APPENDICES

APPENDIX A

Figure NR3: Coastal Views

CITY of NEWPORT BEACH
GENERAL PLAN

Figure NR3
COASTAL VIEWS

Legend

- Public View Point
- Coastal View Road
- Shoreline Height Limitation Zone
- City Boundary
- County

0 0.5 1 Miles

Source: City of Newport Beach, 2005
PROJECT NUMBER: 10579-01
Date: 07/24/06

EIP ASSOCIATES

N:/GISProjects/NewportBeach_10579/coastal_views.mxd

APPENDIX B

Mestre Greve Associates Air Quality Analysis

MEMORANDUM

Mestre Greve Associates

A Division of Landrum and Brown Inc.

Date : May 06, 2011

To : Makana Nova, City of Newport Beach

From : Tanya Moon
Mestre Greve Associates, Division of Landrum-Brown Inc.

Subject: Air Quality Assessment for Grading Activities on the Single Big Canyon Lot. Report # 515901 (II).

Dear Ms. Nova,

This memo presents the air quality emission assessment for the grading activities of a single lot in Big Canyon. A single custom home will be built on this lot. Air quality will be analyzed based on grading activities of this single lot, and any mitigation measures necessary will be specified.

1.0 AIR QUALITY ANALYSIS

Temporary impacts will result from project construction activities. Air pollutants will be emitted by construction equipment and fugitive dust will be generated during grading activities as well as importing and exporting of soil.

Short-term air pollutant emissions due to construction were calculated using the URBEMIS2007 program (version 9.4.2). URBEMIS is a computer program generated by the California Air Resources Board (CARB) that calculates emissions for construction and operation of development projects. Default URBEMIS2007 variables were used for the calculations. The six criterion pollutants of concern are: reactive organic gasses (ROG), oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO_2), and PM_{10}, (particles smaller than 10 microns in size) and $PM_{2.5}$ (particles smaller than or equal to 2.5 microns).

Short-term Construction Emissions

The project will need to comply with the SCAQMD significant thresholds. The SCAQMD significance thresholds for short-term construction are presented in Table 1.

Table 1
SCAQMD Regional Pollutant Emission Thresholds of Significance

	Pollutant Emissions (lbs/day)					
	CO	**VOC**	**NOx**	**PM10**	**PM2.5**	**Sox**
Construction	*550*	*75*	*100*	*150*	*55*	*150*

The primary source of air quality emissions would primarily from the grading, import and export of soil. Table 2 presents the results of the URBEMIS2007 model showing the maximum daily air pollutant emissions projected. The project emissions will be compared to the Significant Thresholds established by the South Coast Air Quality Management District (SCAQMD) shown above. The specific data utilized in calculating the emissions, and output files from the URBEMIS2007 program are provided in the appendix.

Table 2 t
Peak Construction Emissions - Pounds per day

	Daily Emissions (lbs/day)					
Activity	**CO**	**NO_x**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**
Mass Grading	20.8	44.9	4.9	12.5	3.9	0.0
Haul Trucks	23.0	62.5	4.7	2.8	2.3	0.1
Combined:	43.8	107.4	9.6	15.3	6.2	0.1
Significance Threshold	**550**	**100**	**75**	**150**	**55**	**150**
Exceed Threshold?	No	Yes	No	No	No	No

NOTE: Underline data indicates exceedance. Construction emissions include standard mitigation as required by SCAQMD rules. Particulate (PM_{10} and $PM_{2.5}$) emissions include a 60% reduction from watering three times daily as required by SCAQMD Rules.

Table 2 shows that unmitigated construction emissions would be above the Significance Emission Thresholds established by the SCAQMD, specifically for NOx. In general, the primary source of NO_x emissions would be from construction equipment and haul trucks importing and exporting material. Mitigation measures to reduce construction emissions to a level that is under the significance threshold such as the use of construction equipment with diesel oxidation catalyst are recommended in Section 3.0 (Mitigation Measures).

Localized LST Analysis

In accordance with Governing Board direction, SCAQMD staff developed localized significance threshold (LST) methodology and mass rate look-up tables by Source Receptor Area (SRA) that can be used to determine whether or not a project may generate significant adverse localized air quality impacts. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or

state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area. The LST methodology is described in "Final Localized Significance Threshold Methodology" updated on October 21, 2009 by the SCAQMD and is available at the SCAQMD website (http://aqmd.gov/ceqa/handbook/LST/LST.html).

The LST mass rate look-up tables provided by the SCAQMD allow one to determine if the daily emissions for proposed construction or operational activities could result in significant localized air quality impacts. If the calculated on-site emissions for the proposed construction or operational activities are below the LST emission levels found on the LST mass rate look-up tables and no potentially significant impacts are found to be associated with other environmental issues, then the proposed construction or operation activity is not significant for air quality.

The LST mass rate look-up tables are applicable to the following pollutants only: oxides of nitrogen (NO_x), carbon monoxide (CO), and particulate matter (PM_{10} and $PM_{2.5}$). LSTs are derived based on the location of the activity (i.e., the source/receptor area); the emission rates of NO_x, CO, PM_{10}, and $PM_{2.5}$; and the distance to the nearest exposed individual.

The LST methodology presents mass emission rates for each SRA, project sizes of 1, 2, and 5 acres, and nearest receptor distances of 25, 50, 100, 200, and 500 meters. For project sizes between the values given, or with receptors at distances between the given receptors, the methodology uses linear interpolation to determine the thresholds. If receptors are within 25 meters of the site, the methodology document says that the threshold for the 25-meter distance should be used.

The project is located in SRA 18. The nearest existing homes are located on Rue Biarritz the cul-de-sac to the north. The homes are referred to as Residential 1 as shown in Exhibit 1. The distances to the nearest homes could be located as close as 50 feet from the edge the project site to approximately 150 feet when the grading occurs towards the midpoint of the project site. The LSTs are the same for receptors closer than 25 meters (82 feet). Table 6 summarizes the LSTs for construction.

Table 3 also lists the thresholds to determine if construction of the project results in a significant local air quality impact. The thresholds listed in Table 6 are based on a 1.9 acre construction site with an adjacent receiver approximately 50 feet from the closest home, to approximately 150 feet at the general midpoint of the project site. A project with daily emission rates below the thresholds during operation is considered to have a less than significant effect on local air quality.

Table 3
Localized Significance Thresholds at the Nearest Receptors

	Distance Feet	Localized Significance Threshold (lbs/day)			
		CO	NO_x	PM_{10}	$PM_{2.5}$
Construction	*50*	930.5	127.1	6.7	4.8
Construction	*150*	1,032.8	124.9	17.9	6.5

The emissions presented in Table 4 below are those that would be emitted from activity within the project site, including the emissions from construction trucks and vehicles traveling on-site (inside the project boundaries). The on-site worker trips were estimated using URBEMIS default calculations, while each on-road construction vehicle or diesel trip would have a 0.2 mile component within the project site. The total on-site construction emissions are compared to the Localized Significance Thresholds (LSTs). The LSTs are the same for distances less than 25 meters (82 feet), and are slightly less stringent for distances greater than 25 meters. Worksheets showing the emission calculations are presented in the appendix.

Table 4
On-site Emissions By Construction Activity

Activity	*Distance Feet*	Daily Emissions (lbs/day) CO	NO_x	PM_{10}	$PM_{2.5}$
Mass Grading	--	0.2	0.4	10.8	2.3
Haul Trucks	--	0.2	0.5	0.0	0.0
Combined:		0.4	0.9	10.8	2.3
Significance Threshold	*50*	**930.5**	**127.1**	**6.7**	**4.8**
Exceed LST?		No	No	Yes	No
Significance Threshold	*150*	**1,032.8**	**124.9**	**17.9**	**6.5**
Exceed LST?		No	No	No	No

The emissions will be above the LSTs even with mitigation measures required by SCAQMD rules, specifically for PM_{10} at the closest distance of 50 feet. Additional mitigation to reduce fugitive dust is recommended in Section 3.0.

3.0 Mitigation Measures

3.0.1 Air Quality

NOx and PM_{10} emissions would be above the significant thresholds without mitigation measures. Therefore, mitigation measures required by SCAQMD Rules should be implemented to the greatest extent possible. Mitigation to reduce NOx, PM_{10} and PM_{25} emission are recommended below.

The following measures are recommended:

- To reduce daily NOx emissions, the use of construction equipment with diesel oxidation catalyst are recommended.

- To reduce daily PM_{10} emissions, the on-site cut/fill activities shall be limited to a maximum of 400 cubic yards per day, when grading activities are within 25 meters (82 feet) of the nearest homes. The grading in this area would involve approximately 5,000 cubic yards and take approximately 13 days. Once the grading activities are outside the 25 meter zone, the on-site cut/fill activities shall be operated at a maximum 1,422 cubic yards per day. The grading for the remaining project area (outside 25 meters) would total 17,000 cubic yards, and take approximately 12 days.

- Apply soil stabilizers to inactive areas, and replace ground cover in disturbed areas quickly. Water exposed surfaces three times daily.

- Provide water while loading and unloading to reduce visible dust plumes. Reduce speed on unpaved roads to less than 15 mph.

- Manage haul road dust by watering three times daily. Haul trucks related to the import of 45,000 cubic yards per day is anticipated to take approximately 32 days.

With these mitigation measures, emissions would be reduced to levels below all significance thresholds for construction activities.

APPENDIX

(Urbemis Modeling)

4/19/2011 06:36:06 PM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\My Dropbox\L&B WORK_2\BigCanyon AQ_NZ NB2\big canyon nb 022811 mitg 50'.urb924

Project Name: Big Canyon Lot

Project Location: Orange County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	CO2
2011 TOTALS (tons/year unmitigated)	639.24
2011 TOTALS (tons/year mitigated)	639.24
Percent Reduction	0.00

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	CO2
2011	639.24
Mass Grading 02/01/2011-10/07/2011	618.69
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	383.79
Mass Grading On Road Diesel	218.19
Mass Grading Worker Trips	16.70
Building 06/01/2011-06/30/2011	20.55
Building Off Road Diesel	20.55
Building Vendor Trips	0.00
Building Worker Trips	0.00
Coating 08/02/2011-08/15/2011	0.00
Architectural Coating	0.00
Coating Worker Trips	0.00

Phase Assumptions

Phase: Mass Grading 2/1/2011 - 10/7/2011 - Default Mass Site Grading/Excavation Description

Total Acres Disturbed: 1.9

Maximum Daily Acreage Disturbed: 1

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 380 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 575.2

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 6/1/2011 - 6/30/2011 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Architectural Coating 8/2/2011 - 8/15/2011 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

APPENDIX C

SCAQMD Thresholds

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • www.aqmd.gov

SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Construction [b]**	**Operation [c]**
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs), Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 MT/yr CO2eq for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants [d]		
NO2 1-hour average annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM10 24-hour average annual average	10.4 µg/m^3 (construction)[e] & 2.5 µg/m^3 (operation) 1.0 µg/m^3	
PM2.5 24-hour average	10.4 µg/m^3 (construction)[e] & 2.5 µg/m^3 (operation)	
SO2 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 µg/m^3 (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day Average Rolling 3-month average Quarterly average	1.5 µg/m^3 (state) 0.15 µg/m^3 (federal) 1.5 µg/m^3 (federal)	

[a] Source: SCAQMD CEQA Handbook (SCAQMD, 1993)
[b] Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).
[c] For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.
[d] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.
[e] Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day ppm = parts per million µg/m^3 = microgram per cubic meter ≥ = greater than or equal to
MT/yr CO2eq = metric tons per year of CO2 equivalents > = greater than

Revision: March 2011

APPENDIX D

Glenn Lukos Associates Biological Survey

MEMORANDUM

GLENN LUKOS ASSOCIATES

Regulatory Services

PROJECT NUMBER: 08660002PERM

TO: Phil Martin

FROM: Tony Bomkamp

DATE: December 14, 2010

SUBJECT: Results of Site Biological and Regulatory Site Visits Conducted for Big Canyon Country Club Single Family Residential Lot

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On July 27, 2010 I conducted a site visit to evaluate an artificial relict drainage feature to determine whether the feature exhibits characteristics consistent with the presence of waters of the United States, which are regulated by the U.S. Army Corps of Engineers (Corps) pursuant to Section 404 of the Clean Water Act or waters of the State, which are regulated by the California Department of Fish and game (CDFG) pursuant to Section 1602 of the Fish and Game Code.

In addition, I conducted a review of the existing fill area that comprises a substantial portion of the building pad to determine whether conditions have changed since previous surveys were completed as documented in the Glenn Lukos Associates (GLA) report dated August 25, 2008.[1]

Following the July 27, 2010 site visits, GLA requested confirmation from both the Corps and CDFG regarding the jurisdictional status of the relict drainage feature. A site visit was conducted with CDFG October 4, 2010 and a separate site visit was conducted with the Corps on October 12, 2010. The results of the site visits are discussed below.

RELICT DRAINAGE FEATURE

The relict drainage feature is located along the eastern edge of the golf course fairway between the fairway and the previously approved building pad. The feature is not a natural drainage course but rather was constructed to collect water from a storm-drain outlet and carry it between the golf course fairway and adjacent slope in a westerly direction to another storm drain inlet. In order to direct water to downstream areas that have been created as wetland mitigation, water from the 36-inch corrugated metal pipe, that previously discharged into the relict channel is now captured by a 12-inch plastic pipe [Exhibit 1, Photograph 1] and carried under the golf course fairway discharging to the wetland mitigation area.

[1] Glenn Lukos Associates. August 25, 2008. Letter Report addressed to Mr. Larry Tucker: *Results of Biological/Regulatory Overview Conducted for the 1.9-Acre Proposed Residential Lot Located in the Big Canyon Community, Newport Beach, Orange County, California.*

29 Orchard ▪ Lake Forest ▪ California 92630-8300
Telephone: (949) 837-0404 Facsimile: (949) 837-5834

At the time of the site visit, the relict drainage feature was dry and exhibited no signs of recent flow. Where a channel was observable, it varied in width from 0.5 to 2 feet. The substrate consisted primarily of coarse sands and gravels with areas of clay inclusions, consistent with the artificial character of the feature. The relict channel bottom is sparsely vegetated and the bank closest to the golf course fairway supports a predominance of native and non-native species typical of wetland or riparian areas [Exhibit 1, Photograph 2]. It is important to note however, that the vegetation concentrated on the bank closest to the fairway is clearly support by irrigation runoff as the adjacent turf area was clearly saturated by irrigation and the turf area also supported many of the species on the banks of the drainage.[2] Dominant species include arroyo willow (*Salix lasiolepis*, FACW), mugwort (*Artemisia douglasiana*, FACW), tall umbrella sedge (*Cyperus eragrostis*, FACW), bristly ox-tongue (*Picris echioides*, FAC), and tall horseweed (*Conyza Canadensis*, FAC).

U.S. Army Corps of Engineers Jurisdiction

Pursuant to Section 404 of the Clean Water Act, the Corps regulates the discharge of dredged and/or fill material into waters of the United States. The term "waters of the United States" is defined in Corps regulations at 33 CFR Part 328.3(a) as:

> *(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;*
> *(2) All interstate waters including interstate wetlands;*
> *(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect foreign commerce including any such waters:*
> *(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*
> *(ii) From which fish or shell fish are or could be taken and sold in interstate or foreign commerce; or*
> *(iii) Which are used or could be used for industrial purpose by industries in interstate commerce...*
> *(4) All impoundments of waters otherwise defined as waters of the United States under the definition;*
> *(5) Tributaries of waters identified in paragraphs (a) (1)-(4) of this section;*
> *(6) The territorial seas;*

[2] Although the fairway is mowed, many of the species on the banks of the channel have migrated into the fairway and were easily identified despite the recent mowing.

> *(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1)-(6) of this section.*

In the absence of wetlands, the limits of Corps jurisdiction in non-tidal waters, such as intermittent streams, extend to the Ordinary High Water Mark (OHWM) which is defined at 33 CFR 328.3(e) as:

> *...that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*

Site Characteristics Relative to Above Definition

The relict channel does not meet the definition of waters of the United States as set forth in subparagraphs 1-4 or 6 and 7 above. The only avenues by which the Corps could potentially assert jurisdiction over the relict channel would be by asserting that it is "tributary" (subparagraph 5) to the Pacific Ocean. The feature does exhibit at least minimal characteristics for the presence of an OHWM including shelving. However, the presence of an OHWM is not sufficient to bring an ephemeral channel under Corps jurisdiction.

In order to make the assertion that the relict channel is subject to jurisdiction under Section 404, the Corps, in accordance with the recent Supreme Court ruling in *Rapanos v. United States* and *Carabell v. United States* ("Rapanos") would have to find that a "significant nexus" exists between the relict drainage feature and downstream navigable waters (i.e., the Pacific Ocean), which means that the subject relict drainage feature contributes to natural functions within the Pacific Ocean. It is GLA's opinion that there is no significant nexus between the relict drainage channel and the Pacific Ocean; however, only the Corps can make a final determination should such a determination be required.

The Corps also has one other potential avenue for asserting jurisdiction over the relict drainage feature: the downstream wetland mitigation area. Often, the Corps asserts jurisdiction over Corps-approved mitigation areas, particularly where such mitigation areas exhibit wetland characteristics. In order to make such a determination, the Corps would also have to find a "significant nexus" between the relict channel and the wetland mitigation area. Given the proximity of the channel to the wetland mitigation area, during the site visit of October 12, 2010 the Corps in fact determined that the relict channel does have a nexus with the downstream wetland, and would be regulated as a Water of the United States.

California Department of Fish and Game

Pursuant to Division 2, Chapter 6, Sections 1600-1603 of the California Fish and Game Code, the CDFG regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake, which supports fish or wildlife.

CDFG defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation

CDFG jurisdiction within altered or artificial waterways is based upon the value of those waterways to fish and wildlife. CDFG Legal Advisor has prepared the following opinion:

- Natural waterways that have been subsequently modified and which have the potential to contain fish, aquatic insects and riparian vegetation will be treated like natural waterways...

- Artificial waterways that have acquired the physical attributes of natural stream courses and which have been viewed by the community as natural stream courses, should be treated by [CDFG] as natural waterways...

- Artificial waterways without the attributes of natural waterways should generally not be subject to Fish and Game Code provisions...

Thus, CDFG jurisdictional limits closely mirror those of the Corps. Exceptions are CDFG's exclusion of isolated wetlands (those not associated with a river, stream, or lake), the addition of artificial stock ponds and irrigation ditches constructed on uplands, and the addition of riparian habitat supported by a river, stream, or lake regardless of the riparian area's federal wetland status.

Site Characteristics Relative to Above Definition

The relict channel does exhibit characteristics consistent with the presence of a “bed and bank” albeit the indicators are weak at best. During the site visit on October 4, CDFG determined that the relict channel exhibited sufficient indicators to warrant a determination that it would be regulated under Section 1602 of the California Fish and Game Code.

Potential Changes on Building Pad

Since the initial surveys were conducted in August 2008, coyote brush (*Baccharis pilularis*), a component of Coastal Sage Scrub has further expanded on the pad. In the August 25, 2008

report, this species was reported on the pad but did not occur in sufficient densities to warrant designation as Coastal Sage Scrub habitat. The pad remains dominated by ruderal vegetation as previously described; however, the southwest portion of the pad (estimated 40-percent) now supports disturbed coyote brush scrub, totaling 0.23 acre [Exhibit 2 is the 2010 vegetation map overlain with the recently delineated coyote brush scrub]. Because of the disturbed character of the habitat, the proximity of non-native ornamental vegetation and the limited patch size, this area does not exhibit potential for supporting any special-status species, including the California gnatcatcher. The loss of 0.23 acre of disturbed coyote brush scrub would not be considered a significant impact and would not require mitigation.

DISCUSSION/CONLUSIONS

Potential impacts to the disturbed coyote brush scrub would not result in a determination of significant impacts and would not trigger mitigation requirements.

Regarding the drainage feature, GLA provides the following comments.

Corps Jurisdiction

While the Corps determined that the relict drainage would be eligible for regulation under Section 404 of the Clean Water Act, the preliminary determination from the Corps was that impacts were so small (0.004 acre [174 square feet] of ephemeral streambed with no wetlands present) that mitigation would not be required. Based on this determination, the impacts would not be considered significant pursuant to the California Environmental Quality Act and mitigation would not be required.

CDFG Jurisdiction

While CDFG determined that the relict drainage would be eligible for regulation under Section 1602 of the Fish and Game Code, the preliminary determination from CDFG was that impacts were so small (0.004 acre [174 square feet] of ephemeral streambed with no wetlands present) that mitigation would not be required. Based on this determination, the impacts would not be considered significant pursuant to the California Environmental Quality Act and mitigation would not be required.

GLA will be submitting applications to the Corps, CDFG as well as to the Regional Water Quality Control Board (Santa Ana Regional Board). Should any of these agencies determine that the impacts are significant, mitigation would be required and would be provided at a 1:1 basis (due to the low value of the relict drainage) either onsite or offsite at an agency-approved mitigation bank or in-lieu-fee program.

PHOTOGRAPH 1: View of 36-inch pipe discharging to 12-inch pipe at northern end of relict drainage feature.

PHOTOGRAPH 2: View of relict drainage feature looking north. Note lack of well defined channel or signs of flow.

GLENN LUKOS ASSOCIATES

Exhibit 1

BIG CANYON RESIDENTIAL LOT PROPOSAL

Site Photographs

Legend

- Project Boundary
- Disturbed Coyote Brush Scrub (0.23 ac)

Vegetation Type and Code

- Disturbed, 16.1
- Mixed Sage Scrub/Chenopod Scrub, 2.3.10/2.7
- Ornamental, 15.5
- Ruderal, 4.6
- Ruderal/Ornamental, 4.6/15.5
- Southern Willow Scrub, 7.2

N

0 25 50 100

Feet

BIG CANYON
RESIDENTIAL LOT PROPOSAL

2010 Updated Vegetation Map

GLENN LUKOS ASSOCIATES

Exhibit 2

X:\0363-THE REST\0866-1BIGC\866-1GIS\BIO_GIS\Vegetation\866-1Vegetation2010.mxd
August 2, 2010

APPENDIX E

CDFG Letter and Email

SCANNED

866 - 2 PERM
permit

Tony Bomkamp

From: Russell Barabe [RBarabe@dfg.ca.gov]
Sent: Thursday, January 20, 2011 11:20 AM
To: dvoorhees@bigcanyoncc.org; tbomkamp@wetlandpermitting.com
Subject: Big Canyon Residential Lot Proposal

Mr. Voorhees and Mr. Bombkamp,

The changes to the original project (increasing the jurisdictional impact from 0.002 ac to 0.004 ac) are acceptable to CDFG. I have amended the file, and included the documents Mr. Bombkamp provided.

I suggest you print a copy of this e-mail, and keep it with the original op-law letter. That way, if asked for you CDFG permit, you will be in compliance.

If you have any questions, please do not hesitate to contact me.

Thank you.

Russell Barabe
Environmental Scientist
CA Department of Fish and Game
4949 Viewridge Ave, SD, CA 92123
858-467-2717

Pursuant to the Governor's Executive Order S-12-10, I am required to take three furlough days per month.

866-2 PERM permit

California Natural Resources Agency
DEPARTMENT OF FISH AND GAME
South Coast Region
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4201
www.dfg.ca.gov

ARNOLD SCHWARZENEGGER, Governor
JOHN McCAMMAN, Director

December 13, 2010

Mr. David Voorhees
Big Canyon Country Club
1 Big Canyon Drive
Newport Beach, CA 92660

Subject: Notification of Lake or Streambed Alteration No. 1600-2010-0265-R5
Big Canyon Residential Lot Proposal

Dear Mr. David Voorhees:

As the Department of Fish and Game (Department) explained in a previous letter to you dated September 30, 2010, the Department had until December 3, 2010 to submit a draft Lake or Streambed Alteration Agreement (Agreement) to you or inform you that an Agreement is not required. The Department did not meet that date. As a result, by law, you may now complete the project described in your notification without an Agreement.

Please note that pursuant to Fish and Game Code section 1602(a)(4)(D), if you proceed with this project, it must be the same as described and conducted in the same manner as specified in the notification and any modifications to that notification received by the Department in writing prior to December 3, 2010. This includes completing the project within the proposed term and seasonal work period and implementing all avoidance and mitigation measures to protect fish and wildlife resources specified in the notification. If the term proposed in your notification has expired, you will need to re-notify the Department before you may begin your project. Beginning or completing a project that differs in any way from the one described in the notification may constitute a violation of Fish and Game Code section 1602.

Also note that while you are entitled to complete the project without an Agreement, you are still responsible for complying with other applicable local, state, and federal laws. These include, but are not limited to, the state and federal Endangered Species Acts and Fish and Game Code sections 5650 (water pollution) and 5901 (fish passage).

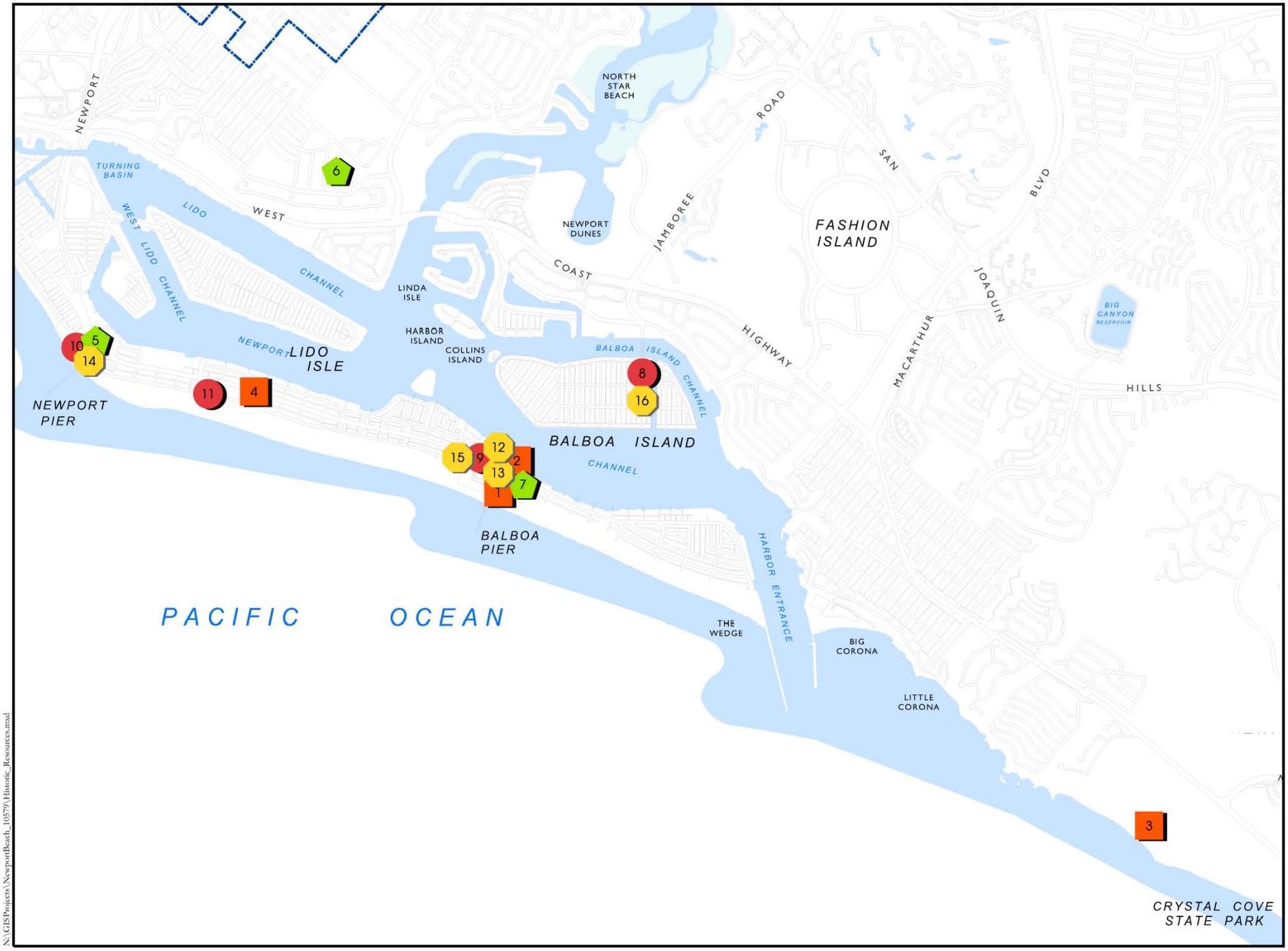
Finally, if you decide to proceed with your project without an Agreement, you must have a copy of this letter and your notification with all attachments available at all times at the work site. If you have any questions regarding this matter, please contact me at (858) 467-2717 or rbarabe@dfg.ca.gov.

Sincerely,

Russell Barabe
Environmental Scientist

APPENDIX F

Figure HR1: Historic Resources



CITY of NEWPORT BEACH
GENERAL PLAN
Figure HR1
HISTORIC RESOURCES

Sites on National Register of Historic Places
1. Balboa Inn
2. Balboa Pavillion
3. Crystal Cove Historic District
4. Lovell Beach House

California Historical Landmarks
5. McFadden Wharf
6. Old Landing
7. Site of First Water-to-Water Flight

Other Historic Sites or Potentially Historic Sites in the CHRIS Database
8. Balboa Island Fire House #4
9. Bank of Balboa/Bank of America
10. B K Stone Building
11. Our Lady Mount Carmel

Other Historic Sites in the City Register
12. Balboa Saloon
13. Balboa Theater
14. Dory Fishing Fleet
15. Rendezvous Ballroom Site
16. Wilma's Patio (formerly Pepper's Restaurant)

N

0 0.125 0.25 0.5 Miles

Source: City of Newport Beach and EIP Associates
PROJECT NUMBER: 10579-01
Date: 9/12/06

N:\GISProjects\NewportBeach_10579\Historic_Resources.mxd

APPENDIX G

Associated Soils Engineering Geotechnical Report

SOILS ENGINEERING, INC.
Consulting Geotechnical Engineers

2860 WALNUT AVE. - SIGNAL HILL, CALIF. 90755 - PHONE 562/426-7990 - FAX 562/426-1842

Project No. 09-6169
June 25, 2010

Big Canyon Country Club
One Big Canyon Drive
Newport Beach, California 92660

Attention: Mr. William Stampley

Subject: Geotechnical Review of Rough Grading Plan for Parcel 1 of Parcel Map No. 2008-11, Big Canyon Country Club, Newport Beach, California.

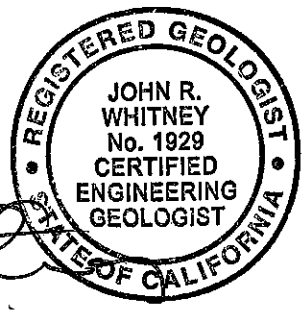
Gentlemen:

Associated Soils Engineering, Inc. (ASE) has completed a review of the 30-scale Rough Grading Plan for Parcel 1 of Parcel Map No. 2008-11, Big Canyon Country Club, Newport Beach, California prepared by Walden & Associates. This report presents a summary of our findings, conclusions and recommendations for rough grading of the site. This report includes all pertinent information presented in our Preliminary Geotechnical Investigation report dated January 21, 2010.

It is ASE's opinion that the subject site can be graded for residential development as shown on the reviewed plans, provided that the grading is completed in compliance with the recommendations presented in this report.

We thank you for the opportunity of working with you on this project. If you have any questions or require additional information, please contact the undersigned.

Respectfully submitted,
ASSOCIATED SOILS ENGINEERING, INC.



Lawrence J. D. Chang, R.E.
Geotechnical Engineer, RGE 2881

John R. Whitney, P.G.
Engineering Geologist, CEG 1929

LC/JRW:jw

Distribution: (3) Addressee
(3) David Bacon, Walden & Associates

1.0 INTRODUCTION

This report presents the results of our geotechnical investigation and review of the Rough Grading Plan for Parcel 1 of Map 2008-11, Big Canyon Country Club, Newport Beach, CA. The 30-scale plan was prepared by Walden & Associates. A copy of Sheet 2 of the reviewed Rough Grading Plan is included herewith as Plate A-1 (Geotechnical Map & Cross Sections). This report presents a summary of our findings with conclusions and recommendations regarding the proposed rough grading.

The excavation logs, laboratory test results, CPT soil probe data and list of references, upon which our evaluation and recommendations are based, are presented in the appendices to this report.

Since building plans have yet to be formulated, this report does not include specific recommendations for precise grading, foundations, or other site improvements.

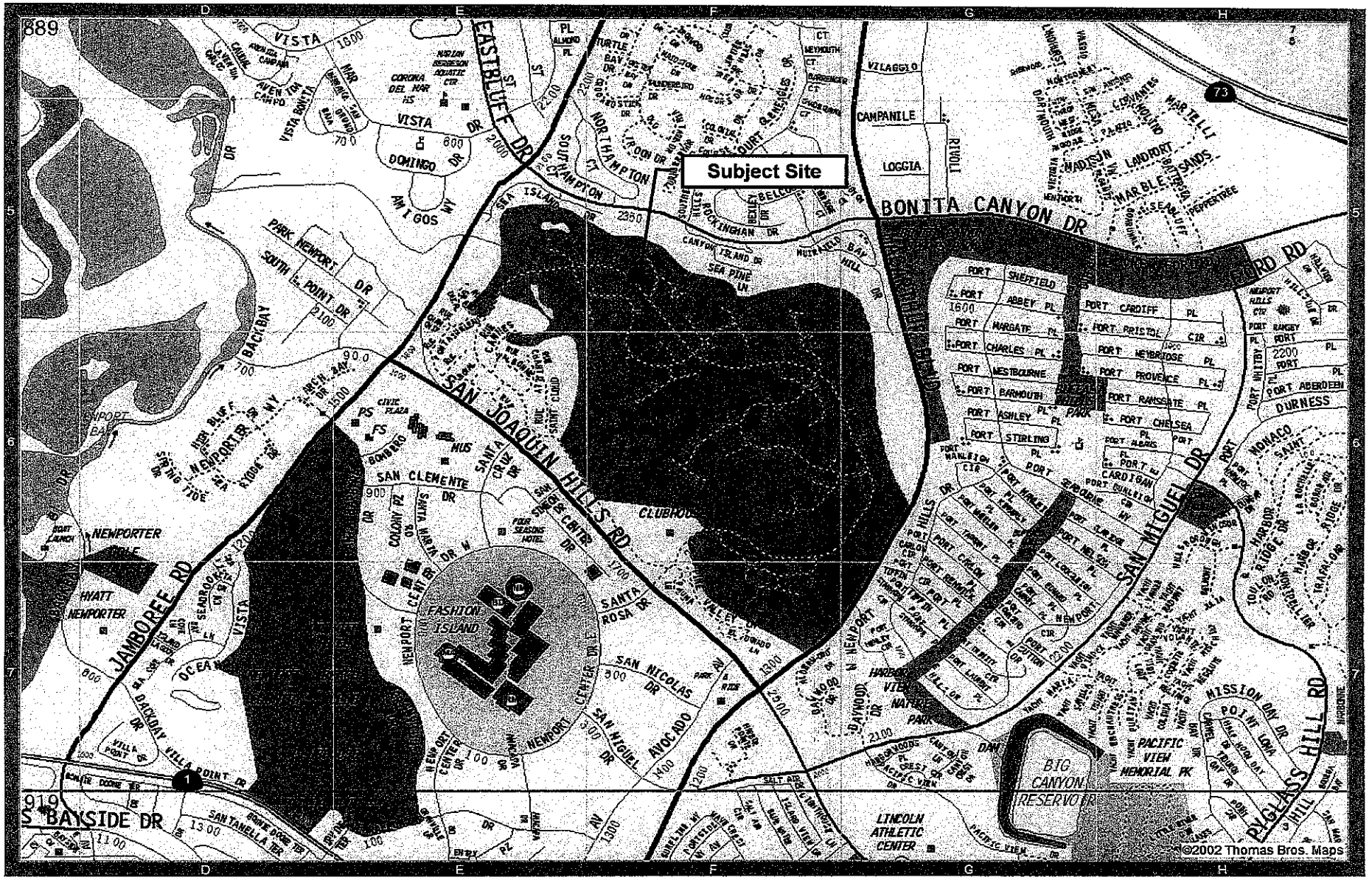
2.0 PROJECT DESCRIPTION

2.1 Site Location and Description

Parcel 1 of Tentative Tract 2008-11 is located on the northeast side of Big Canyon Drive and northwest of Rue Biarritz in the Big Canyon neighborhood of the City of Newport Beach (see Figure 1). The site is a wedge shaped 1.9-acre parcel accessed by an asphalt and gravel road that descends in a northwest direction from Big Canyon Drive to a relatively flat portion that will be the location of the future residential construction (Building Site). The Building Site is bounded on the southwest side by a 10 to 15-foot high graded fill slope with an approximate gradient of 2:1 (horizontal:vertical) ascending to Big Canyon Drive, on the northeast side by a 50-foot high 1.5:1 natural slope ascending to existing residences along Rue Biarritz, and on the northwest by a 17-foot high 3:1 fill slope descending to the 5th Fairway of the Big Canyon Golf Course. Elevations within the Building Site range from approximately 128 feet above mean sea level (MSL) and the southern side to approximately 110 feet MSL at the northern side. Site drainage is sheet flow from the entry drive across the site to an unlined drainage channel at the toe of the northwest slope adjacent to golf course. The site is currently vacant and covered with light to dense vegetation and scattered debris.

2.2 Proposed Rough Grading

Parcel 1 is to be rough graded for single-family residential development use. Final grading and construction plans are not available. The reviewed rough grading plan indicates up to approximately 15 feet of fill to create a flat building. A 13-foot high 2:1 (horizontal:vertical) gradient fill slope descending to the golf course is planned at north Parcel 1 boundary. Additional non-structural fill with a maximum thickness of 15 feet and maximum gradient of 5:1 will be placed in the golf course area immediately adjacent to Parcel 1.



Associated Soils Engineering, Inc. **2860 Walnut Avenue** **Signal Hill, CA 90755** **Tel (562) 426-7990 Fax (562) 426-1842**	**Site Location Map**	Proj. Name:	**Parcel 1 of Tentative Parcel Map No. 2008-111, Big Canyon Country Club, Newport Beach, California.**
		Figure 1	Proj. No.: **09-6169**
			Date: **June, 2010**

ASSOCIATED SOILS ENGINEERING, INC.
Consulting Geotechnical Engineers

3.3 Settlement

The undocumented artificial fill on site is anticipated to undergo significant, uneven volumetric contraction upon loading, due to its highly uncompacted and doubtful nature at the time of its initial placement. Soil of this nature is required to be removed and re-worked totally, regardless of the development scheme, according to the governing grading code.

Based on the consolidation test results shown on Plates C-1 and C-2 in the Appendix, it appears that the alluvial soils on-site are highly heterogeneous in compression characteristics, indicating that, depending on the locations on site, the alluvial soils are at different stages of their respective natural consolidation process under the loading combination of their own weight and the surcharge from the artificial fill. This situation signals that the consolidation in the on-site alluvial stratum is ongoing and significant total and differential settlement could develop across the site potentially undermining the stability of building foundations, surficial flatworks and underground utilities.

Soils of the Monterey Formation, due to their degree of cementation and hardness, are not anticipated to undergo further consolidation under the likely additional loading from the proposed residential development. Should deep foundation alternative be considered, the Monterey Formation is anticipated to function as the bearing layer in which the tips of deep foundation will be embedded into.

In summary, it is ASE's preliminary estimate that settlements ranging from more than 5 inches to less than 2 inches, reflecting a differential settlement of more than 3 inches, could develop across the site at different locations due to the combination of ongoing natural consolidation of the alluvium material and the newly imposed loading from the residential development.

3.4 Faulting and Seismicity

No active or potentially active faults are known to project through the site. In addition, the site does not lie within an Earthquake Fault Zone as designated by the State of California in the Alquist-Priolo Earthquake Zoning Act (Hart and Bryant, 1997). Several active and potentially active faults, however, do lie within close proximity to the site, including the Newport-Inglewood fault zone, located approximately 3 miles to the southwest, and the San Joaquin Hills thrust fault, located approximately 3 miles to the northeast. However, the subject site is not considered to be at a particularly greater level of seismic risk than other areas in the region.

3.5 Liquefaction

A portion of the site lies within a State of California Seismic Hazard Zone of required investigation for liquefaction potential (CDMG, 2001). The term "liquefaction" describes a phenomenon in which a saturated cohesionless soil loses strength and acquires a degree of mobility as a result of strong ground shaking during an earthquake. The

factors known to influence liquefaction potential include soil type and depth, grain size, relative density, ground water level, degree of saturation, and both the intensity and duration of ground shaking. This phenomenon occurs only below the water table and rarely where the groundwater level is greater than 40 feet below the surface. Due to the soft and saturated conditions of the alluvium underlying the site, the potential for settlement by liquefaction as a result of ground shaking does exist. The liquefaction potential will be mitigated at the Building Site by removal and recompaction of the underlying alluvial soils.

3.6 Slope Stability

Based on stability analyses performed by P.A. & Associates (2008, 2009a, 2009b) the northeast natural slope ascending to Rue Biarritz is considered to be grossly stable. However, erosion and surficial failure of the colluvial deposits overlying the bedrock should be anticipated. Methods to minimize the impact of surficial slope instability, such as structural setback from the toe and debris catchment fences, should be determined as development plans are formulated. Note that the minimum setback distance from the toe of the slope is 15 feet per the California Building Code.

4.0 CONCLUSIONS

It is ASE's geotechnical opinion that the subject site can be graded for residential development as shown on the reviewed plans, provided that the grading is completed in compliance with the recommendations presented in this report. The potential for liquefaction and settlement of the site soils can be mitigated by removing and recompacting the existing liquefiable and compressible soils. The proposed grading is not expected to have an adverse impact on adjacent properties.

5.0 GRADING RECOMMENDATIONS

5.1 General

Site grading should be performed in compliance with the more stringent of the requirements and criteria stipulated in Appendix J of the 2007 California Building Code, the General Earthwork and Grading Specifications provided in Appendix C of this report, and the following recommendations.

5.2 Site Preparation and Remedial Grading

5.2.1 Surface Vegetation: Surface vegetation should be stripped from areas of proposed construction. Stripping should penetrate six inches into surface soils. Any soil contaminated with organic matter (such as root systems or strippings mixed into the soil) should be disposed of off-site or set aside for future use in non-structural landscaped areas. Removal of trees and shrubs should include rootballs and attendant root systems.

5.2.2 Removal of Existing Fill: The artificial fill deposit should be completely removed from proposed structural areas. These fill materials may be re-used as engineered, compacted fill in structural areas if cleaned of all deleterious materials such as wood, asphalt, organics, etc.

5.2.3 Removal and Recompaction of Compressible Alluvium: Following the removal of the uncompacted fill, the underlying compressible alluvium can be removed to expose competent bedrock, and then replaced as engineered fill. Removal depths, including the overlying fill, will range from 34 feet at Boring 2 to more than 40 feet at Boring 1 (see cross sections on Plate A-2). For the purposes of this report, it is assumed that the deepest removal will be 50 feet below existing grade in the vicinity of Boring 1; actual depths may be greater. The alluvium is expected to be very moist to wet and groundwater will likely be encountered in the lower 5 to 10 feet of the alluvium deposit. A grading contractor experienced with excavating and recompacting wet clayey soils should be consulted to determine efficient methods of grading this site and for cost estimating.

5.2.4 Remedial Removals Along Site Perimeters: Restricted grading limits adjacent to the perimeter of the site boundary, particularly on the west side adjacent to Big Canyon Drive, will limit the horizontal extent that removals can be completed during grading of the subject site. Temporary excavation sidewalls are recommended to be constructed at a slope ratio no steeper than 1:1 (horizontal to vertical). Should sloughing of wet alluvium be experienced during excavation operations, flattening of cut slope faces, or other special procedures may be required to achieve stable, temporary slopes (see Section 5.2.2 below). Therefore, due to remedial grading limit constraints, and considering a potential removal depth greater than 50 feet, a wedge of potentially unsuitable soil materials may be left in place to an anticipated horizontal distance greater than 50 feet from the western property boundary (see Cross Section A-A'). The left-n-place unsuitable soil located within the wedge will continue to undergo consolidation of varying magnitudes, depending on the remaining thickness of the compressible soil at different locations within the wedge, as well as on the intensity of additional surcharge loading resulting from site improvements. Therefore, as a general guideline, buildings and improvements located easterly of a point projected vertically from the limit of alluvium left in-place (line X-X' on Cross Section A-A') may be designed without considering the potentially uneven settlement caused by the continuing consolidation of the alluvium located within the wedge. Buildings and improvements located to the west of line X-X' have to take into account the potential for differential settlement. The as-graded limit of the alluvium left in-place should be surveyed and by the project civil engineer. Detailed quantification of the magnitude and extent of such settlement should be carried out as development plans are refined.

5.2.5 Water Seepage During Grading: Groundwater will be encountered as excavations progress to depths below 25 feet. Constant water seepage from excavation sidewalls should be anticipated. Slow, trickling flow is anticipated from the open faces of the relatively less permeable clayey strata with more noticeable and faster water flow from the open faces of better-draining sandy strata. Exceedingly fast dewatering could

increase the effective overburden pressure of the soils near the top of the temporary excavation slope causing further consolidation of the underlying clay layers resulting in a failure of the temporary slope and possible distress to adjacent existing improvements. Therefore, during excavation of the wet alluvium, it is recommended that drainage ditches be maintained at the toe of temporary slopes to direct water to sumps from where it can be regularly pumped out of the excavation. Should excessive water flow be observed exiting the sand layers, horizontal drain pipes can be installed to intercept the phreatic surface to alleviate water pressure and allow direct outflow without triggering undesirable consolidation of clay layers exposed on the excavation sidewalls.

5.2.6 Non-Structural Fill Areas: In any non-structural area to receive new fills, such as in the golf course area, the upper 2 feet of the existing soils should be removed and replaced with compacted fill as described in the next section.

5.3 Fill Placement

5.3.1 Suitability of Fill Materials: Subsequent to site clearing (as described above) the remaining site soils may be utilized for fill placement. Concrete and asphalt fragments less than 6 inches in size may be placed in the fill at depths greater than 5 feet from finished grade in structural areas (Building Site). Any imported fill soils should be examined by the Geotechnical Consultant and tested as necessary to evaluate their suitability for use as fill prior to being hauled to the site. Final acceptance of any imported soil will be based upon review and testing of the soil actually delivered to the site. Imported soils should be free of organic material, trash and oversized material (i.e. rocks greater than 6 inches in diameter).

5.3.2 Fill Compaction: Subsequent to completion of the recommended removals and prior to fill placement, the excavation bottom should be scarified to a depth of 6 inches, moisture conditioned, and recompacted. Fill soils should be placed in horizontal lifts not exceeding 8 inches in loose thickness, moisture conditioned to within 3 percentage points above optimum moisture content and compacted to 90 percent of the maximum dry density as determined by ASTM Test Method D1557-09. Fills placed on surfaces sloping greater than 5:1 should be keyed and benched into competent native materials as the fill is placed. Keys and benches should be observed by the geotechnical consultant.

5.3.3 Slope Construction: All slopes are planned at a maximum 2:1 slope ratio and as high as approximately 13 feet. Proper compaction of all fill slopes out to the slope face is important for short and long term surficial stability. Where possible, slopes should be overfilled and cut back to a compacted core. Where this is impractical, the slope surface should be track walked with a dozer or backrolled with a sheepsfoot roller and then grid rolled to compact the outer zone of the slope face.

5.3.4 Volume Changes During Grading: Shrinkage that will occur when the existing soil is removed, screened, and replaced as compacted fill is estimated to be on the order of

5.3.4 Volume Changes During Grading: Shrinkage that will occur when the existing soil is removed, screened, and replaced as compacted fill is estimated to be on the order of 20% to 30%. Subsidence due to equipment vibration during grading is estimated to be 2 tenths of a foot.

5.3.5 Observation and Testing: All grading, compaction, and backfill operations should be performed under the observation of and testing by the Geotechnical Consultant's field representative. An adequate number of field tests should be taken to ensure compliance with this report and local ordinances. Maximum density for control of grading should be determined in accordance with ASTM D 1557-09 test procedures. Depths of overexcavation should be reviewed by the Geotechnical Consultant during the actual construction. Any subsurface obstruction, buried structural elements, and unsuitable material encountered during grading, should be immediately brought to the attention of the Geotechnical Consultant for proper exposure, removal and processing, as recommended. If it is determined during grading that site soils require overexcavation to greater depths for obtaining proper support for the proposed structures and/or new fill placement, this additional work should be performed in accordance with the recommendations of the Geotechnical Consultant.

5.4 Review of Future Development Plans

Upon completion of future development plans, they should be forwarded to the Geotechnical Consultant for review of conformance with the intent of the recommendations presented in this report and to provide foundation design criteria.

6.0 CLOSURE

This Geotechnical Report has been prepared for the exclusive use of Big Canyon Country Club and their design consultants for use in planning for residential development of the subject site. This Geotechnical Report has not been prepared for use by other parties, and may not contain sufficient information for the purpose of obtaining grading and building permits.

We appreciate your business and are prepared to assist you with construction-related services.

APPENDIX A

The following Appendix contains the substantiating data and laboratory test results, from ASE's Preliminary Geotechnical Investigation Report dated January 21, 2010, to complement the engineering evaluations and recommendations contained in this report.

Plate A-1 (in back pocket)	Geotechnical Map & Cross Section
Plates B-1 through B-3	Log of Borings
Plates C-1 and C-2	Consolidation Tests
Plates D-1 through D-3	Direct Shear Tests
Plate E-1	Atterberg Limits
Plate F-1	Soil Corrosivity Tests
Plates G-1 through G-3	Log of trenches by P.A. & Assoc., 2008
CPT Data	

SITE EXPLORATION

On September 18, 2009, field exploration was performed by drilling 3 18" diameter bucket auger borings to depths of 18, 39 and 39.5 feet from the existing grades. Continuous observations of the materials encountered in the borings were recorded in the field. The soils were classified in the field by visual and textural examination and these classifications were supplemented by obtaining bulk soil samples for future examination in the laboratory. Relatively undisturbed samples of soils were extracted in thin walled Shelby tubes. All samples were secured in moisture-resistant bags as soon as taken to minimize the loss of field moisture prior to testing. Upon completion of exploration, the borings were backfilled with excavated materials. Description of the soils encountered, depth of samples, field density and moisture content of samples given on the Log of Borings (see attached "B" Plates).

LABORATORY TESTS

After samples were visually classified in the laboratory, a testing program that would provide sufficient data for our evaluation was established.

Moisture Content and Density

The undisturbed soil retained within the Shelby tubes was tested in the laboratory to determine in-place density and moisture content. Test results are presented on the Logs of Borings.

Consolidation and Direct Shear Tests

Consolidation and direct shear tests were performed on selected relatively undisturbed and remolded samples to determine the settlement characteristics and shear strength parameters of various soil samples, respectively. The results of these tests are shown graphically on Plates C and D.

Maximum Density Tests

The following maximum density test was conducted in accordance with ASTM D1557-00 Method A, using 5 equal layers, 25 blows each layer, 10 pound hammer, 18 inch drop in a 1/30 cubic foot mold. The results are as follows:

Boring No. @ Depth	Maximum Dry Density, (pcf)	Optimum Moisture Content (%)	Material Classification
B-1 @ 0-5'	116.0	16	Clayey silt w/ sand (SM)
B-2 @ 5'-10'	107.0	17.0	Clayey silt w/ sand (SM)

Expansion Test

An expansion test was performed on a soil sample to determine the swell characteristics. The expansion test was conducted in accordance with a modification of the Uniform Building Code Standard No. 18-2, Expansion Index Test. The expansion sample was remolded to approximately 90 percent relative compaction at near optimum moisture content, subjected to 144 pounds per square foot surcharge load and was saturated.

Boring No. @ Depth	Expansion Index	Expansion Classification
B-1 @ 0-5'	81	High

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-1

Sheet 1 of 2

Project: ***Big Canyon Country Club-Parcel 1,TPM 2008-111***

Location: ***Big Canyon Dr.,Newport Bch*** | Project No. ***09-6169***

Dates(s) Drilled:	**9/18/09**	Logged By:	**John Whitney**
Drilled By:	**Al-Roy Drilling,Inc.**	Total Depth:	**39 Feet 6 Inches**
Rig Make/Model:	**Calweld 150**	Hammer Type:	**Kelly Bar**
Drilling Method:	**Bucket/Core Auger**	Hammer Weight/Drop:	**2400 Lb./12 In. to 22',1550 Lb./**
Hole Diameter:	**18 Inches**	Surface Elevation:	**N/A** **12 In. from 22' to 42'**

Comments: Groundwater encountered at 31 ft. Caving below 36 ft.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					ML	CLAYEY SILT WITH SAND: FILL-Light olive gray,moist,fine-grained sand,with Siltstone and Claystone pieces				MAX DENSITY EXPANSION R-VALUE CORROSIVITY TESTS ATTERBERG LIMITS
5	5			2(Ring)		SM	SILTY SAND WITH CLAY: FILL-Dark yellowish brown,moist,fine-grained sand,with some asphaltic concrete and wire pieces #unable to retrieve relatively undisturbed sample	#	10.5		
10	10			1(Ring)		SM	SILTY SAND: FILL-Olive brown,moist,fine to medium-grained sand,with organic silt layer	79.4	11.1		
						PCC	CONCRETE: FILL-				
						ML	CLAYEY SILT: FILL-Dark brown,moist to very moist,with plastic and rope pieces				
15	15			Push (Ring)		CL	SILTY CLAY: NATIVE-Very dark gray and olive,very moist to wet,trace fine sand and gravel	81.5	37.0		CONSOL
20	20										

SOILS ENGINEERING, INC.

FIELD LOG OF BORING B - 1

Sheet 2 of 2

Project: ***Big Canyon Country Club-Parcel 1,TPM 2008-111***

Location: ***Big Canyon Dr.,Newport Bch*** | Project No. ***09-6169***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
				CL	CLAY: Bluish green with light brown,very moist,with fine sand lenses				
25	25			CL	CLAY: Mottled light brown,dark gray and bluish green,very moist,with fine sand lenses,with occasional cobbles/boulders				
30	30			CL	SANDY CLAY: Dark gray,brownish gray and black,wet,fine-grained sand				
35	35			CL	CLAY: Dark olive gray,wet				

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-2

Sheet 1 of 2

Project: ***Big Canyon Country Club-Parcel 1,TPM 2008-111***

Location: ***Big Canyon Dr.,Newport Bch*** | Project No. ***09-6169***

Dates(s) Drilled:	**9/18/09**	Logged By:	**John Whitney**
Drilled By:	**Al-Roy Drilling,Inc.**	Total Depth:	**39 Feet**
Rig Make/Model:	**Calweld 150**	Hammer Type:	**Kelly Bar**
Drilling Method:	**Bucket Auger**	Hammer Weight/Drop:	**2400 Lb./12 In. to 22',1550 Lb./**
Hole Diameter:	**18 Inches**	Surface Elevation:	**N/A** **12 In. from 22' to 42'**

Comments: Groundwater encountered at 33 ft. No caving.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE, TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0				ML	CLAYEY SILT: FILL-Light olive gray,moist				
					ML	CLAYEY SILT WITH SAND: FILL-Light olive brown with very pale brown,very moist,fine-grained sand				
5	5		1(Ring)				68.2	32.2		MAX DENSITY
					ML	CLAYEY SILT WITH SAND: FILL-Brown to dark brown,very moist,fine-grained sand,with organics (manure),with wood debris at 10 feet				
10	10				CL	SILTY CLAY: NATIVE-Dark gray to dark grayish brown,with brown and gray,moist to very moist,with siltstone and claystone fragments				
15	15									
			5(Ring)		SC	CLAYEY SAND: Olive and olive yellow,moist,fine to medium-grained sand,with shale pieces	118.0	14.4		CONSOL
20	20									

ASSOCIATED
SOILS ENGINEERING, INC.

FIELD LOG OF BORING B - 2

Sheet 2 of 2

Project: ***Big Canyon Country Club-Parcel 1,TPM 2008-111***

Location: ***Big Canyon Dr.,Newport Bch*** | Project No. ***09-6169***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20					CL	SILTY CLAY WITH SAND: Very dark gray and olive,moist,fine-grained sand,with occasional black organics				
							with roots at 24 feet				
25	25						with siltstone fragments at 26 feet				
30	30								19.8		
						ML	CLAYEY SILTSTONE: Olive gray with olive yellow,wet				
35	35										
				11(Ring)				75.9	42.8		SHEAR

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-3

Sheet 1 of 1

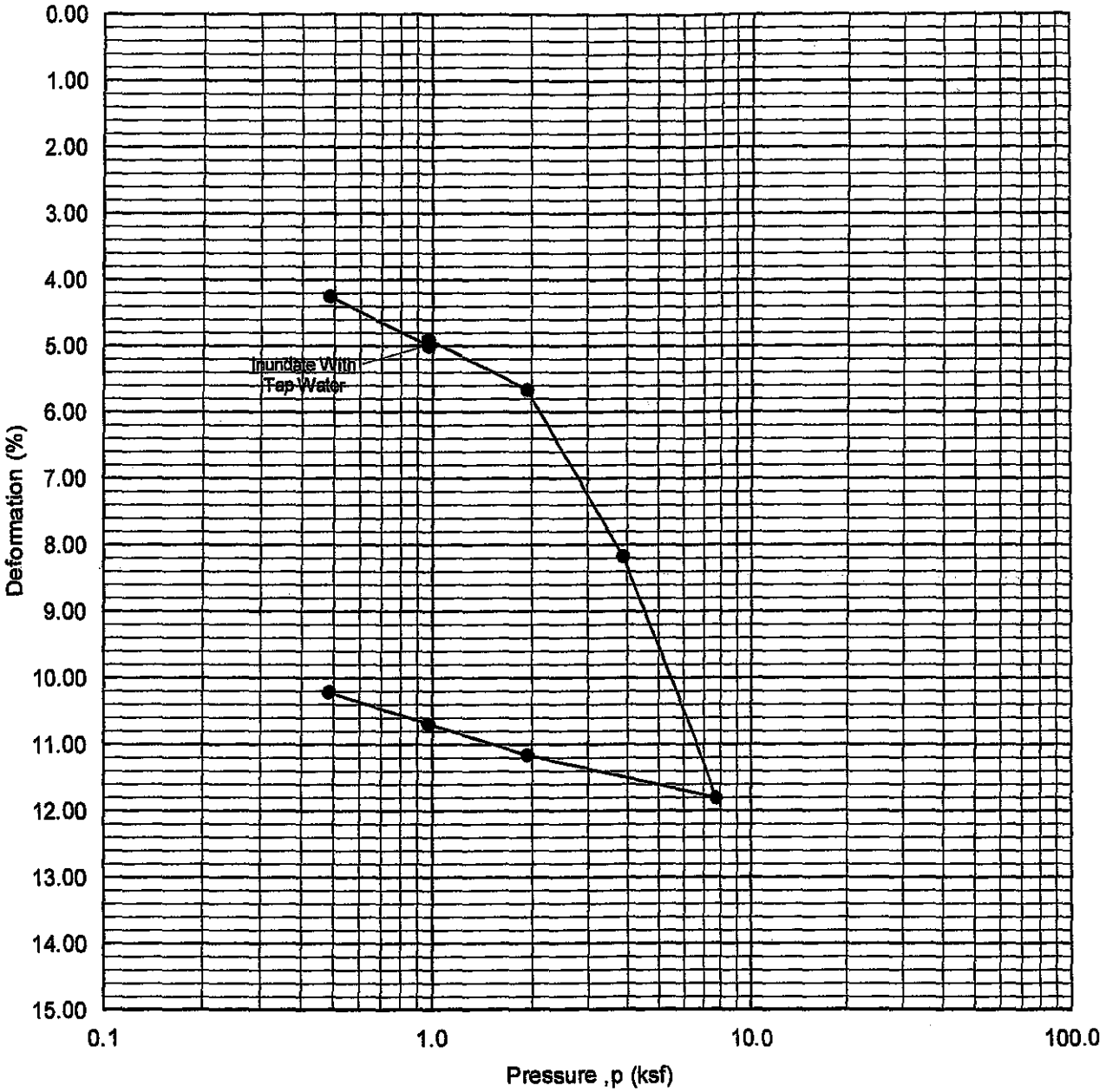
Project: ***Big Canyon Country Club-Parcel 1,TPM 2008-111***

Location: ***Big Canyon Dr.,Newport Bch*** | Project No. ***09-6169***

Dates(s) Drilled:	**9/18/09**	Logged By:	**John Whitney**
Drilled By:	**Al-Roy Drilling,Inc.**	Total Depth:	**18 Feet**
Rig Make/Model:	**Calweld 150**	Hammer Type:	**Kelly Bar**
Drilling Method:	**Bucket Auger**	Hammer Weight/Drop:	**2400 Lb./12 In. to 22',1550 Lb./**
Hole Diameter:	**18 Inches**	Surface Elevation:	**N/A** **12 In. from 22' to 42'**

Comments: Groundwater not encountered. No caving.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0				SM	SILTY SAND WITH GRAVEL: FILL-Grayish brown,dry to damp,fine-grained sand,with large concrete pieces at 2 feet				
5	5				ML	SANDY SILT WITH CLAY: FILL-Brown,damp to moist,fine-grained sand,with siltstone pieces with concrete fragments at 7 feet				
10	10				CL	SILTY CLAY: FILL-Brown,moist				
15	15				ML	CLAYEY SILTSTONE: NATIVE-Olive gray with olive yellow,moist				

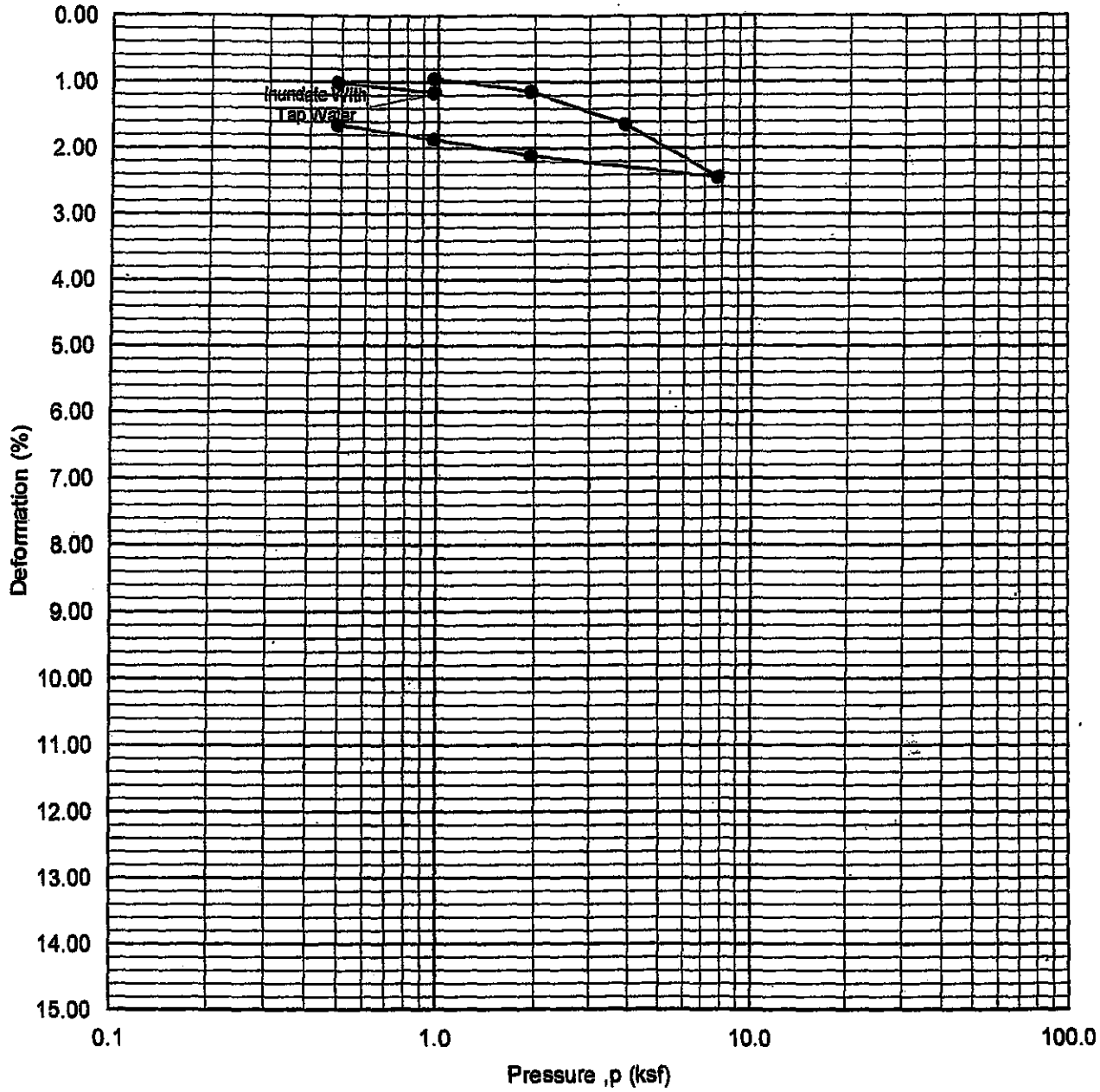


Boring No. : B-1
Depth (ft.) : 15.0
Sample Type: Silty Clay with trace Fine Sand and organics

Dry Density (pcf) = 81.5
Moisture (%) = 37.0

Project Name:Big Canyon C.C.-Parcel 1,TPM 2008-111-Newport Bch	Project No.: 09-6169
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-1

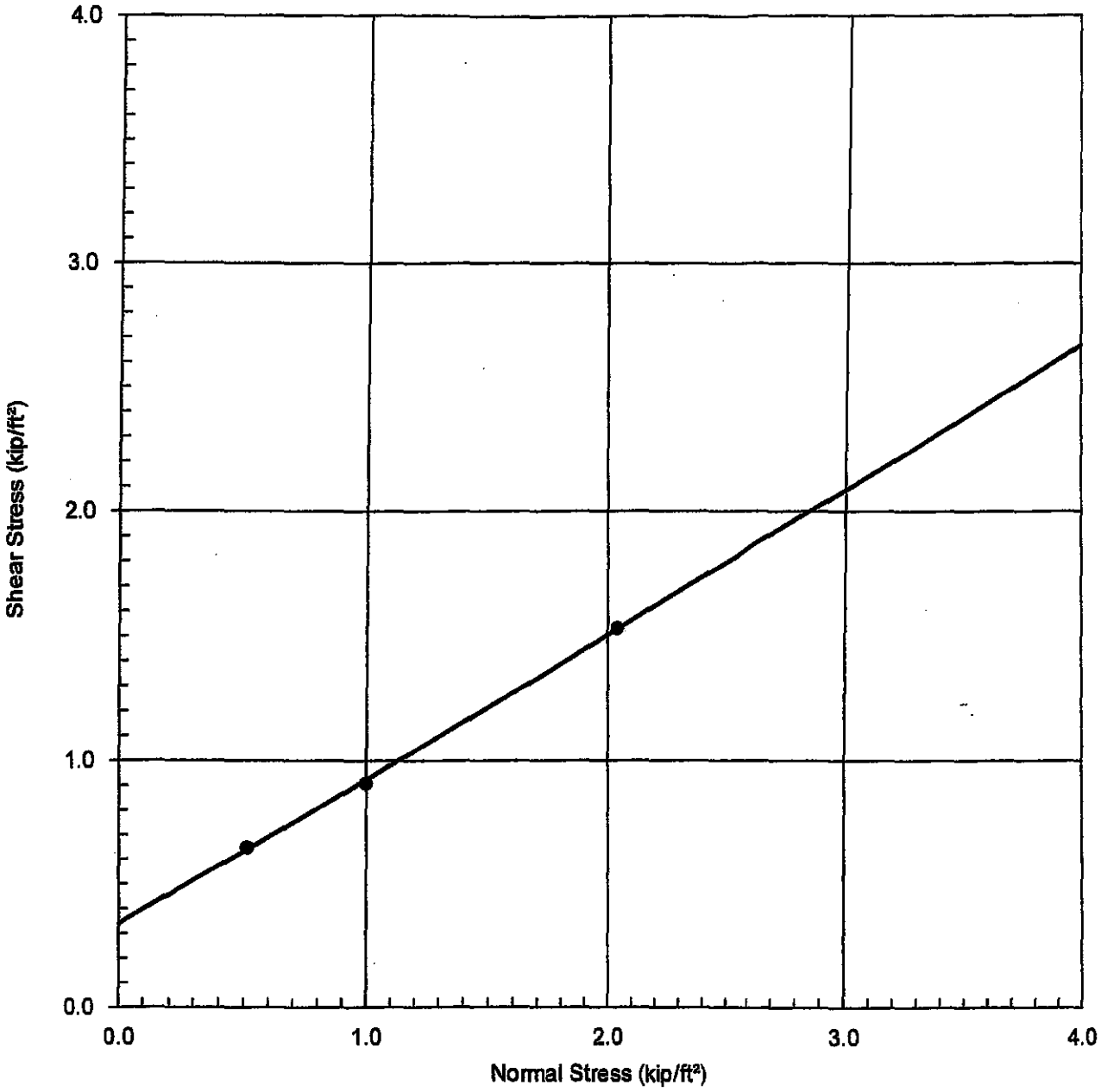


Boring No. : B-2
Depth (ft.) : 18.0
Sample Type: Clayey Fine to Medium Sand

Dry Density (pcf) = 118.0
Moisture (%) = 14.4

Project Name:Big Canyon C.C.-Parcel 1,TPM 2008-111-Newport Bch	Project No.: 09-6169
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-2



Boring No. : B-2
Depth (ft.) : 38.0
Sample : Relatively Undisturbed
Sample Type : Clayey Siltstone

Cohesion(C) = 340 psf
Friction (ϕ) = 30°
Dry Density (pcf) = 75.9
Moisture (%) = 42.8

Project Name:.Big Canyon C.C.-Parcel 1,TPM 2008-111-Newport Bch	Project No.: 09-6169
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D-1

ATTERBERG LIMITS

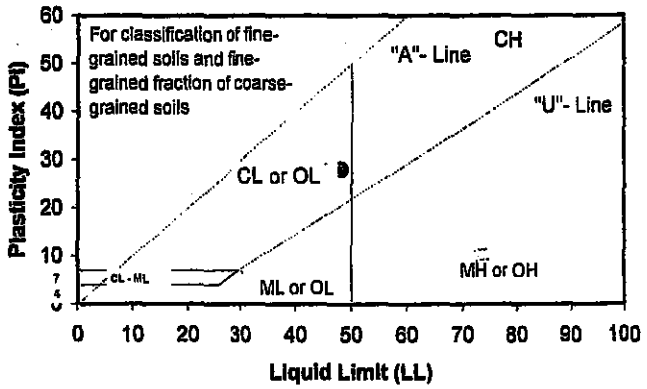
ASTM D 4318-93

Project Name: Big Canyon Country Club-Parcel 1,TPM 2008-111-Newport Beach
Project No. : 09-6169
Boring No. : B-1
Depth (feet): 0-5
Visual Sample Description: Silty Clay (CL)

	PLASTIC LIMIT		LIQUID LIMIT			
TEST NO.	1	2	1	2	3	4
Number of Blows [N]			32	26	18	
Container No.	b1	c1	A1	B1	C1	
Wet Wt. of Soil + Cont. (gm)	15.62	14.17	18.16	18.51	17.29	
Dry Wt. of Soil + Cont. (gm)	13.72	12.57	15.95	16.19	15.11	
Wt. of Container (gm)	4.28	4.30	11.11	11.30	10.65	
Moisture Content (%) [Wn]	20.13	19.35	45.66	47.44	48.88	

Liquid Limit	**48**
Plastic Limit	**20**
Plasticity Index	**28**
USCS Classification	**CL**

PI at "A" - Line = 0.73(LL-20) = 20.44
One - Point Liquid Limit Calculation
LL =Wn(N/25)$^{0.121}$



PROCEDURES USED

- ☐ Wet Preparation
  Multipoint - Wet
- ☒ Dry Preparation
  Multipoint - Dry
- ☒ Procedure A
  Multipoint Test
- ☐ Procedure B
  One-point Test

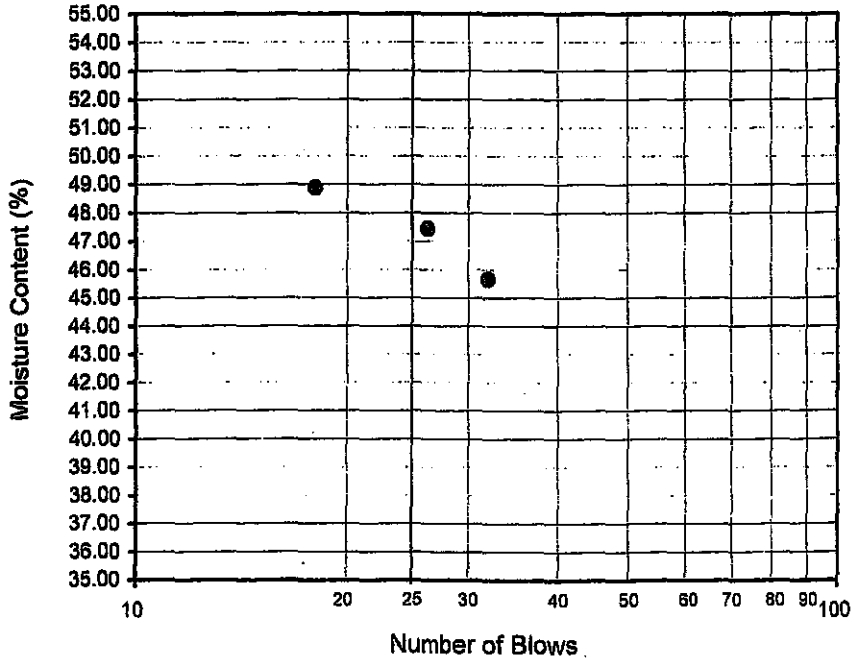


PLATE E-1

Cal Land Engineering, Inc.
dba Quartech Consultants
Geotechnical, Environmental, and Civil Engineering

Client Name: Associated Soils Engineering, Inc.
Project Name: Big Canyon
Project No.: ASE 09-6169
Address: N/A

QCI Project No.:09-064-09g
Date: September 30, 2009
Summarized by: ABK

Sample ID	Sample Depth	pH CT-532 (643)	Chloride CT-422 (ppm)	Sulfate CT-417 (% By Weight)	Resistivity CT-532 (643) (ohm-cm)
B-1	0-5'	7.41	140	0.250	400

576 East Lambert Road, Brea, California 92821; Tel: 714-671-1050; Fax: 714-671-1090

PLATE F-1

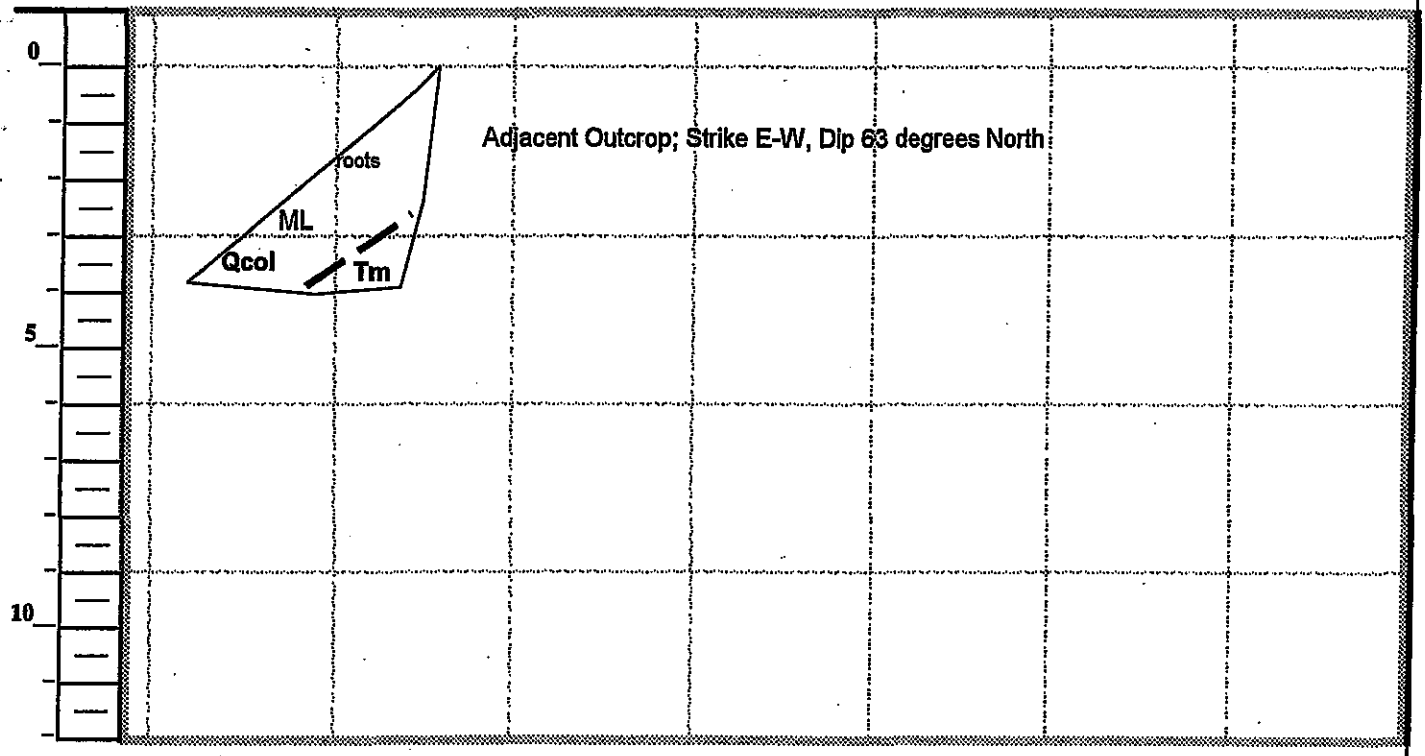
e: 11/7/08	Logged By: JR	Equipment: Manual	Sheet: 1 of 1	Test Pit No: T-3
cation: Fig. A-1-1	Engineer: PA	Hammer: NA	Groundwater not encountered	Total Depth: 4 ft.

ep ft.	Blow Count	Sample Type	Moisture (%)	Dry Density	Visual Log	Soil Class	Material Description	Laboratory Test Results
						ML	**Colluvium/Residual Soil - Sandy Silt**, light grayish brown, moist, soft, roots.	
							Bedrock - Siltstone, light olive gray/white, moderately well indurated, siliceous, thin bedded.	

5

10

Scale: H: 1" = 3' V: 1" =3'



NOTE: Please refer to Figure A-2 for Explanation of symbols.

P. A. & ASSOCIATES, INC.

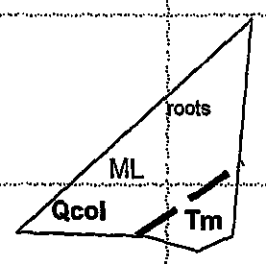
TITLE:	TYPICAL LOG OF EXPLORATORY TRENCH				FIGURE NO.:
PROJECT:	11 Rue Biarritz, Big Canyon, Newport Beach, CA				A-5
PROJECT NO:	28135-101	DATE	12/14/2008	BY: MM	

PLATE G-1

ate: 11/7/08	Logged By: JR	Equipment: Manual	Sheet: 1 of 1	Test Pit No: T-4
ocation: Fig. A-1-1	Engineer: PA	Hammer: NA	Groundwater not encountered	Total Depth: 4 ft.

Depth (ft.)	Blow Count	Sample Type	Moisture (%)	Dry Density	Visual Log	Soil Class	Material Description	Laboratory Test Results
						ML	**Colluvium/Residual Soil - Sandy Silt**, light greyish brown, moist, soft, roots.	
							Bedrock - Siltstone, light olive gray/white, moderately well indurated, siliceous, thin bedded.	

Scale: H: 1" = 3' V: 1" =3'



NOTE: Please refer to Figure A-2 for Explanation of symbols.

P. A. & ASSOCIATES, INC.

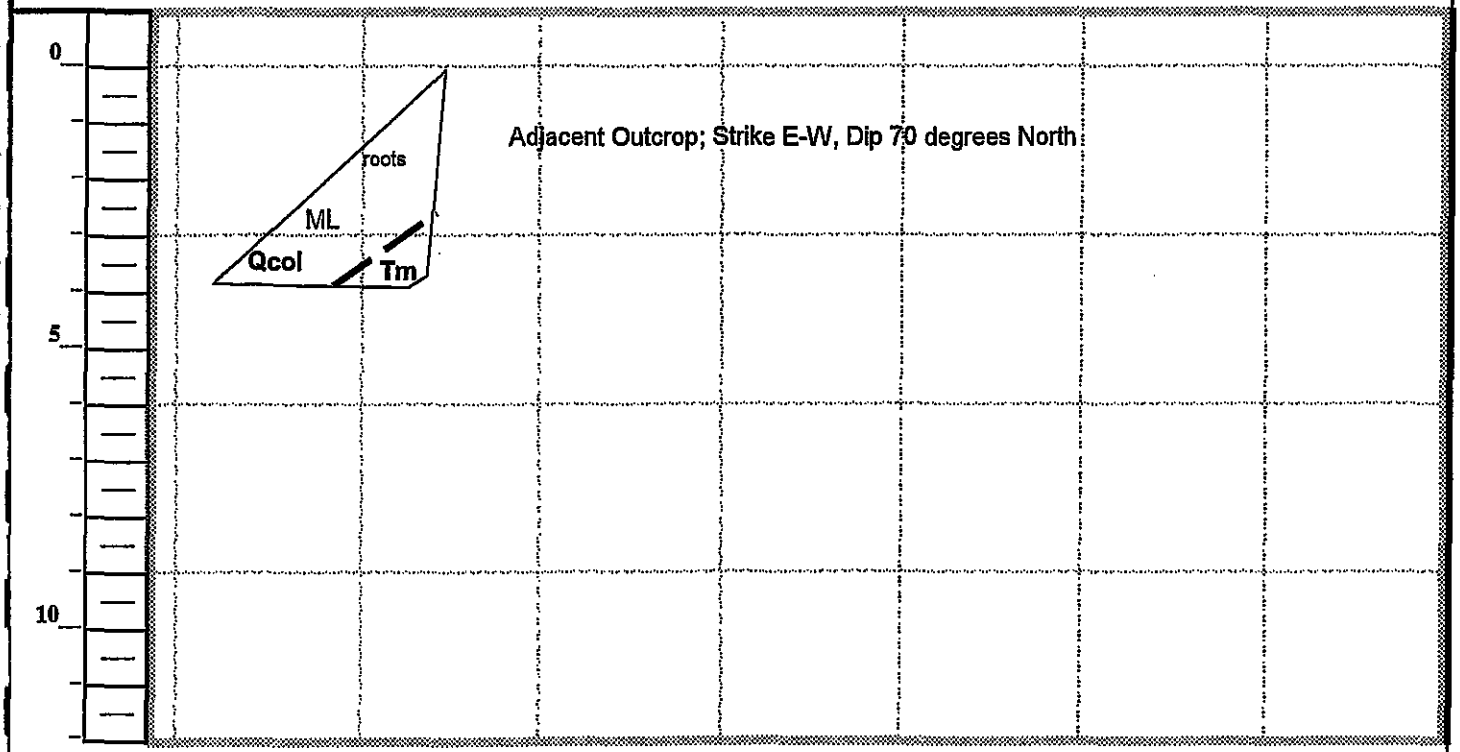
TITLE:	TYPICAL LOG OF EXPLORATORY TRENCH				FIGURE NO.:
PROJECT:	11 Rue Biarritz, Big Canyon, Newport Beach, CA				A-6
PROJECT NO:	28135-101	DATE	12/14/2008	BY: MM	

PLATE G-2

Date:	11/7/08	Logged By:	JR	Equipment:	Manual	Sheet:	1 of 1	Test Pit No:	T-5
Location:	Fig. A-1-1	Engineer:	PA	Hammer:	NA	Groundwater not encountered		Total Depth:	4 ft.

Depth (ft.)	Blow Count	Sample Type	Moisture (%)	Dry Density	Visual Log	Soil Class	Material Description	Laboratory Test Results
						ML	**Colluvium/Residual Soil - Sandy Silt**, light grayish brown, moist, soft, roots.	
							Bedrock - Siltstone, light olive gray/white, moderately well indurated, siliceous, thin bedded.	

Scale: H: 1" = 3' V: 1" =3'



NOTE: Please refer to Figure A-2 for Explanation of symbols.

P. A. & ASSOCIATES, INC.

TITLE:	TYPICAL LOG OF EXPLORATORY TRENCH					FIGURE NO.:
PROJECT:	11 Rue Biarritz, Big Canyon, Newport Beach, CA					A-7
PROJECT NO:	28135-101	DATE	12/14/2008	BY:	MM	

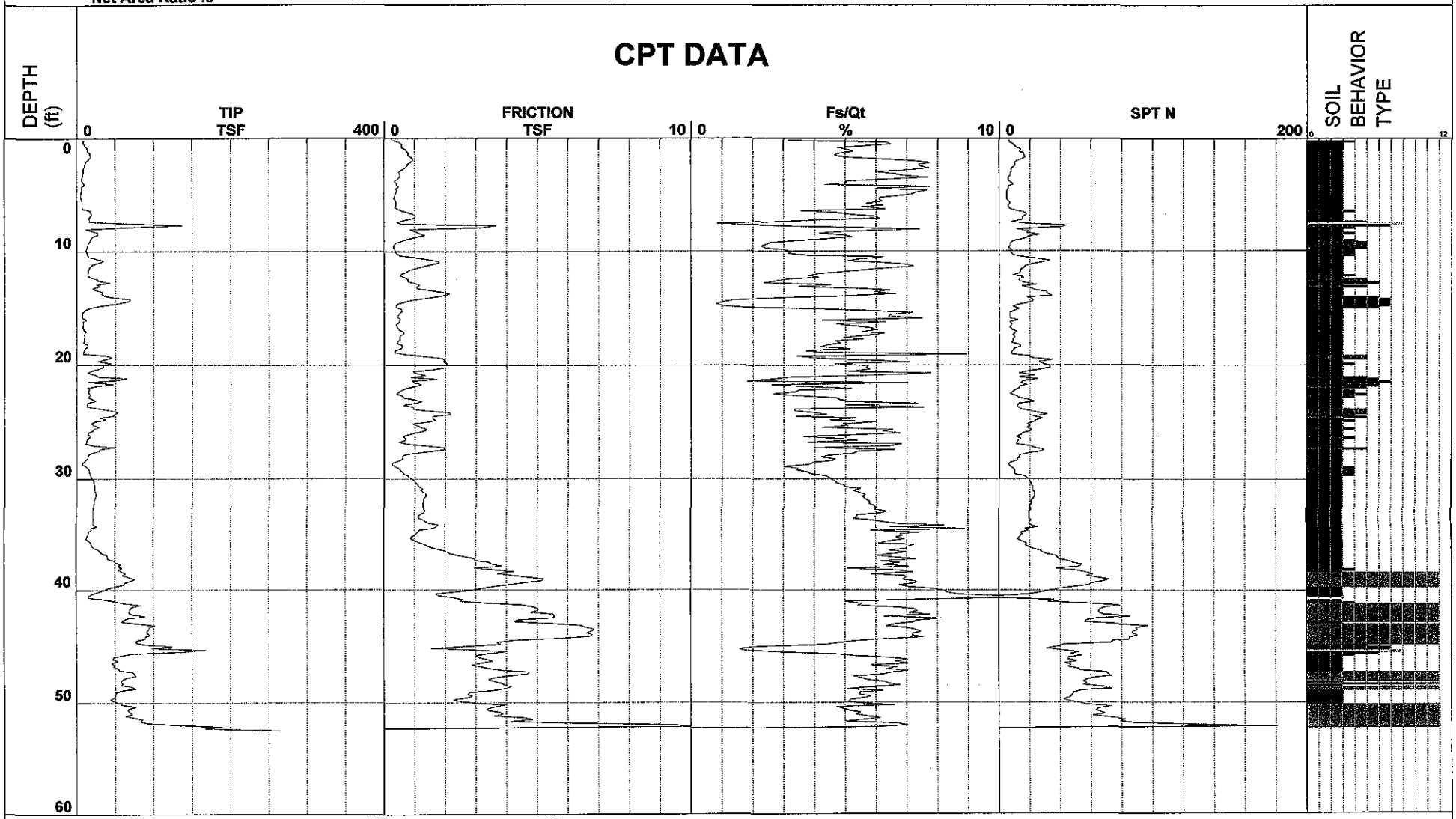
PLATE G-3

Associated Soils Engineering

Project	Big Canyon Country Club	Operator	BH-AH	Filename	SDF(468).cpt
Job Number	6169	Cone Number	DSG0786	GPS	
Hole Number	CPT-01	Date and Time	2/22/2010 8:54:46 AM	Maximum Depth	52.49 ft
Water Table Depth		19.00 ft			

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

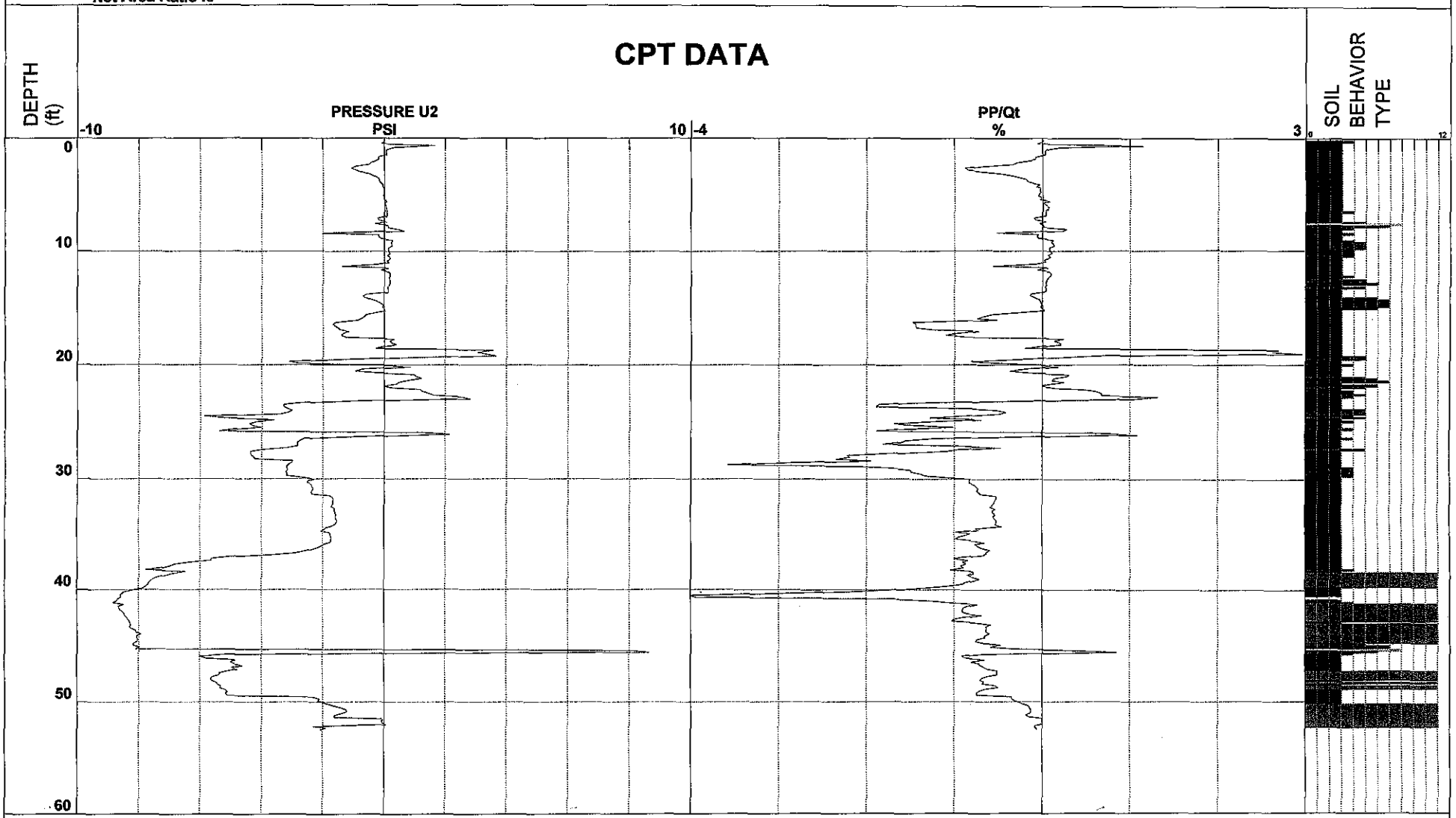
*Soil behavior type and SPT based on data from UBC-1983

Associated Soils Engineering

Project	Big Canyon Country Club	Operator	BH-AH	Filename	SDF(468).cpt
Job Number	6169	Cone Number	DSG0786	GPS	
Hole Number	CPT-01	Date and Time	2/22/2010 8:54:46 AM	Maximum Depth	52.49 ft
Water Table Depth		19.00 ft			

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

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

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(468).cpt
CPT Date: 2/22/2010 8:54:46 AM
GW During Test: 19 ft

Sounding ID: CPT-01
Project No: 6169
Cone/Rig: DSG0786

Depth ft	qc PS tsf	qcln PS -	qincs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 - mm	Nk -
0.33	7.7	12.3	-	0.5	0.0	6.4	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	67	0.005	15
0.49	9.0	14.4	-	0.6	-0.1	6.5	3	silty CLAY to CLAY	115	1.5	10	6	-	-	0.6	9.9	64	0.005	15
0.66	10.5	16.8	-	0.6	1.7	5.6	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	58	0.005	15
0.82	12.2	19.6	-	0.6	0.3	4.8	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.9	9.9	51	0.005	15
0.98	14.1	22.6	-	0.7	0.1	5.1	3	silty CLAY to CLAY	115	1.5	15	9	-	-	1.0	9.9	50	0.005	15
1.15	14.1	22.5	-	0.7	0.1	5.3	3	silty CLAY to CLAY	115	1.5	15	9	-	-	1.0	9.9	50	0.005	15
1.31	16.7	26.9	-	0.8	0.1	4.8	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	45	0.005	15
1.48	16.7	26.8	-	0.8	0.1	4.7	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	45	0.005	15
1.64	17.4	28.0	-	0.9	-0.2	5.0	3	silty CLAY to CLAY	115	1.5	19	12	-	-	1.2	9.9	45	0.005	15
1.80	15.4	24.8	-	0.9	-0.2	6.1	3	silty CLAY to CLAY	115	1.5	17	10	-	-	1.1	9.9	51	0.005	15
1.97	13.0	20.9	-	0.9	-0.3	7.2	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	58	0.005	15
2.13	10.7	17.2	-	0.8	-0.4	7.9	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	64	0.005	15
2.30	10.4	16.7	-	0.8	-0.5	7.5	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	64	0.005	15
2.46	10.2	16.3	-	0.8	-0.9	7.5	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	65	0.005	15
2.62	8.7	13.9	-	0.7	-1.1	7.9	3	silty CLAY to CLAY	115	1.5	9	6	-	-	0.6	9.9	69	0.005	15
2.79	7.9	12.7	-	0.6	-0.9	7.2	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	70	0.005	15
2.95	8.1	13.0	-	0.5	-0.8	6.1	3	silty CLAY to CLAY	115	1.5	9	5	-	-	0.6	9.9	66	0.005	15
3.12	7.7	12.4	-	0.5	-0.5	6.8	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	69	0.005	15
3.28	7.6	12.1	-	0.5	-0.4	7.1	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	70	0.005	15
3.45	6.3	10.1	-	0.5	-0.2	7.9	3	silty CLAY to CLAY	115	1.5	7	4	-	-	0.4	9.9	78	0.005	15
3.61	6.7	10.8	-	0.4	-0.2	6.6	3	silty CLAY to CLAY	115	1.5	7	4	-	-	0.5	9.9	72	0.005	15
3.77	6.6	10.6	-	0.3	-0.2	5.2	3	silty CLAY to CLAY	115	1.5	7	4	-	-	0.5	9.9	68	0.005	15
3.94	8.0	12.8	-	0.4	-0.1	5.2	3	silty CLAY to CLAY	115	1.5	9	5	-	-	0.6	9.9	63	0.005	15
4.10	9.6	15.5	-	0.4	0.0	4.4	3	silty CLAY to CLAY	115	1.5	10	6	-	-	0.7	9.9	56	0.005	15
4.27	6.2	10.0	-	0.5	-0.1	8.1	3	silty CLAY to CLAY	115	1.5	7	4	-	-	0.4	9.4	79	0.005	15
4.43	6.3	10.1	-	0.4	0.0	6.3	3	silty CLAY to CLAY	115	1.5	7	4	-	-	0.4	9.4	73	0.005	15
4.59	5.5	8.7	-	0.4	0.0	8.1	3	silty CLAY to CLAY	115	1.5	6	4	-	-	0.4	7.9	83	0.005	15
4.76	5.3	8.5	-	0.4	0.0	7.7	3	silty CLAY to CLAY	115	1.5	6	4	-	-	0.4	7.4	83	0.005	15
4.92	5.0	8.0	-	0.4	0.0	7.6	3	silty CLAY to CLAY	115	1.5	5	3	-	-	0.3	6.8	84	0.005	15
5.09	5.2	8.3	-	0.3	0.0	7.1	3	silty CLAY to CLAY	115	1.5	6	3	-	-	0.3	6.9	82	0.005	15
5.25	5.2	8.3	-	0.3	0.0	6.5	3	silty CLAY to CLAY	115	1.5	6	3	-	-	0.3	6.8	80	0.005	15
5.41	5.7	9.2	-	0.3	0.0	6.5	3	silty CLAY to CLAY	115	1.5	6	4	-	-	0.4	7.4	77	0.005	15
5.58	6.4	10.3	-	0.4	0.1	6.5	3	silty CLAY to CLAY	115	1.5	7	4	-	-	0.4	8.3	74	0.005	15
5.74	6.9	11.1	-	0.4	0.0	6.0	3	silty CLAY to CLAY	115	1.5	7	5	-	-	0.5	8.8	70	0.005	15
5.91	6.3	10.1	-	0.4	0.0	6.6	3	silty CLAY to CLAY	115	1.5	7	4	-	-	0.4	7.8	74	0.005	15
6.07	6.4	10.2	-	0.4	0.1	5.9	3	silty CLAY to CLAY	115	1.5	7	4	-	-	0.4	7.7	72	0.005	15
6.23	7.1	11.4	-	0.4	0.1	6.6	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	8.5	71	0.005	15
6.40	16.5	26.5	-	0.6	0.1	3.7	4	clayy SILT to silty CLAY	115	2.0	13	8	-	-	1.1	9.9	42	0.070	15
6.56	17.0	27.3	-	0.8	0.1	4.8	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	46	0.005	15
6.73	19.2	30.8	-	1.0	0.1	5.3	3	silty CLAY to CLAY	115	1.5	21	13	-	-	1.3	9.9	45	0.005	15
6.89	17.0	27.2	-	1.0	0.1	6.1	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	50	0.005	15
7.05	15.4	24.7	-	0.9	-0.2	6.3	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.1	9.9	52	0.005	15
7.22	15.8	25.3	-	0.7	-0.2	4.3	3	silty CLAY to CLAY	115	1.5	17	11	-	-	1.1	9.9	45	0.005	15
7.38	16.2	26.0	-	0.4	0.1	2.6	4	clayy SILT to silty CLAY	115	2.0	13	8	-	-	1.1	9.9	37	0.070	15
7.55	72.4	106.8	122.2	0.6	-0.3	0.9	6	clean SAND to silty SAND	125	5.0	21	14	69	45	-	-	9	0.350	16
7.71	136.9	199.5	265.6	3.7	0.1	2.7	5	silty SAND to sandy SILT	120	4.0	50	34	90	48	-	-	14	0.200	16
7.87	63.0	90.9	229.0	3.2	0.1	5.1	9	very stiff fine SOIL	120	2.0	45	32	64	44	-	-	28	0.250	30
8.04	11.5	18.5	-	0.9	0.4	7.7	3	silty CLAY to CLAY	115	1.5	12	8	-	-	0.8	9.9	63	0.005	15
8.20	20.3	32.5	-	1.0	0.7	5.2	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.4	9.9	44	0.005	15
8.37	27.6	44.2	-	1.1	-2.0	4.2	4	clayy SILT to silty CLAY	115	2.0	22	14	-	-	1.9	9.9	35	0.070	15
8.53	26.9	43.2	-	1.3	-0.2	5.0	3	silty CLAY to CLAY	115	1.5	29	18	-	-	1.9	9.9	39	0.005	15
8.69	20.2	32.3	-	1.1	-0.2	5.4	3	silty CLAY to CLAY	115	1.5	22	13	-	-	1.4	9.9	44	0.005	15
8.86	18.1	29.0	-	0.8	-0.1	4.6	3	silty CLAY to CLAY	115	1.5	19	12	-	-	1.3	9.9	44	0.005	15
9.02	17.0	27.3	-	0.6	0.3	3.6	4	clayy SILT to silty CLAY	115	2.0	14	9	-	-	1.2	9.9	41	0.070	15
9.19	15.9	25.5	-	0.4	0.2	2.7	4	clayy SILT to silty CLAY	115	2.0	13	8	-	-	1.1	9.9	38	0.070	15
9.35	14.0	22.4	-	0.3	0.2	2.6	4	clayy SILT to silty CLAY	115	2.0	11	7	-	-	1.0	9.9	40	0.070	15
9.51	13.7	22.0	-	0.3	0.3	2.4	4	clayy SILT to silty CLAY	115	2.0	11	7	-	-	0.9	9.9	39	0.070	15
9.68	13.0	20.8	-	0.3	0.1	2.5	4	clayy SILT to silty CLAY	115	2.0	10	6	-	-	0.9	9.9	41	0.070	15
9.84	11.9	19.1	-	0.4	0.1	3.1	4	clayy SILT to silty CLAY	115	2.0	10	6	-	-	0.8	9.9	46	0.070	15
10.01	11.6	18.6	-	0.4	0.2	3.4	3	silty CLAY to CLAY	115	1.5	12	8	-	-	0.8	9.9	48	0.005	15
10.17	13.1	21.0	-	0.4	0.2	3.3	4	clayy SILT to silty CLAY	115	2.0	10	7	-	-	0.9	9.9	45	0.070	15
10.34	13.7	21.9	-	0.5	0.1	4.0	3	silty CLAY to CLAY	115	1.5	15	9	-	-	0.9	9.9	47	0.005	15
10.50	15.0	24.0	-	0.9	0.2	6.5	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	54	0.005	15
10.66	24.9	40.0	-	1.4	0.2	5.7	3	silty CLAY to CLAY	115	1.5	27	17	-	-	1.7	9.9	42	0.005	15
10.83	34.7	47.5	-	1.8	0.1	5.2	4	clayy SILT to silty CLAY	115	2.0	24	17	-	-	2.4	9.9	38	0.070	15
10.99	29.4	46.4	-	1.8	0.1	6.3	3	silty CLAY to CLAY	115	1.5	31	20	-	-	2.0	9.9	41	0.005	15
11.16	21.4	33.3	-	1.5	-0.2	7.2	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.5	9.9	49	0.005	15
11.32	17.5	26.8	-	1.3	-1.4	7.5	3	silty CLAY to CLAY	115	1.5	18	12	-	-	1.2	9.9	54	0.005	15
11.48	16.3	24.7	-	1.0	0.1	6.6	3	silty CLAY to CLAY	115	1.5	16	11	-	-	1.1	9.9	54	0.005	15
11.65	14.7	21.9	-	0.8	-0.1	5.9	3	silty CLAY to CLAY	115	1.5	15	10	-	-	1.0	9.9	54	0.005	15
11.81	14.8	21.7	-	0.7	0.2	5.2	3	silty CLAY to CLAY	115	1.5	14	10	-	-	1.0	9.9	52	0.005	15
11.98	13.8	20.0	-	0.6	0.2	4.4	3	silty CLAY to CLAY	115	1.5	13	9	-	-	0.9	9.9	50	0.005	15
12.14	14.1	20.1	-	0.5	0.2	4.0	3	silty CLAY to CLAY	115	1.5	13	9	-	-	1.0	9.9	49	0.005	15
12.30	16.6	23.5	-	0.7	0.2	4.3	3	silty CLAY to CLAY	115	1.5	16	11	-	-	1.1	9.9	47	0.005	15
12.47	26.2	32.5	-	0.8	0.2	3.1	4	clayy SILT to silty CLAY	115	2.0	16	13	-	-	1.8	9.9	36	0.070	15
12.63	28.2	32.1	104.1	0.8	0.2	2.8	4	clayy SILT to silty CLAY	115	2.0	16	14	-	-	2.0	9.9	35	0.070	15
12.80	42.7	48.3	112.5	1.0	0.2	2.4	5	silty SAND to sandy SILT	120	4.0	12	11	43	40	-	-	27	0.200	16
12.96	25.6	34.2	-	1.2	0.2	4.7	3	silty CLAY to CLAY	115	1.5	23	17	-	-	1.8	9.9	41	0.005	15
13.12	30.4	36.3	-	1.1	0.1	3.6	4	clayy SILT to silty CLAY	115	2.0	18	15	-	-	2.1	9.9	36	0.070	15
13.29	20.7	27.0	-	1.1	0.1	5.5	3	silty CLAY to CLAY	115	1.5	18	14	-	-	1.4	9.9	48	0.005	15
13.45	24.2	31.2	-	1.6	0.2	6.7	3	silty CLAY to CLAY	115	1.5	21	16	-	-	1.7	9.9	49	0.005	15
13.62	32.8	41.8	-	2.0	0.1	6.1	3	silty CLAY to CLAY	115	1.5	28	22	-	-	2.3	9.9	42	0.005	15
13.78	32.2	40.5	-	2.1	-0.6	6.8	3	silty CLAY to CLAY	115	1.5	27	21	-	-	2.2	9.9	45	0.005	15
13.94	35.8	44.5	-	1.8	-0.7	5.1	3	silty CLAY to CLAY	115	1.5	30	24	-	-	2.5	9.9	38	0.005	15
14.11	47.4	51.0	132.1	1.4	-0.6	3.1	4	clayy SILT to silty CLAY	115	2.0	26	24	-	-	3.3	9.9	29	0.070	15
14.27	69.6	74.6	108.5	0.9	-0.4	1.4	5	silty SAND to sandy SILT	120	4.0	19	17	57	43	-	-	16	0.200	16
14.44	67.5	71.9	97.1	0.7	-0.2	1.0	6	clean SAND to silty SAND	125	5.0	14	14	56	42	-	-	14	0.350	16
14.60	55.1	58.3	80.8	0.5	-0.1	0.8	6	clean SAND to silty SAND	125	5.0	12	11	49	41	-	-	15	0.350	16
14.76	38.3	40.2	72.5	0.4	0.0	1.1	5	silty SAND to sandy SILT	120	4.0	10	10	37	39	-	-	21	0.200	16
14.93	22.8	23.8	75.9	0.4	-0.1	1.8	4	clayy SILT to silty CLAY	115	2.0	12	11	-	-	1.6	9.9	34	0.070	15
15.09	13.9	15.9	-	0.6	0.0	4.4	3	silty CLAY to CLAY	115	1.5	11	9	-	-	0.9	8.6	56	0.005	15
15.26	10.1	11.4	-	0.6	0.0	6.5	3	silty CLAY to CLAY	115	1.5	8	7	-	-	0.7	6.0	72	0.005	15
15.42	7.0	7.9	-	0.5	-0.3	8.2	3	silty CLAY to CLAY	115	1.5	5	5	-	-	0.5	4.0	89	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(468).cpt
CPT Date: 2/22/2010 8:54:46 AM
GW During Test: 19 ft

Sounding ID: CPT-01
Project No: 6169
Cone/Rig: DSG0786

Depth ft	qc PS tsf	qc1n PS -	qincs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR - -	Fin Ic %	D50 - mm	Nk - -
15.58	7.3	8.1	-	0.5	-0.6	7.4	3	silty CLAY to CLAY	115	1.5	5	5	-	-	0.5	4.1	85	0.005	15
15.75	6.9	7.6	-	0.4	-0.6	7.4	3	silty CLAY to CLAY	115	1.5	5	5	-	-	0.5	3.8	87	0.005	15
15.91	7.1	7.8	-	0.5	-0.7	8.6	3	silty CLAY to CLAY	115	1.5	5	5	-	-	0.5	3.9	90	0.005	15
16.08	12.1	13.0	-	0.5	-0.9	4.6	3	silty CLAY to CLAY	115	1.5	9	8	-	-	0.8	7.0	62	0.005	15
16.24	7.7	8.2	-	0.5	-1.6	7.2	3	silty CLAY to CLAY	115	1.5	5	5	-	-	0.5	4.2	84	0.005	15
16.40	8.3	8.8	-	0.4	-1.7	5.3	3	silty CLAY to CLAY	115	1.5	6	6	-	-	0.6	4.6	75	0.005	15
16.57	7.9	8.3	-	0.4	-1.6	6.0	3	silty CLAY to CLAY	115	1.5	6	5	-	-	0.5	4.3	80	0.005	15
16.73	7.7	7.9	-	0.4	-1.5	6.6	3	silty CLAY to CLAY	115	1.5	5	5	-	-	0.5	4.1	84	0.005	15
16.90	8.2	8.4	-	0.5	-1.4	6.9	3	silty CLAY to CLAY	115	1.5	6	5	-	-	0.5	4.4	82	0.005	15
17.06	11.5	11.7	-	0.6	-1.2	6.1	3	silty CLAY to CLAY	115	1.5	8	8	-	-	0.8	6.3	70	0.005	15
17.23	10.2	10.2	-	0.6	-1.3	6.9	3	silty CLAY to CLAY	115	1.5	7	7	-	-	0.7	5.5	76	0.005	15
17.39	9.2	9.2	-	0.5	-1.4	6.4	3	silty CLAY to CLAY	115	1.5	6	6	-	-	0.6	4.9	78	0.005	15
17.55	10.2	10.1	-	0.5	-1.3	5.5	3	silty CLAY to CLAY	115	1.5	7	7	-	-	0.7	5.4	72	0.005	15
17.72	9.5	9.3	-	0.5	0.3	6.3	3	silty CLAY to CLAY	115	1.5	6	6	-	-	0.6	4.9	77	0.005	15
17.88	9.8	9.5	-	0.5	0.2	5.2	3	silty CLAY to CLAY	115	1.5	6	7	-	-	0.7	5.1	73	0.005	15
18.05	8.6	8.3	-	0.4	0.2	5.5	3	silty CLAY to CLAY	115	1.5	6	6	-	-	0.6	4.3	78	0.005	15
18.21	13.2	12.5	-	0.6	0.4	4.8	3	silty CLAY to CLAY	115	1.5	8	9	-	-	0.9	6.9	63	0.005	15
18.37	14.1	13.3	-	0.6	0.0	4.5	3	silty CLAY to CLAY	115	1.5	9	9	-	-	1.0	7.4	61	0.005	15
18.54	9.9	9.3	-	0.5	-0.3	5.8	3	silty CLAY to CLAY	115	1.5	6	7	-	-	0.7	5.0	75	0.005	15
18.70	9.5	8.8	-	0.4	3.5	4.2	3	silty CLAY to CLAY	115	1.5	6	6	-	-	0.6	4.7	71	0.005	15
18.87	8.3	7.7	-	0.4	3.0	4.9	3	silty CLAY to CLAY	115	1.5	5	6	-	-	0.5	4.0	78	0.005	15
19.03	8.1	7.4	-	0.7	3.3	9.9	2	Organic SOILS - Peats	100	1.0	7	8	-	-	0.8	3.8	95	0.100	10
19.19	38.7	35.3	-	1.3	3.6	3.5	4	clayy SILT to silty CLAY	115	2.0	18	19	-	-	2.7	9.9	36	0.070	15
19.36	45.1	40.9	-	1.9	0.7	4.3	4	clayy SILT to silty CLAY	115	2.0	20	23	-	-	3.1	9.9	37	0.070	15
19.52	36.1	32.7	-	2.0	-1.4	5.6	3	silty CLAY to CLAY	115	1.5	22	24	-	-	2.5	9.9	45	0.005	15
19.69	27.4	24.7	-	1.9	-3.1	7.4	3	silty CLAY to CLAY	115	1.5	16	18	-	-	1.9	9.9	56	0.005	15
19.85	44.0	39.5	-	2.1	-2.7	4.8	3	silty CLAY to CLAY	115	1.5	26	29	-	-	3.1	9.9	39	0.005	15
20.01	34.6	30.9	-	2.0	-0.1	5.9	3	silty CLAY to CLAY	115	1.5	21	23	-	-	2.4	9.9	47	0.005	15
20.18	34.4	30.6	-	2.0	0.9	5.9	3	silty CLAY to CLAY	115	1.5	20	23	-	-	2.4	9.9	47	0.005	15
20.34	27.8	24.6	-	1.6	-0.7	6.1	3	silty CLAY to CLAY	115	1.5	16	19	-	-	1.9	9.9	52	0.005	15
20.51	18.5	16.4	-	0.9	-0.9	5.5	3	silty CLAY to CLAY	115	1.5	11	12	-	-	1.3	8.9	59	0.005	15
20.67	13.8	12.2	-	1.1	-0.3	8.5	3	silty CLAY to CLAY	115	1.5	8	9	-	-	0.9	6.5	76	0.005	15
20.83	23.7	20.8	-	1.4	1.0	6.0	3	silty CLAY to CLAY	115	1.5	14	16	-	-	1.6	9.9	55	0.005	15
21.00	27.1	23.7	-	0.9	1.0	3.4	4	clayy SILT to silty CLAY	115	2.0	12	14	-	-	1.9	9.9	43	0.070	15
21.16	64.8	58.7	130.5	1.7	1.2	2.7	5	silty SAND to sandy SILT	120	4.0	15	16	49	40	-	-	26	0.200	16
21.33	50.8	45.9	97.5	0.9	0.8	1.9	5	silty SAND to sandy SILT	120	4.0	11	13	41	39	-	-	24	0.200	16
21.49	14.2	12.3	-	1.0	0.5	7.7	3	silty CLAY to CLAY	115	1.5	8	9	-	-	1.0	6.4	74	0.005	15
21.65	46.8	42.2	113.3	1.2	0.4	2.7	4	clayy SILT to silty CLAY	115	2.0	21	23	-	-	3.3	9.9	30	0.070	15
21.82	26.3	22.5	-	1.0	0.0	3.9	3	silty CLAY to CLAY	115	1.5	15	18	-	-	1.8	9.9	46	0.005	15
21.98	13.8	11.8	-	0.7	0.3	5.7	3	silty CLAY to CLAY	115	1.5	8	9	-	-	0.9	6.1	68	0.005	15
22.15	16.3	13.9	-	0.6	1.2	3.8	3	silty CLAY to CLAY	115	1.5	9	11	-	-	1.1	7.2	57	0.005	15
22.31	14.2	12.0	-	0.5	1.2	3.7	3	silty CLAY to CLAY	115	1.5	8	9	-	-	1.0	6.2	60	0.005	15
22.47	15.3	12.9	-	0.4	1.4	2.9	3	silty CLAY to CLAY	115	1.5	9	10	-	-	1.0	6.7	54	0.005	15
22.64	17.0	14.3	-	0.6	1.6	3.8	3	silty CLAY to CLAY	115	1.5	10	11	-	-	1.1	7.4	56	0.005	15
22.80	14.0	11.7	-	0.7	2.6	5.2	3	silty CLAY to CLAY	115	1.5	8	9	-	-	0.9	6.0	67	0.005	15
22.97	20.0	16.8	-	1.0	2.8	5.2	3	silty CLAY to CLAY	115	1.5	11	13	-	-	1.4	8.8	58	0.005	15
23.13	24.1	20.0	-	1.2	-0.8	5.4	3	silty CLAY to CLAY	115	1.5	13	16	-	-	1.7	9.9	54	0.005	15
23.30	13.3	11.0	-	1.0	-2.7	8.2	3	silty CLAY to CLAY	115	1.5	7	9	-	-	0.9	5.5	78	0.005	15
23.46	12.7	10.5	-	0.6	-3.3	5.6	3	silty CLAY to CLAY	115	1.5	7	8	-	-	0.8	5.2	72	0.005	15
23.62	12.5	10.3	-	0.9	-3.3	8.5	3	silty CLAY to CLAY	115	1.5	7	8	-	-	0.8	5.1	81	0.005	15
23.79	28.8	23.6	-	1.0	-3.2	3.5	4	clayy SILT to silty CLAY	115	2.0	12	14	-	-	2.0	9.9	44	0.070	15
23.95	42.7	34.9	-	1.4	-3.0	3.5	4	clayy SILT to silty CLAY	115	2.0	17	21	-	-	3.0	9.9	36	0.070	15
24.12	53.3	46.7	148.8	2.1	-3.1	4.1	4	clayy SILT to silty CLAY	115	2.0	23	27	-	-	3.7	9.9	34	0.070	15
24.28	49.1	39.9	-	2.2	-3.4	4.5	4	clayy SILT to silty CLAY	115	2.0	20	25	-	-	3.4	9.9	38	0.070	15
24.44	46.6	40.8	129.2	1.6	-5.9	3.5	4	clayy SILT to silty CLAY	115	2.0	20	23	-	-	3.2	9.9	34	0.070	15
24.61	29.3	23.6	-	1.6	-5.2	5.6	3	silty CLAY to CLAY	115	1.5	16	20	-	-	2.0	9.9	52	0.005	15
24.77	37.0	29.8	-	1.7	-3.6	4.7	3	silty CLAY to CLAY	115	1.5	20	25	-	-	2.6	9.9	44	0.005	15
24.94	23.4	18.8	-	1.4	-4.2	6.4	3	silty CLAY to CLAY	115	1.5	13	16	-	-	1.6	9.6	59	0.005	15
25.10	18.8	15.0	-	0.9	-4.4	5.3	3	silty CLAY to CLAY	115	1.5	10	13	-	-	1.3	7.5	61	0.005	15
25.26	21.4	17.0	-	1.1	-4.3	5.5	3	silty CLAY to CLAY	115	1.5	11	14	-	-	1.5	8.6	58	0.005	15
25.43	28.5	22.6	-	1.2	-4.0	4.5	3	silty CLAY to CLAY	115	1.5	15	19	-	-	2.0	9.9	48	0.005	15
25.59	21.5	17.0	-	1.4	-4.9	7.0	3	silty CLAY to CLAY	115	1.5	11	14	-	-	1.5	8.5	63	0.005	15
25.76	20.5	16.2	-	1.3	-5.4	6.7	3	silty CLAY to CLAY	115	1.5	11	14	-	-	1.4	8.1	64	0.005	15
25.92	15.2	12.0	-	1.0	1.3	7.5	3	silty CLAY to CLAY	115	1.5	8	10	-	-	1.0	5.8	74	0.005	15
26.08	14.2	11.1	-	0.8	2.1	6.0	3	silty CLAY to CLAY	115	1.5	7	9	-	-	0.9	5.3	72	0.005	15
26.25	16.8	13.1	-	0.6	-0.5	4.0	3	silty CLAY to CLAY	115	1.5	9	11	-	-	1.1	6.4	59	0.005	15
26.41	14.9	11.6	-	0.7	-2.6	5.3	3	silty CLAY to CLAY	115	1.5	8	10	-	-	1.0	5.6	68	0.005	15
26.58	12.6	9.7	-	0.7	-2.7	6.1	3	silty CLAY to CLAY	115	1.5	6	8	-	-	0.8	4.5	76	0.005	15
26.74	12.6	9.7	-	0.5	-2.8	4.3	3	silty CLAY to CLAY	115	1.5	6	8	-	-	0.8	4.5	69	0.005	15
26.90	11.3	8.7	-	0.8	-2.8	7.9	3	silty CLAY to CLAY	115	1.5	6	8	-	-	0.7	4.0	85	0.005	15
27.07	21.4	16.4	-	1.4	-2.8	6.9	3	silty CLAY to CLAY	115	1.5	11	14	-	-	1.5	8.1	64	0.005	15
27.23	48.3	36.9	-	1.9	-3.2	4.2	4	clayy SILT to silty CLAY	115	2.0	18	24	-	-	3.4	9.9	38	0.070	15
27.40	29.9	22.8	-	2.0	-4.0	7.0	3	silty CLAY to CLAY	115	1.5	15	20	-	-	2.1	9.9	57	0.005	15
27.56	28.6	21.7	-	1.5	-4.4	5.7	3	silty CLAY to CLAY	115	1.5	14	19	-	-	2.0	9.9	54	0.005	15
27.72	18.3	13.9	-	1.0	-4.4	5.7	3	silty CLAY to CLAY	115	1.5	9	12	-	-	1.2	6.7	64	0.005	15
27.89	14.0	10.6	-	0.6	-4.3	5.1	3	silty CLAY to CLAY	115	1.5	7	9	-	-	0.9	4.9	69	0.005	15
28.05	14.0	10.5	-	0.6	-4.3	4.8	3	silty CLAY to CLAY	115	1.5	7	9	-	-	0.9	4.9	68	0.005	15
28.22	12.9	9.7	-	0.6	-4.2	5.3	3	silty CLAY to CLAY	115	1.5	6	9	-	-	0.9	4.4	73	0.005	15
28.38	11.0	8.2	-	0.5	-3.0	5.4	3	silty CLAY to CLAY	115	1.5	5	7	-	-	0.7	3.7	78	0.005	15
28.54	7.6	5.7	-	0.3	-3.0	5.0	3	silty CLAY to CLAY	115	1.5	4	5	-	-	0.5	2.3	91	0.005	15
28.71	6.3	4.7	-	0.2	-3.1	5.2	3	silty CLAY to CLAY	115	1.5	3	4	-	-	0.4	1.8	95	0.005	15
28.87	11.0	8.1	-	0.3	-3.2	3.5	3	silty CLAY to CLAY	115	1.5	5	7	-	-	0.7	3.6	71	0.005	15
29.04	13.5	9.9	-	0.5	-3.2	4.0	3	silty CLAY to CLAY	115	1.5	7	9	-	-	0.9	4.5	67	0.005	15
29.20	15.1	11.1	-	0.5	-3.2	3.9	3	silty CLAY to CLAY	115	1.5	7	10	-	-	1.0	5.1	63	0.005	15
29.36	15.5	11.4	-	0.6	-3.2	4.2	3	silty CLAY to CLAY	115	1.5	8	10	-	-	1.0	5.2	64	0.005	15
29.53	16.5	12.0	-	0.6	-3.2	4.3	3	silty CLAY to CLAY	115	1.5	8	11	-	-	1.1	5.6	63	0.005	15
29.69	17.2	12.5	-	0.7	-3.2	4.8	3	silty CLAY to CLAY	115	1.5	8	11	-	-	1.2	5.8	64	0.005	15
29.86	18.4	13.4	-	0.8	-2.8	4.9	3	silty CLAY to CLAY	115	1.5	9	12	-	-	1.2	6.2	63	0.005	15
30.02	19.9	14.4	-	0.9	-2.3	5.0	3	silty CLAY to CLAY	115	1.5	10	13	-	-	1.3	6.7	61	0.005	15
30.19	21.3	15.4	-	1.0	-2.5	5.1	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.4	7.2	60	0.005	15
30.35	21.7	15.6	-	1.0	-2.5	5.1	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.5	7.3	59	0.005	15
30.51	22.0	15.8	-	1.1	-2.4	5.4	3	silty CLAY to CLAY	115	1.5	11	15	-	-	1.5	7.4	60	0.005	15
30.68	22.7	16.2	-	1.1	-2.4	5.4	3	silty CLAY to CLAY	115	1.5	11	15	-	-	1.5	7.6	59	0.005	15
30.84	22.8	16.2	-	1.3	-2.3	6.0	3	silty CLAY to CLAY	115	1.5	11	15	-	-	1.5	7.6	61	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(468).cpt
CPT Date: 2/22/2010 8:54:46 AM
GW During Test: 19 ft

Sounding ID: CPT-01
Project No: 6169
Cone/Rig: DSG0786

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 - mm	Nk -
31.01	22.7	16.1	-	1.2	-2.4	5.7	3	silty CLAY to CLAY	115	1.5	11	15	-	-	1.5	7.5	61	0.005	15
31.17	23.7	16.8	-	1.3	-2.4	5.9	3	silty CLAY to CLAY	115	1.5	11	16	-	-	1.6	7.8	60	0.005	15
31.33	24.2	17.1	-	1.4	-2.4	6.1	3	silty CLAY to CLAY	115	1.5	11	16	-	-	1.6	8.0	61	0.005	15
31.50	24.4	17.2	-	1.4	-1.8	6.0	3	silty CLAY to CLAY	115	1.5	11	16	-	-	1.7	8.0	60	0.005	15
31.66	23.3	16.4	-	1.3	-1.7	6.1	3	silty CLAY to CLAY	115	1.5	11	16	-	-	1.6	7.6	62	0.005	15
31.83	22.2	15.5	-	1.3	-1.7	6.2	3	silty CLAY to CLAY	115	1.5	10	15	-	-	1.5	7.2	63	0.005	15
31.99	22.1	15.4	-	1.3	-1.7	6.3	3	silty CLAY to CLAY	115	1.5	10	15	-	-	1.5	7.1	64	0.005	15
32.15	21.8	15.2	-	1.3	-1.7	6.3	3	silty CLAY to CLAY	115	1.5	10	15	-	-	1.5	7.0	64	0.005	15
32.32	21.3	14.8	-	1.3	-1.7	6.5	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.4	6.7	65	0.005	15
32.48	21.0	14.5	-	1.3	-1.7	6.6	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.4	6.6	66	0.005	15
32.65	21.7	14.9	-	1.3	-1.6	6.5	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.5	6.8	65	0.005	15
32.81	20.8	14.3	-	1.3	-1.6	7.0	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.4	6.5	68	0.005	15
32.97	20.8	14.2	-	1.3	-1.6	6.8	3	silty CLAY to CLAY	115	1.5	9	14	-	-	1.4	6.4	67	0.005	15
33.14	21.3	14.6	-	1.2	-1.6	5.9	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.4	6.6	64	0.005	15
33.30	20.4	13.9	-	1.1	-1.6	5.9	3	silty CLAY to CLAY	115	1.5	9	14	-	-	1.4	6.3	65	0.005	15
33.47	21.0	14.3	-	1.1	-1.6	5.8	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.4	6.4	64	0.005	15
33.63	21.5	14.5	-	1.3	-1.6	6.5	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.4	6.5	66	0.005	15
33.79	21.2	14.3	-	1.3	-1.5	6.9	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.4	6.4	68	0.005	15
33.96	21.2	14.3	-	1.4	-1.6	7.4	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.4	6.4	69	0.005	15
34.12	21.4	14.4	-	1.8	-1.6	9.0	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.4	6.4	73	0.005	15
34.29	26.2	17.5	-	1.7	-1.7	7.0	3	silty CLAY to CLAY	115	1.5	12	17	-	-	1.8	8.0	63	0.005	15
34.45	18.2	12.1	-	1.6	-1.9	10.0	3	silty CLAY to CLAY	115	1.5	8	12	-	-	1.2	5.3	81	0.005	15
34.61	19.3	12.9	-	1.1	-2.0	6.5	3	silty CLAY to CLAY	115	1.5	9	13	-	-	1.3	5.7	69	0.005	15
34.78	15.0	9.9	-	1.1	-2.1	8.6	3	silty CLAY to CLAY	115	1.5	7	10	-	-	1.0	4.2	83	0.005	15
34.94	15.3	10.1	-	1.0	-1.8	7.8	3	silty CLAY to CLAY	115	1.5	7	10	-	-	1.0	4.3	80	0.005	15
35.11	14.6	9.6	-	1.0	-1.8	8.0	3	silty CLAY to CLAY	115	1.5	6	10	-	-	1.0	4.1	83	0.005	15
35.27	13.1	8.6	-	0.9	-1.7	7.9	3	silty CLAY to CLAY	115	1.5	6	9	-	-	0.9	3.6	86	0.005	15
35.43	12.5	8.2	-	0.9	-1.7	8.3	3	silty CLAY to CLAY	115	1.5	5	8	-	-	0.8	3.3	89	0.005	15
35.60	15.6	10.2	-	1.0	-1.7	7.4	3	silty CLAY to CLAY	115	1.5	7	10	-	-	1.0	4.3	79	0.005	15
35.76	19.0	12.4	-	1.2	-1.7	6.8	3	silty CLAY to CLAY	115	1.5	8	13	-	-	1.3	5.4	71	0.005	15
35.93	18.3	11.9	-	1.3	-1.9	8.2	3	silty CLAY to CLAY	115	1.5	8	12	-	-	1.2	5.1	77	0.005	15
36.09	20.0	13.0	-	1.4	-2.0	7.8	3	silty CLAY to CLAY	115	1.5	9	13	-	-	1.3	5.6	73	0.005	15
36.26	22.7	14.7	-	1.6	-2.2	7.7	3	silty CLAY to CLAY	115	1.5	10	15	-	-	1.5	6.5	69	0.005	15
36.42	28.4	18.3	-	1.8	-2.4	7.0	3	silty CLAY to CLAY	115	1.5	12	19	-	-	1.9	8.2	62	0.005	15
36.58	29.5	18.9	-	2.1	-2.6	7.5	3	silty CLAY to CLAY	115	1.5	13	20	-	-	2.0	8.5	62	0.005	15
36.75	32.5	20.8	-	2.1	-2.9	7.0	3	silty CLAY to CLAY	115	1.5	14	22	-	-	2.2	9.4	59	0.005	15
36.91	39.0	25.0	-	2.4	-3.7	6.4	3	silty CLAY to CLAY	115	1.5	17	26	-	-	2.7	9.9	53	0.005	15
37.08	40.2	25.6	-	2.7	-5.1	7.0	3	silty CLAY to CLAY	115	1.5	17	27	-	-	2.8	9.9	54	0.005	15
37.24	40.4	25.7	-	2.9	-5.6	7.7	3	silty CLAY to CLAY	115	1.5	17	27	-	-	2.8	9.9	56	0.005	15
37.40	48.0	30.4	-	3.0	-5.6	6.5	3	silty CLAY to CLAY	115	1.5	20	32	-	-	3.3	9.9	49	0.005	15
37.57	50.5	32.0	-	3.4	-6.4	7.1	3	silty CLAY to CLAY	115	1.5	21	34	-	-	3.5	9.9	50	0.005	15
37.73	56.5	35.7	-	3.5	-6.8	6.5	3	silty CLAY to CLAY	115	1.5	24	38	-	-	3.9	9.9	46	0.005	15
37.90	54.3	34.2	-	3.8	-7.0	7.4	3	silty CLAY to CLAY	115	1.5	23	36	-	-	3.8	9.9	49	0.005	15
38.06	58.1	36.5	-	3.0	-7.3	5.3	3	silty CLAY to CLAY	115	1.5	24	39	-	-	4.0	9.9	42	0.005	15
38.22	53.6	33.6	-	3.6	-7.8	7.1	3	silty CLAY to CLAY	115	1.5	22	36	-	-	3.7	9.9	49	0.005	15
38.39	58.9	36.8	-	4.2	-6.5	7.5	3	silty CLAY to CLAY	115	1.5	25	39	-	-	4.1	9.9	48	0.005	15
38.55	63.4	39.5	-	3.7	-6.9	6.1	3	silty CLAY to CLAY	115	1.5	26	42	-	-	4.4	9.9	43	0.005	15
38.72	59.6	37.0	-	4.1	-7.1	7.2	3	silty CLAY to CLAY	115	1.5	25	40	-	-	4.1	9.9	48	0.005	15
38.88	67.9	42.0	-	4.7	-7.4	7.2	3	silty CLAY to CLAY	115	1.5	28	45	-	-	4.7	9.9	45	0.005	15
39.04	75.6	46.7	-	5.2	-7.5	7.1	3	silty CLAY to CLAY	115	1.5	31	50	-	-	5.3	9.9	43	0.005	15
39.21	70.0	43.1	-	5.1	-7.6	7.6	3	silty CLAY to CLAY	115	1.5	29	47	-	-	4.9	9.9	46	0.005	15
39.37	63.2	38.8	-	4.6	-7.7	7.6	3	silty CLAY to CLAY	115	1.5	26	42	-	-	4.4	9.9	48	0.005	15
39.54	61.2	37.5	-	4.2	-7.7	7.0	3	silty CLAY to CLAY	115	1.5	25	41	-	-	4.2	9.9	47	0.005	15
39.70	51.1	31.2	-	3.6	-7.8	7.4	3	silty CLAY to CLAY	115	1.5	21	34	-	-	3.5	9.9	51	0.005	15
39.86	40.9	24.9	-	3.2	-7.8	8.4	3	silty CLAY to CLAY	115	1.5	17	27	-	-	2.8	9.9	58	0.005	15
40.03	34.6	21.0	-	2.8	-8.2	8.8	3	silty CLAY to CLAY	115	1.5	14	23	-	-	2.4	9.2	63	0.005	15
40.19	27.1	16.4	-	2.3	-8.5	9.1	3	silty CLAY to CLAY	115	1.5	11	18	-	-	1.8	7.1	70	0.005	15
40.36	19.5	11.8	-	1.7	-8.5	9.9	3	silty CLAY to CLAY	115	1.5	8	13	-	-	1.3	4.9	82	0.005	15
40.52	15.2	9.2	-	1.8	-8.6	9.9	3	silty CLAY to CLAY	115	1.5	6	10	-	-	1.0	3.6	90	0.005	15
40.68	15.7	9.4	-	2.3	-8.6	9.9	3	silty CLAY to CLAY	115	1.5	6	10	-	-	1.0	3.8	89	0.005	15
40.85	37.4	22.5	-	2.6	-8.7	7.3	3	silty CLAY to CLAY	115	1.5	15	25	-	-	2.6	9.8	58	0.005	15
41.01	49.7	29.8	-	2.5	-8.7	5.3	3	silty CLAY to CLAY	115	1.5	20	33	-	-	3.4	9.9	46	0.005	15
41.18	60.7	36.2	-	3.4	-8.8	5.8	3	silty CLAY to CLAY	115	1.5	24	40	-	-	4.2	9.9	44	0.005	15
41.34	82.4	49.1	-	4.5	-8.5	5.6	3	silty CLAY to CLAY	115	1.5	33	55	-	-	5.7	9.9	38	0.005	15
41.50	72.4	43.0	-	4.9	-8.7	7.0	3	silty CLAY to CLAY	115	1.5	29	48	-	-	5.0	9.9	44	0.005	15
41.67	69.4	41.1	-	5.0	-8.6	7.5	3	silty CLAY to CLAY	115	1.5	27	46	-	-	4.8	9.9	47	0.005	15
41.83	68.3	40.4	-	5.0	-8.6	7.6	3	silty CLAY to CLAY	115	1.5	27	46	-	-	4.7	9.9	47	0.005	15
42.00	67.5	39.8	-	4.8	-8.5	7.4	3	silty CLAY to CLAY	115	1.5	27	45	-	-	4.7	9.9	47	0.005	15
42.16	71.0	41.7	-	5.5	-8.5	8.0	3	silty CLAY to CLAY	115	1.5	28	47	-	-	4.9	9.9	48	0.005	15
42.32	88.5	51.9	-	5.6	-8.5	6.5	3	silty CLAY to CLAY	115	1.5	35	59	-	-	6.2	9.9	40	0.005	15
42.49	67.0	39.2	-	5.5	-8.4	8.5	3	silty CLAY to CLAY	115	1.5	26	45	-	-	4.6	9.9	50	0.005	15
42.65	59.9	34.9	-	4.4	-8.4	7.6	3	silty CLAY to CLAY	115	1.5	23	40	-	-	4.1	9.9	50	0.005	15
42.82	58.6	34.1	-	4.2	-8.3	7.5	3	silty CLAY to CLAY	115	1.5	23	39	-	-	4.1	9.9	50	0.005	15
42.98	81.5	47.3	-	5.4	-8.3	6.9	3	silty CLAY to CLAY	115	1.5	32	54	-	-	5.7	9.9	43	0.005	15
43.15	101.1	58.5	-	6.4	-8.3	6.5	3	silty CLAY to CLAY	115	1.5	39	67	-	-	7.1	9.9	38	0.005	15
43.31	93.5	54.0	-	6.6	-8.3	7.2	3	silty CLAY to CLAY	115	1.5	36	62	-	-	6.5	9.9	41	0.005	15
43.47	93.8	54.0	-	6.9	-8.3	7.5	3	silty CLAY to CLAY	115	1.5	36	63	-	-	6.5	9.9	42	0.005	15
43.64	90.7	52.1	-	6.8	-8.1	7.7	3	silty CLAY to CLAY	115	1.5	35	60	-	-	6.3	9.9	43	0.005	15
43.80	91.4	52.4	-	6.6	-8.1	7.4	3	silty CLAY to CLAY	115	1.5	35	61	-	-	6.4	9.9	42	0.005	15
43.97	94.6	54.1	-	6.8	-7.9	7.4	3	silty CLAY to CLAY	115	1.5	36	63	-	-	6.6	9.9	42	0.005	15
44.13	88.9	50.7	-	6.7	-8.1	7.7	3	silty CLAY to CLAY	115	1.5	34	59	-	-	6.2	9.9	44	0.005	15
44.29	88.7	50.4	-	5.6	-8.1	6.5	3	silty CLAY to CLAY	115	1.5	34	59	-	-	6.2	9.9	40	0.005	15
44.46	77.6	44.0	-	4.2	-8.0	5.6	3	silty CLAY to CLAY	115	1.5	29	52	-	-	5.4	9.9	40	0.005	15
44.62	76.6	43.4	-	3.7	-8.1	5.0	4	clayy SILT to silty CLAY	115	2.0	22	38	-	-	5.3	9.9	38	0.070	15
44.79	87.8	64.1	180.6	3.8	-8.2	4.4	4	clayy SILT to silty CLAY	115	2.0	32	44	-	-	6.1	9.9	31	0.070	15
44.95	123.7	90.2	148.2	2.7	-8.2	2.3	5	silty SAND to sandy SILT	120	4.0	23	31	64	40	-	-	19	0.200	16
45.11	97.4	70.9	112.8	1.5	-8.0	1.6	5	silty SAND to sandy SILT	120	4.0	18	24	56	39	-	-	18	0.200	16
45.28	168.1	122.2	162.4	2.9	-8.1	1.8	5	silty SAND to sandy SILT	120	4.0	31	42	74	42	-	-	14	0.200	16
45.44	135.8	98.6	177.6	3.9	8.1	3.0	5	silty SAND to sandy SILT	120	4.0	25	34	67	41	-	-	21	0.200	16
45.61	73.5	41.0	-	3.4	8.6	4.8	4	clayy SILT to silty CLAY	115	2.0	20	37	-	-	5.1	9.9	39	0.070	15
45.77	56.3	31.3	-	3.0	-5.3	5.6	3	silty CLAY to CLAY	115	1.5	21	38	-	-	3.9	9.9	46	0.005	15
45.93	47.6	26.4	-	3.1	-6.0	6.8	3	silty CLAY to CLAY	115	1.5	18	32	-	-	3.3	9.9	53	0.005	15
46.10	47.1	26.1	-	3.3	-5.8	7.5	3	silty CLAY to CLAY	115	1.5	17	31	-	-	3.2	9.9	55	0.005	15
46.26	53.5	29.5	-	3.5	-4.8	7.0	3	silty CLAY to CLAY	115	1.5	20	36	-	-	3.7	9.9	51	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(468).cpt
CPT Date: 2/22/2010 8:54:46 AM
GW During Test: 19 ft

Sounding ID: CPT-01
Project No: 6169
Cone/Rig: DSG0786

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-Nl 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR - -	Fin Ic %	D50 - mm	Nk - -
46.43	44.7	24.6	-	3.1	-5.0	7.5	3	silty CLAY to CLAY	115	1.5	16	30	-	-	3.1	9.9	56	0.005	15
46.59	49.2	27.0	-	2.9	-4.9	6.2	3	silty CLAY to CLAY	115	1.5	18	33	-	-	3.4	9.9	51	0.005	15
46.75	47.2	25.9	-	3.2	-4.6	7.1	3	silty CLAY to CLAY	115	1.5	17	31	-	-	3.2	9.9	54	0.005	15
46.92	54.1	29.6	-	3.4	-5.0	6.7	3	silty CLAY to CLAY	115	1.5	20	36	-	-	3.7	9.9	50	0.005	15
47.08	55.0	30.0	-	3.9	-4.8	7.4	3	silty CLAY to CLAY	115	1.5	20	37	-	-	3.8	9.9	52	0.005	15
47.25	72.7	39.6	-	4.7	-5.1	6.8	3	silty CLAY to CLAY	115	1.5	26	48	-	-	5.0	9.9	45	0.005	15
47.41	74.5	40.5	-	4.7	-5.4	6.5	3	silty CLAY to CLAY	115	1.5	27	50	-	-	5.2	9.9	44	0.005	15
47.57	76.4	41.4	-	4.0	-5.4	5.5	3	silty CLAY to CLAY	115	1.5	28	51	-	-	5.3	9.9	41	0.005	15
47.74	64.8	35.1	-	3.6	-5.6	5.8	3	silty CLAY to CLAY	115	1.5	23	43	-	-	4.5	9.9	45	0.005	15
47.90	59.3	32.0	-	3.4	-5.7	6.0	3	silty CLAY to CLAY	115	1.5	21	40	-	-	4.1	9.9	47	0.005	15
48.07	57.3	30.8	-	3.6	-5.6	6.6	3	silty CLAY to CLAY	115	1.5	21	38	-	-	4.0	9.9	49	0.005	15
48.23	59.6	32.0	-	3.8	-5.5	6.7	3	silty CLAY to CLAY	115	1.5	21	40	-	-	4.1	9.9	49	0.005	15
48.39	57.9	31.0	-	3.9	-5.4	7.1	3	silty CLAY to CLAY	115	1.5	21	39	-	-	4.0	9.9	51	0.005	15
48.56	71.3	38.1	-	4.1	-5.3	6.0	3	silty CLAY to CLAY	115	1.5	25	48	-	-	4.9	9.9	44	0.005	15
48.72	76.8	40.9	-	3.9	-5.4	5.3	3	silty CLAY to CLAY	115	1.5	27	51	-	-	5.3	9.9	40	0.005	15
48.89	56.9	30.2	-	3.5	-5.2	6.6	3	silty CLAY to CLAY	115	1.5	20	38	-	-	3.9	9.9	50	0.005	15
49.05	51.2	27.2	-	2.8	-5.1	5.8	3	silty CLAY to CLAY	115	1.5	18	34	-	-	3.5	9.9	50	0.005	15
49.22	49.8	26.4	-	2.7	-5.2	5.8	3	silty CLAY to CLAY	115	1.5	18	33	-	-	3.4	9.9	50	0.005	15
49.38	49.5	26.2	-	2.9	-5.1	6.2	3	silty CLAY to CLAY	115	1.5	17	33	-	-	3.4	9.9	52	0.005	15
49.54	48.1	25.4	-	2.7	-2.3	6.0	3	silty CLAY to CLAY	115	1.5	17	32	-	-	3.3	9.9	52	0.005	15
49.71	43.6	22.9	-	2.3	-2.1	5.6	3	silty CLAY to CLAY	115	1.5	15	29	-	-	3.0	9.5	52	0.005	15
49.87	48.6	25.5	-	2.5	-2.2	5.5	3	silty CLAY to CLAY	115	1.5	17	32	-	-	3.3	9.9	50	0.005	15
50.04	55.1	28.9	-	3.1	-2.0	5.9	3	silty CLAY to CLAY	115	1.5	19	37	-	-	3.8	9.9	49	0.005	15
50.20	59.7	31.2	-	3.9	-1.8	6.9	3	silty CLAY to CLAY	115	1.5	21	40	-	-	4.1	9.9	50	0.005	15
50.36	76.5	39.9	-	3.6	-1.6	4.9	3	silty CLAY to CLAY	115	1.5	27	51	-	-	5.3	9.9	40	0.005	15
50.53	67.9	35.3	-	3.4	-1.4	5.2	3	silty CLAY to CLAY	115	1.5	24	45	-	-	4.7	9.9	43	0.005	15
50.69	66.2	34.3	-	3.4	-1.2	5.4	3	silty CLAY to CLAY	115	1.5	23	44	-	-	4.6	9.9	44	0.005	15
50.86	68.8	35.6	-	3.8	-1.2	5.7	3	silty CLAY to CLAY	115	1.5	24	46	-	-	4.8	9.9	44	0.005	15
51.02	72.2	37.3	-	3.9	-1.4	5.6	3	silty CLAY to CLAY	115	1.5	25	48	-	-	5.0	9.9	43	0.005	15
51.18	63.5	32.7	-	3.6	-1.6	5.9	3	silty CLAY to CLAY	115	1.5	22	42	-	-	4.4	9.9	46	0.005	15
51.35	74.2	38.1	-	4.6	-1.6	6.4	3	silty CLAY to CLAY	115	1.5	25	49	-	-	5.1	9.9	45	0.005	15
51.51	85.5	43.9	-	4.8	0.0	5.9	3	silty CLAY to CLAY	115	1.5	29	57	-	-	5.9	9.9	41	0.005	15
51.68	82.4	42.2	-	4.1	-0.1	5.2	3	silty CLAY to CLAY	115	1.5	28	55	-	-	5.7	9.9	40	0.005	15
51.84	92.2	47.1	-	6.1	-0.1	6.9	3	silty CLAY to CLAY	115	1.5	31	61	-	-	6.4	9.9	43	0.005	15
52.00	134.1	68.4	-	9.4	0.1	7.2	9	very stiff fine SOIL	120	2.0	34	67	54	40	-	-	38	0.250	30
52.17	189.1	130.9	322.6	11.8	-2.3	6.3	9	very stiff fine SOIL	120	2.0	65	95	76	42	-	-	28	0.250	30

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

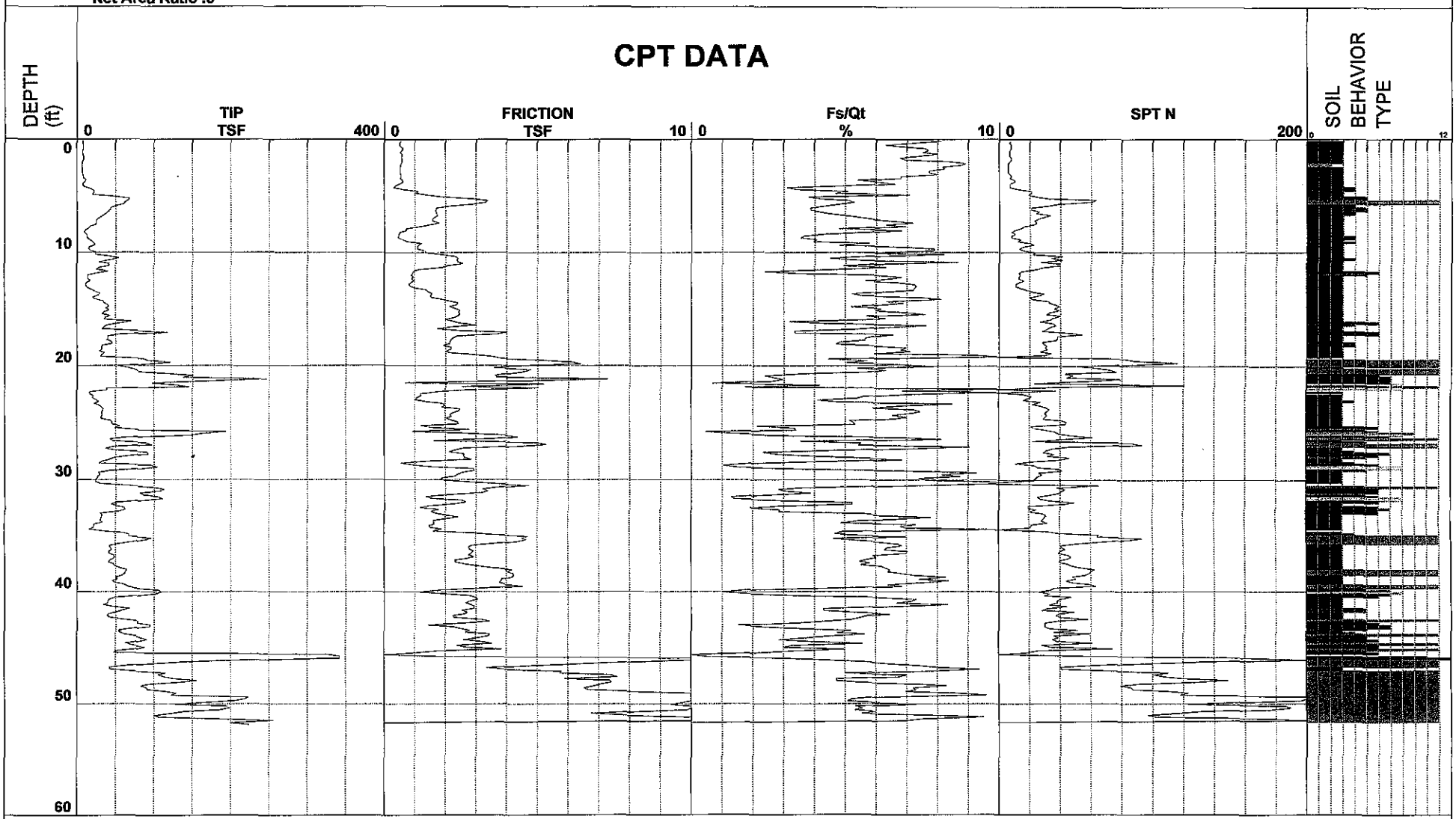
Middle Earth Geo Testing

Associated Soils Engineering

Project	Big Canyon Country Club	Operator	BH-AH	Filename	SDF(473).cpt
Job Number	6169	Cone Number	DSG1104	GPS	
Hole Number	CPT-02	Date and Time	2/22/2010 10:58:14 AM	Maximum Depth	51.84 ft
Water Table Depth		18.00 ft			

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

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

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(473).cpt
CPT Date: 2/22/2010 10:58:14 AM
GW During Test: 18 ft

Sounding ID: CPT-02
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	* Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	* SPT R-N1 60%	* SPT R-N 60%	* Rel Den %	* Ftn Ang deg	Und Shr tsf	OCR -	* Fin Ic %	* D50 - mm	* Nk -
0.33	7.0	11.3	-	0.5	0.0	7.3	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	72	0.005	15
0.49	8.1	13.0	-	0.5	0.0	6.3	3	silty CLAY to CLAY	115	1.5	9	5	-	-	0.6	9.9	66	0.005	15
0.66	7.9	12.7	-	0.6	0.0	7.0	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.6	9.9	69	0.005	15
0.82	8.2	13.2	-	0.6	0.0	7.7	3	silty CLAY to CLAY	115	1.5	9	5	-	-	0.6	9.9	70	0.005	15
0.98	7.4	11.9	-	0.6	0.0	7.8	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	73	0.005	15
1.15	6.8	10.9	-	0.5	0.0	7.6	3	silty CLAY to CLAY	115	1.5	7	5	-	-	0.5	9.9	74	0.005	15
1.31	7.3	11.8	-	0.6	0.0	8.1	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	74	0.005	15
1.48	7.7	12.4	-	0.6	0.0	7.5	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	71	0.005	15
1.64	8.4	13.4	-	0.6	0.0	6.9	3	silty CLAY to CLAY	115	1.5	9	6	-	-	0.6	9.9	67	0.005	15
1.80	8.4	13.5	-	0.6	0.0	7.0	3	silty CLAY to CLAY	115	1.5	9	6	-	-	0.6	9.9	67	0.005	15
1.97	7.0	11.2	-	0.6	0.0	8.5	3	silty CLAY to CLAY	115	1.5	7	5	-	-	0.5	9.9	76	0.005	15
2.13	6.2	10.0	-	0.6	0.0	9.1	3	silty CLAY to CLAY	115	1.5	7	4	-	-	0.4	9.9	81	0.005	15
2.30	6.0	9.7	-	0.5	0.0	9.0	3	silty CLAY to CLAY	115	1.5	6	4	-	-	0.4	9.9	82	0.005	15
2.46	6.4	10.3	-	0.5	0.0	8.4	3	silty CLAY to CLAY	115	1.5	7	4	-	-	0.4	9.9	78	0.005	15
2.62	6.3	10.1	-	0.5	0.0	8.4	3	silty CLAY to CLAY	115	1.5	7	4	-	-	0.4	9.9	79	0.005	15
2.79	6.8	10.9	-	0.5	0.0	7.9	3	silty CLAY to CLAY	115	1.5	7	5	-	-	0.5	9.9	76	0.005	15
2.95	6.6	10.6	-	0.5	0.0	7.9	3	silty CLAY to CLAY	115	1.5	7	4	-	-	0.5	9.9	76	0.005	15
3.12	6.8	10.9	-	0.5	0.0	8.2	3	silty CLAY to CLAY	115	1.5	7	5	-	-	0.5	9.9	77	0.005	15
3.28	8.0	12.8	-	0.5	0.0	7.0	3	silty CLAY to CLAY	115	1.5	9	5	-	-	0.6	9.9	69	0.005	15
3.45	7.7	12.3	-	0.5	0.0	7.0	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	70	0.005	15
3.61	10.9	17.5	-	0.6	0.0	5.5	3	silty CLAY to CLAY	115	1.5	12	7	-	-	0.8	9.9	57	0.005	15
3.77	9.9	15.9	-	0.6	0.0	6.3	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	61	0.005	15
3.94	7.4	11.9	-	0.5	0.0	6.8	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	70	0.005	15
4.10	7.2	11.6	-	0.4	0.0	5.2	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	65	0.005	15
4.27	10.2	16.4	-	0.3	0.0	3.2	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	49	0.005	15
4.43	18.1	29.0	-	0.6	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	15	9	-	-	1.3	9.9	39	0.070	15
4.59	21.7	34.7	-	1.1	0.0	5.2	3	silty CLAY to CLAY	115	1.5	23	14	-	-	1.5	9.9	42	0.005	15
4.76	21.7	34.9	-	1.0	0.0	4.7	3	silty CLAY to CLAY	115	1.5	23	14	-	-	1.5	9.9	41	0.005	15
4.92	19.8	31.8	-	1.4	0.0	7.2	3	silty CLAY to CLAY	115	1.5	21	13	-	-	1.4	9.9	50	0.005	15
5.09	49.4	79.3	181.5	1.9	0.0	3.8	4	clayy SILT to silty CLAY	115	2.0	40	25	-	-	3.5	9.9	26	0.070	15
5.25	67.5	108.3	225.5	2.8	0.0	4.2	9	very stiff fine SOIL	120	2.0	54	34	70	46	-	-	24	0.250	30
5.41	66.0	105.9	250.0	3.4	0.0	5.1	9	very stiff fine SOIL	120	2.0	53	33	69	46	-	-	27	0.250	30
5.58	62.2	99.7	248.3	3.3	0.0	5.3	9	very stiff fine SOIL	120	2.0	50	31	67	45	-	-	28	0.250	30
5.74	60.1	96.5	228.3	2.9	0.0	4.8	9	very stiff fine SOIL	120	2.0	48	30	66	45	-	-	27	0.250	30
5.91	49.9	80.1	196.2	2.2	0.0	4.3	4	clayy SILT to silty CLAY	115	2.0	40	25	-	-	3.5	9.9	28	0.070	15
6.07	43.8	70.3	172.7	1.7	0.0	3.9	4	clayy SILT to silty CLAY	115	2.0	35	22	-	-	3.1	9.9	28	0.070	15
6.23	43.1	69.1	171.8	1.7	0.0	3.9	4	clayy SILT to silty CLAY	115	2.0	35	22	-	-	3.0	9.9	28	0.070	15
6.40	40.5	64.6	173.1	1.7	0.0	4.2	4	clayy SILT to silty CLAY	115	2.0	32	20	-	-	2.8	9.9	30	0.070	15
6.56	37.9	59.8	174.8	1.7	0.0	4.5	4	clayy SILT to silty CLAY	115	2.0	30	19	-	-	2.7	9.9	32	0.070	15
6.73	34.7	54.1	178.4	1.7	0.0	5.1	4	clayy SILT to silty CLAY	115	2.0	27	17	-	-	2.4	9.9	35	0.070	15
6.89	29.9	48.0	-	1.6	0.0	5.5	3	silty CLAY to CLAY	115	1.5	32	20	-	-	2.1	9.9	38	0.005	15
7.05	26.5	42.6	-	1.6	0.0	6.0	3	silty CLAY to CLAY	115	1.5	28	18	-	-	1.9	9.9	42	0.005	15
7.22	24.3	39.0	-	1.6	0.0	6.6	3	silty CLAY to CLAY	115	1.5	26	16	-	-	1.7	9.9	45	0.005	15
7.38	24.8	39.8	-	1.8	0.0	7.3	3	silty CLAY to CLAY	115	1.5	27	17	-	-	1.7	9.9	46	0.005	15
7.55	23.6	37.9	-	1.5	0.0	6.4	3	silty CLAY to CLAY	115	1.5	25	16	-	-	1.6	9.9	45	0.005	15
7.71	16.5	26.4	-	1.1	0.0	7.1	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.1	9.9	53	0.005	15
7.87	14.7	23.5	-	0.7	0.0	5.0	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	49	0.005	15
8.04	10.3	16.6	-	0.7	0.0	7.2	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	64	0.005	15
8.20	8.7	13.9	-	0.5	0.0	6.2	3	silty CLAY to CLAY	115	1.5	9	6	-	-	0.6	8.6	65	0.005	15
8.37	10.9	17.5	-	0.5	0.0	4.5	3	silty CLAY to CLAY	115	1.5	12	7	-	-	0.7	9.9	54	0.005	15
8.53	12.6	20.2	-	0.5	0.0	3.8	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.9	9.9	48	0.005	15
8.69	12.5	20.0	-	0.4	0.0	3.7	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.9	9.9	47	0.005	15
8.86	14.5	23.3	-	0.6	0.0	4.2	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	47	0.005	15
9.02	18.6	29.8	-	0.7	0.0	4.1	4	clayy SILT to silty CLAY	115	2.0	15	9	-	-	1.3	9.9	41	0.070	15
9.19	20.9	33.4	-	1.2	0.0	5.9	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.4	9.9	46	0.005	15
9.35	23.1	37.1	-	1.1	0.0	4.9	3	silty CLAY to CLAY	115	1.5	25	15	-	-	1.6	9.9	41	0.005	15
9.51	15.5	24.9	-	1.1	0.0	7.2	3	silty CLAY to CLAY	115	1.5	17	10	-	-	1.1	9.9	55	0.005	15
9.68	13.5	21.7	-	1.1	0.0	8.2	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	61	0.005	15
9.84	16.8	26.9	-	1.3	0.0	8.1	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	56	0.005	15
10.01	23.7	38.0	-	1.3	0.0	5.8	3	silty CLAY to CLAY	115	1.5	25	16	-	-	1.7	9.9	43	0.005	15
10.17	23.0	36.9	-	1.9	0.0	8.4	3	silty CLAY to CLAY	115	1.5	25	15	-	-	1.6	9.9	50	0.005	15
10.34	42.4	59.9	197.5	2.3	0.0	5.5	4	clayy SILT to silty CLAY	115	2.0	30	21	-	-	3.0	9.9	35	0.070	15
10.50	53.1	66.3	184.4	2.4	0.0	4.6	4	clayy SILT to silty CLAY	115	2.0	33	27	-	-	3.7	9.9	31	0.070	15
10.66	43.1	59.5	197.7	2.4	0.0	5.6	4	clayy SILT to silty CLAY	115	2.0	30	22	-	-	3.0	9.9	35	0.070	15
10.83	27.7	44.3	-	2.4	0.0	8.9	3	silty CLAY to CLAY	115	1.5	30	18	-	-	1.9	9.9	48	0.005	15
10.99	40.9	64.5	-	2.6	0.0	6.4	9	very stiff fine SOIL	120	2.0	32	20	53	41	-	-	36	0.250	30
11.16	42.1	56.3	181.5	2.1	0.0	5.0	4	clayy SILT to silty CLAY	115	2.0	28	21	-	-	2.9	9.9	35	0.070	15
11.32	29.8	45.6	-	1.9	0.0	6.5	3	silty CLAY to CLAY	115	1.5	30	20	-	-	2.1	9.9	42	0.005	15
11.48	25.3	38.1	-	1.1	0.0	4.7	4	clayy SILT to silty CLAY	115	2.0	19	13	-	-	1.8	9.9	39	0.070	15
11.65	40.2	47.7	112.6	1.0	0.0	2.4	5	silty SAND to sandy SILT	120	4.0	12	10	43	40	-	-	27	0.200	16
11.81	27.4	35.2	-	0.9	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	18	14	-	-	1.9	9.9	36	0.070	15
11.98	14.5	20.9	-	0.9	0.0	6.4	3	silty CLAY to CLAY	115	1.5	14	10	-	-	1.0	9.9	56	0.005	15
12.14	13.9	19.9	-	1.0	0.0	7.2	3	silty CLAY to CLAY	115	1.5	13	9	-	-	1.0	9.9	60	0.005	15
12.30	14.0	19.7	-	0.9	0.0	6.8	3	silty CLAY to CLAY	115	1.5	13	9	-	-	1.0	9.9	59	0.005	15
12.47	17.1	23.8	-	1.0	0.0	5.9	3	silty CLAY to CLAY	115	1.5	16	11	-	-	1.2	9.9	52	0.005	15
12.63	13.1	18.0	-	0.9	0.0	7.1	3	silty CLAY to CLAY	115	1.5	12	9	-	-	0.9	9.5	62	0.005	15
12.80	11.1	15.0	-	0.8	0.0	7.8	3	silty CLAY to CLAY	115	1.5	10	7	-	-	0.8	7.8	68	0.005	15
12.96	11.5	15.4	-	0.8	0.0	7.8	3	silty CLAY to CLAY	115	1.5	10	8	-	-	0.8	8.0	68	0.005	15
13.12	14.3	18.8	-	1.0	0.0	7.6	3	silty CLAY to CLAY	115	1.5	13	10	-	-	1.0	9.9	62	0.005	15
13.29	19.1	24.9	-	1.4	0.0	7.5	3	silty CLAY to CLAY	115	1.5	17	13	-	-	1.3	9.9	56	0.005	15
13.45	22.9	29.5	-	1.4	0.0	6.4	3	silty CLAY to CLAY	115	1.5	20	15	-	-	1.6	9.9	49	0.005	15
13.62	29.9	38.0	-	1.6	0.0	5.4	3	silty CLAY to CLAY	115	1.5	25	20	-	-	2.1	9.9	42	0.005	15
13.78	27.0	34.0	-	1.5	0.0	5.7	3	silty CLAY to CLAY	115	1.5	23	18	-	-	1.9	9.9	45	0.005	15
13.94	20.5	25.5	-	1.5	0.0	7.8	3	silty CLAY to CLAY	115	1.5	17	14	-	-	1.4	9.9	56	0.005	15
14.11	22.6	27.8	-	1.8	0.0	8.4	3	silty CLAY to CLAY	115	1.5	19	15	-	-	1.6	9.9	56	0.005	15
14.27	33.3	40.5	-	2.1	0.0	6.5	3	silty CLAY to CLAY	115	1.5	27	22	-	-	2.3	9.9	44	0.005	15
14.44	34.9	41.9	-	2.4	0.0	7.0	3	silty CLAY to CLAY	115	1.5	28	23	-	-	2.4	9.9	45	0.005	15
14.60	39.0	46.4	-	2.4	0.0	6.2	3	silty CLAY to CLAY	115	1.5	31	26	-	-	2.7	9.9	41	0.005	15
14.76	41.1	48.3	-	2.1	0.0	5.3	3	silty CLAY to CLAY	115	1.5	32	27	-	-	2.9	9.9	38	0.005	15
14.93	37.3	43.3	-	2.3	0.0	6.3	3	silty CLAY to CLAY	115	1.5	29	25	-	-	2.6	9.9	42	0.005	15
15.09	41.1	47.2	-	2.5	0.0	6.1	3	silty CLAY to CLAY	115	1.5	31	27	-	-	2.9	9.9	40	0.005	15
15.26	34.7	39.5	-	2.4	0.0	7.1	3	silty CLAY to CLAY	115	1.5	26	23	-	-	2.4	9.9	46	0.005	15
15.42	32.5	36.5	-	2.5	0.0	7.8	3	silty CLAY to CLAY	115	1.5	24	22	-	-	2.3	9.9	49	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(473).cpt
CPT Date: 2/22/2010 10:58:14 AM
GW During Test: 18 ft

Sounding ID: CPT-02
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 - mm	Nk -
15.58	42.2	47.0	-	2.4	0.0	5.8	3	silty CLAY to CLAY	115	1.5	31	28	-	-	2.9	9.9	40	0.005	15
15.75	36.2	39.9	-	2.3	0.0	6.5	3	silty CLAY to CLAY	115	1.5	27	24	-	-	2.5	9.9	44	0.005	15
15.91	34.9	38.0	-	2.0	0.0	5.9	3	silty CLAY to CLAY	115	1.5	25	23	-	-	2.4	9.9	43	0.005	15
16.08	70.3	71.0	156.5	2.2	0.0	3.2	4	clayy SILT to silty CLAY	115	2.0	35	35	-	-	4.9	9.9	25	0.070	15
16.24	55.1	55.3	169.9	2.5	0.0	4.6	4	clayy SILT to silty CLAY	115	2.0	28	28	-	-	3.9	9.9	33	0.070	15
16.40	38.8	41.1	-	3.0	0.0	7.8	3	silty CLAY to CLAY	115	1.5	27	26	-	-	2.7	9.9	47	0.005	15
16.57	34.5	36.1	-	2.2	0.0	6.4	3	silty CLAY to CLAY	115	1.5	24	23	-	-	2.4	9.9	46	0.005	15
16.73	32.4	33.6	-	1.7	0.0	5.5	3	silty CLAY to CLAY	115	1.5	22	22	-	-	2.2	9.9	44	0.005	15
16.90	73.2	72.1	162.4	2.5	0.0	3.4	4	clayy SILT to silty CLAY	115	2.0	36	37	-	-	5.1	9.9	26	0.070	15
17.06	118.1	115.7	207.4	4.0	0.0	3.4	5	silty SAND to sandy SILT	120	4.0	29	30	72	44	-	-	21	0.200	16
17.23	56.0	56.4	-	3.7	0.0	6.7	3	silty CLAY to CLAY	115	1.5	38	37	-	-	3.9	9.9	39	0.005	15
17.39	39.8	39.7	-	2.4	0.0	6.1	3	silty CLAY to CLAY	115	1.5	26	27	-	-	2.8	9.9	43	0.005	15
17.55	39.7	39.2	-	2.2	0.0	5.8	3	silty CLAY to CLAY	115	1.5	26	26	-	-	2.8	9.9	42	0.005	15
17.72	38.4	37.6	-	2.2	0.0	5.8	3	silty CLAY to CLAY	115	1.5	25	26	-	-	2.7	9.9	43	0.005	15
17.88	44.3	42.9	-	2.1	0.0	4.9	4	clayy SILT to silty CLAY	115	2.0	21	22	-	-	3.1	9.9	38	0.070	15
18.05	45.3	43.8	-	2.1	0.0	4.8	4	clayy SILT to silty CLAY	115	2.0	22	23	-	-	3.2	9.9	38	0.070	15
18.21	32.4	31.1	-	1.9	0.0	6.1	3	silty CLAY to CLAY	115	1.5	21	22	-	-	2.2	9.9	48	0.005	15
18.37	31.0	29.7	-	2.2	0.0	7.2	3	silty CLAY to CLAY	115	1.5	20	21	-	-	2.2	9.9	52	0.005	15
18.54	32.2	30.7	-	2.2	0.0	7.0	3	silty CLAY to CLAY	115	1.5	20	21	-	-	2.2	9.9	50	0.005	15
18.70	28.4	27.0	-	2.0	0.0	7.4	3	silty CLAY to CLAY	115	1.5	18	19	-	-	2.0	9.9	54	0.005	15
18.87	35.5	33.6	-	2.1	0.0	6.1	3	silty CLAY to CLAY	115	1.5	22	24	-	-	2.5	9.9	46	0.005	15
19.03	31.3	29.5	-	2.9	0.0	9.5	3	silty CLAY to CLAY	115	1.5	20	21	-	-	2.2	9.9	57	0.005	15
19.19	30.1	28.3	-	3.5	0.0	9.9	3	silty CLAY to CLAY	115	1.5	19	20	-	-	2.1	9.9	59	0.005	15
19.36	85.7	80.5	201.8	3.8	0.0	4.5	4	clayy SILT to silty CLAY	115	2.0	40	43	-	-	6.0	9.9	28	0.070	15
19.52	91.4	85.7	241.9	5.2	0.0	5.8	9	very stiff fine SOIL	120	2.0	43	46	62	43	-	-	31	0.250	30
19.69	120.9	113.1	259.1	6.1	0.0	5.1	9	very stiff fine SOIL	120	2.0	57	60	71	44	-	-	26	0.250	30
19.85	94.0	87.7	273.6	6.4	0.0	6.9	9	very stiff fine SOIL	120	2.0	44	47	63	43	-	-	34	0.250	30
20.01	53.6	49.2	-	4.2	0.0	8.0	3	silty CLAY to CLAY	115	1.5	33	36	-	-	3.7	9.9	45	0.005	15
20.18	66.4	61.7	200.1	3.6	0.0	5.5	4	clayy SILT to silty CLAY	115	2.0	31	33	-	-	4.6	9.9	35	0.070	15
20.34	75.3	68.7	-	4.8	0.0	6.4	9	very stiff fine SOIL	120	2.0	34	38	55	41	-	-	36	0.250	30
20.51	79.4	73.5	225.5	4.6	0.0	5.8	9	very stiff fine SOIL	120	2.0	37	40	57	42	-	-	33	0.250	30
20.67	112.5	103.8	207.3	4.2	0.0	3.8	5	silty SAND to sandy SILT	120	4.0	26	28	68	43	-	-	23	0.200	16
20.83	151.1	139.2	198.3	3.6	0.0	2.4	5	silty SAND to sandy SILT	120	4.0	35	38	78	45	-	-	15	0.200	16
21.00	137.6	126.5	195.0	3.7	0.0	2.7	5	silty SAND to sandy SILT	120	4.0	32	34	75	44	-	-	17	0.200	16
21.16	246.1	225.8	302.3	7.3	0.0	3.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.3	9.9	14	0.250	16
21.33	171.4	157.0	222.1	4.5	0.0	2.6	5	silty SAND to sandy SILT	120	4.0	39	43	82	45	-	-	15	0.200	16
21.49	97.4	89.0	102.7	0.7	0.0	0.7	6	clean SAND to silty SAND	125	5.0	18	19	63	42	-	-	9	0.350	16
21.65	124.9	113.9	231.3	5.2	0.0	4.2	9	very stiff fine SOIL	120	2.0	57	62	71	44	-	-	23	0.250	30
21.82	145.0	131.9	170.6	2.5	0.0	1.8	6	clean SAND to silty SAND	125	5.0	26	29	76	44	-	-	13	0.350	16
21.98	37.6	32.8	-	5.0	0.0	9.9	3	silty CLAY to CLAY	115	1.5	22	25	-	-	2.6	9.9	56	0.005	15
22.15	38.4	33.4	-	2.6	0.0	7.1	3	silty CLAY to CLAY	115	1.5	22	26	-	-	2.7	9.9	49	0.005	15
22.31	15.9	13.8	-	1.8	0.0	9.9	3	silty CLAY to CLAY	115	1.5	9	11	-	-	1.1	7.0	76	0.005	15
22.47	16.6	14.3	-	1.2	0.0	7.7	3	silty CLAY to CLAY	115	1.5	10	11	-	-	1.1	7.2	70	0.005	15
22.64	21.4	18.4	-	1.2	0.0	6.0	3	silty CLAY to CLAY	115	1.5	12	14	-	-	1.5	9.5	58	0.005	15
22.80	19.9	17.1	-	1.1	0.0	5.8	3	silty CLAY to CLAY	115	1.5	11	13	-	-	1.4	8.7	59	0.005	15
22.97	24.6	21.1	-	1.0	0.0	4.4	3	silty CLAY to CLAY	115	1.5	14	16	-	-	1.7	9.9	49	0.005	15
23.13	27.7	23.6	-	1.3	0.0	5.1	3	silty CLAY to CLAY	115	1.5	16	18	-	-	1.9	9.9	50	0.005	15
23.30	22.5	19.1	-	1.9	0.0	9.0	3	silty CLAY to CLAY	115	1.5	13	15	-	-	1.5	9.7	66	0.005	15
23.46	28.7	24.2	-	2.0	0.0	7.2	3	silty CLAY to CLAY	115	1.5	16	19	-	-	2.0	9.9	56	0.005	15
23.62	31.9	26.9	-	1.9	0.0	6.2	3	silty CLAY to CLAY	115	1.5	18	21	-	-	2.2	9.9	51	0.005	15
23.79	34.1	28.6	-	2.5	0.0	7.5	3	silty CLAY to CLAY	115	1.5	19	23	-	-	2.4	9.9	53	0.005	15
23.95	32.7	27.3	-	2.4	0.0	7.8	3	silty CLAY to CLAY	115	1.5	18	22	-	-	2.3	9.9	55	0.005	15
24.12	31.6	26.3	-	2.3	0.0	7.5	3	silty CLAY to CLAY	115	1.5	18	21	-	-	2.2	9.9	55	0.005	15
24.28	32.8	27.3	-	2.2	0.0	6.8	3	silty CLAY to CLAY	115	1.5	18	22	-	-	2.3	9.9	52	0.005	15
24.44	31.4	25.9	-	2.2	0.0	7.3	3	silty CLAY to CLAY	115	1.5	17	21	-	-	2.2	9.9	55	0.005	15
24.61	30.6	25.2	-	2.0	0.0	6.9	3	silty CLAY to CLAY	115	1.5	17	20	-	-	2.1	9.9	54	0.005	15
24.77	42.6	35.0	-	2.2	0.0	5.3	3	silty CLAY to CLAY	115	1.5	23	28	-	-	3.0	9.9	43	0.005	15
24.94	45.5	37.2	-	2.4	0.0	5.4	3	silty CLAY to CLAY	115	1.5	25	30	-	-	3.2	9.9	42	0.005	15
25.10	45.4	37.0	-	2.4	0.0	5.5	3	silty CLAY to CLAY	115	1.5	25	30	-	-	3.2	9.9	43	0.005	15
25.26	55.4	48.5	108.9	1.2	0.0	2.2	5	silty SAND to sandy SILT	120	4.0	12	14	43	39	-	-	26	0.200	16
25.43	48.4	42.3	129.8	1.6	0.0	3.4	4	clayy SILT to silty CLAY	115	2.0	21	24	-	-	3.4	9.9	33	0.070	15
25.59	81.3	70.9	163.2	2.8	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	35	41	-	-	5.7	9.9	26	0.070	15
25.76	193.9	168.8	168.8	0.9	0.0	0.5	6	clean SAND to silty SAND	125	5.0	34	39	84	45	-	-	5	0.350	16
25.92	162.8	141.4	174.0	2.6	0.0	1.6	6	clean SAND to silty SAND	125	5.0	28	33	78	44	-	-	11	0.350	16
26.08	147.8	128.2	197.0	3.9	0.0	2.7	5	silty SAND to sandy SILT	120	4.0	32	37	75	44	-	-	17	0.200	16
26.25	64.0	50.9	-	4.4	0.0	7.0	3	silty CLAY to CLAY	115	1.5	34	43	-	-	4.5	9.9	42	0.005	15
26.41	43.0	34.1	-	3.5	0.0	8.4	3	silty CLAY to CLAY	115	1.5	23	29	-	-	3.0	9.9	52	0.005	15
26.58	45.6	36.0	-	1.6	0.0	3.7	4	clayy SILT to silty CLAY	115	2.0	18	23	-	-	3.2	9.9	37	0.070	15
26.74	89.8	77.3	226.2	4.9	0.0	5.6	9	very stiff fine SOIL	120	2.0	39	45	59	41	-	-	32	0.250	30
26.90	97.1	83.5	233.2	5.3	0.0	5.5	9	very stiff fine SOIL	120	2.0	42	49	61	41	-	-	31	0.250	30
27.07	47.6	37.2	-	4.3	0.0	9.4	3	silty CLAY to CLAY	115	1.5	25	32	-	-	3.3	9.9	53	0.005	15
27.23	36.4	28.3	-	2.6	0.0	7.5	3	silty CLAY to CLAY	115	1.5	19	24	-	-	2.5	9.9	53	0.005	15
27.40	48.9	37.9	-	2.3	0.0	4.9	3	silty CLAY to CLAY	115	1.5	25	33	-	-	3.4	9.9	40	0.005	15
27.56	90.2	77.0	139.8	2.1	0.0	2.4	5	silty SAND to sandy SILT	120	4.0	19	23	58	41	-	-	21	0.200	16
27.72	92.9	79.1	154.7	2.6	0.0	2.9	5	silty SAND to sandy SILT	120	4.0	20	23	59	41	-	-	23	0.200	16
27.89	67.1	57.1	159.2	2.6	0.0	3.9	4	clayy SILT to silty CLAY	115	2.0	29	34	-	-	4.7	9.9	31	0.070	15
28.05	47.6	36.4	-	2.6	0.0	5.7	3	silty CLAY to CLAY	115	1.5	24	32	-	-	3.3	9.9	44	0.005	15
28.22	41.5	31.6	-	2.8	0.0	7.1	3	silty CLAY to CLAY	115	1.5	21	28	-	-	2.9	9.9	50	0.005	15
28.38	31.7	24.1	-	1.3	0.0	4.3	3	silty CLAY to CLAY	115	1.5	16	21	-	-	2.2	9.9	46	0.005	15
28.54	27.9	21.1	-	0.5	0.0	2.1	4	clayy SILT to silty CLAY	115	2.0	11	14	-	-	1.9	9.9	38	0.070	15
28.71	95.6	80.6	105.2	1.0	0.0	1.1	6	clean SAND to silty SAND	125	5.0	16	19	60	41	-	-	13	0.350	16
28.87	103.9	87.5	124.7	1.6	0.0	1.5	5	silty SAND to sandy SILT	120	4.0	22	26	63	41	-	-	15	0.200	16
29.04	81.0	68.1	165.2	2.9	0.0	3.7	4	clayy SILT to silty CLAY	115	2.0	34	41	-	-	5.7	9.9	28	0.070	15
29.20	42.4	31.7	-	2.9	0.0	7.2	3	silty CLAY to CLAY	115	1.5	21	28	-	-	2.9	9.9	50	0.005	15
29.36	27.4	20.4	-	2.5	0.0	9.9	3	silty CLAY to CLAY	115	1.5	14	18	-	-	1.9	9.6	66	0.005	15
29.53	29.3	21.7	-	2.4	0.0	8.7	3	silty CLAY to CLAY	115	1.5	14	20	-	-	2.0	9.9	62	0.005	15
29.69	26.4	19.5	-	2.3	0.0	9.3	3	silty CLAY to CLAY	115	1.5	13	18	-	-	1.8	9.1	66	0.005	15
29.86	25.5	18.8	-	1.9	0.0	7.9	3	silty CLAY to CLAY	115	1.5	13	17	-	-	1.7	8.7	64	0.005	15
30.02	23.5	17.3	-	1.8	0.0	8.3	3	silty CLAY to CLAY	115	1.5	12	16	-	-	1.6	8.0	67	0.005	15
30.19	23.5	17.2	-	2.7	0.0	9.9	3	silty CLAY to CLAY	115	1.5	11	16	-	-	1.6	7.9	71	0.005	15
30.35	29.2	21.3	-	3.5	0.0	9.9	3	silty CLAY to CLAY	115	1.5	14	19	-	-	2.0	9.9	65	0.005	15
30.51	68.2	49.6	-	4.7	0.0	7.1	3	silty CLAY to CLAY	115	1.5	33	45	-	-	4.8	9.9	42	0.005	15
30.68	100.3	83.0	182.0	3.6	0.0	3.7	4	clayy SILT to silty CLAY	115	2.0	41	50	-	-	7.0	9.9	25	0.070	15
30.84	113.0	93.4	169.7	3.2	0.0	2.9	5	silty SAND to sandy SILT	120	4.0	23	28	65	42	-	-	21	0.200	16

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(473).cpt
CPT Date: 2/22/2010 10:58:14 AM
GW During Test: 18 ft

Sounding ID: CPT-02
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR - -	Fin Ic %	D50 - mm	Nk - -
31.01	107.5	88.6	174.3	3.4	0.0	3.2	5	silty SAND to sandy SILT	120	4.0	22	27	63	41	-	-	23	0.200	16
31.17	82.0	67.5	172.5	3.2	0.0	4.0	4	clayy SILT to silty CLAY	115	2.0	34	41	-	-	5.7	9.9	29	0.070	15
31.33	85.9	70.6	137.2	2.1	0.0	2.5	5	silty SAND to sandy SILT	120	4.0	18	21	56	40	-	-	22	0.200	16
31.50	103.6	85.0	116.2	1.3	0.0	1.3	5	silty SAND to sandy SILT	120	4.0	21	26	62	41	-	-	14	0.200	16
31.66	110.9	90.9	124.7	1.6	0.0	1.4	5	silty SAND to sandy SILT	120	4.0	23	28	64	41	-	-	14	0.200	16
31.83	87.4	71.4	150.5	2.5	0.0	3.0	5	silty SAND to sandy SILT	120	4.0	18	22	56	40	-	-	24	0.200	16
31.99	50.8	35.9	-	2.7	0.0	5.4	3	silty CLAY to CLAY	115	1.5	24	34	-	-	3.5	9.9	43	0.005	15
32.15	44.0	31.0	-	2.3	0.0	5.5	3	silty CLAY to CLAY	115	1.5	21	29	-	-	3.0	9.9	46	0.005	15
32.32	50.8	41.4	118.1	1.4	0.0	2.9	4	clayy SILT to silty CLAY	115	2.0	21	25	-	-	3.5	9.9	31	0.070	15
32.48	60.5	49.2	103.5	1.2	0.0	2.0	5	silty SAND to sandy SILT	120	4.0	12	15	44	38	-	-	24	0.200	16
32.65	61.6	50.0	128.3	1.8	0.0	3.0	4	clayy SILT to silty CLAY	115	2.0	25	31	-	-	4.3	9.9	29	0.070	15
32.81	53.5	43.3	121.9	1.5	0.0	3.0	4	clayy SILT to silty CLAY	115	2.0	22	27	-	-	3.7	9.9	31	0.070	15
32.97	30.2	20.9	-	1.7	0.0	6.0	3	silty CLAY to CLAY	115	1.5	14	20	-	-	2.1	9.5	56	0.005	15
33.14	32.6	22.5	-	2.0	0.0	6.5	3	silty CLAY to CLAY	115	1.5	15	22	-	-	2.2	9.9	55	0.005	15
33.30	31.0	21.3	-	2.4	0.0	8.3	3	silty CLAY to CLAY	115	1.5	14	21	-	-	2.1	9.7	62	0.005	15
33.47	30.5	20.9	-	2.0	0.0	7.0	3	silty CLAY to CLAY	115	1.5	14	20	-	-	2.1	9.5	59	0.005	15
33.63	29.5	20.2	-	1.6	0.0	5.8	3	silty CLAY to CLAY	115	1.5	13	20	-	-	2.0	9.1	56	0.005	15
33.79	33.1	22.6	-	1.6	0.0	5.2	3	silty CLAY to CLAY	115	1.5	15	22	-	-	2.3	9.9	51	0.005	15
33.96	22.5	15.3	-	1.6	0.0	8.0	3	silty CLAY to CLAY	115	1.5	10	15	-	-	1.5	6.7	69	0.005	15
34.12	21.6	14.6	-	1.5	0.0	7.5	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.5	6.4	69	0.005	15
34.29	21.4	14.5	-	1.5	0.0	7.7	3	silty CLAY to CLAY	115	1.5	10	14	-	-	1.4	6.3	70	0.005	15
34.45	16.1	10.8	-	1.9	0.0	9.9	3	silty CLAY to CLAY	115	1.5	7	11	-	-	1.1	4.5	84	0.005	15
34.61	32.3	21.7	-	1.6	0.0	5.3	3	silty CLAY to CLAY	115	1.5	14	22	-	-	2.2	9.8	52	0.005	15
34.78	61.1	41.0	-	2.9	0.0	4.9	3	silty CLAY to CLAY	115	1.5	27	41	-	-	4.2	9.9	39	0.005	15
34.94	67.8	45.4	-	3.5	0.0	5.3	3	silty CLAY to CLAY	115	1.5	30	45	-	-	4.7	9.9	39	0.005	15
35.11	67.2	44.9	-	4.7	0.0	7.2	3	silty CLAY to CLAY	115	1.5	30	45	-	-	4.7	9.9	44	0.005	15
35.27	96.9	76.8	203.8	4.5	0.0	4.7	4	clayy SILT to silty CLAY	115	2.0	38	48	-	-	6.8	9.9	30	0.070	15
35.43	89.0	70.4	210.0	4.6	0.0	5.3	4	clayy SILT to silty CLAY	115	2.0	35	44	-	-	6.2	9.9	33	0.070	15
35.60	70.9	46.9	-	4.3	0.0	6.3	3	silty CLAY to CLAY	115	1.5	31	47	-	-	4.9	9.9	41	0.005	15
35.76	52.2	34.5	-	3.5	0.0	7.0	3	silty CLAY to CLAY	115	1.5	23	35	-	-	3.6	9.9	48	0.005	15
35.93	41.7	27.4	-	2.9	0.0	7.2	3	silty CLAY to CLAY	115	1.5	18	28	-	-	2.9	9.9	53	0.005	15
36.09	43.2	28.3	-	2.8	0.0	6.7	3	silty CLAY to CLAY	115	1.5	19	29	-	-	3.0	9.9	51	0.005	15
36.26	44.5	29.1	-	2.8	0.0	6.6	3	silty CLAY to CLAY	115	1.5	19	30	-	-	3.1	9.9	50	0.005	15
36.42	41.4	27.0	-	2.9	0.0	7.4	3	silty CLAY to CLAY	115	1.5	18	28	-	-	2.9	9.9	54	0.005	15
36.58	40.7	26.5	-	2.8	0.0	7.4	3	silty CLAY to CLAY	115	1.5	18	27	-	-	2.8	9.9	55	0.005	15
36.75	46.7	30.3	-	2.8	0.0	6.2	3	silty CLAY to CLAY	115	1.5	20	31	-	-	3.2	9.9	49	0.005	15
36.91	48.6	31.4	-	2.9	0.0	6.3	3	silty CLAY to CLAY	115	1.5	21	32	-	-	3.4	9.9	48	0.005	15
37.08	46.8	30.2	-	2.7	0.0	6.0	3	silty CLAY to CLAY	115	1.5	20	31	-	-	3.2	9.9	48	0.005	15
37.24	41.9	27.0	-	2.3	0.0	5.8	3	silty CLAY to CLAY	115	1.5	18	28	-	-	2.9	9.9	50	0.005	15
37.40	40.3	25.9	-	2.3	0.0	6.1	3	silty CLAY to CLAY	115	1.5	17	27	-	-	2.8	9.9	51	0.005	15
37.57	47.2	30.2	-	2.6	0.0	5.8	3	silty CLAY to CLAY	115	1.5	20	31	-	-	3.3	9.9	47	0.005	15
37.73	48.7	31.1	-	3.0	0.0	6.5	3	silty CLAY to CLAY	115	1.5	21	32	-	-	3.4	9.9	49	0.005	15
37.90	54.9	34.9	-	3.5	0.0	6.6	3	silty CLAY to CLAY	115	1.5	23	37	-	-	3.8	9.9	47	0.005	15
38.06	64.4	40.9	-	4.2	0.0	6.7	3	silty CLAY to CLAY	115	1.5	27	43	-	-	4.5	9.9	44	0.005	15
38.22	62.5	39.6	-	4.0	0.0	6.6	3	silty CLAY to CLAY	115	1.5	26	42	-	-	4.3	9.9	45	0.005	15
38.39	61.4	38.7	-	4.2	0.0	7.1	3	silty CLAY to CLAY	115	1.5	26	41	-	-	4.3	9.9	47	0.005	15
38.55	58.0	36.5	-	4.2	0.0	7.6	3	silty CLAY to CLAY	115	1.5	24	39	-	-	4.0	9.9	49	0.005	15
38.72	50.3	31.6	-	4.2	0.0	8.7	3	silty CLAY to CLAY	115	1.5	21	34	-	-	3.5	9.9	54	0.005	15
38.88	51.8	32.4	-	3.8	0.0	7.7	3	silty CLAY to CLAY	115	1.5	22	35	-	-	3.6	9.9	51	0.005	15
39.04	45.6	28.5	-	3.8	0.0	8.8	3	silty CLAY to CLAY	115	1.5	19	30	-	-	3.1	9.9	57	0.005	15
39.21	50.5	31.5	-	3.8	0.0	7.8	3	silty CLAY to CLAY	115	1.5	21	34	-	-	3.5	9.9	52	0.005	15
39.37	61.7	38.3	-	3.9	0.0	6.6	3	silty CLAY to CLAY	115	1.5	26	41	-	-	4.3	9.9	46	0.005	15
39.54	65.8	40.7	-	4.5	0.0	7.1	3	silty CLAY to CLAY	115	1.5	27	44	-	-	4.6	9.9	46	0.005	15
39.70	74.3	45.9	-	3.3	0.0	4.6	4	clayy SILT to silty CLAY	115	2.0	23	37	-	-	5.2	9.9	36	0.070	15
39.86	105.8	80.6	125.6	1.8	0.0	1.8	5	silty SAND to sandy SILT	120	4.0	20	26	60	40	-	-	17	0.200	16
40.03	109.5	83.4	107.6	1.1	0.0	1.1	6	clean SAND to silty SAND	125	5.0	17	22	61	40	-	-	13	0.350	16
40.19	102.0	77.5	129.1	2.0	0.0	2.0	5	silty SAND to sandy SILT	120	4.0	19	25	59	40	-	-	19	0.200	16
40.36	79.4	60.2	155.6	2.8	0.0	3.6	4	clayy SILT to silty CLAY	115	2.0	30	40	-	-	5.5	9.9	29	0.070	15
40.52	48.6	29.6	-	3.0	0.0	6.4	3	silty CLAY to CLAY	115	1.5	20	32	-	-	3.4	9.9	50	0.005	15
40.68	41.7	25.3	-	3.0	0.0	7.8	3	silty CLAY to CLAY	115	1.5	17	28	-	-	2.9	9.9	57	0.005	15
40.85	39.4	23.9	-	2.8	0.0	7.6	3	silty CLAY to CLAY	115	1.5	16	26	-	-	2.7	9.9	57	0.005	15
41.01	39.9	24.1	-	2.7	0.0	7.1	3	silty CLAY to CLAY	115	1.5	16	27	-	-	2.7	9.9	56	0.005	15
41.18	33.9	20.5	-	2.8	0.0	9.0	3	silty CLAY to CLAY	115	1.5	14	23	-	-	2.3	8.7	64	0.005	15
41.34	46.0	27.7	-	2.9	0.0	6.8	3	silty CLAY to CLAY	115	1.5	18	31	-	-	3.2	9.9	52	0.005	15
41.50	67.6	40.5	-	2.9	0.0	4.5	4	clayy SILT to silty CLAY	115	2.0	20	34	-	-	4.7	9.9	38	0.070	15
41.67	58.5	35.0	-	2.5	0.0	4.5	4	clayy SILT to silty CLAY	115	2.0	17	29	-	-	4.0	9.9	40	0.070	15
41.83	51.5	30.7	-	2.7	0.0	5.5	3	silty CLAY to CLAY	115	1.5	20	34	-	-	3.6	9.9	46	0.005	15
42.00	40.6	24.2	-	2.6	0.0	6.9	3	silty CLAY to CLAY	115	1.5	16	27	-	-	2.8	9.9	55	0.005	15
42.16	38.9	23.1	-	2.2	0.0	6.1	3	silty CLAY to CLAY	115	1.5	15	26	-	-	2.7	9.8	54	0.005	15
42.32	41.5	24.6	-	2.3	0.0	5.8	3	silty CLAY to CLAY	115	1.5	16	28	-	-	2.8	9.9	52	0.005	15
42.49	60.4	35.7	-	3.1	0.0	5.4	3	silty CLAY to CLAY	115	1.5	24	40	-	-	4.2	9.9	43	0.005	15
42.65	78.7	46.4	-	3.4	0.0	4.5	4	clayy SILT to silty CLAY	115	2.0	23	39	-	-	5.5	9.9	36	0.070	15
42.82	77.8	57.9	151.4	2.7	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	29	39	-	-	5.4	9.9	29	0.070	15
42.98	94.7	70.4	111.0	1.4	0.0	1.6	5	silty SAND to sandy SILT	120	4.0	18	24	55	39	-	-	18	0.200	16
43.15	93.9	69.7	135.1	2.2	0.0	2.5	5	silty SAND to sandy SILT	120	4.0	17	23	55	39	-	-	22	0.200	16
43.31	68.1	39.7	-	2.5	0.0	3.8	4	clayy SILT to silty CLAY	115	2.0	20	34	-	-	4.7	9.9	36	0.070	15
43.47	53.5	31.1	-	2.8	0.0	5.4	3	silty CLAY to CLAY	115	1.5	21	36	-	-	3.7	9.9	46	0.005	15
43.64	55.7	32.3	-	2.7	0.0	5.0	3	silty CLAY to CLAY	115	1.5	22	37	-	-	3.8	9.9	44	0.005	15
43.80	61.2	35.4	-	3.5	0.0	5.9	3	silty CLAY to CLAY	115	1.5	24	41	-	-	4.2	9.9	45	0.005	15
43.97	75.6	43.6	-	3.4	0.0	4.7	4	clayy SILT to silty CLAY	115	2.0	22	38	-	-	5.3	9.9	37	0.070	15
44.13	82.0	60.4	162.7	3.1	0.0	3.9	4	clayy SILT to silty CLAY	115	2.0	30	41	-	-	5.7	9.9	30	0.070	15
44.29	91.2	67.1	145.8	2.6	0.0	2.9	5	silty SAND to sandy SILT	120	4.0	17	23	54	39	-	-	25	0.200	16
44.46	80.0	58.8	164.4	3.1	0.0	4.0	4	clayy SILT to silty CLAY	115	2.0	29	40	-	-	5.6	9.9	31	0.070	15
44.62	63.4	36.2	-	3.5	0.0	5.8	3	silty CLAY to CLAY	115	1.5	24	42	-	-	4.4	9.9	44	0.005	15
44.79	72.6	53.2	142.8	2.4	0.0	3.4	4	clayy SILT to silty CLAY	115	2.0	27	36	-	-	5.0	9.9	30	0.070	15
44.95	88.0	64.4	148.2	2.7	0.0	3.1	4	clayy SILT to silty CLAY	115	2.0	32	44	-	-	6.1	9.9	26	0.070	15
45.11	77.2	43.8	-	3.8	0.0	5.1	3	silty CLAY to CLAY	115	1.5	29	51	-	-	5.4	9.9	39	0.005	15
45.28	52.7	29.8	-	1.7	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	15	26	-	-	3.6	9.9	39	0.070	15
45.44	48.0	35.0	95.0	1.0	0.0	2.1	5	silty SAND to sandy SILT	120	4.0	9	12	32	35	-	-	30	0.200	16
45.61	329.2	239.8	239.8	0.0	0.0	0.1	7	grvly SAND to dense SAND	130	6.0	40	55	95	45	-	-	5	1.000	16
45.77	342.2	248.9	248.9	1.7	0.0	0.5	6	clean SAND to silty SAND	125	5.0	50	68	95	45	-	-	5	0.350	16
45.93	342.2	248.5	329.7	10.4	0.0	3.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	22.6	9.9	13	0.250	16
46.10	221.8	160.9	298.1	10.0	0.0	4.6	9	very stiff fine SOIL	120	2.0	80	100	83	43	-	-	21	0.250	30
46.26	138.8	100.5	268.0	8.0	0.0	5.9	9	very stiff fine SOIL	120	2.0	50	69	67	41	-	-	30	0.250	30

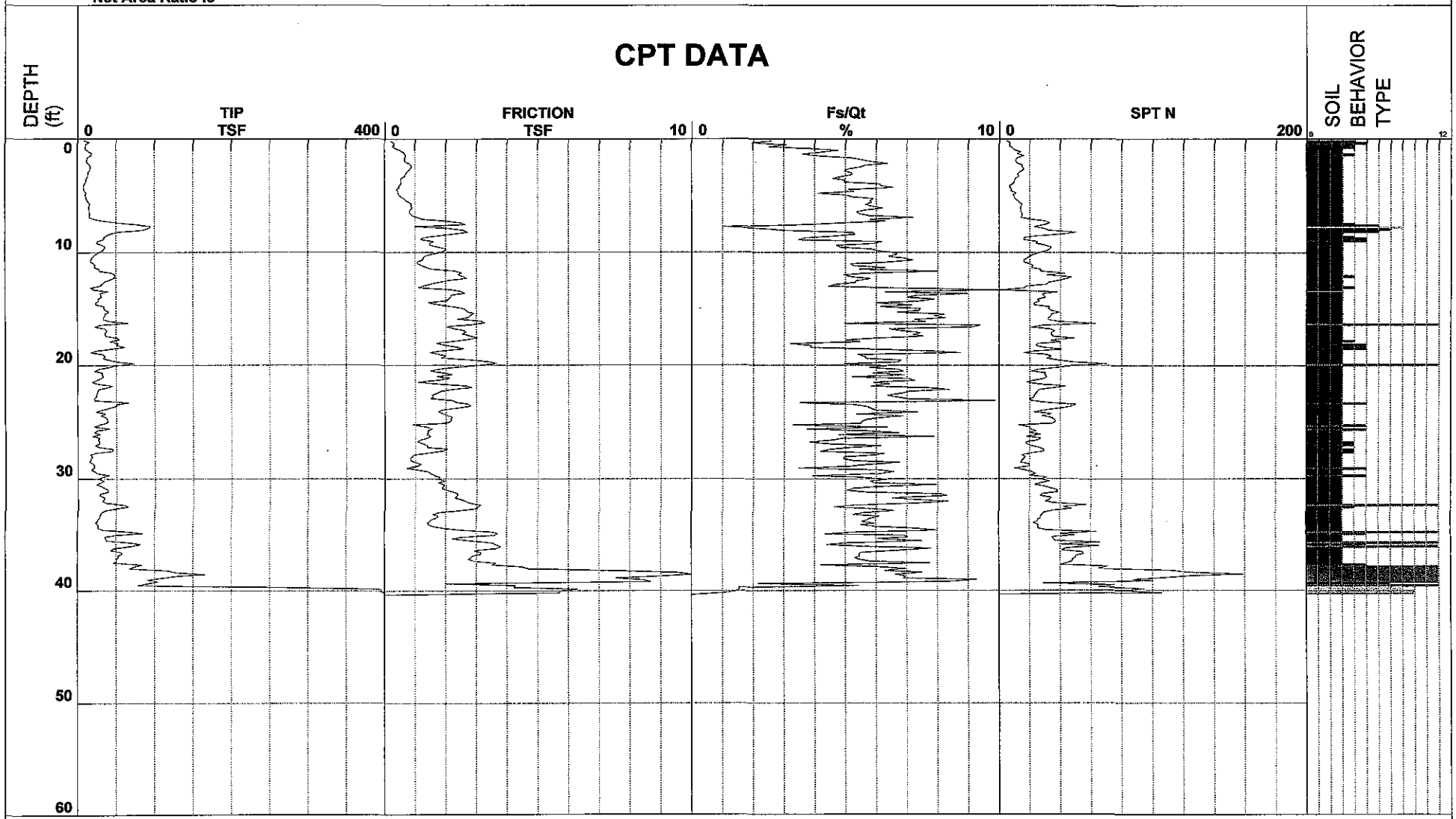
* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Associated Soils Engineering

Project	Big Canyon Country Club	Operator	BH-AH	Filename	SDF(474).cpt
Job Number	6169	Cone Number	DSG1104	GPS	
Hole Number	CPT-03	Date and Time	2/22/2010 11:51:16 AM	Maximum Depth	40.52 ft
Water Table Depth		15.00 ft			

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

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

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(474).cpt
CPT Date: 2/22/2010 11:51:16 AM
GW During Test: 15 ft

Sounding ID: CPT-03
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	*qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato %	*Mat Typ Zon	*Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	*Rel Den %	*Ftn Ang deg	Und Shr tsf	OCR - -	*Fin Ic %	*D50 - mm	*Nk - -
0.33	15.4	24.7	77.5	0.3	0.0	1.9	4	clayy SILT to silty CLAY	115	2.0	12	8	-	-	1.1	9.9	34	0.070	15
0.49	10.4	16.7	-	0.3	0.0	3.1	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	48	0.005	15
0.66	10.5	16.8	-	0.3	0.0	2.5	4	clayy SILT to silty CLAY	115	2.0	8	5	-	-	0.7	9.9	44	0.070	15
0.82	9.4	15.0	-	0.4	0.0	3.8	3	silty CLAY to CLAY	115	1.5	10	6	-	-	0.7	9.9	53	0.005	15
0.98	10.6	17.0	-	0.5	0.0	4.8	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	55	0.005	15
1.15	14.6	23.4	-	0.6	0.0	4.2	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	46	0.005	15
1.31	18.1	29.1	-	0.7	0.0	3.6	4	clayy SILT to silty CLAY	115	2.0	15	9	-	-	1.3	9.9	40	0.070	15
1.48	16.9	27.1	-	0.7	0.0	4.2	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	43	0.005	15
1.64	12.8	20.5	-	0.7	0.0	5.2	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	52	0.005	15
1.80	11.8	18.9	-	0.7	0.0	5.6	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.8	9.9	55	0.005	15
1.97	11.3	18.1	-	0.7	0.0	5.9	3	silty CLAY to CLAY	115	1.5	12	8	-	-	0.8	9.9	57	0.005	15
2.13	12.4	19.9	-	0.8	0.0	6.4	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.9	9.9	57	0.005	15
2.30	15.3	24.5	-	0.9	0.0	5.7	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.1	9.9	50	0.005	15
2.46	16.0	25.7	-	0.9	0.0	5.5	3	silty CLAY to CLAY	115	1.5	17	11	-	-	1.1	9.9	49	0.005	15
2.62	16.5	26.4	-	0.8	0.0	5.1	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	47	0.005	15
2.79	15.6	25.0	-	0.8	0.0	5.0	3	silty CLAY to CLAY	115	1.5	17	10	-	-	1.1	9.9	48	0.005	15
2.95	13.8	22.1	-	0.7	0.0	5.3	3	silty CLAY to CLAY	115	1.5	15	9	-	-	1.0	9.9	51	0.005	15
3.12	12.9	20.7	-	0.7	0.0	5.3	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	52	0.005	15
3.28	13.5	21.6	-	0.7	0.0	5.0	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	50	0.005	15
3.45	12.0	19.2	-	0.6	0.0	4.7	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.8	9.9	52	0.005	15
3.61	10.8	17.3	-	0.5	0.0	5.1	3	silty CLAY to CLAY	115	1.5	12	7	-	-	0.7	9.9	55	0.005	15
3.77	10.8	17.3	-	0.5	0.0	5.1	3	silty CLAY to CLAY	115	1.5	12	7	-	-	0.7	9.9	56	0.005	15
3.94	9.0	14.4	-	0.5	0.0	6.3	3	silty CLAY to CLAY	115	1.5	10	6	-	-	0.6	9.9	64	0.005	15
4.10	7.8	12.5	-	0.5	0.0	6.3	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	68	0.005	15
4.27	7.3	11.7	-	0.5	0.0	6.8	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	71	0.005	15
4.43	7.9	12.6	-	0.4	0.0	5.3	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	64	0.005	15
4.59	8.3	13.3	-	0.4	0.0	5.5	3	silty CLAY to CLAY	115	1.5	9	6	-	-	0.6	9.9	63	0.005	15
4.76	11.0	17.6	-	0.5	0.0	4.2	3	silty CLAY to CLAY	115	1.5	12	7	-	-	0.8	9.9	52	0.005	15
4.92	9.4	15.0	-	0.5	0.0	5.2	3	silty CLAY to CLAY	115	1.5	10	6	-	-	0.6	9.9	59	0.005	15
5.09	10.4	16.7	-	0.5	0.0	5.4	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	58	0.005	15
5.25	10.8	17.4	-	0.6	0.0	6.1	3	silty CLAY to CLAY	115	1.5	12	7	-	-	0.7	9.9	59	0.005	15
5.41	12.1	19.4	-	0.7	0.0	5.9	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.8	9.9	56	0.005	15
5.58	13.8	22.1	-	0.8	0.0	6.0	3	silty CLAY to CLAY	115	1.5	15	9	-	-	1.0	9.9	54	0.005	15
5.74	15.7	25.2	-	0.9	0.0	5.8	3	silty CLAY to CLAY	115	1.5	17	10	-	-	1.1	9.9	50	0.005	15
5.91	14.8	23.8	-	0.9	0.0	6.0	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	52	0.005	15
6.07	14.5	23.2	-	0.9	0.0	6.4	3	silty CLAY to CLAY	115	1.5	15	10	-	-	1.0	9.9	54	0.005	15
6.23	14.8	23.8	-	0.8	0.0	5.8	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	52	0.005	15
6.40	15.0	24.0	-	0.8	0.0	5.5	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	50	0.005	15
6.56	15.3	24.6	-	0.8	0.0	5.6	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.1	9.9	50	0.005	15
6.73	15.6	25.1	-	0.9	0.0	5.9	3	silty CLAY to CLAY	115	1.5	17	10	-	-	1.1	9.9	51	0.005	15
6.89	14.8	23.7	-	1.1	0.0	7.4	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	56	0.005	15
7.05	21.4	34.3	-	1.2	0.0	5.9	3	silty CLAY to CLAY	115	1.5	23	14	-	-	1.5	9.9	45	0.005	15
7.22	31.3	50.2	-	2.0	0.0	6.4	3	silty CLAY to CLAY	115	1.5	33	21	-	-	2.2	9.9	40	0.005	15
7.38	51.8	77.2	205.9	2.5	0.0	4.9	4	clayy SILT to silty CLAY	115	2.0	39	26	-	-	3.6	9.9	30	0.070	15
7.55	76.9	113.3	206.2	2.6	0.0	3.4	5	silty SAND to sandy SILT	120	4.0	28	19	71	45	-	-	21	0.200	16
7.71	94.9	138.4	155.2	1.0	0.0	1.1	6	clean SAND to silty SAND	125	5.0	28	19	78	46	-	-	9	0.350	16
7.87	91.9	132.5	187.8	2.1	0.0	2.3	5	silty SAND to sandy SILT	120	4.0	33	23	76	46	-	-	15	0.200	16
8.04	84.1	120.0	200.8	2.6	0.0	3.1	5	silty SAND to sandy SILT	120	4.0	30	21	73	45	-	-	19	0.200	16
8.20	51.9	73.2	211.7	2.7	0.0	5.3	4	clayy SILT to silty CLAY	115	2.0	37	26	-	-	3.6	9.9	32	0.070	15
8.37	42.5	59.3	193.0	2.3	0.0	5.4	4	clayy SILT to silty CLAY	115	2.0	30	21	-	-	3.0	9.9	35	0.070	15
8.53	37.1	51.3	166.9	1.7	0.0	4.7	4	clayy SILT to silty CLAY	115	2.0	26	19	-	-	2.6	9.9	35	0.070	15
8.69	34.0	46.6	141.0	1.3	0.0	3.8	4	clayy SILT to silty CLAY	115	2.0	23	17	-	-	2.4	9.9	33	0.070	15
8.86	34.0	46.2	135.5	1.2	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	23	17	-	-	2.4	9.9	32	0.070	15
9.02	25.9	41.5	-	1.6	0.0	6.3	3	silty CLAY to CLAY	115	1.5	28	17	-	-	1.8	9.9	43	0.005	15
9.19	24.8	39.7	-	1.5	0.0	6.0	3	silty CLAY to CLAY	115	1.5	26	17	-	-	1.7	9.9	43	0.005	15
9.35	31.4	50.3	-	1.5	0.0	4.8	4	clayy SILT to silty CLAY	115	2.0	25	16	-	-	2.2	9.9	35	0.070	15
9.51	35.5	53.0	174.3	1.7	0.0	4.9	4	clayy SILT to silty CLAY	115	2.0	27	18	-	-	2.5	9.9	35	0.070	15
9.68	34.1	54.7	-	2.0	0.0	5.9	3	silty CLAY to CLAY	115	1.5	36	23	-	-	2.4	9.9	38	0.005	15
9.84	32.6	52.2	-	2.0	0.0	6.2	3	silty CLAY to CLAY	115	1.5	35	22	-	-	2.3	9.9	39	0.005	15
10.01	27.0	43.4	-	1.8	0.0	6.8	3	silty CLAY to CLAY	115	1.5	29	18	-	-	1.9	9.9	44	0.005	15
10.17	22.8	36.5	-	1.5	0.0	6.8	3	silty CLAY to CLAY	115	1.5	24	15	-	-	1.6	9.9	47	0.005	15
10.34	20.4	32.8	-	1.3	0.0	6.6	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.4	9.9	48	0.005	15
10.50	18.3	29.4	-	1.3	0.0	7.1	3	silty CLAY to CLAY	115	1.5	20	12	-	-	1.3	9.9	51	0.005	15
10.66	17.1	27.5	-	1.2	0.0	7.5	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	54	0.005	15
10.83	16.8	26.8	-	1.1	0.0	6.6	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	52	0.005	15
10.99	20.9	33.0	-	1.1	0.0	5.3	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.4	9.9	44	0.005	15
11.16	22.8	35.5	-	1.2	0.0	5.4	3	silty CLAY to CLAY	115	1.5	24	15	-	-	1.6	9.9	43	0.005	15
11.32	21.4	32.8	-	1.3	0.0	6.5	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.5	9.9	48	0.005	15
11.48	28.1	42.4	-	1.5	0.0	5.6	3	silty CLAY to CLAY	115	1.5	28	19	-	-	2.0	9.9	41	0.005	15
11.65	28.4	42.3	-	2.3	0.0	8.2	3	silty CLAY to CLAY	115	1.5	28	19	-	-	2.0	9.9	48	0.005	15
11.81	44.4	57.1	-	2.5	0.0	5.7	4	clayy SILT to silty CLAY	115	2.0	29	22	-	-	3.1	9.9	36	0.070	15
11.98	48.3	56.4	181.5	2.4	0.0	5.0	4	clayy SILT to silty CLAY	115	2.0	28	24	-	-	3.4	9.9	34	0.070	15
12.14	48.7	61.5	196.1	2.6	0.0	5.3	4	clayy SILT to silty CLAY	115	2.0	31	24	-	-	3.4	9.9	34	0.070	15
12.30	46.2	57.7	-	2.7	0.0	5.9	3	silty CLAY to CLAY	115	1.5	38	31	-	-	3.2	9.9	37	0.005	15
12.47	39.3	54.6	-	2.1	0.0	5.4	4	clayy SILT to silty CLAY	115	2.0	27	20	-	-	2.7	9.9	36	0.070	15
12.63	33.9	46.5	-	1.8	0.0	5.4	3	silty CLAY to CLAY	115	1.5	31	23	-	-	2.4	9.9	39	0.005	15
12.80	32.0	43.4	-	1.5	0.0	4.8	4	clayy SILT to silty CLAY	115	2.0	22	16	-	-	2.2	9.9	38	0.070	15
12.96	28.9	38.7	-	1.3	0.0	4.6	4	clayy SILT to silty CLAY	115	2.0	19	14	-	-	2.0	9.9	39	0.070	15
13.12	17.0	22.4	-	1.1	0.0	6.9	3	silty CLAY to CLAY	115	1.5	15	11	-	-	1.2	9.9	56	0.005	15
13.29	21.1	27.5	-	2.1	0.0	9.9	3	silty CLAY to CLAY	115	1.5	18	14	-	-	1.5	9.9	60	0.005	15
13.45	39.4	50.8	-	2.5	0.0	6.4	3	silty CLAY to CLAY	115	1.5	34	26	-	-	2.8	9.9	40	0.005	15
13.62	29.1	37.1	-	2.6	0.0	9.2	3	silty CLAY to CLAY	115	1.5	25	19	-	-	2.0	9.9	52	0.005	15
13.78	29.8	37.5	-	2.2	0.0	7.5	3	silty CLAY to CLAY	115	1.5	25	20	-	-	2.1	9.9	48	0.005	15
13.94	30.9	38.4	-	2.2	0.0	7.2	3	silty CLAY to CLAY	115	1.5	26	21	-	-	2.1	9.9	47	0.005	15
14.11	26.6	32.7	-	2.1	0.0	8.1	3	silty CLAY to CLAY	115	1.5	22	18	-	-	1.8	9.9	52	0.005	15
14.27	27.3	33.2	-	2.0	0.0	7.6	3	silty CLAY to CLAY	115	1.5	22	18	-	-	1.9	9.9	50	0.005	15
14.44	23.7	28.5	-	1.4	0.0	6.2	3	silty CLAY to CLAY	115	1.5	19	16	-	-	1.6	9.9	50	0.005	15
14.60	23.8	28.3	-	1.7	0.0	7.4	3	silty CLAY to CLAY	115	1.5	19	16	-	-	1.6	9.9	53	0.005	15
14.76	34.2	40.2	-	2.1	0.0	6.3	3	silty CLAY to CLAY	115	1.5	27	23	-	-	2.4	9.9	44	0.005	15
14.93	33.7	39.2	-	2.5	0.0	7.6	3	silty CLAY to CLAY	115	1.5	26	22	-	-	2.3	9.9	47	0.005	15
15.09	35.9	41.5	-	2.7	0.0	7.6	3	silty CLAY to CLAY	115	1.5	28	24	-	-	2.5	9.9	46	0.005	15
15.26	40.3	46.4	-	2.7	0.0	6.8	3	silty CLAY to CLAY	115	1.5	31	27	-	-	2.8	9.9	43	0.005	15
15.42	35.5	40.6	-	2.9	0.0	8.4	3	silty CLAY to CLAY	115	1.5	27	24	-	-	2.5	9.9	49	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(474).cpt
CPT Date: 2/22/2010 11:51:16 AM
GW During Test: 15 ft

Sounding ID: CPT-03
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln * PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 * - mm	Nk * - -
15.58	35.4	40.4	-	2.8	0.0	8.1	3	silty CLAY to CLAY	115	1.5	27	24	-	-	2.5	9.9	48	0.005	15
15.75	33.2	37.7	-	2.7	0.0	8.5	3	silty CLAY to CLAY	115	1.5	25	22	-	-	2.3	9.9	50	0.005	15
15.91	32.9	37.1	-	2.4	0.0	7.5	3	silty CLAY to CLAY	115	1.5	25	22	-	-	2.3	9.9	48	0.005	15
16.08	41.0	46.1	-	3.1	0.0	7.8	3	silty CLAY to CLAY	115	1.5	31	27	-	-	2.9	9.9	45	0.005	15
16.24	65.7	67.4	197.8	3.3	0.0	5.0	4	clayy SILT to silty CLAY	115	2.0	34	33	-	-	4.6	9.9	32	0.070	15
16.40	30.2	33.6	-	2.8	0.0	9.7	3	silty CLAY to CLAY	115	1.5	22	20	-	-	2.1	9.9	55	0.005	15
16.57	22.4	24.8	-	2.0	0.0	9.5	3	silty CLAY to CLAY	115	1.5	17	15	-	-	1.5	9.9	61	0.005	15
16.73	34.5	38.0	-	2.2	0.0	6.6	3	silty CLAY to CLAY	115	1.5	25	23	-	-	2.4	9.9	45	0.005	15
16.90	37.8	41.4	-	2.6	0.0	7.0	3	silty CLAY to CLAY	115	1.5	28	25	-	-	2.6	9.9	45	0.005	15
17.06	35.6	38.8	-	2.6	0.0	7.6	3	silty CLAY to CLAY	115	1.5	26	24	-	-	2.5	9.9	48	0.005	15
17.23	35.1	38.1	-	2.5	0.0	7.4	3	silty CLAY to CLAY	115	1.5	25	23	-	-	2.4	9.9	47	0.005	15
17.39	36.8	39.7	-	2.8	0.0	7.7	3	silty CLAY to CLAY	115	1.5	26	25	-	-	2.6	9.9	48	0.005	15
17.55	51.2	55.1	-	3.0	0.0	6.0	3	silty CLAY to CLAY	115	1.5	37	34	-	-	3.6	9.9	38	0.005	15
17.72	53.8	55.5	182.7	2.7	0.0	5.1	4	clayy SILT to silty CLAY	115	2.0	28	27	-	-	3.8	9.9	35	0.070	15
17.88	41.4	44.1	-	2.3	0.0	5.6	3	silty CLAY to CLAY	115	1.5	29	28	-	-	2.9	9.9	40	0.005	15
18.05	52.2	52.3	137.6	1.7	0.0	3.3	4	clayy SILT to silty CLAY	115	2.0	26	26	-	-	3.7	9.9	29	0.070	15
18.21	50.2	50.1	150.3	1.9	0.0	4.0	4	clayy SILT to silty CLAY	115	2.0	25	25	-	-	3.5	9.9	33	0.070	15
18.37	60.7	60.4	162.6	2.3	0.0	3.9	4	clayy SILT to silty CLAY	115	2.0	30	30	-	-	4.2	9.9	30	0.070	15
18.54	42.6	44.6	-	2.6	0.0	6.2	3	silty CLAY to CLAY	115	1.5	30	28	-	-	3.0	9.9	42	0.005	15
18.70	24.2	25.3	-	1.9	0.0	8.2	3	silty CLAY to CLAY	115	1.5	17	16	-	-	1.7	9.9	58	0.005	15
18.87	16.7	17.4	-	1.5	0.0	9.4	3	silty CLAY to CLAY	115	1.5	12	11	-	-	1.1	8.7	69	0.005	15
19.03	32.6	33.7	-	1.8	0.0	5.6	3	silty CLAY to CLAY	115	1.5	22	22	-	-	2.3	9.9	45	0.005	15
19.19	35.5	36.5	-	2.0	0.0	5.8	3	silty CLAY to CLAY	115	1.5	24	24	-	-	2.5	9.9	44	0.005	15
19.36	32.6	33.3	-	1.9	0.0	5.9	3	silty CLAY to CLAY	115	1.5	22	22	-	-	2.3	9.9	46	0.005	15
19.52	40.2	41.0	-	2.7	0.0	7.0	3	silty CLAY to CLAY	115	1.5	27	27	-	-	2.8	9.9	45	0.005	15
19.69	50.2	51.0	-	3.4	0.0	6.8	3	silty CLAY to CLAY	115	1.5	34	33	-	-	3.5	9.9	41	0.005	15
19.85	73.5	71.7	204.2	3.7	0.0	5.0	4	clayy SILT to silty CLAY	115	2.0	36	37	-	-	5.1	9.9	31	0.070	15
20.01	49.1	49.4	-	3.1	0.0	6.5	3	silty CLAY to CLAY	115	1.5	33	33	-	-	3.4	9.9	41	0.005	15
20.18	39.7	39.8	-	2.3	0.0	6.0	3	silty CLAY to CLAY	115	1.5	27	26	-	-	2.8	9.9	43	0.005	15
20.34	27.0	26.9	-	1.8	0.0	7.0	3	silty CLAY to CLAY	115	1.5	18	18	-	-	1.9	9.9	53	0.005	15
20.51	21.8	21.6	-	1.5	0.0	7.3	3	silty CLAY to CLAY	115	1.5	14	15	-	-	1.5	9.9	58	0.005	15
20.67	31.5	31.1	-	1.9	0.0	6.1	3	silty CLAY to CLAY	115	1.5	21	21	-	-	2.2	9.9	48	0.005	15
20.83	31.8	31.3	-	2.2	0.0	7.2	3	silty CLAY to CLAY	115	1.5	21	21	-	-	2.2	9.9	51	0.005	15
21.00	32.7	32.1	-	1.7	0.0	5.4	3	silty CLAY to CLAY	115	1.5	21	22	-	-	2.3	9.9	45	0.005	15
21.16	30.2	29.4	-	2.1	0.0	7.3	3	silty CLAY to CLAY	115	1.5	20	20	-	-	2.1	9.9	52	0.005	15
21.33	24.4	23.7	-	1.8	0.0	7.6	3	silty CLAY to CLAY	115	1.5	16	16	-	-	1.7	9.9	57	0.005	15
21.49	18.7	18.1	-	1.1	0.0	6.3	3	silty CLAY to CLAY	115	1.5	12	12	-	-	1.3	8.7	60	0.005	15
21.65	26.6	25.7	-	1.7	0.0	6.7	3	silty CLAY to CLAY	115	1.5	17	18	-	-	1.8	9.9	53	0.005	15
21.82	45.1	43.3	-	2.6	0.0	6.0	3	silty CLAY to CLAY	115	1.5	29	30	-	-	3.1	9.9	42	0.005	15
21.98	36.7	35.1	-	2.8	0.0	8.0	3	silty CLAY to CLAY	115	1.5	23	24	-	-	2.5	9.9	50	0.005	15
22.15	26.8	25.5	-	2.2	0.0	8.8	3	silty CLAY to CLAY	115	1.5	17	18	-	-	1.8	9.9	59	0.005	15
22.31	26.3	24.9	-	1.9	0.0	7.4	3	silty CLAY to CLAY	115	1.5	17	18	-	-	1.8	9.9	56	0.005	15
22.47	25.1	23.7	-	1.7	0.0	7.2	3	silty CLAY to CLAY	115	1.5	16	17	-	-	1.7	9.9	56	0.005	15
22.64	24.2	22.8	-	1.5	0.0	6.7	3	silty CLAY to CLAY	115	1.5	15	16	-	-	1.7	9.9	56	0.005	15
22.80	23.7	22.2	-	1.6	0.0	7.1	3	silty CLAY to CLAY	115	1.5	15	16	-	-	1.6	9.9	57	0.005	15
22.97	21.4	20.0	-	1.5	0.0	7.5	3	silty CLAY to CLAY	115	1.5	13	14	-	-	1.5	9.4	61	0.005	15
23.13	22.3	20.7	-	2.2	0.0	9.9	3	silty CLAY to CLAY	115	1.5	14	15	-	-	1.5	9.8	66	0.005	15
23.30	66.2	61.8	156.4	2.3	0.0	3.6	4	clayy SILT to silty CLAY	115	2.0	31	33	-	-	4.6	9.9	29	0.070	15
23.46	52.0	47.9	-	2.7	0.0	5.4	3	silty CLAY to CLAY	115	1.5	32	35	-	-	3.6	9.9	38	0.005	15
23.62	49.0	45.0	-	2.8	0.0	5.9	3	silty CLAY to CLAY	115	1.5	30	33	-	-	3.4	9.9	41	0.005	15
23.79	40.9	37.4	-	2.4	0.0	6.0	3	silty CLAY to CLAY	115	1.5	25	27	-	-	2.8	9.9	44	0.005	15
23.95	31.4	28.6	-	1.9	0.0	6.3	3	silty CLAY to CLAY	115	1.5	19	21	-	-	2.2	9.9	50	0.005	15
24.12	23.7	21.5	-	1.7	0.0	7.8	3	silty CLAY to CLAY	115	1.5	14	16	-	-	1.6	9.9	60	0.005	15
24.28	35.7	32.3	-	1.9	0.0	5.6	3	silty CLAY to CLAY	115	1.5	22	24	-	-	2.5	9.9	45	0.005	15
24.44	29.6	26.7	-	2.0	0.0	7.2	3	silty CLAY to CLAY	115	1.5	18	20	-	-	2.0	9.9	54	0.005	15
24.61	35.8	32.1	-	2.2	0.0	6.4	3	silty CLAY to CLAY	115	1.5	21	24	-	-	2.5	9.9	48	0.005	15
24.77	37.7	33.7	-	2.2	0.0	5.9	3	silty CLAY to CLAY	115	1.5	22	25	-	-	2.6	9.9	46	0.005	15
24.94	39.0	34.7	-	2.2	0.0	5.8	3	silty CLAY to CLAY	115	1.5	23	26	-	-	2.7	9.9	45	0.005	15
25.10	36.8	32.6	-	2.0	0.0	5.7	3	silty CLAY to CLAY	115	1.5	22	25	-	-	2.5	9.9	46	0.005	15
25.26	27.8	24.6	-	0.9	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	12	14	-	-	1.9	9.9	43	0.070	15
25.43	20.8	18.3	-	1.3	0.0	6.9	3	silty CLAY to CLAY	115	1.5	12	14	-	-	1.4	8.3	61	0.005	15
25.59	41.2	36.1	-	1.5	0.0	3.9	4	clayy SILT to silty CLAY	115	2.0	18	21	-	-	2.9	9.9	38	0.070	15
25.76	25.3	22.1	-	1.4	0.0	5.9	3	silty CLAY to CLAY	115	1.5	15	17	-	-	1.7	9.9	54	0.005	15
25.92	21.0	18.3	-	1.4	0.0	7.2	3	silty CLAY to CLAY	115	1.5	12	14	-	-	1.4	8.3	62	0.005	15
26.08	28.4	24.6	-	1.4	0.0	5.0	3	silty CLAY to CLAY	115	1.5	16	19	-	-	2.0	9.9	49	0.005	15
26.25	18.8	16.2	-	1.5	0.0	8.6	3	silty CLAY to CLAY	115	1.5	11	13	-	-	1.3	7.2	69	0.005	15
26.41	28.2	24.3	-	1.4	0.0	5.2	3	silty CLAY to CLAY	115	1.5	16	19	-	-	1.9	9.9	50	0.005	15
26.58	25.7	22.0	-	1.2	0.0	4.8	3	silty CLAY to CLAY	115	1.5	15	17	-	-	1.8	9.9	50	0.005	15
26.74	27.6	23.6	-	1.1	0.0	4.1	3	silty CLAY to CLAY	115	1.5	16	18	-	-	1.9	9.9	46	0.005	15
26.90	27.5	23.4	-	1.2	0.0	4.8	3	silty CLAY to CLAY	115	1.5	16	18	-	-	1.9	9.9	49	0.005	15
27.07	22.4	19.0	-	1.4	0.0	6.6	3	silty CLAY to CLAY	115	1.5	13	15	-	-	1.5	8.5	60	0.005	15
27.23	27.0	22.8	-	1.4	0.0	5.4	3	silty CLAY to CLAY	115	1.5	15	18	-	-	1.9	9.9	52	0.005	15
27.40	45.1	38.0	-	2.0	0.0	4.7	3	silty CLAY to CLAY	115	1.5	25	30	-	-	3.1	9.9	40	0.005	15
27.56	44.8	37.5	-	1.9	0.0	4.3	4	clayy SILT to silty CLAY	115	2.0	19	22	-	-	3.1	9.9	39	0.070	15
27.72	22.3	18.6	-	1.4	0.0	6.8	3	silty CLAY to CLAY	115	1.5	12	15	-	-	1.5	8.2	61	0.005	15
27.89	15.9	13.3	-	0.9	0.0	6.6	3	silty CLAY to CLAY	115	1.5	9	11	-	-	1.1	5.7	69	0.005	15
28.05	18.1	15.1	-	0.9	0.0	5.4	3	silty CLAY to CLAY	115	1.5	10	12	-	-	1.2	6.5	62	0.005	15
28.22	16.7	13.8	-	0.8	0.0	5.5	3	silty CLAY to CLAY	115	1.5	9	11	-	-	1.1	5.9	64	0.005	15
28.38	15.9	13.1	-	0.8	0.0	5.9	3	silty CLAY to CLAY	115	1.5	9	11	-	-	1.1	5.5	67	0.005	15
28.54	14.5	11.9	-	1.0	0.0	7.6	3	silty CLAY to CLAY	115	1.5	8	10	-	-	1.0	5.0	75	0.005	15
28.71	20.6	16.8	-	1.2	0.0	6.2	3	silty CLAY to CLAY	115	1.5	11	14	-	-	1.4	7.3	61	0.005	15
28.87	20.6	16.8	-	1.1	0.0	5.6	3	silty CLAY to CLAY	115	1.5	11	14	-	-	1.4	7.3	59	0.005	15
29.04	20.7	16.8	-	0.7	0.0	3.8	3	silty CLAY to CLAY	115	1.5	11	14	-	-	1.4	7.3	52	0.005	15
29.20	17.0	13.8	-	1.0	0.0	6.7	3	silty CLAY to CLAY	115	1.5	9	11	-	-	1.1	5.8	68	0.005	15
29.36	21.4	17.3	-	1.4	0.0	7.1	3	silty CLAY to CLAY	115	1.5	12	14	-	-	1.5	7.5	64	0.005	15
29.53	24.8	19.9	-	1.5	0.0	6.5	3	silty CLAY to CLAY	115	1.5	13	17	-	-	1.7	8.7	58	0.005	15
29.69	40.9	32.8	-	1.6	0.0	4.1	4	clayy SILT to silty CLAY	115	2.0	16	20	-	-	2.8	9.9	40	0.070	15
29.86	32.0	25.5	-	1.8	0.0	5.9	3	silty CLAY to CLAY	115	1.5	17	21	-	-	2.2	9.9	51	0.005	15
30.02	27.8	22.1	-	1.8	0.0	6.8	3	silty CLAY to CLAY	115	1.5	15	19	-	-	1.9	9.7	57	0.005	15
30.19	34.0	27.0	-	2.0	0.0	6.1	3	silty CLAY to CLAY	115	1.5	18	23	-	-	2.3	9.9	51	0.005	15
30.35	29.2	23.1	-	1.7	0.0	6.3	3	silty CLAY to CLAY	115	1.5	15	19	-	-	2.0	9.9	54	0.005	15
30.51	24.5	19.3	-	1.9	0.0	8.6	3	silty CLAY to CLAY	115	1.5	13	16	-	-	1.7	8.3	65	0.005	15
30.68	31.8	24.9	-	1.9	0.0	6.4	3	silty CLAY to CLAY	115	1.5	17	21	-	-	2.2	9.9	53	0.005	15
30.84	35.3	27.6	-	1.9	0.0	5.5	3	silty CLAY to CLAY	115	1.5	18	24	-	-	2.4	9.9	48	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(474).cpt
CPT Date: 2/22/2010 11:51:16 AM
GW During Test: 15 ft

Sounding ID: CPT-03
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	*qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato %	*Mat Typ Zon	* Material Behavior Description	Unit Wght pcf	Qc to N	*SPT R-N1 60%	SPT R-N 60%	*Rel Den %	*Ftn Ang deg	Und Shr tsf	OCR -	*Fin Ic %	*D50 - mm	*Nk -
31.01	39.8	31.0	-	2.0	0.0	5.3	3	silty CLAY to CLAY	115	1.5	21	27	-	-	2.7	9.9	45	0.005	15
31.17	39.3	30.5	-	2.2	0.0	6.0	3	silty CLAY to CLAY	115	1.5	20	26	-	-	2.7	9.9	48	0.005	15
31.33	29.4	22.8	-	2.4	0.0	8.6	3	silty CLAY to CLAY	115	1.5	15	20	-	-	2.0	9.9	61	0.005	15
31.50	28.3	21.9	-	2.4	0.0	8.9	3	silty CLAY to CLAY	115	1.5	15	19	-	-	1.9	9.4	63	0.005	15
31.66	35.1	27.0	-	2.3	0.0	6.9	3	silty CLAY to CLAY	115	1.5	18	23	-	-	2.4	9.9	53	0.005	15
31.83	34.1	26.1	-	2.5	0.0	7.7	3	silty CLAY to CLAY	115	1.5	17	23	-	-	2.3	9.9	56	0.005	15
31.99	31.6	24.2	-	2.6	0.0	8.9	3	silty CLAY to CLAY	115	1.5	16	21	-	-	2.2	9.9	60	0.005	15
32.15	37.5	28.6	-	2.8	0.0	7.8	3	silty CLAY to CLAY	115	1.5	19	25	-	-	2.6	9.9	54	0.005	15
32.32	59.2	44.9	-	3.1	0.0	5.4	3	silty CLAY to CLAY	115	1.5	30	39	-	-	4.1	9.9	39	0.005	15
32.48	65.3	49.4	-	3.0	0.0	4.8	4	clayy SILT to silty CLAY	115	2.0	25	33	-	-	4.5	9.9	36	0.070	15
32.65	49.5	37.4	-	2.9	0.0	6.2	3	silty CLAY to CLAY	115	1.5	25	33	-	-	3.4	9.9	45	0.005	15
32.81	36.5	27.4	-	2.4	0.0	6.9	3	silty CLAY to CLAY	115	1.5	18	24	-	-	2.5	9.9	53	0.005	15
32.97	30.7	23.0	-	1.7	0.0	6.0	3	silty CLAY to CLAY	115	1.5	15	20	-	-	2.1	9.8	54	0.005	15
33.14	29.6	22.1	-	1.6	0.0	5.6	3	silty CLAY to CLAY	115	1.5	15	20	-	-	2.0	9.4	53	0.005	15
33.30	28.4	21.1	-	1.7	0.0	6.6	3	silty CLAY to CLAY	115	1.5	14	19	-	-	1.9	9.0	57	0.005	15
33.47	28.2	20.9	-	1.6	0.0	6.3	3	silty CLAY to CLAY	115	1.5	14	19	-	-	1.9	8.9	56	0.005	15
33.63	26.0	19.2	-	1.5	0.0	6.2	3	silty CLAY to CLAY	115	1.5	13	17	-	-	1.8	8.1	58	0.005	15
33.79	25.9	19.1	-	1.4	0.0	6.0	3	silty CLAY to CLAY	115	1.5	13	17	-	-	1.8	8.0	58	0.005	15
33.96	23.2	17.0	-	1.4	0.0	6.5	3	silty CLAY to CLAY	115	1.5	11	15	-	-	1.6	7.1	62	0.005	15
34.12	25.8	18.9	-	1.4	0.0	6.0	3	silty CLAY to CLAY	115	1.5	13	17	-	-	1.8	7.9	58	0.005	15
34.29	26.5	19.4	-	1.6	0.0	6.5	3	silty CLAY to CLAY	115	1.5	13	18	-	-	1.8	8.1	59	0.005	15
34.45	26.5	19.3	-	1.9	0.0	7.9	3	silty CLAY to CLAY	115	1.5	13	18	-	-	1.8	8.0	63	0.005	15
34.61	32.8	23.8	-	2.6	0.0	8.5	3	silty CLAY to CLAY	115	1.5	16	22	-	-	2.3	9.9	60	0.005	15
34.78	65.3	47.2	-	3.5	0.0	5.5	3	silty CLAY to CLAY	115	1.5	31	44	-	-	4.5	9.9	39	0.005	15
34.94	84.3	69.5	187.3	3.7	0.0	4.5	4	clayy SILT to silty CLAY	115	2.0	35	42	-	-	5.9	9.9	30	0.070	15
35.11	51.4	36.9	-	3.5	0.0	7.2	3	silty CLAY to CLAY	115	1.5	25	34	-	-	3.6	9.9	48	0.005	15
35.27	35.3	25.3	-	2.5	0.0	7.5	3	silty CLAY to CLAY	115	1.5	17	24	-	-	2.4	9.9	56	0.005	15
35.43	36.3	26.0	-	2.2	0.0	6.4	3	silty CLAY to CLAY	115	1.5	17	24	-	-	2.5	9.9	52	0.005	15
35.60	38.0	27.1	-	2.9	0.0	7.9	3	silty CLAY to CLAY	115	1.5	18	25	-	-	2.6	9.9	56	0.005	15
35.76	69.1	49.1	-	3.5	0.0	5.2	4	clayy SILT to silty CLAY	115	2.0	25	35	-	-	4.8	9.9	37	0.070	15
35.93	81.6	66.7	185.1	3.6	0.0	4.5	4	clayy SILT to silty CLAY	115	2.0	33	41	-	-	5.7	9.9	31	0.070	15
36.09	68.2	48.2	-	3.8	0.0	5.7	3	silty CLAY to CLAY	115	1.5	32	45	-	-	4.7	9.9	39	0.005	15
36.26	46.4	32.6	-	3.6	0.0	8.2	3	silty CLAY to CLAY	115	1.5	22	31	-	-	3.2	9.9	52	0.005	15
36.42	43.2	30.3	-	2.9	0.0	7.1	3	silty CLAY to CLAY	115	1.5	20	29	-	-	3.0	9.9	51	0.005	15
36.58	56.5	39.5	-	3.1	0.0	5.7	3	silty CLAY to CLAY	115	1.5	26	38	-	-	3.9	9.9	42	0.005	15
36.75	57.3	40.0	-	3.1	0.0	5.7	3	silty CLAY to CLAY	115	1.5	27	38	-	-	4.0	9.9	42	0.005	15
36.91	51.7	36.0	-	2.8	0.0	5.7	3	silty CLAY to CLAY	115	1.5	24	34	-	-	3.6	9.9	44	0.005	15
37.08	52.6	36.4	-	2.8	0.0	5.5	3	silty CLAY to CLAY	115	1.5	24	35	-	-	3.6	9.9	43	0.005	15
37.24	49.6	34.3	-	2.7	0.0	5.7	3	silty CLAY to CLAY	115	1.5	23	33	-	-	3.4	9.9	45	0.005	15
37.40	50.4	34.7	-	2.9	0.0	6.1	3	silty CLAY to CLAY	115	1.5	23	34	-	-	3.5	9.9	46	0.005	15
37.57	46.8	32.1	-	3.6	0.0	8.1	3	silty CLAY to CLAY	115	1.5	21	31	-	-	3.2	9.9	53	0.005	15
37.73	83.4	67.0	181.3	3.5	0.0	4.3	4	clayy SILT to silty CLAY	115	2.0	34	42	-	-	5.8	9.9	30	0.070	15
37.90	73.7	50.3	-	4.5	0.0	6.3	3	silty CLAY to CLAY	115	1.5	34	49	-	-	5.1	9.9	40	0.005	15
38.06	67.4	45.9	-	4.7	0.0	7.2	3	silty CLAY to CLAY	115	1.5	31	45	-	-	4.7	9.9	44	0.005	15
38.22	117.0	93.6	271.5	7.4	0.0	6.4	9	very stiff fine SOIL	120	2.0	47	58	65	41	-	-	32	0.250	30
38.39	127.3	86.1	-	9.5	0.0	7.6	9	very stiff fine SOIL	120	2.0	43	64	62	41	-	-	36	0.250	30
38.55	165.6	132.1	337.5	11.0	0.0	6.7	9	very stiff fine SOIL	120	2.0	66	83	76	43	-	-	29	0.250	30
38.72	129.8	103.4	305.7	9.1	0.0	7.1	9	very stiff fine SOIL	120	2.0	52	65	68	41	-	-	32	0.250	30
38.88	109.3	73.3	-	7.5	0.0	7.0	9	very stiff fine SOIL	120	2.0	37	55	57	40	-	-	36	0.250	30
39.04	90.9	60.7	-	8.4	0.0	9.5	9	very stiff fine SOIL	120	2.0	30	45	51	39	-	-	45	0.250	30
39.21	104.6	69.7	-	8.7	0.0	8.5	9	very stiff fine SOIL	120	2.0	35	52	55	40	-	-	41	0.250	30
39.37	91.7	72.6	131.6	2.0	0.0	2.2	5	silty SAND to sandy SILT	120	4.0	18	23	56	39	-	-	21	0.200	16
39.54	78.3	51.8	-	4.3	0.0	5.6	3	silty CLAY to CLAY	115	1.5	35	52	-	-	5.5	9.9	38	0.005	15
39.70	273.3	215.6	241.2	4.2	0.0	1.6	6	clean SAND to silty SAND	125	5.0	43	55	92	45	-	-	8	0.350	16
39.86	396.3	312.2	329.6	6.3	0.0	1.6	6	clean SAND to silty SAND	125	5.0	62	79	95	47	-	-	7	0.350	16
40.03	396.4	311.7	322.3	5.7	0.0	1.5	6	clean SAND to silty SAND	125	5.0	62	79	95	47	-	-	6	0.350	16
40.19	555.2	435.9	435.9	5.7	0.0	1.0	6	clean SAND to silty SAND	125	5.0	87	100	95	48	-	-	5	0.350	16

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

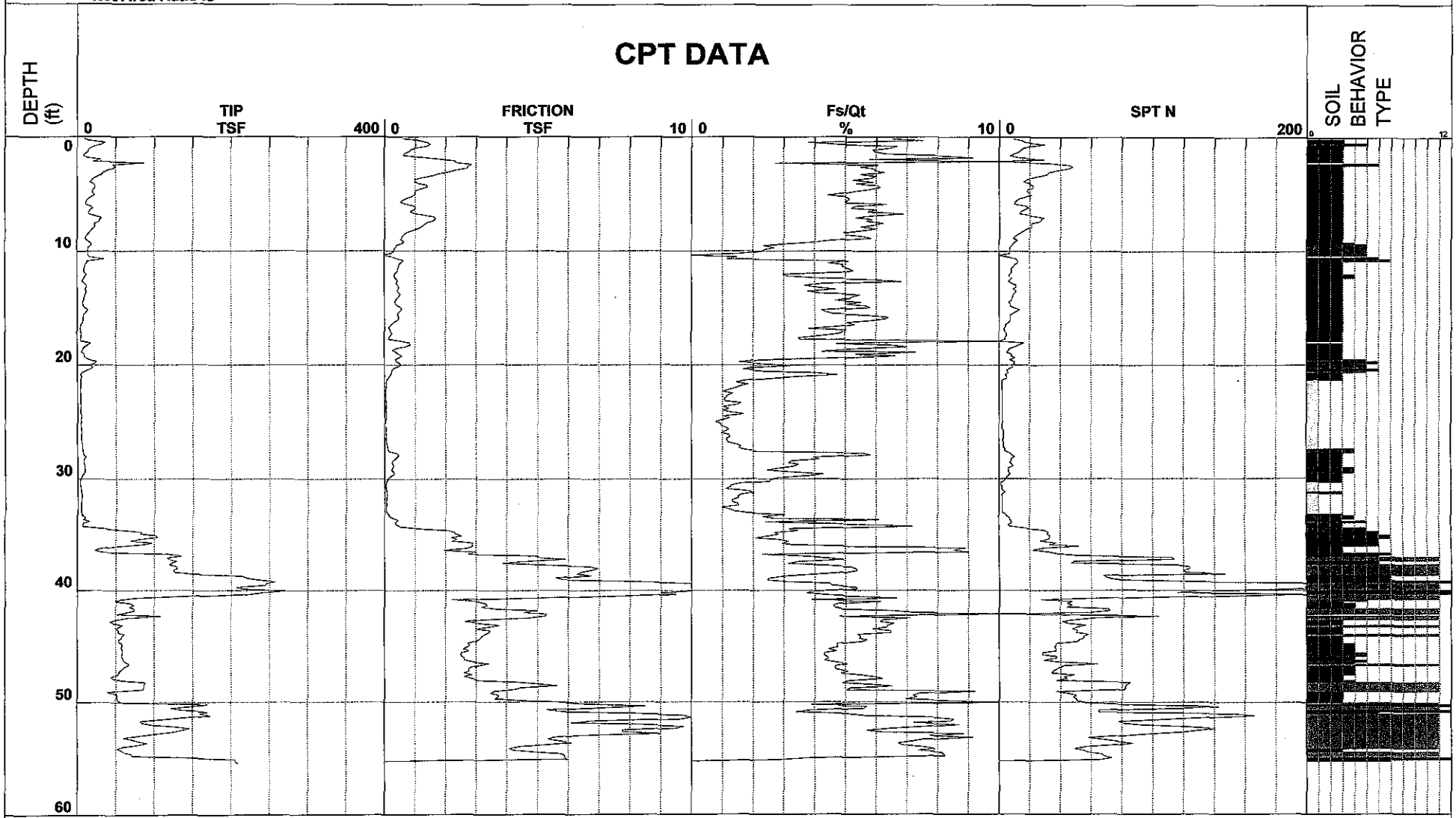
Middle Earth Geo Testing

Associated Soils Engineering

Project	Big Canyon Country Club	Operator	BH-AH	Filename	SDF(476).cpt
Job Number	6169	Cone Number	DSG1104	GPS	
Hole Number	CPT-04	Date and Time	2/22/2010 12:48:31 PM	Maximum Depth	55.45 ft
Water Table Depth		18.00 ft			

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

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

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(476).cpt
CPT Date: 2/22/2010 12:48:31 PM
GW During Test: 18 ft

Sounding ID: CPT-04
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qc1n PS -	qincs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR - -	Fin Ic %	D50 - mm	Nk - -
0.33	14.3	22.9	-	1.1	0.0	7.5	3	silty CLAY to CLAY	115	1.5	15	10	-	-	1.0	9.9	57	0.005	15
0.49	35.7	57.3	153.8	1.4	0.0	3.8	4	clayy SILT to silty CLAY	115	2.0	29	18	-	-	2.5	9.9	30	0.070	15
0.66	30.6	49.1	-	1.5	0.0	4.8	4	clayy SILT to silty CLAY	115	2.0	25	15	-	-	2.2	9.9	36	0.070	15
0.82	20.9	33.6	-	1.4	0.0	6.7	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.5	9.9	47	0.005	15
0.98	16.5	26.5	-	1.1	0.0	6.5	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	51	0.005	15
1.15	14.7	23.6	-	0.9	0.0	5.9	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	52	0.005	15
1.31	13.8	22.2	-	0.8	0.0	6.0	3	silty CLAY to CLAY	115	1.5	15	9	-	-	1.0	9.9	53	0.005	15
1.48	10.4	16.7	-	0.7	0.0	6.4	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	60	0.005	15
1.64	7.7	12.4	-	0.6	0.0	8.2	3	silty CLAY to CLAY	115	1.5	8	5	-	-	0.5	9.9	73	0.005	15
1.80	13.5	21.6	-	1.2	0.0	9.2	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	62	0.005	15
1.97	30.3	48.6	-	1.8	0.0	5.8	3	silty CLAY to CLAY	115	1.5	32	20	-	-	2.1	9.9	39	0.005	15
2.13	21.3	34.2	-	2.3	0.0	9.9	3	silty CLAY to CLAY	115	1.5	23	14	-	-	1.5	9.9	55	0.005	15
2.30	87.1	139.6	208.3	2.4	0.0	2.7	5	silty SAND to sandy SILT	120	4.0	35	22	78	48	-	-	16	0.200	16
2.46	46.9	75.2	233.2	2.8	0.0	6.1	9	very stiff fine SOIL	120	2.0	38	23	58	46	-	-	34	0.250	30
2.62	49.6	79.5	225.4	2.7	0.0	5.5	9	very stiff fine SOIL	120	2.0	40	25	59	46	-	-	31	0.250	30
2.79	45.5	73.0	226.6	2.7	0.0	6.0	9	very stiff fine SOIL	120	2.0	36	23	57	46	-	-	34	0.250	30
2.95	39.1	62.7	-	2.3	0.0	6.0	4	clayy SILT to silty CLAY	115	2.0	31	20	-	-	2.8	9.9	36	0.070	15
3.12	33.7	54.0	-	2.1	0.0	6.3	3	silty CLAY to CLAY	115	1.5	36	22	-	-	2.4	9.9	39	0.005	15
3.28	31.9	51.2	-	1.8	0.0	5.5	3	silty CLAY to CLAY	115	1.5	34	21	-	-	2.2	9.9	37	0.005	15
3.45	25.8	41.4	-	1.5	0.0	6.0	3	silty CLAY to CLAY	115	1.5	28	17	-	-	1.8	9.9	42	0.005	15
3.61	21.1	33.9	-	1.2	0.0	5.9	3	silty CLAY to CLAY	115	1.5	23	14	-	-	1.5	9.9	45	0.005	15
3.77	19.0	30.4	-	1.0	0.0	5.3	3	silty CLAY to CLAY	115	1.5	20	13	-	-	1.3	9.9	45	0.005	15
3.94	16.7	26.8	-	1.0	0.0	6.0	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	50	0.005	15
4.10	20.6	33.0	-	1.1	0.0	5.4	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.4	9.9	44	0.005	15
4.27	22.8	36.6	-	1.4	0.0	6.1	3	silty CLAY to CLAY	115	1.5	24	15	-	-	1.6	9.9	44	0.005	15
4.43	22.8	36.6	-	1.4	0.0	6.2	3	silty CLAY to CLAY	115	1.5	24	15	-	-	1.6	9.9	45	0.005	15
4.59	20.3	32.5	-	1.2	0.0	5.9	3	silty CLAY to CLAY	115	1.5	22	14	-	-	1.4	9.9	46	0.005	15
4.76	19.0	30.5	-	1.0	0.0	5.4	3	silty CLAY to CLAY	115	1.5	20	13	-	-	1.3	9.9	45	0.005	15
4.92	20.2	32.5	-	1.0	0.0	5.0	3	silty CLAY to CLAY	115	1.5	22	13	-	-	1.4	9.9	43	0.005	15
5.09	22.1	35.4	-	1.0	0.0	4.5	4	clayy SILT to silty CLAY	115	2.0	18	11	-	-	1.5	9.9	40	0.070	15
5.25	17.8	28.5	-	0.9	0.0	5.1	3	silty CLAY to CLAY	115	1.5	19	12	-	-	1.2	9.9	46	0.005	15
5.41	14.1	22.6	-	0.7	0.0	5.2	3	silty CLAY to CLAY	115	1.5	15	9	-	-	1.0	9.9	51	0.005	15
5.58	11.7	18.8	-	0.6	0.0	5.2	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.8	9.9	54	0.005	15
5.74	10.6	17.0	-	0.5	0.0	5.1	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	56	0.005	15
5.91	10.6	16.9	-	0.7	0.0	6.6	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	61	0.005	15
6.07	17.5	28.1	-	0.9	0.0	5.5	3	silty CLAY to CLAY	115	1.5	19	12	-	-	1.2	9.9	47	0.005	15
6.23	19.5	31.3	-	1.0	0.0	5.3	3	silty CLAY to CLAY	115	1.5	21	13	-	-	1.4	9.9	45	0.005	15
6.40	16.4	26.2	-	1.0	0.0	6.2	3	silty CLAY to CLAY	115	1.5	17	11	-	-	1.1	9.9	51	0.005	15
6.56	14.7	23.5	-	0.8	0.0	5.9	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	52	0.005	15
6.73	13.5	21.7	-	0.9	0.0	7.1	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	57	0.005	15
6.89	22.2	35.6	-	1.3	0.0	6.0	3	silty CLAY to CLAY	115	1.5	24	15	-	-	1.5	9.9	45	0.005	15
7.05	30.6	49.1	-	1.6	0.0	5.4	3	silty CLAY to CLAY	115	1.5	33	20	-	-	2.1	9.9	38	0.005	15
7.22	28.5	45.6	-	1.7	0.0	6.0	3	silty CLAY to CLAY	115	1.5	30	19	-	-	2.0	9.9	40	0.005	15
7.38	27.9	44.7	-	1.6	0.0	5.8	3	silty CLAY to CLAY	115	1.5	30	19	-	-	1.9	9.9	40	0.005	15
7.55	22.3	35.7	-	1.4	0.0	6.3	3	silty CLAY to CLAY	115	1.5	24	15	-	-	1.6	9.9	46	0.005	15
7.71	21.6	34.6	-	1.3	0.0	6.1	3	silty CLAY to CLAY	115	1.5	23	14	-	-	1.5	9.9	45	0.005	15
7.87	22.0	35.3	-	1.2	0.0	5.6	3	silty CLAY to CLAY	115	1.5	24	15	-	-	1.5	9.9	44	0.005	15
8.04	18.5	29.7	-	1.1	0.0	6.1	3	silty CLAY to CLAY	115	1.5	20	12	-	-	1.3	9.9	48	0.005	15
8.20	16.9	27.1	-	0.9	0.0	5.7	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	49	0.005	15
8.37	14.9	23.9	-	0.7	0.0	5.1	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	49	0.005	15
8.53	12.8	20.5	-	0.6	0.0	5.2	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	53	0.005	15
8.69	10.4	16.7	-	0.6	0.0	5.8	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	60	0.005	15
8.86	9.5	15.2	-	0.6	0.0	6.2	3	silty CLAY to CLAY	115	1.5	10	6	-	-	0.6	8.9	63	0.005	15
9.02	12.2	19.5	-	0.6	0.0	4.7	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.8	9.9	52	0.005	15
9.19	16.0	25.7	-	0.6	0.0	4.2	3	silty CLAY to CLAY	115	1.5	17	11	-	-	1.1	9.9	44	0.005	15
9.35	18.8	30.1	-	0.6	0.0	3.2	4	clayy SILT to silty CLAY	115	2.0	15	9	-	-	1.3	9.9	38	0.070	15
9.51	16.9	27.1	-	0.4	0.0	2.4	4	clayy SILT to silty CLAY	115	2.0	14	8	-	-	1.2	9.9	36	0.070	15
9.68	14.1	22.6	-	0.4	0.0	2.8	4	clayy SILT to silty CLAY	115	2.0	11	7	-	-	1.0	9.9	41	0.070	15
9.84	13.7	21.9	-	0.3	0.0	2.5	4	clayy SILT to silty CLAY	115	2.0	11	7	-	-	0.9	9.9	40	0.070	15
10.01	13.7	22.0	-	0.3	0.0	2.4	4	clayy SILT to silty CLAY	115	2.0	11	7	-	-	0.9	9.9	39	0.070	15
10.17	14.0	20.0	-	0.2	0.0	1.7	4	clayy SILT to silty CLAY	115	2.0	10	7	-	-	1.0	9.9	36	0.070	15
10.34	13.7	17.2	33.0	0.0	0.0	0.1	5	silty SAND to sandy SILT	120	4.0	4	3	9	35	-	-	21	0.200	16
10.50	16.2	20.2	66.7	0.2	0.0	1.5	4	clayy SILT to silty CLAY	115	2.0	10	8	-	-	1.1	9.9	35	0.070	15
10.66	35.4	43.9	78.4	0.4	0.0	1.2	5	silty SAND to sandy SILT	120	4.0	11	9	40	40	-	-	21	0.200	16
10.83	12.4	19.8	-	0.6	0.0	5.4	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.8	9.9	54	0.005	15
10.99	12.5	19.7	-	0.6	0.0	4.7	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.9	9.9	52	0.005	15
11.16	10.0	15.5	-	0.5	0.0	5.3	3	silty CLAY to CLAY	115	1.5	10	7	-	-	0.7	7.8	60	0.005	15
11.32	9.5	14.5	-	0.5	0.0	5.3	3	silty CLAY to CLAY	115	1.5	10	6	-	-	0.6	7.3	61	0.005	15
11.48	8.7	13.1	-	0.4	0.0	5.5	3	silty CLAY to CLAY	115	1.5	9	6	-	-	0.6	6.6	65	0.005	15
11.65	8.3	12.4	-	0.4	0.0	5.7	3	silty CLAY to CLAY	115	1.5	8	6	-	-	0.6	6.2	67	0.005	15
11.81	8.5	12.5	-	0.4	0.0	5.3	3	silty CLAY to CLAY	115	1.5	8	6	-	-	0.6	6.3	65	0.005	15
11.98	11.4	16.5	-	0.3	0.0	3.2	3	silty CLAY to CLAY	115	1.5	11	8	-	-	0.8	8.5	49	0.005	15
12.14	10.0	14.3	-	0.3	0.0	3.3	3	silty CLAY to CLAY	115	1.5	10	7	-	-	0.7	7.3	54	0.005	15
12.30	8.7	12.2	-	0.3	0.0	4.3	3	silty CLAY to CLAY	115	1.5	8	6	-	-	0.6	6.2	62	0.005	15
12.47	6.8	9.5	-	0.4	0.0	6.6	3	silty CLAY to CLAY	115	1.5	6	5	-	-	0.5	4.7	78	0.005	15
12.63	6.2	8.5	-	0.4	0.0	7.7	3	silty CLAY to CLAY	115	1.5	6	4	-	-	0.4	4.2	85	0.005	15
12.80	8.8	11.9	-	0.4	0.0	4.6	3	silty CLAY to CLAY	115	1.5	8	6	-	-	0.6	6.1	64	0.005	15
12.96	11.6	15.5	-	0.4	0.0	3.9	3	silty CLAY to CLAY	115	1.5	10	8	-	-	0.8	8.1	54	0.005	15
13.12	11.4	15.0	-	0.5	0.0	4.4	3	silty CLAY to CLAY	115	1.5	10	8	-	-	0.8	7.9	57	0.005	15
13.29	9.7	12.7	-	0.5	0.0	5.1	3	silty CLAY to CLAY	115	1.5	8	6	-	-	0.7	6.6	64	0.005	15
13.45	11.0	14.2	-	0.4	0.0	4.1	3	silty CLAY to CLAY	115	1.5	9	7	-	-	0.7	7.4	57	0.005	15
13.62	10.8	13.7	-	0.4	0.0	4.4	3	silty CLAY to CLAY	115	1.5	9	7	-	-	0.7	7.2	59	0.005	15
13.78	9.6	12.1	-	0.5	0.0	6.0	3	silty CLAY to CLAY	115	1.5	8	6	-	-	0.6	6.3	69	0.005	15
13.94	9.0	11.1	-	0.5	0.0	5.7	3	silty CLAY to CLAY	115	1.5	7	6	-	-	0.6	5.8	70	0.005	15
14.11	8.2	10.1	-	0.4	0.0	5.7	3	silty CLAY to CLAY	115	1.5	7	5	-	-	0.5	5.2	73	0.005	15
14.27	7.8	9.5	-	0.4	0.0	5.2	3	silty CLAY to CLAY	115	1.5	6	5	-	-	0.5	4.9	73	0.005	15
14.44	6.2	7.5	-	0.3	0.0	6.3	3	silty CLAY to CLAY	115	1.5	5	4	-	-	0.4	3.7	84	0.005	15
14.60	6.9	8.2	-	0.4	0.0	5.7	3	silty CLAY to CLAY	115	1.5	5	5	-	-	0.5	4.2	79	0.005	15
14.76	7.4	8.7	-	0.4	0.0	6.4	3	silty CLAY to CLAY	115	1.5	6	5	-	-	0.5	4.4	80	0.005	15
14.93	8.9	10.4	-	0.5	0.0	6.4	3	silty CLAY to CLAY	115	1.5	7	6	-	-	0.6	5.4	74	0.005	15
15.09	13.2	15.2	-	0.6	0.0	4.5	3	silty CLAY to CLAY	115	1.5	10	9	-	-	0.9	8.2	57	0.005	15
15.26	11.8	13.5	-	0.5	0.0	4.7	3	silty CLAY to CLAY	115	1.5	9	8	-	-	0.8	7.2	61	0.005	15
15.42	9.5	10.7	-	0.4	0.0	5.0	3	silty CLAY to CLAY	115	1.5	7	6	-	-	0.6	5.6	68	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Project ID: Associated Soils
Data File: SDF(476).cpt
CPT Date: 2/22/2010 12:48:31 PM
GW During Test: 18 ft

Sounding ID: CPT-04
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 - mm	Nk -
15.58	7.6	8.5	-	0.4	0.0	6.3	3	silty CLAY to CLAY	115	1.5	6	5	-	-	0.5	4.3	80	0.005	15
15.75	7.2	7.9	-	0.5	0.0	7.3	3	silty CLAY to CLAY	115	1.5	5	5	-	-	0.5	4.0	86	0.005	15
15.91	7.2	7.9	-	0.5	0.0	7.2	3	silty CLAY to CLAY	115	1.5	5	5	-	-	0.5	4.0	86	0.005	15
16.08	7.3	7.9	-	0.4	0.0	6.7	3	silty CLAY to CLAY	115	1.5	5	5	-	-	0.5	4.1	84	0.005	15
16.24	6.1	6.5	-	0.3	0.0	6.0	3	silty CLAY to CLAY	115	1.5	4	4	-	-	0.4	3.2	88	0.005	15
16.40	4.3	4.5	-	0.2	0.0	6.8	2	Organic SOILS - Peats	100	1.0	5	4	-	-	0.4	2.1	95	0.100	10
16.57	3.7	3.9	-	0.2	0.0	6.4	2	Organic SOILS - Peats	100	1.0	4	4	-	-	0.3	1.7	95	0.100	10
16.73	3.5	3.7	-	0.1	0.0	5.2	2	Organic SOILS - Peats	100	1.0	4	4	-	-	0.3	1.6	95	0.100	10
16.90	3.5	3.6	-	0.2	0.0	6.9	2	Organic SOILS - Peats	100	1.0	4	4	-	-	0.3	1.6	95	0.100	10
17.06	4.4	4.5	-	0.2	0.0	6.3	2	Organic SOILS - Peats	100	1.0	4	4	-	-	0.4	2.1	95	0.100	10
17.23	5.5	5.6	-	0.3	0.0	5.8	3	silty CLAY to CLAY	115	1.5	4	4	-	-	0.3	2.7	93	0.005	15
17.39	5.0	5.0	-	0.2	0.0	5.3	3	silty CLAY to CLAY	115	1.5	3	3	-	-	0.3	2.4	95	0.005	15
17.55	4.6	4.6	-	0.2	0.0	4.5	3	silty CLAY to CLAY	115	1.5	3	3	-	-	0.3	2.1	95	0.005	15
17.72	4.0	4.0	-	0.1	0.0	4.7	3	silty CLAY to CLAY	115	1.5	3	3	-	-	0.2	1.8	95	0.005	15
17.88	4.6	4.5	-	0.5	0.0	9.9	2	Organic SOILS - Peats	100	1.0	4	5	-	-	0.4	2.1	95	0.100	10
18.05	17.2	16.7	-	0.8	0.0	5.0	3	silty CLAY to CLAY	115	1.5	11	11	-	-	1.2	9.4	57	0.005	15
18.21	13.3	12.9	-	0.9	0.0	7.0	3	silty CLAY to CLAY	115	1.5	9	9	-	-	0.9	7.1	70	0.005	15
18.37	10.1	9.8	-	0.7	0.0	7.8	3	silty CLAY to CLAY	115	1.5	7	7	-	-	0.7	5.2	81	0.005	15
18.54	7.7	7.4	-	0.4	0.0	6.0	3	silty CLAY to CLAY	115	1.5	5	5	-	-	0.5	3.8	84	0.005	15
18.70	6.4	6.2	-	0.3	0.0	5.1	3	silty CLAY to CLAY	115	1.5	4	4	-	-	0.4	3.0	87	0.005	15
18.87	5.3	5.1	-	0.4	0.0	9.1	2	Organic SOILS - Peats	100	1.0	5	5	-	-	0.5	2.4	95	0.100	10
19.03	8.5	8.1	-	0.5	0.0	6.1	3	silty CLAY to CLAY	115	1.5	5	6	-	-	0.6	4.2	81	0.005	15
19.19	8.6	8.2	-	0.6	0.0	7.6	3	silty CLAY to CLAY	115	1.5	5	6	-	-	0.6	4.2	86	0.005	15
19.36	10.0	9.4	-	0.5	0.0	5.4	3	silty CLAY to CLAY	115	1.5	6	7	-	-	0.7	4.9	74	0.005	15
19.52	15.4	14.5	-	0.4	0.0	2.5	4	clayy SILT to silty CLAY	115	2.0	7	8	-	-	1.0	7.8	49	0.070	15
19.69	25.1	23.6	72.4	0.4	0.0	1.6	4	clayy SILT to silty CLAY	115	2.0	12	13	-	-	1.7	9.9	33	0.070	15
19.85	21.7	20.2	-	0.5	0.0	2.4	4	clayy SILT to silty CLAY	115	2.0	10	11	-	-	1.5	9.9	41	0.070	15
20.01	17.0	15.7	-	0.5	0.0	3.5	3	silty CLAY to CLAY	115	1.5	10	11	-	-	1.2	8.5	52	0.005	15
20.18	19.7	18.2	-	0.4	0.0	2.2	4	clayy SILT to silty CLAY	115	2.0	9	10	-	-	1.4	9.9	42	0.070	15
20.34	16.6	15.2	-	0.3	0.0	1.8	4	clayy SILT to silty CLAY	115	2.0	8	8	-	-	1.1	8.1	43	0.070	15
20.51	10.5	9.7	-	0.2	0.0	2.6	3	silty CLAY to CLAY	115	1.5	6	7	-	-	0.7	4.9	60	0.005	15
20.67	5.8	5.3	-	0.2	0.0	5.1	3	silty CLAY to CLAY	115	1.5	4	4	-	-	0.4	2.4	93	0.005	15
20.83	4.2	3.8	-	0.2	0.0	6.7	2	Organic SOILS - Peats	100	1.0	4	4	-	-	0.4	1.5	95	0.100	10
21.00	5.0	4.5	-	0.2	0.0	4.5	3	silty CLAY to CLAY	115	1.5	3	3	-	-	0.3	1.9	95	0.005	15
21.16	4.8	4.3	-	0.1	0.0	3.5	3	silty CLAY to CLAY	115	1.5	3	3	-	-	0.3	1.8	94	0.005	15
21.33	4.2	3.7	-	0.1	0.0	2.5	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.5	94	0.005	15
21.49	3.9	3.5	-	0.1	0.0	2.1	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.4	94	0.005	15
21.65	3.8	3.4	-	0.1	0.0	2.7	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.3	95	0.005	15
21.82	4.2	3.7	-	0.1	0.0	2.2	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.5	93	0.005	15
21.98	3.8	3.4	-	0.1	0.0	2.1	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.3	95	0.005	15
22.15	3.3	3.0	-	0.0	0.0	1.9	3	silty CLAY to CLAY	115	1.5	2	2	-	-	0.2	1.0	95	0.005	15
22.31	3.5	3.1	-	0.0	0.0	1.6	3	silty CLAY to CLAY	115	1.5	2	2	-	-	0.2	1.1	95	0.005	15
22.47	3.7	3.2	-	0.0	0.0	2.1	3	silty CLAY to CLAY	115	1.5	2	2	-	-	0.2	1.2	95	0.005	15
22.64	3.8	3.3	-	0.0	0.0	1.8	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.2	95	0.005	15
22.80	4.2	3.7	-	0.0	0.0	1.6	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.4	89	0.005	15
22.97	4.3	3.7	-	0.0	0.0	1.5	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.3	1.4	87	0.005	15
23.13	4.1	3.6	-	0.0	0.0	1.6	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.3	90	0.005	15
23.30	4.0	3.4	-	0.1	0.0	2.4	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.2	95	0.005	15
23.46	3.9	3.3	-	0.1	0.0	2.2	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.2	95	0.005	15
23.62	4.1	3.5	-	0.0	0.0	1.5	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.3	89	0.005	15
23.79	4.0	3.4	-	0.0	0.0	1.8	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.2	95	0.005	15
23.95	3.8	3.2	-	0.0	0.0	1.6	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.1	95	0.005	15
24.12	3.6	3.1	-	0.0	0.0	2.0	3	silty CLAY to CLAY	115	1.5	2	2	-	-	0.2	1.0	95	0.005	15
24.28	3.7	3.1	-	0.1	0.0	2.7	3	silty CLAY to CLAY	115	1.5	2	2	-	-	0.2	1.0	95	0.005	15
24.44	5.0	4.2	-	0.1	0.0	1.4	3	silty CLAY to CLAY	115	1.5	3	3	-	-	0.3	1.6	81	0.005	15
24.61	4.3	3.6	-	0.1	0.0	1.8	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.3	1.3	91	0.005	15
24.77	4.1	3.4	-	0.0	0.0	1.5	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	1.2	91	0.005	15
24.94	4.2	3.5	-	0.0	0.0	1.1	1	sensitive fine SOIL	115	2.0	2	2	-	-	0.2	1.2	87	0.005	15
25.10	4.4	3.6	-	0.0	0.0	1.4	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.3	1.3	87	0.005	15
25.26	4.7	3.8	-	0.0	0.0	1.4	3	silty CLAY to CLAY	115	1.5	3	3	-	-	0.3	1.4	84	0.005	15
25.43	4.9	4.0	-	0.1	0.0	1.6	3	silty CLAY to CLAY	115	1.5	3	3	-	-	0.3	1.5	84	0.005	15
25.59	5.1	4.2	-	0.1	0.0	1.7	3	silty CLAY to CLAY	115	1.5	3	3	-	-	0.3	1.6	84	0.005	15
25.76	5.4	4.4	-	0.1	0.0	1.5	3	silty CLAY to CLAY	115	1.5	3	4	-	-	0.3	1.7	80	0.005	15
25.92	5.9	4.8	-	0.1	0.0	1.3	3	silty CLAY to CLAY	115	1.5	3	4	-	-	0.4	1.9	74	0.005	15
26.08	5.3	4.3	-	0.1	0.0	1.7	3	silty CLAY to CLAY	115	1.5	3	4	-	-	0.3	1.6	83	0.005	15
26.25	5.3	4.2	-	0.1	0.0	1.7	3	silty CLAY to CLAY	115	1.5	3	4	-	-	0.3	1.6	83	0.005	15
26.41	5.3	4.2	-	0.1	0.0	1.6	3	silty CLAY to CLAY	115	1.5	3	4	-	-	0.3	1.6	82	0.005	15
26.58	5.2	4.1	-	0.1	0.0	1.6	3	silty CLAY to CLAY	115	1.5	3	3	-	-	0.3	1.5	84	0.005	15
26.74	5.5	4.4	-	0.1	0.0	1.7	3	silty CLAY to CLAY	115	1.5	3	4	-	-	0.3	1.7	81	0.005	15
26.90	5.9	4.7	-	0.1	0.0	2.0	3	silty CLAY to CLAY	115	1.5	3	4	-	-	0.4	1.8	81	0.005	15
27.07	6.1	4.8	-	0.1	0.0	2.2	3	silty CLAY to CLAY	115	1.5	3	4	-	-	0.4	1.9	81	0.005	15
27.23	6.5	5.1	-	0.1	0.0	2.0	3	silty CLAY to CLAY	115	1.5	3	4	-	-	0.4	2.0	78	0.005	15
27.40	6.4	5.1	-	0.1	0.0	2.3	3	silty CLAY to CLAY	115	1.5	3	4	-	-	0.4	2.0	81	0.005	15
27.56	6.8	5.3	-	0.1	0.0	2.8	3	silty CLAY to CLAY	115	1.5	4	5	-	-	0.4	2.1	82	0.005	15
27.72	7.2	5.7	-	0.4	0.0	7.2	2	Organic SOILS - Peats	100	1.0	6	7	-	-	0.7	2.3	95	0.100	10
27.89	8.0	6.3	-	0.5	0.0	7.2	3	silty CLAY to CLAY	115	1.5	4	5	-	-	0.5	2.6	95	0.005	15
28.05	10.5	8.2	-	0.4	0.0	4.7	3	silty CLAY to CLAY	115	1.5	5	7	-	-	0.7	3.6	76	0.005	15
28.22	8.4	6.5	-	0.3	0.0	5.1	3	silty CLAY to CLAY	115	1.5	4	6	-	-	0.5	2.7	86	0.005	15
28.38	8.3	6.4	-	0.3	0.0	4.1	3	silty CLAY to CLAY	115	1.5	4	6	-	-	0.5	2.6	82	0.005	15
28.54	7.6	5.9	-	0.2	0.0	4.0	3	silty CLAY to CLAY	115	1.5	4	5	-	-	0.5	2.3	85	0.005	15
28.71	8.1	6.2	-	0.3	0.0	4.4	3	silty CLAY to CLAY	115	1.5	4	5	-	-	0.5	2.5	84	0.005	15
28.87	9.0	6.9	-	0.3	0.0	4.0	3	silty CLAY to CLAY	115	1.5	5	6	-	-	0.6	2.9	79	0.005	15
29.04	9.1	6.9	-	0.3	0.0	3.4	3	silty CLAY to CLAY	115	1.5	5	6	-	-	0.6	2.9	76	0.005	15
29.20	8.8	6.6	-	0.2	0.0	3.1	3	silty CLAY to CLAY	115	1.5	4	6	-	-	0.6	2.7	75	0.005	15
29.36	9.2	7.0	-	0.3	0.0	3.9	3	silty CLAY to CLAY	115	1.5	5	6	-	-	0.6	2.9	78	0.005	15
29.53	7.6	5.7	-	0.3	0.0	5.5	3	silty CLAY to CLAY	115	1.5	4	5	-	-	0.5	2.2	93	0.005	15
29.69	5.8	4.4	-	0.2	0.0	5.4	3	silty CLAY to CLAY	115	1.5	3	4	-	-	0.3	1.6	95	0.005	15
29.86	4.8	3.6	-	0.1	0.0	4.4	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.3	1.2	95	0.005	15
30.02	3.9	2.9	-	0.1	0.0	4.6	2	Organic SOILS - Peats	100	1.0	3	4	-	-	0.3	0.8	95	0.100	10
30.19	3.0	2.2	-	0.1	0.0	6.0	2	Organic SOILS - Peats	100	1.0	2	3	-	-	0.2	0.5	95	0.100	10
30.35	3.1	2.3	-	0.0	0.0	3.7	2	Organic SOILS - Peats	100	1.0	2	3	-	-	0.2	0.5	95	0.100	10
30.51	3.0	2.2	-	0.0	0.0	3.1	2	Organic SOILS - Peats	100	1.0	2	3	-	-	0.2	0.5	95	0.100	10
30.68	3.4	2.5	-	0.0	0.0	2.6	2	Organic SOILS - Peats	100	1.0	2	3	-	-	0.3	0.6	95	0.100	10
30.84	3.9	2.8	-	0.0	0.0	2.1	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	0.8	95	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Project ID: Associated Soils
Data File: SDF(476).cpt
CPT Date: 2/22/2010 12:48:31 PM
GW During Test: 18 ft

Sounding ID: CPT-04
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln * PS -	qincs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato %	Mat Typ Zon	Material * Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel * Den %	Ftn * Ang deg	Und Shr tsf	OCR - -	Fin * Ic %	D50 * - mm	Nk * - -
31.01	3.9	2.9	-	0.1	0.0	3.1	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	0.8	95	0.005	15
31.17	4.0	3.0	-	0.1	0.0	3.6	2	Organic SOILS - Peats	100	1.0	3	4	-	-	0.3	0.8	95	0.100	10
31.33	5.2	3.8	-	0.1	0.0	2.5	3	silty CLAY to CLAY	115	1.5	3	3	-	-	0.3	1.2	95	0.005	15
31.50	4.9	3.6	-	0.1	0.0	2.4	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.3	1.1	95	0.005	15
31.66	4.6	3.4	-	0.1	0.0	2.5	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.3	1.0	95	0.005	15
31.83	4.6	3.3	-	0.1	0.0	2.2	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.3	1.0	95	0.005	15
31.99	4.5	3.2	-	0.1	0.0	2.2	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.3	0.9	95	0.005	15
32.15	4.3	3.1	-	0.1	0.0	2.6	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	0.9	95	0.005	15
32.32	4.4	3.2	-	0.1	0.0	2.6	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	0.9	95	0.005	15
32.48	4.3	3.1	-	0.0	0.0	1.7	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	0.9	95	0.005	15
32.65	4.1	2.9	-	0.1	0.0	2.3	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	0.8	95	0.005	15
32.81	4.3	3.1	-	0.1	0.0	2.4	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	0.8	95	0.005	15
32.97	4.4	3.1	-	0.1	0.0	3.2	3	silty CLAY to CLAY	115	1.5	2	3	-	-	0.2	0.9	95	0.005	15
33.14	4.7	3.3	-	0.1	0.0	5.1	2	Organic SOILS - Peats	100	1.0	3	5	-	-	0.4	1.0	95	0.100	10
33.30	7.6	5.3	-	0.2	0.0	3.1	3	silty CLAY to CLAY	115	1.5	4	5	-	-	0.5	2.0	85	0.005	15
33.47	10.5	7.4	-	0.3	0.0	3.3	3	silty CLAY to CLAY	115	1.5	5	7	-	-	0.7	2.9	73	0.005	15
33.63	7.7	5.4	-	0.5	0.0	8.1	2	Organic SOILS - Peats	100	1.0	5	8	-	-	0.7	2.0	95	0.100	10
33.79	15.8	11.1	-	0.4	0.0	2.8	3	silty CLAY to CLAY	115	1.5	7	11	-	-	1.0	4.7	58	0.005	15
33.96	8.3	5.8	-	0.4	0.0	5.6	3	silty CLAY to CLAY	115	1.5	4	6	-	-	0.5	2.1	94	0.005	15
34.12	6.7	4.7	-	0.4	0.0	8.5	2	Organic SOILS - Peats	100	1.0	5	7	-	-	0.6	1.6	95	0.100	10
34.29	7.2	5.0	-	0.5	0.0	9.9	2	Organic SOILS - Peats	100	1.0	5	7	-	-	0.7	1.8	95	0.100	10
34.45	33.8	23.4	-	1.1	0.0	3.4	4	clayy SILT to silty CLAY	115	2.0	12	17	-	-	2.3	9.9	43	0.070	15
34.61	61.1	49.3	141.7	2.1	0.0	3.6	4	clayy SILT to silty CLAY	115	2.0	25	31	-	-	4.2	9.9	32	0.070	15
34.78	83.9	67.6	142.0	2.3	0.0	2.8	5	silty SAND to sandy SILT	120	4.0	17	21	54	40	-	-	24	0.200	16
34.94	81.8	65.8	143.2	2.3	0.0	2.9	5	silty SAND to sandy SILT	120	4.0	16	20	53	39	-	-	25	0.200	16
35.11	101.9	81.9	148.2	2.5	0.0	2.5	5	silty SAND to sandy SILT	120	4.0	20	25	60	41	-	-	21	0.200	16
35.27	104.4	83.8	138.9	2.2	0.0	2.1	5	silty SAND to sandy SILT	120	4.0	21	26	61	41	-	-	19	0.200	16
35.43	83.6	67.0	144.5	2.4	0.0	2.9	5	silty SAND to sandy SILT	120	4.0	17	21	54	39	-	-	25	0.200	16
35.60	70.0	56.0	141.9	2.2	0.0	3.3	4	clayy SILT to silty CLAY	115	2.0	28	35	-	-	4.9	9.9	29	0.070	15
35.76	97.4	77.8	158.2	2.9	0.0	3.0	5	silty SAND to sandy SILT	120	4.0	19	24	59	40	-	-	23	0.200	16
35.93	86.8	69.2	159.3	2.9	0.0	3.4	4	clayy SILT to silty CLAY	115	2.0	35	43	-	-	6.1	9.9	26	0.070	15
36.09	54.2	36.4	-	2.9	0.0	5.5	3	silty CLAY to CLAY	115	1.5	24	36	-	-	3.8	9.9	43	0.005	15
36.26	30.2	20.2	-	2.7	0.0	9.6	3	silty CLAY to CLAY	115	1.5	13	20	-	-	2.1	9.0	66	0.005	15
36.42	22.9	15.3	-	1.9	0.0	9.3	3	silty CLAY to CLAY	115	1.5	10	15	-	-	1.5	6.6	73	0.005	15
36.58	33.0	22.0	-	3.0	0.0	9.6	3	silty CLAY to CLAY	115	1.5	15	22	-	-	2.3	9.8	64	0.005	15
36.75	118.7	94.0	153.9	2.7	0.0	2.3	5	silty SAND to sandy SILT	120	4.0	23	30	65	41	-	-	19	0.200	16
36.91	135.7	107.3	209.0	4.9	0.0	3.7	5	silty SAND to sandy SILT	120	4.0	27	34	69	42	-	-	23	0.200	16
37.08	117.1	92.4	214.1	5.1	0.0	4.4	4	clayy SILT to silty CLAY	115	2.0	46	59	-	-	8.2	9.9	26	0.070	15
37.24	119.3	94.0	233.7	5.9	0.0	5.0	9	very stiff fine SOIL	120	2.0	47	60	65	41	-	-	28	0.250	30
37.40	129.2	101.6	198.2	4.5	0.0	3.5	5	silty SAND to sandy SILT	120	4.0	25	32	68	42	-	-	23	0.200	16
37.57	122.7	96.4	182.4	3.9	0.0	3.2	5	silty SAND to sandy SILT	120	4.0	24	31	66	41	-	-	22	0.200	16
37.73	120.0	94.1	212.5	5.1	0.0	4.3	4	clayy SILT to silty CLAY	115	2.0	47	60	-	-	8.4	9.9	26	0.070	15
37.90	129.2	101.2	249.8	6.7	0.0	5.3	9	very stiff fine SOIL	120	2.0	51	65	67	41	-	-	28	0.250	30
38.06	129.7	101.4	255.0	6.9	0.0	5.4	9	very stiff fine SOIL	120	2.0	51	65	67	41	-	-	28	0.250	30
38.22	124.9	97.5	250.8	6.7	0.0	5.5	9	very stiff fine SOIL	120	2.0	49	62	66	41	-	-	29	0.250	30
38.39	126.6	98.7	243.0	6.4	0.0	5.1	9	very stiff fine SOIL	120	2.0	49	63	67	41	-	-	28	0.250	30
38.55	153.0	119.1	236.4	6.3	0.0	4.2	9	very stiff fine SOIL	120	2.0	60	77	73	42	-	-	23	0.250	30
38.72	214.4	166.7	251.4	6.7	0.0	3.2	5	silty SAND to sandy SILT	120	4.0	42	54	84	44	-	-	17	0.200	16
38.88	220.8	171.3	234.0	5.6	0.0	2.6	5	silty SAND to sandy SILT	120	4.0	43	55	85	44	-	-	14	0.200	16
39.04	235.3	182.3	242.0	5.8	0.0	2.5	5	silty SAND to sandy SILT	120	4.0	46	59	87	44	-	-	14	0.200	16
39.21	257.8	199.4	284.1	8.1	0.0	3.2	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	17.0	9.9	15	0.250	16
39.37	246.0	190.1	328.9	11.1	0.0	4.5	9	very stiff fine SOIL	120	2.0	95	100	88	44	-	-	20	0.250	30
39.54	244.9	189.0	330.0	11.2	0.0	4.6	9	very stiff fine SOIL	120	2.0	94	100	88	44	-	-	20	0.250	30
39.70	207.6	159.9	327.4	11.1	0.0	5.4	9	very stiff fine SOIL	120	2.0	80	100	82	44	-	-	24	0.250	30
39.86	215.4	165.7	336.0	11.6	0.0	5.4	9	very stiff fine SOIL	120	2.0	83	100	84	44	-	-	23	0.250	30
40.03	270.7	207.9	334.9	11.3	0.0	4.2	9	very stiff fine SOIL	120	2.0	100	100	91	45	-	-	18	0.250	30
40.19	241.5	185.2	292.8	9.0	0.0	3.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.9	9.9	18	0.250	16
40.36	223.5	171.1	298.3	9.5	0.0	4.3	9	very stiff fine SOIL	120	2.0	86	100	85	44	-	-	20	0.250	30
40.52	154.4	118.1	267.8	7.8	0.0	5.2	9	very stiff fine SOIL	120	2.0	59	77	72	42	-	-	26	0.250	30
40.68	77.0	47.6	-	5.1	0.0	6.9	3	silty CLAY to CLAY	115	1.5	32	51	-	-	5.4	9.9	42	0.005	15
40.85	56.0	34.5	-	2.2	0.0	4.1	4	clayy SILT to silty CLAY	115	2.0	17	28	-	-	3.9	9.9	39	0.070	15
41.01	49.6	30.5	-	3.0	0.0	6.4	3	silty CLAY to CLAY	115	1.5	20	33	-	-	3.4	9.9	49	0.005	15
41.18	68.3	41.9	-	3.3	0.0	5.0	3	silty CLAY to CLAY	115	1.5	28	46	-	-	4.7	9.9	39	0.005	15
41.34	72.9	44.6	-	3.3	0.0	4.7	4	clayy SILT to silty CLAY	115	2.0	22	36	-	-	5.1	9.9	37	0.070	15
41.50	68.5	41.8	-	3.2	0.0	4.8	4	clayy SILT to silty CLAY	115	2.0	21	34	-	-	4.8	9.9	39	0.070	15
41.67	74.4	45.3	-	3.7	0.0	5.1	3	silty CLAY to CLAY	115	1.5	30	50	-	-	5.2	9.9	38	0.005	15
41.83	75.3	45.7	-	5.0	0.0	6.8	3	silty CLAY to CLAY	115	1.5	30	50	-	-	5.2	9.9	43	0.005	15
42.00	63.1	38.2	-	4.5	0.0	7.5	3	silty CLAY to CLAY	115	1.5	25	42	-	-	4.4	9.9	48	0.005	15
42.16	51.9	31.3	-	5.3	0.0	9.9	3	silty CLAY to CLAY	115	1.5	21	35	-	-	3.6	9.9	57	0.005	15
42.32	108.8	82.0	216.0	5.3	0.0	4.9	4	clayy SILT to silty CLAY	115	2.0	41	54	-	-	7.6	9.9	29	0.070	15
42.49	66.2	39.8	-	4.7	0.0	7.4	3	silty CLAY to CLAY	115	1.5	27	44	-	-	4.6	9.9	47	0.005	15
42.65	51.8	31.0	-	3.2	0.0	6.6	3	silty CLAY to CLAY	115	1.5	21	35	-	-	3.6	9.9	49	0.005	15
42.82	42.8	25.6	-	2.6	0.0	6.5	3	silty CLAY to CLAY	115	1.5	17	29	-	-	2.9	9.9	53	0.005	15
42.98	47.3	28.2	-	3.1	0.0	6.9	3	silty CLAY to CLAY	115	1.5	19	32	-	-	3.3	9.9	52	0.005	15
43.15	58.9	35.0	-	3.8	0.0	6.6	3	silty CLAY to CLAY	115	1.5	23	39	-	-	4.1	9.9	47	0.005	15
43.31	53.3	31.6	-	3.4	0.0	6.7	3	silty CLAY to CLAY	115	1.5	21	36	-	-	3.7	9.9	49	0.005	15
43.47	50.6	29.9	-	3.0	0.0	6.2	3	silty CLAY to CLAY	115	1.5	20	34	-	-	3.5	9.9	49	0.005	15
43.64	53.4	31.5	-	3.5	0.0	6.8	3	silty CLAY to CLAY	115	1.5	21	36	-	-	3.7	9.9	50	0.005	15
43.80	52.6	31.0	-	3.4	0.0	6.8	3	silty CLAY to CLAY	115	1.5	21	35	-	-	3.6	9.9	50	0.005	15
43.97	60.8	35.7	-	3.3	0.0	5.6	3	silty CLAY to CLAY	115	1.5	24	41	-	-	4.2	9.9	44	0.005	15
44.13	57.7	33.8	-	3.2	0.0	5.8	3	silty CLAY to CLAY	115	1.5	23	38	-	-	4.0	9.9	45	0.005	15
44.29	57.5	33.6	-	3.1	0.0	5.7	3	silty CLAY to CLAY	115	1.5	22	38	-	-	4.0	9.9	45	0.005	15
44.46	54.3	31.6	-	3.1	0.0	6.0	3	silty CLAY to CLAY	115	1.5	21	36	-	-	3.7	9.9	47	0.005	15
44.62	53.7	31.2	-	3.0	0.0	5.8	3	silty CLAY to CLAY	115	1.5	21	36	-	-	3.7	9.9	47	0.005	15
44.79	57.4	33.3	-	2.7	0.0	5.0	3	silty CLAY to CLAY	115	1.5	22	38	-	-	4.0	9.9	43	0.005	15
44.95	58.6	33.9	-	2.8	0.0	5.0	3	silty CLAY to CLAY	115	1.5	23	39	-	-	4.1	9.9	43	0.005	15
45.11	57.0	32.9	-	2.7	0.0	5.0	3	silty CLAY to CLAY	115	1.5	22	38	-	-	3.9	9.9	43	0.005	15
45.28	57.8	33.3	-	2.6	0.0	4.7	3	silty CLAY to CLAY	115	1.5	22	39	-	-	4.0	9.9	42	0.005	15
45.44	58.5	33.6	-	2.8	0.0	4.9	3	silty CLAY to CLAY	115	1.5	22	39	-	-	4.0	9.9	43	0.005	15
45.61	58.1	33.2	-	2.5	0.0	4.5	3	silty CLAY to CLAY	115	1.5	22	39	-	-	4.0	9.9	41	0.005	15
45.77	57.9	33.1	-	2.5	0.0	4.5	3	silty CLAY to CLAY	115	1.5	22	39	-	-	4.0	9.9	41	0.005	15
45.93	57.3	32.6	-	2.5	0.0	4.6	3	silty CLAY to CLAY	115	1.5	22	38	-	-	4.0	9.9	42	0.005	15
46.10	58.5	33.2	-	2.6	0.0	4.7	3	silty CLAY to CLAY	115	1.5	22	39	-	-	4.0	9.9	42	0.005	15
46.26	59.8	33.9	-	2.6	0.0	4.5	3	silty CLAY to CLAY	115	1.5	23	40	-	-	4.1	9.9	41	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Project ID: Associated Soils
Data File: SDF(476).cpt
CPT Date: 2/22/2010 12:48:31 PM
GW During Test: 18 ft

Sounding ID: CPT-04
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 - mm	Nk -
46.43	61.7	34.9	-	2.9	0.0	4.9	3	silty CLAY to CLAY	115	1.5	23	41	-	-	4.3	9.9	42	0.005	15
46.59	67.0	37.8	-	3.4	0.0	5.3	3	silty CLAY to CLAY	115	1.5	25	45	-	-	4.6	9.9	42	0.005	15
46.75	65.4	36.8	-	3.1	0.0	4.9	3	silty CLAY to CLAY	115	1.5	25	44	-	-	4.5	9.9	41	0.005	15
46.92	60.4	33.9	-	2.8	0.0	4.9	3	silty CLAY to CLAY	115	1.5	23	40	-	-	4.2	9.9	42	0.005	15
47.08	58.0	32.5	-	2.7	0.0	4.9	3	silty CLAY to CLAY	115	1.5	22	39	-	-	4.0	9.9	43	0.005	15
47.25	54.5	30.5	-	2.8	0.0	5.3	3	silty CLAY to CLAY	115	1.5	20	36	-	-	3.8	9.9	46	0.005	15
47.41	53.5	29.8	-	2.6	0.0	5.1	3	silty CLAY to CLAY	115	1.5	20	36	-	-	3.7	9.9	46	0.005	15
47.57	51.4	28.6	-	2.8	0.0	5.9	3	silty CLAY to CLAY	115	1.5	19	34	-	-	3.5	9.9	49	0.005	15
47.74	43.9	24.3	-	2.6	0.0	6.3	3	silty CLAY to CLAY	115	1.5	16	29	-	-	3.0	9.9	53	0.005	15
47.90	45.7	25.3	-	2.8	0.0	6.6	3	silty CLAY to CLAY	115	1.5	17	30	-	-	3.1	9.9	53	0.005	15
48.07	58.6	32.3	-	3.0	0.0	5.4	3	silty CLAY to CLAY	115	1.5	22	39	-	-	4.0	9.9	45	0.005	15
48.23	88.3	48.6	-	4.3	0.0	5.1	4	clayy SILT to silty CLAY	115	2.0	24	44	-	-	6.1	9.9	37	0.070	15
48.39	86.9	47.7	-	4.9	0.0	5.9	3	silty CLAY to CLAY	115	1.5	32	58	-	-	6.0	9.9	40	0.005	15
48.56	86.0	47.1	-	5.6	0.0	6.7	3	silty CLAY to CLAY	115	1.5	31	57	-	-	6.0	9.9	42	0.005	15
48.72	86.1	47.1	-	4.4	0.0	5.3	3	silty CLAY to CLAY	115	1.5	31	57	-	-	6.0	9.9	38	0.005	15
48.89	84.1	45.9	-	4.2	0.0	5.2	3	silty CLAY to CLAY	115	1.5	31	56	-	-	5.8	9.9	38	0.005	15
49.05	38.7	21.1	-	3.6	0.0	9.9	3	silty CLAY to CLAY	115	1.5	14	26	-	-	2.6	8.6	66	0.005	15
49.22	46.8	25.4	-	3.5	0.0	7.9	3	silty CLAY to CLAY	115	1.5	17	31	-	-	3.2	9.9	57	0.005	15
49.38	51.8	28.0	-	3.7	0.0	7.6	3	silty CLAY to CLAY	115	1.5	19	35	-	-	3.6	9.9	54	0.005	15
49.54	50.5	27.3	-	3.7	0.0	7.7	3	silty CLAY to CLAY	115	1.5	18	34	-	-	3.5	9.9	55	0.005	15
49.71	51.9	28.0	-	3.6	0.0	7.4	3	silty CLAY to CLAY	115	1.5	19	35	-	-	3.6	9.9	53	0.005	15
49.87	53.3	28.7	-	4.4	0.0	8.8	3	silty CLAY to CLAY	115	1.5	19	36	-	-	3.7	9.9	57	0.005	15
50.04	58.8	31.6	-	5.9	0.0	9.9	3	silty CLAY to CLAY	115	1.5	21	39	-	-	4.1	9.9	57	0.005	15
50.20	169.5	120.4	231.7	6.6	0.0	4.0	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.1	9.9	22	0.250	16
50.36	149.1	105.8	272.6	8.5	0.0	5.8	9	very stiff fine SOIL	120	2.0	53	75	69	41	-	-	29	0.250	30
50.53	122.4	86.8	243.5	6.8	0.0	5.7	9	very stiff fine SOIL	120	2.0	43	61	62	40	-	-	31	0.250	30
50.69	136.7	96.8	206.2	5.3	0.0	4.0	4	clayy SILT to silty CLAY	115	2.0	48	68	-	-	9.6	9.9	25	0.070	15
50.86	169.1	119.6	214.9	5.9	0.0	3.5	5	silty SAND to sandy SILT	120	4.0	30	42	73	41	-	-	21	0.200	16
51.02	160.5	113.4	263.3	8.2	0.0	5.2	9	very stiff fine SOIL	120	2.0	57	80	71	41	-	-	27	0.250	30
51.18	173.2	122.2	292.0	9.8	0.0	5.7	9	very stiff fine SOIL	120	2.0	61	87	74	42	-	-	27	0.250	30
51.35	141.4	74.4	-	11.1	0.0	8.0	9	very stiff fine SOIL	120	2.0	37	71	57	40	-	-	39	0.250	30
51.51	112.8	59.2	-	9.6	0.0	8.7	9	very stiff fine SOIL	120	2.0	30	56	50	39	-	-	43	0.250	30
51.68	81.9	42.9	-	6.9	0.0	8.7	3	silty CLAY to CLAY	115	1.5	29	55	-	-	5.7	9.9	49	0.005	15
51.84	84.4	44.1	-	6.1	0.0	7.5	3	silty CLAY to CLAY	115	1.5	29	56	-	-	5.9	9.9	45	0.005	15
52.00	97.2	50.7	-	8.5	0.0	9.0	3	silty CLAY to CLAY	115	1.5	34	65	-	-	6.8	9.9	46	0.005	15
52.17	127.3	66.2	-	9.7	0.0	7.8	9	very stiff fine SOIL	120	2.0	33	64	53	40	-	-	40	0.250	30
52.33	146.2	102.3	290.6	9.5	0.0	6.6	9	very stiff fine SOIL	120	2.0	51	73	68	40	-	-	31	0.250	30
52.50	135.8	94.9	258.0	7.7	0.0	5.8	9	very stiff fine SOIL	120	2.0	47	68	65	40	-	-	30	0.250	30
52.66	124.7	64.4	-	7.8	0.0	6.4	9	very stiff fine SOIL	120	2.0	32	62	52	40	-	-	37	0.250	30
52.82	101.5	52.3	-	9.0	0.0	9.1	3	silty CLAY to CLAY	115	1.5	35	68	-	-	7.1	9.9	46	0.005	15
52.99	81.5	41.9	-	6.3	0.0	8.1	3	silty CLAY to CLAY	115	1.5	28	54	-	-	5.7	9.9	48	0.005	15
53.15	60.4	31.0	-	5.5	0.0	9.6	3	silty CLAY to CLAY	115	1.5	21	40	-	-	4.2	9.9	57	0.005	15
53.32	71.0	36.3	-	5.3	0.0	7.9	3	silty CLAY to CLAY	115	1.5	24	47	-	-	4.9	9.9	50	0.005	15
53.48	78.0	39.8	-	5.6	0.0	7.5	3	silty CLAY to CLAY	115	1.5	27	52	-	-	5.4	9.9	47	0.005	15
53.64	91.1	46.4	-	6.1	0.0	6.9	3	silty CLAY to CLAY	115	1.5	31	61	-	-	6.3	9.9	43	0.005	15
53.81	77.3	39.3	-	5.3	0.0	7.1	3	silty CLAY to CLAY	115	1.5	26	52	-	-	5.4	9.9	46	0.005	15
53.97	58.9	29.9	-	4.4	0.0	7.9	3	silty CLAY to CLAY	115	1.5	20	39	-	-	4.1	9.9	54	0.005	15
54.14	51.6	26.1	-	4.1	0.0	8.4	3	silty CLAY to CLAY	115	1.5	17	34	-	-	3.5	9.9	58	0.005	15
54.30	56.9	28.8	-	4.2	0.0	7.8	3	silty CLAY to CLAY	115	1.5	19	38	-	-	3.9	9.9	54	0.005	15
54.46	60.5	30.5	-	4.9	0.0	8.6	3	silty CLAY to CLAY	115	1.5	20	40	-	-	4.2	9.9	55	0.005	15
54.63	70.1	35.2	-	5.7	0.0	8.6	3	silty CLAY to CLAY	115	1.5	23	47	-	-	4.8	9.9	52	0.005	15
54.79	71.4	35.8	-	5.9	0.0	8.6	3	silty CLAY to CLAY	115	1.5	24	48	-	-	4.9	9.9	52	0.005	15
54.96	151.6	104.2	214.0	5.9	0.0	3.9	9	very stiff fine SOIL	120	2.0	52	76	68	40	-	-	24	0.250	30
55.12	205.6	141.2	218.5	6.0	0.0	2.9	5	silty SAND to sandy SILT	120	4.0	35	51	78	42	-	-	17	0.200	16

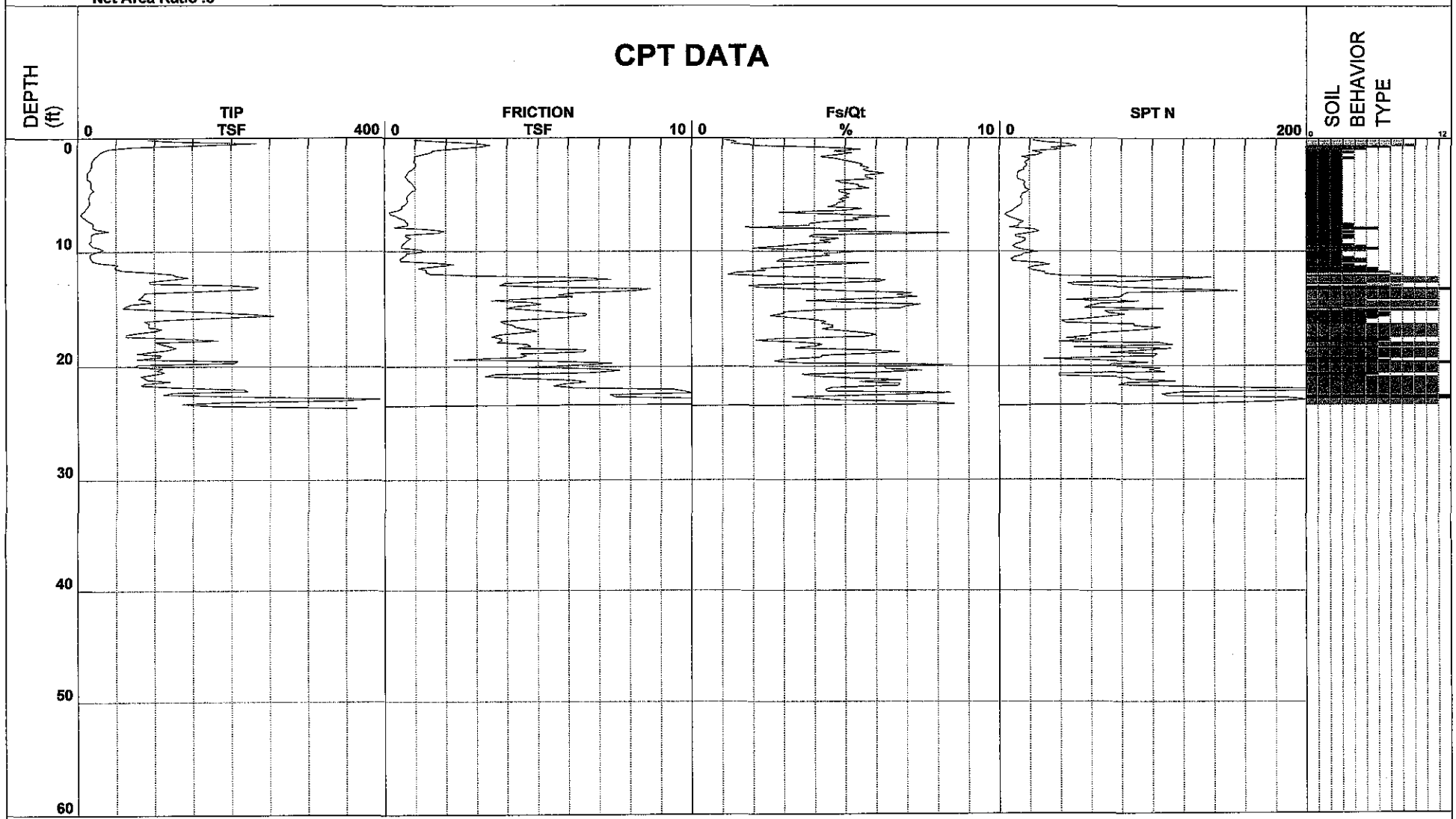
* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Associated Soils Engineering

Project	Big Canyon Country Club	Operator	BH-AH	Filename	SDF(477).cpt
Job Number	6169	Cone Number	DSG1104	GPS	
Hole Number	CPT-05	Date and Time	2/22/2010 1:41:54 PM	Maximum Depth	23.62 ft
Water Table Depth		.No GW			

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

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

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(477).cpt
CPT Date: 2/22/2010 1:41:54 PM
GW During Test: 24 ft

Sounding ID: CPT-05
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qc1n PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 - mm	Nk -
0.33	122.0	195.7	218.7	1.8	0.0	1.4	6	clean SAND to silty SAND	125	5.0	39	24	89	48	-	-	8	0.350	16
0.49	233.0	373.7	373.7	2.9	0.0	1.3	6	clean SAND to silty SAND	125	5.0	75	47	95	48	-	-	5	0.350	16
0.66	156.6	251.1	296.8	3.4	0.0	2.2	6	clean SAND to silty SAND	125	5.0	50	31	95	48	-	-	10	0.350	16
0.82	71.5	114.7	236.8	3.1	0.0	4.4	9	very stiff fine SOIL	120	2.0	57	36	72	48	-	-	24	0.250	30
0.98	41.6	66.7	206.5	2.3	0.0	5.5	4	clayy SILT to silty CLAY	115	2.0	33	21	-	-	2.9	9.9	34	0.070	15
1.15	33.8	54.3	169.5	1.6	0.0	4.7	4	clayy SILT to silty CLAY	115	2.0	27	17	-	-	2.4	9.9	34	0.070	15
1.31	29.4	47.1	-	1.5	0.0	5.2	4	clayy SILT to silty CLAY	115	2.0	24	15	-	-	2.1	9.9	38	0.070	15
1.48	26.5	42.5	-	1.2	0.0	4.7	4	clayy SILT to silty CLAY	115	2.0	21	13	-	-	1.9	9.9	37	0.070	15
1.64	23.7	38.0	-	1.0	0.0	4.2	4	clayy SILT to silty CLAY	115	2.0	19	12	-	-	1.7	9.9	38	0.070	15
1.80	21.3	34.2	-	1.0	0.0	4.7	3	silty CLAY to CLAY	115	1.5	23	14	-	-	1.5	9.9	41	0.005	15
1.97	19.8	31.8	-	1.0	0.0	5.0	3	silty CLAY to CLAY	115	1.5	21	13	-	-	1.4	9.9	43	0.005	15
2.13	18.3	29.3	-	1.0	0.0	5.3	3	silty CLAY to CLAY	115	1.5	20	12	-	-	1.3	9.9	46	0.005	15
2.30	18.5	29.7	-	1.0	0.0	5.6	3	silty CLAY to CLAY	115	1.5	20	12	-	-	1.3	9.9	46	0.005	15
2.46	18.7	30.1	-	1.0	0.0	5.5	3	silty CLAY to CLAY	115	1.5	20	12	-	-	1.3	9.9	46	0.005	15
2.62	17.1	27.5	-	1.0	0.0	5.8	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	48	0.005	15
2.79	16.2	26.0	-	0.9	0.0	5.7	3	silty CLAY to CLAY	115	1.5	17	11	-	-	1.1	9.9	49	0.005	15
2.95	13.8	22.2	-	0.8	0.0	5.9	3	silty CLAY to CLAY	115	1.5	15	9	-	-	1.0	9.9	53	0.005	15
3.12	12.2	19.5	-	0.8	0.0	6.4	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.8	9.9	57	0.005	15
3.28	12.9	20.7	-	0.7	0.0	5.8	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	54	0.005	15
3.45	12.2	19.5	-	0.7	0.0	5.8	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.8	9.9	55	0.005	15
3.61	12.7	20.4	-	0.8	0.0	6.0	3	silty CLAY to CLAY	115	1.5	14	8	-	-	0.9	9.9	55	0.005	15
3.77	16.8	27.0	-	0.8	0.0	4.8	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	45	0.005	15
3.94	17.7	28.4	-	0.9	0.0	5.0	3	silty CLAY to CLAY	115	1.5	19	12	-	-	1.2	9.9	45	0.005	15
4.10	17.2	27.5	-	0.9	0.0	5.5	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	48	0.005	15
4.27	17.7	28.3	-	1.0	0.0	5.5	3	silty CLAY to CLAY	115	1.5	19	12	-	-	1.2	9.9	47	0.005	15
4.43	17.7	28.3	-	1.0	0.0	5.9	3	silty CLAY to CLAY	115	1.5	19	12	-	-	1.2	9.9	48	0.005	15
4.59	21.2	34.1	-	1.0	0.0	4.9	3	silty CLAY to CLAY	115	1.5	23	14	-	-	1.5	9.9	42	0.005	15
4.76	18.3	29.3	-	0.9	0.0	4.9	3	silty CLAY to CLAY	115	1.5	20	12	-	-	1.3	9.9	44	0.005	15
4.92	16.0	25.7	-	0.8	0.0	5.2	3	silty CLAY to CLAY	115	1.5	17	11	-	-	1.1	9.9	48	0.005	15
5.09	15.3	24.6	-	0.8	0.0	5.1	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.1	9.9	48	0.005	15
5.25	14.4	23.0	-	0.7	0.0	5.2	3	silty CLAY to CLAY	115	1.5	15	10	-	-	1.0	9.9	50	0.005	15
5.41	15.3	24.5	-	0.7	0.0	4.9	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.1	9.9	48	0.005	15
5.58	15.3	24.5	-	0.8	0.0	5.1	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.1	9.9	49	0.005	15
5.74	15.6	25.0	-	0.7	0.0	4.9	3	silty CLAY to CLAY	115	1.5	17	10	-	-	1.1	9.9	47	0.005	15
5.91	14.2	22.8	-	0.7	0.0	4.8	3	silty CLAY to CLAY	115	1.5	15	9	-	-	1.0	9.9	49	0.005	15
6.07	12.8	20.5	-	0.6	0.0	4.6	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	50	0.005	15
6.23	10.4	16.7	-	0.6	0.0	5.7	3	silty CLAY to CLAY	115	1.5	11	7	-	-	0.7	9.9	59	0.005	15
6.40	9.3	14.9	-	0.5	0.0	5.1	3	silty CLAY to CLAY	115	1.5	10	6	-	-	0.6	9.9	59	0.005	15
6.56	6.0	9.6	-	0.2	0.0	3.0	3	silty CLAY to CLAY	115	1.5	6	4	-	-	0.4	6.8	61	0.005	15
6.73	4.2	6.8	-	0.2	0.0	5.3	3	silty CLAY to CLAY	115	1.5	5	3	-	-	0.3	4.6	82	0.005	15
6.89	5.9	9.5	-	0.4	0.0	6.9	3	silty CLAY to CLAY	115	1.5	6	4	-	-	0.4	6.4	78	0.005	15
7.05	9.2	14.7	-	0.5	0.0	5.5	3	silty CLAY to CLAY	115	1.5	10	6	-	-	0.6	9.9	61	0.005	15
7.22	12.0	19.3	-	0.7	0.0	5.6	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.8	9.9	55	0.005	15
7.38	16.4	26.3	-	0.7	0.0	4.4	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.1	9.9	45	0.005	15
7.55	20.1	32.3	-	0.8	0.0	3.9	4	clayy SILT to silty CLAY	115	2.0	16	10	-	-	1.4	9.9	39	0.070	15
7.71	19.8	31.7	-	0.8	0.0	3.9	4	clayy SILT to silty CLAY	115	2.0	16	10	-	-	1.4	9.9	40	0.070	15
7.87	19.3	27.7	78.6	0.3	0.0	1.8	5	silty SAND to sandy SILT	120	4.0	7	5	25	38	-	-	31	0.200	16
8.04	24.1	38.7	-	1.4	0.0	5.8	3	silty CLAY to CLAY	115	1.5	26	16	-	-	1.7	9.9	43	0.005	15
8.20	40.3	56.7	178.0	1.9	0.0	4.9	4	clayy SILT to silty CLAY	115	2.0	28	20	-	-	2.8	9.9	34	0.070	15
8.37	21.2	33.9	-	1.8	0.0	8.6	3	silty CLAY to CLAY	115	1.5	23	14	-	-	1.5	9.9	52	0.005	15
8.53	17.7	28.4	-	0.7	0.0	4.1	4	clayy SILT to silty CLAY	115	2.0	14	9	-	-	1.2	9.9	42	0.070	15
8.69	17.9	28.7	-	0.7	0.0	4.0	4	clayy SILT to silty CLAY	115	2.0	14	9	-	-	1.2	9.9	42	0.070	15
8.86	18.0	28.8	-	0.9	0.0	4.9	3	silty CLAY to CLAY	115	1.5	19	12	-	-	1.2	9.9	45	0.005	15
9.02	17.9	28.7	-	0.8	0.0	4.3	3	silty CLAY to CLAY	115	1.5	19	12	-	-	1.2	9.9	43	0.005	15
9.19	15.2	24.4	-	0.7	0.0	4.7	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.1	9.9	47	0.005	15
9.35	17.0	27.3	-	0.6	0.0	3.7	4	clayy SILT to silty CLAY	115	2.0	14	9	-	-	1.2	9.9	41	0.070	15
9.51	19.3	30.9	-	0.6	0.0	3.0	4	clayy SILT to silty CLAY	115	2.0	15	10	-	-	1.3	9.9	36	0.070	15
9.68	28.0	36.3	93.1	0.6	0.0	2.1	5	silty SAND to sandy SILT	120	4.0	9	7	34	39	-	-	29	0.200	16
9.84	33.1	42.5	133.1	1.2	0.0	3.6	4	clayy SILT to silty CLAY	115	2.0	21	17	-	-	2.3	9.9	34	0.070	15
10.01	25.6	41.1	-	1.4	0.0	5.5	3	silty CLAY to CLAY	115	1.5	27	17	-	-	1.8	9.9	41	0.005	15
10.17	16.7	26.8	-	0.7	0.0	4.5	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	45	0.005	15
10.34	16.0	25.6	-	0.7	0.0	4.7	3	silty CLAY to CLAY	115	1.5	17	11	-	-	1.1	9.9	46	0.005	15
10.50	16.1	25.9	-	0.6	0.0	3.9	4	clayy SILT to silty CLAY	115	2.0	13	8	-	-	1.1	9.9	43	0.070	15
10.66	17.5	28.1	-	0.5	0.0	3.1	4	clayy SILT to silty CLAY	115	2.0	14	9	-	-	1.2	9.9	38	0.070	15
10.83	19.4	31.0	-	0.5	0.0	2.9	4	clayy SILT to silty CLAY	115	2.0	16	10	-	-	1.3	9.9	36	0.070	15
10.99	27.3	42.9	-	1.6	0.0	5.9	3	silty CLAY to CLAY	115	1.5	29	18	-	-	1.9	9.9	41	0.005	15
11.16	52.4	63.3	175.9	2.3	0.0	4.4	4	clayy SILT to silty CLAY	115	2.0	32	26	-	-	3.7	9.9	31	0.070	15
11.32	48.4	58.0	148.5	1.7	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	29	24	-	-	3.4	9.9	29	0.070	15
11.48	49.0	58.4	119.3	1.1	0.0	2.3	5	silty SAND to sandy SILT	120	4.0	15	12	49	42	-	-	24	0.200	16
11.65	57.1	67.5	131.8	1.4	0.0	2.4	5	silty SAND to sandy SILT	120	4.0	17	14	54	42	-	-	23	0.200	16
11.81	94.6	111.1	142.8	1.4	0.0	1.5	6	clean SAND to silty SAND	125	5.0	22	18	70	45	-	-	13	0.350	16
11.98	123.7	144.2	165.3	1.5	0.0	1.2	6	clean SAND to silty SAND	125	5.0	29	25	79	46	-	-	9	0.350	16
12.14	128.2	148.3	209.3	3.2	0.0	2.5	5	silty SAND to sandy SILT	120	4.0	37	32	80	46	-	-	15	0.200	16
12.30	143.7	165.1	298.0	6.4	0.0	4.5	9	very stiff fine SOIL	120	2.0	83	72	84	46	-	-	21	0.250	30
12.47	117.0	133.5	325.8	7.4	0.0	6.3	9	very stiff fine SOIL	120	2.0	67	58	77	45	-	-	28	0.250	30
12.63	93.2	105.6	281.3	5.7	0.0	6.2	9	very stiff fine SOIL	120	2.0	53	47	69	44	-	-	30	0.250	30
12.80	94.5	106.4	222.9	3.9	0.0	4.2	9	very stiff fine SOIL	120	2.0	53	47	69	44	-	-	24	0.250	30
12.96	202.7	226.7	262.0	3.8	0.0	1.9	6	clean SAND to silty SAND	125	5.0	45	41	94	48	-	-	10	0.350	16
13.12	236.1	262.3	308.0	5.2	0.0	2.2	6	clean SAND to silty SAND	125	5.0	52	47	95	48	-	-	10	0.350	16
13.29	229.1	252.8	364.5	8.7	0.0	3.8	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.1	9.9	16	0.250	16
13.45	161.3	177.0	333.8	8.1	0.0	5.1	9	very stiff fine SOIL	120	2.0	88	81	86	47	-	-	22	0.250	30
13.62	87.6	95.5	295.6	6.3	0.0	7.2	9	very stiff fine SOIL	120	2.0	48	44	65	44	-	-	33	0.250	30
13.78	84.9	92.0	276.6	5.7	0.0	6.7	9	very stiff fine SOIL	120	2.0	46	42	64	44	-	-	33	0.250	30
13.94	83.4	89.8	290.7	6.1	0.0	7.4	9	very stiff fine SOIL	120	2.0	45	42	63	43	-	-	35	0.250	30
14.11	78.6	84.1	253.1	4.9	0.0	6.3	9	very stiff fine SOIL	120	2.0	42	39	61	43	-	-	33	0.250	30
14.27	92.9	98.8	201.3	3.5	0.0	3.8	5	silty SAND to sandy SILT	120	4.0	25	23	67	44	-	-	24	0.200	16
14.44	94.9	100.4	242.3	4.8	0.0	5.1	9	very stiff fine SOIL	120	2.0	50	47	67	44	-	-	27	0.250	30
14.60	68.4	80.2	-	5.1	0.0	7.5	9	very stiff fine SOIL	120	2.0	40	34	60	42	-	-	36	0.250	30
14.76	62.6	72.6	-	4.4	0.0	7.1	9	very stiff fine SOIL	120	2.0	36	31	56	42	-	-	37	0.250	30
14.93	58.4	65.9	-	4.0	0.0	6.9	9	very stiff fine SOIL	120	2.0	33	29	54	41	-	-	37	0.250	30
15.09	112.2	116.0	235.7	4.7	0.0	4.3	9	very stiff fine SOIL	120	2.0	58	56	72	44	-	-	23	0.250	30
15.26	180.8	185.9	267.2	5.6	0.0	3.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	11.9	9.9	16	0.250	16
15.42	224.9	230.0	305.6	6.6	0.0	2.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	14.9	9.9	14	0.250	16

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Project ID: Associated Soils
Data File: SDF(477).cpt
CPT Date: 2/22/2010 1:41:54 PM
GW During Test: 24 ft

Sounding ID: CPT-05
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 - mm	Nk -
15.58	255.5	259.9	320.2	6.5	0.0	2.6	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	16.9	9.9	11	0.250	16
15.75	181.3	183.6	270.3	5.8	0.0	3.2	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	12.0	9.9	16	0.250	16
15.91	119.2	120.0	229.8	4.7	0.0	3.9	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	7.9	9.9	22	0.250	16
16.08	86.6	86.7	206.9	3.8	0.0	4.4	4	clayy SILT to silty CLAY	115	2.0	43	43	-	-	6.1	9.9	27	0.070	15
16.24	92.3	92.0	209.2	3.9	0.0	4.3	4	clayy SILT to silty CLAY	115	2.0	46	46	-	-	6.5	9.9	26	0.070	15
16.40	91.5	90.8	217.6	4.2	0.0	4.6	9	very stiff fine SOIL	120	2.0	45	46	64	43	-	-	27	0.250	30
16.57	92.3	91.1	218.7	4.3	0.0	4.7	9	very stiff fine SOIL	120	2.0	46	46	64	43	-	-	27	0.250	30
16.73	109.1	107.2	227.1	4.7	0.0	4.3	9	very stiff fine SOIL	120	2.0	54	55	69	44	-	-	24	0.250	30
16.90	98.7	96.5	236.8	4.9	0.0	5.1	9	very stiff fine SOIL	120	2.0	48	49	66	43	-	-	28	0.250	30
17.06	77.0	74.9	224.9	4.3	0.0	5.7	9	very stiff fine SOIL	120	2.0	37	39	57	42	-	-	33	0.250	30
17.23	62.4	61.9	-	3.8	0.0	6.1	3	silty CLAY to CLAY	115	1.5	41	42	-	-	4.4	9.9	36	0.005	15
17.39	61.9	60.8	-	3.5	0.0	5.7	4	clayy SILT to silty CLAY	115	2.0	30	31	-	-	4.3	9.9	36	0.070	15
17.55	136.5	130.8	203.3	3.8	0.0	2.8	5	silty SAND to sandy SILT	120	4.0	33	34	76	45	-	-	17	0.200	16
17.72	182.3	173.9	220.6	3.8	0.0	2.1	6	clean SAND to silty SAND	125	5.0	35	36	85	46	-	-	12	0.350	16
17.88	100.7	95.6	195.4	3.7	0.0	3.7	5	silty SAND to sandy SILT	120	4.0	24	25	66	43	-	-	24	0.200	16
18.05	108.9	102.9	221.7	4.6	0.0	4.3	9	very stiff fine SOIL	120	2.0	51	54	68	44	-	-	25	0.250	30
18.21	118.4	111.3	224.1	4.8	0.0	4.1	9	very stiff fine SOIL	120	2.0	56	59	71	44	-	-	23	0.250	30
18.37	127.3	119.2	211.7	4.3	0.0	3.4	5	silty SAND to sandy SILT	120	4.0	30	32	73	44	-	-	20	0.200	16
18.54	117.4	109.4	270.8	6.6	0.0	5.6	9	very stiff fine SOIL	120	2.0	55	59	70	44	-	-	28	0.250	30
18.70	95.7	88.8	274.6	6.5	0.0	6.8	9	very stiff fine SOIL	120	2.0	44	48	63	43	-	-	33	0.250	30
18.87	75.9	70.1	222.9	4.4	0.0	5.9	9	very stiff fine SOIL	120	2.0	35	38	55	42	-	-	34	0.250	30
19.03	108.0	99.4	218.5	4.6	0.0	4.3	9	very stiff fine SOIL	120	2.0	50	54	67	43	-	-	25	0.250	30
19.19	105.8	96.9	213.0	4.4	0.0	4.2	4	clayy SILT to silty CLAY	115	2.0	48	53	-	-	7.4	9.9	25	0.070	15
19.36	75.7	69.1	148.6	2.2	0.0	3.0	5	silty SAND to sandy SILT	120	4.0	17	19	55	41	-	-	25	0.200	16
19.52	208.1	189.0	256.4	5.6	0.0	2.7	5	silty SAND to sandy SILT	120	4.0	47	52	88	46	-	-	14	0.200	16
19.69	203.0	183.5	286.9	7.4	0.0	3.7	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	13.4	9.9	18	0.250	16
19.85	77.6	66.7	-	6.6	0.0	8.6	9	very stiff fine SOIL	120	2.0	33	39	54	42	-	-	41	0.250	30
20.01	74.4	63.4	-	4.7	0.0	6.4	9	very stiff fine SOIL	120	2.0	32	37	52	41	-	-	37	0.250	30
20.18	109.5	97.8	276.5	6.9	0.0	6.4	9	very stiff fine SOIL	120	2.0	49	55	66	43	-	-	31	0.250	30
20.34	102.1	85.6	-	7.7	0.0	7.6	9	very stiff fine SOIL	120	2.0	43	51	62	43	-	-	36	0.250	30
20.51	112.5	99.6	269.4	6.7	0.0	6.0	9	very stiff fine SOIL	120	2.0	50	56	67	43	-	-	30	0.250	30
20.67	100.6	88.7	186.7	3.6	0.0	3.6	4	clayy SILT to silty CLAY	115	2.0	44	50	-	-	7.1	9.9	24	0.070	15
20.83	81.0	71.2	179.5	3.3	0.0	4.1	4	clayy SILT to silty CLAY	115	2.0	36	41	-	-	5.7	9.9	28	0.070	15
21.00	86.5	75.7	214.0	4.5	0.0	5.2	4	clayy SILT to silty CLAY	115	2.0	38	43	-	-	6.1	9.9	31	0.070	15
21.16	89.8	72.3	-	6.1	0.0	6.9	9	very stiff fine SOIL	120	2.0	36	45	56	42	-	-	36	0.250	30
21.33	119.8	104.0	260.4	6.6	0.0	5.5	9	very stiff fine SOIL	120	2.0	52	60	68	43	-	-	28	0.250	30
21.49	86.9	68.9	-	5.9	0.0	6.9	9	very stiff fine SOIL	120	2.0	34	43	55	42	-	-	37	0.250	30
21.65	81.8	64.4	-	5.5	0.0	6.8	9	very stiff fine SOIL	120	2.0	32	41	52	41	-	-	38	0.250	30
21.82	134.2	115.2	246.2	6.1	0.0	4.6	9	very stiff fine SOIL	120	2.0	58	67	72	44	-	-	25	0.250	30
21.98	216.1	184.8	316.6	9.4	0.0	4.4	9	very stiff fine SOIL	120	2.0	92	100	87	46	-	-	20	0.250	30
22.15	220.9	188.1	322.2	9.7	0.0	4.4	9	very stiff fine SOIL	120	2.0	94	100	88	46	-	-	20	0.250	30
22.31	124.3	94.9	-	10.5	0.0	8.5	9	very stiff fine SOIL	120	2.0	47	62	65	43	-	-	36	0.250	30
22.47	110.7	93.5	279.0	7.3	0.0	6.7	9	very stiff fine SOIL	120	2.0	47	55	65	43	-	-	33	0.250	30
22.64	229.5	193.3	282.3	7.5	0.0	3.3	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	15.2	9.9	16	0.250	16
22.80	393.8	330.5	460.5	16.0	0.0	4.1	8	stiff SAND to clayy SAND	115	1.0	100	100	-	-	26.0	9.9	15	0.250	16
22.97	346.7	289.9	456.4	16.9	0.0	4.9	9	very stiff fine SOIL	120	2.0	100	100	95	48	-	-	18	0.250	30
23.13	185.9	154.9	406.8	14.4	0.0	7.8	9	very stiff fine SOIL	120	2.0	77	93	81	45	-	-	29	0.250	30
23.30	135.5	99.0	-	11.6	0.0	8.6	9	very stiff fine SOIL	120	2.0	49	60	67	44	-	-	36	0.250	30

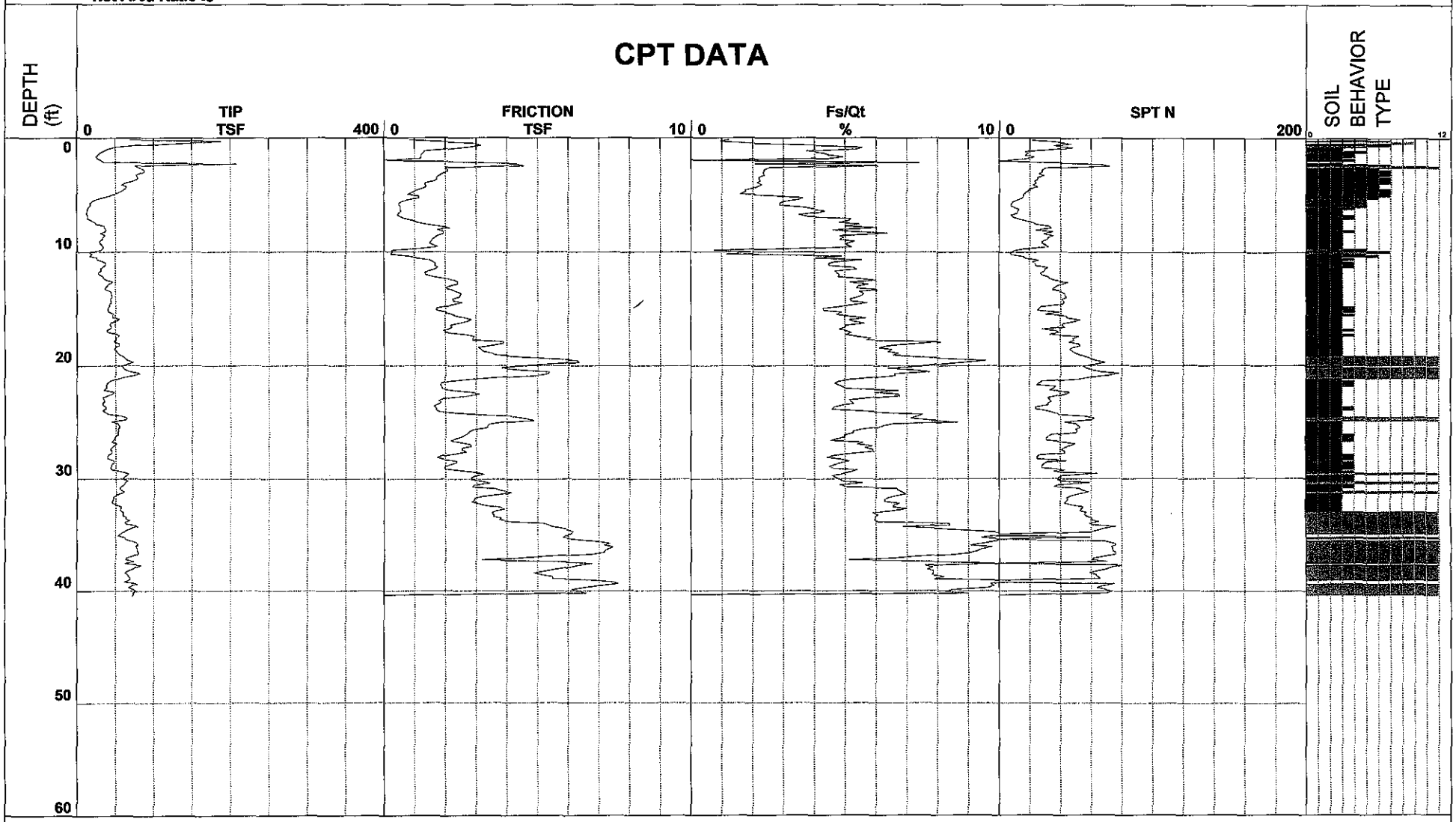
* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Associated Soils Engineering

Project	Big Canyon Country Club	Operator	BH-AH	Filename	SDF(479).cpt
Job Number	6169	Cone Number	DSG1104	GPS	
Hole Number	CPT-06	Date and Time	2/22/2010 2:20:51 PM	Maximum Depth	40.52 ft
Water Table Depth		18.00 ft			

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

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

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(479).cpt
CPT Date: 2/22/2010 2:20:51 PM
GW During Test: 18 ft

Sounding ID: CPT-06
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln * PS -	qlncs * PS -	Slv Stss tsf	pore prss (psi)	Frct Rato %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR - -	Fin Ic %	D50 * mm	Nk * -
0.33	187.5	300.6	300.6	1.8	0.0	1.0	6	clean SAND to silty SAND	125	5.0	60	37	95	48	-	-	5	0.350	16
0.49	146.1	234.4	274.0	2.9	0.0	2.0	6	clean SAND to silty SAND	125	5.0	47	29	95	48	-	-	10	0.350	16
0.66	75.0	120.3	238.6	3.2	0.0	4.2	9	very stiff fine SOIL	120	2.0	60	38	73	48	-	-	23	0.250	30
0.82	49.9	80.0	227.1	2.8	0.0	5.6	9	very stiff fine SOIL	120	2.0	40	25	60	48	-	-	31	0.250	30
0.98	39.8	63.8	198.8	2.1	0.0	5.4	4	clayy SILT to silty CLAY	115	2.0	32	20	-	-	2.8	9.9	34	0.070	15
1.15	35.3	56.6	152.4	1.3	0.0	3.8	4	clayy SILT to silty CLAY	115	2.0	28	18	-	-	2.5	9.9	30	0.070	15
1.31	29.9	48.0	152.9	1.3	0.0	4.3	4	clayy SILT to silty CLAY	115	2.0	24	15	-	-	2.1	9.9	34	0.070	15
1.48	27.4	43.9	-	1.2	0.0	4.5	4	clayy SILT to silty CLAY	115	2.0	22	14	-	-	1.9	9.9	36	0.070	15
1.64	24.5	39.3	-	1.2	0.0	4.9	3	silty CLAY to CLAY	115	1.5	26	16	-	-	1.7	9.9	39	0.005	15
1.80	26.8	43.0	-	1.2	0.0	4.5	4	clayy SILT to silty CLAY	115	2.0	21	13	-	-	1.9	9.9	36	0.070	15
1.97	30.6	49.0	54.3	0.0	0.0	0.1	6	clean SAND to silty SAND	125	5.0	10	6	43	45	-	-	8	0.350	16
2.13	34.8	55.8	-	2.6	0.0	7.4	3	silty CLAY to CLAY	115	1.5	37	23	-	-	2.4	9.9	41	0.005	15
2.30	207.9	333.4	370.5	4.3	0.0	2.1	6	clean SAND to silty SAND	125	5.0	67	42	95	48	-	-	8	0.350	16
2.46	75.0	120.4	298.2	4.6	0.0	6.1	9	very stiff fine SOIL	120	2.0	60	38	73	48	-	-	28	0.250	30
2.62	79.5	127.5	190.7	2.0	0.0	2.5	5	silty SAND to sandy SILT	120	4.0	32	20	75	48	-	-	16	0.200	16
2.79	86.9	139.3	196.6	2.1	0.0	2.4	5	silty SAND to sandy SILT	120	4.0	35	22	78	48	-	-	15	0.200	16
2.95	87.7	140.7	197.8	2.1	0.0	2.4	5	silty SAND to sandy SILT	120	4.0	35	22	78	48	-	-	15	0.200	16
3.12	82.3	132.0	188.6	1.9	0.0	2.3	5	silty SAND to sandy SILT	120	4.0	33	21	76	48	-	-	15	0.200	16
3.28	76.5	122.6	181.0	1.8	0.0	2.4	5	silty SAND to sandy SILT	120	4.0	31	19	74	47	-	-	16	0.200	16
3.45	78.1	125.2	177.8	1.7	0.0	2.2	5	silty SAND to sandy SILT	120	4.0	31	20	74	47	-	-	15	0.200	16
3.61	78.7	126.2	178.9	1.7	0.0	2.2	5	silty SAND to sandy SILT	120	4.0	32	20	75	47	-	-	15	0.200	16
3.77	73.3	117.5	172.1	1.6	0.0	2.2	5	silty SAND to sandy SILT	120	4.0	29	18	72	47	-	-	16	0.200	16
3.94	62.2	99.7	152.9	1.3	0.0	2.2	5	silty SAND to sandy SILT	120	4.0	25	16	67	46	-	-	17	0.200	16
4.10	58.0	93.1	150.9	1.3	0.0	2.3	5	silty SAND to sandy SILT	120	4.0	23	15	65	45	-	-	18	0.200	16
4.27	64.0	102.6	155.8	1.4	0.0	2.2	5	silty SAND to sandy SILT	120	4.0	26	16	68	46	-	-	17	0.200	16
4.43	62.4	100.1	149.3	1.3	0.0	2.0	5	silty SAND to sandy SILT	120	4.0	25	16	67	46	-	-	16	0.200	16
4.59	59.1	94.8	136.5	1.0	0.0	1.7	5	silty SAND to sandy SILT	120	4.0	24	15	65	45	-	-	16	0.200	16
4.76	54.0	86.7	129.6	0.9	0.0	1.8	5	silty SAND to sandy SILT	120	4.0	22	14	62	45	-	-	16	0.200	16
4.92	48.9	78.4	117.8	0.8	0.0	1.6	5	silty SAND to sandy SILT	120	4.0	20	12	59	44	-	-	17	0.200	16
5.09	42.3	67.9	138.9	1.1	0.0	2.7	5	silty SAND to sandy SILT	120	4.0	17	11	54	43	-	-	24	0.200	16
5.25	31.6	50.7	143.8	1.1	0.0	3.7	4	clayy SILT to silty CLAY	115	2.0	25	16	-	-	2.2	9.9	31	0.070	15
5.41	24.2	38.8	125.9	0.8	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	19	12	-	-	1.7	9.9	35	0.070	15
5.58	19.4	31.2	-	0.6	0.0	3.1	4	clayy SILT to silty CLAY	115	2.0	16	10	-	-	1.4	9.9	36	0.070	15
5.74	17.2	27.5	-	0.5	0.0	2.9	4	clayy SILT to silty CLAY	115	2.0	14	9	-	-	1.2	9.9	38	0.070	15
5.91	17.7	28.5	-	0.5	0.0	3.0	4	clayy SILT to silty CLAY	115	2.0	14	9	-	-	1.2	9.9	37	0.070	15
6.07	15.1	24.2	-	0.5	0.0	3.7	4	clayy SILT to silty CLAY	115	2.0	12	8	-	-	1.0	9.9	44	0.070	15
6.23	13.5	21.6	-	0.5	0.0	4.1	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	47	0.005	15
6.40	13.0	20.8	-	0.6	0.0	4.5	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	50	0.005	15
6.56	12.3	19.8	-	0.5	0.0	4.2	3	silty CLAY to CLAY	115	1.5	13	8	-	-	0.9	9.9	50	0.005	15
6.73	13.1	20.9	-	0.5	0.0	3.6	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	46	0.005	15
6.89	13.5	21.7	-	0.5	0.0	3.9	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	47	0.005	15
7.05	13.3	21.4	-	0.7	0.0	5.4	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	52	0.005	15
7.22	17.9	28.8	-	0.9	0.0	5.2	3	silty CLAY to CLAY	115	1.5	19	12	-	-	1.2	9.9	46	0.005	15
7.38	22.6	36.2	-	1.1	0.0	4.9	3	silty CLAY to CLAY	115	1.5	24	15	-	-	1.6	9.9	41	0.005	15
7.55	24.7	39.5	-	1.3	0.0	5.6	3	silty CLAY to CLAY	115	1.5	26	16	-	-	1.7	9.9	42	0.005	15
7.71	34.7	55.7	180.8	1.7	0.0	5.1	4	clayy SILT to silty CLAY	115	2.0	28	17	-	-	2.4	9.9	35	0.070	15
7.87	35.4	56.7	-	2.1	0.0	6.1	3	silty CLAY to CLAY	115	1.5	38	24	-	-	2.5	9.9	38	0.005	15
8.04	37.5	52.9	168.6	1.7	0.0	4.7	4	clayy SILT to silty CLAY	115	2.0	26	19	-	-	2.6	9.9	34	0.070	15
8.20	36.4	58.4	192.0	1.9	0.0	5.4	4	clayy SILT to silty CLAY	115	2.0	29	18	-	-	2.6	9.9	35	0.070	15
8.37	30.3	48.6	-	1.9	0.0	6.5	3	silty CLAY to CLAY	115	1.5	32	20	-	-	2.1	9.9	41	0.005	15
8.53	36.3	57.8	180.7	1.8	0.0	4.9	4	clayy SILT to silty CLAY	115	2.0	29	18	-	-	2.5	9.9	34	0.070	15
8.69	33.6	52.8	-	1.7	0.0	5.0	4	clayy SILT to silty CLAY	115	2.0	26	17	-	-	2.4	9.9	35	0.070	15
8.86	32.6	50.5	-	1.6	0.0	4.9	4	clayy SILT to silty CLAY	115	2.0	25	16	-	-	2.3	9.9	36	0.070	15
9.02	29.1	46.6	-	1.5	0.0	5.4	3	silty CLAY to CLAY	115	1.5	31	19	-	-	2.0	9.9	38	0.005	15
9.19	29.3	47.0	-	1.5	0.0	5.2	4	clayy SILT to silty CLAY	115	2.0	23	15	-	-	2.0	9.9	38	0.070	15
9.35	31.3	50.3	-	1.6	0.0	5.1	4	clayy SILT to silty CLAY	115	2.0	25	16	-	-	2.2	9.9	36	0.070	15
9.51	33.3	53.4	-	1.7	0.0	5.3	4	clayy SILT to silty CLAY	115	2.0	27	17	-	-	2.3	9.9	36	0.070	15
9.68	33.0	42.5	131.9	1.2	0.0	3.6	4	clayy SILT to silty CLAY	115	2.0	21	16	-	-	2.3	9.9	34	0.070	15
9.84	30.5	39.0	63.3	0.2	0.0	0.7	5	silty SAND to sandy SILT	120	4.0	10	8	36	39	-	-	18	0.200	16
10.01	16.3	23.3	76.8	0.3	0.0	1.9	4	clayy SILT to silty CLAY	115	2.0	12	8	-	-	1.1	9.9	35	0.070	15
10.17	20.0	25.1	64.2	0.2	0.0	1.2	5	silty SAND to sandy SILT	120	4.0	6	5	21	37	-	-	29	0.200	16
10.34	16.7	26.8	-	0.8	0.0	5.1	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	47	0.005	15
10.50	26.0	41.8	-	1.1	0.0	4.1	4	clayy SILT to silty CLAY	115	2.0	21	13	-	-	1.8	9.9	36	0.070	15
10.66	26.7	42.7	-	1.5	0.0	5.7	3	silty CLAY to CLAY	115	1.5	28	18	-	-	1.9	9.9	41	0.005	15
10.83	34.4	46.5	-	1.6	0.0	4.7	4	clayy SILT to silty CLAY	115	2.0	23	17	-	-	2.4	9.9	36	0.070	15
10.99	37.7	50.3	162.7	1.7	0.0	4.5	4	clayy SILT to silty CLAY	115	2.0	25	19	-	-	2.6	9.9	35	0.070	15
11.16	37.1	49.0	161.3	1.7	0.0	4.6	4	clayy SILT to silty CLAY	115	2.0	25	19	-	-	2.6	9.9	35	0.070	15
11.32	33.6	50.6	-	1.8	0.0	5.4	4	clayy SILT to silty CLAY	115	2.0	25	17	-	-	2.3	9.9	37	0.070	15
11.48	31.1	46.2	-	1.7	0.0	5.5	3	silty CLAY to CLAY	115	1.5	31	21	-	-	2.2	9.9	39	0.005	15
11.65	31.4	46.1	-	1.5	0.0	4.8	4	clayy SILT to silty CLAY	115	2.0	23	16	-	-	2.2	9.9	37	0.070	15
11.81	27.7	40.1	-	1.3	0.0	4.9	3	silty CLAY to CLAY	115	1.5	27	18	-	-	1.9	9.9	39	0.005	15
11.98	28.9	41.1	-	1.4	0.0	4.9	3	silty CLAY to CLAY	115	1.5	27	19	-	-	2.0	9.9	39	0.005	15
12.14	33.5	47.1	-	1.6	0.0	4.9	4	clayy SILT to silty CLAY	115	2.0	24	17	-	-	2.3	9.9	37	0.070	15
12.30	34.8	48.3	-	1.9	0.0	5.6	3	silty CLAY to CLAY	115	1.5	32	23	-	-	2.4	9.9	38	0.005	15
12.47	38.7	53.0	-	2.3	0.0	6.1	3	silty CLAY to CLAY	115	1.5	35	26	-	-	2.7	9.9	39	0.005	15
12.63	46.8	56.8	186.9	2.4	0.0	5.2	4	clayy SILT to silty CLAY	115	2.0	28	23	-	-	3.3	9.9	35	0.070	15
12.80	41.6	55.6	-	2.4	0.0	5.9	3	silty CLAY to CLAY	115	1.5	37	28	-	-	2.9	9.9	37	0.005	15
12.96	39.4	52.0	-	2.1	0.0	5.5	3	silty CLAY to CLAY	115	1.5	35	26	-	-	2.8	9.9	37	0.005	15
13.12	37.2	48.4	-	2.0	0.0	5.5	3	silty CLAY to CLAY	115	1.5	32	25	-	-	2.6	9.9	38	0.005	15
13.29	36.5	46.9	-	2.2	0.0	6.2	3	silty CLAY to CLAY	115	1.5	31	24	-	-	2.5	9.9	41	0.005	15
13.45	42.5	54.1	-	2.3	0.0	5.6	4	clayy SILT to silty CLAY	115	2.0	27	21	-	-	3.0	9.9	37	0.070	15
13.62	44.6	56.0	-	2.5	0.0	5.7	3	silty CLAY to CLAY	115	1.5	37	30	-	-	3.1	9.9	37	0.005	15
13.78	44.6	55.5	-	2.5	0.0	5.7	4	clayy SILT to silty CLAY	115	2.0	28	22	-	-	3.1	9.9	37	0.070	15
13.94	45.5	55.8	-	2.4	0.0	5.5	4	clayy SILT to silty CLAY	115	2.0	28	23	-	-	3.2	9.9	36	0.070	15
14.11	43.3	52.6	-	2.2	0.0	5.3	4	clayy SILT to silty CLAY	115	2.0	26	22	-	-	3.0	9.9	36	0.070	15
14.27	43.4	52.1	-	2.3	0.0	5.3	4	clayy SILT to silty CLAY	115	2.0	26	22	-	-	3.0	9.9	37	0.070	15
14.44	44.4	52.6	-	2.5	0.0	5.8	3	silty CLAY to CLAY	115	1.5	35	30	-	-	3.1	9.9	38	0.005	15
14.60	42.0	49.3	-	2.2	0.0	5.4	3	silty CLAY to CLAY	115	1.5	33	28	-	-	2.9	9.9	38	0.005	15
14.76	42.1	48.8	-	2.0	0.0	4.9	4	clayy SILT to silty CLAY	115	2.0	24	21	-	-	2.9	9.9	36	0.070	15
14.93	40.0	45.9	-	1.7	0.0	4.4	4	clayy SILT to silty CLAY	115	2.0	23	20	-	-	2.8	9.9	35	0.070	15
15.09	39.7	45.1	-	1.7	0.0	4.4	4	clayy SILT to silty CLAY	115	2.0	23	20	-	-	2.8	9.9	36	0.070	15
15.26	40.5	45.5	-	2.0	0.0	5.0	4	clayy SILT to silty CLAY	115	2.0	23	20	-	-	2.8	9.9	38	0.070	15
15.42	46.8	49.5	-	2.2	0.0	4.8	4	clayy SILT to silty CLAY	115	2.0	25	23	-	-	3.3	9.9	36	0.070	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDP(479).cpt
CPT Date: 2/22/2010 2:20:51 PM
GW During Test: 18 ft

Sounding ID: CPT-06
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qIncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 - mm	Nk -
15.58	46.3	51.0	-	2.3	0.0	5.1	4	clayy SILT to silty CLAY	115	2.0	25	23	-	-	3.2	9.9	36	0.070	15
15.75	46.5	50.7	-	2.6	0.0	5.8	3	silty CLAY to CLAY	115	1.5	34	31	-	-	3.3	9.9	38	0.005	15
15.91	55.2	57.2	187.6	2.8	0.0	5.2	4	clayy SILT to silty CLAY	115	2.0	29	28	-	-	3.9	9.9	35	0.070	15
16.08	51.2	54.6	-	2.7	0.0	5.4	4	clayy SILT to silty CLAY	115	2.0	27	26	-	-	3.6	9.9	36	0.070	15
16.24	44.1	46.6	-	2.5	0.0	5.8	3	silty CLAY to CLAY	115	1.5	31	29	-	-	3.1	9.9	40	0.005	15
16.40	43.1	45.0	-	2.2	0.0	5.1	3	silty CLAY to CLAY	115	1.5	30	29	-	-	3.0	9.9	38	0.005	15
16.57	44.5	46.1	-	2.2	0.0	5.1	4	clayy SILT to silty CLAY	115	2.0	23	22	-	-	3.1	9.9	38	0.070	15
16.73	43.9	45.0	-	2.1	0.0	4.9	4	clayy SILT to silty CLAY	115	2.0	23	22	-	-	3.1	9.9	38	0.070	15
16.90	38.3	39.0	-	1.9	0.0	5.2	3	silty CLAY to CLAY	115	1.5	26	26	-	-	2.7	9.9	41	0.005	15
17.06	40.8	41.1	-	2.1	0.0	5.3	3	silty CLAY to CLAY	115	1.5	27	27	-	-	2.8	9.9	40	0.005	15
17.23	51.8	51.7	-	2.6	0.0	5.1	4	clayy SILT to silty CLAY	115	2.0	26	26	-	-	3.6	9.9	36	0.070	15
17.39	54.5	53.8	-	2.9	0.0	5.5	4	clayy SILT to silty CLAY	115	2.0	27	27	-	-	3.8	9.9	37	0.070	15
17.55	49.7	48.7	-	2.9	0.0	6.0	3	silty CLAY to CLAY	115	1.5	32	33	-	-	3.5	9.9	39	0.005	15
17.72	50.7	49.1	-	2.9	0.0	5.8	3	silty CLAY to CLAY	115	1.5	33	34	-	-	3.5	9.9	39	0.005	15
17.88	48.0	46.1	-	3.9	0.0	8.3	3	silty CLAY to CLAY	115	1.5	31	32	-	-	3.3	9.9	46	0.005	15
18.05	54.1	51.8	-	3.9	0.0	7.3	3	silty CLAY to CLAY	115	1.5	35	36	-	-	3.8	9.9	42	0.005	15
18.21	54.8	52.2	-	3.5	0.0	6.5	3	silty CLAY to CLAY	115	1.5	35	37	-	-	3.8	9.9	40	0.005	15
18.37	50.4	47.8	-	3.1	0.0	6.2	3	silty CLAY to CLAY	115	1.5	32	34	-	-	3.5	9.9	41	0.005	15
18.54	48.3	45.7	-	3.2	0.0	6.7	3	silty CLAY to CLAY	115	1.5	30	32	-	-	3.4	9.9	42	0.005	15
18.70	50.6	47.6	-	3.2	0.0	6.5	3	silty CLAY to CLAY	115	1.5	32	34	-	-	3.5	9.9	41	0.005	15
18.87	52.0	48.7	-	3.5	0.0	6.9	3	silty CLAY to CLAY	115	1.5	32	35	-	-	3.6	9.9	42	0.005	15
19.03	55.1	51.4	-	3.6	0.0	6.7	3	silty CLAY to CLAY	115	1.5	34	37	-	-	3.8	9.9	41	0.005	15
19.19	59.5	55.4	-	4.3	0.0	7.4	3	silty CLAY to CLAY	115	1.5	37	40	-	-	4.2	9.9	41	0.005	15
19.36	62.4	57.8	-	5.3	0.0	8.7	3	silty CLAY to CLAY	115	1.5	39	42	-	-	4.4	9.9	44	0.005	15
19.52	65.4	60.4	-	6.3	0.0	9.7	9	very stiff fine SOIL	120	2.0	30	33	50	41	-	-	45	0.250	30
19.69	72.5	66.6	-	6.4	0.0	8.9	9	very stiff fine SOIL	120	2.0	33	36	54	41	-	-	42	0.250	30
19.85	66.0	60.3	-	5.3	0.0	8.1	9	very stiff fine SOIL	120	2.0	30	33	50	41	-	-	42	0.250	30
20.01	57.8	52.7	-	4.3	0.0	7.6	3	silty CLAY to CLAY	115	1.5	35	39	-	-	4.0	9.9	42	0.005	15
20.18	59.9	54.3	-	3.8	0.0	6.5	3	silty CLAY to CLAY	115	1.5	36	40	-	-	4.2	9.9	39	0.005	15
20.34	62.3	56.3	-	4.5	0.0	7.3	3	silty CLAY to CLAY	115	1.5	38	42	-	-	4.4	9.9	41	0.005	15
20.51	69.4	62.4	-	5.4	0.0	7.9	9	very stiff fine SOIL	120	2.0	31	35	51	41	-	-	41	0.250	30
20.67	80.9	72.5	-	5.3	0.0	6.7	9	very stiff fine SOIL	120	2.0	36	40	56	42	-	-	36	0.250	30
20.83	74.4	66.4	-	4.9	0.0	6.7	9	very stiff fine SOIL	120	2.0	33	37	53	41	-	-	37	0.250	30
21.00	61.6	54.7	-	3.7	0.0	6.1	3	silty CLAY to CLAY	115	1.5	36	41	-	-	4.3	9.9	38	0.005	15
21.16	53.9	47.7	-	2.8	0.0	5.3	3	silty CLAY to CLAY	115	1.5	32	36	-	-	3.8	9.9	38	0.005	15
21.33	44.0	38.8	-	2.1	0.0	4.9	3	silty CLAY to CLAY	115	1.5	26	29	-	-	3.1	9.9	40	0.005	15
21.49	39.9	35.1	-	1.9	0.0	4.8	3	silty CLAY to CLAY	115	1.5	23	27	-	-	2.8	9.9	41	0.005	15
21.65	38.6	33.8	-	1.9	0.0	5.0	3	silty CLAY to CLAY	115	1.5	23	26	-	-	2.7	9.9	42	0.005	15
21.82	38.4	33.5	-	1.9	0.0	5.1	3	silty CLAY to CLAY	115	1.5	22	26	-	-	2.7	9.9	43	0.005	15
21.98	38.0	33.0	-	1.9	0.0	5.2	3	silty CLAY to CLAY	115	1.5	22	25	-	-	2.6	9.9	44	0.005	15
22.15	34.5	29.9	-	2.3	0.0	7.0	3	silty CLAY to CLAY	115	1.5	20	23	-	-	2.4	9.9	51	0.005	15
22.31	48.0	41.4	-	2.9	0.0	6.1	3	silty CLAY to CLAY	115	1.5	28	32	-	-	3.3	9.9	43	0.005	15
22.47	46.1	39.6	-	3.1	0.0	6.9	3	silty CLAY to CLAY	115	1.5	26	31	-	-	3.2	9.9	46	0.005	15
22.64	39.3	33.6	-	2.7	0.0	7.0	3	silty CLAY to CLAY	115	1.5	22	26	-	-	2.7	9.9	49	0.005	15
22.80	33.3	28.4	-	1.9	0.0	6.1	3	silty CLAY to CLAY	115	1.5	19	22	-	-	2.3	9.9	49	0.005	15
22.97	34.6	29.4	-	1.8	0.0	5.4	3	silty CLAY to CLAY	115	1.5	20	23	-	-	2.4	9.9	46	0.005	15
23.13	35.9	30.4	-	1.9	0.0	5.4	3	silty CLAY to CLAY	115	1.5	20	24	-	-	2.5	9.9	46	0.005	15
23.30	33.1	27.9	-	1.7	0.0	5.5	3	silty CLAY to CLAY	115	1.5	19	22	-	-	2.3	9.9	48	0.005	15
23.46	33.2	27.9	-	1.6	0.0	5.1	3	silty CLAY to CLAY	115	1.5	19	22	-	-	2.3	9.9	47	0.005	15
23.62	36.8	30.8	-	1.7	0.0	4.8	3	silty CLAY to CLAY	115	1.5	21	25	-	-	2.6	9.9	44	0.005	15
23.79	37.2	31.0	-	1.7	0.0	4.8	3	silty CLAY to CLAY	115	1.5	21	25	-	-	2.6	9.9	43	0.005	15
23.95	32.9	27.3	-	1.8	0.0	5.7	3	silty CLAY to CLAY	115	1.5	18	22	-	-	2.3	9.9	49	0.005	15
24.12	36.5	30.2	-	2.3	0.0	6.5	3	silty CLAY to CLAY	115	1.5	20	24	-	-	2.5	9.9	49	0.005	15
24.28	40.7	33.6	-	3.1	0.0	7.8	3	silty CLAY to CLAY	115	1.5	22	27	-	-	2.8	9.9	51	0.005	15
24.44	58.2	47.9	-	4.3	0.0	7.5	3	silty CLAY to CLAY	115	1.5	32	39	-	-	4.1	9.9	44	0.005	15
24.61	64.6	52.9	-	4.6	0.0	7.3	3	silty CLAY to CLAY	115	1.5	35	43	-	-	4.5	9.9	42	0.005	15
24.77	62.8	51.3	-	4.9	0.0	7.9	3	silty CLAY to CLAY	115	1.5	34	42	-	-	4.4	9.9	44	0.005	15
24.94	44.8	36.5	-	3.9	0.0	9.0	3	silty CLAY to CLAY	115	1.5	24	30	-	-	3.1	9.9	52	0.005	15
25.10	52.3	42.4	-	3.4	0.0	6.7	3	silty CLAY to CLAY	115	1.5	28	35	-	-	3.6	9.9	44	0.005	15
25.26	53.7	43.4	-	3.4	0.0	6.5	3	silty CLAY to CLAY	115	1.5	29	36	-	-	3.7	9.9	43	0.005	15
25.43	55.3	44.5	-	3.4	0.0	6.2	3	silty CLAY to CLAY	115	1.5	30	37	-	-	3.8	9.9	42	0.005	15
25.59	52.7	42.3	-	2.9	0.0	5.7	3	silty CLAY to CLAY	115	1.5	28	35	-	-	3.7	9.9	41	0.005	15
25.76	53.1	42.5	-	2.8	0.0	5.4	3	silty CLAY to CLAY	115	1.5	28	35	-	-	3.7	9.9	40	0.005	15
25.92	51.9	41.4	-	2.7	0.0	5.4	3	silty CLAY to CLAY	115	1.5	28	35	-	-	3.6	9.9	41	0.005	15
26.08	52.9	42.0	-	2.6	0.0	5.1	3	silty CLAY to CLAY	115	1.5	28	35	-	-	3.7	9.9	39	0.005	15
26.25	50.6	40.0	-	2.5	0.0	5.2	3	silty CLAY to CLAY	115	1.5	27	34	-	-	3.5	9.9	40	0.005	15
26.41	49.0	38.7	-	2.3	0.0	4.9	3	silty CLAY to CLAY	115	1.5	26	33	-	-	3.4	9.9	40	0.005	15
26.58	47.9	37.7	-	2.2	0.0	4.7	3	silty CLAY to CLAY	115	1.5	25	32	-	-	3.3	9.9	40	0.005	15
26.74	45.1	35.3	-	2.5	0.0	5.8	3	silty CLAY to CLAY	115	1.5	24	30	-	-	3.1	9.9	44	0.005	15
26.90	51.7	40.4	-	2.8	0.0	5.6	3	silty CLAY to CLAY	115	1.5	27	34	-	-	3.6	9.9	41	0.005	15
27.07	48.3	37.6	-	2.8	0.0	6.1	3	silty CLAY to CLAY	115	1.5	25	32	-	-	3.4	9.9	44	0.005	15
27.23	45.0	34.9	-	2.5	0.0	5.9	3	silty CLAY to CLAY	115	1.5	23	30	-	-	3.1	9.9	45	0.005	15
27.40	43.3	33.4	-	2.5	0.0	6.1	3	silty CLAY to CLAY	115	1.5	22	29	-	-	3.0	9.9	46	0.005	15
27.56	45.3	34.9	-	2.7	0.0	6.2	3	silty CLAY to CLAY	115	1.5	23	30	-	-	3.1	9.9	46	0.005	15
27.72	44.9	34.5	-	2.3	0.0	5.4	3	silty CLAY to CLAY	115	1.5	23	30	-	-	3.1	9.9	44	0.005	15
27.89	40.8	31.2	-	1.9	0.0	4.9	3	silty CLAY to CLAY	115	1.5	21	27	-	-	2.8	9.9	44	0.005	15
28.05	39.4	30.1	-	1.7	0.0	4.6	3	silty CLAY to CLAY	115	1.5	20	26	-	-	2.7	9.9	43	0.005	15
28.22	39.7	30.2	-	1.9	0.0	5.1	3	silty CLAY to CLAY	115	1.5	20	26	-	-	2.7	9.9	45	0.005	15
28.38	46.1	35.0	-	2.4	0.0	5.3	3	silty CLAY to CLAY	115	1.5	23	31	-	-	3.2	9.9	43	0.005	15
28.54	47.9	36.2	-	2.3	0.0	5.1	3	silty CLAY to CLAY	115	1.5	24	32	-	-	3.3	9.9	42	0.005	15
28.71	44.9	33.8	-	2.1	0.0	4.9	3	silty CLAY to CLAY	115	1.5	23	30	-	-	3.1	9.9	42	0.005	15
28.87	44.1	33.1	-	2.0	0.0	4.7	3	silty CLAY to CLAY	115	1.5	22	29	-	-	3.1	9.9	42	0.005	15
29.04	43.2	32.3	-	2.0	0.0	4.8	3	silty CLAY to CLAY	115	1.5	22	29	-	-	3.0	9.9	43	0.005	15
29.20	44.4	33.1	-	2.4	0.0	5.6	3	silty CLAY to CLAY	115	1.5	22	30	-	-	3.1	9.9	45	0.005	15
29.36	56.5	42.0	-	2.9	0.0	5.3	3	silty CLAY to CLAY	115	1.5	28	38	-	-	3.9	9.9	40	0.005	15
29.53	66.5	49.2	-	3.3	0.0	5.0	4	clayy SILT to silty CLAY	115	2.0	25	33	-	-	4.6	9.9	37	0.070	15
29.69	64.5	47.7	-	3.0	0.0	4.7	4	clayy SILT to silty CLAY	115	2.0	24	32	-	-	4.5	9.9	36	0.070	15
29.86	60.6	44.6	-	2.8	0.0	4.8	4	clayy SILT to silty CLAY	115	2.0	22	30	-	-	4.2	9.9	38	0.070	15
30.02	58.9	43.2	-	2.8	0.0	5.0	3	silty CLAY to CLAY	115	1.5	29	39	-	-	4.1	9.9	38	0.005	15
30.19	65.0	47.5	-	3.2	0.0	5.1	4	clayy SILT to silty CLAY	115	2.0	24	32	-	-	4.5	9.9	37	0.070	15
30.35	61.7	45.0	-	3.4	0.0	5.7	3	silty CLAY to CLAY	115	1.5	30	41	-	-	4.3	9.9	40	0.005	15
30.51	60.5	44.0	-	2.9	0.0	5.0	4	clayy SILT to silty CLAY	115	2.0	22	30	-	-	4.2	9.9	38	0.070	15
30.68	56.9	41.2	-	2.9	0.0	5.2	3	silty CLAY to CLAY	115	1.5	27	38	-	-	4.0	9.9	40	0.005	15
30.84	54.5	39.4	-	3.6	0.0	6.9	3	silty CLAY to CLAY	115	1.5	26	36	-	-	3.8	9.9	46	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(479).cpt
CPT Date: 2/22/2010 2:20:51 PM
GW During Test: 18 ft

Sounding ID: CPT-06
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qc1n PS -	q1ncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 - mm	Nk -
31.01	56.2	40.5	-	3.8	0.0	7.0	3	silty CLAY to CLAY	115	1.5	27	37	-	-	3.9	9.9	45	0.005	15
31.17	60.5	43.5	-	4.1	0.0	7.1	3	silty CLAY to CLAY	115	1.5	29	40	-	-	4.2	9.9	44	0.005	15
31.33	54.5	39.0	-	3.8	0.0	7.2	3	silty CLAY to CLAY	115	1.5	26	36	-	-	3.8	9.9	47	0.005	15
31.50	48.9	34.9	-	3.2	0.0	6.9	3	silty CLAY to CLAY	115	1.5	23	33	-	-	3.4	9.9	48	0.005	15
31.66	46.2	32.9	-	2.9	0.0	6.6	3	silty CLAY to CLAY	115	1.5	22	31	-	-	3.2	9.9	48	0.005	15
31.83	47.0	33.3	-	3.0	0.0	6.6	3	silty CLAY to CLAY	115	1.5	22	31	-	-	3.3	9.9	48	0.005	15
31.99	45.7	32.3	-	2.9	0.0	6.6	3	silty CLAY to CLAY	115	1.5	22	30	-	-	3.2	9.9	48	0.005	15
32.15	45.2	31.8	-	3.1	0.0	7.1	3	silty CLAY to CLAY	115	1.5	21	30	-	-	3.1	9.9	50	0.005	15
32.32	50.3	35.4	-	3.3	0.0	6.8	3	silty CLAY to CLAY	115	1.5	24	34	-	-	3.5	9.9	47	0.005	15
32.48	57.4	40.2	-	3.8	0.0	6.8	3	silty CLAY to CLAY	115	1.5	27	38	-	-	4.0	9.9	45	0.005	15
32.65	56.2	39.3	-	3.9	0.0	7.2	3	silty CLAY to CLAY	115	1.5	26	37	-	-	3.9	9.9	47	0.005	15
32.81	55.6	38.7	-	3.6	0.0	6.8	3	silty CLAY to CLAY	115	1.5	26	37	-	-	3.9	9.9	46	0.005	15
32.97	59.4	41.3	-	3.5	0.0	6.1	3	silty CLAY to CLAY	115	1.5	28	40	-	-	4.1	9.9	43	0.005	15
33.14	59.0	40.8	-	3.6	0.0	6.3	3	silty CLAY to CLAY	115	1.5	27	39	-	-	4.1	9.9	43	0.005	15
33.30	59.5	41.1	-	3.6	0.0	6.2	3	silty CLAY to CLAY	115	1.5	27	40	-	-	4.1	9.9	43	0.005	15
33.47	63.7	43.9	-	3.8	0.0	6.2	3	silty CLAY to CLAY	115	1.5	29	42	-	-	4.4	9.9	42	0.005	15
33.63	63.0	43.2	-	3.8	0.0	6.2	3	silty CLAY to CLAY	115	1.5	29	42	-	-	4.4	9.9	42	0.005	15
33.79	68.3	46.7	-	4.1	0.0	6.2	3	silty CLAY to CLAY	115	1.5	31	46	-	-	4.8	9.9	41	0.005	15
33.96	61.6	42.0	-	5.2	0.0	8.7	3	silty CLAY to CLAY	115	1.5	28	41	-	-	4.3	9.9	49	0.005	15
34.12	63.6	43.2	-	5.3	0.0	8.7	3	silty CLAY to CLAY	115	1.5	29	42	-	-	4.4	9.9	48	0.005	15
34.29	79.5	53.9	-	5.5	0.0	7.1	3	silty CLAY to CLAY	115	1.5	36	53	-	-	5.5	9.9	41	0.005	15
34.45	72.3	48.9	-	5.8	0.0	8.3	3	silty CLAY to CLAY	115	1.5	33	48	-	-	5.0	9.9	45	0.005	15
34.61	66.4	44.7	-	6.0	0.0	9.4	3	silty CLAY to CLAY	115	1.5	30	44	-	-	4.6	9.9	49	0.005	15
34.78	61.7	41.5	-	6.2	0.0	9.9	3	silty CLAY to CLAY	115	1.5	28	41	-	-	4.3	9.9	52	0.005	15
34.94	56.8	38.1	-	6.1	0.0	9.9	3	silty CLAY to CLAY	115	1.5	25	38	-	-	3.9	9.9	53	0.005	15
35.11	52.9	35.3	-	5.9	0.0	9.9	3	silty CLAY to CLAY	115	1.5	24	35	-	-	3.7	9.9	55	0.005	15
35.27	61.9	41.2	-	5.8	0.0	9.7	3	silty CLAY to CLAY	115	1.5	27	41	-	-	4.3	9.9	52	0.005	15
35.43	62.3	41.4	-	6.2	0.0	9.9	3	silty CLAY to CLAY	115	1.5	28	42	-	-	4.3	9.9	52	0.005	15
35.60	70.7	46.9	-	7.0	0.0	9.9	3	silty CLAY to CLAY	115	1.5	31	47	-	-	4.9	9.9	50	0.005	15
35.76	77.4	51.2	-	7.3	0.0	9.7	3	silty CLAY to CLAY	115	1.5	34	52	-	-	5.4	9.9	48	0.005	15
35.93	79.0	52.1	-	7.2	0.0	9.3	3	silty CLAY to CLAY	115	1.5	35	53	-	-	5.5	9.9	47	0.005	15
36.09	76.2	50.1	-	7.4	0.0	9.9	3	silty CLAY to CLAY	115	1.5	33	51	-	-	5.3	9.9	49	0.005	15
36.26	77.3	50.6	-	7.3	0.0	9.7	3	silty CLAY to CLAY	115	1.5	34	52	-	-	5.4	9.9	48	0.005	15
36.42	77.3	50.5	-	7.2	0.0	9.6	3	silty CLAY to CLAY	115	1.5	34	52	-	-	5.4	9.9	48	0.005	15
36.58	79.1	51.5	-	7.2	0.0	9.3	3	silty CLAY to CLAY	115	1.5	34	53	-	-	5.5	9.9	47	0.005	15
36.75	78.8	51.2	-	6.8	0.0	8.8	3	silty CLAY to CLAY	115	1.5	34	53	-	-	5.5	9.9	46	0.005	15
36.91	71.5	46.3	-	5.3	0.0	7.6	3	silty CLAY to CLAY	115	1.5	31	48	-	-	5.0	9.9	45	0.005	15
37.08	64.2	41.5	-	4.2	0.0	6.8	3	silty CLAY to CLAY	115	1.5	28	43	-	-	4.5	9.9	45	0.005	15
37.24	62.3	40.1	-	3.2	0.0	5.3	3	silty CLAY to CLAY	115	1.5	27	42	-	-	4.3	9.9	41	0.005	15
37.40	73.3	47.1	-	5.7	0.0	8.0	3	silty CLAY to CLAY	115	1.5	31	49	-	-	5.1	9.9	46	0.005	15
37.57	62.6	40.1	-	6.8	0.0	9.9	3	silty CLAY to CLAY	115	1.5	27	42	-	-	4.3	9.9	52	0.005	15
37.73	83.1	53.1	-	6.3	0.0	7.8	3	silty CLAY to CLAY	115	1.5	35	55	-	-	5.8	9.9	43	0.005	15
37.90	76.8	49.0	-	6.0	0.0	8.1	3	silty CLAY to CLAY	115	1.5	33	51	-	-	5.4	9.9	45	0.005	15
38.06	73.0	46.4	-	5.6	0.0	7.9	3	silty CLAY to CLAY	115	1.5	31	49	-	-	5.1	9.9	45	0.005	15
38.22	66.5	42.1	-	5.2	0.0	8.1	3	silty CLAY to CLAY	115	1.5	28	44	-	-	4.6	9.9	48	0.005	15
38.39	62.1	39.2	-	4.9	0.0	8.2	3	silty CLAY to CLAY	115	1.5	26	41	-	-	4.3	9.9	49	0.005	15
38.55	65.7	41.4	-	5.1	0.0	8.1	3	silty CLAY to CLAY	115	1.5	28	44	-	-	4.6	9.9	48	0.005	15
38.72	66.7	41.9	-	5.5	0.0	8.5	3	silty CLAY to CLAY	115	1.5	28	44	-	-	4.6	9.9	49	0.005	15
38.88	69.3	43.4	-	5.5	0.0	8.2	3	silty CLAY to CLAY	115	1.5	29	46	-	-	4.8	9.9	47	0.005	15
39.04	67.4	42.1	-	6.8	0.0	9.9	3	silty CLAY to CLAY	115	1.5	28	45	-	-	4.7	9.9	52	0.005	15
39.21	60.9	37.9	-	7.5	0.0	9.9	3	silty CLAY to CLAY	115	1.5	25	41	-	-	4.2	9.9	53	0.005	15
39.37	78.2	48.6	-	7.6	0.0	9.9	3	silty CLAY to CLAY	115	1.5	32	52	-	-	5.4	9.9	49	0.005	15
39.54	71.2	44.1	-	7.0	0.0	9.9	3	silty CLAY to CLAY	115	1.5	29	47	-	-	4.9	9.9	51	0.005	15
39.70	67.3	41.6	-	6.5	0.0	10.0	3	silty CLAY to CLAY	115	1.5	28	45	-	-	4.7	9.9	52	0.005	15
39.86	72.0	44.4	-	6.1	0.0	8.8	3	silty CLAY to CLAY	115	1.5	30	48	-	-	5.0	9.9	48	0.005	15
40.03	76.3	46.9	-	6.3	0.0	8.5	3	silty CLAY to CLAY	115	1.5	31	51	-	-	5.3	9.9	47	0.005	15
40.19	73.1	44.9	-	6.6	0.0	9.3	3	silty CLAY to CLAY	115	1.5	30	49	-	-	5.1	9.9	49	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

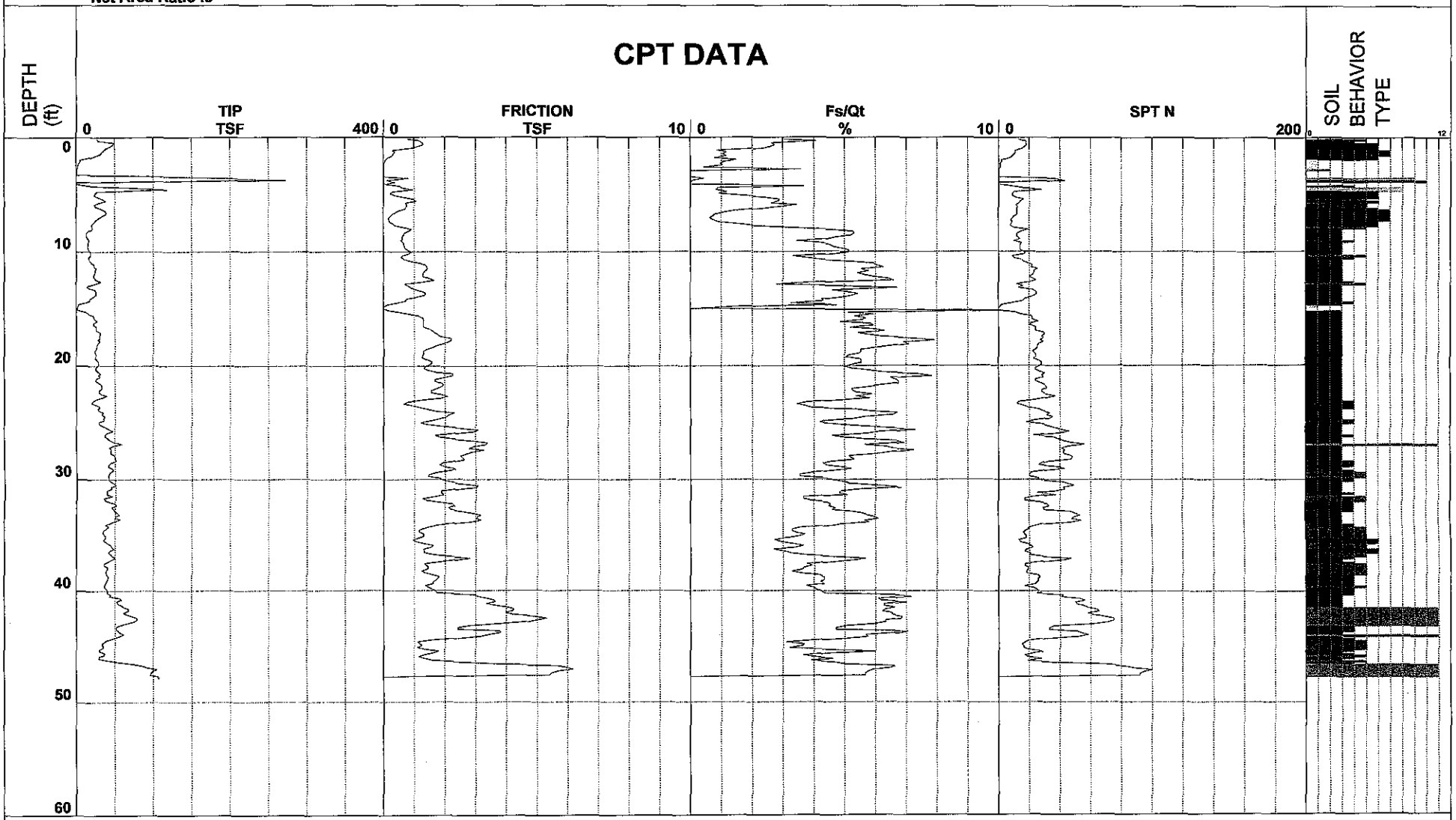
Middle Earth Geo Testing

Associated Soils Engineering

Project	Big Canyon Country Club	Operator	BH-AH	Filename	SDF(481)S.cpt
Job Number	6169	Cone Number	DSG1104	GPS	
Hole Number	CPT-07	Date and Time	2/22/2010 3:13:15 PM	Maximum Depth	47.90 ft
Water Table Depth		19.00 ft			

Net Area Ratio .8

CPT DATA



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

Cone Size 10cm squared

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

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(481)S.cpt
CPT Date: 2/22/2010 3:13:15 PM
GW During Test: 19 ft

Sounding ID: CPT-07
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 - mm	Nk -
0.33	29.0	46.5	145.9	1.2	0.0	4.1	4	clayy SILT to silty CLAY	115	2.0	23	14	-	-	2.0	9.9	34	0.070	15
0.49	48.1	77.2	145.1	1.3	0.0	2.6	5	silty SAND to sandy SILT	120	4.0	19	12	58	48	-	-	22	0.200	16
0.66	47.6	76.4	147.4	1.3	0.0	2.7	5	silty SAND to sandy SILT	120	4.0	19	12	58	48	-	-	22	0.200	16
0.82	43.5	69.8	137.1	1.1	0.0	2.6	5	silty SAND to sandy SILT	120	4.0	17	11	55	48	-	-	23	0.200	16
0.98	38.9	62.3	123.2	0.9	0.0	2.3	5	silty SAND to sandy SILT	120	4.0	16	10	51	48	-	-	23	0.200	16
1.15	35.8	57.4	80.0	0.3	0.0	0.9	5	silty SAND to sandy SILT	120	4.0	14	9	49	48	-	-	15	0.200	16
1.31	33.4	53.6	84.7	0.4	0.0	1.2	5	silty SAND to sandy SILT	120	4.0	13	8	46	47	-	-	18	0.200	16
1.48	31.2	50.0	78.9	0.3	0.0	1.0	5	silty SAND to sandy SILT	120	4.0	12	8	44	47	-	-	18	0.200	16
1.64	24.6	39.4	73.6	0.3	0.0	1.2	5	silty SAND to sandy SILT	120	4.0	10	6	36	45	-	-	22	0.200	16
1.80	18.4	29.5	56.5	0.1	0.0	0.8	5	silty SAND to sandy SILT	120	4.0	7	5	27	43	-	-	22	0.200	16
1.97	5.0	8.1	-	0.1	0.0	1.5	4	clayy SILT to silty CLAY	115	2.0	4	3	-	-	0.3	9.9	54	0.070	15
2.13	4.7	7.6	-	0.1	0.0	1.1	4	clayy SILT to silty CLAY	115	2.0	4	2	-	-	0.3	9.9	51	0.070	15
2.30	2.7	4.4	-	0.0	0.0	1.0	3	silty CLAY to CLAY	115	1.5	3	2	-	-	0.2	6.3	66	0.005	15
2.46	1.7	2.7	-	0.0	0.0	1.1	1	sensitive fine SOIL	115	2.0	1	1	-	-	0.1	3.5	83	0.005	15
2.62	1.5	2.4	-	0.0	0.0	0.5	1	sensitive fine SOIL	115	2.0	1	1	-	-	0.1	2.8	78	0.005	15
2.79	1.1	0.5	-	0.0	0.0	7.5	2	Organic SOILS - Peats	100	1.0	1	1	-	-	0.1	1.9	95	0.100	10
2.95	1.1	0.3	-	0.0	0.0	0.1	1	sensitive fine SOIL	115	2.0	0	1	-	-	0.1	1.8	95	0.005	15
3.12	1.1	0.3	-	0.0	0.0	0.1	1	sensitive fine SOIL	115	2.0	0	1	-	-	0.1	1.7	95	0.005	15
3.28	1.1	0.5	-	0.0	0.0	0.1	1	sensitive fine SOIL	115	2.0	0	1	-	-	0.1	1.6	95	0.005	15
3.45	108.8	174.4	174.4	0.0	0.0	0.1	7	grvly SAND to dense SAND	130	6.0	29	18	85	48	-	-	5	1.000	16
3.61	194.6	312.1	312.1	0.8	0.0	0.4	7	grvly SAND to dense SAND	130	6.0	52	32	95	48	-	-	5	1.000	16
3.77	272.0	436.2	436.2	0.1	0.0	0.1	7	grvly SAND to dense SAND	130	6.0	73	45	95	48	-	-	5	1.000	16
3.94	1.1	-0.8	-	0.4	0.0	0.1	1	sensitive fine SOIL	115	2.0	1	1	-	-	0.1	1.4	95	0.005	15
4.10	1.1	-0.8	-	0.0	0.0	0.1	1	sensitive fine SOIL	115	2.0	1	1	-	-	0.1	1.3	95	0.005	15
4.27	13.5	21.7	-	0.5	0.0	3.7	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	45	0.005	15
4.43	68.6	110.1	125.6	0.6	0.0	0.9	6	clean SAND to silty SAND	125	5.0	22	14	70	46	-	-	9	0.350	16
4.59	117.8	188.9	189.1	1.0	0.0	0.8	6	clean SAND to silty SAND	125	5.0	38	24	88	48	-	-	5	0.350	16
4.76	26.3	42.2	76.0	0.3	0.0	1.2	5	silty SAND to sandy SILT	120	4.0	11	7	38	41	-	-	21	0.200	16
4.92	24.0	38.5	67.3	0.2	0.0	0.9	5	silty SAND to sandy SILT	120	4.0	10	6	36	41	-	-	20	0.200	16
5.09	23.0	36.8	85.2	0.4	0.0	1.7	5	silty SAND to sandy SILT	120	4.0	9	6	34	40	-	-	26	0.200	16
5.25	28.4	45.5	110.2	0.7	0.0	2.4	5	silty SAND to sandy SILT	120	4.0	11	7	41	41	-	-	27	0.200	16
5.41	33.5	53.7	129.3	1.0	0.0	2.9	4	clayy SILT to silty CLAY	115	2.0	27	17	-	-	2.3	9.9	27	0.070	15
5.58	37.4	60.0	134.9	1.1	0.0	2.9	5	silty SAND to sandy SILT	120	4.0	15	9	50	43	-	-	26	0.200	16
5.74	27.4	44.0	113.1	0.7	0.0	2.6	4	clayy SILT to silty CLAY	115	2.0	22	14	-	-	1.9	9.9	29	0.070	15
5.91	22.0	35.3	-	0.8	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	18	11	-	-	1.5	9.9	36	0.070	15
6.07	25.4	40.8	115.8	0.7	0.0	2.9	4	clayy SILT to silty CLAY	115	2.0	20	13	-	-	1.8	9.9	31	0.070	15
6.23	31.4	50.3	113.7	0.7	0.0	2.4	5	silty SAND to sandy SILT	120	4.0	13	8	44	41	-	-	26	0.200	16
6.40	36.5	57.6	96.1	0.5	0.0	1.4	5	silty SAND to sandy SILT	120	4.0	14	9	49	42	-	-	19	0.200	16
6.56	38.8	60.5	88.8	0.4	0.0	1.1	5	silty SAND to sandy SILT	120	4.0	15	10	50	42	-	-	16	0.200	16
6.73	37.8	58.2	79.2	0.3	0.0	0.8	6	clean SAND to silty SAND	125	5.0	12	8	49	42	-	-	14	0.350	16
6.89	32.8	49.8	70.4	0.2	0.0	0.7	5	silty SAND to sandy SILT	120	4.0	12	8	44	41	-	-	15	0.200	16
7.05	29.0	43.5	63.4	0.2	0.0	0.6	5	silty SAND to sandy SILT	120	4.0	11	7	40	40	-	-	16	0.200	16
7.22	25.5	37.8	62.5	0.2	0.0	0.8	5	silty SAND to sandy SILT	120	4.0	9	6	35	40	-	-	19	0.200	16
7.38	23.4	34.4	63.9	0.2	0.0	0.9	5	silty SAND to sandy SILT	120	4.0	9	6	32	39	-	-	21	0.200	16
7.55	20.8	30.2	74.7	0.3	0.0	1.5	5	silty SAND to sandy SILT	120	4.0	8	5	27	38	-	-	28	0.200	16
7.71	19.7	28.3	84.6	0.4	0.0	2.1	4	clayy SILT to silty CLAY	115	2.0	14	10	-	-	1.4	9.9	33	0.070	15
7.87	20.8	33.4	-	0.7	0.0	3.2	4	clayy SILT to silty CLAY	115	2.0	17	10	-	-	1.4	9.9	36	0.070	15
8.04	20.2	32.4	-	0.9	0.0	4.6	3	silty CLAY to CLAY	115	1.5	22	13	-	-	1.4	9.9	42	0.005	15
8.20	15.4	24.7	-	0.8	0.0	5.5	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.1	9.9	50	0.005	15
8.37	12.8	20.5	-	0.7	0.0	5.5	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	54	0.005	15
8.53	12.8	20.5	-	0.7	0.0	5.4	3	silty CLAY to CLAY	115	1.5	14	9	-	-	0.9	9.9	54	0.005	15
8.69	12.7	20.3	-	0.6	0.0	4.9	3	silty CLAY to CLAY	115	1.5	14	8	-	-	0.9	9.9	52	0.005	15
8.86	14.3	23.0	-	0.6	0.0	4.6	3	silty CLAY to CLAY	115	1.5	15	10	-	-	1.0	9.9	48	0.005	15
9.02	16.4	26.2	-	0.6	0.0	3.6	4	clayy SILT to silty CLAY	115	2.0	13	8	-	-	1.1	9.9	42	0.070	15
9.19	15.2	24.4	-	0.6	0.0	4.4	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	46	0.005	15
9.35	14.7	23.6	-	0.7	0.0	4.7	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	48	0.005	15
9.51	14.7	23.5	-	0.7	0.0	4.8	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	49	0.005	15
9.68	14.3	22.9	-	0.7	0.0	5.1	3	silty CLAY to CLAY	115	1.5	15	10	-	-	1.0	9.9	50	0.005	15
9.84	15.1	24.3	-	0.8	0.0	5.3	3	silty CLAY to CLAY	115	1.5	16	10	-	-	1.0	9.9	50	0.005	15
10.01	17.5	28.1	-	0.9	0.0	5.3	3	silty CLAY to CLAY	115	1.5	19	12	-	-	1.2	9.9	47	0.005	15
10.17	17.9	28.7	-	0.8	0.0	4.7	3	silty CLAY to CLAY	115	1.5	19	12	-	-	1.2	9.9	44	0.005	15
10.34	18.2	29.1	-	0.6	0.0	3.4	4	clayy SILT to silty CLAY	115	2.0	15	9	-	-	1.3	9.9	39	0.070	15
10.50	15.4	24.7	-	0.6	0.0	3.9	4	clayy SILT to silty CLAY	115	2.0	12	8	-	-	1.1	9.9	44	0.070	15
10.66	15.8	25.2	-	0.7	0.0	4.4	3	silty CLAY to CLAY	115	1.5	17	11	-	-	1.1	9.9	46	0.005	15
10.83	17.2	27.0	-	0.9	0.0	5.5	3	silty CLAY to CLAY	115	1.5	18	11	-	-	1.2	9.9	48	0.005	15
10.99	19.8	30.7	-	1.2	0.0	6.1	3	silty CLAY to CLAY	115	1.5	20	13	-	-	1.4	9.9	48	0.005	15
11.16	22.9	34.9	-	1.4	0.0	6.2	3	silty CLAY to CLAY	115	1.5	23	15	-	-	1.6	9.9	46	0.005	15
11.32	22.4	33.7	-	1.4	0.0	6.4	3	silty CLAY to CLAY	115	1.5	22	15	-	-	1.6	9.9	47	0.005	15
11.48	25.6	38.0	-	1.4	0.0	5.7	3	silty CLAY to CLAY	115	1.5	25	17	-	-	1.8	9.9	43	0.005	15
11.65	23.5	34.4	-	1.4	0.0	5.9	3	silty CLAY to CLAY	115	1.5	23	16	-	-	1.6	9.9	45	0.005	15
11.81	23.8	34.3	-	1.3	0.0	5.6	3	silty CLAY to CLAY	115	1.5	23	16	-	-	1.6	9.9	44	0.005	15
11.98	22.5	32.1	-	1.3	0.0	5.8	3	silty CLAY to CLAY	115	1.5	21	15	-	-	1.6	9.9	46	0.005	15
12.14	21.3	29.9	-	1.3	0.0	6.2	3	silty CLAY to CLAY	115	1.5	20	14	-	-	1.5	9.9	48	0.005	15
12.30	23.1	32.0	-	1.5	0.0	6.6	3	silty CLAY to CLAY	115	1.5	21	15	-	-	1.6	9.9	48	0.005	15
12.47	24.8	34.0	-	1.6	0.0	6.8	3	silty CLAY to CLAY	115	1.5	23	17	-	-	1.7	9.9	48	0.005	15
12.63	31.8	38.5	-	1.3	0.0	4.1	4	clayy SILT to silty CLAY	115	2.0	19	16	-	-	2.2	9.9	37	0.070	15
12.80	25.2	30.3	-	0.7	0.0	2.9	4	clayy SILT to silty CLAY	115	2.0	15	13	-	-	1.7	9.9	36	0.070	15
12.96	16.3	21.5	-	0.8	0.0	5.3	3	silty CLAY to CLAY	115	1.5	14	11	-	-	1.1	9.9	52	0.005	15
13.12	13.4	17.4	-	0.9	0.0	7.1	3	silty CLAY to CLAY	115	1.5	12	9	-	-	0.9	9.1	63	0.005	15
13.29	22.8	29.3	-	1.1	0.0	4.8	3	silty CLAY to CLAY	115	1.5	20	15	-	-	1.6	9.9	44	0.005	15
13.45	25.1	31.8	-	1.3	0.0	5.2	3	silty CLAY to CLAY	115	1.5	21	17	-	-	1.7	9.9	44	0.005	15
13.62	25.6	32.1	-	1.4	0.0	5.6	3	silty CLAY to CLAY	115	1.5	21	17	-	-	1.8	9.9	45	0.005	15
13.78	25.3	31.3	-	1.3	0.0	5.4	3	silty CLAY to CLAY	115	1.5	21	17	-	-	1.8	9.9	45	0.005	15
13.94	21.7	26.6	-	1.0	0.0	5.0	3	silty CLAY to CLAY	115	1.5	18	14	-	-	1.5	9.9	47	0.005	15
14.11	17.4	21.1	-	0.7	0.0	4.5	3	silty CLAY to CLAY	115	1.5	14	12	-	-	1.2	9.9	50	0.005	15
14.27	16.9	20.2	-	0.7	0.0	4.5	3	silty CLAY to CLAY	115	1.5	13	11	-	-	1.2	9.9	51	0.005	15
14.44	14.1	16.7	-	0.5	0.0	3.5	3	silty CLAY to CLAY	115	1.5	11	9	-	-	1.0	8.9	51	0.005	15
14.60	2.6	3.0	-	0.1	0.0	7.1	2	Organic SOILS - Peats	100	1.0	3	3	-	-	0.2	1.1	95	0.100	10
14.76	1.8	2.1	-	0.0	0.0	3.0	2	Organic SOILS - Peats	100	1.0	2	2	-	-	0.1	0.6	95	0.100	10
14.93	1.0	1.2	-	0.0	0.0	0.1	1	sensitive fine SOIL	115	2.0	1	1	-	-	0.0	0.1	95	0.005	15
15.09	1.1	0.7	-	0.2	0.0	0.1	1	sensitive fine SOIL	115	2.0	0	1	-	-	0.0	0.1	95	0.005	15
15.26	11.0	12.4	-	0.6	0.0	5.6	3	silty CLAY to CLAY	115	1.5	8	7	-	-	0.7	6.5	67	0.005	15
15.42	14.8	16.5	-	0.9	0.0	6.3	3	silty CLAY to CLAY	115	1.5	11	10	-	-	1.0	8.9	62	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Big Canyon Country Club

Project ID: Associated Soils
Data File: SDF(481)S.cpt
CPT Date: 2/22/2010 3:13:15 PM
GW During Test: 19 ft

Sounding ID: CPT-07
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Ratio %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 - mm	Nk -
31.01	38.5	27.2	-	1.9	0.0	5.1	3	silty CLAY to CLAY	115	1.5	18	26	-	-	2.7	9.9	47	0.005	15
31.17	38.7	27.3	-	1.9	0.0	5.1	3	silty CLAY to CLAY	115	1.5	18	26	-	-	2.7	9.9	47	0.005	15
31.33	38.4	27.0	-	1.9	0.0	5.3	3	silty CLAY to CLAY	115	1.5	18	26	-	-	2.6	9.9	48	0.005	15
31.50	45.1	31.6	-	1.6	0.0	3.8	4	clayy SILT to silty CLAY	115	2.0	16	23	-	-	3.1	9.9	40	0.070	15
31.66	34.6	24.2	-	1.3	0.0	3.8	4	clayy SILT to silty CLAY	115	2.0	12	17	-	-	2.4	9.9	45	0.070	15
31.83	36.2	25.2	-	1.4	0.0	4.1	3	silty CLAY to CLAY	115	1.5	17	24	-	-	2.5	9.9	45	0.005	15
31.99	42.0	29.1	-	1.9	0.0	4.6	3	silty CLAY to CLAY	115	1.5	19	28	-	-	2.9	9.9	44	0.005	15
32.15	49.4	34.2	-	2.2	0.0	4.7	3	silty CLAY to CLAY	115	1.5	23	33	-	-	3.4	9.9	42	0.005	15
32.32	51.6	35.6	-	2.3	0.0	4.7	3	silty CLAY to CLAY	115	1.5	24	34	-	-	3.6	9.9	41	0.005	15
32.48	45.2	31.1	-	2.1	0.0	4.9	3	silty CLAY to CLAY	115	1.5	21	30	-	-	3.1	9.9	44	0.005	15
32.65	47.5	32.6	-	2.2	0.0	4.8	3	silty CLAY to CLAY	115	1.5	22	32	-	-	3.3	9.9	43	0.005	15
32.81	49.1	33.5	-	2.6	0.0	5.5	3	silty CLAY to CLAY	115	1.5	22	33	-	-	3.4	9.9	44	0.005	15
32.97	52.1	35.5	-	2.9	0.0	5.8	3	silty CLAY to CLAY	115	1.5	24	35	-	-	3.6	9.9	44	0.005	15
33.14	55.0	37.4	-	3.2	0.0	5.9	3	silty CLAY to CLAY	115	1.5	25	37	-	-	3.8	9.9	44	0.005	15
33.30	50.9	34.5	-	3.0	0.0	6.2	3	silty CLAY to CLAY	115	1.5	23	34	-	-	3.5	9.9	46	0.005	15
33.47	49.9	33.7	-	3.0	0.0	6.3	3	silty CLAY to CLAY	115	1.5	22	33	-	-	3.5	9.9	47	0.005	15
33.63	56.3	37.9	-	3.2	0.0	5.8	3	silty CLAY to CLAY	115	1.5	25	38	-	-	3.9	9.9	43	0.005	15
33.79	49.5	33.3	-	2.9	0.0	6.0	3	silty CLAY to CLAY	115	1.5	22	33	-	-	3.4	9.9	46	0.005	15
33.96	43.9	29.4	-	2.1	0.0	5.1	3	silty CLAY to CLAY	115	1.5	20	29	-	-	3.0	9.9	46	0.005	15
34.12	37.4	25.0	-	1.7	0.0	4.9	3	silty CLAY to CLAY	115	1.5	17	25	-	-	2.6	9.9	48	0.005	15
34.29	41.5	27.6	-	1.5	0.0	3.8	4	clayy SILT to silty CLAY	115	2.0	14	21	-	-	2.9	9.9	42	0.070	15
34.45	38.9	25.8	-	1.3	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	13	19	-	-	2.7	9.9	42	0.070	15
34.61	35.4	23.4	-	1.2	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	12	18	-	-	2.4	9.9	44	0.070	15
34.78	34.0	22.4	-	1.2	0.0	3.6	4	clayy SILT to silty CLAY	115	2.0	11	17	-	-	2.3	9.9	45	0.070	15
34.94	35.3	23.2	-	1.3	0.0	3.9	3	silty CLAY to CLAY	115	1.5	15	24	-	-	2.4	9.9	46	0.005	15
35.11	37.3	24.5	-	1.3	0.0	3.7	4	clayy SILT to silty CLAY	115	2.0	12	19	-	-	2.6	9.9	44	0.070	15
35.27	36.7	24.0	-	1.1	0.0	3.3	4	clayy SILT to silty CLAY	115	2.0	12	18	-	-	2.5	9.9	42	0.070	15
35.43	34.8	22.7	-	0.9	0.0	2.9	4	clayy SILT to silty CLAY	115	2.0	11	17	-	-	2.4	9.9	42	0.070	15
35.60	36.9	24.0	-	1.1	0.0	3.1	4	clayy SILT to silty CLAY	115	2.0	12	18	-	-	2.5	9.9	42	0.070	15
35.76	40.7	26.4	-	1.4	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	13	20	-	-	2.8	9.9	42	0.070	15
35.93	44.1	28.5	-	1.6	0.0	3.8	4	clayy SILT to silty CLAY	115	2.0	14	22	-	-	3.0	9.9	41	0.070	15
36.09	45.3	29.3	-	1.5	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	15	23	-	-	3.1	9.9	40	0.070	15
36.26	48.2	31.0	-	1.3	0.0	2.8	4	clayy SILT to silty CLAY	115	2.0	16	24	-	-	3.3	9.9	35	0.070	15
36.42	43.3	27.8	-	1.3	0.0	3.2	4	clayy SILT to silty CLAY	115	2.0	14	22	-	-	3.0	9.9	39	0.070	15
36.58	41.1	26.3	-	1.3	0.0	3.4	4	clayy SILT to silty CLAY	115	2.0	13	21	-	-	2.8	9.9	41	0.070	15
36.75	43.5	27.8	-	1.6	0.0	3.8	4	clayy SILT to silty CLAY	115	2.0	14	22	-	-	3.0	9.9	42	0.070	15
36.91	46.2	29.4	-	2.1	0.0	4.8	3	silty CLAY to CLAY	115	1.5	20	31	-	-	3.2	9.9	45	0.005	15
37.08	49.5	31.4	-	2.8	0.0	5.9	3	silty CLAY to CLAY	115	1.5	21	33	-	-	3.4	9.9	47	0.005	15
37.24	44.3	28.1	-	2.4	0.0	5.6	3	silty CLAY to CLAY	115	1.5	19	30	-	-	3.1	9.9	48	0.005	15
37.40	39.7	25.1	-	1.8	0.0	4.9	3	silty CLAY to CLAY	115	1.5	17	26	-	-	2.7	9.9	48	0.005	15
37.57	35.3	22.2	-	1.3	0.0	4.0	3	silty CLAY to CLAY	115	1.5	15	24	-	-	2.4	9.9	47	0.005	15
37.73	35.4	22.2	-	1.4	0.0	4.2	3	silty CLAY to CLAY	115	1.5	15	24	-	-	2.4	9.9	48	0.005	15
37.90	39.7	24.9	-	1.5	0.0	3.9	4	clayy SILT to silty CLAY	115	2.0	12	20	-	-	2.7	9.9	44	0.070	15
38.06	39.1	24.4	-	1.4	0.0	3.8	4	clayy SILT to silty CLAY	115	2.0	12	20	-	-	2.7	9.9	44	0.070	15
38.22	37.7	23.5	-	1.2	0.0	3.5	4	clayy SILT to silty CLAY	115	2.0	12	19	-	-	2.6	9.9	44	0.070	15
38.39	37.6	23.4	-	1.3	0.0	3.7	4	clayy SILT to silty CLAY	115	2.0	12	19	-	-	2.6	9.9	45	0.070	15
38.55	38.6	23.9	-	1.6	0.0	4.4	3	silty CLAY to CLAY	115	1.5	16	26	-	-	2.6	9.9	47	0.005	15
38.72	41.7	25.8	-	1.8	0.0	4.6	3	silty CLAY to CLAY	115	1.5	17	28	-	-	2.9	9.9	46	0.005	15
38.88	41.0	25.3	-	1.8	0.0	4.6	3	silty CLAY to CLAY	115	1.5	17	27	-	-	2.8	9.9	47	0.005	15
39.04	40.0	24.6	-	1.7	0.0	4.6	3	silty CLAY to CLAY	115	1.5	16	27	-	-	2.7	9.9	47	0.005	15
39.21	38.6	23.7	-	1.6	0.0	4.5	3	silty CLAY to CLAY	115	1.5	16	26	-	-	2.6	9.9	48	0.005	15
39.37	37.4	22.9	-	1.6	0.0	4.6	3	silty CLAY to CLAY	115	1.5	15	25	-	-	2.6	9.9	49	0.005	15
39.54	36.5	22.3	-	1.4	0.0	4.0	3	silty CLAY to CLAY	115	1.5	15	24	-	-	2.5	9.8	47	0.005	15
39.70	36.6	22.3	-	1.5	0.0	4.3	3	silty CLAY to CLAY	115	1.5	15	24	-	-	2.5	9.8	48	0.005	15
39.86	38.9	23.6	-	1.6	0.0	4.3	3	silty CLAY to CLAY	115	1.5	16	26	-	-	2.7	9.9	47	0.005	15
40.03	40.3	24.4	-	1.7	0.0	4.5	3	silty CLAY to CLAY	115	1.5	16	27	-	-	2.8	9.9	47	0.005	15
40.19	39.8	24.0	-	1.7	0.0	4.7	3	silty CLAY to CLAY	115	1.5	16	27	-	-	2.7	9.9	48	0.005	15
40.36	44.1	26.6	-	3.0	0.0	7.1	3	silty CLAY to CLAY	115	1.5	18	29	-	-	3.0	9.9	54	0.005	15
40.52	43.0	25.8	-	3.1	0.0	7.6	3	silty CLAY to CLAY	115	1.5	17	29	-	-	3.0	9.9	56	0.005	15
40.68	55.3	33.1	-	3.4	0.0	6.4	3	silty CLAY to CLAY	115	1.5	22	37	-	-	3.8	9.9	47	0.005	15
40.85	58.0	34.6	-	3.6	0.0	6.5	3	silty CLAY to CLAY	115	1.5	23	39	-	-	4.0	9.9	47	0.005	15
41.01	52.0	31.0	-	3.6	0.0	7.3	3	silty CLAY to CLAY	115	1.5	21	35	-	-	3.6	9.9	51	0.005	15
41.18	53.3	31.7	-	3.3	0.0	6.6	3	silty CLAY to CLAY	115	1.5	21	36	-	-	3.7	9.9	49	0.005	15
41.34	58.1	34.4	-	3.6	0.0	6.5	3	silty CLAY to CLAY	115	1.5	23	39	-	-	4.0	9.9	47	0.005	15
41.50	60.8	35.9	-	4.0	0.0	6.9	3	silty CLAY to CLAY	115	1.5	24	41	-	-	4.2	9.9	47	0.005	15
41.67	66.9	39.4	-	4.2	0.0	6.6	3	silty CLAY to CLAY	115	1.5	26	45	-	-	4.6	9.9	45	0.005	15
41.83	67.4	39.6	-	4.2	0.0	6.5	3	silty CLAY to CLAY	115	1.5	26	45	-	-	4.7	9.9	44	0.005	15
42.00	60.8	35.7	-	4.0	0.0	6.8	3	silty CLAY to CLAY	115	1.5	24	41	-	-	4.2	9.9	47	0.005	15
42.16	64.0	37.5	-	4.2	0.0	6.8	3	silty CLAY to CLAY	115	1.5	25	43	-	-	4.4	9.9	46	0.005	15
42.32	72.0	42.0	-	4.9	0.0	7.1	3	silty CLAY to CLAY	115	1.5	28	48	-	-	5.0	9.9	45	0.005	15
42.49	78.0	45.4	-	5.3	0.0	7.0	3	silty CLAY to CLAY	115	1.5	30	52	-	-	5.4	9.9	44	0.005	15
42.65	78.4	45.5	-	4.9	0.0	6.5	3	silty CLAY to CLAY	115	1.5	30	52	-	-	5.5	9.9	42	0.005	15
42.82	74.4	43.1	-	4.7	0.0	6.5	3	silty CLAY to CLAY	115	1.5	29	50	-	-	5.2	9.9	43	0.005	15
42.98	64.7	37.4	-	3.9	0.0	6.2	3	silty CLAY to CLAY	115	1.5	25	43	-	-	4.5	9.9	45	0.005	15
43.15	56.0	32.3	-	2.8	0.0	5.3	3	silty CLAY to CLAY	115	1.5	22	37	-	-	3.9	9.9	45	0.005	15
43.31	51.3	29.5	-	2.4	0.0	5.0	3	silty CLAY to CLAY	115	1.5	20	34	-	-	3.5	9.9	45	0.005	15
43.47	51.3	29.4	-	2.4	0.0	4.9	3	silty CLAY to CLAY	115	1.5	20	34	-	-	3.5	9.9	45	0.005	15
43.64	53.6	30.6	-	3.8	0.0	7.4	3	silty CLAY to CLAY	115	1.5	20	36	-	-	3.7	9.9	52	0.005	15
43.80	56.1	32.0	-	3.8	0.0	7.1	3	silty CLAY to CLAY	115	1.5	21	37	-	-	3.9	9.9	50	0.005	15
43.97	60.4	34.4	-	3.4	0.0	5.9	3	silty CLAY to CLAY	115	1.5	23	40	-	-	4.2	9.9	45	0.005	15
44.13	54.7	31.1	-	3.1	0.0	6.0	3	silty CLAY to CLAY	115	1.5	21	36	-	-	3.8	9.9	48	0.005	15
44.29	47.0	26.7	-	2.3	0.0	5.3	3	silty CLAY to CLAY	115	1.5	18	31	-	-	3.2	9.9	48	0.005	15
44.46	38.8	21.9	-	1.5	0.0	4.2	3	silty CLAY to CLAY	115	1.5	15	26	-	-	2.6	9.3	48	0.005	15
44.62	35.4	20.0	-	1.1	0.0	3.3	3	silty CLAY to CLAY	115	1.5	13	24	-	-	2.4	8.4	47	0.005	15
44.79	32.1	18.1	-	1.2	0.0	4.0	3	silty CLAY to CLAY	115	1.5	12	21	-	-	2.2	7.6	52	0.005	15
44.95	34.2	19.2	-	1.2	0.0	3.9	3	silty CLAY to CLAY	115	1.5	13	23	-	-	2.3	8.1	50	0.005	15
45.11	34.0	19.1	-	1.1	0.0	3.5	3	silty CLAY to CLAY	115	1.5	13	23	-	-	2.3	8.0	48	0.005	15
45.28	29.8	16.6	-	1.3	0.0	4.8	3	silty CLAY to CLAY	115	1.5	11	20	-	-	2.0	6.9	57	0.005	15
45.44	30.0	16.7	-	1.8	0.0	6.6	3	silty CLAY to CLAY	115	1.5	11	20	-	-	2.0	6.9	63	0.005	15
45.61	36.2	20.1	-	1.6	0.0	4.9	3	silty CLAY to CLAY	115	1.5	13	24	-	-	2.5	8.5	53	0.005	15
45.77	36.2	20.1	-	1.3	0.0	3.9	3	silty CLAY to CLAY	115	1.5	13	24	-	-	2.5	8.4	49	0.005	15
45.93	29.3	16.2	-	1.2	0.0	4.4	3	silty CLAY to CLAY	115	1.5	11	20	-	-	2.0	6.7	56	0.005	15
46.10	28.8	15.9	-	1.3	0.0	5.1	3	silty CLAY to CLAY	115	1.5	11	19	-	-	1.9	6.5	59	0.005	15
46.26	40.5	22.3	-	1.6	0.0	4.2	3	silty CLAY to CLAY	115	1.5	15	27	-	-	2.8	9.4	48	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

Middle Earth Geo Testing

Project ID: Associated Soils
Data File: SDF(481)S.cpt
CPT Date: 2/22/2010 3:13:15 PM
GW During Test: 19 ft

Sounding ID: CPT-07
Project No: 6169
Cone/Rig: DSG1104

Depth ft	qc PS tsf	qcln PS -	qlncs PS -	Slv Stss tsf	pore prss (psi)	Frct Rato %	Mat Typ Zon	Material Behavior Description	Unit Wght pcf	Qc to N	SPT R-N1 60%	SPT R-N 60%	Rel Den %	Ftn Ang deg	Und Shr tsf	OCR -	Fin Ic %	D50 - mm	Nk -
46.43	54.8	30.1	-	2.6	0.0	4.9	3	silty CLAY to CLAY	115	1.5	20	37	-	-	3.8	9.9	45	0.005	15
46.59	73.5	40.3	-	3.7	0.0	5.3	3	silty CLAY to CLAY	115	1.5	27	49	-	-	5.1	9.9	41	0.005	15
46.75	85.5	46.7	-	5.7	0.0	6.8	3	silty CLAY to CLAY	115	1.5	31	57	-	-	5.9	9.9	43	0.005	15
46.92	92.4	50.4	-	6.0	0.0	6.7	3	silty CLAY to CLAY	115	1.5	34	62	-	-	6.4	9.9	41	0.005	15
47.08	104.4	56.8	-	6.2	0.0	6.1	3	silty CLAY to CLAY	115	1.5	38	70	-	-	7.3	9.9	38	0.005	15
47.25	98.7	53.6	-	5.7	0.0	5.9	3	silty CLAY to CLAY	115	1.5	36	66	-	-	6.9	9.9	38	0.005	15
47.41	96.3	52.2	-	5.5	0.0	5.8	3	silty CLAY to CLAY	115	1.5	35	64	-	-	6.7	9.9	38	0.005	15
47.57	95.5	51.6	-	5.4	0.0	5.8	3	silty CLAY to CLAY	115	1.5	34	64	-	-	6.7	9.9	38	0.005	15

* Indicates the parameter was calculated using the normalized point stress.
The parameters listed above were determined using empirical correlations.
A Professional Engineer must determine their suitability for analysis and design.

APPENDIX B

References

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APPENDIX C

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

Associated Soils Engineering, Inc.
General Earthwork & Grading Specifications

1.0 GENERAL

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

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

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

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the Geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required. Subsurface areas to be geotechnically observed, mapped, elevations recorded, and/or tested include natural ground after it has been cleared for receiving fill but before fill is placed, bottoms of all "remedial removal" areas, all key bottoms, and benches made on sloping ground to receive fill.

The Geotechnical Consultant shall observe the moisture-conditions and processing of the subgrade and fill materials and perform relative compaction testing of fill to determine the

attained level of compaction. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor: The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, Geotechnical Report and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the plans and specifications.

The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "spreads" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate observations and tests can be planned and accomplished. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved Geotechnical Report and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified.

2.0 PREPARATION OF AREAS TO BE FILLED

2.1 Clearing and Grubbing: Vegetation, such as brush grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 5 percent of organic matter. All organic materials should be nested prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed.

2.2 Processing: Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free of large clay lumps or clods and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Overexcavation: In addition to removals and overexcavations recommended in the approved Geotechnical Report and the grading plan(s), soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching: Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

2.5 Evaluation/Acceptance of Fill Areas: All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys and benches.

3.0 FILL MATERIAL

3.1 General: Material to be used as fill essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, strong corrosivity, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize: Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import: If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1 at the potential import source. The Geotechnical Consultant shall be notified at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 FILL PLACEMENT AND COMPACTION

4.1 Fill Layers: Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning: Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain relatively uniform moisture content at or slightly over optimum. Maximum dry density and optimum soil moisture content tests shall be performed in accordance with the latest edition of the American Society of Testing and Materials (ASTM) Test Method D1557.

4.3 Compaction of Fill: After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (or relative compaction) per the latest edition of ASTM Test Method D1557. Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes: In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent per the latest edition of ASTM Test Method D1557.

4.5 Compaction Testing: Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces, near areas of high moisture content, and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing: Tests shall be taken as intervals not exceeding 2 feet in vertical rise and/or 500 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 2,000 square feet of slope face and/or each 5 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical

Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations: The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established to that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 SUBDRAIN INSTALLATION

Subdrain systems shall be installed in accordance with the approved Geotechnical Report, the grading plan(s), and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 EXCAVATION

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on Geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

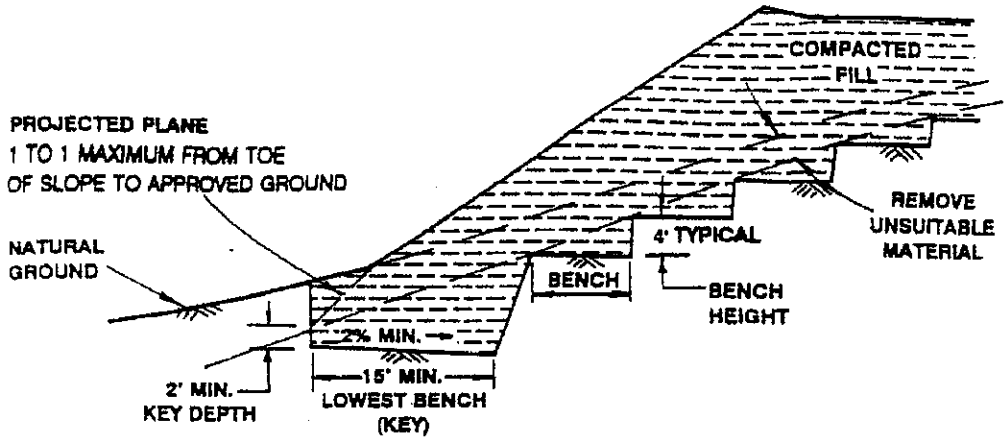
7.0 TRENCH BACKFILLS

7.1 Safety: The Contractor shall follow all OSHA and Cal/OSHA requirements for safety of trench excavations.

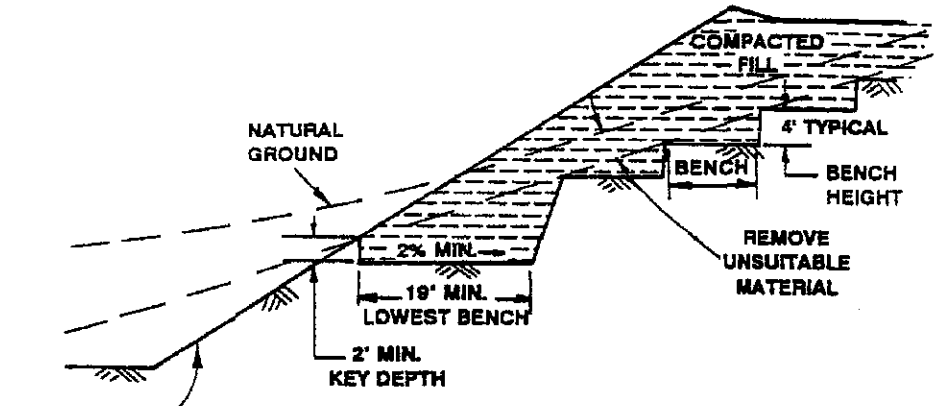
7.2 Bedding and Backfill: All bedding and backfill of utility trenches shall be performed in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent (Cal Test 217) greater than 30 (SE>30). The bedding shall be placed to 1 foot above the top of the conduit to the surface.

7.3 Lift Thickness: Lift thickness of trench backfill shall not exceed those allowed in the latest edition of Standard Specifications of Public Works Construction (i.e. "Green Book") unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum required relative compaction by his alternative equipment and method.

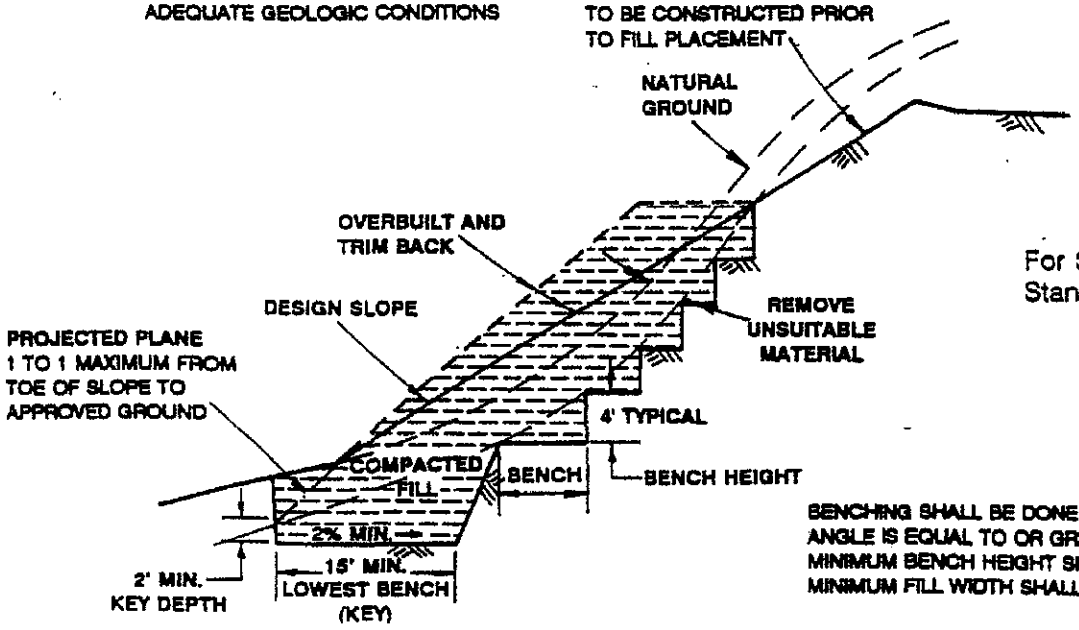
7.4 Observation and Testing: If acceptable by the Geotechnical Consultant, the jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.



FILL SLOPE



FILL-OVER-CUT SLOPE



CUT-OVER-FILL SLOPE

For Subdrains See Standard Detail C

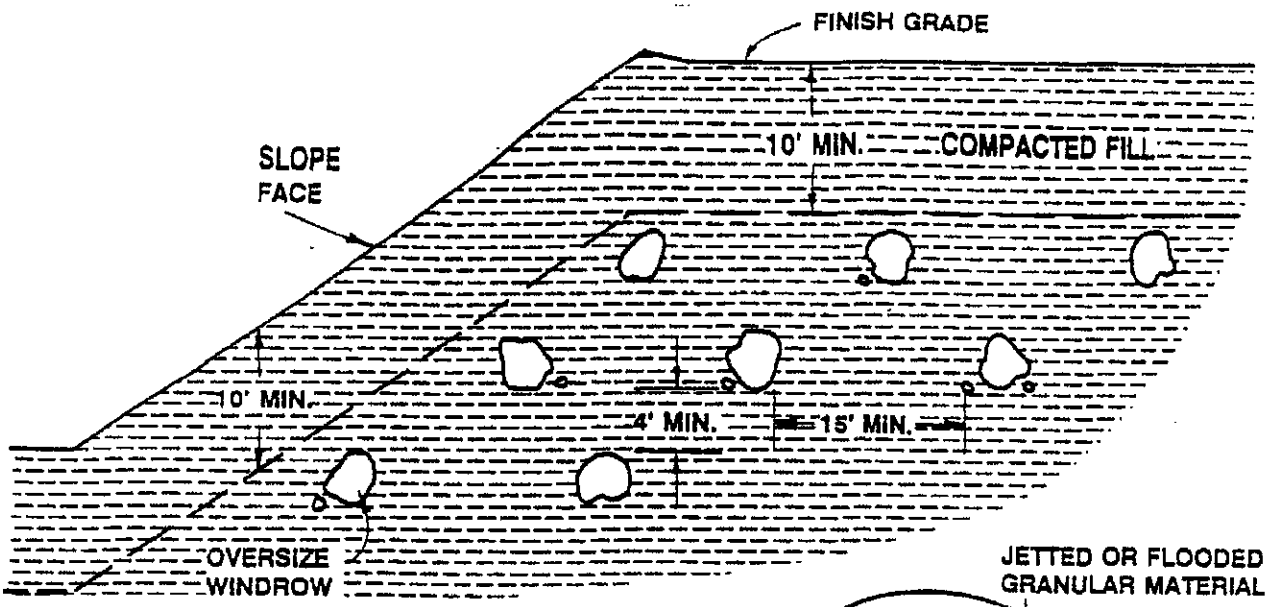
BENCHING SHALL BE DONE WHEN SLOPES ANGLE IS EQUAL TO OR GREATER THAN 5:1
MINIMUM BENCH HEIGHT SHALL BE 4 FEET
MINIMUM FILL WIDTH SHALL BE 9 FEET

Schematic Not To Scale

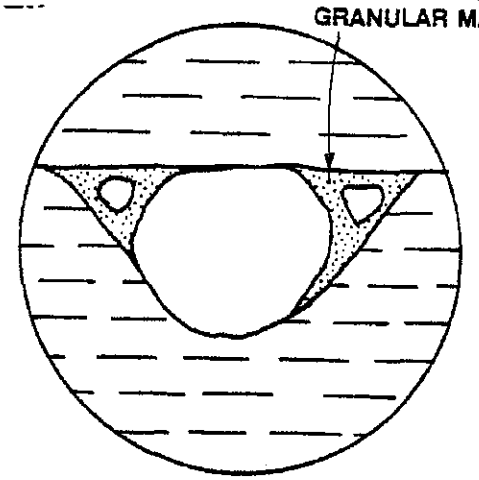
ASSOCIATED SOILS ENGINEERING, INC.
Consulting Geotechnical Engineers

Associated Soils Engineering, Inc.
2860 Walnut Avenue
Signal Hill, CA 90755
Tel (562) 426-7990 Fax (562) 426-1842

Project:	Parcel 1 of Tentative Parcel Map No. 2008-111, Big Canyon Country Club, Newport Beach, California.		
Details "A"	KEYING & BENCHING		
Proj. No.:	09-6169	Date:	June, 2010

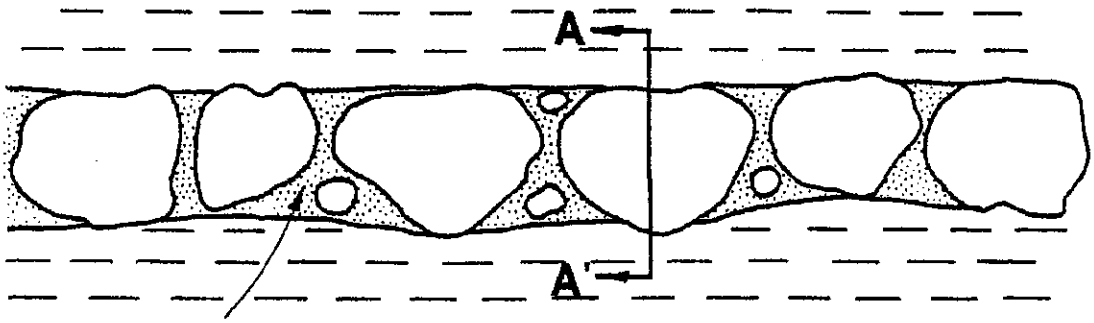


- Oversize rock is larger than 8 inches in largest dimension.
- Excavate a trench in the compacted fill deep enough to bury all the rock.
- Backfill with granular soil jetted or flooded in place to fill all the voids.
- Do not bury rock within 10 feet of finish grade.
- Windrow of buried rock shall be parallel to the finished slope fill.



ELEVATION A-A'

PROFILE ALONG WINDROW



Schematic Not To Scale

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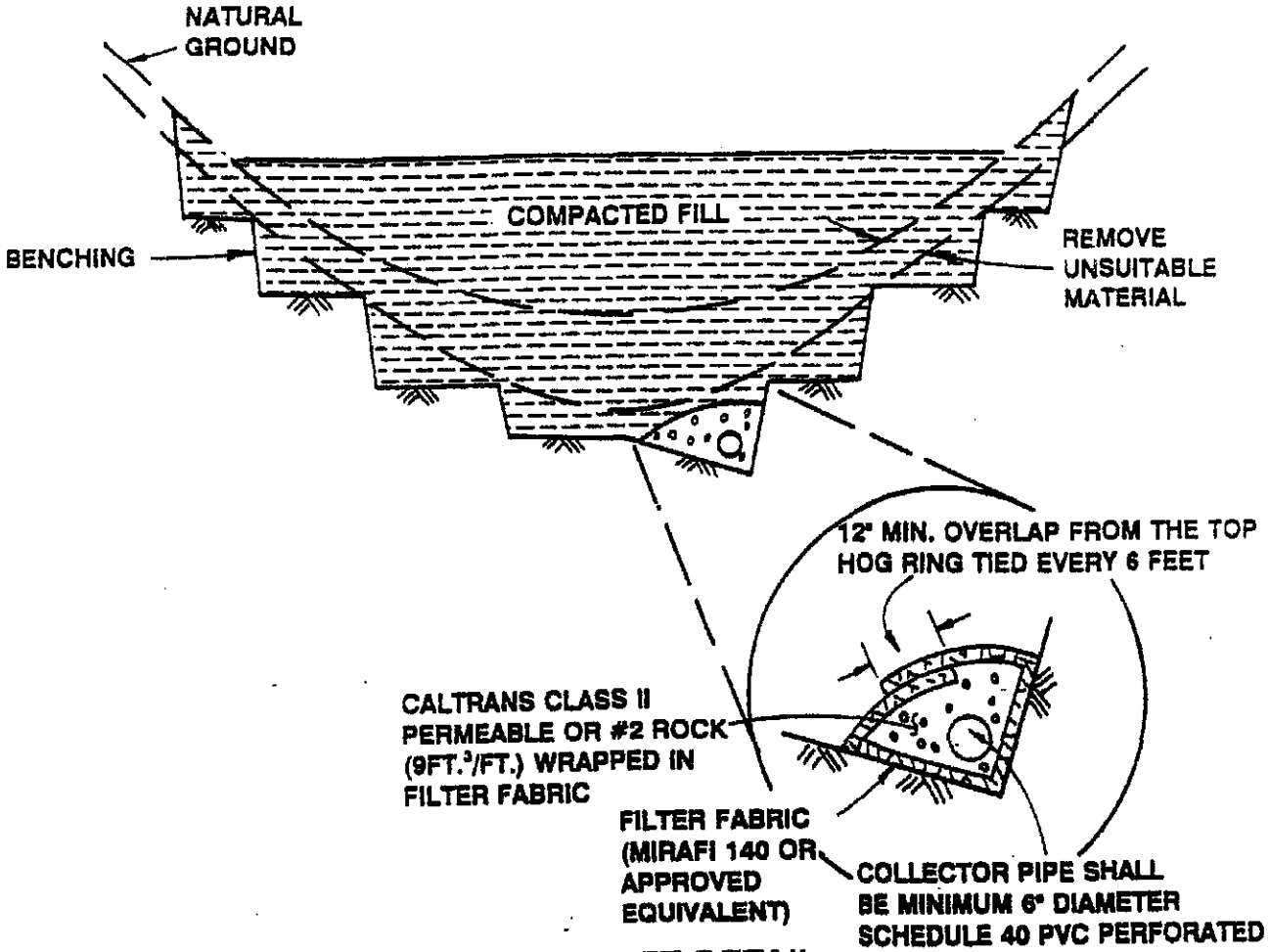
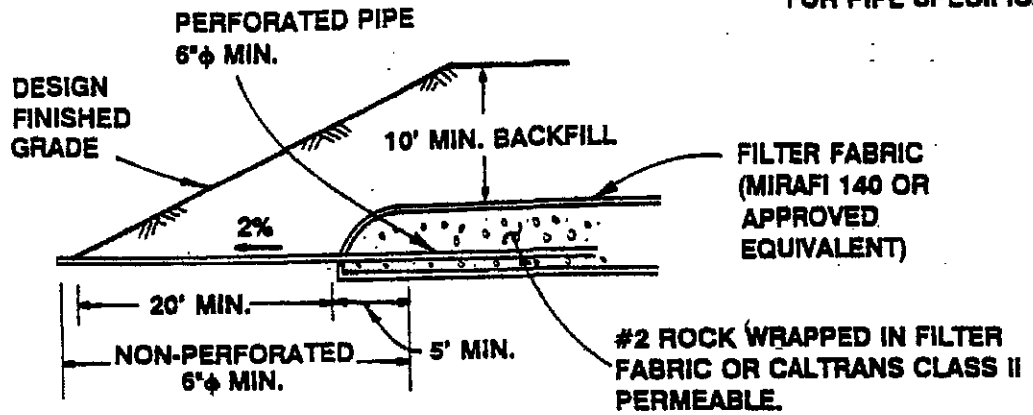
Project:	Parcel 1 of Tentative Parcel Map No. 2008-111, Big Canyon Country Club, Newport Beach, California.		
Details "B"	OVERSIZE ROCK DISPOSAL		
Proj. No.:	09-6169	Date:	June, 2010



CANYON SUBDRAIN OUTLET DETAIL



Schematic Not To Scale

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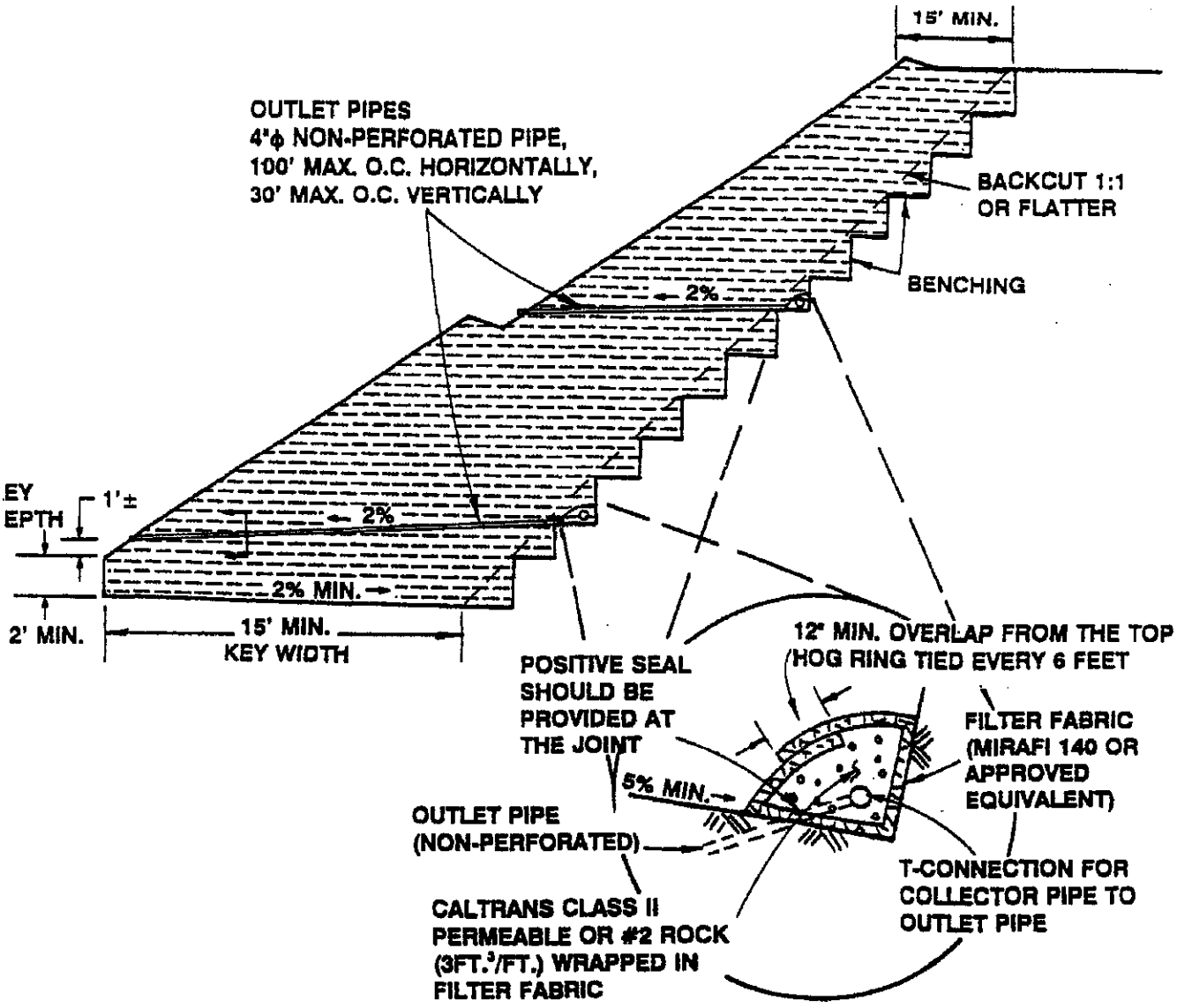
Project:	Parcel 1 of Tentative Parcel Map No. 2008-111, Big Canyon Country Club, Newport Beach, California.		
Details "C"	CANYON SUBDRAINS		
Proj. No.:	09-6169	Date:	June, 2010



- SUBDRAIN INSTALLATION - Subdrain collector pipe shall be installed with perforations down or, unless otherwise designated by the geotechnical consultant. Outlet pipes shall be non-perforated pipe. The subdrain pipe shall have at least 8 perforations uniformly spaced per foot. Perforation shall be ¼" to ½" if drilled holes are used. All subdrain pipes shall have a gradient at least 2% towards the outlet.

- SUBDRAIN PIPE - Subdrain pipe shall be ASTM D2751, SDR 23.5 or ASTM D1527, Schedule 40, or ASTM D3034, SDR 23.5, Schedule 40 Polyvinyl Chloride Plastic (PVC) pipe.

- All outlet pipe shall be placed in a trench no wider than twice the subdrain pipe. Pipe shall be in soil of SE≥30 jetted or flooded in place except for the outside 5 feet which shall be native soil backfill.

Schematic Not To Scale

ASSOCIATED
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Consulting Geotechnical Engineers

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2860 Walnut Avenue
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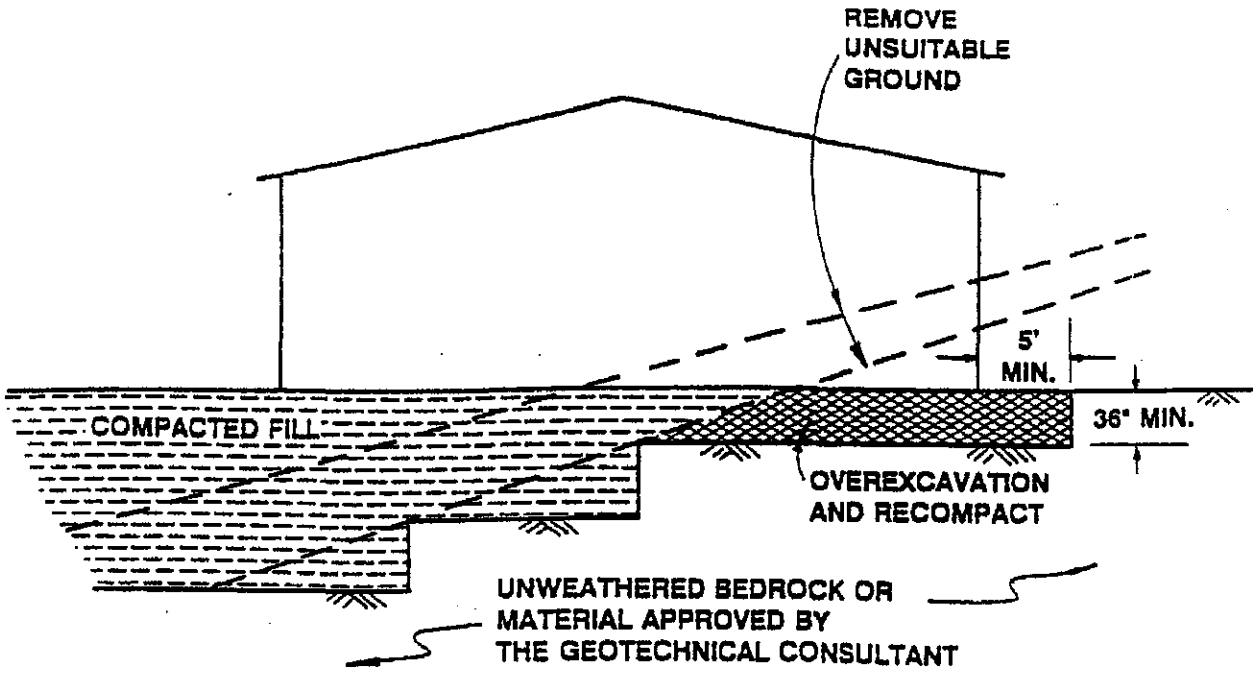
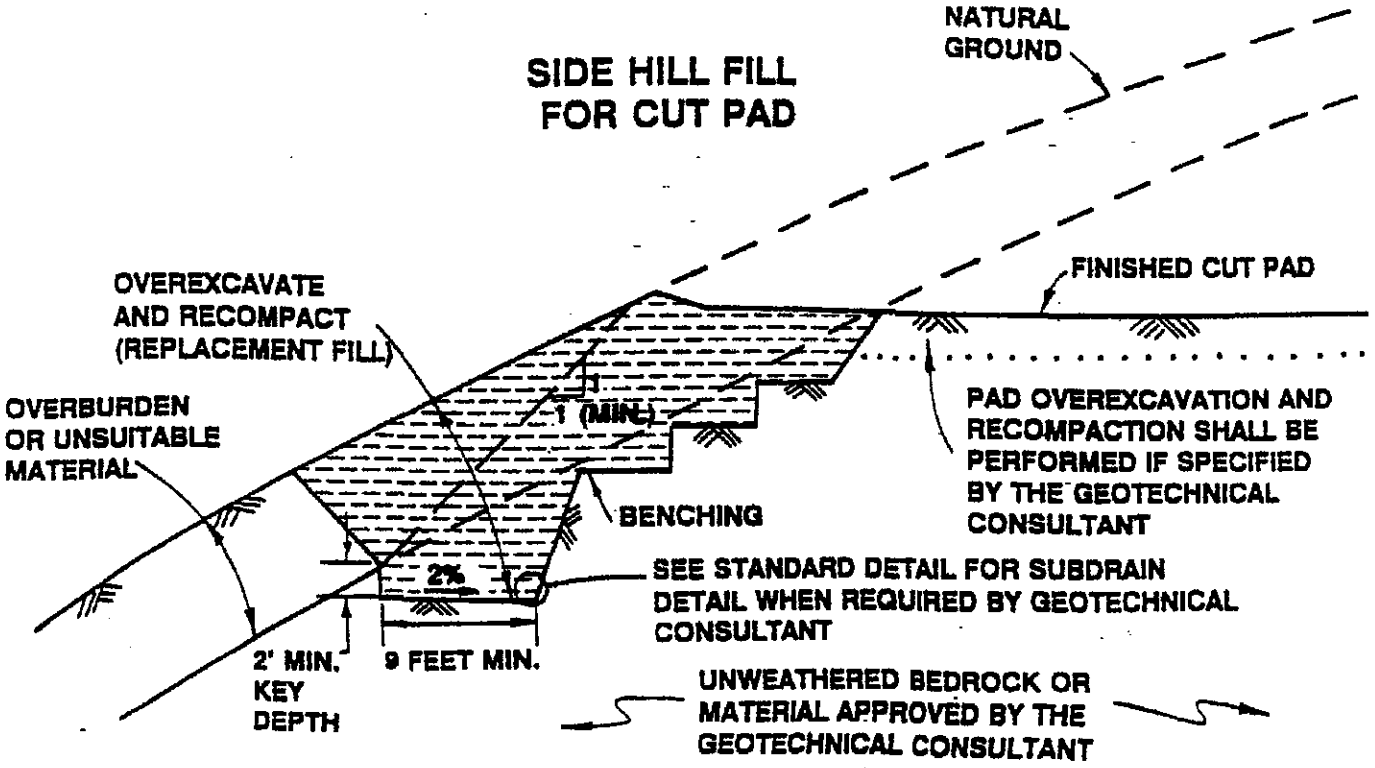
Tel (562) 426-7990 Fax (562) 426-1842

Project:	Parcel 1 of Tentative Parcel Map No. 2008-111, Big Canyon Country Club, Newport Beach, California.		
Details "D"	BUTTRESS OR REPLACEMENT FILL SUBDRAINS		
Proj. No.:	09-6169	Date:	June, 2010

CUT AND CUT-FILL LOT



SIDE HILL FILL FOR CUT PAD



Schematic Not To Scale

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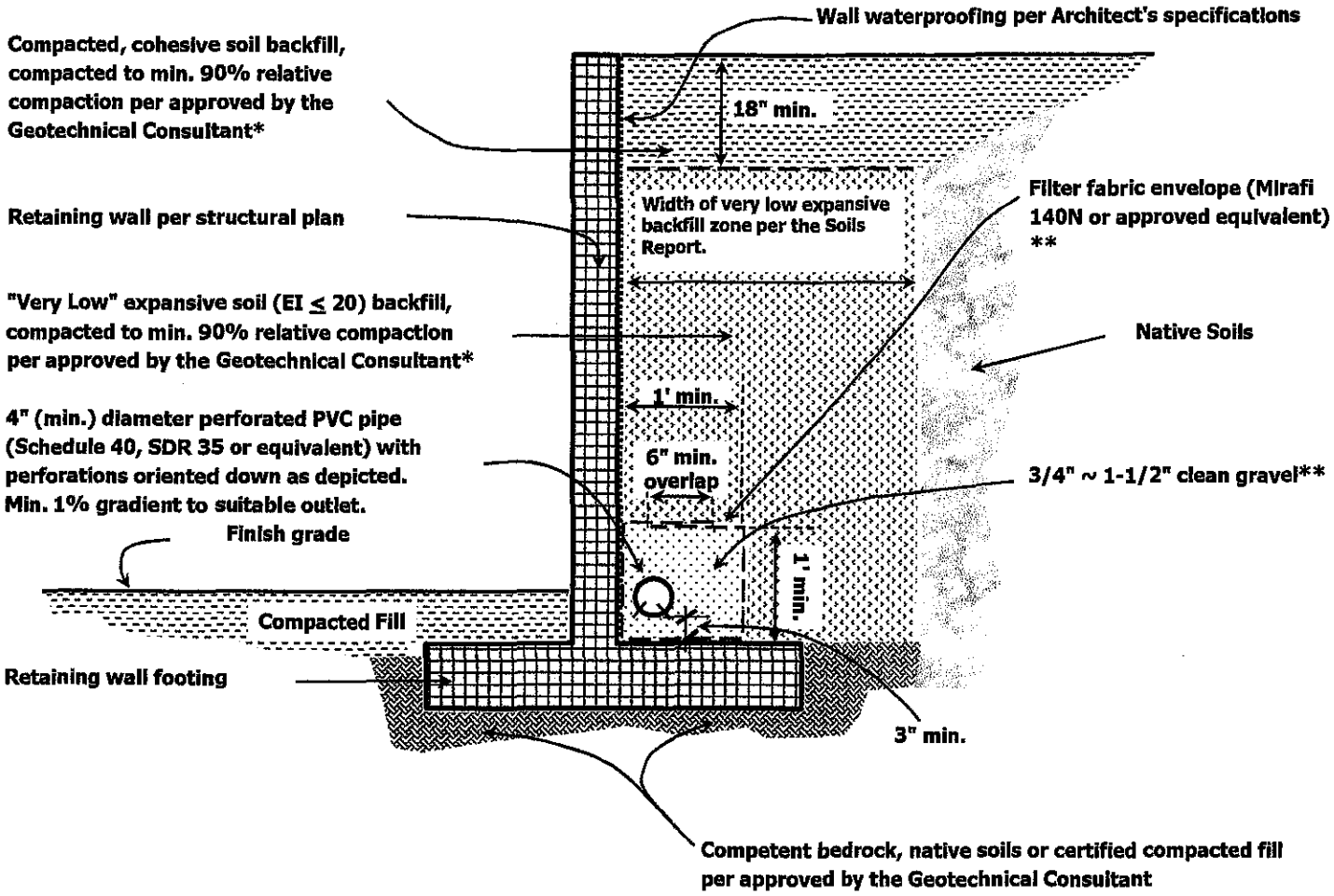
Tel (562) 426-7990 Fax (562) 426-1842

Project:	Parcel 1 of Tentative Parcel Map No. 2008-111, Big Canyon Country Club, Newport Beach, California.		
Details "E"	TRANSITION LOT FILLS & SIDE HILL FILLS		
Proj. No.:	09-6169	Date:	June, 2010



SPECIFICATIONS FOR CALTRANS CLASS 2 PERMEABLE MATERIAL	
U.S. STANDARD SIEVE SIZE	% PASSING
1"	100
3/4"	90 ~ 100
3/8"	40 ~ 100
No. 4	25 ~ 40
No. 8	18 ~ 33
No. 30	5 ~ 15
No. 50	0 ~ 7
No. 200	0 ~ 3
Sand Equivalent > 75	

* Based on ASTM D-1557-02

** If Caltrans Class 2 permeable material (see gradation to left) is used in place of 3/4" ~ 1-1/2" gravel, filter fabric may be deleted. Caltrans Class 2 permeable material should be compacted to minimum 90 percent relative compaction. Unless otherwise specified, a minimum of 1 cubic foot of gravel should be used for each 1 foot run of drain.

Note: Composite drainage products such as Contech C-Drain, Miradrain or J-Drain may be used as alternative to gravel or Class II. Installation should be performed in accordance with manufacturer's specifications.

Schematic Not To Scale

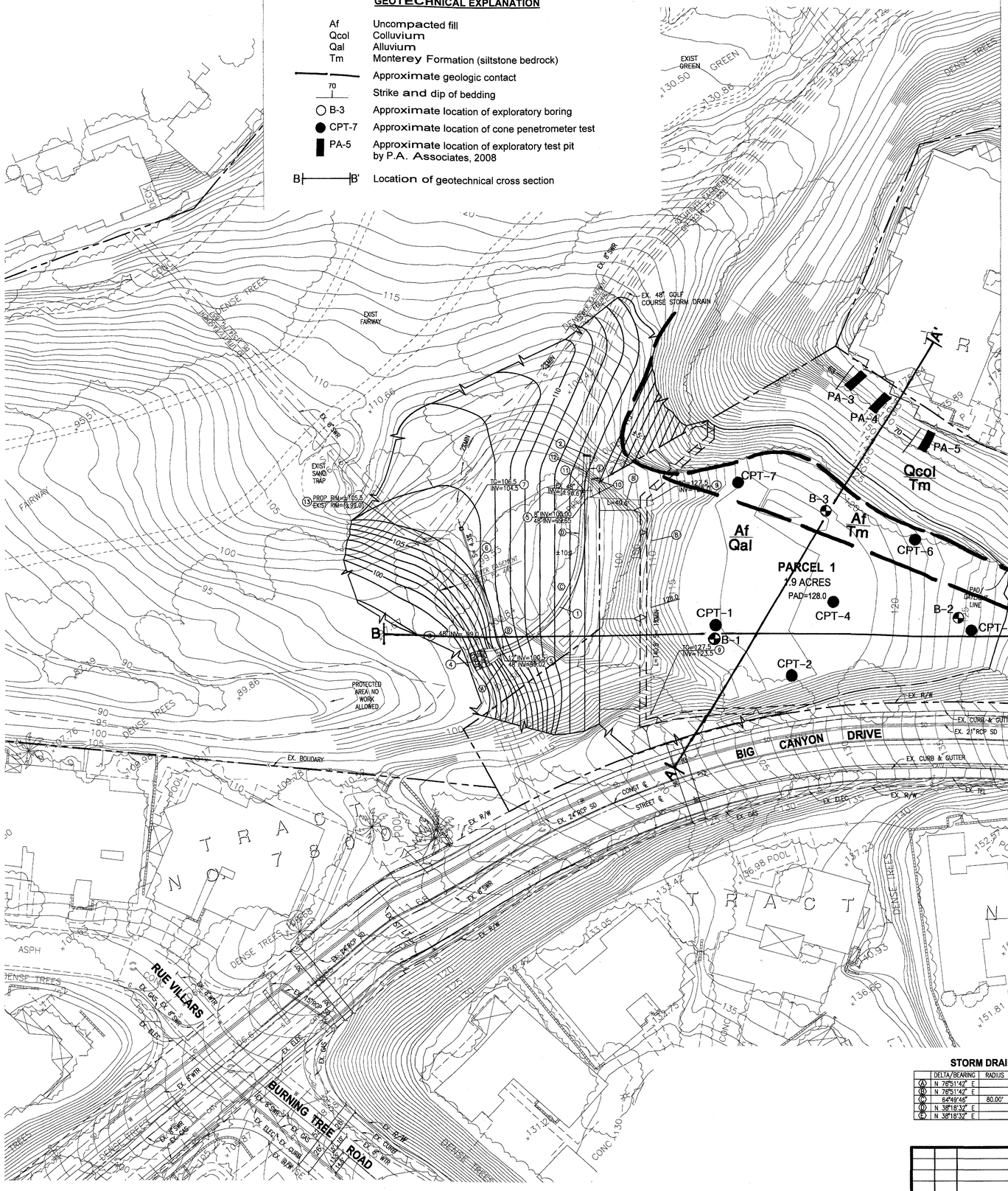
ASSOCIATED SOILS ENGINEERING, INC.
Consulting Geotechnical Engineers

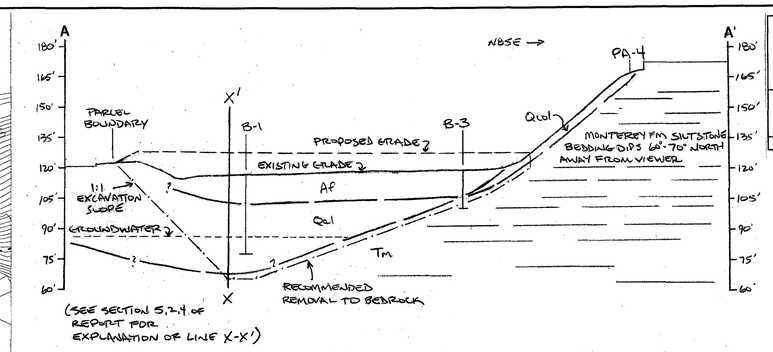
Associated Soils Engineering, Inc.
2860 Walnut Avenue
Signal Hill, CA 90755
Tel (562) 426-7990 Fax (562) 426-1842

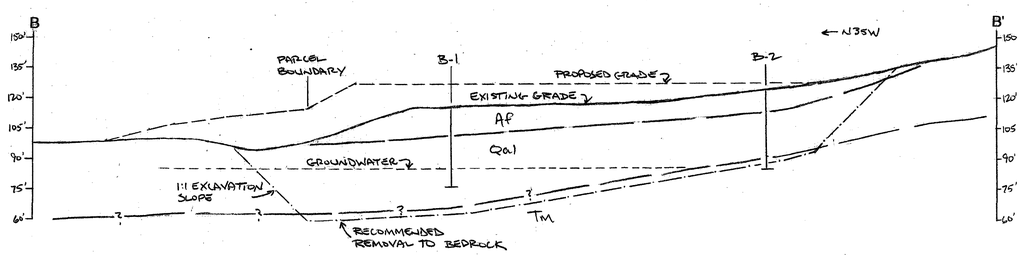
Project:	Parcel 1 of Tentative Parcel Map No. 2008-111, Big Canyon Country Club, Newport Beach, California.		
Details "F"	RETAINING WALL DRAINAGE DETAILS		
Proj. No.:	09-6169	Date:	June, 2010

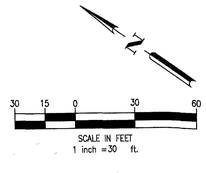
GEOTECHNICAL EXPLANATION

Af	Uncompacted fill
Qcol	Colluvium
Qal	Alluvium
Tm	Monterey Formation (siltstone bedrock)
———	Approximate geologic contact
70	Strike and dip of bedding
B-3	Approximate location of exploratory boring
CPT-7	Approximate location of cone penetrometer test
PA-5	Approximate location of exploratory test pit by P.A. Associates, 2008
B — B'	Location of geotechnical cross section









STORM DRAIN PIPE DATA

	DELTA/BEARING	RADIUS	LENGTH	TANGENT	REMARK
A	N 76°51'42" E		6.60'		STRAIGHT
B	N 76°51'42" E		2.90'		STRAIGHT
C	64°49'46"	80.00'	90.52'	50.80'	CURVE
D	N 38°18'32" E		33.45'		STRAIGHT
E	N 38°18'32" E		28.00'		STRAIGHT

GENERAL NOTES:

1. SEE SHEET 1 FOR GRADING NOTES.
2. SEE SHEET 3 FOR SECTIONS, DETAILS, CONSTRUCTION NOTES AND QUANTITIES
3. SEE SHEET 4 FOR EROSION CONTROL.
4. EXIST. STORM DRAIN, SEWER AND WATER ARE TO BE PROTECTED IN PLACE AT ALL TIMES, NO INTERRUPTION OF SERVICE WILL BE ALLOWED.
5. EXCEPT WHERE NOTED ON THE PLAN, ALL CURB, GUTTERS AND DRIVEWAYS ARE TO BE PROTECTED AT ALL TIMES AND BECOME THE SOLE RESPONSIBILITY OF THE CONTRACTOR THROUGHOUT THE DURATION OF THE CONSTRUCTION.
6. UNLESS OTHERWISE NOTED ON THE PLANS THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION, RESTORATION AND RELOCATION OF ALL TREES, LAWNS, AND SHRUBBERY ADJACENT TO OR AFFECTED BY ITS WORK AND SHALL RESTORED OR REPLACED IN AS NEARLY THE ORIGINAL CONDITION AND LOCATION AS IS REASONABLY POSSIBLE AT THE COMPLETION OF THE WORK.

NUMBER	DATE	DESCRIPTION	INITIAL	DATE

REVISIONS

REGISTERED PROFESSIONAL ENGINEER — DAVID LEE BACON — No. 40496 — Exp. 3-31-11 — CIVIL — STATE OF CALIFORNIA

ALDEN & ASSOCIATES — CIVIL ENGINEERS, LAND SURVEYORS, PLANNERS
2552 WHITE ROAD, SUITE B, IRVINE, CA 92614
(949) 660-0110 FAX: 660-0418
DAVID L. BACON P.E. 40496 DATE

ROUGH GRADING PLAN

FOR

PARCEL 1 OF PARCEL MAP NO. 2008-11

BIG CANYON COUNTRY CLUB

NEWPORT BEACH, CA

JOB NUMBER	1140-458-012
DATE:	06/24/2010
DRAWN:	SK
CHECKED:	DB
SHEET	2 OF 4

ASSOCIATED SOILS ENGINEERING, INC.
2860 WALNUT AVENUE
SIGNAL HILL, CA 90755
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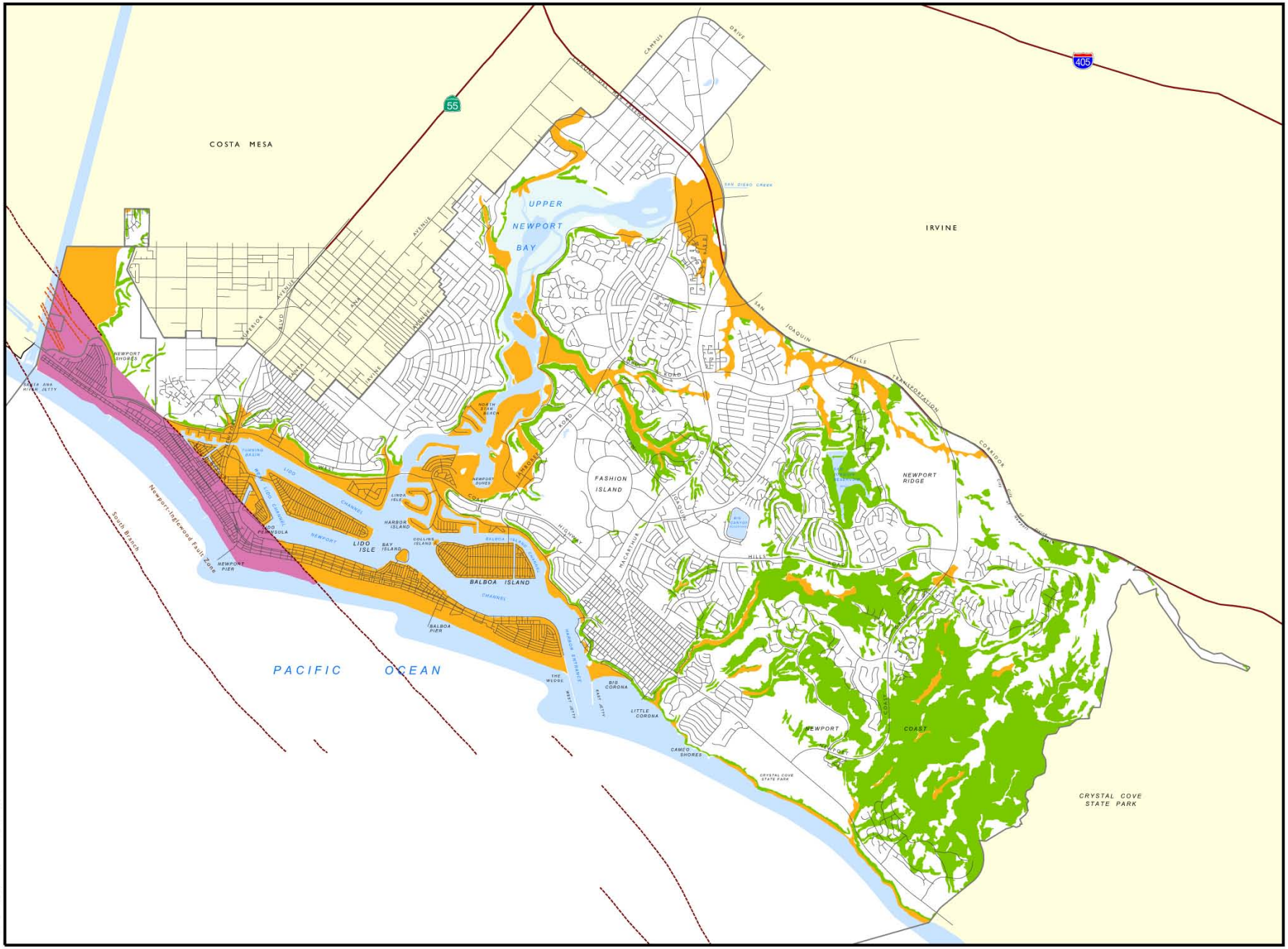
GEOTECHNICAL MAP AND CROSS SECTIONS

Project No.: 09-6169 | Date: 6/25/10 | Plate: A-1

APPENDIX H

Figure S2: Seismic Hazards



CITY of NEWPORT BEACH
GENERAL PLAN

Figure S2
SEISMIC HAZARDS

Legend

- City Boundary
- Areas with liquefaction potential
- Areas with landslide potential
- Fault Disclosure Zone for real-estate disclosure purposes

Fault Line

- Major fault traces as mapped by Morton, 1999. Presumed active, except where shown otherwise based on geological studies
- Southward projection of active fault traces based on a subsurface study on the west bank of the Santa Ana River
- Highway
- Local Road
- County

N

0 0.5 1
Miles

Source: City of Newport Beach and Earth Consultants, 2003
PROJECT NUMBER: 10579-01
Date: 06/07/06

EIP ASSOCIATES

N:/GISProjects/NewportBeach_10579/SeismicHazards.mxd