES
	ᆸ	집	В	ZECC	FRA	R.(~ 사람					Ь	ן ב		
		9	5	22/30											
. [<u>3</u> 70														
-	-	-10		00/00					MUD FLOW (Qm)						
-	-	10		32/30					Sandy CLAY5 YR 4/4 (reddish fine SAND.	brown); moist	;; some				
- -	-								Sharp contact with sand above						
30	_	11	6	43/60											
-	<u>3</u> 65														
-	_														
-	_														
-	_														
35 -	_	40		00/00											
. [<u>3</u> 60	12	7	28/30											
40									SAND and GRAVEL layer, app	roximately 5"	thick.				
	 355	13	8	29/60					No recovery-Contact inferred fr						
	<u></u>														
	_								OLDER ALLUVIUM (Qoal)						
·	-									7 F VD 4/0 /					
.	-								Clayey SAND to Sandy CLAY brown);	.5 114 4/6 (Sii	ong				
45	_	14	9	53/60					Sandy CLAY5 YR 4/4 (reddish	brown).					
.	<u>3</u> 50														
	-								Clayey SAND5 YR 4/4 (reddisl	brown); mois	t; mostly				
. }	-								fine to medium SAND; few coal	se SAND.					
	-														
					_			1/	I		TUE 00:=::		1		
ROL	JP (GRO	DUP	DEL	.TA	CC	NSUL	.TAI	NTS, INC. THIS SUMMARY APP	AT THE TIME	OF DRILLING.				
							Ave. S		SUBSURFACE COND	CHANGE AT	THIS LOCATIO	r N		GURI	= h
				, ,							- Ι 1Δ Ι Λ			יידווו	_ []

				OR	E	ВО	RIN	G	PROJECT NAME Millenium Trench W Argyle Ave	LA-1191A				ORING B-6	
	LOC								DATE(S) DRILLED 4/16/2014	LOGGED	BY			HEET NO of 3	O.
	tol Pa			`					DRILL BIT SIZE/TYPE	ТО	CHECKED	RY			PTH DRILLE
	w Ste			•					8"		SK	٠.	(fe		60
	L RIG								DRILLED BY			N F	ROM V	ERTICA	L/BEARING
Marl	M-12								Gregg In-Situ Drilling			0 I	Degree	es	
	AREN enco			NDWA ⁻	ΓER	DEP.	TH				APPROXIMA	ATE	SURF	ACE EL	EVATION
	MEN										(feet)		96	1	
CON	IVILIA	13									Soil Cuttings		JKI ILI	L	
$\overline{}$	(ft)			ROC	KC	CORE	<u> </u>	_				STS	₹	шα	
DEРТН (ft)	EVATION		·	۲, %	ä	%	₩ _Ø ~	LITHOLOGY	MATERIAL DESC	PIDTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEP.	EVA	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	Ħ	MATERIAL DESC			CKE	BOR TE	RILL EET/	NOTES
	E	R.	BO	ECO	RAC	A.	PRAC	-				PA	5		
		15	10	45/60	_										
	<u>3</u> 45														
	L .							//							
	L								Sandy CLAY5 YR 4/4 (reddish b	orown); moist	; some				
	L								fine SAND.						
55															
55	340	16	11	30/60					Clayey SAND5 YR 4/6 (yellowis fine to medium SAND; trace coal	h red); moist;	mostly				
	<u>o</u> o								GRAVEL.	00 07 1110, 110					
	_														
	-														
	-								Clayey SAND to Sandy CLAY5	YR 4/4 (redo	lish				
-60	_				-				brown); moist; mostly fine to med coarse SAND; trace fine GRAVE	lium SAND; t	race				
	<u>3</u> 35								Total Depth: 60 feet below groun						
	_														
	_														
-	_														
65															
	<u>3</u> 30														
_															
	<u> </u>														
70	-														
	<u>3</u> 25														
-	<u> </u>														
-	_														
	<u> </u>														
									1						
RO	UP (GRO	OUF	DEI	_T#	CC	NSUI	ΤΔΙ.	THIS SUMMARY APPLI OF THIS BORING AND	AT THE TIME	OF DRILLING.				
J		~· \\					Ave. S		LOCATIONS AND MAY	CHANGE AT	THIS LOCATIO	ER N	₋ ,		
					-				WITH THE PASSAGE C	F TIME. THE PLIFICATION (DATA		[GUR	= C
EL	121		ľC	rran	ce,	Ca	lifornia	a 90	501 CONDITIONS ENCOUN	TERED.					

0	G ()F	C	ORI	ΕΙ	ВО	RIN	G	PROJECT NA Millenium Tr	AME ench W Argyle Ave	PROJECT LA-1191A	NUMBER		- 1	ORING B-7	
	LOC								DATE(S) DRI		LOGGED	ВҮ		S	HEET N	0.
	itol Pa							\perp	4/16/2014	IZE/TVDF	ТО	CHECKED	DV.		of 3	PTH DRILLE
	. LING w Ste			'					DRILL BIT S	IZE/ I YPE		SK	Βĭ	1 -	et)	60
	L RIC								DRILLED BY	· · · · · · · · · · · · · · · · · · ·		INCLINATIO	N FI	ROM V	/ERTIC	
	M-12								Gregg In-Situ	u Drilling			0 1	Degree	es	
	AREN e enco			IDWA	ΓER	DEP.	ГН					APPROXIMA (feet)			ACE EL	EVATION
СОМ	MEN.	TS										BOREHOLE		94 CKFIL	L	
												Soil Cutting	S			
				ROC	K C	ORE	<u>:</u>						S			
Œ.	ON (ft)			%	ď		111.~	-06√					PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEРТН (ft)	EVATION	RUN NO.	BOX NO.	ERY,	FRE	D., %	TURE VING BER	LITHOLOGY		MATERIAL DESC	RIPTION		KER	SORA TES	SILL R ET/H	NOTES
		RUN	BOX	RECOVERY, %	FRAC. FREQ	R.Q.D.,	FRACTURE DRAWING/ NUMBER	=					PAC	IAE I	RA	
				쮼	Щ				→ Asphalt at	t surface.						
	_								Hand aug	ered to 5 feet bgs. AL FILL (Qaf)		/				
	-	Silty SAND 10 YR 4/4 (dark)									wish brown):	dry to				
	-				Silty SAND10 YR 4/4 (dark yellowish brown); dry to moist; mostly fine to medium SAND; few coarse SAN trace fine GRAVEL.							se SAND;				
	<u>3</u> 90							3	trace fine	OIAVEE.						
5	_	1	1	24/30	_			. 2								
	_		•					X								
	_							*	•							
	-	2	1	30/30												
	<u>3</u> 85								UPPER S	SAND UNIT (Qs)						
10	H	3	2	18/30						AND 10 YR 4/4 (dark ye	llowish brow	n); drv				
	-								\to moist; r	mostly fine SAND; trace	medium SA	ND. '				
	_								mostly fin	e SAND; few medium S ace fine GRAVEL.						
	_	4	2	27/30					Clavev S	AND 10 YR 5/6 (vellowis	sh brown); dr	y to				
	<u>3</u> 80								- GRAVEL.			/-				
15	-	5	3	25/30					mostly fin	ID 10 YR 5/6 (yellowish e SAND; few medium S						
	-								<u>@ 15':</u> 10	ace fine GRAVEL. YR 4/4 dark (yellowish		/				
	-			L					mostly me	th SILT10 YR 6/6 (browedium to coarse SAND;						
	-	6	3	22/30					fine GRA\ Clayey S	VEL. AND 10 YR 4/4 (dark ye	llowish brow					
	<u>3</u> 75								moist; mo	stly fine SANDID 10 YR 6/6 (brownish		· _				
20	H	7	4	24/30	-				mostly fin	e to medium SAND; trac	ce coarse SA	ND.				
	-								1							
	-									. 						
	-	8	4	20/30						th SILT10 YR 5/4 (yello stly fine to medium SAN						
	<u>3</u> 70									ace fine GRAVEL.						
					<u> </u>			111		THIS SUMMARY APPLIE	S ONLY AT	THE LOCATION	J			
RO	UP (GRO	DUP	DEL	.TA	CC	NSUL	TAI	NTS, INC.	OF THIS BORING AND A SUBSURFACE CONDITI	AT THE TIME	OF DRILLING.				
			370) Am	ар	ola	Ave. S	Suite	e 212	LOCATIONS AND MAY (WITH THE PASSAGE O	CHANGE AT THE	THIS LOCATIO DATA	N	FI	GURI	Ξa
EL	ΓΛ		То	rran	ce,	Cal	lifornia	90	501	PRESENTED IS A SIMP CONDITIONS ENCOUN		OF THE ACTUA	L			

_O	G (ЭF	C	ORI	E	ВО	RIN	GŪ	PROJECT NA Millenium Tr	AME ench W Argyle Ave	PROJECT LA-1191A	NUMBER			ORING B-7	
	LOC								DATE(S) DR I	LLED	LOGGED TO	ВҮ			HEET No	0.
DRIL	LING	ME	ГНОГ)					DRILL BIT S	IZE/TYPE	10	CHECKED	ВҮ	1 -	OTAL DE	PTH DRILLE
DRIL	L RIC	3 TYI							DRILLED BY							AL/BEARING
	M-12		ROUN	NDWA	ΓFR	DED.	ТН		Gregg In-Situ	u Drilling		APPROXIM		Degre		EVATION
	e enco			IDIIA		DL.	•••					(feet)		SURF 94	ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLE Soil Cuttings		CKFIL	L	
⊕	(ft)			ROC	KC	ORE		_____\					STS	ŘΥ	Ä,Ä	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		9	5	18/30												
									MUD FLC							
	Sandy CLAY5 YR 4/4 (reddish brown); moist; somfine SAND; trace medium to coarse SAND.										some					
	<u>3</u> 65															
30	_	11	6	42/60												
	-															
•	360								@ 33': ind	crease in SAND.						
35										yer with SAND, approx 6						
		12	7	29/60					No recove	ery-Contact inferred fron	n CPT lines.					
	_															
	-															
	<u>3</u> 55															
40	-	13	8	42/60					1							
									OLDER A	LLUVIUM (Qoal)						
									Clayey S.	AND7.5 YR 4/6 (strong e to medium SAND; few	brown); mois	st; ID; trace / ¯				
	350								\fine GRA\			,'				
45		14	0	40/00					YR 5/2 (b	rown); moist; some fine SAND; trace fine GRAV	SAND; trace EL.	medium				
	_	14	9	42/60					∤ YR 5/2 (b	ANDmottled, 7.5 YR 5/6 rown); moist to wet; mos	stly fine SAN	D; some				
	-								medium S GRAVEL	SAND; trace coarse SAN	ID; trace fine	1				
	 <u>3</u> 45									AY7.5 YR 4/4 (brown); ace medium to coarse S. flecks.						
SRO DEL		GR(370) Am	ар	ola	NSUL Ave. S lifornia	Suit		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY O WITH THE PASSAGE OF PRESENTED IS A SIMPL CONDITIONS ENCOUNT	AT THE TIME ONS MAY DI CHANGE AT TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ξb

of 3 OTAL DEPTH DRILL et) 60 VERTICAL/BEARING
/ERTICAL/BEARIN
ACE ELEVATION
ACE ELEVATION
L
шα
PRILL RATE, FEETTHOUR NOTES

LO	G (ЭF	C	ORI	ΕI	ВО	RIN	G	PROJECT NA Millenium Tr	AME ench W Argyle Ave	PROJECT LA-1191A	NUMBER		- 1	ORING B-8	
	LOC								DATE(S) DRI 4/16/2014	LLED	LOGGED TO	ВҮ			HEET No	0.
DRIL	LING	MET	THOD)					DRILL BIT S	IZE/TYPE		CHECKED	вү	1 -	TAL DE	PTH DRILLE
	w Ste								DRILLED BY	<u>, </u>		SK INCLINATION	N F	ROM V	/ERTICA	L/BEARING
	M-12								Gregg In-Situ	u Drilling				Degree		
	e enco			IDWA	ΓER	DEP ⁻	ГН					APPROXIMA (feet)		SURF. 92	ACE EL	EVATION
COM	IMEN ⁻	TS										BOREHOLE Soil Cuttings	ВА		L	
	(ff)			ROC	K C	ORE	<u> </u>	 -						≿	μîα	
DEPTH (ft)	ELEVATION (RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
- - - - - - - - - - - - - - - - - - -	390 - 385 - 380 - 375 - 377	1 2 3 4 5 6 6 7 7	3	28/30 21/30 31/30 22/30 19/30 29/30					UPPER S Clayey S mostly fin SAND; tra Clayey S mostly fin trace fine SAND wir SAND, fer Clayey S 4/4 (dark SAND. Silty SAN mostly fin trace fine SAND wir dry to mo SAND; tra @ 19.5': S Silty SAN moist; mo SAND wir dry to mo SAND; tra @ 19.5': S Silty SAN moist; mo SAND wir yellowish SAND; tra	AND UNIT (Qs) AND UNIT (Qs) AND UNIT (Qs) AND 10 YR 5/6 (yellowish e SAND; frace medium Sate fine SAND; trace medium GRAVEL. AND 10 YR 5/4 (yellowish e SAND; trace medium GRAVEL. AND 10 YR 5/4 (yellowish e SAND; trace fine GRAVEL. AND 10 YR 6/6 (brownis yellowish brown); dry to moist; most yellowish brown); dry to graph of the SAND; trace medium GRAVEL. AND 10 YR 5/4 (yellowish e SAND; trace medium GRAVEL. AND 10 YR 5/4 (yellowish e SAND; trace medium GRAVEL. AND 10 YR 5/4 (very pale ist; mostly fine the medium GRAVEL. AND 10 YR 7/4 (very pale istly fine SAND. AND 10 YR 7/4 (very pale istly fine SAND. AND 10 YR 5/4 (yellowish ist) fine SAND. AND 10 YR 5/4 (yellowish ist) fine SAND.	sh brown); dry tedium SAND brown); dry teto coarse SA stly fine to m ne GRAVEL h yellow) to 1 brown); dry teto coarse SA yellowish brown yello	y to b. o moist; ND; edium o moist; ND; ew coarse cobbles. to nedium //				
GRO		GRO	370) Am	ар	ola	NSUL Ave. S	Suite	© 23 ⁵ : 10 NTS, INC. e 212	e SAND; few medium to YR 5/6 (yellowish brow THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OI PRESENTED IS A SIMPLE CONDITIONS ENCOUNTED TO THE SENTED IS A SIMPLE OF THE SENTED	n). S ONLY AT TAT THE TIME ONS MAY DII CHANGE AT TIME. THE	THE LOCATION OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURE	 ∃ a

_O	G (ЭF	C	ORI	E	ВО	RIN	G	PROJECT NA Millenium Tr	AME ench W Argyle Ave	PROJECT LA-1191A	NUMBER			ORING B-8	
	LOC								DATE(S) DRI	LLED	LOGGED	BY			HEET N	0.
	itol Pa)					4/16/2014 DRILL BIT S	IZE/TYPE	ТО	CHECKED	BY			PTH DRILLE
	w Ste								8"			SK		1,	et)	60
	.L RIC M-12		PE						DRILLED BY			INCLINATIO		ROM \ Degre		AL/BEARING
			ROUN	NDWA	ΓER	DEP	TH		Gregg In-Situ	J Drilling		APPROXIM				FVATION
None	e enco	unte	red									(feet)		92	AGE EE	LVATION
СОМ	IMEN	TS										Soil Cuttings		CKFIL	L	
æ	(£			ROC	KC	CORE	E	>					STS	₹	'nj.Ŗ	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NI IMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		9	5	25/30					moist; mo	th SILT10 YR 5/4 (yello	owish brown)	; dry to				
	365								SAND; tra @ 25': Sa	ace fine GRAVEL. and becomes more coars						
		10		28/30					MUD FLC	OW (Qm)						
	_								fine SANI	_AY 5 YR 4/4 (reddish b D; trace medium to coars	rown); moist se SAND; sh	; some arp				
30	_	11	6	60/60	-				contact.							
	_		O	00/00												
	<u>3</u> 60															
	_								@ 33': Co	obble.						
	-															
35	_	12	7	38/60												
	355															
	555															
•																
40																
		13	8	60/60												
	350								7	ALLUVIUM (Qoal)		_				
	_								\ \ cemented	CLAY10 YR 6/8 (reddish I, pourous, with a green	mieralization	; n lining,				
•	_								\pour space	_AY 5 YR 4/4 (reddish b D; trace medium to coars	rown); moist	; some				
45	-	14	9	44/60	-				contact.	o, nace medium to coars	oe oaind, si	ιαι μ				
	_															
	<u>3</u> 45															
-	_															
SRO DEL		GRO	370) Am	ар	ola		Suit	NTS, INC. te 212	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY O WITH THE PASSAGE OI PRESENTED IS A SIMP CONDITIONS ENCOUNT	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GUR	E b

SITE	LOC	ATIC	ON	OR	E	ВО	RIN	G	DATE(S) DRI	ench W Argyle Ave	LA-1191A LOGGED			s	ORING B-8 HEET Notes of 3	0.
DRIL	itol Pa LING ow Ste	ME	THOD	1					4/16/2014 DRILL BIT S 8"	IZE/TYPE	ТО	CHECKED SK		TC (fe	OTAL DE	EPTH DRILLE
Marl	L RIC M-12								DRILLED BY Gregg In-Situ			INCLINATIO		ROM \ Degre		AL/BEARING
	AREN e enco			IDWA.	TER	DEP.	TH					APPROXIMA (feet)		SURF 92	ACE EL	EVATION
COM	IMEN	TS										Soil Cutting:		CKFIL	L	
<u> </u>	(ft)			ROC	K C	ORE	E	_					STS	 ≿	щœ	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	340 - - 335 - 330 - 325 - 320 -	16	11	27/60						et; charcoal fragments; th: 60 feet below grour						
GRO		GRO	370) Am	ар	ola	NSUL Ave. S lifornia	Suit		THIS SUMMARY APPLI OF THIS BORING AND SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMF CONDITIONS ENCOUN	AT THE TIME TONS MAY DI CHANGE AT OF TIME. THE PLIFICATION O	OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	E c

	G (OR	Εl	ВО	RIN	G	PROJECT NA Millenium Tr	ench W Argyle Ave	PROJECT LA-1191A				ORING B-9 HEET N	0.
	itol Pa								8/11/2014	LLLU	TO	5.			of 3	
DRIL	LING	MET	HOD)					DRILL BIT S	IZE/TYPE	1	CHECKED	BY	1 -	TAL DE	PTH DRILLE
	w Ste								8"	_		SK INCLINATION	N F	1,		70 AL/BEARING
	. L RIC M-12		'E						Gregg In-Situ			INCLINATIO		Degree		AL/DLAKING
				IDWA	ΓER	DEP	TH		0.099 0			APPROXIM				EVATION
	enco		red									(feet)		90.8		
СОМ	IMEN	TS										BOREHOLE		CKFIL	L	
								1				Soil Cutting	<u> </u>			
_	Œ			ROC	KC	ORE	•						STS	չ	ய் ம	
DЕРТН (ft)	EVATION		·.	Υ, %	EQ.	%	RE G/ R	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEP	EVA	RUN NO.	BOX NO.	VER	FRAC. FREQ.	R.Q.D., ⁶	FRACTURE DRAWING/ NUMBER	Ĕ					CKE	ABOF TE	JRILL FEET	NOTES
		교	BC	RECOVERY, %	FRA	R.(FR/ DR,						'	_		
	390								Asphalt at	t surface. ered to 5 feet bgs.						
-	Ĺ							7	Artificial		no to madii	/				
•									Sandy Si	Li dark brown; moist; iii	ne to medium	i sand.				
-																
								7								
-5	385	1	1	22/30				2	9							
-									UPPER S	AND UNIT (Qs)						
-		2	1	22/30	-				Silty SAN	ID 10YR 5/6 (yellowish I SAND; trace coarse SAN	orown); mois	t, fine to				
-		_	•	22/30				·/.	SAND wit	th SILTmoist; fine to me	edium SAND	with				
-									few coars	e SAND; trace fine GRA	AVEL					
-10	380	3	2	23/30				,	Silty SAN	1D 10YR 4/4 (dark yellov dium SAND; few coarse	wish brown);	moist;				
-									GRAVEL	didili OAND, iew coars	c oallo, liac	ic iii c				
_	L	4	2	23/30	-				。 』 @ 12.5': (Cobble						
-			_						1	I0YR 4/6 (dark yellowis	h hrown) SAI	ND is fine				
-									with trace	medium SAND; no GR	AVEL	10 1110				
-15	<u>3</u> 75	5	3	24/30				· · · · ·	@ 15': Sa	nd becomes coarser						
-								/	SAND wit	th SILT10YR 5/4 (yellow dium SAND, some coal	wish brown); rse SAND fe	moist; w fine				
		6	3	21/30	-			%	_ GRAVEL	ID 10YR 5/4 (yellowish I		, –				
-			-					<i>"</i>	medium S	SAND, some coarse SA	ND, few fine	GRAVEL				
20								: %	SAND wit	th SILT10YR 5/4 (yellow dium SAND; few coarse	wish brown); e SAND and	moist; fine				
-20	370	7	4	22/30	1			· · · · ·		trace coarse GRAVEL		-				
-									Clayey Sa	AND to Sandy CLAY7.5 loist; fine SAND; trace r	5YR 3/4 (darl nedium SAN					
_		8	4	19/30	-				fine GRA		2 2 3 0, 114					
-			•													
_									MUD FLC	OW (Qm)						
					-	~~	NO:::			THIS SUMMARY APPLI	ES ONLY AT	THE LOCATION	<u>۱</u>		-	
SRO M	UP (NTS, INC.	OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY	IONS MAY DI	FFER AT OTHE	ΞR			
					•		Ave. S			WITH THE PASSAGE O PRESENTED IS A SIMP	F TIME. THE	DATA		FI	GURI	Ξa
DEL.	TΛ		To	rran	ce,	Cal	lifornia	a 90)501	CONDITIONS ENCOUN			_			

LO	G (ЭF	C	ORI	Ε	ВО	RIN	IG		PROJECT NA Millenium Tr	AME ench W Argyle Ave	PROJECT LA-1191A	NUMBER			ORING B-9	
	LOC								1	DATE(S) DRI 8/11/2014	LLED	LOGGED TO	BY			HEET N	0.
	itol Pa LING)					+	DRILL BIT S	ZE/TYPE	10	CHECKED	BY	тс	TAL DE	PTH DRILLE
	w Ste								+-	8"	_		SK INCLINATION	N F	1,	et)	70 AL/BEARING
	. L RIC M-12		PE							DRILLED BY Gregg In-Situ			INCLINATIO		Degre		AL/BEAKING
	AREN			NDWA	ΓER	DEP.	TH						APPROXIM	ATE	SURF	ACE EL	EVATION
	IMEN												(feet) BOREHOLE		90.8 CKFIL	.L	
		1											Soil Cutting	s	1	ı	
_	(#			ROC	K	CORE	≣		_					TS	 ≿	uî œ	
DEPTH (ft)	ELEVATION (RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/		LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	365	9	5	22/30					\forall	035-041	ID 7 5\/D 4/0 (-tu b						
_										medium S	ID7.5YR 4/6 (strong bro SAND; few coarse SAND ce fine GRAVEL	own); moist; f D, small lense	es of				
_	_	10	5	37/30							5YR 4/4 (brown)						
_	_																
_30	_	11	6	60/60													
-	360		·						И								
_									И								
_																	
- _35	_																
_	<u>3</u> 55	12	7	57/60						brown); m	AND to Silty SAND 7.5Y loist; fine to medium SA	′R 4/6 (strong ND; trace co	g arse				
_	_									SAND and	d fine GRAVEL						
_	-									Color cha	nge to 5YR 4/4 (reddish	brown)					
<u> </u>	_								И								
-4 0		13	8	60/60													
_																	
_	_																
_	-																
45		14	9	60/60					<u>K</u> -	OLDER A	LLUVIUM (Qoal)						
_	<u>3</u> 45		-							Clayey S	AND to Silty SAND5YR	3/3 (dark re	ddish				
-										brown); m	oist; fine to medium SA d fine GRAVEL	ND; trace co	arse				
_										@ 48': 5Y	R 4/4 (reddish brown) a	ind 5YR 5/1 ((gray				
GRO		GRO	370) Am	ар	ola	Ave.	Sui	ite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GUR	E b

SITE	LOC	ATIC	N	ORI	E	ВО	RIN	IG	DATE(S) DRI	ench W Argyle Ave	LA-1191A LOGGED			s	ORING B-9 HEET N	0.
DRIL	itol Pa LING ow Ste	ME	THOD	1					8/11/2014 DRILL BIT S 8"	IZE/TYPE	ТО	CHECKED I		TC (fe	OTAL DE	PTH DRILLE
	L RIC M-12		PE						DRILLED BY Gregg In-Situ			INCLINATIO		ROM \ Degree		AL/BEARING
	AREN e enco			IDWA	ΓER	DEP.	TH					APPROXIMA (feet)		SURF 90.8	ACE EL	EVATION
СОМ	IMEN [®]	TS										BOREHOLE Soil Cuttings		CKFIL	L	
	ff.			ROC	K C	ORE	.						TS	۲۸	~ ئىر	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	<u>3</u> 40	15	10	60/60												
- -	_															
_55 - -		16	11	60/60	-											
- - -60 -	 <u>3</u> 30	17	12	25/60	_											
- - - -65	_	18	13	60/60					Sandy CI fine SANI	_AY 5YR 3/3 (dark reddi D; trace medium SAND a	sh brown); m and fine GRA	noist, AVELS				
- - -	<u>3</u> 25		.0					/·/·/·/·/·								
–70 –	 320 				_				Total Dep	th: 70 feet below ground	- — — — — d surface.					
- -																
SRD DEL	UP	GRO	370) Am	ар	ola		Suit	NTS, INC. e 212 0501	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OI PRESENTED IS A SIMPI CONDITIONS ENCOUNT	AT THE TIME ONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ξc

SITE	LOC	ATIO	N	ORI	E	ВО	RIN	G	DATE(S) DRI	ench W Argyle Ave	PROJECT LA-1191A LOGGED			S	ORING B-10 HEET N	0.
DRIL	itol Pa LING w Ste	MET	HOD)					8/11/2014 DRILL BIT S 8"	ZE/TYPE	ТО	CHECKED SK		TC (fe	et)	PTH DRILLE
	L RIC M-12		PE						DRILLED BY Gregg In-Situ			INCLINATIO		ROM \ Degree		AL/BEARING
	AREN e enco			IDWA	ΓER	DEP	ГН					APPROXIM (feet)		SURF 90.2	ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLE Soil Cutting	BA		L	
	(ft)			ROC	K C	ORE		 -					STS	۲۶	uî œ	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
										surface. ered to 5 feet bgs. AL FILL (Qaf)						
	_									LTdark brown, moist, fir	ne to medium	n sand.				
5	385							*								
	503	1	1	25/30				**	UPPER S	AND UNIT (Qs)						
-		2		22/30	_				Silty SAN medium S	ID 10YR 5/6 (yellowish b SAND; trace coarse SAN R 3/6 (dark yellowish bi	ID and fine C	t; fine to SRAVEL				
-10	<u>3</u> 80	3	2	22/30	_				fine to me	th SILT10YR 6/6 (brown dium SAND; trace coar	se SAND and	d fine				
-	_								Silty SAN fine SAND	D10YR 4/4 (dark yellov); trace coarse SAND a	vish brown); nd fine GRA\	moist; √EL				
-	_	4		24/30					。 							
15	<u>3</u> 75	5	3	27/30	-				moist; fine	AND 10YR 4/4 to 4/6 (days sand); few medium Sold fine GRAVEL th SILT10YR 6/6 (brown	AND, trace c	oarse	_			
		6		23/30					fine to me	dium SAND with some	coarse SANI	D, trace				
	_			20,00					Silty SAN	I D 10YR 5/6 (yellowish b SAND; trace coarse SAN	prown); moist	t; fine to	-			
20	<u>3</u> 70	7	4	26/30	-					YR 4/6 (dark yellowish I		RAVEL				
		8		23/30	-				9							
-																
SRO DEL			370) Am	ар	ola .	NSUL Ave. S	Suit		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER ON	 FI	GURI	Ξ а

_O(ORI	Ε	ВО	RIN	IG	I		ench W Argyle Ave	PROJECT LA-1191A LOGGED				ORING B-10 HEET N	0.
Capit DRILI	tol Pa	arking	g Lot)					8	DATE(S) DRI 8/11/2014 DRILL BIT S		TO	CHECKED	BY	TC	of 3	PTH DRILLE
Hollov	w Ste	m Aı	uger							8"			SK INCLINATION	NI E	1,	et)	60 AL/BEARING
DRILI Marl N			PE						1	DRILLED BY Gregg In-Situ			INCLINATIO		Degre		AL/BEARING
APPA None				NDWA	ΓER	DEP	ТН		1				APPROXIMA	ATE	SURF	ACE EL	EVATION
COM													(feet) BOREHOLE		90.2 CKFIL	L	
													Soil Cutting			_	
(#)	(ft)			ROC	KC	CORE	E		5					ESTS	ORY .	TE, UR	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/		LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
-	_	9	5	28/30				\dashv	d	MUD FLC	OW (Qm)						
_	_									(brown); r	.AY 5YR 4/3 (reddish br noist, fine SAND, few m	own) to 7.5Y edium SAND	R 4/4), trace				
_	_	10		31/30						coarse SA	AND and fine GRAVEL						
- [
-30	<u>3</u> 60	11	6	52/60													
-	_			02/00													
-	-																
-	_																
_35 [<u>3</u> 55	12	7	60/60													
_	_																
- [
_ [
40	<u>3</u> 50	13	8	58/60													
-	_									@ 41': 7.5	5YR 3/3 (dark brown)						
-	_																
-	_																
-	_							ļ.		OLDER A	LLUVIUM (Qoal)						
45 <u> </u>	<u>3</u> 45	14	9	60/60	1					brown); m	AND to Silty SAND .5Y oist; fine to medium SA	R 4/6 (strong ND; trace co	g arse				
_	_										d fine GRAVEL						
_ [@ 401. 7.7	SVD 4/4 (brown) and 7.5	VD 5/4 /~~~	()				
- [<i>യ</i> 48∵ 7.5	5YR 4/4 (brown) and 7.5	ırk ə/i (gra)	')				
											THIC CHAMADY ADDITE	EQ ONII V AT	THE LOCATION		<u> </u>		
SROL		GRO	370) Am	ар	ola	NSU Ave. liforni	Su	ite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OI PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME ONS MAY DI CHANGE AT TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE ITHIS LOCATIO DATA	ER N	FI	GURI	Ξb

SITE	LOC	ATIC	N	ORI	E	вО	RIN	G	PROJECT NAME Millenium Trench W Argyle DATE(S) DRILLED	Ave LA	-1191A DGGED	NUMBER		s	ORING B-10 HEET N	0.
DRIL	itol Pa LING w Ste	MET	HOD	1					8/11/2014 DRILL BIT SIZE/TYPE 8"	TC)	CHECKED SK		TC (fe	et)	PTH DRILLE
	L RIC M-12		PΕ						DRILLED BY Gregg In-Situ Drilling			INCLINATIO		ROM \ Deare		L/BEARING
APP	AREN	IT GI		IDWA	ΓER	DEP	ТН	ı	Grogg in Old Drining			APPROXIM				EVATION
	e enco		rea									(feet) BOREHOLE		90.2		
												Soil Cutting				
æ	(ft)			ROC	K C	ORE	<u> </u>	<u>}</u>					STS	ᇫ	ய் ⊈	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL D	ESCRIP	TION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	-	15	10	60/60				1.								
	-															
	_															
55	<u>3</u> 35	16	11	59/60												
	_															
	_															
	-															
60	 330															
									Total Donth: 60 foot holow	around our						
•	_								Total Depth: 60 feet below	ground sun	ace.					
	_															
-	-															
65	<u>3</u> 25															
	_															
	Ĺ															
70	<u>3</u> 20															
	-															
-	-															
-	-															
iRO	UP (GRO							NTS, INC. e 212 THIS SUMMARY OF THIS BORING SUBSURFACE CO LOCATIONS AND WITH THE PASS, PRESENTED IS A	AND AT THO DNDITIONS MAY CHAN AGE OF TIM	IE TIME MAY DIF IGE AT 1 E. THE	OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ξc

				ORI	ΕΙ	ВО	RIN	G		ench W Argyle Ave	LA-1191A				ORING B-11 HEET N	0
	LOC itol Pa								DATE(S) DRI 8/12/2014	LLED	TO TO	ВҮ			of 3	0.
	LING		_)					DRILL BIT S	IZE/TYPE		CHECKED	ВҮ		OTAL DE	PTH DRILLE
	ow Ste							+	8"	,		SK	ON F	'		60 AL/BEARING
	M-12		PE						Gregg In-Situ					Degre		
	AREN			NDWA	ΓER	DEP	ТН					APPROXIM	ATE	SURF	ACE EL	EVATION
	IMEN		i eu									(feet)		88.3		
												Soil Cutting		J. (.)	. -	
				ROC	K C	ORE	<u> </u>						S			
(£)	J) NC							-06∀					TEST	TORY	ATE, OUR	FIELD
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	NOTES
									Asphalt a	t surface. ered to 5 feet bgs.						
_										AL FILL (Qaf)						
_	385								Sandy SI	LTdark brown, moist, fir	ne to mediun	n sand.				
_								1								
_5		1	1	21/30	_				UPPER S	AND UNIT (Qs)						
_		·		2.700						ID 10YR 5/6 (yellowish b	orown): mois	: fine to				
_									medium S	SAND; trace coarse SAN	ID and fine (BRAVEL				
_	<u>3</u> 80	2		24/30					SAND wi	th SILT10YR 6/6 (brown	nish yellow);	moist;				
_	_								GRAVEL	edium SAND; trace coar	se SAND and	d fine				
_10	-	3	2	23/30					•							
_	-								<i>,</i>							
_	375	4		24/30				• • • •	Silty SAN	ID 10YR 4/6 (dark yellov	vish brown);	moist;				
_	3/3								fine to me GRAVEL	edium SAND; trace coar	se SAND an	d fine				
_15		5	3	20/30					@ 14.5': s	sand becomes coarser						
_		5	3	20/30					SAND wi	th SILT10YR 5/6 (yellov	wish brown):					
_									fine to me	edium SAND; few coarse trace coarse GRAVEL	e SAND and	fine				
_	<u>3</u> 70	6		21/30				::/	Silty SAN	ID 10YR 5/6 (yellowish to SAND, few coarse SAND	orown); mois 0: trace fine (; fine to				
_	_								•	avel becomes coarser	,					
- 20	-	7	4	24/30	-					YR 4/4 (dark yellowish t	orown); sand	becomes				
_	-									YR 5/6 (yellowish brown	n); sand beco	omes /-				
_	 365	8		25/30	-					th SILT10YR 5/6 (yellow dium SAND; few coarse						
_	-								MUD FLO	OW (Qm)						
GRO		GR	370	0 Am	ар	ola	NSUL Ave. S	Suite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OI PRESENTED IS A SIMP CONDITIONS ENCOUNT	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ξa

	G (ORI	E	ВО	RIN	G	PROJECT NA Millenium Tr	ench W Argyle Ave	PROJECT LA-1191A LOGGED				ORING B-11 HEET N	0.
Сар	itol Pa	arking	g Lot)					8/12/2014 DRILL BIT S		TO	CHECKED	BY	2	2 of 3	EPTH DRILLE
	w Ste			,					8"			SK		(fe	eet)	60
	L RIC M-12		PE						Gregg In-Situ			INCLINATIO		ROM \ Deare		AL/BEARING
				NDWA	ΓER	DEP	ТН	l	2.099 o			APPROXIM				.EVATION
	IMEN		rea									(feet)		88.3	1	
												Soil Cutting			· -	
æ	(ft)			ROC	KC	ORE	I	≿					STS	NY.	hj玩	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		9	5	60/60						AY7.5YR 4/4 (brown) tooist; fine SAND; trace fi						
-																
_	360															
_	_															
_30	-	10	6	60/60												
-	-															
_	255															
_	<u>3</u> 55															
_35		11	7	59/60					Clavey S	AND to sandy CLAY7.5	YR 4/6 (stro	na				
_			•	00/00					brown); m	noist; fine SAND; few me	edium SAND	, trace				
-	_															
_	<u>3</u> 50								@ 38': 7.5	5YR 4/4 (brown)						
-	-															
-40 -	-	12	8	58/60					@ 40': 7.	5YR 5/4 (brown)						
_																
_	345															
-									OLDER A	LLUVIUM (Qoal)						
4 5	_	13	9	59/60	-				Clayey S	AND to sandy CLAY7.5	SYR 3/2 (dark	s brown);				
-	-								moist; fine SAND and	e SAND; few medium SA d fine GRAVEL	AND, trace c	oarse				
_	_															
_	340															
									Color cha (brown) a	nge to 7.5YR 3/2 (dark l nd 7.5 YR 5/1 (gray)	brown); 7.5Y	R 4/4		<u> </u>		
GRO		GRO	370	O Am	ар	ola		Suit	NTS, INC. e 212 0501	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OF PRESENTED IS A SIMP CONDITIONS ENCOUNT	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	IGURI	E b

SITE	LOC	ATIC	N	ORI	ΕΪ	ВО	RIN	G	PROJECT NA Millenium Tr DATE(S) DRI 8/12/2014	ench W Argyle Ave	PROJECT LA-1191A LOGGED TO			s	ORING B-11 HEET N	0.
DRIL Hollo	itol Pa LING w Ste	ME1	Γ ΗΟD uger)					DRILL BIT S		10	CHECKED SK		TC (fe	OTAL DE	60
	. L RIC M-12		PE						DRILLED BY Gregg In-Situ			INCLINATIO		ROM \ Deare		AL/BEARING
			ROUN	IDWA	ΓER	DEP	TH		Gregg III-Sill	a Dilling		APPROXIM				EVATION
	enco		red									(feet)	3	88.3		
COM	IMEN	TS										BOREHOLE Soil Cutting		CKFIL	L	
												Con Cutting				
Œ	£)			ROC	KC	ORE	<u> </u>	_ ≿					STS	λ	氘尻	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	-	14	10	39/60				1.:								
	_															
	-															
	<u>3</u> 35															
55		45	4.4	50/00												
		15	11	59/60					010	AND 7 EVD 4/C (observe)		t. 6:				
									SAND; fe	AND7.5YR 4/6 (strong with medium SAND; trace	coarse SAN	D and				
	330								lille GRA	VEL						
60																
	_								Total Dep	th: 60 feet below groun	d surface.					
	_															
	<u>32</u> 5															
. -	-															
35	_															
	_															
	320															
	520															
70																
	<u>3</u> 15															
FRO		GR(370) Am	ар	ola		Suit	↓ NTS, INC . e 212 0501	THIS SUMMARY APPLII OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER ON	 FI	GUR	Ē c

_0	G (OF	C	ORI	Ε	ВО	RIN	G	PROJECT NAME Millenium Trench W Arg	yle Ave	LA-1191A				ORING B-12	
	LOC								DATE(S) DRILLED		LOGGED	BY			HEET NO of 3	0.
	tol Pa			<u> </u>					8/12/2014 DRILL BIT SIZE/TYPE		ТО	CHECKED	RY			PTH DRILLE
	w Ste								8"			SK	٠.		et)	60
	L RIG								DRILLED BY				ON F	ROM V	ERTICA	AL/BEARING
Marl	M-12								Gregg In-Situ Drilling				0	Degree	es	
	AREN enco			IDWA	ΓER	DEP	ТН					APPROXIM	ATE	SURF	ACE EL	EVATION
	MEN											(feet)		87.5	1	
00111												Soil Cutting		OKI IL	_	
æ	(ft)				KC	ORE	<u>:</u>	_ إ					STS	장	氘尻	
DEРТН (ft)	EVATION		o.	RECOVERY, %	EQ.	%	품. 15년 18년	LITHOLOGY	MATERIA	L DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEP	EVA.	RUN NO.	BOX NO.	VER	FRAC. FREQ.	R.Q.D., ⁶	FRACTURE DRAWING/ NUMBER	<u>F</u>					CKE	ABOF TE	JRILI FEET	NOTES
	ᆸ	교	B	SECC	FRA	R.(PRA DN						Δ.	-		
								\ <u>\</u>	Asphalt at surface.				-			
									Hand augered to 5 feet ARTIFICIAL FILL (Qaf			/				
	385								Sandy SILTdark brown		e to medium	n sand				
								7	Sundy CIET dank Brown	1, 1110101, 1111	o to modium	r darra.				
								* * * * * * * * * * * * * * * * * * *								
5		1	1	23/30					UPPER SAND UNIT (0	Je)						
	_	'	'	23/30								fi 4				
	_								Silty SAND 10YR 5/6 (medium SAND; trace c	oarse SAN	D and fine G	RAVEL				
	<u>3</u> 80	2		16/30												
	-															
10	-															
	_	3	2	19/30												
	_															
	<u>3</u> 75	4		15/30	-				@ 12': very soft drilling	4 - 4/0 / 4 -						
	_			10,00					Clayey SAND 10YR 4/4 moist; fine to coarse SA	AND; trace	coarse sand	l and fine				
	_								GRAVEL							
15		5	3	12/60					No Recovery contact in	nferred usin	g CPT data.					
	L															
	<u>3</u> 70															
		6							Clayey SAND10YR 4/4 moist, dense, mostly fir							
									SAND and GRAVEL, m		, -					
20		7	4	0/30	-			\(\frac{1}{2}\)	No Recovery contact in	nferred usin	g CPT data		-			
			•													
	265															
	<u>3</u> 65	8		0/30	1											
	-								MUD FLOW (Qm)				-			
									Silty SAND7.5YR 4/4	(brown), mo	oist, medium	ı dense,				
RO	UP (GRO					NSUL Ave. S		NTS, INC. OF THIS BOR SUBSURFACE LOCATIONS WITH THE PA	ARY APPLIE RING AND A E CONDITION AND MAY CASSAGE OF	S ONLY AT THE TIME ONS MAY DIECHANGE AT THE	THE LOCATION OF DRILLING. FFER AT OTHI THIS LOCATION DATA	ER N	FI	GURI	≣ a
ELT	ΓΔ		То	rran	ce,	Cal	lifornia	90	501 PRESENTED CONDITIONS			OF THE ACTUA	AL			

	G (ORI	E	ВО	RIN	IG	PROJECT NA Millenium Tr	ench W Argyle Ave	PROJECT LA-1191A LOGGED				ORING B-12 HEET N	0.
Cap DRIL	itol Pa	arkino ME	g Lot THOE)					8/12/2014 DRILL BIT S 8"		ТО	CHECKED	BY	тс	of 3 OTAL DE	PTH DRILLE
	w Ste								DRILLED BY	<u> </u>		SK INCLINATION	ON F	1,		60 AL/BEARING
	M-12								Gregg In-Site				0	Degre	es	
	AREN e enco			NDWA	ΓER	DEP.	TH					APPROXIMA (feet)			ACE EL	EVATION
COM	IMEN	TS										BOREHOLE Soil Cutting	ВА	87.5 CKFIL	L	
£	(ft)				K	CORE	E		5				STS)RY	IE, JR	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NI IMBER	YEO IOHIII		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
-		9	5	24/30					GRAVEL	edium SAND, trace coars and coarse GRAVEL.	se SAND, fin	e				
	360	10		00/00						ecomes harder						
	_	10		30/30					Silty SAN	used to place Qm conta ND7.5YR 4/4 (brown), medium SAND,	act oist, dense,	mostly				
30		11	6	29/30												
35		12	7	60/60					Clayey S moist, find GRAVEL	AND 10YR 4/6 (dark yel e SAND; trace coarse S.	lowish browr AND and fine	n); e				
									Sandy C	LAYmoist; fine SAND; tr	ace medium	and				
40	 <u>3</u> 45	13	8	60/60					coarse S	AND, and fine GRAVEL						
	-								OLDED ()						
45		14	9	60/60				1:/:/:	Sandy C	ALLUVIUM (Qoal) LAY 5YR 4/3 (reddish bace medium and coarse						
- - -	<u>3</u> 40							<i>'./././././.</i>	GRAVEL							
SRO		⊢—∣ GR(370) Am	ар	ola		Sui	ANTS, INC. te 212 0501	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OF PRESENTED IS A SIMPLE CONDITIONS ENCOUNT	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Εb

SITE	LOC	ATIC	N	ORI	E	ВО	RIN	G	DATE(S) DRI	ench W Argyle Ave	LA-1191A LOGGED			s	ORING B-12 HEET N of 3	0.
DRIL Hollo	LING W Ste	ME1	T HOD uger)					8/12/2014 DRILL BIT S 8"		ТО	SK INCLINATIO		TC (fe	OTAL DE	EPTH DRILLE 60 AL/BEARING
	. L RIC M-12		'E						Gregg In-Situ			III III III III III III III III III II		Degree		AL/DEARING
				IDWA ⁻	ΓER	DEP	ТН	- 1				APPROXIM	ATE	SURF	ACE EL	EVATION
	enco		rea									(feet)		87.5		
COIVI	MEN	13										Soil Cuttings		CKFIL	L	
£	(ft)				K C	ORE	=						STS	ВY	Ä,	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	-	15	10	42/60												
	 <u>3</u> 35								10YR 5/2	AND10YR 4/6 (dark yel (grayish brown); moist; ace coarse and fine GR/	fine to media	ı) and um				
55	_	10	44	E4/00	-				Sandy Cl moist; fine	AY10YR 4/6 and 10YR SAND; trace fine GRA	R 5/2 (mottled VEL	i);				
	 330	16	11	54/60					Clayey Sa moist; fine	AND 10YR 4/4 (dark yel e SAND	lowish brown	n);				
									Silty SAN SAND; tra	ID 10YR 5/6 (yellowish bace fine GRAVEL	prown); moist	t; fine				
60	 325				-				Total Dep	th: 60 feet below groun	d surface.					
65	_															
	_															
	320															
70																
	_															
	<u>3</u> 15															
•	_															
	_															
FRO		GRO	370) Am	ар	ola	NSUL Ave. S	Suite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	E c

SITE	G (ATIC	N	OR	E I	ВО	RIN	G	PROJECT NA Millenium Tr DATE(S) DRI 8/12/2014	ench W Argyle Ave	PROJECT LA-1191A LOGGED TO			s	ORING B-13 HEET N of 3	0.
DRIL	LING	MET	THOD)					DRILL BIT S	IZE/TYPE	10	CHECKED SK	ВҮ	тс		PTH DRILLEI
	L RIC M-12		PE						DRILLED BY Gregg In-Situ			INCLINATION		ROM \ Degre		AL/BEARING
	AREN e enco			NDWA.	TER	DEP	ГН					APPROXIM (feet)		SURF 87	ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLI Soil Cutting		CKFIL	L	
	(ft)			ROC	ck c	ORE	Ē	 					STS	≿	uí œ	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
_	_									t surface. ered to 5 feet bgs. AL FILL (Qaf)						
-	<u>38</u> 5									LTdark brown, moist, fi	ne to medium	n sand.				
- -5	_	1	1	23/60	-			*								
-	380	2		19/30					Silty SAN	SAND UNIT (Qs) ID10YR 5/8 (yellowish bedium SAND; trace coar	orown); moist se SAND and	t; mostly d fine				
- -10	_	3	2	25/30					GRAVEL							
_	 <u>3</u> 75								Clavey S	AND 10YR 4/4 (dark yel	lowish brown	n)·				
-	_	4		30/30					moist; mo	stly fine SAND; few med AND and GRAVEL	dium SAND;	trace				
-15 -	370	5	3	26/30						th SILT10YR 5/6 (yellov e to medium SAND; few VEL						
-		6		20/30					Silty SAN	ND 10YR 4/4 (dark yellov e SAND; few medium S	wish brown); AND; trace f	 moist; ine	_			
- -20 -	_	7	4	27/30	-				GRAVEL							
_	<u>3</u> 65	8		18/30	-				📜 moist; mo	th SILT10YR 4/6 (dark style) stly fine to medium SANAVEL; occasional silty s	ND; few coars					
_									MUD FLC	DW (Qm) AND7.5YR 4/4 (brown);	moist; most	y fine				
GRO		GRO	370	0 Am	nap	ola .	NSUL Ave. S	Suite	NTS, INC. e 212	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY O WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	ES ONLY AT THE TIME IONS MAY DICHANGE AT THE LIFICATION (THE LOCATION OF DRILLING FFER AT OTH THIS LOCATION DATA	ER ON	FI	GURI	≣ a

	G (ORI	E	ВС	RIN	IG	PROJECT NA Millenium Tr DATE(S) DR	ench W Argyle Ave	PROJECT LA-1191A LOGGED			s	ORING B-13 HEET N	0.
DRIL	itol Pa LING w Ste	ME	ГНОД)					8/12/2014 DRILL BIT S 8"	IZE/TYPE	ТО	CHECKED SK	BY	тс	OTAL DE	PTH DRILLE
	L RIG								DRILLED BY	<u> </u>			ON F	ROM V	VERTIC/	AL/BEARING
	M-12								Gregg In-Site	u Drilling				Degre		
	AREN e enco			NDWAT	ΓER	DEP.	ТН					APPROXIM (feet)		SURF 87	ACE EL	EVATION
COM	IMEN [*]	TS										BOREHOLE Soil Cutting	ВА		L	
(L	(#) 1			ROC	KC	ORE	.		-				STS	JRY	元紀	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	YOU OHILL		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
_	_	9	5	32/30					SAND; fe GRAVEL	w medium SAND; trace	coarse and t	fine				
_	<u>3</u> 60								Clayey S	AND 7.5YR 4/4 (brown); SAND; trace coarse SAN	moist; most	ly fine to				
_									medium S	SAND; trace coarse SAN	ID and fine (SRAVEL				
-	_															
_30		11	6	58/60	_											
_	355															
_																
_																
_35	_	12	7	59/60												
_	-	-	•	00/00												
_	<u>3</u> 50															
_									Sandy Cl	LAY7.5YR 3/4 (dark bro	wn) interbed	ded				
-									some me coarse G	reddish brown); moist; r dium SAND; few coarse	SAND; trace	and; e fine to				
- 40		13	8	58/60					Coarse O	IVAVLE						
_	345															
_																
_	_							Щ	OLDER (ALLUVIUM (Qoal)						
45	_	14	9	58/60				<i>\\</i>		LAY5YR 3/3 (dark reddi	sh brown) n	noist:				
-	-		-						mostly fin	e SAND; some medium ace GRAVEL	SAND; few	coarse				
_	<u>3</u> 40															
_								<i>\interpretation \interpretation \interpretati</i>								
-	_							[;								
GRO		GRO	370) Am	ар	ola		Sui	ANTS, INC. te 212 0501	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OF PRESENTED IS A SIMP CONDITIONS ENCOUNT	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER N	F	IGURI	E b

	G (ORI	E	ВО	RIN	IG	DATE(S) DR	ench W Argyle Ave	LA-1191A LOGGED			s	ORING B-13 HEET N	0.
DRIL	itol Pa . LING w Ste	ME	THOD	1					8/12/2014 DRILL BIT S 8"	IZE/TYPE	ТО	CHECKED SK		TC (fe	et)	PTH DRILLE
	. L RIC M-12		PE						DRILLED BY			INCLINATION		ROM \		AL/BEARING
			ROUN	IDWA	ΓER	DEP.	TH		Gregg In-Situ	ı Drilling		APPROXIM				EVATION
	enco		red									(feet)		87		
COM	MEN	15										BOREHOLE Soil Cutting		CKFIL	.L	
<u> </u>	(ft)			ROC	KC	ORE	=						STS	RY	ய் ⊈	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NI IMBER	YEO IOHTI I		MATERIAL DESC	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
- - - - - - - - - - -		16	11	34/60					Sandy CI interbedd trace med mottled	LAY to Clayey SAND ed 7.5YR 5/1 (gray); mo flium to coarse SAND; ti	5YR 4/4 (brovist; mostly finace fine GRA	wn) ne SAND; AVEL;				
65									Total Dep	th: 60 feet below grour	nd surface.					
GRO		GR(370) Am	ар	ola		Sui	INTS, INC. te 212	THIS SUMMARY APPLII OF THIS BORING AND SUBSURFACE CONDII LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTH THIS LOCATIC DATA	ER)N	 FI	GUR	E c

	G (OR	ΕI	ВО	RING	3	PROJECT NA Millenium Tre	ench W Argyle Ave	PROJECT LA-1191A LOGGED				B-14 CHEET NO	D .
	itol Pa								1/5/2015		TO	٥.			of 3	
DRIL		ME	THOD)					DRILL BIT SI	ZE/TYPE		CHECKED SK	ВҮ		OTAL DE eet)	PTH DRILLEI
DRIL	L RIC								DRILLED BY				ON F	ROM	VERTICA	L/BEARING
CME									Gregg In-Situ	Drilling			0	Degre	es	
	e enco			NDWA	TER	DEP.	ТН					APPROXIM (feet)		SURF 90	ACE ELI	EVATION
СОМ	MEN	TS										BOREHOLE		CKFIL	.L	
		1										Soil Cutting	s			
<u></u>	(#)			ROC	CK C	ORE		<u>}</u>					STS	ᇫ	可民	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Asphalt at	surface. Approximately ered to 10 feet bgs.	7".					
								2		AL FILL (Qaf)						
								7	Sandy SII	.T dark brown, moist, fi	ne to medium	sand				
										i dan siem, molet, m	no to modium	r oana.				
5	385							7								
								**								
										AND UNIT (Qs)						
									medium S	Dyellowish brown (10Y AND; trace fine GRAVI	ΞL. ΄΄					
	L								@ 7" few f	fine GRAVEL; trace coa 5.	arse GRAVE	L and				
0	380	1	1	26/30												
	-	'	'	20/00												
	_							/ //:								
	_	2		23/30				://								
	_															
15	<u>3</u> 75	3	2	22/30						AND strong brown (7.5 n few medium SAND; tr EL.						
										h SILT (SP-SM) yellow o medium SAND; few o						
		4		20/30					GRAVEL;	trace coarse GRAVEL.						
										(7.5.)	(D. F(0)					
20	<u>3</u> 70	5		20/20					SAND; tra	ANDstrong brown (7.5) ce medium SAND; trac	e coarse SAI	ND.				
	_	5	3	22/30					SAND wit medium S	h SILT yollowish brown AND; few coarse SANI	(10YR 5/6); D; trace fine (fine to GRAVEL.				
	_								SAND wit	h SILT10YR 4/6; dark ge; mostly medium to fi	yellowish bro	wn;				
	L	6		26/30					\\SAND; tra	ce GRAVEL.		//				
	365								∖ medium de	AND7.5YR 5/8; strong to ense; mostly fine SANE I development.						
RO	UP (GR(370) Am	nap	ola	NSUL [*] Ave. S lifornia	uite	NTS, INC. e 212	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTH THIS LOCATIC DATA	ER ON	F	IGURE	E a

GDC_ROCK_CORE_ENG LA1191 BORING LOGS B-1 TO B-13.GPJ ROCK2.GDT 3/3/15

SITE	LOC	ATIO	N	ORI	ΕΙ	ВО	RIN	G	DATE(S) DRI	ench W Argyle Ave	LA-1191A LOGGED			S	ORING B-14 HEET Notes of 3	0.
DRIL	itol Pa LING ow Ste	MET	THOD)					1/5/2015 DRILL BIT S 8"	IZE/TYPE	ТО	CHECKED SK	вү	то		PTH DRILLE
	L RIC								DRILLED BY			INCLINATIO		ROM V		L/BEARING
	AREN e enco			NDWA ⁻	ΓER	DEP.	ТН			<u>-</u>		APPROXIM (feet)		SURF	ACE EL	EVATION
COM	IMEN	TS										BOREHOLE Soil Cutting	BA		L	
	ı,			ROC	K C	ORE						Toon outling		 		
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
-	_	7	4	32/30					\ moist; mo	th SILT10YR 5/6; yellow stly medium SAND; sor w GRAVEL at 22.5-23.0 OW (Qm)	e fine and co	pose; parse				
-	_	8		30/30	-				mostly fin- plasticity; SAND with	AND7.5YR 4/6; strong to e SAND; trace coarse Sono dilitancy; medium to th SILT and GRAVELsti	AND; mediu ughness. rong brown;	m 7.5YR				
30	360	9	5	32/30	_				5/6; moist fine GRA\ Silty San fine SANI	t; fine to medium SAND; VEL; trace coarse GRA\ dy CLAYstrong brown (D; trace medium SAND. IDstrong brown (7.5YR	few coarse /EL. 7.5YR 5/6); r	SAND; moist;				
- - -		10		41/30	_				SAND; fer Clayey Sa SAND; fer	w medium SAND; trace AND strong brown (7.5Y w medium SAND; trace VEL; soil development.	fine GRAVE R 5/6); mois	L. t; fine				
-35 -	<u>35</u> 5	11	6	55/60												
-	_															
- -40	<u>3</u> 50	12	7	56/60												
- - -	_								@ 41': Ind (5YR 3/3)	crease in clay content; d ; moist.	ark reddish t	orown				
- -45	 <u>3</u> 45	13	8	60/60					OLDER A	ALLUVIUM (Qoal)			-			
- - -	_								trace med	LAYbrown (7.5YR 4/4); dium SAND; trace coase on grains; mild to moder	SAND; Iron	oxide				
GRO		↓ GR0	370) Am	ар	ola	NSUL Ave. S	Suite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OF PRESENTED IS A SIMP CONDITIONS ENCOUN'	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER ON	FI	GURI	Ē b

SITE	LOC	ATIC	N	ORI	E	ВО	RIN	G	DATE(S) DRI	ench W Argyle Ave	LA-1191A LOGGED			s	ORING B-14 HEET N of 3	0.
DRIL Hollo	itol Pa LING w Ste	m A	THOE uger)					1/5/2015 DRILL BIT S 8"		ТО	CHECKED SK		TC (fe	OTAL DE	PTH DRILLE
DRIL CME	. L RIC : 95	3 TY	PE						Gregg In-Situ			INCLINATIO		ROM v Degre		AL/BEARING
APP	AREN			NDWA	ΓER	DEP	ТН	l	Oregg III-Oll	, Drilling		APPROXIM				EVATION
	enco		red									(feet)		90		
COM	IMEN	TS										BOREHOLE Soil Cutting		CKFIL	L	
	(ff)			ROC	K C	CORE		 -						l ≿	ui œ	
DEPTH (ft)	ELEVATION (RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		14	9	58/60				1.								
									@ 51': fin	e gravels.						
•																
55	335															
		15	10	60/60												
	_							1.								
	_															
60	<u>3</u> 30	16	11	46/60												
	-							::/	Silty SAN SAND; fe	ID strong brown, (7.5YR w medium SAND; trace	4/6); moist; fine GRAVE	fine L.				
-	_									,						
	-								Sandy Cl	_AYreddish brown (5YR	2 4/3); moist;	fine	-			
-									SAND; fer	w medium SAND; trace /EL.	coarse SAN	D and				
65	<u>3</u> 25	17	12	56/60												
-																
-																
70	320								}							
-									Total Dep	th: 70 feet below ground	d surface.					
_																
-																
	315	Щ								•				<u> </u>		
iRO	UP (GRO					NSUL Ave. S		NTS, INC.	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY	AT THE TIME IONS MAY DI CHANGE AT	OF DRILLING. FFER AT OTH THIS LOCATIC	ER		CHDI	= 0
DEL	TA				-					WITH THE PASSAGE OF PRESENTED IS A SIMP	LIFICATION (λL	"	GURI	= C
EL	1 21		ΙC	rran	ce,	Ca	lifornia	a 90	1501	CONDITIONS ENCOUN	TERED.					

pitol Parking Lot 1/5/2015 TO 1 LLING METHOD DRILL BIT SIZE/TYPE CHECKED BY TO	SHEET NO. 1 of 3
LLING METHOD DRILL BIT SIZE/TYPE CHECKED BY If the state of the state	
(fe	OTAL DEPTH DRILL
	eet) 60
LL RIG TYPE DRILLED BY INCLINATION FROM V	
E 95 Gregg In-Situ Drilling 0 Degree	es
PARENT GROUNDWATER DEPTH ne encountered APPROXIMATE SURF. (feet)	FACE ELEVATION
MMENTS BOREHOLE BACKFIL	
Soil Cuttings	
ROCK CORE STS:	而 一 一 一 一 一 一 一 一 一 一 一 一 一
LITHOLOGY ABORATORY MALEN M	FIELD NOTES
ELEVATION (#) RUN NO. BOX NO. ROCK COLER, % ROCLD. % ROCLD. % LITHOLOGY LITHOLOGY LABORATORY LABORATORY LABORATORY LABORATORY TESTS	DRILL RATE, FEET/HOUR LIETD
RI B B B B B B B B B B B B B B B B B B B	
Asphalt at surface. Approximately 7".	
Hand augered to 10 feet bgs. ARTIFICIAL FILL (Qaf)	
Sandy SILT; dark brown, moist, fine to medium sand.	
1385 UPPER SAND UNIT (Qs)	
Silty SAND brownsih yellow (10YR 5/8); moist; fine to	
medium SAND; few coarse SAND; few fine GRAVEL;	
Lace coalse GRAVEL.	
380 1 1 25/30	
<u> 2 27/30 </u>	
Clayey SANDstrong brown (7.5YR 4/6); moist; fine	
375 3 2 24/30 sand; few medium SAND; trace coarse SAND and fine GRAVEL.	
SAND with SILTyellowish brown (10YR 5/4), moistl;	
fine to medium SAND; some coarse SAND; trace fine GRAVEL.	
fine to medium SAND; trace coarse SAND; trace fine	
GRAVEL.	
370 5 3 25/30	
@ 21': cobble	
SAND with SILTstrong brown (7.5YR 4/6); moist; fine	
to coarse SAND; trace fine GRAVEL.	
THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING.	
370 Amanola Ave Suite 212 LOCATIONS AND MAY CHANGE AT THIS LOCATION FI	IGURE a
WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.	IOUNL a

SITE	G (ATIC	N	ORI	ΕΙ	ВО	RIN	G	PROJECT NA Millenium Tr DATE(S) DR 1/5/2015	ench W Argyle Ave	PROJECT LA-1191A LOGGED TO			s	ORING B-15 HEET N of 3	O.
DRIL Hollo	LING ow Ste	ME1	THOD uger)					DRILL BIT S	IZE/TYPE	1.0	SK		(fe	et)	60
DRIL CME	L RIC	TYI	PE						DRILLED BY Gregg In-Site			INCLINATIO		ROM v Degree		AL/BEARING
		IT GI	ROUN	NDWA	ΓER	DEP.	TH		Gregg III-Sili	и Бишид		APPROXIM				FVATION
None	e enco	unte	red									(feet)		90.8	, (02 22	
СОМ	IMEN	TS										Soil Cutting		CKFIL	L	
∵	(£)			ROC	K C	ORE	=	>	-				STS	RY	Ä,Ë	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	YEO IOTHI		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	<u>3</u> 65	7	4	30/30					Clayey S coarse SA MUD FLC	ANDdark brown (7.5YR AND; trace fine GRAVE DW (Qm)	3/4); moist; L.	fine to				
-		8		31/30					Sandy Cl	L AY brown (10YR 4/4); ı um SAND; trace coarse	moist; fine SA	AND; fine				
_	_								GRAVEL Clayey S	AND to Sandy CLAY str	ong brown (7	7.5YR				
-30	-	9	5	56/60					4/6); mois coarse S/	st; fine SAND; few medic	um SAND; tra	ace				
- - -	<u>3</u> 60	3	J	30/00												
- -35 - - -	 355 	10	6	57/60					@ 36.5': 1	trace cobbles and fine g	ravels.					
- 40 - -	350 	11	7	53/60					@ 40': gra	ay mottling (7.5YR 6/1)						
- 45 - -	345 	12	8	60/60					Sandy Cl	ALLUVIUM (Qoal) LAY brown (7.5YR 4/4); um SAND; trace coarse ; few dark gray (7.5YR 6	SAND and fi	ne				
GRO		GR(370) Am	ар	ola		Sui	INTS, INC. te 212 0501	THIS SUMMARY APPLIED OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE OPRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER N	FI	GURI	E b

SITE	LOC	ATIO	N	ORI	E	ВО	RIN	G	PROJECT NAME Millenium Trench W Argyle A DATE(S) DRILLED	/e LA-119			s	ORING B-15 HEET N	0.
DRIL Hollo	tol Pa LING w Ste	ME1 m Au	T HOD uger)					1/5/2015 DRILL BIT SIZE/TYPE 8"	ТО	CHECKED SK		TC (fe	OTAL DE	PTH DRILLE
DRIL CME	L RIG	TYF	PE						DRILLED BY Gregg In-Situ Drilling		INCLINATION		ROM \ Degre		AL/BEARING
		IT GF	ROUN	IDWA	ΓER	DEP.	TH		Gregg III-Sita Dillillig		APPROXIM				EVATION
	enco		red								(feet)	3	90.8		
COM	MEN	ΓS									BOREHOLI Soil Cutting		CKFIL	L	
											Con Outling				
ft)	(ft)				KC	ORE	.	_ ≿				STS	JRY	Ä,R	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DE	SCRIPTIO	N	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	340	13	9	60/60				1.:	@ 50': reddish brown (5YR 4 mottling and very dark gray (/3) with gray (5YR 5/1)				
									fragments.	7.511(5/1) cai	DOII				
	_														
	_														
55	_														
	<u>3</u> 35	14	10	60/60											
	_														
	_														
	-														
60	_				-			1.							
	<u>3</u> 30								Total Depth: 60 feet below gi	ound surface.					
	-								g.						
	-														
	_														
35	 325														
	525														
70															
70	320														
	L														
ROI	UP (NTS, INC. THIS SUMMARY AF OF THIS BORING A SUBSURFACE COLLOCATIONS AND MUTH THE PASSACE	ND AT THE TII IDITIONS MAY IAY CHANGE A	ME OF DRILLING DIFFER AT OTH AT THIS LOCATION	ER	 FI	GURI	= c
	ΓΔ				-		lifornia		PRESENTED IS A S			ΔI	' '		_

SITE	LOC	ATIC	N	ORI	E	ВО	RIN	G	DATE(S) DRI	ench W Argyle Ave	LA-1191A LOGGED			s	ORING B-16 HEET N	0.
DRIL	itol Pa LING w Ste	ME	ГНОД)					1/6/2015 DRILL BIT SI 8"	IZE/TYPE	ТО	CHECKED SK	вү	TC	of 3 OTAL DE	PTH DRILLE
DRIL	L RIG	TYI	PE						DRILLED BY			INCLINATIO		ROM \ Degree		AL/BEARING
		IT GI	ROUN	NDWA	ΓER	DEP	ТН		Gregg In-Situ	T Drilling		APPROXIM				EVATION
	enco		red									(feet)		91		
COIV	IMEN [.]	15										Soil Cutting		CKFIL	L	
	(ft)			ROC	KC	ORE	•	\ 					TS	۲۷	μία	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
_	<u>3</u> 90									t surface. Approximately ered to 10 feet bgs.	/ 7".					
-	_									AL FILL (Qaf) LT dark brown, moist, fir	ne to mediun	n sand.				
- -5	_															
	385							**								
_	_								Silty SAN	AND UNIT (Qs) IDdark yellowish brown	(10YR 4/6):	moist:				
-									fine to me coarse GF	dium SAND; few coarse	e SAND; trac	e fine to				
-10	_	1	1	26/30					9							
-	<u>3</u> 80							9.0								
_		2		26/30				***								
_	_								Clayey Sa moist; fine	ANDdark yellowish brove SAND; few medium SA	wn (10YR 4/6 AND; trace fi	S); ne				
-15	 375	3	2	22/30					GRAVEL.	th SILTbrownish yellow	(10YR 6/6):	moist·				
-									fine to me GRAVEL.	dium SAND; some coa	rse SAND; fe	w fine				
_	_	4		26/30	-				9 0 9							
-	_								Clayey S	ANDbrownish yellow (1 n SAND; some coarse S	OYR 6/6); mo	pist; fine				
-20 -	<u>3</u> 70	5	3	21/30	-				GRAVEL. Sand witl	h SILTyellowish brown	(10YR 5/8); r	noist;				
-	_								∖ fine to me √GRAVEL.	dium SAND; some coa	rse SAND; fe	w fine				
-		6		24/30					yellowish medium S	5 to 21 Silty Clayey San brown (10YR 4/6); mois SAND.	at; fine SAND	; few				
GRO		GR(370) Am	ар	ola	NSUL Ave. S lifornia	Suite		THIS SUMMARY APPLII OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	E a

-00	G ()F	C	ORI	ΕΙ	BO	RING		PROJECT NA Millenium Tre	ME ench W Argyle Ave	PROJECT LA-1191A	NUMBER			ORING B-16	
SITE									DATE(S) DRII	LED	LOGGED	BY			HEET NO	Ο.
Capi								_	1/6/2015		ТО	l			of 3	DT. DD. E
DRIL				1					DRILL BIT SIZ	ZE/TYPE		CHECKED E	3Y	(fe		PTH DRILLE 60
	w Ste L RIG								DRILLED BY			SK INCLINATIO	N FF	ROM V	'ERTICA	L/BEARING
CME			-						Gregg In-Situ				0 [Degree	es	
				IDWA	ΓER	DEP	ТН	- 1				APPROXIMA	TE	SURF	ACE EL	EVATION
None			red									(feet)	39			
COM	MENT	rs										BOREHOLE		CKFIL	L	
												Soil Cuttings	i		1	
	Ţ.			ROC	K C	ORE	<u> </u>						LS	>-		
⊣ (ft)	ELEVATION (ft)			%	ď			LITHOLOGY					PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DЕРТН (ft)	VATI	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	밀		MATERIAL DESC	RIPTION		KER	ORA TES	ILL F	NOTES
D	ELE	RUN	ВОХ	00	SAC.	R.Q.I	RAC	=					PAC	LAB	H H	
							<u> </u>									
	<u>3</u> 65	1	4	31/30					MUD FLO							
									Sandy CL SAND; trad	AYstrong brown (7.5Y) ce medium SAND.	R 4/6); moist	fine				
		8		29/30	-				•							
		-														
	-							$\parallel \downarrow$	Clauser C	NDdark vallavijah heer	up (10VP 4/2					
30	_	9	5	60/60	1				moist; fine	NDdark yellowish brow SAND; trace mediume	to coarse S	AND;				
	<u>3</u> 60								trace fine (GRAVEL.						
	_															
	_															
	_															
35		10		60/00												
	<u>3</u> 55	10	6	60/60												
	_															
10	-	11	7	60/60	1				@ 40': higi	ner SAND content; few	medium to o	oarse				
	<u>35</u> 0								SAND; tra	ce carbon modules.						
	-															
	-															
	_															
45	_	12	8	60/60	-			W.	OLDER A	LLUVIUM (Occi)						
	<u>3</u> 45	14	O	00/00					OLDEK A	LLUVIUM (Qoal)						
									Sandy CL	AY to Clayey SANDstr	ong brown (7	7.5YR				
									trace fine							
									@ 47': mo	ttled gray (7.5YR 5/1); ery dark gray (7.5YR 3/	strong brown	(7.5YR likely				
									carbon.	ner clay content and fir		-				
		-			-			+ \ · ·		THIS SUMMARY APPLIE	ES ONLY AT	THE LOCATION		1	-	
ROI	JP (1.0,	OF THIS BORING AND A SUBSURFACE CONDIT	AT THE TIME IONS MAY DI	OF DRILLING. FFER AT OTHE	R			
			370) Δm	an	دام	Ave. S	uite	212	LOCATIONS AND MAY	CHANGE AT	THIS LOCATION		1 -		- L
			370	וווא ל	ιαμ	Ola .	AVC. O	unc		WITH THE PASSAGE O PRESENTED IS A SIMP				[GURE	= D

SITE	LOC	ATIC	N	ORI	Eİ	вО	RIN	G	PROJECT NAME Millenium Trench W Argylo DATE(S) DRILLED	e Ave	LA-1191A			s	ORING B-16 HEET N of 3	0.
DRIL Hollo	itol Pa LING w Ste	ME1	THOD uger)					1/6/2015 DRILL BIT SIZE/TYPE 8"		ТО	CHECKED SK		TC (fe	TAL DE	60
DRIL CME	L RIG	TYI	PE						DRILLED BY Gregg In-Situ Drilling			INCLINATIO		ROM \ Degree		AL/BEARING
		IT GI	ROUN	IDWA	ΓER	DEP	TH		Gregg III-Situ Dillillig			APPROXIM				EVATION
	enco		red									(feet)	3	91		
COM	MEN	TS										BOREHOLE Soil Cutting		CKFIL	L	
												Oon Outling				
(L)	(#) Z				KC	ORE	Ī	_ გ					STS	JRY	TE, UR,	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL	DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	0.40	13	9	56/60				1.	medium SAND; moderate	e soil de	velopment.					
	<u>3</u> 40								@ 51.5': trace fine GRAV	EL.						
55	 <u>3</u> 35	14	10	58/60	-				@ 55.5': increase in SAN grained.	D conte	nt fine to coa	ırse				
	_								@ 57': less SAND; increa SAND; trace medium and	ise in Cl I coarse	AY content SAND.	and fine				
60	<u>3</u> 30								Total Depth: 60 feet below	w ground	d surface.					
0.5																
65	325															
	L															
70																
	<u>3</u> 20															
-	_															
	-															
FRO		GR(370) Am	ар	ola	NSUL Ave. S	Suite	PRESENTED IS	NG AND A CONDIT ND MAY (SAGE O S A SIMP	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER N	FI	GURI	E c

LO	G (ЭF	C	ORI	ΕI	ВО	RIN	G	PROJECT NA Millenium Tro	ME ench W Argyle Ave	PROJECT LA-1191A	NUMBER			ORING B-17	
	LOC								DATE(S) DRI 1/6/2015	LLED	LOGGED TO	ВҮ			HEET Notes	0.
DRIL	LING	ME	ГНОД)					DRILL BIT SI	ZE/TYPE	10	CHECKED	вү		TAL DE	EPTH DRILLE
	w Ste								ORILLED BY	,		SK INCLINATION	ON F	ROM V	/ERTIC	AL/BEARING
CME									Gregg In-Situ				0	Degre	es	
	AREN e enco			NDWA ⁻	ΓER	DEP ⁻	ТН					APPROXIM			ACE EL	EVATION
COM	IMEN	TS										BOREHOLE Soil Cutting	ВА	91 CKFIL	L	
				ROC	K C	ORE						Con Cutting				
DEPTH (ft)	ELEVATION (ft)	EVATION N NO. X NO. X ERY, % VERY, % LD., % CTURE								MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	<u>3</u> 90								├ \Hand aug	surface. Approximately ered to 10 feet bgs. AL FILL (Qaf)	7".					
-										LTdark brown; moist; fir	ne to medium	n sand.				
Sandy SiL1 dark brown, mic																
_5	205							. 2	3							
-	385							***	UPPER S	AND UNIT (Qs)						
-									Silty SAN fine to me coarse GF	Ddark yellowish brown dium SAND; few coarse	(10YR 4/6); s SAND; trac	moist; e fine to				
-	-								, coarse or	WVLL.						
_10 _	380	1	1	22/30					9							
_									@ 11': Silt fine SAND	y Clayey SAND; strong).	brown (7.5Y	'R 4/6);				
-	-	2		22/30												
-	_								@ 13.5'; S above.	Silty Clayey SAND; (7.5	∕R 4/6); sam	e as				
-15 -	<u>3</u> 75	3	2	23/30					fine to me	ty SAND; yellowish browdium SAND; few coasre	vn (10YR 5/6 SAND; trac	s); moist; e fine				
_	_								GRAVEL.							
_	-	4		22/30						ANDstrong brown (7.5Y	R 4/6); mois	t; fine				
20	_								SAND. Silty SAN	D dark yellowish brown dium SAND; few coarse	(10YR 4/6);	moist;				
–20 –	<u>3</u> 70	5	3	22/30					coarse GF		, อกเขอ, แสต	C IIIIC IU				
_	_			L					<i>,</i> 0							
-		6		20/30					9							
										THIS SUMMARY APPLIE	ES ONLY AT T	THE LOCATION	\	<u> </u>		
SRO	UP (GRO					NSUL Ave. S		NTS, INC. e 212	OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OF	AT THE TIME ONS MAY DII CHANGE AT	OF DRILLING. FFER AT OTHE THIS LOCATIO	ΞR	FI	GURI	E a
DEL.	TA				•		lifornia			PRESENTED IS A SIMPLE CONDITIONS ENCOUNT	LIFICATION C		NL			

				ORI	Ε	ВО	RIN	IG		ench W Argyle Ave	LA-1191A				ORING B-17 HEET N	0
	LOC itol Pa								1/6/2015	ILLED	TO	ום			of 3	~ .
DRIL	LING	ME	ГНОД)					DRILL BIT S	IZE/TYPE		CHECKED	BY		OTAL DE	PTH DRILLE
	w Ste								8" DRILLED BY	,		SK INCLINATION	ON F	1,		60 AL/BEARING
CME		,	_						Gregg In-Situ				0	Degre	es	
	AREN			NDWA	ΓER	DEP.	тн					APPROXIMA	ATE	SURF	ACE EL	EVATION
	IMEN											BOREHOLE		91 CKFIL	.L	
												Soil Cuttings	s		1	
	(#)			ROC	KC	CORE	.	>					STS	≿	ய் ம	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	265	7	4	27/30					MUD FLO	OW (Qm)						
_	365								✓ SAND; fe	ANDstrong brown (7.5Y w medium SAND and tra	R 4/6); mois ace coarse S	t; fine SAND;				
_	_	8		36/30					moderate	soil development.						
_	-															
_30	_	9	5	60/60												
-	360															
_	_															
_																
- -35																
_	355	10	6	60/60												
_	_															
_	_															
_	_															
4 0	-	11	7	60/60						own (7.5YR 4/4) increas		ND; few				
_	<u>3</u> 50								medium S	SAND; trace coarse SAN	ID.					
_																
_																
- -45								K	OLDER A	ALLUVIUM (Qoal)						
-	<u>3</u> 45	12	8	60/60				<i>[</i> •								
_								(;	(5YR 4/4)	AND to Sandy CLAYmo	SAND; trace	orown e coarse				
_	_								. @ 45': mo	oderate soil developmer ottled dark gray (7.5YR 4 6) and very dark gray (7	4/1); strong b	orown				
_	_								carbon no	odules.	.o i i v o/ 1), III	Ciy				
		Щ		ļ				\ <u>'</u>		THIS SUMMARY APPLIE	S ONI Y AT	THE LOCATION	<u></u>	1		
GRO DEL		GRO	370) Am	ар	ola		Sui	ints, inc. te 212 0501	OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY O WITH THE PASSAGE OF PRESENTED IS A SIMP CONDITIONS ENCOUNT	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GUR	E b

	G (ORI	E I	ВО	RIN	G	PROJECT NA Millenium Tr	ench W Argyle Ave	PROJECT LA-1191A LOGGED	BY		s	ORING B-17 HEET N	0.
DRIL	itol Pa . LING w Ste	MET	HOD	ı					1/6/2015 DRILL BIT S I 8"	ZE/TYPE	ТО	CHECKED SK		TC (fe	et)	PTH DRILLE
	L RIG	TYI	PE						DRILLED BY			INCLINATIO				AL/BEARING
CME		IT GI	ROUN	IDWA	ΓFR	DFP.	TH		Gregg In-Situ	ı Drilling		APPROXIM		Degree		EVATION
	enco											(feet)		91	ACE EL	EVATION
COM	MEN	TS										BOREHOLE		CKFIL	L	
								Т				Soil Cutting:	S			
	(ft)			ROC	KC	ORE	.	_ ≿					STS	RY	Ä,E	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	340	13	9	60/60				1.	@ 50': hig	her clay content						
		14	10	39/60					Total Dep	th: 60 feet below groun	d surface.					
SRO	UP (GRO							NTS, INC. re 212	THIS SUMMARY APPLI OF THIS BORING AND SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP	AT THE TIME IONS MAY DII CHANGE AT ⁻ F TIME. THE	OF DRILLING. FFER AT OTHE ITHIS LOCATIO DATA	ER N	 FI	GURI	

	G (ORI	ΕI	ВО	RIN	G		ench W Argyle Ave	PROJECT LA-1191A LOGGED				ORING B-18 HEET N	0.
	itol Pa								DATE(S) DRI 1/7/2015	LLED	TO	ы			of 3	
DRIL	LING	MET	ГНОД)					DRILL BIT S	ZE/TYPE		CHECKED	BY		OTAL DE	PTH DRILLE
	w Ste							+	8"	,		SK	N F	<u> </u>		70 AL/BEARING
CME		, , , ,							Gregg In-Situ					Degree		
	AREN			NDWA	ΓER	DEP.	тн					APPROXIMA	ATE	SURF	ACE EL	EVATION
COM			- Cu									(feet)		92 CKFII		
												Soil Cuttings				
				ROC	K C	ORE	=						တ			
DEPTH (ft)	EVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	ELE	RUN	BO	RECO\	FRAC.	R.Q.	FRAC DRAN	=					PAC	LAE	DF	
_									⊢ \Hand aug	surface. Approximately ered to 10 feet bgs.	7".					
_	<u>3</u> 90								ARTIFICI	AL FILL (Qaf)						
_	_								Sandy SI	LTdark brown; moist; fir	ne to medium	n sand.				
_5	_								@ 5': dark	yellowish brown (10YF	2 4/6).					
_	385							,	UPPER S	AND UNIT (Qs)						
_	_								Silty SAN SAND; so fine GRAN	Ddark brown (7.5YR 3 me medium SAND; trac	/4); moist; fir e coarse SA	ne ND and				
_	_									, LL.						
_10	_	1	1	23/30					9							
_	380							·		ellowish brown (10YR 5/	4).					
_		2		24/30												
_																
_15	_	3	2	19/30				·								
_	_		_	10,00												
_	<u>3</u> 75															
_	-	4		24/30						ANDdark yellowish brov						
-									fine GRA\							
- 20	<u> </u>	5	3	19/30					Silty SANfine to meGRAVEL.	ID (SM) yellowish brown dium SAND; few coarse	1 (10YR 4/6); e SAND; trac	moist; e fine				
_	 370									clayey SAND lense.						
_		6		22/30												
_	L							29.	2							
								<u>;</u> ;		THIC CHAMADY ADDITE		THE LOCATION	.i			
GRO		GRO	370) Am	ар	ola	NSUL Ave. S lifornia	Suite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OI PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME ONS MAY DI CHANGE AT T TIME. THE LIFICATION O	OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ξ а

	G (ORI	E	ВО	RIN	G	PROJECT NA Millenium Tr DATE(S) DRI	ench W Argyle Ave	PROJECT LA-1191A LOGGED			s	ORING B-18 HEET N	0.
DRIL	itol Pa LING w Ste	ME	THOD)					1/7/2015 DRILL BIT S 8"	IZE/TYPE	ТО	CHECKED SK	вү	TC	of 3 TAL DE et)	PTH DRILLE
	L RIC								DRILLED BY					ROM \		AL/BEARING
	AREN e enco			IDWA	ΓER	DEP	ТН	'				APPROXIM (feet)			ACE EL	EVATION
COM	MEN	TS										BOREHOLE Soil Cutting	ЕВА	92 CKFIL	L	
	(ft)			ROC	KC	ORE									μîα	
DEPTH (ft)	ELEVATION (RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		7	4	26/30					MUD FLC	OW (Qm)						
-									/ (7.5YR 4/	AND to Sandy CLAY (\$6); moist; fine SAND; ferse SAND.	SC/CL)strong w medium S	j brown AND;				
	_	8		31/30					@ 28': tra	ce fine GRAVEL.						
30	_	9	5	46/60	-											
	<u>3</u> 60															
35	 355	10	6	58/60					@ 35': fev	w fine GRAVEL.						
40		11	7	60/60					@ 40': mc 4/6) and b developm	ottled Gray (7.5 YR 5/1); brown (7.5YR 4/3); mild ent.	strong brow to moderate	n (7.5YR soil				
	<u>3</u> 50								Silty SAI fine SANI	ND dark yellowish browr).	(10YR 4/6);	moist;				
45	_	12	8	60/60	-				•	LLUVIUM (Qoal)			-			
								[·/·/·	Clayey Sa 5/1); stror	AND to Sandy CLAYnong brown (7.5YR 4/6) ar	ottled Gray (7 nd brown (7.5	7.5 YR SYR 4/3).				
-	_							(:/:/:								
SRO DEL		GRO	370) Am	ар	ola		Sui	INTS, INC. te 212	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER ON	FI	GURI	E b

SITE	LOC	ATIC	N	ORI	E	ВО	RIN	G	PROJECT NAME Millenium Trench W A DATE(S) DRILLED	argyle Ave	LA-1191A LOGGED			s	ORING B-18 HEET N	0.
DRIL	itol Pa LING w Ste	ME	ГНОД)					1/7/2015 DRILL BIT SIZE/TYPE 8"		ТО	CHECKED I		TC (fe	et)	PTH DRILLE
DRIL CME	. L RIC 95	TYI	PE						DRILLED BY Gregg In-Situ Drilling			INCLINATIO		ROM \ Degree		AL/BEARING
	AREN			NDWA	ΓER	DEP	ТН	ı				APPROXIMA				EVATION
	IMEN											(feet)		92 CKFIL	L	
	1	1										Soil Cuttings	s			
	(ft)			ROC	K C	CORE	=						TS	<u></u> ≿		
DEPTH (ft)	ELEVATION (RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATER	IAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		13	9	60/60				1.								
-	<u>3</u> 40								Sandy CLAY, reddis SAND; trace coarse @ 52': strong brown	SAND.	R 4/4); moist;	fine				
-	_								Clayey SANDstrong to medium SAND; tr GRAVEL.	brown; (7.5) ace coarse S	(R 4/6); mois AND and find	st; fine e				
-55 - -	 335	14	10	60/60	_				Sandy CLAYreddisi SAND; few medium development; some	SAND; mode	rate soil	ine				
-	_															
-60 - -	330	15	11	60/60												
-	_															
-65 -	 325	16	12	60/60	_											
-																
- -70					-											
-	 <u>3</u> 20								Total Depth: 70 feet	below ground	d surface.					
-																
									Tule of the		ES ONI V AT	THE LOCATION	J	 		
SRO DEL		GRO	370) Am	ар	ola	NSUL Ave. S lifornia	Suite	NTS, INC. OF THIS E SUBSURF LOCATION WITH THE PRESENT	BORING AND A FACE CONDITI NS AND MAY (FPASSAGE OI	AT THE TIME ONS MAY DI CHANGE AT F TIME. THE LIFICATION (FHE LOCATION OF DRILLING. FFER AT OTHE FHIS LOCATIO DATA DF THE ACTUA	ER N	FI	GURI	Ξc

LO	G (ЭF	С	ORI	ΕI	ВО	RIN	G	PROJECT NA Millenium Tr	AME ench W Argyle Ave	PROJECT LA-1191A	NUMBER			ORING B-19	
	LOC								DATE(S) DRI 1/7/2015	LLED	LOGGED TO	ВҮ			HEET N of 3	0.
DRIL	LING	ME	ГНОГ)					DRILL BIT S	IZE/TYPE		SK	ВҮ		TAL DE	PTH DRILLE
DRIL	L RIC								DRILLED BY							AL/BEARING
CME		IT C	BOLL	NDWA	FED	DED	TU		Gregg In-Situ	u Drilling				Degree		
	e enco			NDWA	IER	DEP	111					APPROXIMA (feet)		SURF 93	ACE EL	EVATION
COM	IMEN [.]	TS										BOREHOLE Soil Cutting		CKFIL	L	
	(ft)			ROC	K C	ORE		\ -					STS	۲۲	uí œ	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									\Hand aug	t surface. Approximately ered to 10 feet bgs. AL FILL (Qaf)	7".					
-	390									LTdark brown; moist; fir	ne to mediun	n sand.				
- -5	_							**************************************								
										AND UNIT (Qs)						
_									Silty SAN medium S	ID yellowish brown (10Y SAND; few coarse SAND	R 4/6); mois o; trace fine (t; fine to GRAVEL.				
_	<u>3</u> 85															
_	-															
_10	-	1	1	28/30	-											
_	-															
<u> </u>	380	2		19/30												
_																
_15				05/00						(7.7)(7.4(0)						
_	_	3	2	25/30					@ 15" str	ong brown (7.5YR 4/6).						
_	-															
_	<u>3</u> 75	4		21/30					@ 17.5': y	ellowish brown (10YR 4	l/6).					
-	-							*	@ 40 51 1	one of alcumy CANID	hana ba	in ools-				
- 20	-	5	3	25/30					@ 19.5°:1 (7.5YR 4/	ense of clayey SAND; si 6); fine SAND.	uong brown	III COIOF				
_																
_	<u>3</u> 70	6		19/30	-											
_																
		Ш							MUD FLC	OW (Qm)				<u> </u>		
GRO		GRO	370) Am	ар	ola	NSUL Ave. S lifornia	Suite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OF PRESENTED IS A SIMPLE CONDITIONS ENCOUNT	AT THE TIME ONS MAY DI CHANGE AT TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	E a

				ORI	Ε	ВО	RIN	1G	;		ench W Argyle Ave	LA-1191A				ORING B-19 HEET N	0
	LOC itol Pa									DATE(S) DRI 1/7/2015	LLED	LOGGED TO	Вĭ		1 -	of 3	.
	LING)					İ	DRILL BIT SI	ZE/TYPE		CHECKED	вү		OTAL DE	PTH DRILLE
	w Ste								+	8"			SK INCLINATION	N F	'		60 AL/BEARING
DRIL CME	. L RIC 95	iΥl	PE							DRILLED BY Gregg In-Situ			INOLINATIO		Degre		AL/DEAKING
				NDWA	ΓER	DEP	тн						APPROXIM	ATE	SURF	ACE EL	.EVATION
	enco		rea										(feet)		93		
COM	MEN	15											Soil Cutting		CKFIL	. L	
æ	(ft)				K	CORE	.		37					STS	NY.	而民	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/	NOMBEK	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		7	4	30/30													
										Clayey SA 4/6) moist coarse SA	AND to Sandy CLAYstr ; fine SAND; few mediu .ND and fine GRAVEL.	ong brown (7 m SAND; tra	'.5YR ce				
	<u>3</u> 65	8		33/30													
-																	
30				00/00													
	_	9	5	60/60													
-	_																
	<u>3</u> 60																
	_								K								
35	_	10	6	60/60													
	-																
-	-																
	<u>3</u> 55																
-	_																
40	-	11	7	56/60					K								
-	_																
	250								K								
-	<u>3</u> 50								K								
									<u>'</u> '	OLDER A	LLUVIUM (Qoal)						
45		12	8	60/60					;;	Clayey SA	AND to Sandy CLAYed fine SAND; few mediu	dish brown	5YR				
-									<i>`\</i>	coarse SA	ND and GRAVEL.	OAIND, II a					
-	345								<u>;</u> ;								
-									;;								
						L			<u>;</u> ;								
SRO		GRO	370		ар	ola	Ave.	Sι	uite	e 212	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OF PRESENTED IS A SIMP CONDITIONS ENCOUNT	AT THE TIME ONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE FHIS LOCATIO DATA	ER N	F	IGUR	E b

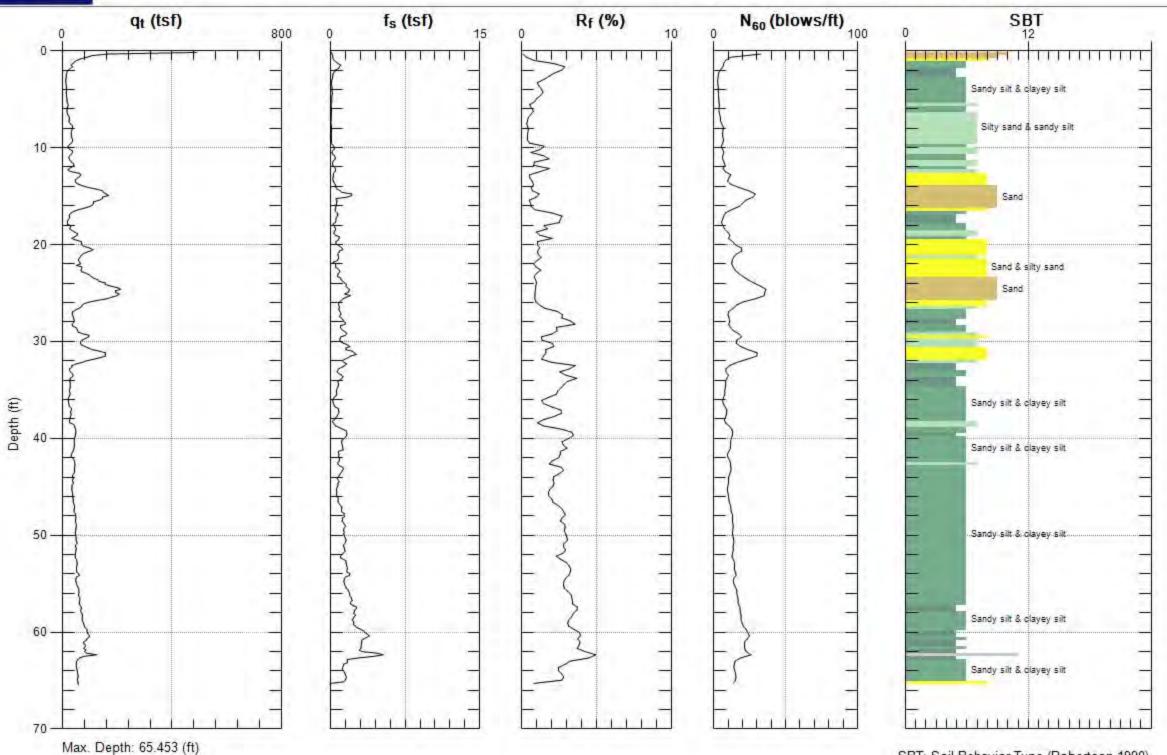
	G (ORI	ΕΪ	ВО	RIN	G	PROJECT NA Millenium Tr	ench W Argyle Ave	PROJECT LA-1191A LOGGED			s	ORING B-19 HEET N	0.
DRIL	itol Pa LING w Ste	MET	THOD)					1/7/2015 DRILL BIT S 8"	IZE/TYPE	ТО	CHECKED SK		TC (fe	et)	PTH DRILLE
DRIL CME	L RIC 95	TYI	PE						DRILLED BY Gregg In-Situ			INCLINATIO		ROM \ Degre		AL/BEARING
	AREN e enco			NDWA ⁻	ΓER	DEP.	TH					APPROXIM (feet)		SURF	ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLE Soil Cutting	ВА		L	
	E E			ROC	K C	ORE	.					1		≿		
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		13	9	60/60												
	_															
	<u>3</u> 40															
55		14	10	60/60	-											
			10	00/00												
	 335															
	_															
60																
									Total Dep	th: 60 feet below ground	d surface.					
	<u>3</u> 30															
65																
	_															
	 325															
70																
-	<u>3</u> 20															
SRO DEL		GRO	370) Am	ар	ola		Suit	NTS, INC. ee 212	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER N	FI	GUR	≣ c

WEST MILLENNIUM FAULT ACTIVITY INVESTIGATION, 1757 VINE STREET, HOLLYWOOD AREA, CITY OF LOS ANGELES, CALIFORNIA. WEST MILLENNIUM PARKING LOT CPT'S and BORINGS.



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-1 Date: 6/6/2012 07:36



Max. Depth: 65.453 (ft)

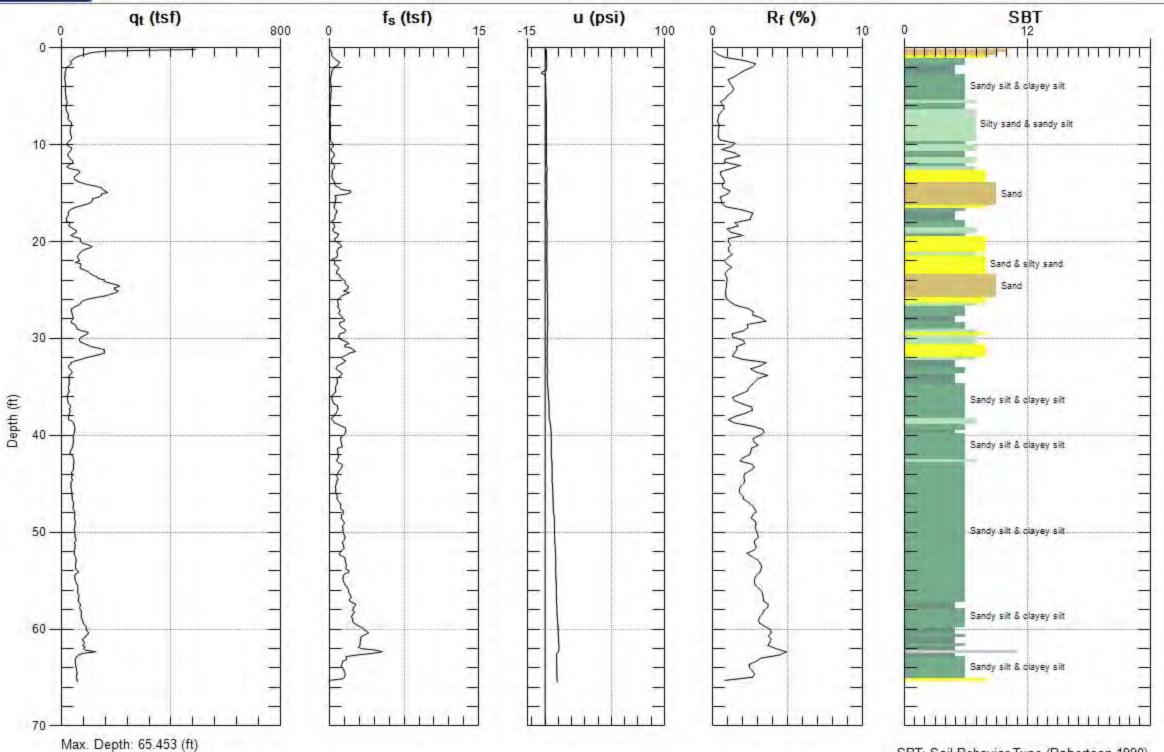
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-1 Date: 6/6/2012 07:36



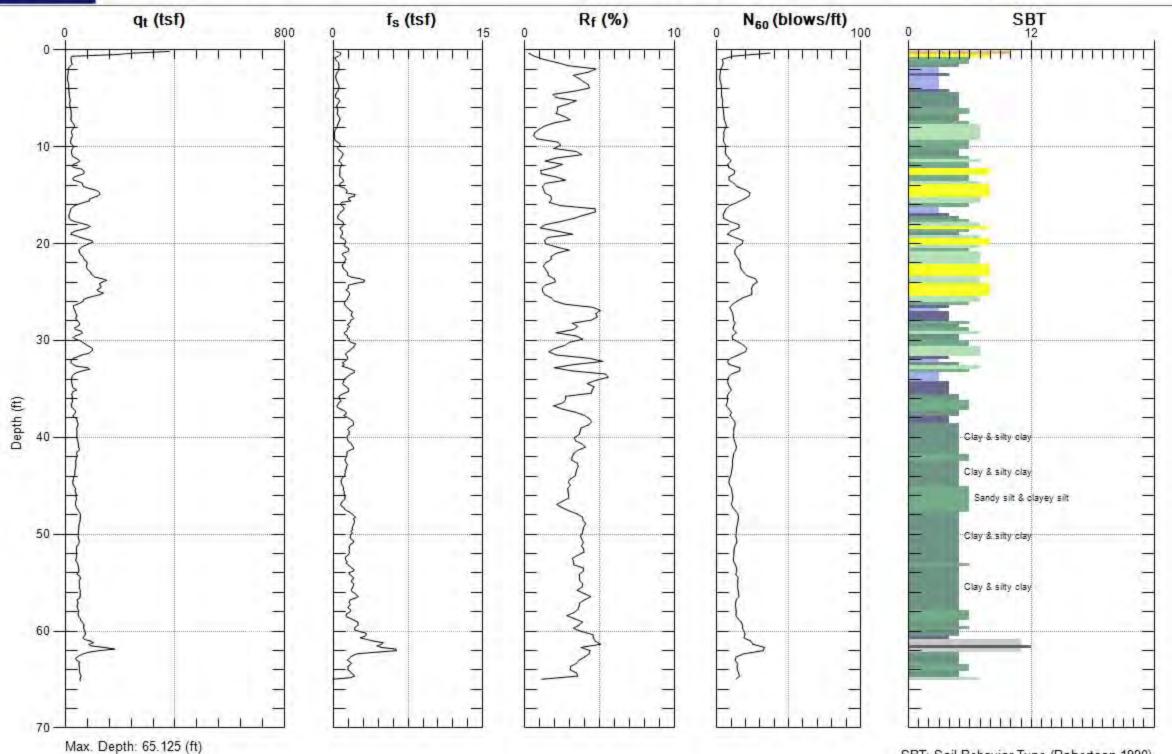
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-2 Date: 6/6/2012 08:14

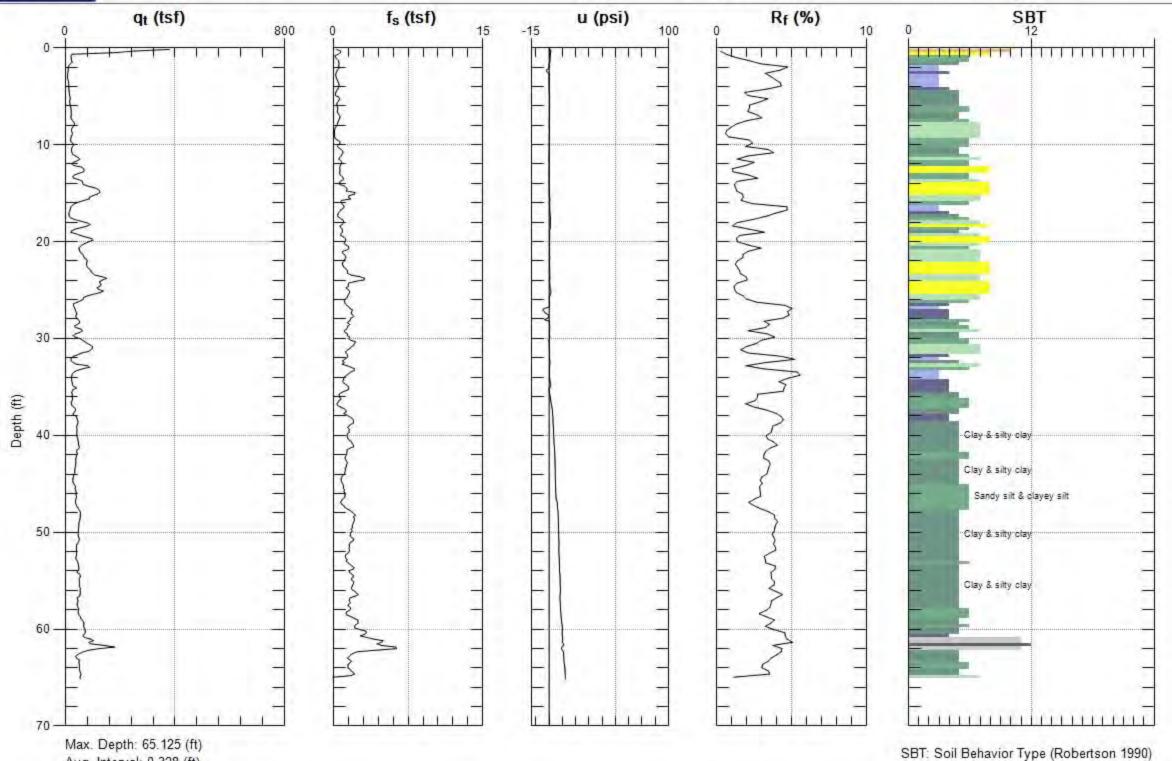




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

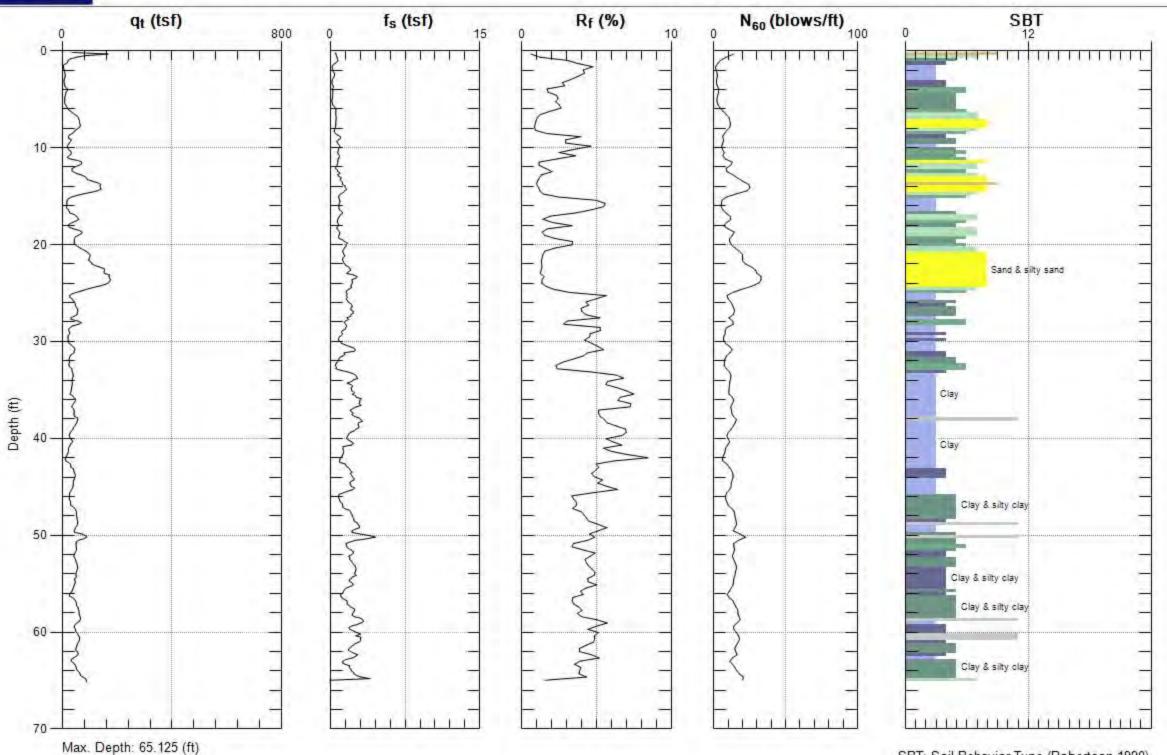
Sounding: C-2 Date: 6/6/2012 08:14





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-3 Date: 6/6/2012 08:44

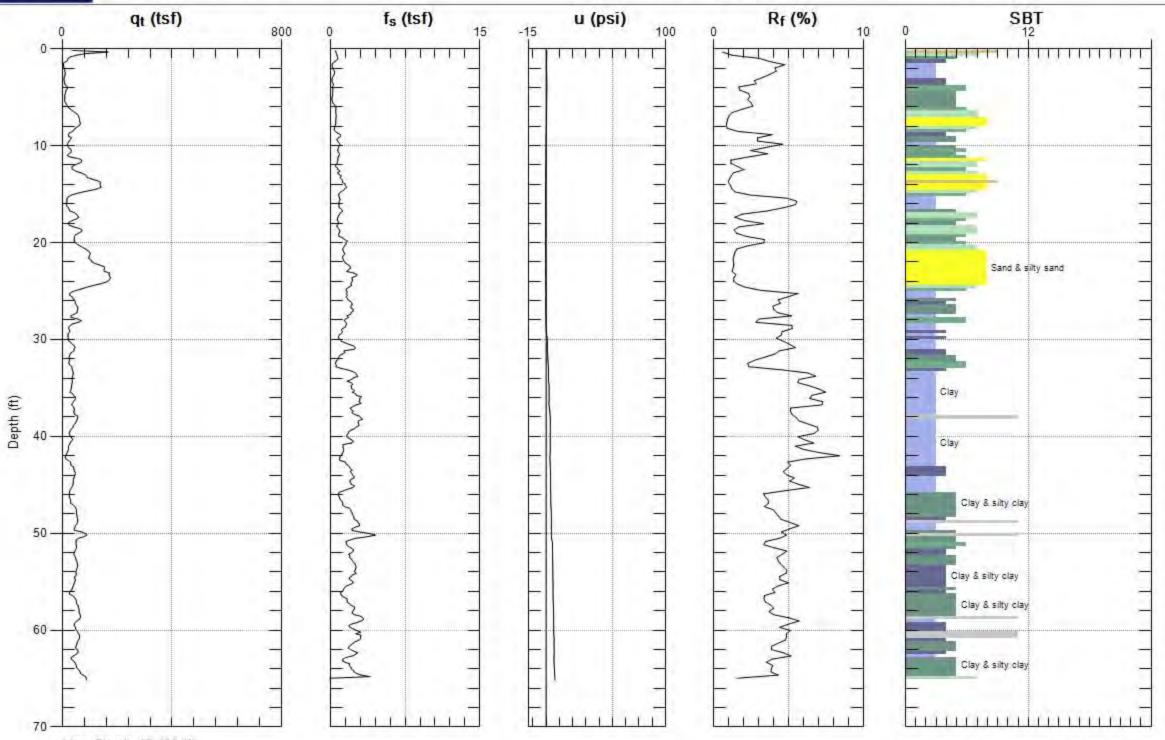


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-3 Date: 6/6/2012 08:44



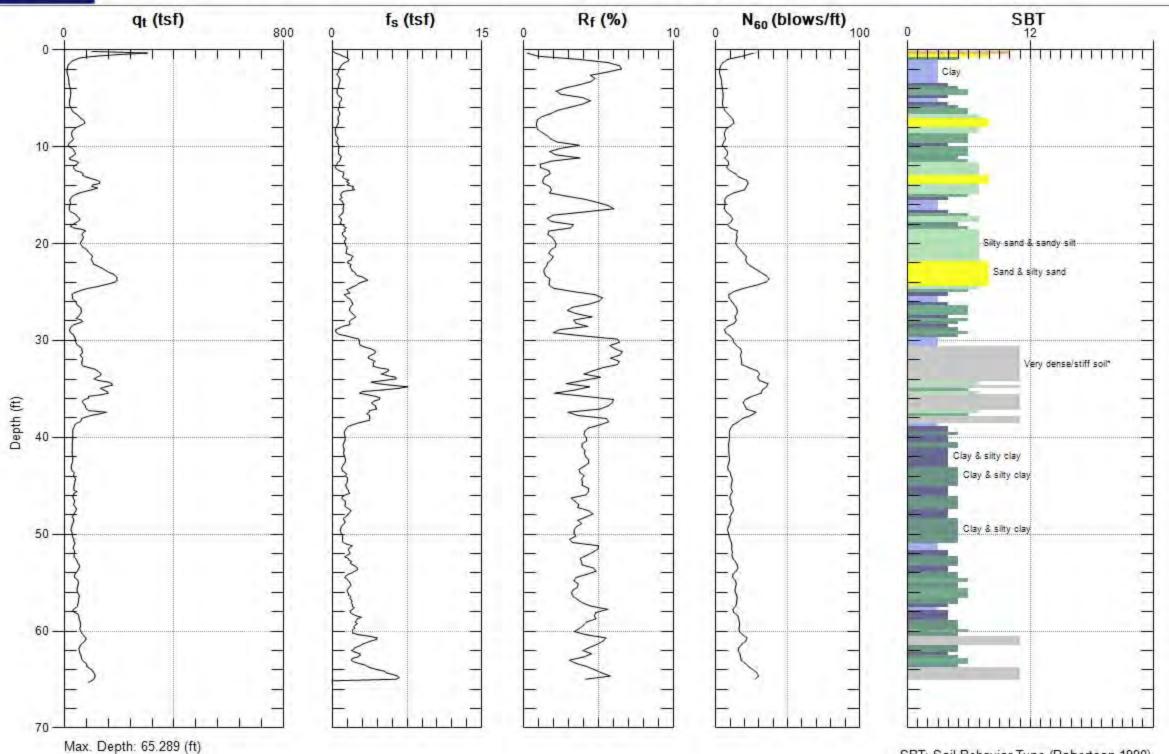
Max. Depth: 65.125 (ft) Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

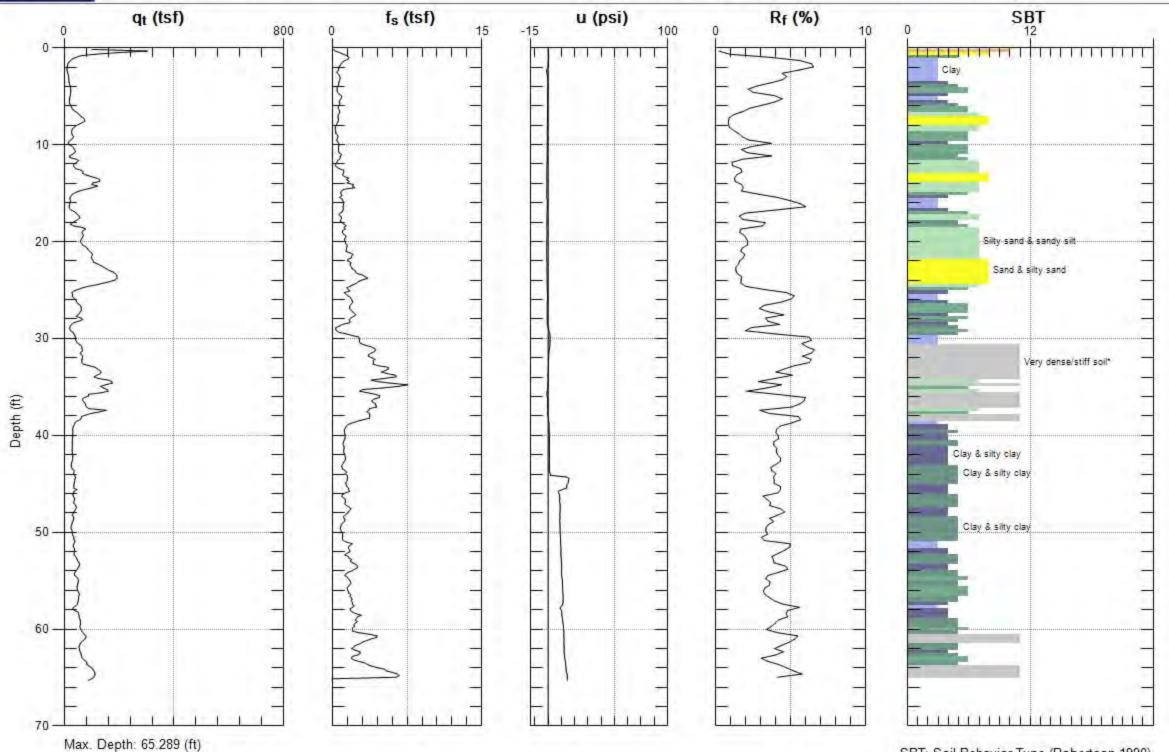
Sounding: C-4 Date: 6/6/2012 09:16





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-4 Date: 6/6/2012 09:16

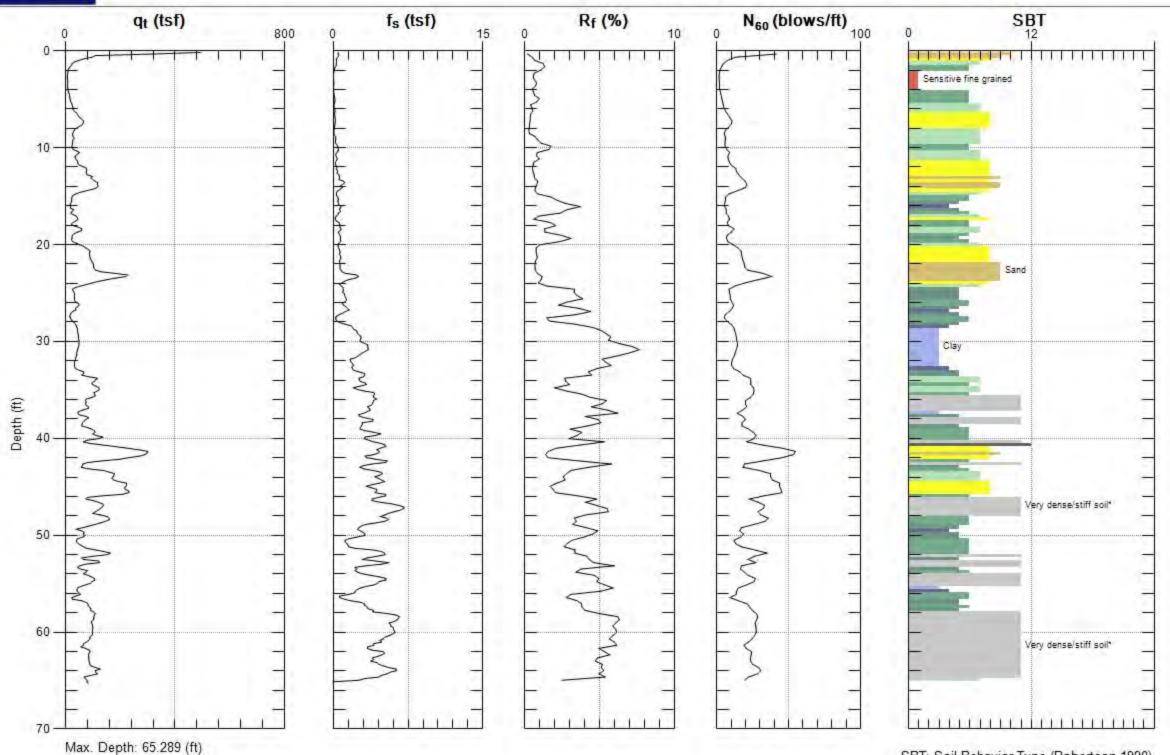


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-5 Date: 6/6/2012 09:55

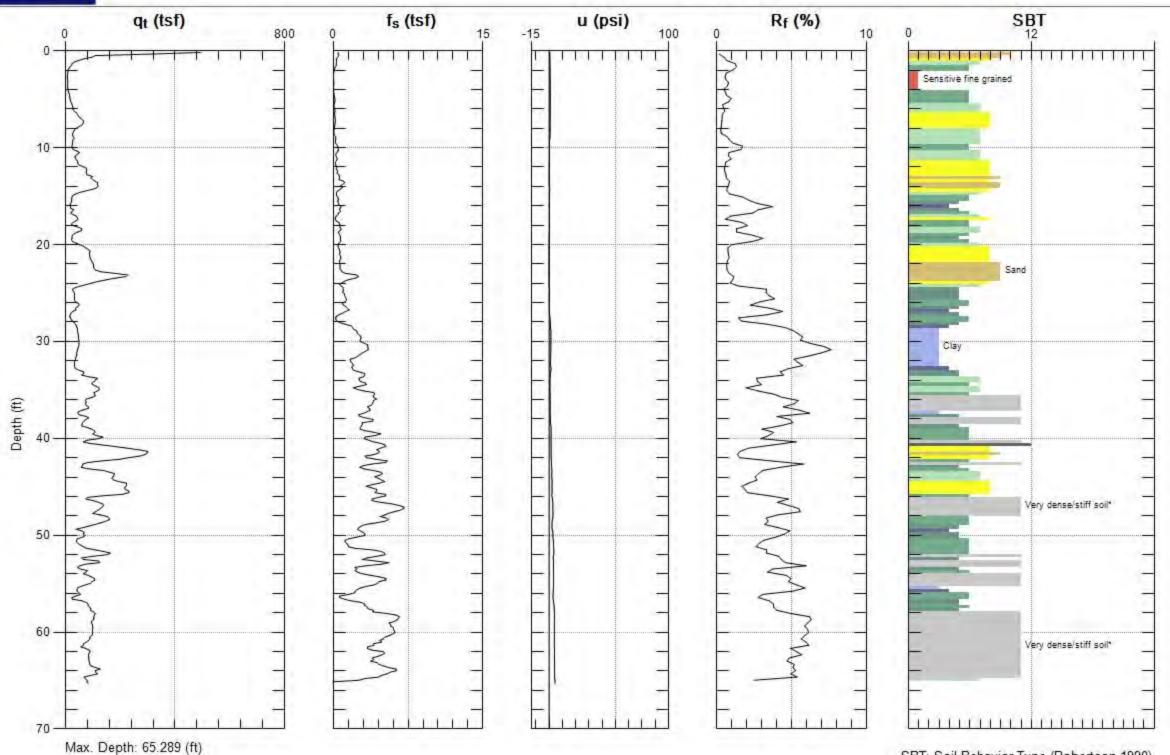


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-5 Date: 6/6/2012 09:55

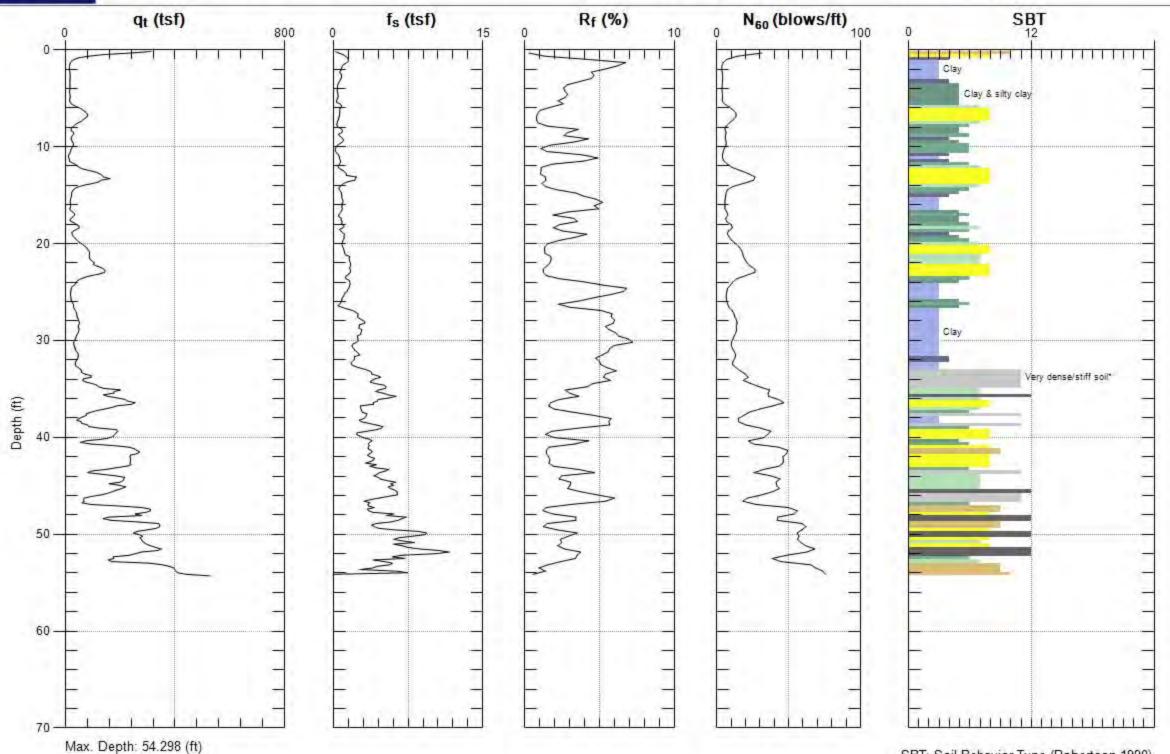


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-6 Date: 6/6/2012 10:23

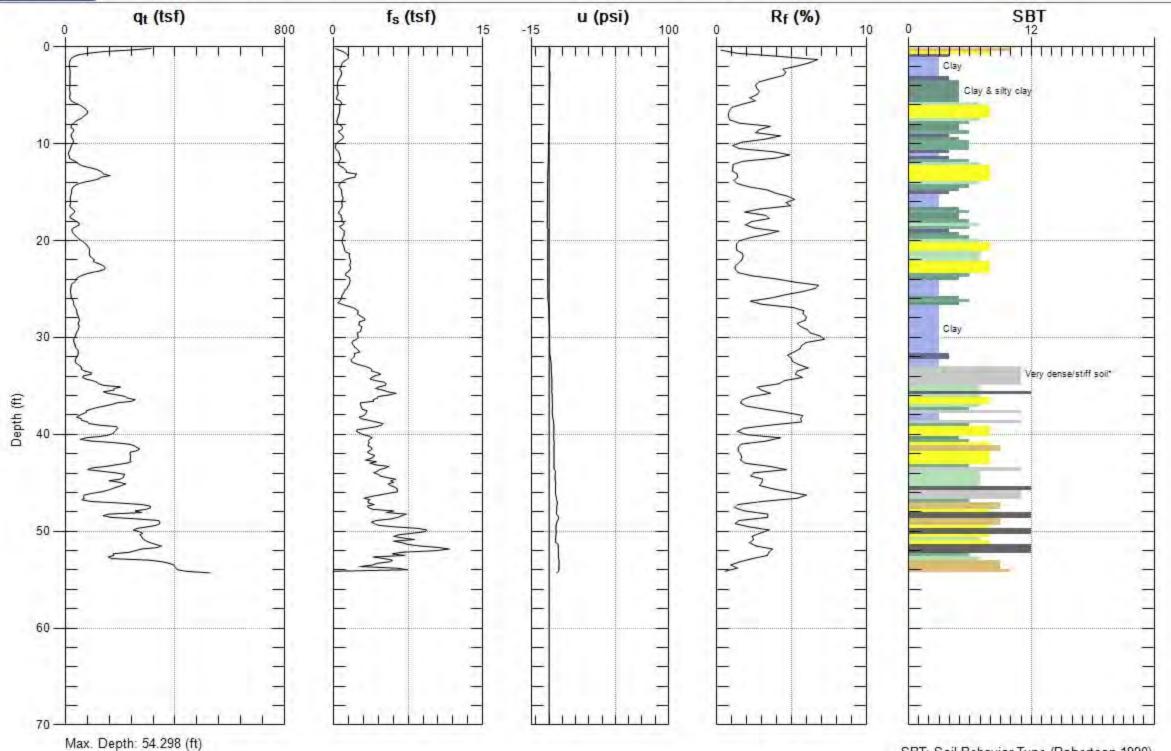


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-6 Date: 6/6/2012 10:23



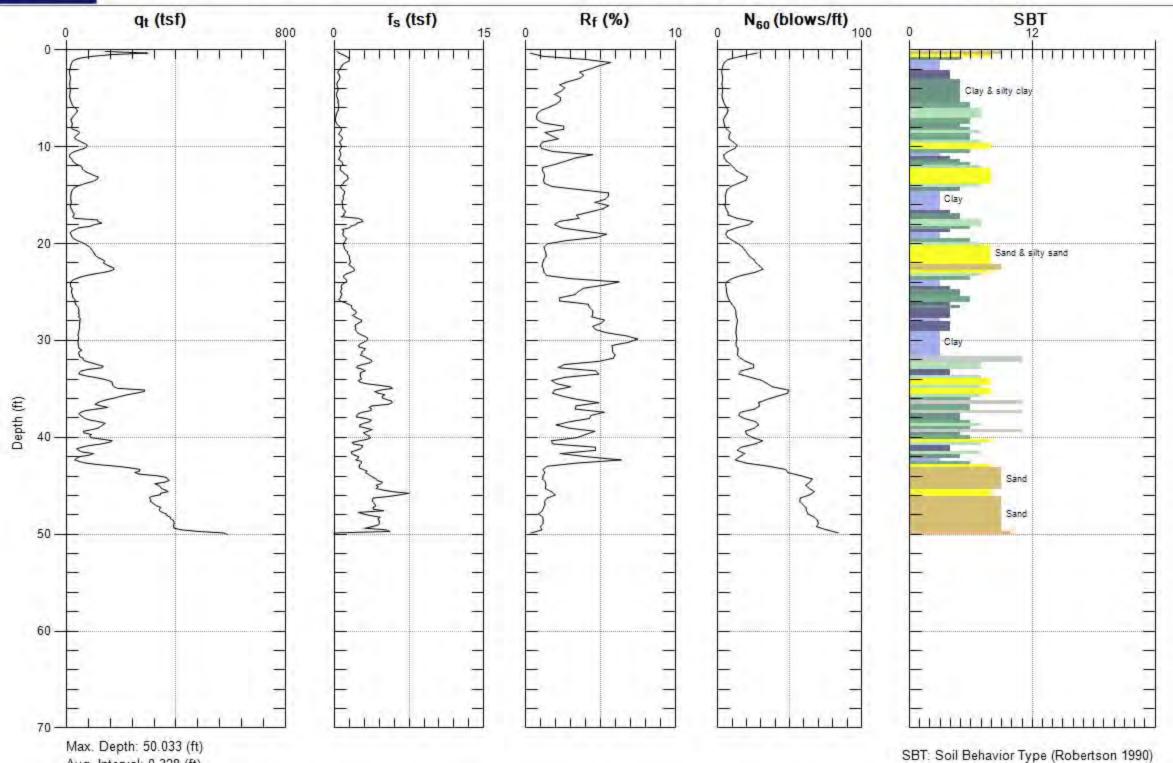
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

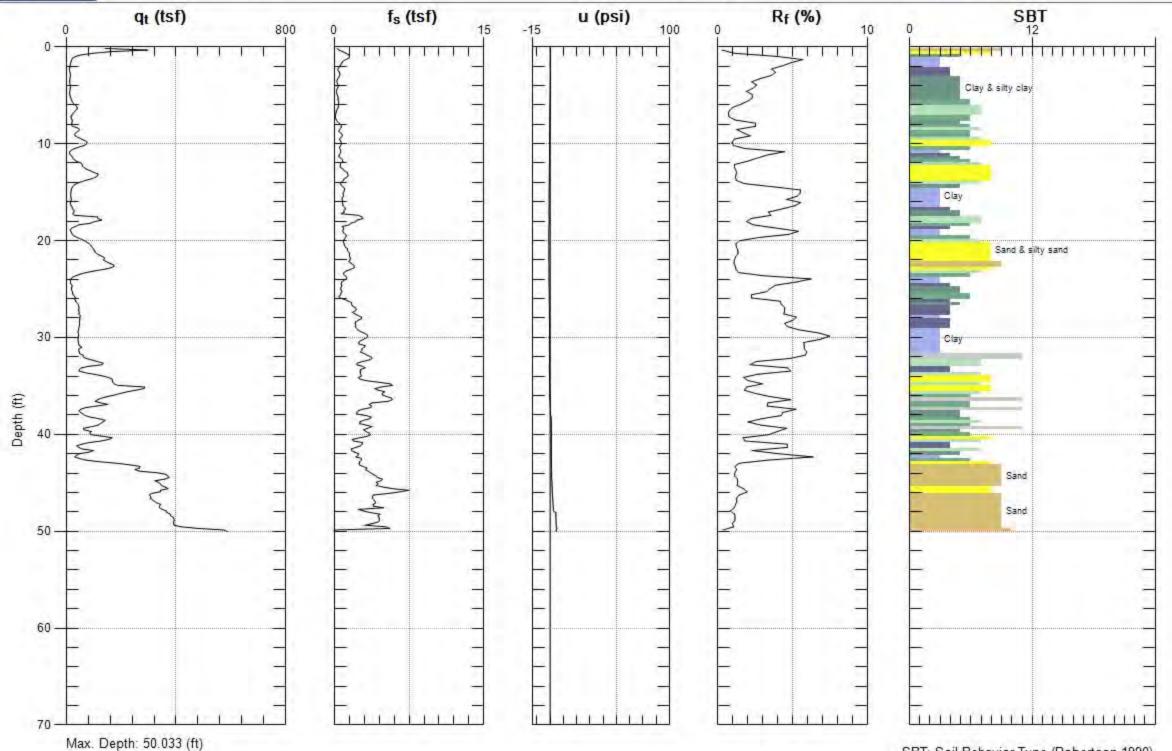
Sounding: C-7 Date: 6/6/2012 10:46





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-7 Date: 6/6/2012 10:46

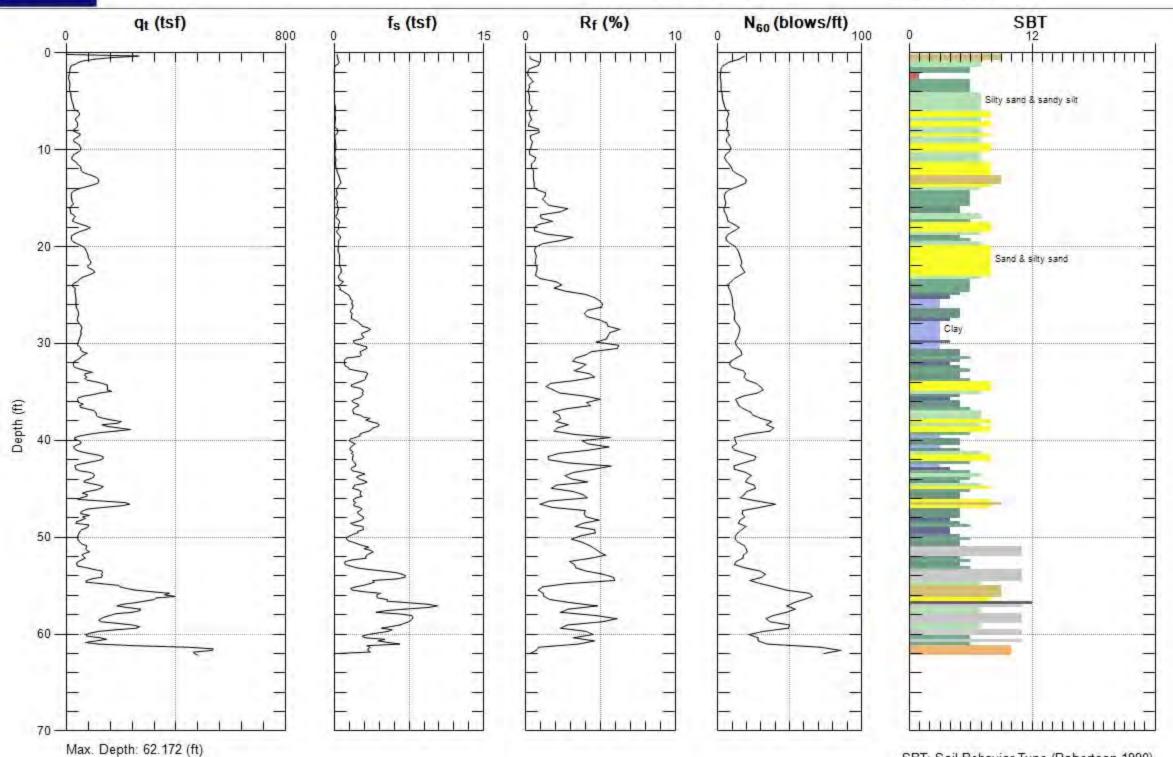


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-8 Date: 6/6/2012 11:11



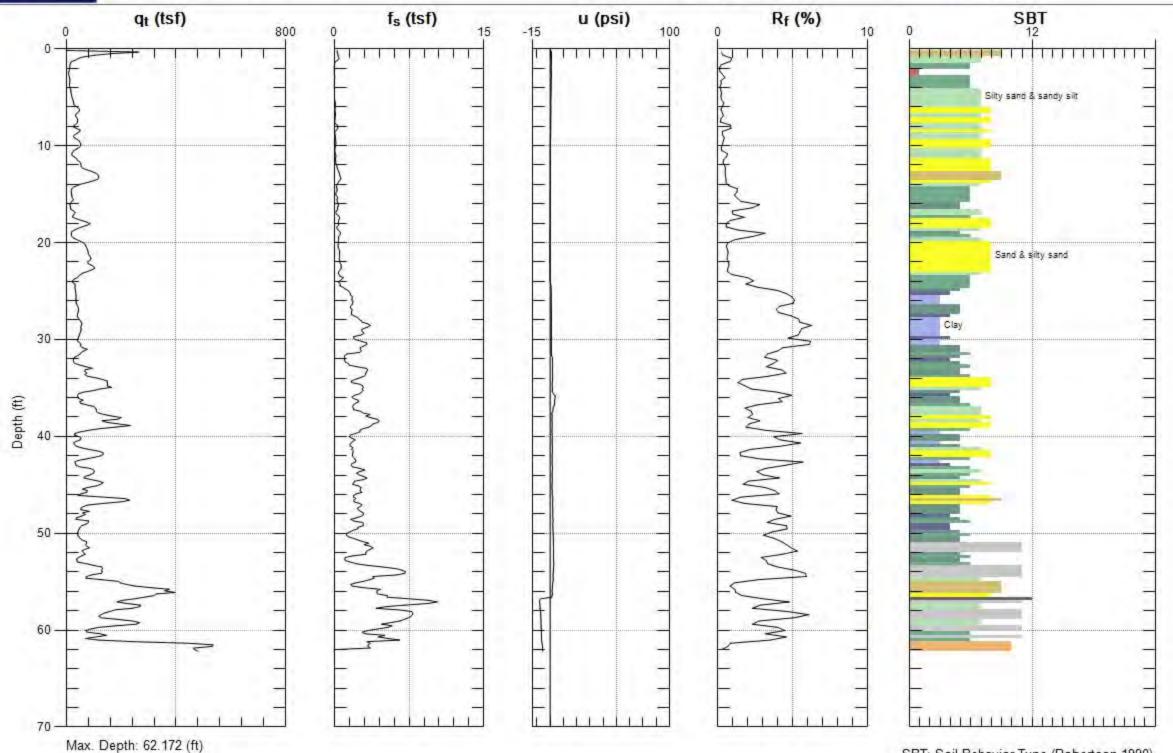
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

Sounding: C-8 Date: 6/6/2012 11:11

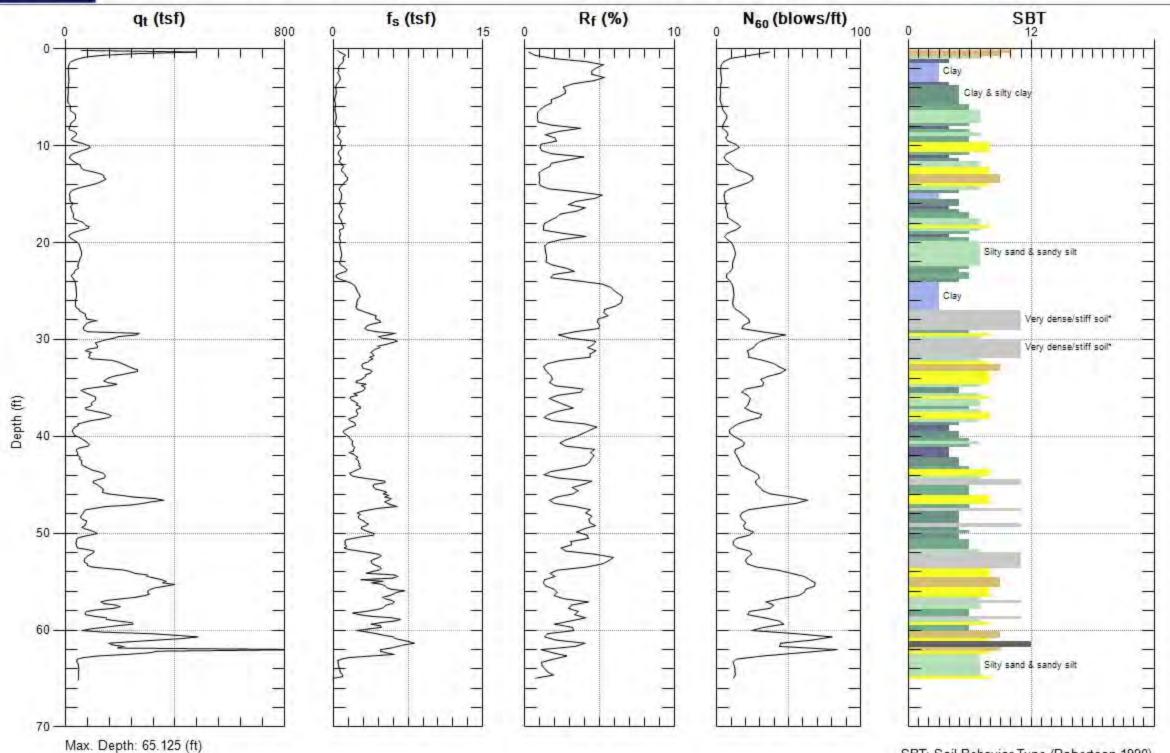




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-9 Date: 6/6/2012 11:53

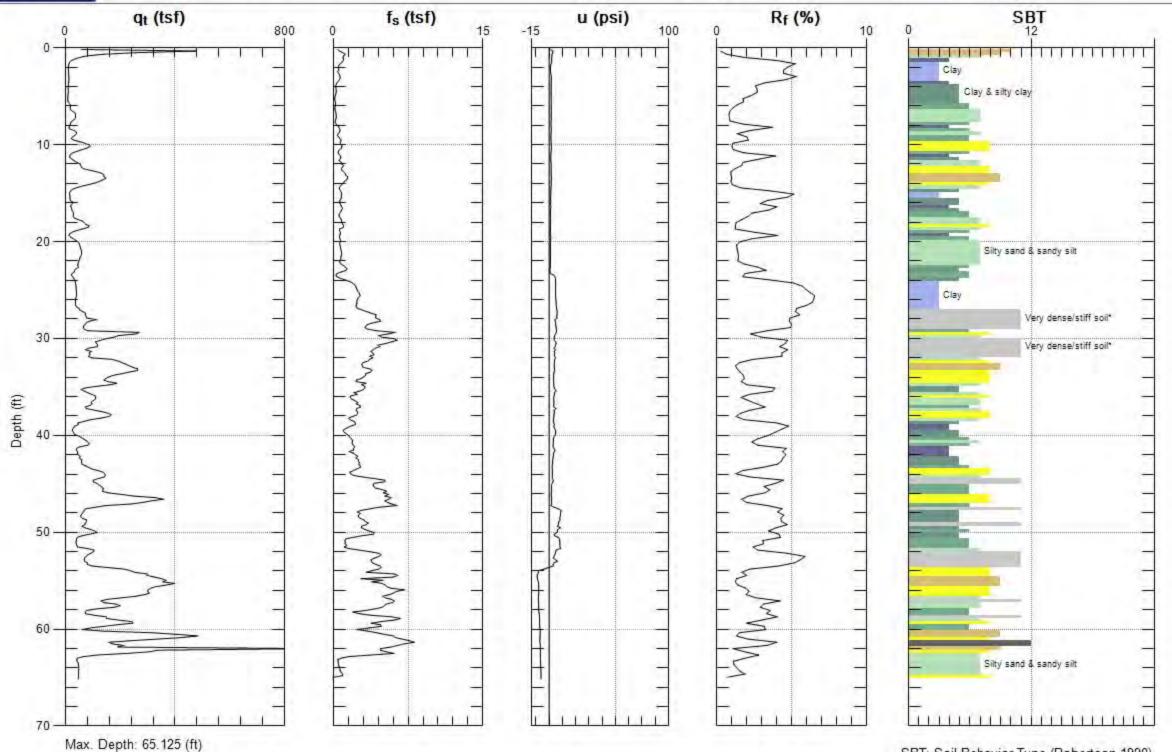




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-9 Date: 6/6/2012 11:53

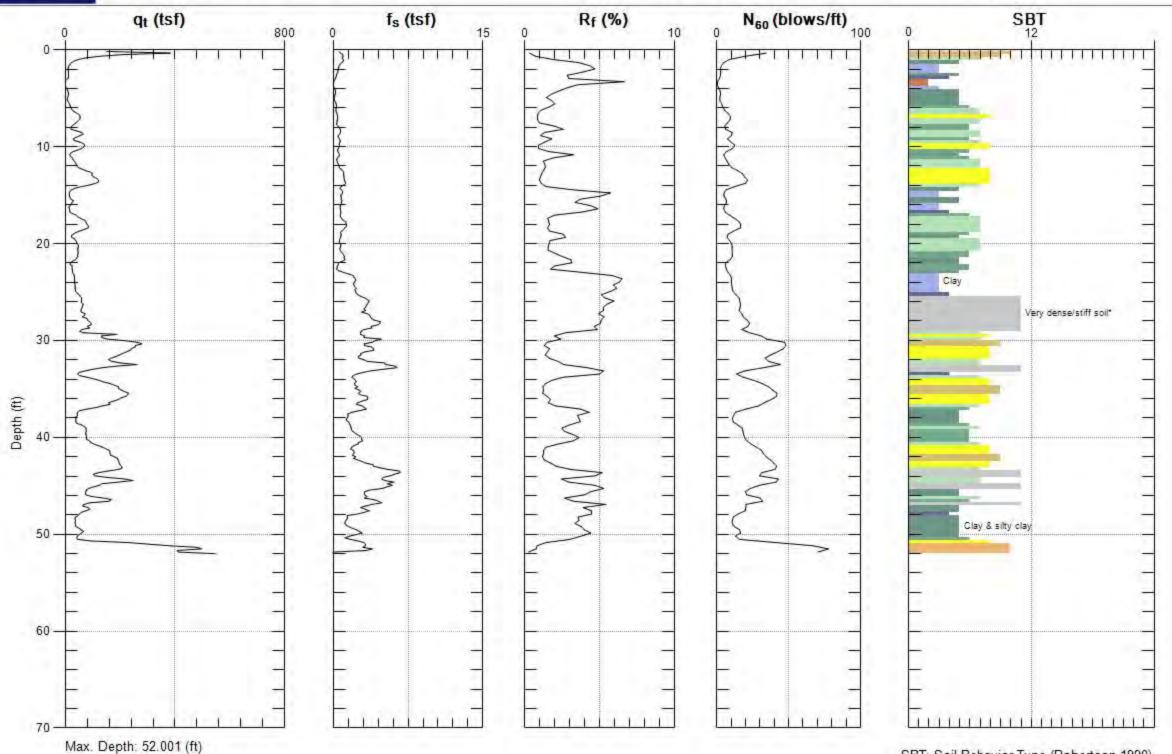




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

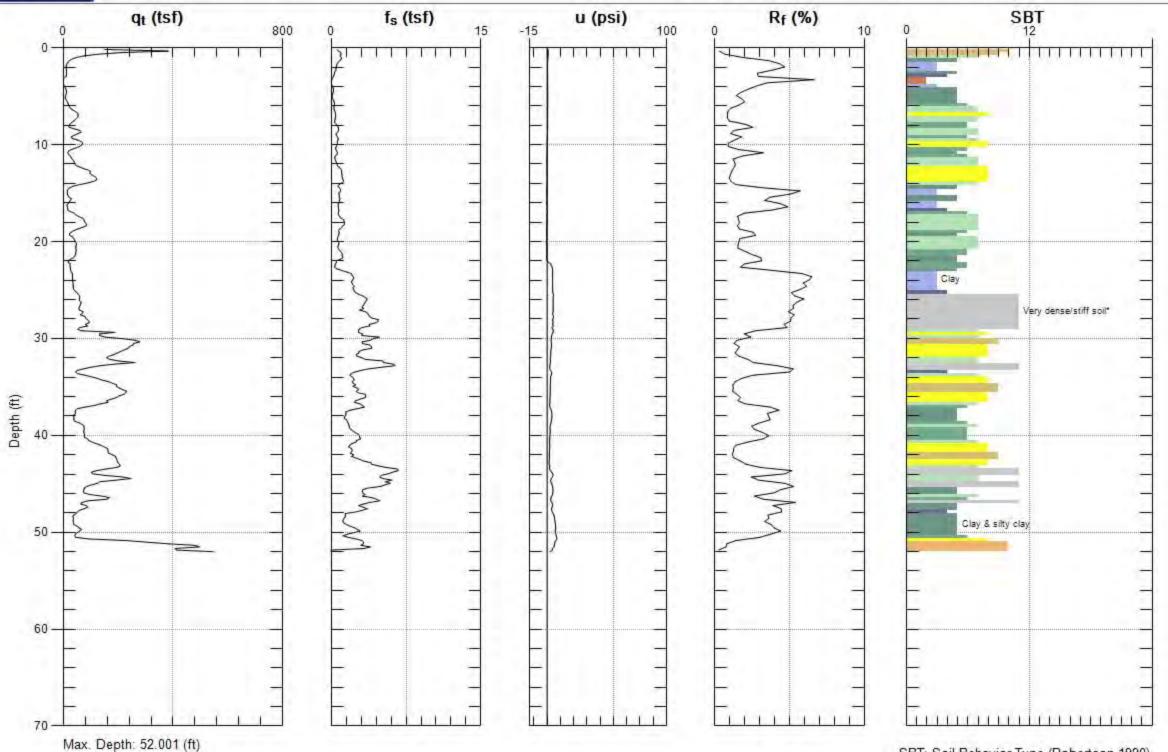
Sounding: C-10 Date: 6/6/2012 12:23





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-10 Date: 6/6/2012 12:23

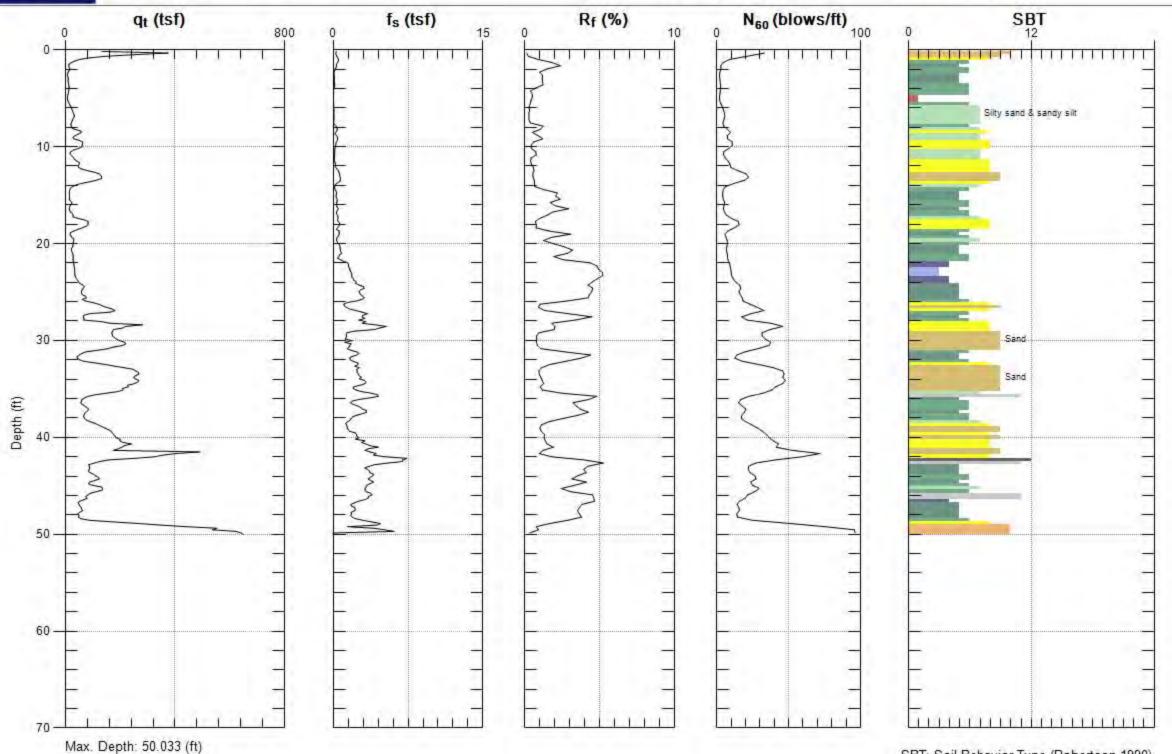


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-11 Date: 6/6/2012 12:50



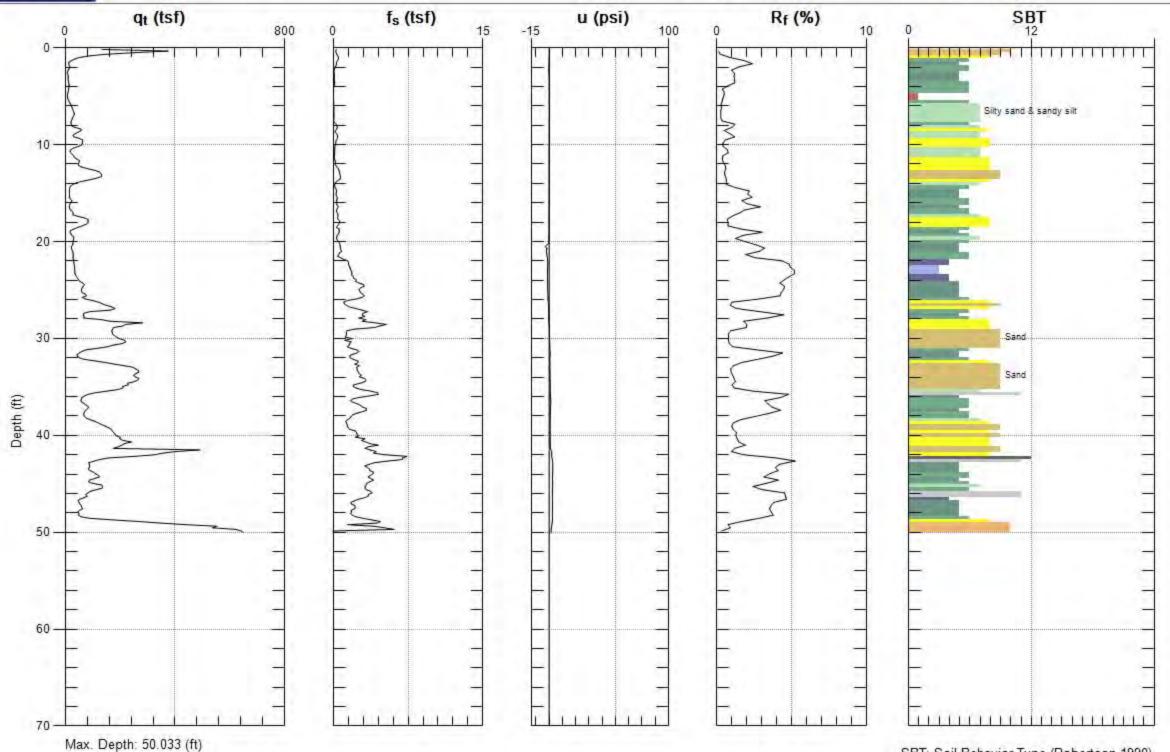
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-11 Date: 6/6/2012 12:50



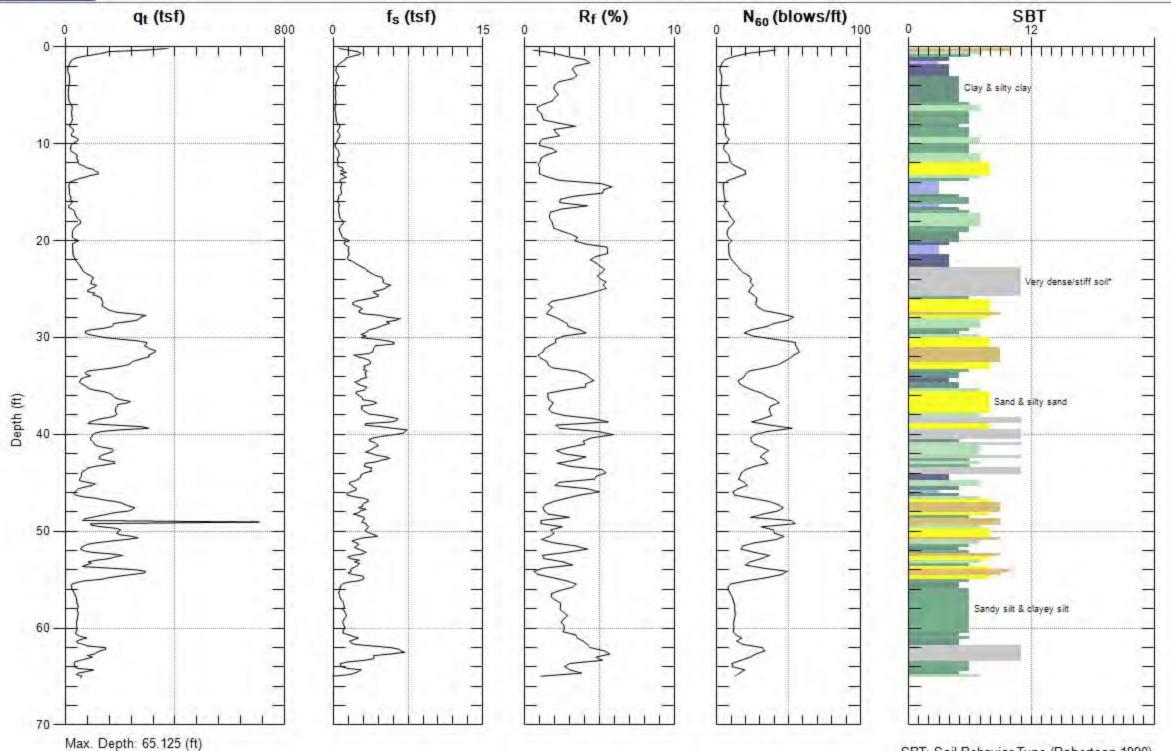
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

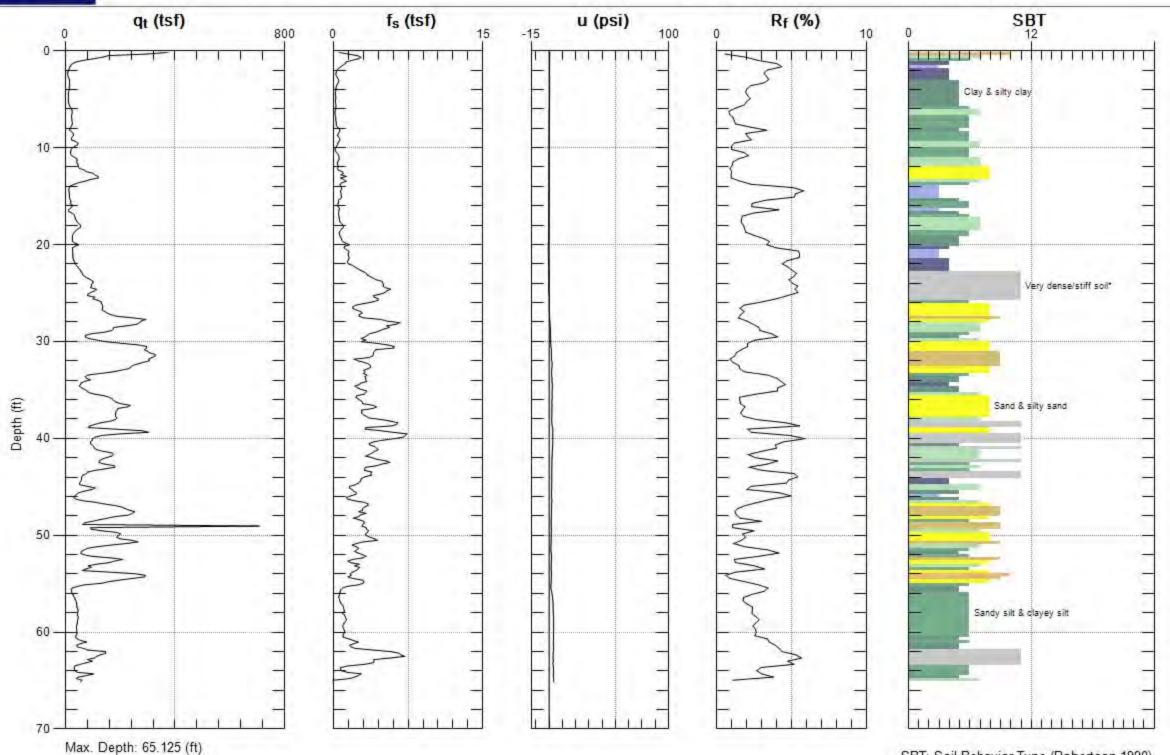
Sounding: C-12 Date: 6/6/2012 01:17





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-12 Date: 6/6/2012 01:17

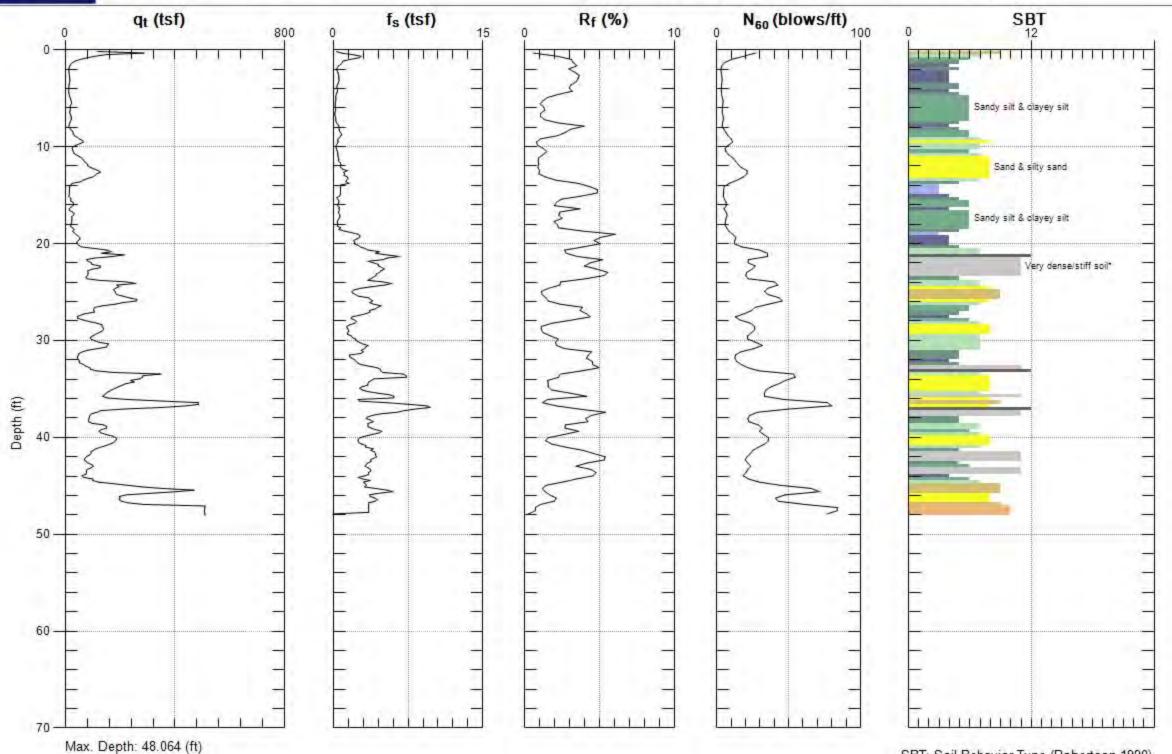


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

Sounding: C-13 Date: 6/6/2012 01:45

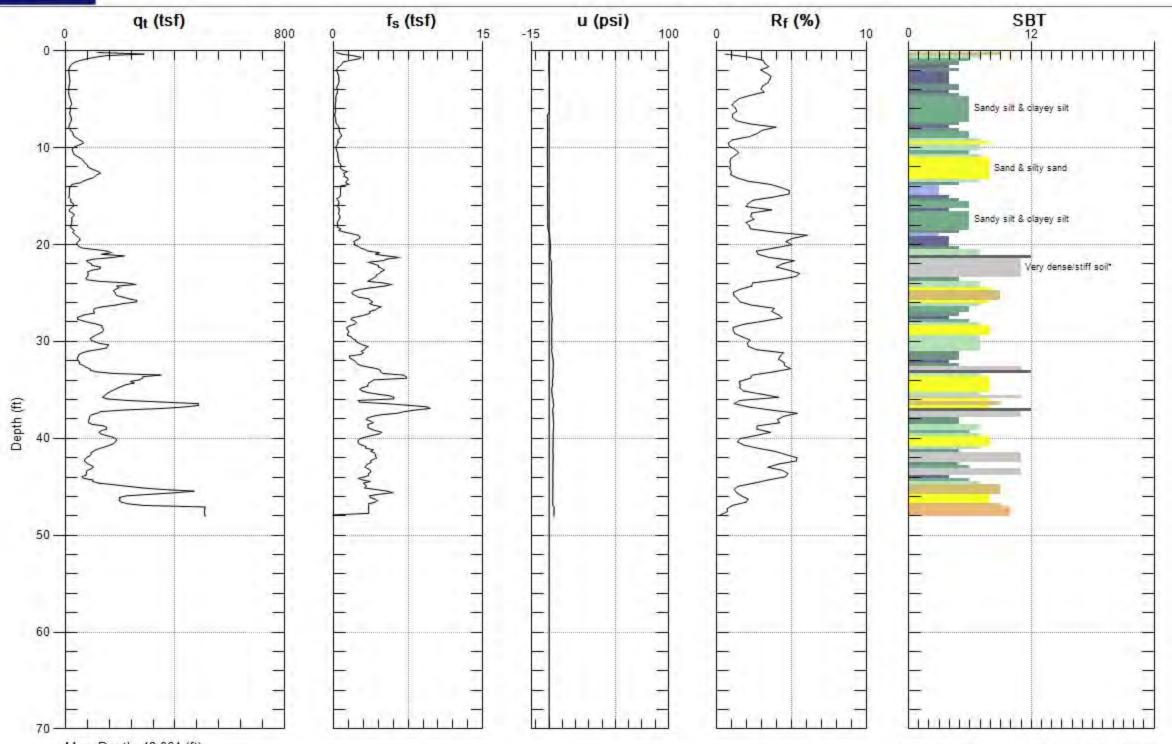


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-13 Date: 6/6/2012 01:45



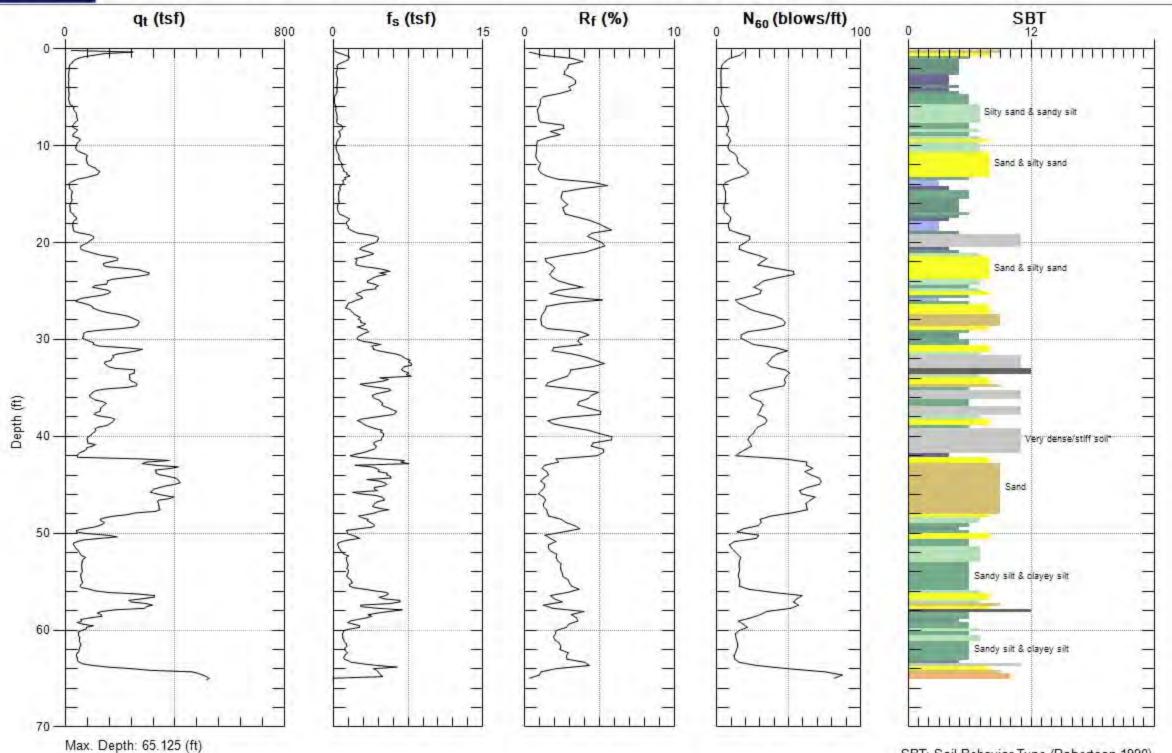
Max. Depth: 48.064 (ft) Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

Sounding: C-14 Date: 6/6/2012 02:09

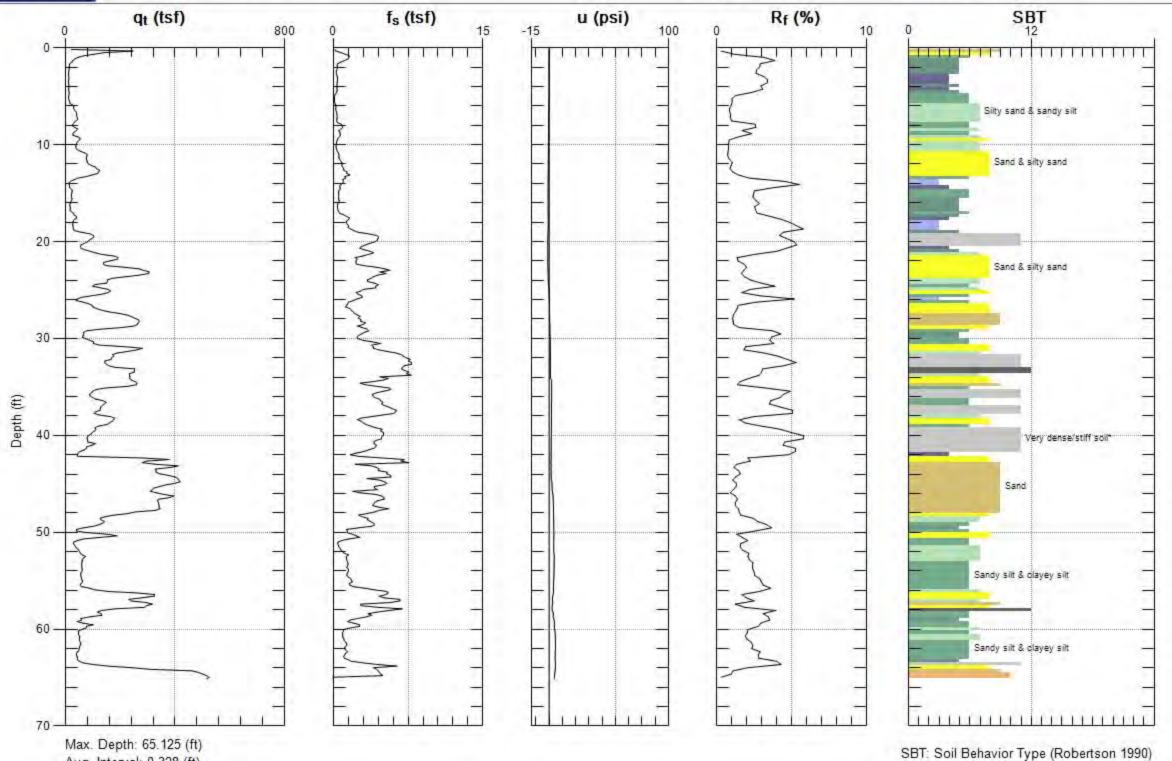




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-14 Date: 6/6/2012 02:09

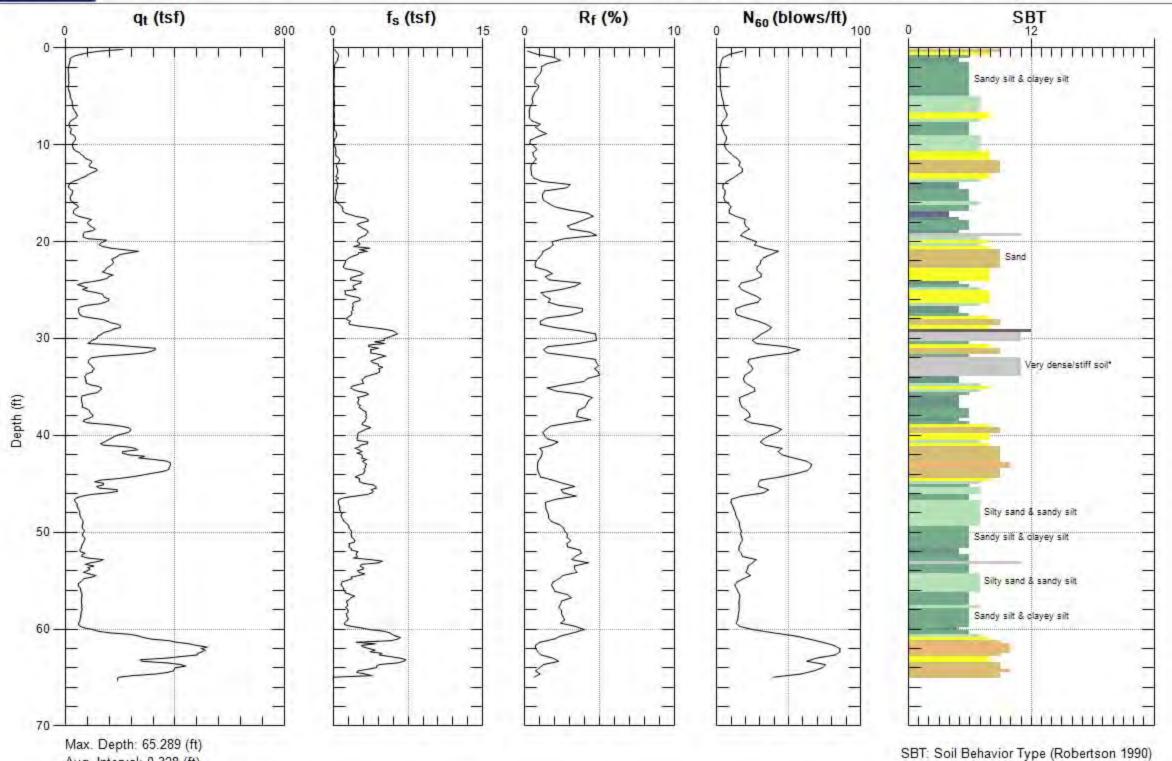




GROUP DELTA

Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

Sounding: C-15 Date: 6/7/2012 06:37

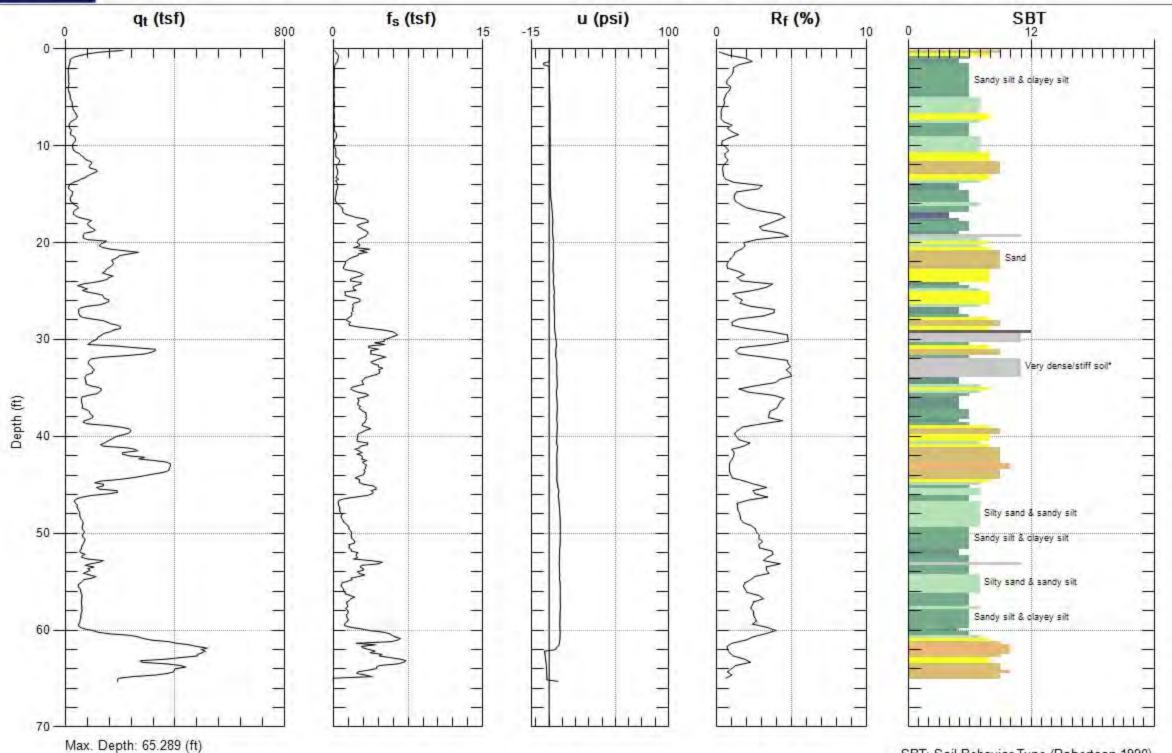




GROUP DELTA

Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

Sounding: C-15 Date: 6/7/2012 06:37

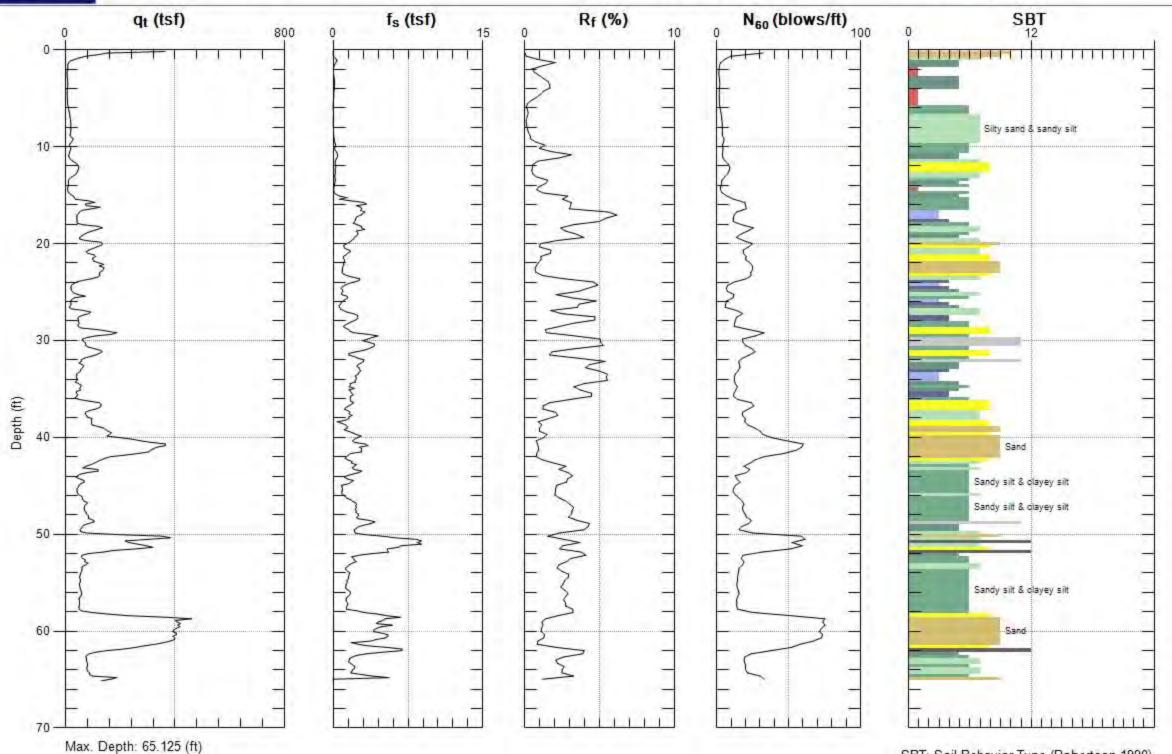




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-16 Date: 6/7/2012 07:25

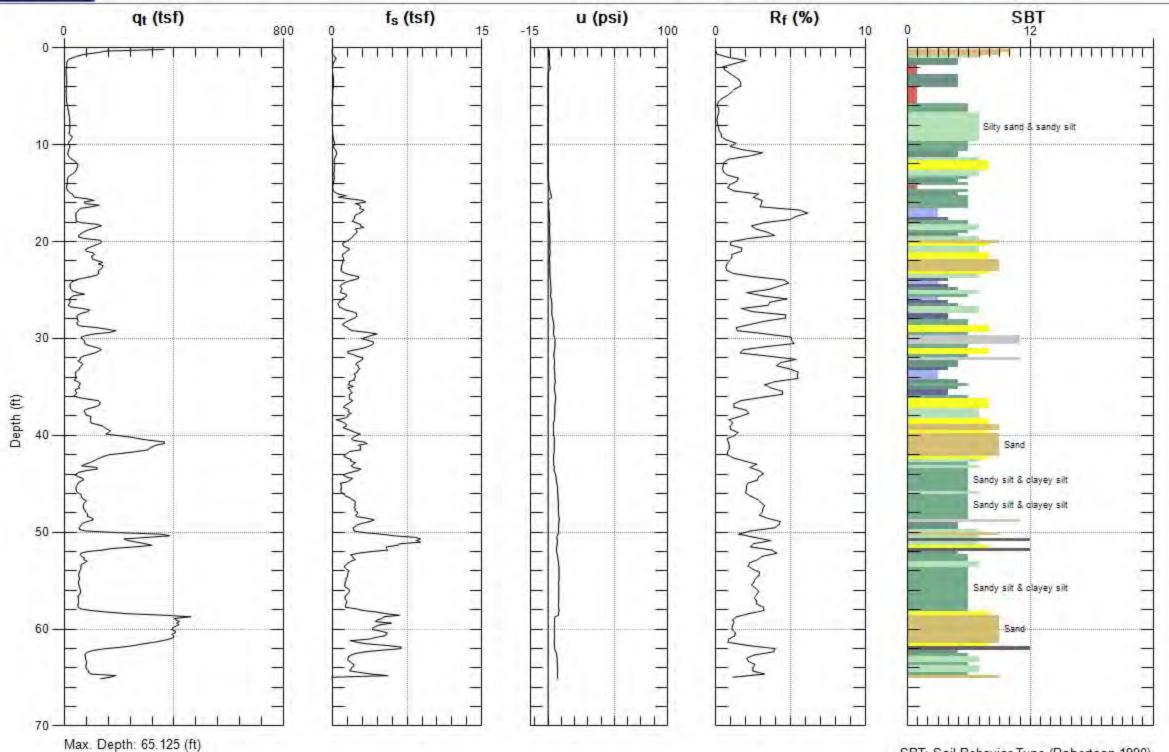




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-16 Date: 6/7/2012 07:25

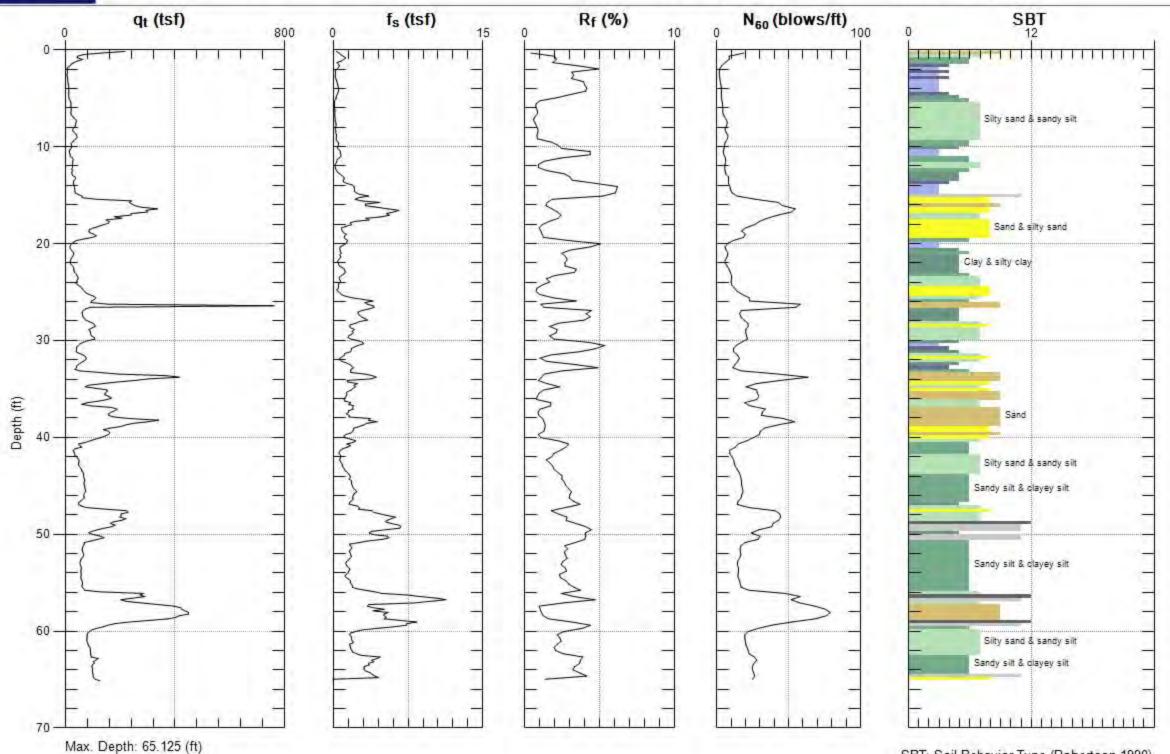




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

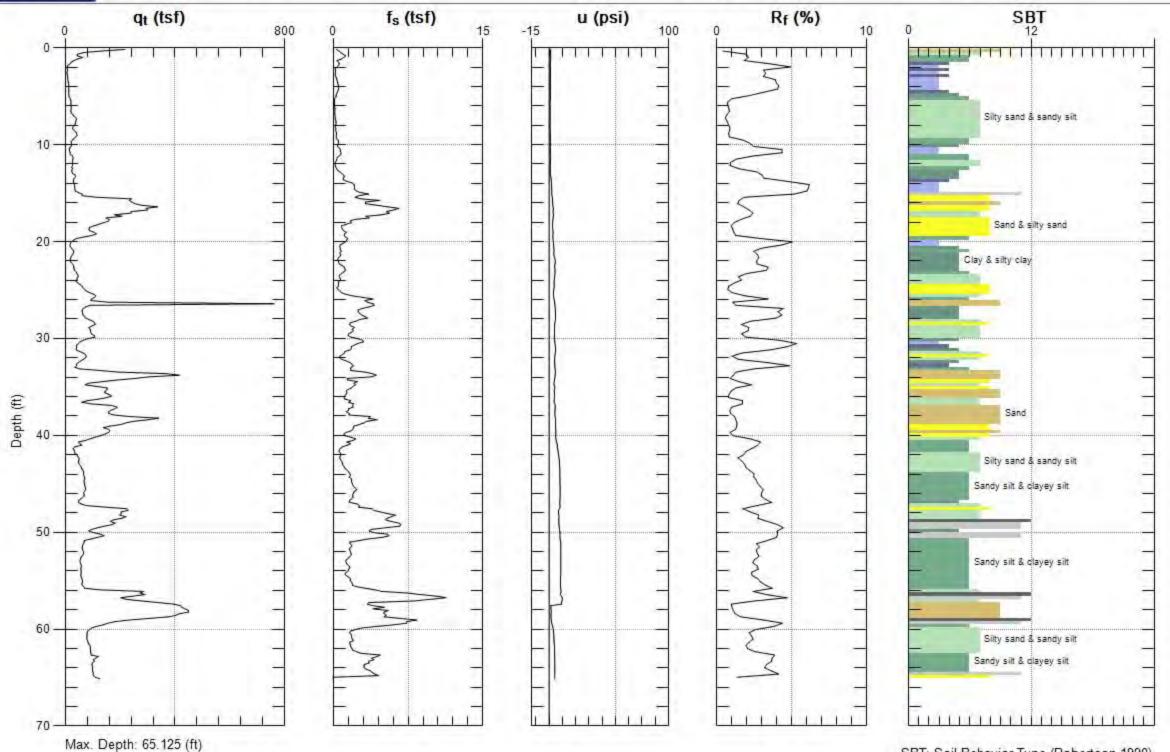
Sounding: C-17 Date: 6/7/2012 07:56





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-17 Date: 6/7/2012 07:56



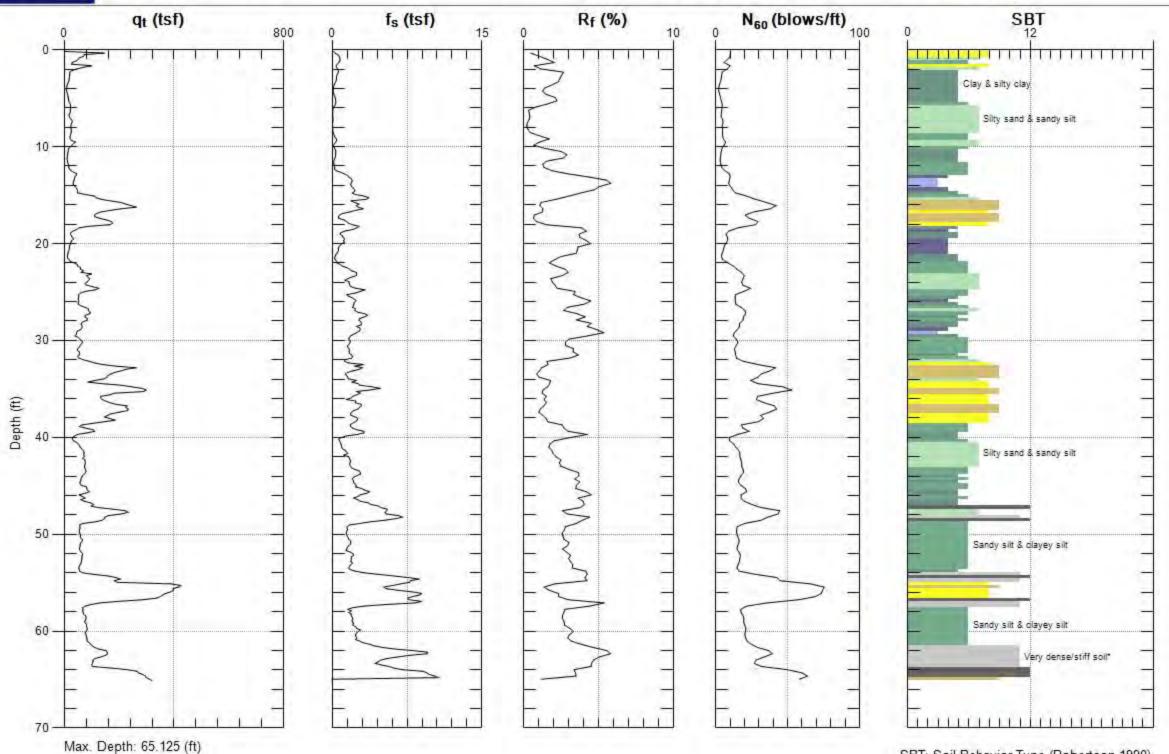
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

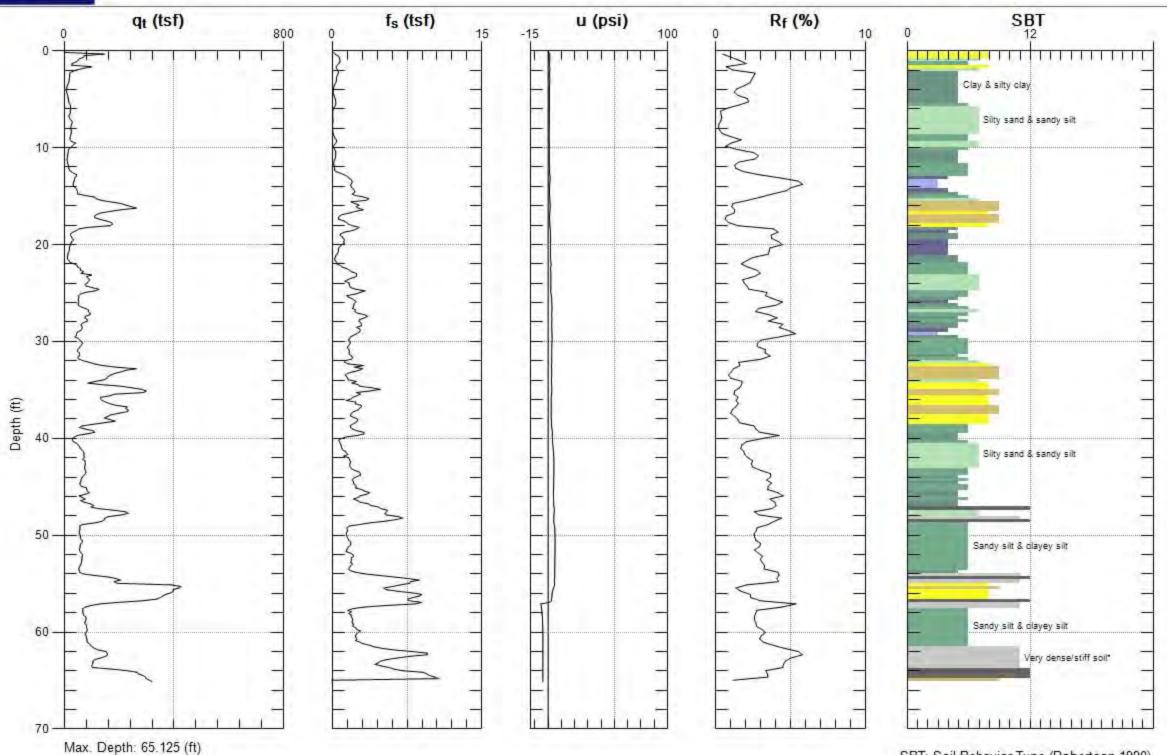
Sounding: C-18 Date: 6/7/2012 08:24





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-18 Date: 6/7/2012 08:24



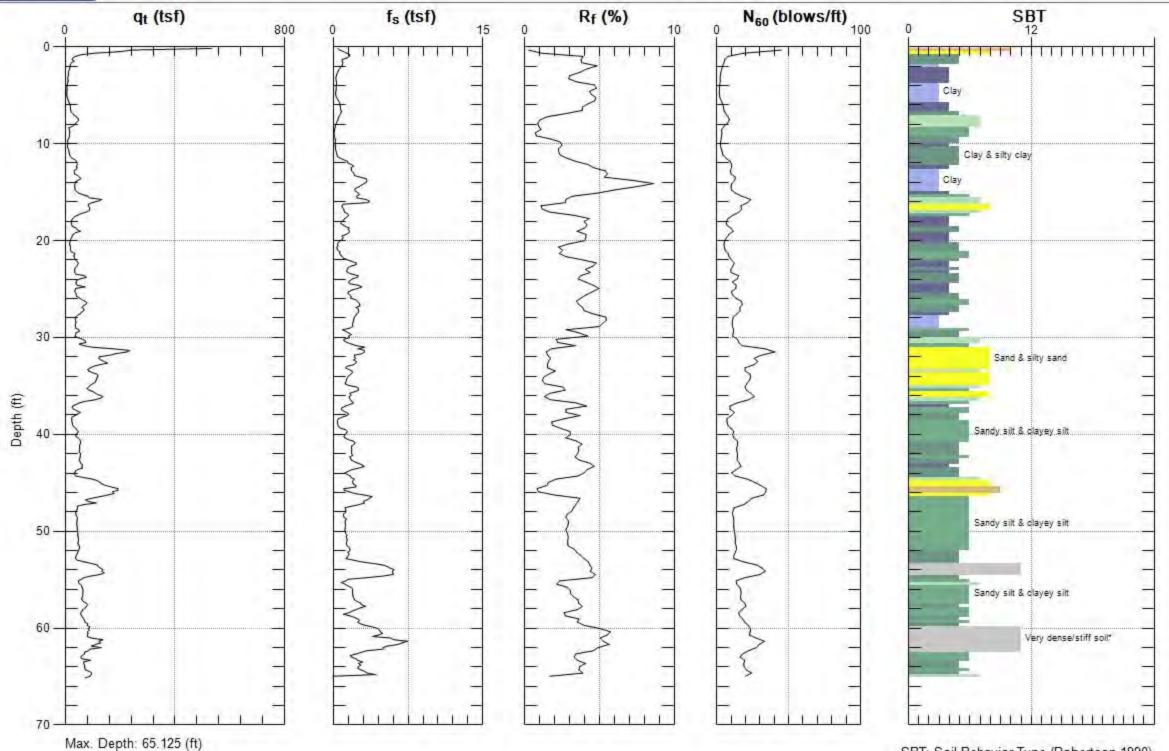
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

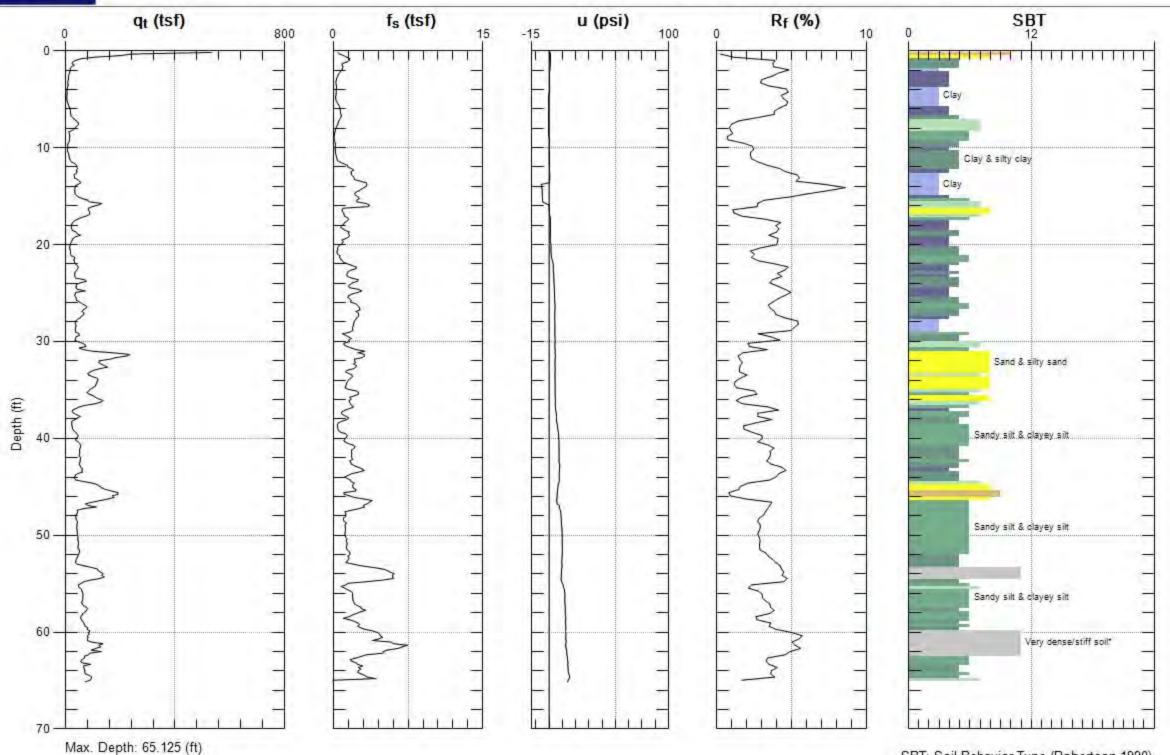
Sounding: C-19 Date: 6/7/2012 08:54





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-19 Date: 6/7/2012 08:54



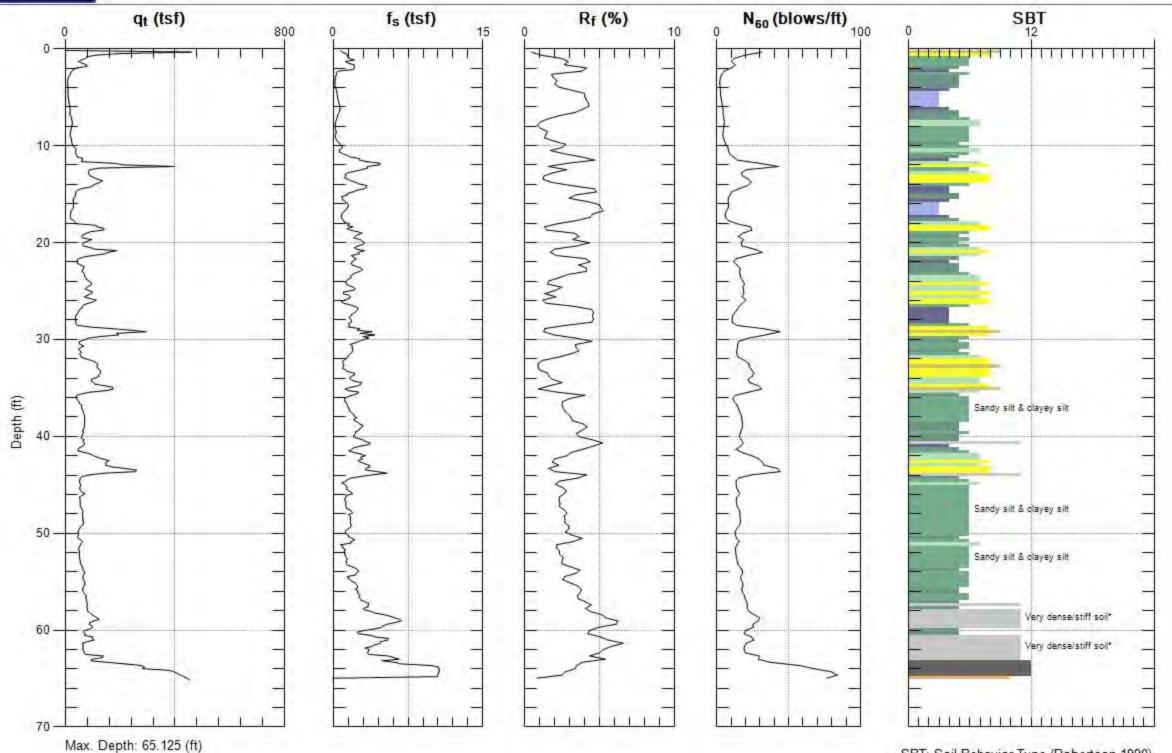
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

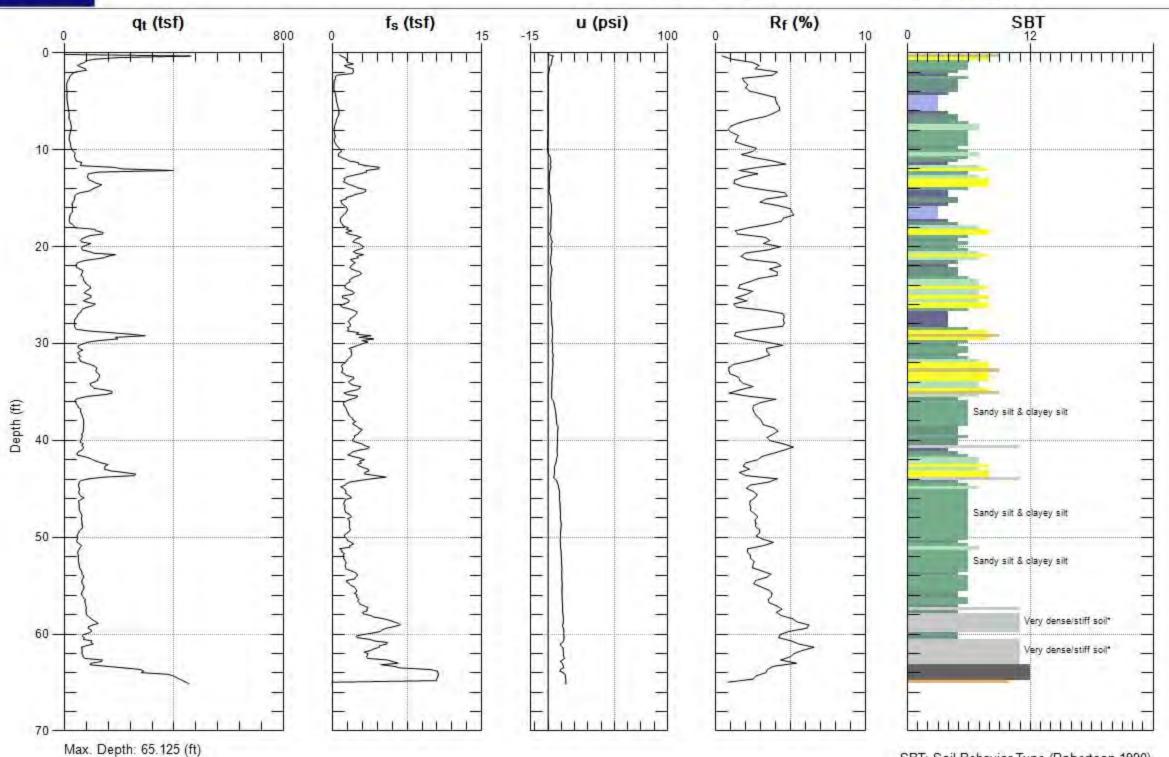
Sounding: C-20 Date: 6/7/2012 09:22





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-20 Date: 6/7/2012 09:22



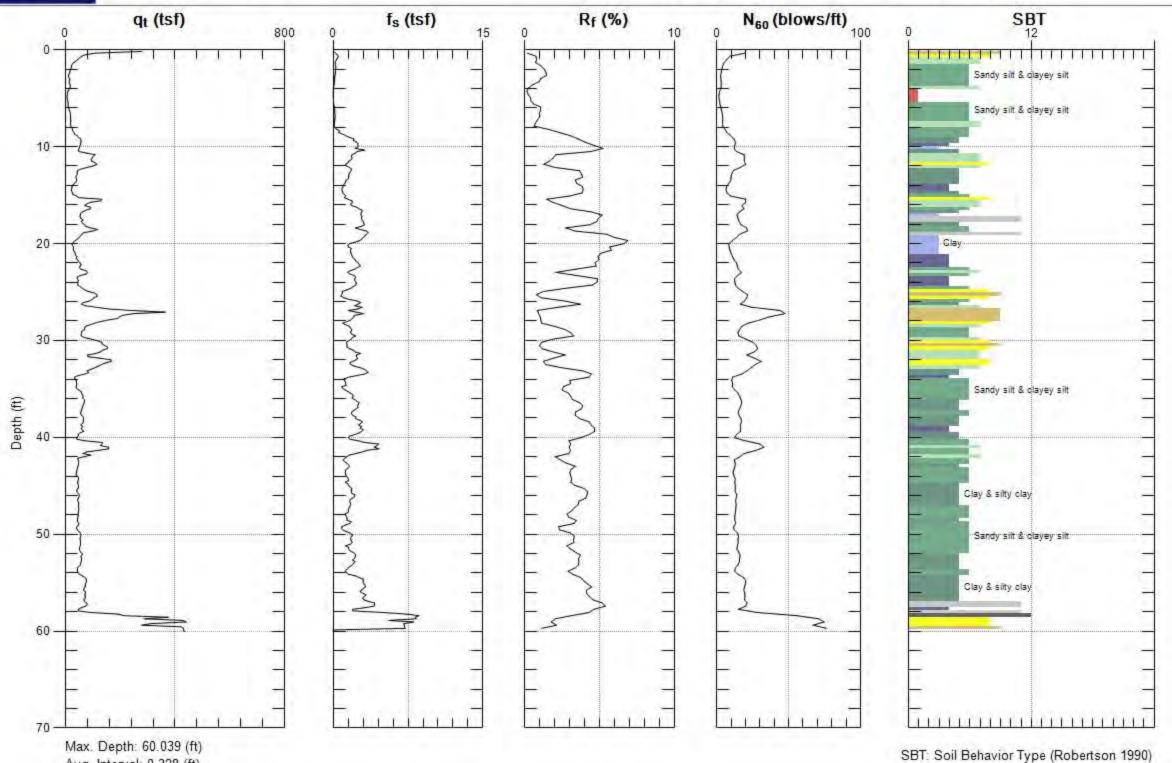
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-21 Date: 6/7/2012 09:45

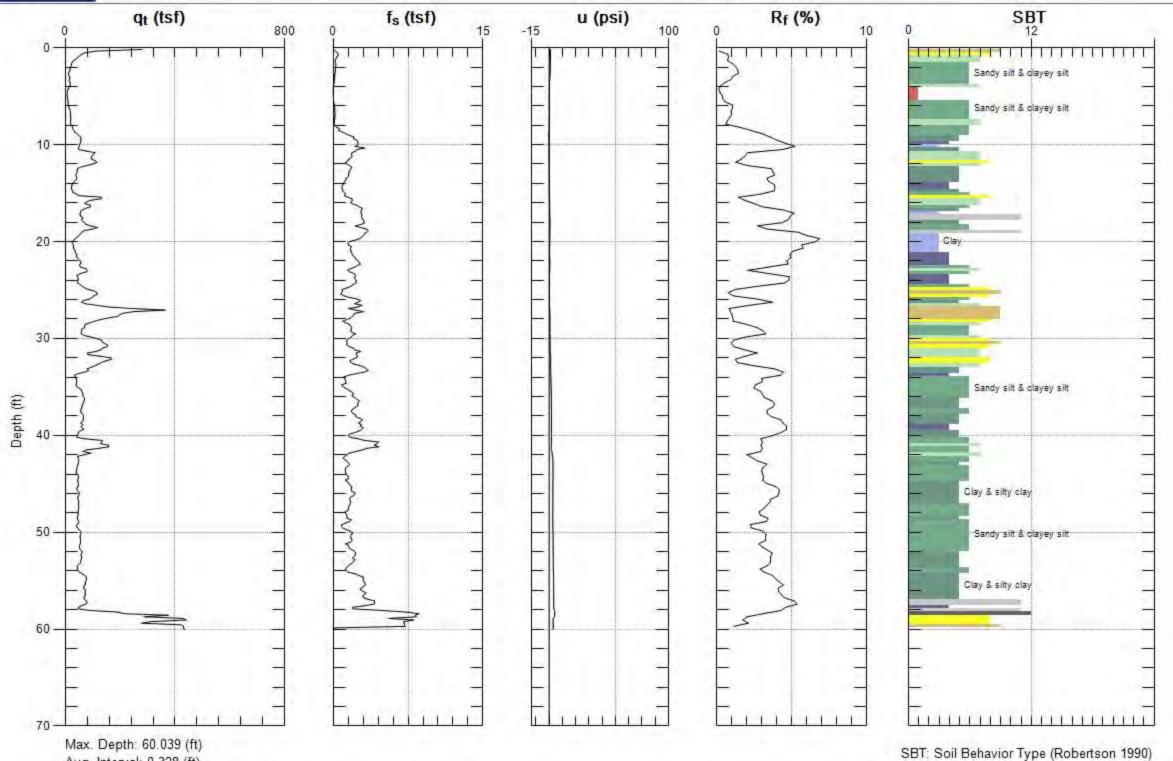




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-21 Date: 6/7/2012 09:45

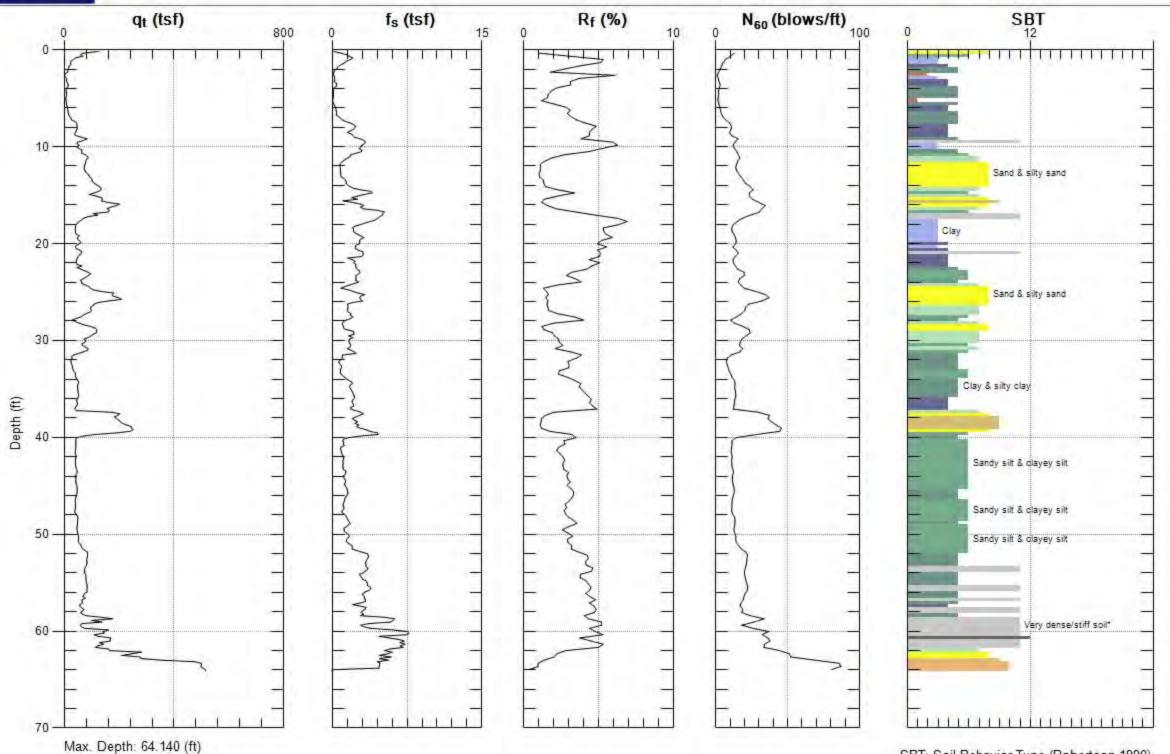




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-22 Date: 6/7/2012 10:12

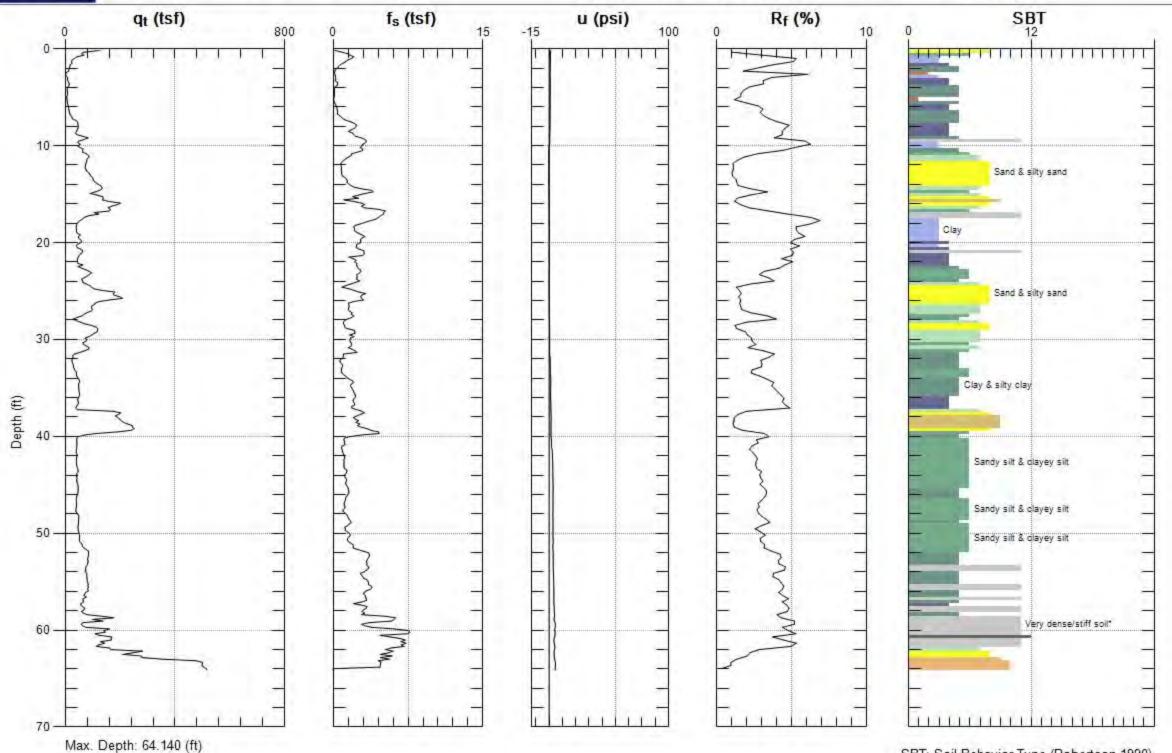




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-22 Date: 6/7/2012 10:12

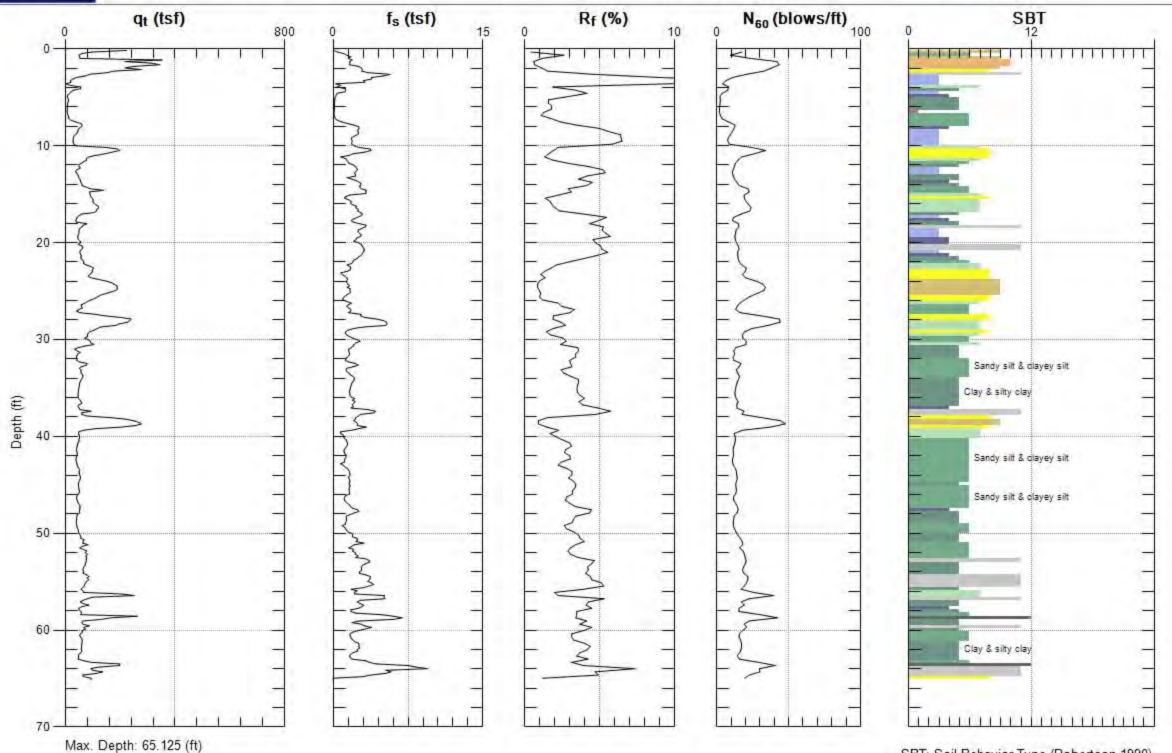




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-23 Date: 6/7/2012 10:40

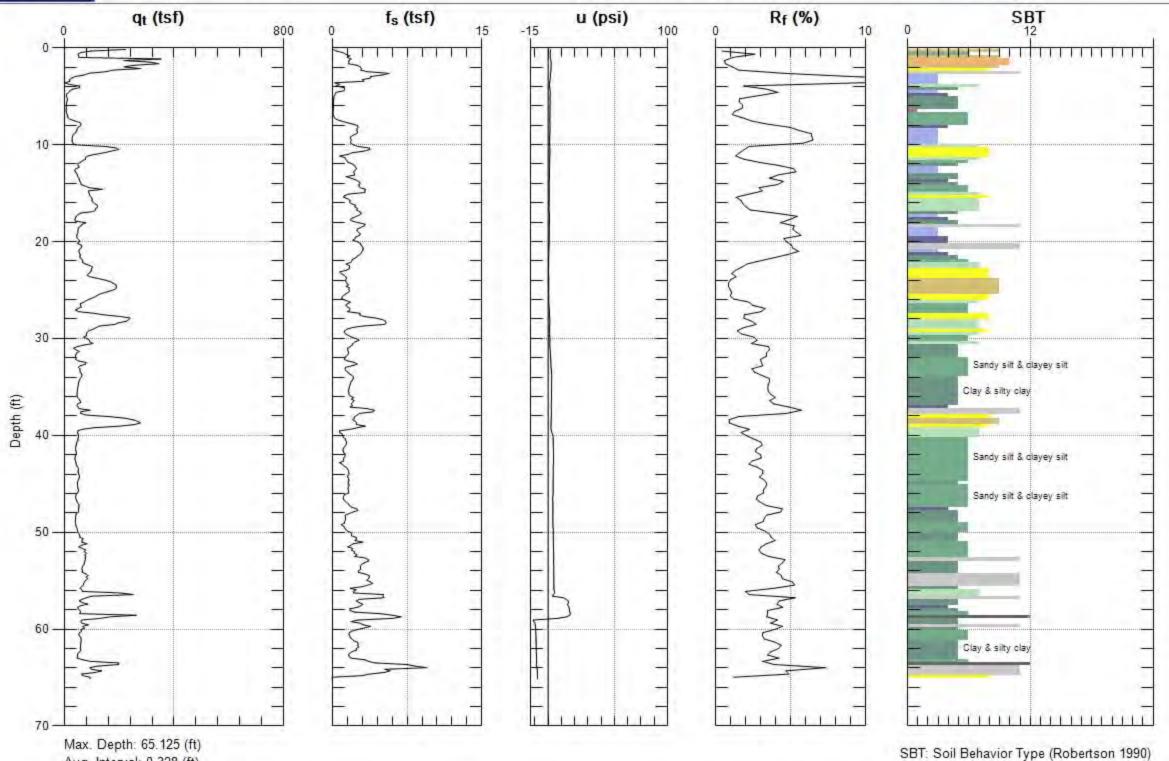




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-23 Date: 6/7/2012 10:40

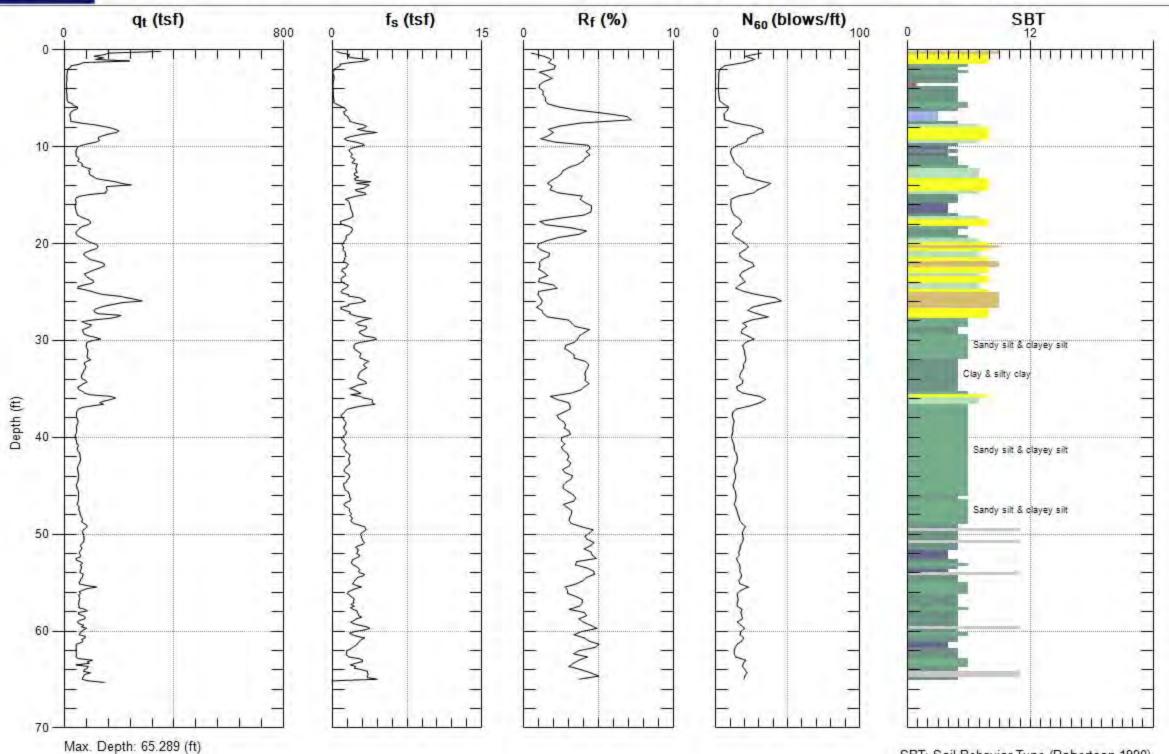




GROUP DELTA

Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

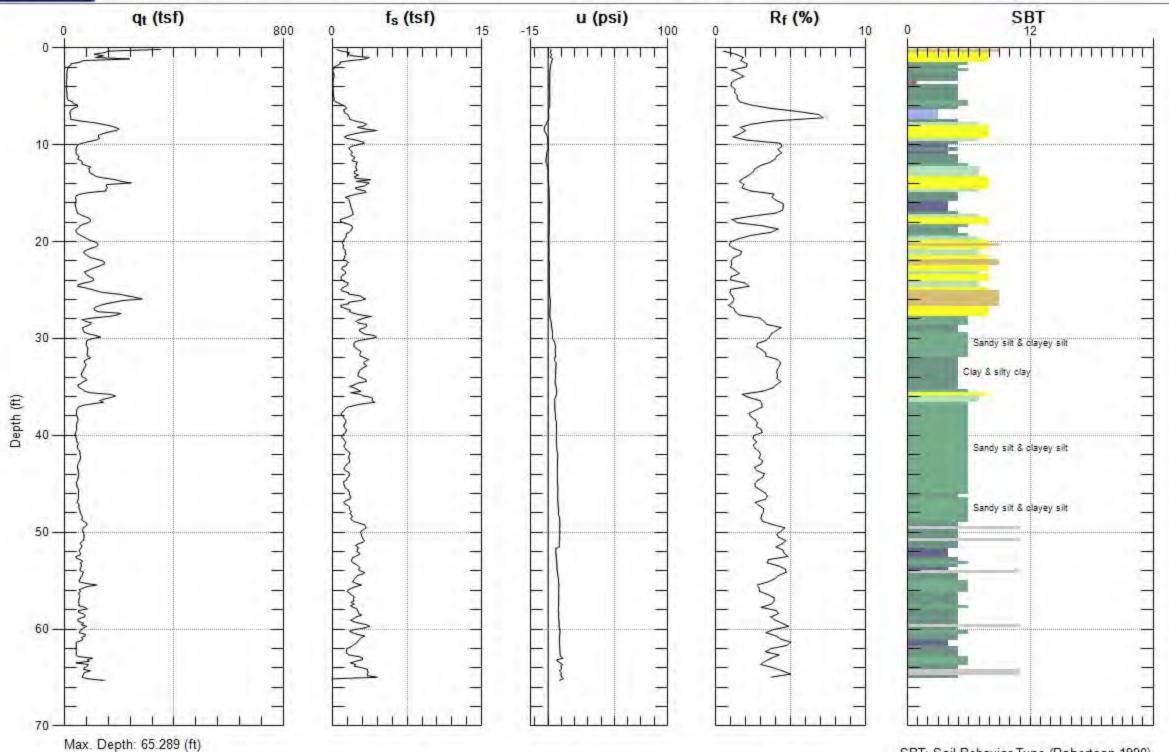
Sounding: C-24 Date: 6/7/2012 11:15





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-24 Date: 6/7/2012 11:15



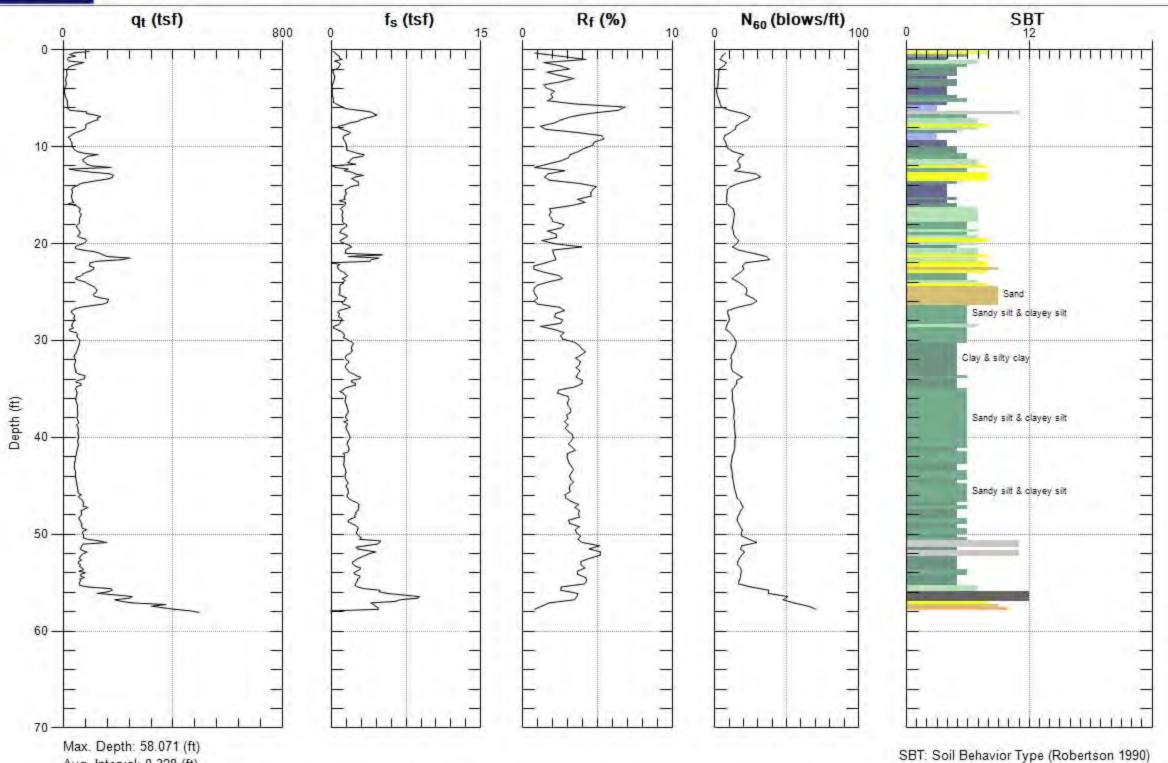
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-25 Date: 6/7/2012 11:39

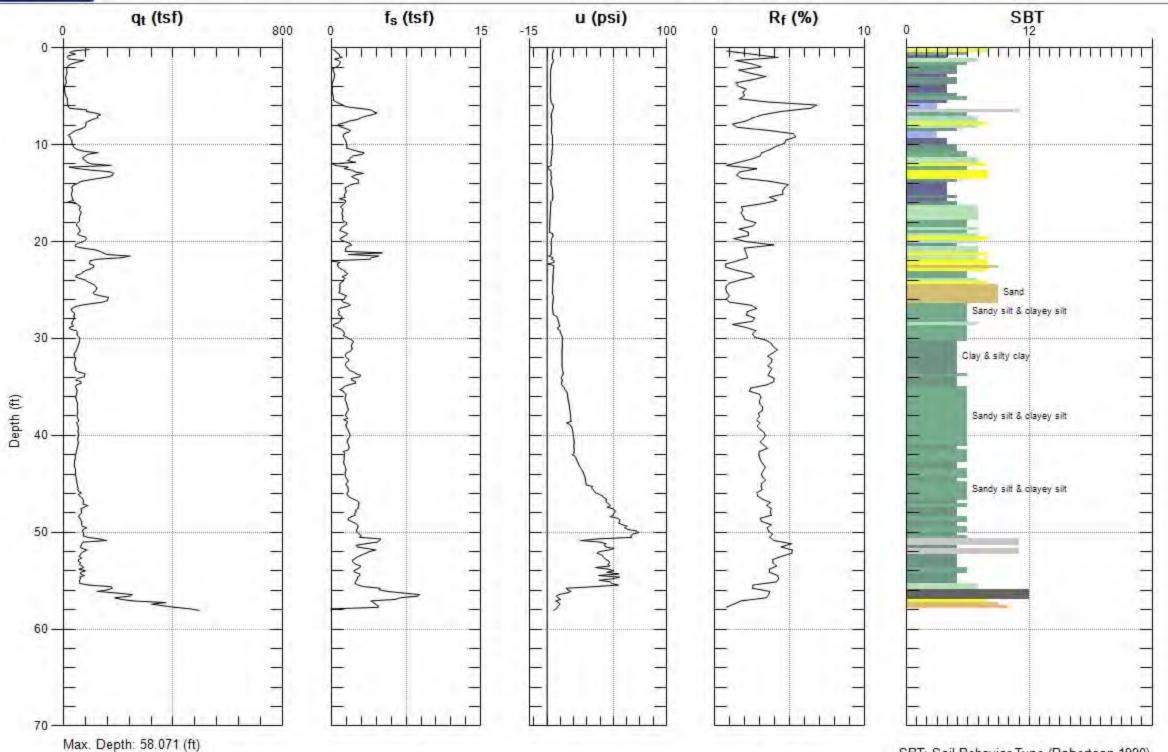




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: C-25 Date: 6/7/2012 11:39

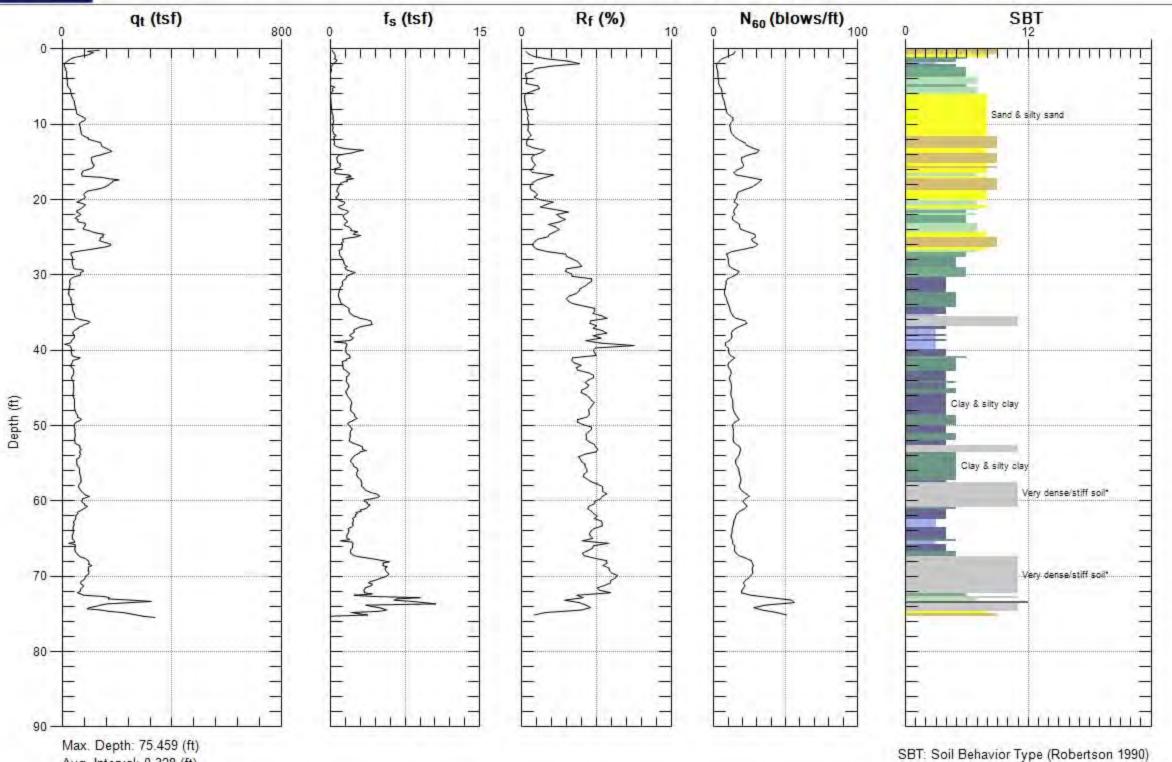




GROUP DELTA

Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

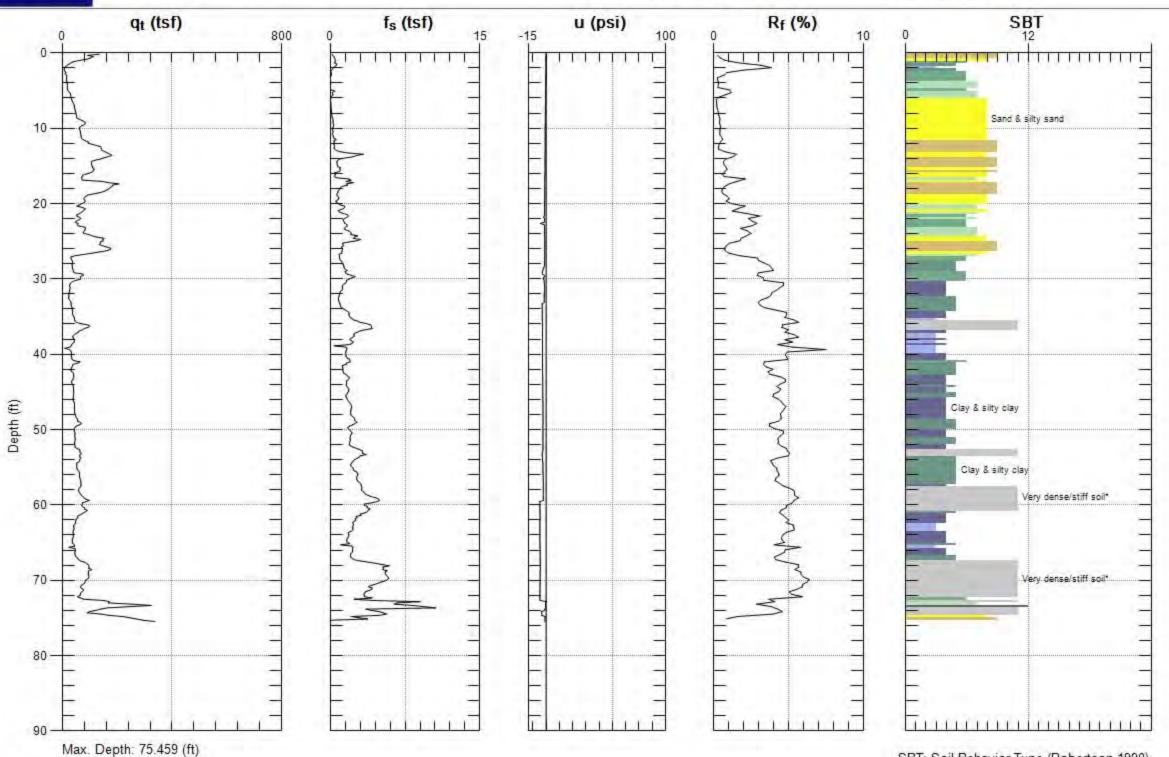
Sounding: CPT-101 Date: 8/3/2012 11:01





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-101 Date: 8/3/2012 11:01

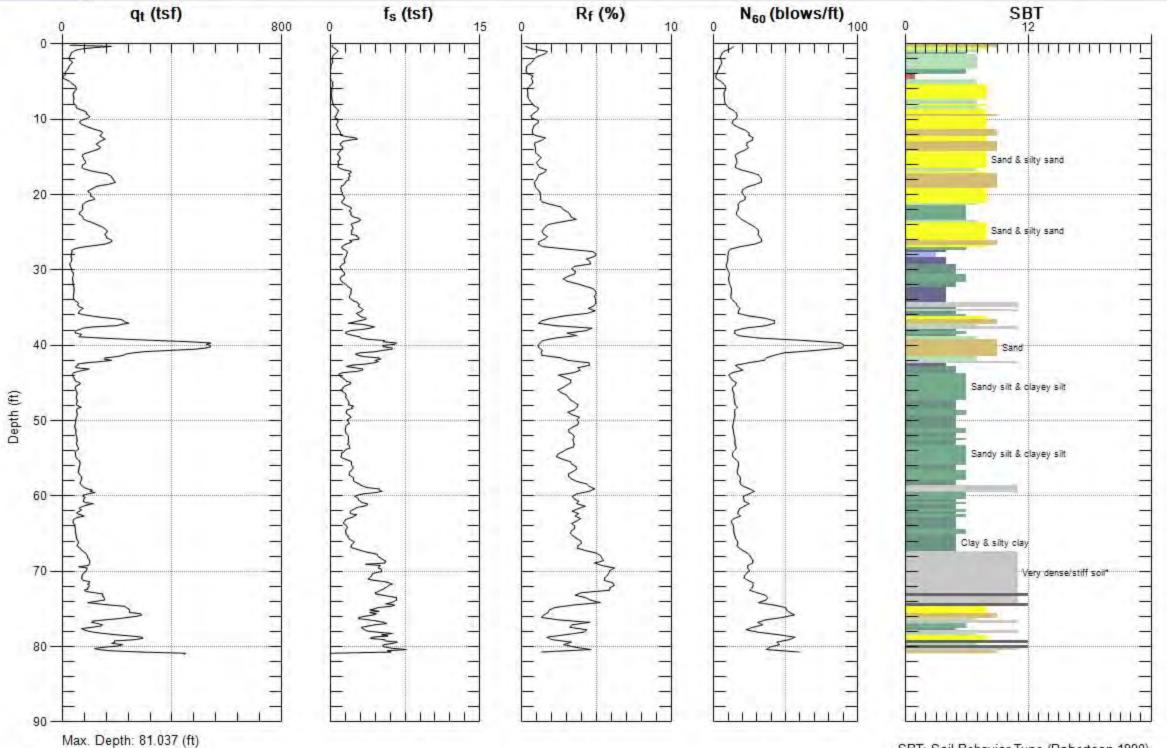


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-102 Date: 8/3/2012 11:49



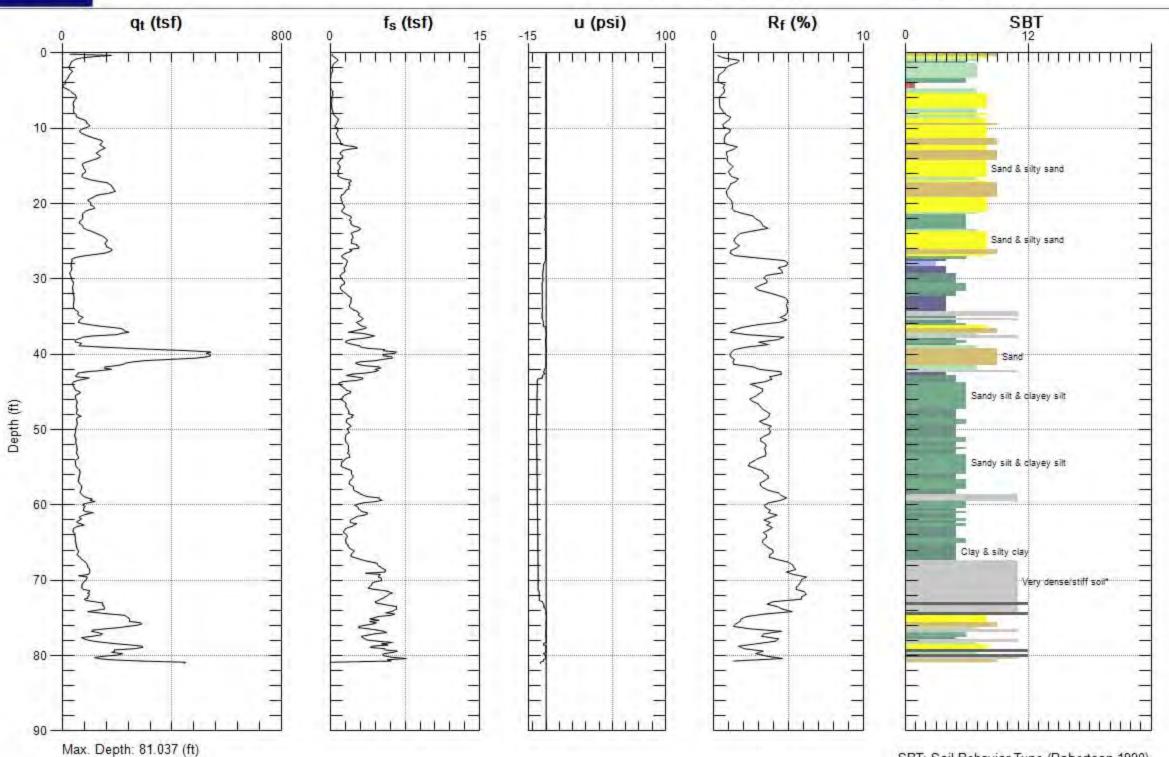
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUMIngineer: E.HOLLIDAY

Sounding: CPT-102 Date: 8/3/2012 11:49

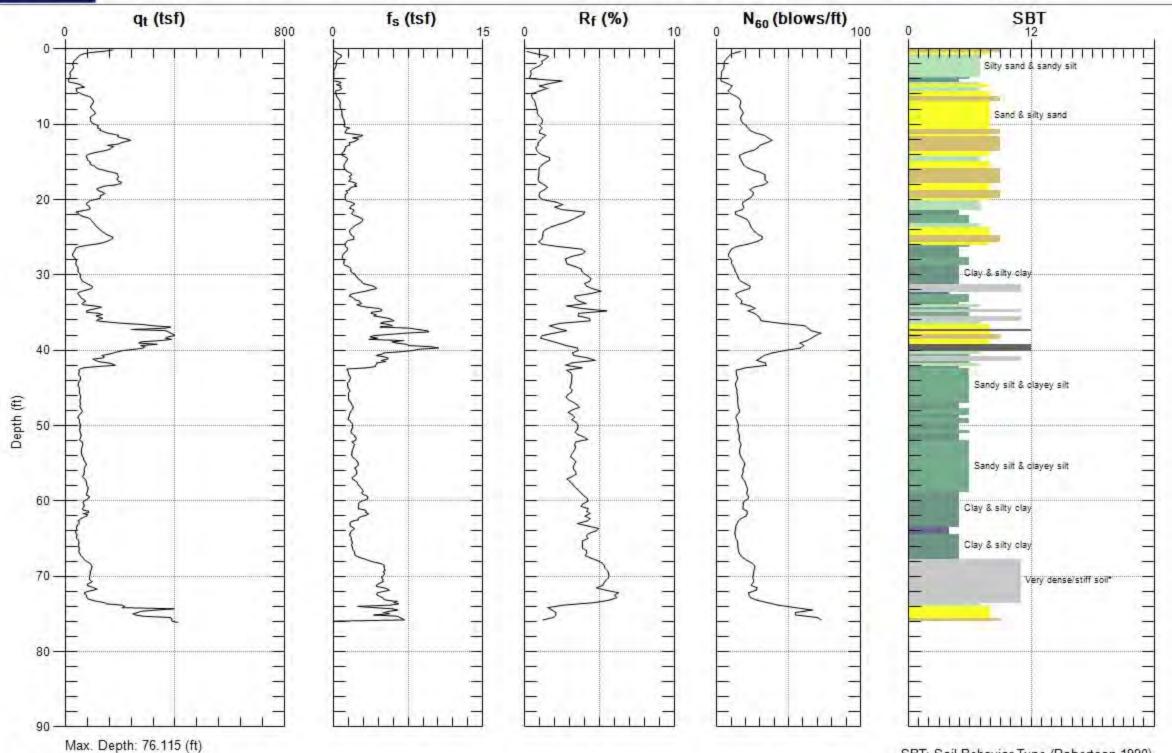




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

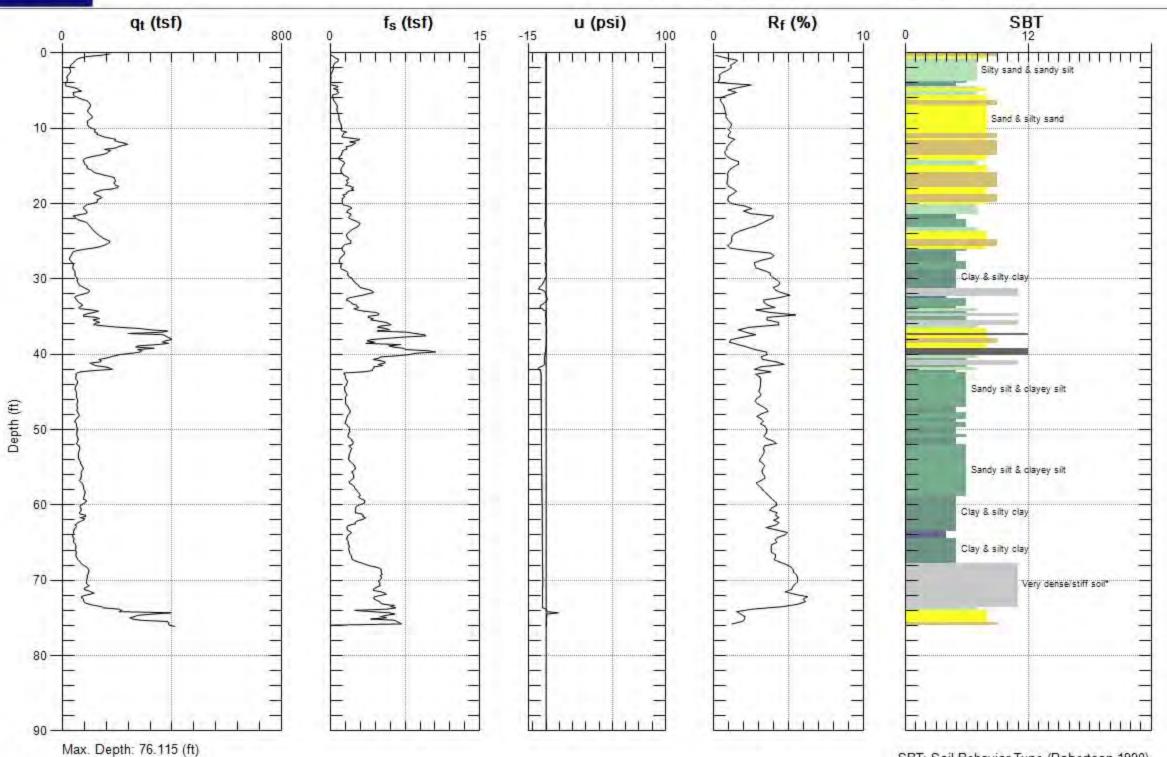
Sounding: CPT-103 Date: 8/3/2012 12:28





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-103 Date: 8/3/2012 12:28



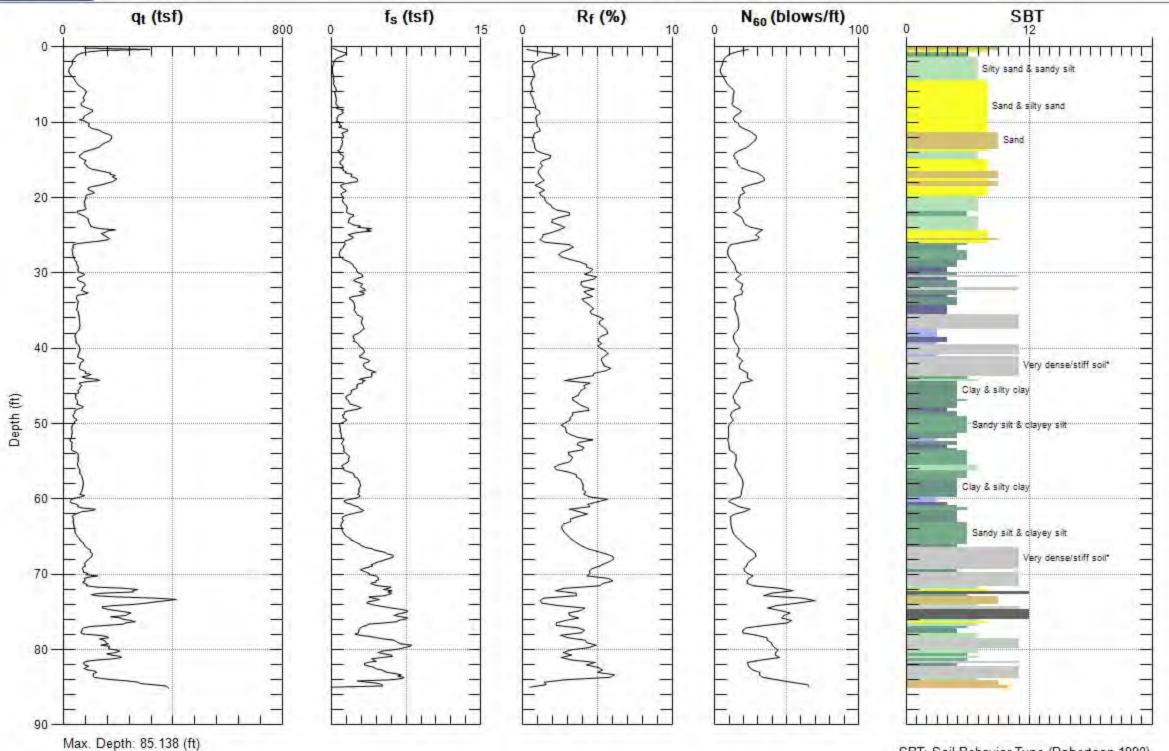
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

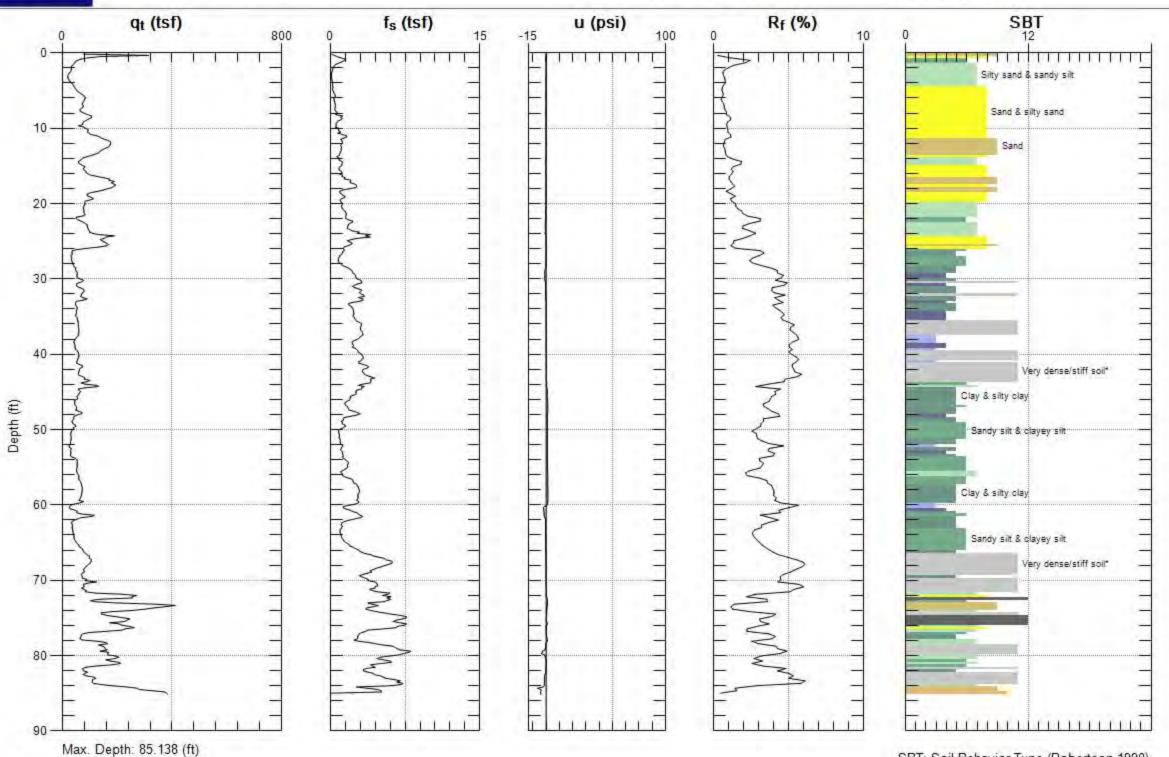
Sounding: CPT-104 Date: 8/3/2012 01:10





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-104 Date: 8/3/2012 01:10



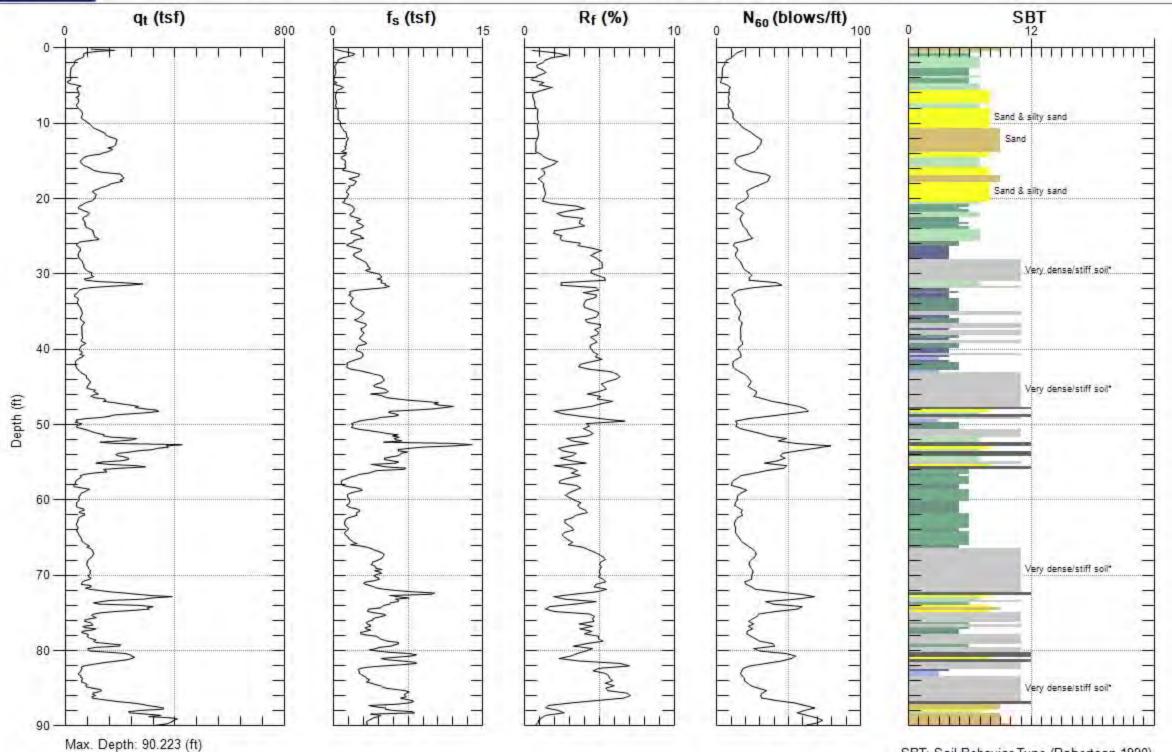
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-105 Date: 8/3/2012 01:50

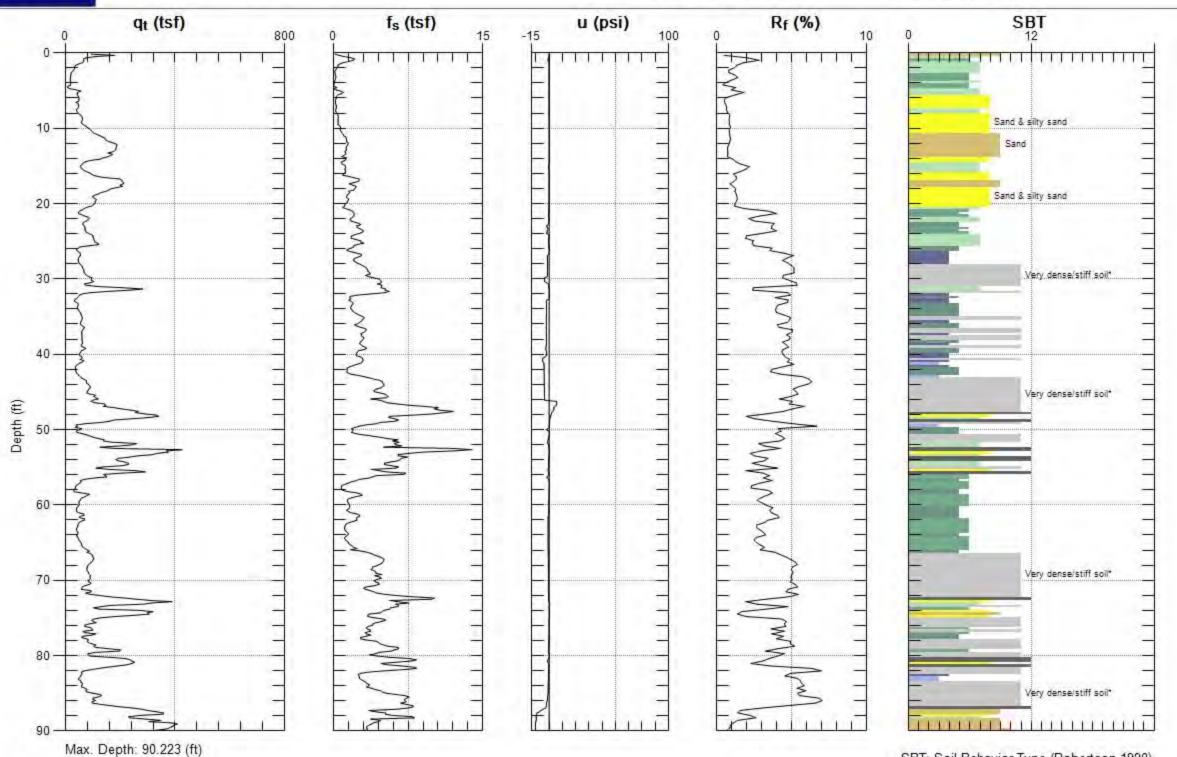




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

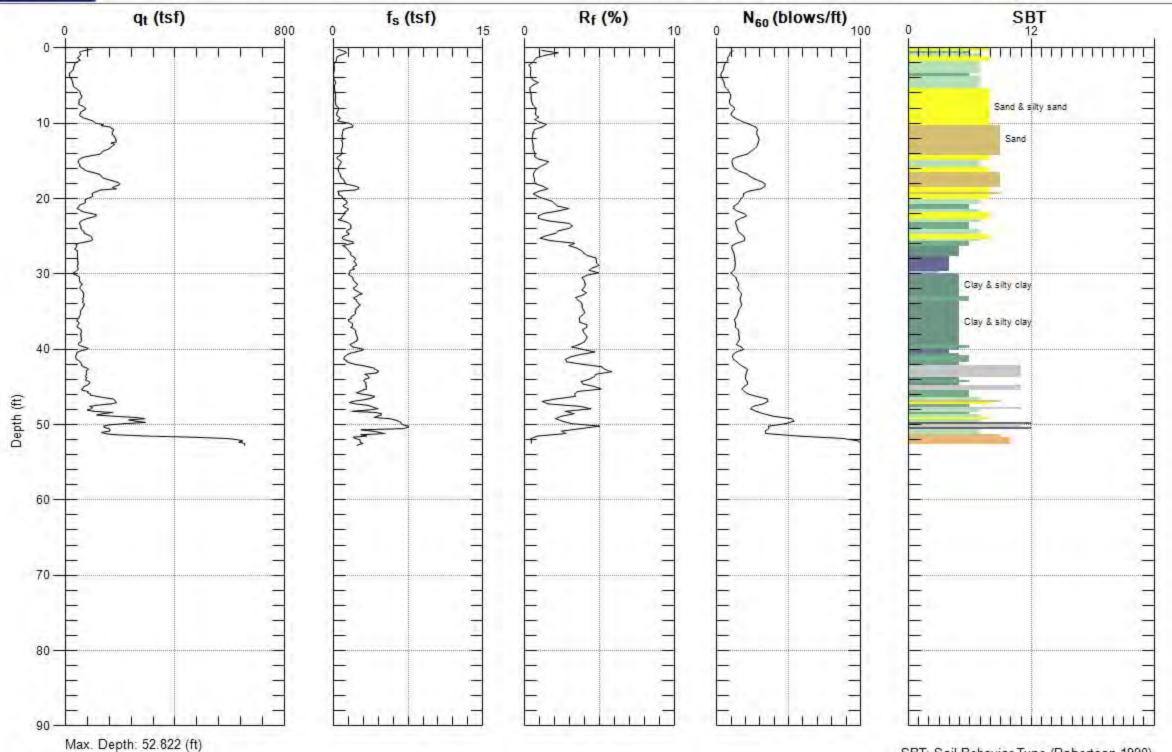
Sounding: CPT-105 Date: 8/3/2012 01:50





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-106 Date: 8/6/2012 09:40

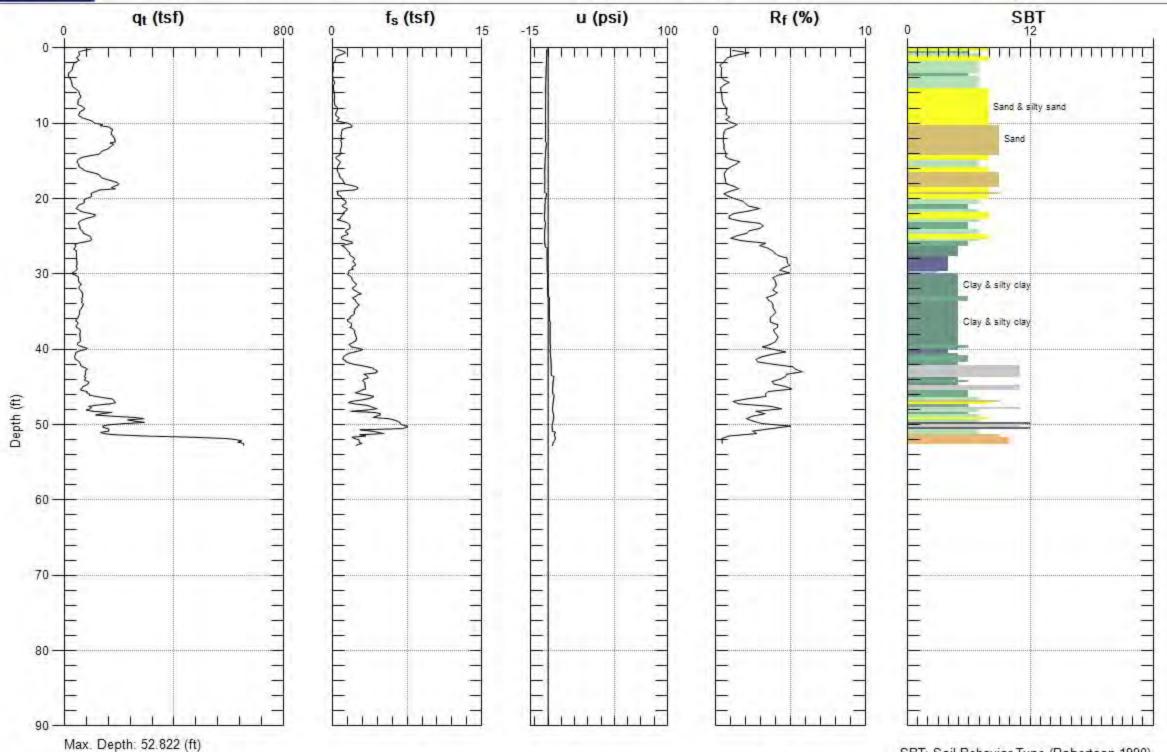


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-106 Date: 8/6/2012 09:40

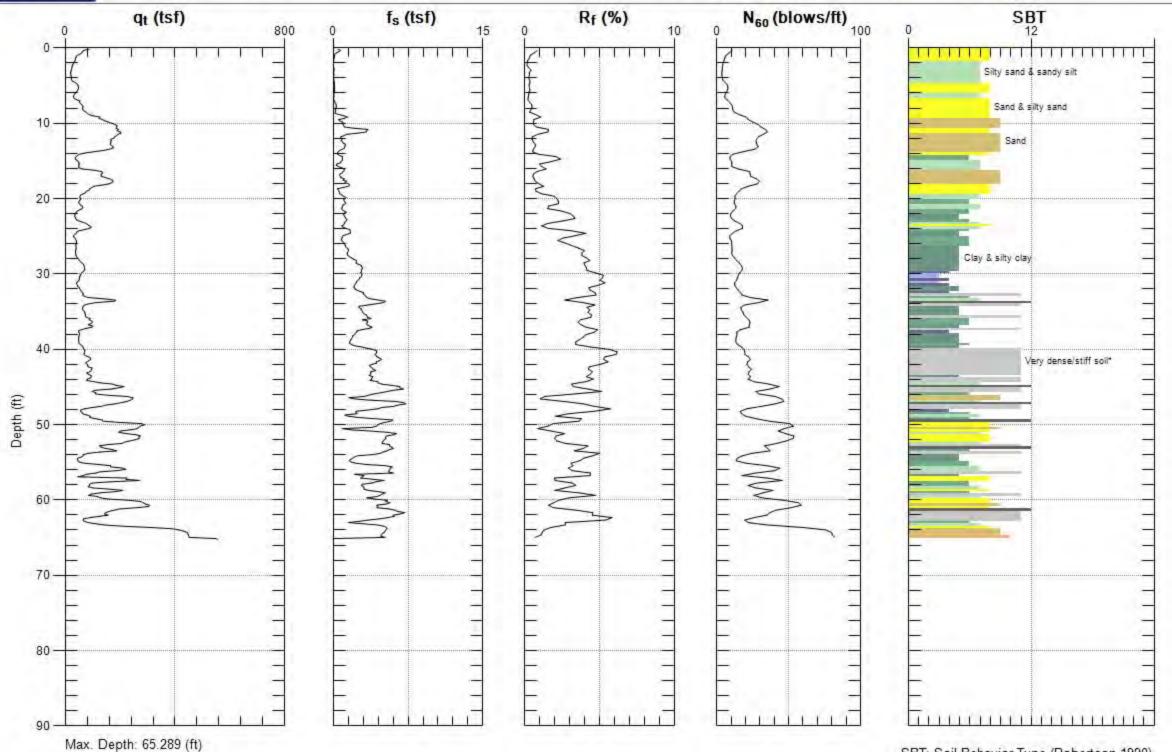


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-107 Date: 8/6/2012 10:32

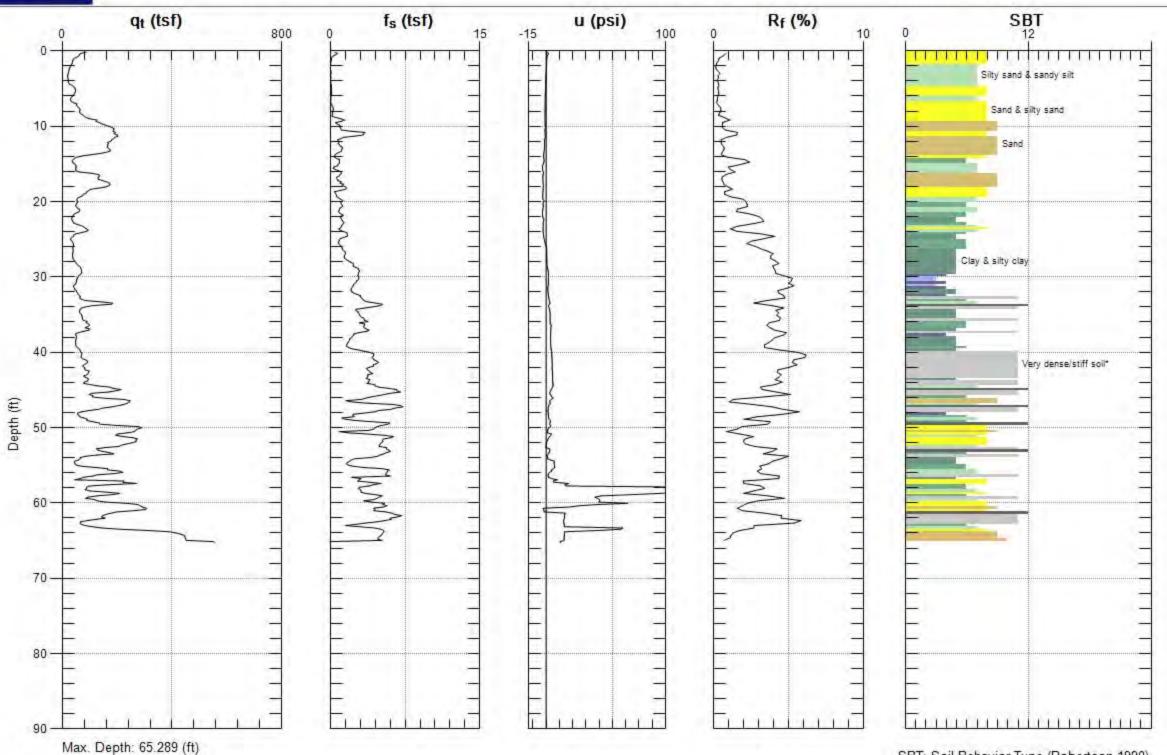


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-107 Date: 8/6/2012 10:32

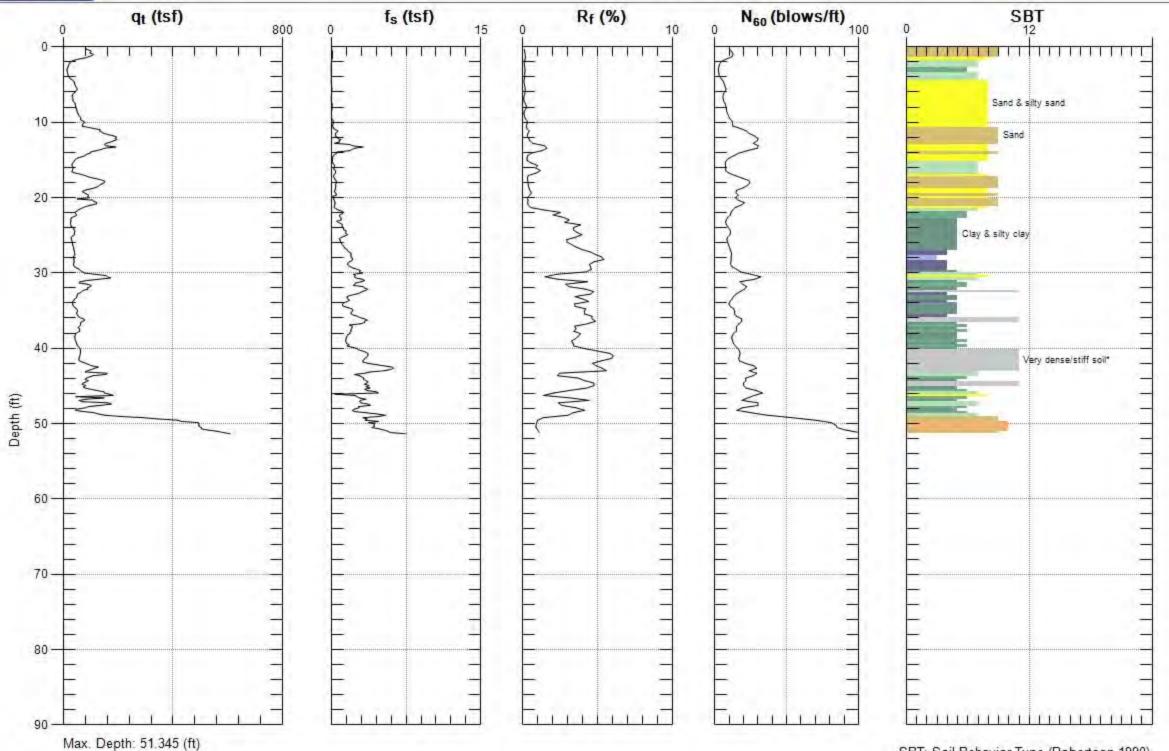


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-108 Date: 8/6/2012 12:03

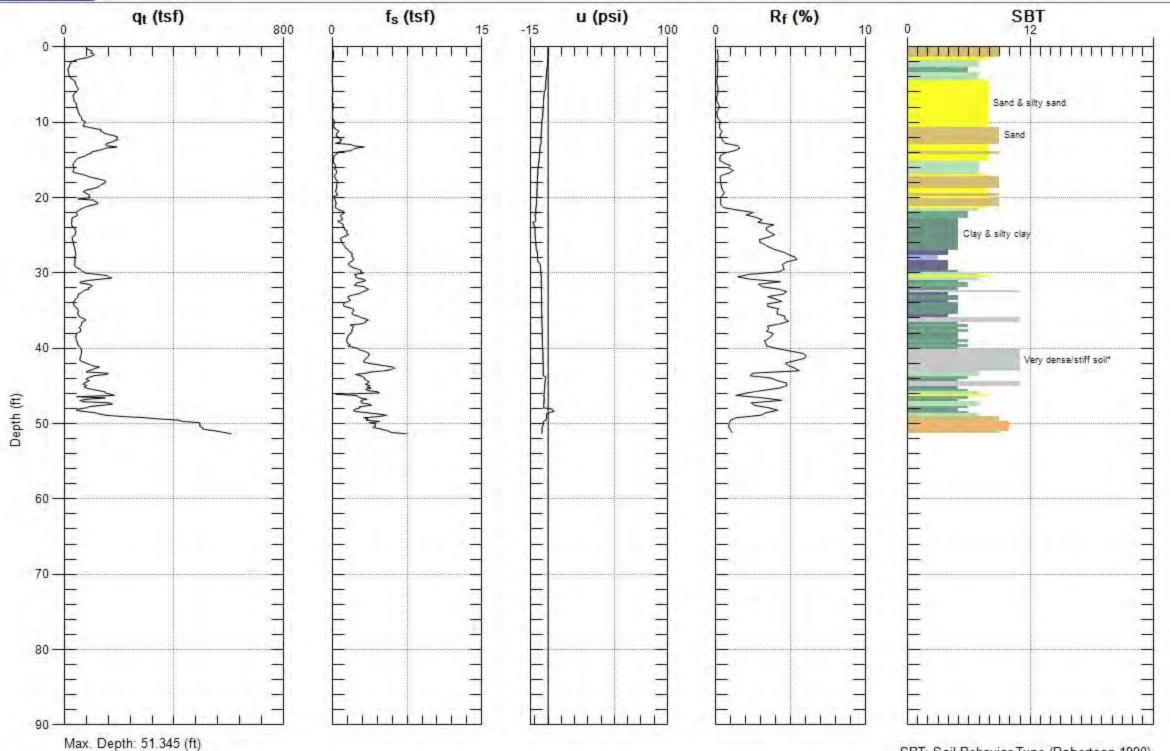


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-108 Date: 8/6/2012 12:03



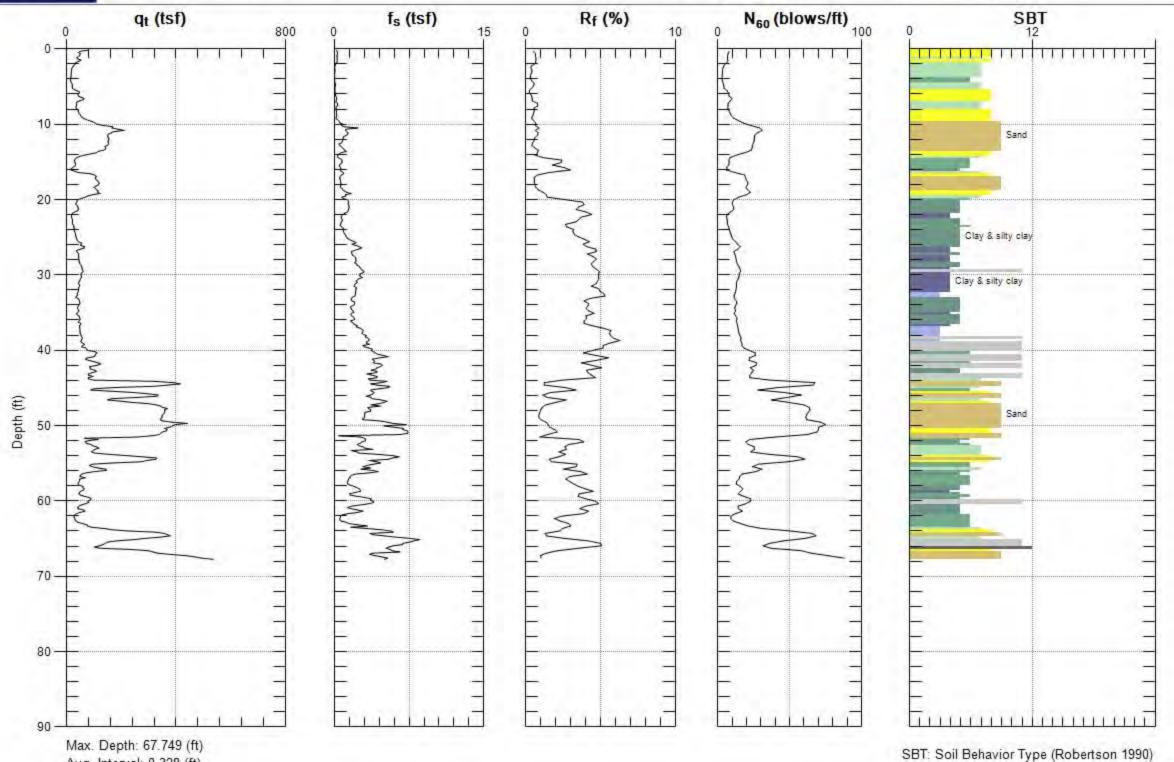
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

Sounding: CPT-109 Date: 8/6/2012 12:32

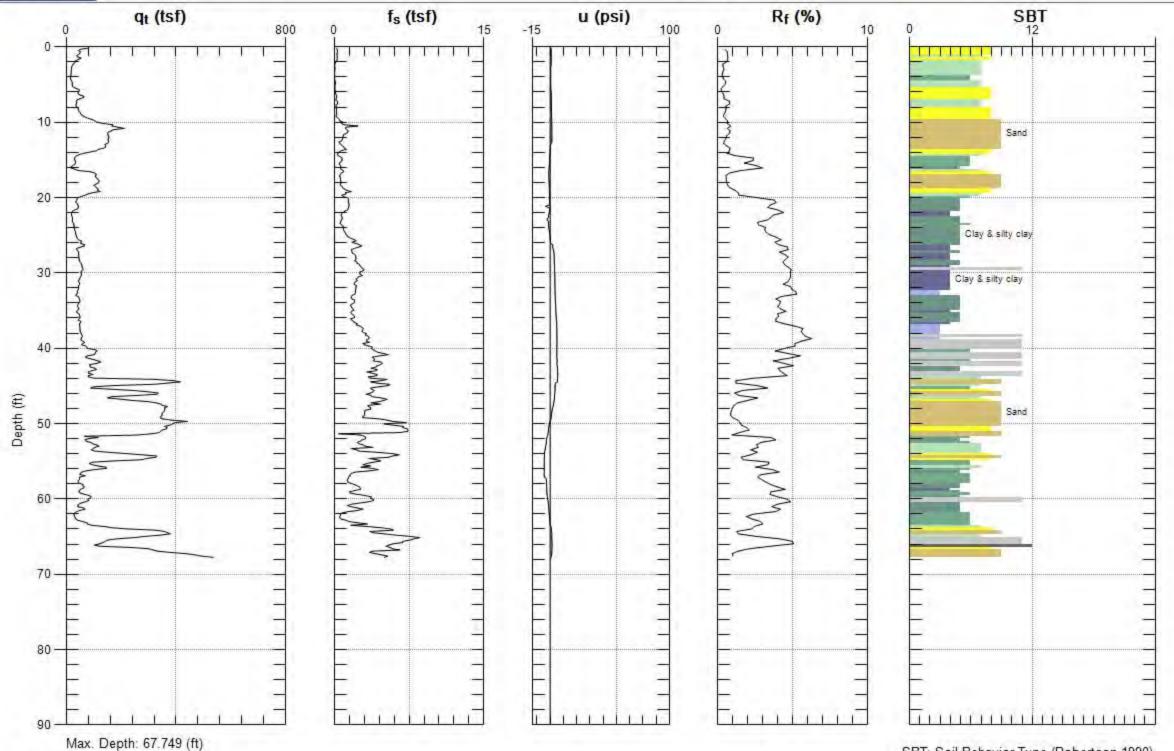




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

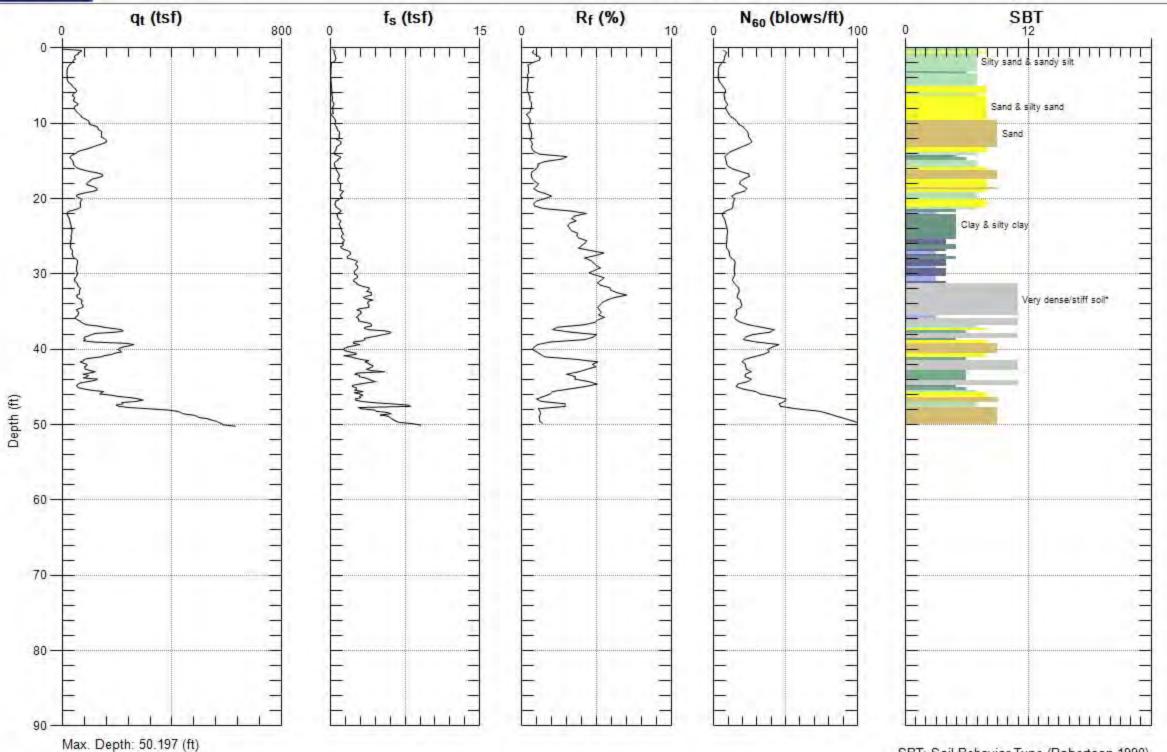
Sounding: CPT-109 Date: 8/6/2012 12:32





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-110 Date: 8/6/2012 01:10

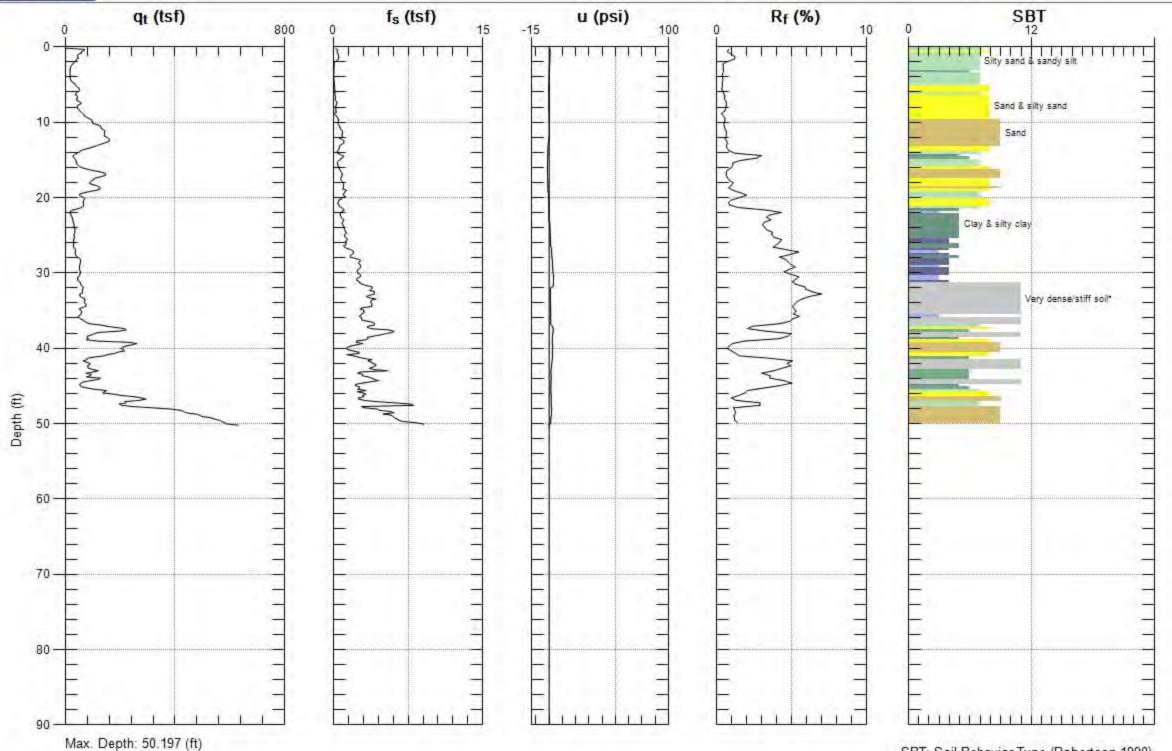


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

Sounding: CPT-110 Date: 8/6/2012 01:10

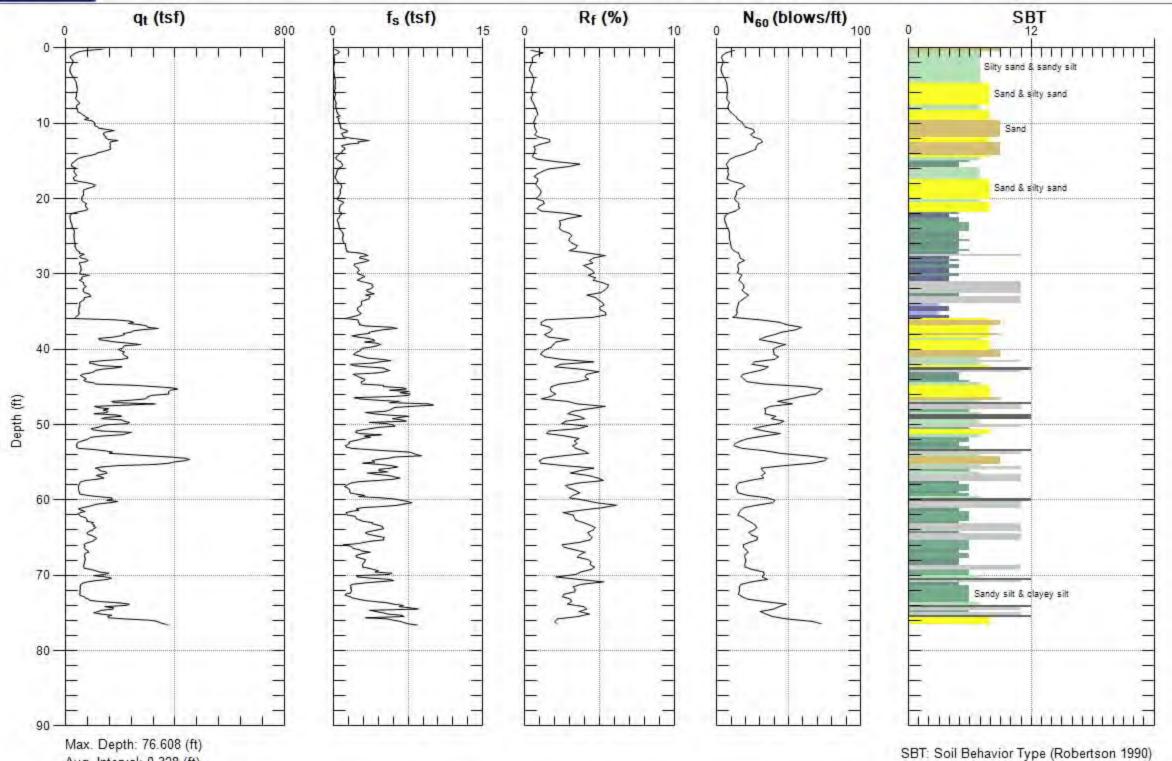


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUMEngineer: E.HOLLIDAY

Sounding: CPT-111 Date: 8/6/2012 01:36

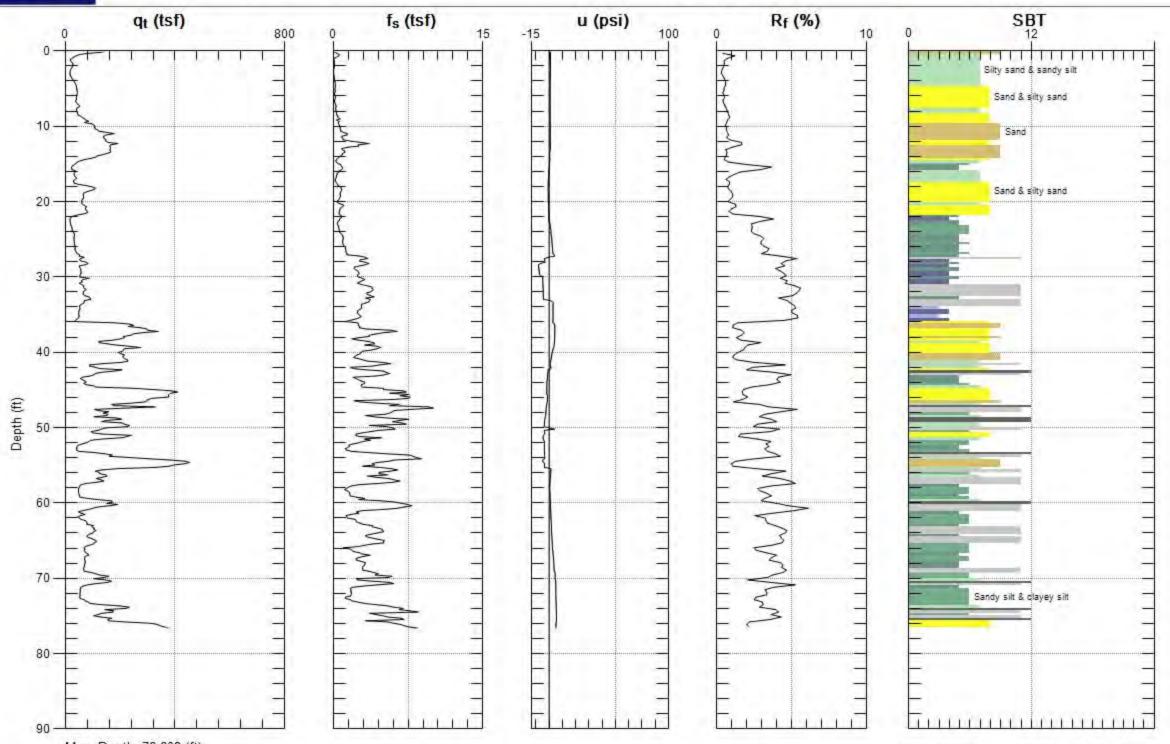


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-111 Date: 8/6/2012 01:36



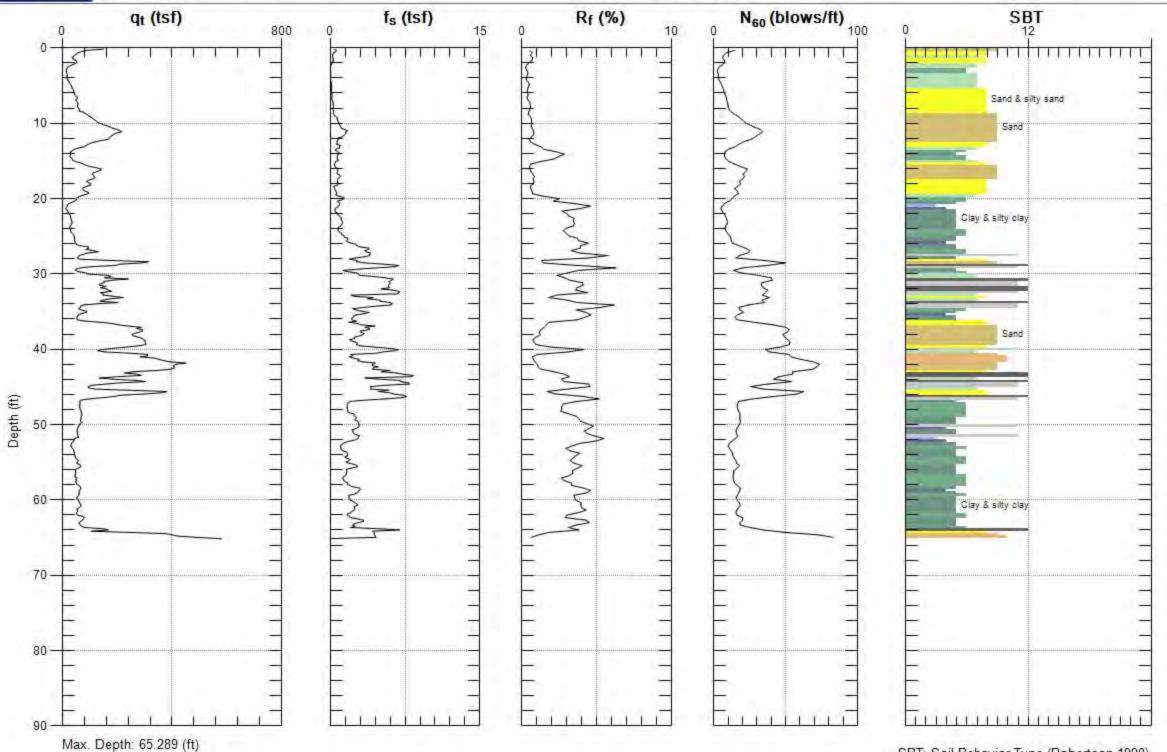
Max. Depth: 76.608 (ft) Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

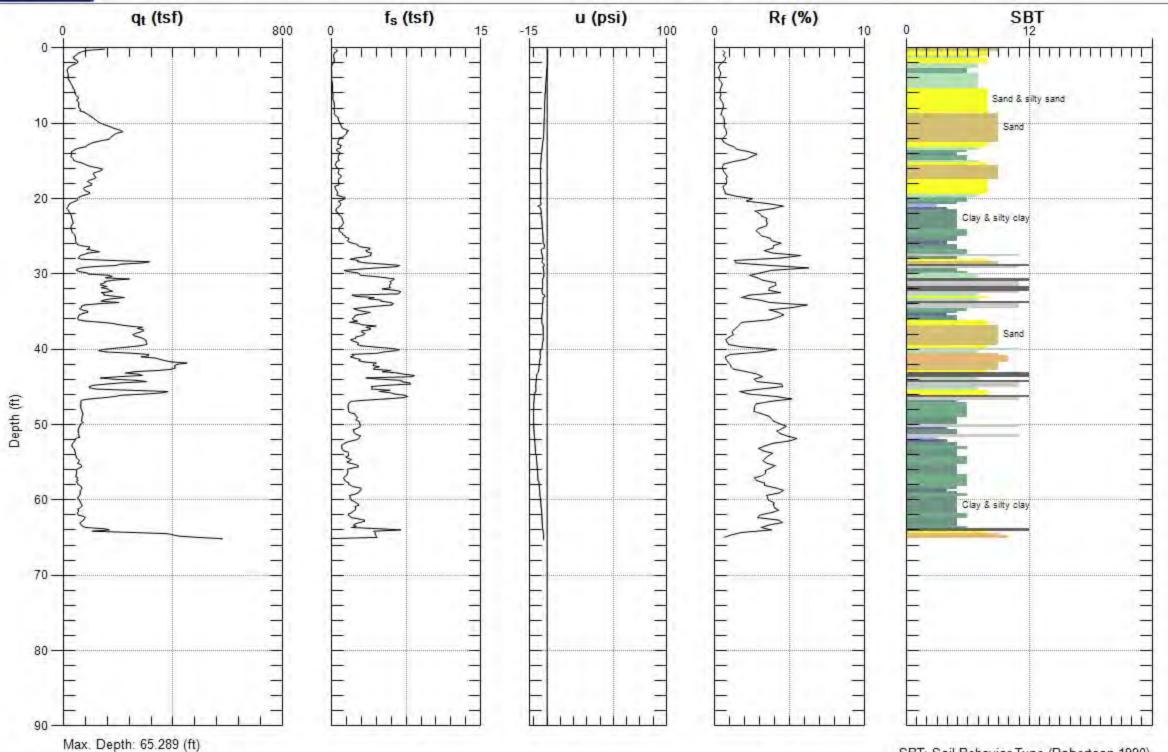
Sounding: CPT-112 Date: 8/6/2012 02:26





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-112 Date: 8/6/2012 02:26



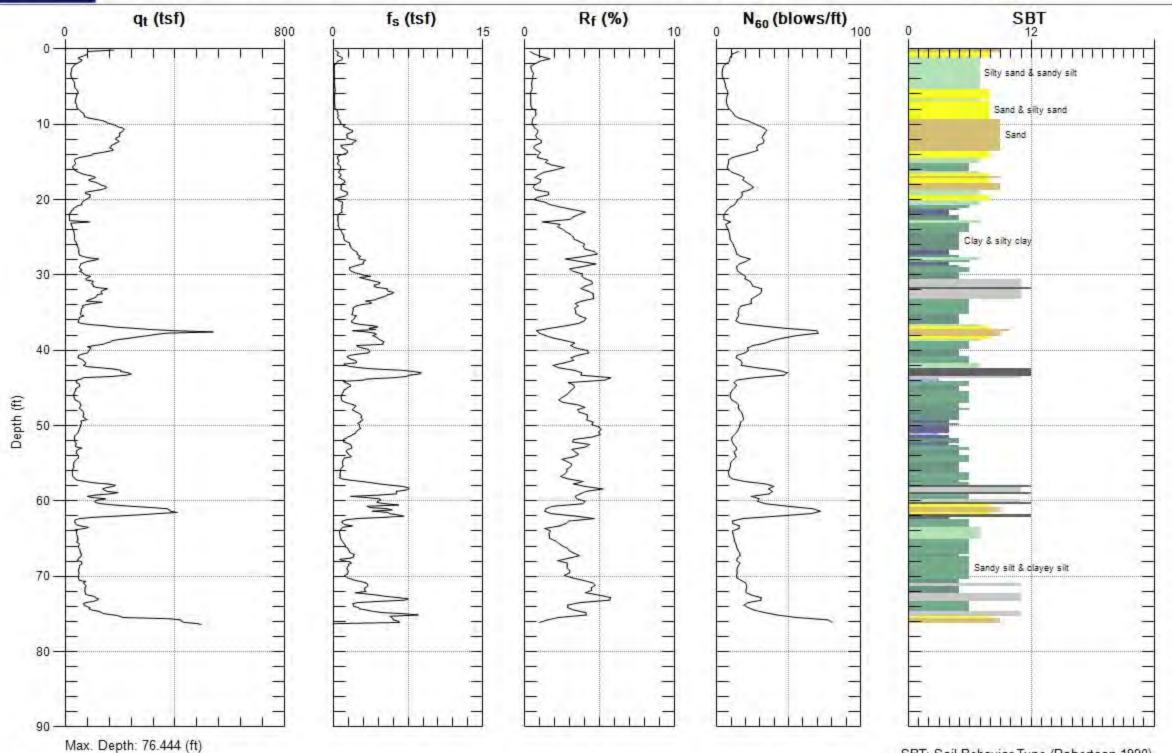
Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-113 Date: 8/6/2012 03:04

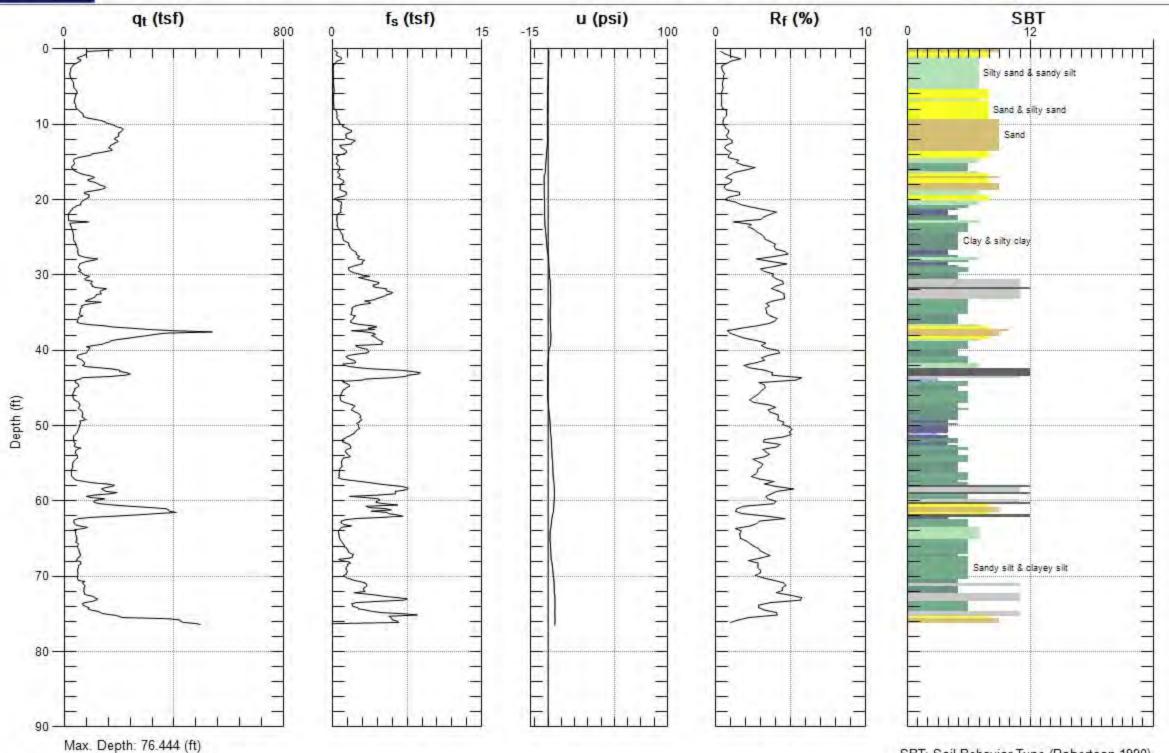




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

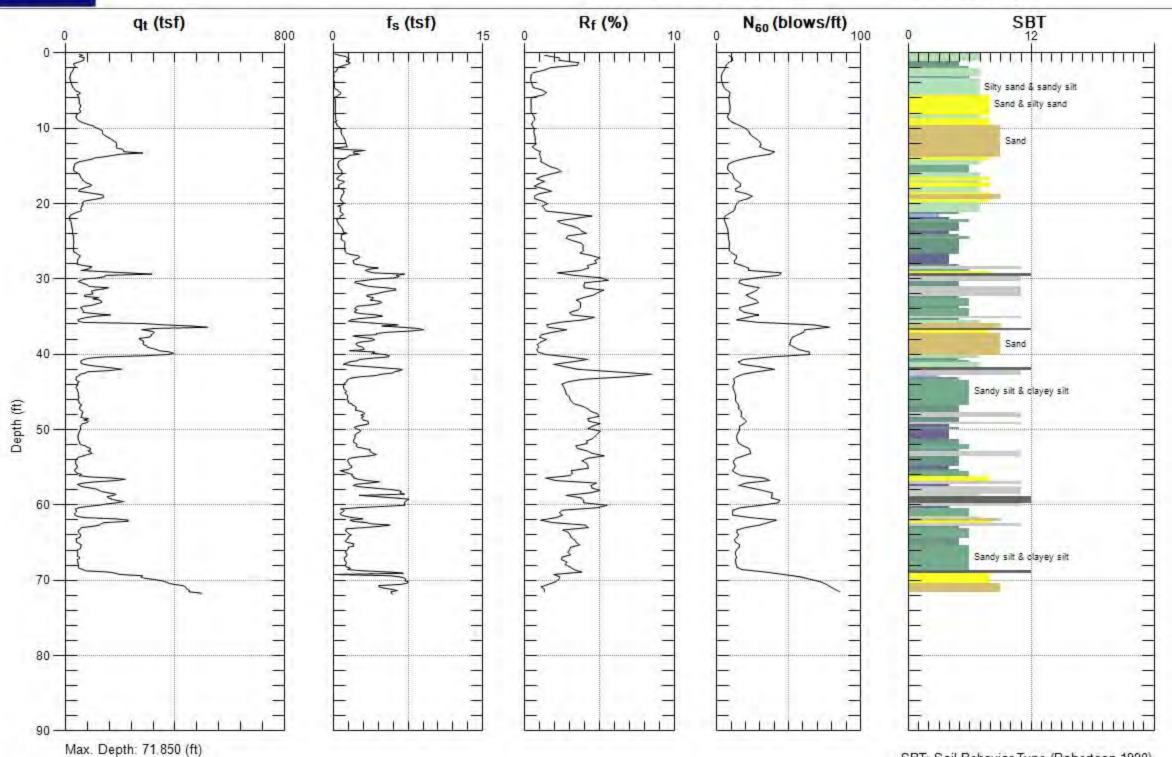
Sounding: CPT-113 Date: 8/6/2012 03:04





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-114 Date: 8/6/2012 03:43

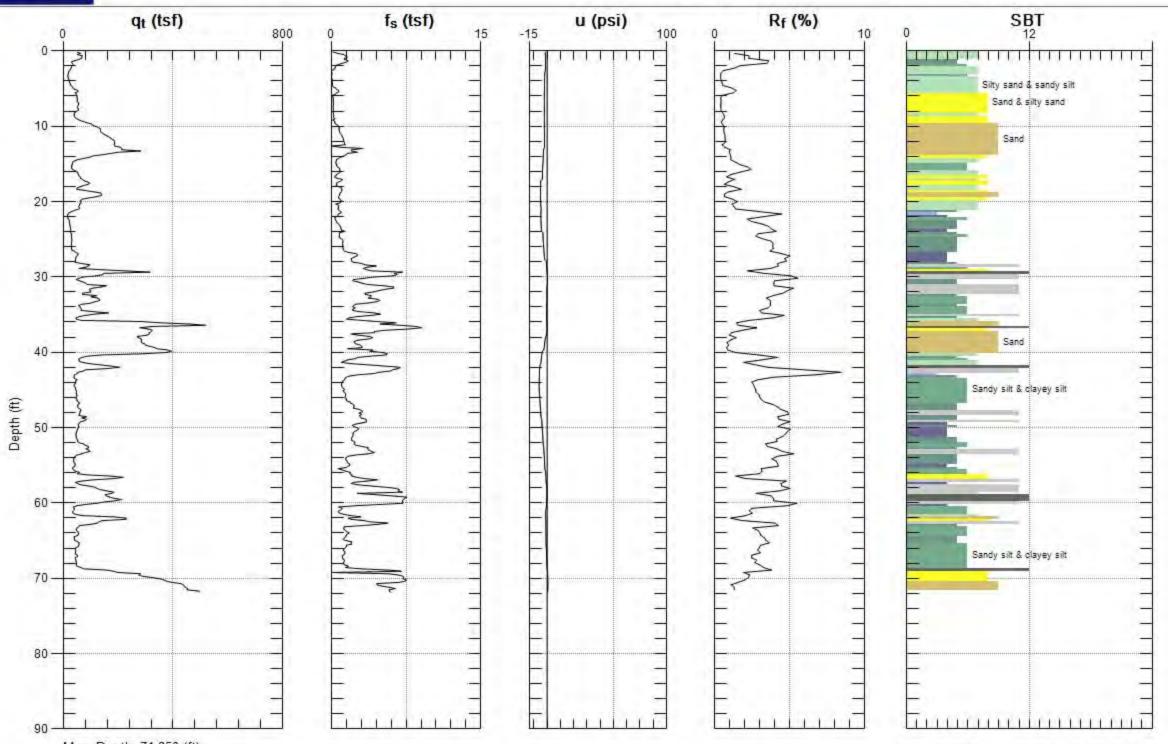


Avg. Interval: 0.328 (ft)



Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-114 Date: 8/6/2012 03:43



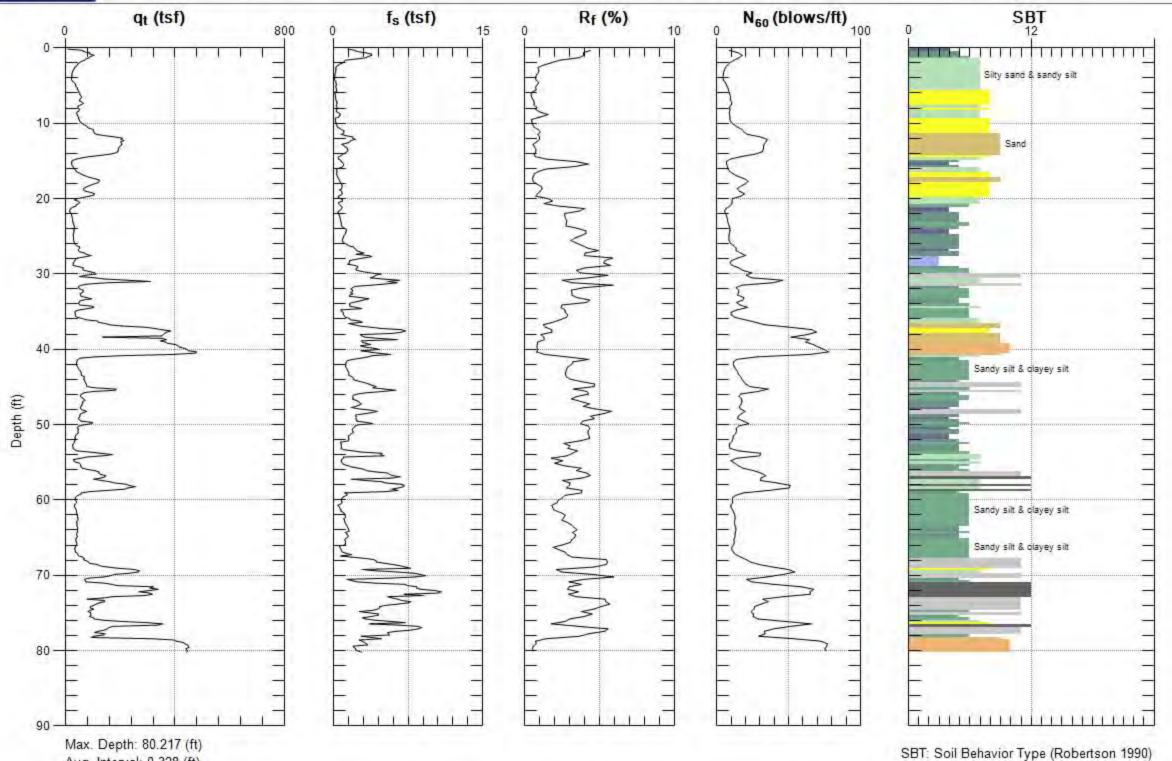
Max. Depth: 71.850 (ft) Avg. Interval: 0.328 (ft)



GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-115 Date: 8/6/2012 04:45

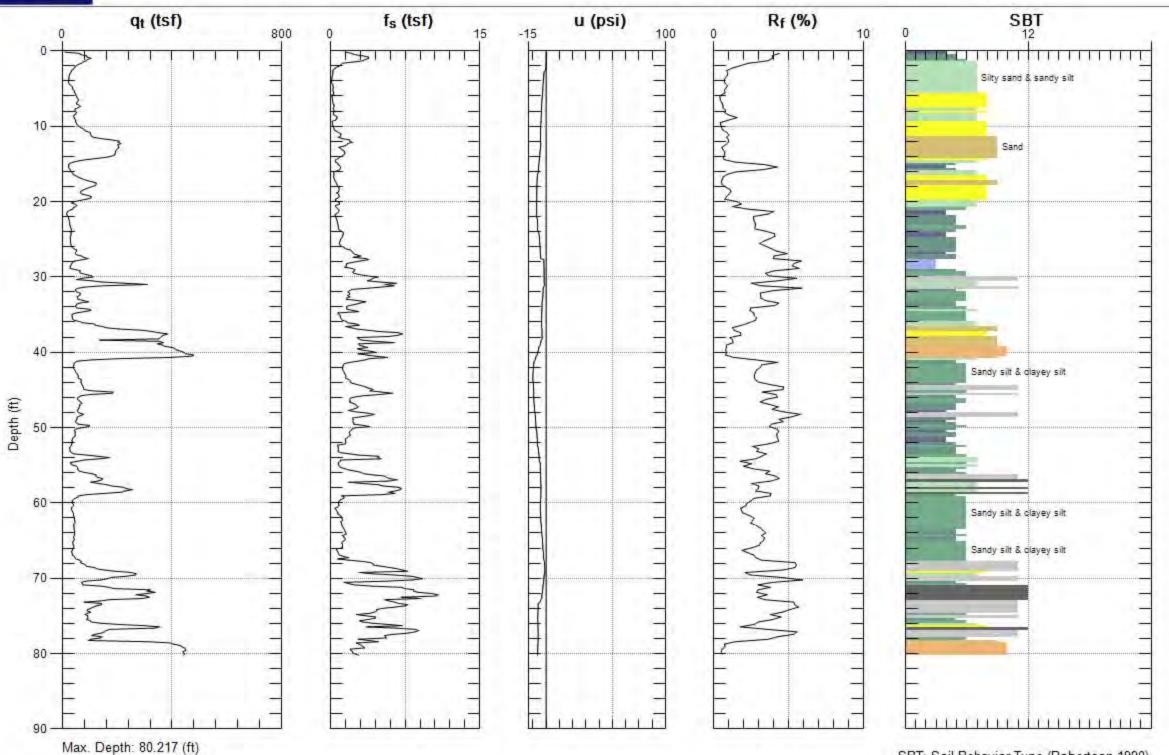




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-115 Date: 8/6/2012 04:45

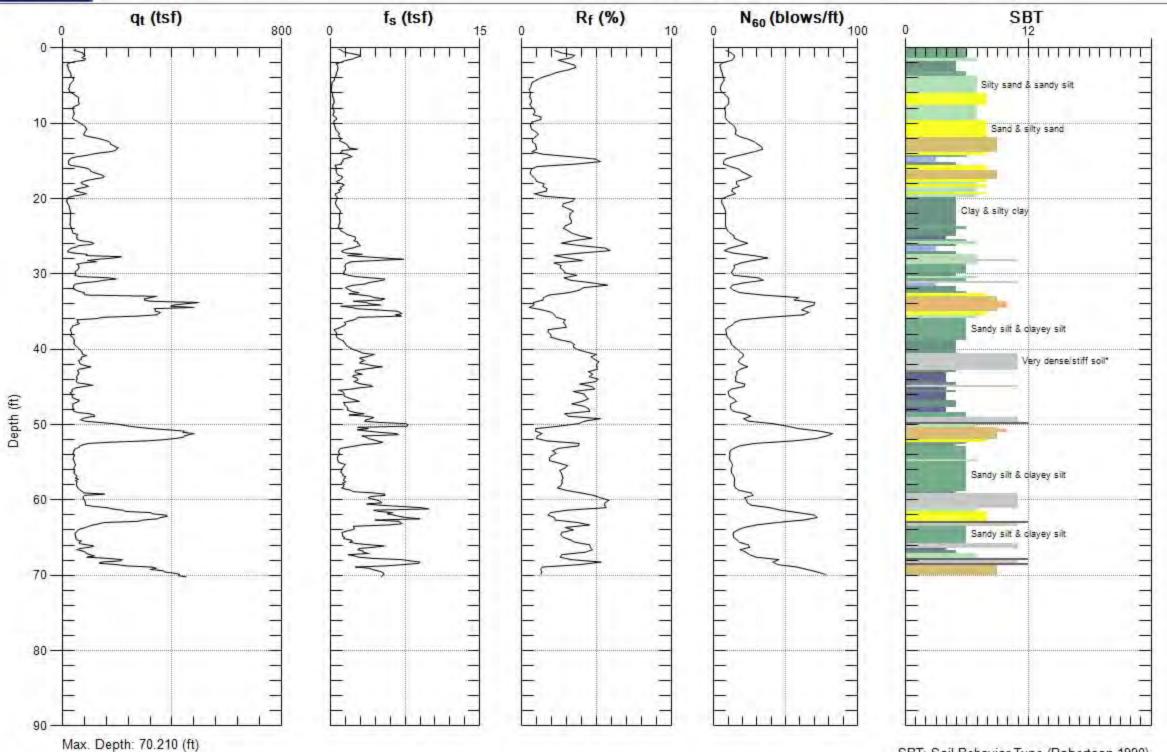




GROUP DELTA

Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

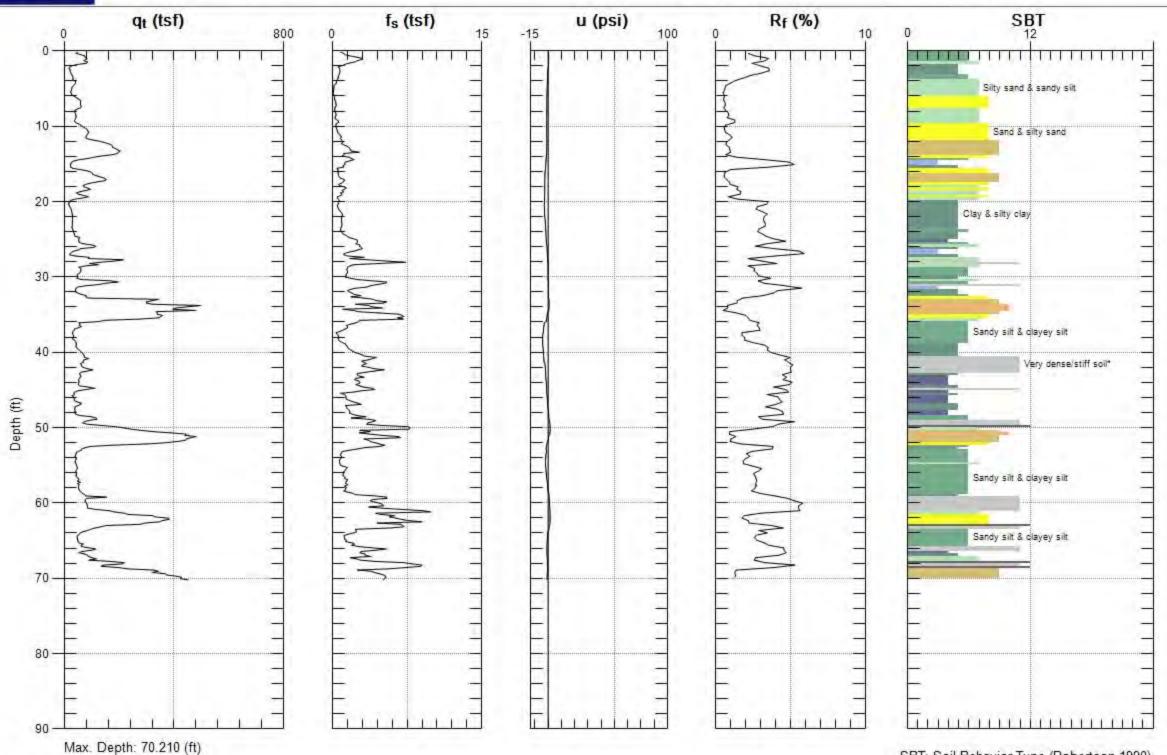
Sounding: CPT-116 Date: 8/6/2012 05:34





Site: HOLLYWOOD MILLENNIUM ngineer: E.HOLLIDAY

Sounding: CPT-116 Date: 8/6/2012 05:34



Avg. Interval: 0.328 (ft)

-0	G ()F	С	ORI	Ε	ВО	RIN	G	PROJECT NAME West Millennium Site	PROJEC LA-1191	T NUMBER			ORING B-1	
SITE	LOC	ATIC	N						DATE(S) DRILLED	LOGGE	D BY			HEET N	Ο.
)-175								2/9/2015	Eguene				of 3	
	LING)					DRILL BIT SIZE/TYPE		CHECKED	BY		OTAL DE et)	PTH DRILLE
	w Ste							+	8 in		Steve Kolth		<u> </u>	<u> </u>	60 AL/BEARING
ORIL CME	L RIC	i TYI	PE						DRILLED BY ABC Drilling		INCLINATIO	0	KOWI V	LKIICA	AL/BEARING
		IT GI	ROUN	NDWA	ΓFR	DFP	TH		ADC Dilling		APPROXIM		CLIDE	ACE EL	EVATION
	enco						•••				(feet)		30K F 90	ACE EL	EVALION
СОМ	MEN	TS									BOREHOLE			L	
											Soil Cutting	s			
				BOO	· V C	ORE	<u>-</u>								
(H	(#)			_	, N (JURE	<u>-</u>	_				PACKER TESTS	LABORATORY TESTS	TE, UR,	
DEРТН (ft)	EVATION	ا ا	o.	, ,×,	EQ.	%	품질째	OLO	MATERIAL DE	SCRIPTION	1	RE	RAT(-RA 7HO	FIELD NOTES
DEF	EVA	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ	R.Q.D.,	FRACTURE DRAWING/ NUMBER	LITHOLOGY				CKE	ABOF TE	DRILL RATE, FEET/HOUR	NOTES
		요	BC		FRAC	R.0	AR S					ΔA	ר	- 1	
				LE.	F				Asphalt ` 4in						
	-							\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Artificial Fill (Qaf)						
	<u> </u>								Sitly SAND with Clay Mottle						
								(2)	5YR 4/1 (Gray); moist; mostle few fine angular GRAVEL.	tine to mediun	n SAND;				
									· ·						
_	385														
5	300	1	1	1.0/1.0)			*							
	-	2		2.2/2.5	5)	CAHUENGA SAND (Qs)						
	-								Clayey SAND10YR 4/3 (bro	vn); moist; mos	tly fine to				
	_								medium SAND. Silty SAND10YR 4/4 (dark y	,	· _				
	_	3		2.2/2.5	5				mostly fine SAND.	ellowish brown,	, moist,				
10	380														
									Clayey SAND10YR 4/4 (dar	yellowish brov					
		4	2	2.5/2.5	5				\ moist; mostly fine SAND; few \SAND; trace carbon fragmen		parse /				
								Щ	Silty SAND 10YR 4/4 (dark y		; moist; -/				
				4.0/0.5				M	\ mostly fine SAND. Clayey SAND10YR 4/4 (dar	vellowish brov	<u>/n);</u> — — — — // —				
	_	5		1.9/2.5					\moist; mostly fine SAND; trac	e medium SAN	D. '				
15	<u>3</u> 75								Silty SAND 10YR 4/4 (dark y mostly fine SAND; with few n	nedium SAND a	nd trace				
	_	6	3	2.5/2.5					sub-angular GRAVEL. @ 15': sub-rounded GRAVE	_S					
	_		J	2.0/2.0	1				Olevers Oll T40VD 4/4 (deals		N				
									Clayey SILT10YR 4/4 (dark some very fine SAND; trace	yellowish browr nedium SAND.), moist;				
	L	7		2.4/2.5	5				Silty SAND7.5YR 4/4 (brown	n); moist; fine to	medium				
20	370								SAND. @ 19.5': Sandy SILT - 3 in le	,					
20	<u> </u>								10.0. Gallay SILT - SIITIE	100					
	-	8	4	2.1/2.5	5				@ 21': trace coarse GRAVEI	-					
	-														
	-														
	<u> </u>	9		2.2/2.5	5										
	365														
	n= 4	~ D 4	ייי ו	י רבי	T 4		MOLII	T A 1	THIS SUMMARY AI			١			
RO	마면 (JK(NTS, INC. OF THIS BORING A SUBSURFACE COIL	IDITIONS MAY D	IFFER AT OTHE	ER N			
			370) Am	ар	ola	Ave. S	Suit	WITH THE TAOOAR	E OF TIME. TH	E DATA		FI	GURI	E a
EL	TΔ		To	rran	ce,	Cal	lifornia	a 90	PRESENTED IS A S		OF THE ACTUA	\L			

_0	G (OF	С	ORI	ΕΙ	ВО	RIN	G	PROJECT NA West Millenr		PROJECT LA-1191B	NUMBER			ORING B-1	
	LOC			St St					DATE(S) DRI 2/9/2015	LLED	LOGGED Eguene L			S	HEET N	0.
DRIL	LING w Ste	MET	ГНОЕ						DRILL BIT S	IZE/TYPE	Lyuene L	CHECKED Steve Kolth	off	(fe	et)	PTH DRILLE
DRIL CME	. L RIC 85	S TYI	PE						DRILLED BY ABC Drilling	(INCLINATIO	ON F I 0	ROM \	/ERTIC	AL/BEARING
APP	AREN			NDWA	ΓER	DEP	ТН		ADO DIIIIII			APPROXIM		SURF	ACE EL	EVATION
	MEN		rea									(feet)		90 CKEII		
COIVI	IIVIEIN	13										Soil Cutting		CKFIL	L	
£	(ft)			ROC	K C	ORE	E	34					STS)RY	E, JR,	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		10	5	2.5/2.5	5											
									Mud Flo	w (Qm)						
		11		2.5/2.5	5				Sitly SAN mostly fin	ID 10YR 4/4 (dark yelllowe to medium SAND.	wish brown);	moist;				
30	<u>3</u> 60								Clayey Samoist; mo SAND.	AND10YR 4/6 (dark yell stly fine SAND; trace m	lowish brown edium and co	oarse				
		12	6	2.5/2.5	5				Silty SAN mostly fin	i D 10YR 4/4 dark yellow e SAND.	ish brown); r	noist;				
35		13		2.5/2.5	5											
		14	7	2.5/2.5	5											
	_									luvium (Qoal)						
40	 350	15		2.5/2.5					Clayey S. SAND; fee	AND7.5YR 4/4 (brown); w medium SAND; trace	moist; mostl coarse SAN	y fine D.				
	_	16	8	2.5/2.5	5											
		17		2.5/2.5	5				@ 42.5': 5	5YR 3/3 (dark reddish bi	rown)					
45	<u>3</u> 45								@ 45': roo	ot structures filled in with	n Clay and S	ilt				
-		18	9	2.5/2.5												
-	340	19		2.5/2.5	5					'R 3/4 (dark reddish bro ning along fractures.	wn); mangar	nese				
SRO DEL		GRO	370	0 Am	ар	ola		Suit	NTS, INC. e 212 0501	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OF PRESENTED IS A SIMP CONDITIONS ENCOUNTY	AT THE TIME ONS MAY DI CHANGE AT TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	

S .	/ine S HOD iger PE		K C		гн		DATE(S) DRILLED 2/9/2015 DRILL BIT SIZE/TYPE 8 in DRILLED BY ABC Drilling		LOGGED Eguene Le	ewis CHECKED E Steve Koltho	off	3 TO (fe	et)	O. PTH DRILLEI 60 AL/BEARING
METH M Aug TYPP T GR untere	rHOD iger PE ROUN red	IDWAT ROC	K C		гн		DRILL BIT SIZE/TYPE 8 in DRILLED BY		Eguene Le	CHECKED E	off	TO (fe	TAL DE et)	60
TYPP T GR. ON NON	PE ROUN red	IDWAT ROC	K C		гн		8 in DRILLED BY			Steve Koltho	off	(fe	et)	60
T GR untere	PE ROUN red	ROC	K C		ГН							ROM V	/ERTICA	L/BEARING
S .	red	ROC	K C		ГН		ABC Drilling							
S .	red	ROC	K C		ГН						0			
RUN NO.	BOX NO.			ORE						APPROXIMA (feet)			ACE EL	EVATION
+	BOX NO.			ORE						BOREHOLE		90 CKFILI	L	
+	BOX NO.			ORE						Soil Cuttings	3			
+	BOX NO.				<u>:</u>						တ			
+	BOX NO.	VERY,				- 66					TEST	TORY	ATE, OUR	FIELD
20		RECC	FRAC. FREQ	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERI	IAL DESCI	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	NOTES
20						<u> ; ; </u>	Sandy CLAY5YR 3/4 few fine and medium							
	10	2.5/2.5				1.								
							-Pin hole casts							
21		2.5/2.5												
22	11	2.5/2.5					@ 55.5': 5YR 2.5/2 (d	dark reddish b	rown)					
		2.0/2.0												
							Silty SAND7.5YR 4/0	,	,	· /-				
23		1.5/1.5					Clay with Sand5YR few fine SAND.	3/4 (Dark Re	ddish Brown); moist;				
						7.								
							Boring terminated at Boring back filled with	h soil cuttings						
							No groundwater obse	erved.						
RO							NTS, INC. OF THIS BO SUBSURFA LOCATION WITH THE	ORING AND A ACE CONDITION S AND MAY C PASSAGE OF	T THE TIME (DNS MAY DIF HANGE AT T TIME. THE	OF DRILLING. FFER AT OTHE THIS LOCATION DATA	ER N	FI	GURI	Ξ c
3		370	370 Am	370 Amapo	370 Amapola	370 Amapola Ave. S	370 Amapola Ave. Suite	ROUP DELTA CONSULTANTS, INC. OF THIS BY SUBSURFA LOCATION WITH THE PRESENTE	ROUP DELTA CONSULTANTS, INC. 370 Amapola Ave. Suite 212 OF THIS BORING AND AY SUBSURFACE CONDITION AND MAY CONTINUE AND MAY CONTINUE AS SIMPLE OF PRESENTED IS A SIMPLE OF THE PASSAGE OF PRESENTED IS A SIMPLE OF THE PASSAGE OF THE	ROUP DELTA CONSULTANTS, INC. 370 Amapola Ave. Suite 212 OF THIS BORING AND AT THE TIME OF SUBSURFACE CONDITIONS MAY DIFFUSION OF THIS BORING AND AT THE TIME OF THIS BORING AND THE TIME OF THIS BORING AND AT THE TIME OF THIS BORING AND THE TIME OF THIS BORING AND THE TIME OF THIS BORING AND THE TIME OF THIS BORING AND THE TIME OF THIS BORING AND THE TIME OF THIS BORING AND THE TIME OF THIS BORING AND THE TIME OF THIS BORING AND THE TIME OF THIS BORING AND THE	ROUP DELTA CONSULTANTS, INC. OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHE LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL PRESENTED IS A SIMPLIFICATION OF THE ACTUAL	370 Amapola Ave. Suite 212 SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATION AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL	ROUP DELTA CONSULTANTS, INC. 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	ROUP DELTA CONSULTANTS, INC. 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

_O	G ()F	C	ORI	ΕΙ	ВО	RIN	G	PROJECT NA West Millenr		PROJEC LA-1191E	TNUMBER		- 1	ORING B-2	
SITE	LOC	ATIC	N						DATE(S) DRI	LLED	LOGGED	BY			HEET N	0.
1720	0-175	0 N. \	Vine S	St.					2/9/2015		Eguene L				of 3	
DRIL	LING	MET	THOD)					DRILL BIT S	IZE/TYPE		CHECKED	3Y		TAL DE	PTH DRILLE
	w Ste								8 in			Steve Koltho		Ι,		60
	L RIG	TYI	PE						DRILLED BY	(INCLINATIO		ROW V	ERIICA	AL/BEARING
CME		IT CI	2011	NDWA	ED	DED	ru .		ABC Drilling				0			
	e enco			NDWA	IEK	DEP	ın					APPROXIMA (feet)			ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLE		90 CKFIL	L	
												Soil Cuttings				
												·				
<u></u>	Œ			ROC	KC	ORE	•	_ ≿					STS	Υ	可尻	
DЕРТН (ft)	EVATION			۲, %	ä	%	₩ <i>%</i> ~	LITHOLOGY		MATERIAL DES	CDIDTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
)EP	-VA	RUN NO.	BOX NO.	ÆR	<u>F</u>	D., 6	MING	E		WATERIAL DES	CKIF HON		XE	BOR	RILL EET/	NOTES
_	出出	R.	BO)	RECOVERY, %	FRAC. FREQ.	R.Q.D., ⁽	FRACTURE DRAWING/ NUMBER	-					PA(4		
				2	ш				A ambalk `	4 in						
									Asphalt ` A	Fill (Qaf)						
								2		_ AY 7.5YR 3/3 (dark b	rown) and 7.5	YR 3/1				
										oist; few fine to medic						
-																
-	_							Z*	<u> </u>							
-5	<u>3</u> 85	1	1	1.0/1.0				. ~								
	-	2		2.5/2.5				X								
-	_								CAHUEN	IGA SAND (Qs)						
_	_								Silty SAN	ID 10YR 5/6 (yellowisl	n brown); mois	t; fine to				
_		3		2.2/2.5					medium S	SAND.						
-10	380															
-10									Sandy SI	LT 10YR 4/4 (dark yel	lowish brown)					
-		4	2	2.5/2.5					· \ mostly fine	e SAND.	,	/7				
-	_								∏_,`∖medium S			′,¬				
-	-								\ Sandy CL \few fine S	AY10YR 4/6 (dark ye	ellowish brown); moist; /				
-	_	5		2.4/2.5					Silty SAN	ID 10YR 5/6 (yellowisl	n brown); mois	t; mostly				
-15	<u>3</u> 75								fine SANE @ 13.5': s	sub angular fine GRA	VEL lense					
-	_			0.5/0.5				Ш	: @ 15': inc	crease in fine to very f	ine SAND					
_		6	3	2.5/2.5					SAND.	R 3/6 (dark yellowish	prown); moist;	tew tine				
									Silty SAN	ID 10YR 4/6 (dark yell	owish brown);	 moist:				
-		7		2.4/2.5					mostly fine		,-					
•	270															
20	<u>3</u> 70															
-	-	8	4	2.1/2.5					Silty SAN	ID 10YR 4/4 (dark yell	owish brown);	 moist;				
-	-								mostly find	e SAND.	·					
_	_															
_	_	9		2.5/2.5						h anauda - fire - f	ODAVEL:					
	365								@ 24': sul	b angular fine to coars	se GRAVEL le	nses				
SRO DEL		GRO	370) Am	ар	ola		Suit	NTS, INC. e 212 0501	THIS SUMMARY APP OF THIS BORING ANI SUBSURFACE COND LOCATIONS AND MA WITH THE PASSAGE PRESENTED IS A SIN CONDITIONS ENCOU	D AT THE TIME ITIONS MAY DI Y CHANGE AT OF TIME. THE IPLIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATION DATA	R N	FI	GURI	≣ a

	G (ORI		ВО	RIN	G	PROJECT NAME West Millennium Site DATE(S) DRILLED	PROJEC LA-11918				ORING B-2 HEET N	0.
1720 DRIL	0-175 LING ow Ste	0 N. \	√ine : Γ ΗΟ Ε						2/9/2015 DRILL BIT SIZE/TYPE 8 in	Eguene I	CHECKED		тс	of 3 OTAL DE	PTH DRILLE
DRIL CME	L RIC 85	3 TYF	PE						DRILLED BY ABC Drilling		Steve Kolth INCLINATIO		ROM \	/ERTIC	AL/BEARING
None	e enco	ounte		AWDW	ΓER	DEP	ГН				APPROXIM (feet)	3	90		EVATION
	1										Soil Cutting				
(#)	(#) NO			_		CORE		₩				rests	TORY S	ATE, OUR	FIELD
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DE	SCRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	NOTES
-		10	5	2.4/2.5					MUD FLOW (Qm)						
-									Clayey SAND 10YR 4/4 (dark moist; fine to medium SAND.	yellowish brow	n);				
- -30	<u>3</u> 60	11		2.5/2.5					Silty SAND 10YR 5/6 (yellowis fine SAND.	sh brown); mois	st; mostly				
-	_	12	6	2.5/2.5					CLAY with Sand7.5YR 4/6 (s fine SAND.	trong brown); r	noist; few	-			
- - -35	355	13		2.5/2.5											
-		14	7	2.2/2.5					Older Alluvium (Qoal) Sandy CLAY5YR 3/4 (dark re	ddish brown); ı	moist;	-			
- - 40	350	15		2.5/2.5					some fine SAND. @ 38.5': 5YR 3/2 (dark reddis	n brown)					
-		16	8	2.5/2.5											
-	_	17		2.5/2.5											
45 -	<u>3</u> 45	18	9	2.5/2.5											
- - -		19		2.5/2.5											
GRO	UP (370) Am	ар	ola	NSUL Ave. S lifornia	Suit	PRESENTED IS A SI	ID AT THE TIME DITIONS MAY D AY CHANGE AT E OF TIME. THE MPLIFICATION	E OF DRILLING. IFFER AT OTHE THIS LOCATIO E DATA	ER N	FI	GUR	Ξb

SITE	LOC	ATIC	N		Ε	ВО	RIN	IG	PROJECT NA West Millen	nium Site	LA-1191B	ВҮ		s	ORING B-2 HEET Notes of 3	0.
DRIL Hollo DRIL CME	w Ste	ME1	THO C						2/9/2015 DRILL BIT S 8 in DRILLED B' ABC Drilling	Y	Eguene L	CHECKED Steve Kolth	off	TC (fe	OTAL DE	EPTH DRILLEI 60 AL/BEARING
	AREN			NDWA	ΓER	DEP.	тн		ABC DIIIIII			APPROXIM (feet)	ATE	SURF	ACE EL	EVATION
COM	MEN	TS										BOREHOLE Soil Cutting	ВА		L	
æ	(ft)			ROC	KC	ORE	=	>;					STS	RY	河尻	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NI IMBER	AGO IOHEI -		MATERIAL DES	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	_	20	10	2.5/2.5	5											
55	335	21		2.5/2.5	5											
		22	11	4.0/4.0	j				(Gray) wi	ottled 5YR 3/4 (dark red th black ash in a clay m 5YR 3/2 (dark reddish b	natrix	to 5Y 5/1				
60	330								Boring ba	erminated at 60 ft. ackfilled with soil cutting Vater not encountered (ls. during drilling.					
65	 325 															
-	_															
70	<u>3</u> 20															
- -																
	315									THIS SUMMARY APPL	IES ONLY AT	THE LOCATION	\ N			
DEL		GRO	370) Am	ар	ola		Sui	NTS, INC. te 212 0501	OF THIS BORING AND SUBSURFACE CONDI LOCATIONS AND MAY WITH THE PASSAGE (PRESENTED IS A SIMI CONDITIONS ENCOUN	AT THE TIME FIONS MAY DI CHANGE AT OF TIME. THE PLIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	E c

_O(G ()F	C	ORI		BO	RIN	G	West Millennium Site	LA-1191	T NUMBER			ORING B-3	
SITE	LOC	ATIO	N						DATE(S) DRILLED	LOGGE	BY			HEET N	0.
1720)-175() N. \	/ine S	St.					2/7/2015	Eguene				of 3	
DRIL)					DRILL BIT SIZE/TYPE		CHECKED	BY		TAL DE et)	PTH DRILLE
	w Ste								8 in		Steve Kolth		Ι,		60 AL/BEARING
DRIL CME	L RIG	TYF	PΕ						DRILLED BY		INCLINATIO	י ח אי כ 0	KOIVI V	EKIICA	AL/BEARING
		IT CE		NDWA1	red	DED	гш		ABC Drilling		4 DDD 0 VII4			405 51	=\/A=\O\!
	enco			IDWAI	LK	DEF	111				APPROXIMA (feet)			ACE EL	EVAIION
СОМ	MEN	ΓS									BOREHOLE		90 CKFIL	L	
											Soil Cutting	S			
£	(ft)				KC	ORE	•	_ ≿				PACKER TESTS	ВY	듀氏	
DЕРТН (ft)	NOIT		Ċ.	Υ, %	Ğ.	%	#b~	700	MATERIAL DE	SCRIPTION		R E	STS	-RAJ	FIELD
DEP	EVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	WATER THE SE			CKE	LABORATORY TESTS	DRILL RATE, FEET/HOUR	NOTES
	日	RU	BO	ECO	RAC	я. О.	PRA DRA					PA	🖺		
				~	_				Asphalt ` 4in						
	_								Artificial Fill (Qaf)						
									Sandy CLAY7.5YR 3/3 (dark	brown); moist:	few fine				
									to coarse SAND.	,					
	_														
								7.							
5	<u>3</u> 85	1	1	1.0/1.0				. ~							
	_	2		2.2/2.5					CAHUENGA SAND (Qs)						
	_								Silty SAND with Clay10YR 3 brown); moist; mostly fine to	4 (dark yellowi	sh				
	_								brown), moist, mostly line to	nedium SAND.					
		3		2.2/2.5											
10	380														
10									@ 10': 10YR 5/6 (yellowish b	rown)					
	_	4	2	2.2/2.5					@ 11': sub angular fine GRA'	/EL lenses					
	_														
	_														
	_	5		2.3/2.5					SAND with Silt10 YR 5/6 (ye mostly fine SAND.	llowish brown);	moist;				
15	<u>3</u> 75														
	_								Clayey SILT10YR 4/6 (dark mostly fine SAND.	ellowish brown); moist;				
		6	3	2.3/2.5											
									Silty SAND 10YR 5/4 (Yellow medium SAND.	ish Brown), mo	st, fine to				
	_	7		2.4/2.5											
	_	<i>'</i>		2.4/2.5											
20	<u>3</u> 70								@ 19.5': 10YR 4/6 (dark yello SAND.	wish brown); m	ostly fine				
	_	8	4	2.5/2.5											
	_														
	_														
		9		2.4/2.5											
	365														
									THIS SUMMARY AF	PLIES ONLY AT	THE LOCATION	1	Ϊ		
RO	UP (GRC	DUP	DEL	.TA	CO	NSUL	_TA	NTS, INC. OF THIS BORING A SUBSURFACE CON	ND AT THE TIME DITIONS MAY D	OF DRILLING. IFFER AT OTHE	ΕR			
1			370) Am	ар	ola .	Ave. \$	Suit		AY CHANGE AT	THIS LOCATIO	N	FI	GURI	Ξа
									PRESENTED IS A S						

_O	G	ЭF	С	ORI	E	ВО	RIN	G	PROJECT NA West Millenn		PROJEC LA-1191E	T NUMBER			ORING B-3	
	LOC								DATE(S) DR	ILLED	LOGGE				HEET N	0.
	0-175							_	2/7/2015		Eguene L				of 3	
	LING)					DRILL BIT S 8 in	IZE/TYPE		CHECKED			DTAL DE et)	PTH DRILLE
	w Ste									,		Steve Kolth		I ` ROM \	/ERTIC	60 AL/BEARING
CME	.L RIC : 85	ווו כ	'E						ABC Drilling	Y		INCLINATIO	0		LICITOR	AL/ DEAITING
		IT GI	ROUI	NDWA	ΓER	DEP.	TH		ADO DIIIIII			APPROXIM		SLIDE	ACE EL	EVATION
	enco											(feet)		90	AUL LL	LVAIION
COM	IMEN	TS										BOREHOLE			L	
												Soil Cutting	s			
				ROC	·K (`ODE	=									
(#	EVATION (ft)			_			-	d ₹					PACKER TESTS	LABORATORY TESTS	TE, UR,	
DEРТН (ft)	I	 o	o.	₹, %	ZEQ.	%	품호유	OLO		MATERIAL DES	CRIPTION		R. H	RAT	L RA I/HO	FIELD NOTES
DEF	.EV	RUN NO.	BOX NO.)VEF	1 C	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY					CKE	ABO	DRILL RATE, FEET/HOUR	NOTES
	Ε	교	BC	RECOVERY, %	FRAC. FREQ.	R.6	동원						₹	ر ا		
	\vdash	\vdash		+ "	H											
-	-	10	5	2.5/2.5	5				MUD FL	OW (Qm)						
-	-								Sand wit	h Clay10YR 3/4 (darlostly fine SAND; some	k yellowish bro	wn); · trace				
-	_								fine GRA	VELS; sub rounded.	COURSE OF IND	, 11400				
_	L	11		2.5/2.5	5				CLAY wit	th Sand 10 YR 3/6 (da	rk yellowish br	own);				
_30	360								moist; sor	me fine SAND.						
-30																
-		12	6	2.5/2.5	5											
-	-								1							
-	-															
-	-	13		2.5/2.5	5											
-35	<u>3</u> 55								Older Al	lundum (Ocal)						
_										luvium (Qoal)						
		14	7	2.5/2.5					Sandy C	LAY5YR 3/3 (dark red dium to coarse SAND	ddish brown);).	moist;				
-		15		2.5/2.5												
-	-	'		2.0/2.0	1											
40	<u>3</u> 50															
=	-	16	8	2.5/2.5	5											
-	-]							
_	-															
_	L	17		2.5/2.5	5				-@ 43.5':	5YR 3/3 (dark reddis	h brown)					
45	<u>3</u> 45															
.5	1															
-		18	9	2.5/2.5	5]							
-	_															
-	-							1/	@ 48': da	ırk charcoal dispersed	l within clay ma	atrix.				
-	-	19		2.5/2.5	Ò				1		-					
	340	Щ							<u>@ 49.5': r</u>	root casts filled in with	<u>-</u>			<u> </u>		
SRO	UP (GRO	OUF	DEI	_T#	CC	NSUI	ΤΔΙ	NTS, INC.	THIS SUMMARY APF OF THIS BORING AN	D AT THE TIME	OF DRILLING.				
		• •							•	SUBSURFACE COND LOCATIONS AND MA	ITIONS MAY D	FFER AT OTHE	ΞR		O. 10.	– 1-
							Ave. S			WITH THE PASSAGE PRESENTED IS A SI	OF TIME. THE	DATA		[GURI	E b
DEL	TΛ		To	orran	ce,	Ca	lifornia	a 90	501	CONDITIONS ENCOL			_			

	G (ORI	Ε Ι	ВО	RIN	IG	l	PROJECT NAME West Millennium Site DATE(S) DRILLED	LA-1191B LOGGED	ВҮ		s	ORING B-3 HEET N	O .
DRIL Hollo	0-175 LING ow Ste	ME1	THO E							2/7/2015 DRILL BIT SIZE/TYPE 8 in DRILLED BY	Eguene L	CHECKED Steve Kolth	off	TC (fe	et)	PTH DRILLEI 60 AL/BEARING
				NDWA	ΓER	DEP.	тн		<u> </u>	ABC Drilling		APPROXIMA			ACE EL	EVATION
COM	IMEN	TS										BOREHOLE Soil Cutting	ВА	90 CKFIL	L	
(H)	(ft)			ROC	KC	ORE	.		GΥ				STS	ORY	TE, UR	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/		LITHOLOGY	MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
-		20	10	2.5/2.5	5			///////////////////////////////////////								
	 335	21		2.5/2.5	5			///////////////////////////////////////								
55		22	11	2.5/2.5	5					@ 56': 5YR 3/3 (dark reddish bro	wn)					
- - -60	330	23		1.5/1.5	5			/								
-	_									Boring Terminated at 60 ft. Boring backfilled with soil cuttings No ground water encountered in	s. boring.					
- - -65	325															
-	_															
- -70	<u>32</u> 0															
-																
-	_ 315											_				
SRO DEL		GRO	370) Am	ар	ola		Su	iite	THIS SUMMARY APPLII OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ξc

0	G (ЭF	C	ORI	ΕI	ВО	RIN	G	PROJECT NAME West Millennium Site	PROJEC LA-1191E	T NUMBER			ORING B-3A	
SITE	LOC	ATIC	N						DATE(S) DRILLED	LOGGE	ВҮ		SI	HEET N	0.
1720	0-175	0 N. \	Vine S	St.					2/10/2015	Terry Otis				of 3	
	LING)					DRILL BIT SIZE/TYPE		CHECKED I	ВΥ		TAL DE et)	PTH DRILLE
	w Ste								8 in		Steve Koltho		1,		60 AL/BEARING
DRIL CME	L RIC	3 TYI	PE						DRILLED BY ABC Drilling		INCLINATIO	0	COIVI V	LICTION	L/DLAKING
		IT GI	ROUN	IDWA ⁻	ΓER	DEP	TH	ı	7.00 Dinning		APPROXIMA		SURF	ACF FI	FVATION
None	e enco	unte	red								(feet)		90 90	HOL LL	LVAIION
СОМ	IMEN	TS									BOREHOLE		CKFIL	L	
	1	l						ı			Soil Cuttings	5			
	(£			ROC	K C	ORE	<u> </u>					S	 -		
E (#	NO E			%	ď		111.	LITHOLOGY				PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEРТН (ft)	EVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	D., %	FRACTURE DRAWING/ NUMBER	물	MATERIAL DES	CRIPTION		KER	SOR/	ILL F	NOTES
	EE	RUN	BOX	000	SAC.	R.Q.D.,	RAC SRAV NUM	=				PAC	F	RE	
				W	芷				Applied & C. in						
									Asphalt ` 6 in Artifical Fill (Qaf)						
	L							1							
5	385							7							
,		1	1	23/30				. 2							
									CAHUENGA SAND (Qs)						
		2		26/30	-				Clayey SAND7.5YR 4/4 to 4/6 (mostly fine to medium SAND; fe	strong brown); moist;				
		-		20/00					\fine GRAVEL.		/				
	380								Sitly SAND 10YR 4/6 (dark yellomostly fine to medium SAND; tr	ace coarse Ś	AND. /				
0	360	3	2	23/30					Clayey SAND10YR 5/6 (yellow mostly fine sand; trace medium	ish brown); m to coarse SAI	ioist; ND; trace / –				
	-								carbon fragments; micacous. Silty SAND 10YR 4/6 (yellowish	brown) moist	mostly				
	_								fine SAND; few medium SAND; and fine GRAVEL.						
	-	4		26/30					and line ONAVEL.						
	_								@ 14': Grussified granitic cobble	clast; mostly	fine to				
15	<u>3</u> 75	5	3	24/30	-				medium SAND; trace coarse SA	ND and fine	GRAVEL.				
	-								Clayey SAND to Sandy SILT10	YR 4/6 (vello	 wish				
	-								brown); moist; mostly fine SANE coarse SAND.); trace mediu	m and				
	_	6		27/30					Silty SAND 10YR 5/6 (yellowish fine to medium SAND; trace coa	brown); mois	t; mostly				
	_								GRAVEL.						
20	<u>3</u> 70	7	4	41/30					@ 18.5': lenses of Clayey SANE approximately 4 in thick.	το Sandy SII	_1;				
	L	$\mid ' \mid$	4	4 1/30											
	L														
	L														
_	365											_			
	•		21.12	, DC.	T *		NOU	T A '	THIS SUMMARY APPL			1	Ϊ		
KO	UP (JK(NTS, INC. OF THIS BORING AND SUBSURFACE CONDI	TIONS MAY D	FFER AT OTHE				
			370) Am	ap	ola .	Ave. S	suite	e 212 LOCATIONS AND MAY WITH THE PASSAGE PRESENTED IS A SIM	OF TIME. THE	DATA		FI	GUR	Ξa
EL	TΛ		To	rran	ce,	Cal	lifornia	90	501 CONDITIONS ENCOU		O. THE AUTUA	_			

_0	G ()F	C	ORI	ΕI	ВО	RIN	G	PROJECT NAME West Millennium		PROJECT LA-1191B	NUMBER		I	ORING B-3A	
SITE	LOC	ATIO	N						DATE(S) DRILLE	D	LOGGED	ВҮ		S	HEET N	0.
1720)-175	0 N. \	√ine S	St.					2/10/2015		Terry Otis				of 3	
	LING)					DRILL BIT SIZE	TYPE		CHECKED	BY		OTAL DE et)	PTH DRILLE
	w Ste							_	8 in			Steve Kolth		<u> </u>		60 AL/BEARING
DRIL CME	L RIC	3 TYF	PΕ						DRILLED BY ABC Drilling			INCLINATIO	0 0	NOIVI V	LKIICA	AL/BEARING
		IT GE	SULIN	NDWA	ΓFR	DED.	TH		ABC Dilling			ADDDOVIM		CUDE	ACE EL	FVATION
	enco			· DIIA		J	•••					APPROXIMA (feet)		30K F 90	ACE EL	EVAIION
СОМ	MEN.	TS										BOREHOLE			L	
												Soil Cutting	S			
				DO			-									
£	£			ROC	KC	ORE	=	_ ⊱					PACKER TESTS	ВY	듀氏	
DEРТН (ft)	NOI	<u>.</u>	Ċ.	Υ, %	ä	%	₩ _@ ~	700	l M	ATERIAL DES	CRIPTION		R H	STS	-RAJ	FIELD
DEP	EVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY			J		CKE	LABORATORY TESTS	DRILL RATE, FEET/HOUR	NOTES
		R.	BO	ECO	RAC	R.0	PRA DRA	-					ΡĀ	🖺		
		8	5	₹ 28/30				/	MUD FLOW	(Qm)						
	_									7.5YR 4/6 (strong	brown): mois	t:				
	_								mostly fine SAND and fir	AND; few medium ?	SAND; trace of	coarse				
		9		29/30	1				SAND and III	IE GRAVELS.						
									@ 28.5': 5YR	4/4 (Reddish Brow	n); trace carb	on				
20	360								fragments.	·	•					
30	000	10	6	31/30												
	-							//	;							
	-															
	_	11	7	31/30					@ 33'· 10∀R	5/6 (yellowish brow	n): mostly fin	e to				
	L							//	medium SAN	D; few coarse SAN	D.					
35	355									e clast (basalt) mod UVIUM (Qoal)	eratiy weathe	ered				
		12	8	27/30					Clavey SAN	D 7.5YR 5/6 (reddis	sh brown), mo	stly fine				
									SAND; trace	medium to coarse	SAND and fin	e				
		13		30/30					GRAVEL; tra	ce carbon fragmen	IS.					
	-	13		30/30				//	:							
	_															
40	<u>3</u> 50	14	9	35/30	-											
	_	'	Ü	00/00												
		15		34/30	-											
	245															
45	<u>3</u> 45	16	10	32/30	1			//								
	-															
	<u> </u>															
	_	17		38/30	1											
	L															
	340															
iRD	•	GRO	DUP	DEL	_TA	CC	NSUL	TAI	NTS. INC. OF	IS SUMMARY APPL THIS BORING AND BSURFACE CONDI	AT THE TIME	OF DRILLING.			· · · · · · · · · · · · · · · · · · ·	
			370) Am	ap	ola	Ave. S	uite	212 LO	CATIONS AND MAY TH THE PASSAGE (CHANGE AT	THIS LOCATIO		FI	GURI	Εb
	TΔ				-		lifornia		PR	ESENTED IS A SIMI INDITIONS ENCOUN	PLIFICATION (L	' '		_ ~

	G (ORI	EĪ	ВО	RIN	G	PROJECT N West Millen DATE(S) DR	nium Site	PROJEC LA-1191E LOGGEE			s	ORING B-3A HEET N	0.
DRIL	0-175 LING ow Ste	MET	ГНОД						2/10/2015 DRILL BIT S 8 in	SIZE/TYPE	Terry Otis	CHECKED Steve Kolth		тс	of 3 OTAL DE	PTH DRILLE
CME									DRILLED B' ABC Drilling			INCLINATIO	ON F	ROM \	/ERTIC	AL/BEARING
None	enco	unte		IDWA	ΓER	DEP.	TH					APPROXIM (feet)	3	90		EVATION
СОМ	IMEN	15										Soil Cutting		CKFIL	L	
Œ	(£)			ROC	KC	ORE	E	>					STS)RY	JE,	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	YEO IOHTI I		MATERIAL DE	ESCRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
_		18	11	31/30				/								
_		19		34/30												
_	F															
-55	<u>3</u> 35	20	12	54/60	-											
=																
_																
_60	<u>3</u> 30							/								
_									Boring ba	rminated at 60 ft. ackfilled with soil cut d water encountere	tings. d during drilling.					
-	-															
- -65																
_	_															
-																
-	320															
-70 -																
-																
_																
SRO DEL		— GR(370) Am	ар	ola		Sui	NTS, INC. te 212	THIS SUMMARY AF OF THIS BORING A SUBSURFACE COI LOCATIONS AND M WITH THE PASSAC PRESENTED IS A S	ND AT THE TIME NDITIONS MAY D MAY CHANGE AT SE OF TIME. THE	OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	≡ c

LOG OF CORE BORING									PROJECT NAME West Millennium Site DATE(S) DRILLED PROJECT LA-1191E LOGGED			BORING B-4 SHEET NO.					
1720 DRIL	0-175 LING ow Ste	0 N. Y	√ine S						2/7/2015 Eguene L DRILL BIT SIZE/TYPE 8 in					1 of 3 TOTAL DEPTH DRILLE (feet) 60			
DRILL RIG TYPE CME 85									DRILLED BY ABC Drilling			INCLINATION FROM VERTICAL/BEARI				AL/BEARING	
None	e enco	ounte		NDWA ⁻	ΓER	DEP	тн			(feet)			390				
COM	IMEN	18							1			Soil Cutting		CKFIL	L		
DEPTH (ft)	(£)	ROCK CORE											STS)RY	JE,		
	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESCRIPTION			PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES	
									Asphalt ` Artificial								
- - -									Sandy Cl 7.5YR 3/3	_AYMottled 10YR 3/1 (8 (Dark Brown), moist, brick chips and asphal	mostly fine SA	ay) and AND,					
	385	1	1	1.0/1.0					9								
-	_	2		1.2/2.5	5				Silty SAN	NGA SAND (Qs) ID10YR5/6 (yellowish D; few coarse SAND.	brown); moist	; mostly					
-10	 <u>3</u> 80	3	2	2.0/2.5													
-		4		1.3/2.5	5					crease in coarse quartz	ite grains						
- -15	_ <u>3</u> 75	5	3	NR					@ 13.5': r	no sample recovery for 2.5 feet.							
-		6		1.3/2.5	5												
	 370	7	4	1.4/2.5	5				@ 18.5': 7 SAND; fe	7.5YR 4/4 (brown); mos w coarse SAND.	stly fine to me	dium					
20	_	8		1.7/2.5	5												
-	_	9	5	2.5/2.5	5												
GROUP GROUP DELTA CONSULTA 370 Amapola Ave. Suit Torrance, California 90								Suit	e 212	212 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				FIGURE a			

LOG OF CORE BORING SITE LOCATION 1720 1750 N. Vino St.									West Millennium Site LA-1191B DATE(S) DRILLED LOGGED		NUMBER		BORING B-4 SHEET NO.					
											Eguene Lo			SHEET NO. 2 of 3				
1720-1750 N. Vine St. DRILLING METHOD									DRILL BIT SIZE/TYPE			CHECKED BY			TOTAL DEPTH DRILLE			
Hollow Stem Auger DRILL RIG TYPE									8 in Stev			Steve Kolth		(feet) 60				
																OM VERTICAL/BEARING		
													0					
APPARENT GROUNDWATER DEPTH None encountered													ATE SURFACE ELEVATION					
			eu									(feet)		90				
COMI	WEN	15								BOREHOLE BA Soil Cuttings				ACKFILL				
												Con Cutting						
	(ft)			ROC	KC	ORE	<u>:</u>	>					STS	≾	πiα			
DEPTH (ft)	ELEVATION (% 0 1 1 0 0 0 0 0 0 0							MATERIAL RECORDERION				TES	ATOF TS	RATE	FIELD		
ËPT		RUN NO.	N _O	ERY	FRE	Э., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTIO		RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	NOTES		
			BOX	RECOVERY, %	FRAC. FREQ.	R.Q.D.,		=					PAC	LAB.	RE			
				뿐	芷		<u>г</u> п-											
_									MUD FLOV									
	_	10		2.5/2.5					Sandy CLA mostly fine S	Y 10YR 4/4 (dark yell SAND.	owish brown)	; moist;						
	_								line c	,								
	_	44		0.5/0.5														
-	_	11	6	2.5/2.5														
30	<u>3</u> 60								@ 30': mottl	ed 7.5YR 4/4 (brown	to 5YR 4/6 (yellowish						
	_	12		2.5/2.5					brown); micacous; few coarse SAND; trace fine GRAVEL.									
_	_	12		2.5/2.5						R 4/4 (reddish brown)								
		13	7	2.5/2.5					Older Alluv	vium (Qoal)								
-	355		-							Y 5YR 3/3 (dark redd	ah hrawa): m	oiot:						
-35	333								mostly fine S	SAND.	SII DIOWII), II	ioist,						
- }	_	14		2.5/2.5					Silty SAND	7.5YR 5/6 (strong bro	wn); moist; r	nostly						
-	_								fine SAND.									
-	_								Clayey SAN mostly fine S	ID7.5YR 4/6 (strong	prown); mois	i;						
_	_	15	8	2.5/2.5					mostly line (DAIND.								
40	350								SULV SAND	5YR 5/8 (yellowish re	d): moist: mo	etly fine						
									SAND.	31K 3/8 (yellowisi) re	u), moist, me	ostry inie						
	_	16		2.5/2.5														
-								Щ		ID7.5YR 4/6 (strong	orown): mois							
-	_	17		0.5/0					mostly fine S	SAND; some medium	to coarse SA	AND.						
-	_	17	9	2.5/2.5					 	V7 EVD E/E (3-3-7-5	rown maist							
45	<u>3</u> 45								fine SAND,	Y7.5YR 5/6 (strong b trace medium SAND.	iown); moist;	mostly						
.	_	18		2.5/2.5														
_	_	.0		0,2.0					A 471 51/5	0/0 (-11 11: 1 :								
_									@ 47': 5YR	3/3 (dark reddish bro	wn)							
		19	10	2.3/2.5														
-	340																	
		-		-	-	 		<u> </u>	''	HIS SUMMARY APPLII	ES ONLY AT T	THE LOCATION	I					
ROI	UP (GRC	UP	DEL	.TA	CC	NSUL	LTA	NTS. INC. \circ	F THIS BORING AND . UBSURFACE CONDIT	AT THE TIME	OF DRILLING.						
///			370) Am	an	ola	Ave :	Suit	ລ 212	OCATIONS AND MAY	CHANGE AT	THIS LOCATIO	N	FI	GURI	= h		
			0, 0	, , ,,,,,	٩p	O.G.			- 100	ITH THE PASSAGE O	F TIME. THE	DATA		1 1 1	GUN	_ 0		

SITE	LOC	ATIC	N		E	ВО	RIN	IG	PROJECT NA West Millenn DATE(S) DRI	nium Site	LA-1191B	ВҮ		s	ORING B-4 HEET N	0.
	L RIC	ME1	T HO E						2/7/2015 DRILL BIT S 8 in DRILLED BY ABC Drilling		Eguene L	CHECKED Steve Kolth	off	TC (fe	OTAL DE	PTH DRILLE 60 AL/BEARING
APP				NDWAT	ΓER	DEP	ТН		ABC Dilling			APPROXIM (feet)	ATE	SURF	ACE EL	EVATION
СОМ	MEN	TS										BOREHOLE Soil Cutting	ВА		L	
ť)	(#)				KC	CORE		>:					STS	Ϋ́	元成	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/	AGO CHEL-		MATERIAL DES	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
-	_	20		2.5/2.5	5											
		21	11	1.0/2.5	5				@ 53': Fir	ne sand lenses within c	lay matrix					
55	<u>3</u> 35								@ 55': ca	rbon fragments approx	imately 1.4 in	diameter				
	_	22		2.5/2.5					within bed	ading of Silty SAND an	d Clayey SAN	ID.				
	_	23	12	1.5/1.5	5											
.60 -	330								Boring ba	minated at 60 ft.	gs.					
	_								No groun	d water encountered di	uring drilling.					
65	 325															
-	_															
-																
70	 <u>3</u> 20															
	L															
-	_															
	315		21.15	, D.C.			Morr		NTO INC	THIS SUMMARY APPL	IES ONLY AT	THE LOCATION	N	<u> </u>		
SRO		ĿK(370	0 Am	ар	ola	Ave.	Sui	NTS, INC. te 212 0501	OF THIS BORING AND SUBSURFACE CONDI' LOCATIONS AND MAY WITH THE PASSAGE (PRESENTED IS A SIMI CONDITIONS ENCOUN	TIONS MAY DI CHANGE AT OF TIME. THE PLIFICATION (FFER AT OTHI THIS LOCATIO DATA	ER N	FI	GURI	Ξс

_O	G ()F	C	ORI	ΕĪ	ВО	RIN	G	PROJECT NAME West Millennium Site	PROJEC LA-1191	T NUMBER			ORING B-4A	
SITE	LOC	ATIC	N						DATE(S) DRILLED	LOGGE	BY			HEET N	O .
1720)-175	0 N. \	Vine S	St.					2/10/2015	Terry Oti	5			of 3	
	LING)					DRILL BIT SIZE/TYPE		CHECKED	3Y	TO (fe		PTH DRILLE
	w Ste								8 in		Steve Kolth		1,		60 L/BEARING
DRIL CME	.L RIG	j IYI	'E						DRILLED BY ABC Drilling		INOLINATIO	0	CON .	LITTIOE	L/DLAKINO
		IT GI	ROUN	NDWA	ΓER	DEP.	TH		7.00 Drilling		APPROXIMA		SURF	ACE EL	FVATION
	enco										(feet)		90 90	AOL LL	LVAIION
СОМ	MEN	TS									BOREHOLE		CKFIL	L	
	1	ı						1	I		Soil Cuttings	3			
	<u> </u>			ROC	K C	ORE	<u> </u>					လ	_		
Œ,	(ft)			%	بز			LITHOLOGY				PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEPTH	EVATION	Š.	Ŏ.	ERY,	FRE(% '.0	TURE ING/ 3ER	爿	MATERIAL DES	CRIPTION		ŒR.	ORA TEST	ILL R ET/H	NOTES
	ELE	RUN NO.	BOX NO.	RECOVERY, %	-RAC. FREQ.	R.Q.D., '	FRACTURE DRAWING/ NUMBER	5				PAC	AB.	RE	
				REG	FR	ш	H O								
									Asphalt `4in Artificial Fill (Qaf)						
								12	, , , , , , , , , , , , , , , , , , , ,						
	205							1							
5	<u>3</u> 85	1	1	23/30	1										
	-)	CAHUENGA SAND (Qs)						
	-								 Clayey SAND7.5YR 3/4 (dark	brown); moist;	mostly /				
	_	2		28/30					\ fine SAND; few medium to coa \GRAVEL.	rse SAND; tra	ce fine /				
	-								_\ Silty SAND 10YR 5/6 (yellowis	h brown); mois	st; mostly				
10	<u>3</u> 80	3	2	30/30	-				\\GRAVEL.		ii l				
	_		_					Ш	Clayey SAND10YR 4/4 (dark y		í , -				
	_								Silty SAND10YR 5/6 (yellowis						
		4		21/30	1				GRAVEL.		í /				
									\moist; mostly fine SAND.		1				
15	<u>3</u> 75								Silty SAND 10YR 5/6 (yellowis fine to medium SAND; trace co	h brown); mois arse SAND ar	st; mostly ad fine				
. •		5	3	32/30				1	GRAVEL. Clayey SAND10YR 4/4 (dark y		/-				
•									moist; mostly fine SAND.	, Shomon brow	,,				
		6		24/30	-				Silty SAND 10YR 5/6 (yellowis	h brown): mois	t: mostly				
				.,,,,				Щ	fine to medium SAND; trace co	arse SAND ar	id fine				
	-							Í	Clayey SAND10YR 4/4 (dark	ellowish brow	n) ; — — — / / —				
20	<u>3</u> 70	7	4	26/30					\\moist; mostly fine SAND.\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	h brown): mois	st: mostly				
	-								fine SAND; trace medium SAN Clayey SAND to Sandy SILTi	D.	i, -				
	-								\brown), moist, mostly fine SAN	D.	í				
	_	8		27/30					Silty SAND 10YR 4/4 (dark yel mostly fine SAND; trace mediu	lowish brown) m to coarse S	moist; AND and				
	L								fine GRAVEL; trace weathered		-				
	365														
PO		GRO) P	DFI	TΔ	, CC	NSIII	ΤΔΙ	NTS, INC. THIS SUMMARY APP			I			
j		٠. ‹‹							SUBSURFACE CONL	ITIONS MAY D	IFFER AT OTHE		 	01.10.	
					•		Ave. S		WITH THE PASSAGE	OF TIME. THE	DATA		[GURE	<u> </u>
EL	ΙΛ		To	rran	ce,	Cal	lifornia	90	501 CONDITIONS ENCOU						

				ORI	E	ВО	RIN	G	PROJECT NA West Millenn	nium Site	LA-1191E				ORING B-4A HEET N	0
	LOC			C4					DATE(S) DRI 2/10/2015	ILLED	LOGGED				HEEIN of 3	U .
	0-175 . LING								DRILL BIT S	IZE/TYDE	Terry Otis	CHECKED	DV.			PTH DRILLE
	w Ste			,					8 in			Steve Kolth		1 -	et)	60
	L RIC								DRILLED BY	<u> </u>				ROM V	/ERTIC	AL/BEARING
CME			_						ABC Drilling	•			0			
				NDWA	ΓER	DEP.	TH					APPROXIM	ATE	SURF	ACE EL	EVATION
	enco		red									(feet)		90		
СОМ	IMEN	TS										BOREHOLE		CKFIL	L	
	1	l						1				Soil Cutting	s I			
				ROC	K C	ORE	<u> </u>						တ္က			
Œ	ON (ft)			%	ä			LITHOLOGY					PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEPTH (ft)	EVATION	ġ.	ō.	₹,	REC	%	NG/	힏		MATERIAL DES	CRIPTION		ER	PRA EST	L R. T/H(NOTES
	ELEV,	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D.,	FRACTURE DRAWING/ NUMBER	<u> </u>					ACKI	ABC	DRIL FEE	110120
	Ш	~	ā	REC	FRA	₩.	, 뜻문 _도						۵			
		9	5	30/30				//	MUD FL	OW (Qm)						
									1							
	-								moist; mo	AND10YR 4/6 (dark) stly fine SAND; trace	medium to coa	arse				
	_	10		31/30					SAND and	d trace fine GRAVEL; sifed granite clasts.	trace weather	ed basalt				
	_								-@ 27.5':	5YR 4/4 (reddish bro	wn)					
80	360	44	_	0.4/00												
		11	6	34/30												
									<pre>@ 31': mo (gray)</pre>	ottled 10YR 5/4 (yello	wish brown) to	10YR 8/1				
		12		26/30	-				, ```	.5YR 4/6 (strong brow	n)					
	_								OLDER A	ALLUVIUM (Qoal)						
35	355								Silty SAI	ND 10YR 4/6 (dark ye	llowish brown)	moist;				
		13	7	28/30						e SAND; few medium d fine GRAVEL: trace						
									:	,						
		14		24/30												
	_	14		24/30												
	-								Clayey S	AND7.5YR 4/6 (stron	g brown); mois	 t;				
40	<u>3</u> 50	15	8	31/30					mostly fin	e SAND; few medium d fine GRAVEL; trace	SAND; trace of	coarse				
	_		Ü	0 1700					OAIND an	a mic Orovez, trace	carbon fragin	J111.3.				
		16		28/30					;							
									Silty SAN	ID 10YR 4/6 (dark yel	lowish brown).	moist				
	345								mostly fin	e SAND; few medium d fine GRAVEL; trace	SAND; trace of	coarse				
45	343	17	9	32/30					Clayey S.	AND7.5YR 4/6 (stron	g brown); mois	t;				
									mostly fin	e SAND; few medium d fine GRAVEL; trace	SAND; trace of weathered ba	coarse salt.				
	-]	,						
	-	18		33/30					@ 47.5': h	nigher Clay content, tr	ace carbon fra	gments.				
	_							1/	.]							
	340]							
	ne 4	20/	חור	י חבי	T 4		Merri	T ^ !	NTC INC	THIS SUMMARY APP OF THIS BORING AN	LIES ONLY AT	THE LOCATION	N			
NO.	טר (NTS, INC.	SUBSURFACE COND LOCATIONS AND MA	ITIONS MAY DI	FFER AT OTH	ER			
			370	Am ر	ар	ola	Ave. S	Suit	e 212	WITH THE PASSAGE	OF TIME. THE	DATA		FI	GURI	Ξb
EL	TA		To	rran	ce,	Ca	lifornia	a 90	501	PRESENTED IS A SIN CONDITIONS ENCOL		OF THE ACTUR	\L			

SITE	LOC	ATIC	N		ΕΙ	ВО	RIN	G	PROJECT NA West Millenn DATE(S) DRI	ium Site	LA-1191B	ВҮ		s	ORING B-4A HEET Notes of 3	0.
DRIL Hollo	0-175 LING ow Ste	ME em Aı	THO E						2/10/2015 DRILL BIT SI 8 in DRILLED BY		Terry Otis	CHECKED Steve Kolth	off	TC (fe	TAL DE	EPTH DRILLE 60 AL/BEARING
				NDWA	ΓER	DEP.	ТН		ABC Drilling			APPROXIM/			ACE EL	EVATION
COM	IMEN	TS										BOREHOLE Soil Cutting:	ВА	90 CKFIL	L	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DE	SCRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	_	19	10	33/30					@ 50': 5Y	R 4/4 (reddish brow	n)					
-	_	20		33/30					@ 52.5': 1	0YR 4/6 (strong bro	wn)					
-55 - -	<u>3</u> 35	21	11	36/30	-				@ 56': 5Y	R 3/3 (dark reddish	brown)					
- - -60	 <u>3</u> 30	22		34/30					@ 58': 5Y	R 4/4 (reddish brow	n) —————					
- - -									Boring bad	minated at 60 ft. ck filled with soil cut d water encountered	tings. during drilling.					
-65 - -	<u>32</u> 5															
- - -70	 <u>32</u> 0															
- - -																
SRO		∐ GR(370) Am	ар	ola	NSUL Ave. S	Suite		THIS SUMMARY AP OF THIS BORING AT SUBSURFACE CON LOCATIONS AND M. WITH THE PASSAG PRESENTED IS A SI CONDITIONS ENCO	ND AT THE TIME DITIONS MAY DI AY CHANGE AT E OF TIME. THE IMPLIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	 FI	GURI	E c

_0	G (DF	C	ORI	ΕΙ	ВО	RIN	G	PROJECT NAME West Millennium Site	PROJEC LA-1191B	NUMBER			ORING B-5	
	LOC								DATE(S) DRILLED	LOGGED				of 3	D .
)-1750							-	2/5/2015	Eguene L	1	D\			DTU DDU I F
	LING								DRILL BIT SIZE/TYPE 8 in		CHECKED			et)	PTH DRILLE 60
	w Ste L RIG							+	DRILLED BY		Steve Kolth		ROM V	/ERTIC	L/BEARING
CME		, , , , ,	_						ABC Drilling			0			
				IDWA1	ΓER	DEP	TH				APPROXIM	ATE	SURF	ACE EL	EVATION
None	enco	unter	ed								(feet)	3	90		
COM	MEN	ΓS									BOREHOLE		CKFIL	L	
								1			Soil Cutting	s I	1		
	(ft)			ROC	K C	ORE	.					ည	>		
Œ,	J) NC			%	ب			LITHOLOGY				PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEРТН (ft)	EVATION	NO.	NO.	ERY,	FRE	% '.'	URE ING/ 3ER	보	MATERIAL DES	CRIPTION		ŒR.	ORA	ILL R ET/H	NOTES
ä	ELEV	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	=				ACK	LAB	DRI	
				REC	FR	т.						L			
								Ş.	Asphalt ` 4in Artificial Fill (Qaf)						
-								12		k brown \ !-	t: mostly				
								*	SILT with Sand7.5YR 3/3 (dai fine SAND.	k biown); mois	i, mostry				
	-														
	-							7							
5	<u>3</u> 85	1	1	2.1/2.5				. *							
	_								CAHUENGA SAND (Qs)						
_	_								Silty SAND7.5YR 4/4 (brown)	moiat: moatly	fina ta				
-	_	2		1.3/2.0				Ш	_ medium SAND.	-	, -	-			
_	_								CLAY with Sand7.5YR 3/3 (day mostly fine to medium SAND.	rk brown); mo	st;				
-10	380	3		1.8/2.5											
-10															
-									Silty SAND 10YR 4/6 (dark yel mostly fine to medium SAND.	owish brown);	moist;				
-		4		1.4/2.5					inostry line to medium oznab.						
-	_														
·	_														
-15	<u>3</u> 75	5		1.0/2.5											
-	_														
-	-	6		1.8/2.5					: : : @ 17': 3 in sub-rounded cobble	in shoe					
-	<u> </u>								:	0.100					
	_														
20	<u>3</u> 70	7	2	2.4/2.5					Sandy SILT 10YR 4/6 (dark ye	lowish brown);	moist;	-			
_									mostly fine SAND; trace mediu micacious.	m and coarse s	SAND;				
-		8		2.5/2.5											
_															
-	-			0 5 70 5					 			1			
	365	9		2.5/2.5				1/	MUD FLOW (Qm) THIS SUMMARY APP	IES ONI V AT	THE LOCATION	\ \	<u> </u>		
RO	UP (GRC	UP	DEL	.TA	CC	NSUL	.TA	NTS, INC. OF THIS BORING AN SUBSURFACE COND	O AT THE TIME	OF DRILLING.				
			370) Am	an	ola	Ave. S	Suit		Y CHANGE AT	THIS LOCATIO	N	=	GURI	=
			σ_{I}	, , ,,,,,	uр	0.00				OF TIME THE	DATA			GURI	_ a

LO	G (OF	С	ORI	E	ВО	RIN	G	PROJECT NA West Millenr		PROJECT LA-1191B	NUMBER			ORING B-5	
	LOC			01					DATE(S) DRI	ILLED	LOGGED			s	HEET N	0.
DRIL	0-175 LING	ME	ГНОЕ						2/5/2015 DRILL BIT S 8 in	IZE/TYPE	Eguene Lo	CHECKED		тс		PTH DRILLE
	w Ste								DRILLED BY	<u> </u>		Steve Kolth		ROM V	/ERTIC	AL/BEARING
CME									ABC Drilling				0			
	AREN e enco			NDWAT	ΓER	DEP	тн					APPROXIMA (feet)		SURF 90	ACE EL	EVATION
COM	IMEN	TS										BOREHOLE Soil Cutting:	ВА		L	
æ	(ft)			ROC	KC	ORE	=	\\;					STS	RY	Е, R,	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
_									Sandy CI	L AY 7.5YR 3/3 (dark bro	wn); moist; n	nostly				
-	_	10	3	2.5/2.5	5				Sandy CI medium S	LAY7.5YR 4/3 (brown); SAND; few coarse SAND	moist; mostly).	fine to				
- _30 -	<u>3</u> 60	11		2.9/2.5	5				@ 30': ind	crease in clay content						
_	_	12		2.5/2.5	5				OLDER A	ALLUVIUM (Qoal)						
- _35 -	<u>3</u> 55	13		2.5/2.5	5				fine SANI	ID 10YR 5/6 (yellowish b D; trace fine GRAVEL.	orown); moist	; mostly				
_	_	14	4	2.5/2.5	5				-trace fine	e to coarse GRAVEL.						
_ _40	 <u>3</u> 50	15		2.3/2.5	5											
-	_	16		2.2/2.5	5				@ 41': 7.5 SAND; litt COBBLES	5YR 4/6 (strong brown); tle coarse SAND and fin S	mostly fine to e GRAVEL;	o medium trace				
- -45	 <u>3</u> 45	17	5	2.4/2.5	5											
_	_	18		2.3/2.5	5				@ 46': fev	w coarse SAND and fine S.	e GRAVEL; tr	race				
_	340								@ 49.5':	wet.						
GRO DEL		GRO	370	0 Am	ар	ola	NSUL Ave. S	Suit		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY O WITH THE PASSAGE OF PRESENTED IS A SIMP CONDITIONS ENCOUNT	AT THE TIME IONS MAY DII CHANGE AT ⁻ F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GUR	Εb

_O	G	OF	C	OR	ΕI	ВО	RIN	G	PROJECT NA West Millenr		PROJECT LA-1191B	NUMBER			ORING B-5	
	LOC			24					DATE(S) DRI 2/5/2015	LLED	LOGGED Eguene L			s	HEET N	0.
DRIL	LING	MET	ГНОД						DRILL BIT S 8 in	IZE/TYPE	Lguerie L	CHECKED Steve Kolth		тс		EPTH DRILLE
DRIL CME	L RIC	3 TYI	PE						DRILLED BY ABC Drilling	•		INCLINATIO	ON F	ROM V	/ERTIC	AL/BEARING
APP	AREN			NDWA	TER	DEP	TH		ABC Drilling			APPROXIM		SURF	ACE EL	EVATION
	enco		red									(feet)		90		
COM	IMEN	15										Soil Cutting		CKFIL	.L	
	(ft)			ROC	K C	ORE		<u>};</u>					STS	RY	щ. К	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
55	 335	20		0/5 2.0/2.5	Ö				Clayey S.	No recovery for 5 feet. AND 5YR 4/6 (strong brown); few medium SAND; tr	own); moist;	mostly				
30	 <u>33</u> 30	21	6	3.0/2.5	5				micacous	minated at 60 ft.						
- - - -65 - -									Boring ba	ck filled with soil cutting rater encountered at app	s. proximately 4	9.5 ft				
-70 - - -	320 															
SRO DEL		GRO	370) Am	ар	ola		Suit	NTS, INC. e 212 0501	THIS SUMMARY APPLII OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT [*] F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER N	FI	GURI	Ξ c

_0	G ()F	С	ORI	ΕI	ВО	RIN	G	PROJECT NAM West Millenni		PROJECT LA-1191B	Γ NUMBER			ORING B-5A	
SITE	LOC	ATIC	N						DATE(S) DRIL	LED	LOGGED	BY		S	HEET N	О.
1720)-175(0 N. '	Vine S	St.					2/10/2015		Eguene L	ewis			of 3	
	LING)					DRILL BIT SIZ	ZE/TYPE		CHECKED	3Y		TAL DE	PTH DRILLED
	w Ste								8 in			Steve Koltho		Ι,		60 AL/BEARING
DRIL CME	L RIC	3 TYI	PE						DRILLED BY ABC Drilling			INCLINATIO	, INI FI	COIVI V	EKIICA	AL/BEARING
		IT GI	ROUN	NDWA	ΓER	DEP	TH		ADC Drilling			APPROXIMA		SURF	ACE EL	EVATION
	enco											(feet)		90 90	AOL LL	LVAIION
COM	MEN.	TS										BOREHOLE		CKFIL	L	
		ı						1				Soil Cuttings	3			
	(ft)			ROC	K C	ORE	<u> </u>						S	>	*	
DEPTH (ft)	NO NO			%	ď	_	111.	LITHOLOGY	_				PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
EPT	EVATION	RUN NO.	BOX NO.	ERY	FRE	J., %	TURI VING BER	로	ľ	MATERIAL DESC	CRIPTION		KER	OR/	ET/F	NOTES
	ELE	NS	BOX	RECOVERY, %	FRAC. FREQ.	R.Q.D., ⁽	FRACTURE DRAWING/ NUMBER	=					PAC	LAE	RH	
				W	芷		ш —		A 1 11 2 4							
-									Asphalt ` 4i							
_									SILT with	Sand 7.5YR 3/3 (dark	brown); mois	t; mostly				
								2	fine SAND; coarse SAN	; few medium SAND; ND.	trace subrour	ided				
5	385							7								
0		1	1	0/1.0					CAHUENO	GA SAND (Qs)						
•		2		2.5/2.5	5					D 7.5YR 4/4 (brown);	moist: some f	ine				
									SAND; little	e medium SAND; few d-subangular SAND;	coarse					
		3		2.5/2.5					Subrounded	u-subangulai SAND, i	mcaceous.					
	200			2.0/2.0	1				CHA CANE	27 EVD 4/6 (atrona br	owa): maiat: .	monthy				
10	<u>3</u> 80		2	1					fine SAND;	7.5YR 4/6 (strong br ; few medium SAND;	trace subrour	ided				
	-	4		1.8/2.5	5				coarse SAr	ND; micaceous.						
	-															
	-															
	-	5		1.9/2.5	Ò											
15	<u>3</u> 75		3	-					Sandy SIL	T7.5YR 4/4 (strong b	rown); moist;	little fine				
	_	6		2.4/2.5	5				SAND; few micaceous.	medium SAND; trace	coarse SAN	D;				
	-								CAND fine	to accres langua with	traca auban	aular fina				
-	-							H	∖GRAVEL	e to coarse lenses with						
	L	7		2.5/2.5	Ď				\ SAND; few	T7.5YR 4/6 (strong by medium SAND; trace	rown); moist; e subangular i	little fine / = fine /				
20	<u>3</u> 70		4						GRAVEL C	oated in clay. 10YR 5/6 (yellowish	brown): mois	t: mostly				
	_	8	7	2.5/2.5					fine SAND;	; few medium SAND.	J. J. J. J. J. J. J. J. J. J. J. J. J. J	.,				
		$ $		2.3/2.3	1				inorcuse ii	I OIL I						
_		9		2.5/2.5	5				some fine S	10YR 4/6 (dark yello SAND; little medium S	SAND; few co	ase				
	365							Ш	\SAND; trac	ce angular find GRAV	EL; micaceou	S. /				
:00	110 (CD/	םו וכ	ם חבי	T ^	, CC	Meili	TΛ		THIS SUMMARY APPLI OF THIS BORING AND			I			
	(٠،\(SUBSURFACE CONDIT LOCATIONS AND MAY	TIONS MAY DI	FFER AT OTHE			O. 1-	=
					•		Ave. S		E Z 1 Z \	WITH THE PASSAGE OPRESENTED IS A SIMP	F TIME. THE	DATA		FI	GURI	± a
EL	ΙΛ		To	rran	ce,	Cal	lifornia	90)501	CONDITIONS ENCOUN		2.27.				

_O	G (ЭF	C	ORI	ΕI	ВО	RING	3	PROJECT NA West Millenr		PROJECT LA-1191B	NUMBER		- 1	ORING B-5A	
	LOC								DATE(S) DRI	ILLED	LOGGED			S	HEET N	0.
	0-175 LING								2/10/2015 DRILL BIT S	IZF/TYPF	Eguene L	ewis CHECKED	BY	_		PTH DRILLE
	w Ste								8 in	,		Steve Kolth			et)	60
	L RIG	3 TYI	PE						DRILLED BY	1		INCLINATIO		ROM V	/ERTIC	AL/BEARING
CME		IT GI	ROUI	NDWA ⁻	ΓFR	DED.	ТН		ABC Drilling			APPROXIM	0 ATE	CUDE	ACE EL	EVATION
	e enco			10117		J						(feet)		30K F 90	ACE EL	EVAIION
COM	IMEN	TS										BOREHOLE		CKFIL	L	
	Τ											Soil Cutting	s 			
<u></u>	(ft)			ROC	KC	ORE	.	<u>}</u>					STS	<u>~</u>	Ä,E	
DEРТН (ft)	EVATION	<u>.</u>	ō.	RECOVERY, %	REQ.	% '	URE NG/ ER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TEST	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
DE	ELEV	RUN NO.	BOX NO.	SOVE	FRAC. FREQ	R.Q.D., %	FRACTURE DRAWING/ NUMBER	=					ACK	LABC	DRII	
				RE O	꿈	Ľ.	# G Z	<u> </u>								
	_	10	5	2.5/2.5						OW (Qm)	.h. h	-1-4-				
		10		2.5/2.5)				some fine		sn brown); m	OIST;				
	_								-increase	in plasticity						
	_	11		2.5/2.5	5											
30	<u>3</u> 60		6	_					-Color cha	ange to 5YR 4/3 (reddisl	h brown)					
	_	12		2.5/2.5	5					ed Quartzite - mostly find		SAND				
	-															
	-	40		0.5/0.5					OLDER A	ALLUVIUM (Qoal)		- – – – – -				
	 355	13		2.5/2.5	9				Sandy CI	LAY5YR 3/4 (dark reddi y fine SAND.	sh brown); m	noist;				
35	333		7						Sandy Cl	y line SAND. L AY 5YR 4/6 (yellowish i edium SAND; trace coars	red); moist; s	some				
		14		2.5/2.5	5				fine GRA		se and subic	Junueu				
								Ш		ND5YR 4/3 (reddish brovedium SAND.	wn); moist; m	nostly				
40	350									h Silt5YR 3/4 (dark redo e to medium SAND; gru						
			8						clasts Silty SAN	ND5YR 4/3 (reddish brov	wn); moist; m	 nostly				
		15		2.5/2.5					fine SANI and fine 0	D; few medium SAND; tr GRAVEL.	ace coarse s	SAND				
	_															
	-	16		2.5/2.5	5				-Quartzite	e and basalt clasts						
45	<u>3</u> 45		9	-				Ш	:	AND5YR 3/3 (Dark Red	dish Brown)	 , moist,				
	-	17		2.5/2.5	5				mostly fin		,					
	-								medium S	SAND, some coarse SAN	ND, few fine	,				
	-			0.5/0.5					Silty SAN	ND5YR 4/4 (reddish brov D; few medium SAND; tr	wn); moist; m	nostly				
	240	18		2.5/2.5					subround	ed SAND; micaceous.						
	340	⊢						<u> </u>	•	ange to 7.5YR 4/3 (brow THIS SUMMARY APPLIE	S ONLY AT		V			
iRO	UP (GR(NTS, INC.	OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (ONS MAY DI	FFER AT OTHE				_
					•		Ave. S			WITH THE PASSAGE OF PRESENTED IS A SIMP	F TIME. THE	DATA		FI	GURI	E b
EL	TΛ		To	rran	ce,	Ca	lifornia	90	501	CONDITIONS ENCOUNT			_			

SITE	LOC	ATIC	N		E	ВО	RIN	G	PROJECT NA West Millenr DATE(S) DRI	nium Site	LA-1191E	ВҮ		S	ORING B-5A HEET N of 3	0.
DRIL Hollo DRIL	0-175 LING w Ste	ME1	T HOD uger						2/10/2015 DRILL BIT S 8 in DRILLED BY		Eguene L	CHECKED Steve Kolth	off ON F	TO (fe	TAL DE	60 AL/BEARING
				NDWA ⁻	ΓER	DEP'	тн		ABC Drilling			APPROXIM (feet)		SURF	ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLE Soil Cutting	ВА		L	
£	(ft)			ROC	K C	CORE							STS	ŔŶ	Ē, R,	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DES	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
-	_		10						No recove	ery from 51.0 to 53.5' l	ogs					
- -55 -	 <u>3</u> 35 	19	11	0/2.5	-				fine SANI	ID7.5YR 4/6 (strong b); little medium SAND d quartzite and basalt	; few coarse S	AND;				
- - -		21		1.5/1.5					No recove	ery from 58.5 to 60.0' l	 ogs					
-60 - -	<u>3</u> 30 								Boring ba	minated at 60 ft. ck filled with soil cuttir ater encountered at a ling.	ngs. pproximately ધ	50 ft				
- -65 -	 <u>3</u> 25 															
- - - -70																
- -	_ _ _															
-	_ 315															
GRO DEL		GRO	370) Am	ар	ola		Suit	NTS, INC. e 212	THIS SUMMARY APPI OF THIS BORING ANI SUBSURFACE COND LOCATIONS AND MA WITH THE PASSAGE PRESENTED IS A SIM CONDITIONS ENCOU	O AT THE TIME ITIONS MAY DI Y CHANGE AT OF TIME. THE IPLIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	E c

_0	G (ЭF	C	ORI	ΕI	30	RIN	G	PROJECT NAME West Millennium Site	PROJEC LA-1191E	T NUMBER		- 1	ORING B-6	
SITE	LOC	ATIC	N						DATE(S) DRILLED	LOGGE	BY			HEET NO	ο.
1720	0-175	0 N. '	Vine S	St.					2/9/2015	Terry Oti	3			of 3	
			THOD)					DRILL BIT SIZE/TYPE		CHECKED	3Y	TO (fe		PTH DRILLE
	w Ste							-	8 in		Steve Koltho		`		60 L/BEARING
ORIL CME	L RIC	IYI و	PE						DRILLED BY ABC Drilling		INCLINATIO	0	COIVI V	LICTION	L/BLAKING
		IT GI	ROUN	NDWA	ΓER	DEP	TH		ADC DIMING		APPROXIMA		CLIDE	ACE EL	EVATION
	enco										(feet)		90.5	ACE EL	EVAIION
СОМ	MEN	TS									BOREHOLE			L	
	1										Soil Cuttings	3			
				ROC	K C	ORE	<u> </u>					S			
Œ	(f)							JG√				PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	EIEL D
DEPTH	EVATION	ġ	ō.	₹,	REQ	% "	URE NG/ ER	LITHOLOGY	MATERIAL DES	CRIPTION		ER 1	RAT EST	L R/	FIELD NOTES
	ELEV,	RUN NO.	BOX NO.	RECOVERY, %	-RAC. FREQ.	R.Q.D., '	FRACTURE DRAWING/ NUMBER	Ė				ACK	ABC T	DRIL	
	ш	<u>~</u>	ā	REO	FRA	α.	Ä, N N N N					Δ.			
	390								Asphalt, approximately 6 inches	thick.					
									ARTIFICIAL FILL (Qaf)						
;	205			40/00											
	385	1	1	40/60											
	-								CAHUENGA SAND (Qs)						
	-								Clayey SAND to Sand CLAY1 moist; mostly fine SAND; few m	0YR 3/3 (dark ledium SAND	brown); trace				
	-								\ coarse SAND and fine GRAVE Silty SAND10YR 5/6 (yellowisi	_; micacous.	/7				
	_								fine to medium SAND; few coar	se SAND; tra	ce fine				
10	380	2	2	24/30					GRAVEL. @ 10': mostly fine SAND with to	ace medium S	SAND.				
									@ 11': mostly fine to medium S	AND; few coa	rse				
									SAND; trace fine GRAVEL. Clayey SAND to Sand CLAY?	5YR 5/6 (stro					
		3		26/30					brown); moist; mostly fine SAN Silty SAND 10YR 5/6 (yellowisl	D; track mediu	ım SAND. 🚬				
									fine to medium SAND; few coar						
5	275	4	3	14/30				Щ	GRAVEL.		<u></u>				
	<u>3</u> 75	4	J	14/30					Clayey SAND7.5YR 5/6 (strong mostly fine SAND; trace medium						
	-								micacous.						
	-	5		24/30	-										
	-								Silty SAND 10YR 5/6 (yellowish fine to medium SAND; trace co						
_	_							Щ	clayey SAND7.5YR 5/6 (strong						
20	<u>3</u> 70	6	4	26/30	1				\ fine SAND; few medium SAND	trace coarse	SAND /				
	L								\and fine GRAVEL. Silty SAND 7.5YR 5/6 (strong b	rown); moist:	mostly /				
									fine SAND; few medium SAND and fine GRAVEL.	trace coarse	SANĎ				
		7		20/30					and mid office.						
									MUD FLOW (Qm)						
		Щ							Clayey SAND7.5/YR 5/6 (stron	g brown); moi	st;				
	110 4	GR	םווכ	DEI	TΛ	. הר	NSIII	TΔN	ITS, INC. THIS SUMMARY APP			I			
Ĭ		٠. <i>۱</i> ۲							SUBSURFACE COND	ITIONS MAY D	IFFER AT OTHE			O = =	_
					•		Ave. S		WITH THE PASSAGE	OF TIME. THE	DATA		Fl	GURE	<u> </u>
EL	$\Gamma \Lambda$		To	rran	ce,	Cal	lifornia	90	501 CONDITIONS ENCOU		E7.010A	-			

_O(G ()F	C	ORI	Ε	BO	RIN	G	PROJECT NAME West Millennium Site	LA-119	CT NUMBER 1B			ORING B-6	
SITE									DATE(S) DRILLED	LOGGI			S	HEET N	0.
)-175(LING							+	2/9/2015 DRILL BIT SIZE/TYPE	Terry C	tis CHECKED	RV		of 3	PTH DRILLE
	w Ste			•					8 in		Steve Kolth		1 -	et)	60
	L RIG	TYF	PΕ						DRILLED BY		INCLINATION	ON F	ROM \	/ERTIC	AL/BEARING
CME		TO	2011	ID\A/A T	reb	DED	TU		ABC Drilling			0			
	enco			IDWA	IEK	DEP	IH				APPROXIN (feet)		SURF 90.5	ACE EL	EVATION
СОМ	MEN	ГS									BOREHOL			L	
								1			Soil Cutting	js 	ı		
	(ft)			ROC	K	CORE	=					LS	≿	uî ~	
DEPTH (ft)				%,	ä	 %	#\@\c	LITHOLOGY	MATERIAL I	NESCRIPTIO	N	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEP.	EVATION.	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	\f	MATERIAL)LOOKII 110	•	CKE	ABOR TE	RILL FEET/	NOTES
	日	٦ ا	B	RECC	FRA(R.0	P. P. S.					Ρδ	٦		
	<u>3</u> 65	8	5	31/30				//	mostly fine SAND; trace m trace fine GRAVEL; micac		e SAND;				
_	_								@ 25': 5YR 4/4 (reddish br		clay				
-	_	9		32/30	-				Content.						
_	_			02,00											
- -30	_														
-30	360	10	6	57/60					-becomes more yellowish lincreased	prown, SAND cor	ntent				
	_								OLDER ALLUVIUM (Qoa	<u> </u>					
_	_								SAND with Silt10YR 5/6 (fine to medium SAND, trace						
_	-								GRAVEL. Reddish weathe gruficied granite.	red basalt fragm	ents, trace				
_35	_	44		25/60					-mottled with Gray						
_	<u>3</u> 55	11	7	25/60					Sitly SAND 10YR 5/6 (Yell	owich Proven to	7 EVD 5/6				
_	_								(Strong Brown), moist, mo	stly fine SAND, tr	ace				
_	_								medium SAND, trace carb	л.					
_	_														
40	 350	12	8	30/30					-increase fine to medium S	AND few coarse	SAND				
-	000			00,00					trace fine GRAVEL	, ii 12, 1011 ooulot	, 0, 11 1D,				
-	_								- increase to mostly fine S	AND, few mediur	n SAND				
_		13		24/30					-minor clay content	,					
-															
4 5	<u>3</u> 45	14	9	23/30					SAND with Silt10YR 5/4 (Yellowish Brown) to 7.5YR	-			
-									5/6 (Strong Brown), moist, SAND, few coarse SAND,	mostly fine to me trace fine GRAV	edium EL				
-		45		20/00											
-	_	15		22/30					Silty SAND 10YR 5/6 (Yell (Strong Brown), moist, mo	stly fine to mediu	m SAND,				
-	<u> </u>								few coarse SAND, trace fir	IE GRAVEL.					
	UP (GRO	DUP	DEL	Τ.⁄	· CC	NSUL	TAT.	NTS. INC. OF THIS BORING	APPLIES ONLY A S AND AT THE TIM	IE OF DRILLING				
			370) Am	an	ola	Ave. S	Suite	212 LOCATIONS AND	ONDITIONS MAY) MAY CHANGE A AGE OF TIME. TI	T THIS LOCATION			GUR	= h

				ORI	E	ВО	RIN	IG	\	PROJECT NAME West Millennium Site	LA-1191B				ORING B-6 HEET N	0
	LOC.			St					- 1	DATE(S) DRILLED 2/9/2015	LOGGED Terry Otis			- 1	of 3	U .
	LING								+	DRILL BIT SIZE/TYPE	l elly Olls	CHECKED	BY			PTH DRILLE
	w Ste			,						8 in		Steve Kolth			et)	60
	L RIG									DRILLED BY				ROM V	/ERTIC	AL/BEARING
CME										ABC Drilling			0			
				IDWA	ΓER	DEP	TH					APPROXIM	ATE	SURF	ACE EL	EVATION
	enco		red									(feet)		90.5		
COM	MEN	TS										BOREHOLE		CKFIL	L	
	l	1										Soil Cutting	s 			
	<u></u>			ROC	K (CORE	<u> </u>						တ			
(#)	N (ft)							\dashv	LITHOLOGY				PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIEL D
DЕРТН (ft)	EVATION	ġ.	ō.	₹,	REC	%;	RN P	ב כ	호	MATERIAL DESC	RIPTION		ER 1	PRA1 EST	L R.	FIELD NOTES
DE	ELEV,	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/		<u> </u>				ACK	ABC	DRIL	
	ш	٣	Ф	REC	FR	α.	F.R.	2						_		
	340	16	10	22/30				-								
		17		22/30						SAND with Silt10YR 5/4 (Yellow mostly fine to medium SAND, few	vish Brown), v	wet,				
	_									fine GRAVEL.	v coarse sar	ND, trace				
55	_															
5	<u>3</u> 35	18	11	30/30					$\ \ $							
	_															
	_															
		19		28/30												
60	_								Щ.							
	<u>3</u> 30									Boring terminated at 60 ft.						
	_									Boring back filled with soil cutting Ground water encountered at ap	ıs. oroximately 5	50 ft				
	_									during drilling.						
	_															
35	325															
70	-															
	<u>3</u> 20															
	_															
	L															
										THIS SHAMADY ADDIT	ES UNI A VA	THE LOCATION	<u></u>	l		
ROI	UP (GRO	OUP	DEL	_T/	CC	NSU	LT/	ΑN	TS, INC. THIS SUMMARY APPLI OF THIS BORING AND SUBSURFACE CONDIT	AT THE TIME TONS MAY DI	OF DRILLING. FFER AT OTHE	ΞR			
			370) Am	ар	ola	Ave.	Su	iite	212 LOCATIONS AND MAY WITH THE PASSAGE C	CHANGE AT F TIME. THE	THIS LOCATIO DATA	N	FI	GURI	Ξс
							liforn			PRESENTED IS A SIME	I IFICATION (OF THE ACTUA	\L	1		

_O	G (ЭF	C	ORI	E	BO	RIN	G│	PROJECT NA West Millenr		PROJECT LA-1191B	T NUMBER		- 1	ORING B-6A	
	LOC								DATE(S) DRI	ILLED	LOGGED			S	HEET No.	0.
	0-175 LING							+	2/10/2015 DRILL BIT S	IZE/TYPE	Eguene L	ewis CHECKED I	BY			PTH DRILLE
	w Ste			,					8 in			Steve Kolth		1 -	et)	60
	L RIC	TYF	PE						DRILLED BY	(INCLINATIO		ROM \	/ERTIC	AL/BEARING
CME		IT GE	SOLIN	NDWA	ΓFR	DED.	ТН		ABC Drilling			APPROXIM	0 ATE	CURE	ACE EL	EVATION
	enco			IDIIA		D L1	•••					(feet)		SURF 90.5	ACE EL	EVAIION
СОМ	IMEN	TS										BOREHOLE		CKFIL	L	
	1								1			Soil Cuttings	S			
_	(£)			ROC	K	CORE							STS	<u>⊁</u>	ய்ம	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	390			_					— Asphalt `							
-	_							2	<u> </u>	Fill (Qaf)	mov():!!	mooth:				
	_								fine SANE	ID 10YR 3/1 (very dark o D.	gray), moist;	шоѕиу				
-	_															
5	-							*								
	385	1	1	1.0/1.0				. 2	<u> </u>]				
	-	2		2.5/2.5	5					NGA SAND (Qs)						
	_								mostly fin	AND 7.5YR 2.5/2 (very one SAND; little medium S	dark brown); SAND; few co	moist; parse				
		3	2	2.5/2.5	5				SAND, mi	ID 10YR 4/6 (dark yellov	vish brown);	moist;				
10	380								\SAND.	to medium SAND; little		í l				
-	300	4		2.2/2.5	5				moist; little	CLAY10YR 4/6 (dark yel e fine SAND; few mediu	lowish browi m SAND; tra	n); ice				
-									1	AND; micaceous. ID 10YR 5/6 (yellowish b	orown): mois	 t: some				
									fine Sand	; little medium SAND; fe angular GRAVELS; mid	w coarse SA					
		5	3	2.1/2.5	5				:	-						
15	<u>3</u> 75									th Silt10YR 4/4 (dark ye						
-	_	6		2.5/2.5	5				moist; sor SAND; mi	ne fine to medium SANI icaceous.	ט, trace coar	se				
	_															
-	_	7	4	2.5/2.5	5				Silty SAI	ND 10YR 5/6 (yellowish edium SAND; micaceous	brown); mois	st; some				
20	-		•					//	Clayey S	AND 10YR 4/6 (dark yellostly fine SAND.						
-20	<u>3</u> 70								Silty SAN	ID 10YR 5/6 (yellowish b	orown); mois	t; mostly				
_	-	8		2.5/2.5	5				fine SANI micaceou	D; little medium SAND; t	race coarse	SAND;				
_	_								:							
_	-	9	5	2.4/2.5	5				MUD FLO	OW (Qm)						
	<u> </u>								Sandy C	LAY5YR 5/6 (yellowish	red); moist;	some				
SRO DEL		GRO	370) Am	ар	ola	NSUL Ave. S lifornia	Suite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY O WITH THE PASSAGE OI PRESENTED IS A SIMP CONDITIONS ENCOUNT	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ξa

				ORI	Ξ	ВО	RIN	G	West Millennium		LA-1191B				ORING B-6A HEET N	n
	LOC. 1750-1			C+					DATE(S) DRILLED 2/10/2015	1	LOGGED Eguene Lo				of 3	O .
	LING								DRILL BIT SIZE/T	VDE	Eguerie Li	CHECKED E	RY			PTH DRILLE
	w Ste			,					8 in	IFE		Steve Koltho			et)	60
	L RIG								DRILLED BY			INCLINATIO		ROM V	/ERTICA	
CME			_						ABC Drilling				0			
APP	AREN	IT GF	ROUI	NDWAT	ΓER	DEP	TH	- 1				APPROXIMA	λΤΕ	SURF	ACE EL	EVATION
None	enco	unte	red									(feet)		90.5		
СОМ	MEN	ΓS										BOREHOLE	BAG	CKFIL	L	
									1			Soil Cuttings	S			
				ROC	K (OPE	=						"			
(F)	(ft)				·	JUKE	- 	_ გ					PACKER TESTS	LABORATORY TESTS	H,R	
DEPTH (ft)	Į į		Ċ.	,, ,,	Ö.	%		. 일	MA-	TERIAL DESC	RIPTION		R	STS	HOH/	FIELD
DEP	EVATION	RUN NO.	BOX NO.	VER	F.	R.Q.D., ^o	N N N	LITHOLOGY	1				SKE	BOF	DRILL RATE, FEET/HOUR	NOTES
	긥	RUI	BO	RECOVERY, %	FRAC. FREQ	R.O	FRACTURE DRAWING/ NUMBER	• -					ΡĀ	ן ַ		
	265			<u>~</u>	ш			1.7	fine SAND: tree	o coorso SAND						
_	<u>3</u> 65			0.5/0					ille SAND, trac	e coarse SAND.						
	-	10		2.5/2.5												
•	<u> </u>															
-	L			0.5/0.5												
-		11	6	2.5/2.5												
-30	360															
_	<u>5</u> 00	40		0.5/0.5					OLDER ALLU	VIUM (Qoal)						
	-	12		2.5/2.5					Silty SAND5YF	R 4/6 (yellowish re	d); moist; mo	stly fine				
	_								SAND; little me micaceous.	R 4/6 (yellowish redium SAND; trace	coarse SAN	D; /				
•	_	13	7	2.5/2.5					Sandy CLAY5	R 4/4 (reddish br	own); moist;	ittle /				
-		13	1	2.5/2.5						e coarse SAND ar R 4/3 (reddish brov						
_35	355								fine SAND; little	medium SAND; f	ew coarse S	AND;				
_		14		2.4/2.5					micaceousSandy CLAY5	YR 4/3 (reddish bi	own); moist;	mostly				
_		'-		2.4/2.5					fine SAND; trac	e medium SAND.	ŕ	· /				
	-								to medium SAN	R 4/6 (yellowish re ID; trace coarse S	AND; few fin	e				
	_	15	8	2.5/2.5					GRAVEL, mica	ceous. 7.5YR 5/6 (strong	hrown): moi					
_	_		Ū						mostly fine SAN	ID; few medium to	coarse SAN	ID.				
40	350								Silty SAND 5YF to medium SAN	R 4/6 (yellowish re ID; few coarse SA	d); moist; so ND and fine	me fine				
-		16		2.5/2.5						ts with a sandy ma						
-										R 4/4 (reddish brove medium SAND; f						
_	_								_ micaceous.			/ -				
	_	17	9	2.3/2.5						s with silty sand m YR 3/4 (dark reddi		/				
-	_								\some fine SAN	D; few medium to	coarse SANI	o <i>'</i> /⊢				
45	<u>3</u> 45									R 4/4 (reddish brow AND; trace fine ar						
-	L	18		2.5/2.5						:5YR 4/4 (reddish ID; trace medium						
-									\trace fine angul	ar GRAVEL.		/				
_										R 4/4 (reddish brow SAND; trace coars		ostly				
_	<u> </u>	19	10	2.3/2.5					Quartzite clasts							
	-								-2in quartzite gr Silty SAND7.5	avei iense YR 4/6 (strong bro	wn); moist; r	nostly				
	-			 	_				Ітніѕ	SUMMARY APPLIE	S ONLY AT 1	THE LOCATION			+	
SRO	UP (3RC	JUF	DEL	.Τ/	CC	NSU	LTA	SUBS	HIS BORING AND <i>F</i> SURFACE CONDITI	ONS MAY DI	FFER AT OTHE				
			370	0 Am	ар	ola	Ave.	Suit	212 LOCA	ATIONS AND MAY (I THE PASSAGE OF	CHANGE AT	THIS LOCATION		FI	GURE	Ξb
1	ΓΔ		_				liforni		PRF9	SENTED IS A SIMPI			L	1		

				ORI	ΞΙ	ВО	RIN	G	PROJECT NAME West Millennium Site	LA-1191E				ORING B-6A HEET N	n
	LOC 1750-			24					DATE(S) DRILLED 2/10/2015	LOGGED				of 3	o .
	LING								DRILL BIT SIZE/TYPE	Eguene L	CHECKED	BY			PTH DRILLE
	w Ste								8 in		Steve Kolth			et)	60
	L RIG								DRILLED BY				ROM \	/ERTIC	L/BEARING
CME	85								ABC Drilling			0			
				IDWAT	ΓER	DEP1	ГН				APPROXIMA	ATE	SURF	ACE EL	EVATION
None			ea								(feet)		90.5		
COMI	MENT	ΓS									BOREHOLE Soil Cuttings		CKFIL	L	
											Soil Cuttings	s 			
	£			ROC	K C	ORE						ည	>		
£	ELEVATION (ft)			%	ai.			LITHOLOGY				PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEPTH (ft)	ATIC	ō.	ō.	₩,	REC	% :	URE ING/	卢	MATERIAL DE	SCRIPTION		ER.	JRA'	LL R	NOTES
	:LEV	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ	R.Q.D., %	FRACTURE DRAWING/ NUMBER	5				ACK	ABC	DRII	
	"	~	Ф	REC	FR/	<u>د</u>	氏무 z						_		
	<u>3</u> 40								fine to medium SAND; few a	ngular coarse SA	ND;				
	_	20		2.5/2.5					micaceous.						
									- Weathered basalt in Silty S	and maxtix.					
Ì	_														
	_	21	11	2.5/2.5											
55	-								SAND 7.5YR 4/6 (strong bro	wn): moist: mostl	v fine to				
)3	<u>3</u> 35								∖ coarse SAND; indurated.		· /				
		22		1.4/2.5					Silty SAND7.5YR 4/6 (strong fine to coarse SAND; trace fi	g brown); moist; ne angular GRA\	mostiy /EL;				
									micaceous.						
		23	12	1.5/1.5					SAND with Silt7.5YR 4/6 (si mostly fine to coaruse SAND	rong brown); mo	ist;				
60	_								GRAVEL, micaceous.	, trace line angu	ai				
	<u>3</u> 30								Boring terminated at 60 ft.						
	_								Boring back filled with soil cu Ground water encountered a		9 ft durina				
	_								drilling.						
65	325														
İ															
ŀ	_														
}	-														
	_														
	_														
70	<u>32</u> 0														
.															
.															
.															
}	-														
				<u> </u>								L_			
ROI	UP (THIS SUMMARY AID OF THIS BORDER AND A SUBSTRACE AND A SUBSTRAC	ND AT THE TIME	OF DRILLING. FFER AT OTHE	ΞR			
1			370) Am	an	۔ داں	Ave. S	∖ı ıit∠	e 212 LOCATIONS AND IN	MAY CHANGE AT		N	1 =	GURI	= ^

	G (ORI	ΕI	ВО	RIN	G	PROJECT NA West Millenr DATE(S) DRI	nium Site	PROJECT LA-1191B				ORING B-7 HEET N	0.
DRIL Hollo	0-175 LING ow Ste	0 N. V MET em Au	/ine S 'HOD iger						2/6/2015 DRILL BIT S 8 in DRILLED BY ABC Drilling	IZE/TYPE	Eguene L	ewis CHECKED I Steve Koltho	off	TC (fe	of 3 OTAL DE et)	EPTH DRILLE 60 AL/BEARING
APP.		unter		NDWA	ΓER	DEP	ТН		ADO DIIIIII			APPROXIMA (feet) BOREHOLE Soil Cuttings	39 BA	91		EVATION
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	<u>3</u> 90									approximately 6 inches t I Fill (Qaf)	hick.					
_5 _ _ _	 385 	1 2		1.0/1.0 1.8/2.5 2.0/2.5	5				Silty SAN	NGA SAND (Qs) ND7.5YR 5/8 (strong broedium SAND; trace coar	own); moist; r	mostly ace fine				
_10 _ _ _ _	<u>38</u> 0	5		2.1/2.5 2.4/2.5						YR 5/6 (yellowish browi um SAND; trace fine GF		e SAND;				
_15 _ _ _ _	<u>3</u> 75	6		2.2/2.5				44.	fine SANI			moist;				
		8		2.5/2.5 2.5/2.5					MUD FLC Clayey S. mostly fin	DW (Qm) AND 10YR 5/6 (yellowis e to medium SAND; trac	 h brown); mo	- — — — - oist; AND;				
GRO			370) Am	ар	ola		Suit	NTS, INC. e 212 0501	THIS SUMMARY APPLII OF THIS BORING AND . SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATION DATA	ER N	FI	GURI	E a

				ORI	E	ВО	RIN	G	PROJECT NA West Millenn	nium Site	LA-1191B				ORING B-7 HEET N	<u> </u>
1720	LOC: 0-175			St					DATE(S) DRI 2/6/2015	ILLED	LOGGED Eguene L				neel No of 3	<i>J</i> .
	LING							-	DRILL BIT S	IZE/TYPE	Lyuene L	CHECKED	BY	TC	TAL DE	PTH DRILLE
	w Ste								8 in			Steve Kolth	off	(fe	et)	60
DRIL	L RIC	TYI	PE						DRILLED BY	Υ		INCLINATIO	ON FI	ROM \	/ERTIC	L/BEARING
CME									ABC Drilling				0			
	AREN enco			NDWA	ΓER	DEP.	TH					APPROXIM (feet)			ACE EL	EVATION
СОМ	MEN	TS										BOREHOLE		91 CKFIL	L	
												Soil Cutting	s			
				ROC	k C	ORE	=									
(#)	EVATION (ft)						=	_ ≥					PACKER TESTS	LABORATORY TESTS	TE,	
DЕРТН (ft)	ATIO	<u>ğ</u>	ġ.	RECOVERY, %	FRAC. FREQ.	% ;	URE NG/	LITHOLOGY		MATERIAL DESC	CRIPTION		ERT)RAT EST	DRILL RATE, FEET/HOUR	FIELD NOTES
DE	ELEV	RUN NO.	BOX NO.	OVE	C. F	R.Q.D., %	FRACTURE DRAWING/ NUMBER	=					ACK	LABC T	DRII	
		~	ш	REC	FR/	~	E.P.S						-			
	<u>3</u> 65		3						:							
		10		2.5/2.5					:							
									Older All	uvium (Qoal)						
		11		2.5/2.5	5				Sandy Cl	LAY10YR 3/3 (dark brooil like polished surface	own); moist; fi	ne				
									@ 27': 5Y	R 4/4 (reddish brown);	trace fine GF	AVEL.				
30	360								@ 28': 7.5	5YR 5/6 (strong brown)						
	300	12		2.1/2.5	•				Silty SAN	ND7.5YR 5/6 (strong bredium SAND; trace coa	own); moist; r	nostly				
	-								GRAVEL	edium SAND, trace coa	ise sand, lie	ice iiie				
	-	40		0.4/0.5												
	-	13		2.1/2.5												
35	-		4						:							
	<u>3</u> 55	14		0.4/2.5					:							
	_															
-	-															
	_	15		2.5/2.5												
40	-								Clayey S	AND5YR 4/3 (reddish	orown); moist	mostly				
-	<u>3</u> 50	16		2.5/2.5	5				fine SANI	D; trace medium and co	arse SAND.	-				
	_															
	L															
	_	17		2.5/2.5												
45	L															
	<u>3</u> 45	18	5	2.5/2.5	1				1							
	L	'		,					1							
	_															
	L	19		2.5/2.5	5											
								Ш	Silty SAN	D7.5YR 5/6 (strong br	own); moist; r	nostly				
;p::		GRO) E	DEI	ΤΛ	, CC	NSIII	TΔI	NTS, INC.	THIS SUMMARY APPL OF THIS BORING AND	IES ONLY AT AT THE TIME	THE LOCATION	N		·	
n	Ţ.,	٠. ‹‹							•	SUBSURFACE CONDI- LOCATIONS AND MAY	TIONS MAY DI CHANGE AT	FFER AT OTHI THIS LOCATIO		 	OL 101	- 1-
							Ave. S			WITH THE PASSAGE OF PRESENTED IS A SIMI	OF TIME. THE PLIFICATION (DATA		[GURI	= D
ÉLI	12		Tc	orrano	ce,	Ca	lifornia	a 90	0501	CONDITIONS ENCOUN						

SITE	LOC	ATIC	N		E	ВО	RIN	G	PROJECT NA West Millenr DATE(S) DRI	nium Site	LA-1191B	ВҮ		s	ORING B-7 HEET N	0.
DRIL Hollo DRIL	0-175 LING ow Ste	ME1	T HO E						2/6/2015 DRILL BIT SI 8 in DRILLED BY	·	Eguene L	CHECKED Steve Kolth	off ON F	TC (fe	et)	60 AL/BEARING
				NDWA	ΓER	DEP ⁻	ТН		ABC Drilling			APPROXIM (feet)		SURF	ACE EL	EVATION
COM	IMEN	TS										BOREHOLE Soil Cutting		CKFIL	L	
H (#)	EVATION (ft)			ROC	Ι.			-0GY					TESTS	TORY TS	RATE, HOUR	FIELD
DЕРТН (ft)	ELEVATI	RUN NO.	BOX NO.	RECOVERY,	FRAC. FREQ	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DES	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	NOTES
-	<u>3</u> 40	20		2.5/2.5	5				GRAVEL. Clayev S	dium SAND; trace co. AND 7.5 YR 4/6 (strong coe fine GRAVEL.						
- - -55	_	21	6	1.6/2.5	5				@ 53.5': 1	IOYR 5/6 (yellowish bi	rown); wet.					
- - -	<u>3</u> 35	22		2.4/2.5 1.5/1.5					@ 58': 10 [']	YR 4/4 (dark yellowisl	n brown)					
_60 _ _ _	 <u>3</u> 30 				_				Groundwa approxima	th = 60 feet below gro ater encountered durin ately 49 feet below gro with soil cuttings and	ng drilling at ound surface.	cold				
- -65 - -	 <u>3</u> 25															
- - -70	_															
- - -	<u>3</u> 20															
GRO		GRO	370) Am	ар	ola	ONSUL Ave. S	Suite		THIS SUMMARY APPLOF THIS BORING ANI SUBSURFACE CONDITIONS AND MA' WITH THE PASSAGE PRESENTED IS A SIM CONDITIONS ENCOU	O AT THE TIME ITIONS MAY DI Y CHANGE AT OF TIME. THE IPLIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER N	FI	GURI	Ξ c

.00	G ()F	C	ORI	ΕI	ВО	RIN	G	PROJECT NAME West Millennium Site	LA-1191				ORING B-8	
	LOC								DATE(S) DRILLED	LOGGE				HEET No of 3	U.
)-175(-	2/6/2015	Eguene I	Lewis CHECKED I	BV			PTH DRILLE
	LING)					DRILL BIT SIZE/TYPE 8 in					et)	60
	w Ste L RIG								DRILLED BY		Steve Kolthe		ROM V	/ERTIC	AL/BEARING
ME		, , , , ,	_						ABC Drilling			0			
APP/	AREN	IT GF	ROUN	NDWA1	ΓER	DEP	ГН				APPROXIMA	ATE	SURF	ACE EL	EVATION
None	enco	unte	red								(feet)	39	91		
COM	MEN	ГS									BOREHOLE	BAG	CKFIL	L	
											Soil Cuttings	S			
				ROC	K C	ORF	•					W			
(#)	N (ft)						-					PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	
DЕРТН (ft)	EVATION	o.	o.	γ,	REQ	%	품성 문	LITHOLOGY	MATERIAL DE	SCRIPTION		ERT	RAT	L R/	FIELD NOTES
DE	EV/	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., ^o	FRACTURE DRAWING/ NUMBER	🛓				CKE	ABO	DRIL FEE	NOTES
	日	R	B	ZEC(FRA	α.	FR N					Д	_		
		\vdash		<u> </u>					Asphalt = approximately 6 inch	nes thick					
	<u>3</u> 90								Artificial Fill (Qaf)						
	<u> </u>														
	_														
_															
5	-	1	1	0.9/1.0					CAHUENGA SAND (Qs)						
	<u>3</u> 85	2		0.3/2.5	5				Silty SAND7.5YR 5/8 (strong	brown); moist;	mostly				
	_								fine to medium SAND; trace of GRAVEL.	oarse SAND ar	nd fine				
	_								OI W TV EE.						
		3		2.5/2.5	5										
10															
-	380								Clayey SAND7.5YR 5/8 (stro	na brown): mo					
		4		2.3/2.5					mostly fine to medium SAND; fine GRAVEL.	trace coarse S	AND and				
	_								Silty SAND7.5YR 5/8 (strong						
	-								fine to medium SAND; trace of GRAVEL.	oarse SAND ar	nd fine				
	_	5		2.5/2.5				Щ	MUD FLOW (Qm)						
15	_									na hrown): mo	iot:				
	<u>3</u> 75			4.0/0 =					Clayey SAND7.5YR 5/8 (stro mostly fine to medium SAND;	trace coarse S	AND and				
		6	2	1.8/2.5					fine GRAVEL. Clayey SAND5YR 4/4 (reddis	sh brown); mois	st; mostly				
									fine to medium SAND; trace of GRAVEL.	arse SAND ar	nd fine				
		7		3.7/2.5											
				5.772.0											
20									Older Alluvium (Qoal)						
	<u>3</u> 70	8		2.5/2.5					Silty SAND 10YR 5/4 (yellowis	sh brown); mois	st; mostly				
	-								fine to medium SAND; trace of GRAVEL.	oarse SAND ar	nd fine				
	_								J. V. V. E.E.						
		9	3	2.3/2.5											
_		<u> </u>		, D	- -		.N.C	.	THIS SUMMARY APP			1			
ROI	UP ()Χد							ITS, INC. OF THIS BORING AN SUBSURFACE CONI	DITIONS MAY D	IFFER AT OTHE	ER.			
			370) Am	ар	ola .	Ave. S	Suite	WITH THE TAOONOL	OF TIME. THE	DATA		FI	GUR	Ξa
	ΓΔ		_				lifornia	~~	PRESENTED IS A SI CONDITIONS ENCO	MPLIFICATION	OF THE ACTUA	L	I		

	G (ORI	E	ВО	RIN		PROJECT NA West Millenr DATE(S) DRI	nium Site	PROJECT LA-1191B				ORING B-8 HEET N	0.
1720	0-175 LING	0 N. \	Vine :						2/6/2015 DRILL BIT S		Eguene L		3Y	2 TC	of 3	PTH DRILLE
DRIL	w Ste								8 in DRILLED BY	· · · · · · · · · · · · · · · · · · ·		Steve Koltho	N FI	١,	et) /ERTIC <i>A</i>	60 AL/BEARING
				NDWA	ΓER	DEP	ТН		ABC Drilling			APPROXIMA (feet)			ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLE Soil Cuttings	BA	91 CKFIL	L	
	(ft)			ROC	KC	ORE		>						λ.	ய் ம	
DЕРТН (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
-	<u>3</u> 65	10		2.5/2.5	5				Clayey S. fine SANI	AND 5YR 5/4 (reddish b D; few medium SAND.	orown); moist	; mostly				
- - -30	360	11		2.5/2.5	5											
- - -		12	4	2.5/2.5					Silty SAN fine SANI and fine 0	ND7.5YR 5/8 (strong bri D; few medium SAND; t GRAVEL	own); moist; r race coarse s	mostly SAND				
- _35 -	 <u>3</u> 55	14		2.1/2.5					@ 35': tra	ace cobbles						
- - -	_	15		2.5/2.5	5				moist; mo SAND; tra Silty SAN	AND 10YR 4/4 (dark ye stly fine SAND; trace mace fine GRAVEL. ND 7.5YR 4/6 (strong bredium SAND.	edium and c	parse				
-40 - -	<u>3</u> 50	16	5	2.5/2.5	5											
- - -45	_	17		1.4/2.5	5											
-	<u>3</u> 45 	18		2.3/2.5	5					rounded granitic cobble						
_		19		2.5/2.5	5				mostly fin fine GRA	eSAND; trace medium VEL.	to coarse SA	ND; trace				
GRO			370	0 Am	ар	ola	NSUL Ave. S lifornia	Suite	ITS, INC. e 212	Wet; groundwater encountries SUMMARY APPLI OF THIS BORING AND SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE C PRESENTED IS A SIMF CONDITIONS ENCOUN	ES ONLY AT AT THE TIME TONS MAY DI CHANGE AT F TIME. THE PLIFICATION (THE LOCATION OF DRILLING. FFER AT OTHE THIS LOCATION DATA	R N	FI	GURI	Ξb

				OR	E	ВО	RIN	G	West Millenr	nium Site	LA-1191B				ORING B-8	•
	LOC								DATE(S) DRI	LLED	LOGGED				HEET Notes	0.
	0-175								2/6/2015		Eguene L		-			PTH DRILLE
	LING)					DRILL BIT S 8 in	IZE/TYPE		CHECKED			et)	60
	w Ste								DRILLED BY	,		Steve Kolth		ROM \	/ERTIC	AL/BEARING
CME			-						ABC Drilling				0			
				NDWA	TER	DEP	TH					APPROXIM	ATE	SURF	ACE EL	EVATION
None	e enco	ounte	red									(feet)	3	91		
СОМ	IMEN	TS										BOREHOLE		CKFIL	L	
	1	1							1			Soil Cutting	S	I		
				ROC	K (CORE	.						S			
Œ	EVATION (ft)							გ					PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	EIEI D
DEРТН (ft)	ATIC	9	ō.	₹,	REC	%	NG/ ER	LITHOLOGY		MATERIAL DE	SCRIPTION		ER 1	PRA1	L R.	FIELD NOTES
	ELEV	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	=					ACK	ABC	DRII FEE	
		œ	ш	REC	FR/	~	KRZ							_		
	<u>3</u> 40			. = /0 -												
		20		2.5/2.5	P			//	Sandy Cl SAND; fe	AY7.5YR 3/4 (dark w pinhole pores.	brown); wet; fin	е				
										·						
-		21		2.1/2.5	1											
		-		2.172.0	1											
55	_															
	335	22		2.0/2.5	5											
-	-															
	_															
-		23		1.5/1.5	5											
-60																
_	330															
									Total dep	th = 60 feet below g ater encountered du	round surface. ring drilling at					
-									approxima	ately 49.5 feet belowith soil cuttings ar	w ground surface					
-									patch.	with 3011 cuttings at	ia paterica with	Joid				
-	_															
65	-															
-	<u>32</u> 5															
	_															
	-															
	_															
70																
	320															
_	L															
_																
-																
-																
SRO SEL		⊷ GR(37	0 Am	ар	ola		Suit	NTS, INC.	THIS SUMMARY AF OF THIS BORING A SUBSURFACE CON LOCATIONS AND M WITH THE PASSAG PRESENTED IS A S	ND AT THE TIME DITIONS MAY DI AY CHANGE AT E OF TIME. THE	OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	≣ c

LO	G ()F	C	ORI	ΕI	BO	RIN	G	PROJECT NA West Millenr		PROJECT LA-1191B	NUMBER			ORING B-9	
	LOC			21					DATE(S) DRI 2/8/2015	LLED	LOGGED Eguene Lo			S	HEET No	0.
DRIL	LING	MET	HOD						DRILL BIT S	IZE/TYPE	Lguerie Li	CHECKED I			TAL DE et)	PTH DRILLE
	L RIC	TYF	PΕ						DRILLED BY	′		INCLINATIO		ROM \	/ERTIC	AL/BEARING
CME APP		IT GF	ROUN	NDWA1	ΓER	DEP ⁻	ТН		ABC Drilling			APPROXIMA	0 ATE	SIIDE	ACE EL	EVATION
None	e enco	unte										(feet)		92.5	AOL LL	LVATION
СОМ	IMEN	TS										Soil Cuttings		CKFIL	L	
·	(ft)			ROC	K C	ORE	.	<u></u>					STS	RY	ய் ⊄	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
- - -	 390									pproximately 6-inches t Fill (Qaf)	hick					
_5 _ _ _ _ _ _10	 <u>38</u> 5 	1 2		1.0/1.0 2.3/2.5 2.5/2.5	5				Clayey S. Medium S GRAVEL Silty SAN Clayey S. to medium Silty SAN Silty SAN	AND 10YR 4/3 (brown); SAND; trace coarse SAND; trace coarse SAND; trace coarse SAND; trace coarse SAND, trace coarse SAND, trace fine SAND; trace fine SAND; trace fine SAND, tr	ND; trace fine pist; mostly fi ND. ; moist; most D. vish brown);	ne to / - / - / - / - / - / - / - / - / - /				
- -	380	4		2.5/2.5	5				mostly fine fine GRA\		ce coarse SA	.ND; few				
- -15 -		5	3	2.5/2.5					Clayey S. SAND; tra	AND7.5YR 4/4 (brown); ace medium and coarse ALLUVIUM (Qoal)	moist mostly SAND.	/ fine				
-	 <u>3</u> 75	6	4	2.5/2.5 2.5/2.5					Clayey S, medium S	AND7.5YR 4/4 (brown); SAND; trace coarse SAN	moist; mostl ND and fine G	y fine to GRAVEL.				
- -20 -	_	7	4	2.5/2.5												
- -	<u>3</u> 70	9	5	2.3/2.5												
GRO		GRO	370) Am	ар	ola	NSUL Ave. S lifornia	Suite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME IONS MAY DII CHANGE AT ⁻ F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ξa

	G (ORI	Ε	ВО	RIN	IG	PROJECT NA West Millenr DATE(S) DR	nium Site	PROJECT LA-1191B			s	ORING B-9 HEET N	0.
DRIL Hollo	0-175 LING ow Ste L RIG	ME1	T HO E						2/8/2015 DRILL BIT S 8 in DRILLED BY ABC Drilling		Eguene L	CHECKED I	off	TC (fe	et)	PTH DRILLE 40 AL/BEARING
APP				NDWA	ΓER	DEP.	ТН		ADC DIMING			APPROXIMA (feet)	ATE	SURF 92.5	ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLE Soil Cuttings		CKFIL	L	
æ	(ft)				K	CORE	.						STS	JRY	TE, UR	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NI IMBED	LITHOLOGY		MATERIAL DES	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
-	 <u>3</u> 65	10		2.3/2.5	5											
- -30 -		11	6	2.1/2.5												
		12	7	2.5/2.5												
- 35 -	_	14		2.3/2.5	5											
-	<u>35</u> 5	15	8	1.5/1.5	5				mostly fin trace fine	ND 10YR 4/4 (dark yello te to medium SAND; tra GRAVEL. AND 7.5YR 4/4 (brown SAND; few coarse SAN	ace coarse SA	AND; 				
40 - -	 <u>35</u> 0								No groun	th = 40 feet below groudwater. I with soil cuttings and o		old patch.				
- -45 -	_															
-																
SRO		↓ GR0	370) Am	ар	ola		Sui	INTS, INC. te 212	THIS SUMMARY APPL OF THIS BORING AND SUBSURFACE CONDI LOCATIONS AND MAY WITH THE PASSAGE (PRESENTED IS A SIMI CONDITIONS ENCOUN	AT THE TIME FIONS MAY DI CHANGE AT OF TIME. THE PLIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ξb

.00	G ()F	C	ORI	ΞE	BO	RIN	G	PROJECT NA West Millenr		PROJEC LA-1191E	T NUMBER			ORING B-10				
SITE	LOC	ATIO	N					\top	DATE(S) DRI	LLED	LOGGE	BY		S	SHEET NO.				
1720)-175() N. \	√ine §	St.					2/8/2015		Eguene L				of 2				
	LING)					DRILL BIT SIZE/TYPE CHE						(feet)				
	w Ste								INCL IN					Steve Kolthoff 40 INCLINATION FROM VERTICAL/BEARI					
CME		, , , , ,	' E						DRILLED BY ABC Drilling					0					
APP	AREN	T GF	ROUN	NDWA1	ΓER	DEP	TH		9			APPROXIM	ATE	SURF	ACE EL	EVATION			
None	enco	unte	red									(feet)		94					
COM	MEN	rs										BOREHOLE		CKFIL	L				
	l							1	I			Soil Cutting	s I						
	t)			ROC	K C	ORE	.						ည	>					
(#)	ON (ft)			%	انی		1115	LITHOLOGY					PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD			
DЕРТН (ft)	EVATION	Š.	Ŏ.	ERY,	FRE(% '.0	TURE ING/	무		MATERIAL DE	SCRIPTION		(ER	ORA	ILL R ET/H	NOTES			
ä	ELE	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ	R.Q.D.,	FRACTURE DRAWING/ NUMBER	=					AC	ΡΨ.	DRI				
				RE(FR	ш	FF D												
										pproximately 6 incl	es thick.								
									7.1.1.110101	<u> (– w.</u> /									
								//]										
	390								() ()										
	390																		
5	_	1	1	1.0/1.0															
	_	2		2.2/2.5					CAHUEN	IGA SAND (Qs)									
	_									ID 10YR 4/4 (dark y	ellowish brown).	mostlv							
	_							Ш	_ fine to me	dium SAND.									
	<u>3</u> 85	3	2	2.5/2.5					MUD FLC		ala laura - North Colonia								
10	_								fine SAND	AND5YR 4/4 (reddi D; trace medium SA	sh brown); mois ND; few coarse	; mostly SAND,							
	_							//	trace fine										
		4		2.5/2.5						ALLUVIUM (Qoal)									
									Clayey Sa	AND5YR 4/4 (reddi	sh brown); moist parse SAND: trad	; mostly ce fine							
	380	5	3	2.5/2.5					GRAVEL.		,								
	<u>-</u>								Clavov S	AND5YR 4/5 (yello	wich rad): moetly	fine							
15	_								sand.	ANDOTTE 4/3 (yello	visit rea), mostly	IIIIC							
	_	6		2.5/2.5															
	_																		
	_																		
	375	7	4	2.5/2.5															
20	<u> </u>																		
	_	8		2.5/2.5					Sandy SI	LT5YR 4/4 (reddish	hrown), moist.								
	<u> </u>							Щ	fine to me	dium SAND; trace	ine GRAVEL.								
									Sandy Cl SAND; tra	AY5YR 4/4 (reddis	n prown); moist;	Tine							
	<u>3</u> 70	9	5	2.5/2.5				-		ID 5YR 4/6 (yellowis	sh red); moist; m	ostly fine							
									SAND.										
ROI	UP (GRO					NSUL Ave. S		NTS, INC. e 212	THIS SUMMARY AI OF THIS BORING A SUBSURFACE COI LOCATIONS AND I WITH THE PASSAC	ND AT THE TIME IDITIONS MAY D IAY CHANGE AT	OF DRILLING. FFER AT OTHE THIS LOCATIO	ΞR	FI	GURI	E a			
-	ΓΔ						lifornia			PRESENTED IS A			d	1					

_O(ORI	E	ВО	RIN	G	PROJECT NA West Millenr DATE(S) DRI	nium Site	PROJECT LA-1191B				ORING B-10 HEET N	0.
311E 1720				St.					2/8/2015	ILLED	Eguene L				of 2	
DRIL	LING	MET	ГНОГ)					DRILL BIT S	IZE/TYPE		CHECKED	BY			PTH DRILLE
Hollo	w Ste	m Au	uger						8 in			Steve Kolth		`	et)	40
DRIL		TYI	PE						DRILLED BY	1		INCLINATIO		ROM \	/ERTIC	AL/BEARING
CME		IT GI	ROIII	NDWA	ΓFR	DED.	ТН		ABC Drilling			ADDDOVIM	0	CURE	A OF FL	EV/ATION
None				ILLIIA		, DLI	•••					APPROXIM (feet)		SURF 94	ACE EL	EVATION
COM	MEN	TS										BOREHOLE			L	
	I	ı							1			Soil Cutting	s	ı	I	
	<u></u>			ROC	K	CORE	.						မွ			
(ft)	ON (ft)			%	ď			LITHOLOGY					PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DЕРТН (ft)	EVATION	o S	Ŏ.	ERY,	FREC	% :.	JURE ING/	HOL		MATERIAL DES	CRIPTION		ER.	ORA	ILL R ET/H	NOTES
D	ELE	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	=					PAC	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	DRI	
				R.	Æ		E02									
									mostly fin	AND7.5YR 4/6 (strong e SAND; trace medium	SAND.					
		10		2.5/2.5					@ 26': tra staining.	ice fine to medium SAN	ID; trace oxid	ation				
	_ 365	11	6	2.5/2.5												
	303	'	U	2.3/2.0						5 ODAV(5)						
30	_								@ 29.5" t	trace fine GRAVEL.						
	_	12		2.5/2.5	5				@ 31': tra	ice COBBLES.						
	_															
	_															
	360	13	7	2.0/2.5												
35	_								SAND 10'	YR 5/4 (yellowish brow	n); moist; mo	stly fine				
_	_	44		0.5/0.5				7	Clayey S	AND7.5YR 4/6 (strong	brown); mois	 t;				
_		14		2.5/2.5					mostly fin SAND.	e SAND; few medium	SAND; trace of	coarse				
	355	15	8	1.5/1.5	5											
40																
-										th = 40 feet below grou	ind surface.					
-	_									water. I with soil cuttings and I	oatched with o	cold				
-	_								patch.							
.	350															
45	_															
	_															
-	_															
-	_															
	<u>3</u> 45															
										1				<u> </u>		
ROI	UP (GRO	OUF	DEL	.T/	A CC	NSUL	.TAI	NTS, INC.	THIS SUMMARY APPL OF THIS BORING AND	AT THE TIME	OF DRILLING.				
1							Ave. S		•	SUBSURFACE CONDI- LOCATIONS AND MAY	CHANGE AT	THIS LOCATIO	ER N		CHD	= h
ELT					-					WITH THE PASSAGE (PRESENTED IS A SIM	PLIFICATION (۸L	"	GURI	Ξb
/ELI	21		10	orran	ce,	Ca	lifornia	a 90	1501	CONDITIONS ENCOUR	ITERED.					

0	OG OF CORE BORING								PROJECT NAME West Millennium Site PROJEC LA-1191E			CT NUMBER B			BORING B-11			
	LOC								DATE(S) DRI	LLED	LOGGED		ВҮ			SHEET NO. 1 of 2		
	0-175 LING							\perp	2/9/2015 DRILL BIT S	IZE/TYPE	Terry Otis	CHECKED BY				PTH DRILLE		
	w Ste								8 in			Steve Kolthoff (feet) 40						
DRIL CME	L RIC	TYI	PE						DRILLED BY	•		INCLINATIO	N FI 0	ROM \	/ERTIC	AL/BEARING		
		IT GI	ROUN	NDWA ⁻	ΓER	DEP	ТН		ABC Drilling			APPROXIM		SURF	ACE EL	EVATION		
	enco		red									(feet)	3	95				
COM	IMEN	TS										Soil Cutting		CKFIL	L			
				DOG														
(ft)	(£)			ROC	Ι	ORE		}					ESTS	ORY S	ATE, OUR			
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TEST	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES		
								/		pproximately 6-inches the Fill (Qaf)	hick							
									Artmoral	<u> </u>								
	_																	
	_																	
5	<u>3</u> 90	1	1	30/30	-													
	_								OLDER A	ALLUVIUM (Qoal)								
	_	2		30/30					Clayey S	AND5YR 3/2 (dark redd e SAND; trace medium	ish brown); r	noist;						
				30/30						GRAVEL; trace red wea								
10	385								Clayey S	AND to sandy CLAY5YI								
		3	2	28/30					basalt frag									
	_								mostly fin	AND7.5YR 3/4 (dark red e SAND; trace medium f	to coarse SA	ND;						
	-	4		23/30					_ basalt frag									
	_									ID 7.5YR 4/6 (strong bro); trace medium and coa								
15	380	5	3	26/30														
									@ 16': tra	ce red weathered basalt	fragments.							
		6		28/30	-				Clayey Sa mostly fin	AND7.5YR 4/6 (strong be to medium SAND; trace	orown); mois ce coarse SA	 t; ND;						
									trace fine fragments	GRAVEL; trace red wea	thered basa	lt						
20	<u>3</u> 75			22/20						crease in clay content; m lium to coarse SAND; tra								
	_	7	4	33/30					@ 21'· tra	ce red weathered basalt	fragmente:	trace						
	-	8		20/30	1					oon fragments.	. nagmento,							
										ncrease in sand content medium to coarse SAN								
SRO DEL		GRO	370) Am	ap	ola	NSUL Ave. S lifornia	uite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY O WITH THE PASSAGE OF PRESENTED IS A SIMPLE CONDITIONS ENCOUNT	AT THE TIME ONS MAY DI CHANGE AT TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	 ∃ a		

_0	G (OF	C	ORI	Ε	ВО	RIN	G	PROJECT NAME West Millennium Site PROJECT LA-11910			NUMBER		BORING B-11				
	LOC								DATE(S) DRII	LLED	LOGGED	ВҮ		S	HEET N	О.		
)-1750 LING								2/9/2015 DRILL BIT SI	7E/TVDE	Terry Otis	CHECKED	ov.		of 2	PTH DRILLE		
	w Ste			,					8 in	ZE/11PE		Steve Kolth		1 -	et)	40		
	L RIC								DRILLED BY			INCLINATION FROM VERTICAL/BEARING						
CME									ABC Drilling				0					
	AREN e enco			IDWA1	ΓER	DEP	ТН					APPROXIMATE SURFACE ELEVATION (feet)						
СОМ	MEN	TS										BOREHOLE BACKFILL						
	1	ı							1			Soil Cuttings	8	ı				
				ROC	K	CORE	<u> </u>						လှ	_				
Œ.	ON (ft)			%	ď		111.	LITHOLOGY					PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD		
DEРТН (ft)	EVATION	RUN NO.	BOX NO.	ERY	FRE	R.Q.D., %	TUR	된		MATERIAL DESC	RIPTION		KER	30RA TES	SILL F EET/F	NOTES		
	H	₽	80	RECOVERY, %	FRAC. FREQ.	R.O.	FRACTURE DRAWING/ NUMBER	=					PAC	3	DF.			
		9	5	27/30			_ -		Silty Clav	ey SAND 7.5YR 4/6 (str	ong brown):	moist;						
•	_								mostly fine SAND; tra	e SAND; little medium S ce fine GRAVEL.	AND; trace	coarse						
•	_								@ 26': trad	ce medium to coarse SA ce carbon fragments.	AND; trace fi	ne						
-	_	10		21/30					@ 27': trad	ce red weathered basal	fragments.							
-	-																	
30	<u>3</u> 65	11	6	31/30					@ 29.5': n SAND; tra	@ 29.5': mostly fine to medium SAND; trace coarse SAND; trace fine GRAVEL.								
-	_									AND 7.5YR 4/4 (strong b	orown); mois							
-	-								mostly fine	e SAND; few medium S. ce fine GRAVEL.	AND; trace o	oarse						
-	-	12		36/30														
-	-																	
35	360	13	7	36/30														
-	-																	
-	_																	
-	_	14		21/30														
_	_								@ 39': We	et; groundwater encount	ered during	drilling.						
40	<u>3</u> 55							/ /										
_	-									h = 40 feet below groun								
-	-								approxima	ter encountered during ately 39 feet below ground	nd surface.							
-	-								Backfilled patch.	with soil cuttings and pa	atched with o	old						
-																		
45	<u>3</u> 50																	
-	-																	
_	_																	
_	-																	
_	345																	
SRO		GRO					NSUL Ave. S	Suit		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY (WITH THE PASSAGE OF PRESENTED IS A SIMPLE	AT THE TIME ONS MAY DII CHANGE AT T TIME. THE	OF DRILLING. FFER AT OTHE ITHIS LOCATIO DATA	ER N	FI	GURI	E b		

-00	G ()F	C	ORI	Ε	ВО	RIN	G	PROJECT NAME West Millennium Site	PROJEC LA-1191	T NUMBER			ORING B-12			
SITE	LOC	ATIC	N						DATE(S) DRILLED	LOGGEI) BY			HEET N	0.		
1720)-1750) N. \	Vine S	St.					2/5/2015	Eguene I				of 3			
	LING)					DRILL BIT SIZE/TYPE		CHECKED	BY	1 -)TAL DE et)	PTH DRILLE		
	w Ste								8 in			Steve Kolthoff G					
DRIL CME	L RIG	TYI	PΕ						DRILLED BY		INCLINATIO	0					
		IT GI	SULIN	NDWAT	TFR.	DED.	ТН		ABC Drilling		APPROXIM		CURE	A O E E I	EVATION.		
None				IDIIA	- IX	DL.	•••				(feet)		30KF 96	ACE EL	EVAIION		
COM	MEN	ΓS									BOREHOLE			L			
											Soil Cutting	s					
				DO		_D_	_										
f)	(ft)			ROC	K C	ORE	:	_ გ				PACKER TESTS	LABORATORY TESTS	듀氏			
DЕРТН (ft)	EVATION		Ċ.	RECOVERY, %	Ë.	%		LITHOLOGY	MATERIAL DE	SCRIPTION		R H	STS	DRILL RATE, FEET/HOUR	FIELD		
DEP	EVA	RUN NO.	BOX NO.	VER	FRAC. FREQ.	R.Q.D.,	FRACTURE DRAWING/ NUMBER	ΙĔ				CKE	BOF TE	RILL	NOTES		
	E	RU	BO	ECO	RAC	R. O.	PRA DRA	-				A	2				
				<u> </u>	_				Asphalt approximately 3 inches	es thick							
	<u>3</u> 95								Artificial Fill (Qaf)								
	L																
		1	1	1.4/2.5													
	_	•	ļ	1.4/2.0				1									
5	_							<i>[.]</i>									
	<u>3</u> 90	2		1.7/2.5					OLDER ALLUVIUM (Qoal)								
	_							//	Clayey SAND7.5YR 5/6 (stro	na hrown): moi	/ -						
	_								\mostly fine to medium SAND;	trace coarse S	AND. $'$						
		3		1.9/2.5					Sandy CLAY7.5YR 5/6 (stror fine SAND.	ng brown); mois	t; mostly _						
10									Clayey SAND, 7.5YR 4/4 (bro to medium SAND; trace coars	own); moist; mo	stly fine						
-	385								GRAVEL.	e SAND, liace	ille						
	000	4		2.1/2.5													
	_																
	-																
	_	5		3.0/2.5					Silty SAND7.5YR 4/4 (brown): moist: mostly	fine to						
15	_		2						medium SAND; trace coarse	SAND.	11110 10						
	<u>3</u> 80																
		6		2.5/2.5					Clayey SAND7.5YR 4/4 (brownedium SAND; trace coarse	vn); moist; mos SAND.	tly fine to						
	_	7		2.1/2.5													
	_	'		2.1/2.5					Silty SAND7.5YR 4/4 (brown); moist; mostly	fine						
20	-		3	1					SAŇD; trace medium SAND a	ind fine GRAVE	:L.						
	<u>3</u> 75	8		2.3/2.5													
	_								@ 22's mostly fine to madicine	SAND							
	_								@ 22': mostly fine to medium	OMNU.							
		9		2.4/2.5					@ 23.5': mostly fine SAND								
ROI		GRO	370) Am	ар	ola	NSUL Ave. S	Suit	PRESENTED IS A S	ND AT THE TIME DITIONS MAY D AY CHANGE AT E OF TIME. THE IMPLIFICATION	E OF DRILLING. IFFER AT OTHE THIS LOCATIO E DATA	ER N	FI	GURI	Ξ а		

_0	G ()F	С	ORI	Ε	ВО	RIN	G	PROJECT NA West Millenr		PROJECT LA-1191B	NUMBER			ORING B-12				
	LOC 0-175			St.					DATE(S) DRI 2/5/2015	LLED	LOGGED Eguene L			S	HEET N	0.			
	LING)					DRILL BIT S	IZE/TYPE	, ,	CHECKED Steve Kolth		off (feet) 60					
DRIL CME	L RIC	3 TYI	PE						DRILLED BY ABC Drilling	1		INCLINATIO	ON F I	N FROM VERTICAL/BEARING					
APP				NDWA	ΓER	DEP	ТН		APPROXIMA					E SURFACE ELEVATION					
	IMEN											(feet)		396 ACKFILL					
												Soil Cutting	S		ı				
æ	(ft)			ROC	K	CORE	<u> </u>	_ ≿					STS)RY	<u> </u>				
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES			
-	<u>3</u> 70	10		2.5/2.5	5														
30	_	11	4	3.0/2.5	5				Mud Flov Clayey S SAND; tra	v (Qm) AND7.5YR 4/4 (brown) ace fine GRAVEL.	; moist; mostl	y fine							
	<u>3</u> 65	12	7	2.3/2.5	5			6	Silty SAN	rium (Qoal) ID7.5 YR 4/6 (strong br	own); moist;	mostly							
35		13		2.3/2.5	5				GRAVEL		,								
-	<u>3</u> 60	14		2.4/2.5	5				Sandy Cl	AY7.5YR 4/6 (strong b	prown); moist	mostly							
- - 40 -	 <u>35</u> 5	15	5	4.5/5.0	5				GRAVEL.	dium SAND; tràce coar	se SAND; tra	ice tine							
	_	16		2.3/2.5	5														
45	 <u>3</u> 50 	17		2.5/2.5	5														
-		18	6	2.5/2.5	5														
SRO DEL		GRO	370	0 Am	ар	ola		Suit	NTS, INC. e 212 0501	THIS SUMMARY APPLII OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME TONS MAY DI CHANGE AT F TIME. THE PLIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	Ξb			

				ORI	Ε	ВО	RIN	G	PROJECT NA West Millenr	nium Site	LA-1191B				ORING B-12	2
	LOC			C4					DATE(S) DRI 2/5/2015	LLED	LOGGED				HEET N of 3	U.
)-175(LING								DRILL BIT S	IZE/TVDE	Eguene L	CHECKED	DV.			PTH DRILLE
	w Ste			,					8 in	IZE/ I TPE		Steve Kolth			et)	60
	L RIG								DRILLED BY	<u>, </u>				ROM V	/ERTIC	L/BEARING
CME			_						ABC Drilling				0			
				NDWA	ΓER	DEP	TH					APPROXIMA	ATE	SURF	ACE EL	EVATION
	enco		red									(feet)		96		
СОМ	MEN	TS										BOREHOLE		CKFIL	L	
								<u> </u>				Soil Cuttings	S			
	(ft)			ROC	K	CORE	E						S	>	*	
H (#	J) NC			%	ď			LITHOLOGY					PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEРТН (ft)	EVATION	ŏ.	Ŏ.	K	FRE	% ::	J. J. J. J. J. J. J. J. J. J. J. J. J. J	[로		MATERIAL DESC	CRIPTION		ŒR	ORA TES	ILL R ET/H	NOTES
Ö	ELE	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NI IMBER	5					PAC	LAB	DR	
		"		REC	Æ	"							_			
	<u>3</u> 45	19		2.3/2.5						Formation (Tt)						
	_			2.0/2.0						 -						
	_								fine to me	ID 7.5YR 4/4 (brown); redium SAND; few fine to	coarse GRA	NOSTIY NEL,				
		20		2.3/2.5				F	interbedd	ed conglomerate and s	ilt stone.					
55																
55	340															
	540	21	7	2.5/2.5				F								
	_															
	_															
	_	22		1.5/1.5												
60	_								=							
	<u>3</u> 35								Total don	th = 60 feet below grou	nd curface					
	_								Ground w	ater encountered at ap		0 ft				
									during dri Backfilled	ուրց with soil cuttings and բ	atched with o	old				
									patch.							
65																
00	330															
-	<u>5</u> 50															
	_															
	-															
	-															
70	-															
	<u>3</u> 25															
	_															
_			_	L		L										
	·	~ · · ·	\!!"	, רבי	T -		NOU		NTO INO	THIS SUMMARY APPLI	ES ONLY AT	THE LOCATION	1			
RO	UP (K(NTS, INC.	OF THIS BORING AND SUBSURFACE CONDIT	TONS MAY DI	FFER AT OTHE	ER N			
			370) Am	ар	ola	Ave.	Suit	te 212	LOCATIONS AND MAY WITH THE PASSAGE C	F TIME. THE	DATA		FI	GURI	Ξс
ELT	ΓΔ		To	rran	ce,	Ca	liforni	a 90	0501	PRESENTED IS A SIMP CONDITIONS ENCOUN		OF THE ACTUA	L			

YUCCA SITE, FAULT ACTIVITY INVESTIGATION 6230 YUCCA STREET, SW CORNER OF YUCCA STREET AND ARGYLE AVENUE HOLLYWOOD AREA, CITY OF LOS ANGELES, CALIFORNIA, CPT and BORING LOGS.

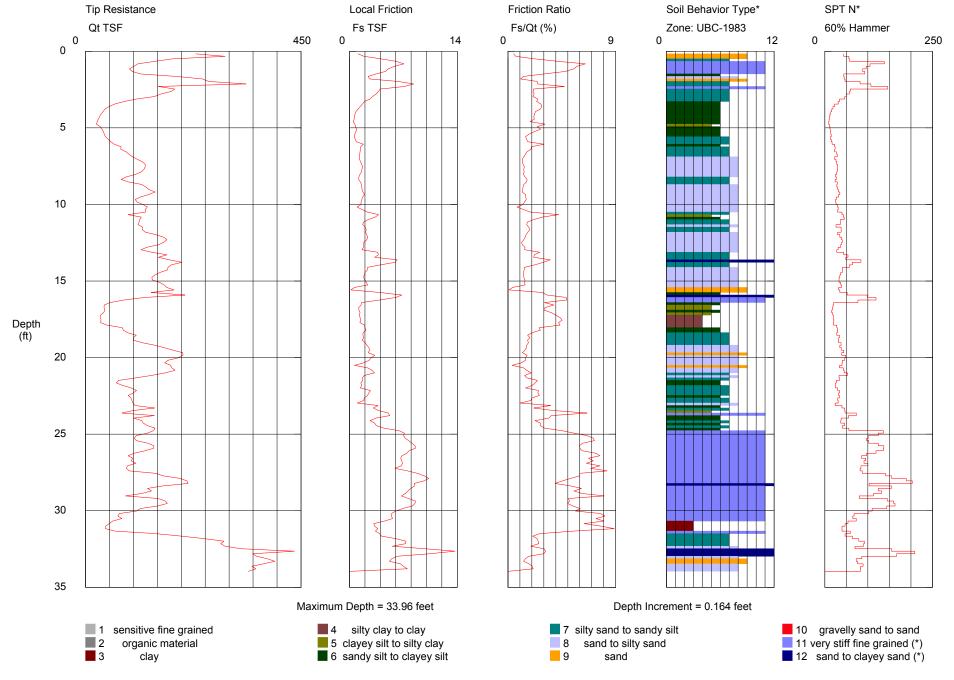
Operator: SA-RA CPT Date/Time: 10/22/2013 3:53:44 PM

Sounding: CPT-01b*

Cone Used: DSG1104

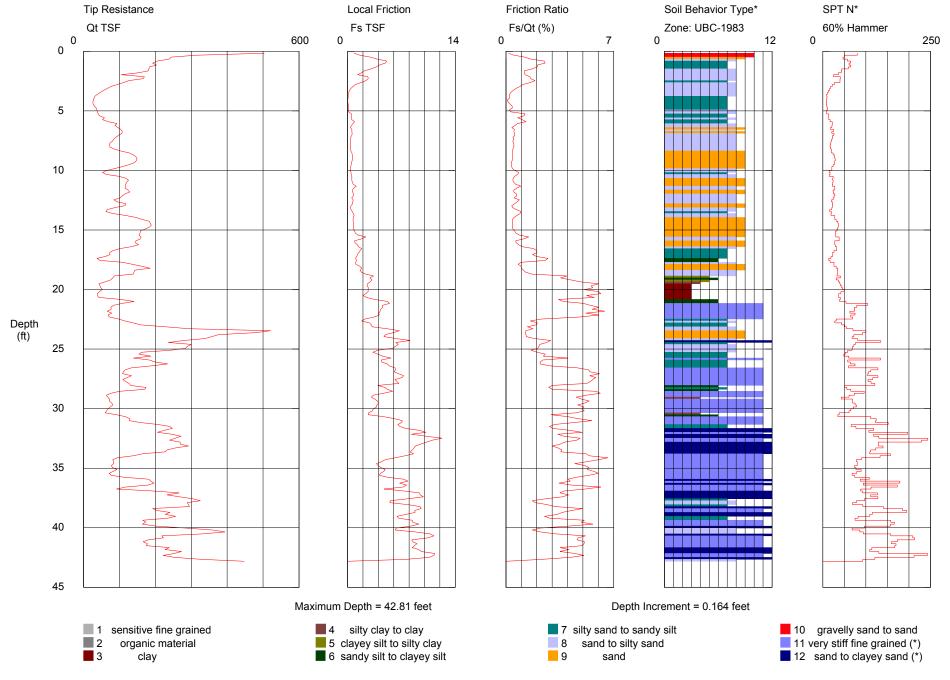
Location: Yucca

Job Number: LA-1161



Operator: SA-RA CPT Date/Time: 10/21/2013 8:34:23 AM

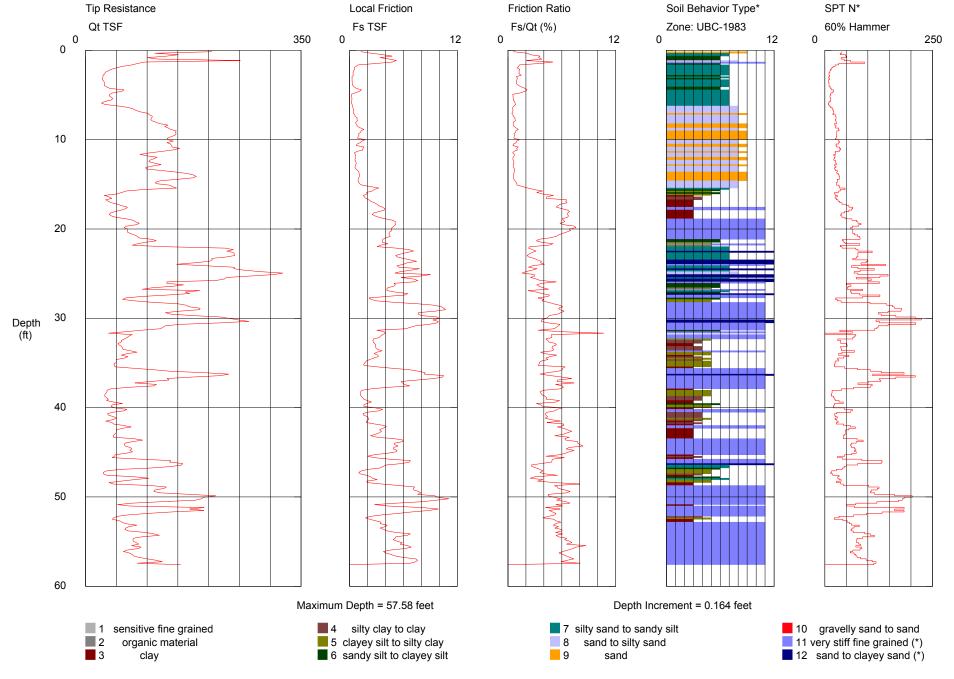
Sounding: CPT-02* Location: Yucca
Cone Used: DSG1104 Job Number: LA-1161



Operator: SA-RA CPT Date/Time: 10/21/2013 10:23:37 AM

Sounding: CPT-03a* Location: Yucca
Cone Used: DSG1104

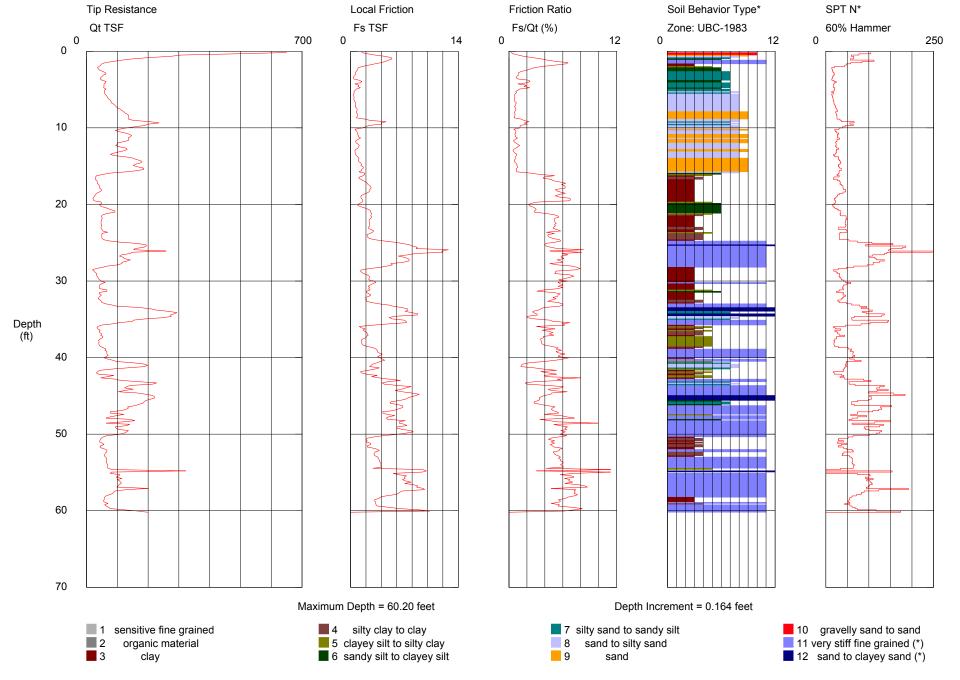
Location: Yucca
Job Number: LA-1161



Operator: SA-RA CPT Date/Time: 10/21/2013 11:12:33 AM

Sounding: CPT-04* Location: Yucca
Cone Used: DSG1104

Location: Yucca
Job Number: LA-1161



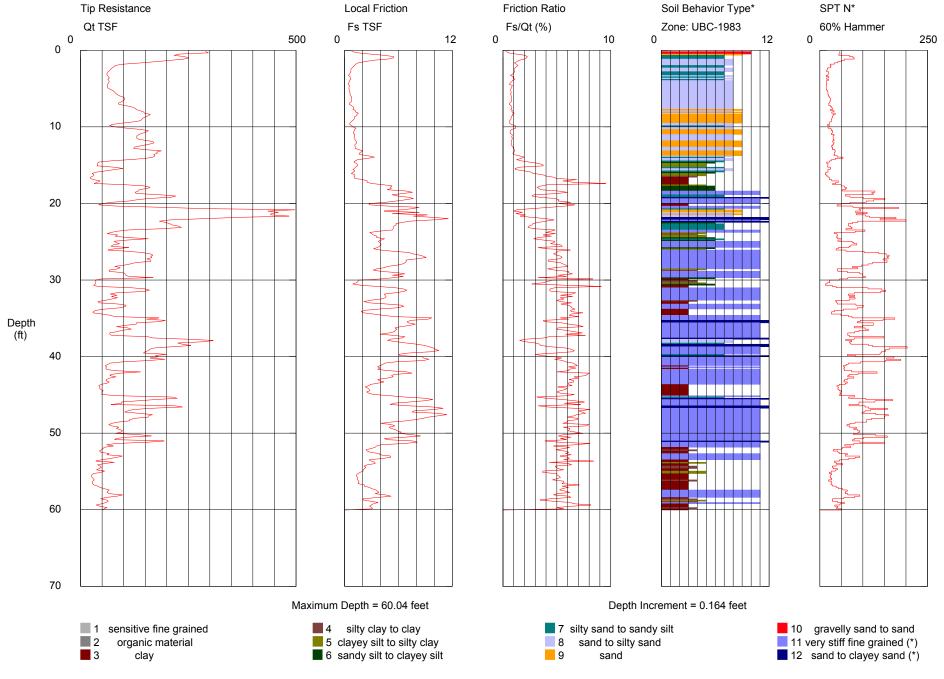
Operator: SA-RA CPT Date/Time: 10/21/2013 12:11:51 PM

Sounding: CPT-05*

Cone Used: DSG1104

Location: Yucca

Job Number: LA-1161



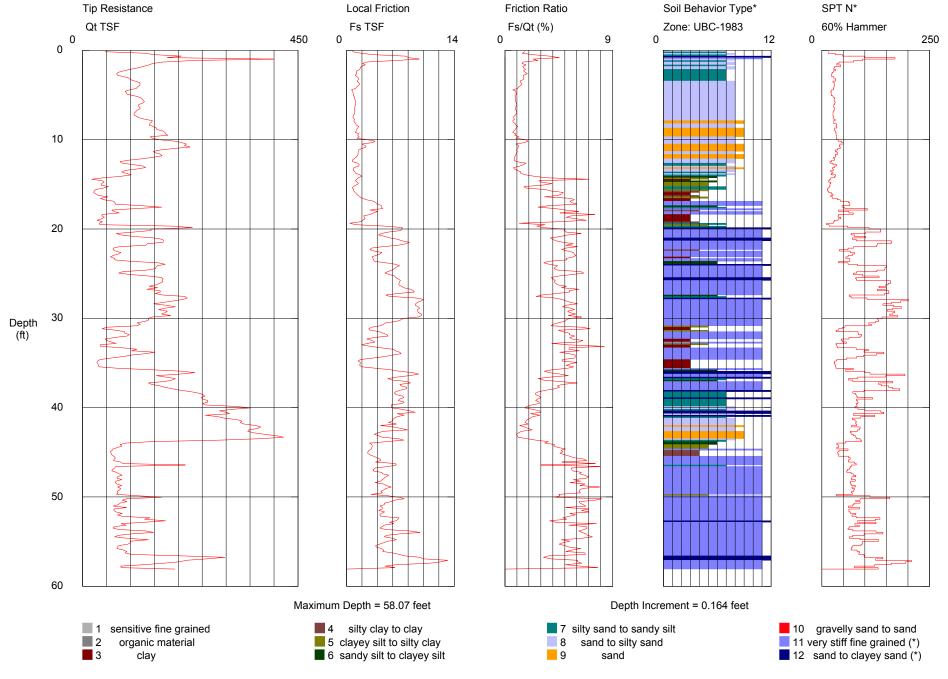
Operator: SA-RA CPT Date/Time: 10/21/2013 1:31:39 PM

Sounding: CPT-06*

Cone Used: DSG1104

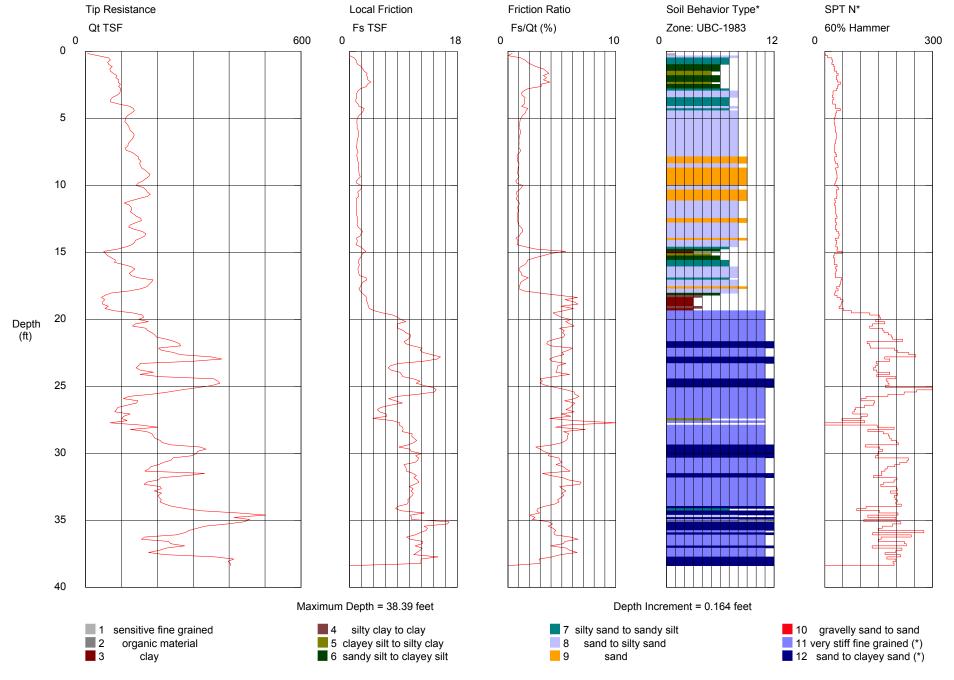
Location: Yucca

Job Number: LA-1161



Operator: SA-RA CPT Date/Time: 10/21/2013 2:32:23 PM

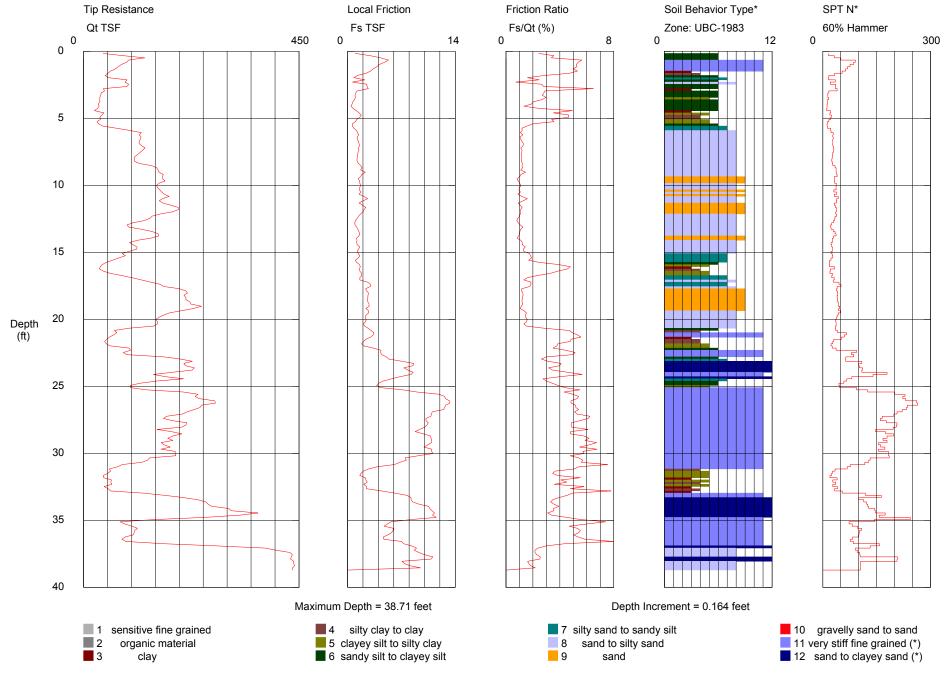
Sounding: CPT-07* Location: Yucca
Cone Used: DSG1104 Job Number: LA-1161



Operator: SA-RA CPT Date/Time: 10/22/2013 7:23:38 AM

Sounding: CPT-08* Location: Yucca
Cone Used: DSG1104

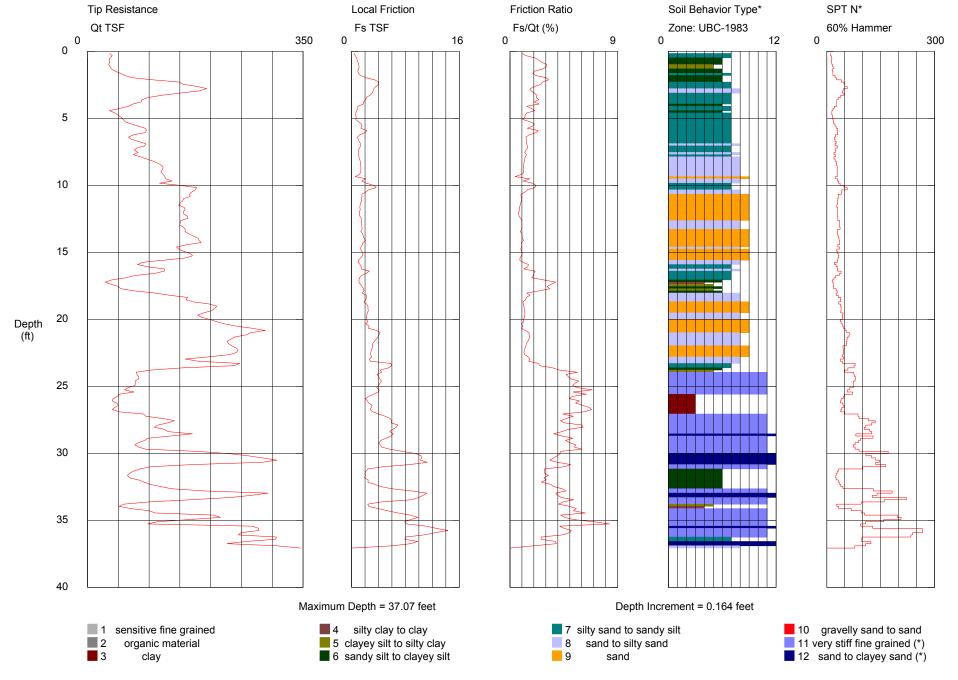
Location: Yucca
Job Number: LA-1161



Operator: SA-RA CPT Date/Time: 10/22/2013 8:25:25 AM

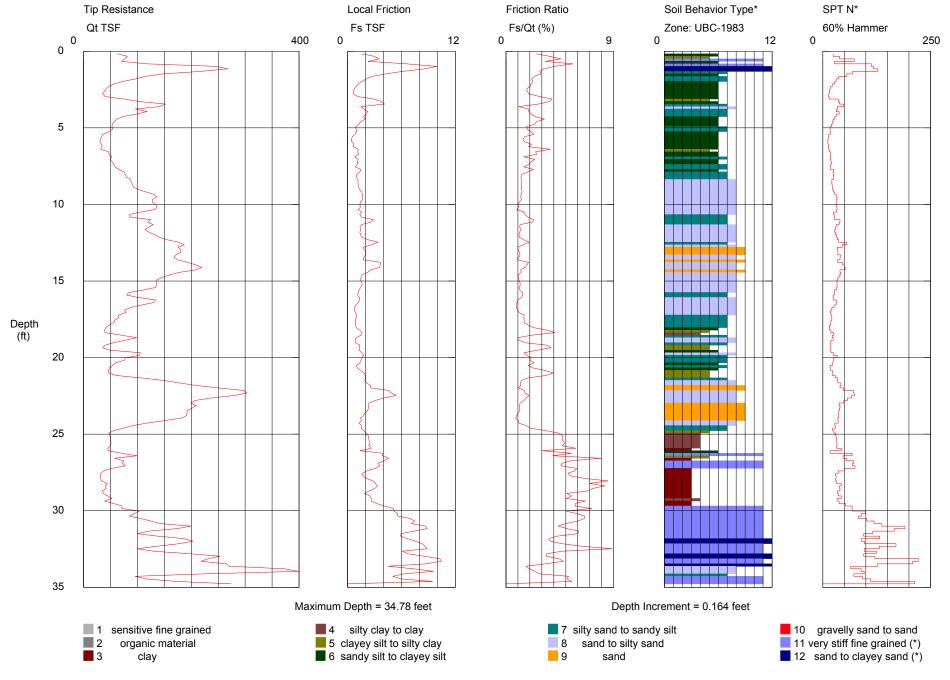
Sounding: CPT-09* Location: Yucca
Cone Used: DSG1104

Location: Yucca
Job Number: LA-1161



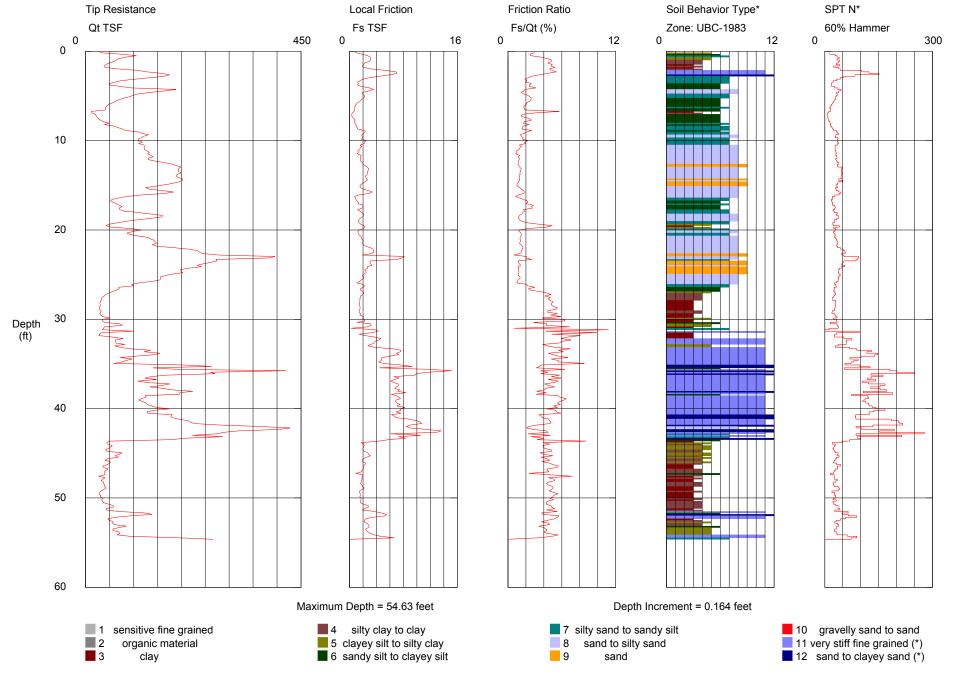
Operator: SA-RA CPT Date/Time: 10/22/2013 9:00:01 AM

Sounding: CPT-10* Location: Yucca
Cone Used: DSG1104 Job Number: LA-1161



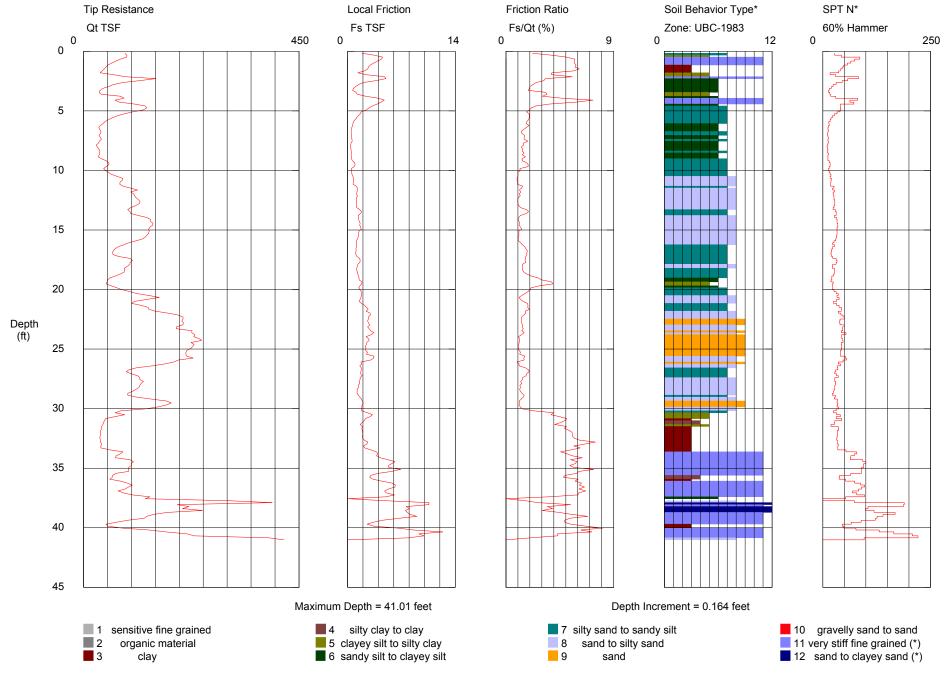
Operator: SA-RA CPT Date/Time: 10/22/2013 9:34:03 AM

Sounding: CPT-11* Location: Yucca
Cone Used: DSG1104 Job Number: LA-1161



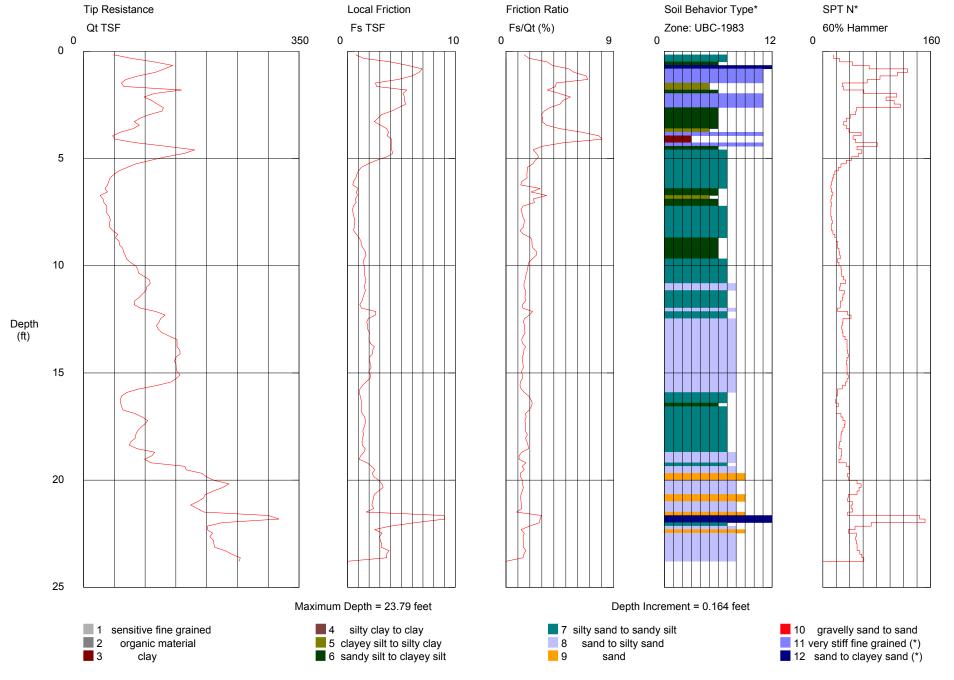
Operator: SA-RA CPT Date/Time: 10/22/2013 10:16:04 AM

Sounding: CPT-12* Location: Yucca
Cone Used: DSG1104 Job Number: LA-1161



Operator: SA-RA CPT Date/Time: 10/22/2013 10:50:40 AM

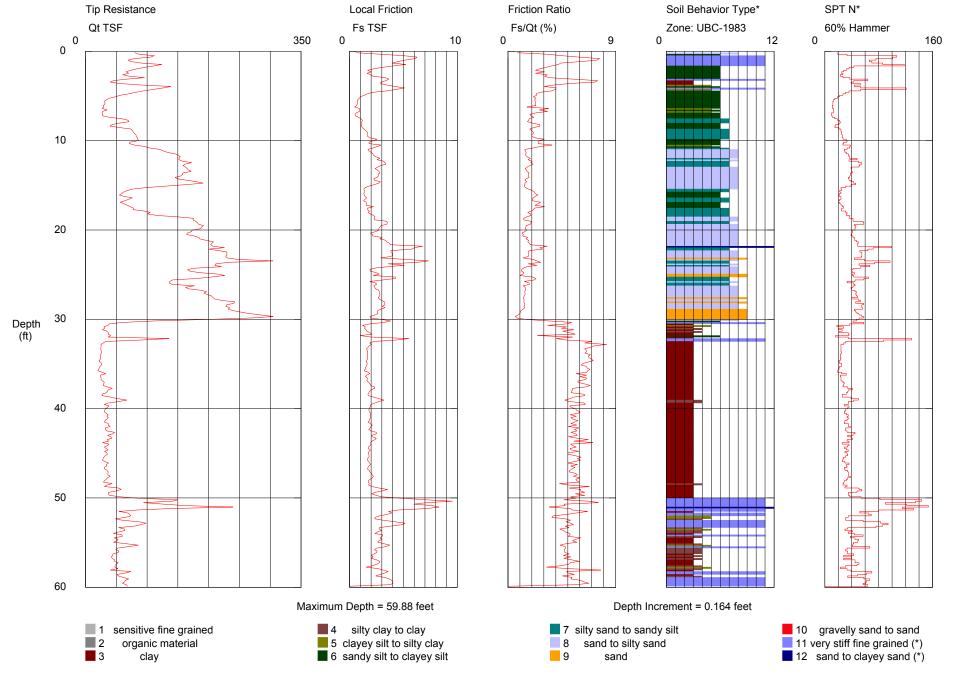
Sounding: CPT-13* Location: Yucca
Cone Used: DSG1104 Location: Yucca
Job Number: LA-1161



Operator: SA-RA CPT Date/Time: 10/22/2013 3:00:14 PM

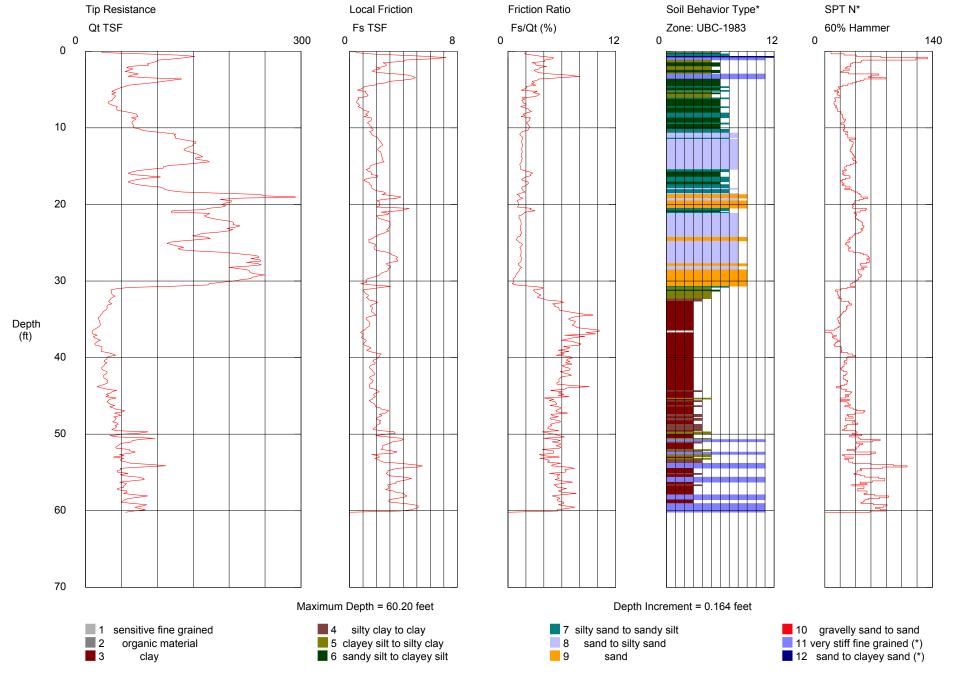
Sounding: CPT-13a* Location: Yucca
Cone Used: DSG1104

Location: Yucca
Job Number: LA-1161



Operator: SA-RA CPT Date/Time: 10/22/2013 11:18:28 AM

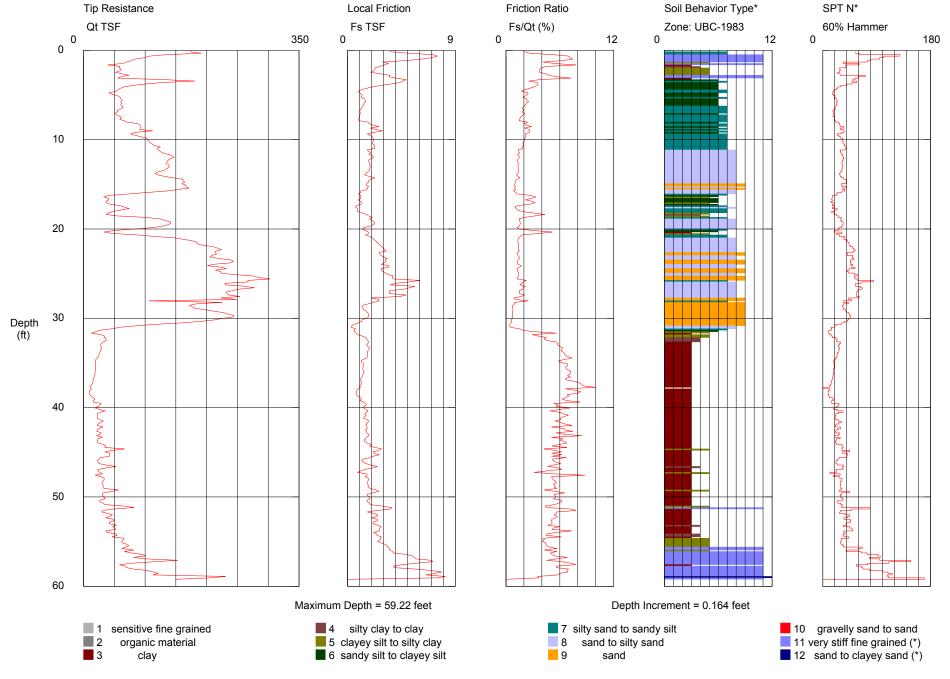
Sounding: CPT-14* Location: Yucca
Cone Used: DSG1104 Location: Yucca
Job Number: LA-1161



Operator: SA-RA CPT Date/Time: 10/22/2013 12:36:31 PM

Sounding: CPT-15* Location: Yucca
Cone Used: DSG1104

Location: Yucca
Job Number: LA-1161



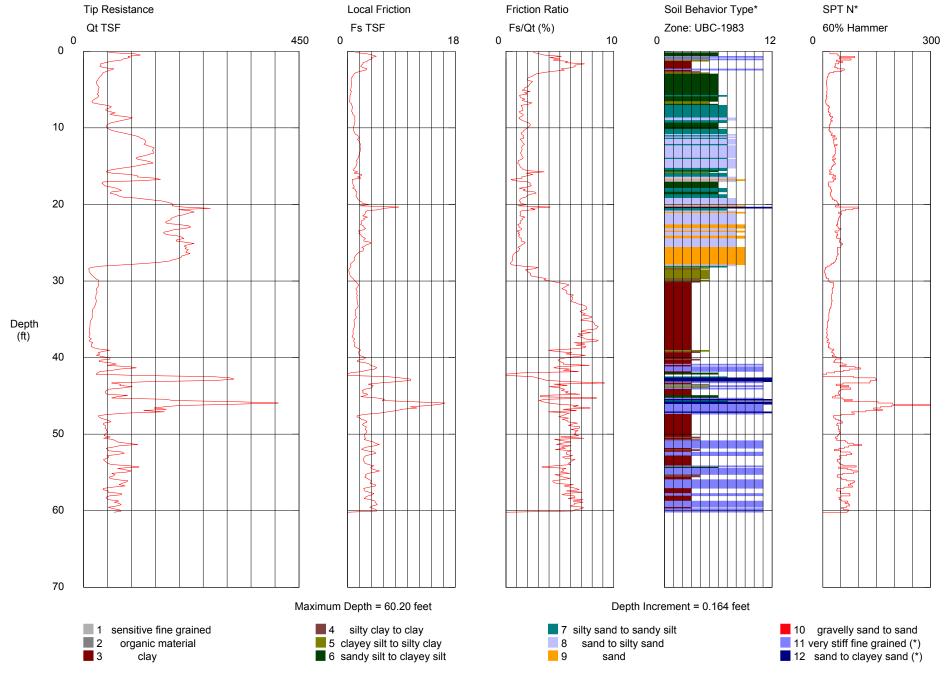
Operator: SA-RA CPT Date/Time: 10/22/2013 1:23:21 PM

Sounding: CPT-16*

Cone Used: DSG1104

Location: Yucca

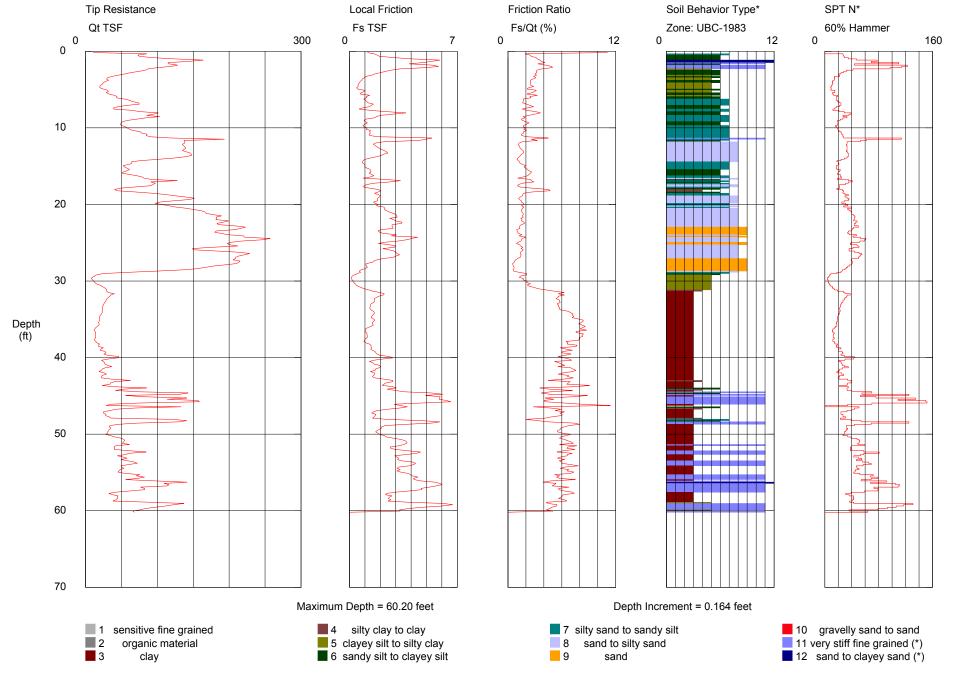
Job Number: LA-1161



Operator: SA-RA CPT Date/Time: 10/22/2013 2:11:19 PM

Sounding: CPT-17* Location: Yucca
Cone Used: DSG1104

Location: Yucca
Job Number: LA-1161





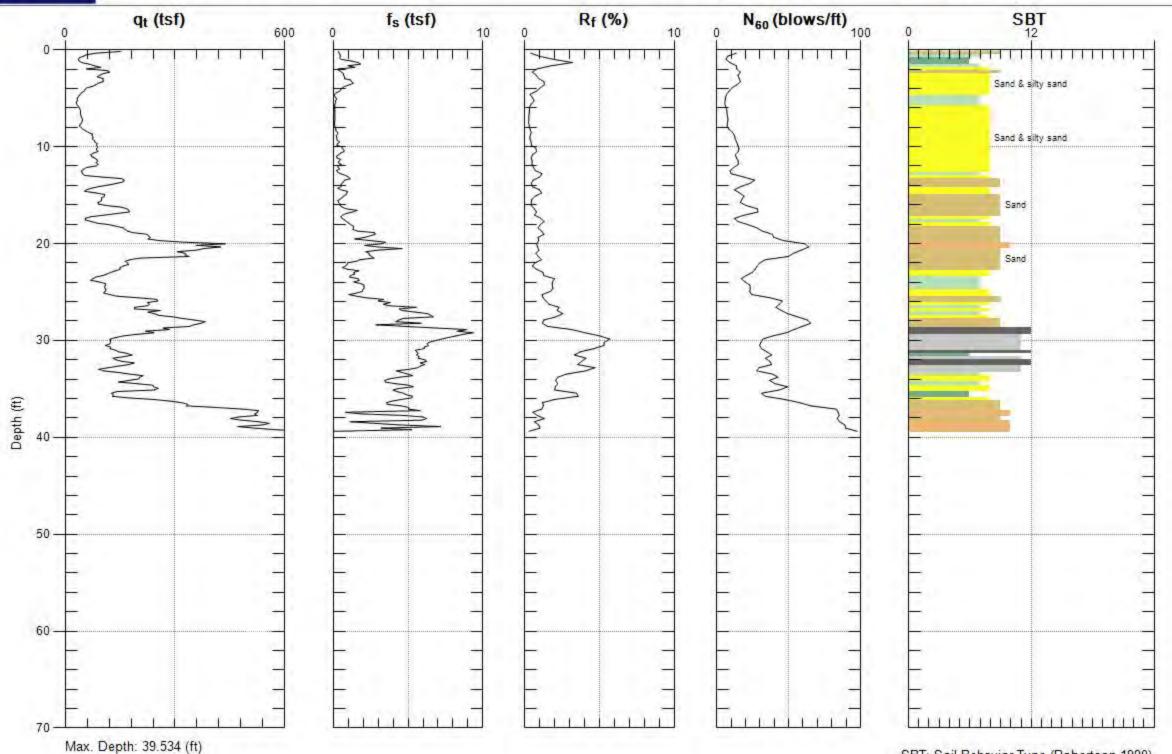
Avg. Interval: 0.328 (ft)

GROUP DELTA

Site: YUCCA CHAMPION Sounding: CPT-18 * Engineer: S.KOLTHOFF

SBT: Soil Behavior Type (Robertson 1990)

Date: 4/15/2014 07:17

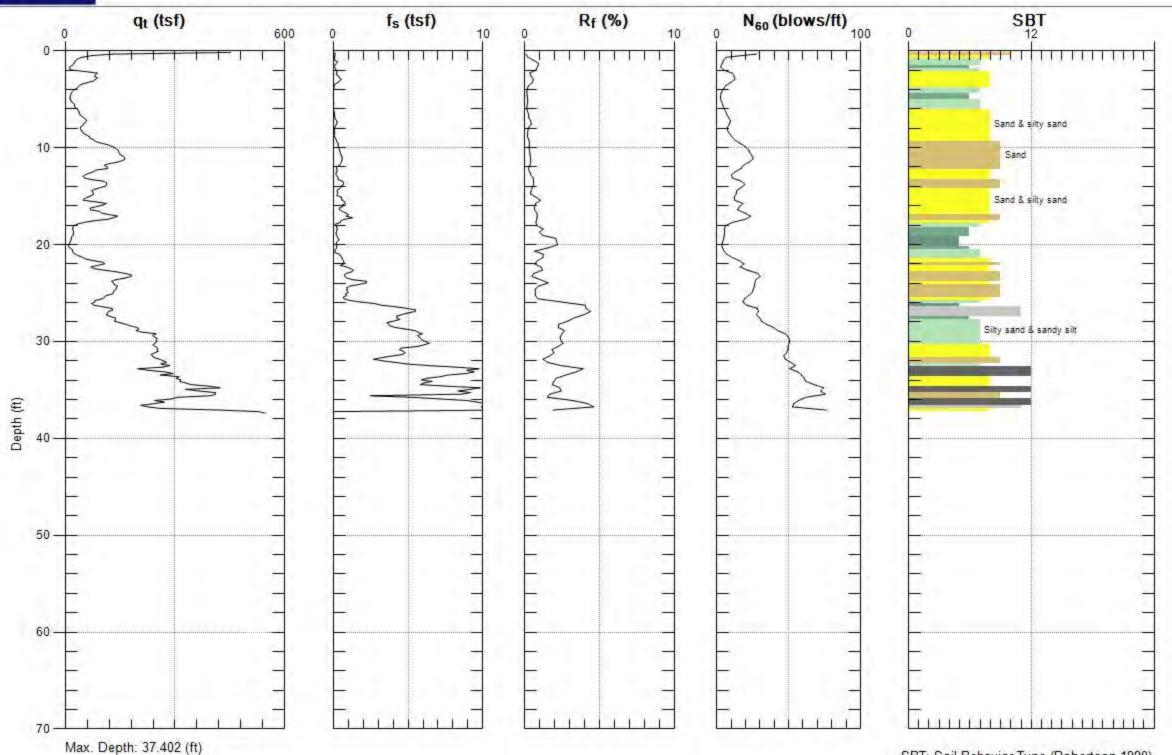




GROUP DELTA

Site: YUCCA CHAMPION Sounding: CPT-19 * Engineer: S.KOLTHOFF

Date: 4/15/2014 07:51



Avg. Interval: 0.328 (ft)

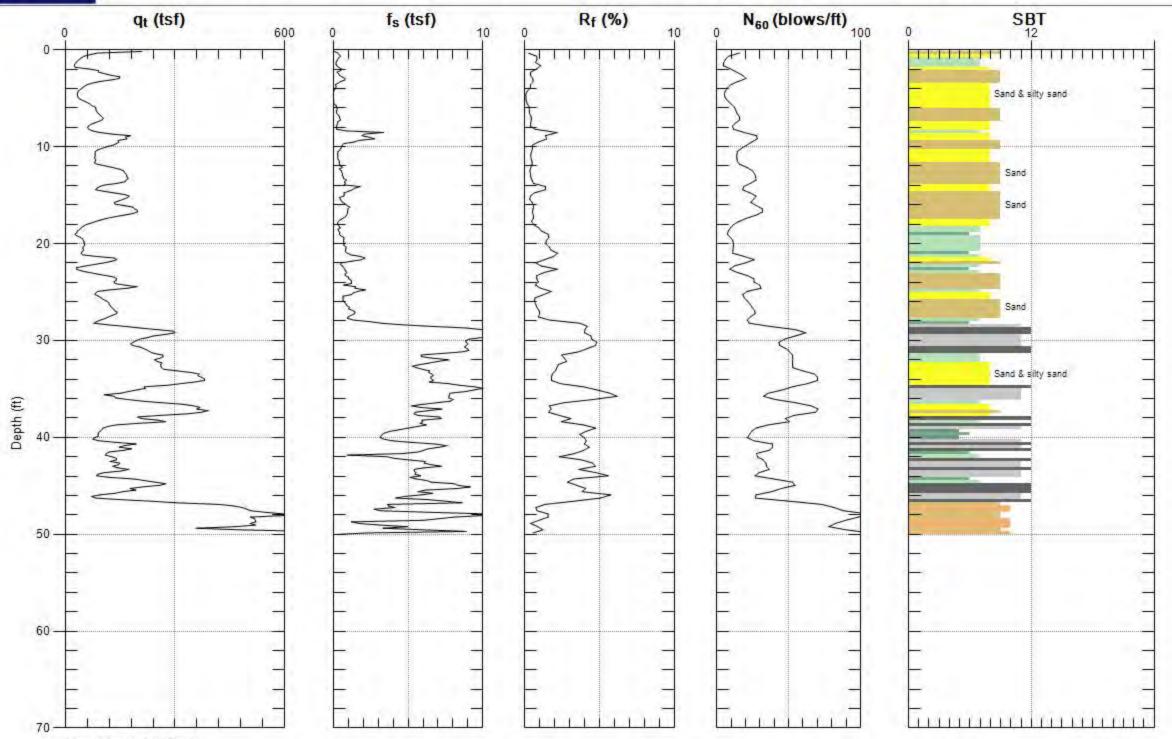
SBT: Soil Behavior Type (Robertson 1990)



GROUP DELTA

Site: YUCCA CHAMPION Sounding: CPT-20 Engineer: S.KOLTHOFF

Date: 4/15/2014 08:24



Max. Depth: 50.197 (ft) Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

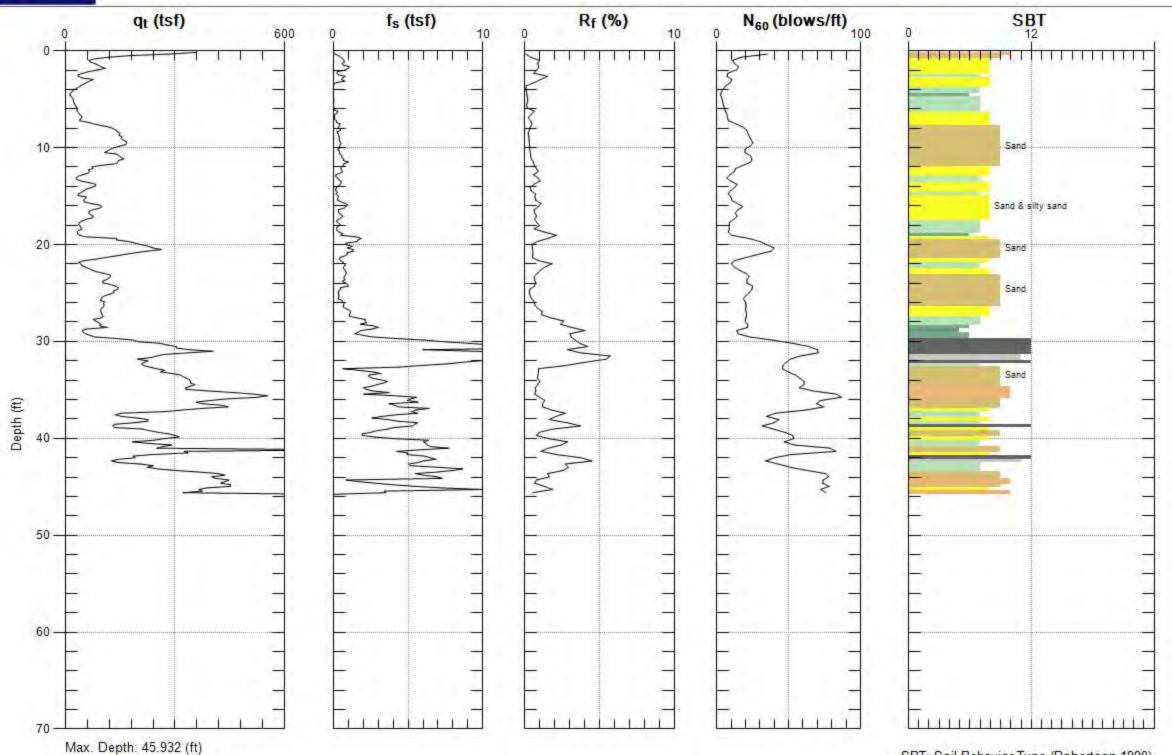


GROUP DELTA

Site: YUCCA CHAMPION Sounding: CPT-21*

Engineer: S.KOLTHOFF

Date: 4/15/2014 09:09



Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

				OR	E	ВО	RIN	G	PROJECT NA SSV		LA-1161A				ORING B-1*	
	LOC			Halliar	004	Co			DATE(S) DRI 10/23/13	ILLED	SS	BY			HEET N of 3	U.
	U YUC LING			Hollyw)	ooa,	Сä			DRILL BIT SI	IZE/TYPE	33	CHECKED	BY			PTH DRILLE
	ow Ste								8"	,		SK		(fe	et)	60
	L RIC								DRILLED BY	(INCLINATIO	ON F	ROM \	/ERTIC	AL/BEARING
CME									Gregg In-Situ	u Drilling			0	degree	es	
	AREN e enco			NDWA.	ΓER	DEP ⁻	ТН					APPROXIM (feet)		SURF 06	ACE EL	EVATION
COM	IMEN	TS										BOREHOLE		CKFIL	L	
	1	Ι						1				Soil Cutting	s 			
	(ft)			ROC	KC	ORE	<u>:</u>						2	>		
DEPTH (ft)	EVATION (f	O	O	:RY, %	-REQ.	., %	URE ING/ ER	LITHOLOGY		MATERIAL DES	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
8	ELEV	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	=					PACK	LABC	DRII	
_	<u>4</u> 05							<i>``.</i>	Asphalt at Hand aug	ered to 5 feet bgs.						
	_															
	_								Sandy Si	LT, dark brown, mois	t, fine to mediu	ım sand.				
_								1								
5																
	400	1	1	2.1/5												
_	L							800]	SAND UNIT (Qs)						
		2							 gravel, hu 	oarse to fine grained, imid to dry, granitic gr	avels were fou	nd in				
-								000	samples t	o be highly weathered ig to angular sand gra	d with phenocr	vsts				
40									and meta-	-quartzite gravels four o sub-rounded with sl	nd in the depos	sit were '				
-10	395	3	2	2.5/5					the surfac	ce. Abundant sub-rou ed outer surface sugg	nded quartz sa	and grains				
-	000								10YR 5/3	(brown).	esting navarin	origiri,				
-		4														
-	<u> </u>	4							Clayey S	AND, some fine grave	els, humid, har	d to				
-									break with	n fingers or cut with kr	nite.					
15	-	5	3	3.5/5												
-	<u>3</u> 90								MUD FLC	OW (Qm)			-			
	-									AND, grading down to	silty sand, mo	oist to				
-	-	6							humid, 5Y	R 4/4 reddish brown.	,					
	_							1								
20			А	26/5									-			
	<u>3</u> 85	7	4	2.6/5						ALLUVIUM (Qoal)						
_									fingers an							
_		8							volcanic w	AND, some fine grave vith some meta quartz	ite, humid to n	noist,				
								1	crumbles	into chunks between ne base (23 feet).						
•									255 41 (1)							
iRo	UP (GRO					NSUL Ave. S		NTS, INC.	THIS SUMMARY APP OF THIS BORING ANI SUBSURFACE COND LOCATIONS AND MA	D AT THE TIME ITIONS MAY DI Y CHANGE AT	OF DRILLING. FFER AT OTHE THIS LOCATIO	ER		CLID	E A 20 -
EL	TA				•		lifornia			WITH THE PASSAGE PRESENTED IS A SIN CONDITIONS ENCOL	IPLIFICATION (AL.	[GUKI	E A-32 a

_O	G ()F	C	ORI	ΕI	BO	RIN	G	PROJECT NA	AME	PROJECT LA-1161A	NUMBER			ORING B-1*	
	LOC			سامال	مدم	Ca			DATE(S) DRI	ILLED	LOGGED	ВҮ		S	HEET No.	0.
DRIL	LING	MET	ГНОВ	Hollyw)	ooa,	Сá			10/23/13 DRILL BIT S 8"	IZE/TYPE	SS	CHECKED	вү	тс		PTH DRILLE
	w Ste								ORILLED BY	,		SK INCLINATION)N F	ROM V	/ERTIC	AL/BEARING
CME			_						Gregg In-Situ				0	degree	es	
	AREN			NDWA ⁻	TER	DEP	TH					APPROXIMA	ATE	SURF	ACE EL	EVATION
	IMEN											(feet)		06 CKFII	1	
												Soil Cutting			. <u> </u>	
æ	(#)			ROC	K C	ORE	<u> </u>	_\ <u>`</u>					STS	ᇫ	'n,Œ	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	<u>3</u> 80	9	5	4/5				<u></u>		Silty CLAY , moist, plas brown), mottled to 10YF						
,	_								gray).							
	-	10						<i>'</i> ;								
	-															
30	_	11	6	3.5/5					Clayey S	AND, fine grained sand						
	<u>3</u> 75									,						
-	-							1	SAND to	Clayey SAND, wet, 10\	'R 4/6 (stron					
	-	12						<i>!!!</i>	brown), in (strong br	n contact with silty clay a cown).	t 34 feet, 7.5	YR 4/6				
	-								-Ground v	water						
35	_	13	7	2.8/5					Clayey S	AND, mottled 7.5 YR 4/	6 (strong bro	wn) to				
	370								2.5 Y 5/4 throughou	(light olive brown), sand ut.	mostly fine	to silt				
		11						1.								
		14														
-	-															
40	265	15	8	5/5					CLAY to	Silty CLAY, moist, hard locks, squeezes when p	, fractures in	to				
-	<u>3</u> 65								fingers, 5	5Y 5/2 (olive gray), coars es and at tip.	se sand at 43	3.5 feet				
		16							101 Z-IIICIII	es and at tip.						
•																
45																
45	360	17	9	2.8/5						Clayey SAND, wet to sa- rounded to sub-angular						
									with trace (brown).	of mica and heavy mine	erals, 7.5 YR	5/4				
-		18							(2.0011).							
									•							
iRO	UP (GR(NSUL Ave. S		NTS, INC.	THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY	AT THE TIME IONS MAY DI CHANGE AT	OF DRILLING. FFER AT OTHE THIS LOCATIO	ΞR			E A-32 b
DEL.	TA				•					WITH THE PASSAGE OF PRESENTED IS A SIMP	LIFICATION (L	[JUKI	L A-32 [
	`		10	nian	Ċe,	Ua.	lifornia	90	1001	CONDITIONS ENCOUN	I EKEU.					

.00	G ()F	C	OR	E	ВО	RIN	G	PROJECT NAME SSV	PROJEC LA-1161	T NUMBER			ORING B-1*	
	LOC								DATE(S) DRILLED	LOGGE	D BY			HEET N of 3	0.
				Hollyw	ood,	Са			10/23/13	SS	CHECKED	DV			PTH DRILLE
	LING w Ste			,					DRILL BIT SIZE/TYPE 8"			ьт		et)	60
	L RIG								DRILLED BY		SK INCLINATION	ON FI	ROM \	/ERTIC	AL/BEARING
CME			_						Gregg In-Situ Drilling			0 (degree	es	
				IDWA	TER	DEP.	TH				APPROXIM	ATE	SURF	ACE EL	EVATION
	enco		red								(feet)		06		
СОМ	MEN	TS									BOREHOLE		CKFIL	L	
								1			Soil Cutting	s 			
	£.			ROC	ck c	ORE	E					ည	>		
(#) +	ELEVATION (ft)			%	ď		1115	LITHOLOGY				PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEРТН (ft)	ATI	Š.	Ŏ.	ERY,	FRE	% '.'	JURE NGG	무	MATERIAL D	ESCRIPTION		Æ	ORA TES	LL R ET/H	NOTES
ă	ELE	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	5				AC	AB.	DR	
					H.	ш.	1102								
	<u>3</u> 55	19	10	2.6/5					Silty to Sandy CLAY to Cl (brown).	ayey SILT 7.5 YF	R 4/4				
									, , ,						
		20													
	_	20							Gravel and Sand Conglor	nerate poorly cer	nented,				
	-							۵ ۵	angular to subangular clast						
55	_	21	11	5/5	-				MODELO FORMATION (T						
	<u>3</u> 50								SILTSTONE, wet, thinly bed		ne				
	_														
	_														
	_														
60															
	345								Total Depth: 60 Feet bgs Groundwater: Encountered	at 33 Feet					
									Boring backfilled with tampe						
-															
-	_														
.	_														
65	<u> </u>														
-	<u>3</u> 40														
•	-														
	<u> </u>														
	<u> </u>														
70	L														
	<u>3</u> 35														
-															
	<u> </u>														
FRO		GRO	370) Am	nap	ola	NSUL Ave. S	Suite	NTS, INC. OF THIS BORING SUBSURFACE CO LOCATIONS AND WITH THE PASSA PRESENTED IS A	APPLIES ONLY AT AND AT THE TIM DNDITIONS MAY I MAY CHANGE AT AGE OF TIME. TH SIMPLIFICATION	E OF DRILLING. DIFFER AT OTHI THIS LOCATIO E DATA	ER N	FI	GURI	Ξ A-32 α

_O	G ()F	C	ORI	ΕI	BO	RIN	G	PROJECT NA	AME	PROJECT LA-1161A	NUMBER			ORING B-2*	
	LOC			Llallı	مدرا	0-			DATE(S) DRI	ILLED	LOGGED	ВҮ		S	HEET NO	0.
DRIL	LING	MET	ГНОД	Hollywe	oua,	∪a_			10/23/13 DRILL BIT S 8"	IZE/TYPE	SS	CHECKED	вү	то		PTH DRILLE
	w Ste								DRILLED BY			SK INCLINATION	N F	ROM V	/ERTICA	L/BEARING
CME									Gregg In-Situ				0	degree	es	
	AREN e enco			IDWA	ΓER	DEP.	ГН					APPROXIMA (feet)			ACE EL	EVATION
СОМ	IMEN	TS										BOREHOLE	ВА	07 CKFIL	L	
				ROC	· K C	ODE	<u> </u>					Soil Cuttings				
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	 405 	1	1	1.5/5					Artificial	ered to 5 feet bgs.	ine to mediu	m sand				
- - - -10 -	400 	3	2	1.25/5					SAND, co gravel, hu samples t weatherin and meta rounded t the surfac with froste	parse to fine grained, so unid to dry, granitic gravio be highly weathered via to angular sand grains quartzite gravels found to sub-rounded with slighter. Abundant sub-rounded outer surface suggestines throughout 10YR 4.	els were four vith phenocry s. Volcanic (in the depos nt to no weat led quartz sa ting fluval in	nd in /sts basalt?) it were hering on nd grains				
- - -15	_	4		2/2.5					crumbles wormhole	AND, humid, mild soil d with fingers, abundant r s, holes coated with cla	ootlet casts a y.					
-	 <u>3</u> 90 	6		2.2/2.5 2.2/2.5					5YR 4/4 (sand minument of the	ONGLOMERATE, with of reddish brown) grading us gravel 7.5 YR 5/4 (brown holes, platy fractular to core barrel. Doarse to fine grained, so umid to dry, granitic graves be highly weathered weathered weathered weathered weathered.	down to a cla own). Abund cture in sand me silt and fi els were four vith phenocry	ayey ant ine nd in vsts				
-20 - -	 <u>3</u> 85	7	4	2.8/3	-				and metal rounded the surface of mixed in the suggestin	ng to angular sand grains -quartzite gravels found to sub-rounded with slight ce. Abundant sub-round the alluvium with frosted g fluval in origin.	in the depos nt to no weat led quartz sa outer surfac	it were hering on nd grains e				
-	_	8		2.8/3	-											_
SRO DEL		GRO	370) Am	ар	ola	NSUL Ave. S lifornia	Suite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY O WITH THE PASSAGE OI PRESENTED IS A SIMP CONDITIONS ENCOUNT	AT THE TIME IONS MAY DII CHANGE AT T F TIME. THE LIFICATION C	OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	E A-33 a

_0	G ()F	C	ORI	ΕI	ВО	RIN	G	PROJECT NAME SSV	PROJEC LA-1161	T NUMBER			ORING B-2*	
	LOC								DATE(S) DRILLED	LOGGE	BY			HEET N	0.
) Yuco . LING			Hollywo	ood,	Са			10/23/13 DRILL BIT SIZE/TYPE	SS	CHECKED	DV		of 3	PTH DRILLE
	w Ste			,					8"		SK	ы		et)	60
	L RIC								DRILLED BY			ON FI	ROM V	/ERTIC	AL/BEARING
CME									Gregg In-Situ Drilling			0 (degree	es	
	AREN e enco			ADWA	ΓER	DEP ⁻	ГН				APPROXIM (feet)			ACE EL	EVATION
СОМ	MEN	TS									BOREHOLE		07 CKFIL	L	
											Soil Cutting	s			
				ROC	K C	ORE	<u>:</u>					Ŋ			
H (#)	EVATION (ft)			%	ď		111.5	LITHOLOGY				PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEРТН (ft)	VATIC	Š.	NO.	ERY,	FRE	ک., %	TURE /ING/ BER	본	MATERIAL DE	SCRIPTION		KER	ORA	ILL R ET/H	NOTES
	ELE	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., ⁰	FRACTURE DRAWING/ NUMBER	=				PAC	LAB	DR FE	
		9	5	문 2.2/2.5				0,7	Clayey SAND to Silty Clays	ight to moderat	e soil '				
-	_	$ $	J	,2,2.0				. Ø	developmemnt, crumbles in to fingers 7.5 YR 4/6 (Strong Bro	blocky pieces	between /				
-	<u>3</u> 80							3	siltstone with layers of gravel reddish clay infilling the grave	conglomerate a	nd ¦				
	_	10		2.5/2.5					(Reddish Brown) and 10YR 6	1, mottled 51R 2 11 (Gray).	+/ 4 				
_	_								OLDER ALLUVIUM (Qoal)						
30		44	_	0.4/0.5					Clayey SAND and Gravemix with clods of weathered bedro	of sands and g ck, clay, and si	ravel Itstone.				
_		11	6	2.4/2.5				.00							
_	<u>3</u> 75							%							
_		12		2.4/2.5											
_								8							
35		40		0.5/0./					-Groundwater						
_		13	7 :	2.25/2.	•			. X							
_	<u>3</u> 70							%							
_		14		2.15/2.	5			80							
_									Increase in clay, and weather	ed bedrock.					
40								90							
_		15	8	2.5/2.5				6 ×							
_	<u>3</u> 65							%	Weathered Zone						
_		16		2.3/2.5				80							
_															
45															
		17	9	2.5/2.5					MODELO FORMATION (Tm)						
-	360								Siltstone and Sandstone we mudstone.	t, thinly interbed	lded				
_	Ĺ	18		2.5/2.5											
_															
iRO	UP (GRO					NSUL Ave. S		THIS SUMMARY AP OF THIS BORING AI SUBSURFACE CON LOCATIONS AND M WITH THE PASSAG	ND AT THE TIME DITIONS MAY D AY CHANGE AT	OF DRILLING. IFFER AT OTHE THIS LOCATIO	ΞR	FI	GURI	E A-33 k
EL.	TA		To	rran	ce,	Cal	lifornia	90	PRESENTED IS A S	MPLIFICATION		\L			

				ORI	Εl	ВО	RIN	3	SSV		LA-1161A				ORING B-2*	
	LOC 0 Yuc			Hollyw	ood,	Ca			DATE(S) DRIL 10/23/13	LED	LOGGED SS	BY		- 1	of 3	0.
	LING)					DRILL BIT SIZ	ZE/TYPE	•	CHECKED I	ВҮ		TAL DE et)	PTH DRILLE
	ow Ste								DRILLED BY			SK INCLINATIO	N F	ROM V	ERTICA	
CME		IT C	2011	NDWA		DED	T		Gregg In-Situ	Drilling				degree		
	e enco			NDWA	IEK	DEP	IH					APPROXIMA (feet)		SURF 07	ACE EL	EVATION
COM	IMEN	TS										BOREHOLE Soil Cuttings		CKFIL	L	
												3011 Cuttings	>			
Œ	(£)			ROC	K C	ORE	!	\ 5					ESTS	ORY.	H,R,	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DES	CRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
=		19	10	2.5/2.5												
_	<u>3</u> 55								-							
_	_	20	2	2.35/2.	5											
-	-								-							
-55		21	11	5/5	-											
_	350															
_																
-	-															
- 60	-								Total Dept	h: 60 Feet bgs						
-	345								Boring bac	ter: Encountered at 3 kfilled with tamped co	4 Feet uttings					
-																
_	_															
-65	-															
-	340															
_																
-	_															
-70	-															
_	335															
_																
-																
3RO	UP (GRO	OUP	DEL		CC	NSUL	⊥ TAI	NTS INC	THIS SUMMARY APPL OF THIS BORING AND	AT THE TIME	OF DRILLING.				
			370) Am	ар	ola	Ave. S	Suite	e 212	SUBSURFACE CONDI LOCATIONS AND MAY WITH THE PASSAGE	CHANGE AT OF TIME. THE	THIS LOCATIO DATA	N	FI	GURI	Ξ A-33 (
DEL	TΛ		То	rran	ce,	Cal	lifornia	90	501	PRESENTED IS A SIM CONDITIONS ENCOU		OF THE ACTUA	L			

_O(G ()F	C	ORI	ΕΙ	ВО	RIN	G	PROJECT NA	AME	PROJECT LA-1161A	NUMBER			ORING B-3*	
	LOC			Hollywo	204	Ca			DATE(S) DRI 10/24/13	LLED	LOGGED SS	ВҮ		S	HEET No	О.
DRIL	LING	MET	ГНОД			Ou			DRILL BIT S	IZE/TYPE	00	CHECKED I	ВΥ		TAL DE	EPTH DRILLE
	w Ste L RIG								ORILLED BY			SK INCLINATION	N F	ROM V	/ERTIC	AL/BEARING
CME	95								Gregg In-Situ				0 (degree	es	
	AREN enco			NDWA1	ΓER	DEP.	ГН					APPROXIMA (feet)			ACE EL	EVATION
СОМ	MEN	ΓS										BOREHOLE		09 CKFIL	L	
								1 1				Soil Cuttings	8			
	£)			ROC	K C	ORE	<u> </u>						LS	≿	ui~	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
								///	Asphalt a	t surface. ered to 5 feet bgs.						
									Artificial							
	_								Sandy SI	LT, dark brown, moist,	fine to mediu	m sand.				
	405															
5	_	1	1	1.5/2.5												
	_		•	1.0/2.0												
	_															
	400	2		2/2.5					UPPER S	AND UNIT (Qs)						
10	<u>4</u> 00								SAND, co	arse to fine grained, so	me silt and fi	ne nitic				
10	_	3	2	1.5/2.5					gravels in	samples were highly wasts weathering to angula	eathered witl	ո				
								.,,,	brown, al	fine clayey sands 10YR bundant quartz and mic	a. Volcanic (basalt?)				
	_	4		1.5/2.5					sub-round	-quartzite gravels depos ded with slight to no wea	athering on th	ne				
	<u>3</u> 95								with froste	Abundant sub-rounded ed outer surface sugges ones throughout 10YR 4	ting fluval in	origin.				
15	_	5	3	1.1/2.5					brown.	mes unoughout forth	74 dank yello	WISH				
	_															
	_	6		2.2/2.5												
	 390			2.2/2.5					-l aver of	Clayey SAND, humid, n	nild soil deve	lonment				
20									crumbles	with fingers, abundant is, holes coated with cla	ootlet casts	and				
_U		7	4	2.4/2.5					feet in thic							
	_															
	_	8		1.5/2.5				888								
	<u>3</u> 85								Clayey S	AND to Silty CLAYmat	rix mostly gra	avel				
					Щ			[••]	conglome	rate with reddish clay in	filling gravel.	5YR 4/6		l		
FROI		GRO	370) Am	ар	ola	NSUL Ave. S lifornia	Suite		OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP	AT THE TIME IONS MAY DI CHANGE AT F TIME. THE	OF DRILLING. FFER AT OTHE THIS LOCATION DATA	ER N	FI	GURI	E A-34 a

_O	G ())	С	OR	ΕI	BO	RIN	G	PROJECT NA	ME	PROJECT LA-1161A	NUMBER			ORING B-3*	
	LOC								DATE(S) DRII	LLED	LOGGED	вү		S	HEET N	0.
	0 Yuc LING			Hollyw	ood,	Са		+	10/24/13 DRILL BIT SI	7E/TVDE	SS	CHECKED I	RV		of 3	PTH DRILLE
	ow Ste			,					8"	ZE/11PE		SK	D 1		et)	50
	L RIG								DRILLED BY	,		INCLINATIO)N F	ROM V	/ERTIC	AL/BEARING
CME									Gregg In-Situ	Drilling				degree		
	AREN e enco			NDWA ⁻	IER	DEP	ГН					APPROXIMA (feet)		SURF 09	ACE EL	EVATION
CON	MEN	TS										BOREHOLE			L	
		1							1			Soil Cuttings	S	ı		
	₽ P			ROC	K C	ORE	.						ည	>		
Œ,	EVATION (ft)			%	ď			LITHOLOGY					PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEРТН (ft)	VATI	RUN NO.	BOX NO.	ΈRΥ	FRE	R.Q.D., %	TURE	밀		MATERIAL DESC	RIPTION		KER	30RA TES	SILL F EET/F	NOTES
		RUN	BO	RECOVERY, %	FRAC. FREQ.	R.Q.	FRACTURE DRAWING/ NUMBER	=					PAC	3	DF FF	
		9	5	1.1/2.5				000	° (strong bro	own), mottled to 10YR 6	6/1 (light grav	to gray).				
	-								MUD FLO	•						
	_									h Siltmottled 5.5 YR 5/	3 to 10 YR 5	/4				
	_	10		2.5/2.5	5				(Yellowish	Brown).						
	380							1	Sandy CL	.AY, mild soil developm	ent, with trac	 ce of				
30	_	11	6	3.0/3.0	<u>)</u>				fine gravel	I, 7.5 YR 3/2 (dark brow oist to wet.	n) crumbles	between				
	-							Ž	Ground W			/-				
•	-							\[\begin{array}{c} \cdot \cdo	OLDER A	LLUVIUM (Qoal)						
	-	12		2.0/2.0	Ō			A 4	Conglome	erate , clayey sand matri ze clasts, abundant me	ix, mostly gra	evel and				
	<u>3</u> 75							A A	4/4 (Brown	n to Dark Brown)	ta quarterto,	7.0 110				
35	-	13	7	2.0/2.5	5			ے م	<u>-</u>							
-	-								<u> </u>							
-	_								<u> </u>							
-	_	14		1.75/2.	5			<u>م</u>								
-	<u>3</u> 70							\[\begin{array}{c} \times \\ \times								
40	-	15	8	2.0/2.5	5				Clayey SA	AND to Silty SAND wit	h fine grave	I streaks				
-	-								of clay 7.5	R 3/6 (dark red).	-					
-	_															
-	-	16		2.5/2.5	5				MODELO	FORMATION (Tm)						
	<u>3</u> 65								Siltstone	and Claystone, thinly	bedded, wet.					
45	-	17	9	3.75/5.	þ				Siltstone 1	I0YR 6/4 (light yellowish 5Y6/1 (gray),	n brown) and					
	-								1	·- · ·						
-	-															
-	-															
	<u>3</u> 60															
		—— C D 4	2115	, pr.	T *		Morri	TA'	NTS INC	THIS SUMMARY APPLIE			1			
) N		GK							NTS, INC.	OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY	IONS MAY DI	FFER AT OTHE		_	O: :=:	
					•		Ave. S			WITH THE PASSAGE OF PRESENTED IS A SIMP	F TIME. THE	DATA		FI	GURI	Ξ A-34 I
DEL	12		To	orran	ce,	Ca	lifornia	a 90)501	CONDITIONS ENCOUN						

_0(G (DF	C)R	E	BO	RIN	G	PROJECT NAME SSV		PROJECT LA-1161A	NUMBER			ORING B-3*	
SITE									DATE(S) DRILLED		LOGGED	BY			HEET N	0.
6230	Yuc	ca Str	eet, l	Hollyw	ood,	Са			10/24/13		SS	1			of 3	
	LING								DRILL BIT SIZE/TYPE			CHECKED	BY		OTAL DE et)	PTH DRILLE
	w Ste							-	8"			SK INCLINATION	N F	<u> </u>		50 AL/BEARING
DRIL CME	L RIG	TYP	Έ						DRILLED BY Gregg In-Situ Drilling			INCLINATIO		degree		AL/BEAKING
		IT GE	OUN	IDWA	TFR	DED.	TH		Gregg III-Sita Dillillig			APPROXIM				EVATION
None							•••					(feet)		30 KF 09	ACE EL	EVALION
СОМ	MEN	ΓS										BOREHOLE			L	
												Soil Cutting	s			
				POC	יע ר	ORE	=						,,			
(£)	ELEVATION (ft)				J (JUKE	- 	- ≿					PACKER TESTS	LABORATORY TESTS	E,E	
DЕРТН (ft)	TIO	o.	o.	۲۲, %	ÆÖ.	%	품질대	LITHOLOGY	MATERIAL I	DESCI	RIPTION		R. H	RAT(DRILL RATE, FEET/HOUR	FIELD NOTES
DEF	EV.	RUN NO.	BOX NO.	VEF	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	<u>F</u>					CKE	ABO	JRIL FEET	NOTES
	╗	R	BC	RECOVERY, %	FRA	Э.	P.R.						4	_		
									Total Depth: 50 Feet bgs							
-	_								Groundwater: Encountered Boring backfilled with tamp	d at 29 F	eet nas					
	_								Joining Sacrimica maritaming	ou out	90					
	_															
	<u>3</u> 55															
-55	_															
-	_															
	 350															
	<u>3</u> 30															
-60	_															
-	_															
-	_															
-	_															
-	<u>3</u> 45															
65	_															
_	_															
.																
	340															
70																
-	_															
-	-															
-	_															
	<u>3</u> 35															
					_				THIS SUMMARY	APPLIE	S ONLY AT	THE LOCATION	N	<u> </u>		
iROI	UP (NTS, INC. OF THIS BORING SUBSURFACE C	AND A	T THE TIME ONS MAY DI	OF DRILLING. FFER AT OTHE	ΞR			
			370) Am	nap	ola	Ave. S	Suit		AGE OF	TIME. THE	DATA		FI	GUR	E A-34 d
ELI	ΓΔ		Tο	rran	2	Ca	lifornia	a	PRESENTED IS A CONDITIONS EN	4 SIMPL	IFICATION (ERED	JE THE ACTUA	NL			

370 Amapola Ave. Suite 212 Torrance, California 90501

_0	G ()F	C	ORI	Ξ	30	RIN	G	PROJECT NA	AME	PROJECT LA-1161A	NUMBER		- 1	ORING B-4*	
	LOC			11-0-		0-			DATE(S) DRI	LLED	LOGGED	ВҮ		S	HEET No.	0.
DRIL	LING	ME	ГНОД	Hollywo	od,	∪a			DRILL BIT S	IZE/TYPE	SS	CHECKED	ВҮ	тс		PTH DRILLE
	w Ste								8" DRILLED BY	,		SK INCLINATION	N FI	'		40 AL/BEARING
CME		, , , ,	_						Gregg In-Situ					degree		
	AREN			NDWA	ΓER	DEP	ТН	·				APPROXIMA	ATE	SURF	ACE EL	EVATION
	MEN											BOREHOLE		12 CKFIL	L	
												Soil Cutting	S			
	(ft)			ROC	K C	ORE	.						STS	ΥΥ	шìС	
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TEST	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
								1		ered to 5 feet bgs.						
	<u>4</u> 10								Artificial			_				
	_								Sandy SI	LT, dark brown, moist, f	ine to mediu	m sand.				
	_															
5	_	1	1	1.67/2.	5											
	_															
-	<u>4</u> 05															
-	-	2		1.83/2.	5				UPPER S	AND UNIT (Qs)						
								%	Silty SAN	ID, dry, brown, some roo	ots and rootle	ets.				
-10		3	2	1.17/2.	5					layey SAND, some gravoughout, fine sand with						
-	400									ast two feet, 10 YR 4/4						
		4		1.17/2.	5			\\ \tag{\tag{\tag{\tag{\tag{\tag{\tag{	Mild soil	development, sand with Yellowish Brown), friabl						
-									Sandy Cl	AY, coarse to fine grain to cobbles throughout,	ned, some si	It and				
15		_	2	1 22/2					gravels, h gravel gra	ighly weathered to grus ins. Zones of fine claye	s angular sa ey sands 10 `	nd to fine YR 4/6				
_	_	5	3	1.33/2.					Volcanic (owish brown), abundant (basalt?) and meta-quar	tzite gravels	deposits				
-	<u>3</u> 95								weatherin	nded to sub-rounded with g on the surface. Abun	dant sub-rou					
_	-	6		1.67/2.	•				suggestin	nd grains with frosted ou g fluvial in origin. development, 10 YR 4/6		wieh				
-	-								Brown), a	pproximately 6" thick.						
-20	<u> </u>	7	4	1.33/2.	5					development, 10 YR 4/6 pproximately 6" thick.	(Dark Yello	wish				
-	300															
-	<u>3</u> 90	8		1.58/2.					-Mild soil	development, 10 YR 4/6 pproximately 6" thick.	(Dark Yello	wish				
-									Diowii), a	PPIOXIIIIately O tillor.						
-									-Mild soil Brown), a	development, 10 YR 4/6 pproximately 6" thick.	6 (Dark Yello	wish				
SRO		GRO	370) Am	ар	ola	NSUL Ave. S lifornia	Suite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDITI LOCATIONS AND MAY WITH THE PASSAGE OF PRESENTED IS A SIMP CONDITIONS ENCOUNT	AT THE TIME ONS MAY DI CHANGE AT TIME. THE LIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIO DATA	ER N	FI	GURI	E A-35 a

LO	G (OF	С	OR	E	BO	RIN	G	PROJECT NAME SSV	PROJEC LA-1161	T NUMBER			ORING B-4*	
	LOC								DATE(S) DRILLED	LOGGE	о вү		S	HEET N	0.
	O Yuc			Hollyw	ood,	Са			10/24/13 DRILL BIT SIZE/TYPE	SS	CHECKED	BV		of 2	PTH DRILLE
	w Ste			,					8"		SK	ы	- 1	eet)	40
	L RIC	3 TY	PE						DRILLED BY		INCLINATIO				AL/BEARING
CME		IT C	BOII	NDWA ⁻	TED	DED.	TU		Gregg In-Situ Drilling				degree		
	e enco			NDWA	IER	DEP	111				APPROXIM (feet)		SURF 12	ACE EL	EVATION
COM	IMEN	TS									BOREHOLE	ЕВА		.L	
	1	ı						1			Soil Cutting	ıs 	1	<u> </u>	
_	£			ROC	K C	ORE	E	>				STS	l ≿	ni w	
DЕРТН (ft)	EVATION (ft)			۲, %	ä	%	#.jo.~	LITHOLOGY	MATERIAL D	ESCDIDTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEP.		RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	\frac{1}{2}	WATERIALD			CKE	ABOR TE	RILL FEET/	NOTES
		RU	BC	RECC	FRA(R.0	PRA DR/					ΔA	ב		
		9	5	1.5/2.5	5			1.							
-	385														
-	303	10		1.08/2.	5										
_				1.00/2.	Ĭ				SAND, moderatly well deve color ranges from 10 YR 3/3	oped soil, when	sandy,				
-									(dark yellow brown), breaks coatings on sand grains.	into angular bloc	ks, clay				
_30		11	6	1.42/2.	5				-Ground water MUD FLOW (Qm)						
-	380								Sandy CLAY, fine to mediu	m grained with s	nme				
-		12		1.5/2.5	5				clayey sand, 7.5 YR 4/4 (bro	wn).	onic .				
_	L														
_35															
_		13	7	2.5/2.5					MODELO FORMATION (Tr	-					
_	<u>3</u> 75								Siltstone and Claystone, von bedding, some carbonate von	ins and nodules	mottled				
_		14		2.5/2.5	5				2.5 Y 5/6 (light olive brown) bedded, wet.	to 5 Y 5/0 (gray),	thin				
_	_														
4 0	_								T						
_	_								Total Depth: 40 Feet bgs Groundwater: Encountered						
_	<u>3</u> 70								Boring backfilled with tampe	a cullings					
_	_														
-	_														
45	-														
-	-														
_	365														
_	-														
-	-														
GRO		GRO	37	0 Am	ap	ola	NSUL Ave. S lifornia	Suite	PRESENTED IS A	AND AT THE TIMI NDITIONS MAY D MAY CHANGE AT GE OF TIME. THI SIMPLIFICATION	E OF DRILLING. IFFER AT OTHI THIS LOCATIO E DATA	ER ON	FI	IGUR	E A-35 k

_O	G (OF	С	ORI	ΕI	ВО	RIN	G	PROJECT NA	AME	PROJECT LA-1161A	NUMBER			ORING B-5*	
	LOC								DATE(S) DRI	ILLED	LOGGED	ВҮ		S	HEET N	0.
	0 Yuc			Hollywe	ood,	Са			10/25/13 DRILL BIT S	IZE/TYPE	SS	CHECKED	BY			PTH DRILLE
	w Ste								8"			SK		1,	et)	50
DRIL CME	L RIC	3 TY	PE						ORILLED BY Gregg In-Situ			INCLINATIO		ROM \ degree		AL/BEARING
APP	AREN			NDWA	ΓER	DEP	ТН		Oregg III-OIII	Diming		APPROXIM				EVATION
	enco		red									(feet)		11		
COM	IMEN [.]	TS										Soil Cutting		CKFIL	L	
				POC	· K (ORE										
(#)	(ff)				1			790					FESTS	ORY S	ATE, OUR	FIELD
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	NOTES
	410							1	Asphalt a	t surface. ered to 5 feet bgs.						
									Artificial	Fill (Qaf)						
	_								Sandy SI	LT, dark brown, moist,	fine to mediu	m sand.				
	_															
5	_	1	1	1.67/2.	<u> </u> 5											
	<u>4</u> 05															
	_			0/0.5												
	_	2		2/2.5					UPPER S	SAND UNIT (Qs)						
10									Silty SAN	ID, dry, brown, with root	s and rootlets	6.				
10	400	3	2	1.75/2.	5				dry, grave	oarse to fine grained, so els scattered throughout	from fine gra	ained to 1				
									decompos	onsisting mostly of volc sing clasts of granite. Th	ne grànitic cla					
		4		1.67/2.	5				phenocry	samples to be highly we sts weathering to angula (handle) around found	ar sand grain	S.				
	_								rounded t	(basalt?) gravels found in o sub-rounded with slight of ace. Abundant sub-ro	ht to mild we	athering				
15	_	5	3	1.5/2.5	5				grains wit origin.	h frosted outer surface	suggesting fl	uvial in				
	<u>3</u> 95															
		6		1.75/2.	į.					development, friable be						
				1.73/2.						ontact with sand below, YR 4/4 (Dark Yellowish		iy o				
20																
	390	7	4	1.75/2.	5											
								, , , , , , , , , , , , , , , , , , ,								
-	_	8		1.83/2.	5			000								
	-															
		<u> </u>		_	_					THIS SUMMARY APPLIE				\vdash		
iRO	UP (GR							NTS, INC.	OF THIS BORING AND A SUBSURFACE CONDIT	AT THE TIME IONS MAY DI	OF DRILLING. FFER AT OTH	ER			
					•		Ave. S			LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP	F TIME. THE	DATA		FI	GUR	E A-36 a
EL	ΙΛ		To	orran	ce,	Ca	lifornia	a 90)501	CONDITIONS ENCOUN						

LOG OF CORE BORING SITE LOCATION							RIN	G	PROJECT NAME SSV DATE(S) DRILLED	T NUMBER	SI	B-5* SHEET NO.				
DRILLING METHOD Hollow Stem Auger DRILL RIG TYPE CME 95									DRILL BIT SIZE/TYPE 8" DRILLED BY	SK				2 of 3 TOTAL DEPTH DRILLEI (feet) 50 ROM VERTICAL/BEARING		
									Gregg In-Situ Drilling				degree			
	AREN			IDWA	ΓER	DEP	ТН				APPROXIMA	ATE	SURF	ACE EL	EVATION	
	IMEN										(feet)		11 CKFIL	 L		
											Soil Cuttings	s				
(H)	(£)				CK CORE			64		STS				χ. π.α.		
DEPTH (ft)	ELEVATION	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DE	SCRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES	
	385	9	5	.92/2.	5											
_																
_	_	10		.75/2.	5				-Mild soil development, appro	vimately 6" thia	,					
-	-								SAND, wet, fine to coarse gr	•						
_30	-	11	6 2	2.08/2.	<u> </u> 5				to fine grained gravel with ma grained, gravel well to sub-rou	ority being coal nded, sand mo	rse stly /					
-	380								quartz, some gravel mostly co	\ quartz, some gravel mostly consisting of volcanic and \ feldspar, zone well washed, 10YR 4/4 (dark yellowish \						
-	_	12		2.5/2.5	5											
- -35 -		13	7	3/3	-				\(\(\text{(Yellowish Brown)}\). \(\text{Silty SAND to Sandy Silty C}\) \(\text{developed soil, wet, yelds into}\) \(\text{by hand, base of soil on grave}\)							
-				1.33/2	-			۵ ۵	OLDER ALLUVIUM (Qoal)							
-	_	14		1.00/2					Gravel and Cobble Conglon volcanic composition, top of comparity similar to the soil above Clayey SAND wet, trace to so	onglomerate ha	s a clayey /					
-40 - -		15	8	1.33/5					(Dark Yellowish Brown). Clayey SAND with GRAVEL from large cobbles.							
-																
-4 5	365	16		5/5	1				MODELO FORMATION (Tm)							
-									Claystone , well bedded with sandstone, trace large cobble	some siltstone s.	and fine					
-																
GRO		⊢—∣ GR(370) Am	ар	ola	NSUL Ave. S	Suite	PRESENTED IS A S	ND AT THE TIME DITIONS MAY D AY CHANGE AT E OF TIME. THE MPLIFICATION	E OF DRILLING. IFFER AT OTHE THIS LOCATIO E DATA	ER N	FI	GURI	E A-36 k	

LOG OF CORE BORING						ВС	RIN	G	PROJECT NAME SSV	PROJECT LA-1161A	NUMBER	BORING B-5*				
SITE LOCATION 6230 Yucca Street, Hollywood, Ca DRILLING METHOD						_			DATE(S) DRILLED	BY	SHEET NO. 3 of 3					
						Са			10/25/13	SS						
									DRILL BIT SIZE/TYPE			CHECKED	BY		OTAL DE et)	PTH DRILLE
Hollow Stem Auger								\rightarrow	8"			SK	N F	'		50 AL/BEARING
DRILL RIG TYPE CME 95									Oraga la City Drilling			INCLINATIO				AL/BEARING
		IT CE	OLIN	IDWA	TED	DED	TU		Gregg In-Situ Drilling					degree		
	enco			IDWA	IEK	DEP	III					APPROXIM. (feet)			ACE EL	EVATION
СОМ	MEN	ΓS										BOREHOLE		11 CKFIL	L	
												Soil Cutting				
_	(ft)			ROC	CKC	ORE		_					STS	조	щα	
DEРТН (ft)	<u>N</u>			%,	O. FREG. D.D., % A.D., % A.WING/ MBER LITHOLOGY				MATERIAL	DECC	DIDTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
EPT	EVATION (ft)	RUN NO.	BOX NO.	ËRY	FR	0., %	L SNS	운	MATERIAL	DESC	RIPTION		Ä	30R TES	SILL EET/I	NOTES
	E	RUN	BOX	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	=					PAC	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	RE	
				뀖	世											
	360								Total Depth: 50 Feet bgs Groundwater: Encountered	ed at 20	Feet					
									Boring backfilled with tam	ped cutt	tings					
-	_															
	_															
55	_															
	355															
•	_															
	_															
	_															
-60	_															
-	<u>3</u> 50															
_	_															
_																
-	_															
-65																
-	<u>3</u> 45															
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:00	ne 4	2D/	םוור	י חבי	T ^	\	וופווו	ТЛ	NTS, INC. THIS SUMMARY	APPLIE	S ONLY AT	THE LOCATION	N		·	
NO.	שר (SUBSURFACE	CONDITI	ONS MAY DI	FFER AT OTHE	ΞR			
			370) Am	nap	ola	Ave. S	Suit	WITH THE PAS	SAGE OF	F TIME. THE	DATA		FI	GURI	E A-36 c
ELT	ΓΔ		Τo	rran	<u></u>	Ca	lifornia	ء ۵۲)501 PRESENTED IS CONDITIONS E	A SIMPI	LIFICATION (JE THE ACTUA	NL			

370 Amapola Ave. Suite 212 Torrance, California 90501

LOG OF CORE BORING							RIN	G	PROJECT NAI	LA-1161A			BORING B-6*				
	LOC			l lalls acc	اممم	0-			DATE(S) DRILLED LOGGEI			BY		SHEET NO. 1 of 3			
6230 Yucca Street, Hollywood, Ca DRILLING METHOD Hollow Stem Auger DRILL RIG TYPE								-	DRILL BIT SIZ	ZE/TYPE	33	CHECKED	BY	TOTAL DEPTH DRILLED			
									8"			SK					
									DRILLED BY			INCLINATIO	ON F	ROM V	/ERTIC	AL/BEARING	
CME 95									Gregg In-Situ	Drilling			0	degree	es		
	APPARENT GROUNDWATER DEPTH None encountered											APPROXIMA (feet)		SURF 05	ACE EL	EVATION	
CON	IMEN	TS										BOREHOLE	ВА	CKFIL	L		
	1								1			Soil Cuttings	S				
				ROC	K C	ORE	<u>.</u>						ဟ				
DEPTH (ft)	(ft)	<u> </u>						₹					PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIEL D	
	EVATION	9	ġ.	₹,	REC	., %	URE NG/ ER	LITHOLOGY	l	MATERIAL DESC	RIPTION		ERI	PRA1	L R. T/HC	FIELD NOTES	
	ELEV	RUN NO.	Ν	RECOVERY, %	FRAC. FREQ.	R.Q.D., ⁶	FRACTURE DRAWING/ NUMBER	<u> </u>					ACK	ABC	DRII		
	"		В	REC	FR/	Α.	유무 조						_				
									Asphalt at s								
_	<u> </u>							1	Artificial F	red to 5 feet bgs.		/					
-	-								Sandy SIL	T , dark brown, moist,	fine to mediu	m sand.					
_	-)	,,							
_	_							1									
_5	<u>4</u> 00			0/0.5				<i>[.,</i>									
_		1	1	2/2.5													
								!; <u>`</u>	UPPER SA	AND UNIT (Qs)							
		2		1.58/2.	5			000		o, dry, brown, with roo od grains mostly round							
								800	quartz and	feldspar, quartz grains	s frosted indic	cating					
_	395							000	granitic gra	fluvial in origin, increase in angular decomposing granitic gravels downward to 20 feet. Abundant silt							
_10	393	3	2	1.5/2.5	5				fractured. 1	/olcanic gravel sub rou IOYR 5/3 (Brown).							
-	-								-Mild soil d	evelopment, sand with	clayey matri	X.					
_	-																
_	-	4		1.83/2.	5				•								
_	<u> </u>								•								
_15	390		0	1 10/0				· · · ·									
_	L	5	3	1.42/2.	3			000	•								
_	L							°°°	-Well soil d	evelopment, gravel-sa	ind layer, pla	ty					
		6		1.92/2.	<u> </u>			000		, ,							
_									MUD FLOV	N (Qm)							
_	305							:::	_ fracture, 10	evelopment, sand with YR 4/3 (Brown to Da		x, piaty 	-				
- 20	<u>3</u> 85	7	4	2.5/2.5	5			1	OLDER AL	LUVIUM (Qoal)	- — -	_					
_	-							7		.ND-Mild soil developn 7.5 YR 4/4, brown to da							
_	-								\ platy fractu	re, sand sub rounded							
_	-	8		2.5/2.5	5				Gravel Co	k minerals and mica. onglomerate, clay ma	 trix, gravel +/	- 3 [_]					
_	F							7	inches, rou	nded to sub rounded, artz frosted grains wit	volcanic origi	in, sands					
	380			ļ				<u> </u>	\mixed withi			/					
SRO	UP (GRO					NSUL Ave. S		NTS, INC.	THIS SUMMARY APPLII OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS ASSACES	AT THE TIME IONS MAY DI CHANGE AT	OF DRILLING. FFER AT OTHE THIS LOCATIO	ΞR	FI	GI IRI	E A-37 a	
DEL	TA				•		lifornia		li li	WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	LIFICATION (NL	' '	JJ: (1	_ / () / (

LOG OF CORE BORING							RING		PROJECT NA SSV	NUMBER			BORING B-6*					
SITE LOCATION										DATE(S) DRILLED LOGGED BY			SHEET NO. 2 of 3					
6230 Yucca Street, Hollywood, Ca DRILLING METHOD								-	10/25/13	IZE/TVDE	SS	CHECKED I	TOTAL DEPTH DRILLE					
Hollow Stem Auger									DRILL BIT SI 8"	ZE/ITPE		SK) I		(feet) 60			
DRILL RIG TYPE CME 95									DRILLED BY	,		INCLINATIO	N F	ROM V	/ERTICA			
									Gregg In-Situ				0 0	degree	es			
APPARENT GROUNDWATER DEPTH None encountered												APPROXIMA	APPROXIMATE SURFACE ELEVATION					
			rea									(feet)		05				
COM	IMEN	TS										BOREHOLE Soil Cuttings		CKFIL	L			
		Ι										Soil Cuttings	•					
	£			ROC	K C	ORE	i .						S	≿				
DEPTH (ft)	EVATION (ft)			% О Ш-			Ш >>	LITHOLOGY					PACKER TESTS	LABORATORY TESTS	DRILL RATE, TOWN FEET/HOUR LEATE, TOWN FEET/HOUR	FIELD		
	VAT	RUN NO.		RECOVERY, %	FRAC. FREQ.	D., %	FRACTURE DRAWING/ NUMBER	H		MATERIAL DESC	RIPTION		KER	30R/ TES	SILL F	NOTES		
		NZ		000	RAC.	R.Q.D., ⁶	RAC NUN	=					PAC	Z	F E			
		9		분 2.25/2.	-		L J		Cabble	onglomerate, cobbles	moethyvolas	nic in						
_	_	9	5 .	2.23/2.				K	origin.	•	•							
_									majority w	AND, friable with finger rell inundated with a blo	s in thin beds ocky fracture,	s, 7.5 YR						
_		10		2.5/2.5	5				4/4 (brown		•							
								^ ^ ^	√ blocky fraction	cture, sands rounded, seddish brown).	some angular	grains, 5						
-	375							_ A	Gravel to	Cobble Conglomerat	e clayey to s	andy						
-30	5/3	11	6	2.5/2.5	5			4	matrix, co — 、 - Ground \	nglomerate granitic to v Water	olcanic.							
-	_								Sandy Cla	ay to Clayey Sand mo leta quartzite gravels th	ist, platy frac	ture, sub						
-	-								2.5YR 5/4	(light olive brown) to 5	YR 4/4 (redd	ish						
-	_	12		2.5/2.5	5				brown).									
-	-							~	Gravel to	Cobble Conglomerat	e gravels sub	angular						
_35	<u>3</u> 70	13	7 :	2.25/2.	5				to sub rou	inded volcanic to granit composing and friable b	ic in origin, g	ranitic						
_	_			1				0 (\little press	sure.	•	/						
_	_							0	to fine gra	SAND with interbedde ined with fine grained o	ravel, both s	and and						
_		14		2/2.5	1			o C		Inded to sub rounded. Stay beds mottled 5Y 5/								
_								0 (7.5YR4/4 -Gravel Be		, ,	,						
4 0	365							0	0.0.0.2	-								
-4 0		15	8 :	2.33/2.	5			。 C	-Clay Bed									
_								0 (
-		10		22/2	<u></u>			Ø	-Sand Bed	d								
-		16		2.33/2.				0	0 :-	- d								
_	-							> (-Gravel Be -Clay Bed									
45	<u>3</u> 60	17	9 :	2.42/2.	_ 5			, C	-Sand Bed									
_	_							0 (
_	_							>										
_		18		2.5/2.5	5			, C										
_								0 (
	355							م م	Gravel Co overlying	onglomerate, decompo bedrock.	sing granitic	gravels						
GRO		GRO	370) Am	ар	ola	NSUL Ave. S	uite		THIS SUMMARY APPLI OF THIS BORING AND SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE C PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME TONS MAY DI CHANGE AT F TIME. THE PLIFICATION (OF DRILLING. FFER AT OTHE THIS LOCATIOI DATA	ER N	 FI	GURI	E A-37 k		

LOG OF CORE BORING							RIN	G	PROJECT NAME SSV	T NUMBER	BORING B-6*				
	LOC			بر دال ما	a a d	Co			DATE(S) DRILLED 10/25/13) BY		SHEET NO. 3 of 3			
DRILLING METHOD DRILL Hollow Stem Auger 8" DRILL RIG TYPE DRIL									DRILL BIT SIZE/TYPE	CHECKED BY		TOTAL DEPTH DRILLE			
											SK	(feet) 60			
									DRILLED BY		INCLINATIO		OM VERTICAL/BEARING		
							-		Gregg In-Situ Drilling				0 degrees		
None encountered											APPROXIMA (feet)			ACE EL	EVATION
СОМ	MEN	гѕ									BOREHOLE		05 CKFIL	L	
											Soil Cuttings	s			
				ROC	:K C	ORE	<u> </u>					S			
Œ	ELEVATION (ft)				_			- }				PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD
DEPTH (ff)	/ATIC	Š.	o O	ERY,	FREC	% '.0	IURE ING/	LITHOLOGY	MATERIAL D	ESCRIPTION		ŒR.	ORA ⁻	ILL R ET/H	NOTES
	ELE	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	5				PAC	LAB.	PR FEI	
				_			<u> </u>								
		19	10	2.5/2.5											
		20		2.5/2.5	5										
55	350														
00		21	11	5/5					MODELO FORMATION (Tr	<u>ı)</u>					
									Sandstone, fine grained with abundant rounded to well ro	n clay matrix, wel	l bedded,				
-									weathered feldspar grains.						
•															
	 345														
-60	<u>0</u> .0								Total Depth: 60 Feet bsg	-t 20 Ft					
-	_								Groundwater: Encountered a Boring backfilled with tampe						
-	_														
-	_														
-	240														
65	<u>3</u> 40														
-															
	_														
70	<u>3</u> 35														
	-														
	-														
-	_														
	H														
	330				_				THIS CHAMADY A	DDI IEQ ONI V AT	THE LOCATION	.1	1		
RO	UP (GRO	DUP	DEL	_TA	CC	NSUL	.TAI	NTS, INC. THIS SUMMARY A OF THIS BORING. SUBSURFACE CO	AND AT THE TIME	OF DRILLING.				
			370) Am	ар	ola	Ave. S	Suite		MAY CHANGE AT	THIS LOCATIO		FI	GURI	E A-37 d
ELI					-		lifornia		PRESENTED IS A	SIMPLIFICATION		L	1 .	• •	

GREEN SITE, NE CORNER OF YUCCA STREET and ARGYLE AVENUE, 1800 ARGYLE AVENUE, HOLLYWOOD AREA, CITY of LOS ANGELES, CALIFORNIA. CPT'S and BORING USED FOR CROSS SECTION A-A'.



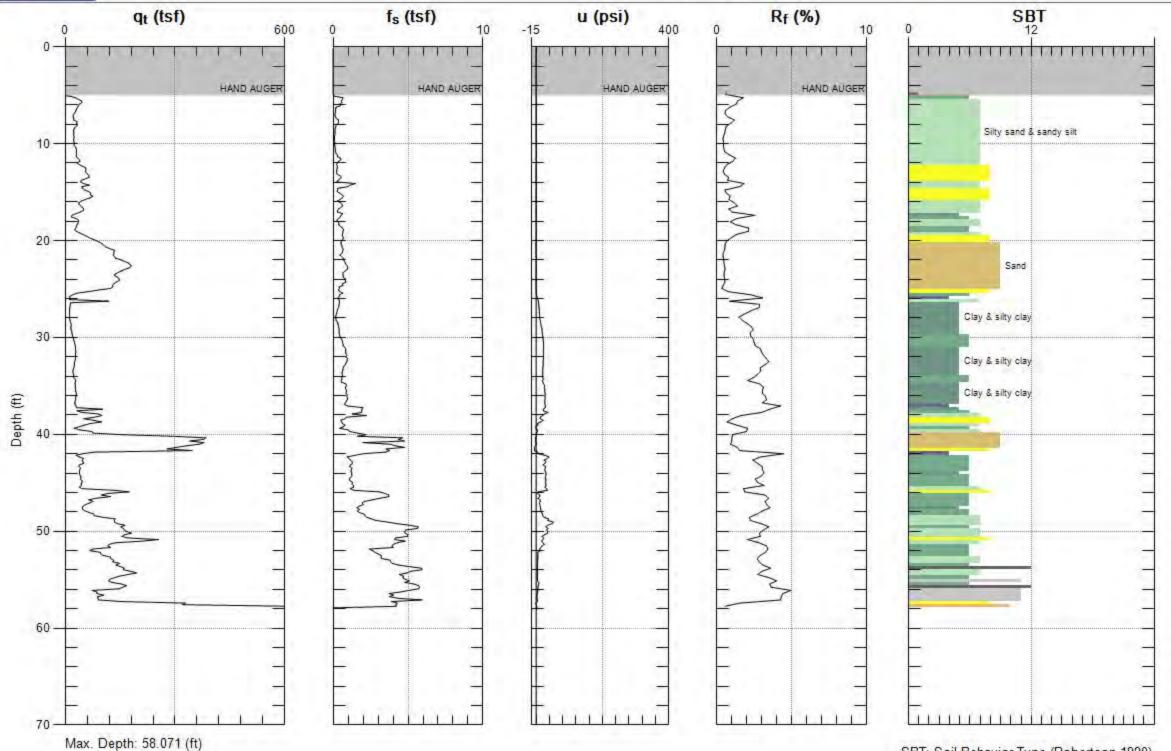
GROUP DELTA

Site: 1800 ARGYLE AVE.

Sounding: C-18**

Engineer: S.KOLTHOFF

Date: 1/6/2014 10:55



Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)



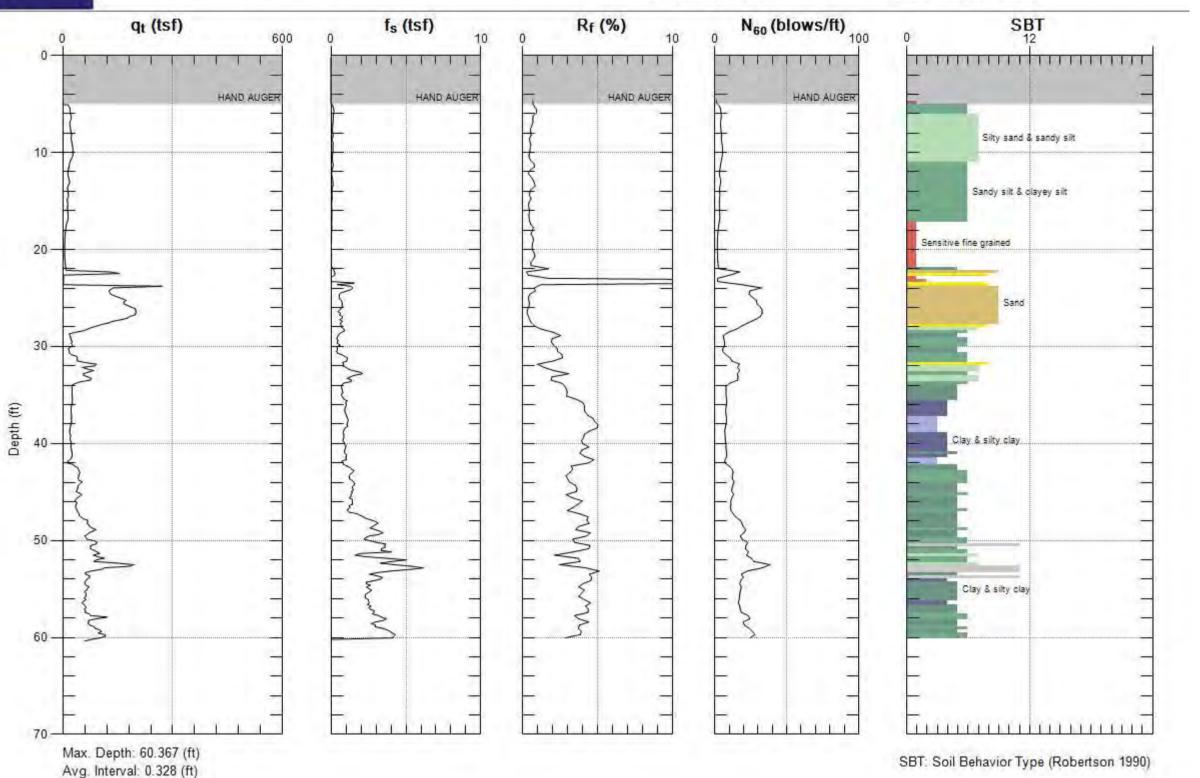
GROUP DELTA

Site: 1800 ARGYLE AVE.

Sounding: C-19 **

Engineer: S.KOLTHOFF

Date: 1/6/2014 12:24





Avg. Interval: 0.328 (ft)

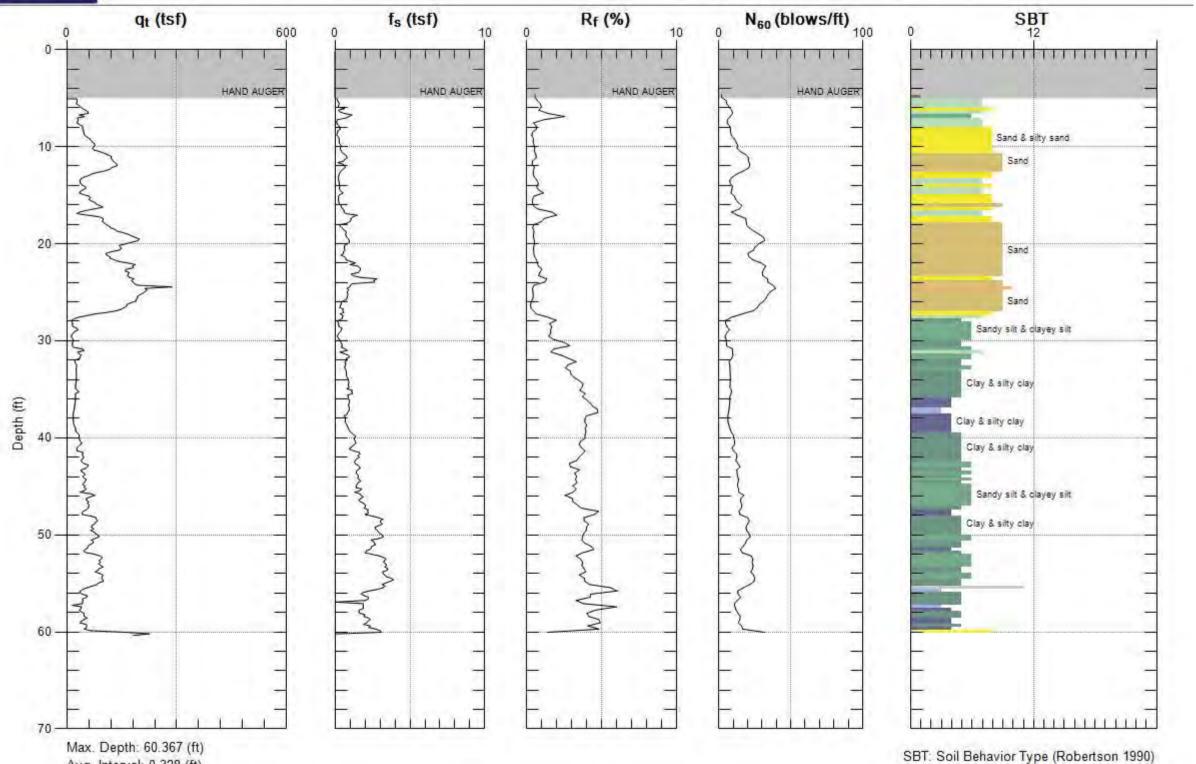
GROUP DELTA

Site: 1800 ARGYLE AVE.

Sounding: C-20 **

Engineer: S.KOLTHOFF

Date: 1/6/2014 01:11



_0	G ()F	C	ORI	E	ВО	RIN	3	PROJECT NAME SSV		PROJECT LA-1161A	NUMBER			ORING B- 5 **		
	LOC			Hollyw	a a d	Co			DATE(S) DRILLE 1/13/14	D	LOGGED TPO	BY			HEET NO of 3	0.	
	LING				oou,	Ca			DRILL BIT SIZE/I	TYPE	IFO	CHECKED I	3Y	TO (fe		PTH DRILLE	
DRIL CME	. L RIC 95	TYI	PE						DRILLED BY Gregg In-Situ Dril	ling			N F F	ROM V	ERTICA	AL/BEARING	
	e enco			NDWA ⁻	TER	DEP	ТН					APPROXIMA (feet)		SURF 15	ACE EL	EVATION	
СОМ	MEN	ΓS										Soil Cuttings		CKFIL	L		
æ	1 (ft)			_	KC	ORE	<u> </u>	_ }5					STS)RY	Ę,R		
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MA	TERIAL DESCI	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES	
-	Há								Approximately Hand augered	8 inches Asphalt ov to 5 feet bgs.	er 15 inche	s Base					
								P 14	Approxinmatel Artificial Fill	y 6 inches Concrete							
5	 <u>4</u> 10	1		29/30					Sandy SILT, of with rootlets.	dark brown, moist, fir	m sand,						
	_								UPPER SAND	OUNIT (Qs) , 7.5 yr 3/4 (Dark Bro	own) moin	t fine to					
-	_	2		17/30	-				\ medium sand,	trace coarse sand, 1 tr, 7.5 yr 5/6 (Strong edium and coarse sa	ew fine gra	vel /					
-10	<u>4</u> 05	3		25/30					<pre>_ medium sand, _ SAND with Si</pre>	, 7.5 yr 3/4 (Dark Brotrace coarse sand, fit, moist, fine to med	ew fine gra	vel _					
-	_	4		18/30	-				\medium sand, Sand with Silt	, 7.5 yr 3/4 (Dark Brotrace coarse sand, f t, 7.5 yr 5/4 (Brown)	ew fine gra moist, fine	vel ´					
- -15 -	<u>4</u> 00	5		25/30	-				cobbles 	few coarse sand, fe gravel , 7.5 yr 3/4 (Dark Bro trace coarse sand, t	own), moist	, fine to /					
	_	6		19/30	-				SAND with Si	It, 7.5 4/6 (Strong Bi few coarse sand, fe	rown), mois w fine grave	t, fine to					
20		7		23/30	-							<u>-</u>					
-	_	8		18/30	-				Clayey SAND/Silty SAND, 7.5 yr 4/6 (Strong Brown), fine to medium sand, few coarse sand, trace cobbles Silty SAND, 7.5 yr 4/6 (Strong Brown), moist, fine to medium sand, some coarse sand, few fine gravel								
-	390								MUD FLOW (<u>Qm)</u>							
SRO DEL	UP (GRO	370) Am	ар	ola	NSUL Ave. S	Suite	NTS, INC. OF SUB LOCK WIT PRE	S SUMMARY APPLIES THIS BORING AND A ISURFACE CONDITIC IATIONS AND MAY C H THE PASSAGE OF ISENTED IS A SIMPL IDITIONS ENCOUNTI	TTHE TIME DNS MAY DI HANGE AT TIME. THE FICATION (OF DRILLING. FFER AT OTHE THIS LOCATIOI DATA	R N	FI	GURI	Ē A-40 a	

LO	G ()F	C	OR	Εl	ВО	RING	3	PROJECT NA SSV	AME	PROJECT LA-1161A	NUMBER			ORING B-5 **	
	E LOC 0 Yuc			Hollyw	ood,	Са			DATE(S) DRI 1/13/14	ILLED	LOGGED TPO	ВҮ		1 -	HEET No.	0.
DRIL HSA	LLING	ME	THOD)					DRILL BIT S	IZE/TYPE		CHECKED SK	BY		TAL DE	PTH DRILLE
	LL RIG	3 TY	PE						DRILLED BY				ON FI	ROM V	/ERTICA	AL/BEARING
	AREN e enco			NDWA ⁻	ΓER	DEP	ГН					APPROXIM (feet)		SURF	ACE EL	EVATION
CON	MEN	TS										BOREHOLE Soil Cutting	ВА		L	
				ROC	. K C	ORE	:					Con Cutting				
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY		MATERIAL DESC	RIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
_	_	9		30/30					wet, fine t gravel	AND, 7.5 yr 4/6 (Strong o medium sand, trace c	Brown) , mo oarse sand,	ist to trace fine				
- - -	_	10		28/30	_				moist to w	AND to Sandy CLAY, 7 vet, fine sand, some me and, traces of peat (Black), slight hydrocar	dium sand, tr	own), race				
_30 - - -	<u>38</u> 5	11		60/60					-10 yr 3/4	(Dark Yellowish Brown						
- _35 -	380	12		60/60	_											
_	_								MODELO	FORMATION (Tm)						
- -40 -	 <u>3</u> 75 	13		60/60	-				Weatherd (Brown), 2 Yellow), n	d Sandy SILTSTONE n 2.5 yr 3/6 (Dark Red), ar noist	ottled 7.5 yr nd 10 yr 6/8 (4/2 (Brownish				
_									Silty SAN	IDSTONE, 7.5 yr 5/8 (S	trong Brown)	1				
- -45 -	<u>3</u> 70	14		60/60	_				Weathers (Brown), 2 Yellow)	ed Sandy SILTSTONE, 2.5 yr 3/6 (Dark Red), ai	mottled 7.5 y nd 10 yr 6/8 (r 4/2 (Brownish				
- -									-7.5 yr 2.5 -Sand Ler thick, fine	ns, 7.5 yr 7/1 (Light Gra	/), approxima	ately 1"				
GRO		GR(370) Am	ар	ola	NSUL' Ave. S	uite		THIS SUMMARY APPLIE OF THIS BORING AND A SUBSURFACE CONDIT LOCATIONS AND MAY WITH THE PASSAGE O PRESENTED IS A SIMP CONDITIONS ENCOUN	AT THE TIME ONS MAY DI CHANGE AT F TIME. THE LIFICATION (OF DRILLING. FFER AT OTHI THIS LOCATIO DATA	ER N	FI	GURI	E A-40 I

	OG OF CORE BORING TE LOCATION 230 Yucca Street, Hollywood, Ca RILLING METHOD							3	PROJECT NAME SSV DATE(S) DRILLED	PROJEC LA-1161A LOGGET				ORING B-5 ** HEET N	O.
6230) Yuc	ca St	reet,		ood,	Са		1	1/13/14 DRILL BIT SIZE/TYPE	TPO	CHECKED	BY		of 3	PTH DRILLE
HSA									8"		SK		(fe	et)	52
DRIL	L RIG	TYI	PE						DRILLED BY		INCLINATIO	N F	ROM \	/ERTIC	AL/BEARING
CME									Gregg In-Situ Drilling			0			
	AREN e enco			IDWA.	TER	DEP.	TH				APPROXIMA (feet)			ACE EL	EVATION
СОМ	MEN	ΓS									BOREHOLE		15 CKFII	1	
											Soil Cuttings		J. (1. 1	_	
							_								
æ	(ft)				KC	ORE	<u> </u>	<u>}</u>				STS	₽Z	三、兄	
DEPTH (ft)	ELEVATION (ft)	RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL I	DESCRIPTION		PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		15		14.5/20	0										
-															
-									Total Depth: 52 feet bsg	-1 00 f1 (M					
-									Groundwater encountered drilling)	,	ed anter				
-									Boring backfilled with tamp						
-55	<u>3</u> 60								Boring used with Permission	on from Green Site					
-	-														
_	-														
-	-														
-	_														
-60	<u>3</u> 55														
_	_														
_	_														
_	_														
_	_														
-65	<u>3</u> 50														
_	L														
_	L														
_															
	_														
70	345														
-70															
-															
-															
-	<u> </u>														
-															
	340				_				THIS STIMMADY	APPLIES ONLY AT	THE LOCATION	 J			
SRO	UP (GRO	OUP	DEL	_TA	CC	ONSUL'	TAI	NTS. INC. OF THIS BORING	APPLIES ONLY AT S AND AT THE TIME ONDITIONS MAY D	OF DRILLING.				
	370 Amapola Ave. Sι					ola	Ave. S	uite	212 LOCATIONS AND	MAY CHANGE AT AGE OF TIME. THE	THIS LOCATIO		FI	GURI	E A-40 d
DEL.	Torrance, California					Са	lifornia	90	PRESENTED IS	A SIMPLIFICATION		L			

PRELIMINARY GEOTECHNICAL REPORT PROPOSED HIGH RISE RESIDENTIAL DEVELOPMENT 6230 YUCCA STREET, HOLLYWOOD, CALIFORNIA. BORING LOGS (GDC 2006).

				T D/	2011	10	PROJE	CT NAI	ME		···			PROJECT	NUMBER	BORING	
		_ 1	FS	TBO	JKII	V G	Propo	sed F	Reside	ential D	evelopmer	nt		L-718		B-1 SHEET NO.	
SITE LOC					٠							STAF			і s н 0/25/2006		
6320 \	Yucca	St. F	lollyw	ood, CA	<u> </u>			DRILI	ING M	ETHOD		10	/25/2006	LOGGED		CHECKED BY	
Jet Dr		A111								tem Αι	iger			S. Na		T. Swantko	
DRILLING		MEN1	T			-			NG DIA		TOTAL DE	PTH (ft)	GROUNE	ELEV (ft)	1	LEV. GROUND WAT	ER (ft)
CME								6			61				▼ 24.3	3 / na	
SAMPLIN			D	20 i-			NOTES	S									
Hamm	ier: 14	JIDS	i., Dio	p: 30 in.	<u> </u>	1		1	ι (Ω	· ·	<u> </u>						
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG		DES	CRIPTION	AND CLASS	SIFICATION	
5			B-1						A.		.	2" of E Possible Silty Sar	Fill。 nd (SM) o	dark brown	n, with son	ne clay, scattered	
-		X	S-2	7 10 11							S	Sandy S lense, li	ilt to Silty ght browr	r fine San n, some ro	d (ML/SM) pots) medium dense to	,
_10		X	R-4	***	40/12	24					\$	Silty Sar	nd (SM) v	vith clay, o	dense, red	dish brown	
15 		X	S-5	6 35/6"				4.3				Bilty Cla	y (CL) ha	ard, reddis	sh brown, s	shale fragments	
20		X	R-6	*	36/1,	2 "					F r	Reddish nedium	brown int	terbedded dense, tra	Sandy Si ace of grav	It and Clayey Sand vel	d
GROUP	GR	229	91 W	LTA C	h St.,	Suit				OF THIS SUBSUF LOCATION WITH TH PRESEN	MMARY APP BORING AN FACE CONE ONS AND MA IE PASSAGE ITED IS A SII	ID AT TH DITIONS AY CHAN E OF TIM MPLIFIC	IE TIME C MAY DIFI IGE AT TI IE. THE C ATION OF	OF DRILLIN FER AT O' HIS LOCA' OATA	IG. THER TION F	FIGURE A-2	a .

				TDC		VIC.	PROJE									NUMBER		BORING
		<u> </u>	I E S	TBC	וואכ	NG	Propo	sed F	Reside	ential D	evelopn	nent		L	718 FINE	SLI		B-1 SHEET NO.
SITE LOC		04 1	1-0	01								STA	kı /25/20	വര)/25/2006	3	2 of 3
DRILLING	YUCCA G COMP	ANY	Hollyw	ood, CA				DRILI	ING M	ETHOD		1 10	123120		GGED I			CKED BY
Jet Dr	illing									tem Au	uger				S. Nav			Swantko
DRILLING		MEN	Ť					BORI	NG DIA	. (in)	i i	DEPTH (ft)	GROU	ND EL	.EV (ft)			ROUND WATER (ft)
CME SAMPLIN	75 IC MET	IOD					NOTES	6			61					¥ 24.3	/ na	
			s. Dro	p: 30 in.			NOIL	,										
			,						ည		1				,			
ਰੇ	z	Æ	<u>o</u>	N S S S	⊭	ш		#50	Ĭ	ä	0							
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	PASSING #200	RG.	POCKET PEN (tsf)	GRAPHIC LOG		DE	SCRI	PTION A	ND CLASS	SIFICAT	ION
EPT	EV.	M M	₽₩	LOS ESSE	ାଳ	lois (6	타	ASS	RAGE TO SERVICE TO SER	S S	SR							
^	ш	S	Ŋ	86.6	E E			%	ATTERBERG LIMITS LL:PL:PI	Ĭ.								
							+		⋖.		7.7.7	Clayey S	Sand to	Sano	y Clay	dense, re	eddish	brown, trace
		IXI	S-7	12 14				3.0				of black	organic	s	•			
		\vdash		18]						
-											////]						
_											1///	,						
												1						
											1///	1						
30				18/	01.	įi					 	Silty to S	Silty fine	e to n	nedium	Sand (Si	WSP)	wet, medium
L			R-8	76 4	Poli	}						dense, li	ght redo	dish b	orown s	lightly		
į																		
												-						
F																		
												1						
35				_								Silty Cla	y (CL)	stiff, l	light red	dish brov	vn, wit	h some sand
		X	S-9	7 8														
		\leftarrow		14														
~																		
_																		
				}				ĺ										
<u> 40 </u>			D 10	12/3	26/.	£1						Slight Si	ity to S	ilty fi	ne to c	oarse Sa	nd (SN	l) medium
<u> </u>			K-10	7/8	11/2							dense, r	eddish t	browr	ו			
												-						
												1						
}-											1.1.1	†						
]						
4-]						
45				33							7.7.7	Sandy C	lay to C	Claye	y Sand	(SC/CL)	very d	ense, reddish
-		X	S-11	28							1././	prown, ti	ace or (grave	:1			
				50/3"														
								İ				,						
-											1///	1						
]						
GROUI	CD		ם הר	LTA C	ONIGI	II TA	NTC	INIC				APPLIES O						
	GN			-					1 :	SUBSU	RFACE CO	AND AT TH ONDITIONS	MAY DI	IFFER	R AT OT	HER _		
		229	91 W	/. 205t	h St.,	Suit	e 10	5		LOCATI	ONS AND	MAY CHAN	IGE AT	THIS	LOCAT	ION F	ıGU	RE A-2 b
DELTA		т	orra	200	۸ ۵۸	504			1 1	PRESEN	NTED IS A	SIMPLIFIC	ATION (JAL		
DELIP).	- 1	onal	nce, C	7 900	ו טכ			- 1 '	CONDIT	IONS EN	COUNTERE	.U					

LO	GO	F	TES	ST B	ORII	NG	PROJE			ential C	Developr	ment		PROJE		NUMBER		BORING B-1
1	CATION			-								STAI			FINI			SHEET NO.
6320	Yucca	St.	Hollyv	vood, CA	4							10	/25/200)/25/200		3 of 3
	NG COM	PANY	′							ETHOD				LOGG			i	CKED BY
Jet L	rilling NG EQUII	DB453								Stem A				S. I				Swantko
		PIVIEN	41						ING DIA	(in)		L DEPTH (ft)	GROUNI	DELEV	(H)			ROUND WATER (fi
CME	NG MET	HOD					NOTES	6			61		<u> </u>			¥ 24.3	3 i na	
			s., Dro	p: 30 in			110.2	•										
				7					13									
) g	Z	SAMPLE TYPE	ġ	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	щ		PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	0							
DEPTH (feet)	ELEVATION (feet)) H	SAMPLE NO.	S/A/S	SNG	MOISTURE (%)	OTHER TESTS	S S	S	F 6-	GRAPHIC LOG		DEG	ODIOTI	~~.	ND 01 40	NEIO A T	1011
Į Ę	5 e	뒽	M M	P SS S		Sic	EH	SSI	187	岩뿔	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	İ	DES	CKIPII	JN A	ND CLASS	SIFICAT	IO N
🛎	ᇤ	SAN	δ	F F F F	×	ž			EB	ŏ	⁶							
<u> </u>								%	A.									
]		M	R-12	22	641	in it]				Sand to	Silty fine	to coa	rse	Sand de	nse, re	ddish brown
 				\ \mu_{\mu_{\text{\chi}}}	64/	2						1						
					1				ŀ	1		1						
												1						
-	1	1					1					}						
													•					
				1		}	1											
_ 55			,									Fine to m	adium S	and (S	<u> </u>	en/ dens	e light	brown, some
1		X	S-13	21/	50/6	ti		Ĭ				silt	icului i S	ariu (S	, , ,	ery deris	e, ngm	blown, some
<u> </u>				50/16	10													
1											,							
1					ļ]				· · · · · · · · · · · · · · · · · · ·							
-																		
L																		
											,							
60				~				1			777	Clayey S	and (6C)	dono	- lie	ht brown	with a	obblos
		M	R-14	50/6"							////	Clayey 3	anu (SC)	uense	, ng	int brown	, with t	obbles
ſ									1 1			Bottom of	boring B	-1 at 6	1 fee	et.		
F												Groundw						with concrete.
												Buring Da	CKIIIEU W	iui Soii	Cutt	irigs ariu	capped	with concrete.
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GROUF	2								\ 	HIS SU	MMARY A	APPLIES ON	LY AT TH	ELOC	ATIC	T n	·· ·	
	GRO	UUI	P DE	LTA C	UNSU	ILTAN	NTS,	INC.	· c	F THIS	BORING.	AND AT THE	E TIME OI	F DRILL	ING	i.		
0		220	31 W	. 205tl	h St	Suita	105					NDITIONS MAY CHAN				ON F	IGU	RE A-2 c
	,		, , v v	. 2001	, Ot.,	Juile	, 100		Ιv	VITH TH	E PASSA	GE OF TIME	E. THE DA	ATA				•
DELTA		T	orran	ice, CA	4 905	01						SIMPLIFICA OUNTERED		THEA	CTU	AL		

100	<u> </u>			TDC	אומכ		PROJE									NUMBER		BORING
		- I	ES	TBC	וואכ	NG	Propo	sed R	eside	ntial D	evelopmen				L-718	011		B-2 SHEET NO.
SITE LOC												STAI		ne		эн 0/26/2006	3	1 of 3
DRILLING	Yucca	St. I	Hollyw	ood, CA				DRILL	ING M	ETHOD		10	/26/20		OGGED			KED BY
Jet Dr		4141								tem Au	aer			- 1	S. Nav		T. :	Swantko
DRILLING		MEN'	r						NG DIA		TOTAL DE	PTH (ft)	GROU	ND E	LEV (ft)	DEPTH/E		ROUND WATER (ft)
CME	75							6			61.5					₹ 44.2	! / na	
SAMPLIN							NOTES	5										
Hamm	ner: 140) lbs	., Dro	p: 30 in.				1										
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG		DE	SCR	RIPTION	AND CLASS	SIFICAT	ION
							+	0-	IA.		~~~~	2" of A	sphalt					
5			B-1								s	2" of E	Base	bro	own, sor	ne gravel		
-		X	R-2	*1	O(12 th								ilt to Si		Sand (Si	WML) dar	k brow	n, scattered
_ 10 _ _		X	S-4	4 10 7	ļ						S	lightly rown, ti	Silty to ace of	Silt; grav	y Sand rel	(SM) med	ium de	ense, light
1031/06 115		X	R-5	*2	412°								Sand ome cla) mediu	m dense,	slightly	y reddish
BORING_1A L-718 YUCCA,GPJ GDC_WLOG,GDT 10/31/06 0 0		X	S-6	8 12 14							d	ense, s	ome co	arse	e sand a	n Sand (S and gravel		
GROUF	GR	229	91 W	LTA C /. 205t	h St.,	Suit			- (OF THIS SUBSUF LOCATION WITH THE PRESEN	MMARY APP BORING AN RFACE COND ONS AND MA HE PASSAGE ITED IS A SIN IONS ENCOL	DATTH ITIONS YCHAN OFTIM	IE TIME MAY DI IGE AT IE. THE ATION (OF IFFE THIS DA	DRILLIN R AT O' S LOCA' TA	IG. THER TION F	IGU	RE A-3 a

Г	00	10.			TDO		10	PROJE	CT NAM	ME					PROJE		JMBER		BORING
L	_OG		- I) B	וואכ	NG	Propo	sed R	Reside	ntial D	evelopmen	t		L-71	8 INISH			B-2 SHEET NO.
	ITE LOC												STAF				1 26/2006		
L	6320 Y	ucca	St. I	Hollyw	ood, CA				DOLL	INC M	ETHOD		10	/26/200	LOGGE				2 of 3 CKED BY
			ANY									aor			S. N				Swantko
Ļ	Jet Dri	lling	AACNI'	-						NG DIA	tem Au	TOTAL DE	DTLI /ff\	GROUN					ROUND WATER (ft)
			MICIA	'					l	אט טוא	. (***)	61.5	111 (14)	GROOM	J L_L (· 1	¥ 44.2		(-,
	CME 7		OD					NOTES	_ 6 s			01.0		1			- 11.6	7 11G	
				s Dro	p: 30 in.														
\vdash	1			.,						S									
	DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG		DES	SCRIPTIC	N AN	ID CLASS	IFICAT	ION
r			M	R-7	.8/ 1/8	36/2"				- A				•					
	30		X	S-8	5 7 9	72			7	,	3.5	ō	lay (CL) very st	tiff, with	som	e sand	 ·	
	35		X	R-9	7	20/12	ù					Sb	ilty fine rown, s	to medi ome clay	ium San	id (Si	M) medi	um de	nse, dark
MLOG.GDT 10/31/06	40		X	S-10	7 12 12		į						ilty fine ravel	e to med	ium San	id (Si	M) medi	um de	nse, some
BORING 1A L-718 YUCCA.GPJ GDC WLOG.GDT 10/31/06	45		X	R-11	*	58/1	2"												
OBC FOG BC	GROUP	GIN	229	91 W	LTA C /. 205t	h St.,	Suit				OF THIS SUBSUF LOCATION WITH TH PRESEN	MMARY APP BORING AN RFACE CONE DNS AND MA HE PASSAGE ITED IS A SIN IONS ENCOL	DAT TH DITIONS Y CHAN OF TIM MPLIFIC	HE TIME (MAY DIF NGE AT T NE. THE ATION O	OF DRIL FER AT HIS LOC DATA	OTH CATIC	IER ON F	IGU	RE A-3 b

Γ	100	G E	F	TES	T BO	DRII	NG	PROJEC	CT NAI	ME Poside	ntial D	evelonn	nent		PROJECT	NUMBER		BORING B-2
-	SITE LOC	CATION						Рюро	seu r	eside	illiai D	evelopii	STAF	RT	FINI			SHEET NO.
1					ood, CA	·			2011	1110 11	ETHOD		10	/26/2006	LOGGED (/26/2006		3 of 3 CKED BY
	Jet Dr		ANY								ETHOD item Au	ıger			S. Nav		1	Swantko
ŀ	DRILLING	G EQUIP	MEN	T						NG DIA			DEPTH (ft)	GROUNE	ELEV (ft)	DEPTH/E	LEV. G	ROUND WATER (ft)
	CME							1110777	6			61.5	<u> </u>			₹ 44.2	! / na	
ľ	SAMPLIN			s Dro	p: 30 in.			NOTES	5									
\perp	Панн	101. 14		J., DIO		Γ -		 	_	ဟ	T	1	Ī		-			
-	(F)	z	Ä	o.	PENETRATION RESISTANCE (BLOWS / 6 IN)	≿	ш		PASSING #200	ATTERBERG LIMITS LL:PL:PI	Z	,						
1	DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	RAT STAN IS/6	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	<u>№</u>	l SG I	POCKET PEN (tsf)	GRAPHIC LOG		DES	CRIPTION A	ND CLASS	SIFICAT	ION
-	EPT	LEV.	₽	AMP	CESIN	<u>a</u> e	NOIS (%	타	ASS	뿚	OCK A	GR J						
1		ш	ΥS	Ś	8.68	K	2		%	E	<u>~</u>							
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LOG BORING 1A L-718 YUCCA GPJ GDC WLOG GDT 10/31/06																		
ORI																		
ဗ္ဗ	GROUP	GR	OH	P DF	LTA C	ONSI	JI TA	NTS	INC				APPLIES ON AND AT TH					
										- - :	SUBSUF	FACE CO	ONDITIONS	MAY DIFF	ER AT OT	HER	IGH	RE A-3 c
င္တို	2291 W. 205th St., Suite 105									\	WITH TH	IE PASSA	MAY CHAN	E. THE D	ATA	1	100	NL 7-30
ľ	DELTA Torrance, CA 90501												SIMPLIFICA COUNTERE		THE ACT	JAL		

LANGAN ENGINEERING & ENVIRONMENTAL SERVICES FAULT INVESTIGATION REPORT FOR THE HOLLYWOOD DEVELOPMENT, VESTING TENTATIVE TRACT 71837, HOLLYWOOD, CALIFORNIA. BORING LOGS, 2011.

ENGINEERING	& ENVIRONMENTA	AL SERVICES		Log c	of B	oring			B	3			She	et	1	of	5
Project	***************************************	<u></u>	Pli	unge (deg) -60	Pro	ject No.			7000	19502							
Location	Millennlum Holly	wood	Be	-60 earing (deg)	Ele	vation an	d Date		000	19002							
	Hollywood, CA			179	Ļ		,	/	Appr	oximat	ely 3		Finish	nd			
Drilling Company		l D			Dat	e Started	1		71	19/12		<i>∪</i> al0	CHISB	вu	7	7/20/12	
Drilling Equipmen	Cascade Drilling	, <u>L</u>			Co	mpletion	Lengti	1				Rock	Depth		-		
	Sonic Drill Rig				-				Distu	100 ft rbed		Tu	ndistur	bed		Core	
Size and Type of	-			1 D - 0 . 70	Nu	mber of S	Sample	36					omplet		-	24 HR.	-
Casing Diameter	(in)		Ca	sing Depth (ft)	1	aler Leve			First		56		Omplet		55	A	55
Casing Hammer	-	Weight (lbs)	•	Drop (in)	Dri	lling Fore	man	1		Klinfal							
Sampler	Continuous Core			4.	Ins	pecting E	ngine	er		Klipfel							
Sampler Hamme	er .	Weight (lbs)	-	Drop (in)		,		D.	Ebe	rhart, S	. Mo	ntgo	mery,	& J.G	off		
AND Elev.						Length	ğ	υ.		mple Da ਸ਼ੁੱਖ਼,⊑		alue ws/ft)	1	(D-AF-	Re	marks	Caeinn
(ft)		Sample Description	on			Scale	Number	Туре	Reg (F)	Penetr. resist BL/6in	(Blov 10 20		,	Fluid Los	ss, Dril	ing Resis	Casing, tance, etc.)
+389.0 +388.7	Asphalt Pavement					- 0 -	-	TI	F			· i		##VD	#/#	Sall Ca	lor based
	Loose, 5YR 3/2, s to slightly moist [F	ilty fine to medium g	raine	a SANU, damp		E 1 -]				:	; ;					ofor Char
		•				Ė	‡				:						
						- 2 -	42	CORE	12		: !						
3 XXX						F 3 -	1				; }						
						E	3				1		.				
	Loose, 5YR 7/1, s	ilty fine to medium g	raine	d SAND, damp		E 4 ·	}_	w w	~		. !		.				
	(FILL)					E 5	10	CORE	12			:	.				
	No Recovery (5 to	7.5 feet)				Ė	1										
3‱						- 6	-				٠.						
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Ž X 382.5	•			, , , , _ , , _ , , _ ,		F 7	3	£ 0			:		.,				
	YOUNG ALLUVIU	sitty fine grained SA	AND.	trace medium		E 8	3	ľ.			:	;]				
	grained sand, trac	ce fine subrounded g	ravel	, slightly moist		E	1				:	!					
	(SM)					E 9	4										
						E 10	1	ļ.,	_	ļ		:	!				
						F "	1					:					
						F 11	亅	y.	_			· :					
						E 43	7	CORE	18								
						F 12	1										
377.7	- T	, very fine to fine gra	ined	noorly graded		- [13	1	+	╟			-					
	SAND, trace fine	, very line to line gra subangular gravel, c	damp	(SP)		Ė	1	ارپرا									
SIN CONTRACTOR	. •					F 14	-100	CORE	15								
		. 40 ()				- 15	1	1	Ц_	+	'						
38	No Recovery (15	to 18 feet)				E]				:	'	:				
8000				••		- 16	4					; ;					
\$						17	1					: :					
						上"	1	R.	9 =	,		; ;					
NIGAN COMDATANIRDATASTO0019502ENGINGERING DATANG	- T.555 750 514	, silty very fine to fin	e 012	ined SAND.	-	18	4				'		!				
Š NAS	scattered clayey	lenses, slightly mois	st (SN	1)		Ė ,,	7					! :					
IGAN						- 19 -	7										
31.34.34.31						F	1		-		1	. ;	L				

ENGINEERING & ENVIRONMENTAL SERVICES Log of Boring **B**3 Sheet of 5 Project Plunge (deg) Project No. Millennium Hollywood 700019502 Location Bearing (deg) Elevation and Datum 179 Hollywood, CA Approximately 389 Sample Data Elev (ft) Remarks Length Scale Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 4 21 22 Loose, 7.5YR 3/4, silty very fine to fine grained SAND, trace fine subrounded gravel, trace coarse grained sand, some clay, slightly moist (SM) 23 88 OLD ALLUVIUM Medium dense, 7.5YR 4/4, silty clayey very fine to fine grained SAND, slightly moist to moist (SC) Loose to medium dense, 7.5YR 4/6, silty clayey very fine 25 grained SAND, moist (SC) 26 27 28 ဖ 28 Medium dense, 7.5YR 4/4, very fine to fine grained poorly graded SAND, trace fine subrounded gravel, trace silt, slightly moist (SP) 29 30 Soft, 7.5YR 4/6, very fine grained sandy SILT, moist (ML) 31 32 8 Medium dense, 7.5YR 4/6, silty very fine to fine grained SAND, moist (SM) 33 34 Medium dense, 7.5YR 3.5/4, slity very fine to fine grained SAND, trace fine subangular gravel, trace medium and coarse sand, trace clay, slightly moist (SM) 35 36 4 37 38 Loose, 10YR 3/4, sitty very fine grained SAND, slightly moist (SM) 39 O) $\overset{\sim}{\sim}$ Loose to medium dense, 10YR 3/4, silty very fine to fine grained SAND, moist (SM) 40 80 2 4 Medium dense, 7.5YR 3/4, clayey very fine to fine grained SAND, trace silt, slightly moist to moist (SC) 16

ENGINEERING & ENVIRONMENTAL SERVICES Log of Boring B3 Sheet 3 of 5 Project No. Project Plunge (deg) -60 700019502 Millennium Hollywood Location Bearing (deg) Elevation and Datum ..Template TEMPLATE.GD1 Hollywood, CA 179 Approximately 389 Sample Data Remarks Length Scale N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) (ft) 10 20 30 40 Loose, 7.5YR 3/4, silty very fine grained SAND, gradational contact, slightly moist (SM) 46 2 4 Loose, 7.5YR 4/6, very fine grained poorly graded SAND, trace fine to coarse subrounded gravel, gradational contact, damp (SP) Medium dense, 7.5YR 4/6, silly very fine to medium grained SAND, slightly moist (SM) 5 Medium dense, 7.5YR 4,5/4, very fine to coarse grained well graded SAND, scattered fine subrounded gravel, damp 8 53 Loose to medium dense, 7.5YR 3/4, slity very fine grained SAND, slightly moist (SM) Medium dense, 10YR 4/6, very fine to medium grained poorly graded SAND, trace fine to coarse subangular 4 7 gravel, slightly moist (SP) 55 Medium dense, 10YR 4/4, very fine to medium grained poorly graded SAND, trace fine subangular gravel, wet (SP) 56 5 8 57 Medium dense, 10YR 3/6, slity very fine to fine grained SAND, trace fine subangular gravel, trace coarse grained sand, moist to wet (SM) 58 Loose, 10YR 5/4, very fine to fine grained poorly graded SAND, trace fine to coarse subangular gravel, damp to 59 slightly moist (SP Loose, 10YR 4/6, fine to coarse grained well graded SAND, wet (SW) 9 37 60 Medium dense, 10YR 4/4, silty very fine grained SAND, trace fine subangular gravel, wet (SM) 61 Loose, 10YR 4/6, very fine to medium grained SAND, some coarse grained sand, wet (SP) 62 Loose, 10YR 3/4, very fine to medium grained poorly CORE 30 graded SAND, trace fine subangular gravel, wet (SP) Medium dense, 10YR 3/6, slity very fine to fine grained SAND, trace coarse grained sand, wet (SM) 63 64 Soft, 10YR 3/6, very fine to fine grained sandy CLAY, trace coarse grained sand, wet (CL) 65 8 38 66 Medium stiff, 10YR 3.5/5, CLAY, trace coarse grained sand, moist (CL) 67 Loose, 7.5YR 3/4, clayey very fine to fine grained SAND, trace coarse grained sand, wet (SC) 68 Loose, 7.5YR 4/6, fine to coarse grained well graded SSR 9 36 SAND, wet (SW) Stiff, 10YR 4/6, silty CLAY, trace coarse grained sand, slightly moist to moist (CL) 69

ENGINEERING & ENVIRONMENTAL SERVICES Log of Boring **B**3 Sheet 5 of Project No. Project Plunge (deg) Millennium Hollywood -60 700019502 Location Bearing (deg) Elevation and Datum Hollywood, CA Approximately 389 Sample Data Remarks Length N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) (ft) Scale 10 20 30 40 Loose, 10YR 3/6, clayey fine to coarse grained SAND, scattered silty lenses, wet (SC) 71 72 Loose to medium dense, 10YR 3/4, clayey silty very fine 20 36 grained SAND, trace coarse grained sand, trace fine angular gravel, moist (SM) 73 74 75 Loose, 10YR 3/6, clayey very fine to coarse well graded SAND, slightly silty, wet (SW) 76 Medium stiff, 10YR 4/3, silty CLAY, trace fine and medium 38 7 grained sand, moist (CL) Modlum stiff to stiff, 10YR 3/4, CLAY, trace medium and coarse grained sand, moist (CL) Medium dense, 10YR 3/4, silly fine to coarse grained SAND, scattered fine subangular to rounded gravel, trace 22 တ Loose to medium dense, 10YR 5/8, silty very fine to coarse grained SAND, moist to wet (SM) 83 4 80 81 Loose, 10YR 4/6, very fine to coarse well graded SAND, 82 scattered fine subrounded gravel, scattered silty lenses, wet (SW) 26 24 83 84 Loose, 10YR 4/6, very fine to coarse well graded SAND, scattered fine subrounded gravel, scattered silty lenses, 85 25 36 86 Loose to medium dense, 10YR 5/6, slifty very fine to coarse grained SAND, scattered fine subangular gravel, dry to damp (SM) 87 Loose, 10YR 4/6, fine to coarse grained well graded SAND, molst to wet (SW) 88 Stiff, 10YR 3/4, silly medium and coarse grained CLAY, slightly moist (CL) 26 36 89 Loose, 7.5YR 3/3, fine to coarse grained well graded SAND, trace clay, slightly moist (SW)
Stiff to very stiff, 7.5YR 3/4, CLAY, trace coarse grained sand, moist (CL) 90 91 27 84 92 Medium dense, 10YR 3/4, clayey fine and coarse grained SAND, wet (SC) 94 8 8

B3 Sheet 5 of 5 ENGINEERING & ENVIRONMENTAL SERVICES Log of Boring Project No. Plunge (deg) Project -60 700019502 Millennium Hollywood Elevation and Datum Bearing (deg) Location 179 Approximately 389 Hollywood, CA Remarks Length Scale Elev. (ft) (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description Stiff, 10YR 3/6, CLAY, trace very fine grained sand, moist (CL) 95 28 8 Loose, 10YR 4/6, fine to coarse grained well graded SAND, wet (SW) 96 97 Medium dense, 10YR 3/6, silty very fine to fine grained SAND, moist to wet (SM) 23 28 99 NLANGAN, COMIDATAINIDATASY 2000 1950 ZIENGINEERING DATANGEOTECHNICAL NGINTLOGS Y 2001 95502 HOLLYWOOD LOGS B1-84-MODIFIED.GPJ ... 11/20/2012 9:59:03 100 101 102 -Boring terminated at 100 feet length Boring backfilled with cement grout Surface patched with black-dyed rapid set concrete 103 104 105 106 107 108 - 109 -110 -111 112 -113 114 115 116

	ERIN	G & ENVIRONMENT	AL SERVICES		Log of	Boring	9 _		E	34			Sheet	1	of	5
Project		Millennlum Holly	wood	Plunge (deg)	-60 F	roject N	о.		700		~			*******	***************************************	
Location		William Holly	WOOD	Bearing (deg)		levation	and D	alum		01950	2					
Drilling C	'ompan	Hollywood, CA			178		4		Арр	oroxima						
Diming	vinhan	y Cascade Drilling,	. LP			ate Star	tea		7	7/20/12		Date	Finished	7/	21/12	
Drilling E	quipme	ent			C	ompleti	on Len	gth	<u>-</u>	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Rock	Depth	- ' '	L 11 (L	
Size and	Туре с	Sonic Drill Rig							Dis	111 ft turbed		TU	ndisturbed	T	Core	
Casing (Damete	r (n)		Casing Depth		lumber e	of Sam	ples					mpletion	· l .		
			Tia/o(-b) (b-)		V	Valer Le			Fire	? 	62,5		62,5		24 HR. Y	_
Casing I		*	Weight (lbs)	Drop (in)		rilling Fo	oremai		lasor	n Klipfe	.1					
Sampler		Continuous Core	Weight (lbs)	Drop (in)	\Tr	spectin	g Engi			rmpro	····	*******		*******		
	1 1	.	-	· Diop (iii)		·				erhart, ample D		ntgor	nery, & J.Got	ff	•	
MATERIAL SYMBOL	Elev. (ft) -393.5		Sample Description	n .		Lengi Scal		Type		Penetr. resist BL/6in		/s/ft)	(Drilling Fiuld Loss		narks Depth of Cosi g Resistance	ing, , etc,)
****	+393.2	Asphalt Pavement	silty very fine grained	SAND asnha	lt and	ŧ°			n-				114VD 4	1111 0	oll Color b	
		concrete fragments	s, damp [FILL]	or with, doping		F 1	1	CORE	4						Soil Calor	
		Loose, 10YR 3/2, s	silly fine grained SAN	D, scattered fi	ne	- 2	1	+	#-	 	i					
		slightly moist [FILL]	ohait and concrete frag .]	gments, damp	0 10	- 3	7	SORE	5		1					
\bowtie						-	3	Ö	II		:	!				
\bowtie			silty fine grained SANI	D, trace fine		- 4	+	T		 	1					
XXX	+389.2	subangular gravel, YOUNG ALLUVIUN			.,	, 5	3	SORE	42	}		!				
		Loose, 10YR 3/3, s	nt silty very fine to fine gr avel, slightly moist (SM	rained SAND,	trace	-	1	0				;	i			
		inte subangulai gra	iver, suggettly moist (or	γi)		- 6	1									
						- 7	4	CORE	မ		:					
		•				Ė,	1				:					
			YR 3/4, silty very fine se grained sand, moist		d	E 8	1									
		4, 1, 14, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	o graniou danoi indiai	. (3)		F 9	5	ORE	8		:	! !				
						E 40										
		Medium dense, 10° SAND, trace coarse	YR 3/4, silty very fine se grained sand, moist	to fine graine t (SM)	d	F 10	3				:					
			,	,		F 11	=	Щ			1					
	-383.1		بند سد بید سداست جدی پید			E 12	1	SOR	12							
		SAND, trace fine si	YR 4/4, clayey fine to subangular to subroun	coarse graine ded gravel, so	ed ome	ŧ "	=									
		silt, dry to damp (S	iC)			E 13	1	+	 							
						- 14						:				
						E	-	CORE	=			! :				
						F 15	7									
144	379,6	T 7005 700 716 -	silty fine to coarse gra	7 717 7 Feet		16	1	$\perp \mid$:				
		clay, slightly moist	(SM)	mou OMNO, li	ac o	E]				٠,	:				
						17	1 8 1 8	CORE	2		· .	:				
						- 18	1	გ	1		. !	:				;
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		Medium dense, 10° slightly moist (SM)	YR 4/4, silty very fine	grained SAN	D,	- 19	1 6	ORE	10		:	;				

of 5 Sheet Log of Boring ENGINEERING & ENVIRONMENTAL SERVICES Project No. Plunge (deg) Project 700019502 Millennium Hollywood Elevation and Datum Location Bearing (deg) 178 Approximately 393.5 Hollywood, CA Sample Data Remarks Length Scale (Drilling Fluid, Depth of Casing, Fjuid Loss, Drilling Resistance, etc.) Elev (ft) Type (in) Sample Description 10 20 30 40 20 Loose to medium dense, 10YR 4/6, fine to coarse grained poorly graded SAND, slightly moist (SP) 9 21 Medium dense, 10YR 4/6, silty fine to medium grained SAND, scattered fine subangular gravel, damp to slightly 22 23 moist (SM) 9 5 24 GINTLOGSI700019502 HOLLYWOOD LOGS B1-84-MODIFIED.GPJ ... 11/20/2012 9:59:17 PM 25 Loose to medium dense, 7.5YR 4/4, silty fine to coarse grained SAND, trace fine angular gravel, moist (SM) 26 Medium dense to dense, 7.5YR 4/4, silty fine to coarse grained SAND, trace_clay, slightly moist (SM) 88 27 370.1 OLD ALLUVIUM 28 Medium dense, 7.5YR 3/3, silty fine to coarse grained SAND, slightly moist (SM) 29 Medium dense, 7.5YR 4/3, silty fine to medium grained SAND, trace coarse grained sand, slightly moist (SM) ŭ 24 30 31 Medium dense, 7.5YR 4/4, clayey silly fine to coarse grained SAND, slightly moist (SM) Medium dense, 7.5YR 4/4, silty fine to coarse grained SAND, trace clay, slightly moist (SM) 32 3 26 33 Medium dense, 7.5YR 3/4, silty very fine to fine grained SAND, slightly moist (SM) 34 363.6 Loose, 7.5YR 5/6, very fine to coarse grained poorly graded SAND, slightly moist (SP) 35 4 ≊ 36 Loose, 7.5YR 4/6, silty fine to medium grained SAND, trace coarse grained sand, slightly moist (SM) 38 5 20 39 40 Loose, 7.5YR 4/6, silty fine to medium grained SAND, 358.4 slightly moist (SM) Loose, 7.5YR 4/4, fine to medium grained poorly graded SAND, trace fine subrounded gravel, slightly moist (SP) 41 8 9 Medium dense, 7.5YR 4/6, silty very fine to fine grained SAND, slightly moist (SM) Medium dense, 10YR 3/6, clayey fine to medium grained SAND, slightly moist (SC) 11 7 Medium dense to dense, 10YR 3/4, clayey very fine to fine grained SAND, trace fine subrounded gravel, slightly moist

ENGINEERING & ENVIRONMENTAL SERVICES Log of Boring **B4** Sheet 3 of 5 Project Plunge (deg) Project No. Millennium Hollywood -60 700019502 Location Bearing (deg) Elevation and Datum Hollywood, CA 178 Approximately 393.5 MATERIAL SYMBOL Sample Data Elev (ft) Remarks Length N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale 10 20 30 40 (SC) Medium dense, 10YR 3/6, clayey fine to medium grained SAND, trace silt, slightly moist (SC)

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Loose, 7.5YR 5/8, fine to coarse grained well graded 67 68 gravel, trace fine subangular to subrounded gravel, wet (SW) 24 28 69



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ENGINEERING & ENVIRONMENTAL SERVICES Log of			f Boring B4				Sheet	5	of	5			
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APPENDIX B: SOIL STRATIGRAPHIC AGE ASSESSMENTS



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Quaternary Geology Economic Geomorphology Soil Stratigraphy Geoarchaeology PG 2867; CPG 1766; CPESC 2167

APPENDIX B

SOIL-STRATIGRAPHIC AGE ASSESSMENTS AND PALEO-ENVIRONMENTAL RECONSTRUCTION. GROUP DELTA CONSULTANTS EAST AND WEST TRENCHES, 6230 YUCCA STREET, HOLLYWOOD AREA, CITY OF LOS ANGELES, CALIFORNIA

INTRODUCTION

Appendix summarizes soil-stratigraphic field This measurements descriptions for dating relative fault activity (time of last displacement) and for reconstructing local geomorphic evolution over the last ~200-300 ka at and near the proposed "Yucca Street" development (Group Delta Consultants, Inc. [GDC], Plate 1, Site 2). The main purpose of the GDC investigation was to determine whether or not the inferred "Argyle Strand" of the Hollywood fault zone affects the proposed site (GDC Plate 1; Hernandez and Treiman, 2014). Accordingly, in addition to onsite and adjacent-site cone penetrometer tests (CPT) and continuous cores, GDC excavated and logged two onsite trenches, informally deemed the "west" and the "east" trenches, respectively (GDC, Plate 1). The two Yucca (Site 2) trenches, excavated and logged under the direction of GDC, complement other site-specific geological and geotechnical analyses (GDC narrative and appendices) to assess possible fault presence and relative activity.

The main purposes of this investigation (Appendix B) were several-fold:

1. To measure and describe a representative soil-stratigraphic section from initial exposures in the west trench;

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- 2. To determine the approximate age of the west-trench sediments based mainly on relative soil-profile development of the several paleosols encountered in the trench:
- To reconstruct the latest Pleistocene-Holocene fluvial environment of deposition as recorded in the west trench exposures; and, from the east trench exposures, to explain the geomorphic evolution of the site and adjacent properties to the east (GDC Plate 1; Champion Site; Site 3) and the northeast (GDC Plate 1; Green Site; Site 4);
- To assess the validity of two radiocarbon dates for the west trench sediments, particularly focusing on potential sample contamination; and to evaluate the stratigraphic validity of east-trench dates for age of "middle" Argyle Channel deposits;
- To assist GDC with correlation of trench exposures and adjacent cone penetrometer test (CPT) transects and continuous cores; specifically, those data obtained onsite as well as from on-going investigations to the south (GDC Plate 1; East Millennium Site; Site 1) and to the east (GDC Plate 1, Site 3);
- To deduce the likely characteristics and relative activity of various Hollywood fault segments inferred to potentially impact the site based on review of the published literature and on exposures in the two, on-site trenches; and
- 7. To provide an independent "Quality Assurance" critique of the GDC draft report in compliance with current geologic standards-of-practice applicable to fault-activity investigations.

The field work was commissioned by GDC and included various field, office and laboratory meetings with GDC personnel and with reviewers from the California Geological Survey and the City of Los Angeles. These took place from February through July 2014. The west trench field measurements were carried out on 13 February and 29 March; and the east trench documentation took place on 11 June and 7 July, respectively.

GDC personnel and Engineering Geologist Steven Kolthoff logged the trenches and kindly provided field logistical support. I particularly thank Steven Kolthoff and GDC engineers Michael Reader and Thomas Swantko for their muchappreciated courtesy and assistance.

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Two formal soil-stratigraphic sections were measured at the Yucca west trench; on the west wall at station 0+55 (Table 1), and in a basal "trench box" at station 0+35 (Table 2). Representative east-trench sections were documented on the east wall at station 0+60 (Table 3) and on the west wall at station 0+78 (Table 4). Pertinent location and geologic maps, trench logs, and CPT and continuous core data are given in the GDC narrative and hence are referred to, but not replicated in this document.

This Appendix uses traditional pedological (soil science) terminology and field methodology described in Soil Survey Division Staff (1993), in Soil Survey Staff (1999) and in Schaetzl and Anderson (2005). The applicability of soil-stratigraphy to fault-activity assessments for construction of residential and commercial properties, dams, landfills and other large engineered structures is summarized in Shlemon (1985). Numeric dating and "calibration" with relative soil profile development is reviewed in Birkeland (1999), McFadden (1989), and Eppes and others (2002).

Quantifying several key soil (pedogenic) properties by use of the "soil development index" (SDI) may provide an "age of weathering" (Harden, 1982). The index generally works well to determine the age of surface profiles, particularly chronosequences on flights of fluvial terraces. For buried soils, however, such as those at the Yucca site, the "Harden index" may yield incorrect results. Specifically, physical truncation or chemical alteration usually leaves only two or three soil characteristics amenable for quantification; for example, color change (rubification) with depth, expressed by Munsell notation; frequency and relative development of secondary clay films; and decrease in clay content from an argillic (Bt) horizon compared with primary (depositional) clay in the parent material (C horizon). Typically, however, as exposed in the Yucca west trench fluvial deposits, the laterally discontinuous, grossly fining-upward deposits make it almost impossible to confidently calculate the amount of translocated (pedogenic) clay compared with that inherent in the parent material. Moreover, local rubification may be derived from erosion of nearby, previously weathered sediments, a problem particularly affecting age assessments of paleosols identified in subsurface cores. In brief, age quantification of truncated buried soils, based only on a few preserved physical and chemical "signatures," too often results in dates with high uncertainty, even though some practitioners provide numbers to two or more significant figures. The age estimates for the Yucca trench soil-stratigraphy are therefore given in realistic ranges (Tables 1 through 4) to encompass uncertainty inherent in dating partially preserved paleosols.

WEST TRENCH STRATIGRAPHY

The Argyle Channel

The Yucca west trench, ~130 ft long and locally up to ~35-ft deep, exposed several interbedded and laterally discontinuous, grossly fining-upward sedimentary "packets" laid down in a former stream channel (fan distributary?) informally named the "Argyle Channel" after its southwest trend down the street of that name and through the site (GDC Fig. 6). The channel thalweg is exposed near the bottom of the west trench (GDC Plate 3 and Appendix D; photographs 1 and 3). The Argyle sediments are mainly bar and channel, capped by a remnant, slightly developed surface soil and replete with four intercalated buried paleosols. Each soil represents an epoch of relative landscape stability and hence a time of weathering (soil formation).

The basal trench unit, incised into and unconformably overlain by the Argyle Channel, is a truncated mudflow (Qm) bearing a remnant soil (dark yellowish brown [10YR 3/6] to dark brown [7.5YR 3/3] silty clay loam [Table 2]). This, in turn, is underlain by matrix-supported angular clasts (debris flows; Qdf) clearly exposed in the east trench (GDC Plate 5) and recognized in CPT transects and in continuous cores (GDC Plates 1 and 4). Topographically, the Argyle Channel no longer exists, its "upstream" source apparently "cut off" by early development in this area. Significantly, however, its sedimentary characteristics and incision into underlying, older clayey deposits indicates relatively abrupt, regional environmental change from deposition of mud- and debris-flows to relatively clean, high-energy fluvial gravels and silts. This major unconformity most likely stems from regional climate and vegetation change, and therefore ostensibly identifies onset of "pluvial" conditions in this area. For conservatism, this is judged to have taken place as recently as ~12-16 ka ago, temporally associated with marine oxygen-isotope stage 2. Accordingly, based on the abrupt change in fluvial environments, the base of the Argyle Channel is at least ~10-12 ka old; an age corroborated by the cumulative age of its several, intercalated buried soils.

Soil-Stratigraphic Measurements and Descriptions

The ~35-ft thick Argyle Channel sediments and paleosols were described from west-trench exposures on the west wall at Station 0+55 (Table 1); and the lower several ft were described from a "box trench" exposure at the base of the trench at Station 0+35 (Table 2).

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Station 0+55

The Station 0+55 soil-stratigraphic section is ~20-ft thick, measured from the surface to essentially the top of Bench 4 (GDC Plate 3). As documented in Table 1, artificial fill is underlain by about 3-ft of gravelly coarse sand grading upward to a loamy medium sand. The section is sufficiently weathered to have developed ~0.8-ft thick cambic (color) horizons (Bw1 and Bw2). No translocated clay is apparent. Nevertheless, weathering in Mediterranean climate, coarse-grained sediments requires at least an estimated 1 ka of weathering (McFadden, 1989). This surface soil is therefore deemed to be "very slightly developed."

Another grossly fining-upward packet of sediments occurs between ~3.8 to 7.8 ft (Table 1). A similar, "very slightly developed" buried soil caps this packet. The upper cambic horizon (2Bw1b) is truncated but, combined with the lower horizon (2Bw2b), similarly represents about ~1-2 ka of weathering.

A second, truncated buried paleosol occurs at a depth of 7.8 ft (Table 1). This soil, however, bears a weak argillic horizon (3Btb) typified by strong brown (7.5YR 4/6) thin clay films that bridge mineral grains and line ped faces. Based on relative development, this "slightly developed" paleosol is judged to represent ~2-3 ka of weathering.

The top of a third, similarly truncated buried paleosol is identified at 10.4 ft (Table 1). Two weak argillic horizons (4Bt1b and 4Bt2b) are characterized by fine, dark yellowish brown (10YR 4/4) fine clay films that line ped faces and locally bridge root pores. A "slightly developed" profile suggests that ~2-3 ka of weathering took place before burial by overlying sediments.

A fourth paleosol caps another fining-upward sequence at a depth of 14.5 ft (Table 1). The identified argillic horizon (5tb) is only 0.5-ft thick, probably truncated by deposition of the overlying coarse gravelly sand. Here, too, the horizon probably formed in ~2 ka. These particular deposits locally incise 2-3 ft into the underlying sediments, typical "cut-and-fill" deposition within the Argyle Channel.

In brief, relative development of the surface and the four buried paleosols suggests a cumulative age of at least ~10-12 ka of weathering, a minimum age for the Argyle Channel deposits. More likely, however, based on thalweg incision into the underlying clay and the dramatic change in the fluvial environment, the

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basal deposits are older, ostensibly initially laid down at least ~12-15 ka ago during onset of marine isotope stage 2.

Station 0+35

In order to assess relative profile development below the base of the Argyle Channel, GDC locally deepened the Yucca trench several ft, providing safe access by means of a "Trench Box" (GDC Appendix D, Photograph 8). As measured and described from Station 0+35, the trench box exposed ~7 to 8-ft of silty clay loam coarsening downward to sandy clay loam, and ultimately to interbedded, mixed coarse sand and granitic gravel lenses at the base (Table 2). The clayey parent material (Qm) is a regional stratigraphic marker, exposed continuously at the base of the Yucca west trench, discontinuously throughout the east trench, and identified in adjacent continuous cores and on CPT transects.

A distinct, though truncated, buried paleosol was identified at the box trench exposure. This soil has two discrete, buried argillic horizons (6Bt1b and 6B2tb; Table 2). The argillic horizons are mainly silty to sandy clay loam, dark brown (7.5YR 3/3) to dark brown (7.5YR 4/4) in color, and replete with few to common fine, dark brown (7.5YR 3/4) clay films that line ped faces, bridge mineral grains and fill old root pores. The trench box exposures show that basal Argyle channel gravels are incised and truncate the underlying paleosol at least about one ft. Nevertheless, sufficient argillic horizon characteristics remain to deem the soil as "moderately developed," thereby representing an additional ~8-15 ka of weathering.

West Trench Radiocarbon Dates

Two "charcoal" samples were collected for potential radiocarbon assay (GDC Appendix C): "Charred material" at ~14-ft (Yucca # 2); and "organic sediments" at ~18-ft (Yucca # 1; GDC Appendix C). The Yucca samples were dated by "standard radiocarbon assay." Such dates may be questionable when sample size is small, where there is potential for modern groundwater contamination, and where samples are taken from high-energy environments and thus potentially reworked from older, "upstream" sediments.

As shown on the trench log (GDC Plate 2), the Yucca sediments are generally very coarse grained and devoid of laterally continuous, relatively impermeable clay beds to "perch" or otherwise prevent modern surface water from penetrating the entire section. Accordingly, the Yucca # 2 sample, dated as ~4300 BP (conventional) has been likely subject to contamination by younger gravitational

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water. It is therefore likely at least 10 or 15 percent too young (Pigati and others, 2007). Similarly, and very highly suspect is the 41,000 BP age for Yucca # 1, obtained from sediments realistically not more than ~12 ka old. Most likely, therefore, this "disseminated organic sediment" was derived from "upstream" weathering of older sediments and transported in the high-energy, coarse fluvial sediment at the base of the Argyle Channel. This "too old" sample age is therefore rejected in favor of more reasonable, and conservative, soil-stratigraphic and paleo-environmental reconstruction.

EAST TRENCH STRATIGRAPHY

GDC excavated the ~160-ft long and ~30-35-ft deep east that overlapped the west trench and continued south across the Yucca property (Site 2) onto the adjacent Site 1 (GDC Plate 1). The east trench generally encountered four discrete Quaternary stratigraphic units, some bearing buried paleosols amenable to measurement, description and relative age assessments. As described by GDC (stratigraphic section, Fig. 10), the uppermost unit (youngest) pertains to the Argyle Channel, mainly fluvial and locally cross-bedded, medium- to coarsesand and lenticular gravel beds (Qs). These are underlain by discontinuous mudflows locally capped by slightly to moderately developed buried paleosols Underlying the mudflows are extensive debris flows, locally bearing (Qm). discrete paleosols indicative of periodic (climatically controlled?) landscape stability and soil formation (Qdf). The debris flows are mainly derived from adjacent upstream and sideslope "older alluvium" (Qoal) that once extended across the entire area. As encountered in onsite and adjacent cores, the Yucca area is underlain by Modelo formation "bedrock" (Tm).

Paleo-Environmental Reconstruction - East Trench Exposures

The east trench exposures supported initial interpretations of core and CPT data about the likely origin and relative age of the mud- and debris flows that underlie the Yucca (Site 2) area. Specifically, as shown on GDC Fig. 7, a veneer of old (likely ~300 ka), "high-level" channel and fan deposits still mantle the eroded surface at Site 3, east of Argyle Street (GDC Plate 1). Based mainly on paleoenvironmental interpretation of regional cores and on the east trench exposures, an ancestral drainage apparently incised the area ostensibly ~300 ka ago, giving rise to a steep channel wall underlying the present Argyle Street (GDC Plate 1). This channel was then filled by multiple debris flows emanating from upstream as well as from adjacent sideslopes. Debris-flow deposition was apparently episodic, or possibly even periodic, as deduced from preservation of slightly to

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moderately developed buried paleosols observed in the east trench. Many debris flows retain their original "brown to reddish brown" color, a result of previous, deep weathering of the their source sediments, the "high level" fan deposits (GDC Fig. 7).

The debris flows (Qdf) were, in turn, eroded and reworked, giving rise to relatively thin but readily discernible mudflows (Qm) that locally cover the debris flows and underlie the Argyle channel sands (Qs).

Additionally, as shown on the GDC trench log (Plate 5), the east trench exposed a south-verging anticline replete with an apparent slip surface (GDC Plate 5). Last apparent "movement" of this structure involved the debris flows (Qdf), but not the overlying mudflows (Qd) and the Argyle (Qs) deposits, as documented on the GDC logs (Plates 4 and 5).

Soil-Stratigraphic Measurements and Descriptions

Two representative soil sections were measured from the east trench exposures: on the east wall at station 0+60 (Table 3); and on the west wall at station 0+78 (Table 4). The station 0+60 descriptions particularly document the relative profile development of a buried paleosol that caps mudflows (Qm) deposits, which, in turn, unconformably overlie a buried paleosol formed on a local mud-debris flow transitional unit (Qm-Qdf). The station 0+78 soil section provides a detailed measurement and description of a buried paleosol that caps a horizontal, unbroken mudflow (Qm) directly overlying a slip surface (inferred fault) along a south-tilted, debris-flow bedding plane illustrated in GDC Fig. .

East Wall, Station 0+60

As documented in Table 3, the upper ~2.9-ft of section represent the base of the Argyle channel sands (Qs). These deposits are typically dark brown (10YR 4/3) to dark yellowish brown (10YR 4/4) sandy clay loam to fine sand with local, lenticular gravel lenses. Structure is typically massive to weak, fine angular, and thus indicative of the non-consolidation and relatively "youth" of Argyle channel sediments. At the measured section, the Argyle sediments are ~40-50 ft east of, and about halfway above the elevation of the main thalweg (see west trench log). Accordingly, based on stratigraphic position, their age is estimated to be ~4 - 5 k.

Horizons 2b1-2b2 (Table 3) mark a ~2.5-ft thick, remnant buried paleosol that caps underlying mudflow (Qm) deposits. The paleosol is a brown to dark brown (7.5YR 4/4 - 7.5YR 4/6) silt to loamy clay with moderate to strong, fine angular blocky structure. The paleosol is also very hard and sticky and plastic; and

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typified by few fine, yellowish brown (10YR 5/4) clay films that line ped faces and fill root pores. Based on its "moderate" relative development, this remnant soil represents an estimated ~20-30 ka of weathering before truncation and burial by Argyle channel (Qs) deposits.

A second, deeper paleosol (horizons 3B1b–3B3b) was also measured and described at station 0+60 (Table 3). This particular paleosol formed across a thin mudflow and is superimposed onto an underlying debris flow. Specifically, the truncated 3B1b horizon is a yellowish brown (10YR 5/6) to strong brown (7.5YR 5/6) sandy clay loam with moderate medium blocky structure. Characteristic are few to common, strong brown (7.5YR 5/6) clay films that line ped faces, bridge mineral grains and line root pores. The underlying parent material (horizons 3C1b through 3c3b) generally grade into debris flows with matrix supported, ~0.7-in angular clasts at the base (Table 3). Based on relative profile development, this buried paleosol represents another ~25-30 ka of local landscape stability and related weathering.

West Wall, Station 0+78

A very detailed, approximately 1.1-ft thick profile was measured at Station 0+78 on the west wall of the Yucca east trench (Table 4). This section specifically addressed the relative age of a mudflow and capping paleosol that lie horizontal and unbroken over tilted debris flows (Qdf) containing an interbedded slip surface conservatively assumed to be a fault (GDC Plate 6). The upper ~0.7 inches of the mudflow bear four discrete, now-buried argillic horizons (2B1b through 2b4b; Table 4) truncated by basal coarse sand and gravel associated with Argyle channel sediments (Qs). The paleosol horizons range in color from dark brown (7.5YR 5/4) to dark reddish brown (5YR 3/4) and formed on fine to coarse medium sandy loam parent material. The diagnostic argillic is the 2b3b (Table 4) with fine subangular blocky structure and few fine brown (7.5YR 5/4) clay films that line ped faces and bridge grains. Any reasonable "upward" projection of the GDC-logged slip surface does not offset the mudflow and its capping buried paleosol (GDC Appendix D [photograph]). Based on relative profile development, the buried paleosol represents at least ~30 k of weathering. Its parent material, the horizontal, unbroken mudflow (Qm) is inherently older. Last movement along the underlying slip surface therefore took place prior to at least ~30 k ago, and probably well before that time.

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East Trench Radiocarbon Dates

GDC collected eight, west-trench charcoal samples for potential radiocarbon assay, all obtained from Argyle Channel sediments. As documented in Appendix C, the samples are identified as Mill-1 through Mill-7 and Yucca 4; and cumulatively provide standard radiocarbon ages ranging from about 4.1 to 4.4 ka. These values were anticipated based on stratigraphic position and are therefore accepted as reasonable; and they support the estimated age for west-trench exposures at this same stratigraphic level.

CORRELATION OF YUCCA TRENCH SEDIMENTS AND SOILS WITH ADJACENT CONTINUOUS CORES AND CPT SOUNDINGS

The Yucca (Site 2) east and west trenches provided an additional three major benefits to assess potential presence and activity of the inferred Argyle Strand of the Hollywood fault. First, the west trench exposed not only Argyle Channel sediments (Qs), but also underlying, relatively impervious clay (Qm). When initially opened, this clay perched water, essentially at the base of the thalweg. Perched water also was present on clayey channel-bordering mudflows and debris flows into which the Argyle Channel was incised. The several different clay beds are vertically separated ~20 ft, as deduced from on-site geotechnical borings (GDC, 2006). The elevation difference was apparently interpreted (Hernandez and Treiman, 2014) as evidence for a possible "Argyle Strand" of the Hollywood fault system (GDC Plate 1; Fig. 4). Now, however, the trench exposures show that the difference in water-level elevation stems from local Argyle Channel incision into several different, relatively impermeable clayey mudand debris flows (stratigraphic units Qm and Qdf).

Second, until excavation of the Yucca trenches, several other nearby, Hollywood fault investigations (GDC Fig. 1) did not employ site-specific trenching. Rather, fault-activity assessments were based mainly on correlation of CPT data and locally on extrapolation of often widely spaced cores. In contrast, the 6230 Yucca Street (Site 2) trenches provide geologic "calibration" for correlation with adjacent CPT soundings and continuous cores. This allows for high-confidence "extrapolation" of site stratigraphy north and south of the Yucca trenches (GDC Plates 1, and 2), and thus better assesses whether or not the adjacent sediments are fault displaced.

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Third, the Yucca trenches provide the first complete exposure of post-bedrock (Tm) Quaternary sediments in the Hollywood area. Accordingly, based on geomorphic reconstruction and on numeric (radiocarbon) and relative dating (soil stratigraphy), the Yucca trenches expose an excellent stratigraphy from which to reconstruct local late Quaternary geomorphologic evolution, to determine the characteristics and age of local faults, and to reasonably date the last displacement of those observed at nearby Site 3 immediately east of Argyle Street (GDC Plate 1).

And finally, as particularly observed in the west trench, the Argyle Channel deposits are internally incised, often up to several ft (GDC Fig. 2). This local fluvial incision may well explain "inverted," core-collected radiocarbon dates previously reported at the then, non-trenched Site 1, adjacent to the south (Langan, 2012; GDC Plate 1).

SUMMARY AND CONCLUSIONS

As part of standard-of-practice fault assessments, GDC emplaced and logged two trenches across a proposed development at 6230 Yucca Street (Site 2) in the Hollywood area of Los Angeles. The west trench, about 100-ft long and up to ~35 ft deep, and the east trench, over ~160 ft long and of similar depth, were purposely sited to determine the possible presence and relative activity (time of last surface or near-surface displacement) of the "Argyle Strand" of the Hollywood fault, recently included within a "Fault Hazard Zone" by the California Geological Survey (Hernandez and Treiman, 2014).

The west trench exposed the thalweg and an overlying 30-ft thick sequence of interbedded, grossly fining-upward fluvial sediments within the "Argyle Channel." Soil-stratigraphic measurements and descriptions show that the Argyle Channel sediments are capped by a remnant, very slightly developed surface soil, and by four, underlying buried paleosols, ranging in relative development from very slight to slight. Based on "calibration" with numerically dated soils elsewhere in Mediterranean climates, the cumulative time of weathering for formation of the channel sediments is an estimated ~10-12 ka.

The Argyle Channel incises underlying, relatively impermeable clay that bears a truncated, slightly to moderately developed buried paleosol. This soil, with its distinct translocated clay films, represents another ~8-15 ka of weathering. Additionally, the abrupt unconformity between the base of the channel and the underlying clay, suggest onset of Argyle channel deposition during an epoch of

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regional pluviality, conservatively estimated as ~12-16 ka ago (marine isotope stage 2). From a pedogenic standpoint, the cumulative age of the trench-exposed Argyle channel and the underlying clay exceeds ~15 ka.

The lower of the two conventional radiocarbon dates from the west trench, Argyle Channel deposits is particularly suspect, owing to likely re-deposition of "organic sediment" (~41,000 bp) resulting in older contamination. Accordingly, more realistic estimates are derived from the cumulative age of the surface and four trench-exposed buried soils and from likely fluvial deposition onset during isotope stage 2.

The east Yucca trench overlapped the west trench to the north and extended onto Site 1 to the south. It exposed multiple debris flows that emanated both from upstream and from sideslope sources. The debris flows are overlain by locally discontinuous mudflows, similar to that observed at the base of the Argyle Channel deposits in the west trench.

A representative soil-stratigraphic section shows that the mudflows bear truncated paleosols with moderate relative profiles development, similar, if not exceeding the soil described in the west trench "box cut." The better preserved east-trench buried soils reflect ~ 25-30 ka of weathering.

Another east-trench soil profile was specifically described from an unbroken, horizontal mudflow that overlies an apparent slip surface within the south-dipping limb of a subsurface anticline. The buried soil is similarly moderately developed, again reflecting – in this case - at least ~30 k of weathering. The soil and its underlying mudflow parent material are undisplaced; therefore, last slip of the presumed fault at this location occurred well before ~30 ka ago.

The Yucca trench exposures also explain the origin for an apparent 20-ft vertical "offset" of piezometric surfaces recorded in adjacent, on-site geotechnical borings. This separation was a main line of evidence for CGS postulation of a possible "Argyle Strand fault." However, rather than fault caused, the "offset" water stems from perching on separate clayey mud- and debris-flows.

The trenches also show that the Argyle Channel sediments typically incise older deposits a few to locally several ft. Thus, without the benefit of trench exposures, charcoal obtained from continuous cores on the adjacent (Site 1) property, the consultants-of-record found that several radiocarbon ages were stratigraphic inverted, thus lowering their confidence to date on-site sediments.

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The Yucca trenches also provide "calibration" to more confidently identify the lithology and grain size and to correlate sediments in adjacent continuous cores and CPT transects. The GDC trench logs and extrapolation to adjacent and logs show that the Argyle Channel overlapping sediments and the underlying clay marker-bed are continuous and unbroken by any fault. Accordingly, if an Argyle Strand of the Hollywood fault truly exists, last surface displacement occurred prior to at least ~30 ka ago.

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TABLE 1 Soil-Stratigraphic Measurements and Descriptions

GDC "Yucca Street" Trench, West Wall, Station 0+55; and Basal "Trench Box;" Station 0+35

Depth (ft)	<u>Horizon</u>	<u>Description</u>
0.0 – 0.8	"Af"	Artificial Fill : Un-engineered fill; asphalt and bottle fragments; organic material.
0.8 – 1.5	A-B	Brown to dark brown (10YR 4/3) to very dark grayish brown (10YR 3/2) when moist loamy medium sand; moderate medium angular blocky structure; slightly hard, slightly firm, non-sticky and non-plastic; few to common fine vertical roots; few to common granitic clasts to 1.5-in dia., gradual wavy boundary.
1.5 – 1.9	Bw1	Yellowish brown (10YR 54) to brown to dark brown (10YR 4/3) when moist silty medium sand; weak fine subangular blocky structure to massive; very hard, very firm, non-sticky and non-plastic; few very fine vertical roots; locally few to common subrounded to angular clasts to 0.5-1.0 in long dia; gradual wavy boundary.
1.9 – 2.3	Bw2	Yellowish brown (10YR 5/4) to yellowish brown (10YR 5/6) when moist silty fine sand; weak to fine subangular blocky structure; extremely hard to locally very firm; few very fine vertical roots; gradual wavy to abrupt wavy boundary (base of cambic horizon).
2.3 – 3.8	C1	Brownish yellow (10YR 6/6) to yellowish brown (10YR 5/4 when moist gravelly coarse sand; massive loose, non-sticky and non-plastic; many angular clasts to ~3-in long diameter; many subrounded pebbles to ~0.8-in dia; abrupt wavy boundary (base of grossly fining-upward channel deposits; laterally discontinuous; unconformity).
3.8 – 4.6	2Bw1b	Buried Paleosol (very slightly developed): Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 5/4) when moist fine to medium sand; weak subangular blocky structure; hard, friable, non-sticky and non-plastic; few subrounded pebbles to ~0.5-in dia., abrupt smooth to abrupt wavy boundary.
4.6 – 5.2	2Bw2b	Dark yellowish brown (10YR 4/6) dark yellowish brown (10YR 3/6) when moist loamy fine sand; weak to moderate subangular blocky structure; slightly hard, firm, slightly sticky and non-plastic; gradual wavy boundary.

Depth (ft)	<u>Horizon</u>	<u>Description</u>
5.2 – 6.0	2C1b	Pale Brown (10YR 6/3) to dark yellowish brown (10YR 3/4) when moist medium to coarse sand; moderate to fine coarse blocky structure; extremely hard, firm to friable; non-sticky and non-plastic; subrounded clasts to 1-in dia.; gradual wavy boundary.
6.0 – 6.3	2C2b	Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 4/4) when moist coarse loamy sand; massive; loose, friable, non-sticky and non-plastic; few subrounded clasts to 1-in. dia., gradual wavy boundary.
6.3 – 7.0	2C3b	Brownish yellow (10YR6/6) to dark yellowish brown (10YR 4/4) when moist gravelly coarse sand; structureless (loose), very friable; non-sticky and non-plastic; common to many subangular and angular clasts to 2-in dia., base of grossly fining-upward sequence; abrupt wavy boundary.
7.0 – 7.8	2C4b	Dark yellowish brown (10YR 4/6) to strong brown (7.5YR 4/6) when moist coarse sand; massive to weak, fine angular blocky structure; soft, friable, non-sticky and non-plastic; very few angular clasts 0.5 to 1.0-in dia., few to common subrounded clasts to 1-in. dia. near base; abrupt wavy boundary (unconformity).
7.8 – 8.2	3Btb	Buried Paleosol (slightly developed): Yellowish brown (10YR 5/6) to strong brown (7.5YR 4/6) when moist loamy fine sand; moderate medium angular blocky structure; slightly hard to hard, firm non-sticky and slightly plastic; few very fine clay films bridging mineral grains and lining ped faces; abrupt smooth boundary.
8.2 – 10.4	3Cb	Light yellowish brown (10YR 6/4) to dark yellowish brown (10YR 4/4) when moist coarse sand,; massive structure; loose, very friable, non-sticky and non-plastic; local gravel lenses to 1.5-in thickness; gravel lenses and horizontal stringers of interbedded sand and gravel; laterally discontinuous; poorly sorted; medium energy environment of deposition; abrupt wavy to abrupt irregular boundary (unconformity).
10.4 – 12.6	4Bt1b	Buried Paleosol (slightly developed): Brownish yellow (10YR 6/6) to dark yellowish brown (10YR 4/6) when moist moderate very fine subangular blocky structure in clayey lenses; friable,

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Depth (ft)	<u>Horizon</u>	<u>Description</u>
		slightly sticky; non-plastic; few very fine dark yellowish brown (10YR 4/4) clay films lining ped faces and bridging mineral grains; locally few to common pebble lenses 0.5 to 1.0 in thick laterally increasing in width; locally discontinuous; local isolated, very angular clasts to 2-in. dia., abrupt wavy boundary
12.6 – 13.4	4Bt2b	Dark yellowish brown (10YR 4/4) to dark yellowish brown (10YR ¾) when moist pebbly clay loam; moderate to strong very angular blocky structure; very hard, very firm, slightly sticky and slightly plastic; few very fine dark brown (10YR 3/3) clay films lining ped faces and bridging mineral grains; few to common fine roots and vertical pores; local sand and pebble lenses near base to 2-in. thick; laterally discontinuous; top of grossly fining-upward sequence; gradual to locally abrupt smooth lower boundary.
13.4 – 14.5	4Bt3b	Dark yellowish brown (10YR 4/4) to dark yellowish brown (10YR 3/4) when moist pebbly loamy sand; weak to moderate angular blocky structure; slightly hard to hard, firm, slightly sticky and plastic; few very fine vertical roots; few very fine clay films lining ped faces and bridging mineral grains; few disseminated detrital charcoal fragments to 0.2-in dia., throughout horizon (see notes), collected near base; few to common pebbly gravel lenses increasing near base; few lenticular subrounded to rounded clasts to 2-in. dia. throughout horizon; abrupt wavy boundary (unconformity).
14.5 – 15.0	5tb	Buried Paleosol (slightly developed): Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 3/6) when moist pebbly loamy clay; moderate medium angular blocky structure; hard, firm to friable, non-sticky and slightly plastic; few thin lenticular clay lenses; locally few very fine dark yellowish brown (10YR 4/4) clay films lining ped faces and bridging mineral grains; united truncated gradual wavy to abrupt wavy boundary.
15.0 – 18.4	5C1b	Yellowish brown (10YR 5/8) to dark yellowish brown (10YR 4/6) when moist medium coarse sand; massive structure; very friable, loose; non-sticky and non-plastic; coarsening near base; gradual smooth to locally abrupt boundary.
18.4 – 18.8	5C2b	Dark yellowish brown (10YR 4/6) to dark yellowish brown (10YR 3/4) silty clay; weak to moderate angular blocky structure; hard very firm, slightly sticky and slightly plastic; laterally extensive marker horizon; thickness variable 2-3 in., continuous unbroken unit below base of locally incised channel

Depth (ft) Horizon Description

gravels and laminated sand); gradual wavy boundary; base of trench wall measured section approximately 6-ft above trench base at Sta. 0+55.

Notes (Trench Wall exposures, Sta. 0+55):

- 1. Soil profile measurement by RJS and SK, 13 February 2014; GDC "Yucca Trench, west wall; Station 0+55.
- 2. The surface and four very slightly to slightly developed buried paleosols cap grossly fining-upward sequences; typified by cambic (Bwb) or by cumulic, "weak" argillic (Btb) horizons. Buried paleosols, in generally coarse-grained parent material, each represent ~1-2 k of relative landscape stability soil weathering.
- 3. Trench exposes thalweg of SW-trending fluvial channel deposits and interbedded paleosols at ~25 ft. Main paleo-channel contains multiple, laterally discontinuous bar and channel sediments; grossly fining upward, and each capped by a truncated buried paleosol.
- 4. Present geomorphic setting, stratigraphic position and onset of basal channel-gravel deposition implies formation under a more "pluvial" climate; conservatively estimated to be during oxygen-isotope stage 2, ~12-16 ka ago.
- 5. Cumulatively, the surface and the four buried paleosols represent \sim 8-10 ka of weathering.

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TABLE 2
GDC Yucca Soil Profile Measurement and Description in "Box Trench" (~4 ft below base of Bench 4, Sta. 0+35)

Depth (ft)	<u>Horizon</u>	<u>Description</u>
25.0 – 25.5	6Bt1b	Buried Paleosol (truncated; slightly to moderately developed): Dark yellowish brown (10YR 3/6) to dark brown (7.5YR 3/3) when moist silty clay loam; moderate medium angular blocky structure; hard, firm, slightly sticky and slightly plastic; few to common fine dark brown (7.5YR ¾) clay films lining ped faces; common fine root pores; gradual diffuse boundary.
25.5 – 27.0	6Bt2b	Brown to dark brown (7.5YR 4/4) sandy clay loam; weak to moderate sub-angular blocky structure; soft, friable, non- sticky and slightly plastic; few very fine clay films decreasing with depth; gradual wavy boundary.
27.0 – 33.0	6Cb	Sandy loam grading downward to interbedded granitic clast lenses to 0.5-in. dia., increasing at base; base of Trench Box exposure.

Notes (Box cut at base of trench; sta. 0+35):

- 1. Soil measured and described by RJS, 29 March 2014.
- 2. Basal clay is truncated by overlying, high-energy channel deposits; only remnant buried paleosol is preserved (slightly too moderately developed with argillic [6Bt1b/6Bt2b] horizons).
- 3. Buried paleosol is estimated to conservatively represent ~8-10 ka of weathering. The clay parent material is a regional stratigraphic marker, exposed continuously at the base of GDC "Yucca Box Trench" and identified in adjacent continuous cores.
- 4. Cumulatively, the "Box Trench" soil and the overlying paleosols within the overlying channel gravels represent at a minimum ~16-20 ka of weathering.

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Table 3 Soil-Stratigraphic Measurement and Description, GDC East Trench, East Wall, Station 0+60

Depth (ft)	<u>Horizon</u>	<u>Description</u>
0.0 - 0.7	C1	Brown to dark brown (10YR 4/3) to dark yellowish brown (10YR 3/4) when moist gravely sandy clay loam; weak medium subangular blocky structure; extremely hard, extremely firm, locally friable, slightly sticky and slightly plastic; common angular clasts to 2-in dia. near base; abrupt wavy boundary.
0.7 – 2.0	C2	Dark yellowish brown (10YR 4/4) to dark yellowish brown (10YR 3/4) when moist sandy clay loam; massive structure; very hard and very firm; slightly sticky and slightly plastic; common angular clasts to 2.0 in dia. near base; few detrital charcoal fragments near base; abrupt wavy boundary.
2.0 – 2.9	C3	Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 3/6) when moist fine gravelly silt loam; massive to weak fine angular blocky structure; extremely hard, extremely firm; slightly sticky and slightly plastic; few to common angular clasts to 0.2 in dia. near base; abrupt smooth boundary (unconformity).
2.9 – 3.9	2B1b	Buried Paleosol: Brown to dark brown (7.5YR 4/4) to strong brown (7.5YR 4/6) when moist loamy clay; massive to weak fine subangular blocky structure; very hard, very firm, sticky and plastic; few very fine dark brown (7.5YR 3/4) clay films lining ped faces and bridging mineral grains; parent material = mudflow; upper horizon truncated; abrupt wavy boundary.
3.9 – 4.8	2B2b	Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 4/6) when moist silty clay; moderate to strong fine angular blocky structure; extremely hard, extremely firm; sticky and very plastic; few very fine rootlets along ped faces; few, very fine yellowish brown (10YR 5/4) clay films along ped faces decreasing near base; parent material = local mud and debris flow; abrupt wavy boundary.
4.8 – 5.4	2Cb	Pale brown (10YR 6/3) to brown (10YR 5/3) when moist sandy loamy clay; massive structure; very hard, very firm; slightly sticky and slightly plastic; abrupt wavy boundary (unconformity).
5.4 – 5.8	3B1b	Buried Paleosol : Yellowish brown (10YR 5/6) to strong brown (7.5YR 5/6) when moist fine sandy clay loam; moderate medium blocky structure; extremely hard, extremely firm, slightly sticky and slightly plastic; very few strong brown (7.5YR 5/8) clay films

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Depth (ft)	<u>Horizon</u>	<u>Description</u>
cont:	3B1b	Lining ped faces and bridging mineral grains; parent material = mudflow bearing a moderately developed buried paleosol; gradual wavy boundary.
5.8 – 6.3	3B2b	Yellowish brown (10YR 5/6) to strong brown (7.5YR 5/6) medium to coarse angular sand; massive structure; extremely hard; extremely firm; non-sticky and non-plastic; gradual wavy boundary.
6.3 – 7.1	3B3b	Yellowish brown (10YR 5/6) to strong brown (7.5YR 5/6) when moist medium sandy loam; massive structure; extremely hard; extremely firm; non-sticky and non-plastic; gradual smooth boundary.
7.1 – 7.6	3C1b	Yellow (10YR 7/6) to brownish yellow (10YR 6/6) when moist fine sandy loamy clay; massive structure; extremely hard; extremely firm; non-sticky and non-plastic; gradual smooth boundary.
7.6 – 8.2	3C2b	Brownish yellow (10YR 6/8) to brownish yellow (10YR 6/6) when moist medium sandy clay loam; massive structure; extremely hard, extremely firm; non-sticky and non-plastic; abrupt smooth boundary.
8.2 – 9.2	3C3b	Very pale brown (10YR 7/4) to yellowish brown (10YR 5/6) when moist stratified loamy lay to silt loam; massive structure to fine medium subangular blocky ear base; common mineral staining on ped faces increasing near base; extremely hard, extremely firm; slightly sticky and slightly plastic; common matrix supported angular clasts to 0.7-in dia. (debris flow) near base of measured section; base of third wall (GDC trench log).

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Table 3 (continued)

Notes:

- 1. Soil measured and described by RJS, assisted by GDC field geologists (see GDC log for location).
- 2. Upper ~2.9 ft comprises three horizons (C1 through C3) within Qs deposits ("Argyle Channel sands") horizons typified by silty to sandy clay loams; stratified fluvial parent material with angular clasts increasing near base (fining upward sequence), incised into and unconformably overlying GDC-designated Qm (Mud Flow).
- 3. Upper buried paleosol (horizons 2B1b/2B2b) typically brown to dark brown (7.5YR 4-4/4/6) loamy to silty clay with few fine, fine dark brown (7.5YR 3/4) clay films lining ped faces and bridging mineral grains. Buried soil is "moderately developed;" represents minimum ~30 ka of "weathering." Overlying argillic horizons eroded at measured section. Parent material is Qm (Mud Flow).
- 4. Lower buried paleosol (argillic horizons 3B1b through 3B3b) typically yellowish brown (10YR 5/6) to strong brown (7.5YR 5/6) sandy clay loam with very few to few clay films lining ped faces and bridging mineral grains. Buried soil is "slightly to moderately developed;" represents minimum ~20-30 ka of weathering; upper argillic horizons locally truncated. Parent material is Qm locally grading into or unconformably overlying lenticular debris flows with matrix-supported angular clasts identified as Qoal (Older alluvial deposits) on GDC log.

Table 4
Soil-Stratigraphic Measurement and Description,
GDC East Trench, Bench 2, West Wall, Sta. 0+78

Depth (ft)	<u>Horizon</u>	<u>Description</u>
0.00 – 0.15	2B1b	Brown to dark brown (7.5YR 4/3) to dark brown (7.5YR 3/3) when moist coarse sandy loam; moderate medium subangular blocky structure; hard to very hard, very firm, plastic and slightly sticky; few very fine dark brown (7.5YR 3/3) clay films ling ped faces and bridging mineral grains; gradual wavy boundary.
0.15 – 0.20	2B2b	Dark brown (7.5YR 3/3) to brown (7.5YR 5/4) when moist medium sandy loam; moderate medium subangular blocky structure; very hard, very firm, sticky and plastic; few very fine dark brown (7.5YR 3/3) clay films bridging mineral grains; gradual wavy to gradual smooth boundary.
0.20 – 0.40	2B3b	Dark reddish brown (5YR 3/4) to brown (7.5YR 5/4) when moist fine sandy clay loam; massive to weak fine subangular blocky structure; very hard, very firm, slightly sticky and plastic; few very fine brown (7.5YR 5/4) clay films lining ped faces and bridging mineral grains; few very angular clasts to 0.2-in dia., lenticular unit to 3-in thick; gradual wavy boundary.
0.40 – 0.60	2B4b	Dark brown (7.5YR 3/3) to brown (7.YR 5/4) when moist coarse sandy clay loam; massive structure; hard, firm, sticky and plastic; few brown to dark brown (7.5YR 4/4) clay films lining ped faces and bridging mineral grains; few very angular pebbles increasing in frequency near base; gradual wavy boundary.
0.60 – 0.75	2C1b	Dark brown (10YR 3/3) to brown to dark brown (10YR) 4/3) when moist sandy clay loam; massive structure; hard, firm to very firm, slightly sticky and plastic; few very angular to common subrounded clasts near base; gradual wavy to abrupt wavy boundary (Unconformity); (Base of Mud Flow, (Qm)).
0.75 – 1.00	2C2b	"Old Alluvium", (Qoal) (South Dipping): Dark brown (10YR 3/3) to brown to dark brown (7.5YR 4/3) when moist pebbly clay loam; massive structure; hard, very firm, slightly sticky and plastic; few very angular pebbles to 0.1 in dia., increasing near base; gradual wavy boundary.
1.00 – 1.10	2C3b	Dark yellowish brown (10YR 3/4) to dark brown (7.5YR 3/4) when moist sandy loamy clay; massive structure; hard to very hard, very firm, slightly sticky and slightly sticky; lenticular angular pebbles to 0.1-in dia. near base; gradual wavy to angular wavy boundary; base of measured section.

Notes:

- 1. Soil measured and described by RJS with assistance from GDC staff. Section located immediately north of bedding-plane fault as depicted on GDC log. The top of the ~1.0-ft section is the truncated surface of the GDC-designated Mud Flow (Qm) deposits; and extends downward into relatively coarse-grained, south-dipping sediments pertaining to "Old Alluvium" (Qoal).
- 2. The upper ~0.6 ft encompass moderately developed argillic horizons (2B1b through 2B4b) typified by dark reddish brown (5YR 3/4) to brown (7.5YR 3/4) fine sandy clay loam with few to locally common, brown (7.5YR 5/4) clay films lining ped faces and bridging mineral grains.
- 3. The 2C1b lower boundary ranges from gradual wavy to abrupt wavy, identifying "deep" weathering extending into the underlying Qoal deposits. The Qm deposits in this locality are ~0.75-ft thick, but vary laterally as depicted on the GDC logs and pertinent annotated photographs.
- 4. The remnant buried argillic horizons represent a minimal ~ 30- to locally 40- ka weathering of the Qm sediments. The argillic horizons (ped faces and clay films) extend downward and across (unbroken) any reasonable projection of the bedding plane fault (see discussion and documentation in the GDC narrative). Last displacement therefore took place prior to at least ~30-40 ka.

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APPENDIX B – W (West Millennium)

SOIL-STRATIGRAPHIC AGE ASSESSMENTS, GROUP DELTA CONSULTANTS CORES B-3A AND B-6A, WEST MILLENNIUM AREA, HOLLYWOOD DISTRICT, CITY OF LOS ANGELES, CALIFORNIA

INTRODUCTION

This Appendix summarizes soil-stratigraphic field measurements and description for dating sediments and soils (pedologic profiles) exposed in two ~40-45-ft continuous cores recovered by Group Delta Consultants (GDC) from the proposed West Millennium development in the Hollywood area of Los Angeles. This Appendix is identified as "B-W" to distinguish it from a previous "Appendix B," which focused on sediments and soils exposed in trenches at the Yucca and the East Millennium sites, respectively (GDC Plate 1). Two cores, B-3A (Table 1) and B-6A (Table 2) were specifically selected from the several cores that comprise the GDC (Plate 1) northwest-southeast, cross-section O-O' (GDC Plate 8) across an inferred trace of the "Yucca Street Strand" of the Hollywood fault (Hernandez and Treiman, 2014). Pertinent location and geologic maps, trench logs, cone penetrometer (CPT) and continuous core data are given in the GDC narrative and hence are referred to, but not replicated in this document.

For context, CPT data and interpretations identify an apparent "break in sediment continuity" ~38-ft below ground surface between cores B-3A and B-5A (GDC, Plate 8). Core B-3A is ~8-ft south of the surface projection of the "break," and Core B-6A is ~20-ft to the north. The particular cores were selected based on their near proximity to the "subsurface break" and on their sediment recovery, in both cases exceeding ~90 percent. The origin of the subsurface "break in sediment continuity" is unknown. It may be the buried south limb of an asymmetrical anticline observed in the East Millennium trench, the back-slope of an ancient sea cliff, or the subsurface expression of faulting. For conservatism, GDC treats it as a fault with a yet-unidentified dip or sense of displacement.

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The investigation was commissioned by GDC and included various field, office and laboratory meetings with GDC personnel and with "Third-Party Reviewers" E. Gath and T. Gonzalez (Earth Consultants International, Santa Ana). The soil-stratigraphic measurements and descriptions were completed in the GDC (Torrance) laboratory in February 2015. Assistance was kindly provided by GDC geologists K. Neill and T. Otis. Likewise appreciated were the observations and comments of consulting geologists S. Kolthoff and M. Mills.

This Appendix uses traditional pedological (soil science) terminology and field methodology described in Soil Survey Division Staff (1993), in Soil Survey Staff (1999) and in Schaetzl and Anderson (2005). The applicability of soil-stratigraphy to fault-activity assessments for construction of residential and commercial properties, dams, landfills and other large engineered structures is summarized in Shlemon (1985). Numeric dating and "calibration" with relative soil profile development is reviewed in Birkeland (1999), McFadden (1989), and Eppes and others (2002).

The presence of multiple buried paleosols, as identified in the cores, indicates that, as elsewhere in California, the Millennium area was subject to episodes of regional sedimentation, ostensibly under "pluvial" climatic and vegetation environments, separated by epochs of relative landscape stability giving rise to weathering and resulting soil formation.

Relative profile development of the several buried paleosols encountered in the B-3A and B-6A cores is based mainly on color changes (Munsell notation) and on presence, thickness and continuity of translocated clay films. Age assessments are given in ranges and, where feasible, associated with the marine isotope stage chronology (GDC, Chart 1; Chappell and Shackleton, 1986; Martinson and others, 1987).

Almost all the core-identified buried paleosols are typified by truncated (eroded) argillic horizons, in some cases up to several inches thick. Locally, however, post-pedogenic erosion likely entirely removed any remnant soil.

In general, the soil parent materials are mixed-lithology, grossly fining-upward fluvial sediments, interspersed with locally derived debris flows grading downslope into mudflows. The remnant buried paleosols are typically internally stratified, and formed on various parent material grain sizes and lithologies. It is therefore impractical to compare illuvial clay percentage with that in an assumed original parent material for quantifying soil age using a typical "soil development"

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index" (Harden, 1982). Realistically, therefore, soil (weathering) ages are estimated using "numeric calibration" for similar Mediterranean climates (McFadden, 1989; Eppes and others, 2002).

SOIL-STRATIGRAPHY, CORE B-3A

As documented in Table 1, Core B-3A, south of surface projection of the inferred subsurface fault (GDC Cross Section O-O'), was measured and described to a depth of ~45-ft, several ft below the upward projection of the inferred fault. About 90-95 percent of sample recovery typifies this core; missing are the upper ~5-ft of likely artificial fill.

Cahuenga Fan Paleosols

The Core B-3A parent material ranges from silty clay to sand grading to basal, pebbly coarse sand forming typical grossly fining-upward sedimentary packets. These sediments were episodically laid down by distributaries of the Cahuenga alluvial fan, one of several emanating from "bedrock hills" several hundred ft to the north (GDC Fig. 2).

Several buried paleosols are indentified in this core. These range in relative profile development from "slight," to "very strong." The uppermost four paleosols are "slightly developed," identified at depths of 9.7, 12.5, 15.8, and 18.7 ft, respectively (Table 1; horizons 2Btb, 4tb, 5Btb and 6Btb). The paleosols are typified by "few, very fine dark yellowish brown (10YR 4/3 - 4/4) clay films that line ped faces and bridge mineral grains." These illuvial clay films are mostly thin and discontinuous, but sufficient to deem these as incipient argillic horizons "Btb." The four paleosols, and the modern solum, each represent ~1.5 – 2 ka of weathering (epochs of local landscape stability) within the Cahuenga fan sediments. This is slightly more than estimated for a similar number of buried cambic (Bw) horizons documented in trench exposures within the east-adjacent, Argyle fan deposits (Appendix B).

Mudflow (Qm) Paleosols

Core B-3A clearly identifies the base of the Holocene Cahuenga fan by an abrupt unconformity and an underlying moderately developed buried paleosol. The paleosol at ~28.8 ft (Table 1; horizons 9Bt1b, 9Bt2b, and 10Cb) marks the top of several, thin-bedded mudflows. These are regionally extensive stratigraphic

marker beds similarly exposed in the East Millennium, the Yucca and the Green trenches (GDC Plate 1). The mudflows (GDC Plate 1, "Qm") are typically separated by 1-2 inch erosion contacts (abrupt wavy boundary). An intramudflow paleosol at ~33.1 ft (Table 1; horizon 11Btb) is similarly moderately developed, although displaying more frequent and continuous brown to dark brown (7.5YR 4/4) clay films that line ped faces, bridge mineral grains and fill root pores.

The two mudflow paleosols each represent ~35-40 ka of weathering (isotope stage 3); however, the parent material is inherently older, therefore laid down at least ~60 ka (stage 4), or more likely even earlier (GDC Chart 1).

"Old Alluvium" (Qoal) Paleosols

Core B-3A exposed at least six discrete paleosols at the top and within sediments identified as "Old Alluvium" (GDC Plate 1). The paleosols range in relative development from "moderate" to "very strong."

The top of the Old Alluvium is marked by a major unconformity at ~33.3 ft; namely, a truncated, ~1.3-ft thick, very strongly developed buried paleosol (Table 1; horizons 12Bt1b, 12Bt2b, and 12Bt3b). Totally unlike the overlying mudflow and Cahuenga fan deposits, this particular paleosol has common to many (>20 percent) medium yellowish red (5YR 5/6) fine to medium continuous clay films that line ped faces, bridge mineral grains and coat clast faces. Such very strong profile development reflects relative landscape stability and relative weathering for least ~100 ka and more likely ~200 ka.

Three moderately developed paleosols occur at depths of 34.7, 37.3, and 38.6-ft respectively (Table 1). Each caps grossly fining upward sequences; and each identifies at least ~40 ka of weathering (local landscape stability) before burial.

Core B-3A exposed two deeper buried paleosols at ~41.6 and 42.4-ft, respectively (Table 1). Each soil is "strongly developed," with classic common to many dark yellowish brown (7.5YR 4/6) to common reddish brown (5YR 3/3) moderately thick clay films lining ped faces, coating clasts and filling root casts and worm burrows. These soils, too, each represent ~100 ka of weathering.

SOIL-STRATIGRAPHY, CORE B-6A

Core B-6A is north of the inferred subsurface fault depicted on GDC cross-section O-O' (GDC Plate 8). Similar to Core B-3A, several buried paleosols were measured and described to a depth of ~40-ft (Table 2). Here, too, no recovery was obtained from the uppermost ~5-ft of core; ostensibly artificial fill.

Cahuenga Fan Paleosols

Four slightly developed buried paleosols occur with the Core B-6A, stratified Cahuenga-fan sediments. These cap grossly fining-upward sequences at ~8.2, 10.8, 15.0 and 19.0 ft (Table 1). These incipient argillic horizons have few fine brown (10YR 5/3) discontinuous clay films that line ped faces and bridge mineral grains. The base of the Cahuenga-fan deposits occurs at ~23.5 ft, marked by fining-upward sediments and a major unconformity (Table 1).

Mudflow (Qm) Paleosols

The B-6A mudflows occur at ~23.5-ft, are ~4.8-ft thick and are mainly silty clay with common to many brown to dark brown (7.5YR 4/4) continuous clay films lining ped faces, bridging mineral grains and filling root pores (Table 1; horizon 6Btb). Here, too, relative profile development suggests a minimal weathering age of ~40 ka; and the deposits themselves are inherently older. The mudflows (GDC Plate 1; "Qm") unconformably overlie (abrupt wavy boundary) a very strongly developed buried paleosol marking the top of the "Old Alluvium."

"Old Alluvium" (Qoal) Paleosols

Two distinct buried paleosols occur within the B-6A Old Alluvium; the upper, very strongly developed caps the section at 25.2 ft (Table 2; horizons 7Bt1b and 7Bt2b); the lower, moderately to strongly developed is identified at ~36.0 ft (horizons 9btb and 9Cb).

Other paleosols were once likely present, but were eroded as reflected by several intervening fining-upward sections with abrupt wavy lower boundaries (see, for example, the horizon 7Bt2b-8C1b contact). Nevertheless, the two Qoal paleosols are sufficiently developed to each represent about 100-200 ka of weathering for the upper, and ~100 ka for the lower.

SUMMARY AND CONCLUSIONS

CPT data for the northwest-southeast trending O-O' cross section show a "subsurface break" in sediment continuity ~38-ft below ground surface between cores B-3A and B-5A. The age of sediments overlying this GDC inferred fault is reasonably judged by relative development of buried paleosols measured and described from ~40-ft deep, continuous cores B-3A on the south and B-6A on the north.

Both cores encountered several slightly developed paleosols within Cahuengafan sediments in the upper ~23 to 28 ft. Relative profile development of these soils suggests that each represents ~1.5 - 2.0 ka of weathering. The entire Cahuenga sequence is thus Holocene in age, comparable to Argyle fan sediments exposed in the nearby Yucca and East Millennium trenches (GDC Plate 1).

A major unconformity marks the base of the Cahuenga deposits. In both cores the unconformity identifies the top of regionally extensive mudflows (Qm). The capping mudflow paleosols are "moderately developed" and thus represent ~40-ka of weathering (relative landscape stability; marine isotope stage 3). The mudflows themselves were therefore deposited earlier, ostensibly at least ~60 ka (stage 4) if not before. The CPT and the paleosol data show that the mudflow deposits continue unbroken over and across any reasonable upward projection of the "subsurface break."

Another major unconformity identifies the base of the mudflow deposits and the top of the Old Alluvium (Qoal). As documented in both cores, the capping paleosol is very strongly developed and reflects ~100 to 200 ka of weathering. Several additional strongly developed buried paleosols occur within the B-3A core; but only one is identified in the B-6A core suggesting subsurface offset or local non-deposition. The top of the B-3A paleosol occurs at ~33.3 ft; and that in B-6A at ~25.2 ft. Given the general south dip, the ~25-ft distance between the cores and the inherent erosion contacts, the ~8-ft difference in elevation is expected. However, in a "worst case scenario," assuming that the subsurface break is truly a fault, then apparent vertical displacement of a few ft might be construed. Regardless, such inferred displacement, does not affect the overlying mudflow deposits and, if existent, took place prior to at least ~60 ka (minimum age for the mudflows).

In sum, the ~45-ft deep Core B-3A, south of the subsurface break, identifies alternating epochs of regional deposition (sedimentation) and weathering (landscape stability and soil formation) most likely exceeding ~500-600 ka in age.

In contrast, the ~40-ft Core B-6A, north of the subsurface break, reflects similar deposition and weathering for the last ~250-300 ka.

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Table 1

Soil-Stratigraphic Measurement and Description Group Delta Consultants – West Millennium Project Core B-3A

Depth (ft)	<u>Horizon</u>	<u>Description</u>
0.0 – 5.8	Af	Artificial Fill (no recovery in core box).
5.8 – 7.2	A1	Dark yellowish brown (10YR 3/6) to very dark brown (10YR 2/2) when moist pebbly fine sandy clay loam; massive to moderate medium subangular blocky structure; hard to very hard, very firm, sticky and very plastic; few to common subrounded pebbles to 0.2-in. dia; decreasing organic matter with depth; truncated original surface horizon; gradual wavy boundary.
7.2 – 7.8	A2-Bt	Brown to dark brown (10YR 3/3) to dark brown (10YR 3/2) when moist sandy loamy clay; massive to moderate medium subangular blocky structure; very hard, very firm, very sticky, plastic; few to common subrounded to subangular pebbles throughout horizon; very few, thin dark brown (10YR 3/3) clay films lining ped faces and bridging mineral grains, discontinuous with depth; abrupt wavy boundary (unconformity).
7.8 – 9.0	C1	Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/4) when moist coarse sandy loam; single grained to massive structure; soft, very friable, non sticky and non-plastic; gradual wavy boundary.
9.0 – 9.7	C2	Light yellowish brown (10YR 6/4) to brown to dark brown (10YR 4/3) when moist loamy coarse sand; weak to moderate medium subangular blocky structure; slightly hard, friable, non sticky and non-plastic; abrupt wavy boundary (unconformity).
9.7 -10.5	2Btb	Buried Paleoso l (slightly developed): Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/4) when moist silty clay; moderate to strong medium subangular blocky structure; hard, firm, non-sticky plastic; few fine dark yellowish brown (10YR 4/4) discontinuous clay films lining ped faces and bridging mineral grains; horizon characterized by common, thin (0.2-0.2-in) thick silt lenses; gradual wavy boundary.
10.5 – 11.4	2Cb	Light yellowish brown (10YR 6/4) to yellowish brown (10YR 5/4) when moist pebbly sandy loam; granular structure; soft, very friable, non-sticky and non-plastic; abrupt wavy boundary (unconformity).
11.4 – 12.0	3C1b	Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/4) when moist; silty clay loam; moderate medium angular blocky structure; hard to very hard, very firm, slightly sticky and plastic; gradual wavy boundary.

Depth (ft)	<u>Horizon</u>	<u>Description</u>
12.0 – 12.5	3C2b	Light yellowish brown (10YR 6/4) to dark yellowish brown (10YR 3/4) when moist; loamy coarse sand; granular to weak fine subangular blocky structure; hard to very hard, firm, non-sticky and slightly plastic; abrupt wavy boundary (unconformity).
12.5 – 13.8	4tb	Buried Paleosol (slightly developed): Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 4/4) when moist silty clay; massive to weak fine subangular blocky grading to angular blocky structure; hard, very firm, sticky and slightly plastic; few very fine dark yellowish brown (10YR 4/4) clay films bridging mineral grains; locally bioturbated; abrupt smooth boundary.
13.8 – 14.8	4C1b	Brownish yellow (10YR 6/6) to dark yellowish brown (10YR 4/4) when moist; single-grained to granular structure; sandy loam, loose, very friable, non-sticky and non-plastic; few subrounded to subangular pebbles to 0.3-in dia. at base; abrupt wavy boundary (unconformity).
14.8 – 15.8	4C2b	Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 4/4) when moist; granular structure; pebbly loamy sand; slightly hard, friable, non-sticky and non-plastic; subrounded to rounded pebbles to 0.2-in. dia. throughout horizon increasing toward base; abrupt wavy boundary (unconformity).
15.8 – 17.1	5Btb	Buried Paleosol (slightly developed): Brownish yellow (10YR6/6) to yellowish brown (10YR 5/6) when moist coarse sand; moderate medium angular blocky structure; hard, firm, to very firm, non-sticky and slightly plastic; few very fine yellowish brown (10YR 5/4) clay films lining ped faces and bridging mineral grains in upper part of horizon (truncated) decreasing with depth; few to common very angular granitic clasts (grussified) increasing toward base; abrupt wavy boundary.
17.1 – 18.7	5CB	Very pale brown (10YR 7/3) to yellowish brown (10YR 5/4) when moist coarse sand increasing to very coarse sand with depth; single grained to granular structure near base; loose, very friable, non-sticky and non-plastic; few very angular clasts near base; abrupt wavy boundary (unconformity; base of fining-upward sequence).
18.7 - 19.2	6Btb	Buried Paleosol (slightly developed): Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 4/4) when moist silty clay; moderate medium subangular blocky structure; very hard, very firm, slightly sticky and plastic; few very fine dark yellowish brown (10YR 5/6) clay films lining ped faces; abrupt wavy boundary (unconformity).
19.2 – 19.8	6Cb	Light yellowish brown (10YR 6/4) to dark yellowish brown (10YR 4/4) when moist coarse sandy loam; single grained, loose, friable, non-sticky and slightly plastic; abrupt wavy boundary (unconformity).

Depth (ft)	<u>Horizon</u>	<u>Description</u>
19.8 – 21.6	7C1b	Brownish yellow (10YR 6/6) to brown to dark brown (10YR 4/3) when moist silty clay; moderate to strong medium subangular blocky structure; very hard, very firm, sticky and plastic; abrupt wavy boundary (unconformity).
21.6 – 21.9	7C2b	Light yellowish brown (10YR 6/4) to yellowish brown (10YR 5/4) when moist medium sandy loam; single grained to medium fine subangular blocky structure; loose to slightly hard, friable, non-sticky and non-plastic; (abrupt wavy boundary (unconformity).
21.9 – 22.9	7C3b	Yellowish brown (10YR 5/5) to dark yellowish brown (10YR 5/4) when moist silty clay; moderate to strong medium subangular blocky structure; very hard, very firm, non-sticky and slightly plastic; gradual wavy boundary.
22.9 – 24.5	7C4b	Brownish yellow (10YR 6/6) to dark yellowish brown (10YR 4/6) when moist pebbly loamy coarse sand; moderate to strong medium subangular blocky structure; very hard, very firm, non-sticky and non-plastic; gradual wavy boundary.
24.5 – 25.9	7C5b	Dark yellowish brown (10YR 4/6) to dark yellowish brown (10YR 4/4) when moist loamy medium sand; moderate to strong medium angular blocky structure; very hard, very firm, non-sticky and slightly plastic; gradual wavy boundary.
25.9 – 27.0	7C6b	Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 3/6) when moist pebbly sandy loam; moderate to strong medium subangular blocky structure; very hard, very firm, non-sticky and slightly plastic; very few angular clasts to 0.2-in dia. Increasing near base; abrupt wavy to broken boundary (unconformity).
27.0 – 27.8	8C1b	Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 5/4) when moist loamy coarse sand; single grained, soft, very friable non-sticky and non-plastic; few to common subrounded metamorphic clasts to 0.4-in dia. throughout horizon; abrupt wavy boundary (unconformity).
27.8 – 28.8	8C2b	Light olive brown (2.5Y 5/4) to dark brownish yellow (10YR 5/4) when moist silty clay loam; moderate fine angular blocky grading to thin platy structure near base; slightly hard, friable non-sticky and plastic; few thin (0.2-in) subrounded clasts at base; gradual smooth to gradual wavy boundary (unconformity; perched water; interpreted base of Cahuenga fan deposits).
28.8 - 30.2	9Bt1b	Buried Paleosol (moderately developed): Dark yellowish brown (10YR 4/6) to dark yellowish brown (10YR 4/4) when moist pebbly fine sandy loam; moderate to strong platy structure; very hard, very firm, slightly sticky and slightly plastic; few fine yellowish brown (10YR 5/4) clay films lining ped faces and bridging

Depth (ft)	<u>Horizon</u>	<u>Description</u>
		mineral grains in upper part of horizon grading to common fine yellowish brown (10YR 5/8) in mid horizon; parent materials are cumulic, thin bedded mudflows; gradual smooth to gradual wavy boundary (interpreted top of mudflow, regional stratigraphic marker).
30.2 - 32.0	9Bt2b	Horizon similar to above with common very angular clasts increasing near base; abrupt wavy boundary (intra-mudflow unconformity).
32.0 – 33.1	10Cb	Yellowish brown (10YR 5/6) to brown to dark brown (10YR 4/3) when moist pebbly fine sand clay loam; moderate medium angular blocky structure; hard to very hard, friable, slightly sticky, plastic; few subrounded to locally subangular ~0.2-in clasts near top of horizon; abrupt wavy boundary (unconformity; base of fining-upward section).
33.1 – 33.3	11Btb	Buried Paleosol (moderately developed): Dark yellowish brown (10YR 4/4) to dark brown (10YR 3/3) when moist pebbly silty clay; moderate to strong medium angular blocky structure; very to extremely hard, extremely firm, sticky and plastic; few to common brown to dark brown (7.5YR 4/4) clay films lining ped faces and bridging mineral grains and coating clast faces; very few angular clasts to 0.2-in dia. near base; abrupt smooth to abrupt wavy boundary (major unconformity; base of mudflows (Qm).
33.3 – 33.9	12Bt1b	Buried Paleosol (very strongly developed; cumulic profile): Yellowish red (5YR 4/6) dark reddish brown (5YR 3/4) when moist pebbly coarse sandy clay; strong medium platy structure; extremely hard, extremely firm, sticky and very plastic; common to many fine to medium yellowish red (5YR 5/6) continuous clay films lining ped faces, bridging mineral grains and coating clast faces; clay films distinct throughout horizon; few to common very angular clasts locally stratified; gradual smooth boundary (horizon marks top of Old Alluvium; Qoal).
33.9 – 34.3	12Bt2b	Horizon similar to above with increasing angular clasts scattered throughout; gradual wavy boundary.
34.3 – 34.7	12Bt3b	Reddish brown (5YR 5/4) to reddish brown (5YR 4/3) when moist sandy clay loam; moderate to strong medium platy structure; very hard, very firm, sticky and plastic; common fine to moderately thick reddish brown (5YR 4/3) to dark reddish brown (5YR 3/3) clay films lining ped faces, bridging mineral grains and filling root pores; abrupt smooth boundary (unconformity).
34.7 – 35.6	13Bt1b	Buried Paleosol (moderately developed): Reddish brown (5YR 5/4) to yellowish red (5YR 5/6) when moist pebbly sandy clay loam moderate to strong medium platy structure; very hard, very firm, sticky and plastic; few fine reddish brown

Depth (ft)	<u>Horizon</u>	<u>Description</u>
		(5YR 4/3) clay films lining ped faces and bridging mineral grains; gradual smooth boundary.
35.6 – 36.8	13Bt2b	Brown to dark brown (7.5YR 4/4) to brown to dark brown (7.5YR 4/3) when moist pebbly coarse loamy sand, very strong medium platy structure; extremely hard, extremely firm, slightly sticky and slightly plastic; few fine dark reddish brown (5YR 3/3) clay films bridging mineral grains; common to many grussified granitic clasts to 1.0-in. dia., gradual wavy boundary.
36.8 – 37.3	13Bt3b	Horizon similar to above with increasing frequency of very angular clasts near base; abrupt wavy to Irregular broken boundary (unconformity; base of grossly fining-upward section).
37.3 – 38.1	14Bt1b	Buried Paleosol (moderately developed): Light yellowish brown (10YR 6/4) to dark yellowish brown (10YR 4/4) when moist sandy clay loam; moderate to strong medium platy structure; very hard, very firm, slightly sticky and slightly plastic; few fine strong brown (7.5YR 4/6) clay films lining ped faces and bridging mineral grains, decreasing with depth; common very angular clasts to 0.3 in. dia. throughout horizon; gradual smooth boundary.
38.1 – 38.6	14Bt2b	Light yellowish brown (10YR 6/4) to dark yellowing brown (10YR 4/4) when moist granular to weak medium platy structure; very hard, very firm, slightly sticky and plastic; few brown to dark brown (7.5YR 4/4) clay films bridging mineral grains, decreasing near base; common to many ~1.0-in dia. angular clasts increasing near base; abrupt wavy boundary (unconformity).
38.6 – 39.3	15Bt1b	Buried Paleosol (moderately developed): Reddish yellow (7.5YR 6/6) to strong brown (7.5YR 5/6) when moist; pebbly fine sandy clay loam; moderate medium platy structure; extremely hard, extremely firm, sticky and plastic; few to common fine strong brown (7.5YR 4/6) clay films lining ped faces and lining upper clast faces; gradual smooth boundary.
39.3 – 41.6	15Bt2b	Horizon similar to above with few fine strong brown (7.5YR 5/6) clay films bridging mineral grains, decreasing near base; gradual smooth to gradual wavy boundary (unconformity).
41.6 – 42.4	16Btb	Buried Paleosol (strongly developed): Light yellowish brown (10YR 6/4) to dark yellowish brown (10YR 4/6) when moist sandy loamy clay; single grained to fine moderately strong platy structure; extremely hard, extremely firm, slightly sticky and plastic; common to many dark yellowish brown (7.5YR 4/6) clay films lining ped faces and bridging mineral grains; abrupt broken boundary (unconformity).

Depth (ft)	<u>Horizon</u>	<u>Description</u>		
42.4 – 44.1	17Bt1b	Buried Paleosol (very strongly developed): Light brown (7.5YR 6/4) to brown (7.5YR 3.3) when moist pebbly coarse sandy clay loam; massive to moderately strong platy structure; extremely hard, extremely firm, sticky and slightly plastic; common reddish brown (5YR 3/3) clay films lining ped faces and filling worm burrows; common subangular to subrounded grussified clasts to ~1.0-in dia. increasing towards base; abrupt wavy boundary (unconformity; parent material locally stratified).		
44.1 – 45+	17Bt2b	Dark brown (7y.5YR 3/4) to dark brown (7.5YR 3/3) when moist loamy coarse sand; massive to weak moderate platy structure; extremely hard, extremely firm, very sticky; very plastic; few fine to medium reddish brown (5YR 4/4) clay films lining ped faces and bridging mineral grains; common light yellowish brown (2.5Y 3/3) mottles throughout horizon; deposit is massive clay with locally mottled plates typically ~0.5 to 0.8 in thick; base of measured section.		

Notes:

- 1. Section measured from Core B-3A at GDC (Torrance) by R. J. Shlemon, 20 and 23 February 2015; assisted by T. Otis (GDC). Core locations and cross-sections shown on GDC maps and on cross-section O-O'.
- 2. Core B-3A = $^{90-95}$ percent recovery; upper 5-ft missing; likely artificial fill.
- 3. Soil terminology follows NRCS; geologic interpretation indicated in parentheses.
- 4. Multiple buried paleosols identified ranging from "slightly" to "very strongly developed." Diagnostic horizons predominately argillic (Bt) with field-identified clay films ranging from few fine to many moderately thick lining ped faces, bridging mineral grains and filling root pores. Secondary clay films increase in thickness, depth and continuity with typical Munsell colors ranging from 10YR 4/4 for "slightly developed;" 7.5YR 3/4 for "moderately developed;" to 5YR 3/3 for "strongly to very strongly developed."
- 5. Likely base of Cahuenga fan deposits ("Argyle fan sediments" at East Millennium trench [see GDC location map]) and top of truncated mudflows ("Qm" of GDC) identified at ~28.8 ft. Mudflow(s) base at ~33.3 ft, typified by thin-bedded deposits with internal, locally truncated, slightly to moderately developed buried paleosols. Estimated minimal soil weathering age is ~35-40 ka (marine isotope stage 3). The deposits are inherently older; at a minimum 60 ka (stage 4); but probably earlier (see GDC regional stratigraphic sections and Chart 1).
- 6. Major unconformity (top of GDC "old alluvium") at ~33.3 ft where basal mudflows cap a ~3.3-ft thick very strongly developed, cumulic buried paleosol typified by a coarse pebbly sand clay with common to many, reddish brown (5YR 5/6) continuous clay films lining ped faces and bridging mineral grains. The buried

paleosol represents at least $^{\sim}100$ ka of weathering; and a minimum forming during isotope stage 5; but likely stage 7 ($^{\sim}200$ ka).

7. Five other moderately to strongly developed buried paleosols are identified below the base of the capping "old alluvium." Based on relative morphological development, each represents at least ~40 to 100+ ka of weathering. Their respective parent materials are inherently older. From the base of the "old alluvium," to the bottom of the measured section (~45 ft), the five buried paleosols identify multiple epochs of regional debris flow, fluvial and local mudflow deposits, each separated by long periods of relative landscape stability and soil formation.

Table 2

Soil-Stratigraphic Measurement and Description
Group Delta Consultants West Millennium Core B-6a

Depth (ft)	<u>Horizon</u>	<u>Description</u>
0.0 - 5.0	Af	Artificial fill (no core recovery)
5.0 - 6.6	A1	Olive grey (5Y 3/2) to black (5Y2.5/2) when moist pebbly sandy clay loam; massive structure increasing to moderate medium platy near base; hard to very hard, firm, sticky and slightly plastic; few to common subangular clasts to 0.2-in. dia., upper part of horizon truncated by artificial fill and not recovered in core; abrupt wavy boundary.
6.6 - 8.2	A2-C	Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 3/6) when moist coarse sandy loam; single grained; to fine weak angular blocky structure; slightly hard, friable, non-sticky and slightly plastic; abrupt wavy boundary (unconformity; base of grossly fining-upward section).
8.2 – 9.2	2Btb	Buried Paleosol (slightly developed): brown (10YR 5/3) to dark yellowish brown (10YR 4/4) when moist silty clay coarsening downward to fine sandy loam; moderate to strong medium to coarse angular blocky structure; very hard, very firm, sticky and plastic; few dark yellowish brown (10YR 3/4) discontinuous clay films bridging mineral grains; gradual wavy boundary.
9.2 – 9.9	2C1b	Brown (10YR 5/3) to dark yellowish brown (10YR 3/4) when moist fine sandy clay loam; weak medium platy to weak fine angular blocky structure; hard, firm, slightly sticky and non-plastic; gradual wavy boundary.
9.9 – 10.8	2C2b	Yellowish brown (10YR 5/5) to dark yellowish brown (10YR 4/4) when moist coarse loamy sand; weak very fine subangular blocky structure; slightly hard, very friable non-sticky and slightly plastic; (abrupt wavy boundary (unconformity; base of grossly fining-upward section).
10.8 – 12.1	3Bt1b	Buried Paleosol (slightly to moderately developed): Brown to dark brown (10YR 4/3) to dark yellowish brown (10YR 3/4) when moist silty clay loam; moderate medium fine angular blocky grading to fine thin platy structure; hard, friable, slightly sticky and plastic; few fine dark yellowish brown (10YR 4/4) discontinuous clay films lining ped faces, bridging mineral grains and filling root pores; abrupt wavy boundary bridging mineral grains and filling root pores; gradual to abrupt wavy boundary.

Depth (ft)	<u>Horizon</u>	<u>Description</u>
12.1 – 13.0	3Bt2b	Brownish yellow (10YR 6/6) to dark yellowish brown (10YR 4/4) when moist coarse sandy loam; moderate medium angular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine brown (10YR 5/3) clay films bridging mineral grains; few angular clasts to 0.2-in dia. Increasing near base; gradual smooth to wavy boundary.
13.0 – 15.0	3Cb	Brownish yellow (10YR 6/6) to yellowish brown (10YR 5/4) when moist sandy clay loam, coarsening downward; massive to single-grained, soft, very friable, non-sticky and slightly plastic; few subrounded metamorphic and grussified granitic clasts to 0.2-in dia. near base; abrupt wavy boundary (unconformity; base of fining-upward section).
15.0 – 19.0	4Btb	Buried Paleosol (slightly developed): Light yellowish brown (10YR 6/4) to dark yellowish brown (10YR 4/4) when moist loamy sand coarsening near base; fine strong angular blocky structure grading to single-grained near base; very hard, very firm, sticky and plastic; few fine brown (10YR 5/3) clay films bridging mineral grains decreasing with depth; local medium sand lenses to 1-2-in thick throughout horizon (stratified); abrupt wavy boundary (unconformity).
19.0 – 21.5	5Btb	Buried Paleosol (slightly developed): Dark yellowish brown (10YR 3/4) to brown (10YR 5/3) when moist sandy clay; moderate medium platy grading to moderate medium platy structure near base; very hard, very firm, sticky and plastic; few very fine dark yellowish brown (10YR 4/6) clay films bridging mineral grains decreasing with depth; gradual wavy boundary.
21.5 – 23.5	5Cb	Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/4) when moist loamy medium sand; massive to fine moderate subangular blocky structure; slightly hard, friable, non-sticky and non-plastic; abrupt wavy boundary (major unconformity; base of fining-upward sequence; base of Cahuenga fan deposits).
23.5 – 25.2	6Btb	Buried Paleosol (moderately developed): Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/4) when moist silty clay; moderate medium subangular blocky structure grading to weak fine platy; few fine brown to dark brown (7.5YR 4/4) clay films lining ped faces and bridging mineral grains; common to many dark brown (7.5YR 4/4) clay films filling worm and root holes extending to base of horizon; abrupt wavy boundary (unconformity; base of GDC mudflow deposits (Qm).
25.2 – 28.2	7Bt1b	Buried Paleosol (very strongly developed): Dark reddish brown (5YR 3/3) to dark reddish brown (2.5YR 3/3) when moist fine sandy clay coarsening to medium sandy clay near base; massive to moderate fine platy structure

Depth (ft)	<u>Horizon</u>	<u>Description</u>
		increasing near base; hard to very hard, firm, very sticky very plastic; common to many dark reddish brown and continuous (2.5YR 3/3) clay films lining ped faces and bridging mineral grains; gradual wavy to abrupt boundary (top of GDC old alluvium (Qoal).
28.2 – 33.1	7Bt2b	Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 3/4) when moist medium sandy clay coarsening to pebbly coarse sand near base; massive to weak very fine platy structure; extremely hard, extremely firm, sticky and plastic; common to many brown to dark brown (7.5YR 4/4) clay films lining ped
		faces and bridging mineral grains; common pale brown (10YR 6/3) "fissure fills" (bioturbation?) from 29.0 ft to base; few grussified clasts to 2.0-in diameter near base; abrupt wavy boundary (unconformity; base of fining-upward section).
33.1 – 33.0	8C1b	Dark yellowish brown (10YR 6/3) to dark yellowish brown (10YR 3/6) when moist sandy clay loam; granular to weak fine subangular blocky structure; slightly to moderately hard, friable, slightly sticky and slightly plastic; gradual smooth boundary.
33.0 – 36.0	8C2b	Dark yellowish brown (10YR4/6) to dark yellowish brown (10YR 4/4) when moist silty clay; massive to weak fine angular blocky structure, very hard, very firm, sticky and plastic; abrupt wavy boundary (unconformity).
36.0 – 37.8	9Btb	Buried Paleosol (moderately to strongly developed): Brownish yellow (10YR 6/6) to yellowish brown (10YR 5/6) when moist pebbly clay loam; massive to weak fine platy structure, very hard, very firm, sticky and plastic; few very fine brown (7.5YR 5/4) clay films lining ped faces and bridging mineral grains; abrupt smooth to abrupt wavy boundary.
37.8 – 40+	9Cb	Brownish yellow (10YR 6/6) to yellowish brown (10YR 5/6) when moist pebbly coarse silty sand; single grain to massive structure; slightly hard, very friable, non-sticky and non-plastic; common to many very angular clasts to \sim 2.0-in dia. in lenses \sim 3-4-in thick near top of horizon; base of measured section.

Notes:

- 1. Section measured and described from Core B-6A at Group Delta (Torrance), by R. J. Shlemon, 23 February 2015; assisted by T. Otis (GDC).
- 2. Core B-6A = ~95 percent recovery; upper ~5-ft missing; likely artificial fill.

- 3. Soil terminology follows Soil Survey Division Staff, (1993); geologic interpretation indicated in parentheses.
- 4. Multiple buried paleosols identified ranging from "slightly" to "very strongly developed." Diagnostic horizons predominately argillic (Bt) with field-identified clay films ranging from few fine to many moderately thick lining ped faces, bridging mineral grains and filling root pores. Secondary clay films increase in thickness, continuity and depth with typical Munsell colors ranging from 10YR 4/4 for "slightly developed;" 7.5YR 3/4 for "moderately developed;" to 5YR 3/3 for "strongly to very strongly developed."
- 5. Likely base of Cahuenga fan deposits ("Argyle fan sediments" at East Millennium trench [see GDC location map]) and top of truncated mudflows ("Qm" of GDC) identified at ~23.5 ft. Mudflow(s) base at ~25.2 ft, typified by thin-bedded deposits with internal, locally truncated, slightly to moderately developed buried paleosols. Estimated minimal soil weathering age is ~35-40 ka (marine isotope stage 3). The deposits are inherently older; at a minimum 60 ka (stage 4); but probably earlier (see GDC Chart 1).
- 6. Major unconformity (top of GDC Old Alluvium) at ~25.2 ft where basal mudflows cap a ~7.9-ft thick, stratified, very strongly developed, cumulic buried paleosol typified by downward coarsening sandy clay loam with common to many (>20 percent), continuous dark reddish brown (2.5YR 5/3) clay films lining ped faces and bridging mineral grains. The buried paleosol represents at least ~100 ka of weathering; and, at a minimum formed during isotope stage 5; but more likely during isotope stage 7 (~200 ka).
- 7. Several unconformities are identified in the cores, particularly in the Old Alluvium. Local fluvial erosion probably locally exceeded ~1-2 ft, removing probable underlying weathering profiles. Remnants of a strongly developed buried paleosol at ~36 ft identifies at least one additional epoch of regional landscape stability and soil formation within the Old Alluvium. Relative profile development is indicative of another ~100 ka of weathering.
- 8. Based on relative development of the capping and underlying buried paleosol, Core B-6C records a minimum of ~200 ka of weathering on and within the old alluvium. The parent materials (underlying sediments) are inherently older.

APPENDIX C: BETA ANALYTICAL RADIOCARBON DATING RESULTS





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Darden Hood President

Ronald Hatfield Christopher Patrick Deputy Directors

February 26, 2014

Mr. Steven H. Kolthoff Group Decta Consultants 370 Amapola Avenue, Suite 212 Torrance, CA 90501 United States

RE: Radiocarbon Dating Results For Samples 1161A Yucca-1, 1161A Yucca-2

Dear Mr. Kolthoff:

Enclosed are the radiocarbon dating results for two samples recently sent to us. The report sheet contains the Conventional Radiocarbon Age (BP), the method used, material type, and applied pretreatments, any sample specific comments and, where applicable, the two-sigma calendar calibration range. The Conventional Radiocarbon ages have been corrected for total isotopic fractionation effects (natural and laboratory induced).

All results (excluding some inappropriate material types) which fall within the range of available calibration data are calibrated to calendar years (cal BC/AD) and calibrated radiocarbon years (cal BP). Calibration was calculated using the one of the databases associated with the 2013 INTCAL program (cited in the references on the bottom of the calibration graph page provided for each sample.) Multiple probability ranges may appear in some cases, due to short-term variations in the atmospheric ¹⁴C contents at certain time periods. Looking closely at the calibration graph provided and where the BP sigma limits intercept the calibration curve will help you understand this phenomenon.

Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference. When counting statistics produce sigmas lower than +/- 30 years, a conservative +/- 30 BP is cited for the result.

All work on these samples was performed in our laboratories in Miami under strict chain of custody and quality control under ISO-17025 accreditation protocols. Sample, modern and blanks were all analyzed in the same chemistry lines by qualified professional technicians using identical reagents and counting parameters within our own particle accelerators. A quality assurance report is posted to your directory for each result.

As always, your inquiries are most welcome. If you have any questions or would like further details regarding the analyses, please do not hesitate to contact us.

The cost of the analysis was charged to the MASTERCARD card provided. Thank you. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Dardew Hood



4985 S.W. 74 COURT MIAMI, FLORIDA, USA 33155 PH: 305-667-5167 FAX:305-663-0964 beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Mr. Steven H. Kolthoff

Report Date: 2/26/2014

Group Decta Consultants

Material Received: 2/19/2014

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 373452 SAMPLE: 1161A Yucca-1 ANALYSIS: AMS-PRIORITY deli	40970 +/- 580 BP	-22.8 o/oo	41010 +/- 580 BP
MATERIAL/PRETREATMENT:		75 to 43415)	
Beta - 37.3453 SAMPLE: 1161A Yucca-2	4310 +/- 30 BP	-24.2 o/oo	4320 +/- 30 BP

SAMPLE: 1161A Yucca-2

ANALYSIS: AMS-PRIORITY delivery

MATERIAL/PRETREATMENT: (charred material): acid/alkali/acid

2 SIGMA CALIBRATION :

Cal BC 3010 to 2975 (Cal BP 4960 to 4925) and Cal BC 2965 to 2950 (Cal BP 4915 to 4900)

and Cal BC 2940 to 2890 (Cal BP 4890 to 4840)

Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the 14C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby 14C half-life (5568 years). Quoted errors represent 1 relative standard deviation statistics (68% probability) counting errors based on the combined measurements of the sample, background, and modern reference standards. Measured 13C/12C ratios (delta 13C) were calculated relative to the PDB-1 standard.

The Conventional Radiocarbon Age represents the Measured Radiocarbon Age corrected for isotopic fractionation, calculated using the delta 13C. On rare occasion where the Conventional Radiocarbon Age was calculated using an assumed delta 13C, the ratio and the Conventional Radiocarbon Age will be followed by "*" The Conventional Radiocarbon Age is not calendar calibrated. When available, the Calendar Calibrated result is calculated from the Conventional Radiocarbon Age and is listed as the "Two Sigma Calibrated Result" for each sample.

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12 = -22.8 o/oo : lab. mult = 1)

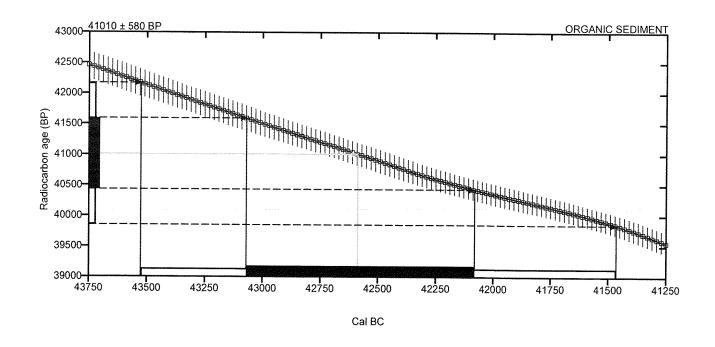
Laboratory number Beta-373452

Conventional radiocarbon age 41010 ± 580 BP

2 Sigma calibrated result Cal BC 43525 to 41465 (Cal BP 45475 to 43415) 95% probability

Intercept of radiocarbon age with calibration Cal BC 42585 (Cal BP 44535) curve

1 Sigma calibrated results Cal BC 43070 to 42085 (Cal BP 45020 to 44035) 68% probability



Database used INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

Reimer PJ et al. IntCal13 and Marine13 radiocarbon age calibration curves 0-50,000 years cal BP. Radiocarbon 55(4):1869-1887.

(Variables: C13/C12 = -24.2 o/oo : lab. mult = 1)

Laboratory number Beta-373453

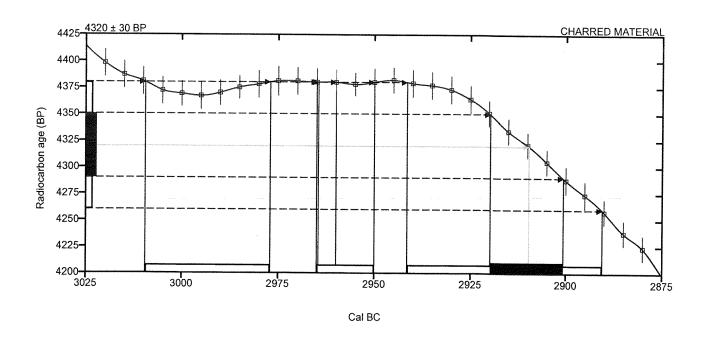
Conventional radiocarbon age 4320 ± 30 BP

2 Sigma calibrated result Cal BC 3010 to 2975 (Cal BP 4960 to 4925)

95% probability Cal BC 2965 to 2950 (Cal BP 4915 to 4900)

Cal BC 2940 to 2890 (Cal BP 4890 to 4840)

Intercept of radiocarbon age with calibration Cal BC 2910 (Cal BP 4860) curve



Database used INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database



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Darden Hood President

Ronald Hatfield Christopher Patrick Deputy Directors

June 25, 2014

Mr. Steven H. Kolthoff Group Delta Consultants 370 Amapola Avenue Suite 212 Torrance, CA 90501 United States

RE: Radiocarbon Dating Results For Samples Mill-1, Mill-2, Mill-3, Mill-4, Mill-5, Mill-6, Mill-7, Yucca-4

Dear Mr. Kolthoff:

Enclosed are the radiocarbon dating results for eight samples recently sent to us. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable. The Conventional Radiocarbon Ages have all been corrected for total fractionation effects and where applicable, calibration was performed using 2013 calibration databases (cited on the graph pages).

The web directory containing the table of results and PDF download also contains pictures, a cvs spreadsheet download option and a quality assurance report containing expected vs. measured values for 3-5 working standards analyzed simultaneously with your samples.

Reported results are accredited to ISO-17025 standards and all chemistry was performed here in our laboratories and counted in our own accelerators here in Miami. Since Beta is not a teaching laboratory, only graduates trained to strict protocols of the ISO-17025 program participated in the analyses.

As always Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference. When counting statistics produce sigmas lower than +/- 30 years, a conservative +/- 30 BP is cited for the result.

When interpreting the results, please consider any communications you may have had with us regarding the samples. As always, your inquiries are most welcome. If you have any questions or would like further details of the analyses, please do not hesitate to contact us.

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Jarden Hood



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REPORT OF RADIOCARBON DATING ANALYSES

Mr. Steven H. Kolthoff

Report Date: 6/25/2014

Group Delta Consultants

ANALYSIS: AMS-PRIORITY delivery

2 SIGMA CALIBRATION :

Material Received: 6/19/2014

Sample Data	Measured	13C/12C	Conventional
	Radiocarbon Age	Ratio	Radiocarbon Age(*
Beta - 383451 SAMPLE : Mill-1 ANALYSIS : AMS-PRIORITY del	4280 +/- 30 BP	-25.3 o/oo	4280 +/- 30 BP
MATERIAL/PRETREATMENT:	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 2915 to 2880 (Cal BP 4865	to 4830)	
Beta - 383452 SAMPLE : Mill-2 ANALYSIS : AMS-PRIORITY del	4310 +/- 30 BP	-23.8 o/oo	4330 +/- 30 BP
MATERIAL/PRETREATMENT :			
2 SIGMA CALIBRATION :	Cal BC 3015 to 2895 (Cal BP 4965	to 4845)	
Beta - 383453 SAMPLE : Mill-3	4170 +/- 30 BP	-25.6 o/oo	4160 +/- 30 BP
ANALYSIS: AMS-PRIORITY del			
MATERIAL/PRETREATMENT : 2 SIGMA CALIBRATION :	(charred material): acid/alkali/acid Cal BC 2880 to 2830 (Cal BP 4830)	o 4780) and Cal BC 2820 to	o 2625 (Cal BP 4770 to 4575)
Beta - 383454 SAMPLE : Mill-4	4190 +/- 30 BP	-23.3 o/oo	4220 +/- 30 BP

Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the 14C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby 14C half-life (5568 years). Quoted errors represent 1 relative standard deviation statistics (68% probability) counting errors based on the combined measurements of the sample, background, and modern reference standards. Measured 13C/12C ratios (delta 13C) were calculated relative to the PDB-1 standard.

MATERIAL/PRETREATMENT: (charred material): acid/alkali/acid

The Conventional Radiocarbon Age represents the Measured Radiocarbon Age corrected for isotopic fractionation, calculated using the delta 13C. On rare occasion where the Conventional Radiocarbon Age was calculated using an assumed delta 13C, the ratio and the Conventional Radiocarbon Age will be followed by "*". The Conventional Radiocarbon Age is not calendar calibrated. When available, the Calendar Calibrated result is calculated from the Conventional Radiocarbon Age and is listed as the "Two Sigma Calibrated Result" for each sample.

Cal BC 2895 to 2860 (Cal BP 4845 to 4810) and Cal BC 2805 to 2755 (Cal BP 4755 to 4705)

and Cal BC 2720 to 2705 (Cal BP 4670 to 4655)



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REPORT OF RADIOCARBON DATING ANALYSES

Mr. Steven H. Kolthoff

Report Date: 6/25/2014

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
page interest proposition gravitation and the state of th			
Beta - 383455	4330 +/- 30 BP	-23.2 o/oo	4360 +/- 30 BP

ANALYSIS: AMS-PRIORITY delivery

MATERIAL/PRETREATMENT: (charred material): acid/alkali/acid

2 SIGMA CALIBRATION :

Cal BC 3085 to 3065 (Cal BP 5035 to 5015) and Cal BC 3025 to 2905 (Cal BP 4975 to 4855)

Beta - 383456

4430 +/- 30 BP

-24.7 o/oo

4430 +/- 30 BP

SAMPLE: Mill-6

ANALYSIS: AMS-PRIORITY delivery

MATERIAL/PRETREATMENT: (charred material): acid/alkali/acid

2 SIGMA CALIBRATION :

Cal BC 3320 to 3235 (Cal BP 5270 to 5185) and Cal BC 3170 to 3160 (Cal BP 5120 to 5110)

and Cal BC 3115 to 3005 (Cal BP 5065 to 4955) and Cal BC 2990 to 2930 (Cal BP 4940 to

4880)

Beta - 383457

4420 +/- 30 BP

-25.0 o/oo

4420 +/- 30 BP

SAMPLE: Mill-7

ANALYSIS: AMS-PRIORITY delivery

MATERIAL/PRETREATMENT: (charred material): acid/alkali/acid

Cal BC 3305 to 3300 (Cal BP 5255 to 5250) and Cal BC 3280 to 3275 (Cal BP 5230 to 5225) 2 SIGMA CALIBRATION:

and Cal BC 3265 to 3240 (Cal BP 5215 to 5190) and Cal BC 3105 to 2925 (Cal BP 5055 to

4875)

Beta - 383459

4170 +/- 30 BP

-24.0 o/oo

4190 +/- 30 BP

SAMPLE: Yucca-4

ANALYSIS: AMS-PRIORITY delivery

MATERIAL/PRETREATMENT: (charred material): acid/alkali/acid

2 SIGMA CALIBRATION:

Cal BC 2890 to 2835 (Cal BP 4840 to 4785) and Cal BC 2815 to 2675 (Cal BP 4765 to 4625)

Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the 14C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby 14C half-life (5568 years). Quoted errors represent 1 relative standard deviation statistics (68% probability) counting errors based on the combined measurements of the sample, background, and modern reference standards. Measured 13C/12C ratios (delta 13C) were calculated relative to the PDB-1 standard.

The Conventional Radiocarbon Age represents the Measured Radiocarbon Age corrected for isotopic fractionation, calculated using the delta 13C. On rare occasion where the Conventional Radiocarbon Age was calculated using an assumed delta 13C, the ratio and the Conventional Radiocarbon Age will be followed by "*" The Conventional Radiocarbon Age is not calendar calibrated. When available, the Calendar Calibrated result is calculated from the Conventional Radiocarbon Age and is listed as the "Two Sigma Calibrated Result" for each sample.

(Variables: C13/C12 = -25.3 o/oo : lab. mult = 1)

Laboratory number

Beta-383451

Conventional radiocarbon age

4280 ± 30 BP

2 Sigma calibrated result 95% probability

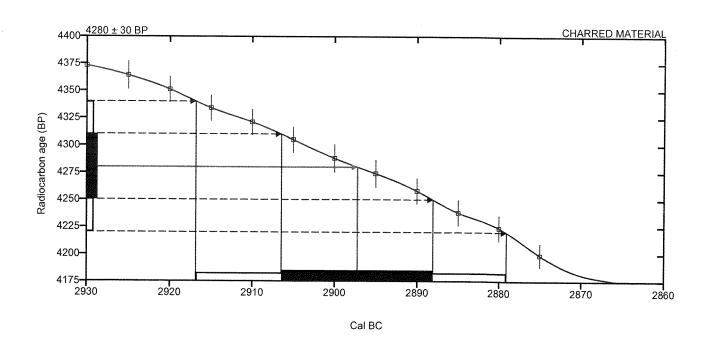
Cal BC 2915 to 2880 (Cal BP 4865 to 4830)

Intercept of radiocarbon age with calibration curve

Cal BC 2895 (Cal BP 4845)

1 Sigma calibrated results 68% probability

Cal BC 2905 to 2890 (Cal BP 4855 to 4840)



Database used INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

(Variables: C13/C12 = -23.8 o/oo : lab. mult = 1)

Laboratory number

Beta-383452

Conventional radiocarbon age

4330 ± 30 BP

2 Sigma calibrated result 95% probability

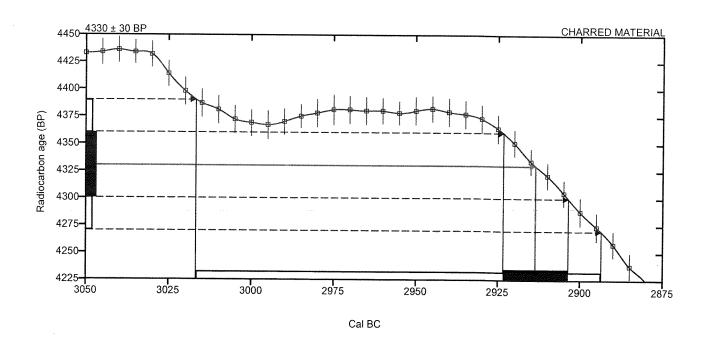
Cal BC 3015 to 2895 (Cal BP 4965 to 4845)

Intercept of radiocarbon age with calibration curve

Cal BC 2915 (Cal BP 4865)

1 Sigma calibrated results 68% probability

Cal BC 2925 to 2905 (Cal BP 4875 to 4855)



Database used INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

(Variables: C13/C12 = -25.6 o/oo : lab. mult = 1)

Laboratory number

Beta-383453

Conventional radiocarbon age

4160 ± 30 BP

2 Sigma calibrated result

Cal BC 2880 to 2830 (Cal BP 4830 to 4780)

95% probability

Cal BC 2820 to 2625 (Cal BP 4770 to 4575)

Intercept of radiocarbon age with calibration

curve

Cal BC 2860 (Cal BP 4810) Cal BC 2805 (Cal BP 4755)

Cal BC 2755 (Cal BP 4705)

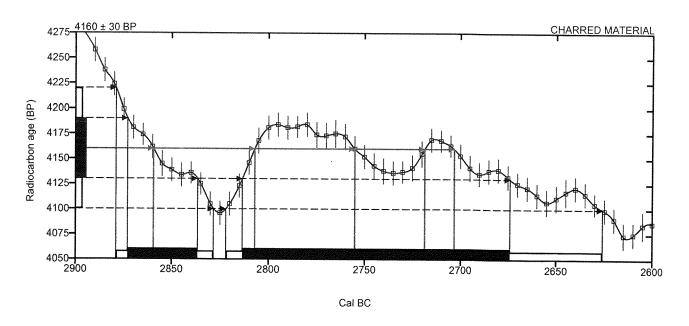
Cal BC 2720 (Cal BP 4670)

Cal BC 2705 (Cal BP 4655)

1 Sigma calibrated results 68% probability

Cal BC 2875 to 2835 (Cal BP 4825 to 4785)

Cal BC 2815 to 2675 (Cal BP 4765 to 4625)



Database used INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

(Variables: C13/C12 = -23.3 o/oo : lab. mult = 1)

Laboratory number

Beta-383454

Conventional radiocarbon age

4220 ± 30 BP

2 Sigma calibrated result

95% probability

Cal BC 2895 to 2860 (Cal BP 4845 to 4810)

Cal BC 2805 to 2755 (Cal BP 4755 to 4705)

Cal BC 2720 to 2705 (Cal BP 4670 to 4655)

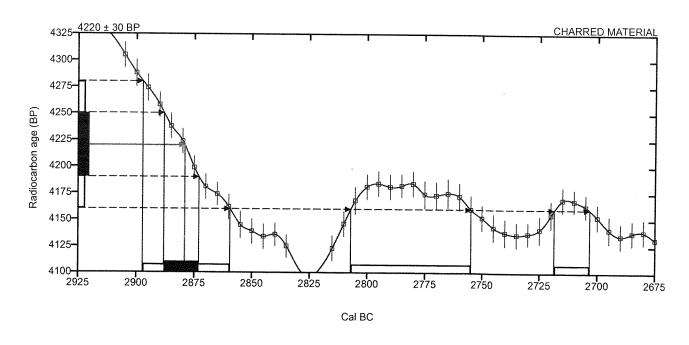
Intercept of radiocarbon age with calibration

curve

Cal BC 2880 (Cal BP 4830)

1 Sigma calibrated results 68% probability

Cal BC 2890 to 2875 (Cal BP 4840 to 4825)



Database used INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

(Variables: C13/C12 = -23.2 o/oo : lab. mult = 1)

Laboratory number

Beta-383455

Conventional radiocarbon age

4360 ± 30 BP

2 Sigma calibrated result

95% probability

Cal BC 3085 to 3065 (Cal BP 5035 to 5015) Cal BC 3025 to 2905 (Cal BP 4975 to 4855)

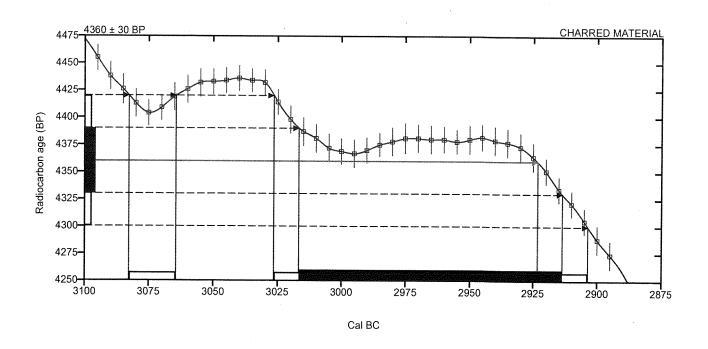
Intercept of radiocarbon age with calibration

curve

Cal BC 2925 (Cal BP 4875)

1 Sigma calibrated results 68% probability

Cal BC 3015 to 2915 (Cal BP 4965 to 4865)



Database used INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

(Variables: C13/C12 = -24.7 o/oo : lab. mult = 1)

Laboratory number

Beta-383456

Conventional radiocarbon age

4430 ± 30 BP

2 Sigma calibrated result

Cal BC 3320 to 3235 (Cal BP 5270 to 5185)

95% probability

Cal BC 3170 to 3160 (Cal BP 5120 to 5110)

Cal BC 3115 to 3005 (Cal BP 5065 to 4955)

Cal BC 2990 to 2930 (Cal BP 4940 to 4880)

Intercept of radiocarbon age with calibration

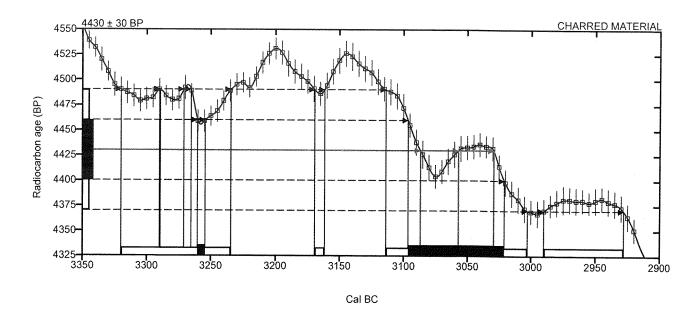
Cal BC 3085 (Cal BP 5035)

curve Cal BC 3055 (Cal BP 5005)

Cal BC 3030 (Cal BP 4980)

1 Sigma calibrated results 68% probability

Cal BC 3260 to 3255 (Cal BP 5210 to 5205)



Database used INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

(Variables: C13/C12 = -25 o/oo : lab. mult = 1)

Laboratory number

Beta-383457

Conventional radiocarbon age

4420 ± 30 BP

2 Sigma calibrated result

Cal BC 3305 to 3300 (Cal BP 5255 to 5250)

95% probability

Cal BC 3280 to 3275 (Cal BP 5230 to 5225)

Cal BC 3265 to 3240 (Cal BP 5215 to 5190)

Cal BC 3105 to 2925 (Cal BP 5055 to 4875)

Intercept of radiocarbon age with calibration

Cal BC 3085 (Cal BP 5035)

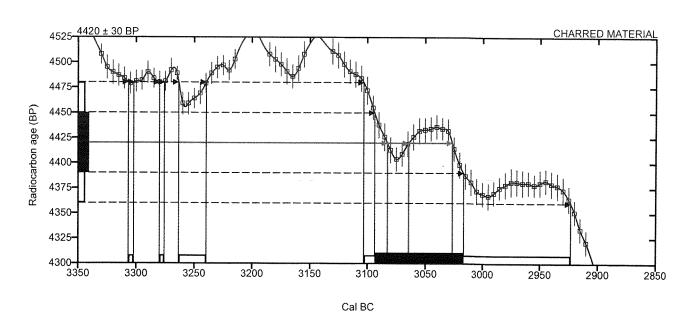
curve

Cal BC 3065 (Cal BP 5015)

Cal BC 3025 (Cal BP 4975)

1 Sigma calibrated results 68% probability

Cal BC 3095 to 3015 (Cal BP 5045 to 4965)



Database used INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

(Variables: C13/C12 = -24 o/oo : lab. mult = 1)

Laboratory number

Beta-383459

Conventional radiocarbon age

4190 ± 30 BP

2 Sigma calibrated result

95% probability

Cal BC 2890 to 2835 (Cal BP 4840 to 4785) Cal BC 2815 to 2675 (Cal BP 4765 to 4625)

Intercept of radiocarbon age with calibration

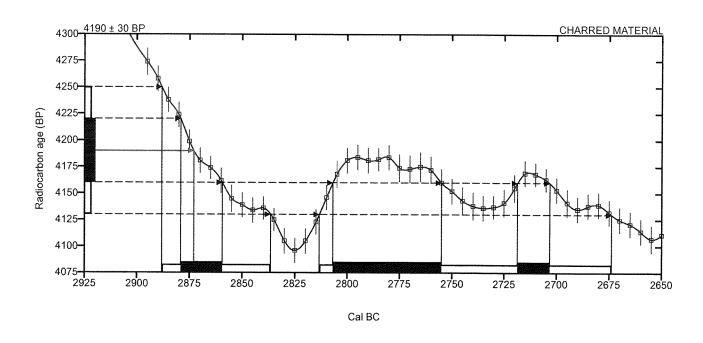
curve

Cal BC 2875 (Cal BP 4825)

1 Sigma calibrated results 68% probability

Cal BC 2880 to 2860 (Cal BP 4830 to 4810) Cal BC 2805 to 2755 (Cal BP 4755 to 4705)

Cal BC 2720 to 2705 (Cal BP 4670 to 4655)



Database used INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

APPENDIX D: PHOTOS OF WEST AND EAST TRENCH



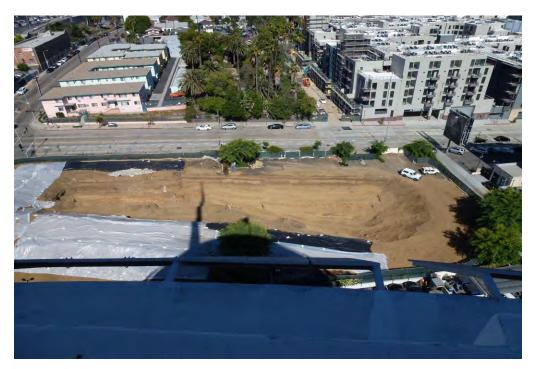




Photo 1 & 2:

East Millennium site (Top photograph, Ariel photo of the Millennium trench and the bottom photo is of the south parking lot). Both parking lots encompass the eastern portion of the Millennium development east of Vine Street and North of Hollywood Boulevard. In the top photo you can see the excavation of the East Millennium Site. The bottom photo shows the approximate location of Cross Section N-N'.





Photo 3:

(East Trench Looking North) A view looking north along the Millennium Fault Trench. The grayish sand in the view is the upper sands of the "Argyle Sand" Qs deposits. On the left side of the photograph below the soil stockpile, a slope failure occurred which was cut back to maintain slope stability for safety.





Photo 4:

(West Trench - East Wall) Looking south at the Holocene upper sand sediments along the eastern side of the west Trench at sta. 0+60. The sands are part of the Argyle Sand (Qs) deposits.





Photo 5:

(East Trench - East Wall) Looking south along the Millennium Property line. Artificial fill (Qaf) on top of Argyle Sand (Qs).





Photo 6:

(East Trench) Breaking Ground. Note the dark layers of historic burnt pits near the surface. This material consisted of incinerated debris likely from the local residence that was buried in shallow pits. Below the burn pits were thick layers of upper sand sediments that thickened to +30 feet thick to the south, on top of mud flow sediments then found unconformable found on top of old alluvium sediments to the east.





Photo 7:

(East Trench looking north). To the left, upper sand sediments are on top of parent mudflow deposits. To the right, artificial fill is on top of older alluvium deposits. At the northern terminus of the trench, artificial fill is on top of upper sand sediments.



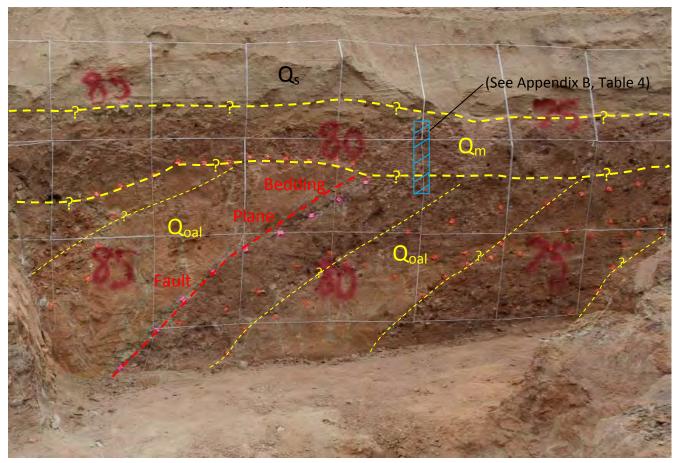


Photo 8:

East trench, west wall close-up showing contact between remnant unbroken mudflow deposits (Qm) and underlying bedding-plane fault within south-dipping older alluvium (Qoal). Location of representative soil-stratigraphic section indicated by dashed blue column.



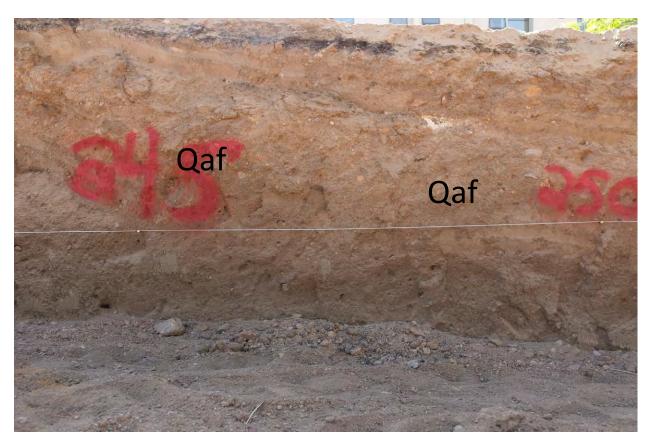


Photo 9:

(East Trench – East Wall) Artificial fill (Qaf) overlies native soils in the Capitol Tower parking area. The fill material consist mostly fine to medium sand, trace fine to coarse gravel.



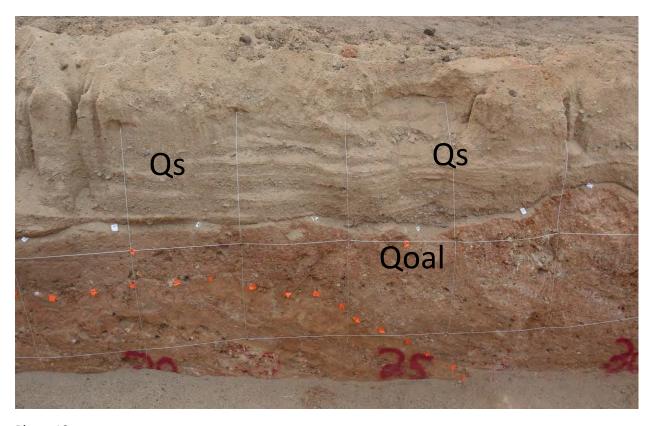


Photo 10:

(East Trench – East Wall) Holocene Argyle Sand deposits (Qs), consist of loose to moderately dense, gradationally bedded and sub-rounded to sub-angular sands with local, weakly cemented gravely sands.



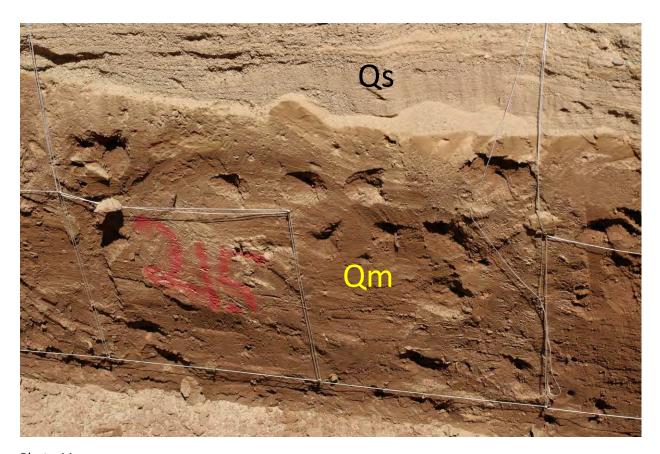


Photo 11:

(East Trench – East Wall) Pleistocene Mud Flow (Qm) Deposits are typically stiff with locally abundant sands, silts and few fine gravels within a clayey supported matrix. General grain-size and stratigraphic position indicate the mudflow deposits initially filled the deeply incised Argyle Channel. Note the erosional contact with the Argyle Sand deposits (Qs).



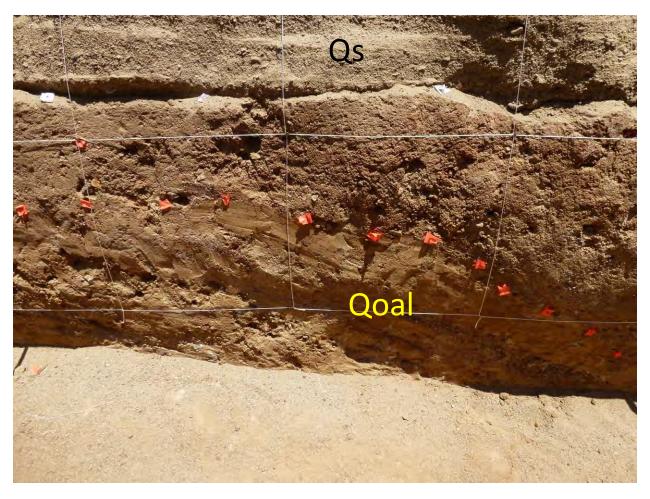


Photo 12:

(East Trench – East Wall) Pleistocene Older Alluvium (Qoal) Deposits are mainly sand and silts, with lenses of gravels and cobbles. The Argyle Sand (Qs) deposits are horizontal and the Older Alluvium (Qoal) dips to the south ($^20^\circ$ - $^49^\circ$), increasing to the south.



West Millennium Site

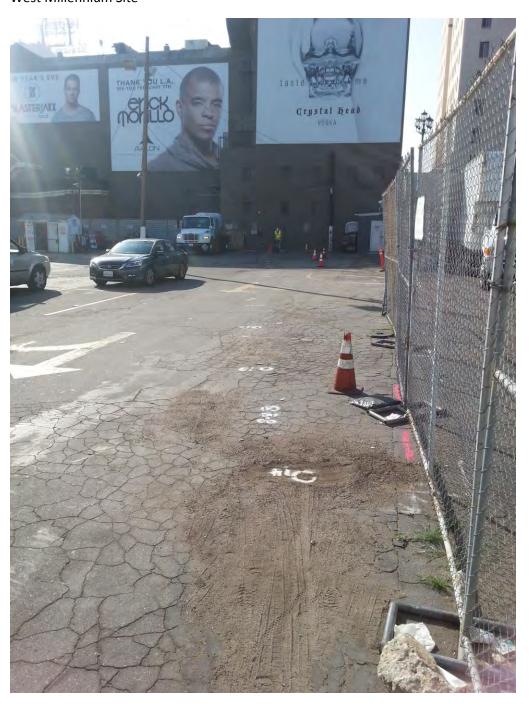


Photo 13:

General picture taken approximately midway along the cone penetration test (CPT) and soil core alignment looking south.



West Millennium Site

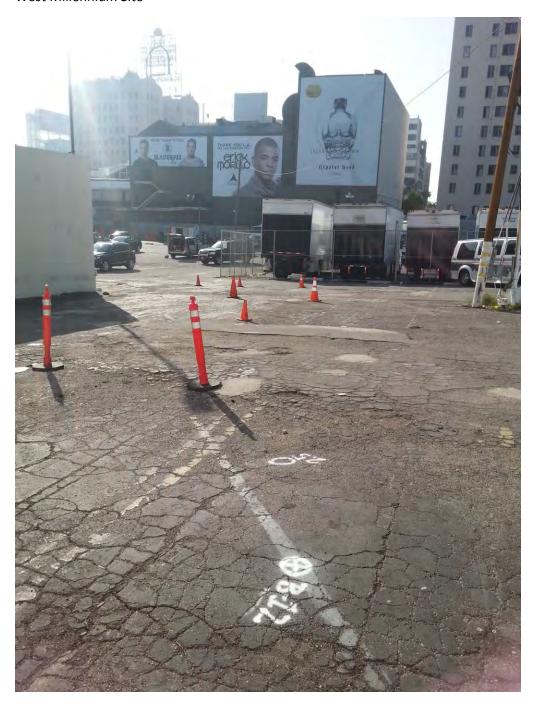


Photo 14:

General picture taken at the north end of the CPT and soil core alignment looking south.



APPENDIX E: THIRD-PARTY REVIEW BY ECI



"To Be Supplied Under Separate Cover"

Ву

Earth Consultants Inc.





Mr. Philip E. Aarons, VP Millennium Hollywood Development LLC 1680 N. Vine Street Los Angeles, California 90028 May 17, 2015 GDC Project. LA-1191 A

Subject: Response to Request from City of Los Angeles

Department of Building and Safety Grading Division

East and West Millennium Sites

1733-1741 Argyle Avenue; 6236 and 6334 W. Yucca Street; 1720-1730, 1740, 1745-1760, and 1762-1770 N. Vine Street; 1746, 1748-1754, 1760, and 1764 N.

Ivar Avenue, Hollywood Area, City of Los Angeles, California

Mr. Aarons:

Group Delta Consultants (GDC) is pleased to submit the enclosed letter responding to concerns raised by the City of Los Angeles Building and Safety Grading Division. More specifically, we received an e-mail from Dan Schneidereit of the City of Los Angeles on 3/17/15 stating the following,

"The Department of Building and Safety (LADBS) has completed its initial review of you submittal and the accompanying 3rd party review by ECI and generally agrees with the conclusions of your report. We recognize that your report is based on a large amount of exploration (78 cone penetrometer tests, 35 continuous core borings and a trench up to 25 feet deep and over 250 feet long) as well as the extensive geologic analysis conducted by yourself, Roy and ECI.

In a meeting I had with Jerry Treiman and Janis Hernandez with the California Geological Survey (CGS) on Friday March 13, 2015, I saw that the CGS has created several cross section based on your "raw" CPT transects, where they indicate alternative interpretations to the conclusions in your report. As you know, LADBS is the reviewing agency and has the sole responsibility in the permitting process to make the final decision as to the adequacy of your report. Nevertheless, we want to be as cooperative as possible to interested agencies. To this end, it would be very helpful to our final evaluation if you could provide any additional analysis you have related to some of these alternative interpretations. Specifically, an apparent change of thickness of the "mudflow" unit across the inferred fault was identified on Cross Section M-M'. Another issue includes a possible southern trace, similar to what ECI shows in their report, may be present. The CGS points to a slight warp of the overlying "mudflow" unit and a minor discontinuity in the overlying sand deposits. All of these issues seemingly can be addressed by your current data.

Unfortunately, while CGS showed me their interpreted cross sections and indicated that they had been provided to others through a PRA, they stated that they were not able to provide me with

copies. Therefore, it may assist your reply to this email if you obtain CGS's interpretations so that you can provide specific responses to the cross sections CGS created.

Your response and additional analysis will enable us to wrap up our review."

Additional Analyses Summary

In response to the subject e-mail, GDC performed the following additional analyses:

- GDC Reevaluated the inferred location of the Alquist-Priolo zoned Yucca Street Fault to determine whether or not the fault exists, and to determine if it should be classified as active or inactive.
- GDC conducted additional field surveying work with a manometer and engaged Psomas
 Associates to field survey the work at or approximately at the CPT and core locations in
 order to ensure that apparent stratigraphic differences in cross-sections M-M' and N-N'
 were not the result of inaccurate elevation assessment and plotting.
- GDC and ECI conducted additional detailed core logging along N-N'.
- GDC performed detailed stratigraphic analyses on increased scale printouts of CPTs along
 the portion of transect N-N in question. Detailed examination of CPT data included tip
 resistance, skin friction, and engineering soil behavior type represented by the specific
 color bars on section N-N. Section N-N' was chosen for this analysis because it overlaps
 with M-M', has CPT data extending south of section M-M, and has very closely spaced
 cores.

Field Survey

Due to interim re-surfacing of the parking lot between the data collection on M-M' and N-N', the specific original locations of the CPTs and cores could not be found along cross-section M-M'. Therefore, a north-south line was surveyed in the vicinity of the line on the original plot. The stations for cross-section M-M' are surveyed approximately with a lower degree of accuracy. For cross-section N-N', the CPT and core locations were still visible during the additional field survey; hence, these locations have the best accuracy.

Stratigraphic Analysis

As indicated in the GDC Fault Evaluation Report for the East and West Millennium Sites, (GDC, March 6, 2015), the East Millennium Site is mostly covered with a thin veneer of artificial fill with an asphalt surface. Directly below the fill are deposits of Holocene alluvial sand sediments (the Argyle Sand), which deepen within inset channels. The sand deposits are lying unconformably on top of the Late Pleistocene Mud Flow Unit, which was determined to be 80 to 125 ka (GDC, 2015a). In the southern portion of both the East and West Millennium Sites, the Mud Flow Unit (Qm, 80-125ka) lies unconformably on top of the older mudflow deposits determined to be 125->500ka+ (based on updated core interpretations for this letter). The identification of this contact was not indicated in the GDC previously submitted report (GDC, 2015a) for the East Millennium



Site. The older mudflow deposits have many strongly developed paleosols; this results in an estimated age for the older mudflow deposits of 125-500 ka+. Both the older mudflow and older alluvium are Middle Pleistocene in age. In the northern portion of both the East and West Millennium Sites, the Mud Flow Unit (Qm, 80-125ka) lies unconformably on top of the Old Alluvium (200ka+).

At the margins of the old Argyle Canyon, which occupies the eastern portion of the east site, and the western portion of the west site, the Argyle Sand lies unconformably on the Old Alluvium, and the Mudflow unit is mostly absent due to erosion previous to deposition of the Argyle Sand.

Near the surface, the Argyle Sand and the Late Pleistocene Mud Flow Unit are both continuous in the subsurface across the aerial extent of the eastern portion of the East Millennium Site. Bedding in the Argyle Sand has a dip of ~2 degrees to the south to horizontal with a consistent increase in thickness to the south. The Argyle Sand is unconformably overlying the Pleistocene Mud Flow Unit and does not show discontinuities due to faulting.

The Mud Flow Unit is continuous with some thickening to the south and apparent dips of <5 degrees to the south. In the approximate area of C-22 along cross-section M-M', the Mud Flow Unit overlays older alluvium to the north and old mudflow deposits to the south. The contact with the older deposits is slightly irregular, showing that the Younger Pleistocene Mud Flow Unit is slightly ductile. The sedimentary deposits, especially the clayey strata, are only slightly ductile in the subsurface. The dip of <5 degrees, the thickening of the Argyle Sand, the thickening of the Mud Flow Unit, and the lower ductile contact with the older units is indicative of normal alluvial deposition, erosion and overburden loading of the soft sediments with minor to no influence from the neo-tectonics at the site.

Fault Evaluation

The California Geological Survey (CGS) and Earth Consultants International (ECI) analyzed the preliminary CPT data for cross-section M-M' and N-N' in the East Millennium Site. During their assessments, they discovered faulting and deformation of sedimentary beds in the older alluvium and older mudflow deposits. The CGS did not show any inferred or suggested faulting projecting into cross-section N-N'. After GDC evaluated their preliminary analysis, GDC concluded that none of the inferred faults crossed the 80 ka Holocene-Upper Pleistocene contact between the Argyle Sand and the Mud Flow Unit. Therefore, these inferred faults are classified as pre-Holocene or inactive. In one case, between C-21 and C-22 along cross-section M-M', the CGS mapped a small potential fault breaking the contact between the Holocene Argyle Sand and the Mud Flow Unit. When this minor potential fault is projected through the East Trench, +/- 100 feet east of cross-section M-M', the fault cannot be found breaking the 80 ka Upper Pleistocene Mud Flow Unit contact with the Argyle Sand. Hence, the faults shown by the CGS either do not exist or are at a depth that would render them definitely not active as defined by the Alquist-Priolo Act.



In cross-sections M-M' and N-N', in the East Millennium Site, the transition south from older alluvium to older mudflow deposits are shown in the subsurface near C-22. This can be explained by a reverse fault separating the older alluvium to the north from the older mudflow at depth below the Holocene alluvium. The east trench in the East Millennium Site was excavated over this fault's projection. No fault rupture was logged crossing or breaking the 80 ka contact of the Upper Pleistocene Mud Flow Unit with the Holocene Argyle Sand, demonstrating that no active faults were found crossing the East Millennium Site.

The Mud Flow Unit has continuous, non-deformed erosional contact with the upper Argyle Sand, the older alluvium, and the mudflow deposit along cross-section N-N'. However, the base contact with the lower older alluvium and the mudflow deposit was found to be irregular along cross-section M-M', especially in the area of C-29. A ~1.5 foot elevation high was found at C-29 along cross-section M-M' in the Mud flow Unit. The apparent higher elevation at C-29 was revisited by evaluating the CPT data, evaluating the surveying data, and a survey of the site. Both the CPT data and recent survey data indicate that the elevation of CPT 29 was depicted correctly in the previously submitted GDC report (GDC, 2015a). When projecting the Mud Flow Unit's upper and lower contacts from C-28 to C-30 across C-29, there is no evidence of fault offset with the Argyle Sand and/or Mud Flow Unit, or the lower older alluvium and mudflow deposit to the west. Neither the elevation high at C-29 nor the irregular contact was found laterally across cross-section N-N'. Although one inactive fault was found in the East Trench on the 6230 Yucca Site, this inactive fault existed solely within the Old Alluvium and did not offset Argyle Sand. No faults were found breaking the older alluvium or Mud Flow Unit throughout the remaining portion of the trench; hence, no active faults were found in any of the trench exposures.

Conclusion

Our detailed examination demonstrates that the older alluvial and older mudflow deposits below the Mud Flow Unit (Qm) are older than 125 ka (and most likely older than 500 ka). Lateral inconsistencies may explain faulting that is older than 80 ka but younger than 125 ka. Our own analysis indicates the potential presence of an inferred inactive fault near CPT-20. This inferred inactive fault was found on other CPT transects O-O' and P-P' on the West Millennium Site. Therefore its interpretation has both vertical and lateral correlation across the explorations of both the East and West Millennium Sites. Given other lateral discontinuities elsewhere in section M-M', it is possible to interpret smaller faults which could be the cause of these lateral discontinuities. However, other depositional or erosional explanations are equally likely. Nonetheless, in all cases, all of the potential interpreted fault locations place the potential inferred faults below the excavated trenches, or below the Mud Flow Unit in the highly detailed and correlated Section N-N'. Therefore, all of these inferred potential faults are demonstrably older than 80 ka, pre-Holocene, and therefore definitely inactive.



This updated detailed analysis confirms the findings in the previously submitted report (GDC, 2015a): the East and West Millennium Sites are characterized by unbroken Holocene sediments and underlying un-faulted Pleistocene Mud Flow Unit deposits that are at least 125 ka. This thereby demonstrates that no active faults were present within the area of our subsurface study on the East and West Millennium Sites or the other areas reviewed within this report.

A summary of the faulting exemplified by the CGS is summarized in Table 1.

GDC appreciates the opportunity to provide geotechnical and geological services for this project. Should you have any questions, please call at 310-320-5100.

Yours Sincerely, GROUP DELTA CONSULTANTS, INC.

STEVEN
HARM
KOLTHOFF
NO. 1985
CERTIFIED
ENGINEERING
GEOLOGIST
FOR CALIFORM

OF CALIFORM

OF CALIFORM

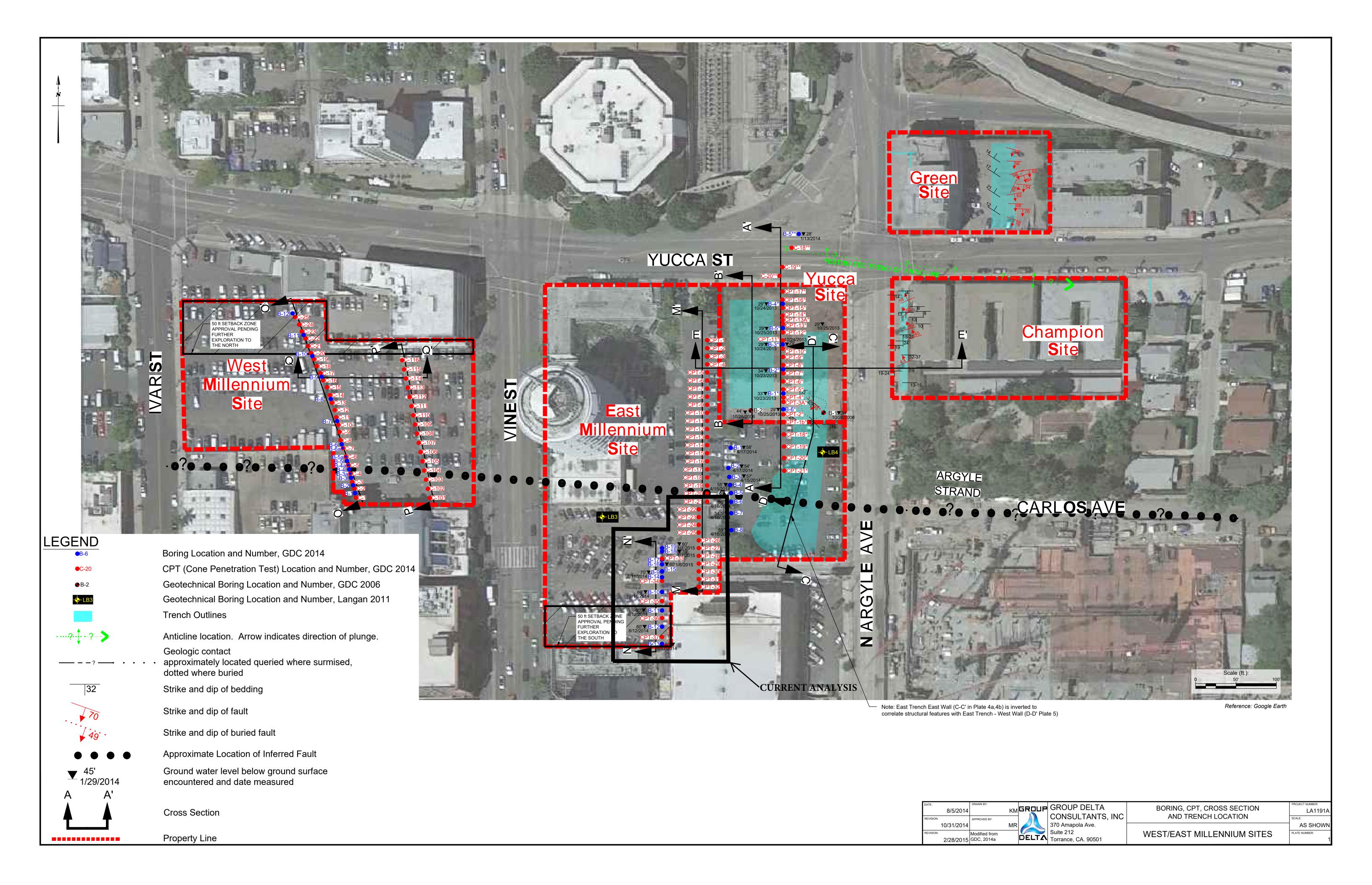
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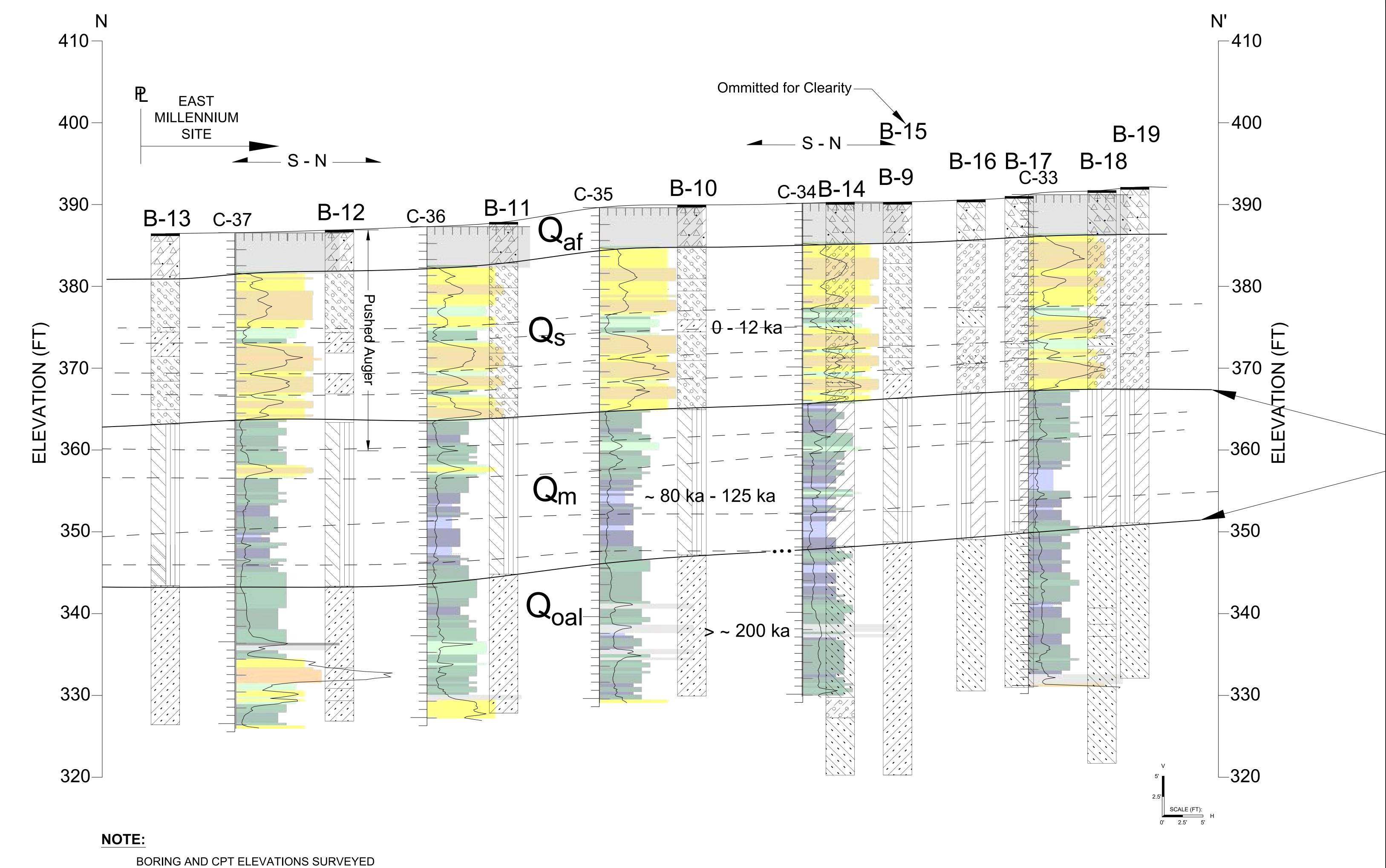
Steven H. Kolthoff, CEG # 1965, exp. 8/31/15 Engineering Geologist Consultant NO OF CALIFORNIA

Michael D. Reader, PE, GE CEO, Principal Engineer

Dist: Addressee (1), LADBS (3)

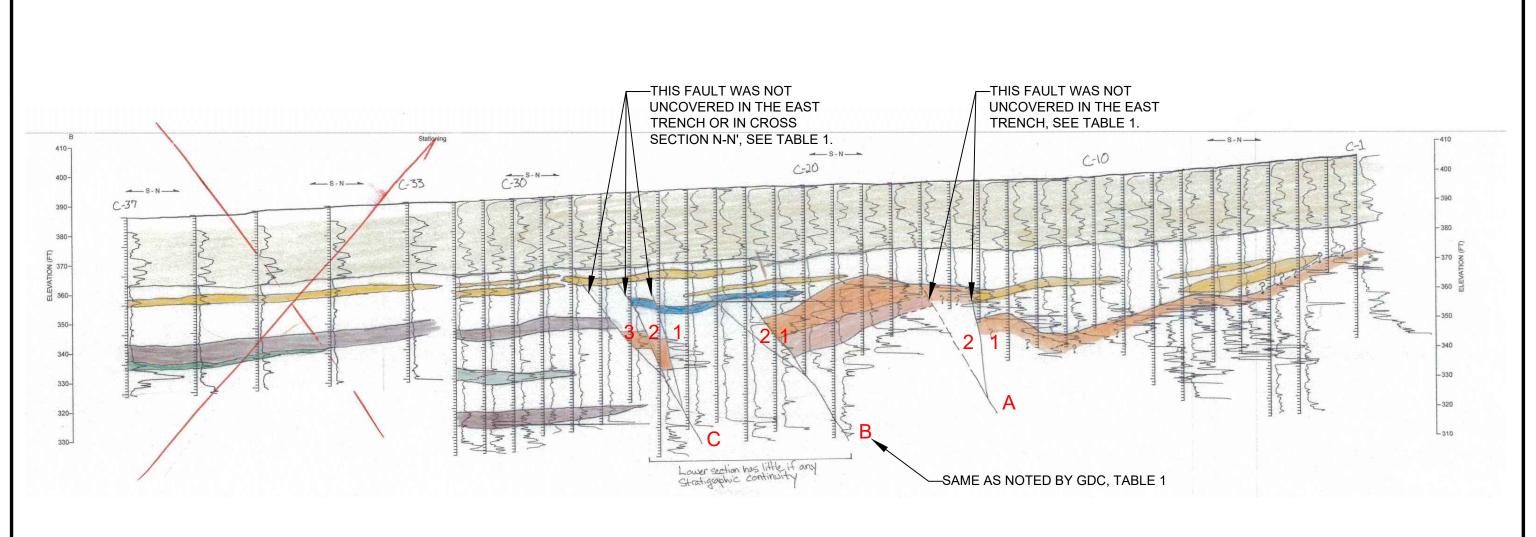






BY PSOMAS ASSOCIATES

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	3/25/2015		SK		370 Amapola Ave.		AS SHOWN
REVISION:					Suite 212	EAST MILLENNIUM SITE	PLATE NUMBER:
				DELTA	Torrance CA 90501	LAOT WILLLIAMOW OTTE	7



NOTES:

- 1 CROSS-SECTION REPRODUCED FROM GDC BY CGS WITH HYPOTHETICAL, INFERRED FAULTS. RED LETTERS ADDED BY GDC FOR DISCUSSION REFERENCE.
- 2 HAND WRITTEN NOTES BY CGS

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GROUP DELTA
CONSULTANTS, INC
370 Amapola Ave.
Suite 212
Torrance, CA. 90501

SUPPLEMENTAL REPORT

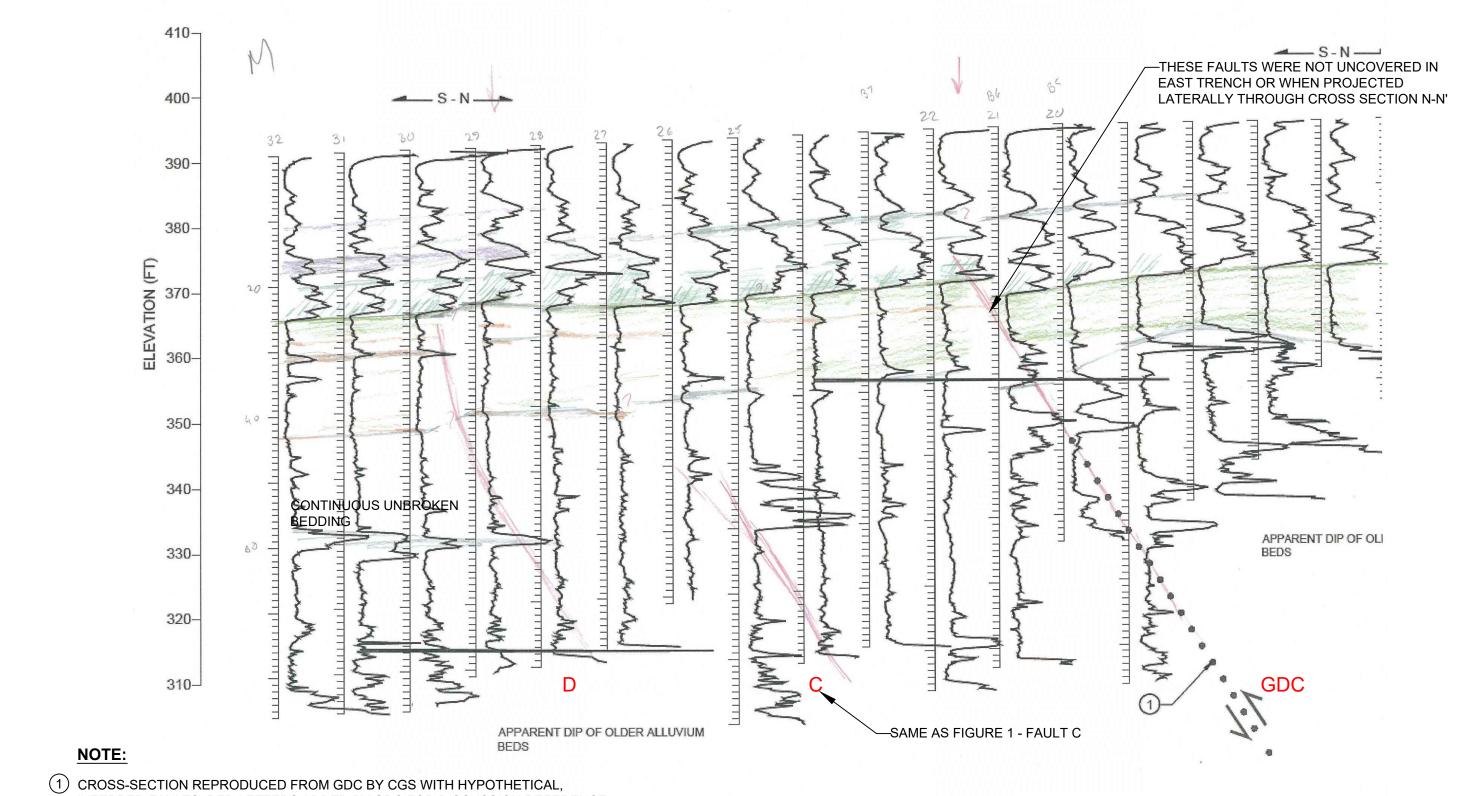
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SCALE:

NONE

FIGURE NUMBER:

LA1191A



INFERRED FAULTS. RED LETTERS ADDED BY GDC FOR DISCUSSION REFERENCE.

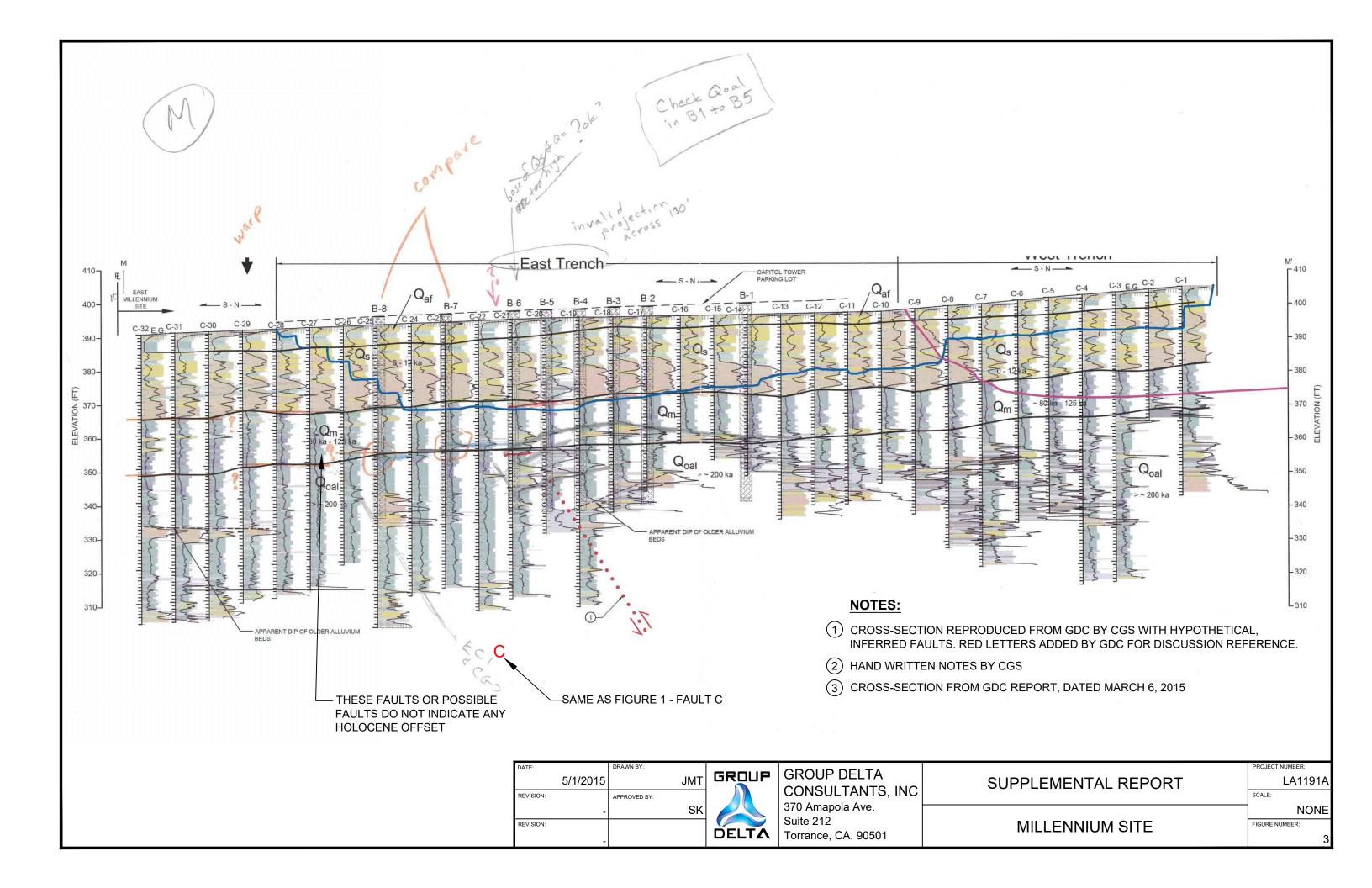
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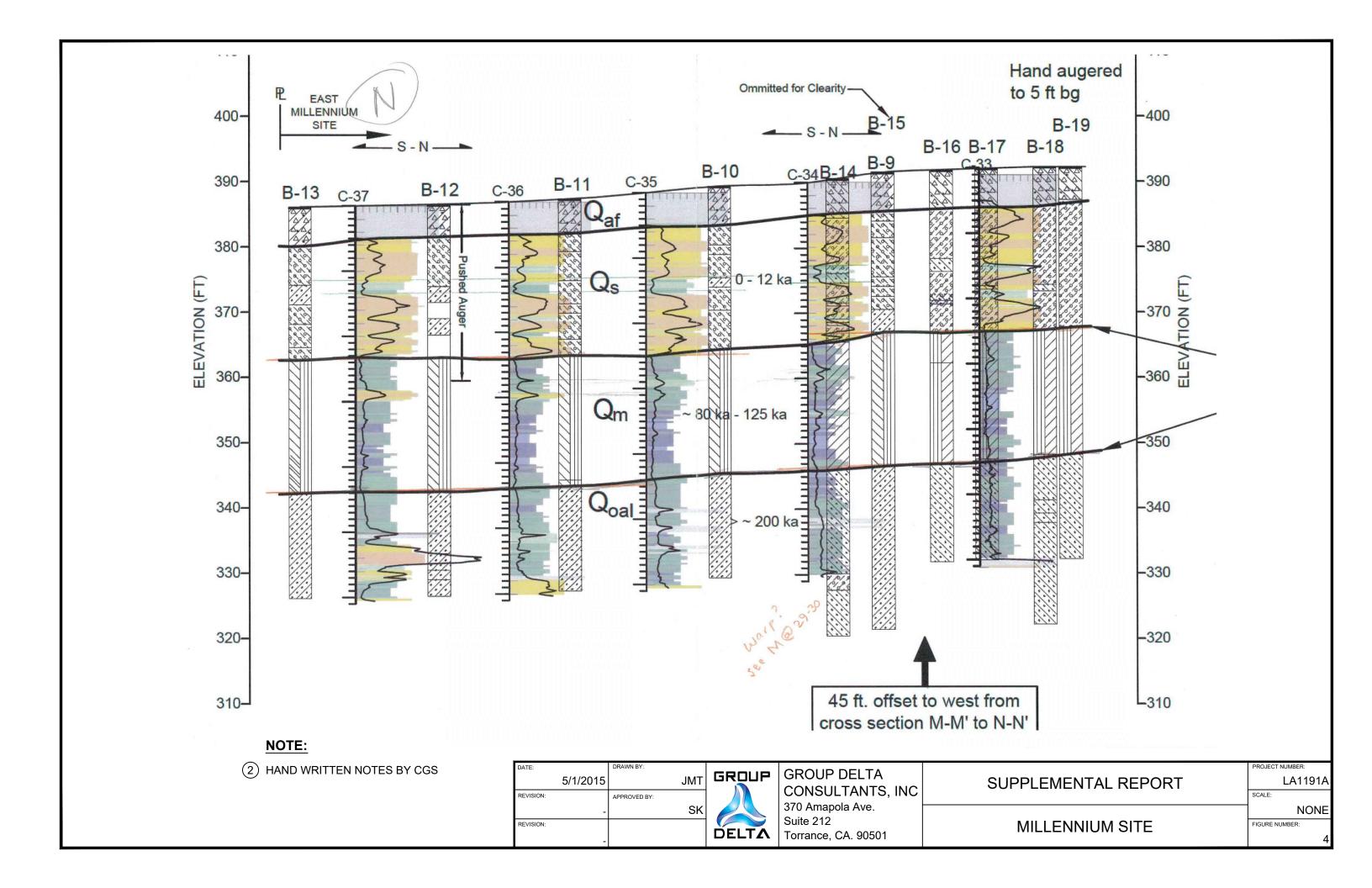


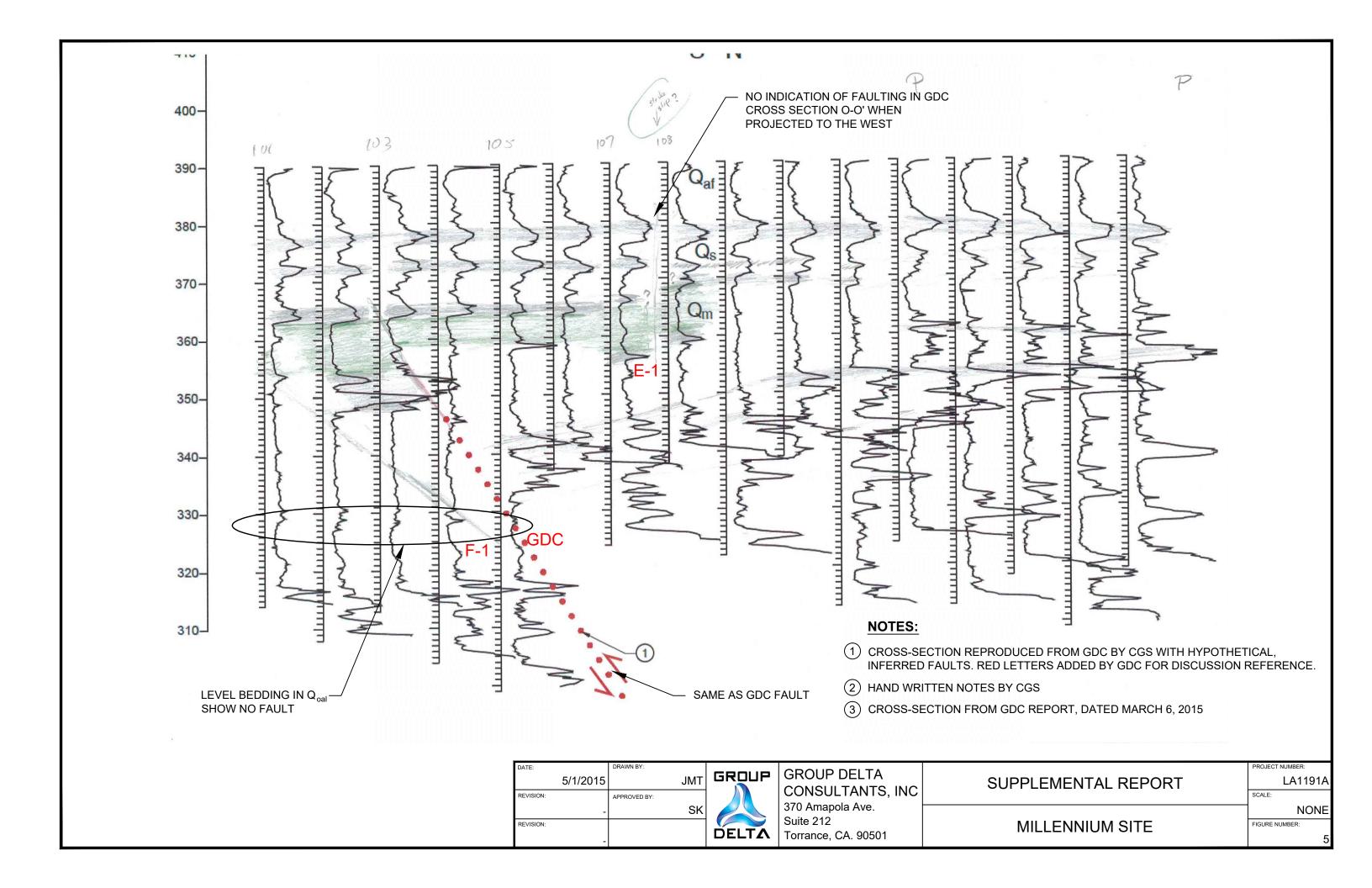
GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501

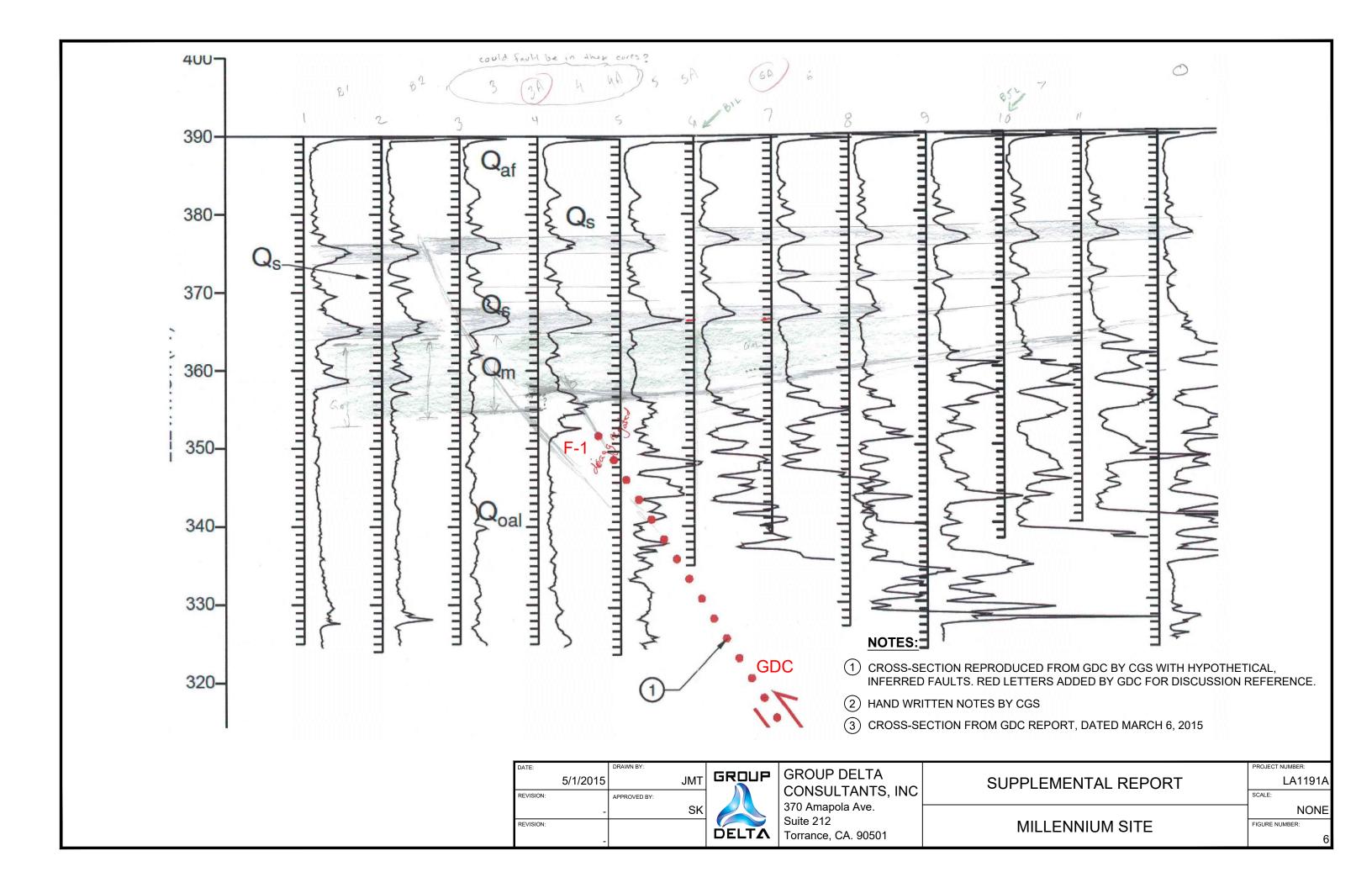
SUPPLEMENTAL REPORT MILLENNIUM SITE

LA1191A NONE FIGURE NUMBER:









REFERENCES

- Group Delta Consultants, Inc., March 6, 2015a, Fault Activity Investigation, East and West Millennium Sites 1733-1741 Argyle Avenue; 6236 and 6334 West Yucca Street; 1720-1730, 1740, 1745-1760, and 1762-1770 N. Vine Street; 1746, 1748-1754, 1760, and 1764 N. Ivar Avenue, Hollywood Area, City of Los Angeles, California.
- Group Delta Consultants, Inc., October 24, 2014a, Response to the City of Los Angeles Geology Correction Letter #85579, Fault Activity Investigation, Yucca-Argyle Apartments Champion Site, SE Corner of Yucca Street and Argyle Avenue, 1756 and 1760 Argyle Avenue, Hollywood District, City of Los Angeles, California.
- Group Delta Consultants, Inc., September 3, 2014b, "Fault Activity Investigation," Yucca-Argyle Apartments, 1756 and 1760 Argyle Avenue, Hollywood Area, City of Los Angeles, CA, GDC Project no. LA-1175 A.
- Group Delta Consultants, Inc., September 7, 2014c, "Fault Activity Investigation," 1756 to 1760 Argyle Avenue, Hollywood Area, City of Los Angeles, CA, GDC Project no. LA-1183 A.
- Group Delta Consultants, Inc., September 7, 2014d, "Fault Activity Investigation," 1800 Argyle Avenue, Hollywood Area, City of Los Angeles, CA, (Supersedes Previous Version 9/3/14) GDC Project no. LA-1175 A.



Table 1: California Geological Survey (CGS) interpretation of GDC Millennium Report (GDC, 2015a) cross-sections M-M', N-N', O-O', and P-P'.

	Cross-Section M-M (Raw Data)					
(A) A-1 A-2	Terminates between C-14 and C-15	A steeply northerly dipping fault that extends through the (Qoal) into the lower (Qm) base by ~ 3.25 ft.	This Fault splays into two breaks. The fault trend, when projected across the East Trench on the East Millennium Site to the east, was not found breaking the (Qm) upper contact with (Qs). So, this fault does not exist or is not active. See plates 4A and 4B in GDC, 2015a.			
(B) B-1 B-2	Terminates between C-21 and C-24	A steeply northerly dipping fault that extends through the (Qoal) into the lower (Qm) base by ~ 0.75 ft.	This Fault splays into two breaks. The fault trend, when projected across the East Trench on the East Millennium Site to the east, was not found breaking the (Qm) upper contact with (Qs). So, the fault does not exist or is not active. See plates 4A and 4B in GDC, 2015a.			
(C) C-1 C-2 C-3	Terminates between C-25 and C-28	A steeply northerly dipping fault that extends through the (Qoal) into the lower (Qm) base by ~ 10 ft.	This Fault splays into three breaks. The fault trend, when projected across the East Trench on the East Millennium Site to the east, was not found breaking the (Qm) upper contact with (Qs). So, the fault does not exist or is not active. See plates 4A and 4B in GDC, 2015a.			
		Cross-Section M-M' (Submit	ted in Report, GDC, 2015a)			
GDC	Terminates between C-21 and C-22	The CGS projects the fault mapped by GDC as breaking the (Qm) and possible (Qs) contact.	GDC has this fault terminating in (Qoal) at depth. (GDC, 2015a) When projecting the fault trend west though cross-section N-N', the fault was not found so it either does not exist or is below the (Qm) and not active.			
С	Terminates between C-25 and C-26	A steeply northerly dipping fault that extends though the (Qoal) into the lower (Qm) base by an undetermined amount.	This is the same (C) fault that CGS mapped from the raw data without splays or maybe splay C-3. When projecting the fault trend west though cross-section N-N', the fault was not found so it either does not exist or is below the (Qm) and not active.			
D	Terminates between C-29 and C-30.	A steeply northerly dipping fault that extends through the (Qoal) and (Qm) into the (Qs).	This questioned zone suggests faulting that may project between C-29 and C-30 due to a 1.5 ft. rise at C-29. Since the rise does not affect the trace at C-28 or C-30, it is considered a stratigraphic anomaly due to erosion. When projecting the fault trend west though cross-section N-N', the fault was not found so it either does not exist or is below the (Qm) and not active.			
	Cross-Section O-O' (Submitted in Report, GDC, 2015a)					
GDC	Terminates between C-102 and C-103	The CGS projects the fault mapped by GDC (GDC, 2015a) as breaking the	GDC (GDC, 2015a) has this fault terminating in (Qoal) at depth. When projecting the fault trend west though cross-section N-N', the fault was not found so			



	1	T	T
		(Qm) and possible (Qs)	it either does not exist or is below the (Qm) and not
		contact.	active.
F-1	Terminates off cross-section to the south	Not shown terminating on cross-section but to the south.	This fault may be a splay of the inferred inactive GDC fault. (GDC, 2015a) Therefore, if it exists it is inactive.
		Cross-Section P-P' (Submitte	ed in Report, GDC, 2015a)
GDC	Terminates between C-102 and C-103	The CGS projects the fault mapped by GDC (GDC, 2015a) as breaking the (Qm) and possible (Qs) contact.	GDC has this fault terminating in (Qoal) at depth. (GDC, 2015a) When projecting the fault trend west though cross-section N-N', the fault was not found so it either does not exist or is below the (Qm) and not active.
E-1	Terminates between C-107 and C-108	Vertical Strike-Slip Fault	Placed between two 10 ft. spaced CPT's, this potential strike -slip fault does not show any flower structures, so its existence is unlikely. If it exists, it's inactive.
F-1	Terminates off cross-section to the south	Not shown terminating on cross-section	This fault may be a splay of the inferred inactive GDC fault. (GDC, 2015a) Therefore, if it exists it is inactive.

