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TECHNICAL MEMORANDUM
TOPANGA LAGOON RESTORATION PROJECT
PRELIMINARY SOIL INVESTIGATION
LOS ANGELES COUNTY, CALIFORNIA

January 29, 2003

TO: Chris Webb
Moffatt & Nichol Engineers

FROM: GeoPentech

INTRODUCTION

In accordance with your authorization of November 8, 2002, this technical memorandum presents the results of our preliminary soil investigation for the proposed Topanga Lagoon Restoration Project in Los Angeles County, California. This evaluation was completed in accordance with GeoPentech's proposal dated January 11, 2002.

Our understanding of the project is based on Moffatt & Nichol Engineers' proposal to the Resource Conservation District of the Santa Monica Mountains for the project and our discussions with Ms. Rosi Dagit of that District. It is our understanding that the goal of the project is to create a self-sustaining Topanga Lagoon by excavating on-site soils. If suitable, the removed soils would be used for beach restoration or would be disposed into the ocean.

The objective of the soil investigation is to provide subsurface data to characterize the physical and chemical character of the proposed soils to be excavated to evaluate the soil's acceptability for beach replenishment or ocean disposal. The general location of the project area is shown on Figure 1.

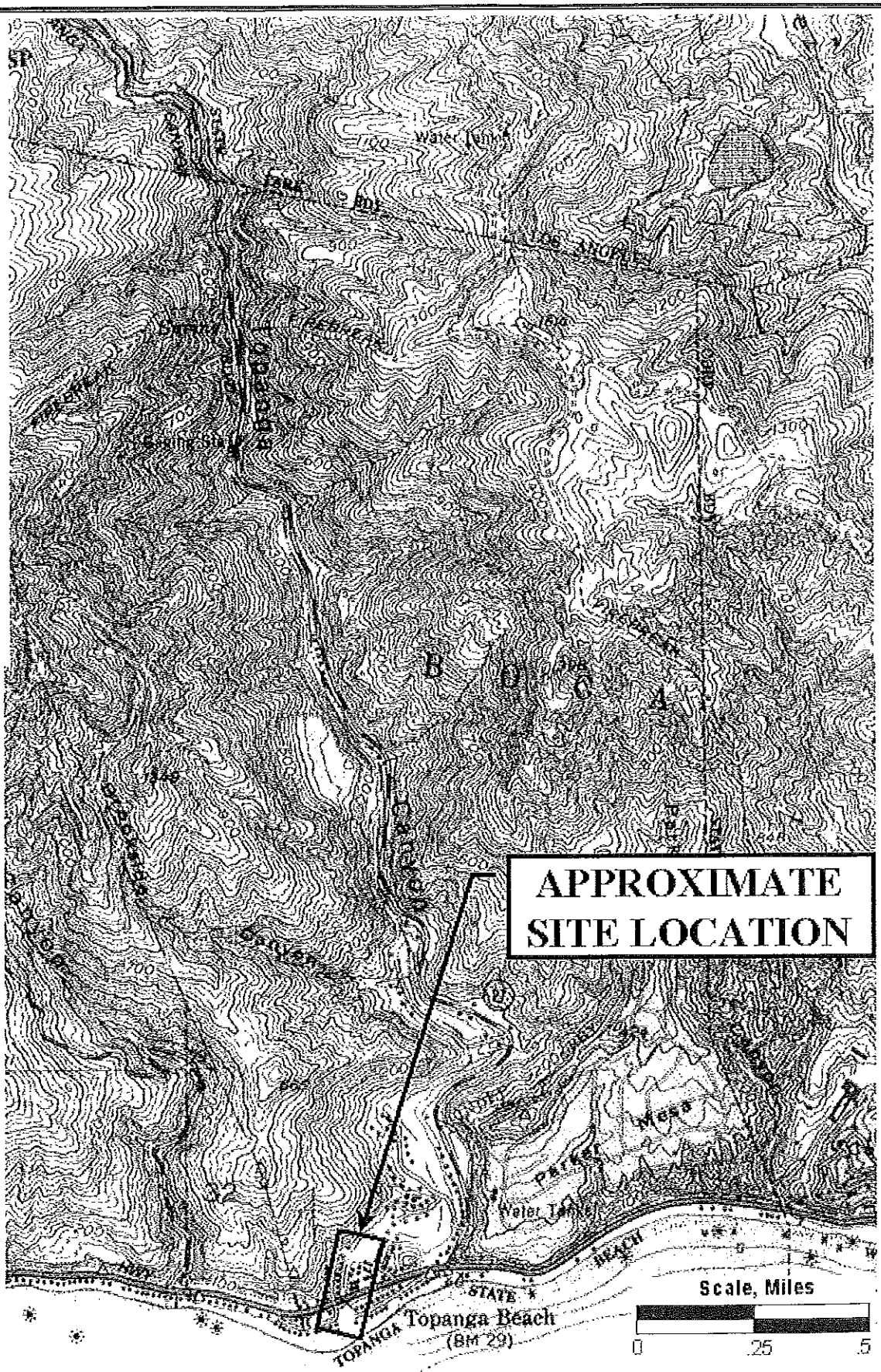


Figure 1, Site Location Map

SCOPE OF WORK

The following tasks were performed as part of our preliminary soil investigation for the proposed Topanga Lagoon Restoration Project:

1. Performed a field investigation that included advancing hollow stem auger boreholes and performing cone penetrometer tests (CPTs).
2. Performed physical and chemical laboratory tests on soil samples collected during the field investigation (Task 2).
3. Developed a characterization of the site's soils, based on the results of Tasks 1 and 2. The characterization forms the basis for the evaluation of the soil's suitability for beach restoration or ocean disposal.
4. Prepared this Technical Memorandum to present the results of the soil evaluation.

Results of the above tasks are summarized below.

FIELD INVESTIGATION

General

Eleven hollow stem auger boreholes (1 through 7, 7A, and 8 through 10) and four CPTs (CPT-2, CPT-3, CPT-7, and CPT-7A) were completed between November 11 and 13, 2002. The boreholes and CPTs were located throughout and within the area of the proposed soil excavation for the proposed Topanga Lagoon Restoration Project. The approximate locations of the boreholes and CPTs and the approximate limits of the lagoon excavation are shown on Figure 2.

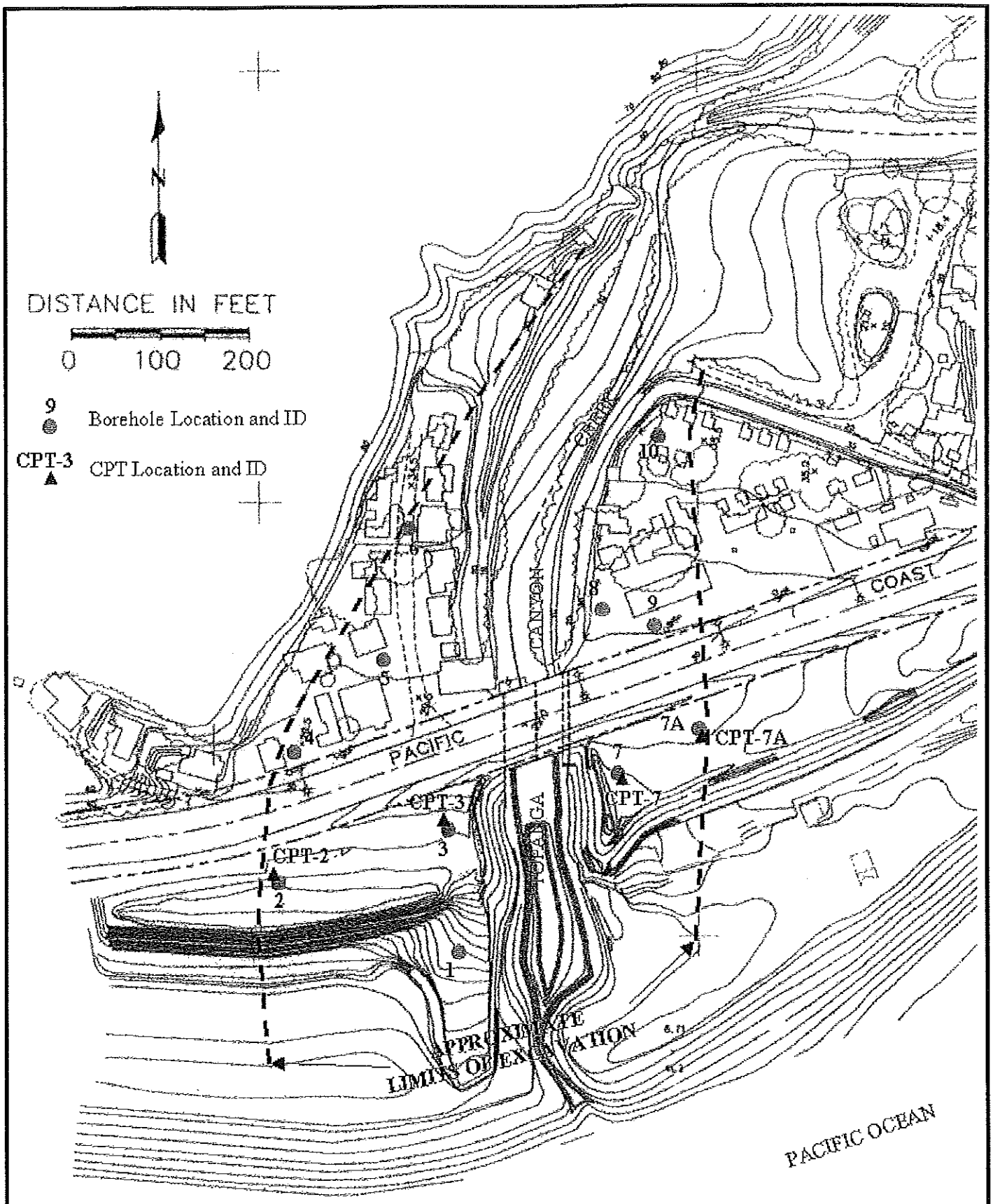


Figure 2, Location of Boreholes and CPTs

Hollow Stem Auger Boreholes

The boreholes were conducted under the direct supervision of a California registered geologist from Geopentech. Prior to drilling, the borehole sites were cleared of utilities by searches performed by Underground Services Alert member agencies. The hollow-stem auger boreholes were advanced by A&R Drilling to depths ranging from about 19.5 feet to about 35.5 feet below existing grade (about 8.5 feet below sea level to about 14.5 feet above sea level). The depths of the boreholes were targeted to extend to just below or near the base of the proposed soil excavation. The boreholes were advanced using a truck-mounted CME 85 drill rig using an 8-inch outside diameter hollow-stem auger. During drilling, subsurface conditions were logged and recorded. The soil materials were visually classified in accordance with the Unified Soil Classification System. A key to the log of the hollow-stem auger boreholes and the logs of the boreholes are presented in Attachment A.

Drive-samples were collected at 2-foot intervals in the boreholes, using an 18-inch long modified California sampler. The modified California sampler was driven 18 inches or to refusal into the bottom of the borehole by repeatedly dropping a 140-pound hammer 30 inches. Samples collected by the California sampler were stored in brass tubes and sealed with Teflon sheets and vinyl caps. Samples collected during the drilling were labeled, stored, and transported to either Calscience Environmental Laboratories, Inc. in Garden Grove, California or to Teratest Labs, Inc. in Irvine, California for further examination and testing.

Upon completion of drilling the boreholes were backfilled with the excavated cuttings. Backfill in the borehole was compacted using a tamper attached to the drill rig. After the borehole was backfilled, the ground surface was restored.

Cone Penetrometer Testing

The cone penetrometer testing consisted of pushing an instrumented cone-tipped probe into the ground while simultaneously recording the resistance to penetration at the cone tip and along the friction sleeve. The CPTs were pushed to a depth of between 33.5 feet and 57.5 feet below ground surface (about 7.5 to 29.5 feet below sea level). The results of the CPTs are presented in Attachment B. The plots in Attachment B show the measured tip resistance, local friction, and friction ratio. These plots also show the estimated soil behavior type and interpreted SPT blow counts, N values.

Results

Two geologic units, "Fill" and "Beach Deposits", were encountered during the field investigation. These two units and the groundwater conditions are discussed below:

Fill: The fill was encountered from the ground surface to between 21 and 30 feet below ground surface (about 5.5 above sea level to 4.5 feet below sea level). The fill generally consisted of medium dense to very dense, moist, silty sand with gravel (SM) to silty/clayey sand with gravel (SM/SC). The gravel was fine to coarse and consisted of fragments of sandstone and shale. Occasional hard, silty clay (CL) beds a few feet thick were also observed. Equivalent SPT-N ranged between 15 blows per foot and 50 blows for 1 inch. In general, the CPT tip resistance ranged between about 50 and 150 tons/feet^2 (tsf) with some layers a few feet thick having tip resistances up to about 350 tsf. In general, the CPT sleeve resistance ranged between about 1 and 6 tsf with occasional layers having sleeve resistances up to about 10 tsf. The CPT estimated soil behavior type is generally consistent with the soils logged in the boreholes, but locally indicates finer-grained materials (i.e. more clays and silts) than the boreholes.

Beach Deposits: The beach deposits were encountered below the Fill. The beach deposits generally consisted of medium dense to dense, wet, silty sand (SM) to clayey sand (SC) with occasional gravel layers. Equivalent SPT-N ranged between 10 blows per foot and 50 blows for 4 inches. In general, the CPT tip resistance ranged between about 10 and 350 tsf with some layers a few feet thick having tip resistances up to 500 tsf. In general, the CPT sleeve resistance ranged between about 1 and 6 tsf with occasional layers having sleeve resistances up to about 10 tsf. The CPT estimated soil behavior type indicates the beach deposits consist mostly of medium dense to dense sands and silty sands, except for a 10-foot thick layer of very stiff fine-grained material in CPT-2.

Groundwater Conditions: The groundwater surface was encountered in all the boreholes except B-4, B-6, and B-9 that were terminated above elevation 0. Generally, the groundwater surface was encountered in the Beach Deposits between about elevation 5-feet above sea level to about elevation 5-feet below sea level.

LABORATORY TESTING

General

The laboratory testing program performed for the proposed Topanga Lagoon site followed guidelines set forth in a testing manual by the US Environmental Protection Agency and US Army Corps of Engineers[1]. This testing manual (also known as the "Green Book") provides

[1] US Environmental Protection Agency and US Army Corps of Engineers, 1991, "Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual", EPA 503/8-91/001.

guidance on the selection of physical and chemical tests to be performed to aid in the evaluation of dredged material for proposed ocean disposal. The physical and chemical tests were performed in general accordance with applicable procedures of the American Society for Testing and Materials (ASTM) and/or the Environmental Protection Agency (EPA).

Physical Laboratory Testing

The physical tests were conducted at the laboratory facilities of Teratest Labs in Irvine, California and included grain-size distribution and specific gravity. The data from the physical laboratory testing are included in Attachment C. Attachment C contains a summary table of the physical test results as well as the results from individual tests that show the particle-size data and curve. Brief descriptions of the physical laboratory testing are summarized below.

Grain Size Distribution Tests: The distribution of particle sizes was measured on selected composited brass tube samples (41 samples total) in general accordance with ASTM D422. A total of 38 samples of fill material were tested, and a total of 3 samples of beach deposits were tested. The distribution of particle sizes larger than 75-µm (No. 200 sieve) was determined by sieving, while the distribution of particle sizes smaller than 75-µm (No. 200 sieve) was determined by a sedimentation process using a hydrometer. The percentages of gravel, sand, and fines measured in the grain size distribution tests are presented on the boring logs in Attachment A and are noted by "GR", "SA", and "FI", respectively.

Specific Gravity Tests: The specific gravity of soil was measured on selected composited brass tube samples (12 samples total) in general accordance with ASTM D854. A total of 10 samples of fill material were tested, and a total of 2 samples of beach deposits were tested. The specific gravity measurements were either performed on the portion of the sample that passed the 4.75-mm (No. 4) sieve or, when the sample size was not large enough, on the portion of the sample that passed the 2-mm (No. 10) sieve.

Chemical Laboratory Testing

The chemical tests were performed at the laboratory facilities of Calscience Environmental Laboratories, Inc. in Garden Grove, California. A total of 5 chemical tests were performed on samples collected from boreholes 1 (depth of 14 to 15.5 feet), 4 (depth of 8 to 11.5 feet), 6 (depth of 12 to 13.5 feet), 7 (depth of 2 to 5.5 feet), and 10 (depth of 16 to 17.5 feet). Samples were analyzed for total solids, ammonia, total sulfide, soluble sulfide, TRPH, metals, mercury, organochlorine, pesticides and PCBs, semi-volatile organics (marine sediment), pH, TOC, and TBT. The data from the chemical laboratory testing are included in

Attachment D. Attachment D contains a summary table of the chemical test results as well as the quality control results.

Results

Physical Laboratory Testing: Figure 3 shows an overlay of the particle-size curves for all 41 grain-size distribution tests that were performed. As can be seen on this figure, the lower bound particle-size curve is defined by a sandy silty/clayey gravel (GM/GC), and the upper bound particle-size curves are defined by a silty sand (SM) and silty/clayey sand (SM/SC). Figure 3 also shows the average particle-size curve for the 41 tests. The average particle-size curve is a gravelly silty/clayey sand (SM/SC).

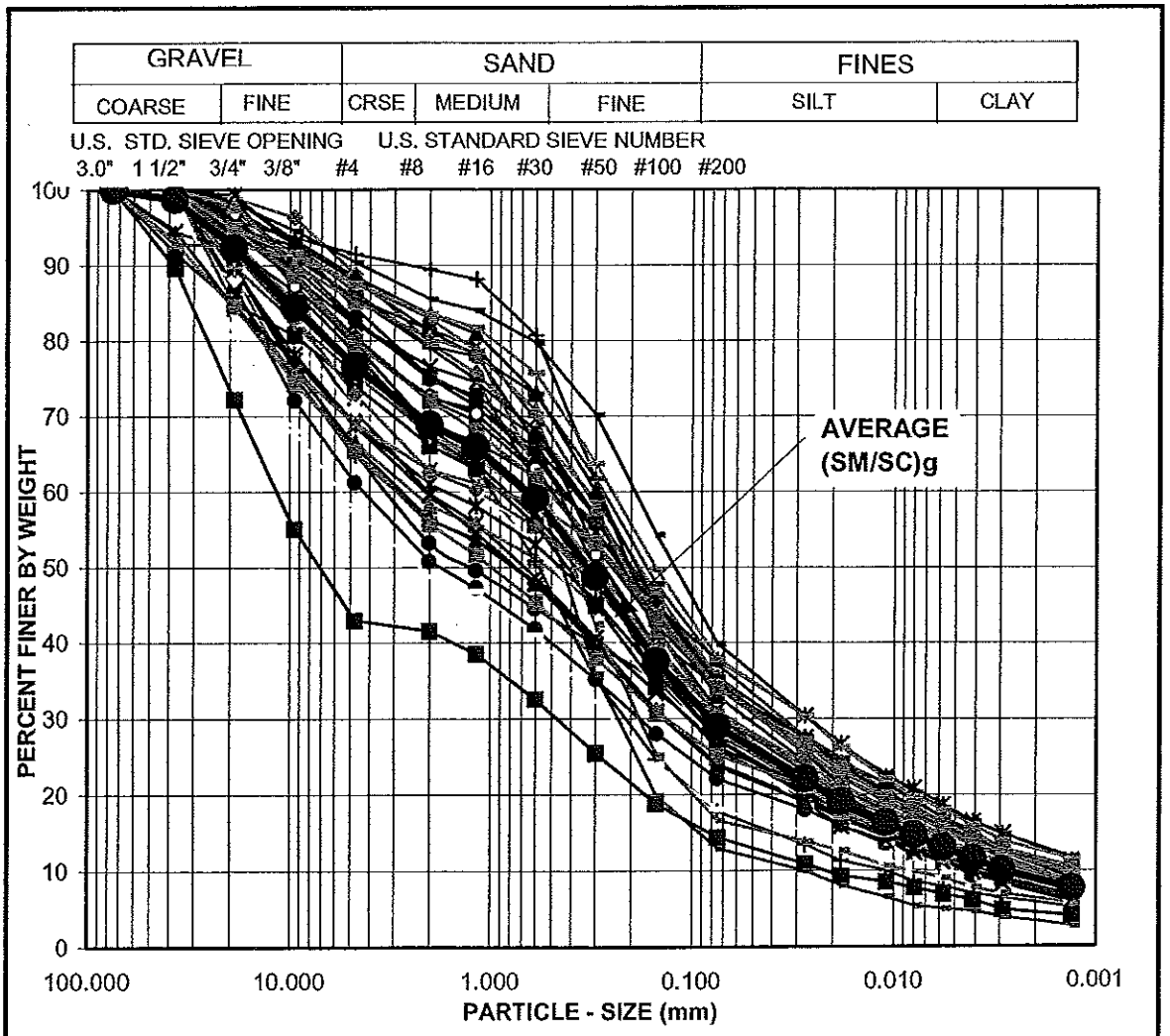


Figure 3, Particle-Size Curves and Average Curve

Figure 4 shows three sieve analysis histograms for tests performed within the fill material (38 tests total). The upper histogram shows the distribution of the percent of fill sample that passed the No. 4 sieve. As can be seen on this histogram, the minimum, maximum, and mean percent passing the No. 4 sieve is 57.2%, 91.5%, and 76.9%, respectively. The middle histogram shows the distribution of the percent of fill sample that passed the No. 30 sieve. As can be seen on this histogram, the minimum, maximum, and mean percent passing the No. 30 sieve is 41.1%, 80.7%, and 59.6%, respectively. The lower histogram shows the distribution of the percent of fill sample that passed the No. 200 sieve. As can be seen on this histogram, the minimum, maximum, and mean percent passing the No. 200 sieve is 17.8%, 39.9%, and 30.0%, respectively.

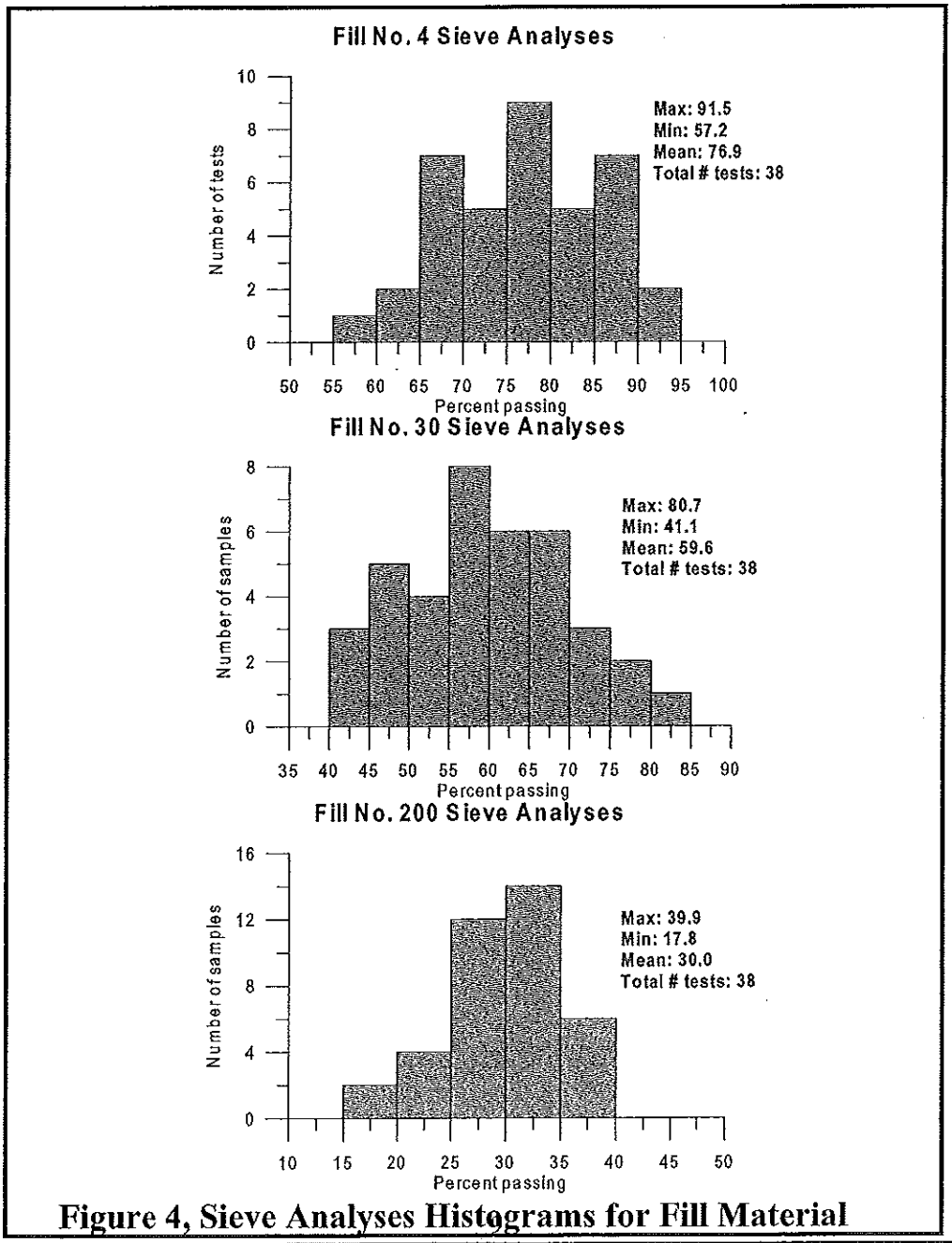


Figure 4, Sieve Analyses Histograms for Fill Material

Results of the specific gravity testing show that the specific gravity of the fill material ranges between 2.68 and 2.80 (10 tests total). The specific gravity of the beach deposits range between 2.71 and 2.73 (2 tests total).

Chemical Laboratory Testing: Figure 5 is a table that summarizes the compounds that were detected in the samples analyzed. This figure also lists the laboratory method, the EPA Region 9 Residential and Industrial Preliminary Remediation Goals (PRGs), the California Code of Regulations (CCR) Title 22, Chapter 11 Total Threshold Limit (TTLC) and Soluble Threshold Limit (STLC), the laboratory detection limit, and the concentrations of the detected compounds. As stated in the "Region 9 PRGs Table User's Guide/Technical Background Document" dated October 1, 2002, PRGs may be used for site "screening", but are not de facto cleanup standards and should not be applied as such. Exceeding a PRG suggests that further evaluation of the potential risks that may be posed by site contaminants, is appropriate.

Parameter	Method	EPA PRG residential soil [1]	EPA PRG industrial soil [1]	CCR Title 22 TTLC [2]	CCR Title 22 STLC [3]	Detection Limit	Borehole Samples 1 (14' to 15.5')	4 (6' to 11.5')	6 (12' to 13.5')	7 (2' to 5.5')	10 (16' to 17.5')
Physical/Conventional Tests											
Total Solids (TS), %1	EPA 160.3					NA	89.7	89.2	92	94.4	92.5
Ammonia-N, mg/kg	EPA 350.2M					0.50	ND<0.56	55	0.98	ND<0.53	ND<0.54
TRPH, mg/kg	EPA 418.1					10	82	32	62	62	47
Total Organic Carbon, mg/kg	EPA 9060					40	620	100	290	480	190
pH, pH units	EPA 9045C					NA	7.59	8.51	8.55	7.92	7.83
Metals, mg/kg											
Arsenic	EPA 6020	0.39	2.7	500	5	0.200	16	3.57	5.84	4.1	4.13
Cadmium	EPA 6020	37	810	100	1	0.100	0.175	ND<0.112	0.169	0.339	ND<0.108
Chromium (total)	EPA 6020	210	450	2,500	5	0.100	43.4	5.88	25.4	25.9	15.6
Copper	EPA 6020	2,900	8.E+04	2,500	25	0.100	21.6	16.9	16.9	23.2	13.2
Lead	EPA 6020	400	750	1,000	5	0.100	15.4	4.52	8.64	10.8	7.42
Nickel	EPA 6020	150	2.E+04	2,000	20	0.100	44.7	5.95	18.8	28.2	12.3
Selenium	EPA 6020	390	5,100	100	1	0.500	0.971	ND<0.561	ND<0.543	ND<0.530	ND<0.541
Silver	EPA 6020	390	5,100	500	5	0.100	0.286	0.118	0.123	0.132	0.148
Zinc	EPA 6020	2.E+04	1.E+05	5,000	250	1.00	70.9	30.7	47.9	47.9	46.1
Mercury	EPA 7471A	0	0	20	0.2	0.020	0.876	ND<0.023	0.324	0.172	0.245
Semi-Volatile Organics, ug/kg											
Bis(2-Ethylhexyl) Phthalate	EPA 8270C	3.50E+04	1.20E+05			10	ND<22	14	ND<11	16	ND<10
Total Phthalates	EPA 8270C					10	ND<22	14	ND<11	16	ND<10
Phenanthrene	EPA 8270C					8.0	120	ND<9.0	ND<8.6	ND<17	20
Fluoranthene	EPA 8270C	2.E+06	2.E+07			8.0	22	ND<9.0	ND<8.6	ND<17	ND<8.6
Pyrene	EPA 8270C	2.E+06	3.E+07			8.0	62	ND<9.0	ND<8.6	ND<17	ND<8.6
Benzo(a)anthracene	EPA 8270C					8.0	23	ND<9.0	ND<8.6	ND<17	ND<8.6
Chrysene	EPA 8270C	6.20E+04	2.10E+05			8.0	110	ND<9.0	ND<8.6	ND<17	9
Benzo(b)fluoranthene	EPA 8270C	620	2,100			8.0	38	ND<9.0	ND<8.6	ND<17	ND<8.6
Benzo(g,h,i) perylene	EPA 8270C					8.0	21	ND<9.0	ND<8.6	ND<17	ND<8.6
Total PAHs	EPA 8270C					8.0	396	ND<9.0	ND<8.6	ND<17	29

[1] US Environmental Protection Agency Region 9 Preliminary Remediation Goals (PRG)
[2] TTLC - Total Threshold Limit (Title 22 California Code of Regulations (CCR), Chapter 11)
[3] STLC - Soluble Threshold Limit (Title 22 California Code of Regulations (CCR), Chapter 11)

Figure 5, Table of Detected Compounds

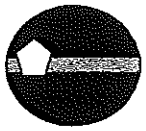
EPA Region 9 PRGs and CCR Title 22 threshold limits are not published for the physical/conventional tests. As shown on Figure 5, the concentrations of arsenic and mercury were detected at levels above EPA Region 9 residential and industrial PRGs and CCR Title 22 STLC. Arsenic was detected above the residential and industrial PRGs in all 5 samples and above the CCR Title 22 STLC in 2 samples. Although arsenic was detected above PRGs and STLC limits, the concentration of arsenic was detected within naturally occurring background concentrations for California. Mercury was detected above the residential and industrial PRGs in 4 samples and above the CCR Title 22 STLC in 3 samples. The concentrations of chromium (total), lead, and nickel were detected at levels above CCR Title 22 STLC in 5 samples, 4 samples, and 2 samples, respectively. The concentrations of semi-volatile organics are below EPA PRG's for those constituents that have published PRG values. However, the results show detections for total phthalates, phenanthrene, benzo(a)anthracene, benzo(g,h,l) perylene, and total PAHs that that do not have published PRG values.

The concentration of mercury detected in soil samples at the site range from 0.17 to 0.88 mg/kg (ppm). These concentrations may reflect naturally occurring mercury concentrations, however they do exceed published EPA Region 9 Preliminary Remediation Goals (PRG's) for residential and industrial soils of 0 ppm. Exceeding a PRG suggests that further evaluation of the potential risks that may be posed by mercury is appropriate. The mercury concentrations do not exceed the State of California total threshold limit values (TTLC's) as defined by Title 22 CCR, and therefore the on-site soils would not be considered hazardous waste for conventional disposal purposes. However, ocean dumping of soils containing other than trace mercury and mercury compounds will not be approved in accordance with the Code of Federal Regulations (40 CFR-Chapter 1 - Part 227). Trace concentrations appear to be defined by 40 CFR Part 227 as mercury present at concentrations less than 0.75 mg/kg, or less than 50% greater than the average total mercury content of natural sediments of similar lithologic characteristics as those at the disposal site. Because the results for one of the five samples tested slightly exceeds 0.75 mg/kg, further evaluation of background soil mercury concentrations and the potential environmental impacts of the proposed ocean dumping of excavated soils in accordance with the requirements of the local regulatory agencies will most likely be necessary.

GENERAL CONDITIONS

The characterization of materials presented in this report are based upon GeoPentech's understanding of the project and the assumption that the subsurface conditions do not deviate appreciably from what was observed in the boreholes and CPTs. However, the possibility of different subsurface conditions cannot be discounted. In the event that the locations, configurations, layout, or features of the proposed Topanga Lagoon Restoration Project are changed, or more site-specific geologic data is retrieved, then the characterization of materials presented in this report may not be applicable. It is the responsibility of the Owner to bring any such changes of the proposed project and any deviations of the known subsurface conditions to the attention of GeoPentech. In this way, a supplemental characterization of materials, if required, can be made without delay to the project.

Professional judgments presented in this report are based on an evaluation of the technical information gathered and GeoPentech's general experience in the field of geology and geotechnical engineering. GeoPentech does not guarantee the performance of the project in any respect, only that the engineering work and judgment rendered meet the standard of care of the geotechnical profession at this time.



ATTACHMENT A

BOREHOLE DATA

Figure No.	Description
A-1	Key to Log of Boring
A-2	Log of Boring 1
A-3	Log of Boring 2
A-4	Log of Boring 3
A-5	Log of Boring 4
A-6	Log of Boring 5
A-7	Log of Boring 6
A-8	Log of Boring 7
A-9	Log of Boring 7A
A-10	Log of Boring 8
A-11	Log of Boring 9
A-12	Log of Boring 10

Note: Approximate location of borings shown on Figure 2 of the main text of this memorandum.

Project: Topanga Lagoon Restoration
Project Location: Topanga, California
Project Number: 02006A

Key to Log of Boring

Sheet 1 of 1

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	Sampling Resistance, blows/foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10

COLUMN DESCRIPTIONS

1. **Elevation:** Elevation in feet referenced to mean sea level (MSL) or site datum.
2. **Depth:** Depth in feet below the ground surface.
3. **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.
4. **Sample Number:** Sample identification number.
5. **Sampling Resistance:** Number of blows required to advance driven sampler 12 inches beyond first 6-inch interval, or distance noted, using a 140-lb hammer with a 30-inch drop. Hydraulic down-pressure may be recorded for pushed samplers.
6. **Graphic Log:** Graphic depiction of subsurface material encountered; typical symbols are explained below.
7. **Material Description:** Description of material encountered; may include density/consistency, moisture, color, and grain size.
8. **Water Content:** Water content of sample, as percentage of dry weight of soil; measured in lab according to ASTM D2216.
9. **Dry Unit Weight:** Dry weight per unit volume of soil sample, in pounds per cubic foot, measured in lab according to ASTM D2937.
10. **Remarks and Other Tests:** Comments and observations regarding drilling or sampling made by driller or field personnel. Other lab tests are indicated using abbreviations explained below.

TYPICAL MATERIAL GRAPHIC SYMBOLS

- POORLY GRADED SAND (SP)
- POORLY GRADED SAND with SILT (SP-SM)
- SILTY SAND (SM)
- SILT (ML)
- ELASTIC SILT (MH)
- SILTY to CLAYEY SAND (SM/SC)
- LEAN CLAY (CL)
- FAT CLAY (CH)
- CLAYEY SAND (SC)
- SILTY CLAY (CL or CL-ML)
- CLAYEY SILT (ML)
- GRAVEL (GP/GW)

TYPICAL SAMPLER GRAPHIC SYMBOLS

- Modified California tube-lined split barrel (2.5-inch-OD)
- Standard Penetration Test (SPT) split spoon
- Shelby tube (thin-wall, fixed-head undisturbed)
- California ring-lined split barrel (3-inch-OD)
- Bulk sample
- Grab sample

OTHER LABORATORY TEST ABBREVIATIONS

AL	Atterberg Limits test (ASTM D4318)
LL	Liquid Limit from Atterberg Limits test
PI	Plasticity Index from Atterberg Limits test
Gs	Specific Gravity (ASTM D854)
GR	Gravel content from sieve analysis (ASTM D422); %>#4 sieve
SA	Sand content from sieve analysis, %<#4 and >#200 sieve
FI	Fines content from sieve analysis, %<#200 sieve
UC	Unconfined compressive strength test (ASTM D2166); q_u in ksf

OTHER GRAPHIC SYMBOLS

- First water encountered at time of drilling and sampling
- Static water level measured at specified time after drilling
- Change in material properties within a lithologic stratum
- Inferred contact between soil strata or gradational lithologic change

Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; field descriptions may have been modified to reflect lab test results. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced; they are not warranted to be representative of subsurface conditions at other locations or times.

Report OF SOIL LOG KEY; File: TLAGOONKOP.ai; 12/18/2002

GeoPentech
Geotechnical & Geoscience Consultants

Figure A-1

Project: Topanga Lagoon Restoration
Project Location: Topanga, California
Project Number: 02006A

Log of Boring 1

Sheet 1 of 1

Date(s) Drilled	11/12/02	Logged By	S. Duke	Checked By	S.T. Freeman
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID, 8-inch-OD auger	Total Depth of Borehole	26.5 feet
Drill Rig Type	CME 85	Drilling Contractor	A & R Drilling	Approximate Surface Elevation	17 feet MSL
Groundwater Level(s)	19 feet bgs ATD	Sampling Method	Modified California lined with 2-inch-dia. brass tubes	Hammer Data	Downhole hammer; 140 lbs / 30-inch drop
Borehole Backfill	Drill cuttings (tamped)	Location	Refer to site plan		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows/foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
15	0					**FILL** Medium dense, moist, brown, SILTY GRAVEL with SAND (GM), gravel consists mostly of yellowish brown sandstone fragments; fine- to medium-grained sand; trace clay			
			1	28					Composite of 1 and 2: GR = 35% SA = 34% FI = 31%
5			2	22		▼ Increasing shale fragments			
						Medium dense, moist, brown, SILTY to CLAYEY SAND with GRAVEL (SM/SC), fine- to medium-grained sand, fine gravel consists mostly of sandstone and shale fragments			
10			3	22					
						▼ Becomes reddish brown			
			4	35					
10						▼ Increasing shale and sandstone fragments			
			5	29					Composite of 5 and 6: GR = 20% SA = 46% FI = 34% Gs = 2.80
5						▼ Becomes medium dense to dense, dark gray with dark gray shale fragments			
			6	39					
15			7	32					
						Dense, moist, dark brown, CLAYEY SAND with GRAVEL (SC), gravel consists of sandstone and shale fragments			
0			8	39					Composite of 8 and 9: GR = 28% SA = 43% FI = 28%
			9	25		▽			
20						**BEACH DEPOSITS** Medium dense to dense, wet, brown, SILTY to CLAYEY GRAVEL with SAND (GM/GC), fine to coarse gravel			
			10	40					Composite of 10 and 11: GR = 57% SA = 29% FI = 14% Gs = 2.73
5			11	41					
						Dense, wet, bluish gray, SILTY SAND (SM)			
25			12	45					
						Bottom of boring at 26.5 feet			
10									
30									
15									
35									

Report: GP SOIL LOG; File: TLAGOON.GPJ; 12/9/2002

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Figure A-2

Project: Topanga Lagoon Restoration
Project Location: Topanga, California
Project Number: 02006A

Log of Boring 2

Sheet 1 of 1

Date(s) Drilled	11/11/02	Logged By	S. Duke	Checked By	S.T. Freeman
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID, 8-inch-OD auger	Total Depth of Borehole	31.5 feet
Drill Rig Type	CME 85	Drilling Contractor	A & R Drilling	Approximate Surface Elevation	28 feet MSL
Groundwater Level(s)	30 feet bgs ATD	Sampling Method	Modified California lined with 2-inch-dia. brass tubes	Hammer Data	Downhole hammer; 140 lbs / 30-inch drop
Borehole Backfill	Drill cuttings (tamped)	Location	Refer to site plan		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Sampling Resistance, blows / foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
28	0					Asphalt			
						FILL Dense, moist, brown, SILTY to CLAYEY SAND with GRAVEL (SM/SC), fine- to medium-grained sand, fine to coarse gravel consists of sandstone and shale fragments			
26	2		1	58					Composite of 1 and 2: GR = 21% SA = 48% FI = 30% Gs = 2.72
			2	52					
	5		3	53		Becomes reddish brown			
23			4	59					
	7		5	58		Becomes light brown (in sampler tip) Becomes dark reddish brown			Composite of 5 and 6: GR = 23% SA = 49% FI = 28%
			6	50/2"		Concreted sandstone cobble in sampler shoe			
21			7	50/3"		Becomes very dense, dark gray			
	10		8	65		Becomes dark reddish brown; increase in clay content			Composite of 8 and 8: GR = 33% SA = 39% FI = 28%
			9	68					
18			10	47		Medium dense to dense, moist, dark brown, SILTY SAND (SM), fine-grained sand, few fine to coarse gravel-size fragments of sandstone and shale			
	13		11	34					Composite of 11 and 12: GR = 11% SA = 53% FI = 36% Gs = 2.72
			12	33					
15			13	40					
	15		14	28		Medium dense, moist, gray, CLAYEY SAND (SC), fine- to medium-grained sand ▽			
13			15	48		BEACH DEPOSITS Dense, wet, brown, SILTY SAND (SM), fine- to medium-grained sand			
	18					Bottom of boring at 31.5 feet			
10									
	20								
8									
	23								
5									
	25								
3									
	28								
0									
	30								
-3									
	33								
-5									
	35								

Report: GP BOR LOG; File: TLAGOON.GPJ; 12/9/2002

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Figure A-3

Project: Topanga Lagoon Restoration
Project Location: Topanga, California
Project Number: 02006A

Log of Boring 3

Sheet 1 of 1

Date(s) Drilled	11/11/02	Logged By	S. Duke	Checked By	S.T. Freeman
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID, 8-inch-OD auger	Total Depth of Borehole	31.5 feet
Drill Rig Type	CME 85	Drilling Contractor	A & R Drilling	Approximate Surface Elevation	26 feet MSL
Groundwater Level(s)	30.5 feet bgs ATD	Sampling Method	Modified California lined with 2-inch-dia. brass tubes	Hammer Data	Downhole hammer; 140 lbs / 30-inch drop
Borehole Backfill	Drill cuttings (tamped)	Location	Refer to site plan		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
26	0					**FILL** Dense, moist, brown, SILTY SAND (SM), fine- to medium-grained sand, some clay			
			1	50					Composite of 1 and 2: GR = 14% SA = 59% FI = 27%
20	6		2	39		Becomes dark reddish brown, with fine to coarse gravel-size fragments of sandstone and shale			
			3	34		Coarse gravel-size sandstone fragment in sampler shoe Becomes medium dense			
			4	64		Becomes very dense			Composite of 4 and 5: GR = 12% SA = 62% FI = 26%
15	10		5	44		Becomes dense			
			6	37		Concreted sandstone cobble in sampler shoe			
10	16		7	30		Medium dense to dense, moist, yellowish brown, SILTY SAND with GRAVEL (SM), fine gravel consists of sandstone and shale fragments			
			8	40		Becomes brown, with some clay			Composite of 8 and 9: GR = 22% SA = 60% FI = 18% Gs = 2.73
5	20		9	33		Cobble in sampler shoe Becomes dense, dark brown, increase in clay content			
			10	60					
			11	48					
0	26		12	43		Becomes light brown (in sampler tip)			
			13	33		Becomes medium dense, dark brown			Composite of 13 and 14: GR = 18% SA = 44% FI = 38%
			14	35					
-5	30		15	36		▽ **BEACH DEPOSITS** Medium dense, wet, dark gray, CLAYEY SAND (SC), fine-grained sand			
	31.5					**Bottom of boring at 31.5 feet**			
	35								

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Figure A-4

Project: Topanga Lagoon Restoration
Project Location: Topanga, California
Project Number: 02006A

Log of Boring 4

Sheet 1 of 1

Date(s) Drilled	11/13/02	Logged By	S. Duke	Checked By	S.T. Freeman
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID, 8-inch-OD auger	Total Depth of Borehole	29.5 feet
Drill Rig Type	CME 85	Drilling Contractor	A & R Drilling	Approximate Surface Elevation	30 feet MSL
Groundwater Level(s)	Not encountered	Sampling Method	Modified California lined with 2-inch-dia. brass tubes	Hammer Data	Downhole hammer; 140 lbs / 30-inch drop
Borehole Backfill	Drill cuttings (tamped)	Location	Refer to site plan		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows/foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
30	0					Asphalt over gravel base course			
						FILL Very dense, wet, dark bluish gray, SILTY GRAVEL with SAND (GM), fine to coarse gravel consists of sandstone fragments, fine- to medium-grained sand, sewage odor [Leach Field?]			Rig grinding.
			1	50/5"					
25	5		2	67					Discrete Sample 2: GR = 42% SA = 40% FI = 18%
			3	50/4"		Very dense, wet, dark bluish gray, CLAYEY SAND with GRAVEL (SC), fine- to medium-grained sand, fine to coarse gravel consists of sandstone fragments, sewage odor [Leach Field?]			
			4	83		Increase in moisture content, decrease in fines content, becomes brownish red			
20	10		5	36		Becomes medium dense, dark bluish gray, increase in moisture content			
			6	50/1"		Bluish gray sandstone cobble in sampler shoe			Drill rig kicked to the side; may have encountered a boulder.
			7	36		Decrease in moisture content, decrease in sewage odor (possibly bottom edge of leach field)			
15	15		8	69		Becomes very dense, moist, dark yellowish brown, gravel consists of shale and sandstone fragments			
			9	28		Medium dense, moist, dark yellowish brown, SILTY SAND with GRAVEL (SM), fine to coarse gravel consists of sandstone and shale fragments			Discrete Sample 9: GR = 29% SA = 39% FI = 32% Gs = 2.69
10	20		10	50		Becomes dense, increase in gravel content			
			11	43		Becomes dark reddish brown to dark brown, decrease in fines and gravel content			Discrete Sample 11: GR = 28% SA = 45% FI = 27%
5	25		12	27		Medium dense, moist, dark yellowish brown, SILTY SAND (SM), fine-grained sand, few gravel-size sandstone fragments			
			13	32		Very stiff, moist, dark gray, FAT CLAY (CH)			
			14	30					
0	30					Bottom of boring at 29.5 feet			
-5	35								

Report: GP-SOIL LOG; File: TLAGOON.GPJ; 1/15/2003

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Figure A-5

Project: Topanga Lagoon Restoration
Project Location: Topanga, California
Project Number: 02006A

Log of Boring 5

Sheet 1 of 1

Date(s) Drilled	11/13/02	Logged By	S. Duke	Checked By	S.T. Freeman
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID, 8-inch-OD auger	Total Depth of Borehole	33.5 feet
Drill Rig Type	CME 95	Drilling Contractor	A & R Drilling	Approximate Surface Elevation	30 feet MSL
Groundwater Level(s)	27 feet bgs ATD	Sampling Method	Modified California lined with 2-inch-dia. brass tubes	Hammer Data	Downhole hammer; 140 lbs / 30-inch drop
Borehole Backfill	Drill cuttings (tamped)	Location	Refer to site plan		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Sampling Resistance, blows/foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
30	0					Asphalt over gravel base course			
						FILL Dense, moist, dark brown, SILTY SAND with GRAVEL (SM), fine- to medium-grained sand, fine to coarse gravel consists of sandstone and shale fragments			
			1	53					Discrete Sample 1: GR = 26% SA = 46% FI = 26%
						Becomes dense to very dense			
25	5		2	90					
			3	60					Composite of 3 and 4: GR = 18% SA = 51% FI = 31%
			4	80					
20	10					Increase in gravel content			
			5	50					
			6	89					Composite of 6 and 7: GR = 31% SA = 42% FI = 27% Gs = 2.73
15	15		7	42					
			8	50/3"		Strong, yellowish brown sandstone cobble in sampler shoe			
			9	51					
10	20					Becomes medium dense to dense; increase in gravel content			
			10	30					
			11	69					Composite of 11 and 12: GR = 34% SA = 42% FI = 24%
5	25		12	29					
			13	16		Becomes wet ▽			
			14	10		**BEACH DEPOSITS** Loose, wet, dark bluish gray, SILTY SAND (SM), fine- to medium-grained sand			
0	30		15	22		Becomes medium dense			
						Becomes dense, with some gravel			
			16	41					
						Bottom of boring at 33.5 feet			
-5	35								

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Figure A-6

Project: Topanga Lagoon Restoration Project Location: Topanga, California Project Number: 02006A	Log of Boring 6 Sheet 1 of 1

Date(s) Drilled	11/13/02	Logged By	S. Duke	Checked By	S.T. Freeman
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID, 8-inch-OD auger	Total Depth of Borehole	19.5 feet
Drill Rig Type	CME 85	Drilling Contractor	A & R Drilling	Approximate Surface Elevation	34 feet MSL
Groundwater Level(s)	Not encountered	Sampling Method	Modified California lined with 2-inch-dia. brass tubes	Hammer Data	Downhole hammer; 140 lbs / 30-inch drop
Borehole Backfill	Drill cuttings (tamped)	Location	Refer to site plan		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Sampling Resistance, blows / foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	0					Asphalt over gravel base course			
						FILL Dense to very dense, moist, dark brown, SILTY SAND with GRAVEL (SM), fine- to medium-grained sand, fine to coarse gravel consists of shale and sandstone fragments			Composite of 1 and 2: GR = 17% SA = 50% FI = 33% Gs = 2.74
30	5		1	60					
			2	50/4"					
			3	50/3"		← Strong, yellowish brown sandstone cobble in sampler shoe			
25	10		4	80					
			5	50/5"					
			6	74					
20	15		7	41		Dense, moist, reddish brown, SILTY SAND (SM), fine- to medium-grained sand, some clay, few gravel			Discrete Sample 7: GR = 8% SA = 65% FI = 27%
			8	40		Dense, moist, brown, CLAYEY SAND with GRAVEL (SC), fine- to medium-grained sand, fine to coarse gravel consists of shale and sandstone fragments			
15	20		9	36					
						Bottom of boring at 19.5 feet			
10	25								
5	30								
0	35								

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Figure A-7

Project: Topanga Lagoon Restoration
Project Location: Topanga, California
Project Number: 02006A

Log of Boring 7

Sheet 1 of 1

Date(s) Drilled	11/11/02	Logged By	S. Duke	Checked By	S.T. Freeman
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID, 8-inch-OD auger	Total Depth of Borehole	30.9 feet
Drill Rig Type	CME 85	Drilling Contractor	A & R Drilling	Approximate Surface Elevation	30 feet MSL
Groundwater Level(s)	25 feet bgs ATD	Sampling Method	Modified California lined with 2-inch-dia. brass tubes	Hammer Data	Downhole hammer; 140 lbs / 30-inch drop
Borehole Backfill	Drill cuttings (tamped)	Location	Refer to site plan		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Sampling Resistance, blows / foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
30	0					Asphalt over gravel base course			
			1	38		FILL Medium dense, moist, brown, SILTY to CLAYEY SAND (SM/SC), fine- to medium-grained sand			
			2	37		Becomes dark brown; increase in fines content, with few fine gravel-size fragments of shale/claystone and sandstone			
25	5		3	66		Becomes dense to very dense			No recovery at 6 ft. Start using catcher on samplers.
			4	50					Composite of 4 and 5: GR = 14% SA = 49% FI = 37%
20	10		5	76		Becomes very dense; decrease in fines content			
			6	83/10"		Hard, moist, dark reddish brown, SILTY CLAY (CL), trace fine-grained sand			
			7	50/4"		Dense to very dense, moist, yellowish brown, SILTY to CLAYEY SAND with GRAVEL (SM/SC), fine- to medium-grained sand, fine to coarse gravel consists of hard sandstone			Composite of 7 and 8: GR = 19% SA = 47% FI = 34%
15	15		8	65		With fine to coarse gravel-size fragments of shale and sandstone			
			9	67		Becomes dark brown; increase in clay content			Composite of 8 and 10: GR = 28% SA = 42% FI = 35% Gs = 2.73
10	20		10	69		Becomes brown; decrease in fines content			
			11	42		Becomes dense Sandstone cobble in sampler shoe			
5	25		12	54		BEACH DEPOSITS Dense, wet, dark gray, CLAYEY SAND (SC), fine-grained sand			
			13	50		Dense, wet, gray, SILTY SAND (SM), fine- to medium-grained sand, few gravel			Composite of 13 and 14: GR = 14% SA = 73% FI = 13%
			14	25		Becomes medium dense			
0	30		15	50/4"		Increase in gravel content			
						Bottom of boring at 30.9 feet			
-5	35								

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Figure A-6

Project: Topanga Lagoon Restoration Project Location: Topanga, California Project Number: 02006A	Log of Boring 7A Sheet 1 of 1

Date(s) Drilled	11/11/02	Logged By	S. Duke	Checked By	S.T. Freeman
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID, 8-inch-OD auger	Total Depth of Borehole	27.5 feet
Drill Rig Type	CME 85	Drilling Contractor	A & R Drilling	Approximate Surface Elevation	30 feet MSL
Groundwater Level(s)	26 feet bgs ATD	Sampling Method	Modified California lined with 2-inch-dia. brass tubes	Hammer Data	Downhole hammer; 140 lbs / 30-inch drop
Borehole Backfill	Drill cuttings (tamped)	Location	Refer to site plan		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Sampling Resistance, blows / foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
30	0					Asphalt over gravel base course			
						FILL Dense to very dense, moist, dark brown, SILTY to CLAYEY SAND (SM/SC), fine- to medium-grained sand, few fine to coarse gravel-size fragments of shale/claystone and sandstone			
			1	72					Composite of 1 and 2: GR = 12% SA = 54% FI = 34%
25	5		2	60					
			3	73		Increase in gravel content			Composite of 3 and 4: GR = 16% SA = 50% FI = 34%
			4	57					
20	10		5	48		Hard, moist, dark reddish brown, SILTY CLAY (CL); some fine gravel-size fragments of shale and sandstone			
			6	79		Very dense, moist, yellowish brown, SILTY to CLAYEY SAND with GRAVEL (SM/SC), fine- to medium-grained sand, fine to coarse sandstone gravel			Composite of 6 and 7: GR = 20% SA = 49% FI = 31% Gs = 2.72
						Very strong sandstone cobble in sampler shoe			
15	15		7	91					
			8	47		Becomes dense, dark brown; increase in clay content			Drilling becomes more difficult; possibly binding on siltstone/claystone.
			9	38					
10	20		10	48					Composite of 10 and 11: GR = 31% SA = 45% FI = 24%
			11	42					
5	25		12	38		**BEACH DEPOSITS** Medium dense, moist, gray, POORLY GRADED SAND with SILT (SP-SM), fine- to medium-grained sand ▽			
			13	29		Medium dense, wet, dark gray, CLAYEY SAND (SC), fine-grained sand			
0	30					**Bottom of boring at 27.5 feet**			
-5	35								

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Figure A-9

Project: Topanga Lagoon Restoration
Project Location: Topanga, California
Project Number: 02006A

Log of Boring 8

Sheet 1 of 2

Date(s) Drilled	11/12/02	Logged By	S. Duke	Checked By	S.T. Freeman
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID, 8-inch-OD auger	Total Depth of Borehole	35.5 feet
Drill Rig Type	CME 85	Drilling Contractor	A & R Drilling	Approximate Surface Elevation	31 feet MSL
Groundwater Level(s)	26 feet bgs ATD	Sampling Method	Modified California lined with 2-inch-dia. brass tubes	Hammer Data	Downhole hammer; 140 lbs / 30-inch drop
Borehole Backfill	Drill cuttings (tamped)	Location	Refer to site plan		

Elevation, feet	Depth, feet	Sample Type	Sample Number	Sampling Resistance, blows / foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
	0					Asphalt over gravel base course			
30						**FILL** Dense to very dense, moist, dark brown, SILTY to CLAYEY SAND with GRAVEL (SM/SC), fine- to medium-grained sand, fine gravel consists of sandstone and shale fragments			Composite of 1 and 2: GR = 24% SA = 45% FI = 31%
			1	81					
	5		2	67					
25			3	23		Medium dense, moist, yellowish brown, SILTY SAND with GRAVEL (SM), fine to coarse gravel consists of sandstone fragments			
			4	42		Dense, moist, dark reddish brown, SILTY to CLAYEY SAND (SM/SC), fine-grained sand, few fine gravel-size shale fragments			Composite of 4 and 5: GR = 12% SA = 50% FI = 38%
	10					↓ Becomes very dense			
20			5	78					
			6	50/2"		Very dense, moist, yellowish brown, SILTY SAND with GRAVEL (SM), fine-grained sand, fine to coarse gravel consists of sandstone fragments			
	15		7	50/5"		Dense to very dense, moist, brown, SILTY to CLAYEY SAND with GRAVEL (SM/SC), fine-grained sand, fine to coarse gravel consists of shale and sandstone fragments			
15			8	44		↓ Decrease in gravel size and content			Discrete Sample 8: GR = 27% SA = 42% FI = 31% Driller skipped sample at 18 ft.
	20		9	89/11"		↓ Increase in gravel size and content			
10			10	50/4"					
	25		11	37		↓ Becomes medium dense, dark brown; decrease in gravel content			
5			12	48		▽ **BEACH DEPOSITS** Dense, wet, bluish gray, SILTY to CLAYEY SAND (SM/SC), fine- to medium-grained sand, few fine gravel			Discrete Sample 12: GR = 12% SA = 71% FI = 17% Gs = 2.71
			13	45		↓ Increase in gravel content			
	30		14	80		↓ Becomes dense to very dense			
0			15	48					
			16	44		← Coarse gravel in sampler shoe			
	35								

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Figure A-10

Project: Topanga Lagoon Restoration
Project Location: Topanga, California
Project Number: 02006A

Log of Boring 8

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Sampling Resistance, blows/foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
-5	35		16	44		BEACH DEPOSITS (continued) Dense, wet, bluish gray, SILTY to CLAYEY SAND with GRAVEL (SM/SC) Bottom of boring at 35.5 feet			
-10	40								
-15	45								
-20	60								
-25	55								
-30	60								
-35	65								
-40	70								
	75								

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Figure A-10

Project: Topanga Lagoon Restoration Project Location: Topanga, California Project Number: 02006A	Log of Boring 9 Sheet 1 of 1

Date(s) Drilled	11/12/02	Logged By	S. Duke	Checked By	S.T. Freeman
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID, 8-inch-OD auger	Total Depth of Borehole	21.5 feet
Drill Rig Type	CME 85	Drilling Contractor	A & R Drilling	Approximate Surface Elevation	31 feet MSL
Groundwater Level(s)	Not encountered	Sampling Method	Modified California lined with 2-inch-dia. brass tubes	Hammer Data	Downhole hammer; 140 lbs / 30-inch drop
Borehole Backfill	Drill cuttings (tamped)	Location	Refer to site plan		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Sampling Resistance, blows / foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
30	0					Asphalt over gravel base course			
			1	46		**FILL** Dense, moist, dark brown, SILTY to CLAYEY SAND with GRAVEL (SM/SC), fine- to medium-grained sand, fine to coarse gravel consists of shale and sandstone fragments			Composite of 1 and 2: GR = 20% SA = 46% FI = 34% Gs = 2.73
25	6		2	48					
			3	63		Becomes dark yellowish brown; decrease in clay content			
			4	28		Becomes medium dense, dark brown; increase in clay content			Discrete Sample 4: GR = 15% SA = 55% FI = 30%
20	10		5	62		Becomes dense, light brown; decrease in clay content			Composite of 5 and 6: GR = 31% SA = 35% FI = 34%
			6	65					
			7	50/3"		Becomes very dense; increase in gravel content			Drilling becomes more difficult
16	15		8	50/5"		Very strong, bluish gray sandstone cobble in sampler shoe			
			9	50/3"		Becomes dark brown			Composite of 9 and 10: GR = 35% SA = 40% FI = 25%
10	20		10	76					
						Bottom of boring at 21.5 feet			
6	25								
0	30								
	35								

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Figure A-11

Project: Topanga Lagoon Restoration
Project Location: Topanga, California
Project Number: 02006A

Log of Boring 10

Sheet 1 of 1

Date(s) Drilled	11/12/02	Logged By	S. Duke	Checked By	S.T. Freeman
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID, 8-inch-OD auger	Total Depth of Borehole	33.5 feet
Drill Rig Type	CME 85	Drilling Contractor	A & R Drilling	Approximate Surface Elevation	35 feet MSL
Groundwater Level(s)	31.5 feet bgs ATD	Sampling Method	Modified California lined with 2-inch-dia. brass tubes	Hammer Data	Downhole hammer; 140 lbs / 30-inch drop
Borehole Backfill	Drill cuttings (tamped)	Location	Refer to site plan		

Elevation, feet	Depth, feet	Samples: Number	Sampling Resistance, blows/foot	MATERIAL DESCRIPTION	Water Content, %	Dry-Unit Weight, pcf	REMARKS AND OTHER TESTS
35	0			Coarse gravel road fill			
				FILL Very dense, moist, dark brown, SILTY to CLAYEY SAND with GRAVEL (SM/SC), fine- to medium-grained sand, fine to coarse gravel consists of sandstone and shale fragments			
		1	73				Composite of 1 and 2: GR = 20% SA = 45% FI = 35%
30	5	2	60/5"	Very strong, bluish gray cobble in sampler shoe			
		3	60/4"				No recovery at 6 ft
		4	92				
25	10	5	50/5"				
				Dense, moist, yellowish brown, SILTY to CLAYEY SAND (SM/SC), fine- to medium-grained sand, few fine to coarse gravel-size fragments of sandstone and shale			
		6	60	Shell fragments (in sampler tip)			Composite of 6 and 7: GR = 10% SA = 50% FI = 40%
20	15	7	40	Becomes mostly reddish brown			
		8	60	Becomes dark brown; increase in fines content			
		9	38	Becomes medium dense			
15	20	10	30	Medium dense to dense, moist, dark brown, SILTY to CLAYEY SAND with GRAVEL (SM/SC), fine- to medium-grained sand, fine to coarse gravel consists of shale and sandstone fragments			Composite of 10 and 11: GR = 39% SA = 39% FI = 22%
		11	42				
10	25	12	53	Becomes dense to very dense, dark gray, with dark gray shale fragments			
		13	50/3"	Becomes dark brown			Composite of 13 and 14: GR = 35% SA = 41% FI = 24%
		14	38	Becomes medium dense, yellowish brown, with yellowish brown sandstone fragments			
5	30	15	50	**BEACH DEPOSITS** Dense, moist, brown, SILTY SAND (SM), fine- to medium-grained sand, few fine gravel-size shale fragments; wet below 31.5 feet ▽			
		16	53				
				Bottom of boring at 33.5 feet			
0	35						

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Figure A-12

ATTACHMENT B

CONE PENETROMETER TEST DATA

Figure No.	Description
B-1	CPT-2 Log
B-2	CPT-3 Log
B-3	CPT-7 Log
B-4	CPT-7A Log

Note: Approximate location of CPTs shown on Figure 2 of the main text of this memorandum.

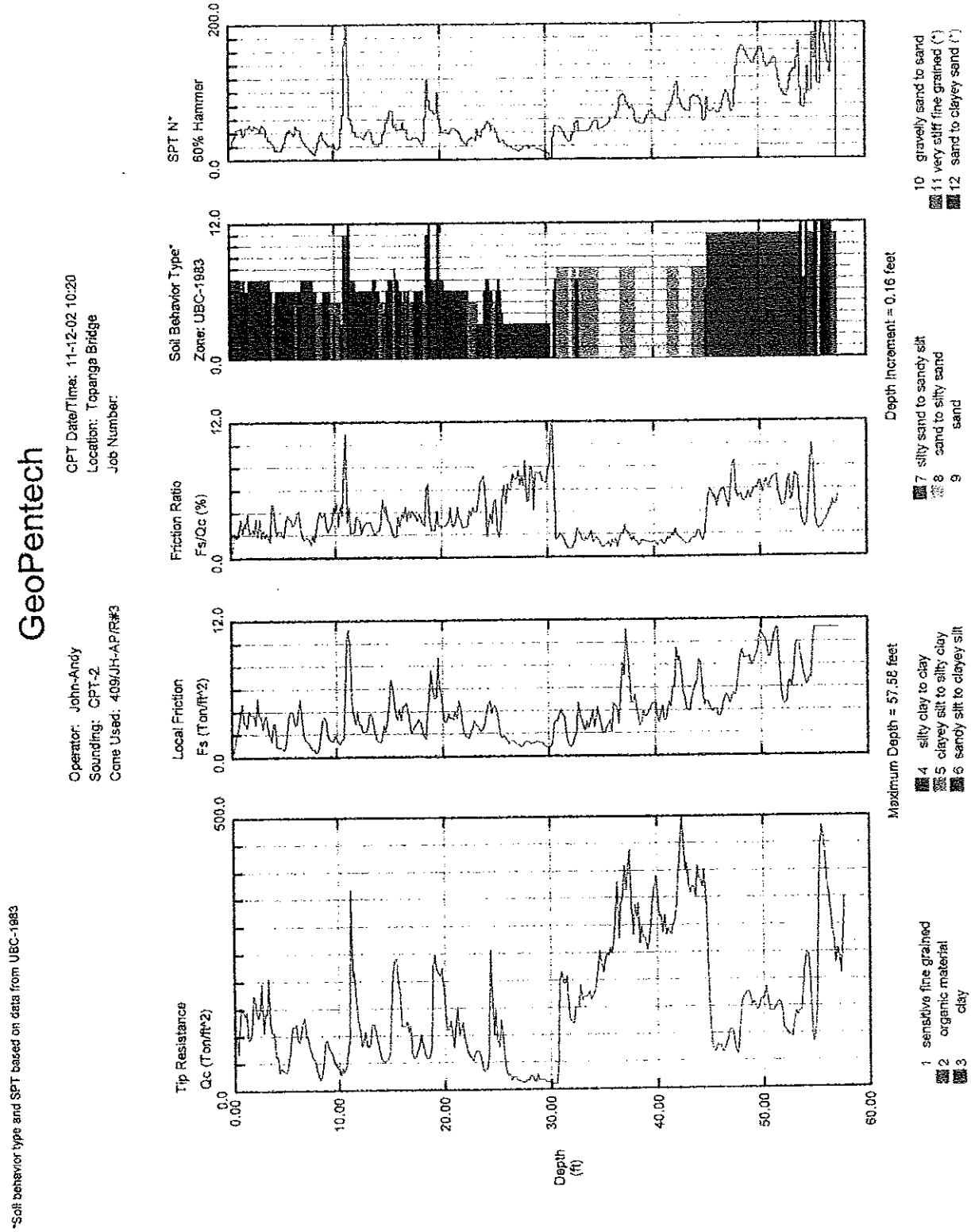
GeoPentech
CPT Date/Time: 11-12-02 10:20
Location: Topanga Bridge
Job Number:
Operator: John-Andy
Sounding: CPT-2
Cone Used: 409/JH-AP/R#3
Tip Resistance
Qc (Ton/ft^2)
0.0
500.0
Local Friction
Fs (Ton/ft^2)
0.0
12.0
Friction Ratio
Fs/Qc (%)
0.0
12.0
Soil Behavior Type*
Zone: UBC-1983
0.0
12.0
SPT N*
60% Hammer
0.0
200.0
Depth
(ft)
0.00
10.00
20.00
30.00
40.00
50.00
60.00
Maximum Depth = 57.58 feet
Depth Increment = 0.16 feet
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 gravely sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)
sdf-42
*Soil behavior type and SPT based on data from UBC-1983

Figure B-1

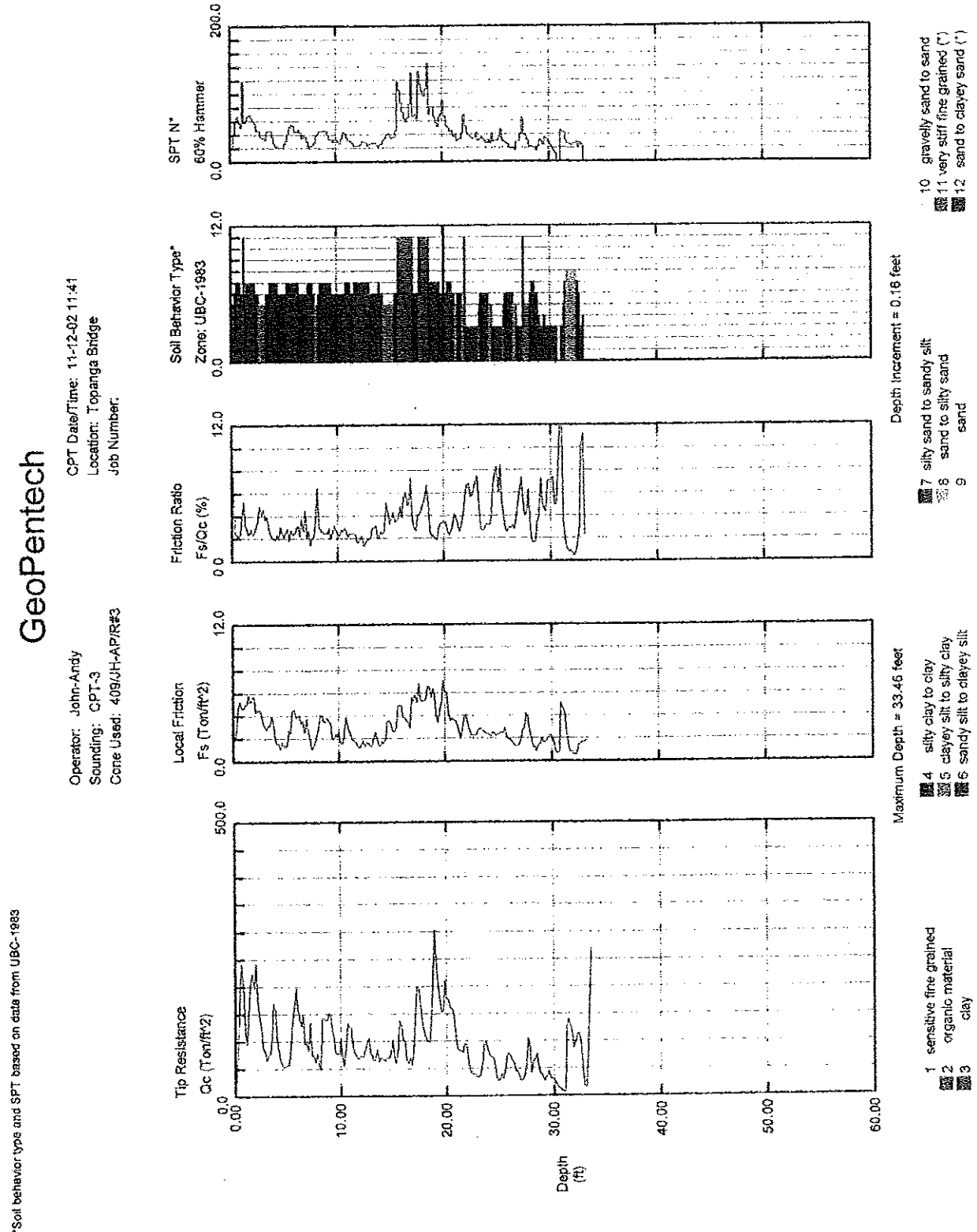
GeoPentech
CPT Date/Time: 11-12-02 11:41
Location: Topanga Bridge
Job Number:
Operator: John-Andy
Sounding: CPT-3
Cone Used: 409/JH-AP/R#3
Tip Resistance Qc (Ton/ft^2)
Local Friction Fs (Ton/ft^2)
Friction Ratio Fs/Qc (%)
Soil Behavior Type* Zone: UBC-1983
SPT N' 60% Hammer
Depth (ft)
Maximum Depth = 33.46 feet
Depth Increment = 0.16 feet
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 (*)
sdf-44
*Soil behavior type and SPT based on data from UBC-1983

Figure B-2

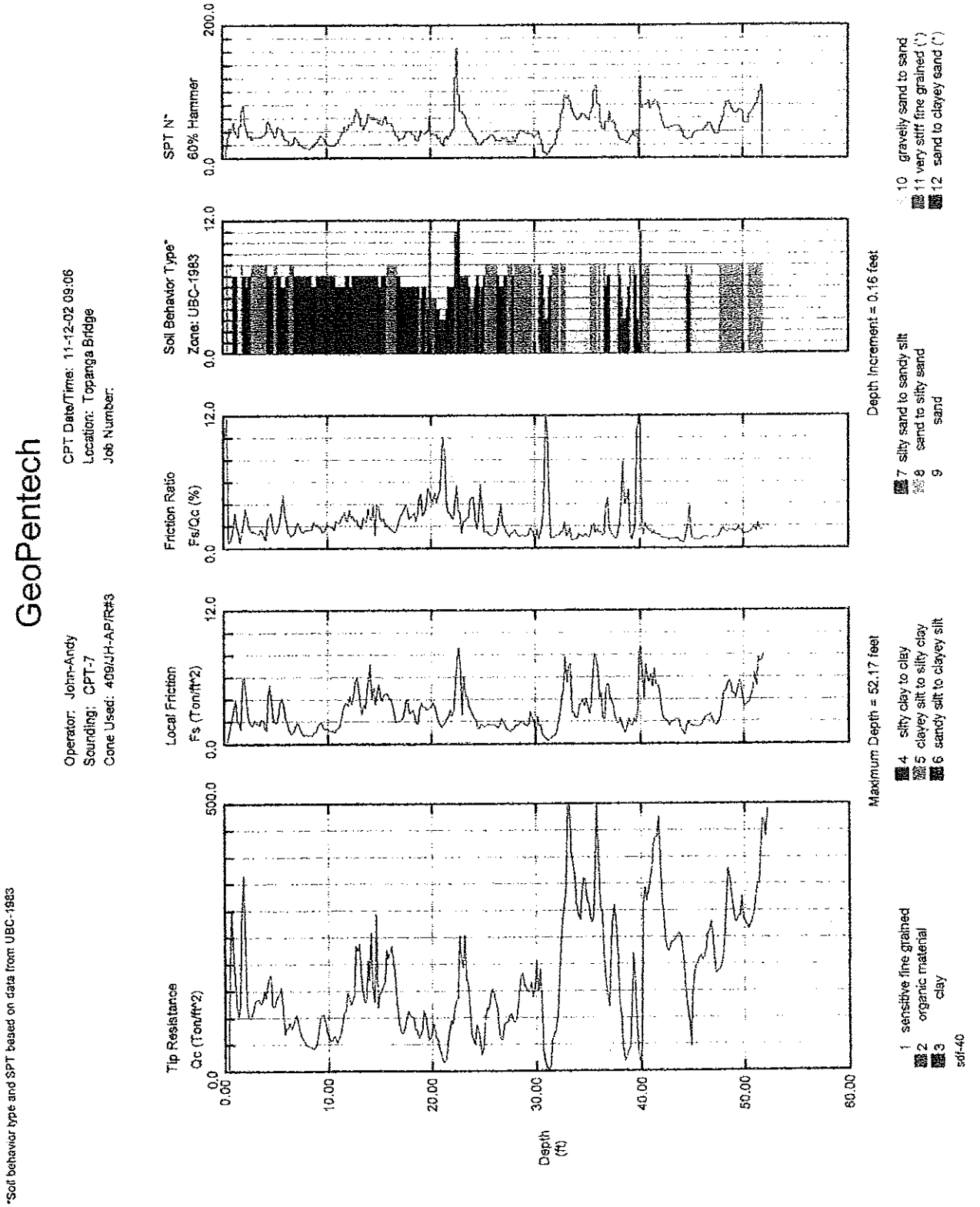
GeoPentech
CPT Date/Time: 11-12-02 09:06
Location: Topanga Bridge
Job Number:
Operator: John-Andy
Sounding: CPT-7
Cone Used: 409IJH-AP/R#3
*Soil behavior type and SPT based on data from UBC-1983
Tip Resistance
Qc (Ton/ft^2)
Local Friction
Fs (Ton/ft^2)
Friction Ratio
Fs/Qc (%)
Soil Behavior Type*
Zone: UBC-1983
SPT N'
60% Hammer
Depth Increment = 0.16 feet
Maximum Depth = 52.17 feet
Depth (ft)
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 (*)
sdf-40

Figure B-3

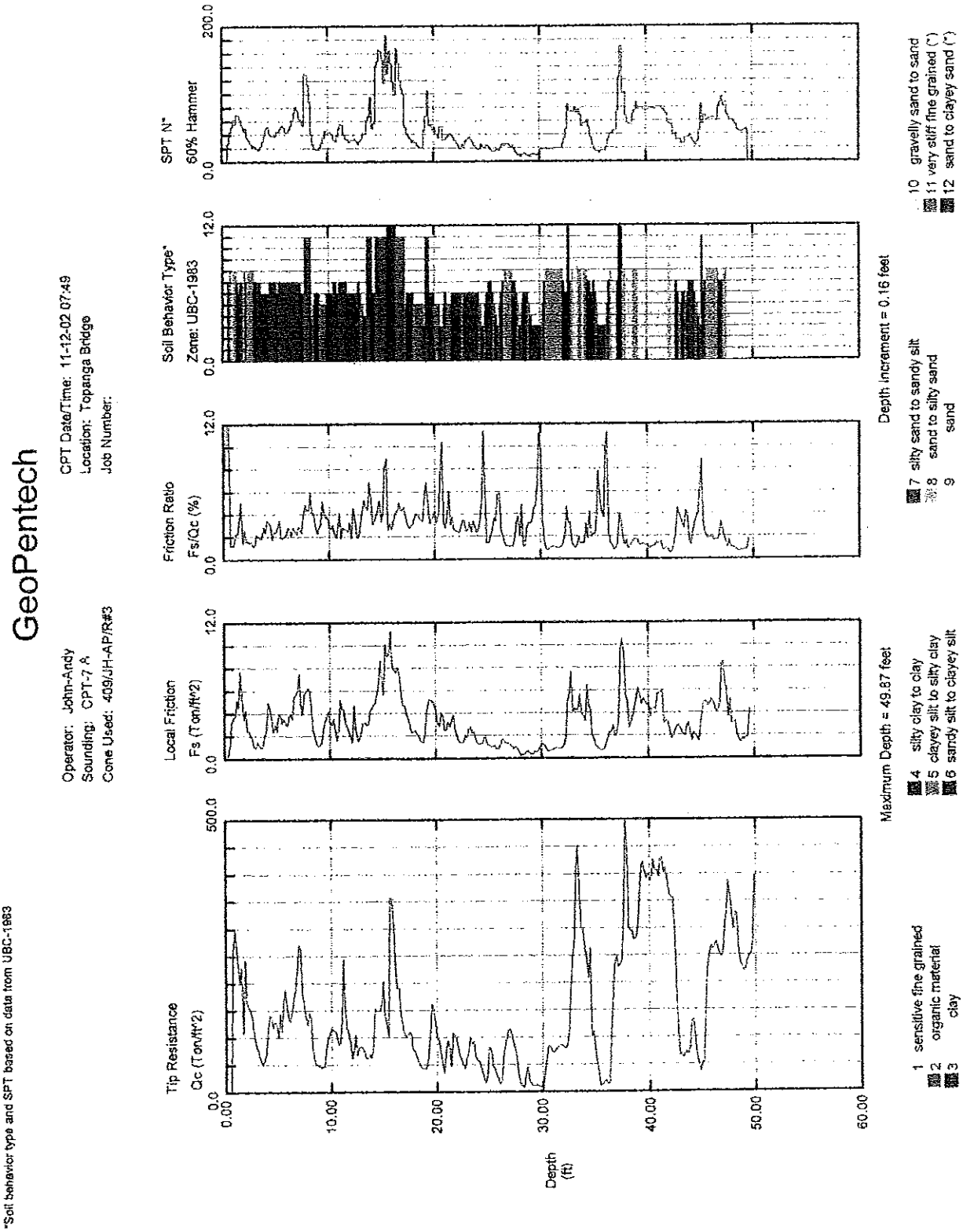
GeoPentech
Operator: John-Andy
Sounding: CPT-7 A
Cone Used: 409/JH-AP/R#3
CPT Date/Time: 11-12-02 07:49
Location: Topanga Bridge
Job Number:
Tip Resistance Qc (Ton/ft^2)
Local Friction Fs (Ton/ft^2)
Friction Ratio Fs/Qc (%)
Soil Behavior Type* Zone: UBC-1983
SPT N' 60% Hammer
Depth (ft)
Maximum Depth = 49.87 feet
Depth increment = 0.16 feet
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 (*)
sdf-39
*Soil behavior type and SPT based on data from UBC-1983

Figure B-4

ATTACHMENT C

PHYSICAL LABORATORY DATA

Description
Table 1 Summary of Test Results
Specific Gravity of Soils Data Sheets
Particle-Size Analysis of Soils Data Sheets and Curves

Teratest Labs, Inc.
A LEIGHTON GROUP COMPANY

December 06, 2002

GeoPentech
601 N. Parkcenter Drive, Suite 110
Santa Ana, CA 92705

Attention: Mr. Steve Duke

Subject: **Report/Laboratory Testing Results**
Project Name: Topanga Lagoon
Project No.: 02006A
TERATEST No.: 015297

Dear Mr. Duke:

Enclosed please find laboratory testing results for the soil samples from the above referenced project. The requested tests were performed in essential accordance with the standard test methods listed below.

TYPE OF TEST	TEST METHOD
Particle-Size Analysis of Soils	ASTM D 422
Specific Gravity of Soils	ASTM D 854

Test results are presented in Table 1 and the attached Data Sheets.

ASTM: American Society for Testing and Materials, Annual Book of ASTM Standards, Section 4 Construction, Volume 04.08 Soil and Rock (1), 2000.

Thank you for selecting Teratest Labs, Inc. to provide laboratory testing services to GeoPentech. Please feel free to contact us if you should have any questions concerning these results.

Very truly yours,

TERATEST LABS, INC.
Laboratory Testing Services

Lester Fruth

Lester Fruth
Soils Laboratory Supervisor

Enclosures

17781 Cowan ▪ Irvine, CA 92614-6009
949.253.5922 ▪ Fax 949.263.8843 ▪ www.teratest.com

17781 Cowan , Suite 150, Irvine, CA 92614 Tel.No. (949) 253-5922 Fax. No. (949) 724-1557

Project Name: Topanga Lagoon **Teratest No.:** 015297

Project No.: 02006A **Tabulated By:** LF

Client: GeoPentech **Date:** 12/06/0

TABLE 1

SUMMARY of LABORATORY TEST RESULTS

Boring No.	Sample No.	Depth (ft)	Particle-Size Distribution ASTM D 422 GR:SA:FI[2] (%)	Specific Gravity[3] ASTM D 854	Soil Classification ASTM D 2487 (group symbol)
1	1 & 2	2 - 5.5	35:34:31		(GM)s
1	5 & 6	10 - 13.5	20:46:34	2.80	(SM/SC)g
1	8 & 9	16 - 19	29:43:28		(SC)g
1	10 & 11	20 - 23.5	57:29:14	2.73	(GM/GC)s
2	1 & 2	2 - 5.5	21:49:30	2.72	(SM/SC)g
2	5 & 6	10 - 13.5	23:49:28		(SM/SC)g
2	8 & 9	16 - 19.5	33:39:28		(SM/SC)g
2	11 & 12	22 - 25.5	11:53:36	2.72	SM
3	1 & 2	2 - 5.5	14:59:27		SM
3	4 & 5	8 - 11.5	12:62:26		SM
3	8 & 9	16 - 19.5	22:60:18	2.73	(SM)g
3	13 & 14	26 - 29.5	18:44:38		(SM)g
4	2	4 - 5.5	42:40:18		(GM)s
4	9	18 - 19.5	29:39:32	2.68	(SM)g
4	11	22 - 23.5	28:45:27		(SM)g
5	1	2 - 3.5	26:48:26		(SM)g
5	3 & 4	6 - 9.5	18:51:31		(SM)g
5	6 & 7	12 - 15.5	31:42:27	2.73	(SM)g
5	11 & 12	22 - 25.5	34:42:24		(SM)g
6	1 & 2	2 - 5	17:50:33	2.74	(SM)g
6	7	14 - 15.5	8:65:27		SM

[2] GR:SA:FI = Gravel: Sand: Fines (Percent Passing #200 Sieve)

[3] Material Passing the #4 Sieve

17781 Cowan , Suite 150, Irvine, CA 92614 Tel.No. (949) 253-5922 Fax. No. (949) 724-1557

Project Name: Topanga Lagoon **Teratest No.:** 015297

Project No.: 02006A **Tabulated By:** LF

Client: GeoPentech **Date:** 12/06/0

TABLE 1 cont'd

SUMMARY of LABORATORY TEST RESULTS

Boring No.	Sample No.	Depth (ft)	Particle-Size Distribution ASTM D 422 GR:SA:FI[2] (%)	Specific Gravity[3] ASTM D 854	Soil Classification ASTM D 2487 (group symbol)
7	4 & 5	8 - 11.5	14:49:37		SM/SC
7	7 & 8	14 - 17.5	19:47:34		(SM/SC)g
7	9 & 10	18 - 21.5	23:42:35	2.73	(SM/SC)g
7	13 & 14	26 - 29.5	14:73:13		SM
7a	1 & 2	2 - 5.5	12:54:34		SM/SC
7a	3 & 4	6 - 9.5	16:50:34		(SM/SC)g
7a	6 & 7	12 - 15.5	20:49:31	2.72	(SM/SC)g
7a	10 & 11	20 - 23.5	31:45:24		(SM/SC)g
8	1 & 2	2 - 5.5	24:45:31		(SM/SC)g
8	4 & 5	8 - 11.5	12:50:38		SM/SC
8	8	16 - 17.5	27:42:31		(SM/SC)g
8	12	26 - 27.5	12:71:17	2.71	SM/SC
9	1 & 2	2 - 5.5	20:46:34	2.73	(SM/SC)g
9	4	8 - 9.5	15:55:30		(SM/SC)g
9	5 & 6	10 - 13.5	31:35:34		(SM/SC)g
9	9 & 10	18 - 21.5	35:40:25		(SM/SC)g
10	1 & 2	2 - 5	20:45:35		(SM/SC)g
10	6 & 7	12 - 15.5	10:50:40		SM/SC
10	10 & 11	20 - 23.5	39:39:22		(SM/SC)g
10	13 & 14	26 - 29.5	35:41:24		(SM/SC)g

[2] GR:SA:FI = Gravel: Sand: Fines (Percent Passing #200 Sieve)

[3] Material Passing the #4 Sieve

Geosyntech

PR...DUR... ...6   Kl ... 13

PROJECT NUMBER 02006A **DUE DATE** ______ est. 23 **EXIT LAB** ______ **DATE** ______

PROJECT NAME Topanga Lagoon **REQUESTED BY** Steve Duke **DATE** 11/20/02 **APPROVED** ______ **DATE** ______

REQUEST NUMBER ______ **CHECKED BY** ______ **DATE** ______ **BILLED** ______ **DATE** ______

CODE NUMBER: Boring Number	Sample Number	Depth Interval	Sample Type	Moisture/Density	Sieve	Hydrometer	Specific Gravity (fines)	Liquid & Plastic Limit	Compaction	Relative Density	CBR	Consolidation: Saturate At	Load To	Rebound To	Reload To	Rebound To	Time Readings Yes/No	Triaxial: Type	Pressure (PSI/KSF) Vertical σ_v	Horizontal σ_h	Permeability: Cell Pressure (PSI)	Back Pressure (PSI)	Expansion Index	Vane Shear	Direct Shear: Vertical Pressure (KSF)	Pinhole Erosion	Sample Remolding: Dry Unit Wt.	Water Content	Other Testing	Special Instruction
					41	41	12																							Per Steve 11-21-02 Mix contents of all tubes in each group before taking test sample. If still not enough material let him know
1	1&2	2'-5.5'			X	X																								
1	5&6	10'-13.5'			X	X	X																							
1	8&9	16'-19'			X	X																								
1	10&11	20'-23.5'			X	X	X						≤ 800g			2" gravel														
2	1&2	2'-5.5'			X	X	X																							
2	5&6	10'-13.5'			X	X																								
2	8&9	16'-19.5'			X	X																								
2	11&12	22'-25.5'			X	X	X																							
NUMBER OF TESTS																														
UNIT PRICE [1]												SG - #10 test																		
TOTAL PRICE												All samples ≥3/4 gravel are 2 Kg. Per Steve 11-21-02 Run SG + Hyd on existing samples.																		TOTAL

(1) THE REQUESTOR SHOULD FILL OUT THE UNIT PRICES. FOR TESTS NOT CHARGED ON A UNIT PRICE BASIS, FILL OUT N/A. THE UNIT PRICES WILL BE CHECKED BY THE LAB SUPERVISON.

(2) IF COMPACTION TESTS ARE REQUESTED, THE DRY UNIT WEIGHT CAN BE EXPRESSED AS A PERCENTAGE OF MAXIMUM DENSITY AND THE MOISTURE CONTENT CAN BE EXPRESSED AS A PERCENTAGE ABOVE OR BELOW OPTIMUM MOISTURE.

TERATEST LABS, INC.
Premier Geotechnical Testing
2121 Alton Parkway, Suite 110
Irvine, California 92606
(714) 724-1776 FAX (714) 724-1557

PROCEDURE GA-6

PROJECT NUMBER 02006A DUE DATE _____ EXIT LAB _____ DATE _____

PROJECT NAME Topanga Lagoon REQUESTED BY Steve Duke DATE 11/20/02 APPROVED _____ DATE _____

REQUEST NUMBER _____ CHECKED BY _____ DATE _____ BILLED _____ DATE _____

CODE NUMBER													CONSOLIDATION						TRIAXIAL			PERME-ABILITY				DIRECT SHEAR		SAMPLE REMOLDING		OTHER TESTING			SPECIAL INSTRUCTION
BORING NUMBER	SAMPLE NUMBER	DEPTH INTERVAL	SAMPLE TYPE	MOISTURE/DENSITY	SIEVE	HYDROMETER	SPECIFIC GRAVITY	LIQUID & PLASTIC LIMIT	COMPACTION	RELATIVE DENSITY	CBR	SATURATE AT	LOAD TO	REBOUND TO	RELOAD TO	REBOUND TO	TIME READINGS YES/NO	TYPE	PRESSURE (PSI/KSF) VERTICAL $\bar{\sigma}_v$	PRESSURE (PSI/KSF) HORIZONTAL $\bar{\sigma}_h$	CELL PRESSURE (PSI)	BACK PRESSURE (PSI)	EXPANSION INDEX	VANE SHEAR	VERTICAL PRESSURE (KSF)	PINHOLE EROSION	DRY UNIT WT.	WATER CONTENT				
3	1,2	2'-5.5'			X	X																										
3	4,5	8'-11.5'			X	X																										
3	8,9	16'-19.5'			X	X	X																									
3	13,14	26'-29.5'			X	X																										
4	2	4'-5.5'			X	X																										
4	9	18'-19.5'			X	X	X																									
4	11	22'-23.5'			X	X																										
NUMBER OF TESTS																																
UNIT PRICE (1)																																
TOTAL PRICE																																TOTAL

(1) THE REQUESTOR SHOULD FILL OUT THE UNIT PRICES. FOR TESTS NOT CHARGED ON A UNIT PRICE BASIS, FILL OUT N/A. THE UNIT PRICES WILL BE CHECKED BY THE LAB SUPERVISOR.

(2) IF COMPACTION TESTS ARE REQUESTED, THE DRY UNIT WEIGHT CAN BE EXPRESSED AS A PERCENTAGE OF MAXIMUM DENSITY AND THE MOISTURE CONTENT CAN BE EXPRESSED AS A PERCENTAGE ABOVE OR BELOW OPTIMUM MOISTURE.

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PROCEDURE QA-6

PROJECT NUMBER 02006A DUE DATE ______ EXIT LAB ______ DATE ______

PROJECT NAME Topanga Lagoon REQUESTED BY Steve Duke DATE 11/20/02 APPROVED ______ DATE ______

REQUEST NUMBER ______ CHECKED BY ______ DATE ______ BILLED ______ DATE ______

CODE NUMBER												CONSOLIDATION						TRIAXIAL			PERMEABILITY				DIRECT SHEAR		SAMPLE REMOLDING		OTHER TESTING			SPECIAL INSTRUCTION
																			PRESSURE (PSI/KSF)													
BORING NUMBER	SAMPLE NUMBER	DEPTH INTERVAL	SAMPLE TYPE	MOISTURE/DENSITY	SIEVE	HYDROMETER	SPECIFIC GRAVITY	LIQUID & PLASTIC LIMIT	COMPACTION	RELATIVE DENSITY	CBR	SATURATE AT	LOAD TO	REBOUND TO	RELOAD TO	REBOUND TO	TIME READINGS YES/NO	TYPE	VERTICAL σ_v	HORIZONTAL σ_h	CELL PRESSURE (PSI)	BACK PRESSURE (PSI)	EXPANSION INDEX	VANE SHEAR	VERTICAL PRESSURE (KSF)	PINHOLE EROSION	DRY UNIT WT.	WATER CONTENT				
5	1	2'-3.5'			X	X																										
5	3&4	6'-9.5'			X	X																										
5	6&7	12'-15.5'			X	X	X																									
5	11&12	22'-25.5'			X	X																										
6	1&2	2'-5'			X	X	X																									
6	7	14'-15.5'			X	X																										
7	4&5	8'-11.5'			X	X																										
7	7&8	14'-17.5'			X	X																										
7	9&10	18'-21.5'			X	X	X																									
7	13&14	26'-29.5'			X	X																										
NUMBER OF TESTS																																
UNIT PRICE (1)																																
TOTAL PRICE																																TOTAL

(1) THE REQUESTOR SHOULD FILL OUT THE UNIT PRICES. FOR TESTS NOT CHARGED ON A UNIT PRICE BASIS, FILL OUT N/A. THE UNIT PRICES WILL BE CHECKED BY THE LAB SUPERVISOR.

(2) IF COMPACTION TESTS ARE REQUESTED, THE DRY UNIT WEIGHT CAN BE EXPRESSED AS A PERCENTAGE OF MAXIMUM DENSITY AND THE MOISTURE CONTENT CAN BE EXPRESSED AS A PERCENTAGE ABOVE OR BELOW OPTIMUM MOISTURE.

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PROCEDURE QA-6

PROJECT NUMBER 02006A DUE DATE _____ EXIT LAB _____ DATE _____

PROJECT NAME Topanga Lagoon REQUESTED BY Steve Duke DATE 11/20/02 APPROVED _____ DATE _____

REQUEST NUMBER _____ CHECKED BY _____ DATE _____ BILLED _____ DATE _____

CODE NUMBER												CONSOLIDATION						TRIAXIAL			PERME-ABILITY					DIRECT SHEAR		SAMPLE REMOLDING		OTHER TESTING			SPECIAL INSTRUCTION
BORING NUMBER	SAMPLE NUMBER	DEPTH INTERVAL	SAMPLE TYPE	MOISTURE/DENSITY	SIEVE	HYDROMETER	SPECIFIC GRAVITY	LIQUID & PLASTIC LIMIT	COMPACTION	RELATIVE DENSITY	CBR	SATURATE AT	LOAD TO	REBOUND TO	RELOAD TO	REBOUND TO	TIME READINGS YES/NO	TYPE	PRESSURE (PSF/KSF) VERTICAL $\bar{\sigma}_v$	PRESSURE (PSF/KSF) HORIZONTAL $\bar{\sigma}_h$	CELL PRESSURE (PSI)	BACK PRESSURE (PSI)	EXPANSION INDEX	VANE SHEAR	VERTICAL PRESSURE (KSF)	PINHOLE EROSION	DRY UNIT WT.	WATER CONTENT				
7a	1&2	2'-5.5'			X	X																										
7a	3&4	6'-9.5'			X	X																										
7a	6&7	12'-15.5'			X	X	X																									
7a	10&11	20'-23.5'			X	X																										
8	1&2	2'-5.5'			X	X																										
8	4&5	8'-11.5'			X	X																										
8	8	16'-17.5'			X	X																										
8	12	26'-27.5'			X	X	X																									
NUMBER OF TESTS																																
UNIT PRICE (1)																																
TOTAL PRICE																																TOTAL

(1) THE REQUESTOR SHOULD FILL OUT THE UNIT PRICES. FOR TESTS NOT CHARGED ON A UNIT PRICE BASIS, FILL OUT N/A. THE UNIT PRICES WILL BE CHECKED BY THE LAB SUPERVISOR.

(2) IF COMPACTION TESTS ARE REQUESTED, THE DRY UNIT WEIGHT CAN BE EXPRESSED AS A PERCENTAGE OF MAXIMUM DENSITY AND THE MOISTURE CONTENT CAN BE EXPRESSED AS A PERCENTAGE ABOVE OR BELOW OPTIMUM MOISTURE.

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PROCEDURE QA-6

PROJECT NUMBER 02006A DUE DATE _____ EXIT LAB _____ DATE _____

PROJECT NAME Topanga Lagoon REQUESTED BY Steve Duke DATE 11/20/02 APPROVED _____ DATE _____

REQUEST NUMBER _____ CHECKED BY _____ DATE _____ BILLED _____ DATE _____

CODE NUMBER												CONSOLIDATION						TRIAXIAL			PERME-ABILITY					DIRECT SHEAR		SAMPLE REMOLDING		OTHER TESTING			SPECIAL INSTRUCTION
BORING NUMBER	SAMPLE NUMBER	DEPTH INTERVAL	SAMPLE TYPE	MOISTURE/DENSITY	SIEVE	HYDROMETER	SPECIFIC GRAVITY	LIQUID & PLASTIC LIMIT	COMPACTION	RELATIVE DENSITY	CBR	SATURATE AT	LOAD TO	REBOUND TO	RELOAD TO	REBOUND TO	TIME READINGS YES/NO	TYPE	PRESSURE (PSI/KSF) VERTICAL σ_v	PRESSURE (PSI/KSF) HORIZONTAL σ_h	CELL PRESSURE (PSI)	BACK PRESSURE (PSI)	EXPANSION INDEX	VANE SHEAR	VERTICAL PRESSURE (KSF)	PINHOLE EROSION	DRY UNIT WT.	WATER CONTENT				
9	1&2	2'-5.5'			X	X	X																									
9	4	8'-9.5'			X	X																										
9	5&6	10'-13.5'			X	X																										
9	9&10	18'-21.5'			X	X																										
10	1&2	2'-5'			X	X																										
10	6&7	12'-15.5'			X	X																										
10	10&11	20'-23.5'			X	X																										
10	13&14	26'-29.5'			X	X																										
NUMBER OF TESTS																																
UNIT PRICE (1)																																
TOTAL PRICE																																TOTAL

(1) THE REQUESTOR SHOULD FILL OUT THE UNIT PRICES. FOR TESTS NOT CHARGED ON A UNIT PRICE BASIS, FILL OUT N/A. THE UNIT PRICES WILL BE CHECKED BY THE LAB SUPERVISOR.

(2) IF COMPACTION TESTS ARE REQUESTED, THE DRY UNIT WEIGHT CAN BE EXPRESSED AS A PERCENTAGE OF MAXIMUM DENSITY AND THE MOISTURE CONTENT CAN BE EXPRESSED AS A PERCENTAGE ABOVE OR BELOW OPTIMUM MOISTURE.

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Irvine, California 92606
(714) 724-1776 FAX (714) 724-1557

Teratest Labs, Inc.

SPECIFIC GRAVITY OF SOILS
ASTM D 854

Project Name: Topanga Lagoon

Project No. : 02006A

Tested By : ACS/VJ Date: 11/22/02
Data Input By: LF Date: 12/04/02
Checked By: LF Date: 12/04/02

BORING NUMBER	1	1	2	2	3	4
SAMPLE No.	5 & 6	10 & 11	1 & 2	11 & 12	8 & 9	9
DEPTH (FT)	10-13.5	20-23.5	2-5.5	22-25.5	16-19.5	18-19.5
SOIL CLASSIFICATION	(SM/SC)g	(GM/GC)s	(SM/SC)g	SM	(SM)g	(SM)g
AVG. SPECIFIC GRAVITY (Gs)	**2.80**	**2.73**	**2.72**	**2.72**	**2.73**	**2.68**
(Gs) PASSING #4	2.80	2.72	2.71	2.72	2.67	2.64
(Gs) PASSING #4 (Dry Back)	2.79	2.74	2.72	2.72	2.78	2.73
BULK SPECIFIC GRAVITY						
ABSORBTION (%)						

CONTAINER	N/A	N/A	N/A	N/A	N/A	N/A
FLASK NUMBER	16	10	13	4	A	B
WT. FLASK+WATER+SOIL	388.59	388.55	389.04	392.07	734.08	735.64
TEMPERATURE	23.2	23.5	23.2	23.5	21.0	22.5
CORRECTION FACTOR	0.9993	0.9992	0.9993	0.9992	0.9998	0.9995
WT. DRY SOIL	50.83	50.25	50.28	50.16	101.14	101.40
WT. FLASK & WATER	355.90	356.79	357.31	360.34	670.77	672.65
% RETAINED #4	0.0	0.0	0.0	0.0	0.0	0.0
% PASSING #4	100.0	100.0	100.0	100.0	100.0	100.0
CONTAINER NO.	836	1615	752	527	600	9545
DRY SOIL AFTER TEST + CONT.	124.06	127.85	125.46	127.17	206.73	205.55
WT.+ #4 SATURATE + CONT.						
WT.+ #4 + CONT.(WATER)						
WT. OF CONTAINER	73.16	77.87	75,33	77.05	107.96	106.21
WT. OF CONTAINER (WATER)						
WT.DRY BACK SOIL	50.90	49.98	50.13	50.12	98.77	99.34
WT.+ #4 SATURATE (AIR)						
WT.+ #4 IN WATER						

TEMPERATURE (CELSIUS)	CORRECTION FACTOR
17	1.0006
18	1.0004
19	1.0002
20	1.0000
21	0.9998
22	0.9996
23	0.9993
24	0.9991
25	0.9989
26	0.9986
27	0.9983

Teratest Labs, Inc.

SPECIFIC GRAVITY OF SOILS
ASTM D 854

Project Name: Topanga Lagoon

Project No. : 02006A

Tested By : ACS/VJ Date: 11/22/02

Data Input By: LF Date: 12/04/02

Checked By: LF Date: 12/04/02

BORING NUMBER	5	6	7	7a	8	9
SAMPLE No.	6 & 7	1 & 2	9 & 10	6 & 7	12	1 & 2
DEPTH (FT)	12-15.5	2-5	18-21.5	12-15.5	26 - 27.5	2 - 5.5
SOIL CLASSIFICATION	(SM)g	(SM)g	(SM/SC)g	(SM/SC)g	SM/SC	(SM/SC)g
AVG. SPECIFIC GRAVITY (Gs)	**2.73**	**2.74**	**2.73**	**2.72**	**2.71**	**2.73**
(Gs) PASSING #4	2.72	2.72	2.73	2.71	2.70	2.72
(Gs) PASSING #4 (Dry Back)	2.75	2.77	2.73	2.73	2.72	2.75
BULK SPECIFIC GRAVITY						
ABSORBTION (%)						

CONTAINER	N/A	N/A	N/A	N/A	N/A	N/A
FLASK NUMBER	C	D	4	10	16	13
WT. FLASK+WATER+SOIL	738.90	737.16	424.04	420.01	418.91	420.78
TEMPERATURE	21.5	22.1	22.4	22.4	21.5	20.5
CORRECTION FACTOR	0.9997	0.9996	0.9995	0.9995	0.9997	0.9999
WT. DRY SOIL	101.93	102.03	100.43	100.01	99.83	100.25
WT. FLASK & WATER	674.45	672.65	360.42	356.85	356.00	357.42
% RETAINED #4	0.0	0.0	0.0	0.0	0.0	0.0
% PASSING #4	100.0	100.0	100.0	100.0	100.0	100.0
CONTAINER NO.	836	1615	752	527	749	754
DRY SOIL AFTER TEST + CONT.	210.96	207.54	175.34	172.87	176.44	174.82
WT.+ #4 SATURATE + CONT.						
WT.+ #4 + CONT.(WATER)						
WT. OF CONTAINER	109.70	106.60	75.07	73.18	77.01	75.28
WT. OF CONTAINER (WATER)						
WT.DRY BACK SOIL	101.26	100.94	100.27	99.69	99.43	99.54
WT.+ #4 SATURATE (AIR)						
WT.+ #4 IN WATER						

TEMPERATURE (CELSIUS)	CORRECTION FACTOR
17	1.0006
18	1.0004
19	1.0002
20	1.0000
21	0.9998
22	0.9996
23	0.9993
24	0.9991
25	0.9989
26	0.9986
27	0.9983

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 1
Sample No.: 1 & 2
Visual Sample Description: Olive silty gravel with sand (GM)s

Tested By : RA/VJ
Data Input By: LF
Checked By: LF
Depth (ft.) : 2 - 5.5

Date: 11/22/02
Date: 12/03/02
Date: 12/03/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	35:34:31			
Plasticity Index:		Grp. Symbol:	(GM)s			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	117.58
Wt.of Air-Dry Soil + Cont. (gm.)	1521.80	Wt. of Container No.___ (gm.)		1.00	1.00	74.31
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1521.80	Wt. of Dry Soil (gm.)				43.27

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	155.77	89.8
3/8"	350.74	77.0
No. 4	528.20	65.3
No. 10	712.40	53.2
Pan		

Sieve after Hydrometer & Wet Sieve

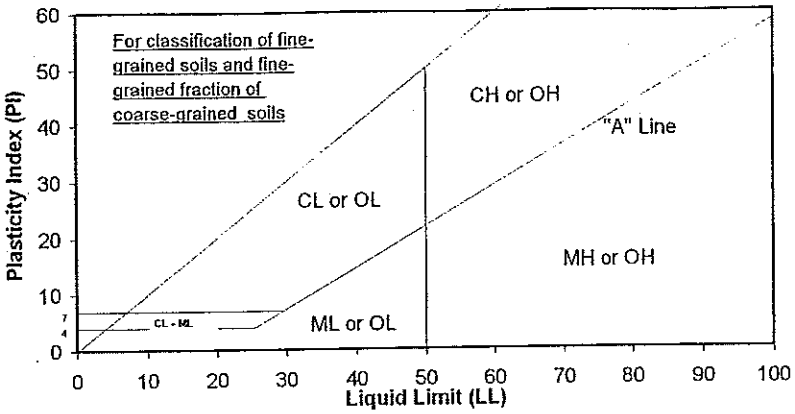
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	53.2
No. 16	6.73	93.3	49.6
No. 30	16.19	83.9	44.6
No. 50	25.35	74.8	39.8
No. 100	34.10	66.1	35.2
No. 200	42.88	57.4	30.5
Pan			

Hydrometer

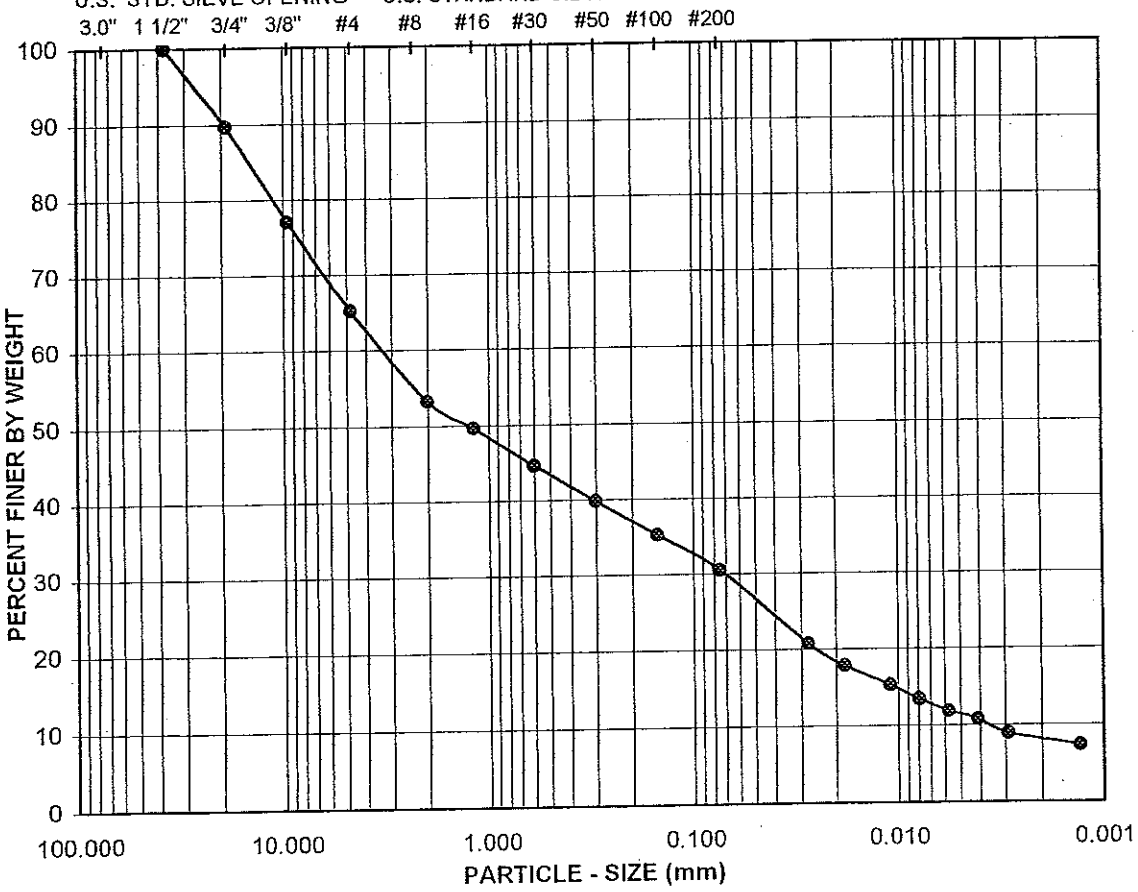
Wt. of Air-Dry Soil (gm): 100.60
Wt. of Dry Soil (gm): 100.60

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
25-Nov-02	10:10	0		5.5			
	10:12	2	23.2	5.5	45.0	20.7	0.0274
	10:15	5	23.3	5.5	39.5	17.8	0.0182
	10:25	15	23.3	5.5	34.5	15.2	0.0109
	10:40	30	23.3	5.5	31.0	13.4	0.0079
	11:10	60	23.3	5.5	28.0	11.8	0.0057
	12:10	120	23.0	5.5	26.0	10.7	0.0041
	14:20	250	23.4	5.5	22.5	8.9	0.0029
26-Nov-02	7:40	1290	22.7	5.5	19.5	7.3	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
1	1 & 2	2 - 5.5	(GM)s	35:34:31	N/A

Sample Description:

Olive silty gravel with sand (GM)s

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name:	Topanga Lagoon	Tested By :	RA/VJ	Date:	11/22/02
Project No. :	02006A	Data Input By:	LF	Date:	12/04/02
Boring No.:	1	Checked By:	LF	Date:	12/04/02
Sample No.:	5 & 6	Depth (ft.) :	10 - 13.5		

Visual Sample Description: Olive brown silty / clayey sand with gravel (SM/SC)g

				Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Liquid Limit:		LL,PL,PI:	N/A			
Plastic Limit:		GR:SA:FI:	20:46:34			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity	2.80	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.97	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	125.50
Wt.of Air-Dry Soil + Cont. (gm.)	1859.60	Wt. of Container No.___ (gm.)		1.00	1.00	75.32
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1859.60	Wt. of Dry Soil (gm.)				50.18

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	23.95	98.7
3/8"	203.26	89.1
No. 4	380.61	79.5
No. 10	588.40	68.4
Pan		

Sieve after Hydrometer & Wet Sieve

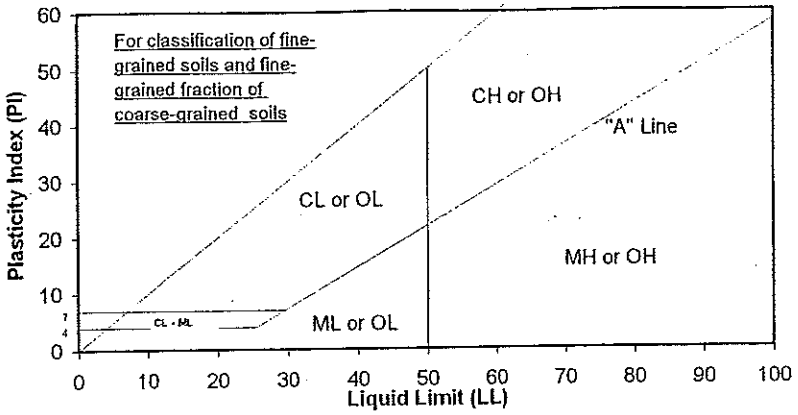
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	68.4
No. 16	6.88	93.1	63.7
No. 30	17.36	82.7	56.6
No. 50	29.63	70.4	48.2
No. 100	41.04	59.0	40.4
No. 200	50.12	49.9	34.1
Pan			

Hydrometer

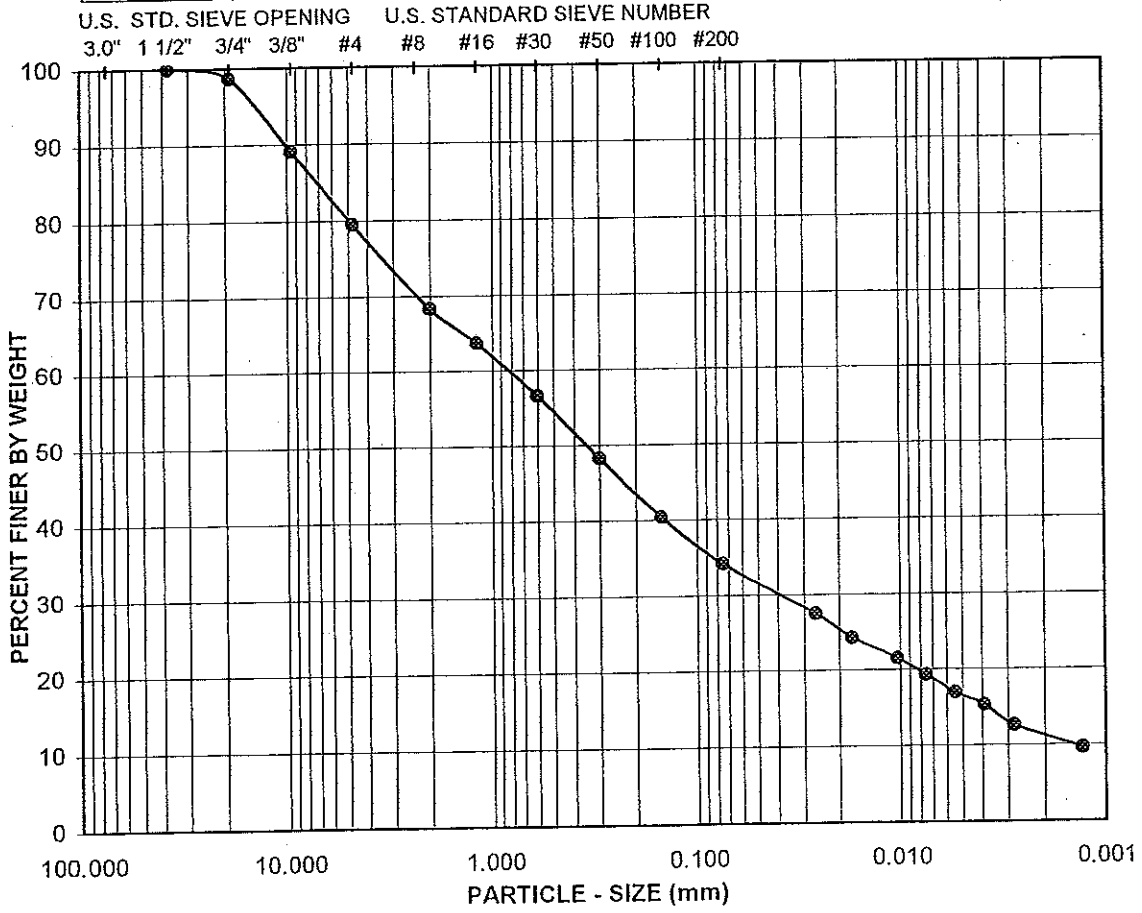
Wt. of Air-Dry Soil (gm) 100.09   Wt. of Dry Soil (gm) 100.09

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
25-Nov-02	9:58	0		5.5			
	10:00	2	23.2	5.5	47.0	27.5	0.0261
	10:03	5	23.2	5.5	42.0	24.2	0.0173
	10:13	15	23.2	5.5	38.0	21.5	0.0103
	10:28	30	23.3	5.5	34.5	19.2	0.0075
	10:58	60	23.3	5.5	31.0	16.9	0.0054
	11:58	120	23.0	5.5	28.5	15.2	0.0039
	14:08	250	23.4	5.5	24.5	12.6	0.0028
26-Nov-02	7:37	1299	22.7	5.5	20.0	9.6	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
1	5 & 6	10 - 13.5	(SM/SC)g	20:46:34	N/A

Sample Description:

Olive brown silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 1
Sample No.: 8 & 9
Visual Sample Description: Olive clayey sand with gravel (SC)g

Tested By : RA/VJ
Data Input By: LF
Checked By: LF
Depth (ft.) : 16 - 19

Date: 11/22/02
Date: 12/03/02
Date: 12/03/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	29:43:28			
Plasticity Index:		Grp. Symbol:	(SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	129.11
Wt.of Air-Dry Soil + Cont. (gm.)	1349.60	Wt. of Container No.___ (gm.)		1.00	1.00	75.20
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1349.60	Wt. of Dry Soil (gm.)				53.91

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	85.27	93.7
3/8"	237.72	82.4
No. 4	395.04	70.7
No. 10	544.30	59.7
Pan		

Sieve after Hydrometer & Wet Sieve

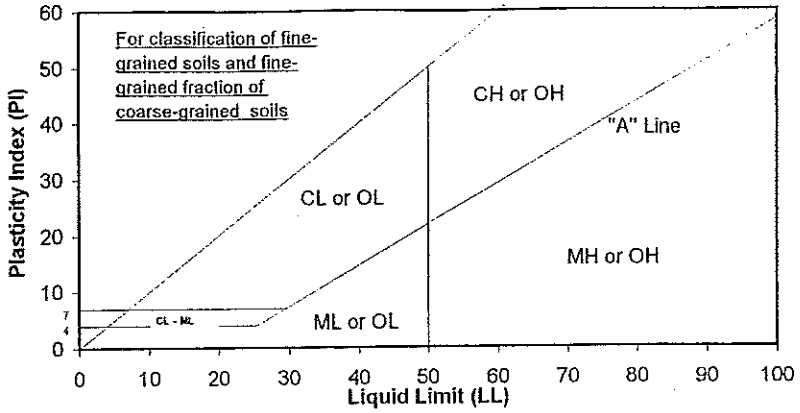
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	59.7
No. 16	6.48	93.6	55.9
No. 30	18.58	81.6	48.7
No. 50	32.02	68.2	40.7
No. 100	44.29	56.1	33.5
No. 200	53.82	46.6	27.8
Pan			

Hydrometer

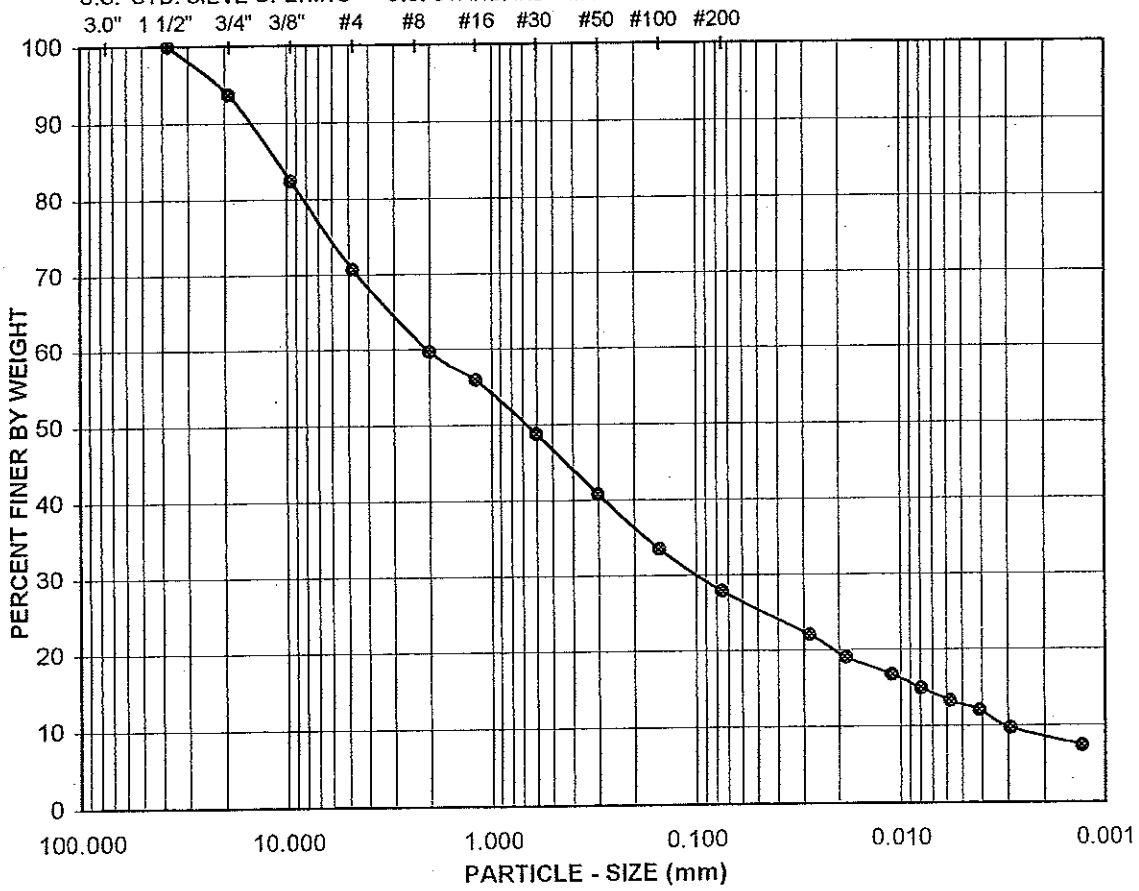
Wt. of Air-Dry Soil (gm) 100.84 Wt. of Dry Soil (gm) 100.84

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
25-Nov-02	10:14	0		5.5			
	10:16	2	23.3	5.5	43.0	22.0	0.0278
	10:19	5	23.3	5.5	38.0	19.0	0.0184
	10:29	15	23.3	5.5	34.0	16.7	0.0110
	10:44	30	23.3	5.5	31.0	14.9	0.0079
	11:14	60	23.3	5.5	28.0	13.2	0.0057
	12:14	120	23.0	5.5	26.0	12.0	0.0041
	14:24	250	23.4	5.5	22.0	9.7	0.0029
26-Nov-02	7:41	1287	22.7	5.5	18.0	7.3	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
1	8 & 9	16 - 19	(SC)g	29:43:28	N/A

Sample Description:

Olive clayey sand with gravel (SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A LEIGHTON GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 1
Sample No.: 10 & 11
Visual Sample Description: Olive silty / clayey gravel with sand (GM/GC)s

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 20 - 23.5

Date: 11/22/02
Date: 12/13/02
Date: 12/13/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	57:29:14			
Plasticity Index:		Grp. Symbol:	(GM/GC)s			
Specific Gravity	2.73	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	110.03
Wt.of Air-Dry Soil + Cont. (gm.)	883.88	Wt. of Container No.___ (gm.)		1.00	1.00	76.71
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	883.88	Wt. of Dry Soil (gm.)				33.32

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	91.77	89.6
3/4"	246.15	72.2
3/8"	396.89	55.1
No. 4	504.10	43.0
No. 10	516.13	41.6
Pan		

Sieve after Hydrometer & Wet Sieve

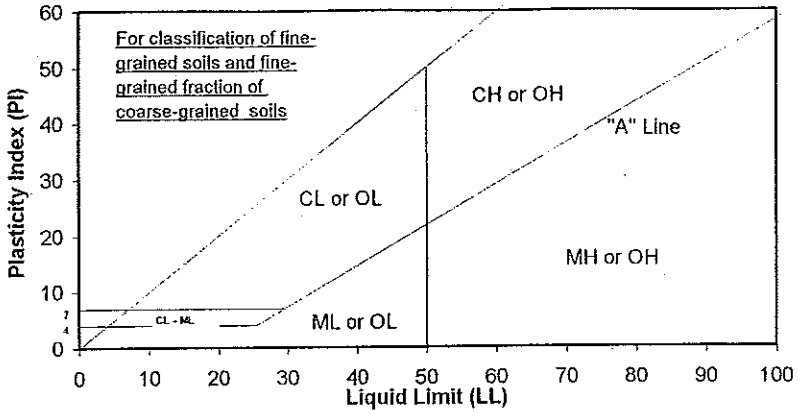
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	41.6
No. 16	3.60	92.9	38.6
No. 30	11.04	78.3	32.6
No. 50	19.73	61.3	25.5
No. 100	27.92	45.2	18.8
No. 200	33.30	34.7	14.4
Pan			

Hydrometer

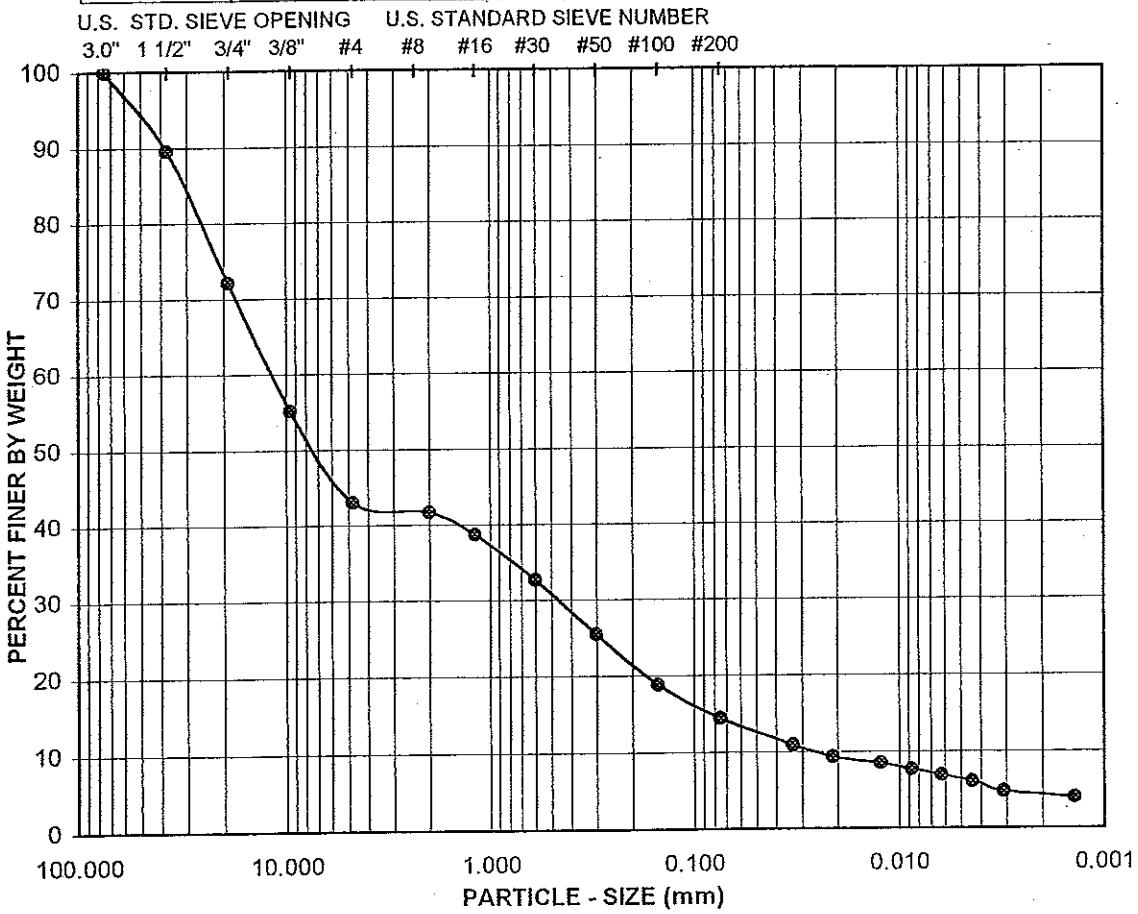
Wt. of Air-Dry Soil (gm) 50.99 Wt. of Dry Soil (gm) 50.99

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
25-Nov-02	10:02	0		5.5			
	10:04	2	23.2	5.5	19.0	10.9	0.0330
	10:07	5	23.2	5.5	17.0	9.3	0.0211
	10:17	15	23.3	5.5	16.0	8.5	0.0123
	10:32	30	23.3	5.5	15.0	7.7	0.0087
	11:02	60	23.3	5.5	14.0	6.9	0.0062
	12:02	120	23.0	5.5	13.0	6.1	0.0044
	14:12	250	23.3	5.5	11.5	4.8	0.0031
26-Nov-02	7:38	1296	22.7	5.5	10.5	4.0	0.0014



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
1	10 & 11	20 - 23.5	(GM/GC)s	57:29:14	N/A

Sample Description:

Olive silty / clayey gravel with sand (GM/GC)s

Terranext Labs, Inc

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon | Tested By: RA/VJ | Date: 11/22/02

Project No.: 02006A | Data Input By: LF | Date: 12/04/02

Boring No.: 2 | Checked By: LF | Date: 12/04/02

Sample No.: 1 & 2 | Depth (ft.): 2 - 5.5

Visual Sample Description: Brown silty / clayey sand with gravel (SM/SC)g

				Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Liquid Limit:		LL,PL,PI:	N/A			
Plastic Limit:		GR:SA:FI:	21:49:30			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity	2.72	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	132.50
Wt.of Air-Dry Soil + Cont. (gm.)	1546.80	Wt. of Container No.___ (gm.)		1.00	1.00	76.68
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1546.80	Wt. of Dry Soil (gm.)				55.82

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	48.44	96.9
3/8"	175.78	88.6
No. 4	328.77	78.7
No. 10	508.02	67.2
Pan		

Sieve after Hydrometer & Wet Sieve

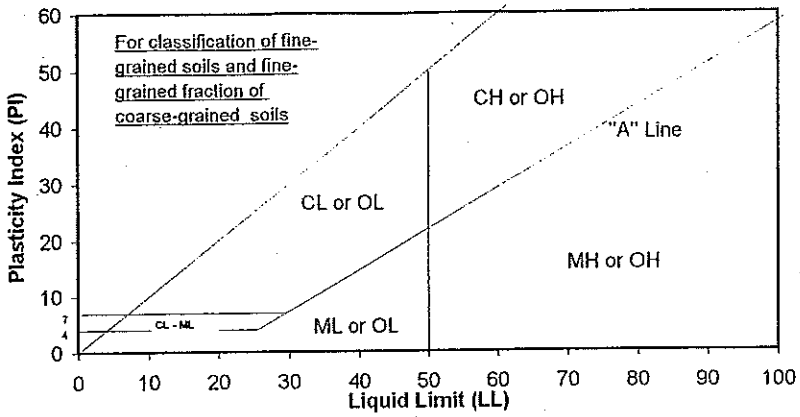
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	67.2
No. 16	6.93	93.1	62.6
No. 30	17.02	83.0	55.8
No. 50	29.58	70.4	47.3
No. 100	43.71	56.3	37.8
No. 200	55.77	44.2	29.7
Pan			

Hydrometer

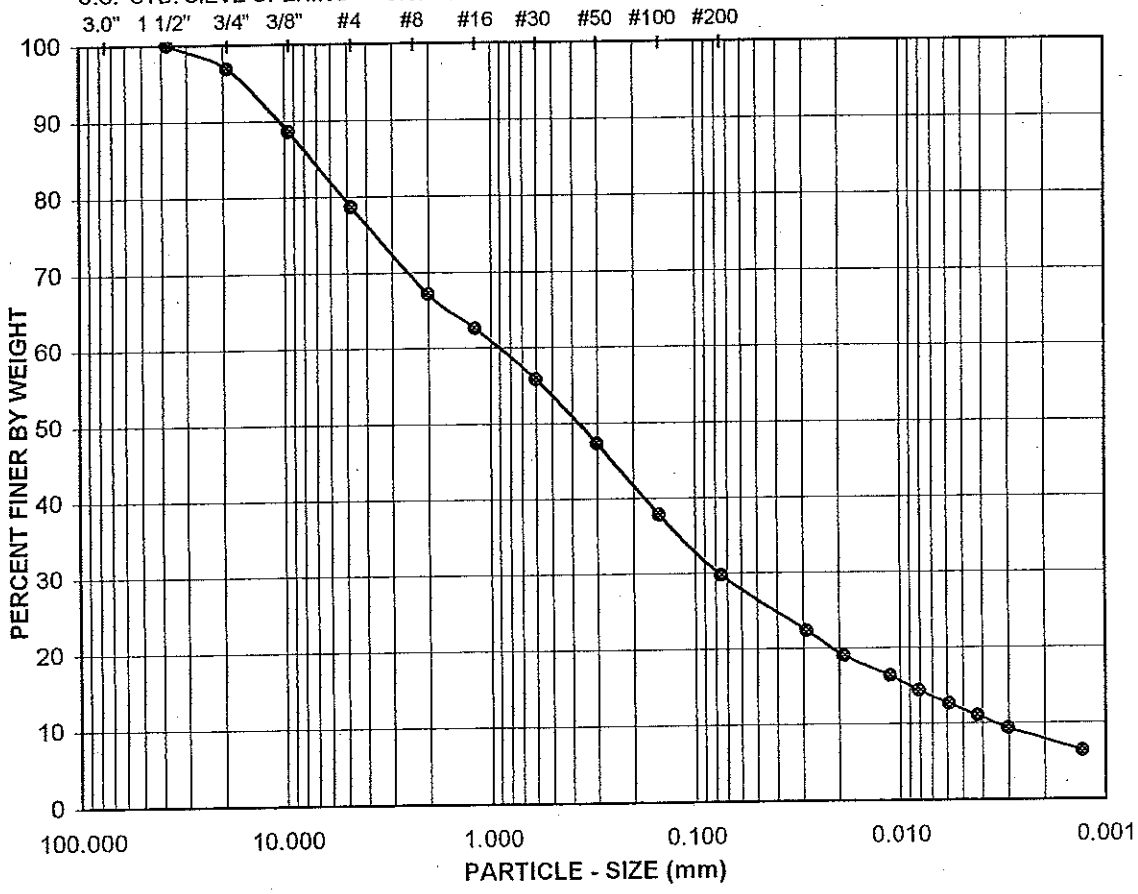
Wt. of Air-Dry Soil (gm) 100.02 Wt. of Dry Soil (gm) 100.02

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
25-Nov-02	10:06	0		5.5			
	10:08	2	23.2	5.5	39.0	22.3	0.0287
	10:11	5	23.2	5.5	34.0	19.0	0.0189
	10:21	15	23.3	5.5	30.0	16.3	0.0112
	10:36	30	23.3	5.5	27.0	14.3	0.0081
	11:06	60	23.3	5.5	24.5	12.6	0.0058
	12:06	120	23.0	5.5	22.0	11.0	0.0042
	14:16	250	23.2	5.5	19.5	9.3	0.0030
26-Nov-02	7:39	1293	22.7	5.5	15.0	6.3	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
2	1 & 2	2 - 5.5	(SM/SC)g	21:49:30	N/A

Sample Description:

Brown silty / clayey sand with gravel (SM/SC)g

Yeramit Labs, Inc.

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon | Tested By: RA/VJ | Date: 11/22/02

Project No.: 02006A | Data Input By: LF | Date: 12/04/02

Boring No.: 2 | Checked By: LF | Date: 12/04/02

Sample No.: 5 & 6 | Depth (ft.): 10 - 13.5

Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

				Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Liquid Limit:		LL,PL,PI:	N/A			
Plastic Limit:		GR:SA:FI:	23:49:28			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	134.46
Wt.of Air-Dry Soil + Cont. (gm.)	1383.60	Wt. of Container No.___ (gm.)		1.00	1.00	75.66
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1383.60	Wt. of Dry Soil (gm.)				58.80

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	94.64	93.2
3/8"	204.45	85.2
No. 4	322.34	76.7
No. 10	448.61	67.6
Pan		

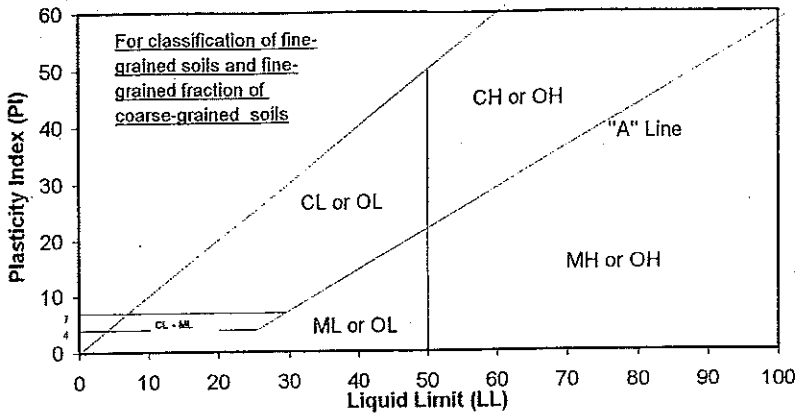
Sieve after Hydrometer & Wet Sieve

U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	67.6
No. 16	4.74	95.3	64.4
No. 30	12.57	87.5	59.2
No. 50	25.86	74.4	50.3
No. 100	44.18	56.2	38.0
No. 200	58.59	41.9	28.3
Pan			

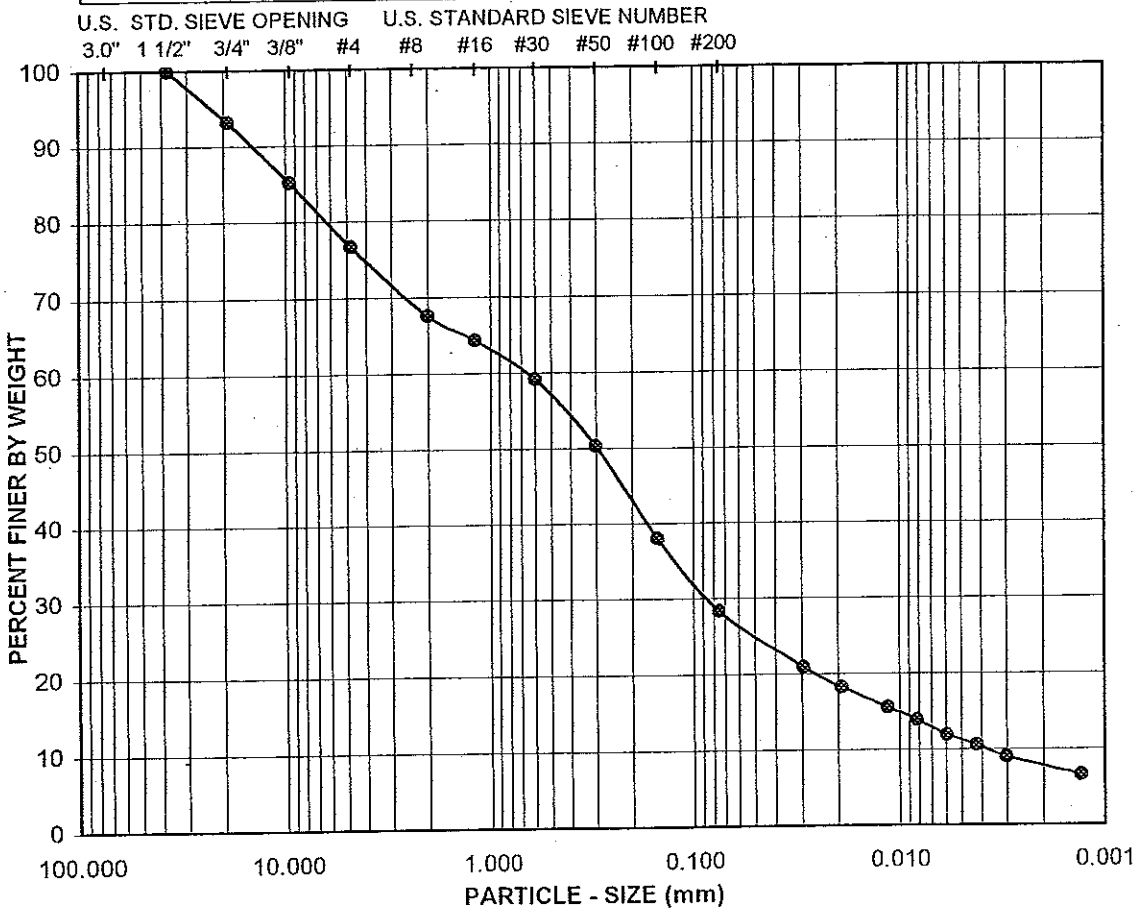
Hydrometer Wt. of Air-Dry Soil (gm) 100.90 Wt. of Dry Soil (gm) 100.90

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
25-Nov-02	9:54	0		5.5			
	9:56	2	23.2	5.5	37.0	20.9	0.0293
	9:59	5	23.2	5.5	33.0	18.2	0.0192
	10:09	15	23.2	5.5	29.0	15.6	0.0114
	10:24	30	23.3	5.5	26.5	13.9	0.0082
	10:54	60	23.3	5.5	23.5	11.9	0.0059
	11:54	120	23.0	5.5	21.5	10.6	0.0042
	14:04	250	23.4	5.5	19.0	9.0	0.0030
26-Nov-02	7:36	1302	22.7	5.5	15.5	6.6	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
2	5 & 6	10 - 13.5	(SM/SC)g	23:49:28	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon | Tested By: RA/VJ | Date: 11/22/02

Project No.: 02006A | Data Input By: LF | Date: 12/04/02

Boring No.: 2 | Checked By: LF | Date: 12/04/02

Sample No.: 8 & 9 | Depth (ft.): 16 - 19.5

Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

				Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Liquid Limit:		LL,PL,PI:	N/A			
Plastic Limit:		GR:SA:FI:	33:39:28			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	128.60
Wt.of Air-Dry Soil + Cont. (gm.)	1810.20	Wt. of Container No.___ (gm.)		1.00	1.00	75.89
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1810.20	Wt. of Dry Soil (gm.)				52.71

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	198.44	89.0
3/8"	467.90	74.2
No. 4	606.60	66.5
No. 10	758.60	58.1
Pan		

Sieve after Hydrometer & Wet Sieve

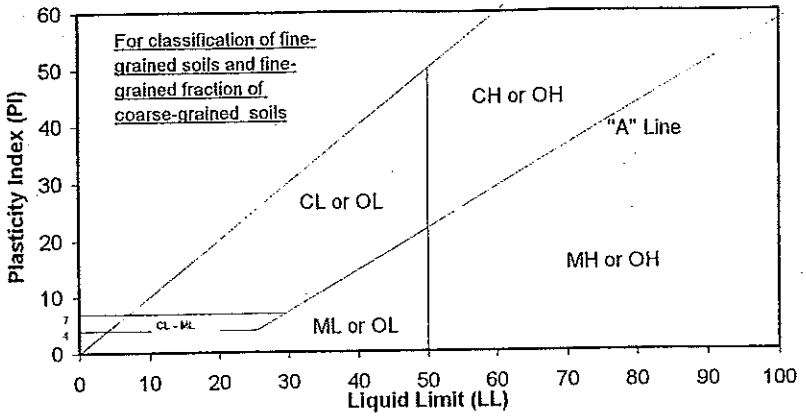
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	58.1
No. 16	4.33	95.7	55.6
No. 30	11.87	88.1	51.2
No. 50	22.55	77.5	45.0
No. 100	36.92	63.1	36.7
No. 200	52.59	47.4	27.5
Pan			

Hydrometer

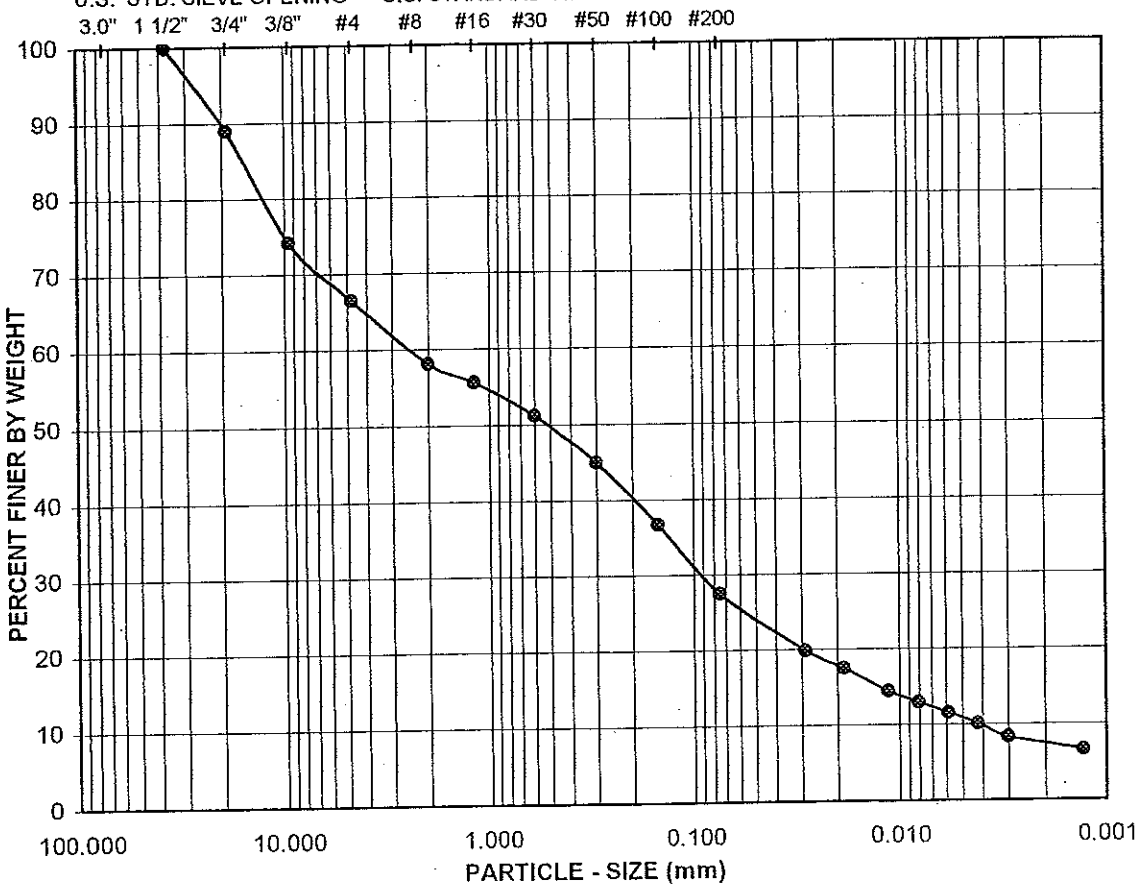
Wt. of Air-Dry Soil (gm) 100.05 Wt. of Dry Soil (gm) 100.05

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
25-Nov-02	9:50	0		5.5			
	9:52	2	23.2	5.5	40.0	19.8	0.0286
	9:55	5	23.2	5.5	36.0	17.5	0.0187
	10:05	15	23.2	5.5	30.5	14.4	0.0113
	10:20	30	23.3	5.5	28.0	12.9	0.0081
	10:50	60	23.3	5.5	25.5	11.5	0.0058
	11:50	120	23.0	5.5	23.0	10.1	0.0042
	14:00	250	23.4	5.5	20.0	8.3	0.0030
26-Nov-02	7:35	1305	22.7	5.5	17.0	6.6	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
2	8 & 9	16 - 19.5	(SM/SC)g	33:39:28	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A KRINGTON GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 2
Sample No.: 11 & 12
Visual Sample Description: Olive silty sand (SM)

Tested By : RA/VJ
Data Input By: LF
Checked By: LF
Depth (ft.) : 22 - 25.5

Date: 11/22/02
Date: 12/04/02
Date: 12/04/02

				Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Liquid Limit:		LL,PL,PI:	N/A			
Plastic Limit:		GR:SA:FI:	11:53:36			
Plasticity Index:		Grp. Symbol:	SM			
Specific Gravity	2.72	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	132.62
Wt.of Air-Dry Soil + Cont. (gm.)	1394.90	Wt. of Container No.___ (gm.)		1.00	1.00	77.03
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1394.90	Wt. of Dry Soil (gm.)				55.59

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	14.70	98.9
3/8"	51.61	96.3
No. 4	155.77	88.8
No. 10	282.70	79.7
Pan		

Sieve after Hydrometer & Wet Sieve

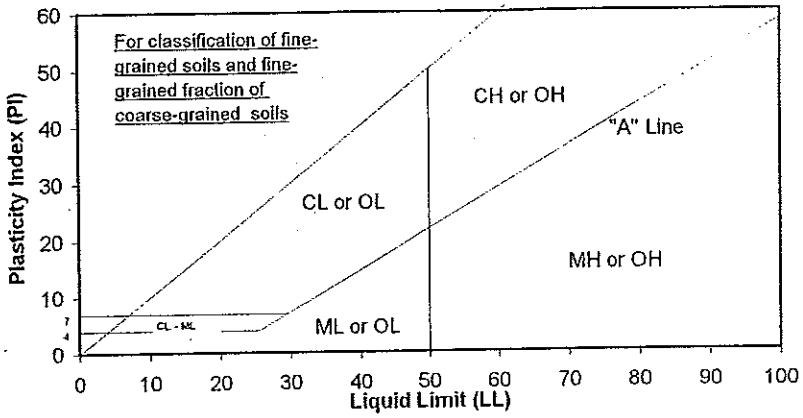
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	79.7
No. 16	5.01	95.0	75.7
No. 30	14.97	85.1	67.8
No. 50	26.19	73.9	58.9
No. 100	41.69	58.4	46.5
No. 200	55.45	44.6	35.5
Pan			

Hydrometer

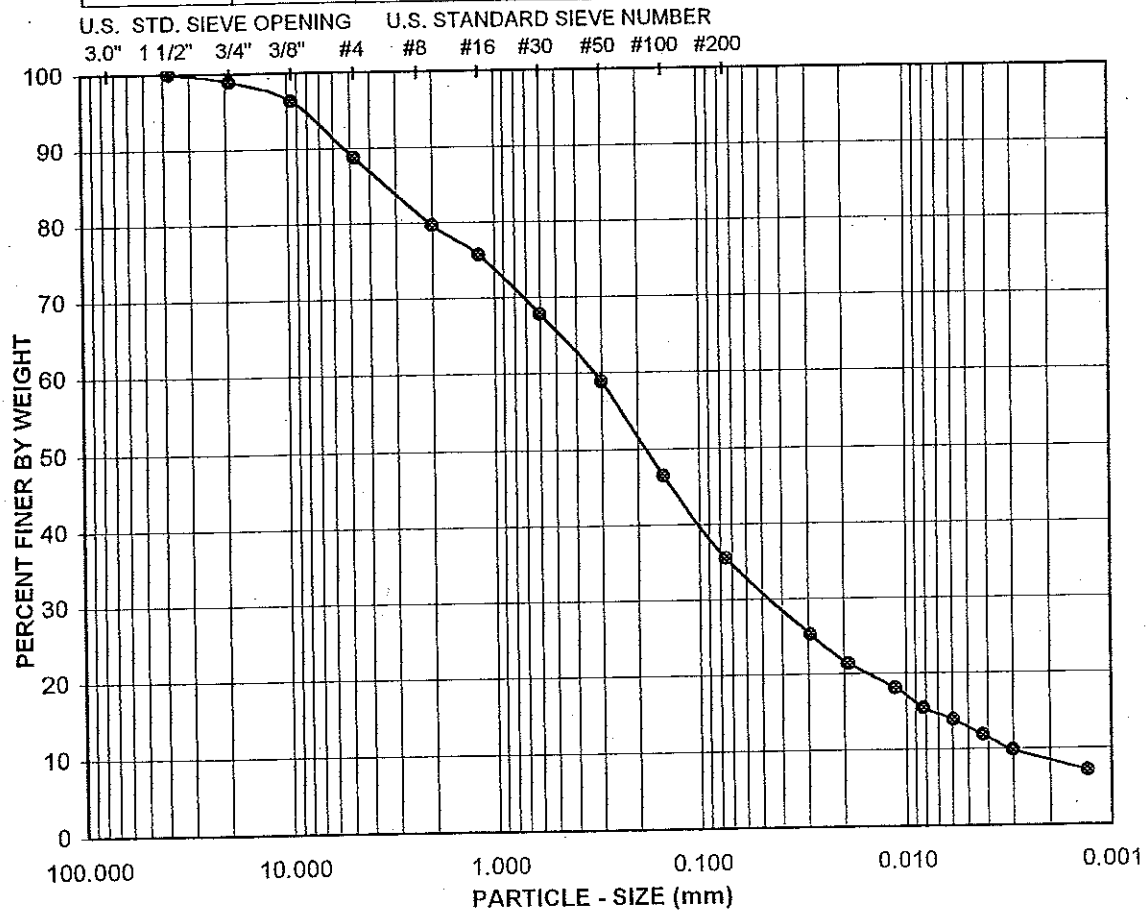
Wt. of Air-Dry Soil (gm) 100.16 Wt. of Dry Soil (gm) 100.16

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
25-Nov-02	9:46	0		5.5			
	9:48	2	23.2	5.5	37.5	25.2	0.0290
	9:51	5	23.2	5.5	32.5	21.3	0.0191
	10:01	15	23.2	5.5	28.5	18.1	0.0113
	10:16	30	23.3	5.5	25.0	15.4	0.0082
	10:46	60	23.3	5.5	23.0	13.8	0.0059
	11:46	120	23.0	5.5	20.5	11.8	0.0042
	13:56	250	23.4	5.5	18.0	9.8	0.0030
26-Nov-02	7:34	1308	22.7	5.5	14.5	7.1	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
2	11 & 12	22 - 25.5	SM	11:53:36	N/A

Sample Description:

Olive silty sand (SM)

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Torrelest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 3
Sample No.: 1 & 2
Visual Sample Description: Reddish brown silty sand (SM)

Tested By : RA/VJ
Data Input By: LF
Checked By: LF
Depth (ft.) : 2 - 5.5

Date: 11/25/02
Date: 12/04/02
Date: 12/04/02

Liquid Limit:		LL,PL,PI: N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI: 14:59:27			
Plasticity Index:		Grp. Symbol: SM			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)	0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)	0.00	0.00	146.88
Wt.of Air-Dry Soil + Cont. (gm.)	1864.30	Wt. of Container No.___ (gm.)	1.00	1.00	76.04
Wt. of Container	109.16	Moisture Content (%)	0.00	0.00	
Dry Wt. of Soil (gm.)	1755.14	Wt. of Dry Soil (gm.)			70.84

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	91.58	94.8
3/8"	158.07	91.0
No. 4	252.13	85.6
No. 10	326.03	81.4
Pan		

Sieve after Hydrometer & Wet Sieve

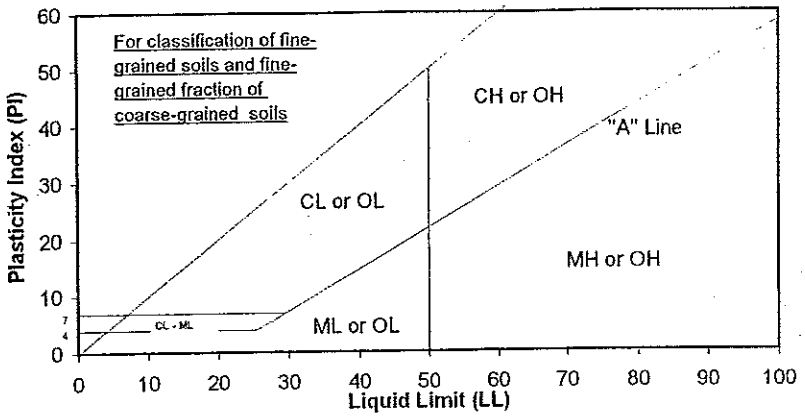
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	81.4
No. 16	2.78	97.4	79.3
No. 30	15.34	85.5	69.6
No. 50	38.11	64.0	52.1
No. 100	57.49	45.7	37.2
No. 200	70.58	33.4	27.2
Pan			

Hydrometer

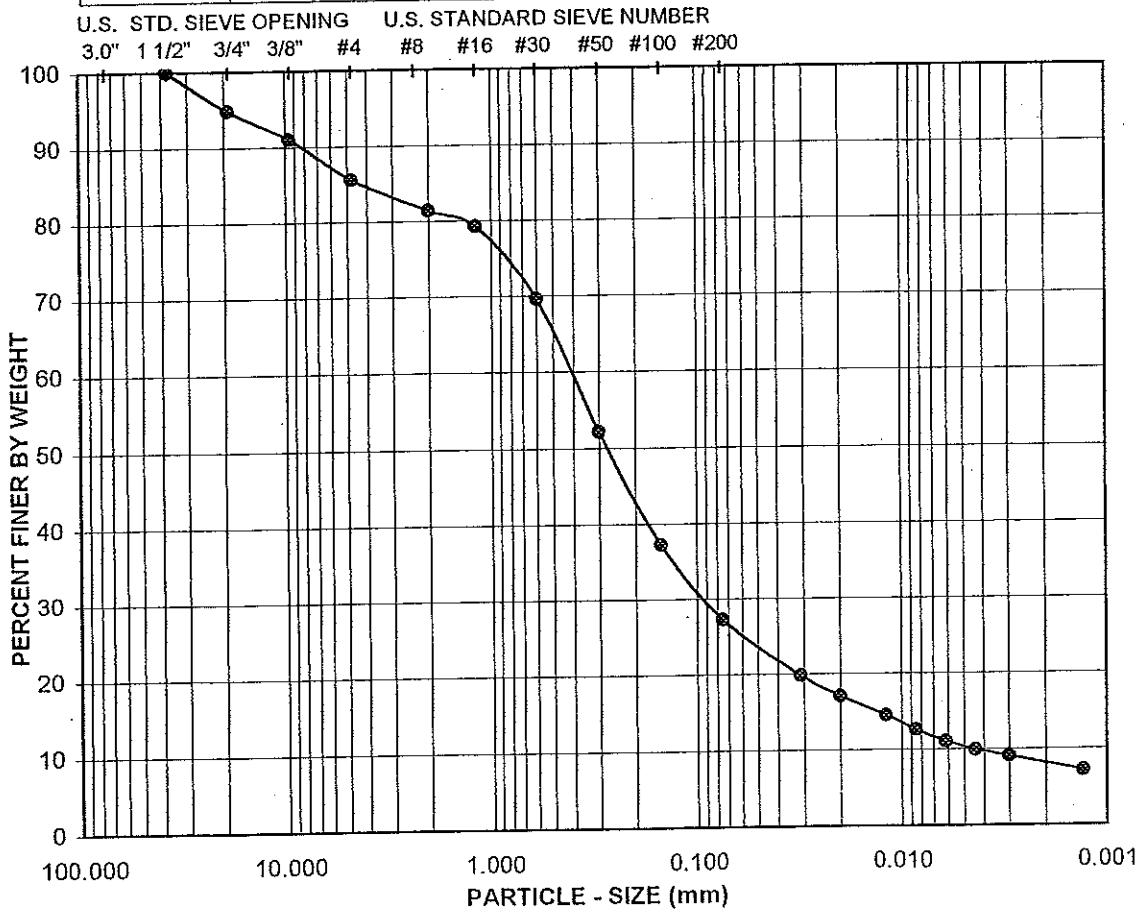
Wt. of Air-Dry Soil (gm) 105.93 Wt. of Dry Soil (gm) 105.93

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:36	0		3.5			
	10:38	2	23.6	3.5	29.5	19.8	0.0310
	10:41	5	23.6	3.5	26.0	17.1	0.0201
	10:51	15	23.7	3.5	22.5	14.5	0.0119
	11:06	30	23.4	3.5	20.0	12.6	0.0085
	11:36	60	23.5	3.5	18.0	11.0	0.0061
	12:36	120	23.2	3.5	16.5	9.9	0.0044
	14:46	250	23.2	3.5	15.5	9.1	0.0030
27-Nov-02	10:36	1440	22.7	3.5	13.0	7.2	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
3	1 & 2	2 - 5.5	SM	14:59:27	N/A

Sample Description:

Reddish brown silty sand (SM)

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A LEIGHTON GROUP COMPANY

Project Name: Topanga Lagoon | Tested By: RA/VJ | Date: 11/25/02

Project No.: 02006A | Data Input By: LF | Date: 12/04/02

Boring No.: 3 | Checked By: LF | Date: 12/04/02

Sample No.: 4 & 5 | Depth (ft.): 8 - 11.5

Visual Sample Description: Reddish brown silty sand (SM)

Liquid Limit:			LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:			GR:SA:FI:	12:62:26			
Plasticity Index:			Grp. Symbol:	SM			
Specific Gravity (Assumed)	2.70		Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99		Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	148.09
Wt.of Air-Dry Soil + Cont. (gm.)	2086.95		Wt. of Container No.___ (gm.)		1.00	1.00	77.28
Wt. of Container	107.80		Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1979.15		Wt. of Dry Soil (gm.)				70.81

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	51.38	97.4
3/8"	140.11	92.9
No. 4	239.04	87.9
No. 10	369.37	81.3
Pan		

Sieve after Hydrometer & Wet Sieve

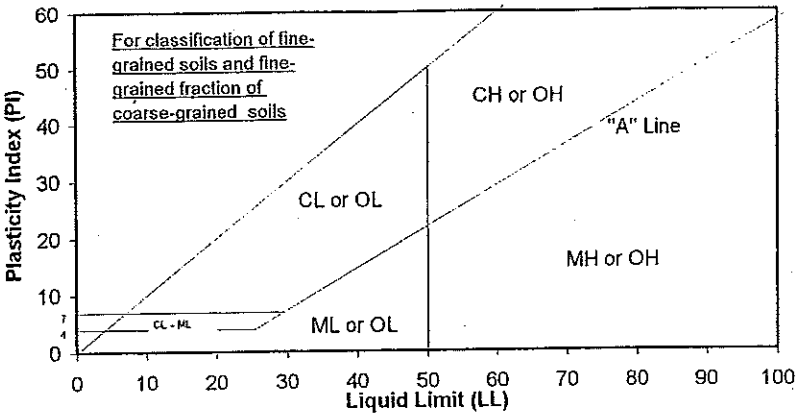
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	81.3
No. 16	4.22	95.9	78.0
No. 30	18.86	81.8	66.5
No. 50	40.53	60.9	49.5
No. 100	58.57	43.5	35.4
No. 200	70.62	31.8	25.9
Pan			

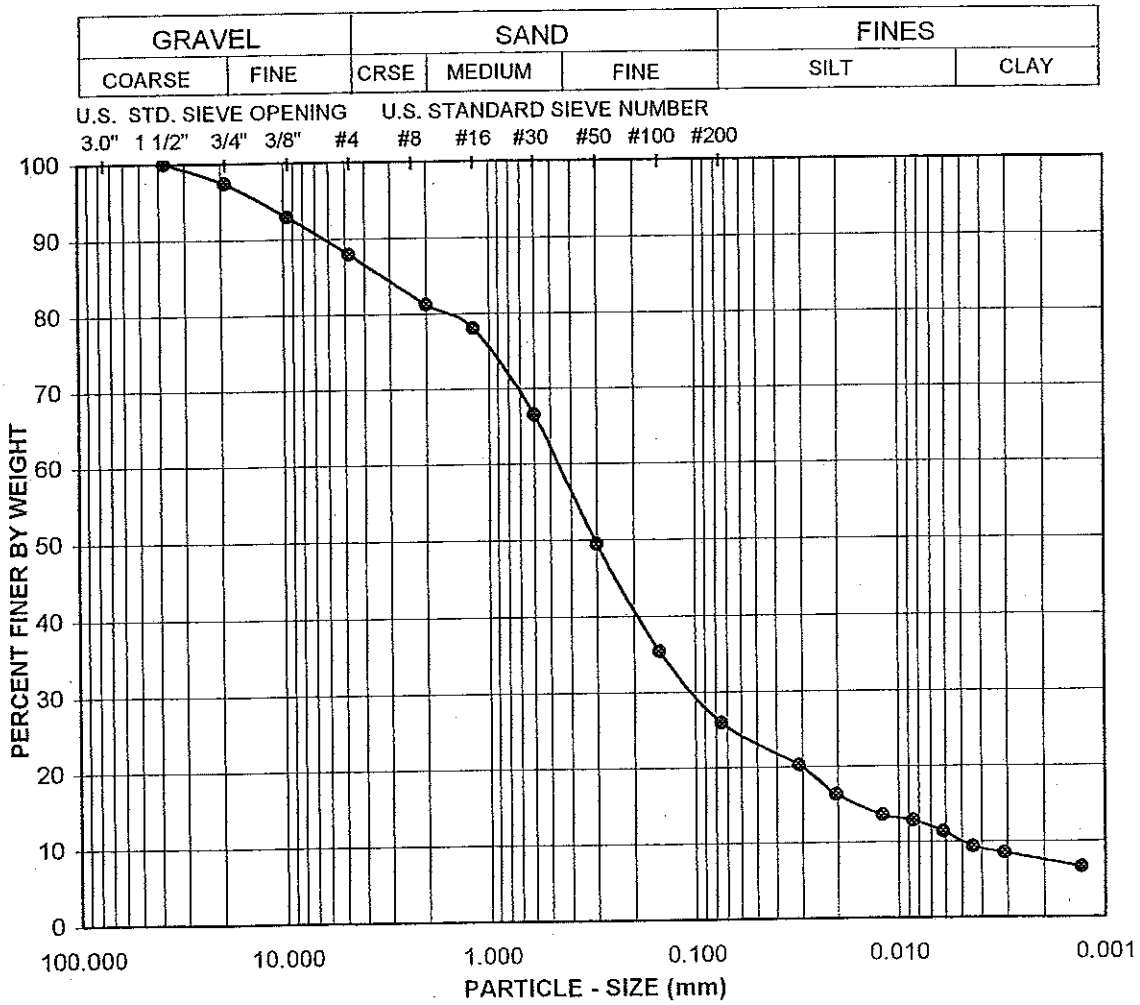
Hydrometer

Wt. of Air-Dry Soil (gm): 103.60 | Wt. of Dry Soil (gm): 103.60

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:28	0		3.5			
	10:30	2	23.6	3.5	29.5	20.2	0.0310
	10:33	5	23.6	3.5	24.5	16.3	0.0203
	10:43	15	23.7	3.5	21.0	13.6	0.0120
	10:58	30	23.7	3.5	20.0	12.8	0.0085
	11:28	60	23.5	3.5	18.0	11.3	0.0061
	12:28	120	23.2	3.5	15.5	9.3	0.0044
	14:38	250	23.2	3.5	14.5	8.5	0.0031
27-Nov-02	10:28	1440	22.7	3.5	12.0	6.6	0.0013





Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
3	4 & 5	8 - 11.5	SM	12:62:26	N/A

Sample Description:

Reddish brown silty sand (SM)

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 3
Sample No.: 8 & 9
Visual Sample Description: Reddish brown silty sand with gravel (SM)g

Tested By : RA/VJ
Data Input By: LF
Checked By: LF
Depth (ft.) : 16 - 19.5

Date: 11/22/02
Date: 12/13/02
Date: 12/13/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	22:60:18			
Plasticity Index:		Grp. Symbol:	(SM)g			
Specific Gravity	2.73	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	157.70
Wt.of Air-Dry Soil + Cont. (gm.)	1816.90	Wt. of Container No.___ (gm.)		1.00	1.00	76.79
Wt. of Container	107.18	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1709.72	Wt. of Dry Soil (gm.)				80.91

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	98.15	94.3
3/4"	132.34	92.3
3/8"	231.56	86.5
No. 4	370.94	78.3
No. 10	555.24	67.5
Pan		

Sieve after Hydrometer & Wet Sieve

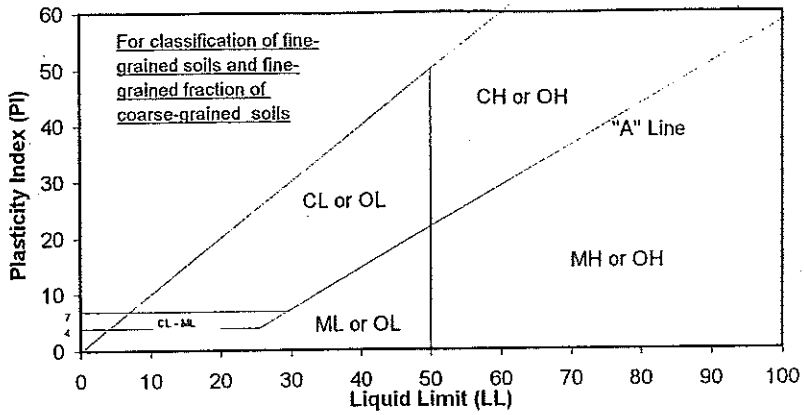
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	67.5
No. 16	6.79	93.8	63.3
No. 30	27.02	75.4	50.9
No. 50	52.49	52.2	35.2
No. 100	69.56	36.6	24.7
No. 200	80.86	26.3	17.8
Pan			

Hydrometer

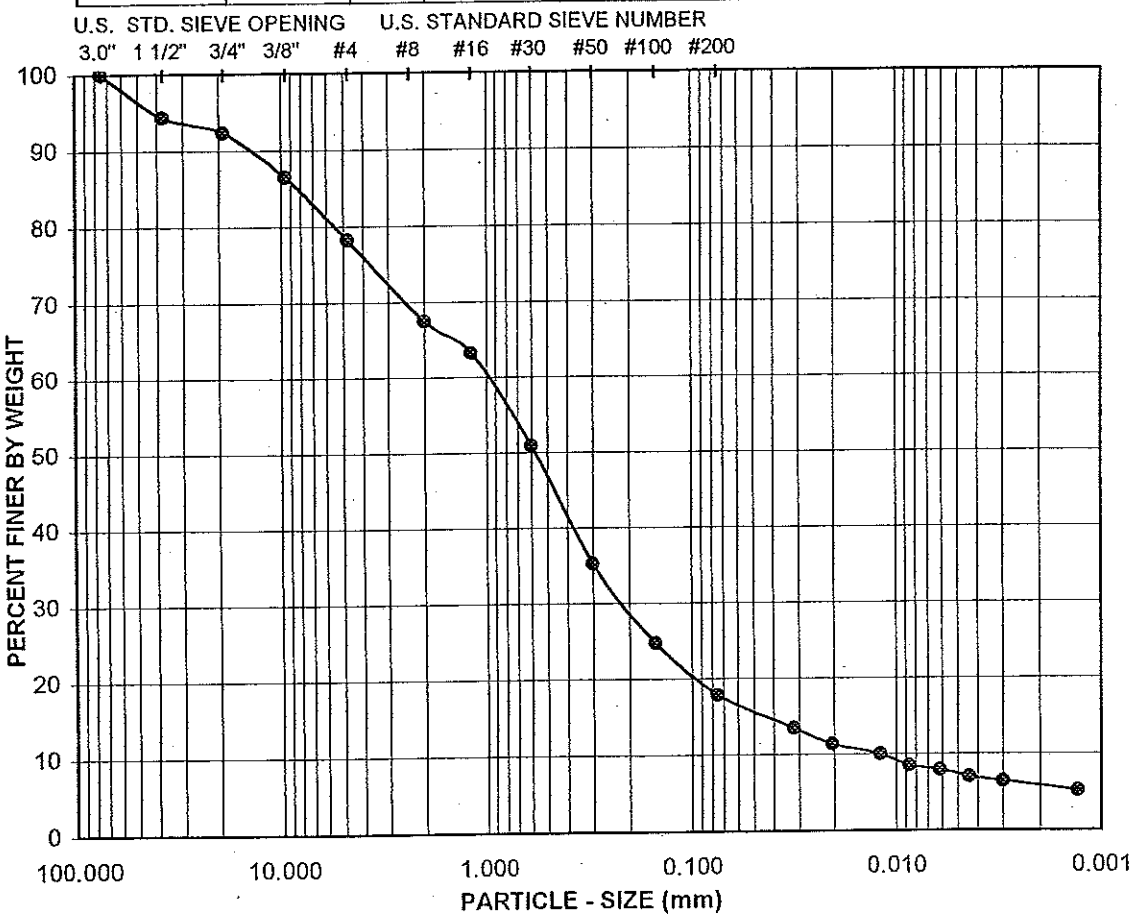
Wt. of Air-Dry Soil (gm): 109.78 Wt. of Dry Soil (gm): 109.78

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:16	0		3.5			
	10:18	2	23.6	3.5	25.5	13.4	0.0316
	10:21	5	23.6	3.5	22.0	11.3	0.0205
	10:31	15	23.6	3.5	20.0	10.0	0.0120
	10:46	30	23.7	3.5	17.5	8.5	0.0086
	11:16	60	23.4	3.5	16.5	7.9	0.0061
	12:16	120	23.2	3.5	15.0	7.0	0.0044
	14:26	250	23.2	3.5	14.0	6.4	0.0030
27-Nov-02	10:16	1440	22.7	3.5	12.0	5.2	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
3	8 & 9	16 - 19.5	(SM)g	22:60:18	N/A

Sample Description:

Reddish brown silty sand with gravel (SM)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 3
Sample No.: 13 & 14
Visual Sample Description: Brown silty sand with gravel (SM)g

Tested By : RA/VJ
Data Input By: LF
Checked By: LF
Depth (ft.) : 26 -29.5

Date: 11/25/02
Date: 12/04/02
Date: 12/04/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	18:44:38			
Plasticity Index:		Grp. Symbol:	(SM)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	127.19
Wt.of Air-Dry Soil + Cont. (gm.)	2680.75	Wt. of Container No.___ (gm.)		1.00	1.00	76.08
Wt. of Container	107.96	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	2572.79	Wt. of Dry Soil (gm.)				51.11

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	134.38	94.8
3/8"	268.31	89.6
No. 4	453.54	82.4
No. 10	632.80	75.4
Pan		

Sieve after Hydrometer & Wet Sieve

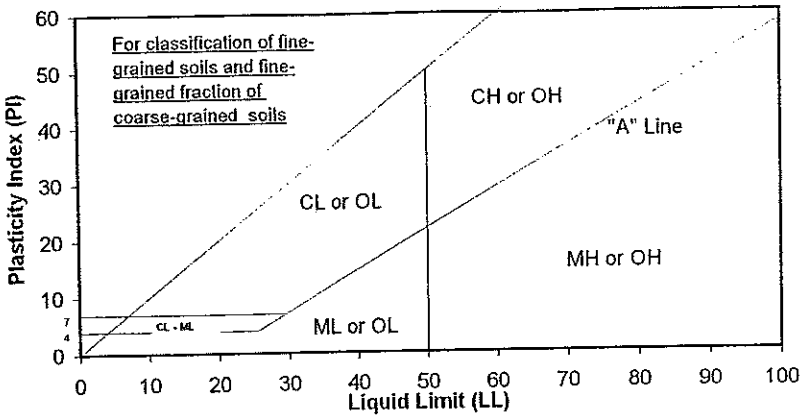
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	75.4
No. 16	4.43	95.7	72.2
No. 30	14.31	86.0	64.8
No. 50	27.96	72.6	54.7
No. 100	41.30	59.5	44.9
No. 200	51.02	50.0	37.7
Pan			

Hydrometer

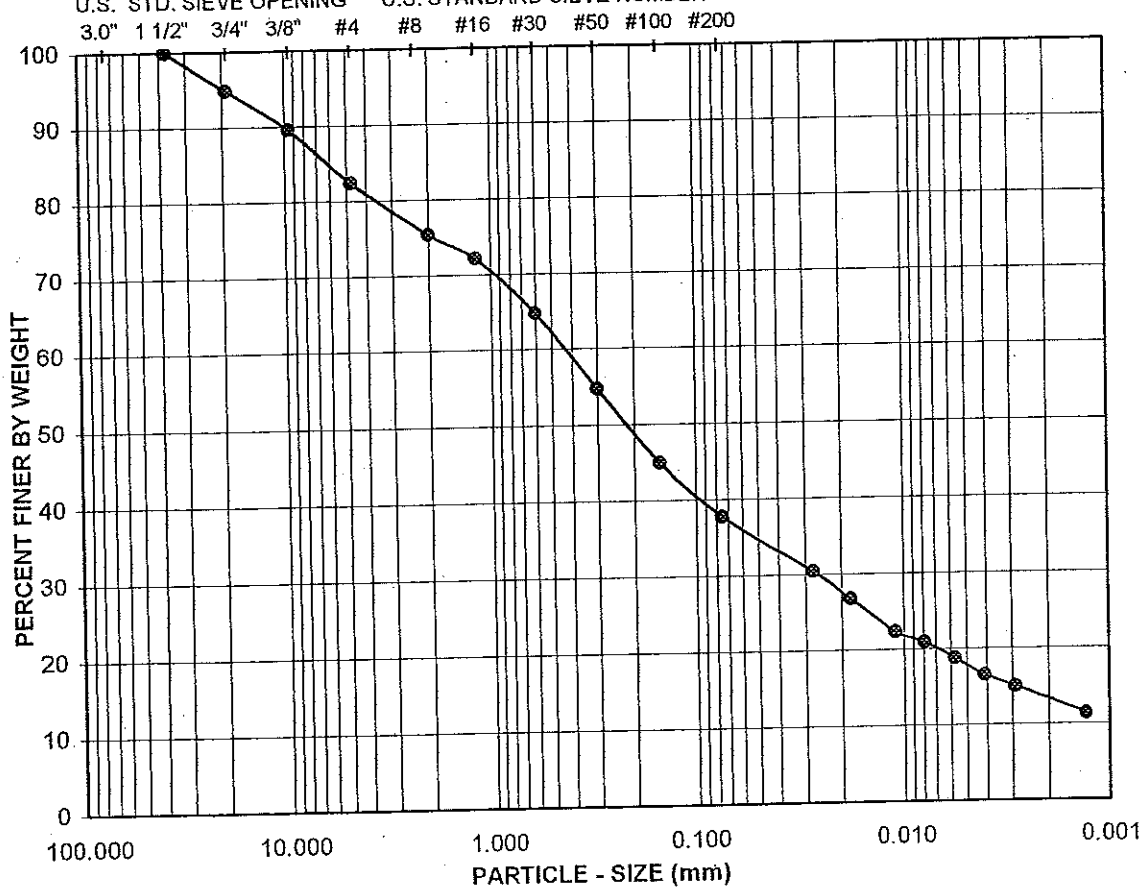
Wt. of Air-Dry Soil (gm) 101.95 Wt. of Dry Soil (gm) 101.95

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:24	0		3.5			
	10:26	2	23.6	3.5	45.0	30.4	0.0274
	10:29	5	23.6	3.5	40.0	26.7	0.0181
	10:39	15	23.6	3.5	34.0	22.3	0.0110
	10:54	30	23.7	3.5	32.0	20.9	0.0079
	11:24	60	23.5	3.5	29.0	18.7	0.0057
	12:24	120	23.2	3.5	26.0	16.5	0.0041
	14:34	250	23.2	3.5	24.0	15.0	0.0029
27-Nov-02	10:24	1440	22.7	3.5	19.0	11.3	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
3	13 & 14	26 -29.5	(SM)g	18:44:38	N/A

Sample Description:

Brown silty sand with gravel (SM)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 4
Sample No.: 2
Visual Sample Description: Olive gray silty gravel with sand (GM)s

Tested By : RA/VJ
Data Input By: LF
Checked By: LF
Depth (ft.) : 4 - 5.5

Date: 11/25/02
Date: 12/04/02
Date: 12/04/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	42:40:18			
Plasticity Index:		Grp. Symbol:	(GM)s			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	121.28
Wt.of Air-Dry Soil + Cont. (gm.)	1064.72	Wt. of Container No.___ (gm.)		1.00	1.00	78.25
Wt. of Container	107.87	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	956.85	Wt. of Dry Soil (gm.)				43.03

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	184.58	80.7
3/8"	306.29	68.0
No. 4	407.06	57.5
No. 10	490.12	48.8
Pan		

Sieve after Hydrometer & Wet Sieve

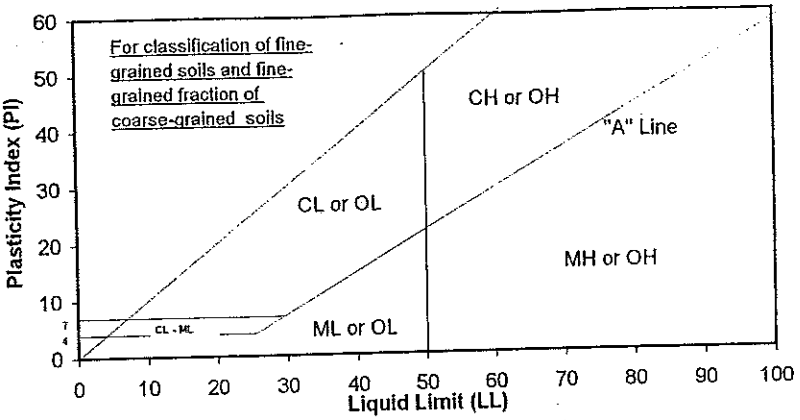
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	48.8
No. 16	2.89	95.8	46.8
No. 30	10.79	84.2	41.1
No. 50	23.10	66.1	32.3
No. 100	34.68	49.1	24.0
No. 200	42.89	37.1	18.1
Pan			

Hydrometer

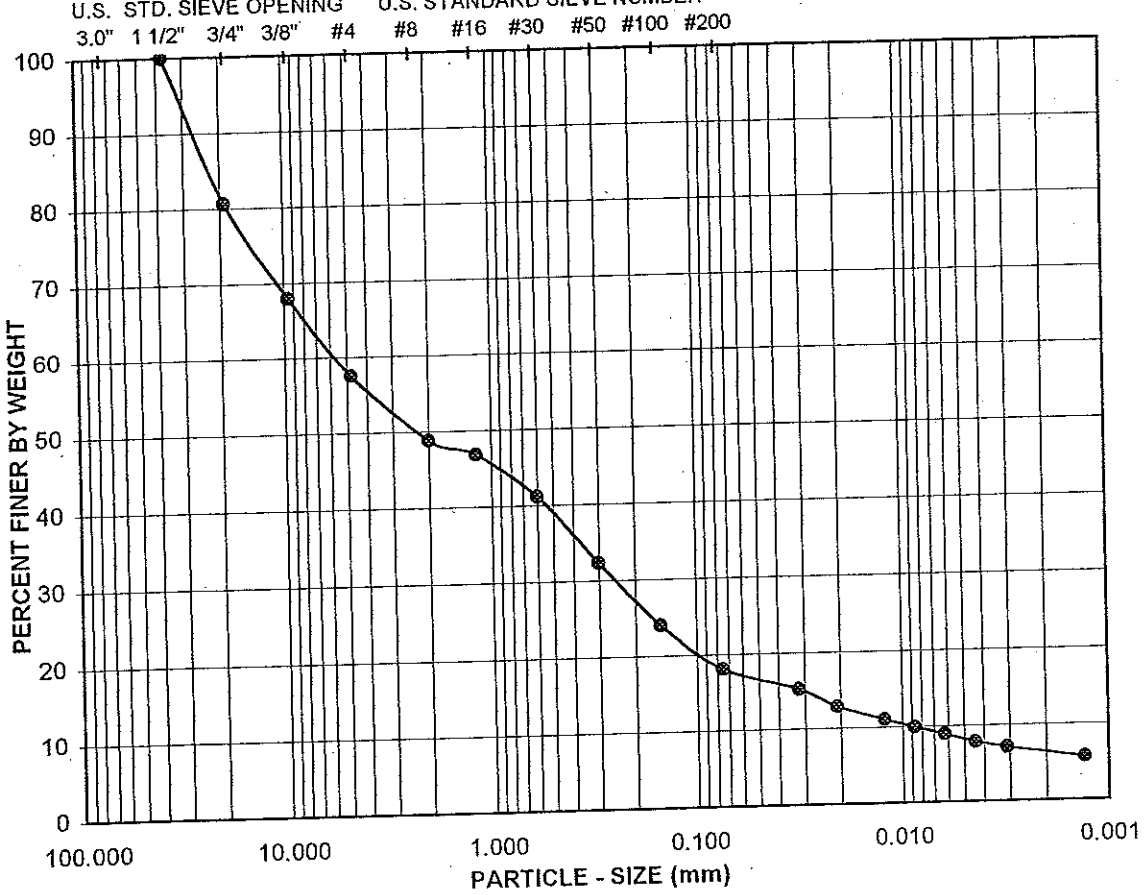
Wt. of Air-Dry Soil (gm): 68.16 Wt. of Dry Soil (gm): 68.16

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:08	0		3.5			
	10:10	2	23.7	3.5	25.0	15.2	0.0320
	10:13	5	23.7	3.5	21.5	12.8	0.0208
	10:23	15	23.6	3.5	19.0	11.0	0.0122
	10:38	30	23.6	3.5	17.5	9.9	0.0087
	11:08	60	23.4	3.5	16.0	8.9	0.0062
	12:08	120	23.2	3.5	14.5	7.8	0.0044
	14:18	250	23.2	3.5	13.5	7.1	0.0031
27-Nov-02	10:08	1440	22.7	3.5	11.5	5.7	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
4	2	4 - 5.5	(GM)s	42:40:18	N/A

Sample Description:

Olive gray silty gravel with sand (GM)s

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A CERTIFIED GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 4
Sample No.: 9
Visual Sample Description: Brown silty sand with gravel (SM)g

Tested By : RA/VJ
Data Input By: LF
Checked By: LF
Depth (ft.) : 18 - 19.5

Date: 11/22/02
Date: 12/13/02
Date: 12/13/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	29:39:32			
Plasticity Index:		Grp. Symbol:	(SM)g			
Specific Gravity	2.68	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	1.00	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	126.21
Wt.of Air-Dry Soil + Cont. (gm.)	1227.90	Wt. of Container No.___ (gm.)		1.00	1.00	76.79
Wt. of Container	107.71	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1120.19	Wt. of Dry Soil (gm.)				49.42

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	90.01	92.0
3/4"	132.22	88.2
3/8"	226.17	79.8
No. 4	325.35	71.0
No. 10	430.79	61.5
Pan		

Sieve after Hydrometer & Wet Sieve

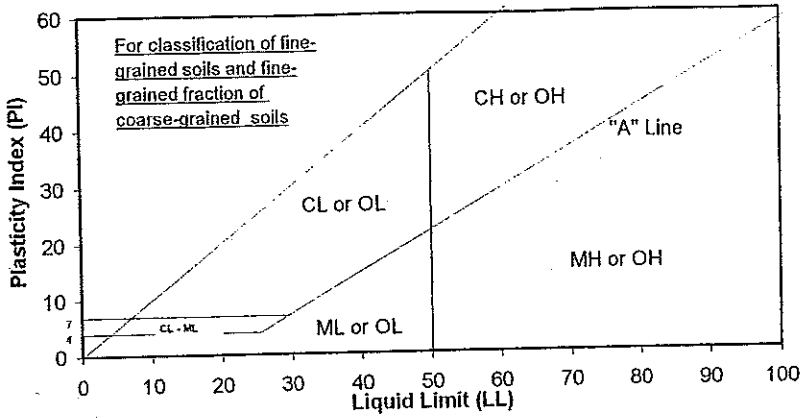
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	61.5
No. 16	3.39	96.7	59.5
No. 30	10.32	90.0	55.4
No. 50	21.62	79.0	48.6
No. 100	35.23	65.8	40.5
No. 200	49.08	52.4	32.2
Pan			

Hydrometer

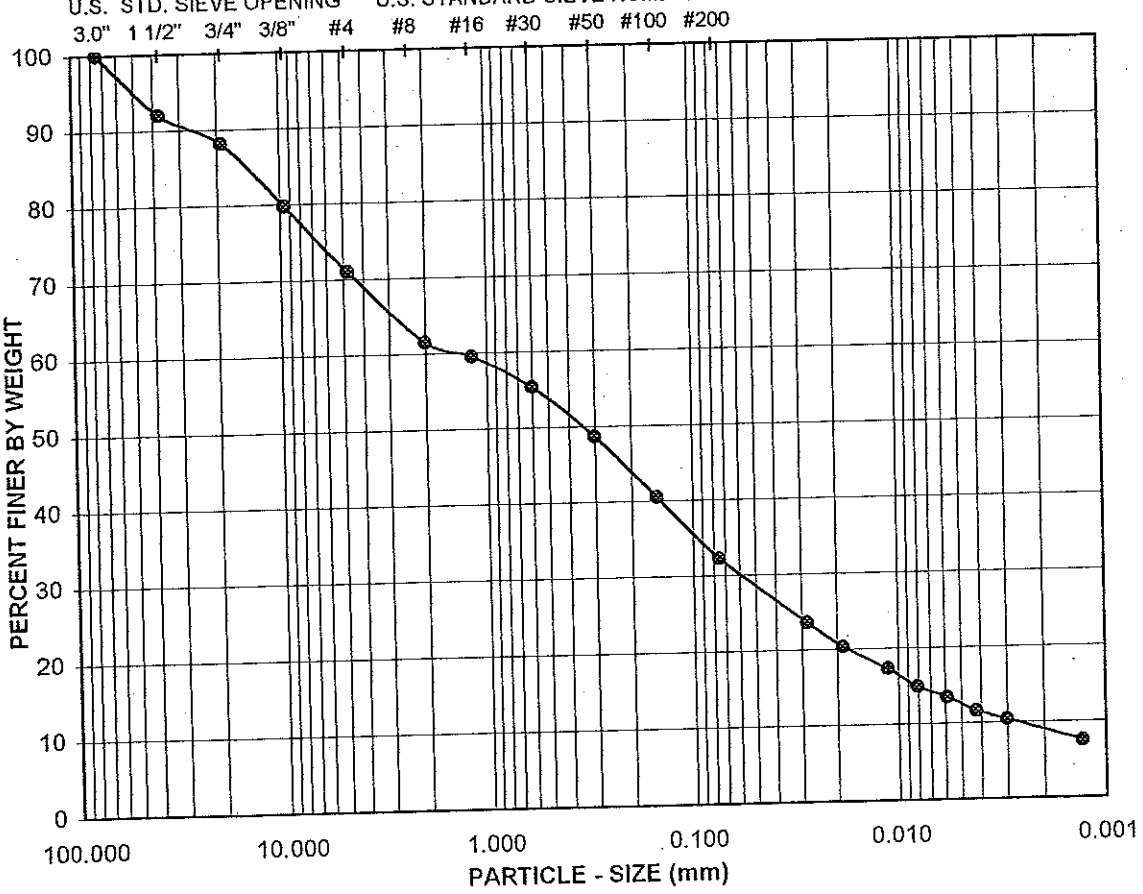
Wt. of Air-Dry Soil (gm) 103.10 Wt. of Dry Soil (gm) 103.10

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:12	0		3.5			
	10:14	2	23.7	3.5	43.0	23.6	0.0280
	10:17	5	23.6	3.5	37.5	20.3	0.0186
	10:27	15	23.6	3.5	32.5	17.3	0.0112
	10:42	30	23.6	3.5	28.5	14.9	0.0081
	11:12	60	23.4	3.5	26.0	13.4	0.0058
	12:12	120	23.2	3.5	23.0	11.6	0.0042
	14:22	250	23.2	3.5	21.0	10.4	0.0030
27-Nov-02	10:12	1440	22.7	3.5	16.0	7.5	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
4	9	18 - 19.5	(SM)g	29:39:32	N/A

Sample Description:

Brown silty sand with gravel (SM)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon | Tested By: RA/VJ | Date: 11/25/02

Project No.: 02006A | Data Input By: LF | Date: 12/04/02

Boring No.: 4 | Checked By: LF | Date: 12/04/02

Sample No.: 11 | Depth (ft.): 22 - 23.5

Visual Sample Description: Olive brown silty sand with gravel (SM)g

				Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Liquid Limit:		LL,PL,PI:	N/A			
Plastic Limit:		GR:SA:FI:	28:45:27			
Plasticity Index:		Grp. Symbol:	(SM)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	133.33
Wt.of Air-Dry Soil + Cont. (gm.)	1048.68	Wt. of Container No.___ (gm.)		1.00	1.00	75.83
Wt. of Container	106.91	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	941.77	Wt. of Dry Soil (gm.)				57.50

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	71.53	92.4
3/8"	170.52	81.9
No. 4	259.65	72.4
No. 10	347.96	63.1
Pan		

Sieve after Hydrometer & Wet Sieve

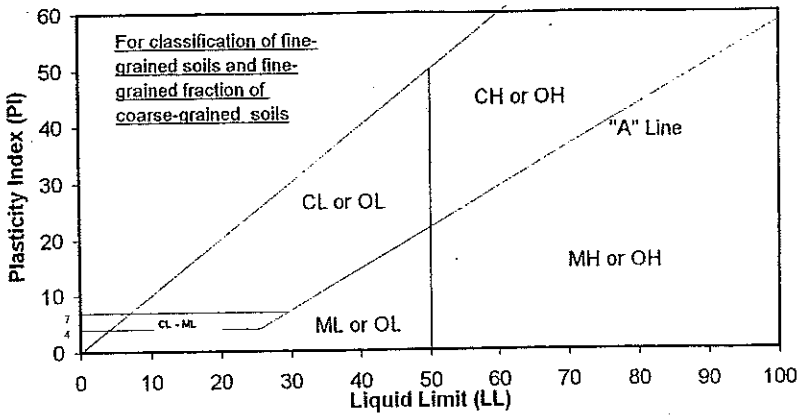
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	63.1
No. 16	4.92	95.1	60.0
No. 30	16.40	83.8	52.9
No. 50	31.91	68.5	43.2
No. 100	46.26	54.3	34.3
No. 200	57.24	43.4	27.4
Pan			

Hydrometer

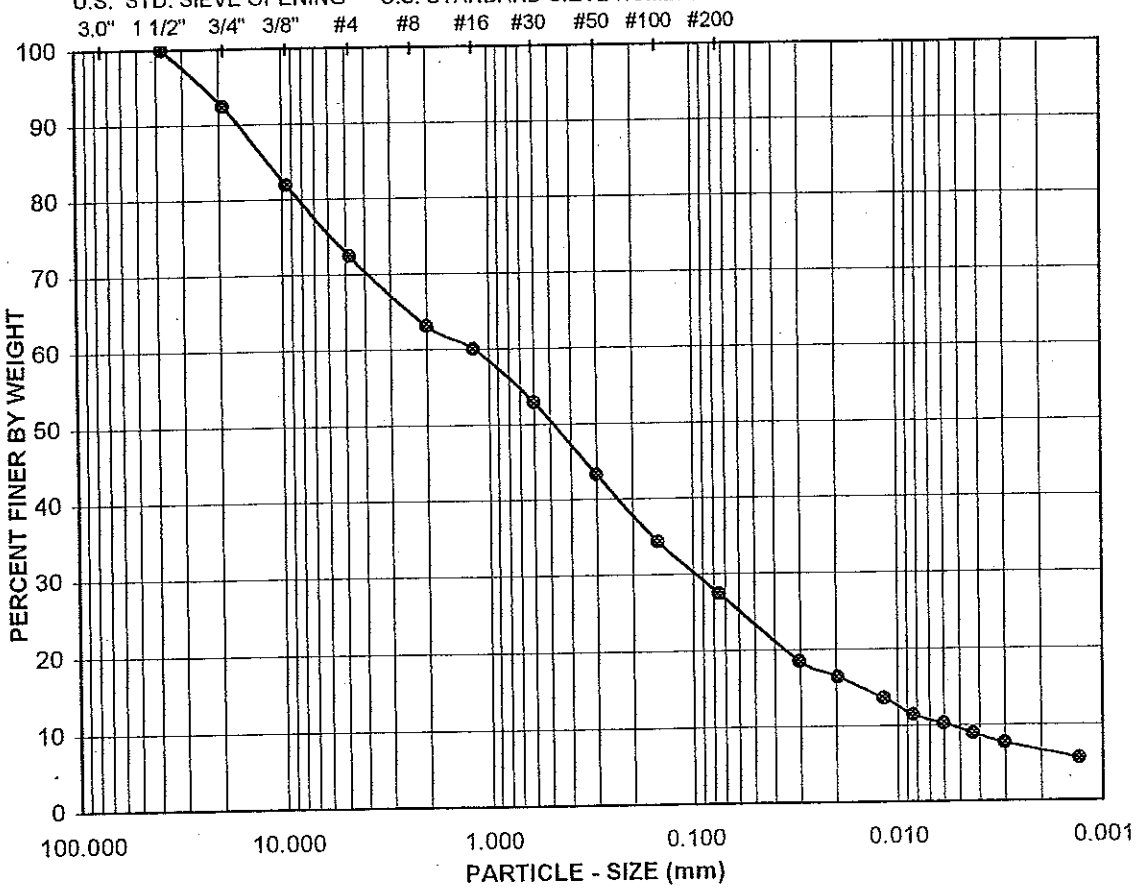
Wt. of Air-Dry Soil (gm): 101.21 | Wt. of Dry Soil (gm): 101.21

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:20	0		3.5			
	10:22	2	23.6	3.5	33.5	18.5	0.0301
	10:25	5	23.6	3.5	30.0	16.4	0.0196
	10:35	15	23.6	3.5	25.5	13.6	0.0116
	10:50	30	23.7	3.5	22.0	11.4	0.0084
	11:20	60	23.5	3.5	20.0	10.2	0.0060
	12:20	120	23.2	3.5	18.0	8.9	0.0043
	14:30	250	23.2	3.5	16.0	7.7	0.0030
27-Nov-02	10:20	1440	22.7	3.5	12.5	5.6	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
4	11	22 - 23.5	(SM)g	28:45:27	N/A

Sample Description:

Olive brown silty sand with gravel (SM)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Torotest Labs, Inc.
A CERCO GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 5
Sample No.: 1
Visual Sample Description: Brown silty sand with gravel (SM)g

Tested By : RA/VJ
Data Input By: LF
Checked By: LF
Depth (ft.) : 2 - 3.5

Date: 11/25/02
Date: 12/13/02
Date: 12/13/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	26:48:26			
Plasticity Index:		Grp. Symbol:	(SM)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	136.95
Wt.of Air-Dry Soil + Cont. (gm.)	869.50	Wt. of Container No.___ (gm.)		1.00	1.00	74.70
Wt. of Container	109.01	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	760.49	Wt. of Dry Soil (gm.)				62.25

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	63.90	91.6
3/4"	114.65	84.9
3/8"	146.61	80.7
No. 4	197.42	74.0
No. 10	257.60	66.1
Pan		

Sieve after Hydrometer & Wet Sieve

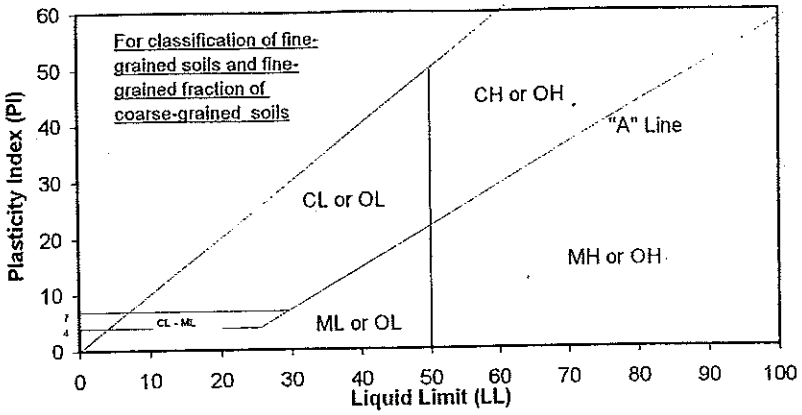
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	66.1
No. 16	4.79	95.3	63.0
No. 30	16.37	84.1	55.6
No. 50	32.90	68.1	45.0
No. 100	49.63	51.8	34.2
No. 200	62.18	39.6	26.2
Pan			

Hydrometer

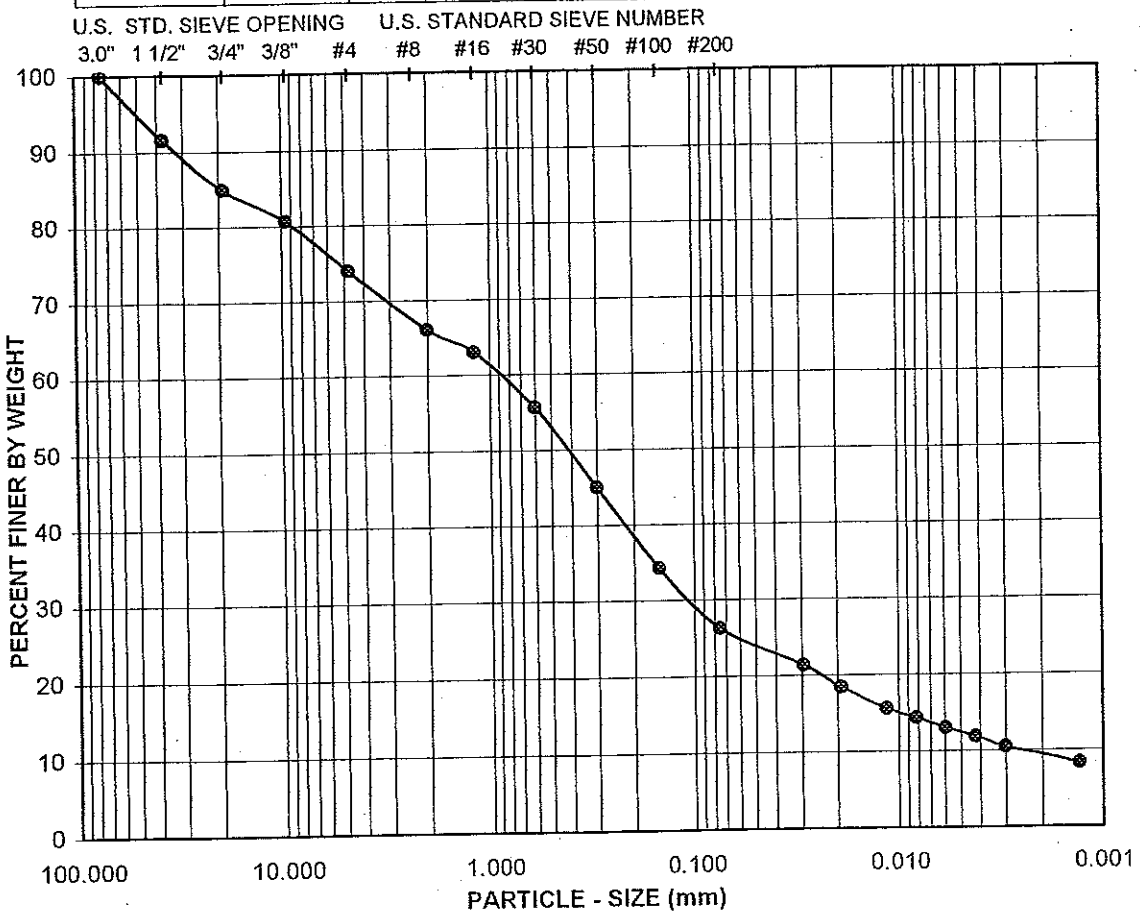
Wt. of Air-Dry Soil (gm) 102.98 Wt. of Dry Soil (gm) 102.98

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:32	0		3.5			
	10:34	2	23.6	3.5	37.0	21.3	0.0293
	10:37	5	23.6	3.5	32.5	18.4	0.0192
	10:47	15	23.7	3.5	28.0	15.6	0.0115
	11:02	30	23.6	3.5	26.0	14.3	0.0082
	11:32	60	23.5	3.5	24.0	13.0	0.0059
	12:32	120	23.2	3.5	22.0	11.8	0.0042
	14:42	250	23.2	3.5	20.0	10.5	0.0030
27-Nov-02	10:32	1440	22.7	3.5	16.5	8.3	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
5	1	2 - 3.5	(SM)g	26:48:26	N/A

Sample Description:

Brown silty sand with gravel (SM)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A LEIGHTON GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 5
Sample No.: 3 & 4
Visual Sample Description: Brown silty sand with gravel (SM)g

Tested By : RA/VJ Date: 11/25/02
Data Input By: LF Date: 12/04/02
Checked By: LF Date: 12/04/02
Depth (ft.) : 6 - 9.5

Liquid Limit:		LL,PL,PI: N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet-sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI: 18:51:31			
Plasticity Index:		Grp. Symbol: (SM)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)	0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)	0.00	0.00	138.79
Wt.of Air-Dry Soil + Cont. (gm.)	1942.10	Wt. of Container No.___ (gm.)	1.00	1.00	74.97
Wt. of Container	84.88	Moisture Content (%)	0.00	0.00	
Dry Wt. of Soil (gm.)	1857.22	Wt. of Dry Soil (gm.)			63.82

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	105.24	94.3
3/8"	216.82	88.3
No. 4	331.51	82.2
No. 10	436.54	76.5
Pan		

Sieve after Hydrometer & Wet Sieve

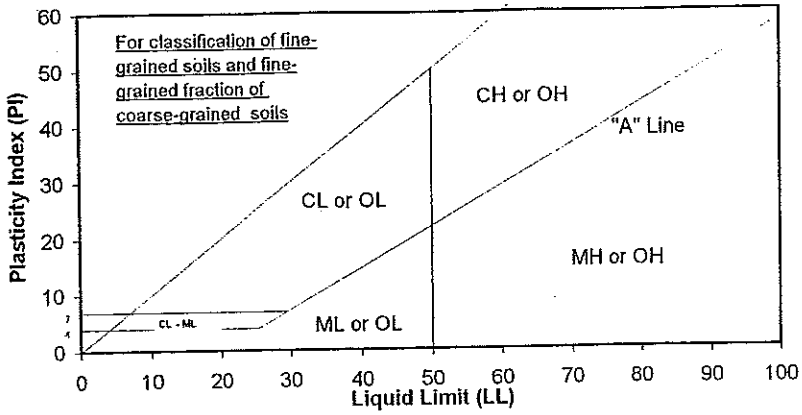
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	76.5
No. 16	2.82	97.4	74.5
No. 30	11.78	89.0	68.1
No. 50	27.47	74.3	56.8
No. 100	48.39	54.7	41.8
No. 200	63.44	40.6	31.1
Pan			

Hydrometer

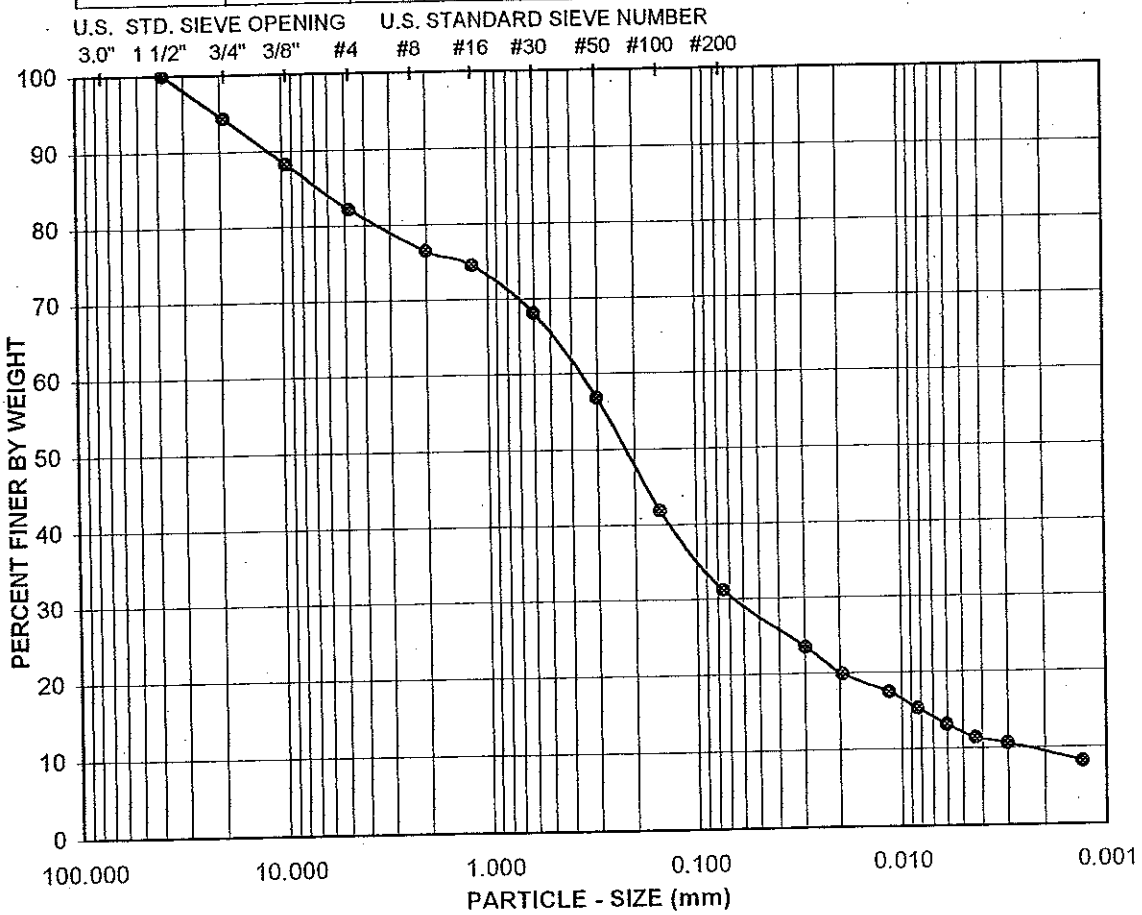
Wt. of Air-Dry Soil (gm) 106.85 Wt. of Dry Soil (gm) 106.85

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:40	0		3.5			
	10:42	2	23.6	3.5	36.5	23.4	0.0294
	10:45	5	23.6	3.5	31.5	19.8	0.0194
	10:55	15	23.7	3.5	28.0	17.4	0.0115
	11:10	30	23.4	3.5	25.0	15.2	0.0083
	11:40	60	23.5	3.5	22.0	13.1	0.0060
	12:40	120	23.2	3.5	19.5	11.3	0.0043
	14:50	250	23.2	3.5	18.5	10.6	0.0030
27-Nov-02	10:44	1444	22.8	3.5	15.0	8.2	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
5	3 & 4	6 - 9.5	(SM)g	18:51:31	N/A

Sample Description:

Brown silty sand with gravel (SM)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon | Tested By : RA/VJ | Date: 11/25/02

Project No. : 02006A | Data Input By: LF | Date: 12/04/02

Boring No.: 5 | Checked By: LF | Date: 12/04/02

Sample No.: 6 & 7 | Depth (ft.) : 12 - 15.5

Visual Sample Description: Gray silty sand with gravel (SM)g

				Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Liquid Limit:		LL,PL,PI:	N/A			
Plastic Limit:		GR:SA:FI:	31:42:27			
Plasticity Index:		Grp. Symbol:	(SM)g			
Specific Gravity	2.73	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	131.02
Wt.of Air-Dry Soil + Cont. (gm.)	2467.05	Wt. of Container No.___ (gm.)		1.00	1.00	74.71
Wt. of Container	108.02	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	2359.03	Wt. of Dry Soil (gm.)				56.31

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	248.70	89.5
3/8"	513.50	78.2
No. 4	733.70	68.9
No. 10	918.87	61.0
Pan		

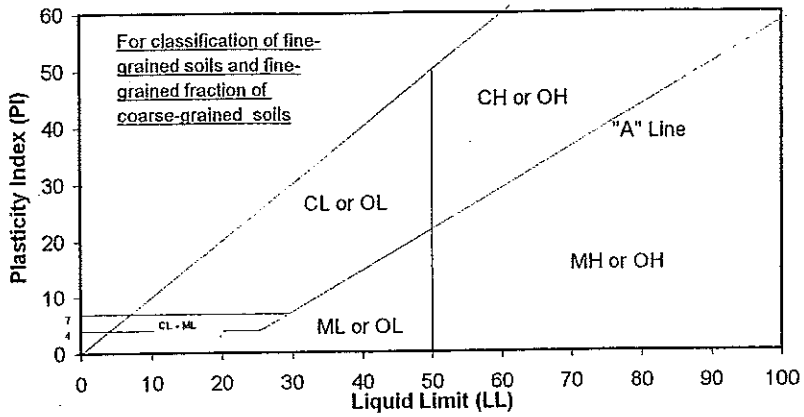
Sieve after Hydrometer & Wet Sieve

U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	61.0
No. 16	4.84	95.2	58.1
No. 30	13.35	86.9	53.0
No. 50	25.67	74.7	45.6
No. 100	41.61	59.1	36.1
No. 200	56.22	44.7	27.3
Pan			

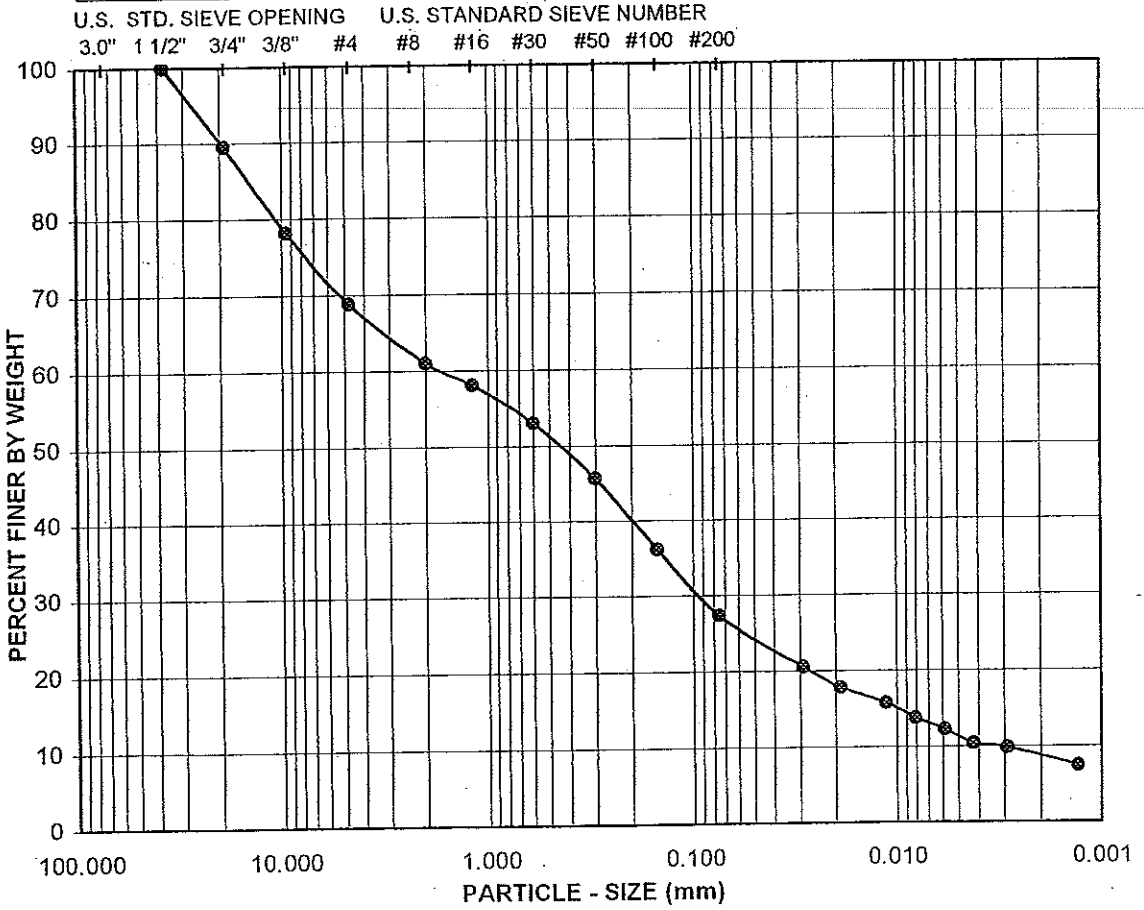
Hydrometer Wt. of Air-Dry Soil (gm) 101.64 Wt. of Dry Soil (gm) 101.64

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:44	0		3.5			
	10:46	2	23.6	3.5	38.0	20.5	0.0289
	10:49	5	23.7	3.5	33.5	17.8	0.0189
	10:59	15	23.7	3.5	30.0	15.7	0.0112
	11:14	30	23.4	3.5	26.5	13.7	0.0081
	11:44	60	23.2	3.5	24.0	12.2	0.0058
	12:44	120	23.1	3.5	21.0	10.4	0.0042
	14:54	250	23.2	3.5	20.0	9.8	0.0029
27-Nov-02	10:44	1440	22.7	3.5	16.0	7.4	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
5	6 & 7	12 - 15.5	(SM)g	31:42:27	N/A

Sample Description:

Gray silty sand with gravel (SM)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Torrelest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 5
Sample No.: 11 & 12
Visual Sample Description: Olive silty sand with gravel (SM)g

Tested By : RA/VJ
Data Input By: LF
Checked By: LF
Depth (ft.) : 22 - 25.5

Date: 11/25/02
Date: 12/04/02
Date: 12/04/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	34:42:24			
Plasticity Index:		Grp. Symbol:	(SM)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	135.15
Wt.of Air-Dry Soil + Cont. (gm.)	2387.15	Wt. of Container No.___ (gm.)		1.00	1.00	75.62
Wt. of Container	108.89	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	2278.26	Wt. of Dry Soil (gm.)				59.53

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	235.26	89.7
3/8"	542.70	76.2
No. 4	773.20	66.1
No. 10	993.80	56.4
Pan		

Sieve after Hydrometer & Wet Sieve

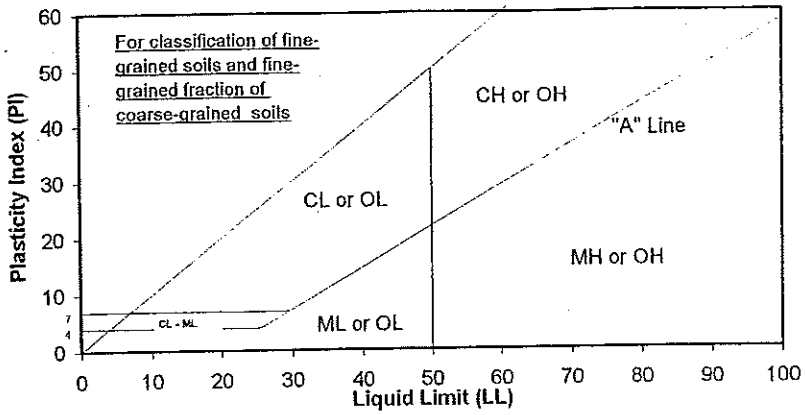
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	56.4
No. 16	5.36	94.8	53.5
No. 30	15.62	84.9	47.9
No. 50	30.75	70.3	39.6
No. 100	47.05	54.5	30.7
No. 200	59.47	42.5	24.0
Pan			

Hydrometer

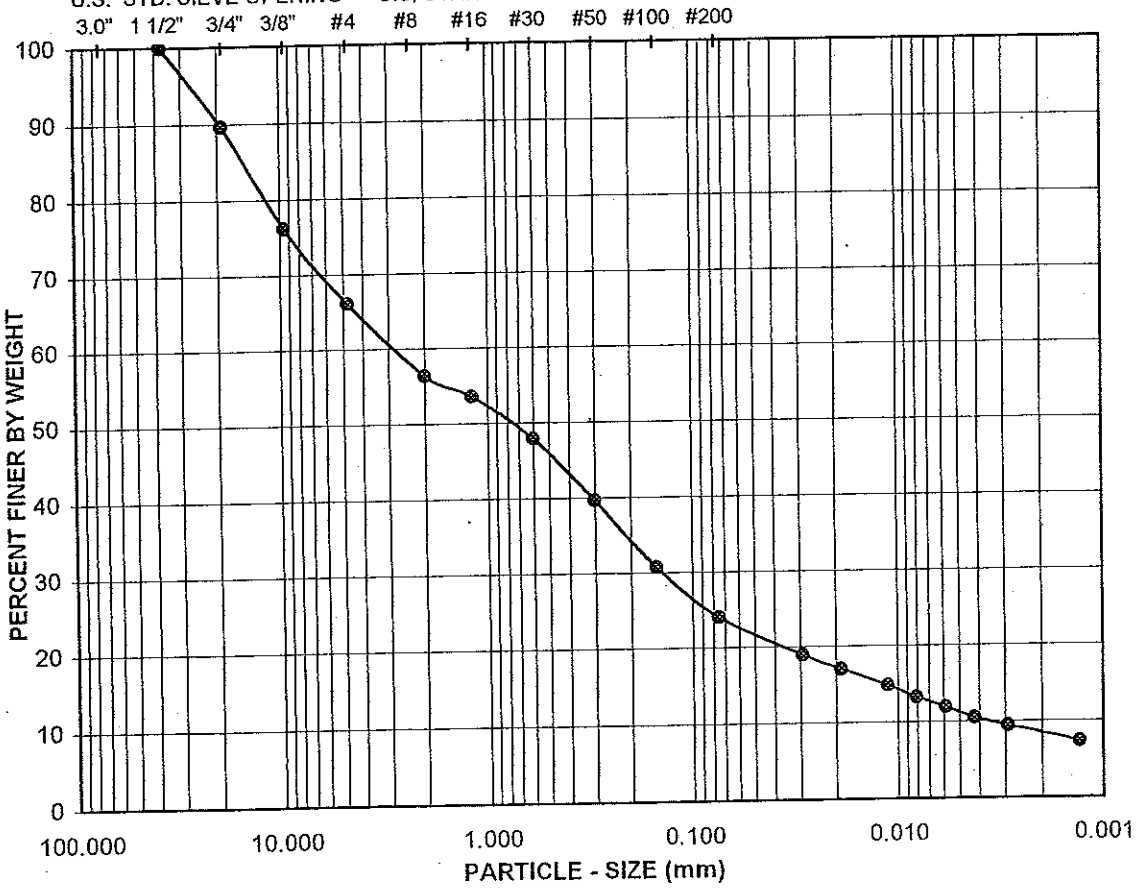
Wt. of Air-Dry Soil (gm) 103.47 Wt. of Dry Soil (gm) 103.47

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:48	0		3.5			
	10:50	2	23.7	3.5	38.5	18.9	0.0290
	10:53	5	23.7	3.5	35.0	17.0	0.0189
	11:03	15	23.6	3.5	31.0	14.8	0.0112
	11:18	30	23.4	3.5	28.0	13.2	0.0081
	11:48	60	23.2	3.5	25.5	11.9	0.0058
	12:48	120	23.1	3.5	23.0	10.5	0.0042
	14:58	250	23.2	3.5	21.0	9.4	0.0029
27-Nov-02	10:48	1440	22.8	3.5	17.0	7.3	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
5	11 & 12	22 - 25.5	(SM)g	34:42:24	N/A

Sample Description:

Olive silty sand with gravel (SM)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A CRIGHTON GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 6
Sample No.: 1 & 2
Visual Sample Description: Brown silty sand with gravel (SM)g

Tested By : RA/VJ
Data Input By: LF
Checked By: LF
Depth (ft.) : 2-5

Date: 11/25/02
Date: 12/04/02
Date: 12/04/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	17:50:33			
Plasticity Index:		Grp. Symbol:	(SM)g			
Specific Gravity	2.74	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.98	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	134.21
Wt.of Air-Dry Soil + Cont. (gm.)	1336.60	Wt. of Container No.___ (gm.)		1.00	1.00	76.67
Wt. of Container	75.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1261.60	Wt. of Dry Soil (gm.)				57.54

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	26.95	97.9
3/8"	118.63	90.6
No. 4	217.31	82.8
No. 10	317.04	74.9
Pan		

Sieve after Hydrometer & Wet Sieve

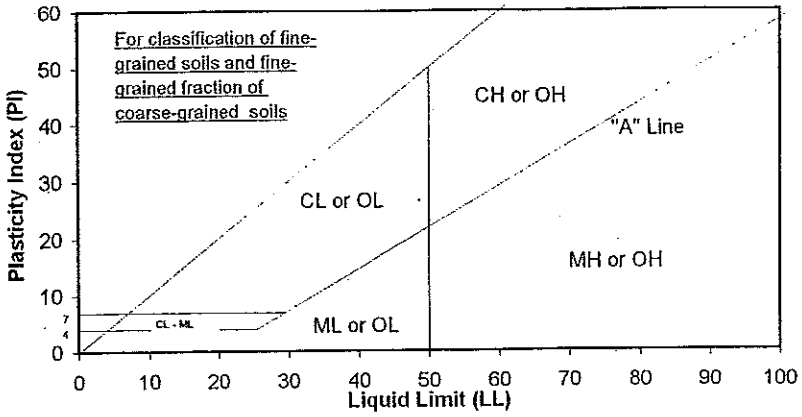
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	74.9
No. 16	3.08	97.0	72.7
No. 30	10.57	89.7	67.2
No. 50	25.21	75.4	56.5
No. 100	43.06	58.0	43.4
No. 200	57.50	43.9	32.9
Pan			

Hydrometer

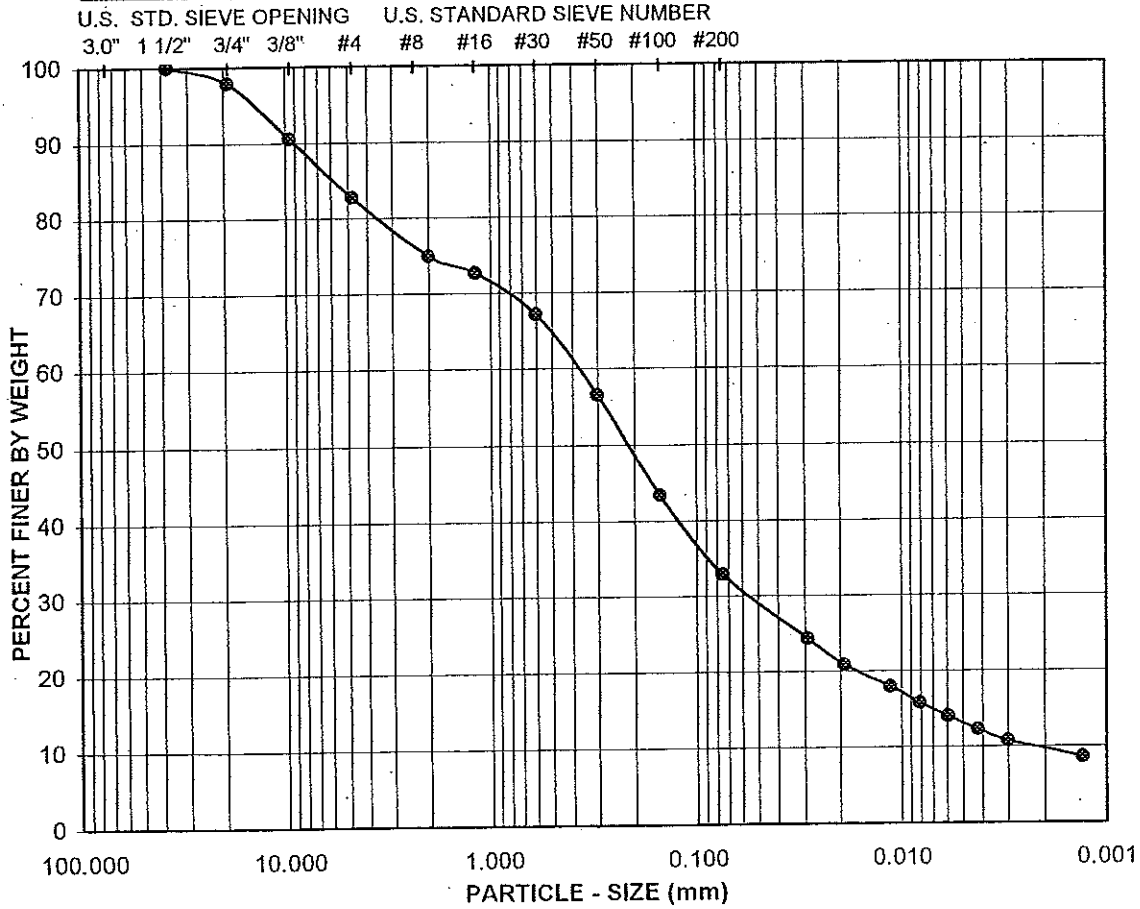
Wt. of Air-Dry Soil (gm) 102.58 Wt. of Dry Soil (gm) 102.58

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:04	0		3.5			
	10:06	2	23.7	3.5	37.5	24.3	0.0289
	10:09	5	23.7	3.5	32.5	20.8	0.0190
	10:19	15	23.6	3.5	28.5	17.9	0.0113
	10:34	30	23.6	3.5	25.5	15.7	0.0081
	11:04	60	23.6	3.5	23.0	14.0	0.0059
	12:04	120	23.2	3.5	20.5	12.2	0.0042
	14:14	250	23.2	3.5	18.5	10.7	0.0030
27-Nov-02	10:04	1440	22.6	3.5	15.5	8.6	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
6	1 & 2	2-5	(SM)g	17:50:33	N/A

Sample Description:

Brown silty sand with gravel (SM)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Torrent Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 6
Sample No.: 7
Visual Sample Description: Reddish brown silty sand (SM)

Tested By : RA/VJ
Data Input By: LF
Checked By: LF
Depth (ft.) : 14 - 15.5

Date: 11/25/02
Date: 12/04/02
Date: 12/04/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	8:65:27			
Plasticity Index:		Grp. Symbol:	SM			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	146.75
Wt.of Air-Dry Soil + Cont. (gm.)	1724.15	Wt. of Container No.___ (gm.)		1.00	1.00	72.11
Wt. of Container	109.89	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1614.26	Wt. of Dry Soil (gm.)				74.64

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	65.95	95.9
3/8"	101.38	93.7
No. 4	137.86	91.5
No. 10	171.77	89.4
Pan		

Sieve after Hydrometer & Wet Sieve

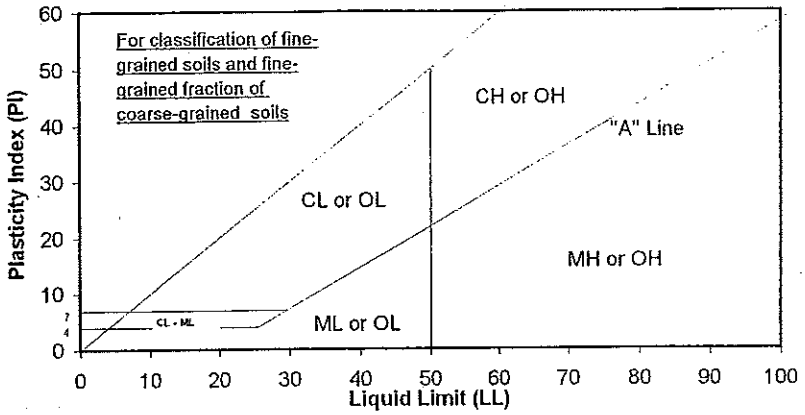
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	89.4
No. 16	1.53	98.6	88.1
No. 30	10.33	90.3	80.7
No. 50	33.26	68.9	61.6
No. 100	58.46	45.3	40.5
No. 200	74.31	30.4	27.2
Pan			

Hydrometer

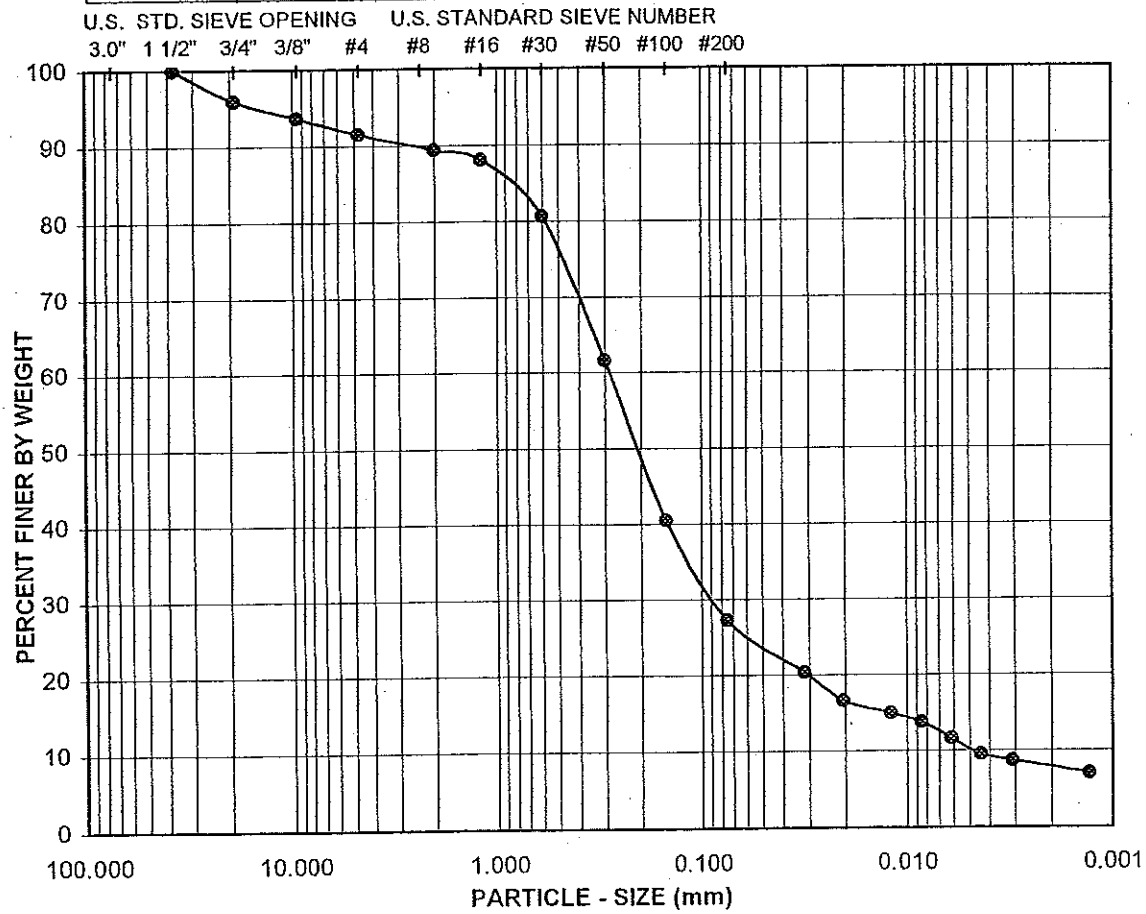
Wt. of Air-Dry Soil (gm) 106.82 Wt. of Dry Soil (gm) 106.82

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
26-Nov-02	10:00	0		3.5			
	10:02	2	23.7	3.5	28.0	20.3	0.0314
	10:05	5	23.7	3.5	23.5	16.6	0.0205
	10:15	15	23.6	3.5	21.5	14.9	0.0120
	10:30	30	23.6	3.5	20.0	13.7	0.0085
	11:00	60	23.7	3.5	17.5	11.6	0.0061
	12:00	120	23.2	3.5	15.0	9.5	0.0044
	14:10	250	23.2	3.5	14.0	8.7	0.0031
27-Nov-02	10:00	1440	22.8	3.5	12.0	7.0	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
6	7	14 - 15.5	SM	8:65:27	N/A

Sample Description:

Reddish brown silty sand (SM)

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A CRIGNTON GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 7
Sample No.: 4 & 5
Visual Sample Description: Olive silty / clayey sand (SM/SC)

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 8 - 11.5

Date: 11/27/02
Date: 12/05/02
Date: 12/05/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	14:49:37			
Plasticity Index:		Grp. Symbol:	SM/SC			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	131.61
Wt.of Air-Dry Soil + Cont. (gm.)	1595.80	Wt. of Container No.___ (gm.)		1.00	1.00	76.98
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1595.80	Wt. of Dry Soil (gm.)				54.63

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	81.78	94.9
3/8"	118.43	92.6
No. 4	217.41	86.4
No. 10	331.41	79.2
Pan		

Sieve after Hydrometer & Wet Sieve

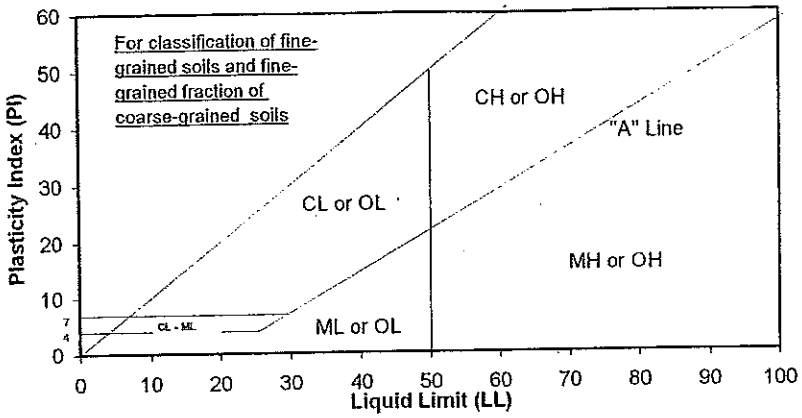
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	79.2
No. 16	1.57	98.4	77.9
No. 30	7.95	92.1	72.9
No. 50	22.27	77.9	61.7
No. 100	40.18	60.2	47.7
No. 200	53.76	46.8	37.1
Pan			

Hydrometer

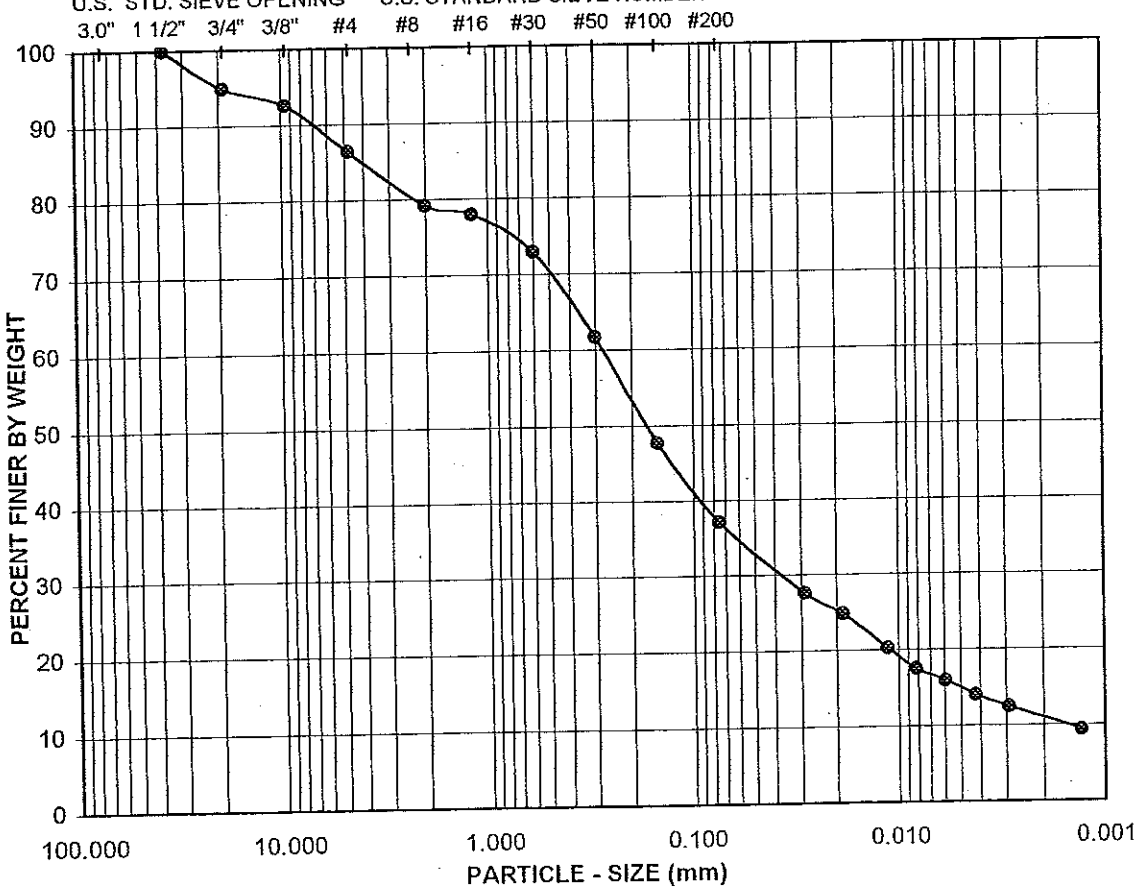
Wt. of Air-Dry Soil (gm) 100.97 Wt. of Dry Soil (gm) 100.97

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
02-Dec-02	10:04	0		6.0			
	10:06	2	22.1	6.0	41.5	27.6	0.0286
	10:09	5	22.1	6.0	38.0	24.8	0.0187
	10:19	15	22.2	6.0	32.0	20.2	0.0113
	10:34	30	22.2	6.0	28.5	17.5	0.0082
	11:04	60	22.2	6.0	26.5	15.9	0.0059
	12:04	120	22.5	6.0	24.0	14.0	0.0042
	14:14	250	23.4	6.0	22.0	12.4	0.0029
03-Dec-02	8:01	1317	21.9	6.0	18.0	9.3	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
7	4 & 5	8 - 11.5	SM/SC	14:49:37	N/A

Sample Description:

Olive silty / clayey sand (SM/SC)

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Torrelest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 7
Sample No.: 7 & 8
Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 14 - 17.5

Date: 11/27/02
Date: 12/13/02
Date: 12/13/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	19:47:34			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	136.41
Wt.of Air-Dry Soil + Cont. (gm.)	861.82	Wt. of Container No.___ (gm.)		1.00	1.00	82.12
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	861.82	Wt. of Dry Soil (gm.)				54.29

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	38.63	95.5
3/8"	102.45	88.1
No. 4	168.19	80.5
No. 10	240.33	72.1
Pan		

Sieve after Hydrometer & Wet Sieve

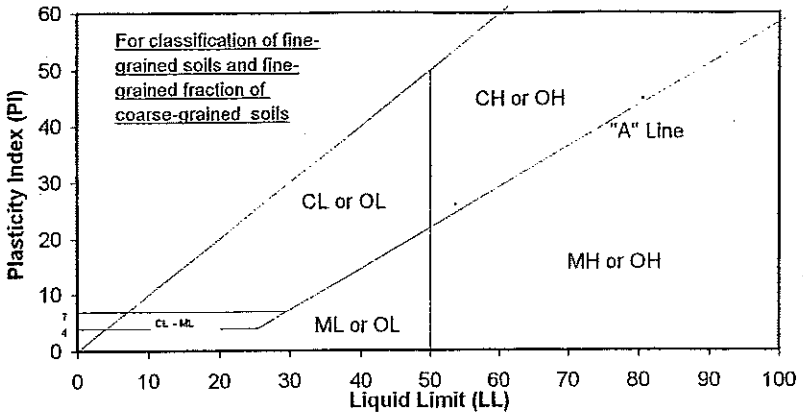
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	72.1
No. 16	3.91	96.1	69.3
No. 30	13.54	86.7	62.5
No. 50	27.33	73.1	52.7
No. 100	41.92	58.7	42.3
No. 200	53.75	47.0	33.9
Pan			

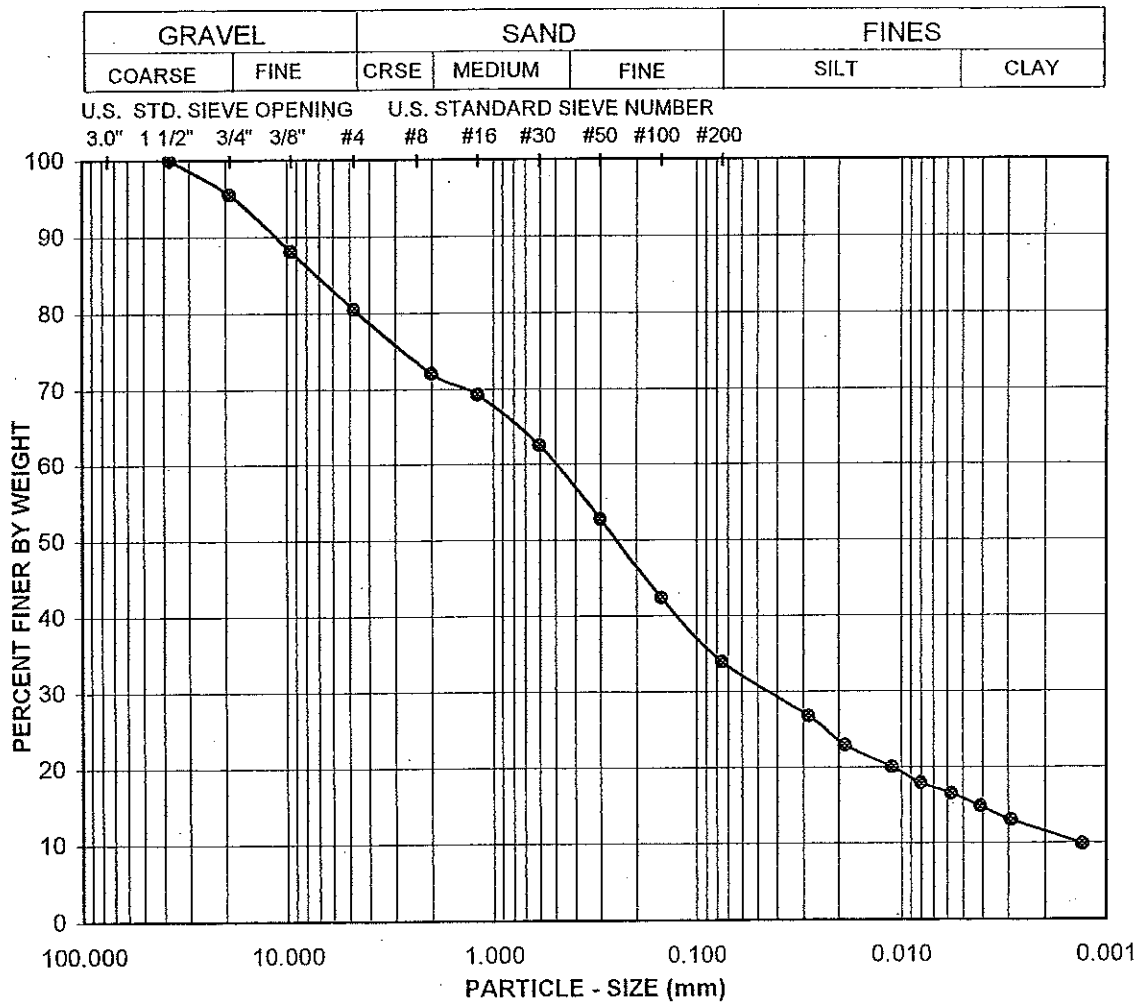
Hydrometer

Wt. of Air-Dry Soil (gm) 101.47 Wt. of Dry Soil (gm) 101.47

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
02-Dec-02	10:08	0		6.0			
	10:10	2	22.1	6.0	44.0	26.7	0.0280
	10:13	5	22.1	6.0	38.5	22.9	0.0186
	10:23	15	22.2	6.0	34.5	20.0	0.0111
	10:38	30	22.2	6.0	31.5	17.9	0.0080
	11:08	60	22.2	6.0	29.5	16.5	0.0057
	12:08	120	22.5	6.0	27.0	14.8	0.0041
	14:18	250	23.4	6.0	24.5	13.0	0.0029
03-Dec-02	8:02	1314	21.9	6.0	20.0	9.8	0.0013





Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
7	7 & 8	14 - 17.5	(SM/SC)g	19:47:34	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A CERTIFIED GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 7
Sample No.: 9 & 10
Visual Sample Description: Olive brown silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 18 - 21.5

Date: 11/27/02
Date: 12/13/02
Date: 12/13/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	23:42:35			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity	2.73	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	125.19
Wt.of Air-Dry Soil + Cont. (gm.)	804.20	Wt. of Container No.___ (gm.)		1.00	1.00	74.50
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	804.20	Wt. of Dry Soil (gm.)				50.69

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	56.37	93.0
3/8"	122.46	84.8
No. 4	185.57	76.9
No. 10	251.11	68.8
Pan		

Sieve after Hydrometer & Wet Sieve

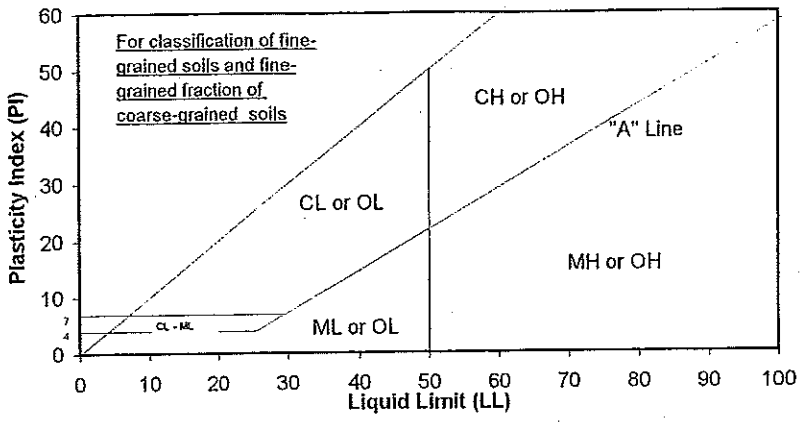
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	68.8
No. 16	3.19	96.8	66.6
No. 30	10.01	90.1	62.0
No. 50	18.79	81.4	56.0
No. 100	34.68	65.6	45.1
No. 200	49.84	50.6	34.8
Pan			

Hydrometer

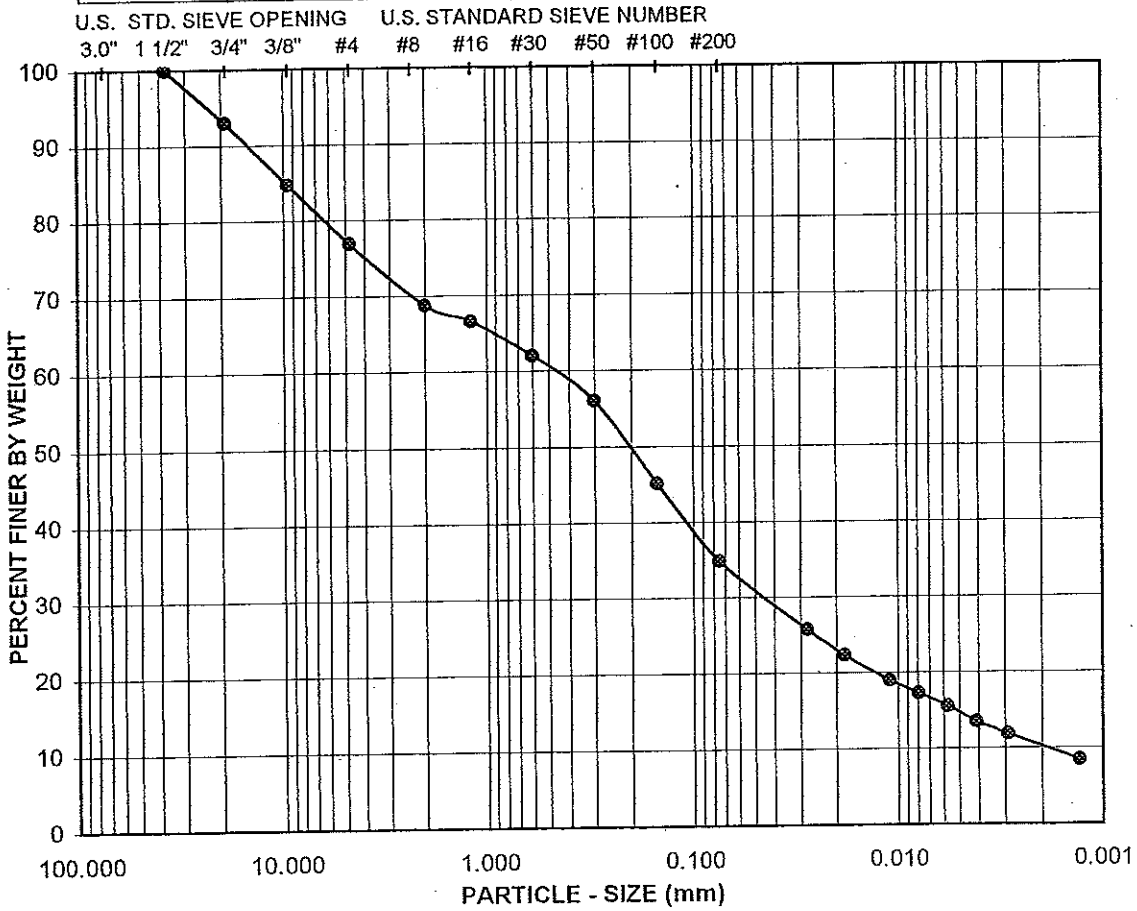
Wt. of Air-Dry Soil (gm) 100.81 Wt. of Dry Soil (gm) 100.81

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
02-Dec-02	10:12	0		6.0			
	10:14	2	22.2	6.0	44.0	25.7	0.0277
	10:17	5	22.2	6.0	39.0	22.3	0.0183
	10:27	15	22.2	6.0	34.0	18.9	0.0110
	10:42	30	22.2	6.0	31.5	17.2	0.0079
	11:12	60	22.4	6.0	29.0	15.5	0.0057
	12:12	120	22.5	6.0	26.0	13.5	0.0041
	14:22	250	23.4	6.0	23.5	11.8	0.0029
03-Dec-02	8:03	1311	21.9	6.0	18.5	8.4	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
7	9 & 10	18 - 21.5	(SM/SC)g	23:42:35	N/A

Sample Description:

Olive brown silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 7
Sample No.: 13 & 14
Visual Sample Description: Pale olive silty sand (SM)

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 26 - 29.5

Date: 11/27/02
Date: 12/05/02
Date: 12/05/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	14:73:13			
Plasticity Index:		Grp. Symbol:	SM			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	158.52
Wt.of Air-Dry Soil + Cont. (gm.)	1839.50	Wt. of Container No.___ (gm.)		1.00	1.00	72.50
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1839.50	Wt. of Dry Soil (gm.)				86.02

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	51.37	97.2
3/8"	160.14	91.3
No. 4	265.42	85.6
No. 10	387.17	79.0
Pan		

Sieve after Hydrometer & Wet Sieve

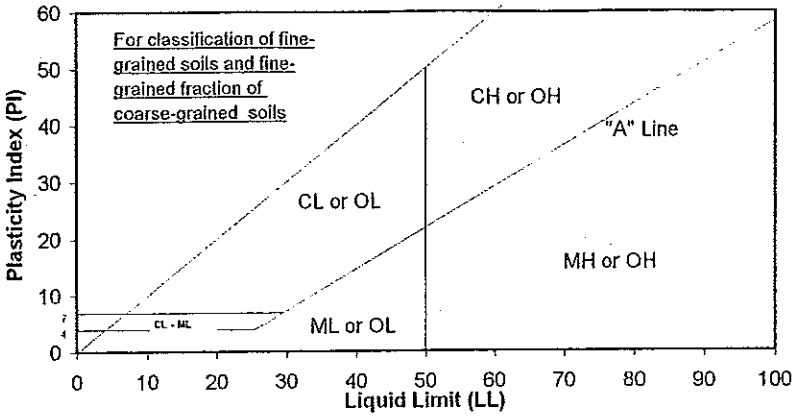
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	79.0
No. 16	5.48	94.7	74.8
No. 30	22.97	77.6	61.3
No. 50	56.11	45.4	35.9
No. 100	76.89	25.2	19.9
No. 200	85.99	16.3	12.9
Pan			

Hydrometer

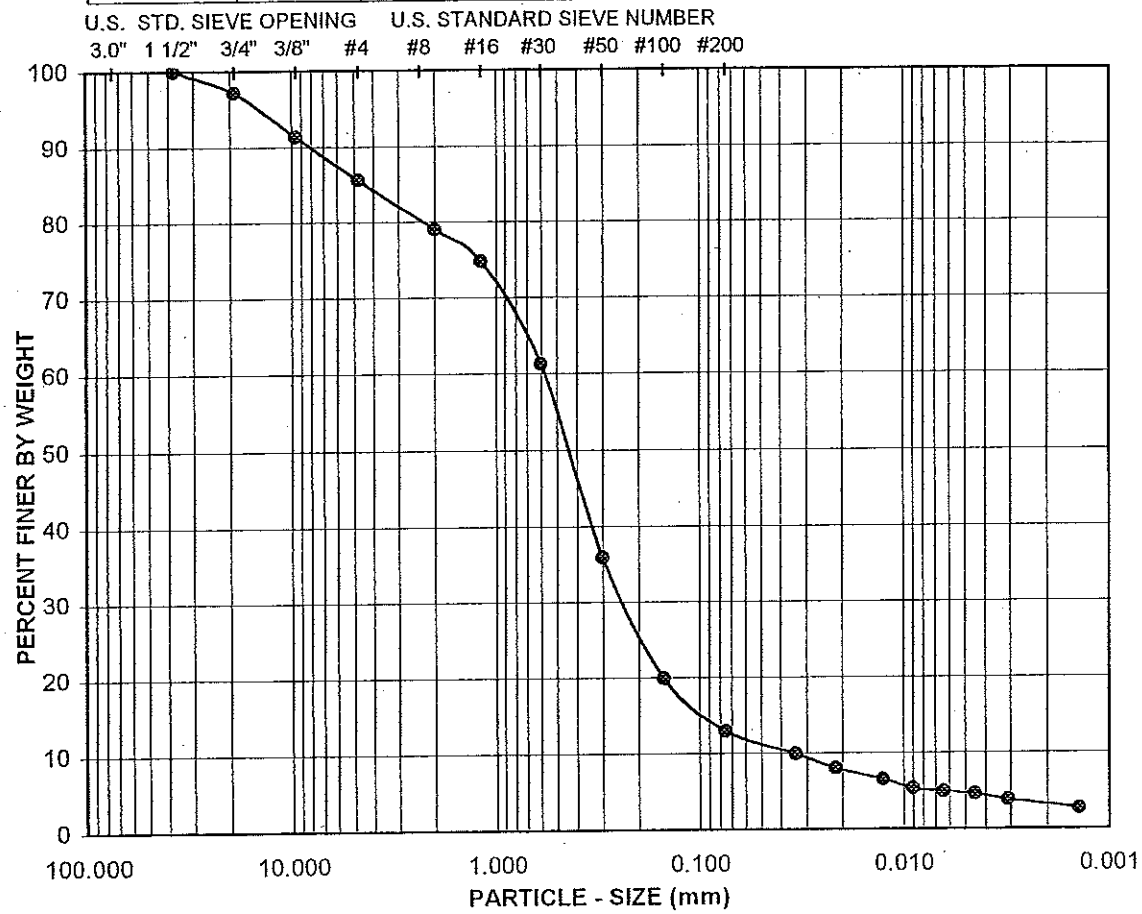
Wt. of Air-Dry Soil (gm) 102.74 Wt. of Dry Soil (gm) 102.74

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
02-Dec-02	10:16	0		6.0			
	10:18	2	22.2	6.0	19.0	9.9	0.0337
	10:21	5	22.2	6.0	16.5	8.0	0.0216
	10:31	15	22.2	6.0	14.5	6.5	0.0126
	10:46	30	22.2	6.0	13.0	5.3	0.0090
	11:16	60	22.4	6.0	12.5	4.9	0.0064
	12:16	120	22.5	6.0	12.0	4.6	0.0045
	14:26	250	23.4	6.0	11.0	3.8	0.0031
03-Dec-02	8:04	1308	21.9	6.0	9.5	2.7	0.0014



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
7	13 & 14	26 - 29.5	SM	14:73:13	N/A

Sample Description:

Pale olive silty sand (SM)

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A CRIGNTON GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 7a
Sample No.: 1 & 2
Visual Sample Description: Olive brown silty / clayey sand (SM/SC)

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 2 - 5.5

Date: 11/27/02
Date: 12/05/02
Date: 12/05/02

Liquid Limit:		LL,PL,PI: N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI: 12:54:34			
Plasticity Index:		Grp. Symbol: SM/SC			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)	0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)	0.00	0.00	134.43
Wt.of Air-Dry Soil + Cont. (gm.)	1610.80	Wt. of Container No.___ (gm.)	1.00	1.00	74.58
Wt. of Container	0.00	Moisture Content (%)	0.00	0.00	
Dry Wt. of Soil (gm.)	1610.80	Wt. of Dry Soil (gm.)			59.85

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	22.67	98.6
3/8"	107.30	93.3
No. 4	186.97	88.4
No. 10	267.92	83.4
Pan		

Sieve after Hydrometer & Wet Sieve

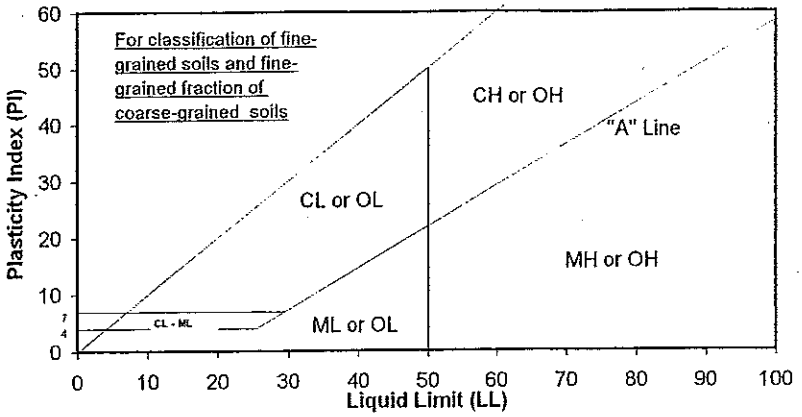
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	83.4
No. 16	2.99	97.0	80.9
No. 30	12.56	87.5	73.0
No. 50	28.17	71.9	60.0
No. 100	45.91	54.2	45.2
No. 200	59.22	40.9	34.1
Pan			

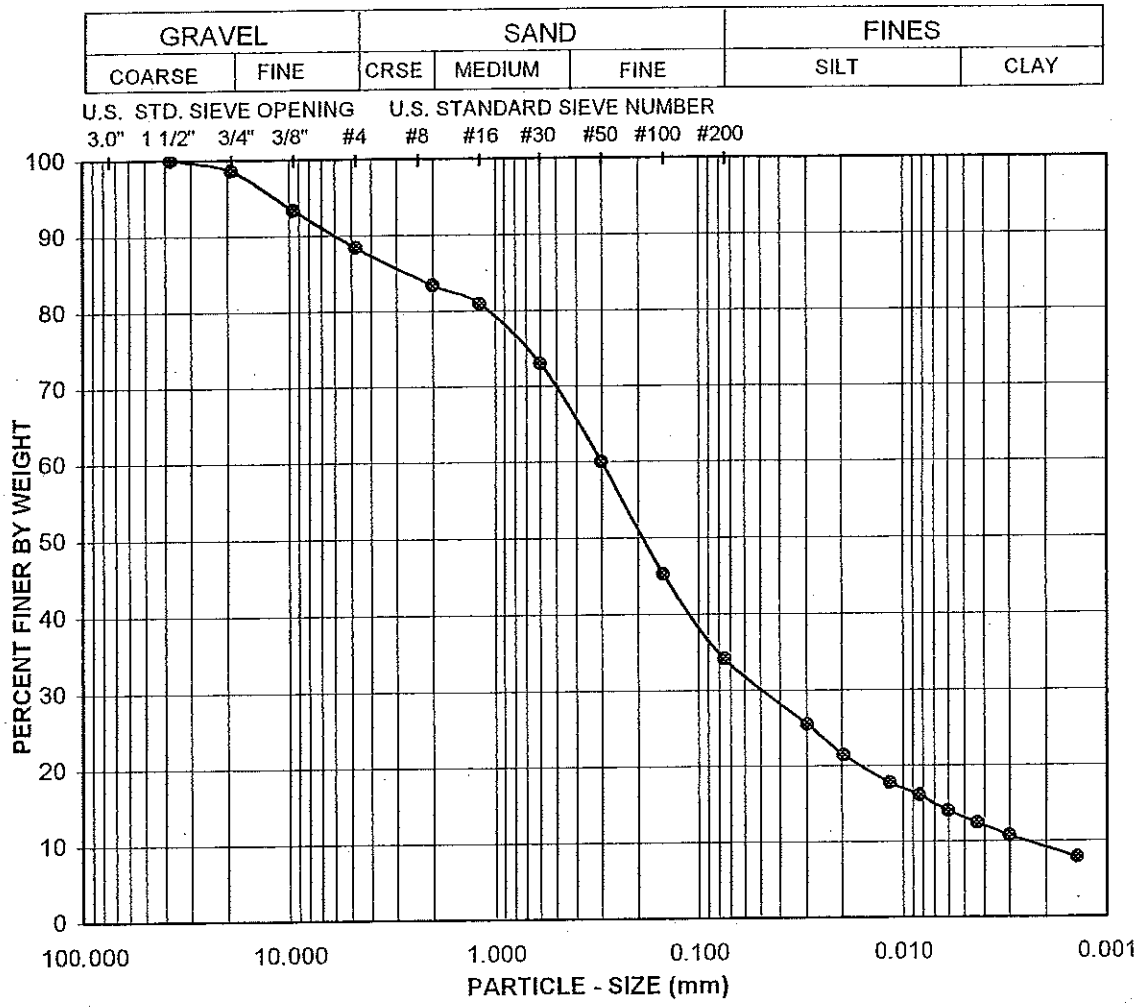
Hydrometer

Wt. of Air-Dry Soil (gm): 100.20
Wt. of Dry Soil (gm): 100.20

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
02-Dec-02	10:20	0		6.0			
	10:22	2	22.2	6.0	37.0	25.5	0.0296
	10:25	5	22.2	6.0	32.0	21.4	0.0196
	10:35	15	22.2	6.0	27.5	17.7	0.0116
	10:50	30	22.2	6.0	25.5	16.1	0.0083
	11:20	60	22.4	6.0	23.0	14.0	0.0060
	12:20	120	22.5	6.0	21.0	12.4	0.0043
	14:30	250	23.4	6.0	19.0	10.7	0.0030
03-Dec-02	8:05	1305	21.9	6.0	15.5	7.8	0.0014





Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
7a	1 & 2	2 - 5.5	SM/SC	12:54:34	N/A

Sample Description:

Olive brown silty / clayey sand (SM/SC)

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A GEOMATRIX GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 7a
Sample No.: 3 & 4
Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 6 - 9.5

Date: 11/27/02
Date: 12/05/02
Date: 12/05/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	16:50:34			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont.	(gm.)	0.00	0.00	130.63
Wt.of Air-Dry Soil + Cont. (gm.)	1546.50	Wt. of Container No.___	(gm.)	1.00	1.00	75.89
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1546.50	Wt. of Dry Soil	(gm.)			54.74

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	10.19	99.3
3/8"	114.13	92.6
No. 4	242.20	84.3
No. 10	385.22	75.1
Pan		

Sieve after Hydrometer & Wet Sieve

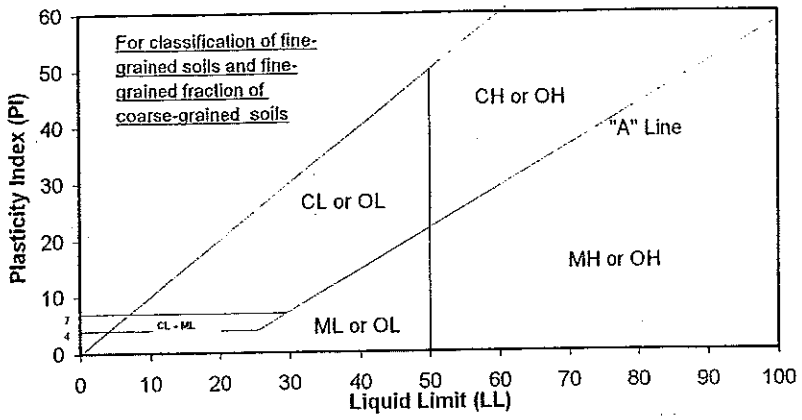
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	75.1
No. 16	5.08	95.0	71.3
No. 30	14.49	85.6	64.3
No. 50	27.54	72.7	54.6
No. 100	42.10	58.2	43.7
No. 200	54.62	45.8	34.4
Pan			

Hydrometer

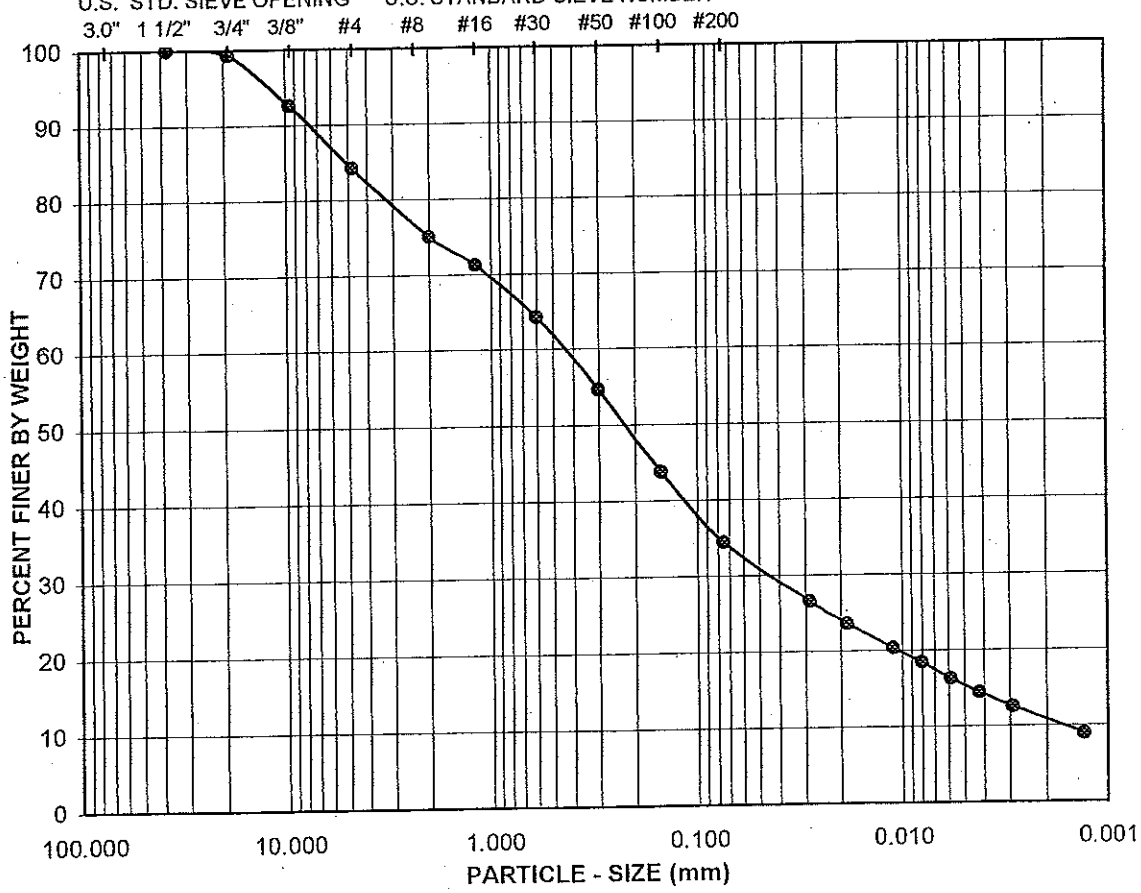
Wt. of Air-Dry Soil (gm) 100.80 Wt. of Dry Soil (gm) 100.80

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
02-Dec-02	10:24	0		6.0			
	10:26	2	22.2	6.0	42.0	26.6	0.0284
	10:29	5	22.2	6.0	38.0	23.6	0.0187
	10:39	15	22.2	6.0	33.5	20.3	0.0111
	10:54	30	22.2	6.0	31.0	18.4	0.0080
	11:24	60	22.4	6.0	28.0	16.2	0.0058
	12:24	120	22.5	6.0	25.5	14.4	0.0042
	14:34	250	23.4	6.0	23.0	12.5	0.0029
03-Dec-02	8:06	1302	21.9	6.0	18.0	8.9	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
7a	3 & 4	6 - 9.5	(SM/SC)g	16:50:34	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A GRIGOLEIT GROVE COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 7a
Sample No.: 6 & 7
Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 12 - 15.5

Date: 11/27/02
Date: 12/05/02
Date: 12/05/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	20:49:31			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity	2.72	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	140.88
Wt.of Air-Dry Soil + Cont. (gm.)	1740.40	Wt. of Container No.___ (gm.)		1.00	1.00	82.27
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1740.40	Wt. of Dry Soil (gm.)				58.61

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	56.06	96.8
3/8"	222.38	87.2
No. 4	357.55	79.5
No. 10	476.62	72.6
Pan		

Sieve after Hydrometer & Wet Sieve

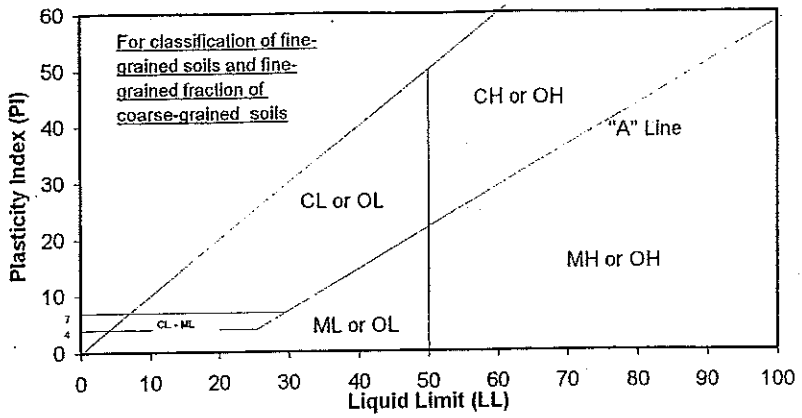
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	72.6
No. 16	3.25	96.8	70.3
No. 30	13.12	86.9	63.1
No. 50	28.98	71.1	51.6
No. 100	45.86	54.2	39.3
No. 200	58.12	42.0	30.5
Pan			

Hydrometer

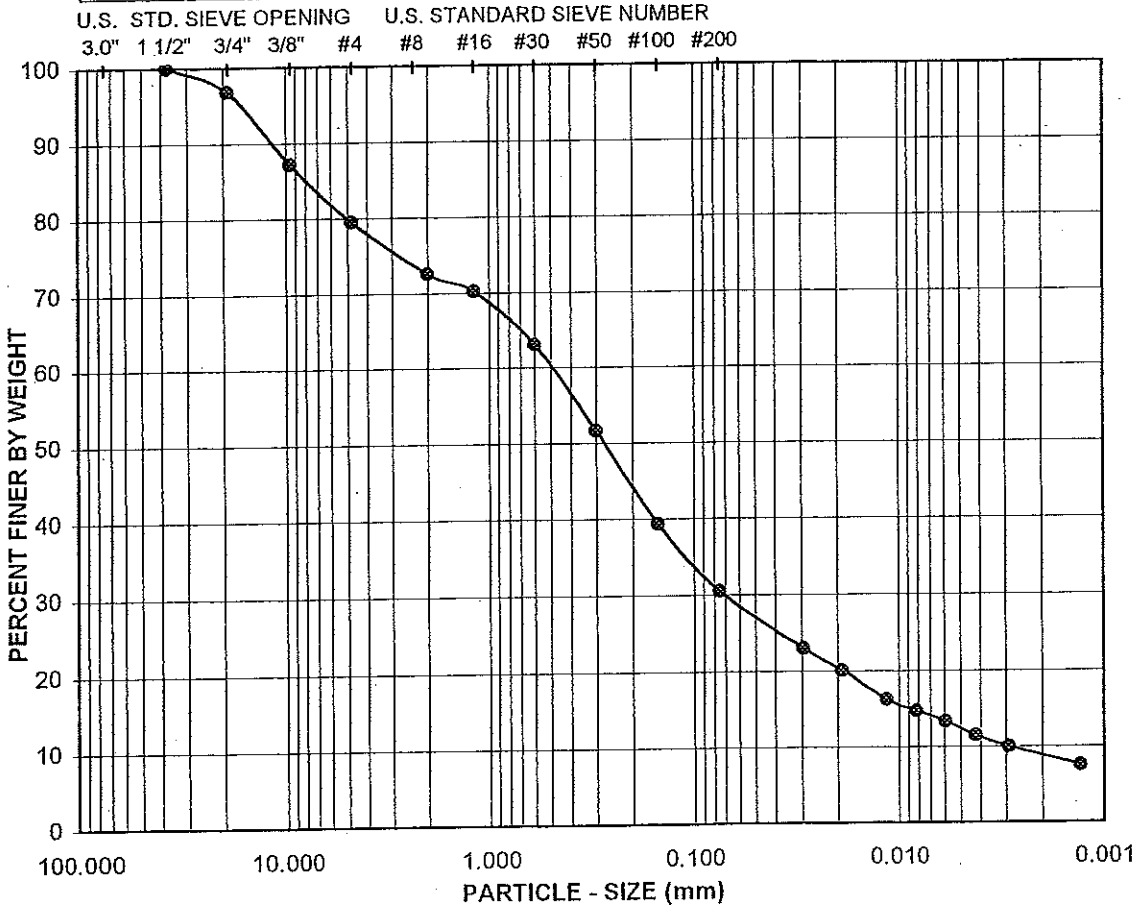
Wt. of Air-Dry Soil (gm) 100.13 Wt. of Dry Soil (gm) 100.13

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
02-Dec-02	10:00	0		6.0			
	10:02	2	22.1	6.0	38.0	23.0	0.0293
	10:05	5	22.1	6.0	34.0	20.1	0.0191
	10:15	15	22.2	6.0	28.5	16.2	0.0115
	10:30	30	22.2	6.0	26.5	14.7	0.0082
	11:00	60	22.2	6.0	24.5	13.3	0.0059
	12:00	120	22.5	6.0	22.0	11.5	0.0042
	14:10	250	23.4	6.0	20.0	10.0	0.0029
03-Dec-02	8:00	1320	21.9	6.0	16.5	7.5	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
7a	6 & 7	12 - 15.5	(SM/SC)g	20:49:31	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A CRIGLER GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 7a
Sample No.: 10 & 11
Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 20 - 23.5

Date: 11/27/02
Date: 12/13/02
Date: 12/13/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	31:45:24			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	142.77
Wt.of Air-Dry Soil + Cont. (gm.)	2207.50	Wt. of Container No.___ (gm.)		1.00	1.00	82.20
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	2207.50	Wt. of Dry Soil (gm.)				60.57

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	120.92	94.5
3/4"	343.72	84.4
3/8"	498.05	77.4
No. 4	690.00	68.7
No. 10	893.70	59.5
Pan		

Sieve after Hydrometer & Wet Sieve

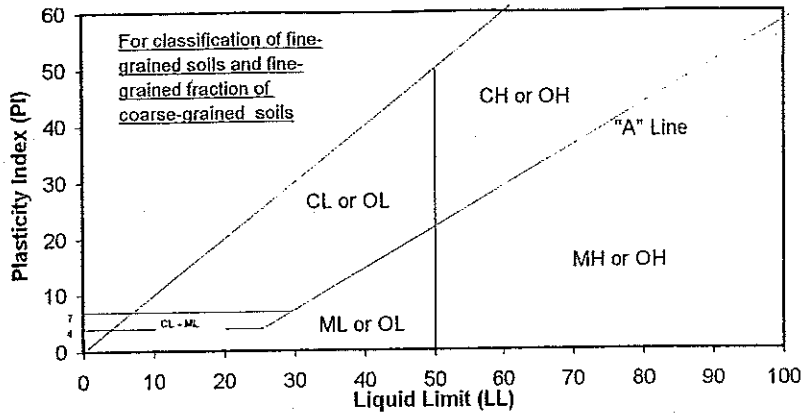
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	59.5
No. 16	8.38	91.7	54.6
No. 30	20.04	80.1	47.7
No. 50	33.18	67.0	39.9
No. 100	48.46	51.8	30.8
No. 200	60.53	39.8	23.7
Pan			

Hydrometer

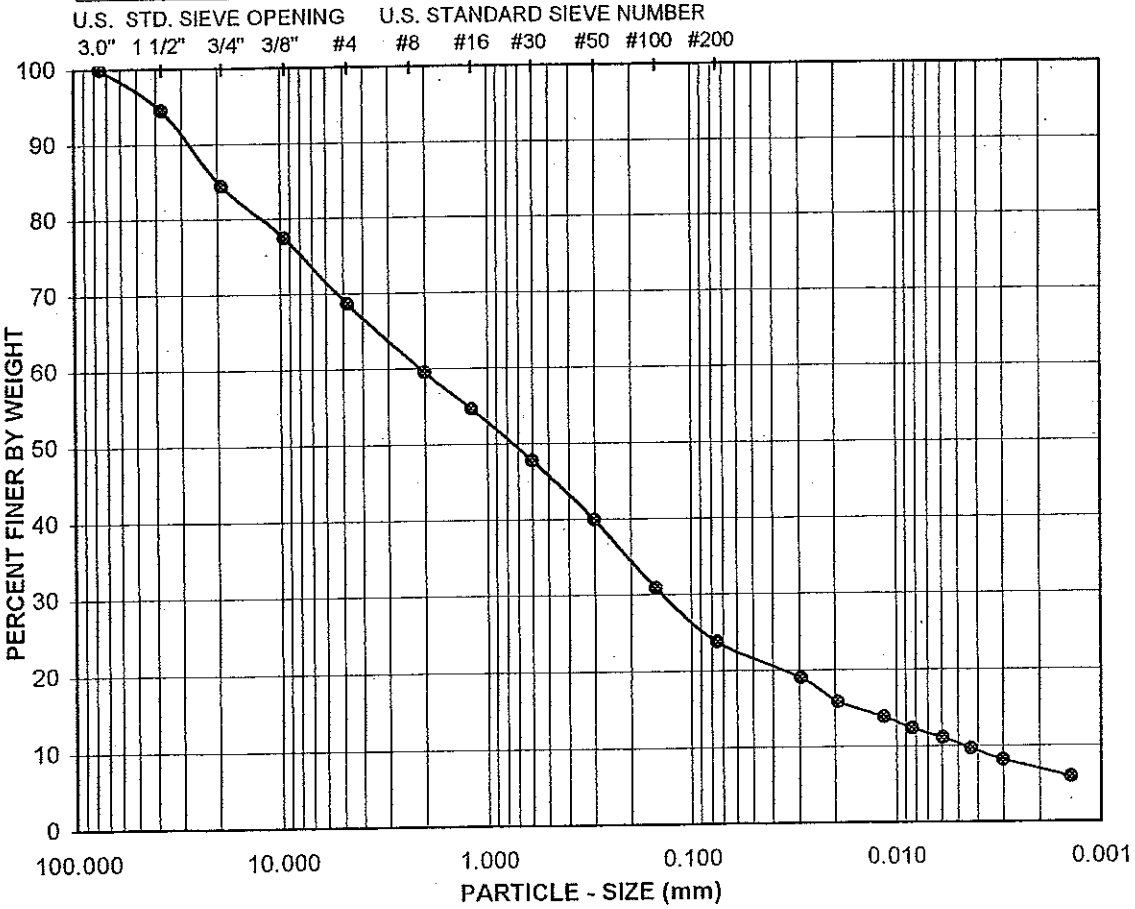
Wt. of Air-Dry Soil (gm) 100.58 Wt. of Dry Soil (gm) 100.58

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
02-Dec-02	10:28	0		6.0			
	10:30	2	22.2	6.0	38.5	19.0	0.0293
	10:33	5	22.2	6.0	33.0	15.8	0.0194
	10:43	15	22.2	6.0	29.5	13.8	0.0115
	10:58	30	22.2	6.0	27.0	12.3	0.0083
	11:28	60	22.4	6.0	25.0	11.1	0.0059
	12:28	120	22.5	6.0	22.5	9.7	0.0043
	14:38	250	23.4	6.0	20.0	8.2	0.0030
03-Dec-02	8:07	1299	21.9	6.0	16.0	5.9	0.0014



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
7a	10 & 11	20 - 23.5	(SM/SC)g	31:45:24	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon | Tested By: ACS | Date: 11/27/02

Project No.: 02006A | Data Input By: LF | Date: 12/05/02

Boring No.: 8 | Checked By: LF | Date: 12/05/02

Sample No.: 1 & 2 | Depth (ft.): 2 - 5.5

Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

				Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Liquid Limit:		LL,PL,PI:	N/A			
Plastic Limit:		GR:SA:FI:	24:45:31			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	130.69
Wt.of Air-Dry Soil + Cont. (gm.)	1429.40	Wt. of Container No.___ (gm.)		1.00	1.00	75.30
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1429.40	Wt. of Dry Soil (gm.)				55.39

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	145.39	89.8
3/8"	249.69	82.5
No. 4	350.32	75.5
No. 10	465.21	67.5
Pan		

Sieve after Hydrometer & Wet Sieve

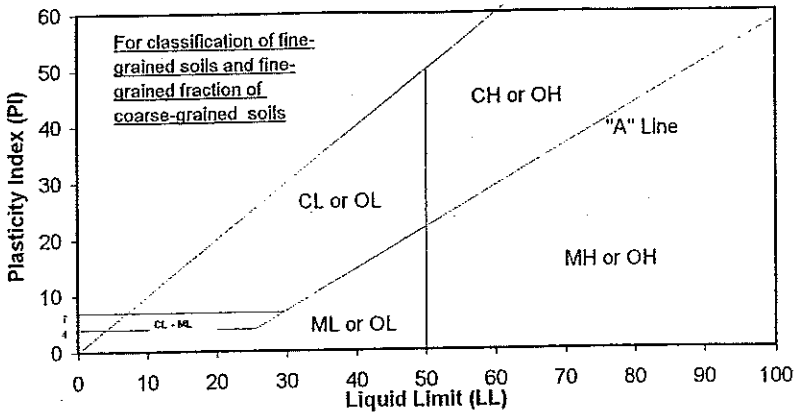
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	67.5
No. 16	3.77	96.3	65.0
No. 30	13.53	86.6	58.5
No. 50	27.46	72.8	49.1
No. 100	42.99	57.3	38.7
No. 200	55.08	45.4	30.6
Pan			

Hydrometer

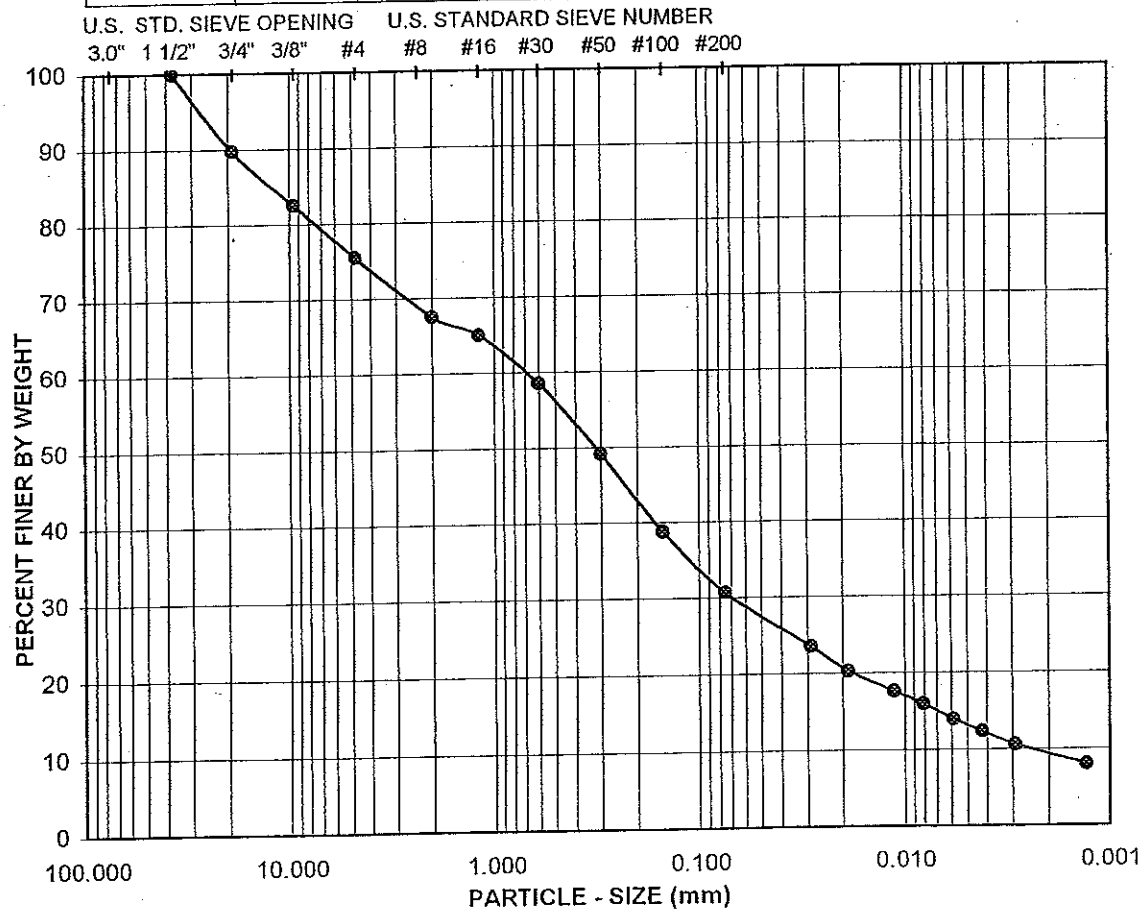
Wt. of Air-Dry Soil (gm): 100.79 | Wt. of Dry Soil (gm): 100.79

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
02-Dec-02	10:32	0		6.0			
	10:34	2	22.2	6.0	41.5	23.5	0.0286
	10:37	5	22.2	6.0	36.5	20.2	0.0188
	10:47	15	22.2	6.0	32.5	17.6	0.0112
	11:02	30	22.2	6.0	30.0	15.9	0.0081
	11:32	60	22.4	6.0	27.0	13.9	0.0058
	12:32	120	22.5	6.0	24.5	12.3	0.0042
	14:42	250	23.4	6.0	22.0	10.6	0.0029
03-Dec-02	8:08	1296	21.9	6.0	18.0	8.0	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
8	1 & 2	2 - 5.5	(SM/SC)g	24:45:31	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 8
Sample No.: 4 & 5
Visual Sample Description: Olive silty / clayey sand (SM/SC)

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 8 - 11.5

Date: 12/03/02
Date: 12/06/02
Date: 12/06/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	12:50:38			
Plasticity Index:		Grp. Symbol:	SM/SC			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	131.49
Wt.of Air-Dry Soil +.Cont. (gm.)	1854.10	Wt. of Container No.___ (gm.)		1.00	1.00	75.80
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1854.10	Wt. of Dry Soil (gm.)				55.69

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	95.83	94.8
3/8"	154.43	91.7
No. 4	230.64	87.6
No. 10	306.78	83.5
Pan		

Sieve after Hydrometer & Wet Sieve

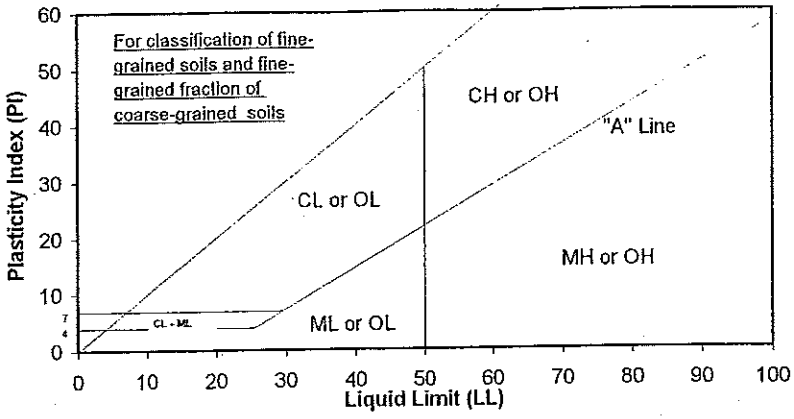
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	83.5
No. 16	2.20	97.8	81.7
No. 30	9.46	90.6	75.7
No. 50	23.87	76.3	63.7
No. 100	40.81	59.5	49.7
No. 200	55.01	45.4	37.9
Pan			

Hydrometer

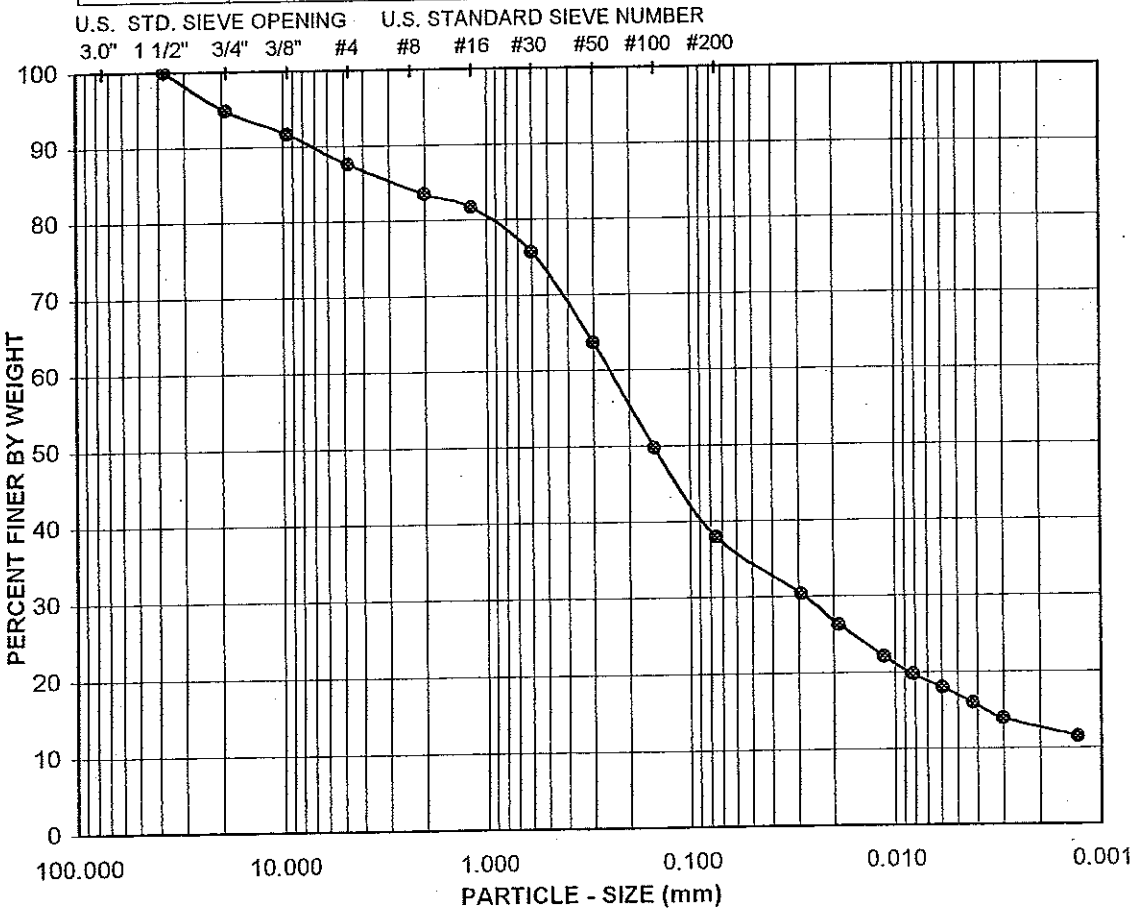
Wt. of Air-Dry Soil (gm) 100.83 Wt. of Dry Soil (gm) 100.83

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
04-Dec-02	10:20	0		4.0			
	10:22	2	22.3	4.0	41.0	30.3	0.0288
	10:25	5	22.3	4.0	36.0	26.2	0.0189
	10:35	15	22.2	4.0	31.0	22.1	0.0113
	10:50	30	22.1	4.0	28.0	19.7	0.0082
	11:20	60	22.1	4.0	26.0	18.0	0.0059
	12:20	120	22.5	4.0	23.5	16.0	0.0042
	14:30	250	22.9	4.0	21.0	13.9	0.0030
05-Dec-02	8:20	1320	21.1	4.0	18.0	11.5	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
8	4 & 5	8 - 11.5	SM/SC	12:50:38	N/A

Sample Description:

Olive silty / clayey sand (SM/SC)

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Torsteel Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 8
Sample No.: 8
Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 16 - 17.5

Date: 12/03/02
Date: 12/06/02
Date: 12/06/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	27:42:31			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	128.97
Wt.of Air-Dry Soil + Cont. (gm.)	1251.20	Wt. of Container No.___ (gm.)		1.00	1.00	76.65
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1251.20	Wt. of Dry Soil (gm.)				52.32

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	106.62	91.5
3/8"	215.47	82.8
No. 4	338.74	72.9
No. 10	468.32	62.6
Pan		

Sieve after Hydrometer & Wet Sieve

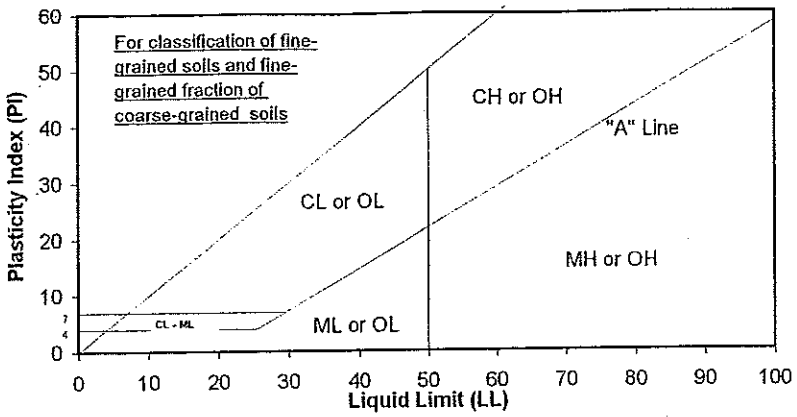
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	62.6
No. 16	3.82	96.2	60.2
No. 30	11.90	88.3	55.3
No. 50	22.83	77.6	48.6
No. 100	37.63	63.0	39.4
No. 200	51.82	49.1	30.7
Pan			

Hydrometer

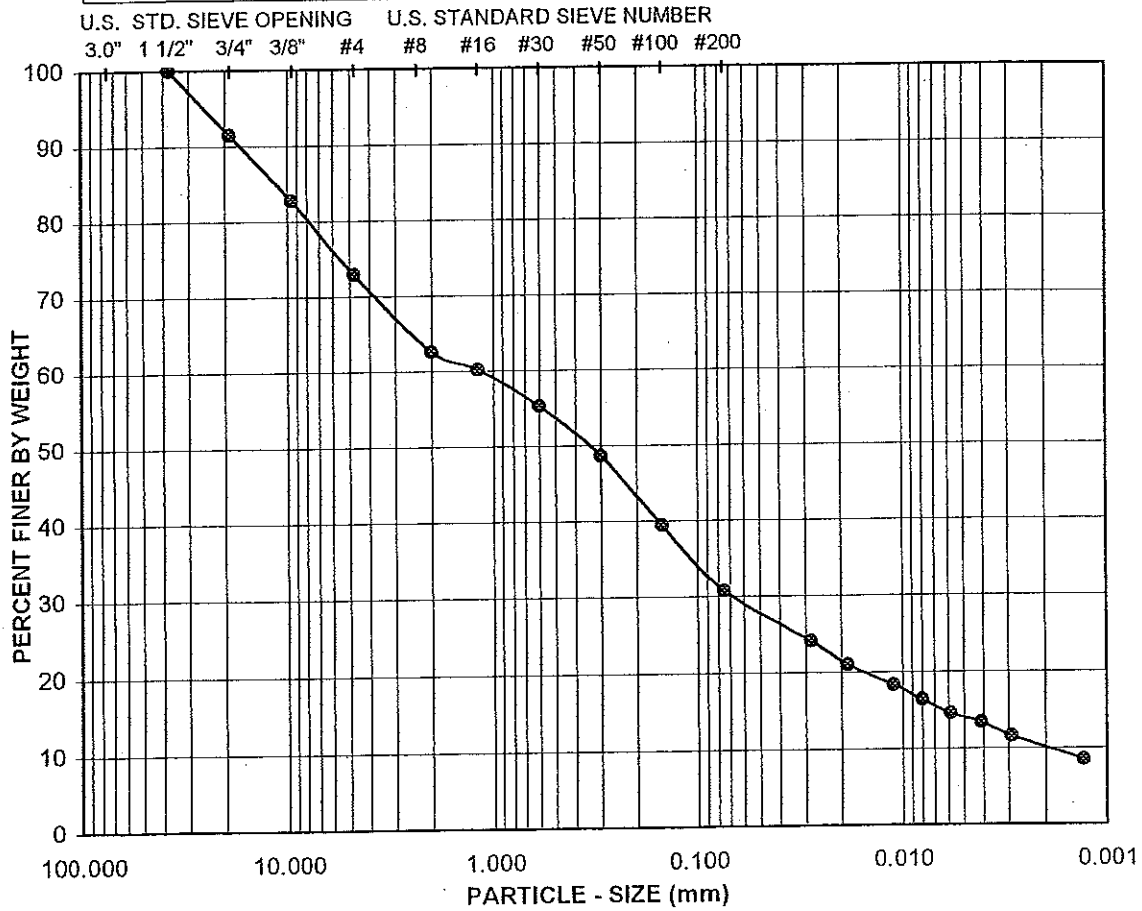
Wt. of Air-Dry Soil (gm) 101.75 Wt. of Dry Soil (gm) 101.75

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
04-Dec-02	10:28	0		4.0			
	10:30	2	22.3	4.0	43.5	24.1	0.0281
	10:33	5	22.3	4.0	38.5	21.0	0.0186
	10:43	15	22.2	4.0	34.0	18.3	0.0111
	10:58	30	22.1	4.0	31.0	16.4	0.0080
	11:28	60	22.1	4.0	28.0	14.6	0.0058
	12:28	120	22.5	4.0	26.0	13.4	0.0041
	14:38	250	22.9	4.0	23.0	11.6	0.0029
05-Dec-02	8:22	1314	21.1	4.0	18.0	8.5	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
8	8	16 - 17.5	(SM/SC)g	27:42:31	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Torrelest Labs, Inc.

Project Name: Topanga Lagoon | Tested By: ACS | Date: 12/03/02

Project No.: 02006A | Data Input By: LF | Date: 12/13/02

Boring No.: 8 | Checked By: LF | Date: 12/13/02

Sample No.: 12 | Depth (ft.): 26 - 27.5

Visual Sample Description: Olive silty / clayey sand (SM/SC)

				Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Liquid Limit:		LL,PL,PI:	N/A			
Plastic Limit:		GR:SA:FI:	12:71:17			
Plasticity Index:		Grp. Symbol:	SM/SC			
Specific Gravity	2.71	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	155.73
Wt.of Air-Dry Soil + Cont. (gm.)	1321.00	Wt. of Container No.___ (gm.)		1.00	1.00	74.70
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1321.00	Wt. of Dry Soil (gm.)				81.03

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	95.87	92.7
3/4"	95.87	92.7
3/8"	117.63	91.1
No. 4	164.48	87.5
No. 10	225.57	82.9
Pan		

Sieve after Hydrometer & Wet Sieve

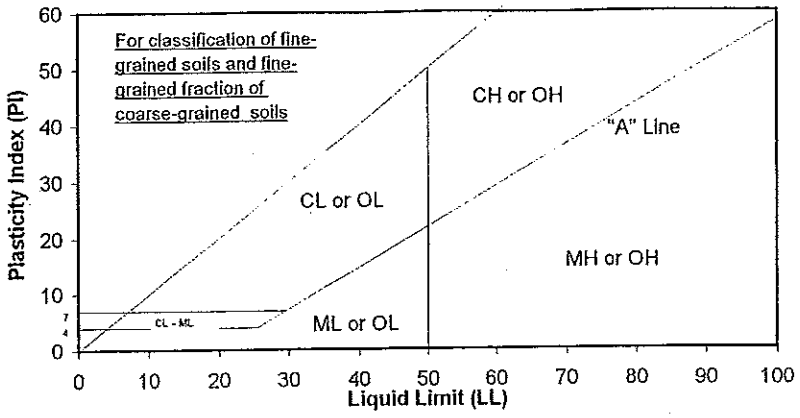
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	82.9
No. 16	5.25	94.8	78.6
No. 30	24.36	75.8	62.8
No. 50	49.33	51.1	42.4
No. 100	70.19	30.4	25.2
No. 200	80.65	20.0	16.6
Pan			

Hydrometer

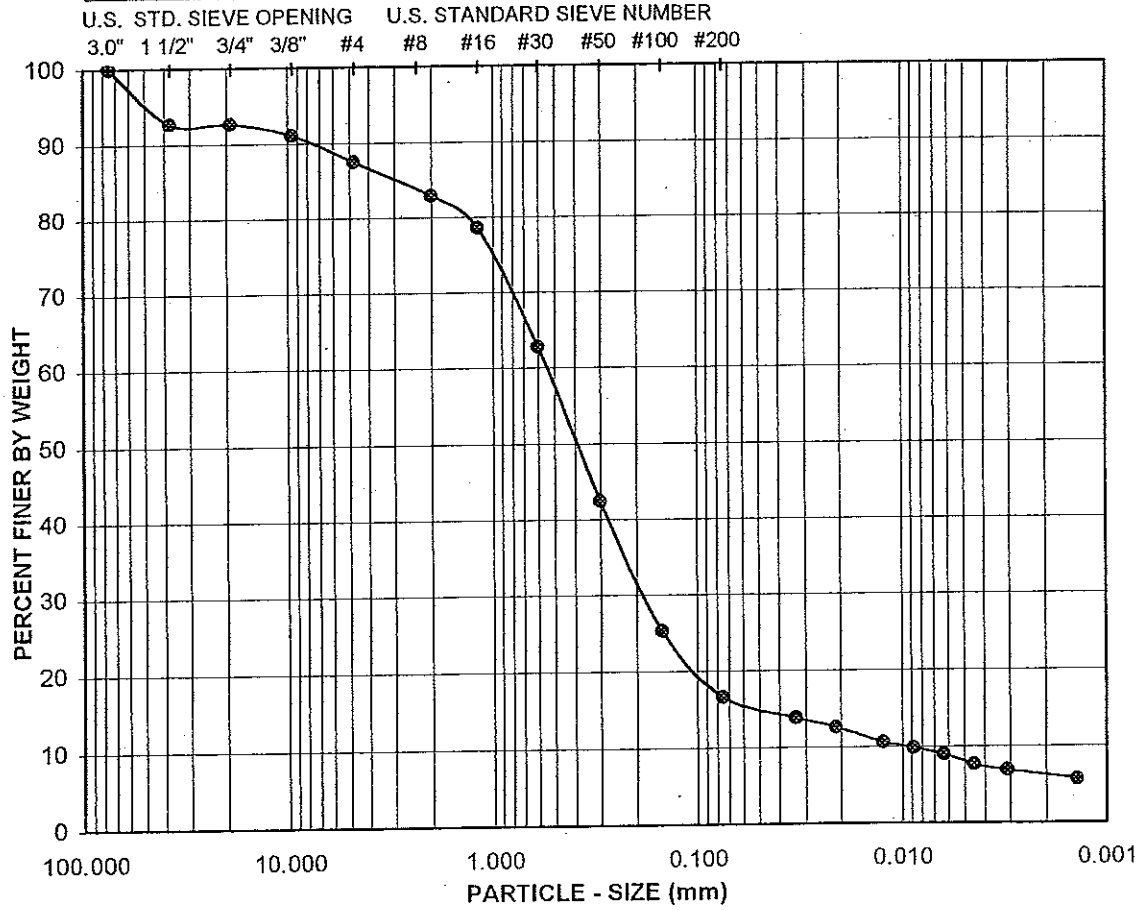
Wt. of Air-Dry Soil (gm): 100.83 | Wt. of Dry Soil (gm): 100.83

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
04-Dec-02	10:24	0		4.0			
	10:26	2	22.3	4.0	21.0	13.8	0.0332
	10:29	5	22.3	4.0	19.5	12.6	0.0212
	10:39	15	22.2	4.0	17.0	10.6	0.0124
	10:54	30	22.1	4.0	16.0	9.8	0.0088
	11:24	60	22.1	4.0	15.0	9.0	0.0063
	12:24	120	22.5	4.0	13.5	7.7	0.0045
	14:34	250	22.9	4.0	12.5	6.9	0.0031
05-Dec-02	8:21	1317	21.1	4.0	11.0	5.7	0.0014



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
8	12	26 - 27.5	SM/SC	12:71:17	N/A

Sample Description:

Olive silty / clayey sand (SM/SC)

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 9
Sample No.: 1 & 2
Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 2 - 5.5

Date: 12/03/02
Date: 12/06/02
Date: 12/06/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	20:46:34			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity	2.73	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	131.48
Wt.of Air-Dry Soil + Cont. (gm.)	1151.80	Wt. of Container No.___ (gm.)		1.00	1.00	77.80
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1151.80	Wt. of Dry Soil (gm.)				53.68

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	60.07	94.8
3/8"	130.48	88.7
No. 4	233.08	79.8
No. 10	322.69	72.0
Pan		

Sieve after Hydrometer & Wet Sieve

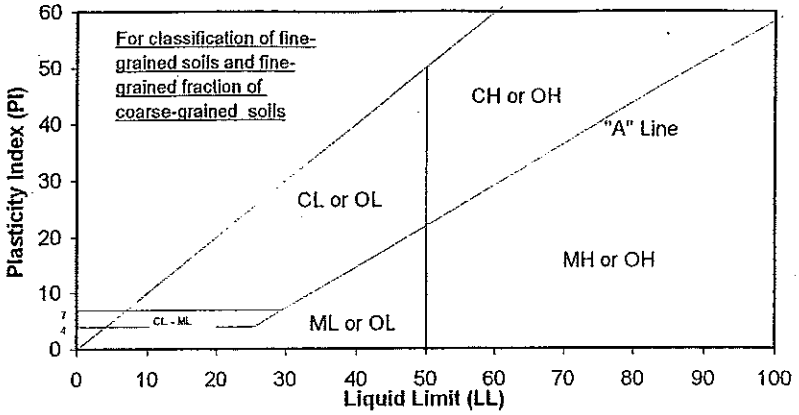
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	72.0
No. 16	5.56	94.5	68.0
No. 30	14.62	85.6	61.6
No. 50	26.67	73.8	53.1
No. 100	40.72	60.0	43.2
No. 200	53.28	47.7	34.3
Pan			

Hydrometer

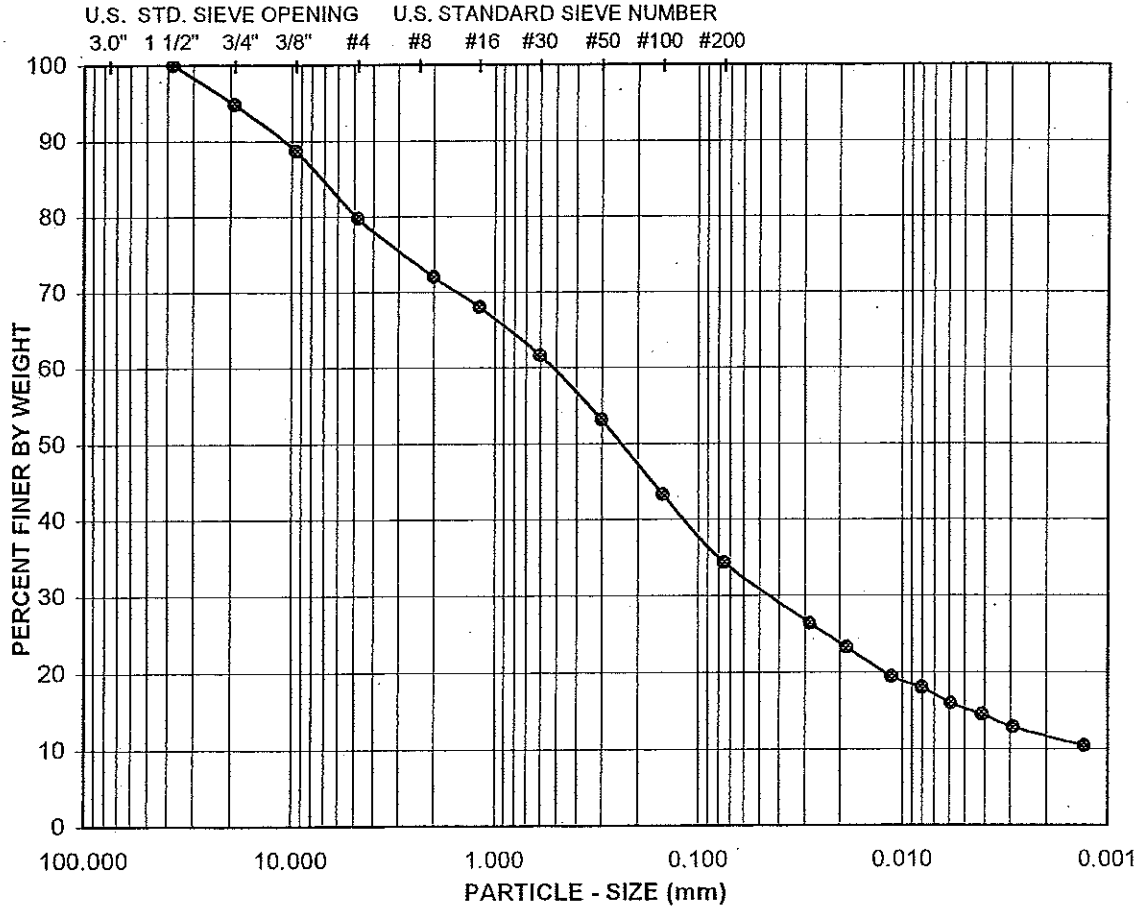
Wt. of Air-Dry Soil (gm) 101.86 Wt. of Dry Soil (gm) 101.86

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
04-Dec-02	10:16	0		4.0			
	10:18	2	22.3	4.0	42.0	26.6	0.0282
	10:21	5	22.3	4.0	37.5	23.4	0.0185
	10:31	15	22.3	4.0	32.0	19.6	0.0112
	10:46	30	22.1	4.0	30.0	18.2	0.0080
	11:16	60	22.1	4.0	27.0	16.1	0.0058
	12:16	120	22.5	4.0	25.0	14.7	0.0041
	14:26	250	22.9	4.0	22.5	12.9	0.0029
05-Dec-02	8:19	1323	21.1	4.0	19.0	10.5	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
9	1 & 2	2 - 5.5	(SM/SC)g	20:46:34	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Torotest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 9
Sample No.: 4
Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 8 - 9.5

Date: 11/27/02
Date: 12/05/02
Date: 12/05/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	15:55:30			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	137.97
Wt.of Air-Dry Soil + Cont. (gm.)	947.82	Wt. of Container No.___ (gm.)		1.00	1.00	74.20
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	947.82	Wt. of Dry Soil (gm.)				63.77

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	18.85	98.0
3/8"	95.94	89.9
No. 4	140.08	85.2
No. 10	186.46	80.3
Pan		

Sieve after Hydrometer & Wet Sieve

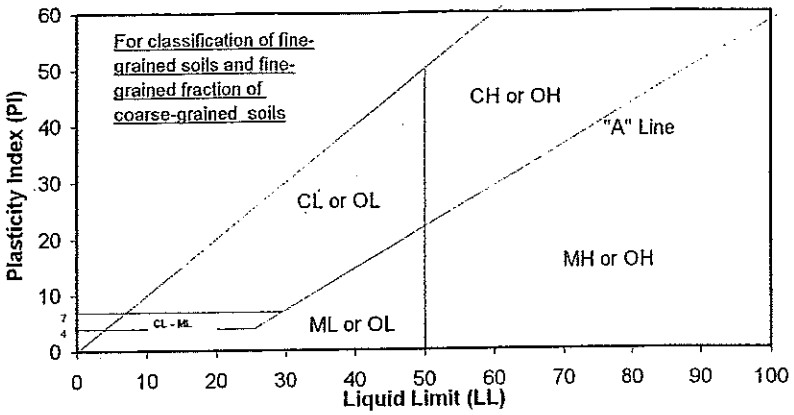
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	80.3
No. 16	2.49	97.5	78.3
No. 30	11.95	88.1	70.7
No. 50	28.06	72.1	57.9
No. 100	48.15	52.1	41.8
No. 200	63.19	37.1	29.8
Pan			

Hydrometer

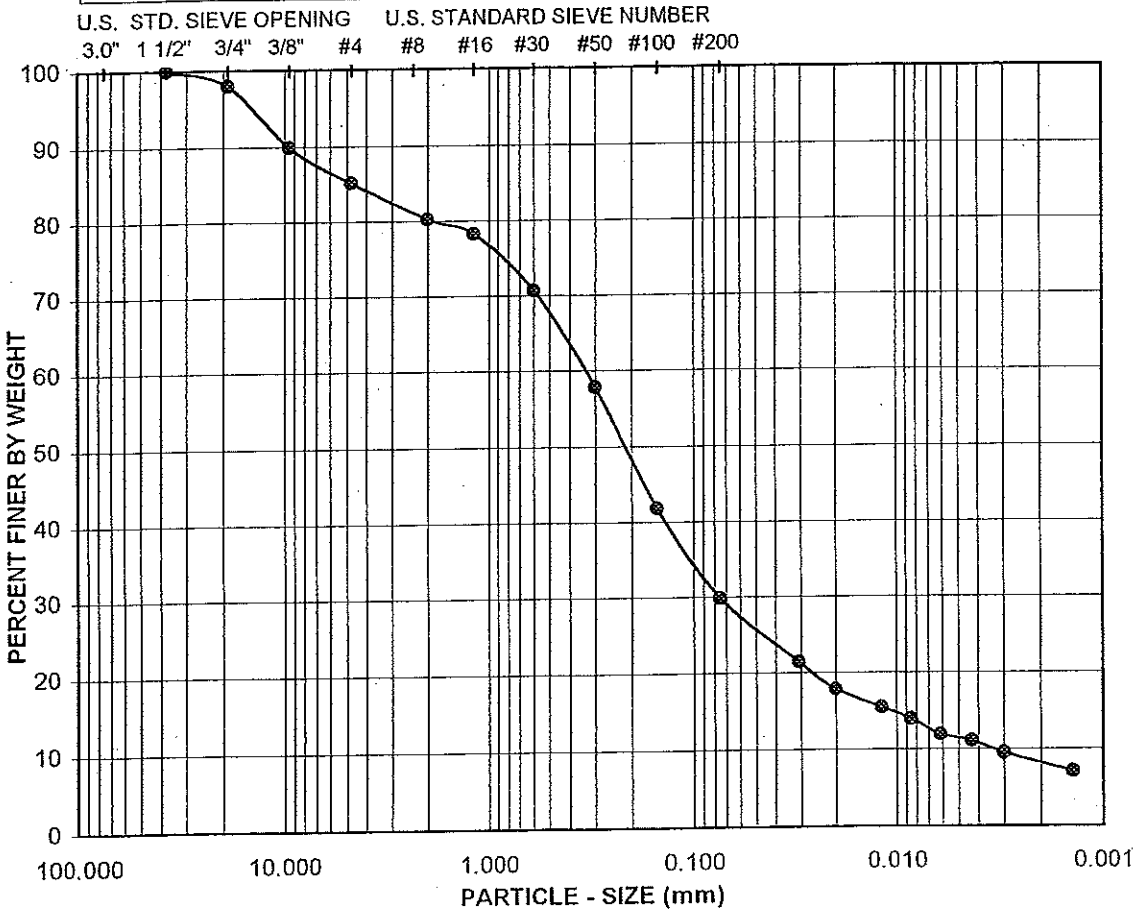
Wt. of Air-Dry Soil (gm) 100.43 Wt. of Dry Soil (gm) 100.43

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
02-Dec-02	10:36	0		6.0			
	10:38	2	22.2	6.0	33.0	21.4	0.0306
	10:41	5	22.2	6.0	28.5	17.8	0.0200
	10:51	15	22.2	6.0	25.5	15.4	0.0118
	11:06	30	22.2	6.0	23.5	13.9	0.0085
	11:36	60	22.4	6.0	21.0	11.9	0.0061
	12:36	120	22.5	6.0	20.0	11.1	0.0043
	14:46	250	23.4	6.0	18.0	9.5	0.0030
03-Dec-02	8:09	1293	21.9	6.0	15.0	7.1	0.0014



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
9	4	8 - 9.5	(SM/SC)g	15:55:30	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 9
Sample No.: 5 & 6
Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 10 - 13.5

Date: 12/03/02
Date: 12/13/02
Date: 12/13/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	31:35:34			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	125.54
Wt.of Air-Dry Soil + Cont. (gm.)	1313.70	Wt. of Container No.___ (gm.)		1.00	1.00	77.85
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1313.70	Wt. of Dry Soil (gm.)				47.69

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	92.06	93.0
3/4"	207.03	84.2
3/8"	316.34	75.9
No. 4	406.80	69.0
No. 10	488.52	62.8
Pan		

Sieve after Hydrometer & Wet Sieve

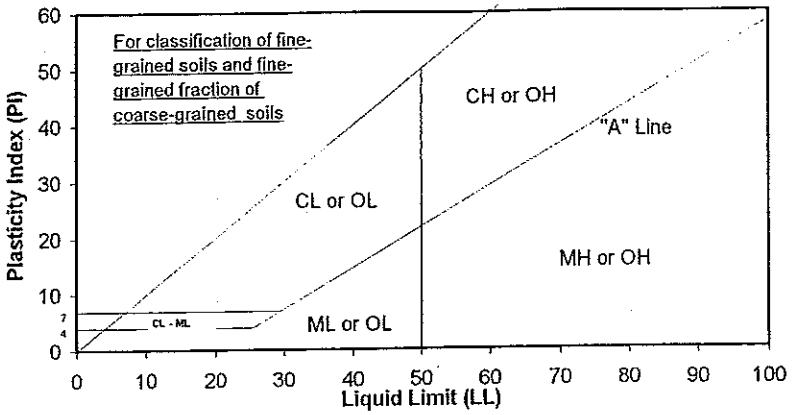
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	62.8
No. 16	2.69	97.3	61.1
No. 30	7.28	92.8	58.3
No. 50	15.59	84.6	53.1
No. 100	29.99	70.4	44.2
No. 200	46.58	54.1	34.0
Pan			

Hydrometer

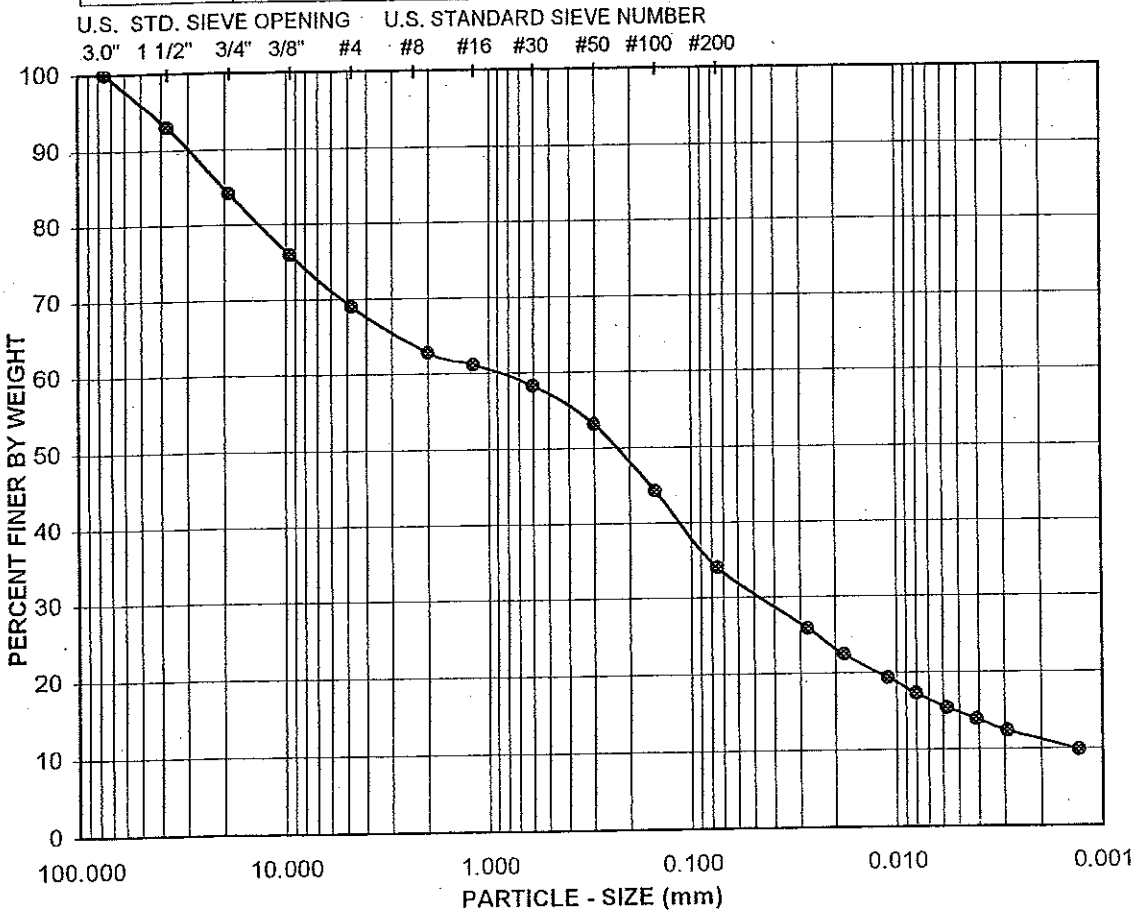
Wt. of Air-Dry Soil (gm): 101.38
Wt. of Dry Soil (gm): 101.38

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
04-Dec-02	10:08	0		4.0			
	10:10	2	22.2	4.0	46.0	25.8	0.0275
	10:13	5	22.2	4.0	40.5	22.4	0.0182
	10:23	15	22.3	4.0	35.5	19.3	0.0110
	10:38	30	22.2	4.0	32.0	17.2	0.0080
	11:08	60	22.1	4.0	29.0	15.3	0.0057
	12:08	120	22.5	4.0	26.5	13.8	0.0041
	14:18	250	22.9	4.0	24.0	12.3	0.0029
05-Dec-02	8:17	1329	21.1	4.0	20.0	9.8	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
9	5 & 6	10 - 13.5	(SM/SC)g	31:35:34	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 9
Sample No.: 9 & 10
Visual Sample Description: Olive brown silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 18 - 21.5

Date: 12/03/02
Date: 12/06/02
Date: 12/06/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	35:40:25			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont.	(gm.)	0.00	0.00	131.07
Wt.of Air-Dry Soil + Cont. (gm.)	1122.80	Wt. of Container No.___	(gm.)	1.00	1.00	75.80
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1122.80	Wt. of Dry Soil	(gm.)			55.27

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	173.84	84.5
3/8"	285.26	74.6
No. 4	389.93	65.3
No. 10	497.82	55.7
Pan		

Sieve after Hydrometer & Wet Sieve

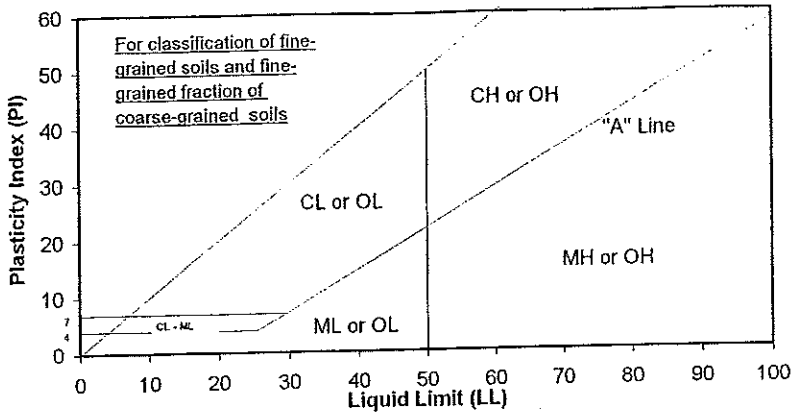
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	55.7
No. 16	7.29	92.7	51.6
No. 30	18.58	81.5	45.4
No. 50	31.80	68.3	38.0
No. 100	44.59	55.5	30.9
No. 200	55.12	45.0	25.1
Pan			

Hydrometer

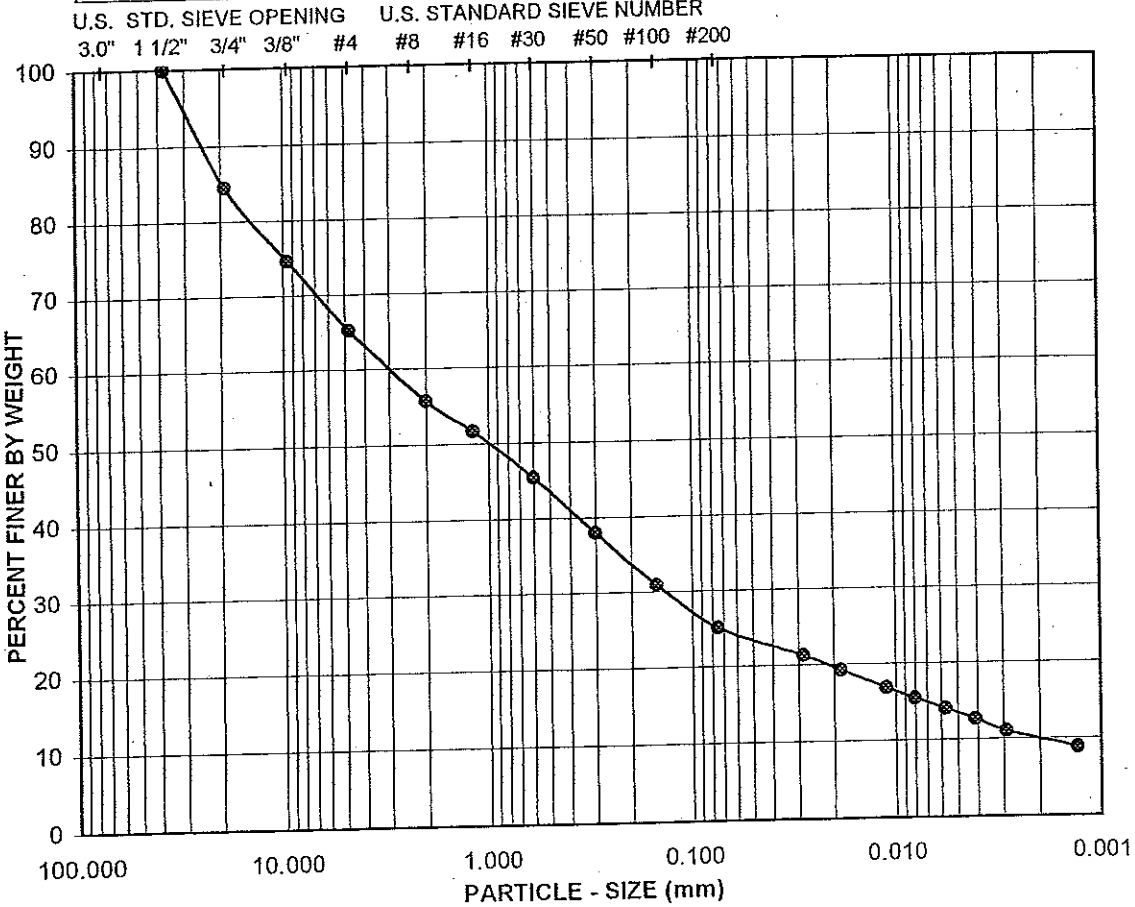
Wt. of Air-Dry Soil (gm) 100.30 Wt. of Dry Soil (gm) 100.30

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
04-Dec-02	10:04	0		4.0			
	10:06	2	22.1	4.0	42.5	21.2	0.0283
	10:09	5	22.2	4.0	39.0	19.2	0.0185
	10:19	15	22.3	4.0	34.5	16.8	0.0111
	10:34	30	22.2	4.0	32.0	15.4	0.0080
	11:04	60	22.1	4.0	29.5	14.0	0.0057
	12:04	120	22.5	4.0	27.0	12.6	0.0041
	14:14	250	22.9	4.0	24.0	11.0	0.0029
05-Dec-02	8:16	1332	21.1	4.0	20.0	8.8	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
9	9 & 10	18 - 21.5	(SM/SC)g	35:40:25	N/A

Sample Description:

Olive brown silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 10
Sample No.: 1 & 2
Visual Sample Description: Olive brown silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 2 - 5

Date: 12/03/02
Date: 12/06/02
Date: 12/06/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	20:45:35			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	127.83
Wt.of Air-Dry Soil + Cont. (gm.)	1111.30	Wt. of Container No.___ (gm.)		1.00	1.00	75.40
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1111.30	Wt. of Dry Soil (gm.)				52.43

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	39.75	96.4
3/8"	142.64	87.2
No. 4	225.64	79.7
No. 10	307.71	72.3
Pan		

Sieve after Hydrometer & Wet Sieve

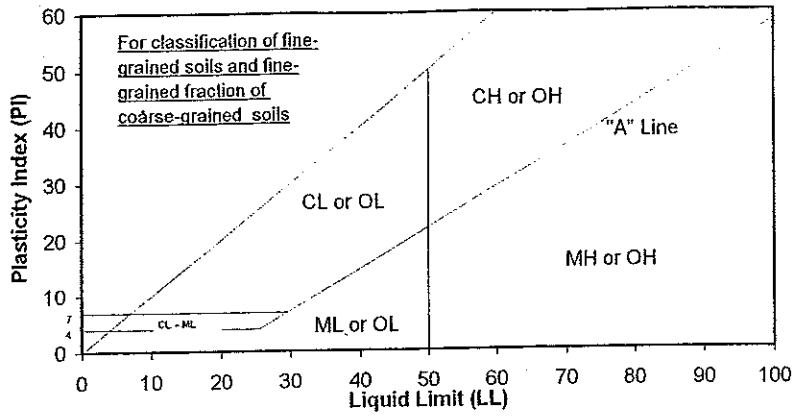
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	72.3
No. 16	1.93	98.1	70.9
No. 30	8.98	91.2	65.9
No. 50	21.76	78.6	56.8
No. 100	38.03	62.6	45.3
No. 200	51.83	49.0	35.4
Pan			

Hydrometer

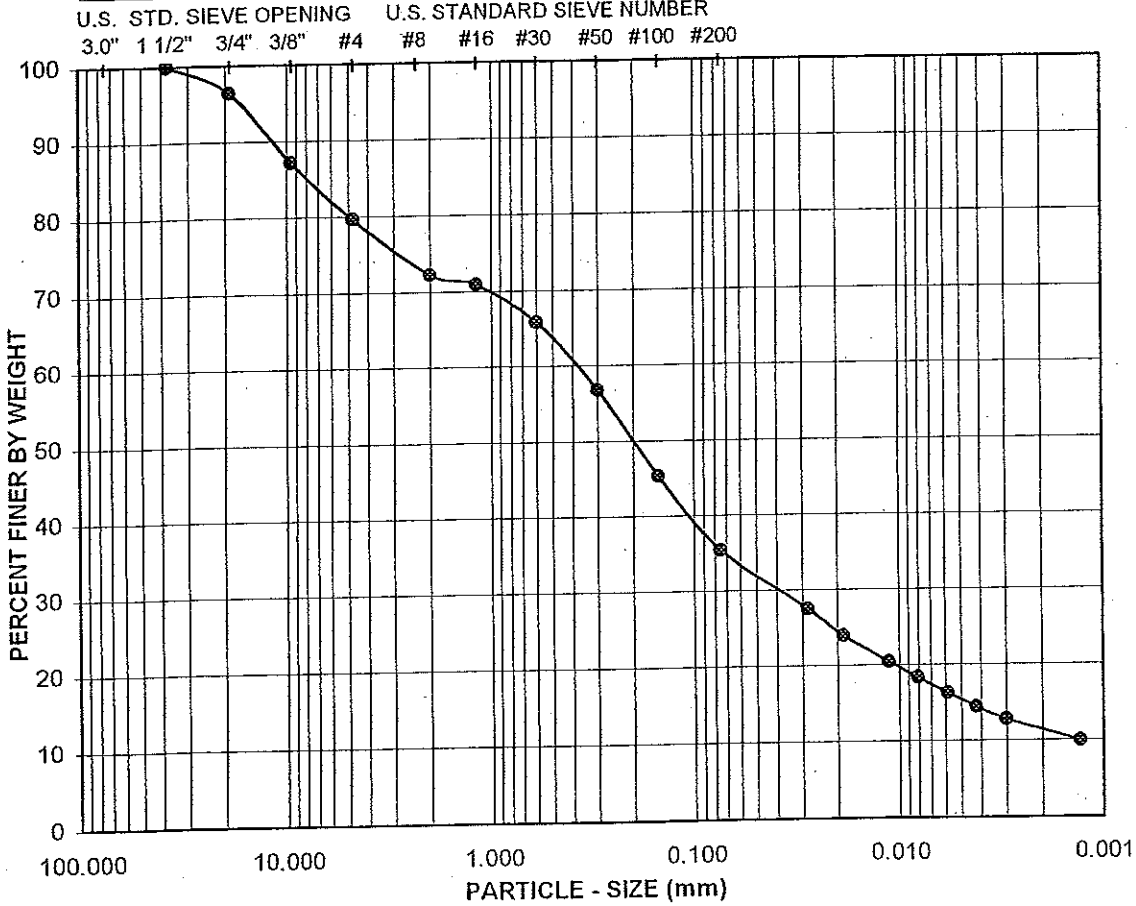
Wt. of Air-Dry Soil (gm): 101.65
Wt. of Dry Soil (gm): 101.65

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
04-Dec-02	10:32	0		4.0			
	10:34	2	22.2	4.0	43.0	27.5	0.0281
	10:37	5	22.2	4.0	38.0	23.9	0.0187
	10:47	15	22.1	4.0	33.0	20.4	0.0112
	11:02	30	22.1	4.0	30.0	18.3	0.0081
	11:32	60	22.1	4.0	27.0	16.2	0.0058
	12:32	120	22.5	4.0	24.5	14.4	0.0042
	14:42	250	22.9	4.0	22.0	12.7	0.0030
05-Dec-02	8:23	1311	21.1	4.0	18.0	9.9	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
10	1 & 2	2 - 5	(SM/SC)g	20:45:35	N/A

Sample Description:

Olive brown silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Torrelest Labs, Inc.
A CRIGHTON GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 10
Sample No.: 6 & 7
Visual Sample Description: Olive brown silty / clayey sand (SM/SC)

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 12-15.5

Date: 12/03/02
Date: 12/06/02
Date: 12/06/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	10:50:40			
Plasticity Index:		Grp. Symbol:	SM/SC			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	131.20
Wt.of Air-Dry Soil + Cont. (gm.)	1607.40	Wt. of Container No.___ (gm.)		1.00	1.00	77.08
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1607.40	Wt. of Dry Soil (gm.)				54.12

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	29.35	98.2
3/8"	87.11	94.6
No. 4	153.99	90.4
No. 10	232.73	85.5
Pan		

Sieve after Hydrometer & Wet Sieve

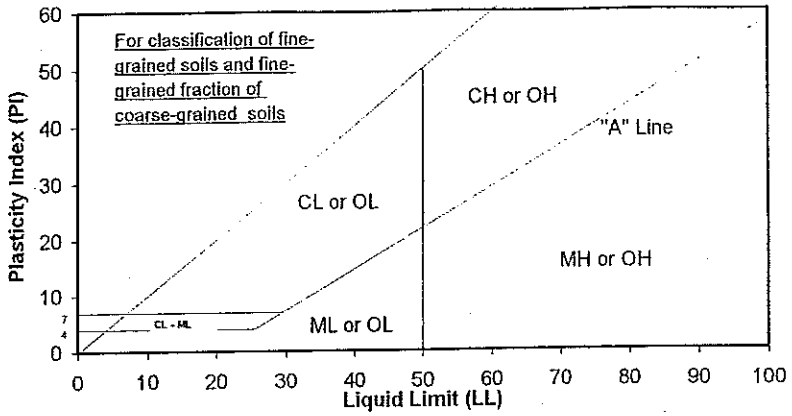
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	85.5
No. 16	1.84	98.2	84.0
No. 30	6.70	93.3	79.8
No. 50	17.92	82.1	70.2
No. 100	36.53	63.5	54.3
No. 200	53.39	46.7	39.9
Pan			

Hydrometer

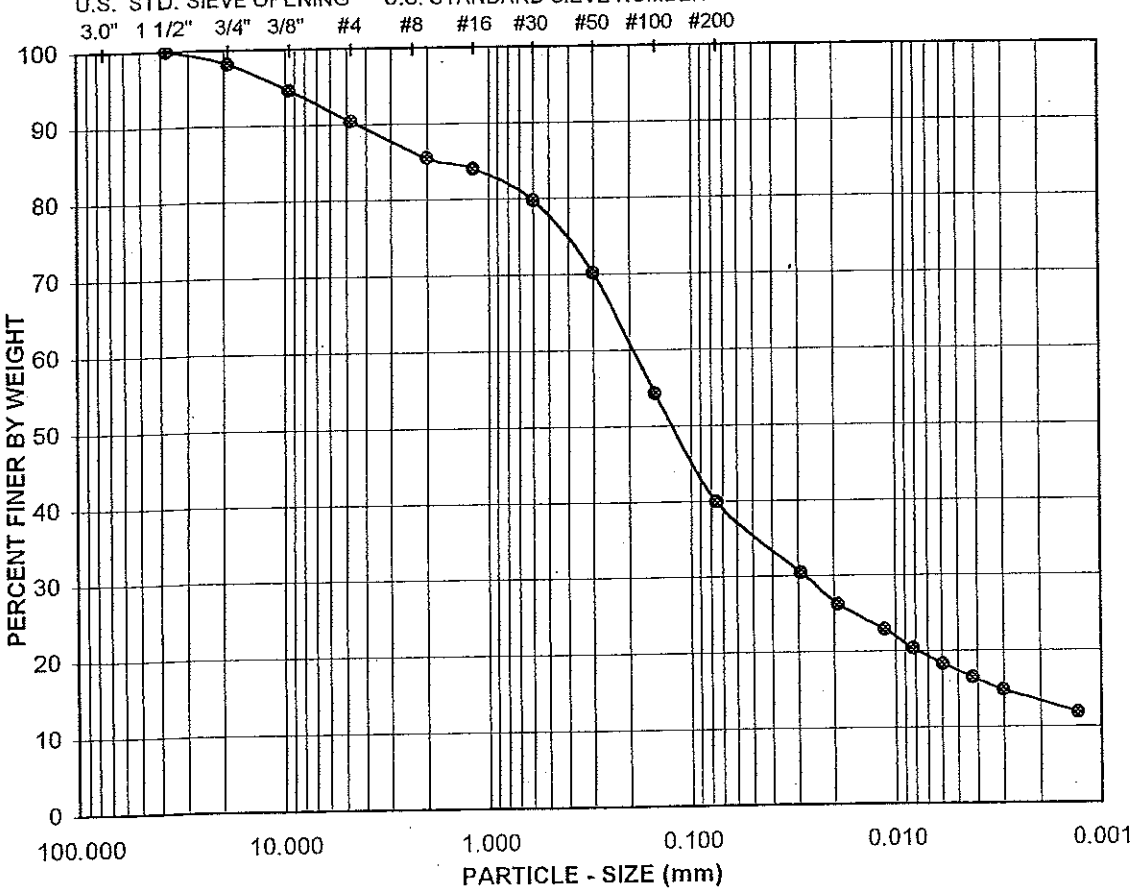
Wt. of Air-Dry Soil (gm): 100.17
Wt. of Dry Soil (gm): 100.17

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
04-Dec-02	10:12	0		4.0			
	10:14	2	22.2	4.0	40.0	30.4	0.0289
	10:17	5	22.3	4.0	35.0	26.2	0.0191
	10:27	15	22.3	4.0	31.0	22.8	0.0113
	10:42	30	22.1	4.0	28.0	20.3	0.0082
	11:12	60	22.1	4.0	25.5	18.2	0.0059
	12:12	120	22.5	4.0	23.5	16.5	0.0042
	14:22	250	22.9	4.0	21.5	14.8	0.0030
05-Dec-02	8:18	1326	21.1	4.0	18.0	11.8	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
10	6 & 7	12-15.5	SM/SC	10:50:40	N/A

Sample Description:

Olive brown silty / clayey sand (SM/SC)

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A CRIGNTON GROUP COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 10
Sample No.: 10 & 11
Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 20 - 23.5

Date: 12/03/02
Date: 12/06/02
Date: 12/06/02

				Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Liquid Limit:		LL,PL,PI:	N/A			
Plastic Limit:		GR:SA:FI:	39:39:22			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	134.15
Wt.of Air-Dry Soil + Cont. (gm.)	1666.40	Wt. of Container No.___ (gm.)		1.00	1.00	76.89
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1666.40	Wt. of Dry Soil (gm.)				57.26

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	212.74	87.2
3/8"	465.43	72.1
No. 4	646.20	61.2
No. 10	820.48	50.8
Pan		

Sieve after Hydrometer & Wet Sieve

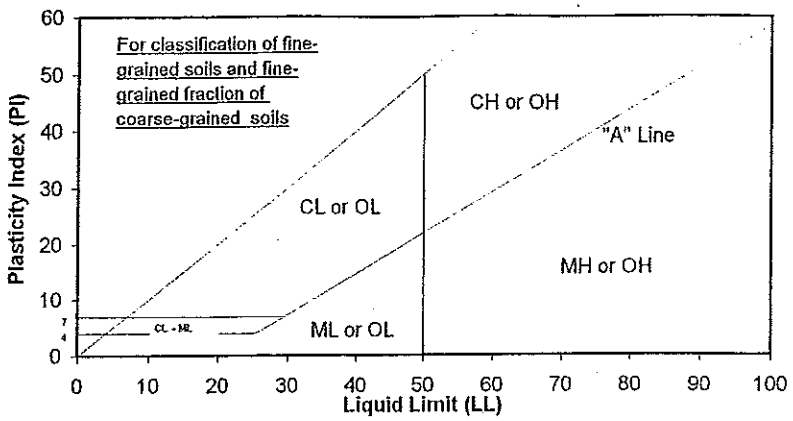
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	50.8
No. 16	6.97	93.1	47.3
No. 30	17.91	82.2	41.8
No. 50	31.01	69.2	35.2
No. 100	45.07	55.2	28.0
No. 200	56.78	43.5	22.1
Pan			

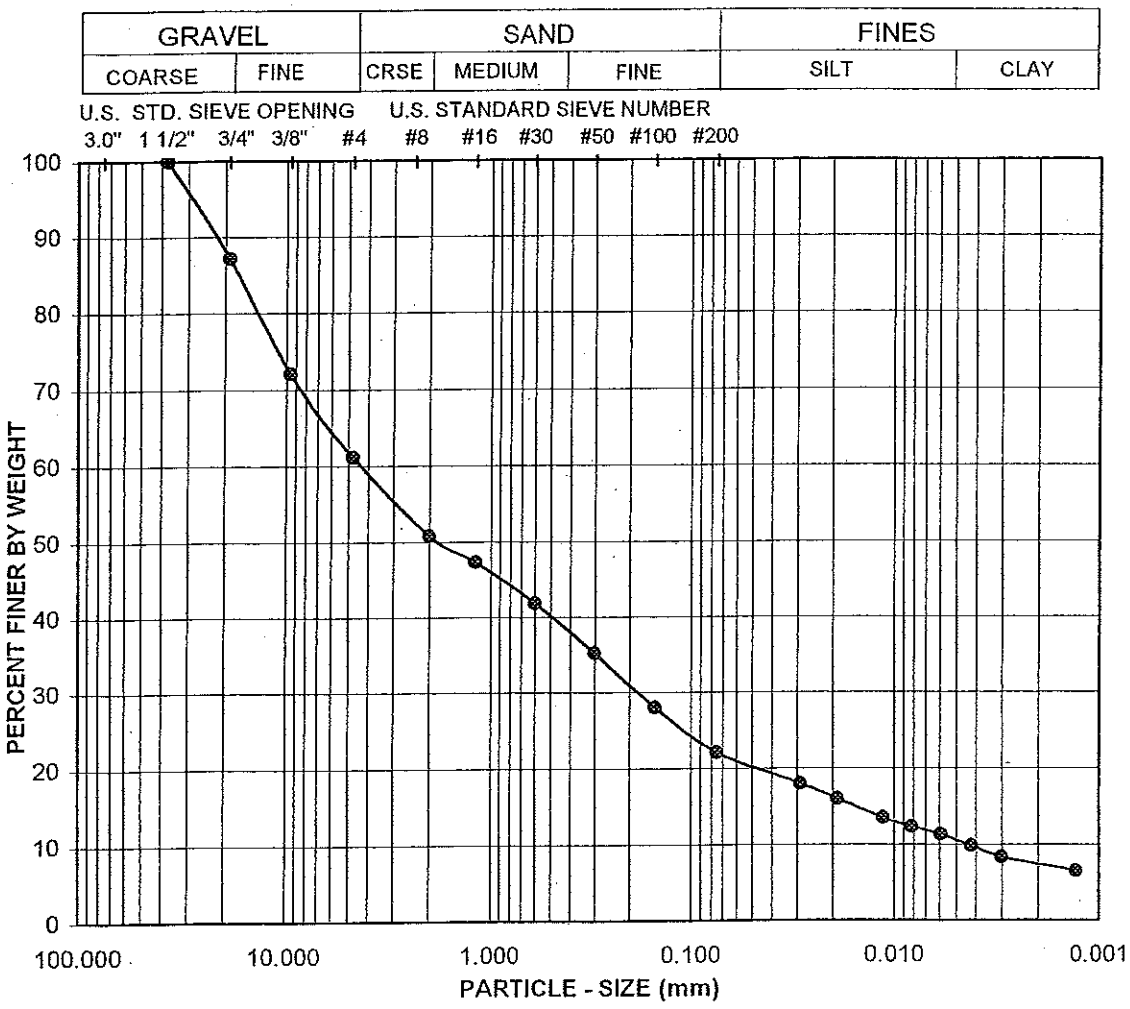
Hydrometer

Wt. of Air-Dry Soil (gm) 100.55 Wt. of Dry Soil (gm) 100.55

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
04-Dec-02	10:36	0		4.0			
	10:38	2	22.2	4.0	40.0	18.0	0.0289
	10:41	5	22.2	4.0	36.0	16.0	0.0189
	10:51	15	22.1	4.0	31.0	13.5	0.0113
	11:06	30	22.1	4.0	28.5	12.3	0.0082
	11:36	60	22.1	4.0	26.5	11.3	0.0059
	12:36	120	22.5	4.0	23.5	9.8	0.0042
	14:46	250	22.9	4.0	20.5	8.3	0.0030
05-Dec-02	8:24	1308	21.1	4.0	17.0	6.5	0.0013





Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
10	10 & 11	20 - 23.5	(SM/SC)g	39:39:22	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Terratest Labs, Inc.
A CALIFORNIA GRAVE COMPANY

Project Name: Topanga Lagoon
Project No. : 02006A
Boring No.: 10
Sample No.: 13 & 14
Visual Sample Description: Olive silty / clayey sand with gravel (SM/SC)g

Tested By : ACS
Data Input By: LF
Checked By: LF
Depth (ft.) : 26 - 29.5

Date: 12/03/02
Date: 12/06/02
Date: 12/06/02

Liquid Limit:		LL,PL,PI:	N/A	Moisture Content of Total Air-Dry Soils	Moisture Content of Air-Dry Soils Passing # 10	After Hydrometer & wet sieve ret. on #200 sieve
Plastic Limit:		GR:SA:FI:	35:41:24			
Plasticity Index:		Grp. Symbol:	(SM/SC)g			
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(gm.)		0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (gm.)		0.00	0.00	134.02
Wt.of Air-Dry Soil + Cont. (gm.)	1379.30	Wt. of Container No.___ (gm.)		1.00	1.00	75.68
Wt. of Container	0.00	Moisture Content (%)		0.00	0.00	
Dry Wt. of Soil (gm.)	1379.30	Wt. of Dry Soil (gm.)				58.34

Coarse Sieve

U.S. Sieve Size	Cumulative Wt.of Dry Soil Retained(gm)	% Passing
3"	0.00	100.0
1½"	0.00	100.0
3/4"	185.54	86.5
3/8"	342.03	75.2
No. 4	486.13	64.8
No. 10	604.68	56.2
Pan		

Sieve after Hydrometer & Wet Sieve

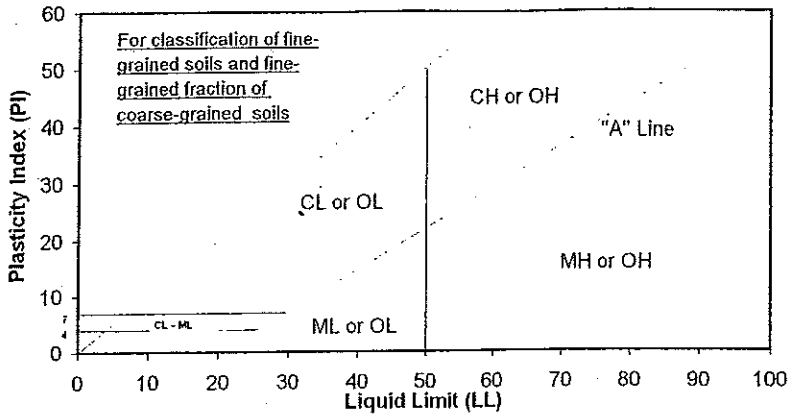
U.S. Sieve Size	Cumulative Wt. of Dry Soil Retained (gm)	% Passing	% Total Sample
No. 10	0.00	100.0	56.2
No. 16	4.39	95.6	53.7
No. 30	14.61	85.5	48.1
No. 50	28.81	71.4	40.1
No. 100	44.87	55.4	31.1
No. 200	57.59	42.7	24.0
Pan			

Hydrometer

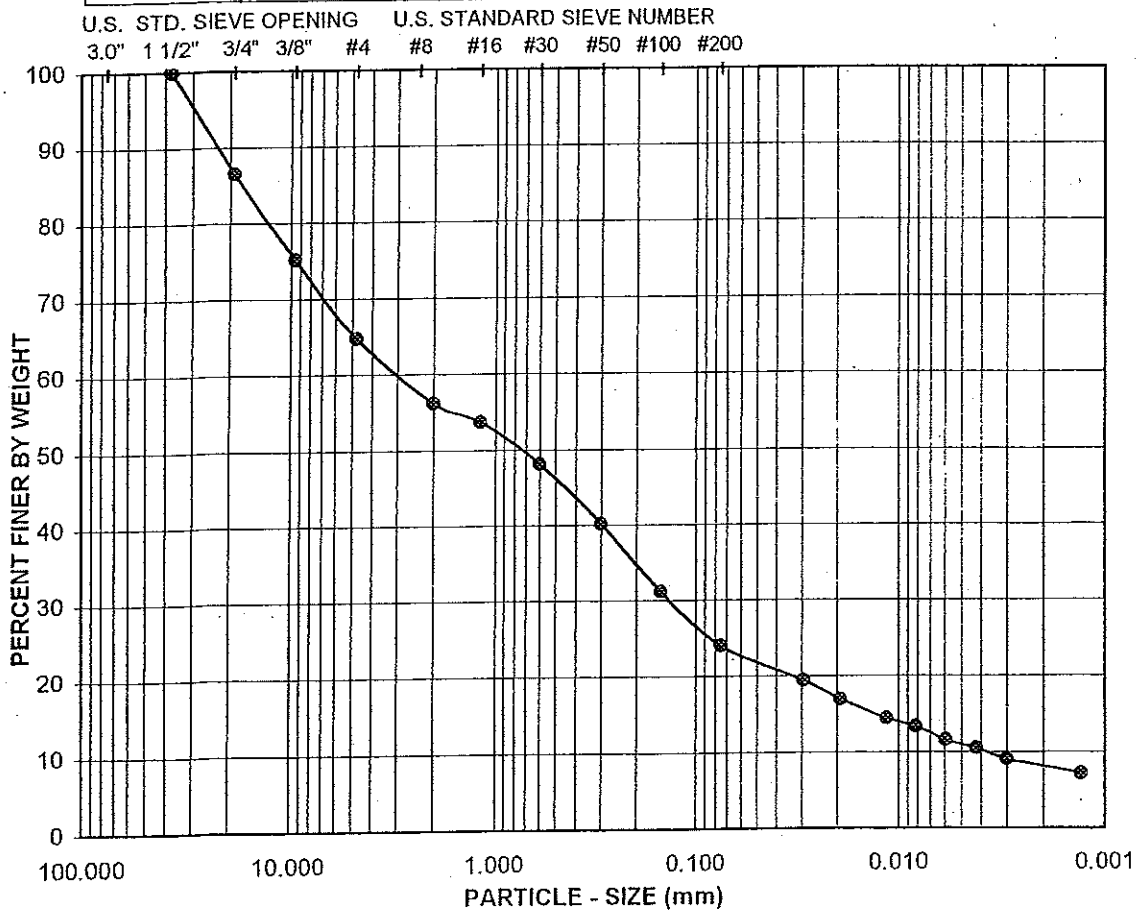
Wt. of Air-Dry Soil (gm): 100.57
Wt. of Dry Soil (gm): 100.57

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature °C	Composite Correction 152 H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
04-Dec-02	10:12	0		4.0			
	10:14	2	22.1	4.0	39.0	19.4	0.0292
	10:17	5	22.1	4.0	34.5	16.9	0.0192
	10:27	15	22.3	4.0	30.0	14.4	0.0114
	10:42	30	22.3	4.0	28.0	13.3	0.0082
	11:12	60	22.1	4.0	25.0	11.6	0.0059
	12:12	120	22.5	4.0	23.0	10.5	0.0042
	14:22	250	22.9	4.0	20.5	9.1	0.0030
05-Dec-02	8:15	1323	21.1	4.0	17.0	7.2	0.0013



GRAVEL		SAND			FINES	
COARSE	FINE	CRSE	MEDIUM	FINE	SILT	CLAY



Boring No.	Sample No.	Depth (ft.)	Soil Type	GR:SA:FI (%)	LL,PL,PI
10	13 & 14	26 - 29.5	(SM/SC)g	35:41:24	N/A

Sample Description:

Olive silty / clayey sand with gravel (SM/SC)g

Project No.: 02006A

Topanga Lagoon

ATTERBERG LIMITS, PARTICLE - SIZE CURVE

ASTM D 4318, D 422

12-02

ATTACHMENT D

CHEMICAL LABORATORY DATA

Description
Summary Data Sheets
Quality Control Data Sheets
Organotins Data Sheets

Calibration

Frequency and control criteria for initial and continuing calibration verifications were met.

Blanks

Concentrations of target analytes in the method blanks were found to be below detection limits for all analyses.

Laboratory Control Samples

Laboratory Control Sample analyses were performed for each applicable method at the required frequencies. All parameters were within control limits for each method.

Matrix Spikes

Matrix spike analyses were performed at required frequencies. All recoveries were within acceptable limits, with the exception of metals. For the metals, the matrix spike (MS) recoveries were out-of-control slightly high for cadmium, lead, and silver, and matrix spike duplicate (MSD) recoveries were slightly low for copper, selenium, and zinc. However, the LCS/LCSD recoveries were within control limits, and thus a matrix interference effect is apparent. Therefore, the data is released with no further corrective action.

Surrogates

Surrogate recoveries for all samples were within acceptable control limits.

Please contact the undersigned if there are any questions regarding this report.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Robert J. Stearns
Director

Michael J. Crisostomo
Quality Assurance Manager

Geopentech
Topanga Lagoon

Summary Data Sheet
(All values based on dry weight unless noted otherwise)

Parameter	Method	1(14' to 15.5')	4(8' to 11.5')	6(12' to 13.5')
PCBs, ug/kg				
Aroclor 1016	EPA 8082	ND<11	ND<11	ND<11
Aroclor 1221	EPA 8082	ND<11	ND<11	ND<11
Aroclor 1232	EPA 8082	ND<11	ND<11	ND<11
Aroclor 1242	EPA 8082	ND<11	ND<11	ND<11
Aroclor 1248	EPA 8082	ND<11	ND<11	ND<11
Aroclor 1254	EPA 8082	ND<11	ND<11	ND<11
Aroclor 1260	EPA 8082	ND<11	ND<11	ND<11
Aroclor 1262	EPA 8082	ND<11	ND<11	ND<11
Semi-Volatile Organics, ug/kg				
2,4,5-Trichlorophenol	EPA 8270C	ND<22	ND<11	ND<11
2,4,6-Trichlorophenol	EPA 8270C	ND<22	ND<11	ND<11
2,4-Dichlorophenol	EPA 8270C	ND<22	ND<11	ND<11
2,4-Dimethylphenol	EPA 8270C	ND<22	ND<11	ND<11
2,4-Dinitrophenol	EPA 8270C	ND<110	ND<56	ND<54
2-Chlorophenol	EPA 8270C	ND<22	ND<11	ND<11
2-Methylphenol	EPA 8270C	ND<22	ND<11	ND<11
2-Nitrophenol	EPA 8270C	ND<22	ND<11	ND<11
3/4-Methylphenol	EPA 8270C	ND<22	ND<11	ND<11
4-Chloro-3-Methylphenol	EPA 8270C	ND<22	ND<11	ND<11
4-Nitrophenol	EPA 8270C	ND<22	ND<11	ND<11
4,6-Dinitro-2-Methylphenol	EPA 8270C	ND<110	ND<56	ND<54
Pentachlorophenol	EPA 8270C	ND<110	ND<56	ND<54
Phenol	EPA 8270C	ND<22	ND<11	ND<11
Total Phenols	EPA 8270C	ND<110	ND<56	ND<54
Dimethyl Phthalate	EPA 8270C	ND<22	ND<11	ND<11
Diethyl Phthalate	EPA 8270C	ND<22	ND<11	ND<11
Di-n-Butyl Phthalate	EPA 8270C	ND<22	ND<11	ND<11
Butyl Benzyl Phthalate	EPA 8270C	ND<22	ND<11	ND<11
Bis(2-Ethylhexyl) Phthalate	EPA 8270C	ND<22	14	ND<11
Di-n-Octyl-Phthalate	EPA 8270C	ND<22	ND<11	ND<11
Total Phthalates	EPA 8270C	ND<22	14	ND<11

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Geopentech
Topanga Lagoon

Summary Data Sheet
(All values based on dry weight unless noted otherwise)

Parameter	Method	7(2' to 5.5')	10(16' to 17.5')	Method Blank [1]
Physical/Conventional Tests				
Total Solids (TS), % [1]	EPA 160.3	94.4	92.5	NA
Total Sulfides, mg/kg	EPA 376.2M	ND<0.11	ND<0.11	ND<0.10
Soluble Sulfides, mg/kg	EPA 376.2M	ND<0.11	ND<0.11	ND<0.10
Ammonia-N, mg/kg	EPA 350.2M	ND<0.53	ND<0.54	ND<0.50
TRPH, mg/kg	EPA 418.1	62	47	ND<10
Total Organic Carbon, mg/kg	EPA 9060	480	190	ND<40
pH, pH units	EPA 9045C	7.92	7.83	NA
Metals, mg/kg				
Arsenic	EPA 6020	4.1	4.13	ND<0.200
Cadmium	EPA 6020	0.339	ND<0.108	ND<0.100
Chromium (total)	EPA 6020	25.9	15.6	ND<0.100
Copper	EPA 6020	23.2	13.2	ND<0.100
Lead	EPA 6020	10.8	7.42	ND<0.100
Nickel	EPA 6020	28.2	12.3	ND<0.100
Selenium	EPA 6020	ND<0.530	ND<0.541	ND<0.500
Silver	EPA 6020	0.132	0.148	ND<0.100
Zinc	EPA 6020	47.9	46.1	ND<1.00
Mercury	EPA 7471A	0.172	0.245	ND<0.020
Pesticides, ug/kg				
4,4'-DDD	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
4,4'-DDE	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
4,4'-DDT	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Aldrin	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Alpha-BHC	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Beta-BHC	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Chlordane	EPA 8081A	ND<11	ND<11	ND<10
Delta-BHC	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Dieldrin	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Endosulfan I	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Endosulfan II	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Endosulfan Sulfate	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Endrin	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Endrin Aldehyde	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Endrin Ketone	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Gamma-BHC	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Heptachlor	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Heptachlor Epoxide	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Methoxychlor	EPA 8081A	ND<1.1	ND<1.1	ND<1.0
Toxaphene	EPA 8081A	ND<22	ND<22	ND<20
Total Pesticides	EPA 8081A	ND<22	ND<22	ND<20

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Geopentech
Topanga Lagoon

Summary Data Sheet
(All values based on dry weight unless noted otherwise)

Parameter	Method	7(2' to 5.5')	10(16' to 17.5')	Method Blank [1]
Semi-Volatile Organics, ug/kg				
Napththalene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Acenaphthylene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Acenaphthene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Fluorene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Phenanthrene	EPA 8270C	ND<17	20	ND<8.0
Anthracene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Fluoranthene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Pyrene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Benzo(a)anthracene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Chrysene	EPA 8270C	ND<17	9	ND<8.0
Benzo(b)fluoranthene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Benzo(k)fluoranthene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Benzo(a)pyrene	EPA 8270C	ND<15	ND<7.5	ND<7.0
Indeno(1,2,3-cd)pyrene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Dibenz(a,h)anthracene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Benzo(g,h,i) perylene	EPA 8270C	ND<17	ND<8.6	ND<8.0
Total PAHs	EPA 8270C	ND<17	29	ND<8.0

Notes:
NA = Not applicable
ND = Not detected at indicated reporting limit.
1. Reporting limit is based on wet weight.

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Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

Geopentech
601 N Parkcenter Dr., Ste 110
Santa Ana, CA 92705-3552

Project: Tapanga Lagoon

Date Received: 11/18/2002
Work Order No: 02-11-1018
Preparation: N/A
Method: EPA 160.3

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
7 (2' to 5.5')	Solid	NA	N/A	11/20/02	21120TSD1

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Total Solids	94.4	92.4	2	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

Geopentech
601 N Parkcenter Dr., Ste 110
Santa Ana, CA 92705-3552

Project: Tapanga Lagoon

Date Received: 11/18/2002
Work Order No: 02-11-1018
Preparation: N/A
Method: EPA 376.2M

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
7 (2' to 5.5')	Solid	NA	N/A	11/22/02	2112SD1

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Total Sulfide	ND	ND	NA	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geopentech
601 N Parkcenter Dr., Ste 110
Santa Ana, Ca 92705-3552

Date Received: 11/18/02
Work Order No.: 02-11-1018
Preparation: N/A
Method: EPA 9060

Project: Tapanga Lagoon

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
7 (2' to 5.5')	Solid	TOC 1	N/A	11/21/02	21121TOCS1

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifier
Total Organic Carbon	106	107	70-130	1	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geopentech
601 N Parkcenter Dr., Ste 110
Santa Ana, CA 92705-3552

Date Received: 11/18/02
Work Order No: 02-11-1018
Preparation: Extraction
Method: EPA 418.1M

Project: Tapanga Lagoon

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
6 (12' to 13.5')	Solid	IR #1	11/21/02	11/21/02	021121S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TRPH	91	95	55-135	3	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geopentech
601 N Parkcenter Dr., Ste 110
Santa Ana, CA 92705-3552

Date Received: 11/18/02
Work Order No: 02-11-1018
Preparation: Total Digestion
Method: EPA 6020

Project: Tapanga Lagoon

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
7 (2' to 5.5')	Solid	ICP/MS A	11/19/02	11/21/02	021119S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	91	81	80-120	10	0-20	
Cadmium	121	108	80-120	11	0-20	3
Chromium (Total)	104	98	80-120	4	0-20	
Copper	83	76	80-120	6	0-20	3
Lead	129	121	80-120	5	0-20	3
Nickel	92	85	80-120	5	0-20	
Selenium	85	73	80-120	15	0-20	3
Silver	121	110	80-120	9	0-20	3
Zinc	85	69	80-120	9	0-20	3

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geopentech
601 N Parkcenter Dr., Ste 110
Santa Ana, CA 92705-3552

Project: Tapanga Lagoon

Date Received: 11/18/02
Work Order No: 02-11-1018
Preparation: Total Digestion
Method: EPA 7471A

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
7 (2' to 5.5')	Solid	Mercury	11/19/02	11/19/02	021119S03

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	116	111	76-136	4	0-16	

Calscience Environmental Laboratories, Inc.

QUALITY ASSURANCE SUMMARY

Method EPA 8081A/8082

Geopentech
Page 1 of 1

Work Order No.: 02-11-1018
Date Analyzed: 11/22/02

Surrogate Recoveries (in %)

Sample Number	S1	S2
1 (14' to 15.5')	94	87
4 (8 to 11.5')	88	67
6 (12' to 13.5')	86	77
7 (2' to 5.5')	89	78
10 (16' to 17.5')	90	86
Method Blank	96	87

Surrogate Compound	%REC Acceptable Limits
S1 > Decachlorobiphenyl (DCB)	50 - 130
S2 > 2,4,5,6-Tetrachloro-m-Xylene	50 - 130

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geopentech
601 N Parkcenter Dr., Ste 110
Santa Ana, CA 92705-3552

Project: Tapanga Lagoon

Date Received: 11/18/02
Work Order No: 02-11-1018
Preparation: EPA 3545
Method: EPA 8081A/8082

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-014-2,432	Solid	GC 16	11/21/02	11/22/02	021121L04

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gamma-BHC	113	113	50-135	0	0-25	
Heptachlor	96	100	50-135	3	0-25	
Endosulfan I	134	127	50-135	5	0-25	
Dieldrin	116	117	50-135	1	0-25	
Endrin	113	112	50-135	1	0-25	
4,4'-DDT	110	109	50-135	1	0-25	
Aroclor-1260	124	120	50-135	3	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geopentech
601 N Parkcenter Dr., Ste 110
Santa Ana, CA 92705-3552

Date Received: 11/18/02
Work Order No: 02-11-1018
Preparation: EPA 3545
Method: EPA 8270C

Project: Tapanga Lagoon

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
6 (12' to 13.5')	Solid	GC/MS P	11/21/02	11/23/02	021121S03

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Phenol	65	65	53-118	1	0-19	
2-Chlorophenol	63	63	60-119	0	0-18	
1,4-Dichlorobenzene	63	62	56-131	1	0-18	
N-Nitroso-di-n-propylamine	68	68	64-123	1	0-18	
1,2,4-Trichlorobenzene	67	66	52-144	1	0-17	
4-Chloro-3-Methylphenol	71	68	45-135	5	0-20	
Acenaphthene	69	68	45-152	1	0-18	
4-Nitrophenol	55	51	45-135	6	0-20	
2,4-Dinitrotoluene	76	75	42-128	2	0-23	
Pentachlorophenol	46	46	45-135	1	0-20	
Pyrene	78	77	45-135	1	0-20	

Calscience Environmental Laboratories, Inc.

GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 02-11-1018

Qualifier	Definition
3	Spike or Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
ND	Not detected at indicated reporting limit.

7440 Lincoln Way, Garden Grove, CA 92841-1432 • TEL: (714) 895-5494 • FAX: (714) 894-7501

BO. OH , IN
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 • FAX: (714) 894-7501

Date 11/18/02

Page 1 of 1

LABORATORY CLIENT: Geopentech

ADDRESS: 601 N. Parkcenter Drive, Suite 110

CITY: Santa Ana STATE: CA ZIP: 92614

TEL: (714) 796-9100 FAX: (714) 796-9191 E-MAIL:

TURNAROUND TIME:
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☐ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ COELT REPORTING

SPECIAL INSTRUCTIONS:
Composite cores.

CLIENT PROJECT NAME / NUMBER: Topanga Lagoon

PROJECT CONTACT: Steve Duke

SAMPLER(S): (SIGNATURE) Steven Duke

COELT LOG CODE ☐☐☐☐

P.O. NO.: 020064

LAB USE ONLY 17-1018

COOLER RECEIPT TEMP = °C

REQUESTED ANALYSES

LAB USE ONLY	GEIMS ID	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH (G)	TPH (D) or	BTEX / MTBE (8021B)	HALOCARBONS (8021B)	VOCs (8260B)	VOCs (5035 / 8260B) EnCore	SVOCs (8270C)	PEST (8081A)	PCBs (8082)	EDB / DBCP (504.1) or (8011)	CAC, T22 METALS (6010B)	PNAs (8310)	VOCs (TO-14A) or (TO-15)
		1 (14' to 15½')	1/12/02	16:00	S	3	Various					(see		attached					list)
		4 (8 to 11½')	1/13/02	9:00	S	4			↓							↓			
		6 (12' to 13½')	1/13/02	12:30	S	3													
		7 (2' to 5½')	1/11/02	13:00	S	4													
		10 (16' to 17½')	1/12/02	12:00	S	3													

Relinquished by: (Signature) Steven Duke	Received by: (Signature)	Date: 11/18/02	Time: 0920
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received for Laboratory by: (Signature)	Date: 11/18/02	Time: 0950

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09/10/01 Revision

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CRG
Marine Laboratories, Inc.
2020 Del Amo Blvd., Torrance, CA 90501 • (310) 533-5190 • FAX (310) 533-5003 • CRGLABS@SBCGLOBAL.NET

December 11, 2002

CalScience
7440 Lincoln Way
Garden Grove, CA 92841-1432

Re: CRG Marine Laboratories, Inc. Project ID# 22113

ATTN: Mr. Stearns

CRG Marine Laboratories is pleased to provide you with the enclosed analytical data report for your project. According to the chain-of-custody, 5 sediment samples were received intact and cool at CRG on November 19, 2002. Per your instructions, the samples were analyzed for:

- Organotins By Rice et al Using GCMS

Please don't hesitate to call if you have any questions and thank you very much for using our laboratory for your analytical needs.

Sincerely,
Rich Gossett

Reviewed and Approved

CRG Marine Laboratories, Inc.

2020 Del Amo Blvd., Suite 200, Torrance, CA 90501-1206 (310) 533-5190 FAX (310) 533-5003 crglabs@sbcglobal.net

Organotins By Rice et al. 1987
GC/MS #1: HP6890/5972

CRG ID#: 7416 **Replicate #:** R1 **Project ID:** 22113 **Batch ID:** 22113-6052 **Matrix:** Sediment

Sample Description: PO# 02-11-1018; 4

Client Name: Calscience Environmental Lab; Bob Stearns

Date Sampled: 13-Nov-02 **Date Received:** 19-Nov-02

Date Processed: 05-Dec-02 **Date Analyzed:** 10-Dec-02

CONSTITUENT	RESULT	UNITS	MDL	ML	DILUTION FACTOR
(Tripentyltin)	89	% Recovery			1
Dibutyltin	ND	ng/dry g	1	2	1
Monobutyltin	ND	ng/dry g	1	2	1
Tetrabutyltin	ND	ng/dry g	1	2	1
Tributyltin	ND	ng/dry g	1	2	1

MDL= Method Detection Limit (CFR40 Part 136); ML= Minimum Level (SWQCB); ND= Not Detected

California ELAP Certificate # 2261

CRG Marine Laboratories, Inc.

2020 Del Amo Blvd., Suite 200, Torrance, CA 90501-1206 (310) 533-5190 FAX (310) 533-5003 crglabs@sbcglobal.net

Organotins By Rice et al. 1987
GC/MS #1: HP6890/5972

CRG ID#: 7417 **Replicate #:** R1 **Project ID:** 22113 **Batch ID:** 22113-6052 **Matrix:** Sediment

Sample Description: PO# 02-11-1018; 6

Client Name: Calscience Environmental Lab; Bob Stearns

Date Sampled: 13-Nov-02 **Date Received:** 19-Nov-02 **Date Processed:** 05-Dec-02 **Date Analyzed:** 10-Dec-02

CONSTITUENT	RESULT	UNITS	MDL	ML	DILUTION FACTOR
(Tripentyltin)	97	% Recovery			1
Dibutyltin	ND	ng/dry g	1	2	1
Monobutyltin	ND	ng/dry g	1	2	1
Tetrabutyltin	ND	ng/dry g	1	2	1
Tributyltin	ND	ng/dry g	1	2	1

MDL= Method Detection Limit (CFR40 Part 136); ML= Minimum Level (SWQCB); ND= Not Detected

California ELAP Certificate # 2261

CRG Marine Laboratories, Inc.

2020 Del Amo Blvd., Suite 200, Torrance, CA 90501-1206 (310) 533-5190 FAX (310) 533-5003 crglabs@sbcglobal.net

Organotins By Rice et al. 1987
GC/MS #1: HP6890/5972

CRG ID#: 7419 | Replicate #: R1 | Project ID: 22113 | Batch ID: 22113-6052 | Matrix: Sediment

Sample Description:	PO# 02-11-1018 10	Client Name:	Calscience Environmental Lab Bob Stearns
Date Sampled:	12-Nov-02	Date Processed:	05-Dec-02
Date Received:	19-Nov-02	Date Analyzed:	10-Dec-02

CONSTITUENT	RESULT	UNITS	MDL	ML	DILUTION FACTOR
(Tripentyltin)	93	% Recovery			1
Dibutyltin	ND	ng/dry g	1	2	1
Monobutyltin	ND	ng/dry g	1	2	1
Tetrabutyltin	ND	ng/dry g	1	2	1
Tributyltin	ND	ng/dry g	1	2	1

MDL= Method Detection Limit (CFR40 Part 136); ML= Minimum Level (SWQCB); ND= Not Detected

California ELAP Certificate # 2261

CRG Marine Laboratories, Inc.

2020 Del Amo Blvd., Suite 200, Torrance, CA 90501-1206 (310) 533-5190 FAX (310) 533-5003 crglabs@sbcglobal.net

QA/QC REPORT
Organotins Using GCMS#1: HP6890/5972

CRG ID#: 7416 **Replicate #:** MS2 **Project ID:** 22113 **Batch ID:** 22113-6052 **Matrix:** Sediment

Sample Description: PO# 02-11-1018, 4

Client Name: Calscience Environmental Lab

Project Officer: Bob Stearns

Date Sampled: 13-Nov-02
Date Received: 19-Nov-02
Date Processed: 05-Dec-02
Date Analyzed: 10-Dec-02

CONSTITUENT	% RECOVERY	TRUE VALUE	ACCEPTANCE RANGE	COMMENT
(Tripentyltin)	94	516 % Recovery	34 - 134%	PASS
Dibutyltin	81	216 % Recovery	42 - 126%	PASS
Tetrabutyltin	86	200 % Recovery	17 - 173%	PASS
Tributyltin	87	200 % Recovery	69 - 129%	PASS

MDL= Method Detection Limit; ND= Not Detected

California ELAP Certificate # 2261

LABORATORY CLIENT:

ADDRESS: X

CITY | STATE | ZIP

TEL: | FAX: | E-MAIL:

CLIENT PROJECT NAME / NUMBER: 02-11-1018

PROJECT CONTACT: Bob Stearns

P.O. #:

LAB USE ONLY

SAMPLER(S): (SIGNATURE)

COELT LOG CODE

COOLER RECEIPT TEMP = °C

TURNAROUND TIME:

☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☐ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)

☐ RWQCB REPORTING ☐ COELT REPORTING

SPECIAL INSTRUCTIONS:

Normal TAT

Calscience to provide dry wt. data.

REQUESTED ANALYSES

LAB USE ONLY	GEIMS ID	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH (G)	TPH (D) or ____	BTEX / MTBE (8021B)	HALOCARBONS (8021B)	VOCs (8260B)	VOCs (5035 / 8260B) EnCore	SVOCs (8270C)	PEST (8081A)	PCBs (8082)	EDB / DBCP (504.1) or (8011)	CAC, T22 METALS (6010B)	PNAs (8310)	VOCs (TO-14A) or (TO-15)	X Organotins
		1	11/12/02		S	1														X
		4	11/13/02																	
		6	11/13/02																	
		7	11/11/02																	
		10	11/12/02		↓	↓														↓

Relinquished by: (Signature)	Received by: (Signature)	Date: 11/19/02	Time: 1150
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