RETURN TO: MWH, 1340 TREAT BLVD., Walnut Crk CA 94597
ATTN: PAM CARTER

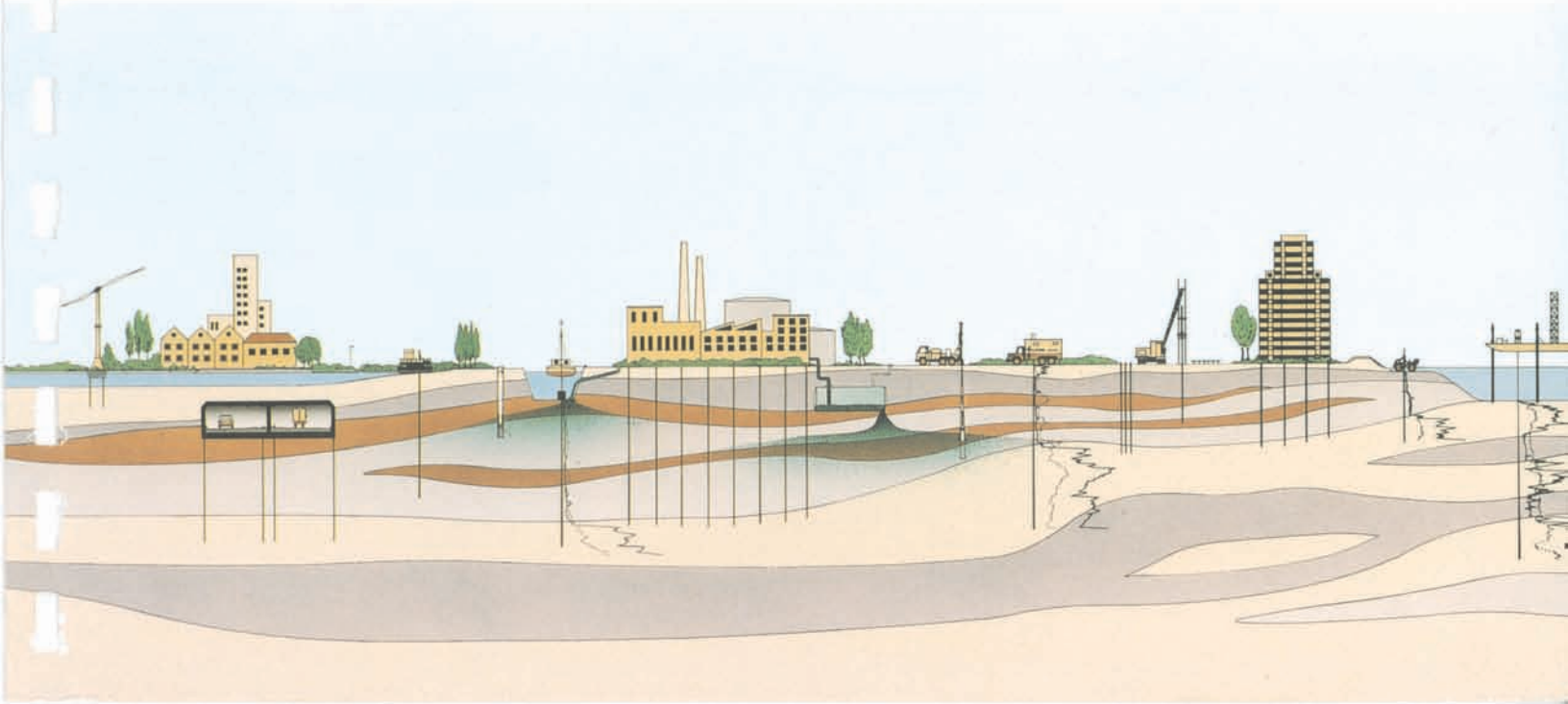
FUGRO WEST, INC.

GEOTECHNICAL REPORT
LOS OSOS WASTEWATER PROJECT
SAN LUIS OBISPO, CALIFORNIA

VOLUME 2 - ATTACHMENTS

Prepared for:
MONTGOMERY WATSON HARZA

March 4, 2004



FUGRO WEST, INC.

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January 27, 2003 (reprinted March 4, 2004)
Project No. 3055.001.04

Montgomery Watson Harza
1340 Treat Boulevard, Suite 300
Walnut Creek, CA 94596

Attention: Mr. Steve Hyland

Subject: Volume 2 - Attachments to Geotechnical Report for Los Osos Wastewater Project, San Luis Obispo County, California

Dear Mr. Hyland:

Fugro is pleased to submit this document that includes subsurface explorations and laboratory data compiled from previous reports related to the Los Osos Wastewater project in San Luis Obispo County, California. Our services are being provided according to our Consulting Services Subcontract with Montgomery Watson Harza, dated October 31, 2002. This document should be included as Volume 2 of the Geotechnical Report for the Los Osos Wastewater Project.

This document compiles field and laboratory testing data from the following four previous studies:

- CFS (2000a), *Field Explorations and Geotechnical Laboratory Data, Tri W Site, Los Osos Wastewater Project*, Los Osos, California, Project No. 991001, not previously submitted.
- CFS (2000b), *Draft Geotechnical Report, Los Osos Wastewater Project, Los Osos, California*, Project No. 991001, June 19.
- Fugro West, Inc. (1997), *Draft Geotechnical Engineering Report, Los Osos Wastewater Project, San Luis Obispo, California*, Project No. 95-92-4286, April 5.
- Fugro West, Inc. (1996), *Revised Report on Limited Geotechnical Engineering Services, Los Osos Sewer Recharge Site, San Luis Obispo, California*, Project No. 95-92-4281, February 9, including boring logs from Metcalf & Eddy.

The general conditions and limitations of the Geotechnical Report also apply to this attachment.

Please contact the undersigned if there are any questions concerning the report.

Sincerely,

FUGRO WEST, INC.

Jonathan D. Blanchard, GE 2312
Principal Geotechnical Engineer

Craig D. Prentice, CEG 1602
Associate Engineering Geologist

Copies: 30 – Addressee

Enclosures: Volume 2 - Attachments to Geotechnical Report for Los Osos Wastewater Project, San Luis Obispo County, California

ATTACHMENT A1
BORING LOGS
CFS (2000a)

SPT — Standard Penetration Test (SPT) split spoon sampler having a 2-inch (50 mm) O.D., 1 3/8-inch (35 mm) I.D. and without liners. Sampler is driven in three 6-inch (305 mm) increments by dropping a 140-lb (63 kg) weight 30 inches (760 mm). The reported blow count is the sum of the blows for the last two increments.

CAL — Modified California split spoon sampler having a 3-inch (76 mm) O.D., 2 3/8-inch (60 mm) I.D. with liners. Sampler is driven in three 6-inch (305 mm) increments by dropping a 140-lb (63 kg) weight 30 inches (760 mm).

CAL — Thick-walled modified California split spoon sampler driven 12 inches (305 mm) using the rig's kelley.

SHELBY — Thin-walled Shelby Tube sampler that is pushed into the ground using the rig's hydraulics.

HAND — Hand driven modified California sampler with liners.

BULK — Bulk sample obtained from drill auger flights, backhoe cuttings or hand excavation.

NR — No recovery

Consistency of Cohesive Soil:

SPT N-Valve	Undrained Shear Strength (Su) psf	kpa	Consistency
0 - 1	< 250	< 12	very soft
2 - 4	250 - 500	13 - 25	soft
5 - 8	500 - 1,000	25 - 50	firm
9 - 15	1,000 - 2,000	50 - 100	stiff
16 - 30	2,000 - 4,000	100 - 200	very stiff
> 31	> 4,000	> 200	hard

Relative Density of Granular Soil:

SPT N-Valve	Consistency
0 - 4	very loose
5 - 10	loose
11 - 30	medium dense
31 - 50	dense
> 50	very dense

$S_{t,uu,pp,h}$ Undrained shear strength (t = torvane, uu=uu triaxial, pp = pocket penetrometer, h = hand vane)

Initial depth to groundwater

Groundwater level after drilling

Notes:

Soil classification and descriptions are performed in general accordance with ASTM D-2487 and ASTM D-2488 based on the Unified Soil Classification System.

The logs represent the interpretation of field classifications and testing, interpolation between sample intervals, results of laboratory tests, and the conditions observed at the time of exploration. The transitions between soil types and strata are approximate and can be gradual.

Soil and rock materials vary in type and other geotechnical properties between points of observation and exploration. Groundwater and soil moisture conditions vary seasonally and for other reasons.

Explorations and services have not been requested nor performed to assess the presence or absence of hazardous or toxic materials.

Drilling Method: 7 inch (180mm) Hollow-Stem Auger
Driller: Gregg Drilling
Logged by: C. Lovato
Hammer Type: 140 lb Autotrip with 30-in drop

Date: May 1, 2000
Completion Depth: 10.5m (34.5') **Ground Elevation:** 26.2m ± (86.0')
Groundwater Depth: Initial: 4.1m (13.5') **After drilling:**
Comments:
Backfill Material: Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
						Qs	**Dune Sand:** SAND with silt (SP-SM), medium dense, dark brown, moist, with roots at 2.5 feet			
1		CAL		50	1-1			105 (16.5)	3.9	
	5						SAND (SP), dense, orange-brown, moist			
2			BULK		1A		light brown, with 2-inch lenses of orangish-brown sand and 1/8-inch seams of dark brown sand			
		SPT		35	1-2					
3	10									
						QTp	**Paso Robles Formation:**			
4		CAL		58	1-3		SAND (SP), dense, light brown, wet ▽	126 (19.8)	17.1	
	15									
5										
		SPT		61	1-4		Silty SAND (SM), very dense, light reddish brown with tan mottles, wet			Grain Size
6	20									
7		CAL		>104	1-5					pp=1.3 tsf
	25						with layer of stiff, light gray, Lean CLAY (CL)			
8										

LOG OF BORING 991001.GPJ CFS_GEO.GDT 11/8/00

CFS Geotechnical Consultants

BORING NO. B-1
100 feet west of Library

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-2

Drilling Method: 7 inch (180mm) Hollow-Stem Auger
Driller: Gregg Drilling
Logged by: C. Lovato
Hammer Type: 140 lb Autotrip with 30-in drop

Date: May 1, 2000
Completion Depth: 10.5m (34.5') **Ground Elevation:** 26.2m ± (86.0')
Groundwater Depth: Initial: 4.1m (13.5') **After drilling:**
Comments:
Backfill Material: Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m^3)	Moisture Content (%)	Other Tests
9	30	SPT		>100	1-6		Silty SAND (SM), very dense, light reddish brown with tan mottles, wet *(Continued)*			
10		CAL		>81	1-7					
	35						Boring terminated at 34.5 feet (10.5 meters)			
11										
12	40									
13										
	45									
14										
15	50									
16										
17	55									

LOG OF BORING 991001.GPJ CFS GEO.GDT 11/8/00

CFS Geotechnical Consultants

BORING NO. B-1

100 feet west of Library

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-2

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** October 20, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 22.9m (75.0') **Ground Elevation:** 26.5m ± (87.0')

Groundwater Depth: Initial: 8.8m (29.0') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 10 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
						Qs	**Dune Sand:** SAND with silt (SP-SM), loose, dark brown, dry, fine grained, with roots to 3 feet	99 (15.6)	2.4	
1		CAL		13	1					
	5	SPT		9	2		SAND (SP), loose, brown to light brown, dry, fine grained			Grain Size
2			BULK		A					Compaction Direct Shear
3	10	CAL		30	3		medium dense	107 (16.9)	3.5	
4						QTp	**Paso Robles Formation:** SAND with silt (SP-SM), medium dense, brown, moist, fine grained			
	15	SPT		21	4		interbedded lenses (1/4 inch thick) of dark brown, wet, SAND with silt (SP-SC)			
5										
6	20	CAL		45	5		interbedded lenses (1/8 to 1/4 inch thick) of dark brown SAND with clay (SP-SC)	114 (17.9)	6.9	
7							SAND with silt (SP-SM) to Silty SAND (SM), dense, brown, moist, fine grained			
	25	SPT		49	6				17.1	
8										

LOG OF BORING 991001.GPJ CFS_GEO.GDT 11/8/00

CFS Geotechnical Consultants

BORING NO. B-101

Tri-W Site-650' West of Palisades, 180' North of LOVR

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-3

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** October 20, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 22.9m (75.0') **Ground Elevation:** 26.5m ± (87.0')

Groundwater Depth: Initial: 8.8m (29.0') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 10 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
9	30	CAL		67	7		SAND with silt (SP-SM), dense, yellowish brown, wet, fine grained *(Continued)* ▽	128 (20.1)	20.8	
10	35	SPT		35	8					
11										
12	40	CAL		78	NR		Silty SAND (SM), dense, yellowish brown, wet			
13										
14	45	CAL	BULK	72	NR 9					
15	50	SPT		94	10					
16							Silty Clayey SAND (SC-SM), very dense, brown, wet, fine grained			
17	55	CAL		75/9	11			128 (20.1)	20.8	

LOG OF BORING 991001.GPJ CFS GEO.GDT 11/8/00

CFS Geotechnical Consultants

BORING NO. B-101

Tri-W Site-650' West of Palisades, 180' North of LOVR

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-3

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** October 20, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 22.9m (75.0') **Ground Elevation:** 26.5m ± (87.0')

Groundwater Depth: Initial: 8.8m (29.0') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 10 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth Meters	Depth Feet	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
							move to 55'			
							with black lenses and inclusions			
							Silty Clayey SAND (SC-SM), very dense, brown, wet, fine grained *(Continued)*			
18	60	SPT		59	12					
19										
	65	CAL		93/10	13			131 (20.5)	21.2	
20										
21										
	70	SPT		87/10	14		interbedded Silty SAND (SM) and SAND (SP), very dense, brown, wet, fine grained			
22										
		SPT		75/10	15					
	75						Boring terminated at 75.0 feet (22.9 meters)			
23										
24	80									
25										

LOG OF BORING 991001.GPJ CFS GEO.GDT 11/8/00

CFS Geotechnical Consultants

BORING NO. B-101

Tri-W Site-650' West of Palisades, 180' North of LOVR

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-3

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** October 20, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 15.4m (50.5') **Ground Elevation:** 24.4m ± (80.0')

Groundwater Depth: Initial: 9.0m (29.5') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 20 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
1	5	CAL		14	1	Qs	**Dune Sand:** SAND with silt (SP-SM), loose, moderate brown, dry, fine grained	102 (16.0)	2.2	
							with roots to 3 1/2 feet			
2		CAL		25	2		SAND (SP), medium dense, light brown/tan, moist, fine grained	106 (16.6)	3.1	
3	10	SPT		21	3		lenses (1/8 inch thick) of slight iron oxide staining			Grain Size
4	15	CAL		28	4			114 (17.9)	9.2	
5						QTp	**Paso Robles Formation:** Silty SAND (SM) to Sandy SILT (ML), dense, orange-brown, moist			
6	20	SPT		32	5		with seems (less than 1/16 inch thick) of dark brown clay and pockets of white SAND		14.2	
7	25	CAL		61	6		interbedded lenses (1/4 inch thick) of yellowish brown clayey SAND (SC)	129 (20.3)	17.6	Consolidation
8										

LOG OF BORING 991001.GPJ CFS GEO.GDT 11/8/00

CFS Geotechnical Consultants

BORING NO. B-102

Tri-W Site-650' West of Palisades, 400' North of LOVR

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-4

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** October 20, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 15.4m (50.5') **Ground Elevation:** 24.4m ± (80.0')

Groundwater Depth: Initial: 9.0m (29.5') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 20 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
9	30	SPT		33	7		**Paso Robles Formation:** Silty SAND (SM) to Sandy SILT (ML), dense, orange-brown, moist *(Continued)* ▽ brown, wet			Grain Size
10	35	CAL		72	8			127 (19.9)	18.8	Direct Shear
12	40	SPT		52	9		interbedded Silty SAND (SM) and SAND with silt (SP-SM), very dense, brown, wet, fine grained			
13	45	CAL		75	10			129 (20.3)	21.1	
15	50	SPT		90/10	11					
16	55						Boring terminated at 50.5 feet (15.4 meters)			

LOG OF BORING 991001.GPJ CFS_GEO.GDT 11/8/00

CFS Geotechnical Consultants

BORING NO. B-102

Tri-W Site-650' West of Palisades, 400' North of LOVR

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-4

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** October 23, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 12.3m (40.5') **Ground Elevation:** 28.0m ± (92.0')

Groundwater Depth: Initial: 8.2m (27.0') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 19 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
1		CAL	BULK	17	A 1	Qs	**Dune Sand:** SAND with silt (SP-SM), loose to medium dense, dark brown, dry, fine grained	106 (16.7)	2.8	
	5	SPT		9	2		grades to light brown SAND (SP)			
2										
3	10	CAL		31	3		medium dense, moist	108 (16.9)	4.9	
4										
	15	SPT		34	4					
5										
						QTp	**Paso Robles Formation:** SAND with silt (SP-SM), very dense, brown, wet	125 (19.6)	19.8	
6	20	CAL		77/11	5					
							Silty SAND (SM) to Sandy SILT (ML), medium dense, orange-brown, wet			
7										
	25	SPT		26	6					
8										

LOG OF BORING 991001.GPJ CFS_GEO.GDT 11/8/00

CFS Geotechnical Consultants

BORING NO. B-103

Tri-W Site-350' NW intersection of LOVR and Palisades Avenue

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-5

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** October 23, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 12.3m (40.5') **Ground Elevation:** 28.0m ± (92.0')

Groundwater Depth: Initial: 8.2m (27.0') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 19 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
9	30	CAL		76	7		Silty Clayey SAND (SC-SM), very dense, orange-brown, wet, fine grained *(Continued)*	125 (19.6)	16.7	
10	35	SPT		43	8		dense, interbedded layers of silty SAND (SM)			
12	40	CAL		79/11	9		Silty SAND (SM), very dense, brown, wet, fine grained	122 (19.2)	19.0	
							Boring terminated at 40.5 feet (12.3 meters)			
13	45									
14										
15	50									
16										
17	55									

LOG OF BORING 991001.GPJ CFS GEO.GDT 11/8/00

CFS Geotechnical Consultants

BORING NO. B-103

Tri-W Site-350' NW intersection of LOVR and Palisades Avenue

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-5

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** October 23, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 9.3m (30.5') **Ground Elevation:** 24.4m ± (80.0')

Groundwater Depth: Initial: 6.4m (21.0') **After drilling:** 5.3m (17.5')

Logged by: C. Lovato **Comments:** Groundwater rose from 21' to 17.5' in approx. 15 min.

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
1		CAL		12	1	Qs	**Dune Sand:** SAND with silt (SP-SM), loose, dark brown, dry, fine grained	101 (15.8)	2.2	
	5	SPT		8	2		SAND (SP), loose, light brown/tan, dry, fine grained			
2		CAL		27	3		medium dense, moist	109 (17.2)	4.3	Consolidation
3	10	SPT		17	4					
4						QTp	**Paso Robles Formation:** Silty SAND (SM), medium dense, orange-brown, moist, fine grained, with bright orange mottles, interbedded lenses (2-inches thick) of white SAND (SP)	123 (19.3)	13.6	
5	15	CAL		44	5					
6	20	SPT		17	6		Clayey SAND (SC), medium dense, brown, wet, grades to Lean CLAY (CL), very stiff, alternating layers of brown and light gray, moist, with interbedded clayey SILT lenses and lenses of iron oxide staining (2-3 inches thick)		27.9	Spp=4.5+ksf Atterberg Limits
7							SAND with silt (SP-SM), very dense, brown, wet, fine grained	116 (18.2)	9.2	
8	25	CAL		72	7					
9	30	SPT		46	8		Silty SAND (SM), dense, brown, wet, fine grained, with pockets of silty, clayey SAND (SC-SM)			
							Boring terminated at 30.5 feet (9.3 meters)			

LOG OF BORING 991001.GPJ CFS GEO.GDT 11/8/00

CFS Geotechnical Consultants

BORING NO. B-104

Tri-W Site-850' NW of intersection LOVR and Palisades Avenue

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-6

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** October 23, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 15.4m (50.5') **Ground Elevation:** 22.6m ± (74.0')

Groundwater Depth: Initial: 7.3m (24.0') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 16.5 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
1	5	CAL		11	1	Qs	**Dune Sand:** SAND with silt (SP-SM), loose, dark brown, dry, fine grained	101 (15.8)	2.1	
2	5	SPT		11	2		medium dense, grades to light brown			
3	10	CAL		45	3			104 (16.4)	2.1	
4	10					QTp	**Paso Robles Formation:** SAND with silt (SP-SM), medium dense, brown, moist, fine grained, with pockets of dark brown, clayey SAND at 10.5.			
5	15	CAL		68	4		dense, interbedded layers (2-3 inches thick) of dark brown, clayey SAND (SC)	112 (17.6)	5.1	
6	20	SPT		44	5		Silty Clayey SAND (SC-SM), dense, brown, moist, fine grained, with 2 inch lense of black clayey SAND (SC) at 19.5 feet			
7	25	CAL		87/11	6		▽ very dense, wet, interbedded sandy SILT (ML)	123 (19.3)	17.1	
8										

LOG OF BORING 991001.GPJ CFS GEO.GDT 11/8/00

CFS Geotechnical Consultants

BORING NO. B-105

Tri-W Site-900' W intersection of Palisades, 500' N of LOVR

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-7

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** October 23, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 15.4m (50.5') **Ground Elevation:** 22.6m ± (74.0')

Groundwater Depth: Initial: 7.3m (24.0') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 16.5 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth Meters	Depth Feet	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m^3)	Moisture Content (%)	Other Tests
9	30	SPT		37	7		Silty SAND (SM) to Sandy SILT (ML), dense, brown, wet			
10	35	CAL		85/11	NR		very dense drillers note: possible clay layer from 36 to 39 feet, sandy clay on centerbit			
12	40	CAL		>50	8		Silty SAND (SM), very dense, brown, wet, with pockets of Sandy CLAY			
13	45	SPT		>50	9		interbedded layers of Sandy SILT (ML)			
14							Silty, clayey SAND (SC-SM), very dense, brown, wet			
15	50	SPT		92/11	10					
16							Boring terminated at 50.5 feet (15.4 meters)			
17	55									

LOG OF BORING 991001.GPJ CFS_GEO.GDT 11/8/00

CFS Geotechnical Consultants

BORING NO. B-105

Tri-W Site-900' W intersection of Palisades, 500' N of LOVR

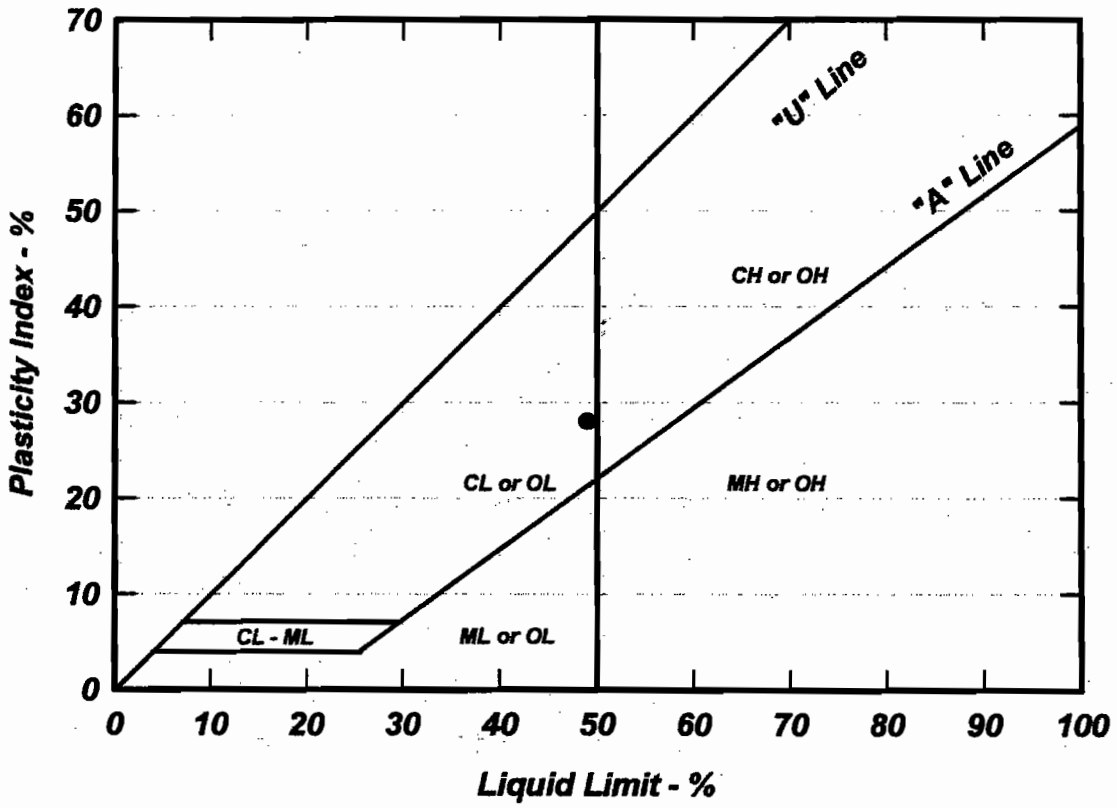
Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-7

ATTACHMENT A2
LABORATORY DATA
CFS (2000a)

TRI-W

Atterberg Limits

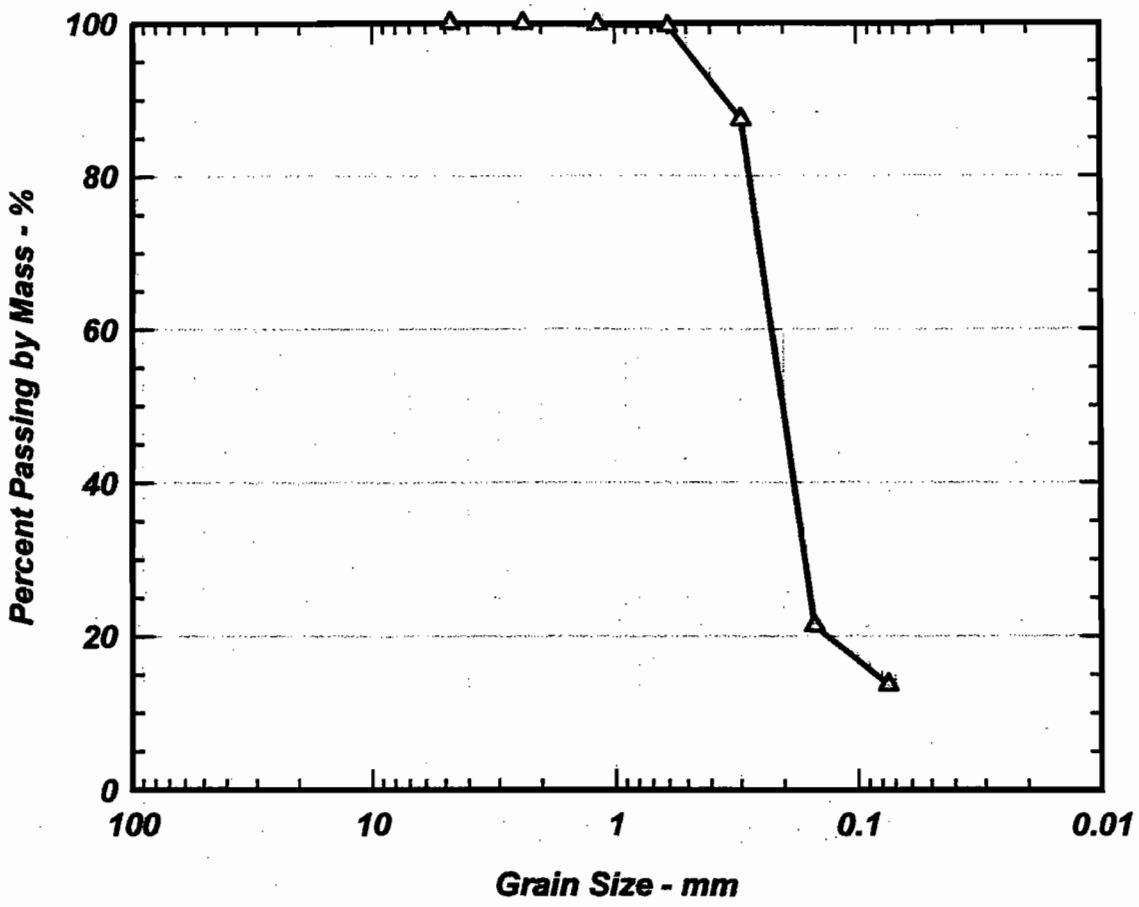


Symbol	Sample	Depth (ft)	Description and Classification	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
•	104-6	19	Lean CLAY (CL)	49	21	28

Project: Los Osos Wastewater Project (Tri-W Site)
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method ASTM D4318

CFS Geotechnical Consultants	ATTERBERG LIMITS TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-1

Mechanical Sieve Analysis Results



GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

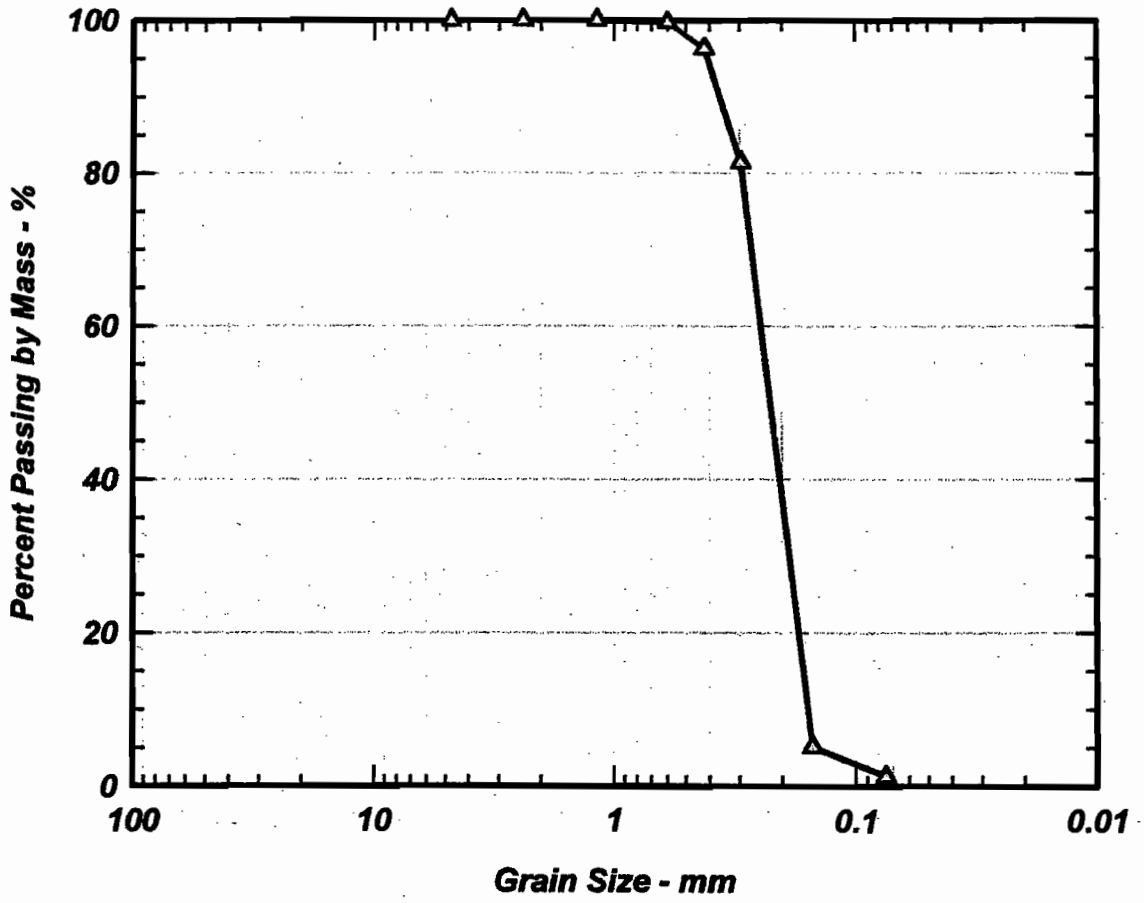
Symbol	Sample	Depth (ft)	Description and Classification	C_c	C_u
▲	1-4	18.5	Silty SAND (SM)	—	—

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D422

GRAIN SIZE

CFS Geotechnical Consultants	~~MECHANICAL SIEVE ANALYSIS~~ RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-2a

Mechanical Sieve Analysis Results



GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

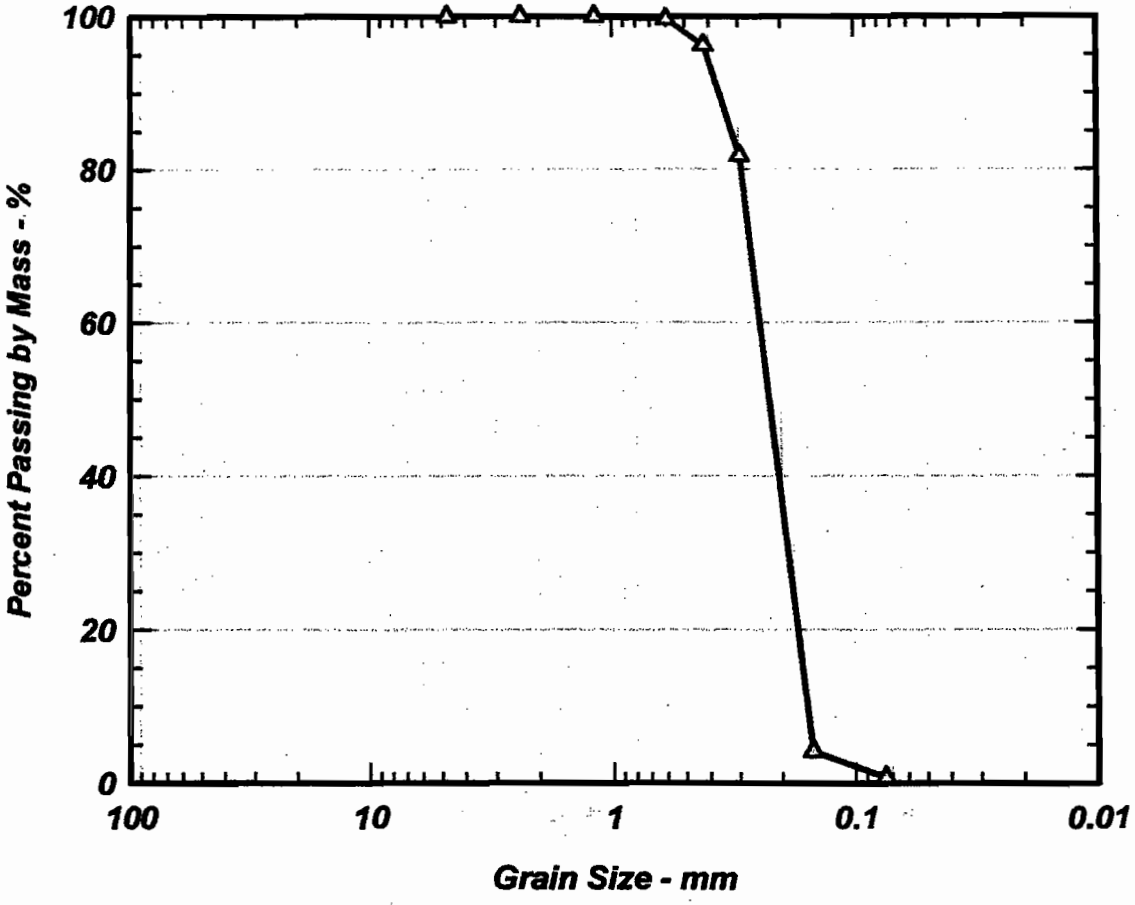
Symbol	Sample	Depth (ft)	Description and Classification	C_c	C_u
▲	101-2	4.5	Poorly Graded SAND (SP)	0.9	1.5

Project: Los Osos Wastewater Project (Tri-W Site)
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D422

GRAIN SIZE

CFS Geotechnical Consultants	~~MECHANICAL SIEVE ANALYSIS~~ RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-2b

Mechanical Sieve Analysis Results



GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

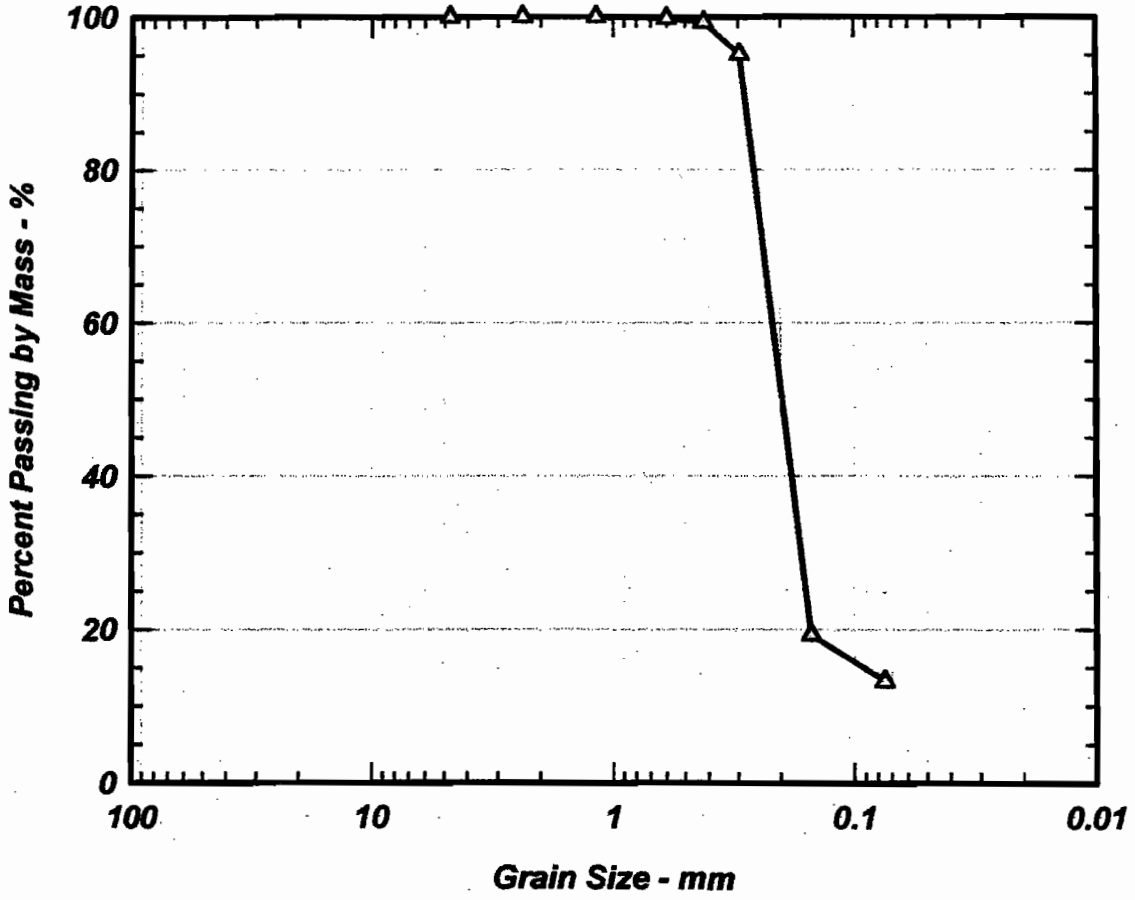
Symbol	Sample	Depth (ft)	Description and Classification	C_c	C_u
▲	102-3	9	Poorly Graded SAND (SP)	0.9	1.4

Project: Los Osos Wastewater Project (Tri-W Site)
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D422

GRAIN SIZE

CFS Geotechnical Consultants	~~MECHANICAL SIEVE ANALYSIS~~ RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-2c

Mechanical Sieve Analysis Results



GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

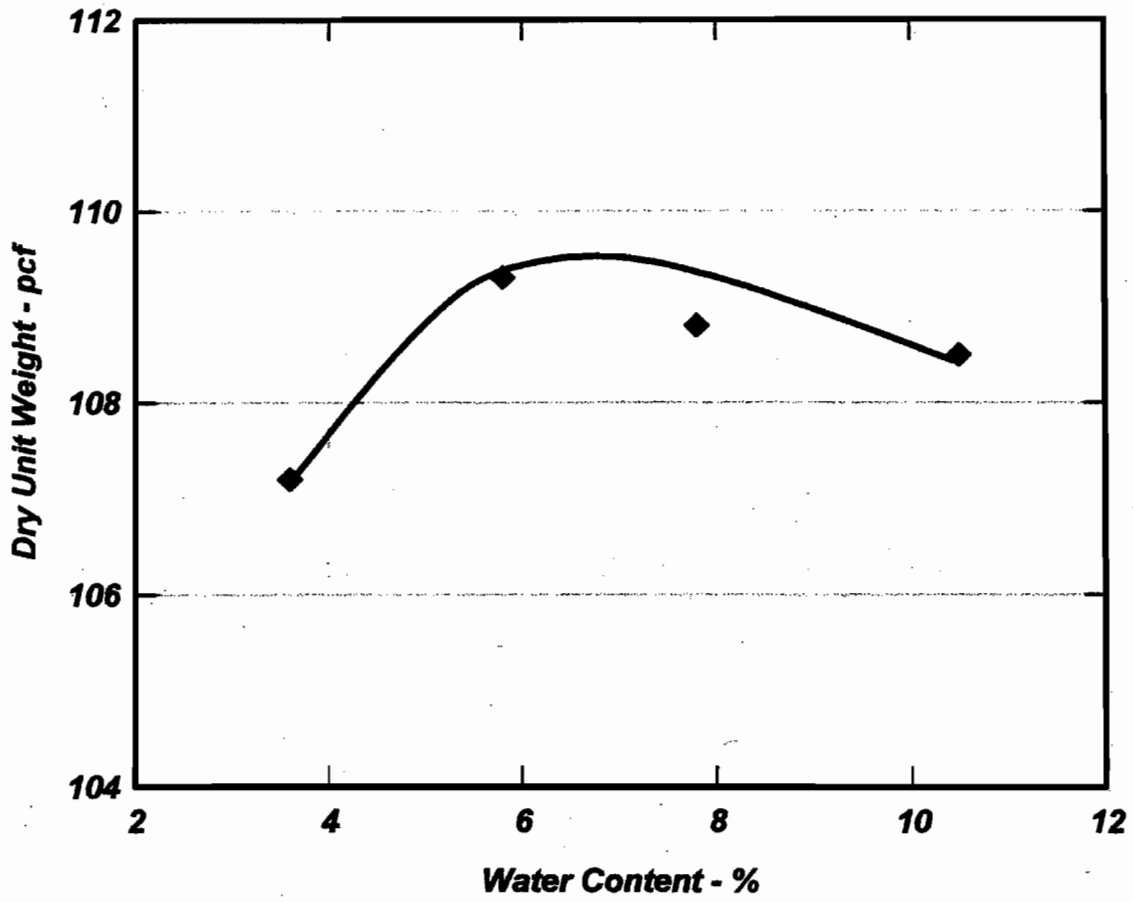
Symbol	Sample	Depth (ft)	Description and Classification	C_c	C_u
▲	102-7	29	Silty SAND (SM)	—	—

Project: Los Osos Wastewater Project (Tri-W Site)
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D422

GRAIN SIZE

CFS Geotechnical Consultants	~~MECHANICAL SIEVE ANALYSIS~~ RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-2d

Compaction Test Results

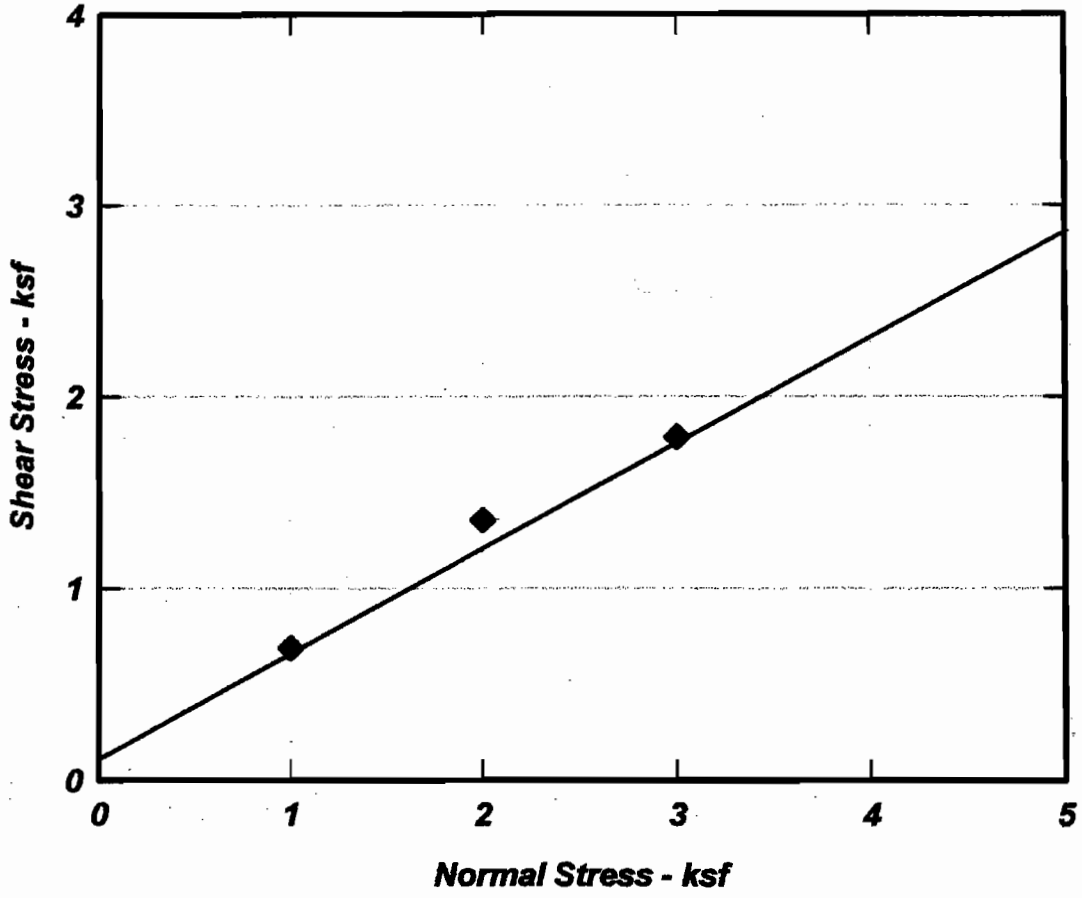


Symbol	Sample	Depth (ft)	Description and Classification	Maximum Dry Unit Weight (pcf)	Optimum Water Content (%)
◆	101A	5 to 9	Poorly Graded SAND with Silt (SP-SM)	109.5	6.6

Project: Los Osos Wastewater Project (Tri-W Site)
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D1557

CFS Geotechnical Consultants	COMPACTION TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-3

Direct Shear Test Results

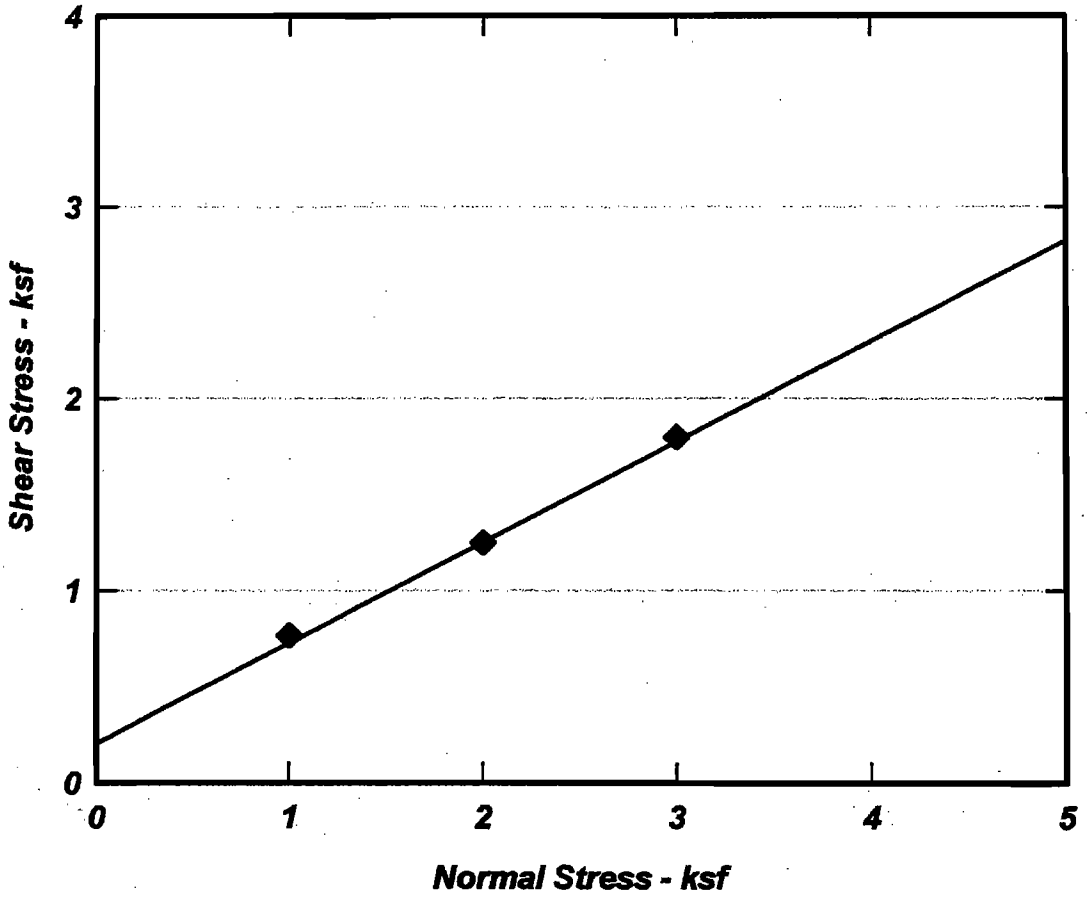


Symbols	Sample	Depth (ft)	Description and Classification	Friction Angle, ϕ (degrees)	Cohesion, c (ksf)
◆	101A	5 to 9	Poorly Graded SAND with Silt (SP-SM)	29	0.1

Project: Los Osos Wastewater Project (Tri-W Site)
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D3080

CFS Geotechnical Consultants	**DIRECT SHEAR TEST RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-4a

Direct Shear Test Results

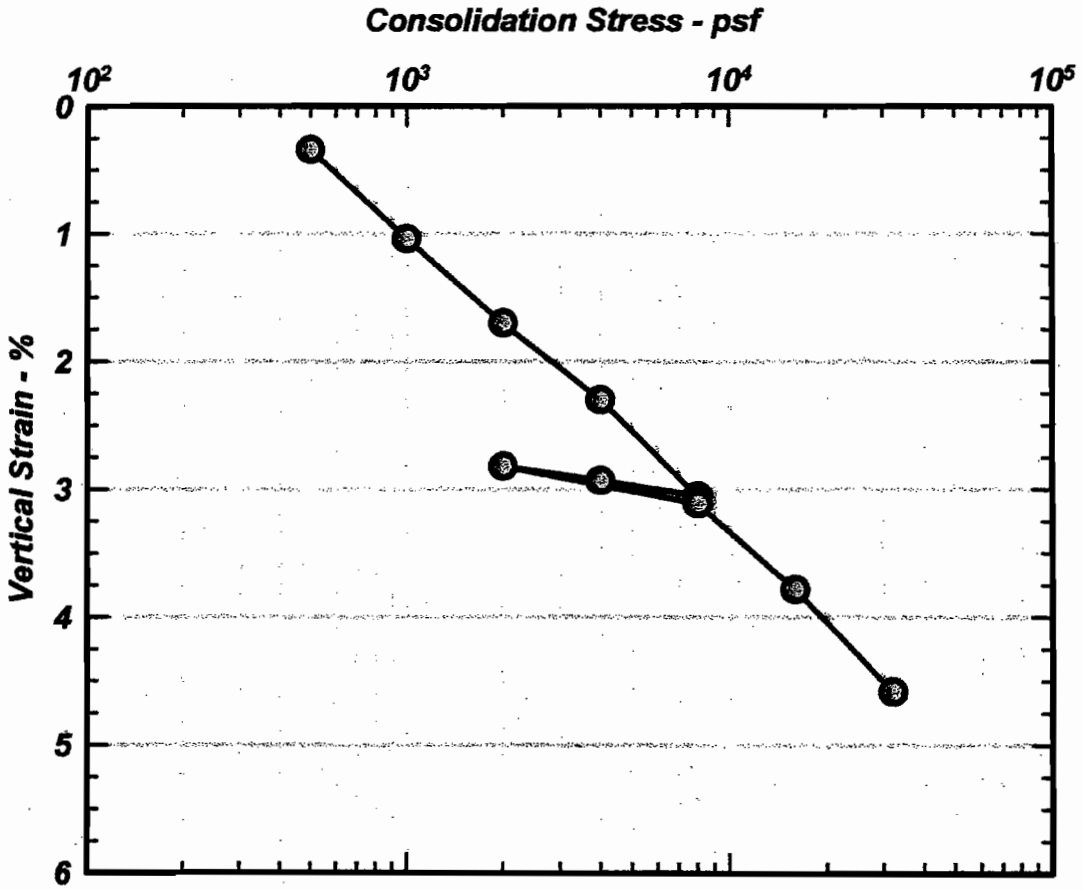


Symbols	Sample	Depth (ft)	Description and Classification	Friction Angle, ϕ (degrees)	Cohesion, c (ksf)
◆	102-8	34	Silty SAND (SM)	27	0.2

Project: Los Osos Wastewater Project (Tri-W Site)
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D3080

CFS Geotechnical Consultants	DIRECT SHEAR TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-4b

Consolidation Test Results

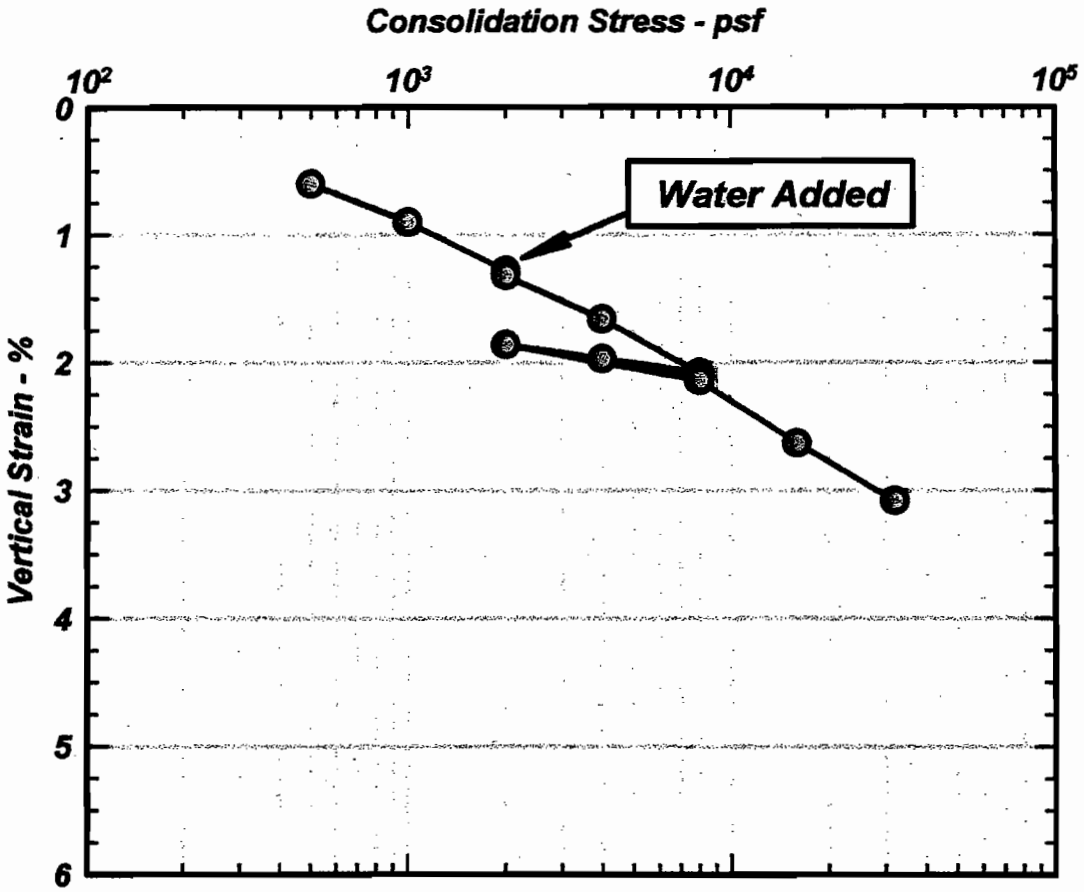


Symbol	Sample	Depth (ft)	Description and Classification	Total Unit Weight (pcf)	Water Content (%)
●	102-6	24	Silty SAND (SM)	129.2	17.6

Project: Los Osos Wastewater Project (Tri-W Site)
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D2435

CFS Geotechnical Consultants	**CONSOLIDATION TEST RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-5a

Consolidation Test Results



Symbol	Sample	Depth (ft)	Description and Classification	Total Unit Weight (pcf)	Water Content (%)
●	104-3	7.5	Poorly Graded SAND (SP)	109.3	4.3

Project: Los Osos Wastewater Project (Tri-W Site)
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D2435

CFS Geotechnical Consultants	CONSOLIDATION TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-5b

ATTACHMENT B1
BORING LOGS
CFS (2000b)

SPT — Standard Penetration Test (SPT) split spoon sampler having a 2-inch (50 mm) O.D., 1 3/8-inch (35 mm) I.D. and without liners. Sampler is driven in three 6-inch (305 mm) increments by dropping a 140-lb (63 kg) weight 30 inches (760 mm). The reported blow count is the sum of the blows for the last two increments.

CAL — Modified California split spoon sampler having a 3-inch (76 mm) O.D., 2 3/8-inch (60 mm) I.D. with liners. Sampler is driven in three 6-inch (305 mm) increments by dropping a 140-lb (63 kg) weight 30 inches (760 mm).

CAL — Thick-walled modified California split spoon sampler driven 12 inches (305 mm) using the rig's kelley.

SHELBY — Thin-walled Shelby Tube sampler that is pushed into the ground using the rig's hydraulics.

HAND — Hand driven modified California sampler with liners.

BULK — Bulk sample obtained from drill auger flights, backhoe cuttings or hand excavation.

NR — No recovery

Consistency of Cohesive Soil:

SPT N-Valve	Undrained Shear Strength (Su) psf	kpa	Consistency
0 - 1	< 250	< 12	very soft
2 - 4	250 - 500	13 - 25	soft
5 - 8	500 - 1,000	26 - 50	firm
9 - 15	1,000 - 1,500	51 - 75	stiff
16 - 30	1,500 - 2,000	76 - 100	very stiff
> 31	> 2,000	> 100	hard

Relative Density of Granular Soil:

SPT N-Valve	Consistency
0 - 4	very loose
5 - 10	loose
11 - 30	medium dense
31 - 50	dense
> 50	very dense

pp — Unconfined compression strength from pocket penetrometer

$S_{t,v}$ — Undrained shear strength (t = torvane, v = minivane, pp = pocket penetrometer)

Initial depth to groundwater

Groundwater level after drilling

Notes:

Soil classification and descriptions are performed in general accordance with ASTM D-2487 and ASTM D-2488 based on the Unified Soil Classification System.

The logs represent the interpretation of field classifications and testing, interpolation between sample intervals, results of laboratory tests, and the conditions observed at the time of exploration. The transitions between soil types and strata are approximate and can be gradual.

Soil and rock materials vary in type and other geotechnical properties between points of observation and exploration. Groundwater and soil moisture conditions vary seasonally and for other reasons.

Explorations and services have not been requested nor performed to assess the presence or absence of hazardous or toxic materials.

Drilling Method: 7 inch (180mm) Hollow-Stem Auger
Driller: Gregg Drilling
Logged by: C. Lovato
Hammer Type: 140 lb Autotrip CME with 30-in drop

Date: May 1, 2000
Completion Depth: 10.5m (34.5') **Ground Elevation:** 26.2m ± (86.0')
Groundwater Depth: Initial: 4.1m (13.5') **After drilling:**
Comments:
Backfill Material: Bentonite

Depth (Meters / Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
1 / 5	CAL		50	1-1	Qs	**Dune Sand:** SAND with silt (SP-SM), medium dense, dark brown, moist, with roots at 2.5 feet	105 (16.5)	3.9	
2 / 10		BULK		1A		SAND (SP), dense, orange-brown, moist light brown, with 2-inch lenses of orangish-brown sand and 1/8-inch seams of dark brown sand			
3 / 10	SPT		35	1-2					
4 / 15	CAL		58	1-3	QTp	**Paso Robles Formation:** SAND (SP), dense, light brown, wet ▽	126 (19.8)	17.1	
5 / 20	SPT		61	1-4		Silty SAND (SM), very dense, light reddish brown with tan mottles, wet			Grain Size
6 / 25	CAL		>104	1-5		with layers of stiff, light gray, Lean CLAY (CL)			pp=1.3 tsf
7 / 25									
8									

LOG OF BORING 991001.GPJ CFS GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. B-1
100 feet west of Library

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-2

Drilling Method: 7 inch (180mm) Hollow-Stem Auger **Date:** May 1, 2000

Driller: Gregg Drilling **Completion Depth:** 10.5m (34.5') **Ground Elevation:** 26.2m ± (86.0')

Logged by: C. Lovato **Groundwater Depth: Initial:** 4.1m (13.5') **After drilling:**

Hammer Type: 140 lb Autotrip CME with 30-in drop **Comments:**

Backfill Material: Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m^3)	Moisture Content (%)	Other Tests
9	30	SPT		>100	1-6		Silty SAND (SM), very dense, light reddish brown with tan mottles, wet *(Continued)*			
10		CAL		>81	1-7					
	35						Boring terminated at 34.5 feet (10.5 meters)			
11										
12	40									
13										
	45									
14										
15	50									
16										
	55									
17										

LOG OF BORING 991001.GPJ CFS GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. B-1

100 feet west of Library

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-2

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 8, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 21.6m (71.0') **Ground Elevation:** 29.0m ± (95.0')

Logged by: C. Lovato **Groundwater Depth: Initial:** 16.5m (54.0') **After drilling:**

Hammer Type: 140 lb Autotrip CME with 30-in drop **Comments:** Caved to 48 feet

Backfill Material: Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
						Qs	**Dune Sand:** SAND with silt (SP-SM), loose, light brown, dry			
1		CAL		11	2-1		SAND (SP), loose, light orangish brown, moist	102 (16.0)	2.7	
	5	SPT		11						
2			BULK		2A 2-2					Compaction
						QTp	**Paso Robles Formation:** SAND with clay (SP-SC), medium dense, light orangish brown, moist	126 (19.7)	17.5	Direct Shear
3	10	CAL		21	2-3		with 1/2" lenses of brown Lean CLAY (CL)			
4							SAND (SP), medium dense, light brown, moist, with 1/2" seams of SAND with clay (SP-SC)			
	15	SPT		16	2-4					
5										
6	20	CAL		30	2-5			101 (15.9)	3.0	
7										
	25	SPT		17	2-6					
8										

LOG OF BORING 991001.GPJ CFS GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. B-2

350' N of Los Osos Valley Rd., 400' E of Broderson Ave.

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-3

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 8, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 21.6m (71.0') **Ground Elevation:** 29.0m ± (95.0')

Logged by: C. Lovato **Groundwater Depth: Initial:** 16.5m (54.0') **After drilling:**

Hammer Type: 140 lb Autotrip CME with 30-in drop **Comments:** Caved to 48 feet

Backfill Material: Bentonite

Depth Meters	Depth Feet	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
9	30	CAL		67	2-7	QTp	**Paso Robles Formation:** SAND (SP), dense, light reddish brown, moist, fine to medium grained with pockets of silt	103 (16.2)	11.6	Permeability
10										
	35	SPT		27	2-8		medium dense, light brown			
11										
12	40	CAL		53	2-9		with pockets of Sandy SILT and Silty SAND	104 (16.3)	3.4	
13										
	45	SPT		27	2-10		light brown, with 1/4" seams of reddish brown, medium SAND			
14										
15	50	CAL		79	2-11		3" lense of reddish brown, medium SAND	107 (16.8)	4.5	Permeability
							SAND with silt (SP-SM), very dense, orange-brown, moist			
16										
	55	SPT		52	2-12		light brown, wet below 54'			
17										

LOG OF BORING 991001.GPJ CFS GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. B-2

350' N of Los Osos Valley Rd., 400' E of Broderson Ave.

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-3

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 8, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 21.6m (71.0') **Ground Elevation:** 29.0m ± (95.0')

Logged by: C. Lovato **Groundwater Depth: Initial:** 16.5m (54.0') **After drilling:**

Hammer Type: 140 lb Autotrip CME with 30-in drop **Comments:** Caved to 48 feet

Backfill Material: Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
						QTp	**Paso Robles Formation:**			
18	60	CAL		>80	2-13		Silty SAND (SM), very dense, brown, wet, with black specs	127 (20.0)	17.1	
19										
	65	SPT		46	2-14					
20										
21										
	70	CAL		>76	2-15		with pockets and lenses of tan, Silty CLAY	130 (20.4)	19.8	
22							Boring terminated at 71.0 feet (21.6 meters)			
	75									
23										
24										
	80									
25										

LOG OF BORING 991001.GPJ CFS GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. B-2

350' N of Los Osos Valley Rd.,
400' E of Broderson Ave.

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-3

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 8, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 12.3m (40.5') **Ground Elevation:** 19.5m ± (64.0')

Groundwater Depth: Initial: 8.5m (28.0') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 29.5 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
						Qs	**Dune Sand:** Silty SAND (SM), loose, dark brown, dry to moist, with roots			
1		CAL		5	3-1		SAND (SP), very loose to loose, light brown, moist, with roots and voids, >1/8-inch thick brown clayey sand seams from 5 to 6 feet	101 (15.9)	4.7	
	5	SPT		7	3-2					Grain Size
2										
3	10	CAL		34	3-3	QTp	**Paso Robles Formation:** SAND with silt (SP-SM), to Silty SAND (SM), medium dense, brown, very moist	125 (19.6)	16.8	Permeability
4							SAND with silt (SP-SM), dense, light brown, moist			
	15	SPT		34	3-4					
5							SAND (SP), dense, light reddish brown, moist, fine to medium grain size			
6	20	CAL		59	3-5			106 (16.7)	3.2	Grain Size
7							SAND with silt (SP-SM), dense, light brown, moist, with 1/2-inch to 1-inch lenses of iron oxide staining			
	25	SPT		33	3-6					
8										

LOG OF BORING 991001.GPJ CFS_GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. B-3

950' N of Los Osos Valley Rd.,
400' SE terminus of skyline

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-4

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 8, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 12.3m (40.5') **Ground Elevation:** 19.5m ± (64.0')

Groundwater Depth: Initial: 8.5m (28.0') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 29.5 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth Meters	Depth Feet	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m^3)	Moisture Content (%)	Other Tests
9	30	CAL		>81	3-7		SAND with silt (SP-SM), very dense, brown, wet ▽	124 (19.5)	28.8	
10										
	35	SPT		54	3-8		with black specs and staining			
11										
12	40	CAL		>100	3-9					
							Boring terminated at 40.5 feet (12.3 meters)			
13										
	45									
14										
15	50									
16										

LOG OF BORING 991001.GPJ CFS GEO.GDT 8/14/00

CFS Geotechnical Consultants

BORING NO. B-3

950' N of Los Osos Valley Rd.,
400' SE terminus of skyline

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-4

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 9, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 21.5m (70.5') **Ground Elevation:** 20.4m ± (67.0')

Logged by: C. Lovato **Groundwater Depth: Initial:** 5.5m (18.0') **After drilling:**

Hammer Type: 140 lb Autotrip CME with 30-in drop **Comments:**

Backfill Material: Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
						Qs	**Dune Sand:** Silty SAND (SM), loose, light brown, dry			
1		SPT		7	4-1		SAND (SP), loose, light brown, moist, with roots at 3 feet			
	5	CAL	BULK	19	4-2		medium dense	105 (16.4)	3.8	
2					4A					Compaction; Direct Shear
3	10	SPT		14	4-3					
4										
	15	CAL	BULK	38	4-4			125 (19.7)	15.7	
5						QTp	**Paso Robles Formation:** SAND with silt (SP-SM), dense, brown, very moist clay lense at 15.5 feet ▽			
6	20	SPT		34	4-5		wet			
7										
	25	CAL		>79	4-6		very dense	130 (20.3)	20.0	Direct Shear
8										

LOG OF BORING 991001.GPJ CFS_GEO.GDT 6/19/00

CFS Geotechnical Consultants

BORING NO. B-4

1500' N of Los Osos Valley Rd., 450' NW terminus of Palisades

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-5

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 9, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 21.5m (70.5') **Ground Elevation:** 20.4m ± (67.0')

Groundwater Depth: Initial: 5.5m (18.0') **After drilling:**

Logged by: C. Lovato **Comments:**

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth Meters	Depth Feet	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m^3)	Moisture Content (%)	Other Tests
9	30	SPT		>72	4-7		**Paso Robles Formation:** SAND with silt (SP-SM), dense, brown, very moist *(Continued)*			
10	35	CAL	BULK	64	4-8		Fat CLAY (CH), hard, moderate brown, moist, with black specs	129 (20.3)	24.7	pp=4.2 tsf Atterberg Limits Consolidation
12	40	SPT		>75	4-9		Silty SAND (SM), very dense, brown, wet, with interbedded layers of gravel to 2-inch diameter and lean clay			
13							grades to			
14	45	CAL		>73	4-10		SAND with silt (SP-SM), very dense, brown, wet, with pockets of clay	128 (20.0)	21.8	Consolidation
15	50	SPT		>88	4-11					
16							Sandy SILT (ML), hard, light yellowish brown, wet, with black specs and pockets of clay			
17	55	CAL		>68	4-12			127 (20.0)	20.7	

LOG OF BORING 991001.GPJ CFS GEO.GDT 8/19/00

CFS Geotechnical Consultants

BORING NO. B-4

1500' N of Los Osos Valley Rd.,
450' NW terminus of Palisades

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-5

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 9, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 21.5m (70.5') **Ground Elevation:** 20.4m ± (67.0')

Groundwater Depth: Initial: 5.5m (18.0') **After drilling:**

Logged by: C. Lovato **Comments:**

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth Meters	Depth Feet	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m^3)	Moisture Content (%)	Other Tests
							Sandy SILT (ML), hard, light yellowish brown, wet, with black specs and pockets of clay *(Continued)*			
18	60	SPT		>88	4-13		Sandy SILT (ML), and Silty SAND (SM), very dense, light yellowish brown, wet			
19							SAND with silt (SP-SM), very dense, light brown, wet			
20	65	CAL		>98	4-14			127 (19.9)	24.0	
21	70	SPT		>68	4-15		Silty SAND (SM), very dense, light brown, wet, with pockets of silty clay			
							Boring terminated at 70.5 feet (21.5 meters)			
22										
23	75									
24										
25	80									

LOG OF BORING 991001.GPJ CFS_GEO.GDT 6/19/00

CFS Geotechnical Consultants

BORING NO. B-4

1500' N of Los Osos Valley Rd.,
450' NW terminus of Palisades

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-5

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 8, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 15.4m (50.5') **Ground Elevation:** 20.6m ± (67.5')

Groundwater Depth: Initial: 5.6m (18.5') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 20.5 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth Meters	Depth Feet	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m^3)	Moisture Content (%)	Other Tests
						Qs	**Dune Sand:** Silty SAND (SM), loose, dark brown, dry to moist			
1										
	5	CAL		21	5-1		SAND (SP), medium dense, light brown, moist	107 (16.8)	3.9	
2			BULK		5A					
3	10	SPT		15	5-2		with 1/2-inch lenses of brown SAND with clay (SP-SC)			Grain Size
4						QTp	**Paso Robles Formation:** SAND with silt (SP-SM), medium dense, light brown, moist	107 (16.8)	7.4	
	15	CAL		32	5-3					
5							SAND (SP), dense, brown to light reddish brown, wet, with 3-inch lenses of medium SAND ▽			
6	20	SPT		33	5-4					
7										
	25	CAL		64	5-5		Silty SAND (SM), dense, light gray to white, wet	132 (20.7)	19.8	Direct Shear
8										

LOG OF BORING 991001.GPJ CFS GEO.GDT 6/19/00

CFS Geotechnical Consultants

BORING NO. B-5

700' East of Skyline Ave.

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-6

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 8, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 15.4m (50.5') **Ground Elevation:** 20.6m ± (67.5')

Groundwater Depth: Initial: 5.6m (18.5') **After drilling:**

Logged by: C. Lovato **Comments:** Caved to 20.5 feet

Hammer Type: 140 lb Autotrip CME with 30-in drop **Backfill Material:** Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m^3)	Moisture Content (%)	Other Tests
9	30	SPT		39	5-6		Clayey SAND with gravel (SC), dense, brown, wet, with red gravel greater than 2-inches *(Continued)*			
10	35	CAL		>90	5-7		Silty SAND (SM), very dense, brown, wet	127 (19.9)	17.9	
12	40	SPT		55	5-8		with lenses of reddish brown, medium SAND pockets of clay and gravel clast to 1/4-inch			
13	45	CAL		>91	5-9		grades to SAND with silt (SP-SM), very dense, brown to reddish brown, wet	129 (20.2)	20.5	
15	50	SPT		58	5-10					
16							Boring terminated at 50.5 feet (15.4 meters)			
17	55									

LOG OF BORING 991001.GPJ CFS_GEO.GDT 8/19/00

CFS Geotechnical Consultants

BORING NO. B-5

700' East of Skyline Ave.

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-6

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 9, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 15.4m (50.5') **Ground Elevation:** 22.7m ± (74.5')

Logged by: C. Lovato/G. Fiegel **Groundwater Depth: Initial:** 2.9m (9.5') **After drilling:**

Hammer Type: 140 lb Autotrip CME with 30-in drop **Comments:**

Backfill Material: Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m^3)	Moisture Content (%)	Other Tests
						Qs	**Dune Sand:** SAND (SP), loose, light yellowish brown, dry, with roots at 3 feet			
1		CAL		12	6-1			100 (15.7)	1.8	
	5	SPT		9	6-2		moist			
2			BULK		6A					
3	10	CAL		32	6-3	QTp	**Paso Robles Formation:** SAND (SP), medium dense, dark brown, wet	124 (19.4)	15.1	Grain Size
							SAND with silt (SP-SM), medium dense, reddish brown to light brown, wet			
4		SPT		22	6-4					
	15	CAL		55	6-5			129 (20.2)	20.3	
5							dense			
6	20	SPT		72	6-6		very dense			
7							interbedded clay layers at 20 feet to 24 feet			
	25	CAL		>90	6-7					
8										

LOG OF BORING 991001.GPJ CFS GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. B-6

260' W of Ferrel Ave.,
375' NE terminus of Palisades

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-7

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 9, 2000
Driller: S/G Testing Laboratories **Completion Depth:** 15.4m (50.5') **Ground Elevation:** 22.7m ± (74.5')
Logged by: C. Lovato/G. Fiegel **Groundwater Depth: Initial:** 2.9m (9.5') **After drilling:**
Hammer Type: 140 lb Autotrip CME with 30-in drop **Comments:**
Backfill Material: Bentonite

Depth Meters	Depth Feet	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
9	30	SPT		13	6-8		Lean CLAY (CL), stiff, dark brown, moist interbedded sand layers 30 feet to 35 feet			
10	35	CAL		62	6-9		Lean CLAY with sand (CL), hard, dark brown, moist	136 (21.3)	16.8	pp=4.5+tsf Atterberg Limits
12	40	SPT		36	6-10		Clayey SAND (SC), dense, dark brown to reddish brown, moist			
14	45	CAL		>92	6-11		SAND with clay and gravel (SP-SC), very dense, brown to reddish brown, moist to wet	132 (20.7)	15.3	
15	50	SPT		>99	6-12					
16							Boring terminated at 50.5 feet (15.4 meters)			

LOG OF BORING 991001.GPJ CFS GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. B-6
260' W of Ferrel Ave.,
375' NE terminus of Palisades

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-7

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 10, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 12.2m (40.0') **Ground Elevation:** 13.1m ± (43.0')

Logged by: C. Lovato **Groundwater Depth: Initial:** 6.7m (22.0') **After drilling:**

Hammer Type: 140 lb Autotrip CME with 30-in drop **Comments:**

Backfill Material: Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
						Qs	**Dune Sand:** SAND with silt (SP-SM), loose, light brown, dry			
1							SAND (SP), loose, light yellowish brown, moist			
	5	CAL	BULK	14	7-1					
2										
							SAND (SP), medium dense, light yellowish brown, moist, with lenses of brown silty sand			
3	10	CAL		25	7-2			114 (17.9)	2.6	Permeability
4										
	15	SPT		17	7-3					Grain Size
5										
						QTp	**Paso Robles Formation:** SAND (SP), medium dense, light reddish brown, moist, medium grain size			
6	20	CAL		44	7-4		▽			
7							SAND with silt (SP-SM), dense, light brown, wet, with gravel interbeds, subangular gravel to 1-inch			
	25	SPT		32	7-5					
8										

LOG OF BORING 991001.GPJ CFS_GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. B-7

800' S of Ramona Ave.,
35' E of mobile home park

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-8

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 10, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 12.2m (40.0') **Ground Elevation:** 13.1m ± (43.0')

Logged by: C. Lovato **Groundwater Depth: Initial:** 6.7m (22.0') **After drilling:**

Hammer Type: 140 lb Autotrip CME with 30-in drop **Comments:**

Backfill Material: Bentonite

Depth Meters	Depth Feet	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m^3)	Moisture Content (%)	Other Tests
9	30	CAL		43	7-6		Silty SAND (SM), medium dense, light brown, wet, with gravel and pockets of silt and clay	132 (20.8)	30.1	
10	35									
11										
12	40						Boring terminated at 40.0 feet (12.2 meters)			
13										
14	45									
15	50									
16										
17	55									

LOG OF BORING 991001.GPJ CFS GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. B-7

800' S of Ramona Ave.,
35' E of mobile home park

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-8

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 10, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 10.8m (35.5') **Ground Elevation:** 7.9m ± (26.0')

Logged by: C. Lovato **Groundwater Depth: Initial:** 4.0m (13.0') **After drilling:**

Hammer Type: 140 lb Autotrip CME with 30-in drop **Comments:** Caved to 13 feet

Backfill Material: Bentonite

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
1		CAL		9	8-1	Qs	**Dune Sand:** SAND (SP), loose, dark brown, dry to moist	104 (16.3)	2.9	Grain Size
	5	SPT	BULK	7	8A 8-2		grades to brown			Compaction R-Value Direct Shear
2										
3	10	CAL		34	8-3		SAND with silt (SP-SM), medium dense, light yellowish brown, moist ▽	107 (16.7)	3.4	
4										
	15	SPT		12	8-4					
5										
						QTp	**Paso Robles Formation:** SAND (SP), medium dense, light brown, wet			
6	20	CAL		34	NR					No Recovery with CAL sampler
			BULK		8-5					
7										
	25	SPT		>63	8-6				19.3	
8										

LOG OF BORING 991001.GPJ CFS_GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. B-8

130' South of Ramona Ave.

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-9

Drilling Method: 8-1/4 in (210mm) Hollow-Stem Auger **Date:** May 10, 2000

Driller: S/G Testing Laboratories **Completion Depth:** 10.8m (35.5') **Ground Elevation:** 7.9m ± (26.0')

Logged by: C. Lovato **Groundwater Depth: Initial:** 4.0m (13.0') **After drilling:**

Hammer Type: 140 lb Autotrip CME with 30-in drop **Comments:** Caved to 13 feet

Backfill Material: Bentonite

Depth Meters	Depth Feet	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m^3)	Moisture Content (%)	Other Tests
9	30	CAL	BULK	67	8-7		**Paso Robles Formation:** SAND (SP), medium dense, light brown, wet *(Continued)*			Disturbed CAL sample
10							SAND (SP), dense, light reddish brown, wet, medium grained			
	35	SPT		>100	8-8		Silty SAND (SM), very dense, light gray, wet			
11							Boring terminated at 35.5 feet (10.8 meters)			
12	40									
13										
	45									
14										
15	50									
16										
	55									
17										

LOG OF BORING 991001.GPJ CFS_GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. B-8

130' South of Ramona Ave.

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-9

Drilling Method: 4 inch Hand-Auger
Driller: CFS Geotechnical Consultants
Logged by: J. Blanchard/C. Lovato
Hammer Type: 5 lb Hand Driven

Date: December 9, 1999
Completion Depth: 7.6m (25.0') **Ground Elevation:** 19.5m ± (64.0')
Groundwater Depth: Initial: 7.6m (25.0') **After drilling:**
Comments: Wet at 23'. Hole caving at 25'
Backfill Material: Native

Depth (Meters)	Depth (Feet)	Drive Samples	Bulk Samples	Blowcount (blows/foot)	Sample	Geologic Unit	DESCRIPTION AND CLASSIFICATION	Total Unit Weight, pcf(kN/m³)	Moisture Content (%)	Other Tests
						Qs	**Dune Sand:** Silty SAND (SM), brown, dry to moist			Compaction Direct Shear
1			BULK		H-1					
	5	CAL		13/6"	NR		Poorly graded SAND and Poorly graded SAND with silt (SP-SM), fine, light brown to tan, moist, occasional roots to 1/4 inch			
2		CAL		40/6	1-1	QTp	**Paso Robles Formation:** Poorly graded SAND with clay (SP-SC), brown to yellow brown, moist, orange mottles, occasional root to 1/8 inch, orange mottles, grading to orange-brown			
3	10						Silty Clayey SAND (SC-SM), orange-brown, moist, with orange cemented nodules to 1-1/2 inches (mottled)			
4										
	15									
5							Silty SAND to SAND with silt (SP-SM), light yellowish brown, moist, orange mottles			
6	20									
7							wet at 23 feet ▽			
	25						Boring terminated at 25.0 feet (7.6 meters)			
8										

LOG OF BORING 991001.GPJ CFS_GEO.GDT 6/14/00

CFS Geotechnical Consultants

BORING NO. H-1
Center of site

Los Osos Wastewater Project
Los Osos, California
Project No. 991001

Figure A-10

ATTACHMENT B2
CPT/CPTU LOGS
CFS (2000b)

GREGG

GREGG DRILLING & TESTING, INC.

SPECIALIZING IN ENVIRONMENTAL, GEOTECHNICAL AND IN-SITU TESTING

PRESENTATION OF CONE PENETRATION TEST DATA

SITE INVESTIGATION

LOS OSOS, CALIFORNIA

Prepared for:
CFS Geotechnical
San Luis Obispo, California

Prepared by:
GREGG IN SITU, INC.
Martinez, California

Prepared on:

December 15, 1999

SOUTHERN CALIFORNIA: 2726 WALNUT AVENUE • SIGNAL HILL, CA 90806 • (562) 427-6899 • FAX (562) 427-3314
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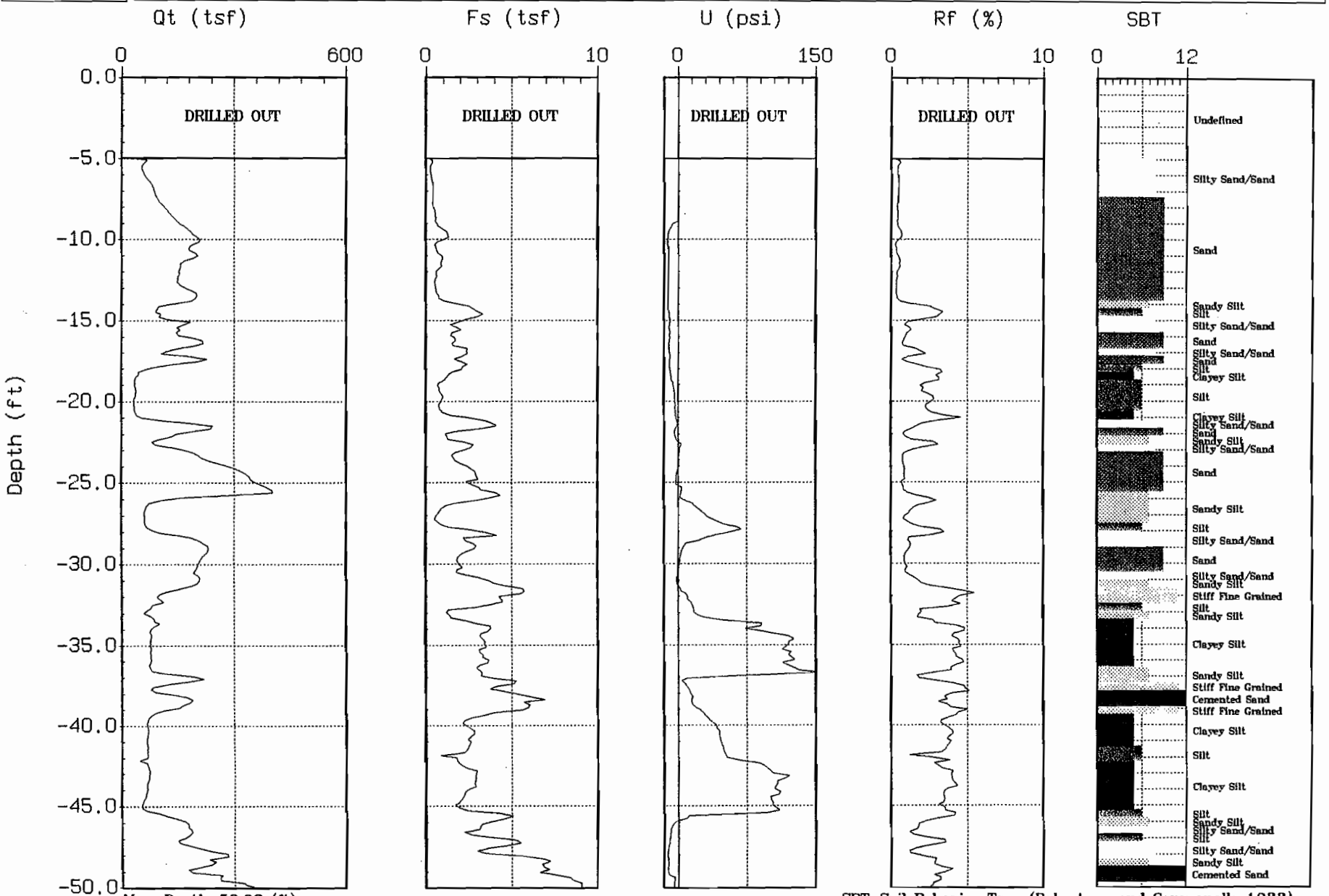
CENTRAL CALIFORNIA: P.O. BOX 3618 • PASO ROBLES, CA 93446 • (805) 226-9672
www.greggdrilling.com

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS WWTP
Location : CPT-01

Engineer : CHRIS LOVATO
Date : 12:11:99 09:56



Max. Depth: 50.03 (ft)

Depth Inc.: 0.164 (ft)

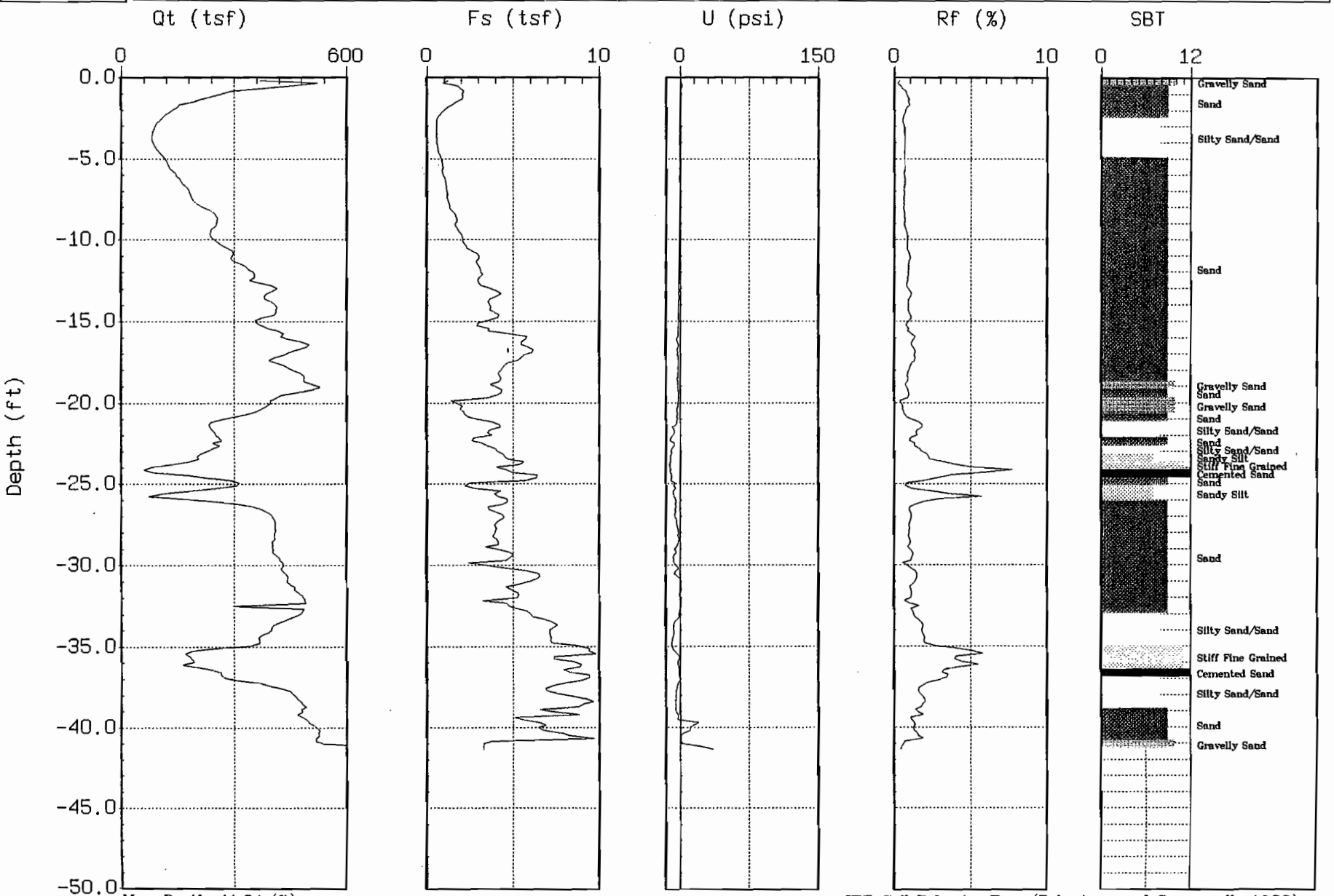
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS WWTP
Location : CPT-02

Engineer : CHRIS LOVATO
Date : 12:11:99 10:48



Max. Depth: 41.34 (ft)

Depth Inc.: 0.164 (ft)

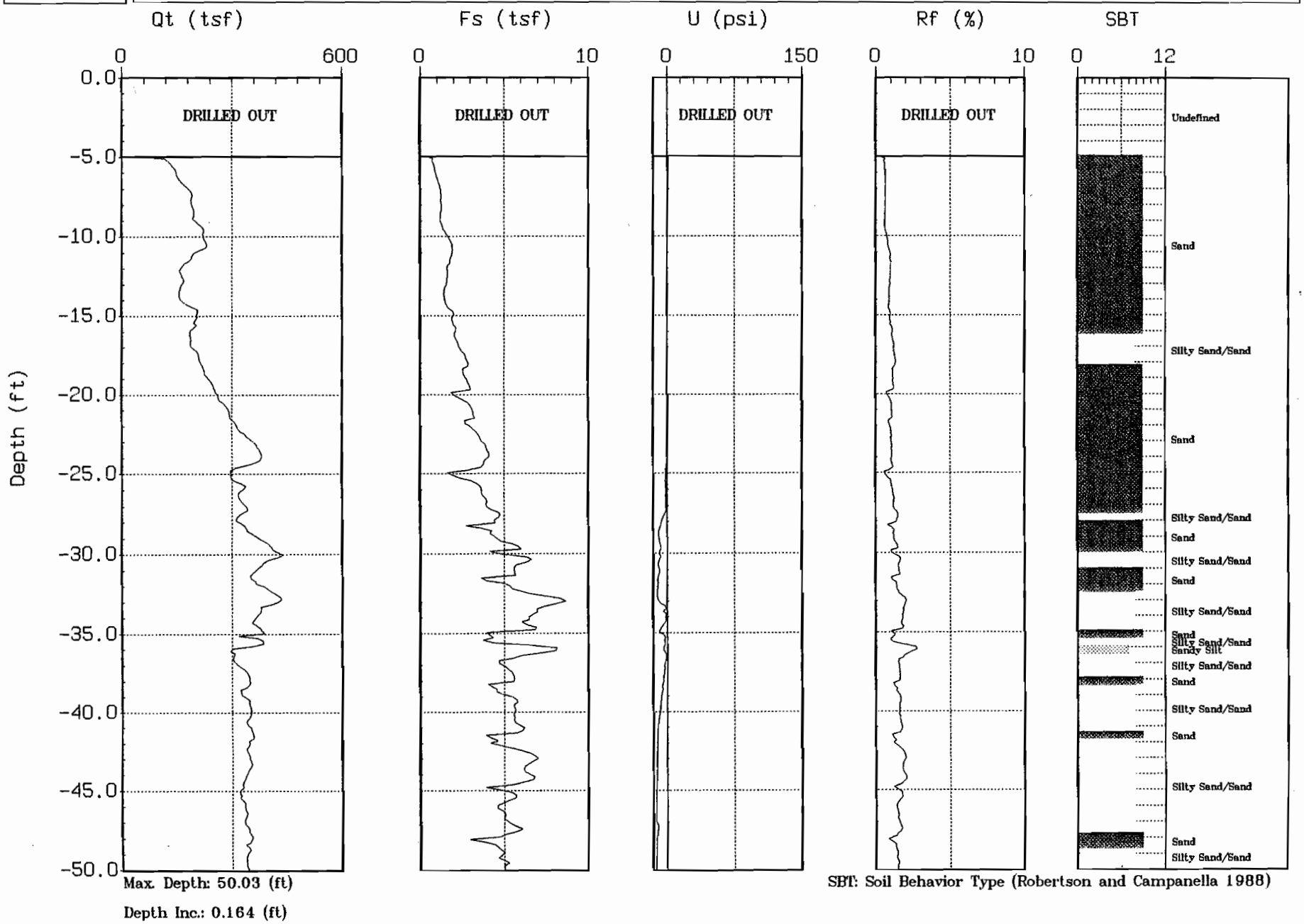
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS WWTP
Location : CPT-03

Engineer : CHRIS LOVATO
Date : 12:11:99 12:19



Max. Depth: 50.03 (ft)

Depth Inc.: 0.164 (ft)

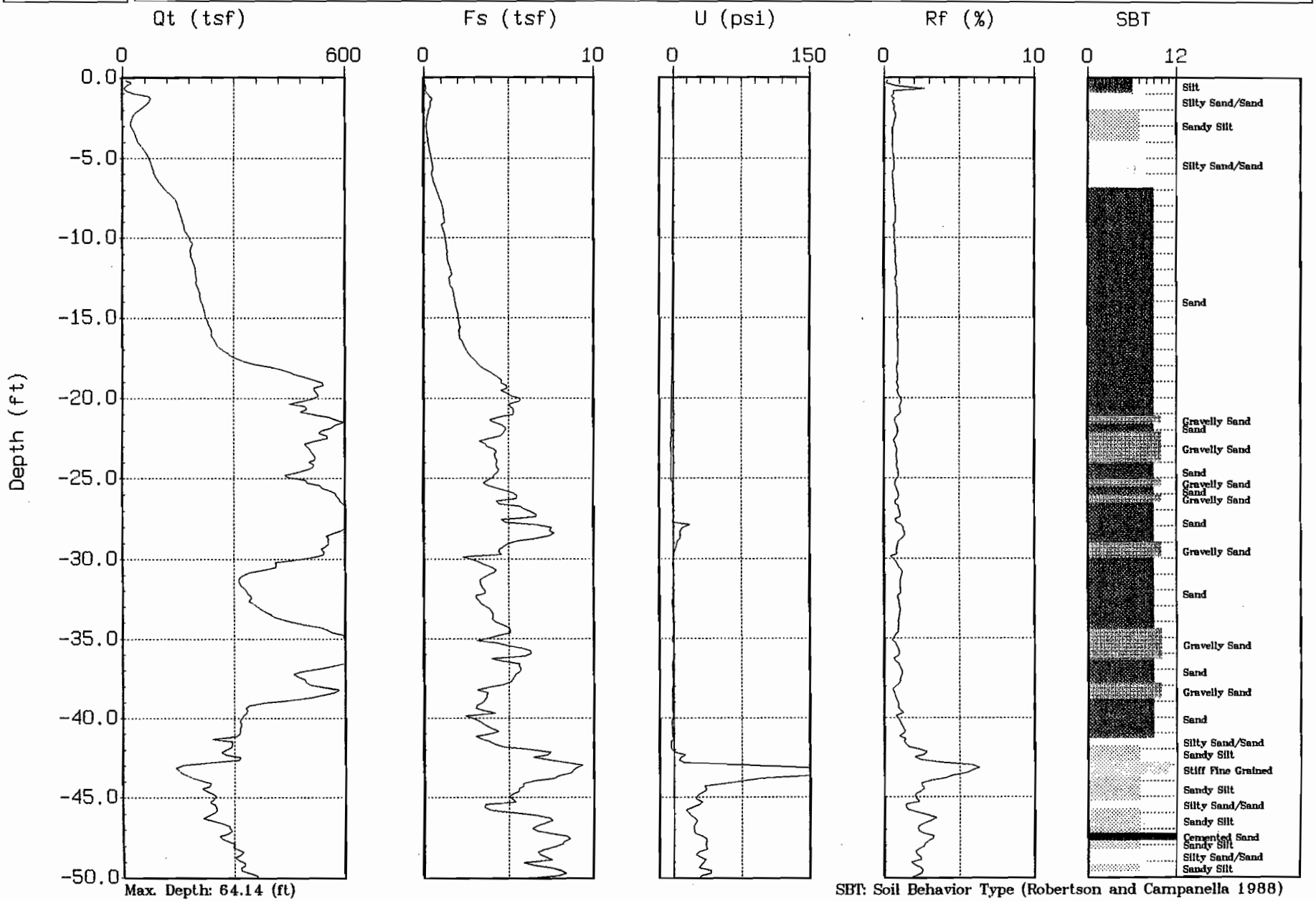
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS WWTP
Location : CPT-04

Engineer : CHRIS LOVATO
Date : 12:11:99 14:38



Max. Depth: 64.14 (ft)

Depth Inc.: 0.164 (ft)

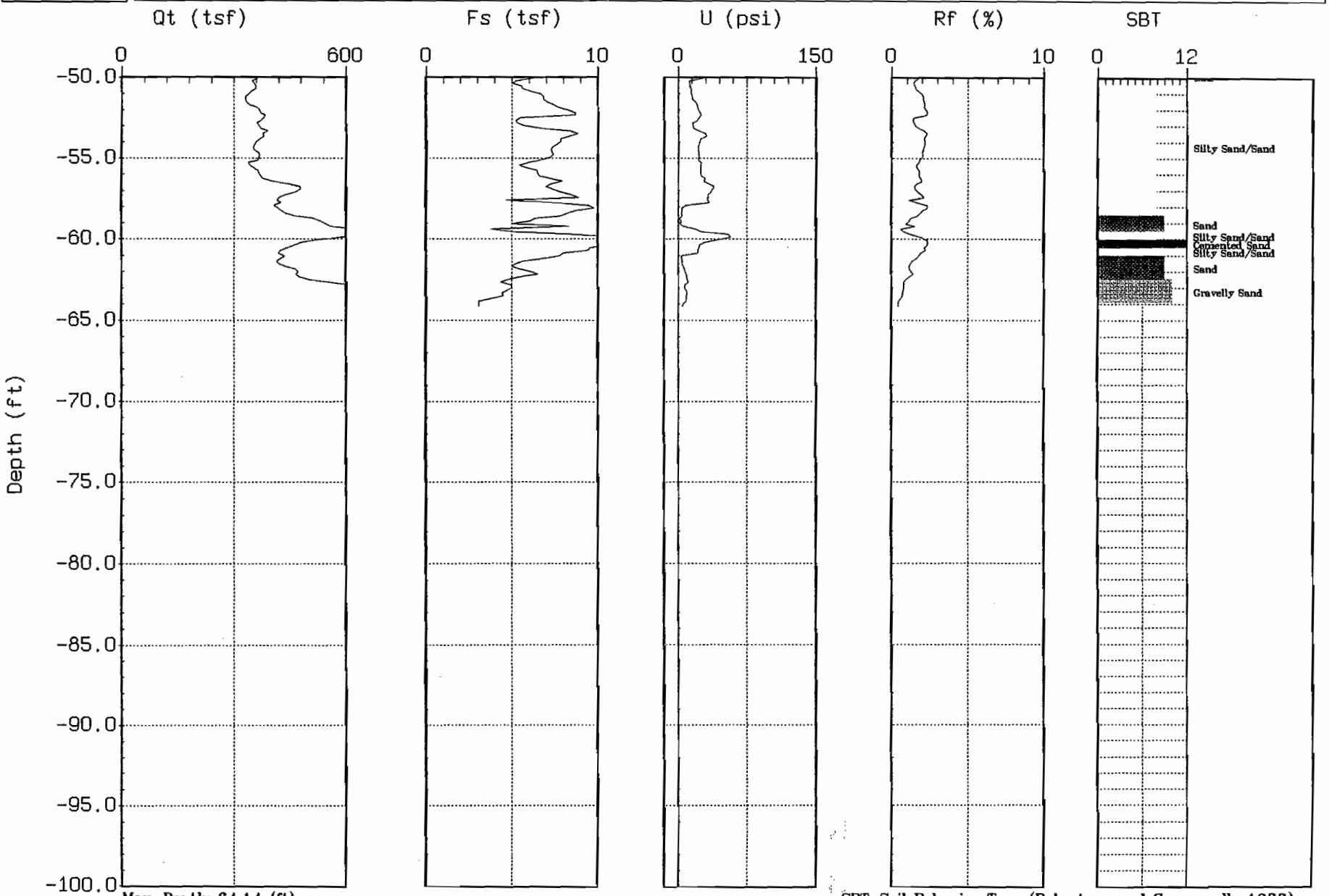
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS WWTP
Location : CPT-04

Engineer : CHRIS LOVATO
Date : 12:11:99 14:38



Max. Depth: 64.14 (ft)

Depth Inc.: 0.164 (ft)

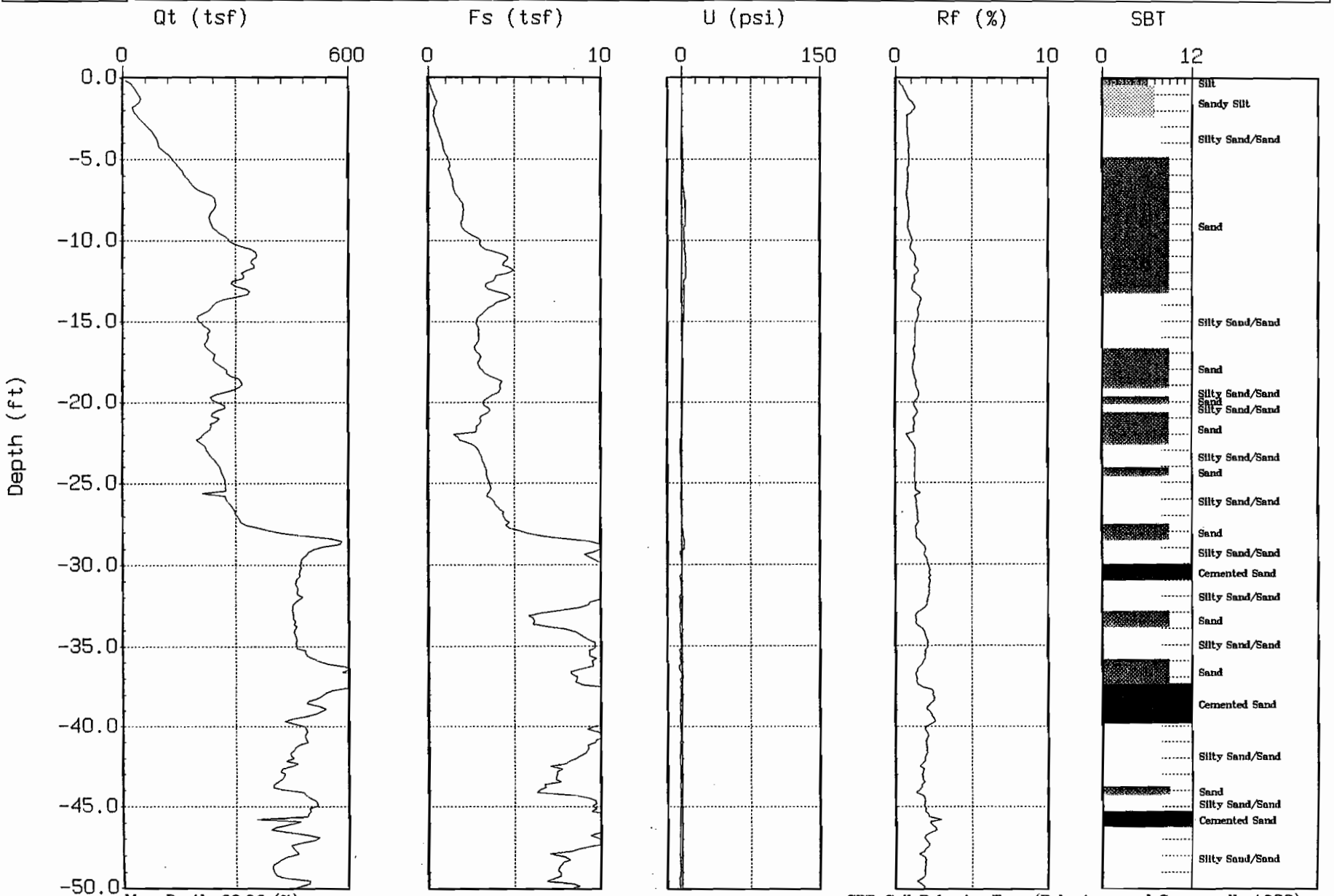
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS WWTP
Location : CPT-05

Engineer : CHRIS LOVATO
Date : 12:11:99 17:00



Max. Depth: 69.06 (ft)

Depth Inc.: 0.164 (ft)

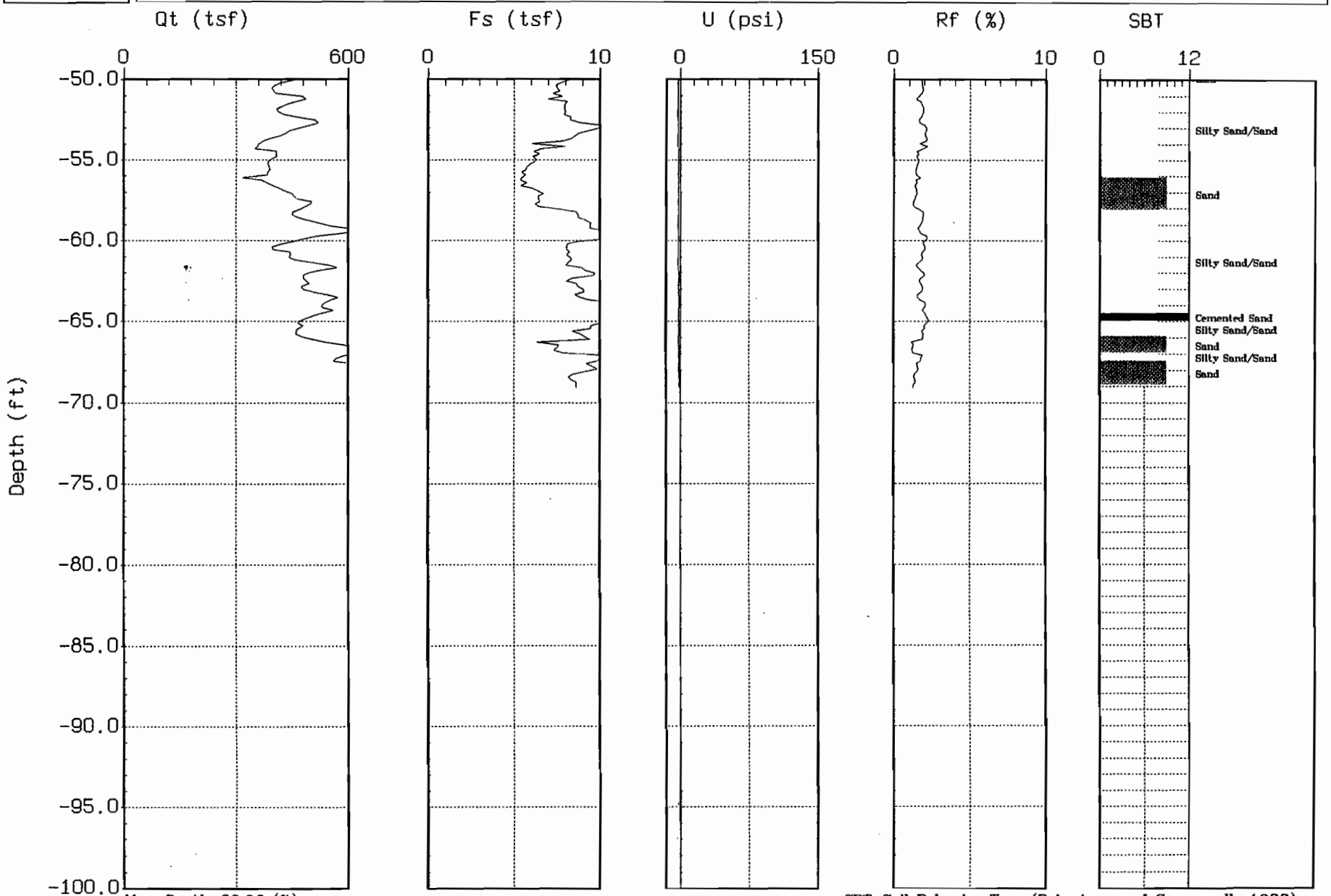
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS WWTP
Location : CPT-05

Engineer : CHRIS LOVATO
Date : 12:11:99 17:00



Max. Depth: 69.06 (ft)

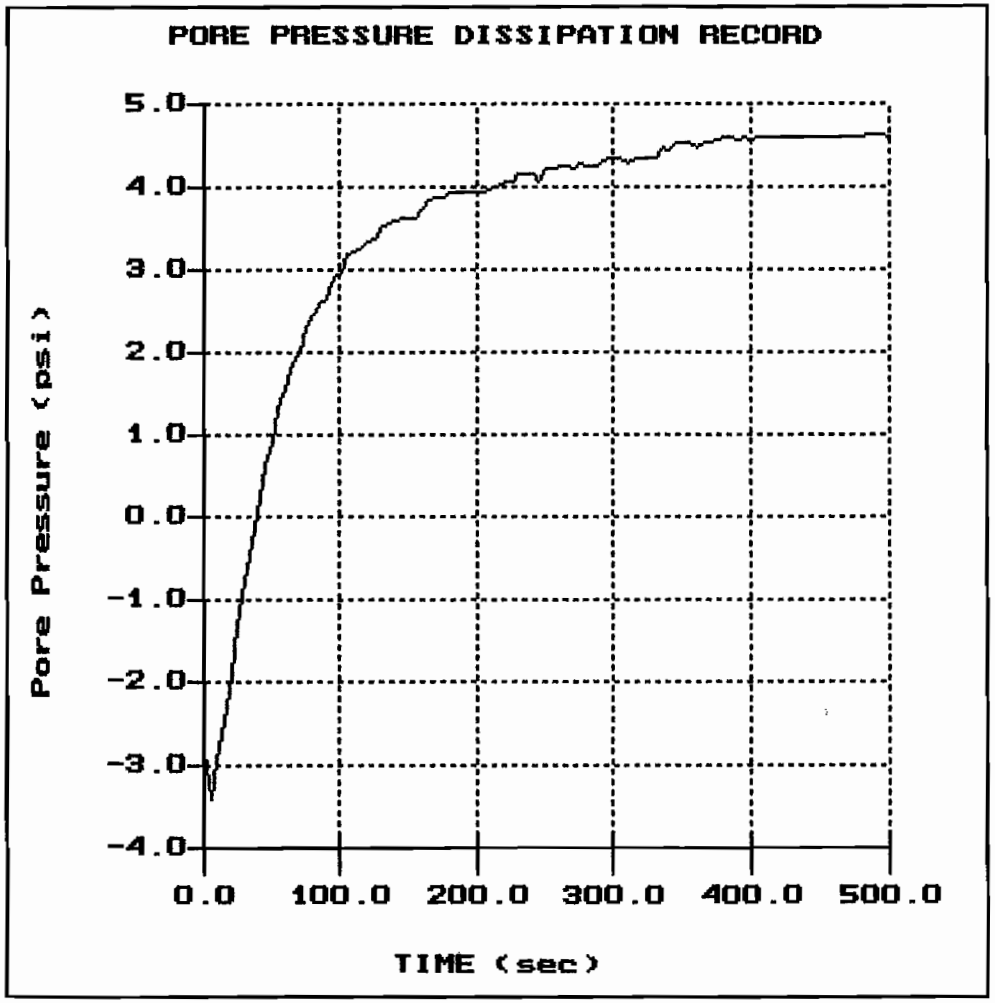
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CFS GEOTECHNICAL

Hole:CPT-01
Location:WWTP

Engineer: C.LOVATO
Date:12:11:99 09:56



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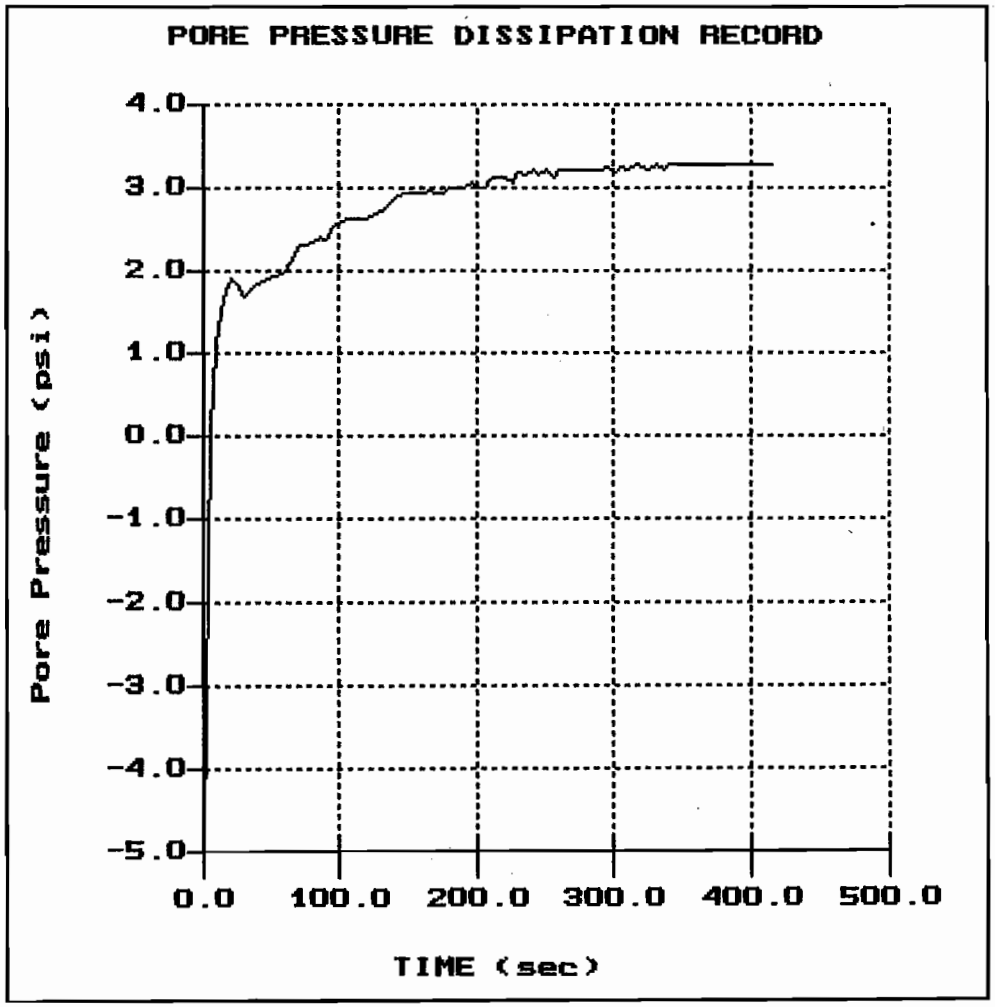
Depth (m): 7.65
(ft): 25.10
Duration : 500.0s
U-min: -3.40 5.0s
U-max: 4.64 495.0s

CFS GEOTECHNICAL

Hole:CPT-02
Location:WWTP

Engineer: C.LOVATO
Date:12:11:99 10:48

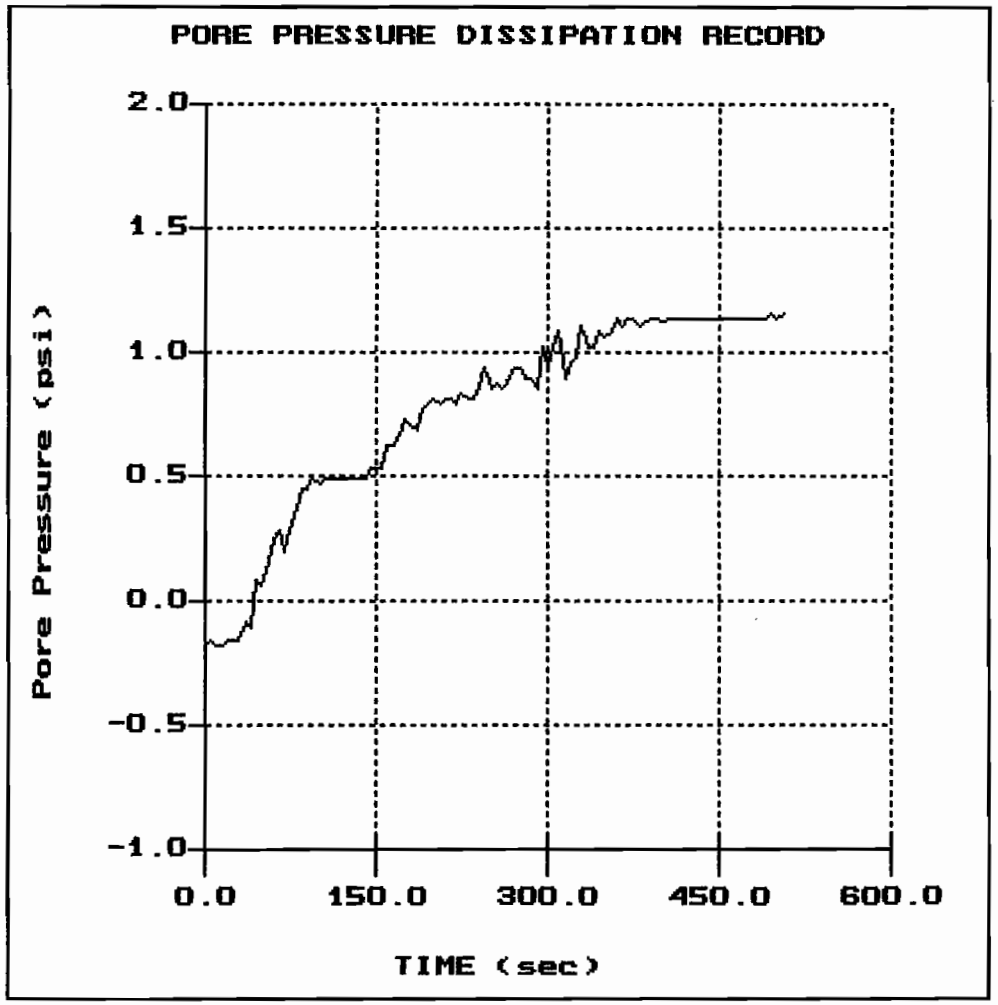


File: 156C02.PPD
Depth (m): 9.15
(ft): 30.02
Duration : 415.0s
U-min: -4.94 0.0s
U-max: 3.28 415.0s

CFS GEOTECHNICAL

Hole:CPT-03
Location:WWTP

Engineer: C.LOVATO
Date:12:11:99 12:19

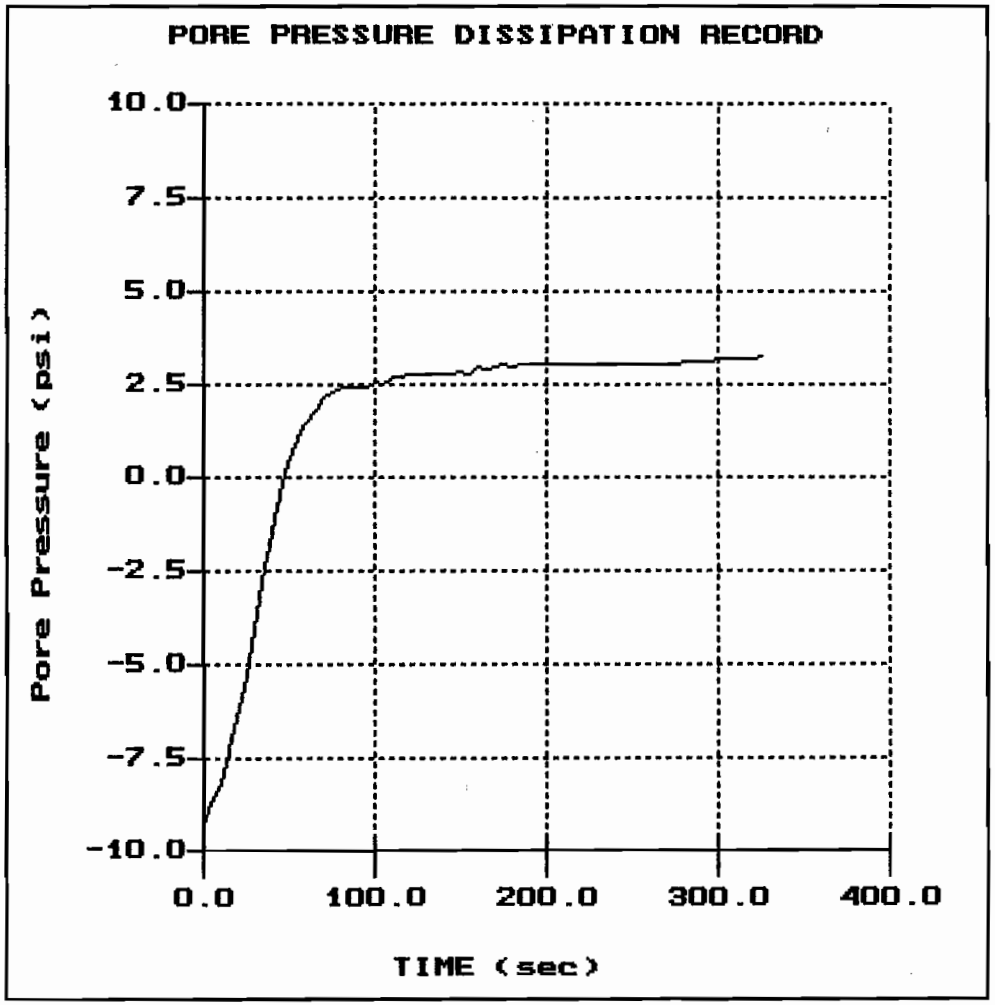


File: 156C03.PPD
Depth (m): 6.10
(ft): 20.01
Duration : 505.0s
U-min: -0.18 15.0s
U-max: 1.16 505.0s

CFS GEOTECHNICAL

Hole:CPT-03
Location:WWTP

Engineer: C.LOVATO
Date:12:11:99 12:19

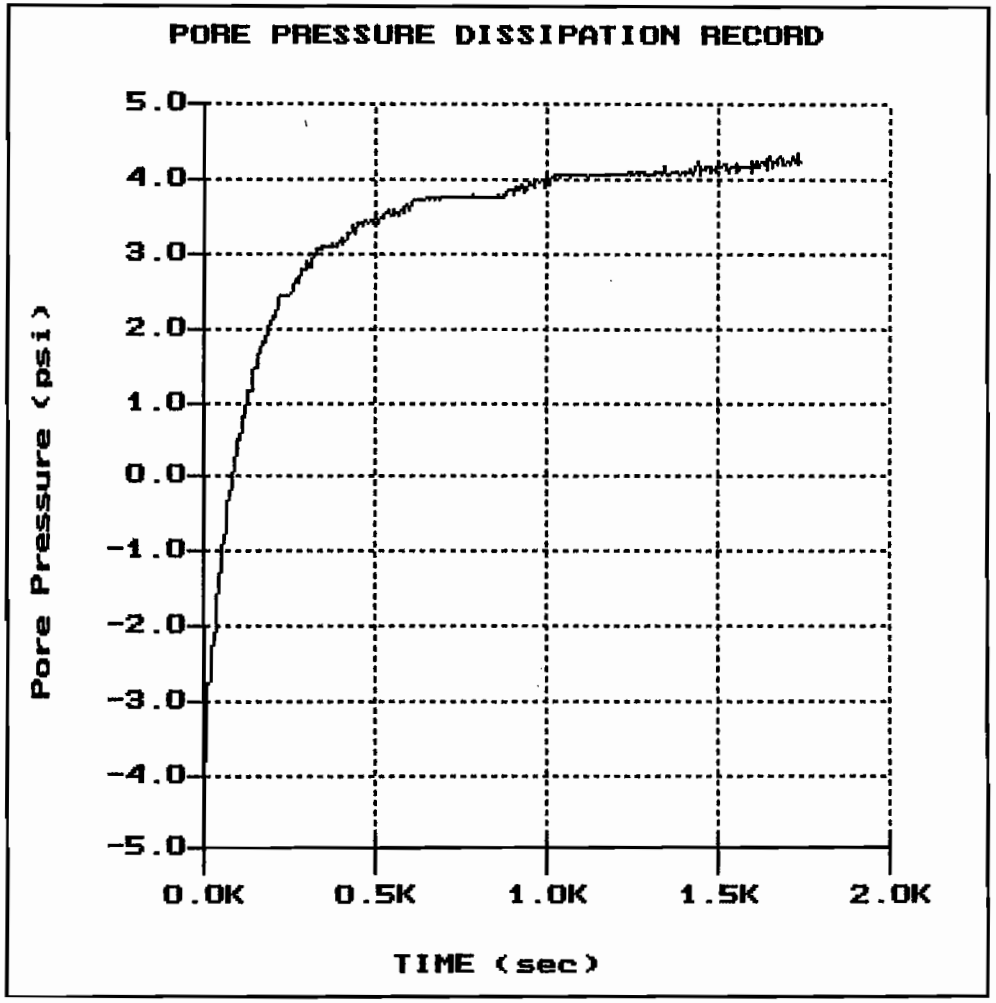


File: 156C03.PPD
Depth (m): 9.15
(ft): 30.02
Duration : 325.0s
U-min: -9.28 0.0s
U-max: 3.26 325.0s

CFS GEOTECHNICAL

Hole:CPT-03
Location:WWTP

Engineer: C.LOVATO
Date:12:11:99 12:19

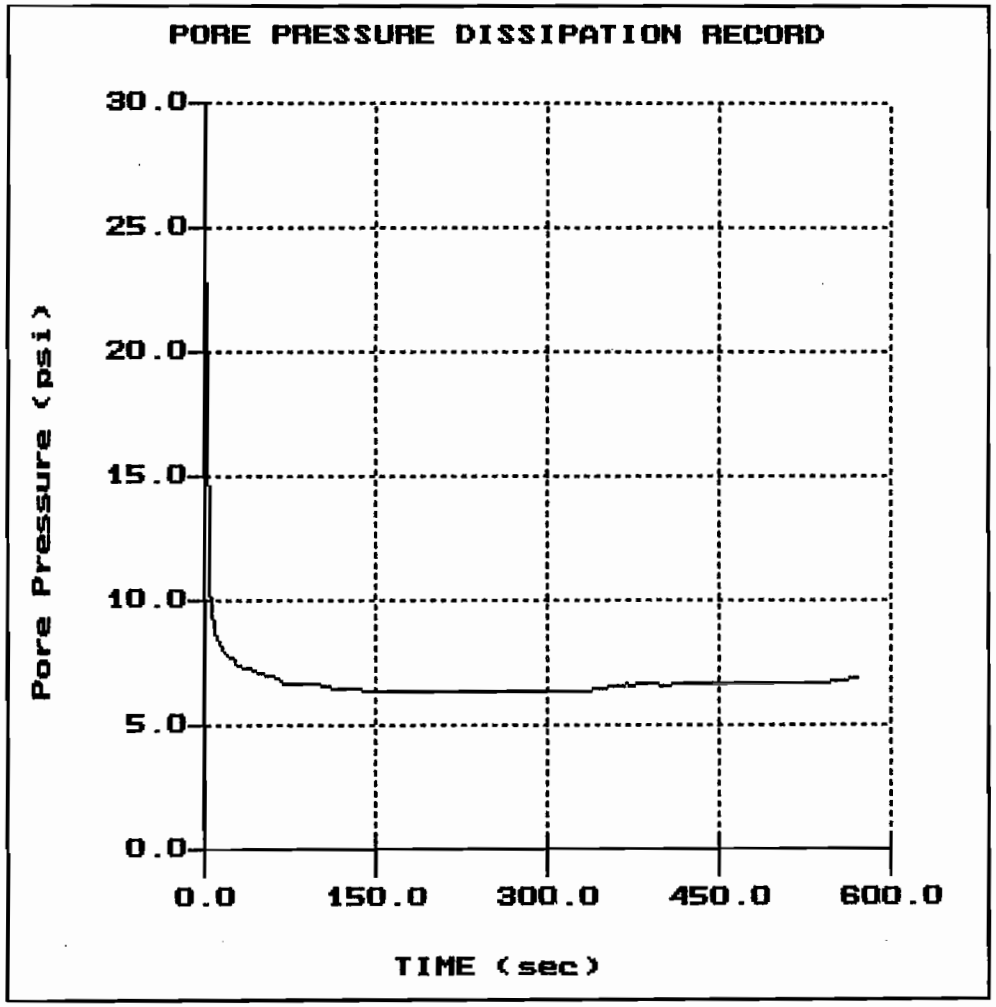


File: 156C03.PPD
Depth (m): 10.70
(ft): 35.10
Duration : 1740.0s
U-min: -4.72 0.0s
U-max: 4.33 1730.0s

CFS GEOTECHNICAL

Hole:CPT-04
Location:WWTP

Engineer: C.LOVATO
Date:12:11:99 14:38

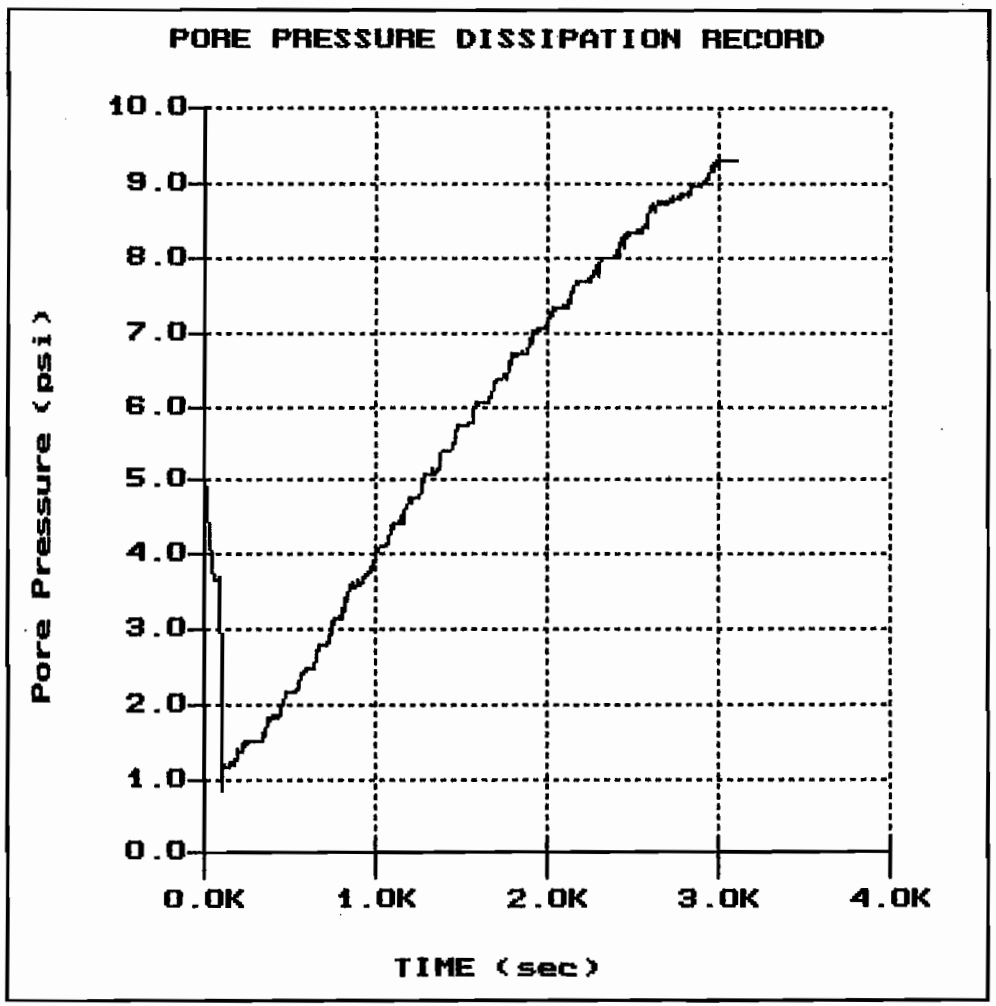


File: 156C04.PPD
Depth (m): 15.25
(ft): 50.03
Duration : 570.0s
U-min: 6.33 215.0s
U-max: 26.81 0.0s

CFS GEOTECHNICAL

Hole:CPT-04
Location:WWTP

Engineer: C.LOVATO
Date:12:11:99 14:38

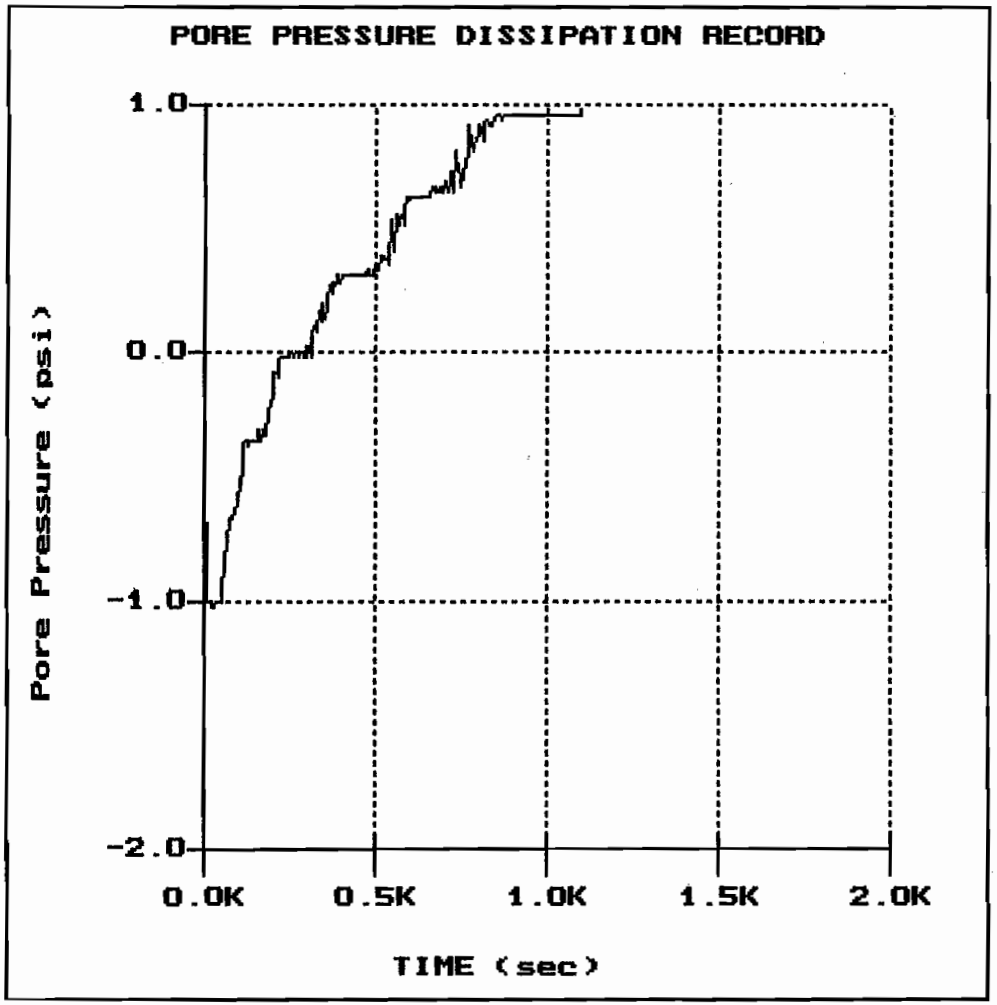


File: 156C04.PPD
Depth (m): 19.55
(ft): 64.14
Duration : 3105.0s
U-min: 0.85 105.0s
U-max: 9.32 3105.0s

CFS GEOTECHNICAL

Hole:CPT-05
Location:WWTP

Engineer: C.LOVATO
Date:12:11:99 17:00



File: 156C05.PPD
Depth (m): 21.05
(ft): 69.06
Duration : 1100.0s
U-min: -1.02 30.0s
U-max: 0.98 1100.0s

PRESENTATION OF CONE PENETRATION TEST DATA

LOS OSOS

LOS OSOS, CALIFORNIA

Prepared for:

CFS GEOTECHNICAL
San Luis Obispo, California

Prepared by:

GREGG IN SITU, INC.
Signal Hill, California

Prepared on:

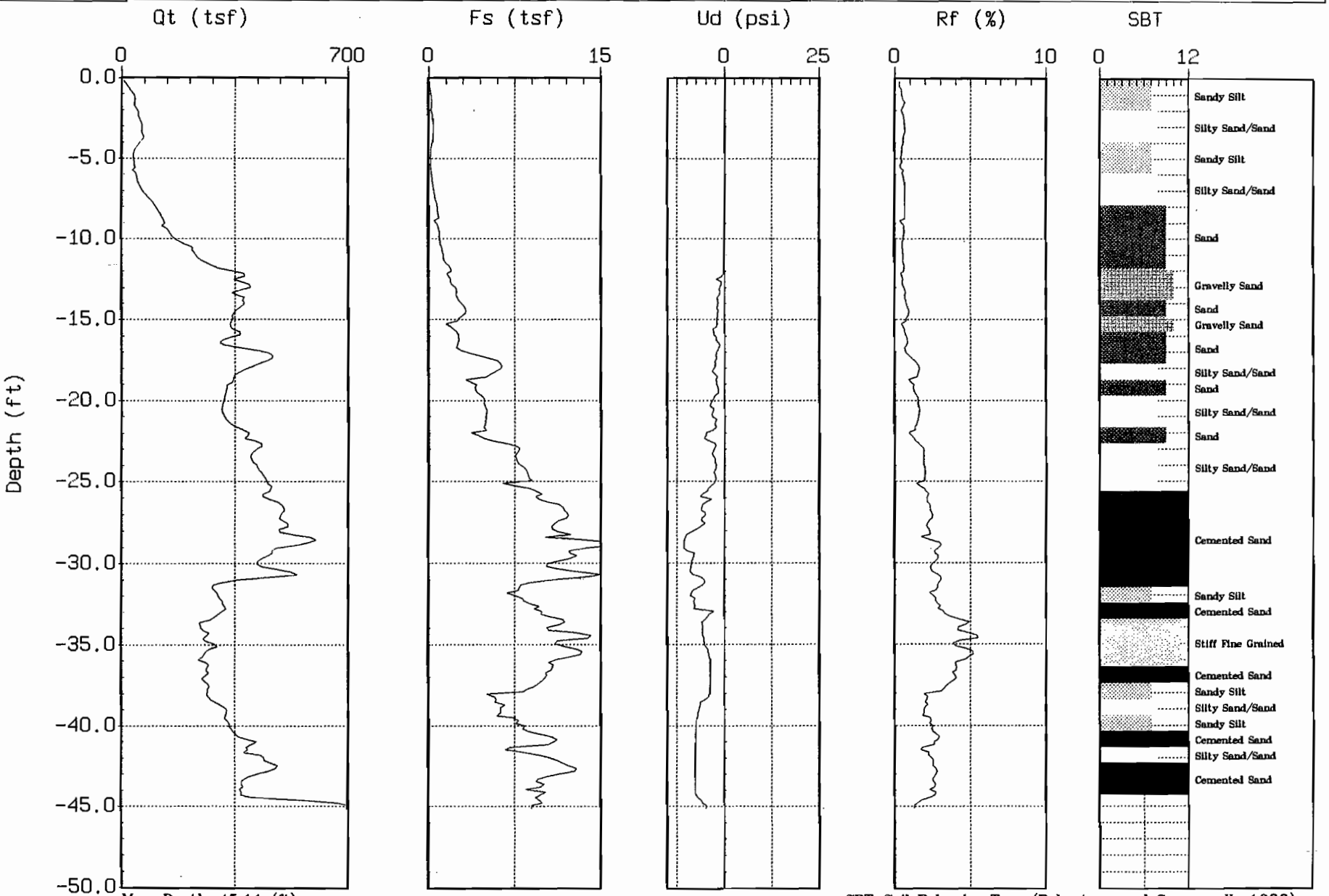
May 4, 2000

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-101

Engineer : C. LAVOTO
Date : 05:01:00 11:25



Max. Depth: 45.11 (ft)

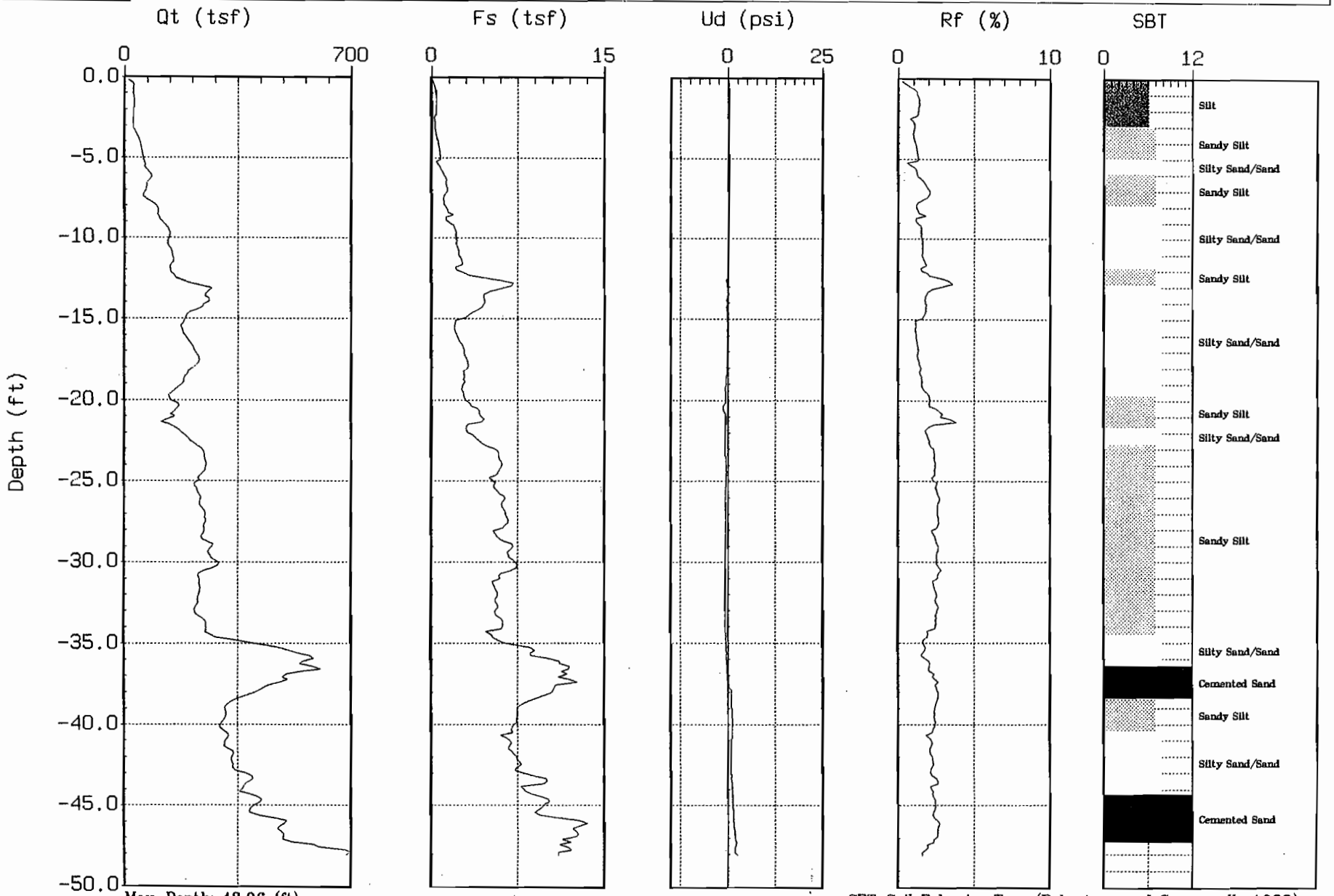
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-102

Engineer : C. LAVOTO
Date : 05:01:00 15:58



Max. Depth: 48.06 (ft)

Depth Inc.: 0.164 (ft)

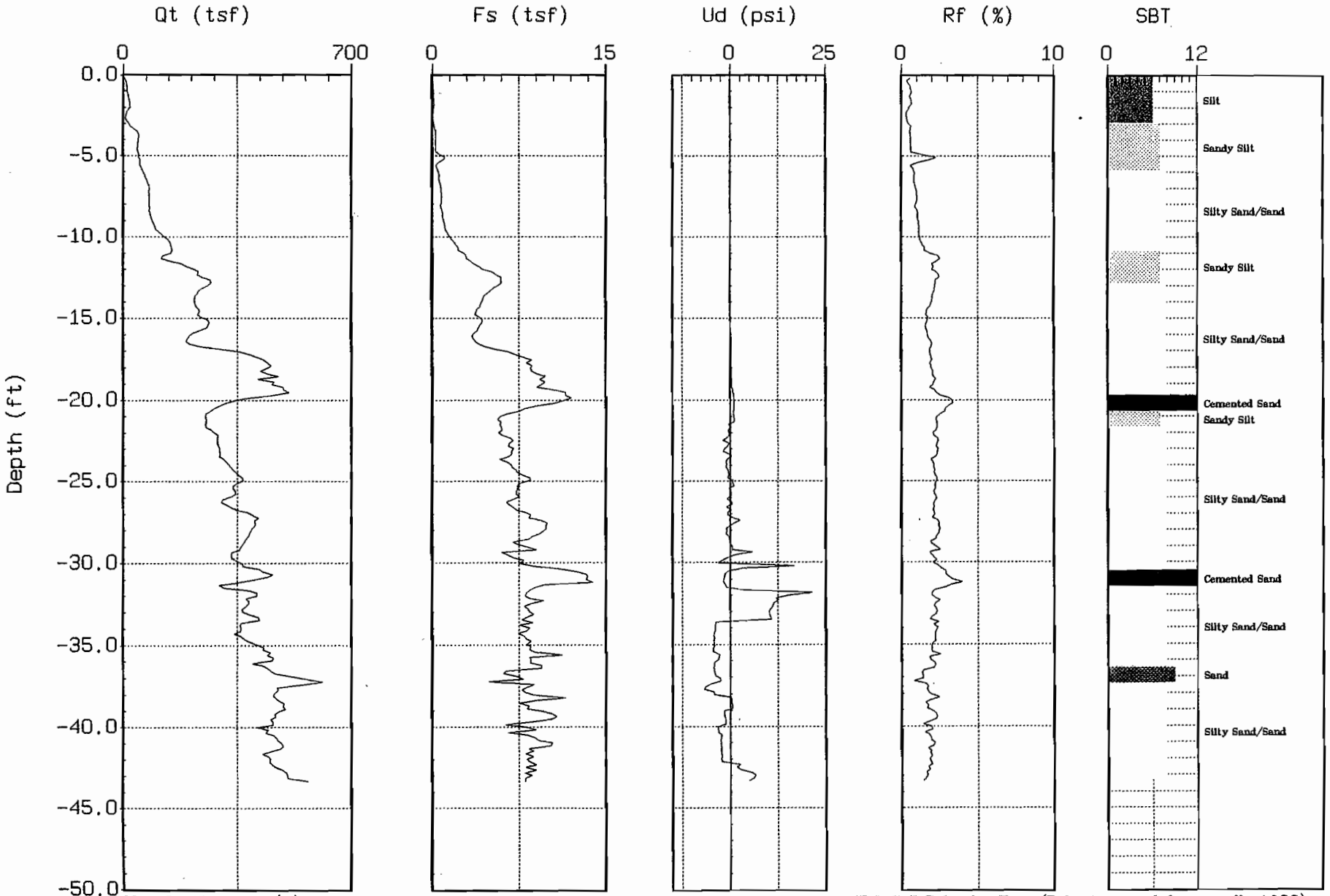
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-103

Engineer : C. LAVOTO
Date : 05:01:00 10:30



Max. Depth: 43.31 (ft)

Depth Inc.: 0.164 (ft)

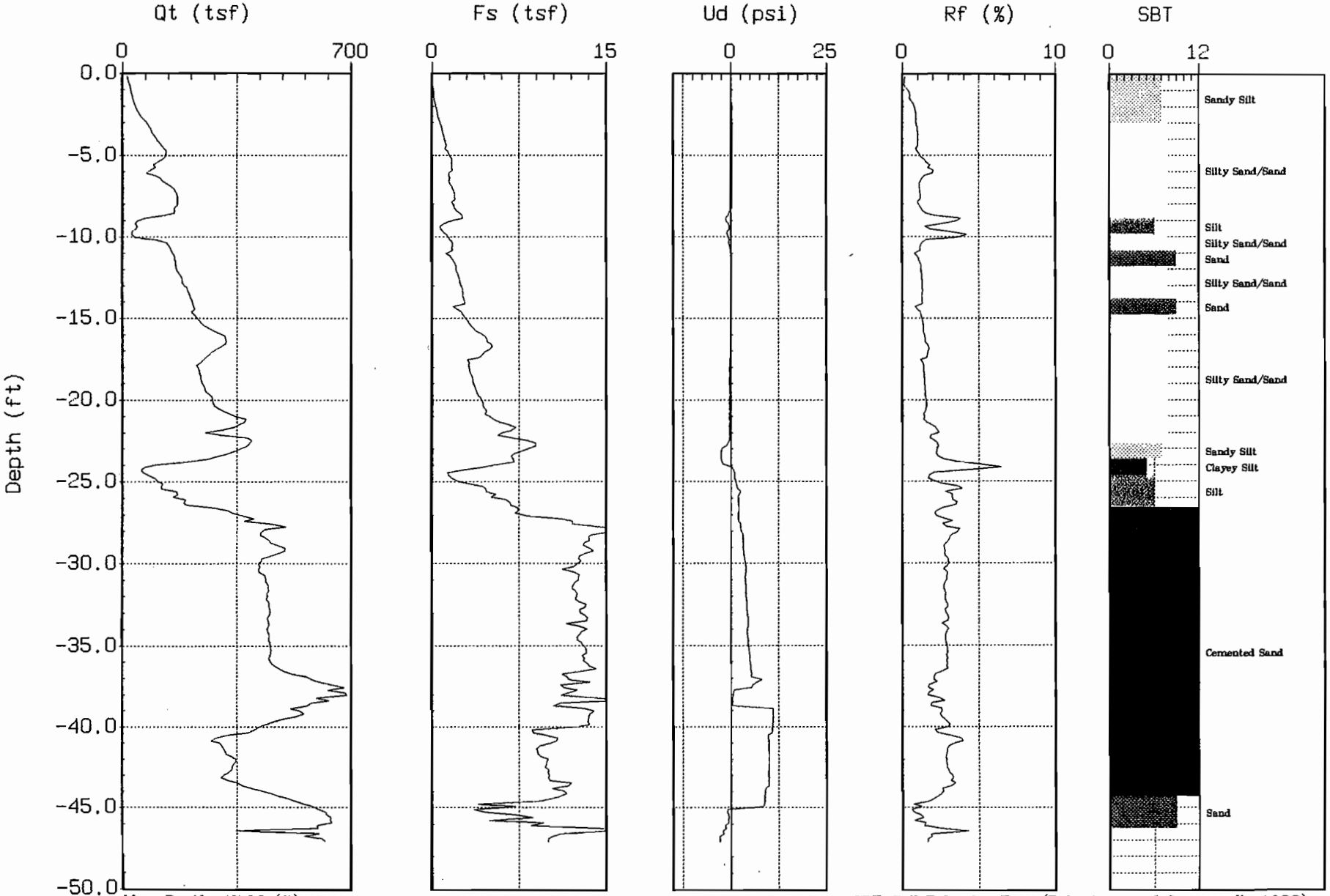
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-104

Engineer : C. LAVOTO
Date : 05:01:00 11:59



Max. Depth: 47.08 (ft)

Depth Inc.: 0.164 (ft)

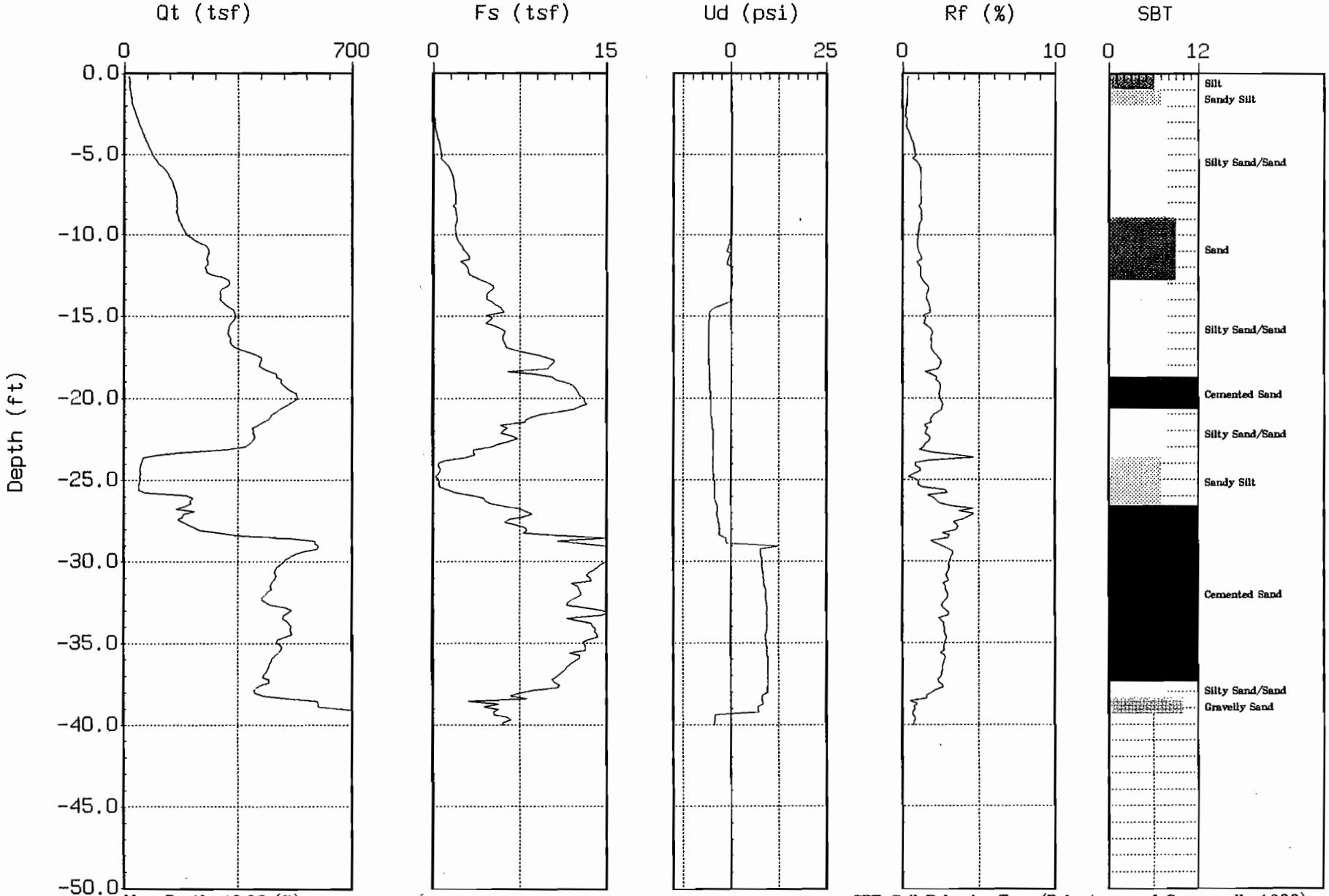
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-105

Engineer : C. LAVOTO
Date : 05:01:00 12:42



Max. Depth: 40.03 (ft)

Depth Inc.: 0.164 (ft)

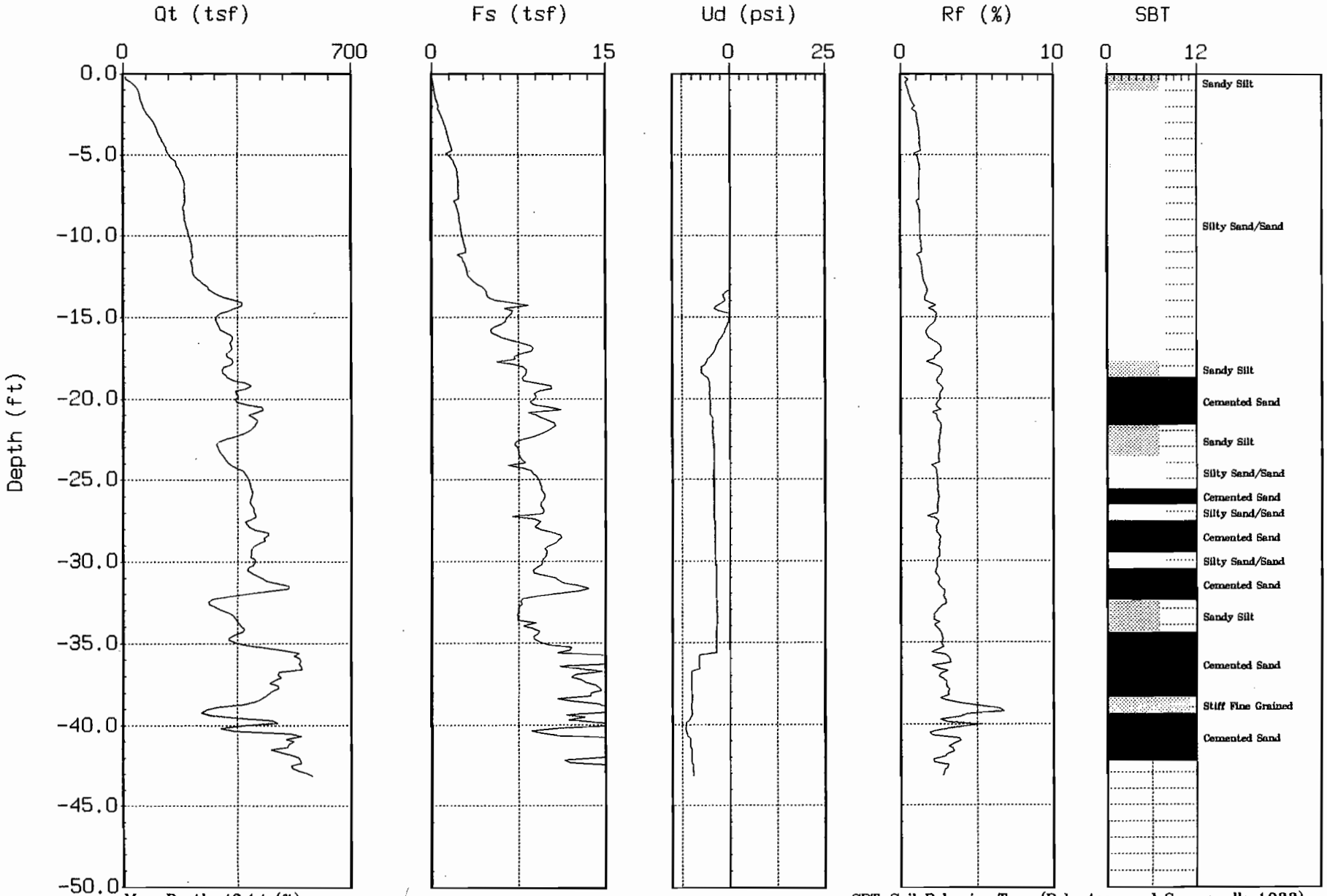
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-106

Engineer : C. LAVOTO
Date : 05:01:00 13:16



Max. Depth: 43.14 (ft)

Depth Inc.: 0.164 (ft)

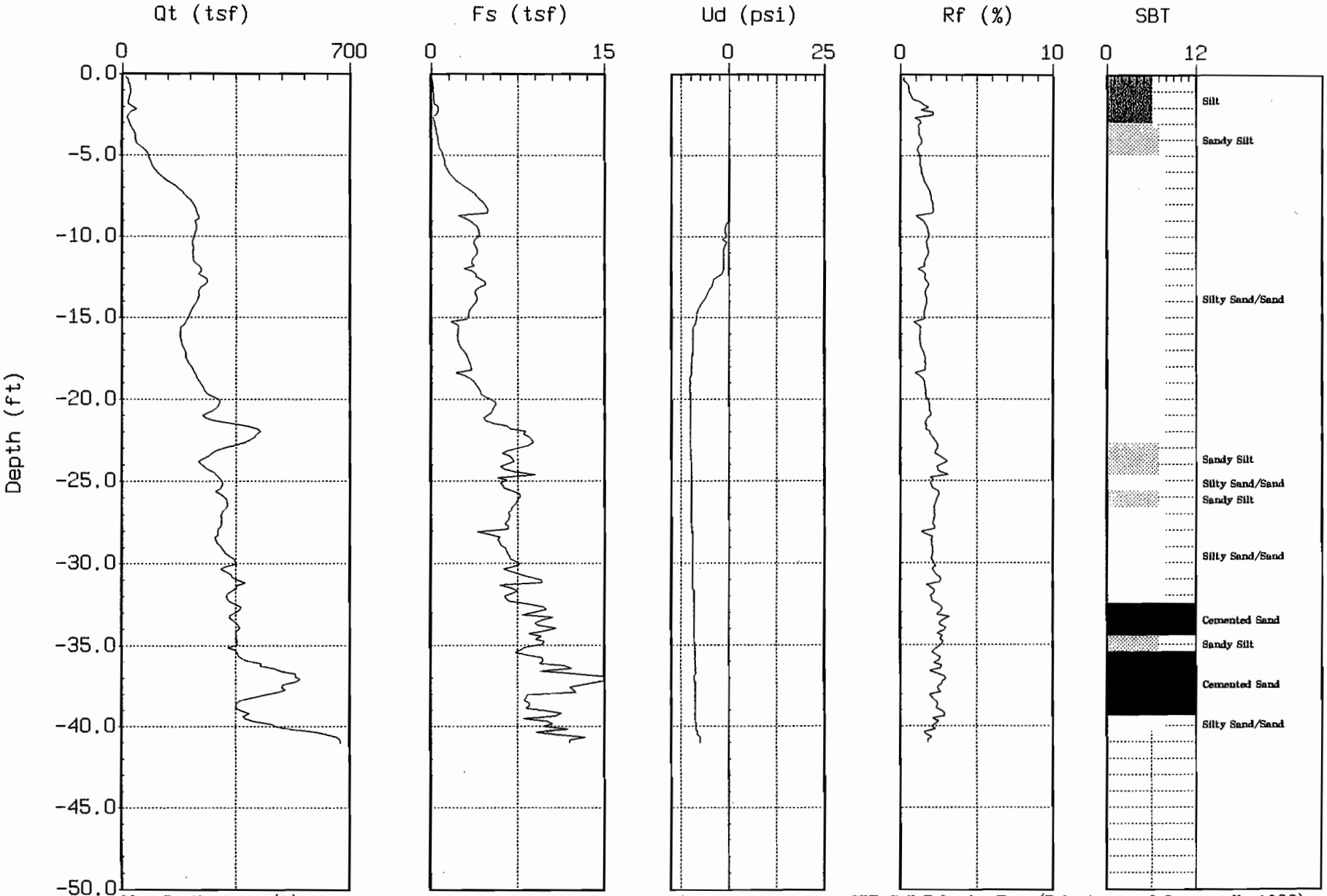
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-107

Engineer : C. LAVOTO
Date : 05:01:00 13:49



Max. Depth: 41.01 (ft)

Depth Inc.: 0.164 (ft)

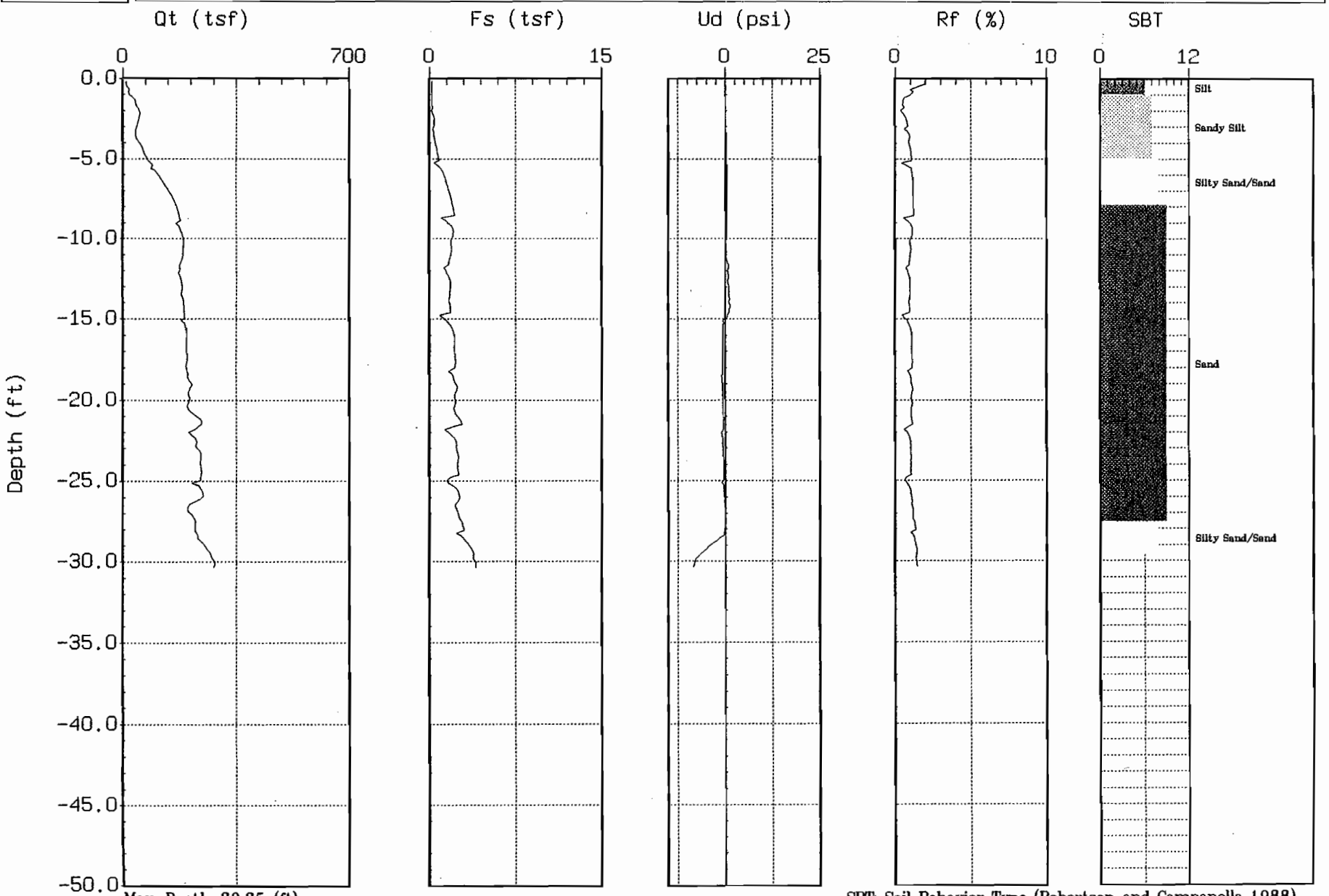
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-401

Engineer : C. LAVOTO
Date : 05:01:00 14:18



Max. Depth: 30.35 (ft)

Depth Inc.: 0.164 (ft)

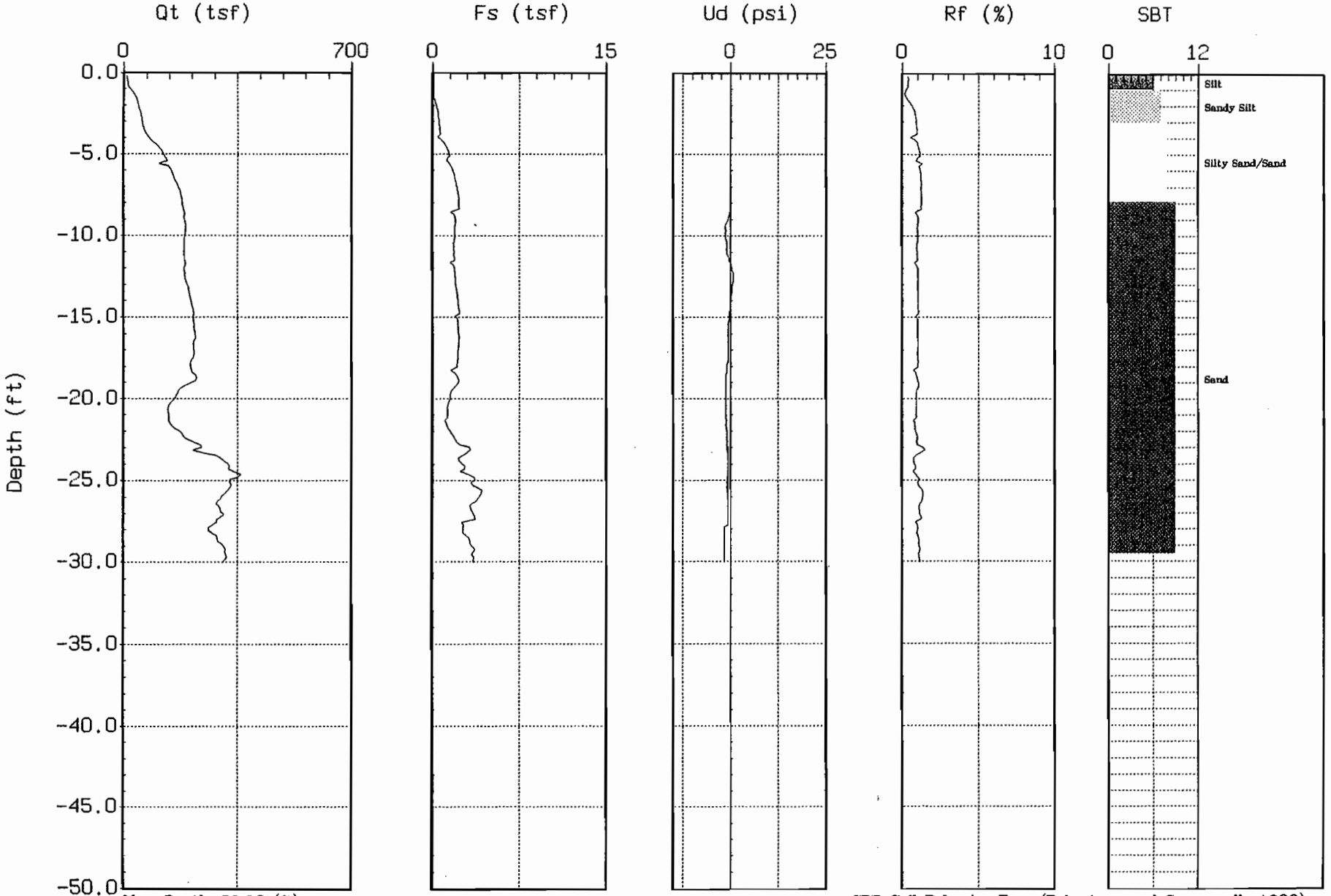
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-402

Engineer : C. LAVOTO
Date : 05:01:00 14:43



Max. Depth: 30.02 (ft)

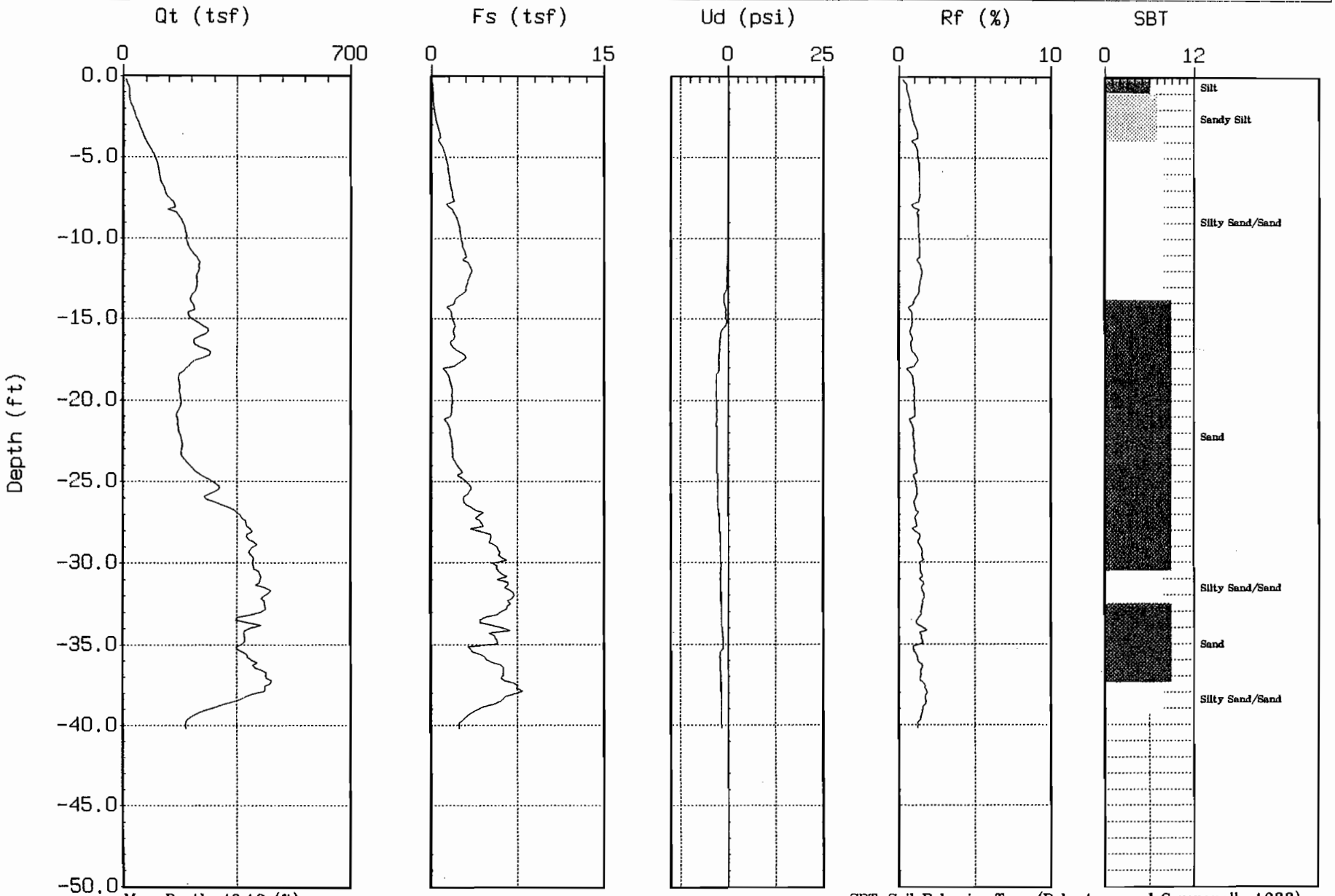
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-403

Engineer : C. LAVOTO
Date : 05:01:00 15:06



Max. Depth: 40.19 (ft)

Depth Inc.: 0.164 (ft)

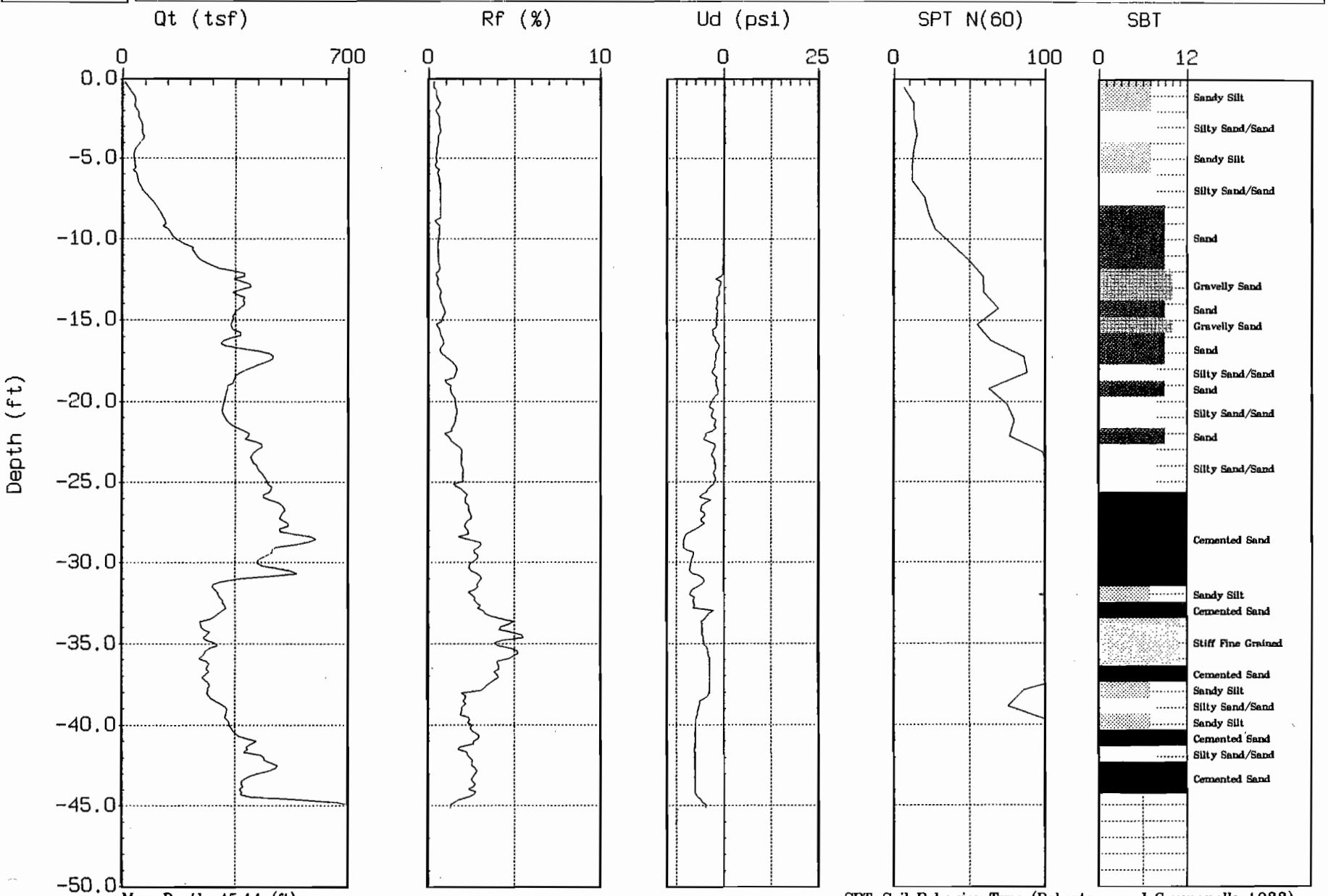
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-101

Engineer : C. LAVOTO
Date : 05:01:00 11:25



Max. Depth: 45.11 (ft)

Depth Inc.: 0.164 (ft)

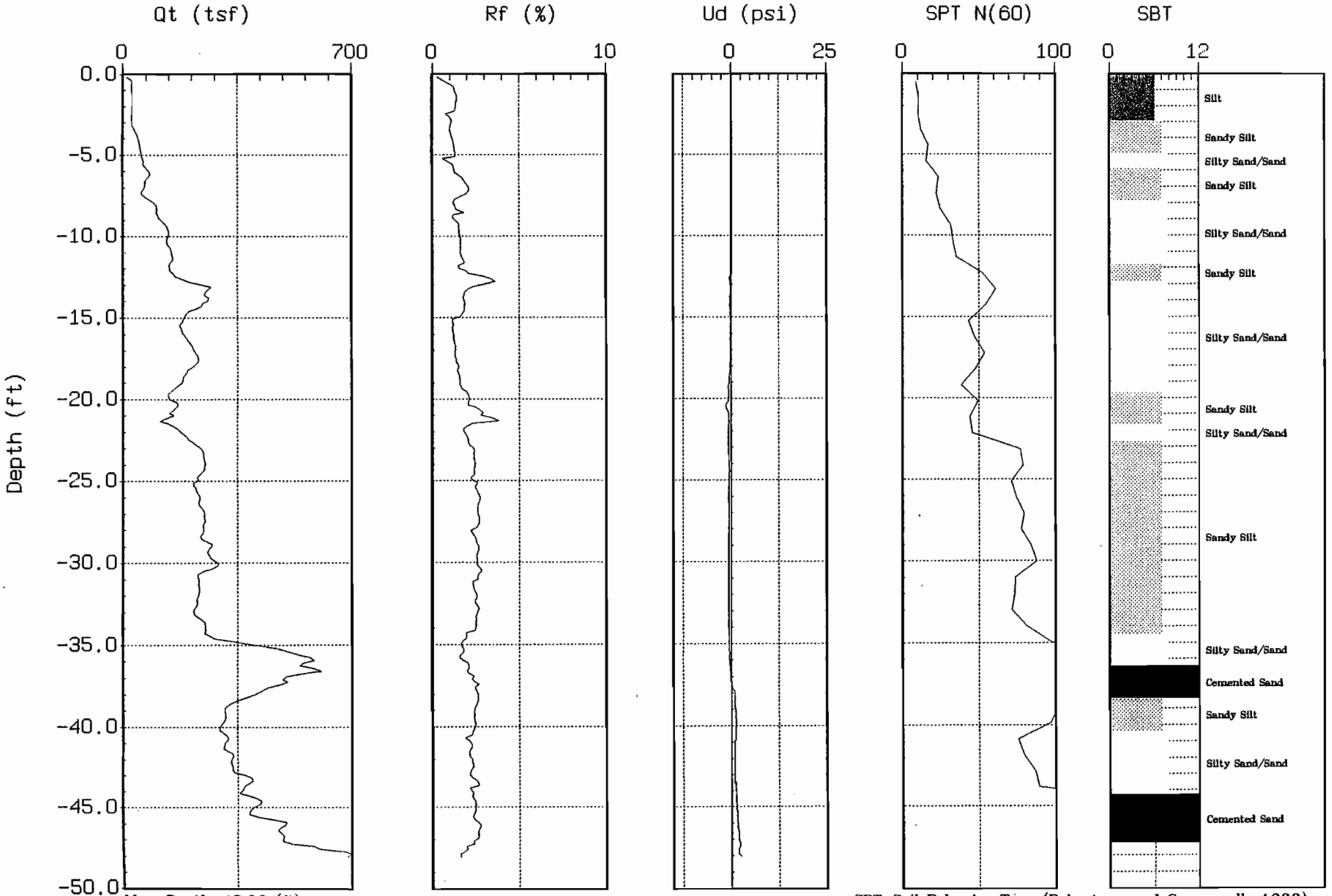
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-102

Engineer : C. LAVOTO
Date : 05:01:00 15:58



Max. Depth: 48.06 (ft)

Depth Inc.: 0.164 (ft)

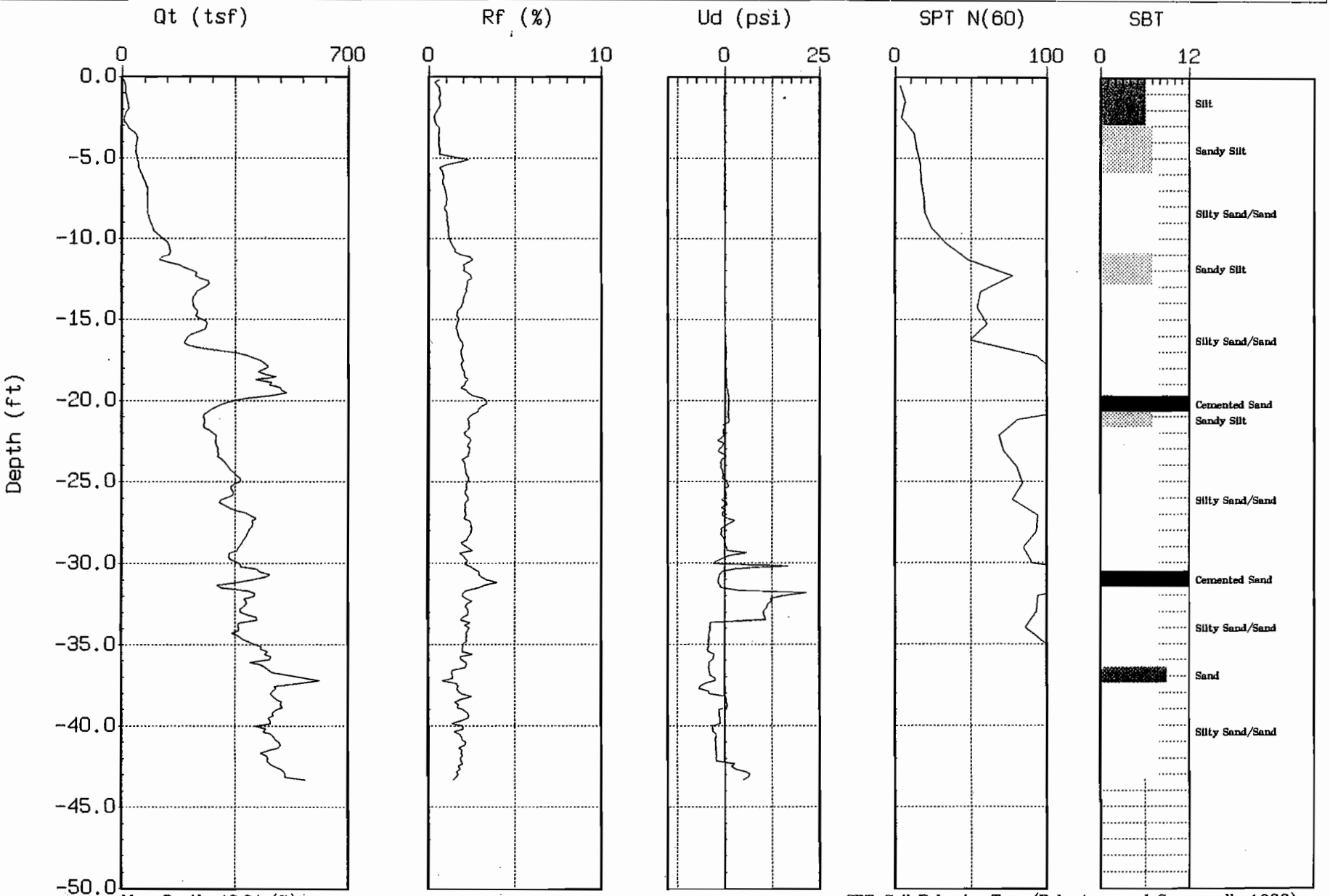
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-103

Engineer : C. LAVOTO
Date : 05:01:00 10:30



Max. Depth: 43.31 (ft)

Depth Inc.: 0.164 (ft)

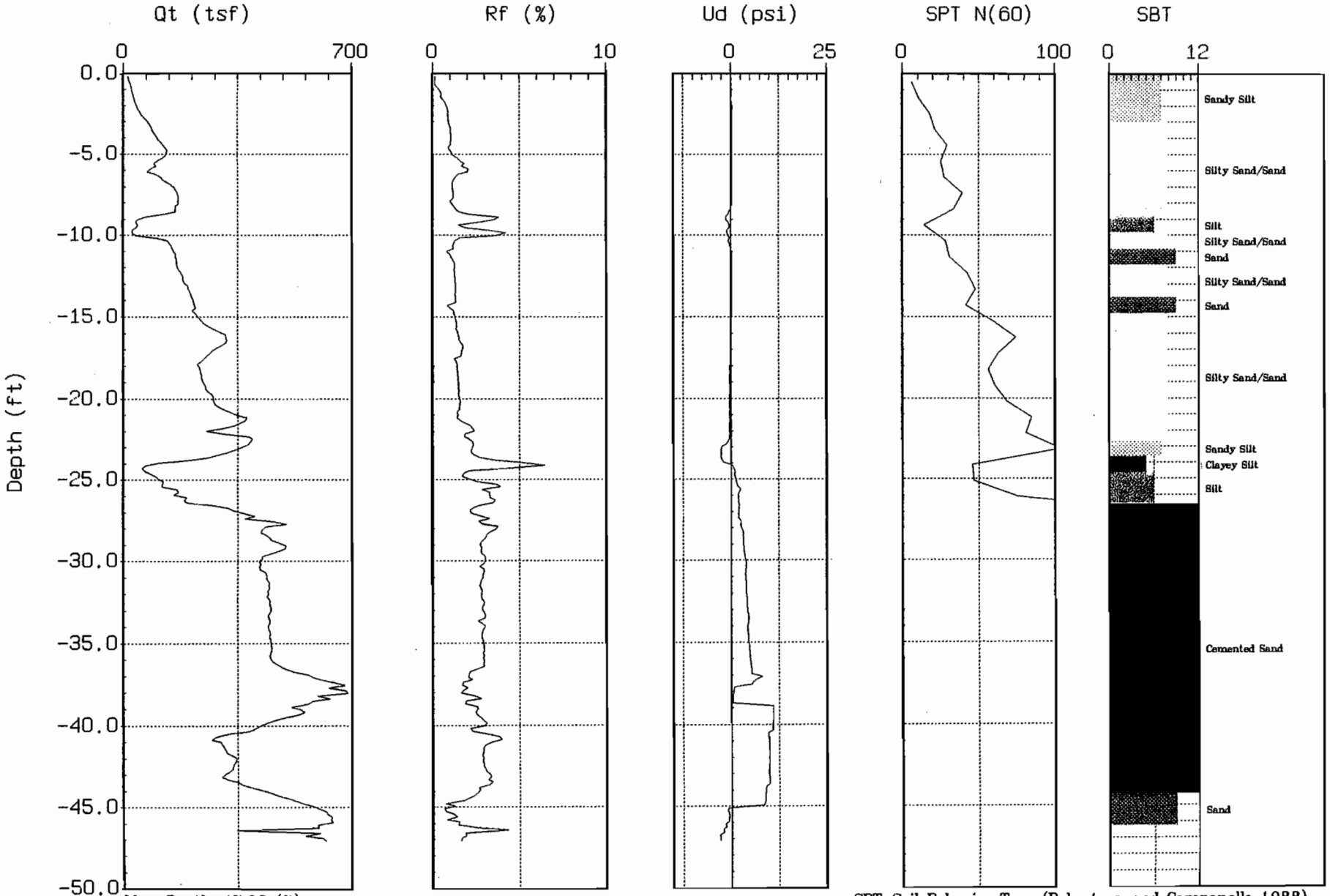
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-104

Engineer : C. LAVOTO
Date : 05:01:00 11:59



Max. Depth: 47.08 (ft)

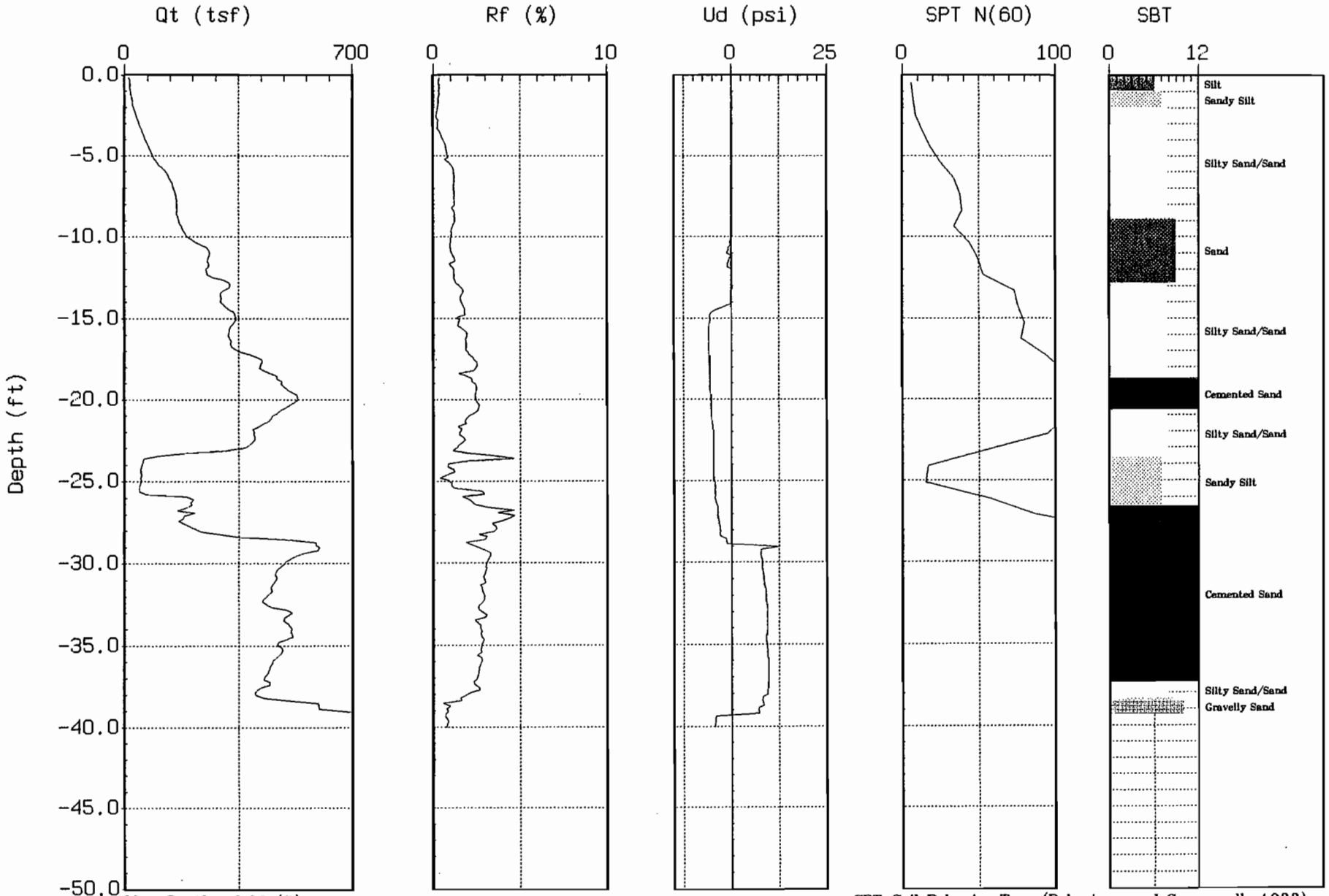
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-105

Engineer : C. LAVOTO
Date : 05:01:00 12:42



Max. Depth: 40.03 (ft)

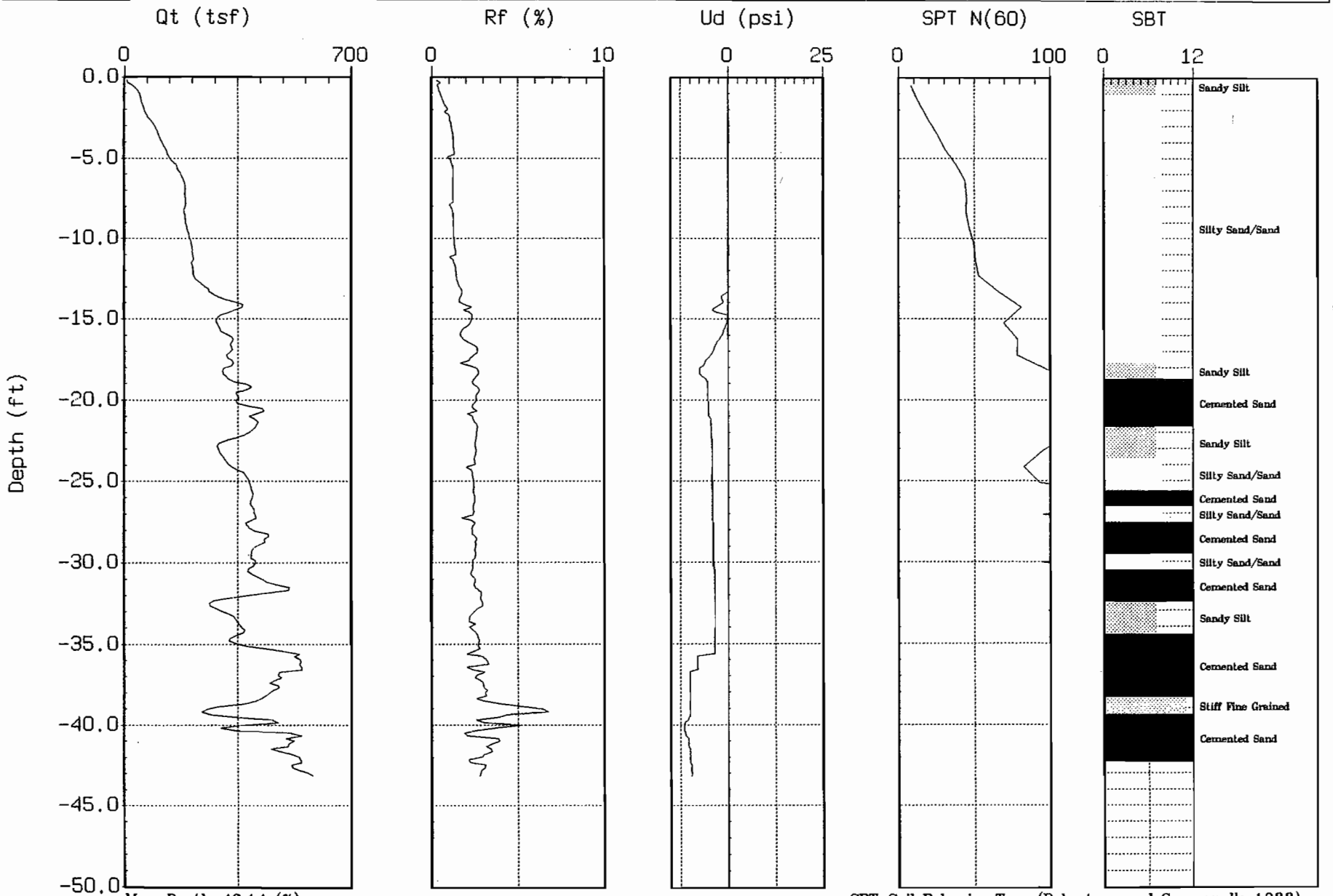
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-106

Engineer : C. LAVOTO
Date : 05:01:00 13:16



Max. Depth: 43.14 (ft)

Depth Inc.: 0.164 (ft)

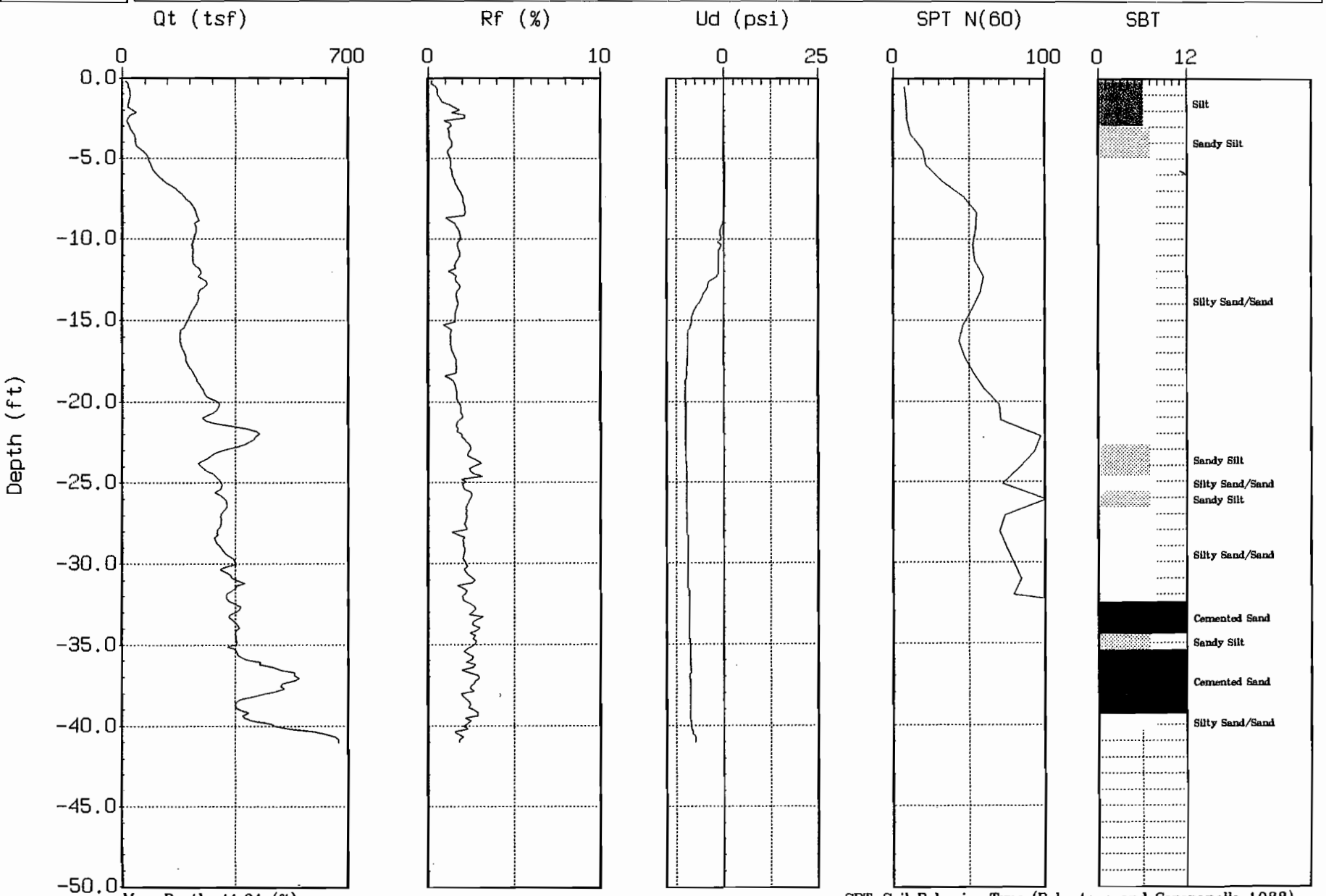
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-107

Engineer : C. LAVOTO
Date : 05:01:00 13:49



Max. Depth: 41.01 (ft)

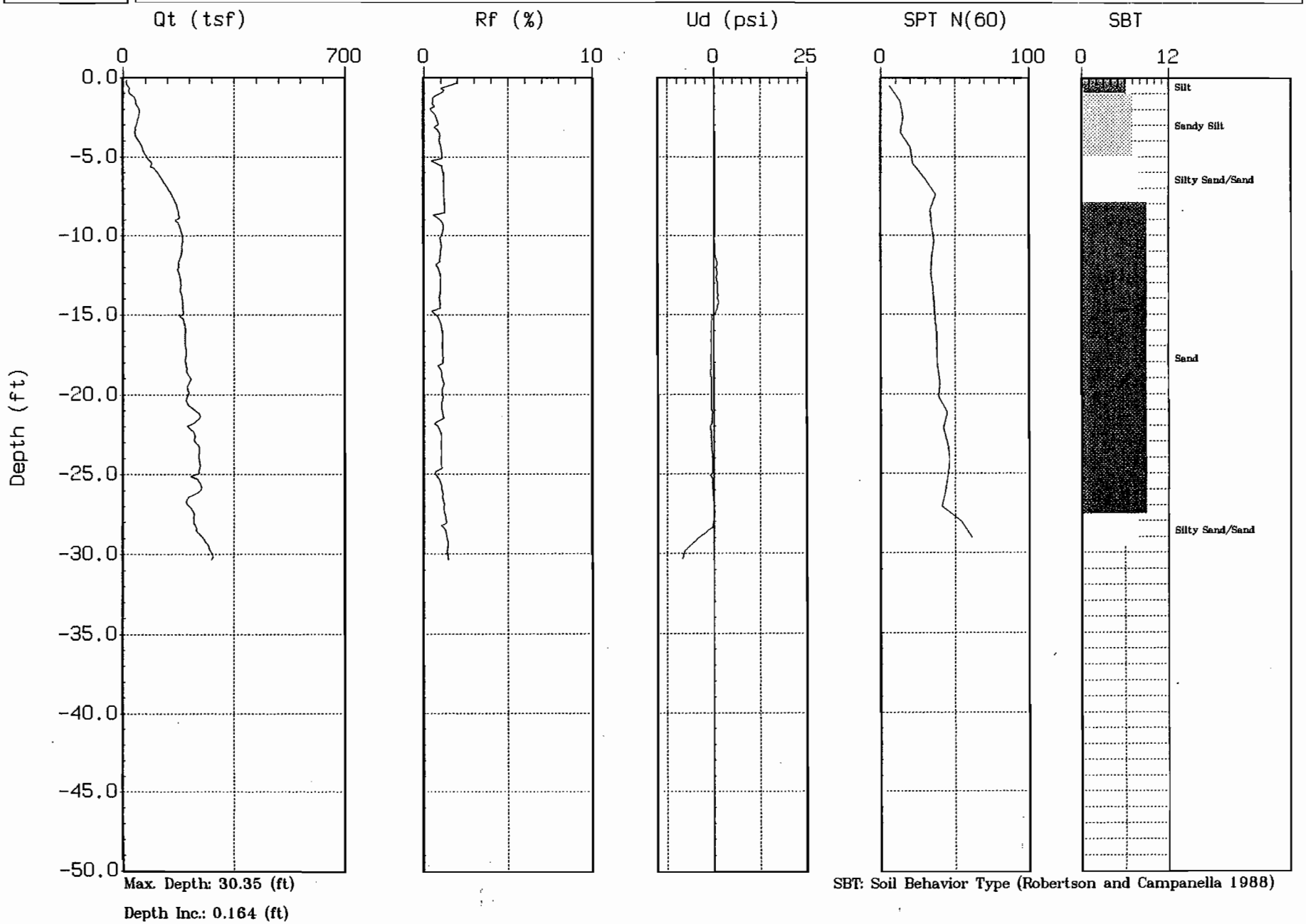
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-401

Engineer : C. LAVOTO
Date : 05:01:00 14:18



Max. Depth: 30.35 (ft)

Depth Inc.: 0.164 (ft)

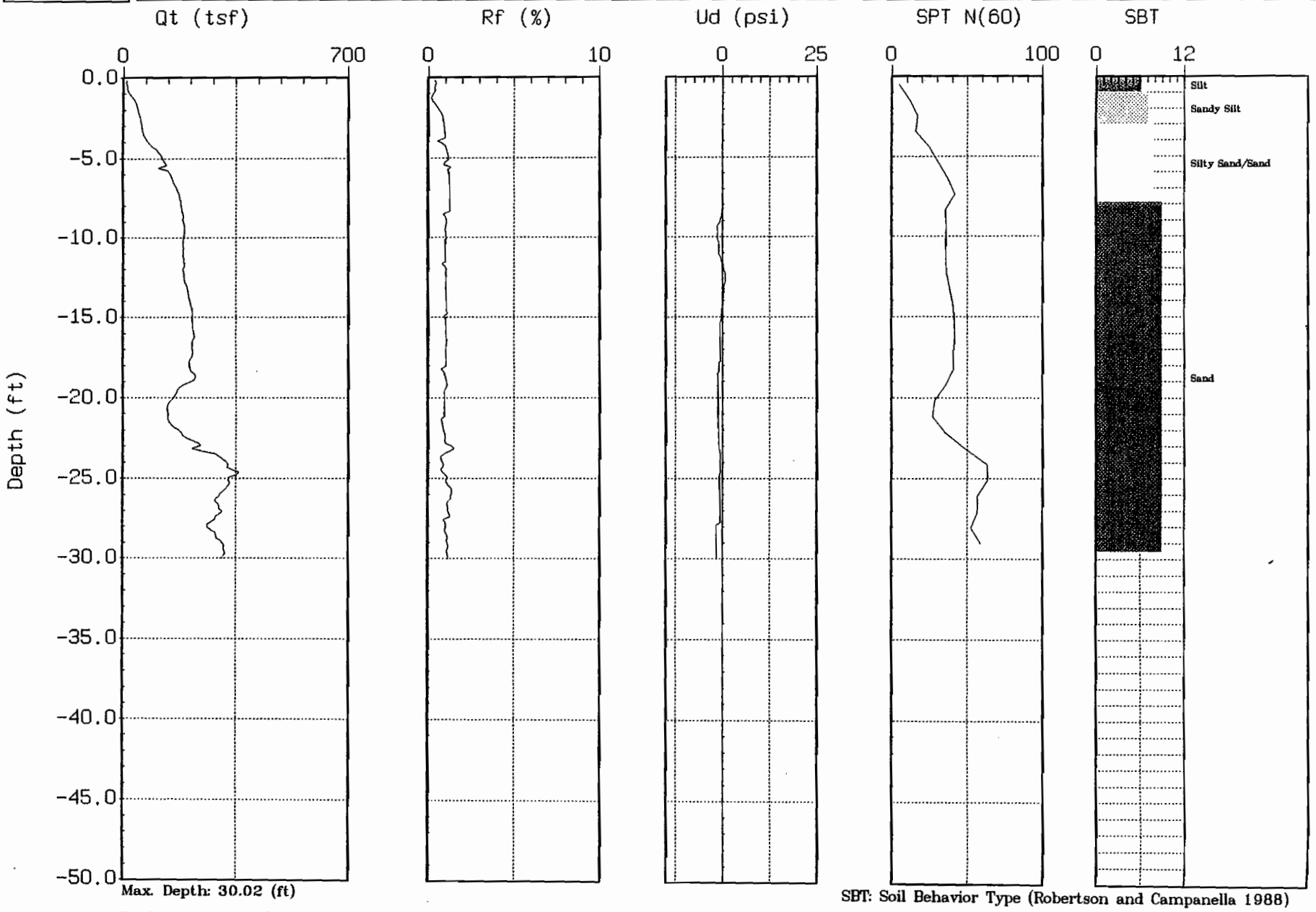
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-402

Engineer : C. LAVOTO
Date : 05:01:00 14:43



Max. Depth: 30.02 (ft)

Depth Inc.: 0.164 (ft)

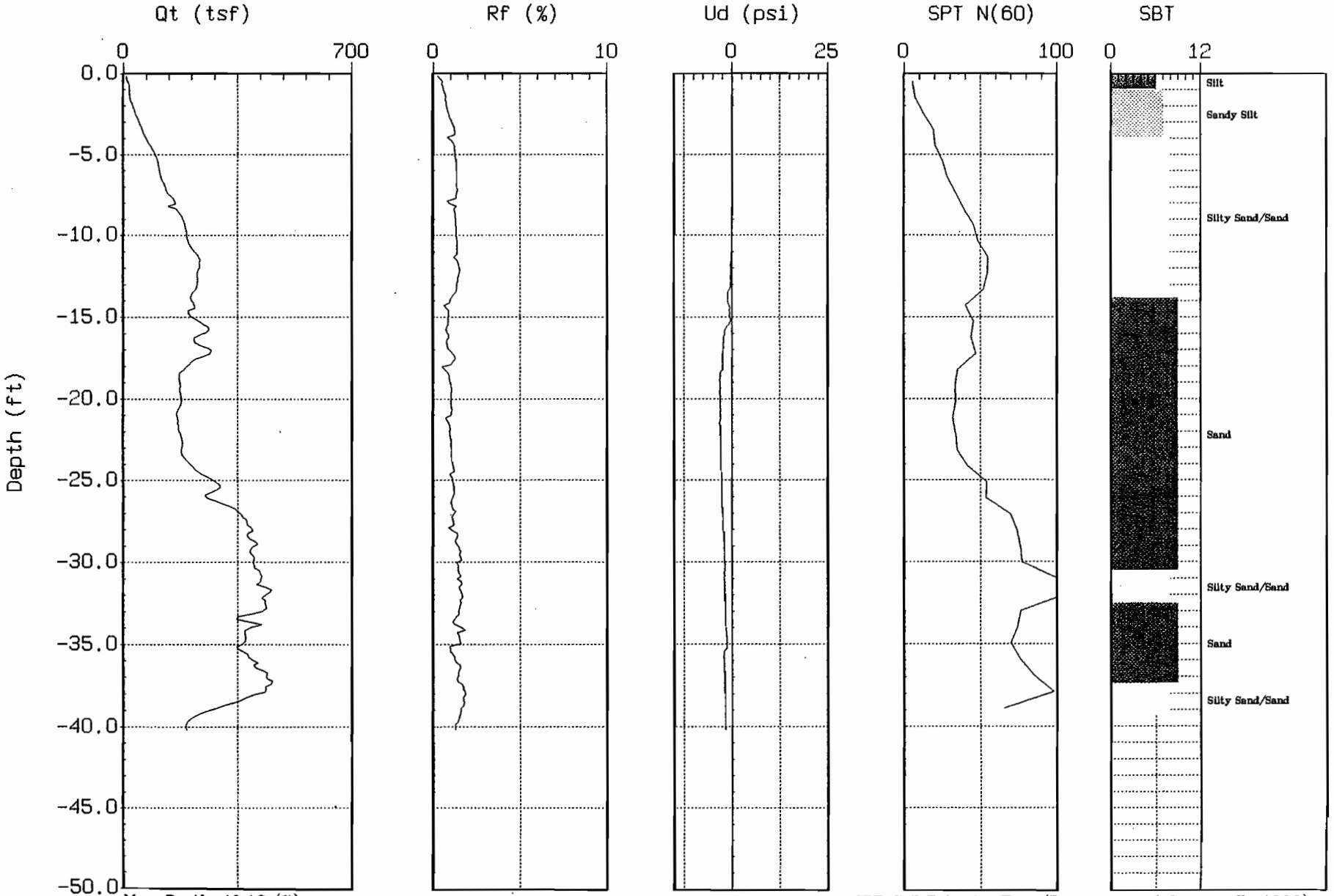
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

CFS GEOTECHNICAL

Site : LOS OSOS
Location : CPT-403

Engineer : C. LAVOTO
Date : 05:01:00 15:06



Max. Depth: 40.19 (ft)

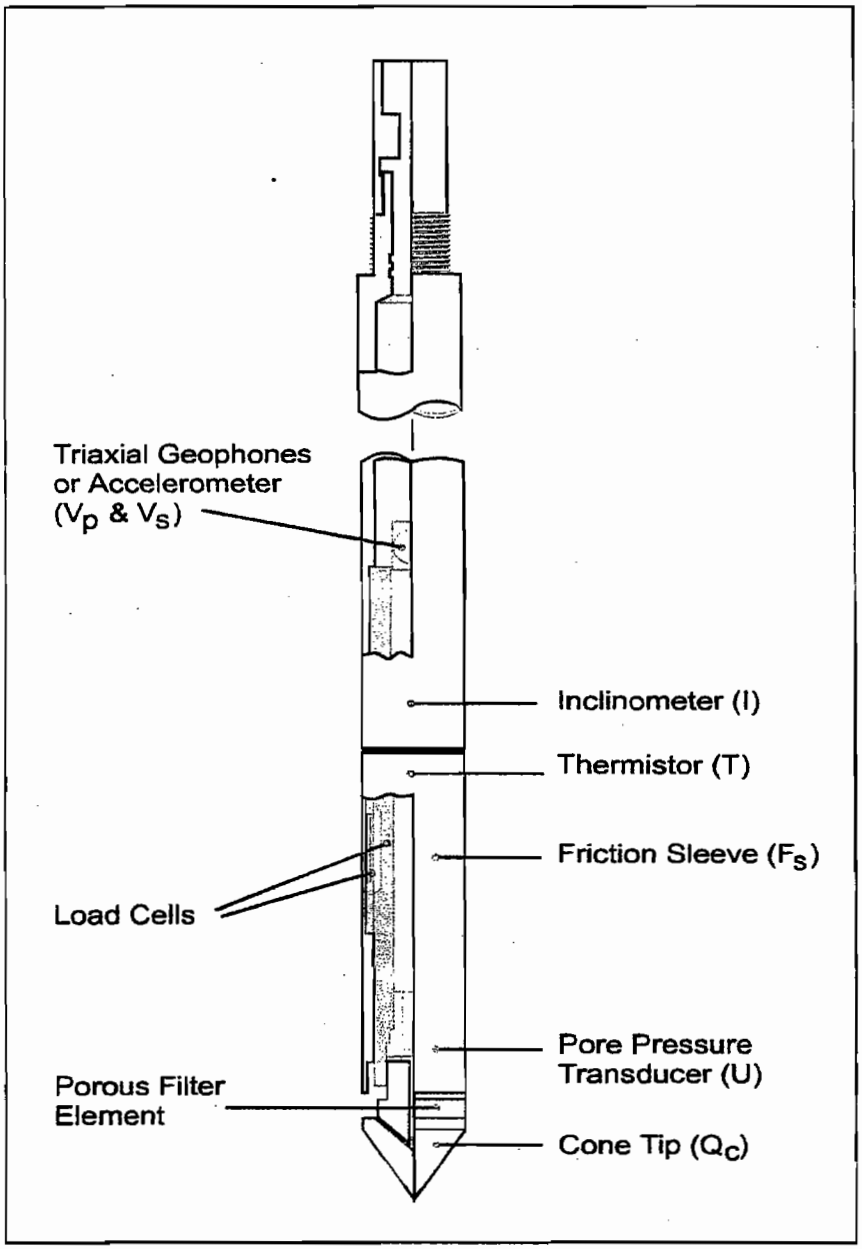
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG IN SITU, INC.

Geotechnical and Environmental In Situ Testing Contractors

THE PIEZO CONE PENETROMETER



GREGG

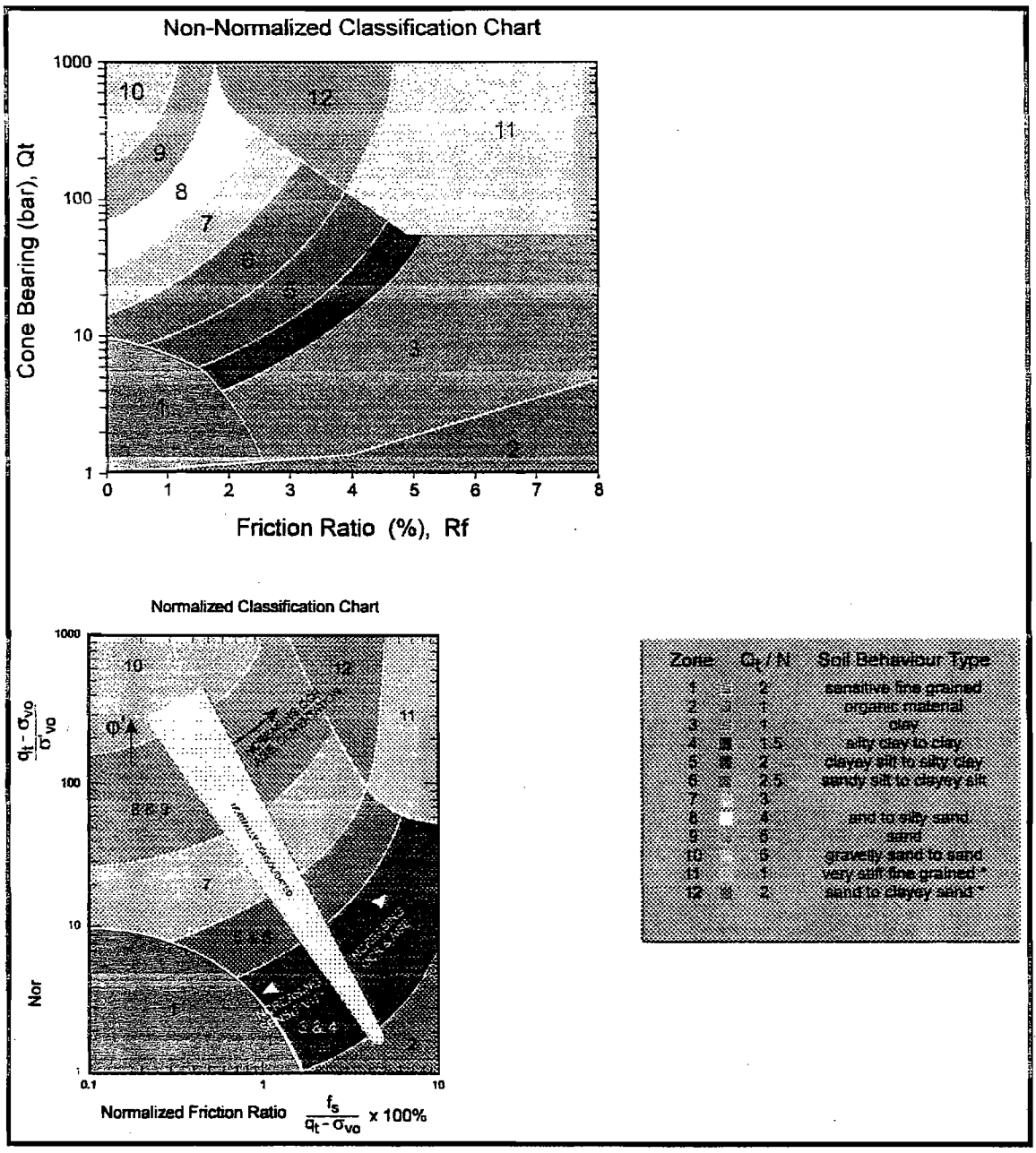
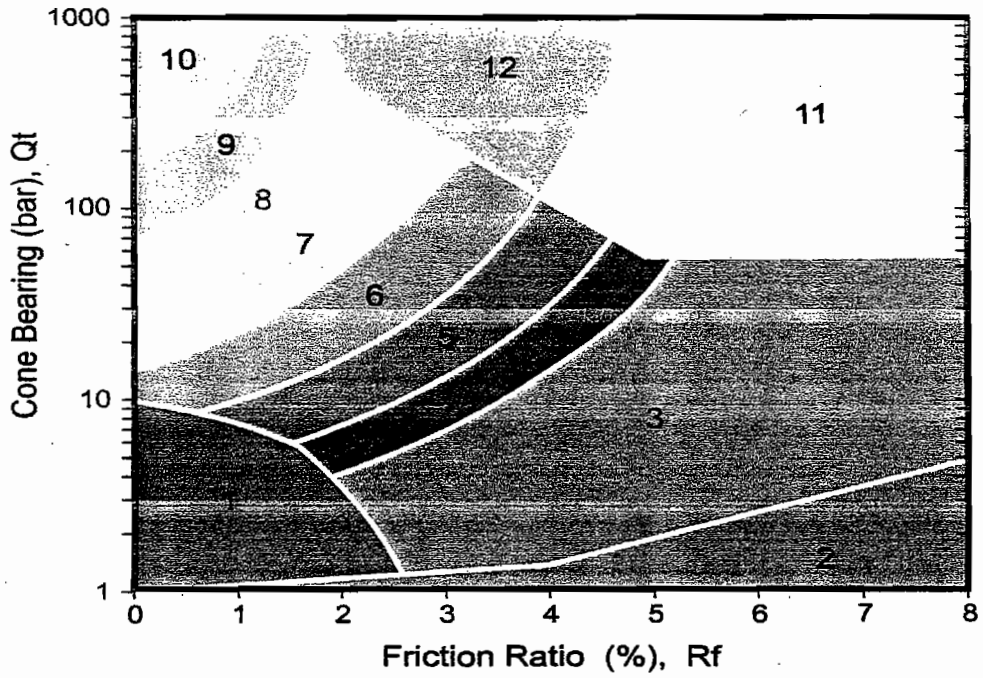


Figure 1 Non-Normalized and Normalized Soil Behavior Type Classification Charts

CPT Classification Chart

(after Robertson and Campanella, 1988)



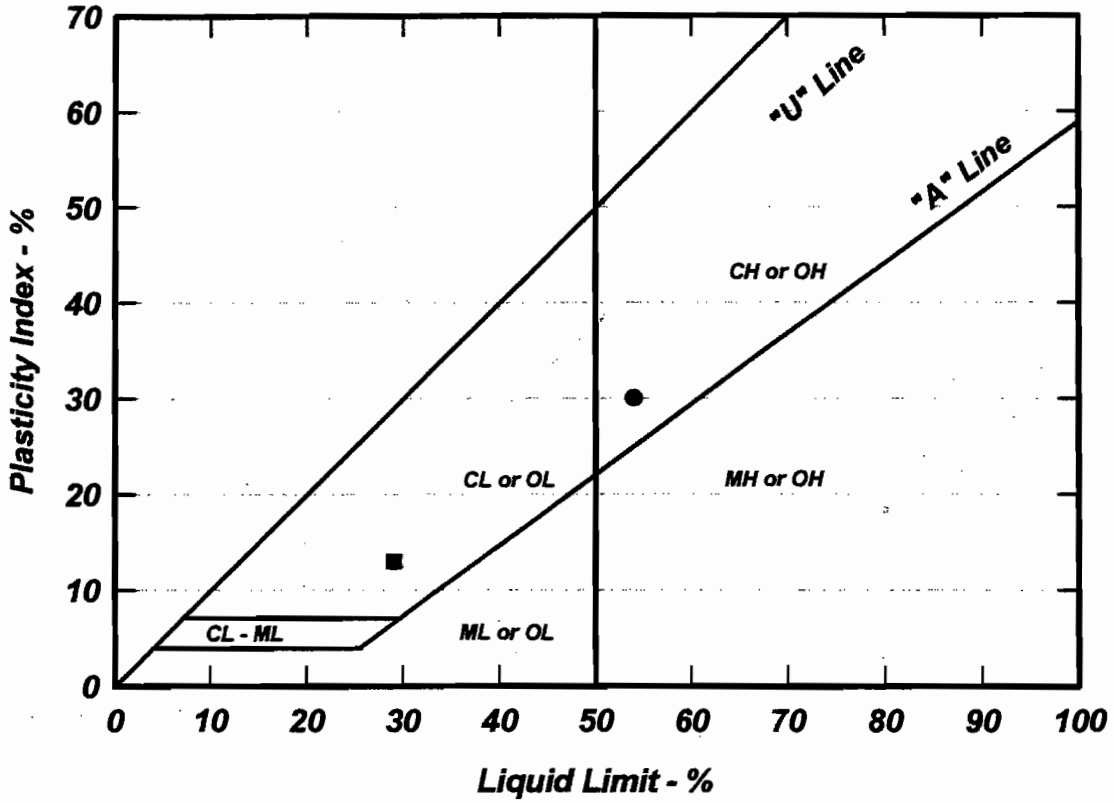
Zone	Q_t / N	Soil Behaviour Type
1	2	sensitive fine grained
2	1	organic material
3	1	clay
4	1.5	silty clay to clay
5	2	clayey silt to silty clay
6	2.5	sandy silt to clayey silt
7	3	silty sand to sandy silt
8	4	sand to silty sand
9	5	sand
10	6	gravelly sand to sand
11	1	very stiff fine grained *
12	2	sand to clayey sand *

* overconsolidated or cemented

GREGG

ATTACHMENT B3
LABORATORY DATA
CFS (2000b)

Atterberg Limits

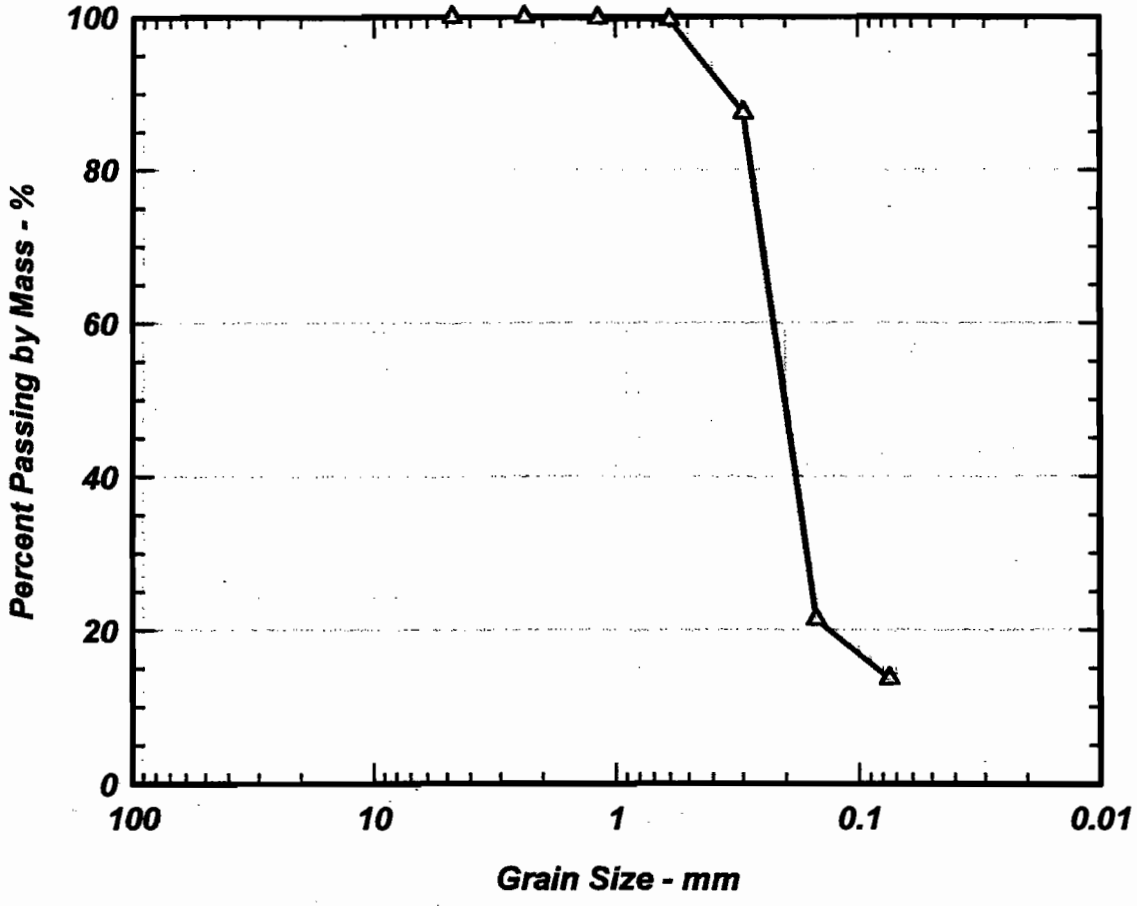


Symbol	Sample	Depth (ft)	Description and Classification	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
●	4-8b	34	Fat CLAY (CH)	54	24	30
■	6-9	34	Lean CLAY (CL)	29	16	13

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method ASTM D4318

CFS Geotechnical Consultants	ATTERBERG LIMITS TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-1

Mechanical Sieve Analysis Results



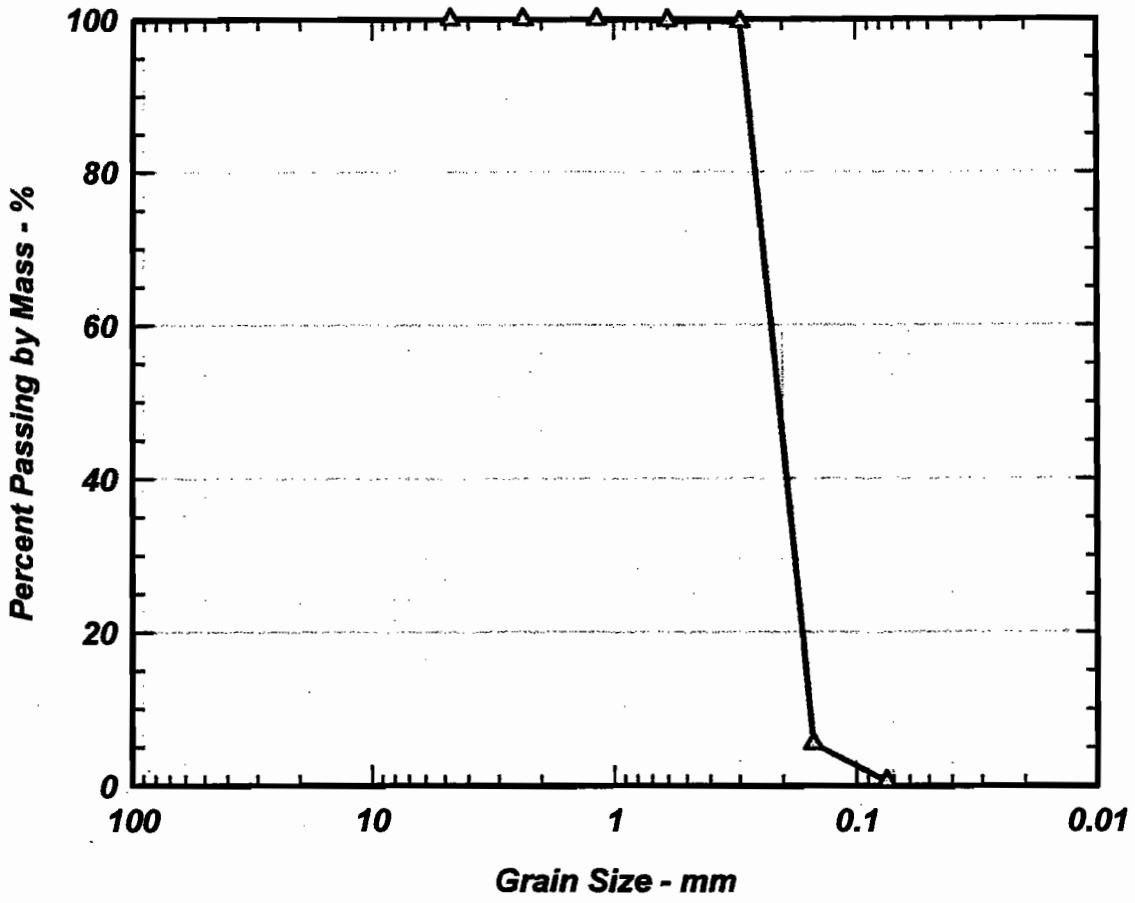
GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

Symbol	Sample	Depth (ft)	Description and Classification	C_c	C_u
▲	1-4	18.5	Silty SAND (SM)	—	—

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D422

CFS Geotechnical Consultants	**MECHANICAL SIEVE ANALYSIS RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-2a

Mechanical Sieve Analysis Results



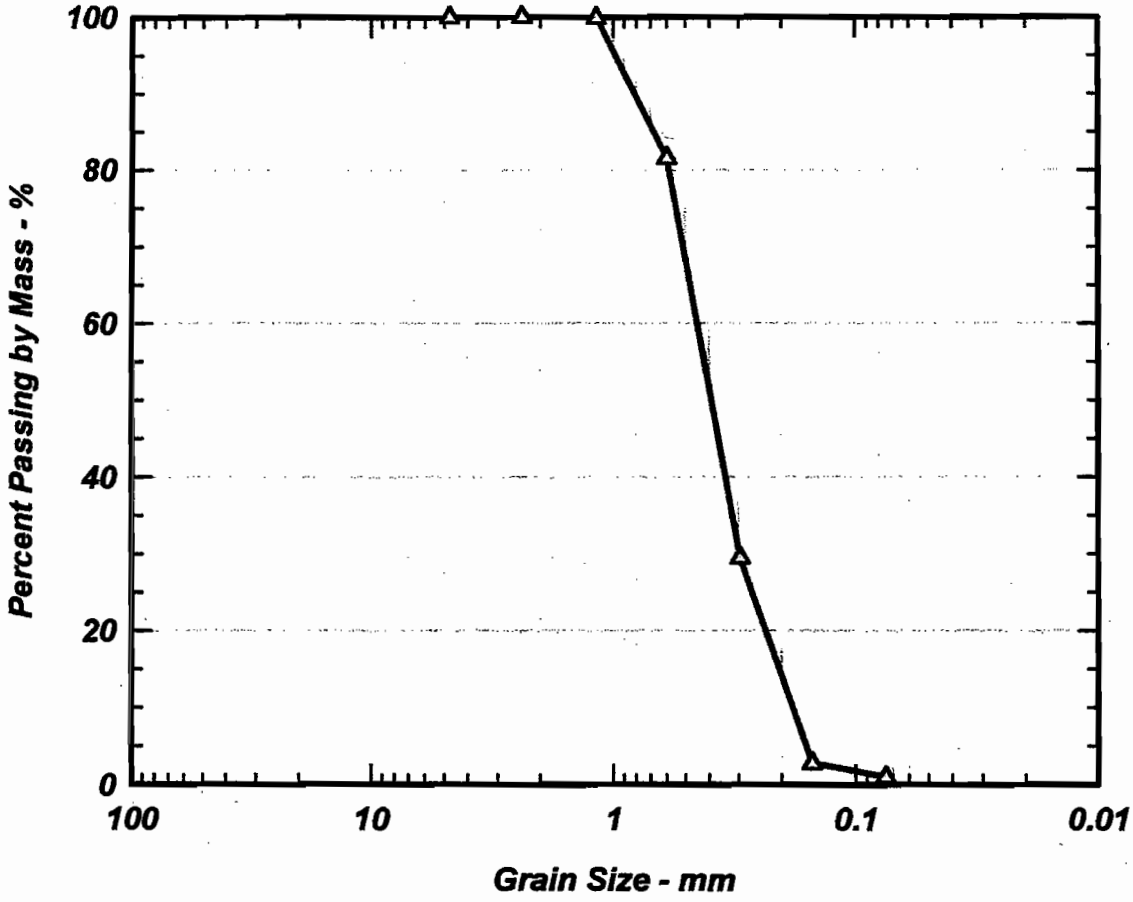
GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

Symbol	Sample	Depth (ft)	Description and Classification	C_c	C_u
▲	3-2	4.5	Poorly Graded SAND (SP)	1.0	1.5

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D422

CFS Geotechnical Consultants	**MECHANICAL SIEVE ANALYSIS RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-2b

Mechanical Sieve Analysis Results



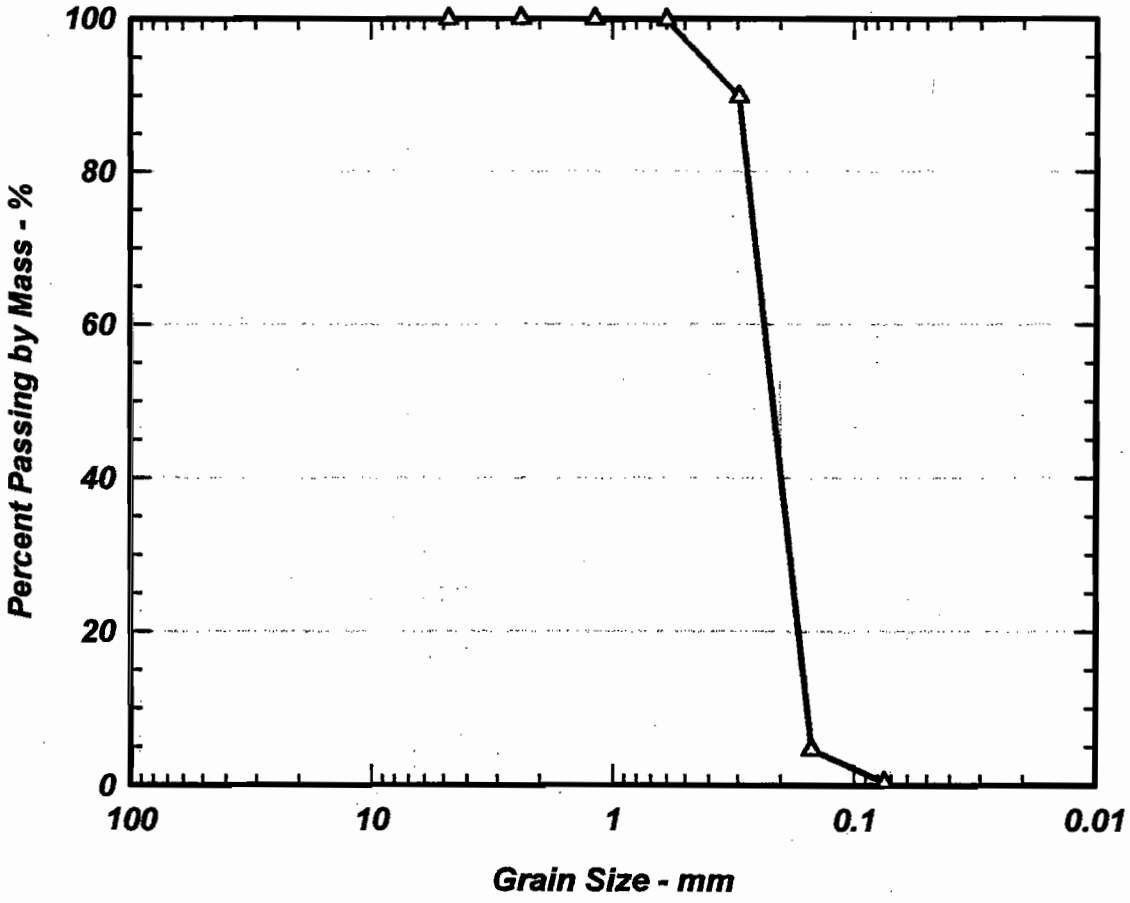
GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

Symbol	Sample	Depth (ft)	Description and Classification	C_c	C_u
▲	3-5	19	Poorly Graded SAND (SP)	1.1	2.5

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D422

CFS Geotechnical Consultants	**MECHANICAL SIEVE ANALYSIS RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-2c

Mechanical Sieve Analysis Results



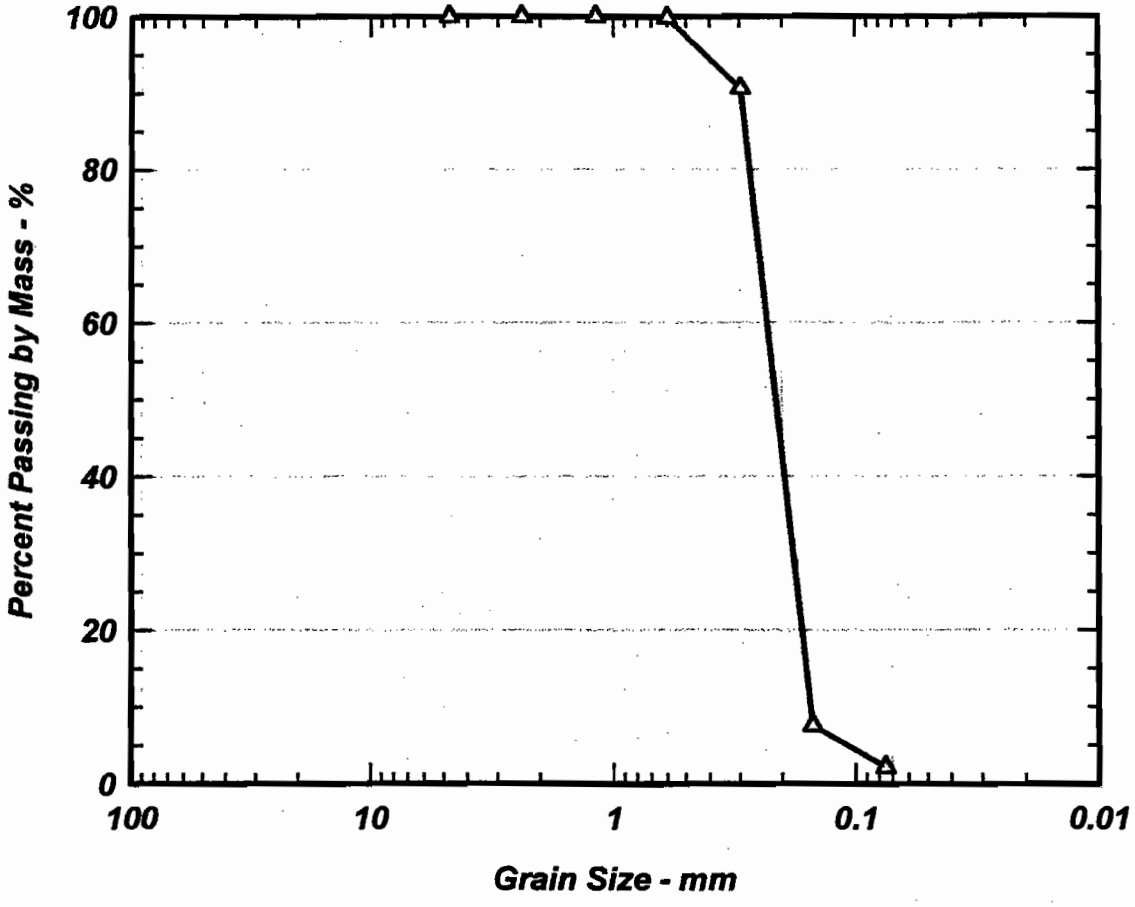
GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

Symbol	Sample	Depth (ft)	Description and Classification	C_c	C_u
▲	5-2	9	Poorly Graded SAND (SP)	1.0	1.6

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D422

CFS Geotechnical Consultants	**MECHANICAL SIEVE ANALYSIS RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-2d

Mechanical Sieve Analysis Results



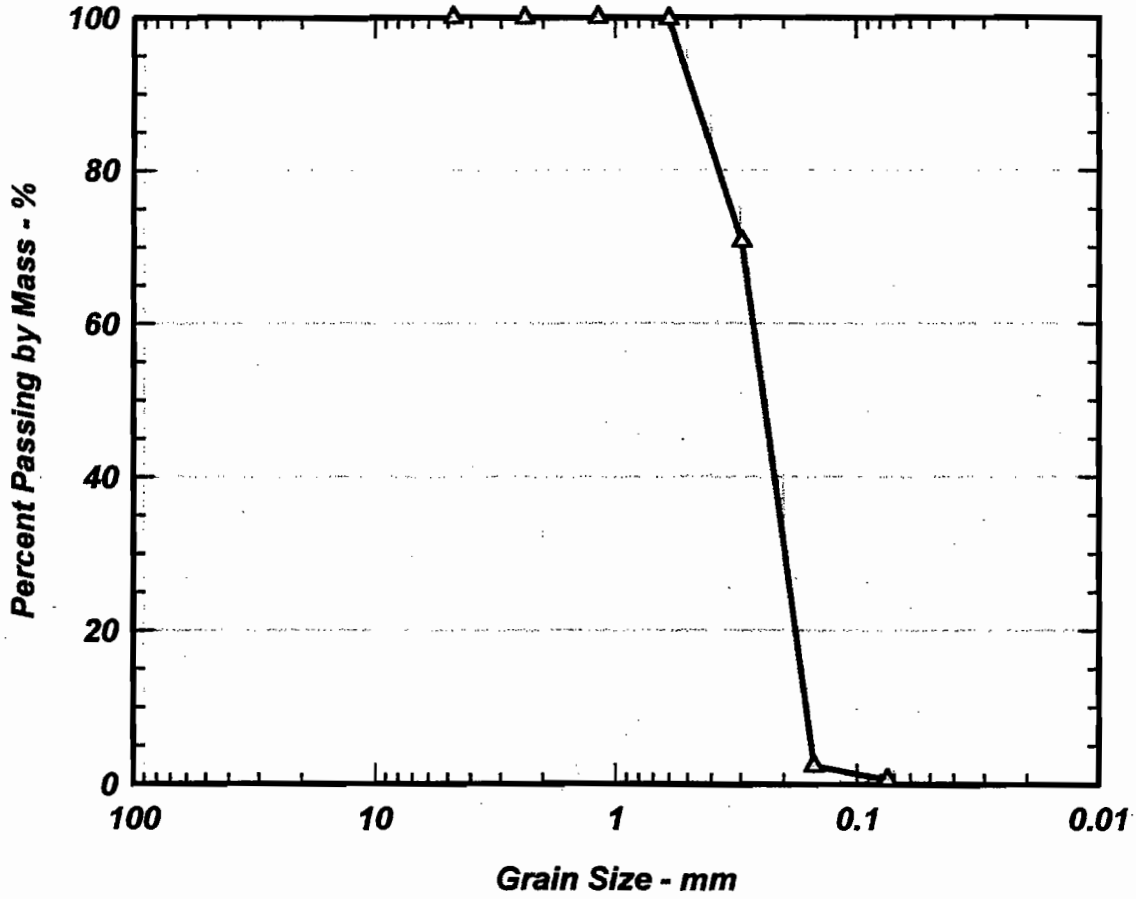
GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

Symbol	Sample	Depth (ft)	Description and Classification	C_c	C_u
▲	6-3	9	Poorly Graded SAND (SP)	0.9	1.4

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D422

CFS Geotechnical Consultants	**MECHANICAL SIEVE ANALYSIS RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-2e

Mechanical Sieve Analysis Results



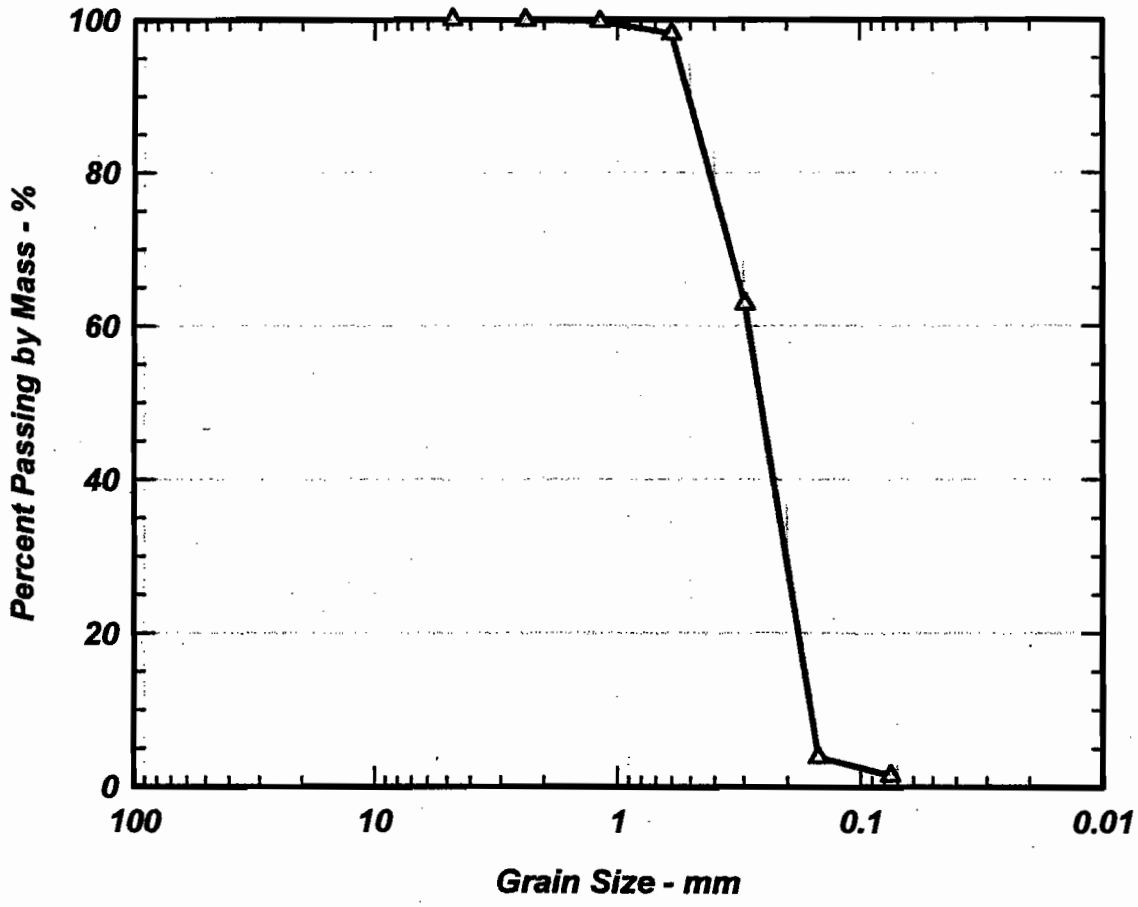
GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

Symbol	Sample	Depth (ft)	Description and Classification	C_c	C_u
▲	7-3	14	Poorly Graded SAND (SP)	0.9	1.7

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D422

CFS Geotechnical Consultants	**MECHANICAL SIEVE ANALYSIS RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-2f

Mechanical Sieve Analysis Results



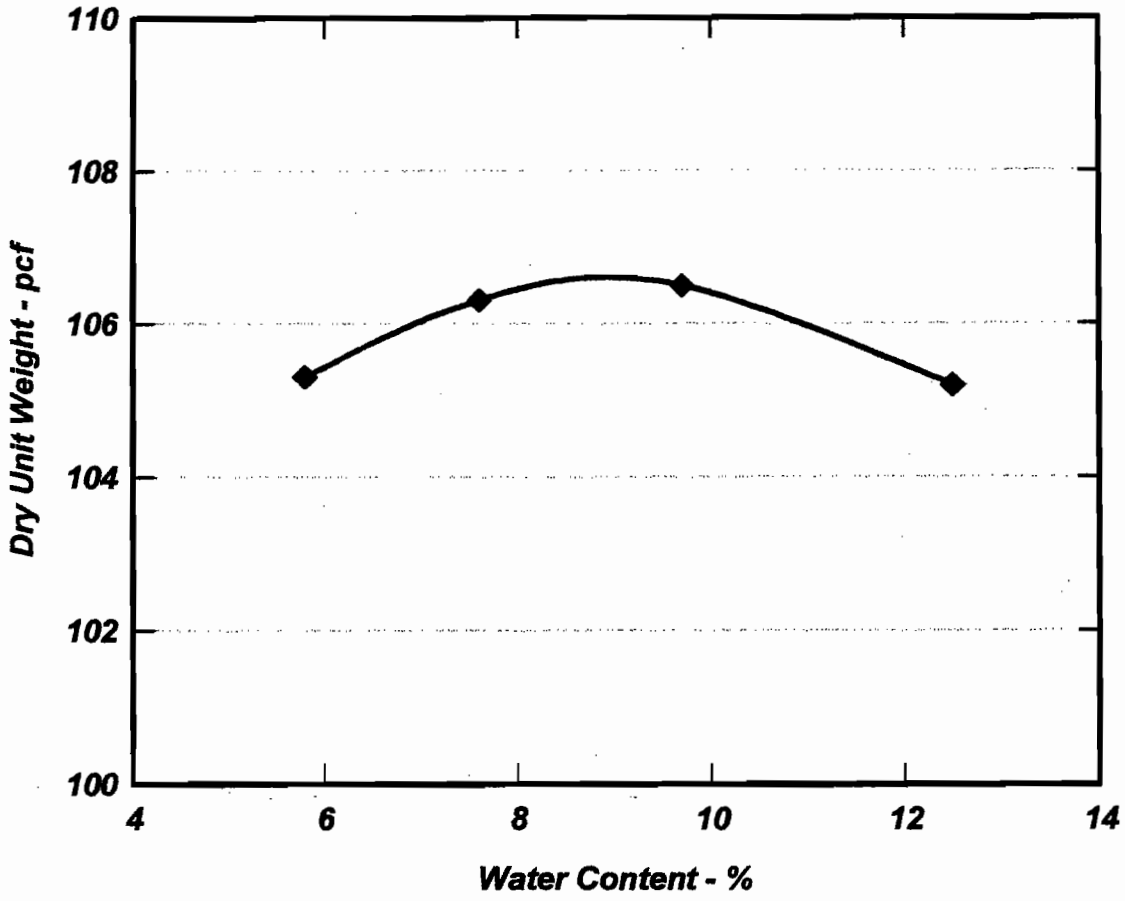
GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

Symbol	Sample	Depth (ft)	Description and Classification	C_c	C_u
▲	8-1	2	Poorly Graded SAND (SP)	0.9	1.8

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D422

CFS Geotechnical Consultants	**MECHANICAL SIEVE ANALYSIS RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-2g

Compaction Test Results

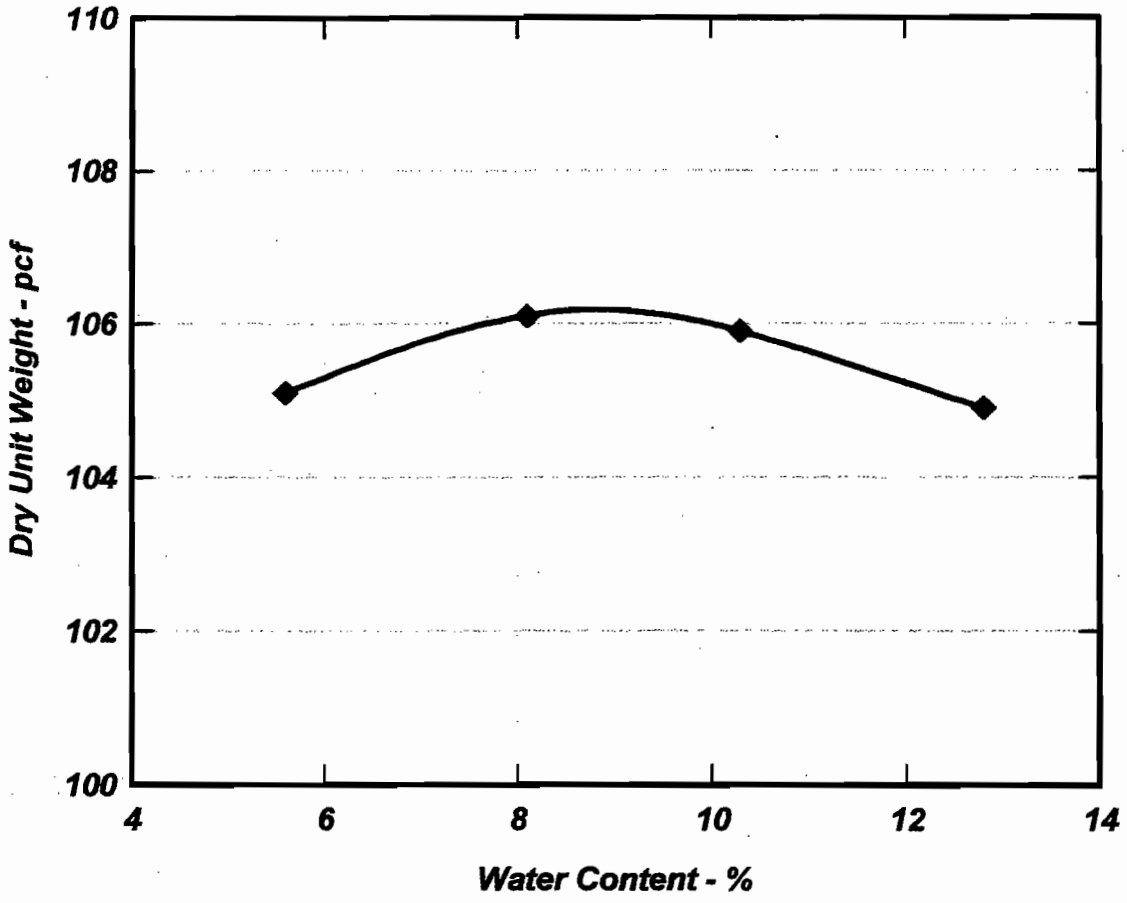


Symbol	Sample	Depth (ft)	Description and Classification	Maximum Dry Unit Weight (pcf)	Optimum Water Content (%)
◆	2A	3 to 10	Poorly Graded SAND (SP)	106.6	8.8

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D1557

CFS Geotechnical Consultants	**COMPACTION TEST RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-3a

Compaction Test Results

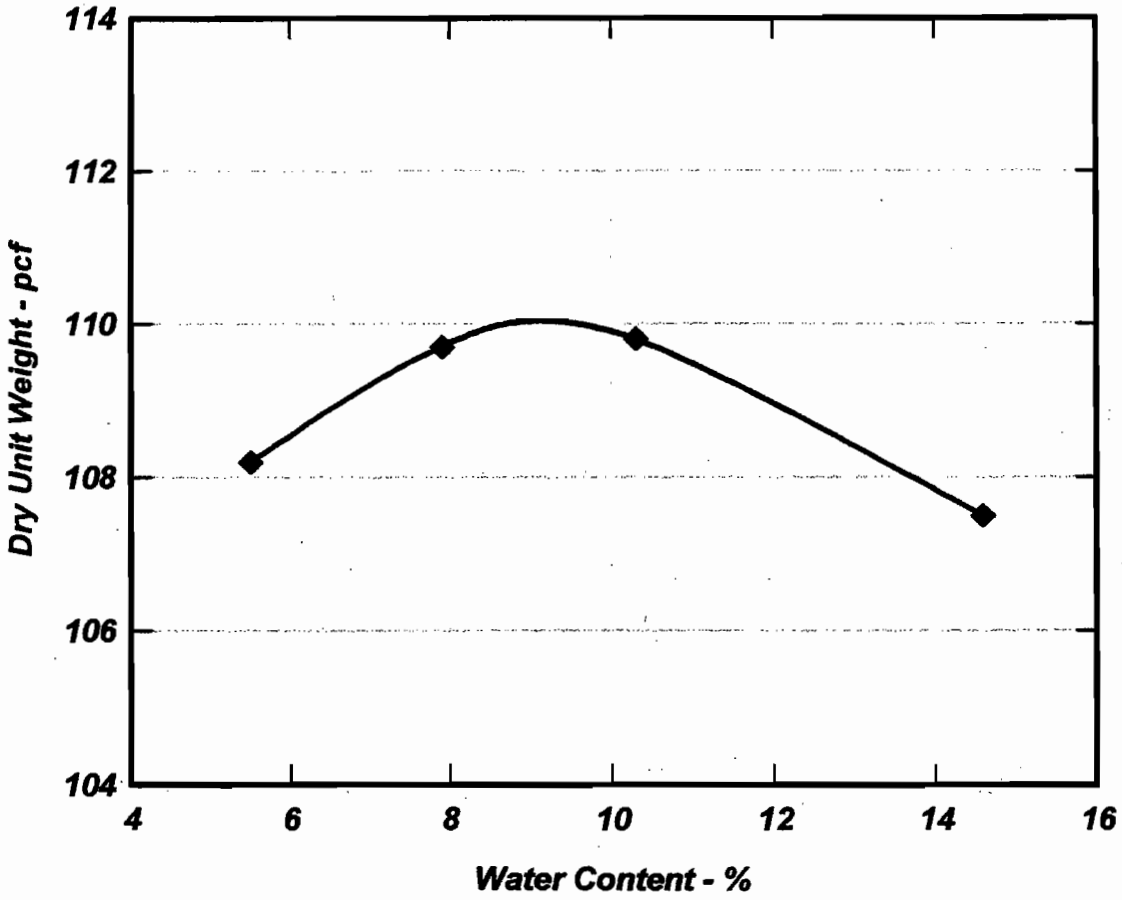


Symbol	Sample	Depth (ft)	Description and Classification	Maximum Dry Unit Weight (pcf)	Optimum Water Content (%)
◆	4A	5 to 10	Poorly Graded SAND (SP)	106.2	9.0

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D1557

CFS Geotechnical Consultants	COMPACTION TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-3b

Compaction Test Results

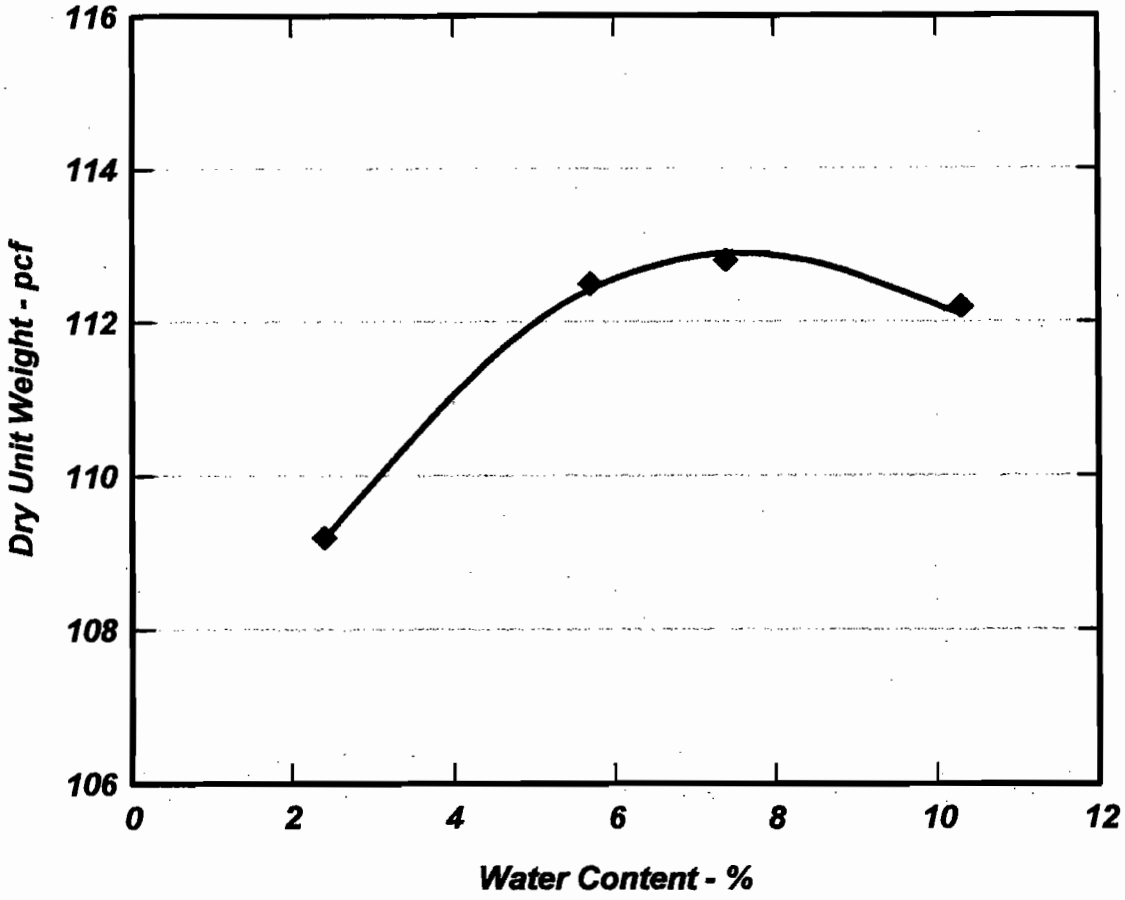


Symbol	Sample	Depth (ft)	Description and Classification	Maximum Dry Unit Weight (pcf)	Optimum Water Content (%)
◆	8A	3 to 9	Poorly Graded SAND (SP)	110.0	9.0

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D1557

CFS Geotechnical Consultants	COMPACTION TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-3c

Compaction Test Results

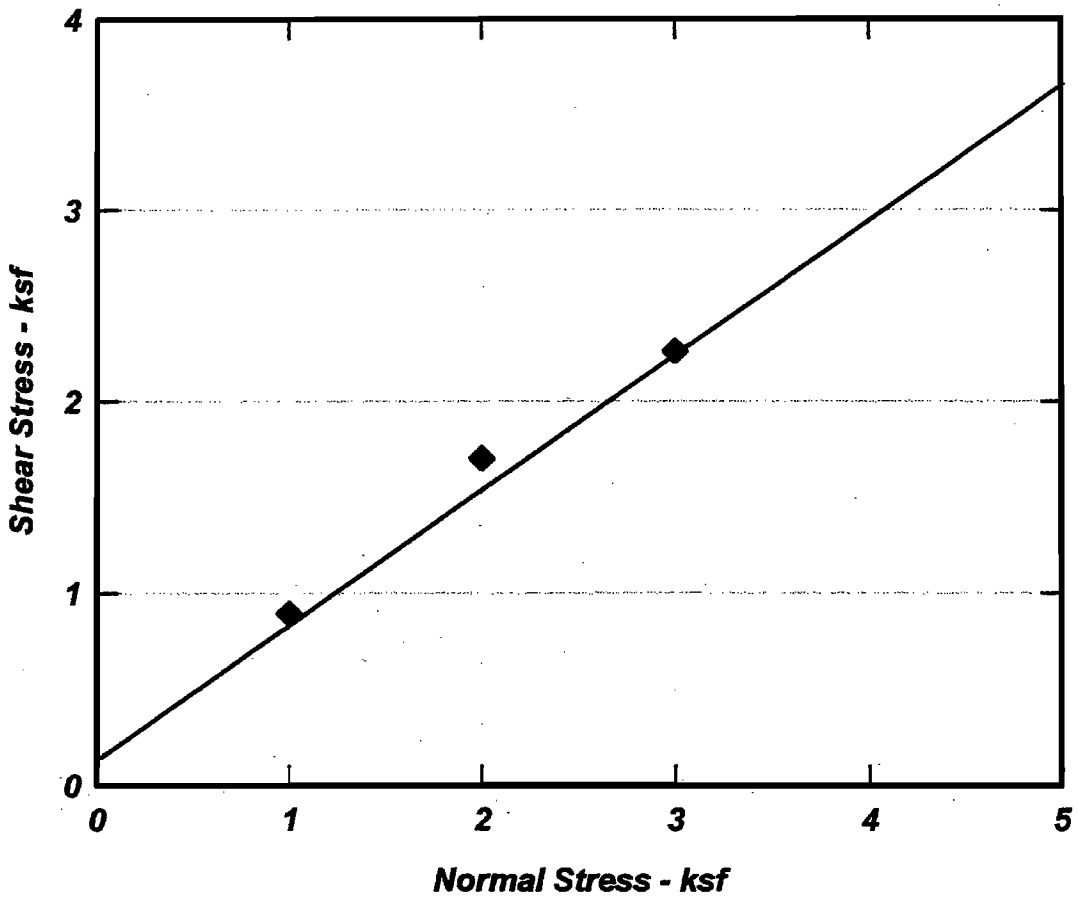


Symbol	Sample	Depth (ft)	Description and Classification	Maximum Dry Unit Weight (pcf)	Optimum Water Content (%)
◆	H-1 Bulk	1 to 5	Poorly Graded SAND (SP)	112.8	7.5

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D1557

CFS Geotechnical Consultants	**COMPACTION TEST RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-3d

Direct Shear Test Results

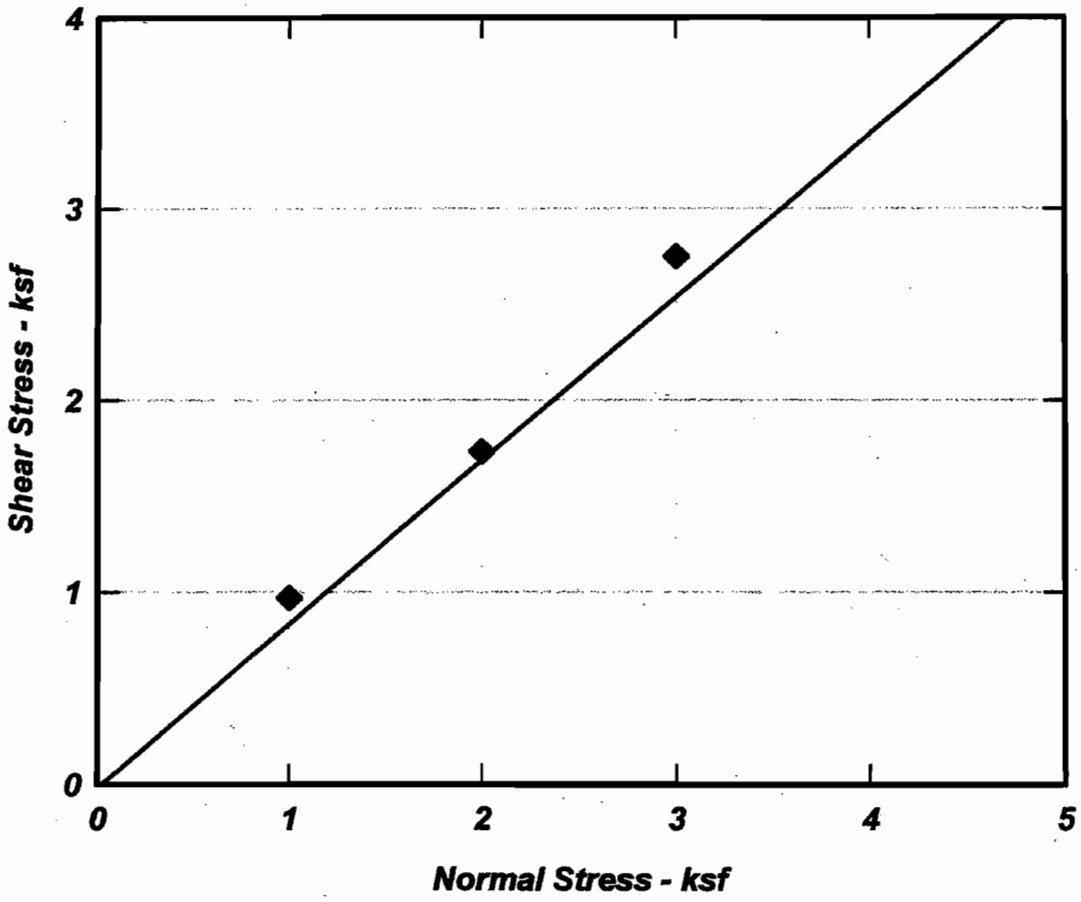


Symbols	Sample	Depth (ft)	Description and Classification	Friction Angle, ϕ (degrees)	Cohesion, c (ksf)
◆	2-3	9.5	Poorly Graded SAND with Clay (SP-SC)	35	0.15

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D3080

CFS Geotechnical Consultants	DIRECT SHEAR TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-4a

Direct Shear Test Results

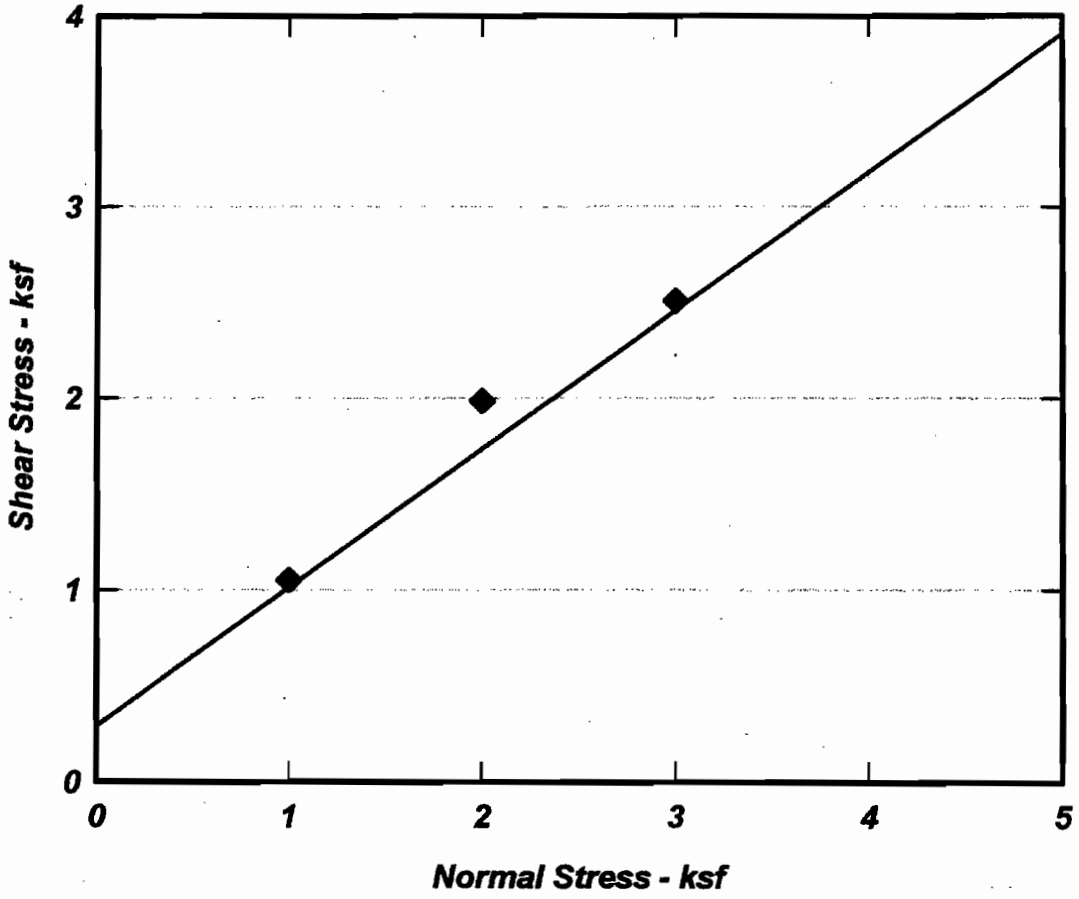


Symbols	Sample	Depth (ft)	Description and Classification	Friction Angle, ϕ (degrees)	Cohesion, c (ksf)
◆	4-4	14	Poorly Graded SAND (SP)	40	0

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D3080

CFS Geotechnical Consultants	**DIRECT SHEAR TEST RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-4b

Direct Shear Test Results

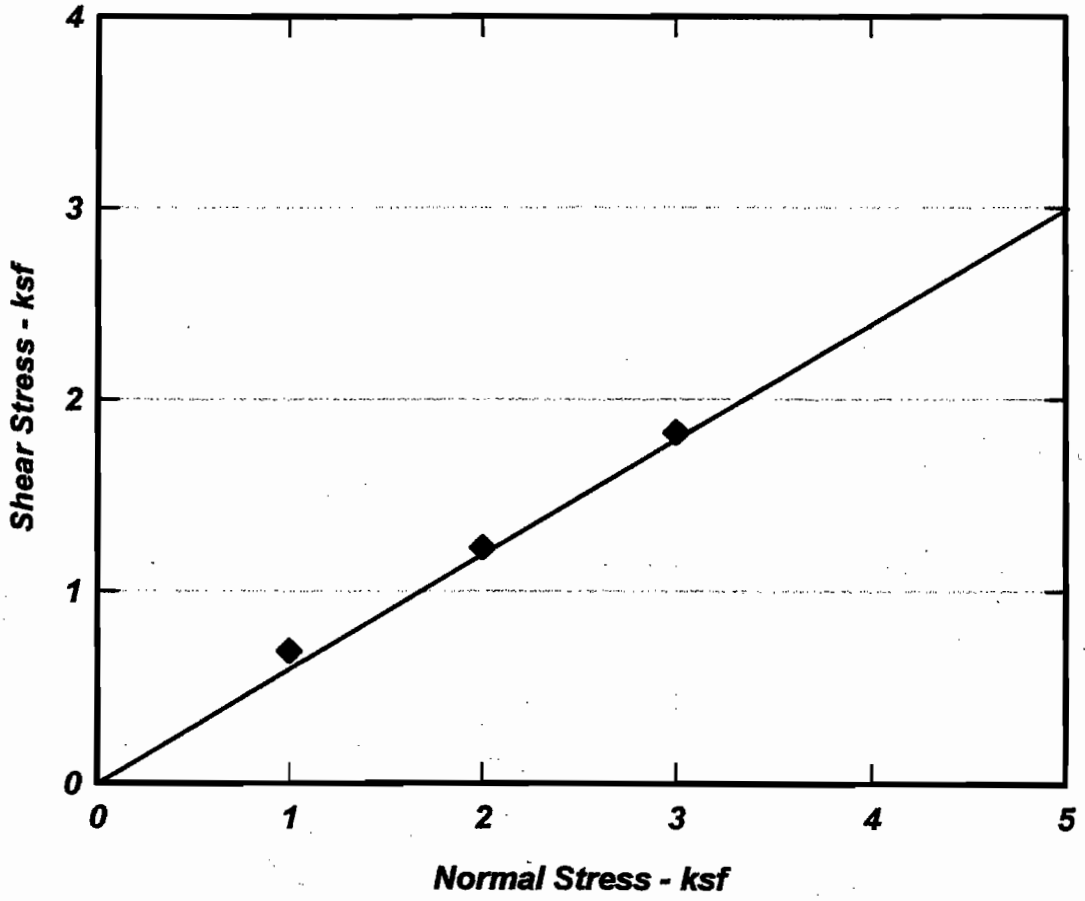


Symbols	Sample	Depth (ft)	Description and Classification	Friction Angle, ϕ (degrees)	Cohesion, c (ksf)
◆	4-6	24	Poorly Graded SAND with Silt (SP-SM)	36	0.3

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D3080

CFS Geotechnical Consultants	**DIRECT SHEAR TEST RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-4c

Direct Shear Test Results

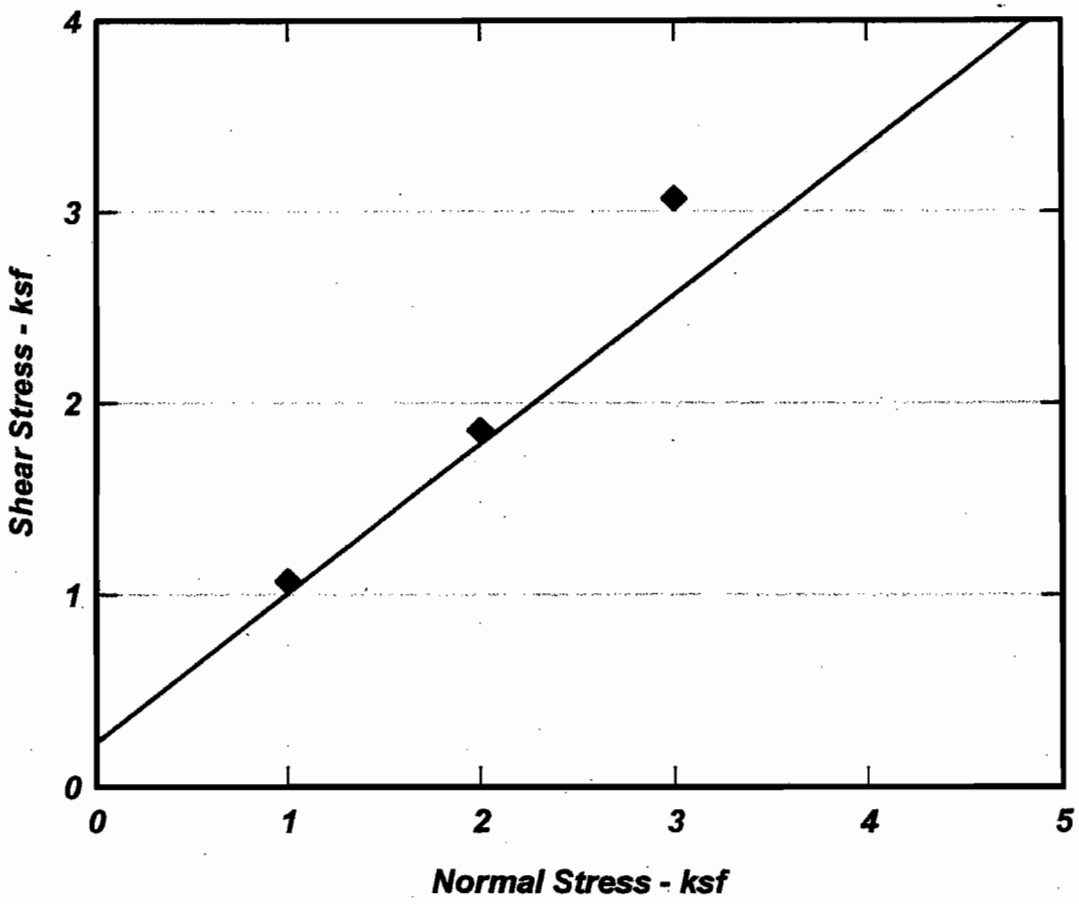


Symbols	Sample	Depth (ft)	Description and Classification	Friction Angle, ϕ (degrees)	Cohesion, c (ksf)
◆	4A	5 to 10	Poorly Graded SAND (SP)	31	0

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D3080

CFS Geotechnical Consultants	DIRECT SHEAR TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-4d

Direct Shear Test Results

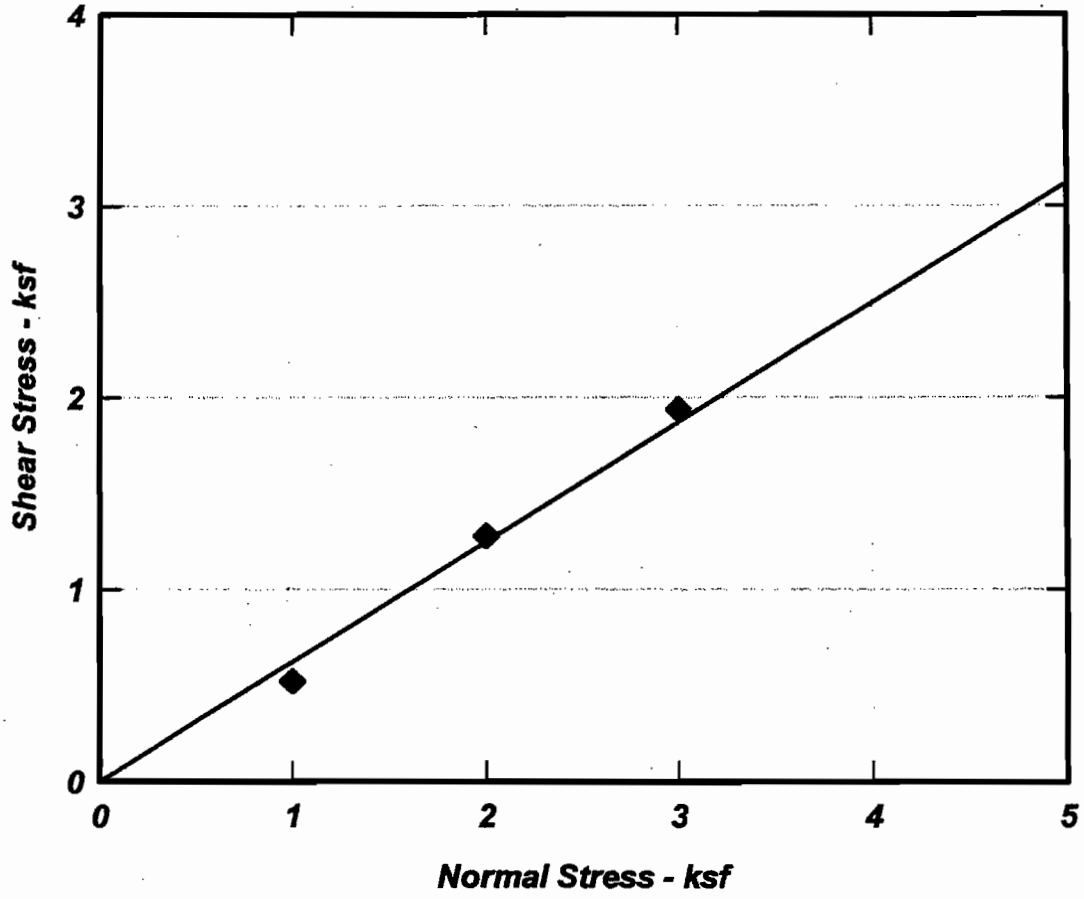


Symbols	Sample	Depth (ft)	Description and Classification	Friction Angle, ϕ (degrees)	Cohesion, c (ksf)
◆	5-5	24	Silty SAND (SM)	38	0.25

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D3080

CFS Geotechnical Consultants	DIRECT SHEAR TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-4e

Direct Shear Test Results

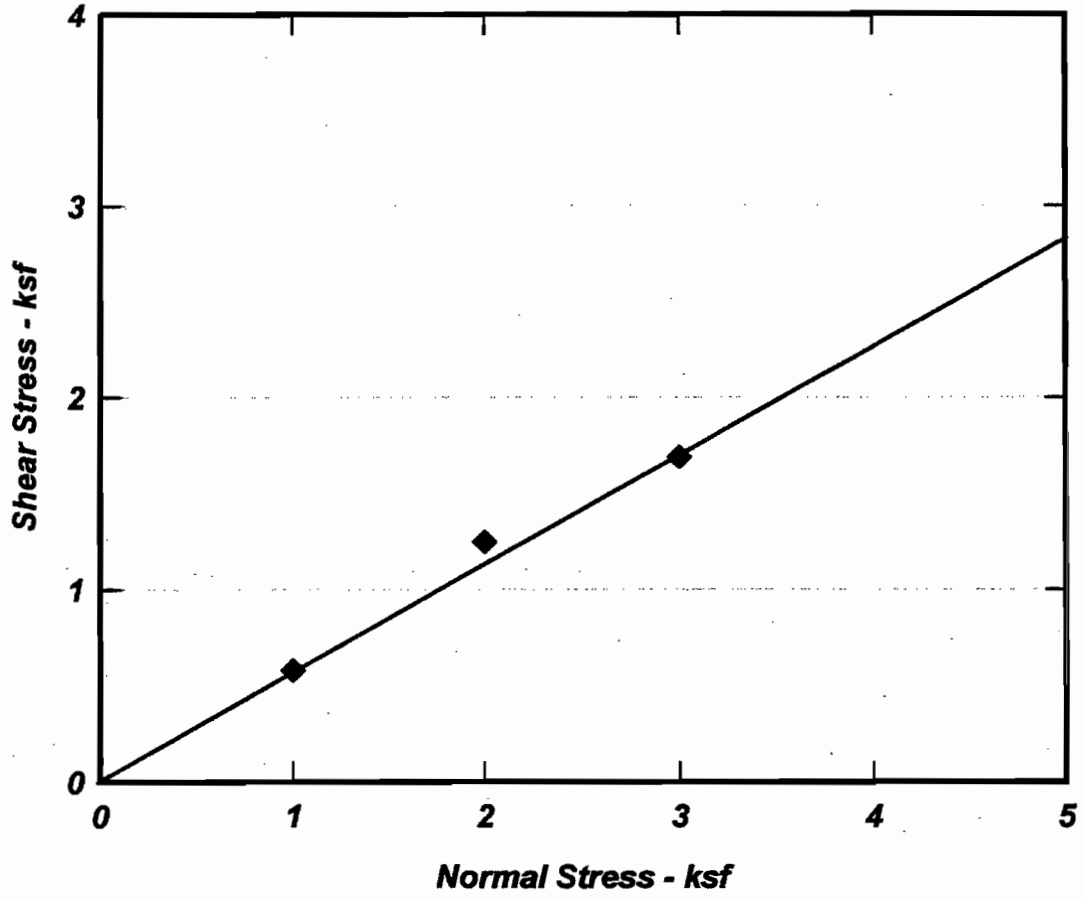


Symbols	Sample	Depth (ft)	Description and Classification	Friction Angle, ϕ (degrees)	Cohesion, c (ksf)
◆	8A	3 to 9	Poorly Graded SAND (SP)	32	0

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D3080

CFS Geotechnical Consultants	DIRECT SHEAR TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-4f

Direct Shear Test Results

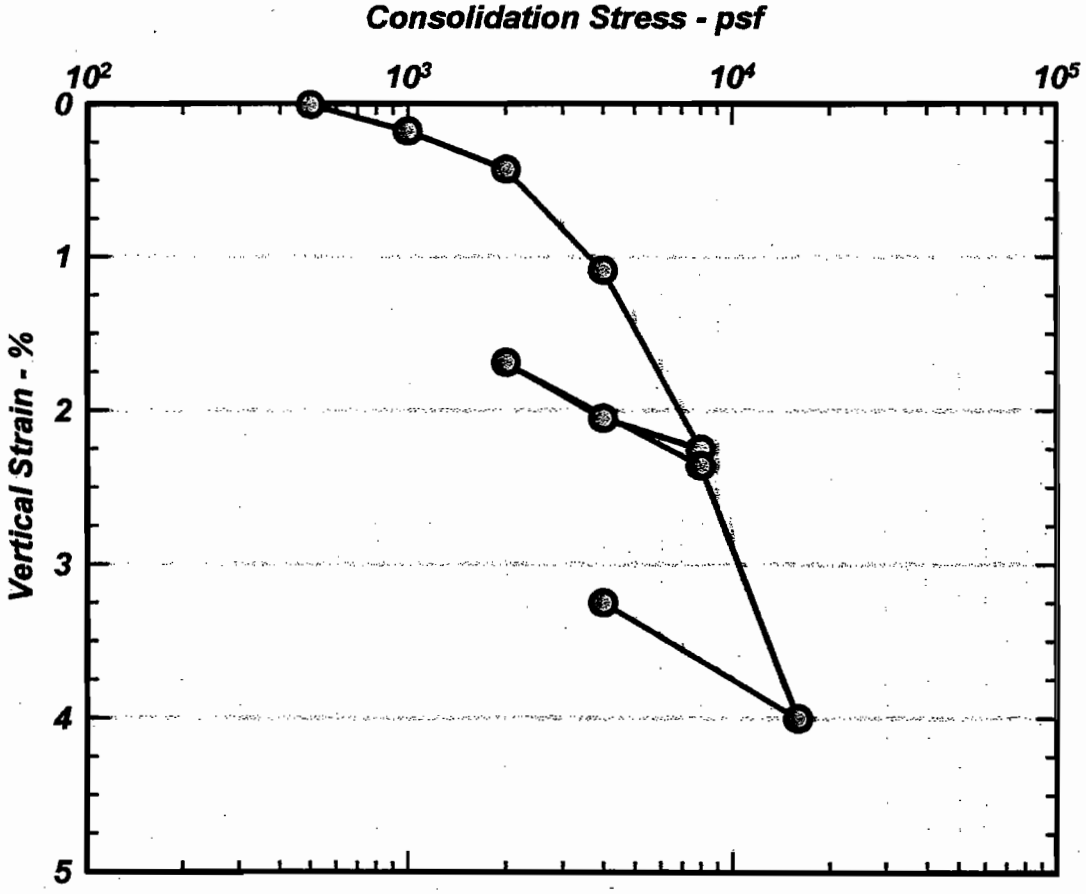


Symbol	Sample	Depth (ft)	Description and Classification	Friction Angle, ϕ (degrees)	Cohesion, c (ksf)
◆	H-1 Bulk	1 to 5	Poorly Graded SAND (SP)	30	0

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D3080

CFS Geotechnical Consultants	DIRECT SHEAR TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-4g

Consolidation Test Results

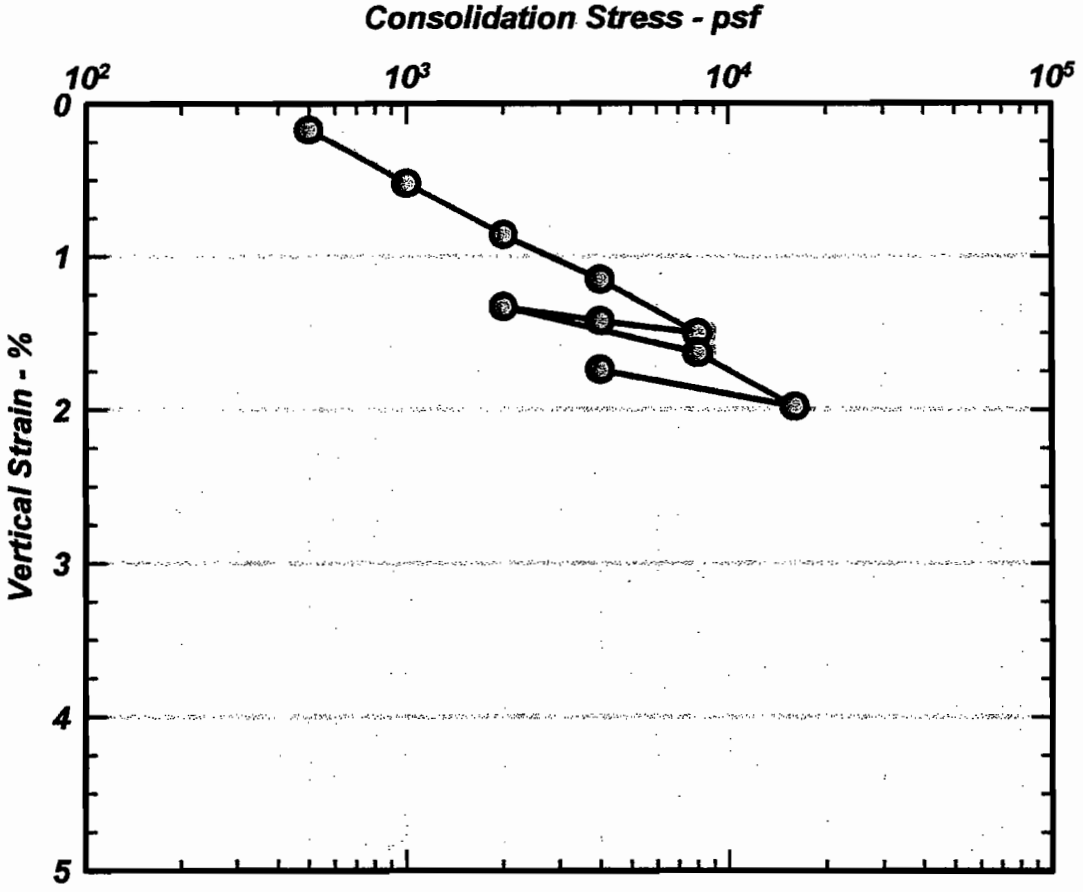


Symbol	Sample	Depth (ft)	Description and Classification	Total Unit Weight (pcf)	Water Content (%)
●	4-8a	34	Fat CLAY (CH)	129.2	24.7

Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D2435

CFS Geotechnical Consultants	CONSOLIDATION TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-5a

Consolidation Test Results



Symbol	Sample	Depth (ft)	Description and Classification	Total Unit Weight (pcf)	Water Content (%)
●	4-10	44	Poorly Graded SAND with Silt (SP-SM)	127.5	21.8

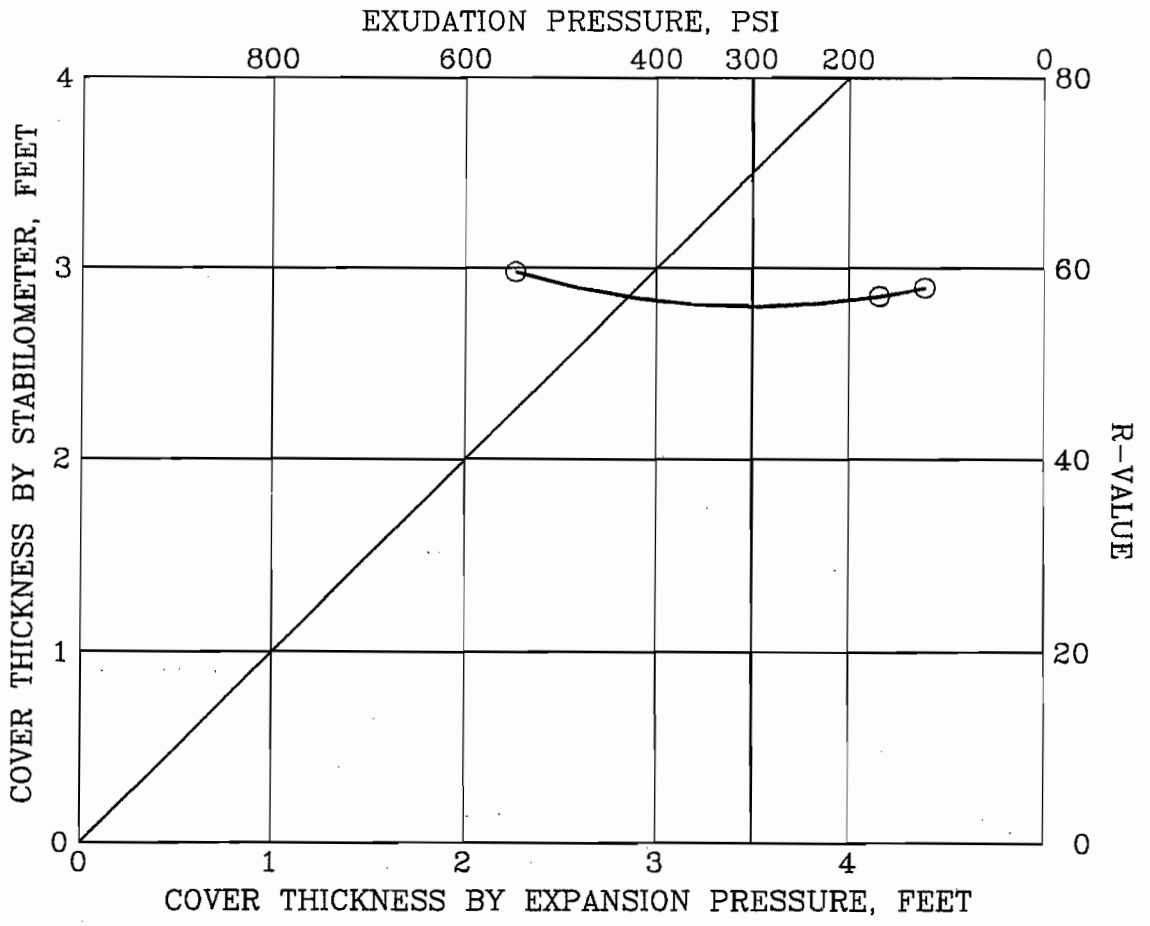
Project: Los Osos Wastewater Project
Performed by: Gregg Fiegel, Ph.D., P.E.
Test Method: ASTM D2435

CFS Geotechnical Consultants	CONSOLIDATION TEST RESULTS	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-5b

Los Osos Wastewater Project
Falling Head Permeability Tests

Sample Number	Description	Total Unit Weight (pcf)	Water Content (%)	Permeability, k (cm/sec)
2-7	Poorly Graded SAND (SP)	103.4	11.6	2.6×10^{-2}
2-11	Poorly Graded SAND with Silt (SP-SM)	107.1	4.5	3.8×10^{-3}
3-3	Poorly Graded SAND with Silt (SP-SM)	124.8	16.8	1.5×10^{-4}
7-2	Poorly Graded SAND (SP)	113.8	2.6	9.1×10^{-3}

CFS Geotechnical Consultants	**PERMEABILITY TEST RESULTS**	Los Osos Wastewater Project Los Osos, California Project No. 991001
		Figure B-6



SAMPLE LOCATION : B-8A
SOIL DESCRIPTION : Poorly Graded Sand w/Silt (SP-SM)
LIQUID LIMIT : SPECIFIC GRAVITY : 2.7
PLASTIC LIMIT : DATE : 06/12/00

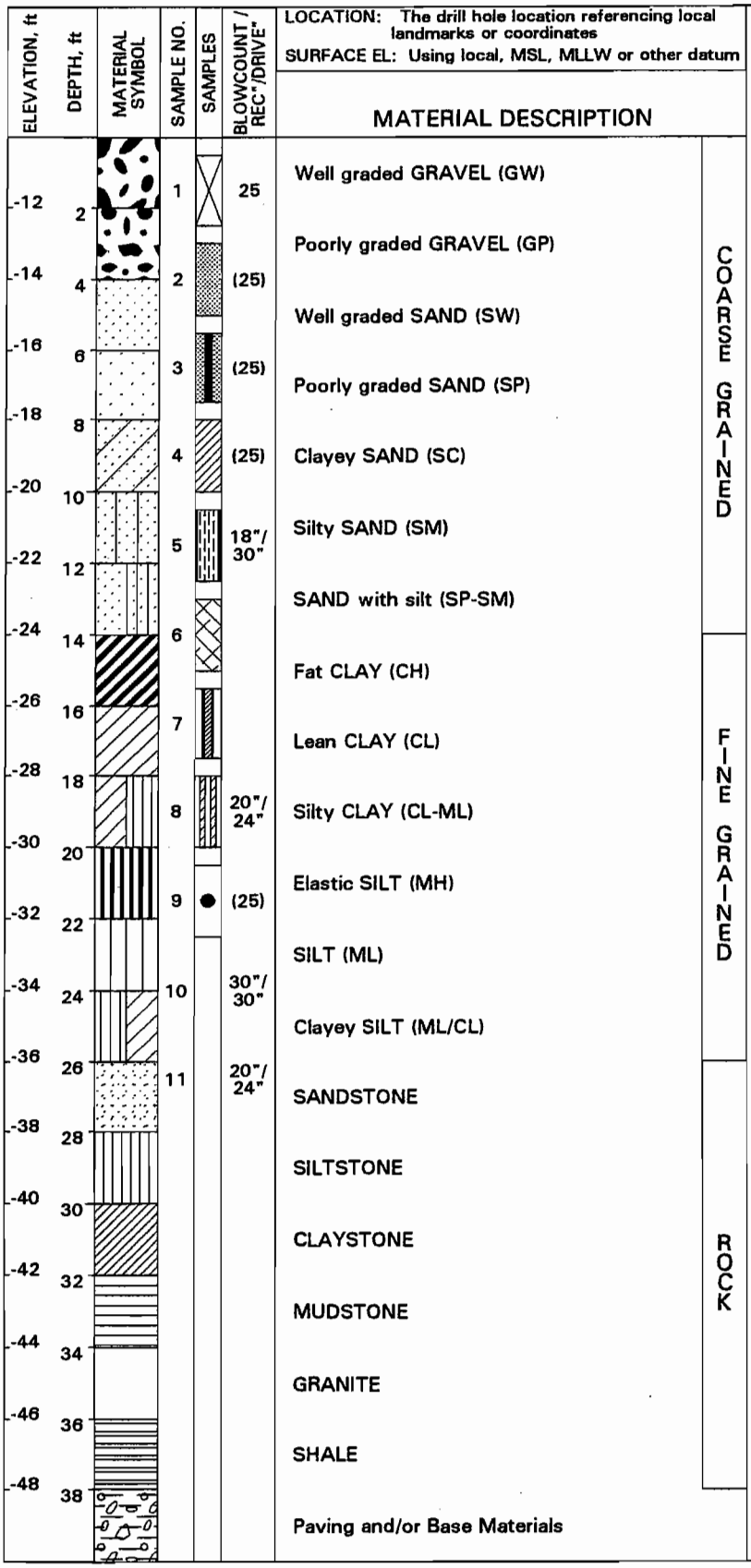
TEST NUMBER	1	2	3	4	5
COMPACTION PRESSURE, PSI	300.0	280.0	300.0		
INITIAL MOISTURE,	5.6	5.6	5.6		
MOISTURE AT COMPACTION,	11.8	13.1	12.4		
DRY DENSITY, PCF	111.0	109.4	110.7		
EXUDATION PRESSURE, PSI	547.5	122.6	168.7		
G.E. (STABILITY), FT	.58	.65	.60		
G.E. (EXPANSION), FT	.00	.00	.00		

R-VALUE BY STABILITY : 56.0

CFS Project No. 991001

EXAM No. 4411-5490	LOS OSOS WASTE WATER TREATMENT PLANT
S/G Testing Labs, Inc.	R-VALUE TEST ATTACHMENT No. 1

ATTACHMENT C1
BORING LOGS
FUGRO WEST, INC. (1997)



General Notes

1 Soil Texture Symbol

2 Sloped line in symbol column indicates transitional boundary

3 Samplers and sampler dimensions (unless otherwise noted in report text) are as follows:

Symbol for:

1 SPT Sampler, driven 1 3/8" ID, 2" OD
2 CA Liner Sampler, driven 2 3/8" ID, 3" OD
3 CA Liner Sampler, disturbed 2 3/8" ID, 3" OD
4 Recovery Interval
5 Thin-walled Tube, pushed 2 7/8" ID, 3" OD
6 Bulk Bag Sample (from cuttings)
7 Hand Auger Sample
8 Rock Core Sample
9 No Sample Recovered
10 Vibracore Sample
11 Pitcher Sample

4 Sampler Driving Resistance

Number of blows with 140 lb. hammer, falling 30-in. to drive sampler 1-ft. after seating sampler 6-in.; for example,

Blows/ft	Description
25	25 blows drove sampler 12" after initial 6" of seating
86/11"	After driving sampler the initial 6" of seating, 36 blows drove sampler through the second 6" interval, and 50 blows drove the sampler 5" into the third interval
50/6"	50 blows drove sampler 6" after initial 6" of seating
Ref/3"	50 blows drove sampler 3" during initial 6" seating interval

5 Blow counts for California Liner Sampler shown in ( )

6 Length of sample symbol approximates recovery length

7 Classification of Soils per ASTM D2487 or D2488

8 Geologic Formation noted in bold font at the top of interpreted interval

9 Strength Legend

Q = Unconfined Compression
u = Unconsolidated Undrained Triaxial
t = Torvane
p = Pocket Penetrometer
m = Miniature Vane

10 Water Level Symbols

▽ Initial ground water level
▼ Final ground water level

11 Rock Quality Designation (RQD) is the sum of recovered core pieces greater than 4 inches divided by the length of the cored interval

12

KEY TO TERMS & SYMBOLS USED ON LOGS

PLATE A-1

April 1997
Project No. 95-92-4286

FUGRO

LOCATION: Pasadena Drive, south of Santa Lucia and 1st Street

SURFACE EL: 51 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
50	0												
			1		24	**Artificial Fill (Af):** 2" Asphalt Concrete Pavement; 8" Base Material, Silty SAND with gravel (SM): dense, pale red, dry	112	112	1				
48	2		2										
						Sand Dune Deposits (Qs):							
46	4		3		26	Fine SAND (SP): medium dense, yellowish-red, dry, uniform	110	109	1	2			
44	6												
42	8												
40	10		4		20	Lense of sandy SILT (ML): grades to darker yellowish-red, some small shale in sample; SAND with silt (SP-SM): medium dense, dark, yellowish-red, dry to slightly moist							
38	12												
36	14		5		24	SAND (SP): medium dense, yellowish-red, slightly moist, uniform color and texture, clean							
34	16												
32	18												
30	20												
28	22												
26	24												
24	26												
22	28												
20	30												
18	32												
16	34												
14	36												
12	38												
10	40												
8	42												
	44												

COMPLETION DEPTH: 16 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native/Cold Patch
DRILLING DATE: January 17, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-101

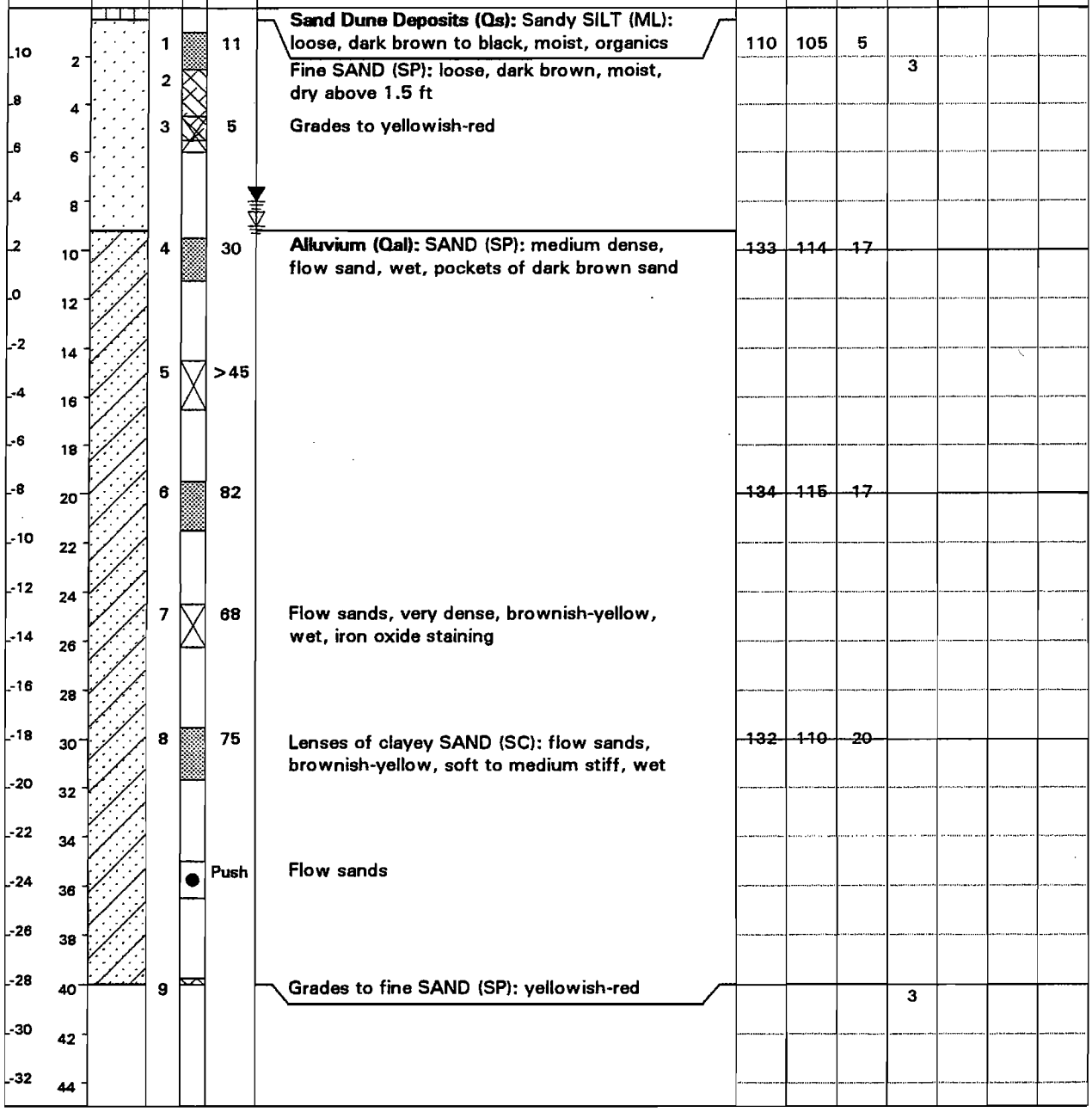
Los Osos Wastewater Project

GEOT(54286/DH-101)
6/18/97\12:37

PLATE A-2

LOCATION: 25 ft of 1st St. 200 ft south of Santa Maria

SURFACE EL: 12 ft +/- (rel. MSL datum)



COMPLETION DEPTH: 40 ft
DEPTH TO WATER: 8 ft
BACKFILLED WITH: Native
DRILLING DATE: January 21, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-102

Los Osos Wastewater Project

GEOT(54286/DH-102)
6/18/97\12:38

PLATE A-3

April 1997
Project No. 95-92-4286

FUGRO

LOCATION: South-west corner of Santa Maria and 4th St.

SURFACE EL: 25 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
24												
22	2	1		17	**Artificial Fill (Af):** 1.75" Asphalt Concrete Pavement 11" Base Material: silty SAND with gravel (SM)	107	105	1				
		2										
20	4				**Sand Dune Deposits (Qs):**							
		3A		10	Fine SAND (SP): loose, yellowish-red, dry				1			
18	6											
16	8											
14	10											
		3B		34	Medium dense, moist	125	105	19	1			
12	12											
10	14											
		4		40	Dense, wet, (flow sands in auger)							
8	16											
6	18											
4	20	5		>75	Flow sands							
2	22											
0	24											
-2	26											
-4	28											
-6	30											
-8	32											
-10	34											
-12	36											
-14	38											
-16	40											
-18	42											
-20	44											

COMPLETION DEPTH: 21.5 ft
DEPTH TO WATER: 11 ft
BACKFILLED WITH: Native/Cold Patch
DRILLING DATE: January 17, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-103
Los Osos Wastewater Project

GEOT(54286/DH-103)
6/18/97\12:38

PLATE A-4

April 1997
Project No. 95-92-4286

LOCATION: East shoulder of 10th St. (top of hill) between Santa Ysabel and Santa Maria

SURFACE EL: 86 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
84	2	1		24	**Artificial Fill (Af)** 2" Asphalt Concrete Pavement 4" Base Material	~~113~~	~~110~~	~~2~~				
82	4	2			**Sand Dune Deposits (Qs):** Fine SAND (SP): medium dense, yellowish-red, moist, 3" layer of sandy SILT (ML)							
80	6	3		9	3" layer of sandy silt, brown, dry, loose Brown, dry, loose				~~1~~			
78	8											
76	10	4		20	Medium dense	107	105	2				
74	12											
72	14											
70	16	5		32	Dense, reddish-brown, moist							
68	18											
66	20	6		34	Dry to moist	110	107	3				
64	22											
62	24											
60	26	7		12	Medium dense							
58	28											
56	30	8		42	Dense, reddish-brown with white and black grains	109	107	2				
54	32											
52	34											
50	36											
48	38											
46	40											
44	42											
42	44											

COMPLETION DEPTH: 31.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native/Cold Patch
DRILLING DATE: January 17, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-104
Los Osos Wastewater Project

GEOT(54286/DH-104)
6/18/97\12:38

PLATE A-5

April 1997
Project No. 95-92-4286

FUGRO

LOCATION: East shoulder of 11th St. between Santa Ysabel and Santa Maria

SURFACE EL: 94 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
92	2	1		18	**Artificial Fill (Af):** Sandy SILT with gravel (ML): brown, moist	109	106	3				
90	4	2			**Sand Dune Deposits (Qs):** Fine SAND (SP): medium dense, yellowish-red, slightly moist to dry				1			
88	6	3		10	Loose				1			
86	8											
84	10	4		24	Medium dense, some small pockets of reddish-brown SAND	108	106	2				
82	12											
80	14											
78	16	5		13	1.5" lense of sandy SILT (ML)							
76	18											
74	20	6		38	Lenses of silty SAND (SM)	111	108	3				
72	22											
70	24											
68	26	7		30	Moist to slightly moist, poorly graded							
66	28											
64	30	8		76		111	107	3				
62	32											
60	34											
58	36											
56	38											
54	40											
52	42											
50	44											

COMPLETION DEPTH: 31 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native
DRILLING DATE: January 17, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-105

Los Osos Wastewater Project

GEOT(54286/DH-105)
6/18/97\12:39

PLATE A-6

April 1997
Project No. 95-92-4286

FUGRO

LOCATION: West shoulder of South Blvd., 140 ft south of Santa Ysabel

SURFACE EL: 89 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
88					**Artificial Fill (Af):**							
	2	1		37	4" Asphalt Concrete Base	135	122	11				
86		2			6" Base material: silty SAND with gravel (SM): dense, brown, moist				24	30	10	
	4	3A		13	Clayey SAND with gravel (SC): fill material, medium dense, yellowish-red to brown, moist				2			
84												
	6				Fine SAND (SP): medium dense, yellowish-red, slightly moist							
82												
	8											
80												
	10	3B		29	Medium dense, pockets of slightly clayey SAND (SC) and small 0.125" gravel	~~115~~	~~110~~	~~5~~				
78												
	12											
76												
	14											
74		4		7	**Sand Dune Deposits (Qs):** Fine Sand (SP): loose, dark gray to black, slightly moist				3			
	16											
72												
	18											
70												
	20	5		28	Grades medium dense, reddish-brown	~~115~~	~~110~~	~~4~~				
68												
	22											
66												
	24											
64		6		20	Yellowish-red							
	26											
62												
	28											
60												
	30	7		48	Pockets/lenses of silty SAND (SM): dark brown	~~111~~	~~106~~	~~4~~				
58												
	32				▽							
56												
	34											
54		8		51	Flow sands, dense, yellowish-red, wet, lenses of iron oxide staining							
	36											
52												
	38											
50												
	40	9		>70	Flow sands, lense of dark iron oxide staining							
48												
	42											
46												
	44											

COMPLETION DEPTH: 41.5 ft
DEPTH TO WATER: 33 ft
BACKFILLED WITH: Native/Cold Patch
DRILLING DATE: January 23, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-106

Los Osos Wastewater Project

GEOT(54286/DH-106)
6/18/97\14:53

PLATE A-7

April 1997
Project No. 95-92-4286

FUGRO

LOCATION: East shoulder of 18th St., 50 ft north of Paso Robles St.

SURFACE EL: 75 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
74	0	1		28	**Artificial Fill (Af):** 3.5" Asphalt Concrete Pavement 5" Base material, sandy GRAVEL (GW): dense, gray	112	109	3				
72	2	2										
70	4	3		8	**Sand Dune Deposits (Qs):** Fine SAND (SP): loose to medium dense, reddish-brown, dry to slightly moist, lense of silty SAND (SM) at 2 ft				2			
68	6											
66	8				Flow sands grades from yellowish-red to							
64	10	4		34	brownish-yellow, wet	~~130~~	~~112~~	~~16~~				
62	12											
60	14	5		23	Flow sands							
58	16											
56	18											
54	20			5	Flow sands							
52	22											
50	24	6		51	Flow sands							
48	26											
46	28											
44	30	7		23	Brownish-yellow, wet	~~127~~	~~103~~	~~23~~				
42	32											
40	34											
38	36	8		>30	**Paso Robles Formation (Qpr):** Sandy lean CLAY (CL): very hard, reddish brown, wet Flow sands							
36	38											
34	40											
32	42											
	44											

COMPLETION DEPTH: 40 ft
DEPTH TO WATER: 9.5 ft
BACKFILLED WITH: Native/Cold Patch
DRILLING DATE: January 20, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-107
Los Osos Wastewater Project

GEOT(54286/DH-107)
6/18/97\12:39

PLATE A-8

April 1997
Project No. 95-92-4286

LOCATION: South-east corner of Pismo and South Bay Blvd.

SURFACE EL: 85 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
84			1		10	**Sand Dune Deposits (Qs):** Fine SAND (SP): loose, yellowish-red, moist, some small roots and organics in upper 1'	104	100	4				
82	2												
80	4		2		22	Grades to light yellowish-red, dry to sightly moist	108	103	5	1			
78	6												
76	8												
74	10		3		16								
72	12												
70	14		4		85	SAND (SP): very dense, yellowish-red, wet, (flowsands)							
68	16												
66	18												
64	20												
62	22												
60	24												
58	26												
56	28												
54	30												
52	32												
50	34												
48	36												
46	38												
44	40												
42	42												
	44												

COMPLETION DEPTH: 16.5 ft
DEPTH TO WATER: 14 ft
BACKFILLED WITH: Native
DRILLING DATE: January 20, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-108

Los Osos Wastewater Project

GEOT(54286/DH-108)
6/18/97\12:40

PLATE A-9

April 1997
Project No. 95-92-4286

FUGRO

LOCATION: West shoulder of 9th street between El Morro and Paso Robles

SURFACE EL: 34 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
32	2	1		12	**Artificial Fill (Af):** 1"-1.5" Asphalt Concrete Pavement	109	105	4				
30	4	2			4" Silty SAND (SM): medium dense, dark brown, moist				3			
28	6	3		20	**Sand Dune Deposits (Qs):** Fine to medium SAND (SP): loose, yellowish-red, slightly moist (No recovery, pushed SPT to recover sample) Medium dense, yellowish-red, wet							
26	8											
24	10	4		48	Fine SAND (SP): dense, reddish-brown, wet, flow sands							
22	12											
20	14											
18	16			74	No Recovery, flow sands							
16	18											
14	20											
12	22											
10	24											
8	26											
6	28											
4	30											
2	32											
0	34											
-2	36											
-4	38											
-6	40											
-8	42											
-10	44											

COMPLETION DEPTH: 16 ft
DEPTH TO WATER: 5.5 ft
BACKFILLED WITH: Native/Cold Patch
DRILLING DATE: January 17, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-109

Los Osos Wastewater Project

April 1997
Project No. 95-92-4286

FUGRO

LOCATION: Psimo St., 20 ft east EEP off of 4th St. (dirt trail)

SURFACE EL: 19 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
18	2	1		23	**Alluvium (Qal):** SAND with gravel (SP): medium dense, yellowish-brown, very moist	132	118	12				
16	4	2										
14	6	3		1	SAND with silt (SP-SM): very loose, dark gray to black, wet				5			
12	8											
10	10			21	No recovery							
8	12											
6	14											
4	16	4		19	Fine SAND (SP): medium dense, reddish-brown, wet, flow sands							
2	18											
0	20	5		43	SAND (SP): medium dense, yellowish-red, wet	~~138~~	~~118~~	~~17~~				
-2	22											
-4	24											
-6	26	6		17								
-8	28											
-10	30			41								
-12	32											
-14	34											
-16	36	7		19	Lenses of SAND with silt (SP-SM): medium dense, light gray, very moist to wet, lense of clayey SAND (SC): iron oxide staining, 1/8" to 1/4" gravel							
-18	38				Lenses of dark brown lean CLAY (CL), lenses of reddish-brown peat with organics, small pieces of wood, organic odor							
-20	40	8		81		~~133~~	~~114~~	~~18~~				
-22	42				SAND with silt (SP-SM): dense, yellowish-red, wet, lenses of dark brown sandy lean CLAY (CL): soft, wet							
-24	44											

COMPLETION DEPTH: 41 ft
DEPTH TO WATER: 3 ft
BACKFILLED WITH: Native
DRILLING DATE: January 23, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-110
Los Osos Wastewater Project

GEOT(54286/DH-110)
6/18/97\12:40

PLATE A-11

April 1997
Project No. 95-92-4286

FUGRO

LOCATION: 8th St. south of Romona

SURFACE EL: 90 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
88	2		1		18	**Artificial Fill (Af):** 2" Asphalt Concrete Pavement 6" Base Material	111	108	3	1			
			2										
86	4		3		28	**Sand Dune Deposits (Qs):** Fine SAND (SP): medium dense, light brown, dry, with silt Brownish-yellow, slightly moist	110	108	2				
84	6												
82	8												
80	10		4		12	Loose							
78	12												
76	14		5		39	Lenses of silty SAND (SM): dry	111	106	4				
74	16												
72	18												
70	20		6		36								
68	22												
66	24												
64	26												
62	28												
60	30												
58	32												
56	34												
54	36												
52	38												
50	40												
48	42												
46	44												

COMPLETION DEPTH: 21 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native/Cold Patch
DRILLING DATE: January 20, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-111

Los Osos Wastewater Project

GEOT(54286/DH-111)
6/18/97\12:41

PLATE A-12

LOCATION: North shoulder of Los Olivos, 50 ft east of 10th St.

SURFACE EL: 128 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
126	2	1		20	**Artificial Fill (Af):** 2.5" Asphalt Concrete Pavement	138	126	10				
		2			2" Base material, silty SAND with gravel (SM): dark gray							
124	4				**Sand Dune Deposits (Qs):** SAND with silt (SP-SM): medium dense, dark gray to black, moist				2			
122	6	3		10								
120	8				Sandy SILT with gravel (ML): medium stiff, dark brown, moist, mottled							
118	10	4		30	Fine SAND (SP): loose, reddish-brown, slightly moist	110	105	5	2			
116	12				Medium dense lenses of sandy SILT (ML) to silty SAND (SM): light brown, dry							
114	14	5		12	Loose, brownish-yellow, dry to slightly moist							
112	16											
110	18											
108	20											
106	22											
104	24											
102	26											
100	28											
98	30											
96	32											
94	34											
92	36											
90	38											
88	40											
86	42											
84	44											

COMPLETION DEPTH: 15.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native/Cold Patch
DRILLING DATE: January 20, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-112

Los Osos Wastewater Project

April 1997
Project No. 95-92-4286

FUGRO

LOCATION: West lane of Mountain View, 150 ft north of Los Olivos

SURFACE EL: 101 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
100	2	1		25	**Artificial Fill (Af):** 2.5" Asphalt Concrete Pavement	107	105	2				
98	4	2			4" Base material, silty SAND with gravel (SM): brown, dry				2			
96	6			15	**Sand Dune Deposits (Qs):** Silty SAND (SM): medium dense, pale red, dry							
94	8				Fine SAND (SP): medium dense, brownish-yellow, dry to slightly moist Loose							
92	10	3		9	Clayey SAND (SC): loose, pale red, very moist, iron oxide staining, some black inclusions				17			
90	12											
88	14	4		40	Fine SAND (SP): medium dense, flow sands, brownish-yellow, wet							
86	16											
84	18											
82	20											
80	22											
78	24											
76	26											
74	28											
72	30											
70	32											
68	34											
66	36											
64	38											
62	40											
60	42											
58	44											

COMPLETION DEPTH: 15.5 ft
DEPTH TO WATER: 5 ft
BACKFILLED WITH: Native/Cold Patch
DRILLING DATE: January 20, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-113
Los Osos Wastewater Project

GEOT(54286/DH-113)
6/18/97\15:21

PLATE A-14

April 1997
Project No. 95-92-4286

LOCATION: South shoulder of Los Osos Valley Rd., 80 ft east of Sunny Oaks MHP

SURFACE EL: 158 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
156	2	1		23	**Artificial Fill (Af):** 5.5" Asphalt concrete pavement	111	107	5				
		2			0.75" Base material, silty SAND with gravel (SM): gray							
154	4				Fine SAND (SP): medium dense, yellowish-red, slightly moist							
		3		19	3" lense of silty SAND (SM): moist, medium dense, 0.125" pieces of shale, dark gray							
152	6											
150	8											
148	10	4		25		~~108~~	~~103~~	~~5~~				
146	12											
144	14											
142	16	5		19	**Sand Dune Deposits (Qs):** Fine SAND (SP): medium dense, brownish-yellow to yellowish-red, slightly moist							
140	18											
138	20			46	No recovery							
136	22											
134	24											
132	26	6		46	Dense, yellowish-red, wet, lenses of iron oxide staining, flow sands							
130	28											
128	30	7		>70	Light gray pockets, flow sands	~~132~~	~~112~~	~~18~~				
126	32											
124	34											
122	36	8		41	Dense, yellowish-red, flow sands, pockets/lenses of light gray silty SAND (SM)							
120	38											
118	40	9		65	**Paso Robles Formation (Qpr):** Lean CLAY with pockets of sand (CL): stiff, olive gray to gray, slightly moist, flowsands	~~135~~	~~113~~	~~20~~				
116	42											
114	44											

COMPLETION DEPTH: 41 ft
DEPTH TO WATER: 20 ft
BACKFILLED WITH: Native/Cold Patch
DRILLING DATE: January 23, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-114
Los Osos Wastewater Project

GEOT(54286/DH-114)
6/18/97\12:42

PLATE A-15

April 1997
Project No. 95-92-4286

LOCATION: East lane of Pecho Rd., 200 ft north of Los Osos Valley Rd.

SURFACE EL: 66 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
64	2	1		13	**Artificial Fill (Af):** 2.5" Asphalt Concrete Pavement	106	102	3				
		2			6" Aggregate base, dense, light yellowish-brown							
62	4	3		16	**Sand Dune Deposits (Qs):** Silty SAND (SM): loose, reddish-brown, dry				13			
60	6				Medium dense, brownish-yellow							
58	8											
56	10	4		73	Dense, yellow to light brown	114	109	5				
54	12											
52	14	5		29	Lenses of silty SAND with gravel (SM)							
50	16											
48	18											
46	20											
44	22											
42	24											
40	26											
38	28											
36	30											
34	32											
32	34											
30	36											
28	38											
26	40											
24	42											
22	44											

COMPLETION DEPTH: 16 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native/Cold Patch
DRILLING DATE: January 24, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

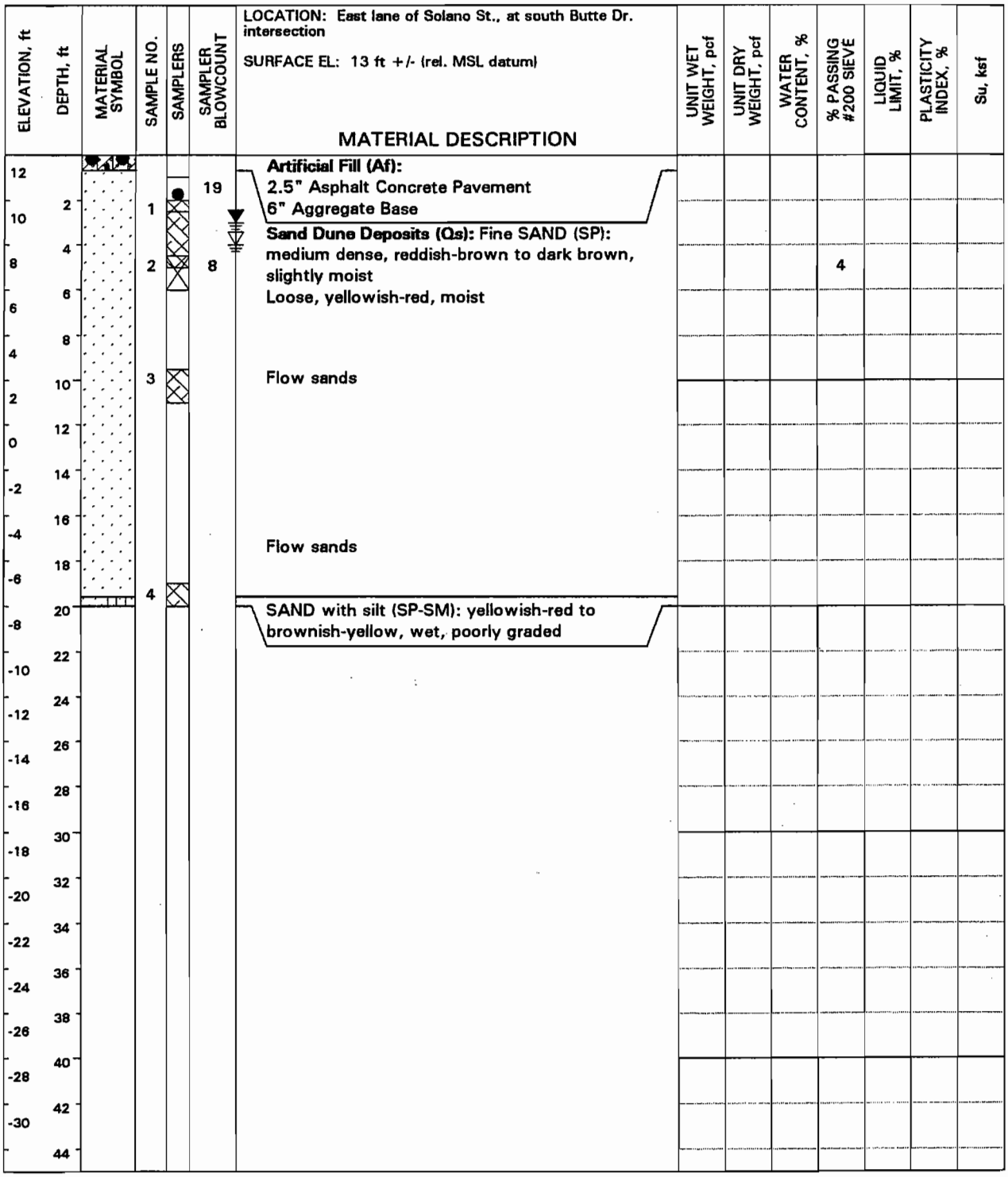
The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-115
Los Osos Wastewater Project

GEOT(54286/DH-115)
6/18/97\12:42

PLATE A-16

April 1997
Project No. 95-92-4286



COMPLETION DEPTH: 20 ft
DEPTH TO WATER: 3 ft
BACKFILLED WITH: Native/Cold Patch
DRILLING DATE: January 24, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

This log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-116
Los Osos Wastewater Project

GEOT(54286/DH-116)
6/18/97\12:42

PLATE A-17

April 1997
Project No. 95-92-4286

FUGRO

LOCATION: North shoulder of Lupine St., east of Doris Ave., 1 ft outside EEP

SURFACE EL: 12 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
10	2	1		11	**Artificial Fill (Af):** Slightly clayey SAND (SC): loose, brown, moist	110	103	7				
8	4	2			**Sand Dune Deposits (Qs):** Fine SAND (SP): loose, yellowish-red, moist							
6	6	3		12	Medium dense, wet				2			
4	8											
2	10	4		49		134	114	17				
0	12											
-2	14				Grades to fine SAND with silt (SP-SM): lenses of iron oxide staining.							
-4	16	5		29					11			
-6	18	6		29	**Paso Robles Formation (Qpr):** Clayey SAND (SC): medium dense, light brown							
-8	20	7		>70	SAND (SP): dense, yellowish-red, wet	130	107	22				
-10	22											
-12	24	8		60								
-14	26											
-16	28											
-18	30	9		>75		130	109	20				
-20	32											
-22	34											
-24	36	10		>76	Lense of medium grained SAND							
-26	38											
-28	40			53	No Recovery							
-30	42											
-32	44											

COMPLETION DEPTH: 41 ft
DEPTH TO WATER: 4 ft
BACKFILLED WITH: Native
DRILLING DATE: January 21, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-117
Los Osos Wastewater Project

GEOT(54286/DH-117)
6/18/97\12:42

PLATE A-18

LOCATION: North-east corner of north-east basin

SURFACE EL: 215 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
214					**Sand Dune Deposits (Qs):** Fine SAND with silt (SP-SM): loose, brown, moist							
212	2	1		12		105	100	5				
210	4	2										
	6	3		15	Dark brown	109	103	6				
208												
206	8											
204	10	4		14	CLAY lense at 10 ft. Medium dense, yellowish-brown to tan							
202	12											
200	14	5		36	Tan, some pockets of dark brown SAND	113	105	8				
198	16											
196	18											
194	20	6		22	Interbedded lenses of brown clayey SAND (SC)				6			
192	22											
190	24	7		91	**Paso Robles Formation (Qpr):** Fine SAND with silt (SP-SM): dense, tan, moist, pockets of dark brown clayey SAND	120	110	9				
188	26											
186	28											
184	30	8		30	Fine SAND (SP): dense, tan, moist							
182	32											
180	34	9		59	Fine SAND with silt (SP-SM): dense, tan, moist	111	104	6				
178	36											
176	38											
174	40	10		32	Layers of sandy SILT (ML): visible water but not saturated							
172	42											
	44											

COMPLETION DEPTH: 41.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native
DRILLING DATE: January 15, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-201
Los Osos Wastewater Project

April 1997
Project No. 95-92-4286

LOCATION: North side of north-west basin

SURFACE EL: 205 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
204					**Sand Dune Depsits (Qs):** Fine SAND (SP): loose, reddish-brown, moist							
202	2	1		10		107	102	6				
200	4	2										
		3		17	Grades to medium dense, brownish-yellow	109	104	5				
198	6											
196	8											
194	10	4		13								
192	12											
190	14	5		38		112	103	9				
188	16											
186	18											
184	20	6		21								
182	22											
180	24	7		52	Dense, some small brown to black inclusions	114	104	9				
178	26											
176	28											
174	30	8		29	Medium dense				1			
172	32											
170	34	9		>70	**Paso Robles Formation (Qpr):** Fine SAND (SP): dense, brownish-yellow to brown, moist	109	104	5				
168	36											
166	38											
164	40	10		25	Medium dense				1			
162	42											
	44											

COMPLETION DEPTH: 41.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native
DRILLING DATE: January 16, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-202
Los Osos Wastewater Project

GEOT(54286/DH-202)
6/18/97\12:44

PLATE A-20

April 1997
Project No. 95-92-4286

LOCATION: West end of north-east basin

SURFACE EL: 220 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
218	2	1		13	**Sand Dune Deposits (Qs):** Silty SAND (SM): medium dense, dark reddish-brown, moist, some roots	106	102	4				
216	4	2			Grades from light brown to tan							
214	6	3		19	Medium dense	107	103	5				
212	8											
210	10	4		13	Fine SAND with silt (SP-SM)							
208	12											
206	14											
204	16	5		27	Light brown, pockets of dark brown to gray SAND	116	104	12				
202	18											
200	20	6		23	Brown to dark reddish-brown, lenses of clayey SAND (SC)							
198	22											
196	24											
194	26	7		75	**Paso Robles Formation (Qpr):** Fine SAND (SP): dense, light brown, moist, lenses of dark brown silty SAND	114	108	6				
192	28											
190	30	8		37								
188	32											
186	34											
184	36	9		80	Very dense, light brown to orangish brown, moist, medium to coarse at 35.5 ft	114	107	6				
182	38											
180	40	10		76	Moist, lenses of clayey SAND (SC)							
178	42											
176	44											

COMPLETION DEPTH: 41.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native
DRILLING DATE: January 15, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-203
Los Osos Wastewater Project

GEOT(54286/DH-203)
6/18/97\12:44

PLATE A-21

April 1997
Project No. 95-92-4286

LOCATION: East end of south-west basin

SURFACE EL: 240 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
238	2		1		29	**Sand Dune Deposits (Qs):** Fine silty SAND (SM): medium dense, reddish-brown, dry	97	94	3				
236	4		2										
234	6		3		17		99	97	2				
232	8												
230	10		4		13	Yellowish-brown to brown, dry to moist							
228	12												
226	14												
224	16		5		30	Dark reddish-brown mottles	107	103	4				
222	18												
220	20		6		23	Interbedded lenses of reddish-brown silty fine SAND (SM)							
218	22												
216	24												
214	26												
212	28												
210	30												
208	32												
206	34												
204	36												
202	38												
200	40												
198	42												
196	44												

COMPLETION DEPTH: 21.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native
DRILLING DATE: January 16, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-204
Los Osos Wastewater Project

GEOT(54286/DH-204)
6/18/97\12:45

PLATE A-22

April 1997
Project No. 95-92-4286

LOCATION: North-west corner of Operations Bld.

SURFACE EL: 85 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
84					**Sand Dune Deposits (Qs):**							
	2	1		11	Fine SAND (SP): loose, reddish-brown, dry to moist, quickly grades to yellowish-red, some small roots	109	102	6				
82		2										
	4											
80		3		23	Medium dense	108	104	4	2			
	6											
78												
	8											
76												
	10	4		15	Yellowish-red, dry							
74												
	12											
72												
	14											
70		5		41	Brownish-yellow, moist, iron oxide staining	111	105	6				
	16											
68												
	18											
66												
	20	6		22	Grades from fine SAND (SP) to SAND with silt (SP-SM): medium dense, brownish-yellow, wet							
64												
	22											
62					▽							
	24											
60		7		>50	Very dense	132	110	20				
	26											
58												
	28											
56												
	30	8		51								
54												
	32											
52												
	34											
50		9		40	Medium dense (flowsands)	128	105	22	1			
	36											
48												
	38											
46												
44	40	10		57	**Paso Robles (Qpr):**			20		49	21	
	42				Lean CLAY (CL): very stiff to hard, dark gray/brown, moist							
42												
	44											

COMPLETION DEPTH: 61.5 ft
DEPTH TO WATER: 24 ft
BACKFILLED WITH: Native
DRILLING DATE: January 16, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-301
Los Osos Wastewater Project

GEOT(54286/DH-301)
6/18/97\12:45

PLATE A-23a

April 1997
Project No. 95-92-4286

LOCATION: North-west corner of Operations Bld.

SURFACE EL: 85 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
38	46		11		63	Fine Sand (SP): dense, dark brown to brown, wet, layers of clayey SAND (SC) and sandy CLAY (CL)	134	119	13				
36	48												
34	50		12		51	Very dense, dark brown to yellowish-red, moist to wet							
32	52												
30	54		13		>93	Lenses of slightly clayey SAND (SC): iron oxide staining							
28	56												
26	58												
24	60		14		50								
22	62												
20	64												
18	66												
16	68												
14	70												
12	72												
10	74												
8	76												
6	78												
4	80												
2	82												
0	84												
-2	86												
-4	88												

COMPLETION DEPTH: 61.5 ft
DEPTH TO WATER: 24 ft
BACKFILLED WITH: Native
DRILLING DATE: January 16, 1997

DRILLING METHOD: Hollow Stem Auger
DRILLED BY: S & G Drilling
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. DH-301
Los Osos Wastewater Project

GEOT(54286/DH-301)
6/18/97\12:46

PLATE A-23b

April 1997
Project No. 95-92-4286

FUGRO

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	LOCATION: North shoulder of Los Olivos, 50 ft east of Fairchild SURFACE EL: 122 ft +/- (rel. MSL datum) MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
120	2					**Sand Dune Deposits (Qs):** Silty fine SAND (SM): dark brown, dry to moist 0.25" Diameter reddish-brown to orange mottling							
118	4												
116	6					Grades to fine SAND (SP): light brown, moist, iron cemented inclusions (0.25")							
114	8												
112	10												
110	12												
108	14												
106	16												
104	18												
102	20												
100	22												
98	24												
96	26												
94	28												
92	30												
90	32												
88	34												
86	36												
84	38												
82	40												
80	42												
78	44												

COMPLETION DEPTH: 6 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native
DRILLING DATE: January 28, 1997

DRILLING METHOD: Hand Auger
DRILLED BY: JDBlanchard
LOGGED BY: JDBlanchard
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. HA-1
Los Osos Wastewater Project

GEOT(54286/HA-1)
6/18/97\12:46

PLATE A-24

April 1997
Project No. 95-92-4286

LOCATION: East shoulder of 18th St., 138 ft south of Paso Robles Street.

SURFACE EL: 71 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
70	0					**Sand Dune Deposits (Qs):** Silty SAND (SM): gray-brown, wet							
68	2					Grades to light brown							
66	4					Grades to yellowish-brown Caved at 4 ft							
64	6					Orange mottles							
62	8												
60	10												
58	12												
56	14												
54	16												
52	18												
50	20												
48	22												
46	24												
44	26												
42	28												
40	30												
38	32												
36	34												
34	36												
32	38												
30	40												
28	42												
	44												

COMPLETION DEPTH: 6 ft
DEPTH TO WATER: 0 ft
BACKFILLED WITH: Native
DRILLING DATE: January 28, 1997

DRILLING METHOD: Hand Auger
DRILLED BY: JDBlanchard
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. HA-2
Los Osos Wastewater Project

GEOT(54286/HA-2)
6/18/97\12:46

PLATE A-25

FUGRO

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	LOCATION: South-west corner of Los Olivos and Mountain View Ave. SURFACE EL: 122 ft +/- (rel. MSL datum) MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
120	2					**Sand Dune Depsits (Qs):** Clayey SAND with gravel (SC): black, very moist							
118	4					Grades to silty SAND (SM): dark gray/black, wet, organic odor							
116	6					Grades to brown							
114	8												
112	10												
110	12												
108	14												
106	16												
104	18												
102	20												
100	22												
98	24												
96	26												
94	28												
92	30												
90	32												
88	34												
86	36												
84	38												
82	40												
80	42												
78	44												

COMPLETION DEPTH: 5 ft
DEPTH TO WATER: 3 ft
BACKFILLED WITH: Native
DRILLING DATE: February 18, 1997

DRILLING METHOD: Hand Auger
DRILLED BY: CLLovato
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. HA-3
Los Osos Wastewater Project

April 1997
Project No. 95-92-4286

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	LOCATION: East shoulder of 11th St., 125 feet south of end of 11th St. SURFACE EL: 53 ft +/- (rel. MSL datum) MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
52						**Sand Dune Deposits (Qs):** Fine silty SAND (SM): dark brown, moist							
50	2					Fine SAND with silt (SP-SM): yellowish-brown, slightly moist							
48	4												
46	6												
44	8												
42	10												
40	12												
38	14												
36	16					Fine SAND (SP): brown, wet							
34	18												
32	20												
30	22												
28	24												
26	26												
24	28												
22	30												
20	32												
18	34												
16	36												
14	38												
12	40												
10	42												
	44												

COMPLETION DEPTH: 17 ft
DEPTH TO WATER: 16.5 ft
BACKFILLED WITH: Native
DRILLING DATE: February 18, 1997

DRILLING METHOD: Hand Auger
DRILLED BY: CLLovato
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. HA-4
Los Osos Wastewater Project

GEOT(54286/HA-4)
6/18/97\12:47

PLATE A-27

LOCATION: South Santa Ysabel, west of South Bay Blvd.

SURFACE EL: 80 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
78	2					**Sand Dune Deposits (Qs):** Fine silty SAND (SM): dark brown, dry to slightly moist							
76	4												
74	6					Grades to fine SAND (SP): dark yellowish-brown, slightly moist							
72	8												
70	10												
68	12												
66	14												
64	16												
62	18												
60	20												
58	22					▽							
56	24												
54	26												
52	28												
50	30												
48	32												
46	34												
44	36												
42	38												
40	40												
38	42												
36	44												

COMPLETION DEPTH: 22.25 ft
DEPTH TO WATER: 22 ft
BACKFILLED WITH: Native
DRILLING DATE: February 18, 1997

DRILLING METHOD: Hand Auger
DRILLED BY: CLLovato
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. HA-5
Los Osos Wastewater Project

April 1997
Project No. 95-92-4286

LOCATION: East shoulder 15th St., 320 feet south of Ramona Ave.

SURFACE EL: 95 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
94						**Sand Dune Deposits (Qs):** Fine SAND with silt (SP-SM): dark reddish-brown, dry to slightly moist							
92	2												
90	4					Grades to fine Sand (SP): yellowish-brown to tan, moist							
88	6												
86	8												
84	10												
82	12												
80	14												
78	16												
76	18												
74	20												
72	22												
70	24												
68	26												
66	28												
64	30												
62	32												
60	34												
58	36												
56	38												
54	40												
52	42												
50	44												

COMPLETION DEPTH: 9 ft
DEPTH TO WATER: 8.5 ft
BACKFILLED WITH: Native
DRILLING DATE: February 18, 1997

DRILLING METHOD: Hand Auger
DRILLED BY: CLLovato
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. HA-6
Los Osos Wastewater Project

April 1997
Project No. 95-92-4286

FUGRO

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	LOCATION: East shoulder Pasadena Dr., 100 feet south of Santa Ysabel SURFACE EL: 9 ft +/- (rel. MSL datum) MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
8													
6	2					**Alluvium (Qal):** Fine silty SAND (SM): dark gray/black, wet, organics							
4	4					Grades to fine SAND with silt (SP-SM): gray, wet							
2	6												
0	8												
-2	10												
-4	12												
-6	14												
-8	16												
-10	18												
-12	20												
-14	22												
-16	24												
-18	26												
-20	28												
-22	30												
-24	32												
-26	34												
-28	36												
-30	38												
-32	40												
-34	42												
-36	44												

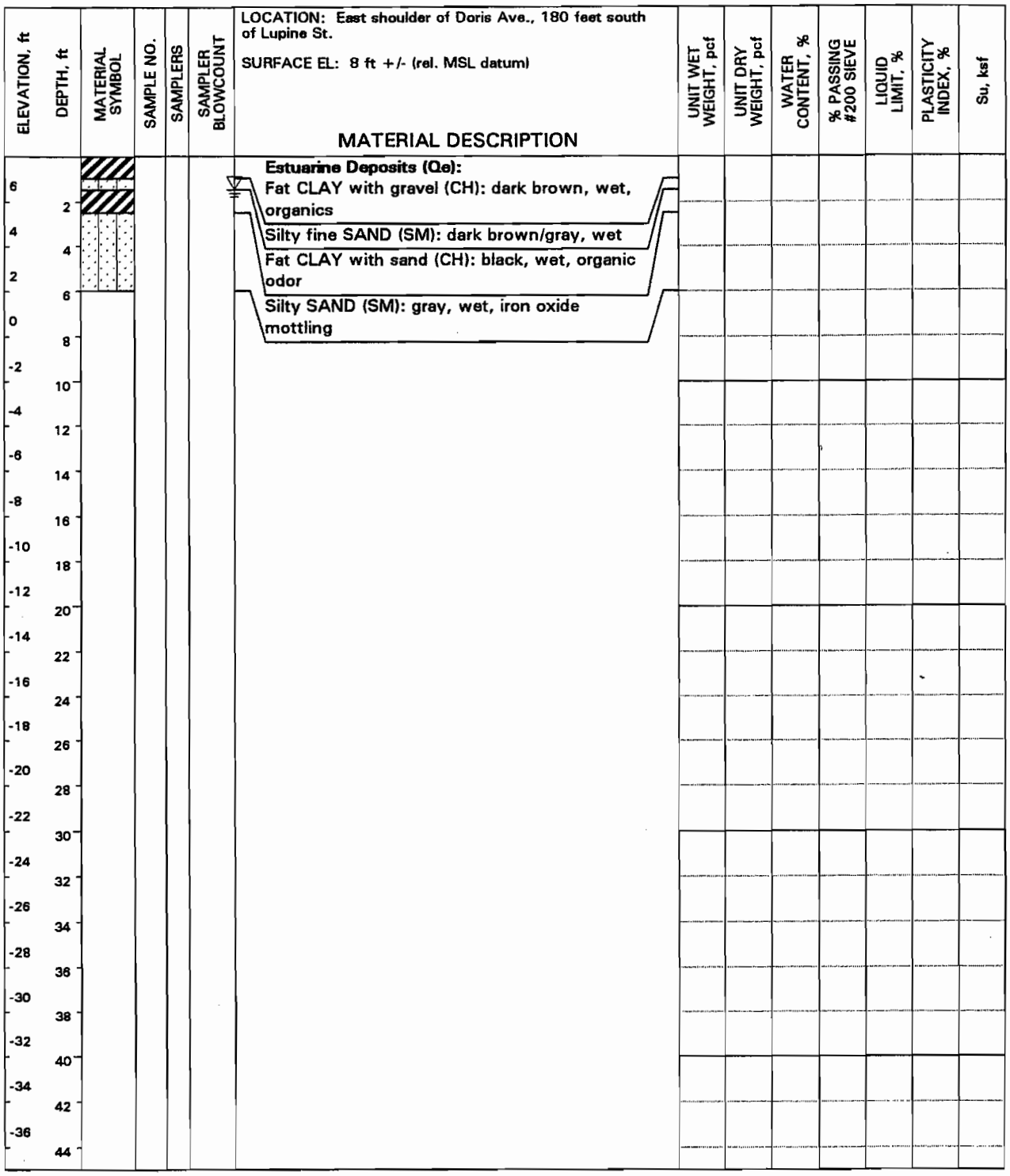
COMPLETION DEPTH: 5.5 ft
DEPTH TO WATER: 2.5 ft
BACKFILLED WITH: Native
DRILLING DATE: February 18, 1997

DRILLING METHOD: Hand Auger
DRILLED BY: CLLovato
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. HA-7
Los Osos Wastewater Project

April 1997
Project No. 95-92-4286



COMPLETION DEPTH: 6 ft ft
DEPTH TO WATER: 1.5 ft
BACKFILLED WITH: Native
DRILLING DATE: February 18, 1997

DRILLING METHOD: Hand Auger
DRILLED BY: CLLovato
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. HA-8
Los Osos Wastewater Project

GEOT(54286/HA-8)
6/18/97\12:48

PLATE A-31

April 1997
Project No. 95-92-4286

LOCATION: UV Disinfection Site

SURFACE EL: 74 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
72	2					**Sand Dune Deposits (Qs):** Silty fine SAND (SM): dark brown, dry to moist							
70	4					Grades to fine SAND (SP): yellowish-brown, moist							
68	6												
66	8					Iron oxide mottling at 8 ft.							
64	10					Light yellow, very wet							
62	12												
60	14												
58	16												
56	18												
54	20												
52	22												
50	24												
48	26												
46	28												
44	30												
42	32												
40	34												
38	36												
36	38												
34	40												
32	42												
30	44												

COMPLETION DEPTH: 14 ft
DEPTH TO WATER: 8.5 ft
BACKFILLED WITH:
DRILLING DATE: February 13, 1997

DRILLING METHOD: Hand Auger
DRILLED BY: CLLovato
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILL HOLE NO. HA-301
Los Osos Wastewater Project

GEOT(54286/HA-301)
6/18/97\12:49

PLATE A-32

April 1997
Project No. 95-92-4286

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOWCOUNT	LOCATION: Clarifier Site SURFACE EL: 82 ft +/- (rel. MSL datum) MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
80	2					**Sand Dune Deposits (Qs):** Silty fine SAND (SP): dark brown, dry to slightly moist							
78	4					Fine Sand (SP): yellowish-brown, moist							
76	6												
74	8												
72	10												
70	12												
68	14					Flow sands							
66	16												
64	18												
62	20												
60	22												
58	24												
56	26												
54	28												
52	30												
50	32												
48	34												
46	36												
44	38												
42	40												
40	42												
38	44												

COMPLETION DEPTH: 14.5 ft
DEPTH TO WATER: 12.5 ft
BACKFILLED WITH: Native
DRILLING DATE: February 13, 1997

DRILLING METHOD: Hand Auger
DRILLED BY: CLLovato
LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

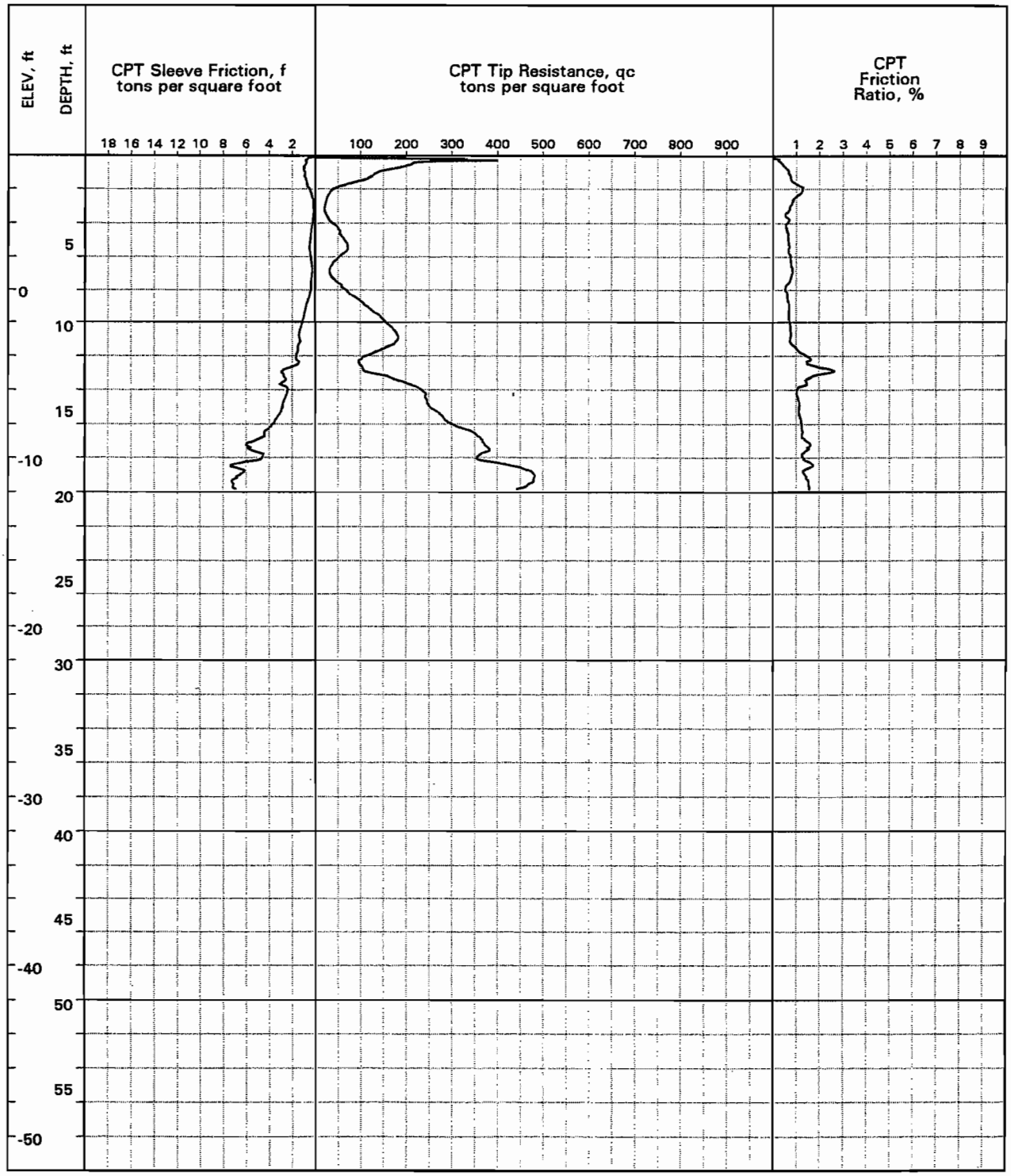
LOG OF DRILL HOLE NO. HA-302
Los Osos Wastewater Project

GEOT(54286/HA-302)
6/18/97\12:49

PLATE A-33

ATTACHMENT C2
CPT/CPTU LOGS
FUGRO WEST, INC. (1997)

April 1997
Project No. 95-92-4286



LOCATION: East shoulder Pasadena Drive, 100 ft south of Santa Ysabel
SURFACE EL: 8.5 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 19.9 ft
TESTING DATE: JAN 20 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

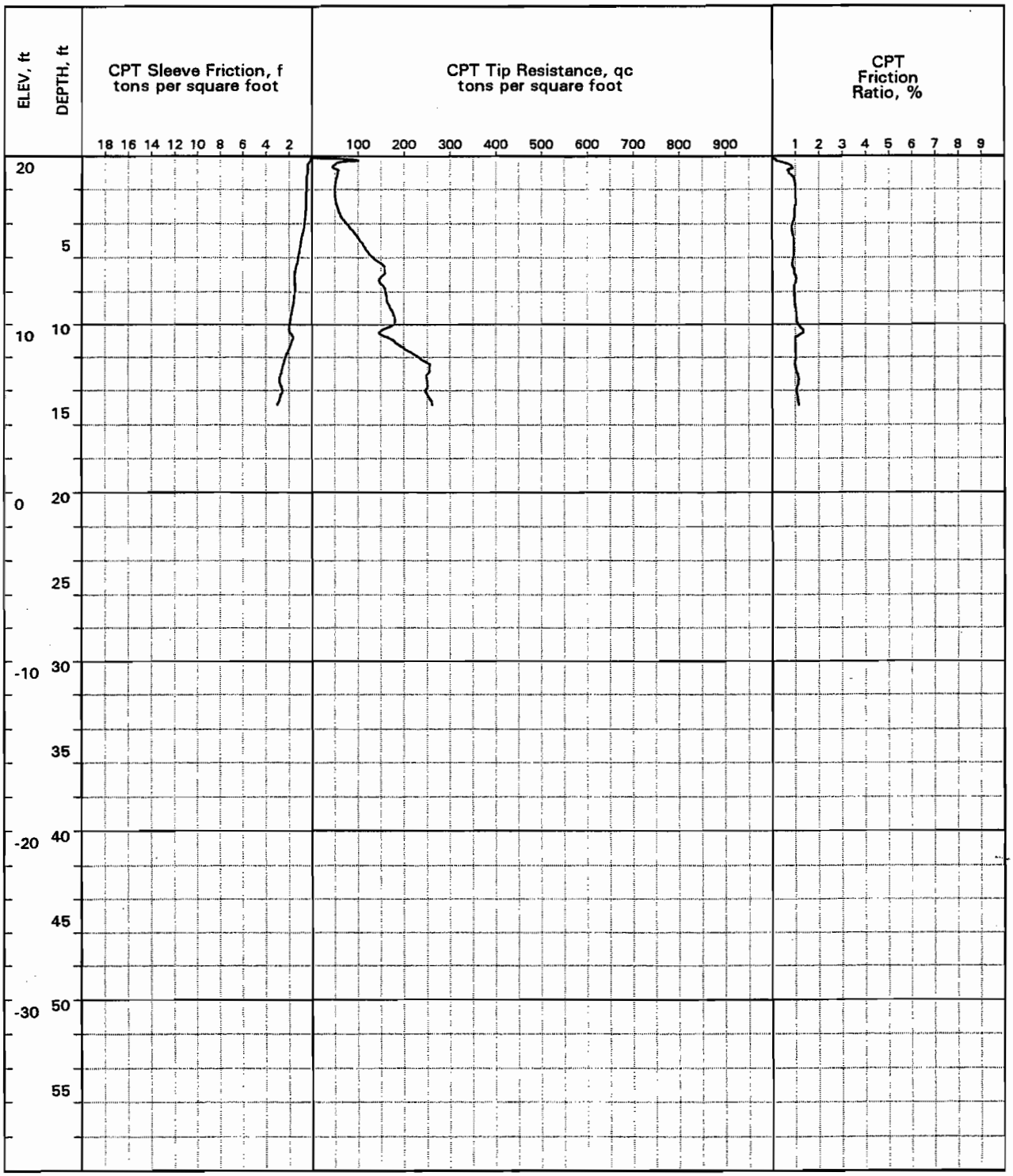
LOG OF CPT NO: CPT101

Los Osos Wastewater Project

CPT(54286/CPT101]
4/4/97\11:07

PLATE A-34

April 1997
Project No. 95-92-4286



LOCATION: South shoulder Pasadena Drive, 20 ft west of First Street

SURFACE EL: 21.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 14.9 ft
TESTING DATE: JAN 20 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

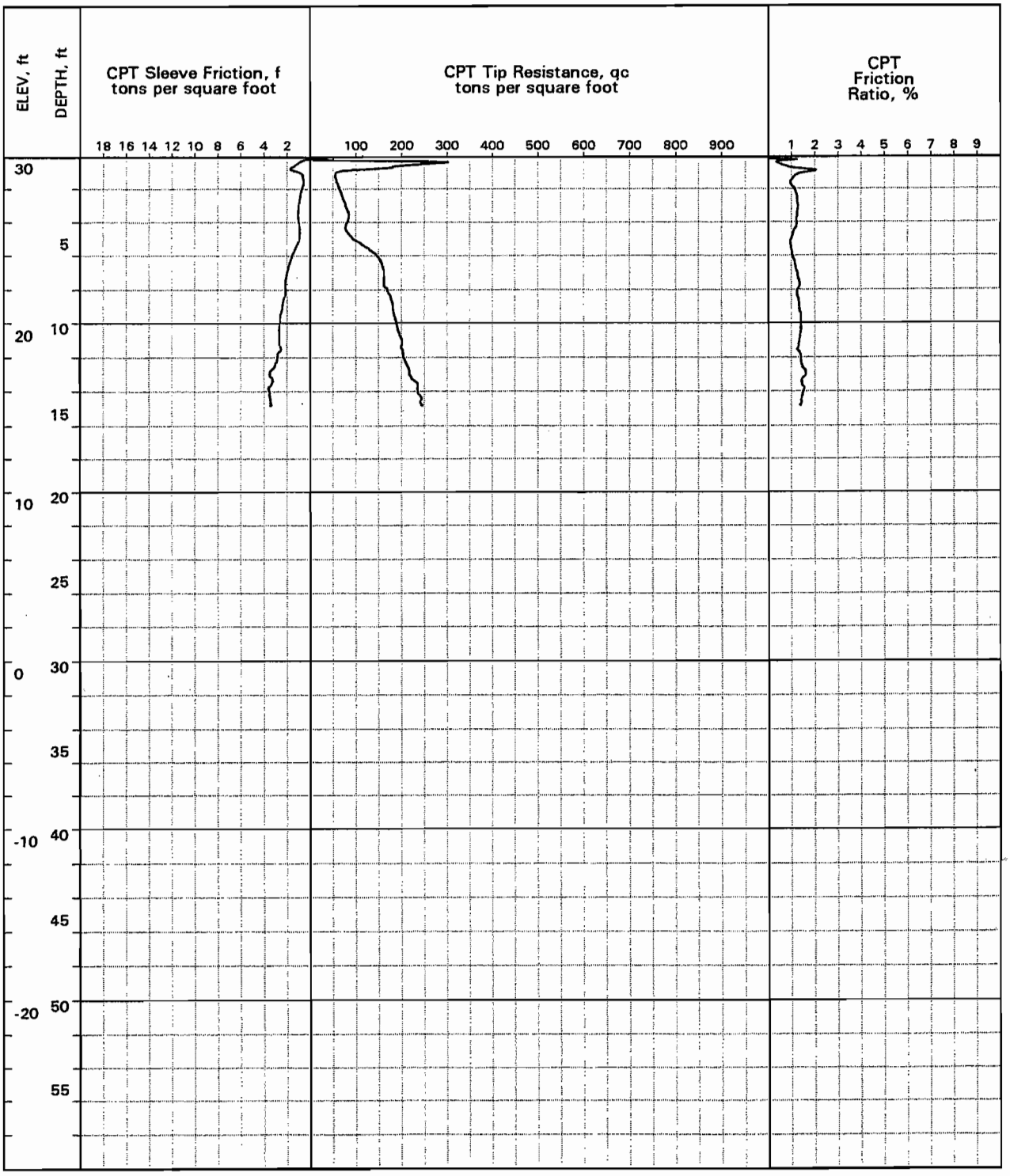
LOG OF CPT NO: CPT102

Los Osos Wastewater Project

PLATE A-35

CPT(54286/CPT102)
4/4/97\11:07

April 1997
Project No. 95-92-4286



LOCATION: West shoulder Third Street, 110 ft south of Santa Lucia

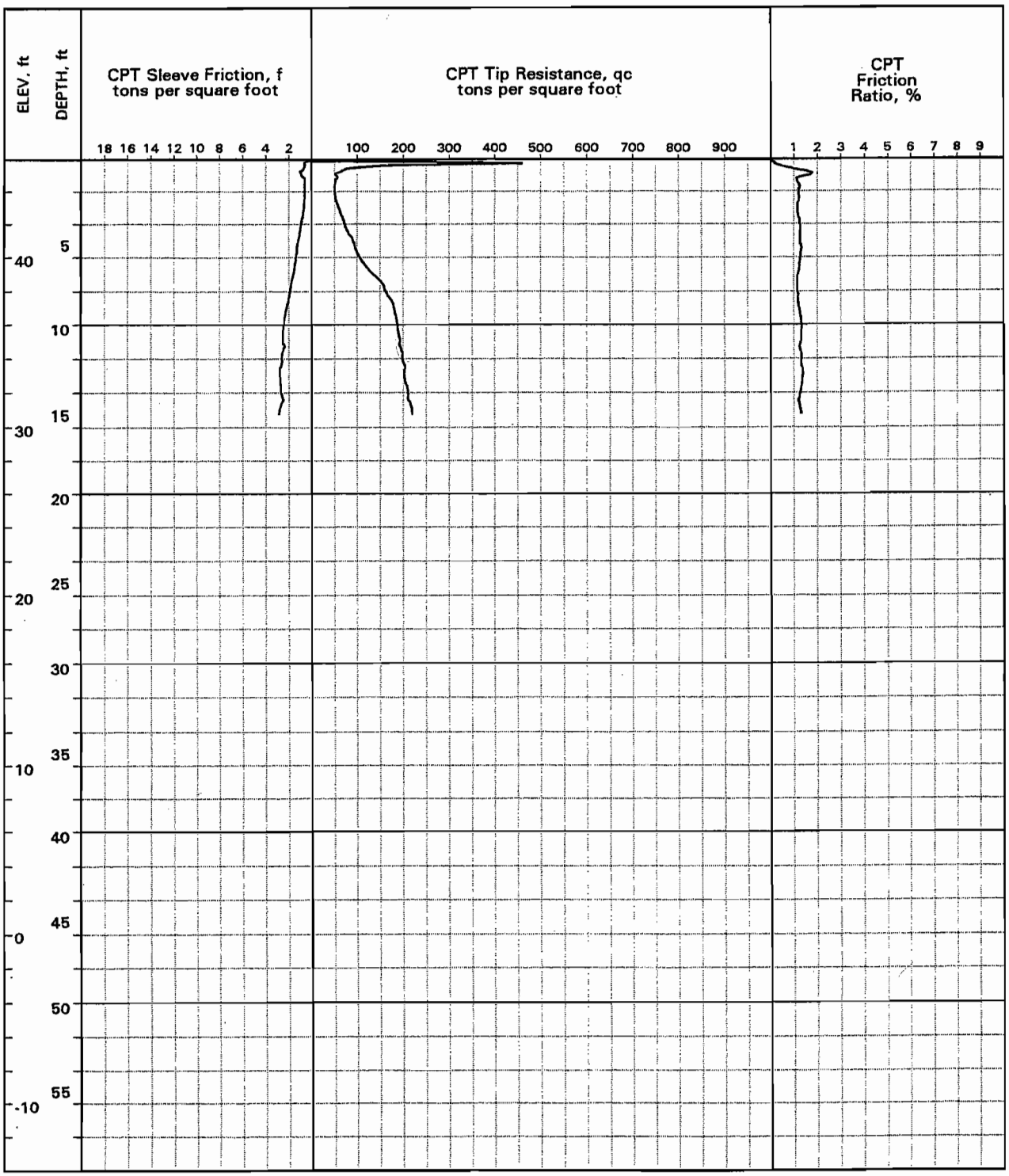
SURFACE EL: 31.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 15.3 ft
TESTING DATE: JAN 20 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT103
Los Osos Wastewater Project

PLATE A-36

April 1997
Project No. 95-92-4286



LOCATION: East shoulder Fifth Street, 230 ft north of Santa Ysabel

SURFACE EL: 46.5 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 15.3 ft
TESTING DATE: JAN 20 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

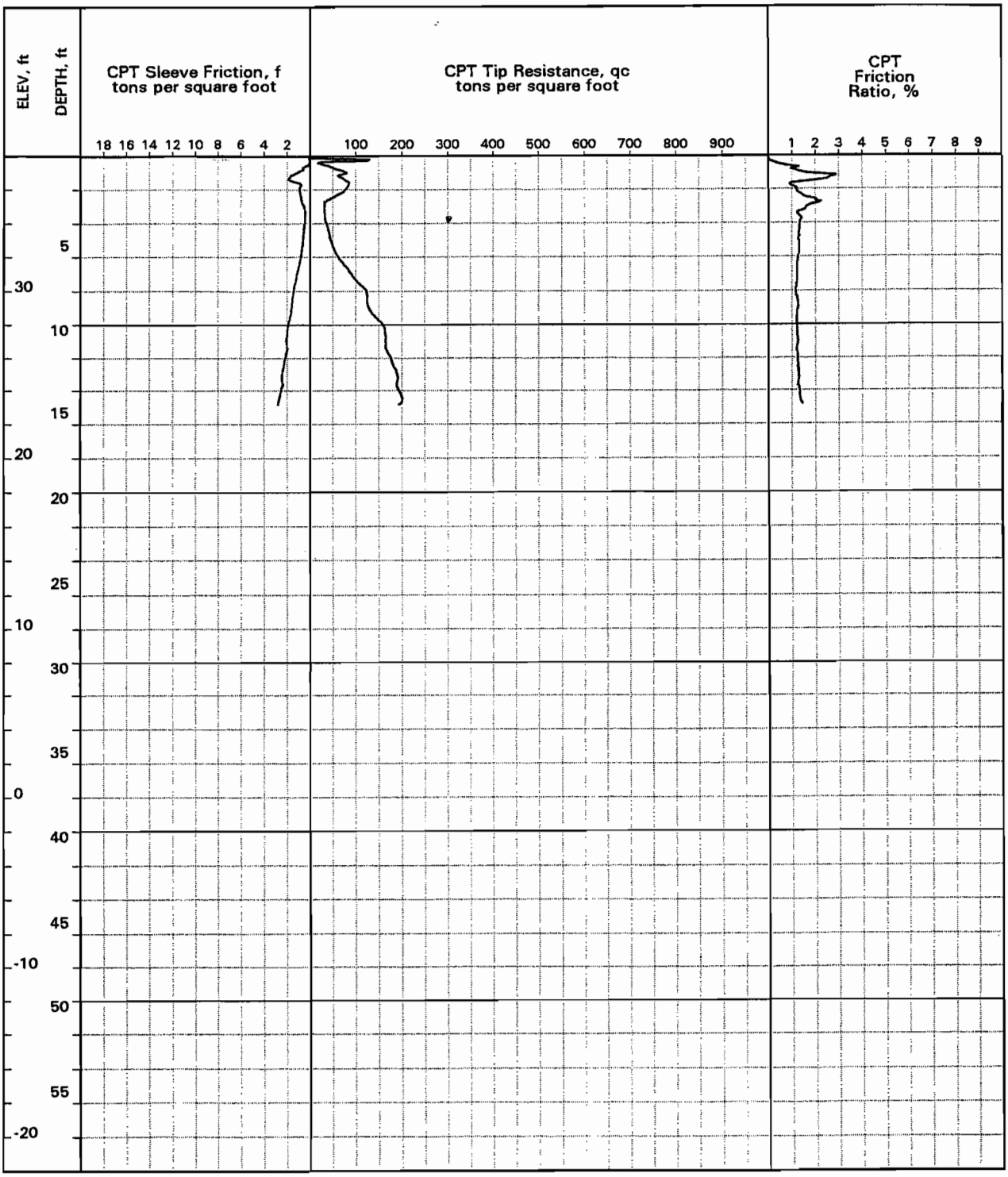
LOG OF CPT NO: CPT104

Los Osos Wastewater Project

CPT(54286/CPT104)
4/4/97\11:07

PLATE A-37

April 1997
Project No. 95-92-4286



LOCATION: West shoulder Ninth Street, 95 ft north of Santa Ysabel

SURFACE EL: 38.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 14.9 ft
TESTING DATE: JAN 20 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

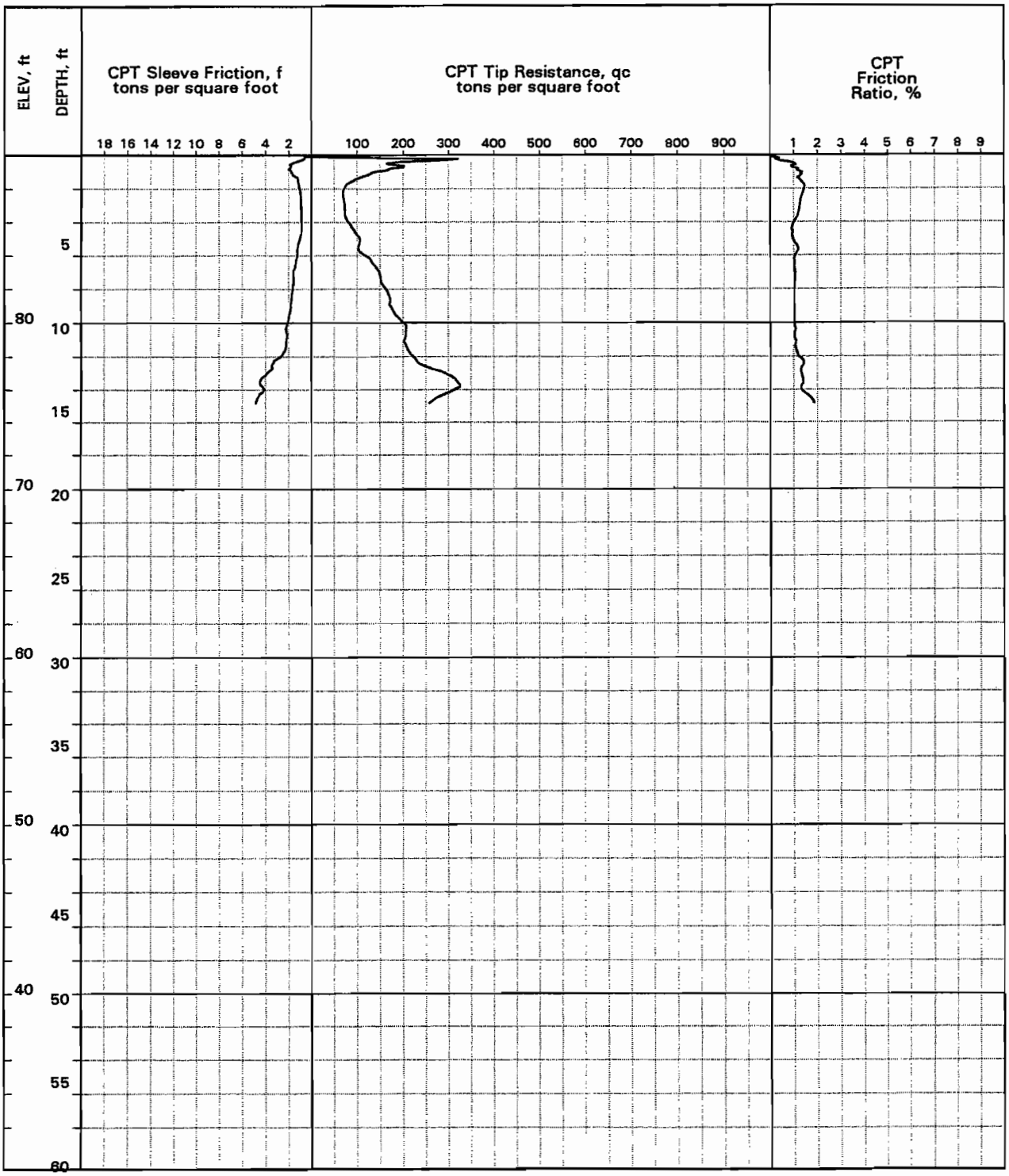
LOG OF CPT NO: CPT105

Los Osos Wastewater Project

PLATE A-38

CPT(54286/CPT105)
4/4/97\11:08

April 1997
Project No. 95-92-4286



LOCATION: East shoulder 12th Street, 10 ft north of Santa Ysabel

SURFACE EL: 90.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 14.9 ft
TESTING DATE: JAN 20 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

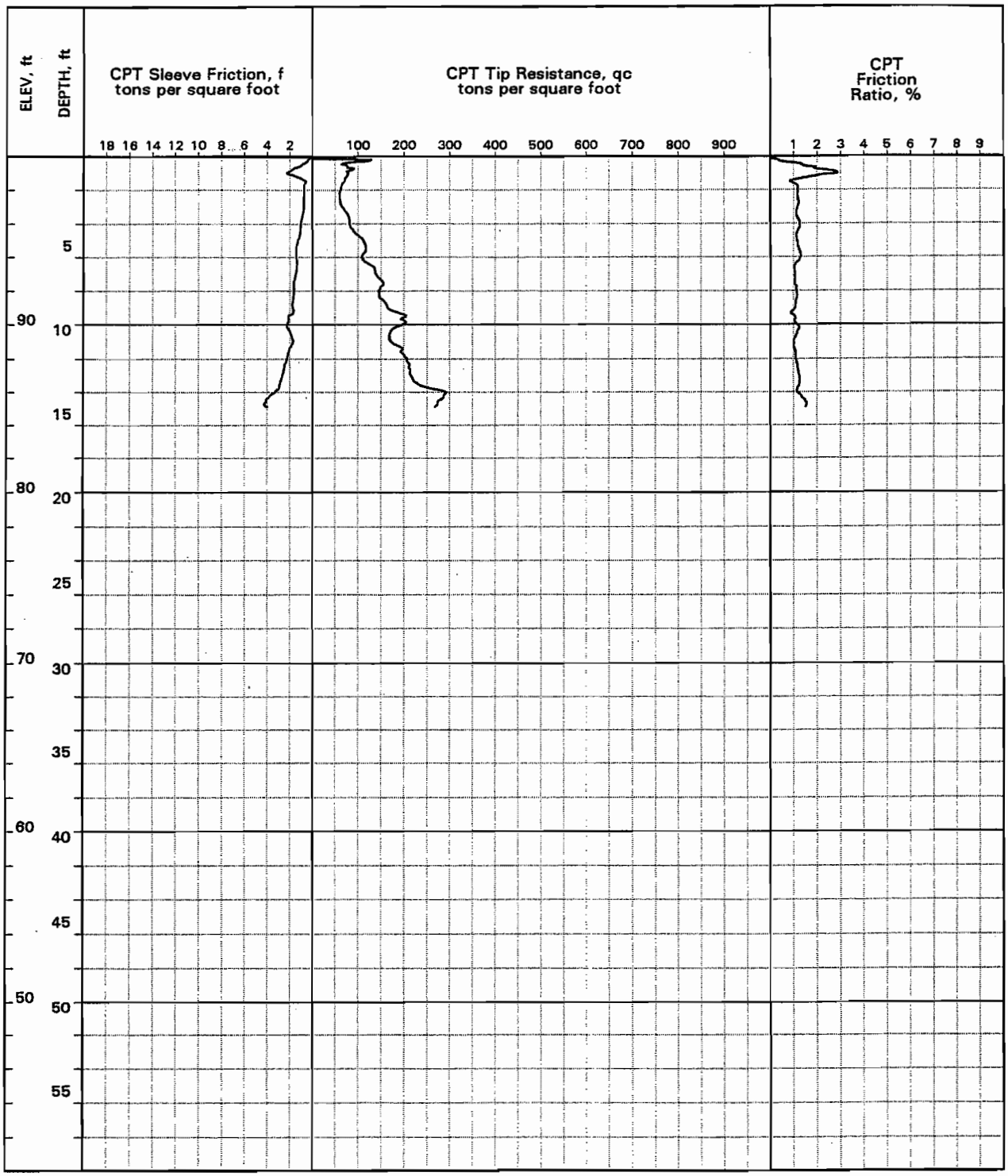
LOG OF CPT NO: CPT106

Los Osos Wastewater Project

PLATE A-39

CPT(54286/CPT106)
4/4/97\14:56

April 1997
Project No. 95-92-4286



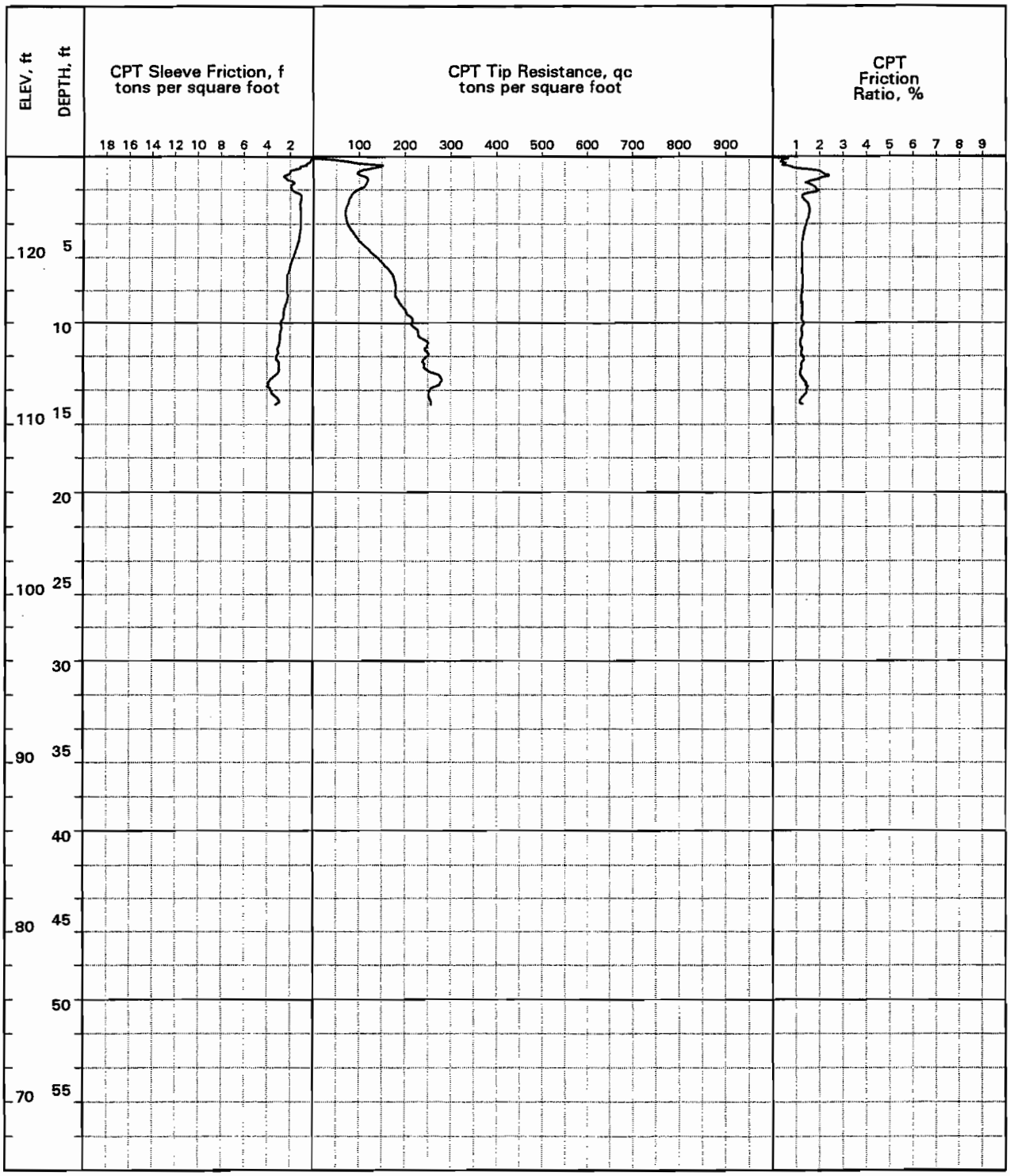
LOCATION: East shoulder Fifteenth Street, 150 ft north of Santa Ysabel
SURFACE EL: 100.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 14.9 ft
TESTING DATE: JAN 20 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT107
Los Osos Wastewater Project

PLATE A-40

April 1997
Project No. 95-92-4286



LOCATION: North shoulder Santa Maria, 210 ft east of Seventeenth Street
SURFACE EL: 126.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 29.8 ft
TESTING DATE: JAN 20 97

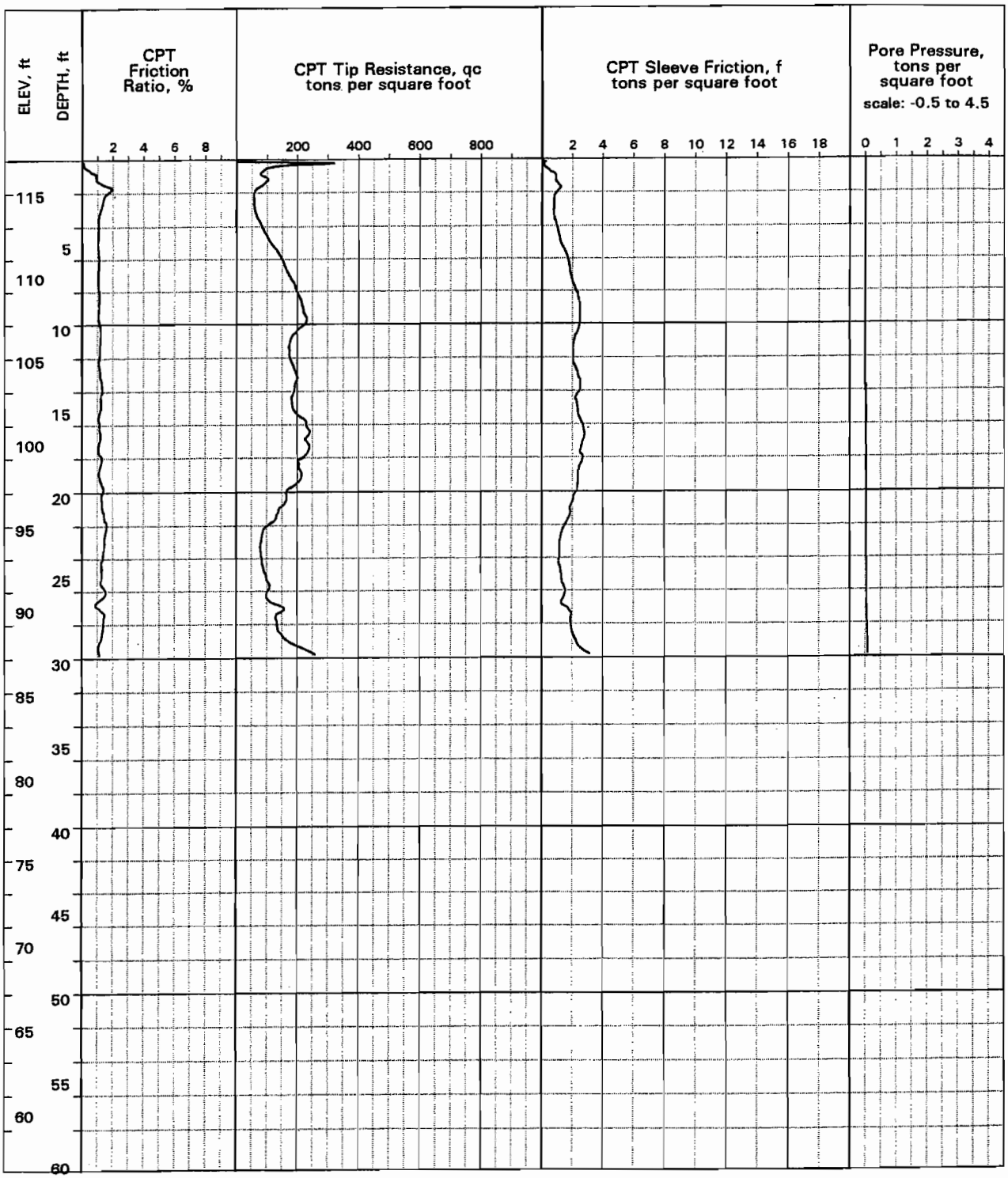
TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT108
Los Osos Wastewater Project

CPT(54286/CPT108)
4/4/97\11:09

PLATE A-41

April 1997
Project No. 95-92-4286



LOCATION: , West shoulder 12th Street, 185 ft north of Santa Maria
SURFACE EL: 117.5 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 29.8 ft

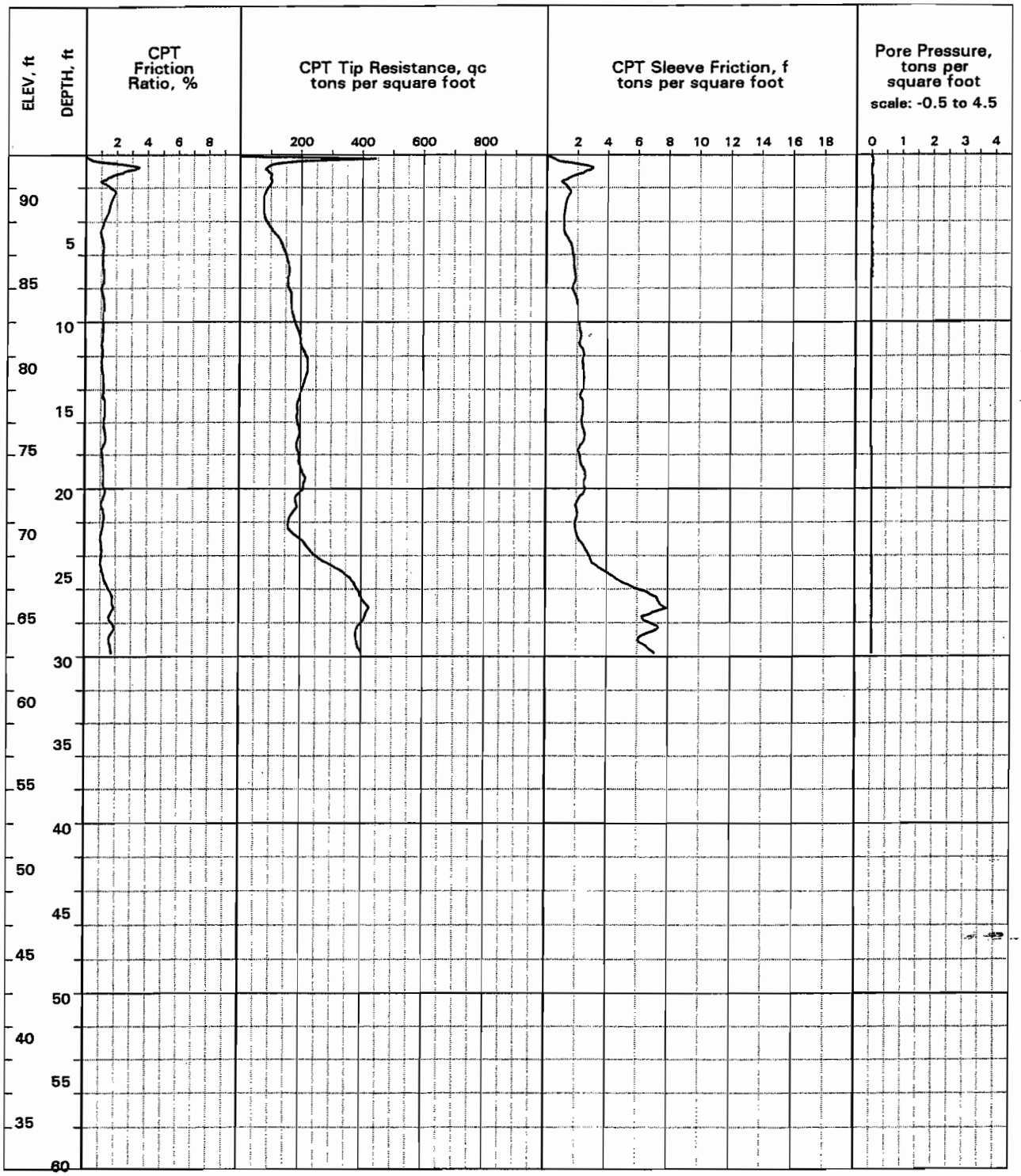
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 20 97

LOG OF CPT NO. CPT109
Los Osos Wastewater Project

PLATE A-42

CPT W/PP
4/4/97\14:43

April 1997
Project No. 95-92-4286



LOCATION: , West shoulder Eleventh Street, 250 ft north of Santa Maria
SURFACE EL: 93.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 29.8 ft

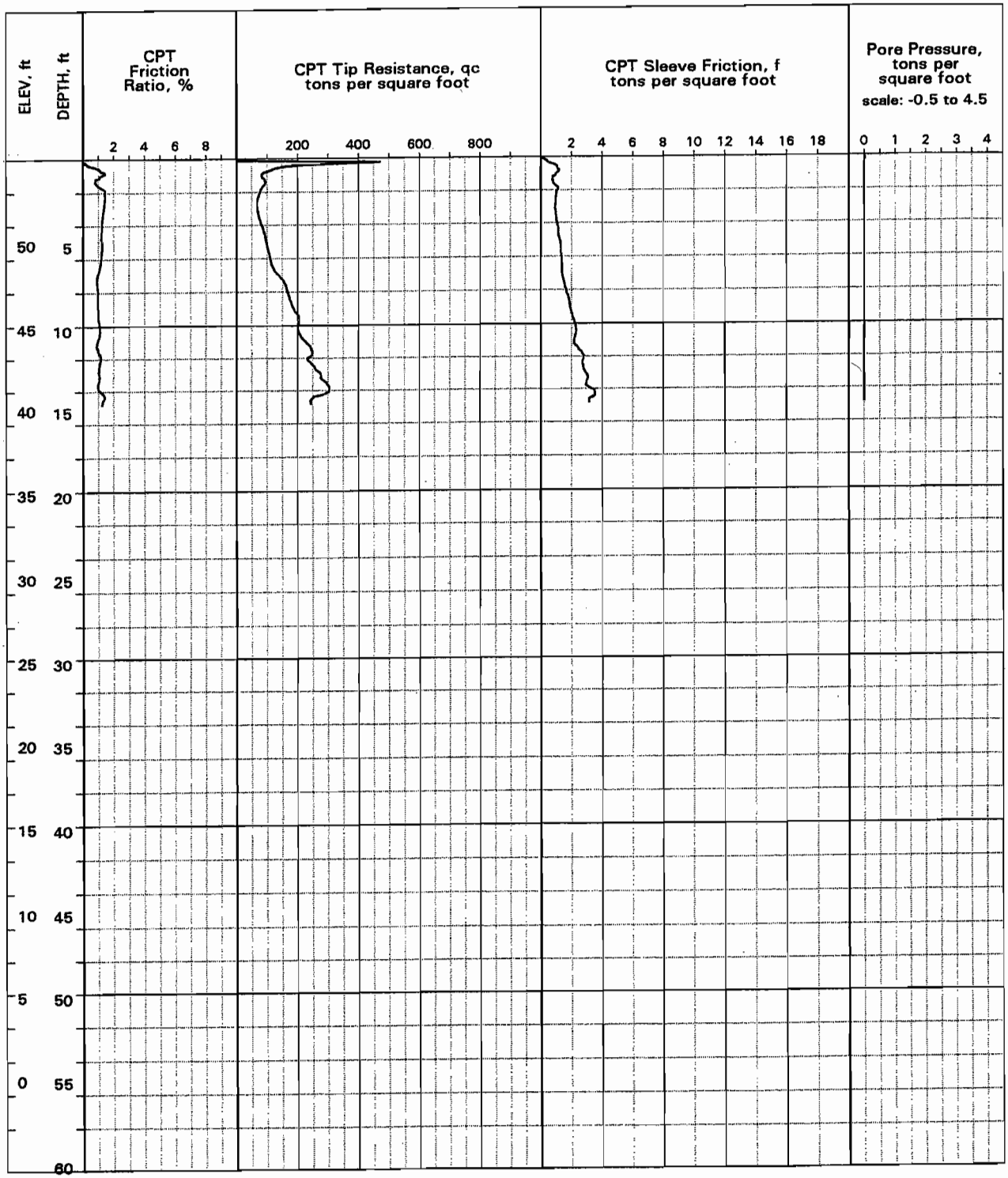
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 20 97

LOG OF CPT NO. CPT110
Los Osos Wastewater Project

CPT W/PP
4/4/97\12:30

PLATE A-43

April 1997
Project No. 95-92-4286



LOCATION: , West shoulder Ninth Street, 40 ft north of Santa Maria
SURFACE EL: 55.5 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 14.9 ft

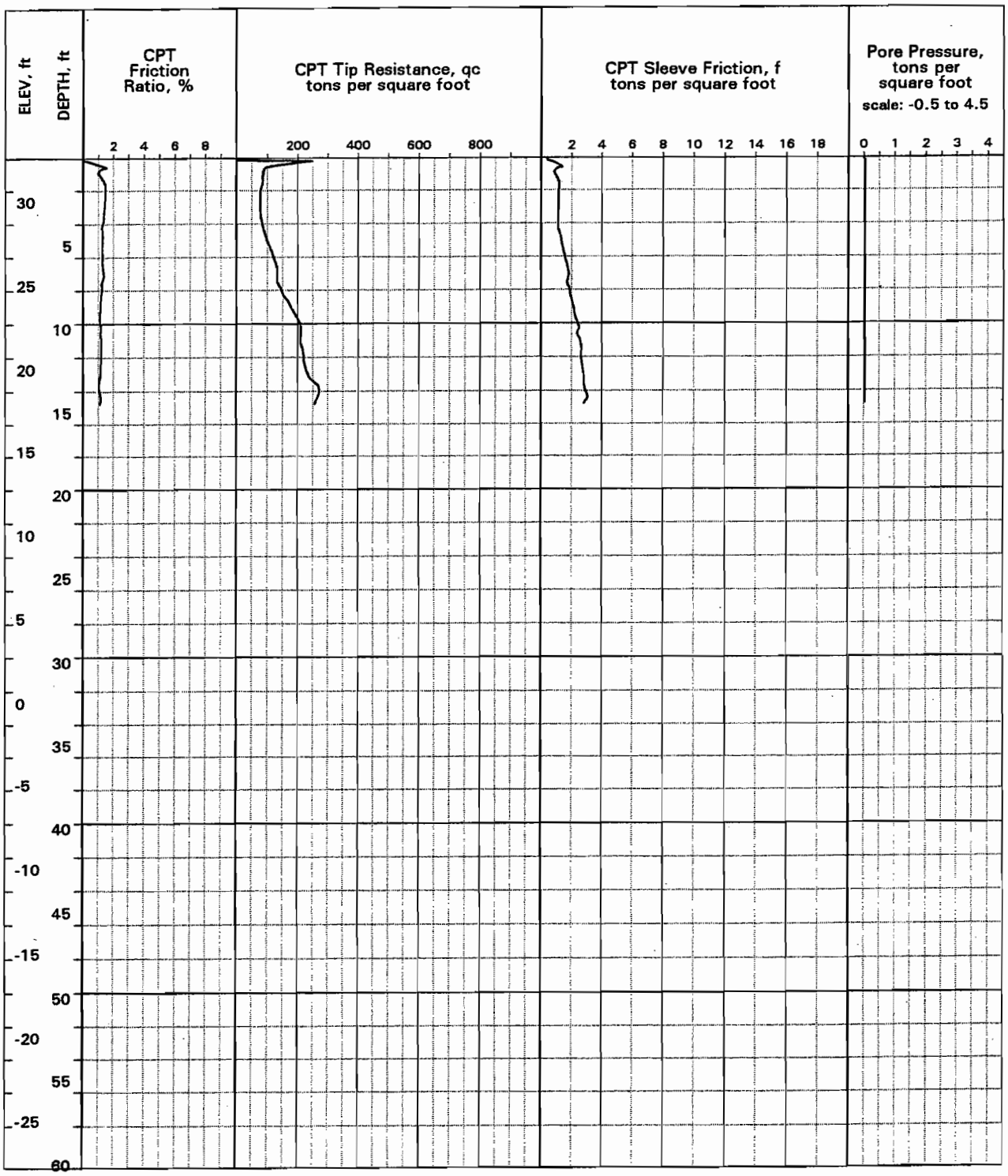
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 20 97

LOG OF CPT NO. CPT111
Los Osos Wastewater Project

PLATE A-44

CPT W/PP
4/4/97\12:31

April 1997
Project No. 95-92-4286



LOCATION: , West shoulder Sixth Street, 160 ft north of Santa Maria
SURFACE EL: 33.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 39.9 ft

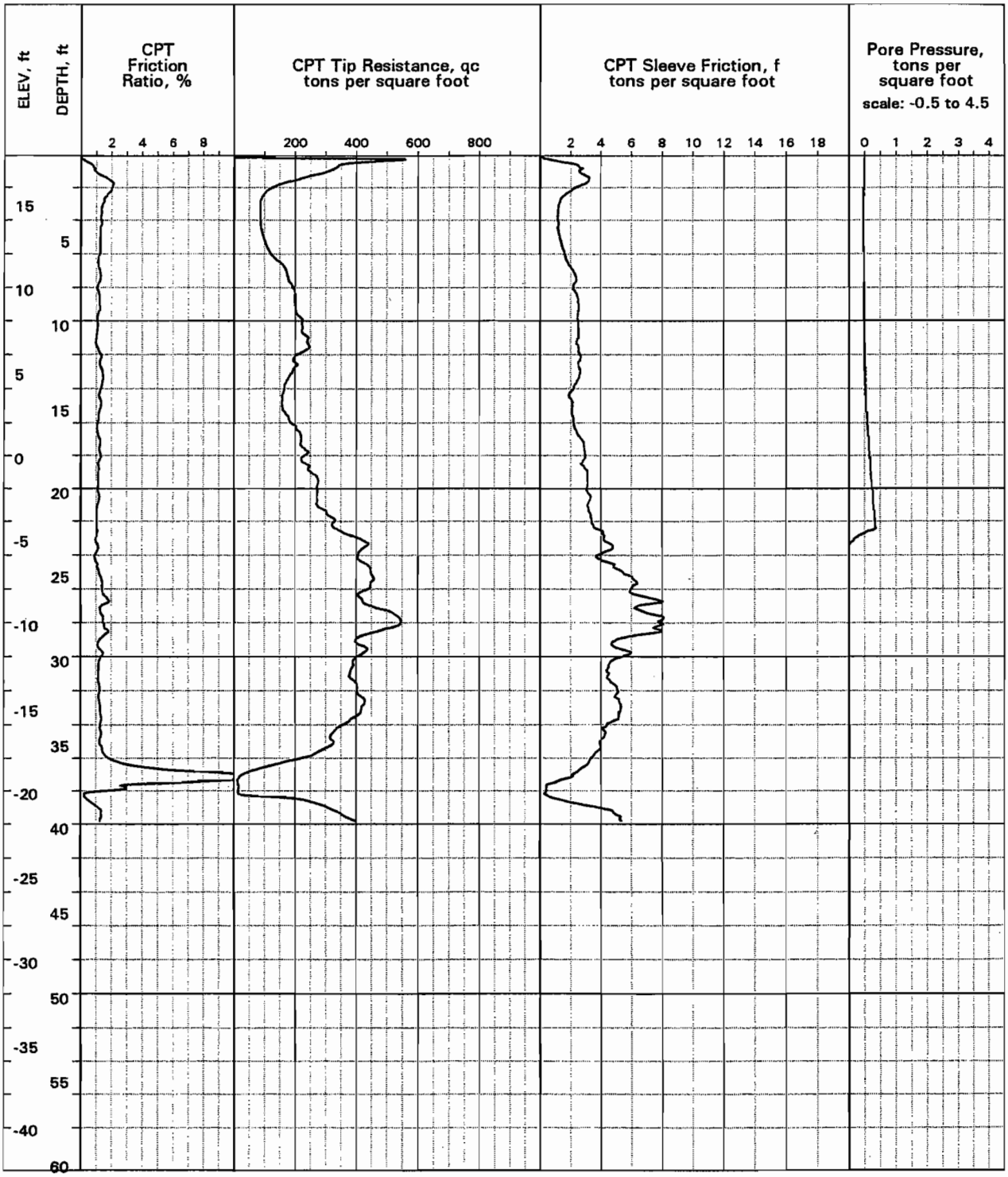
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 20 97

LOG OF CPT NO. CPT112
Los Osos Wastewater Project

PLATE A-45

CPT W/PP
4/4/97\12:31

April 1997
Project No. 95-92-4286



LOCATION: , South shoulder Santa Maria, 140 ft west of First Street
SURFACE EL: 18.5 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 12 ft
COMPLETION DEPTH: 39.9 ft

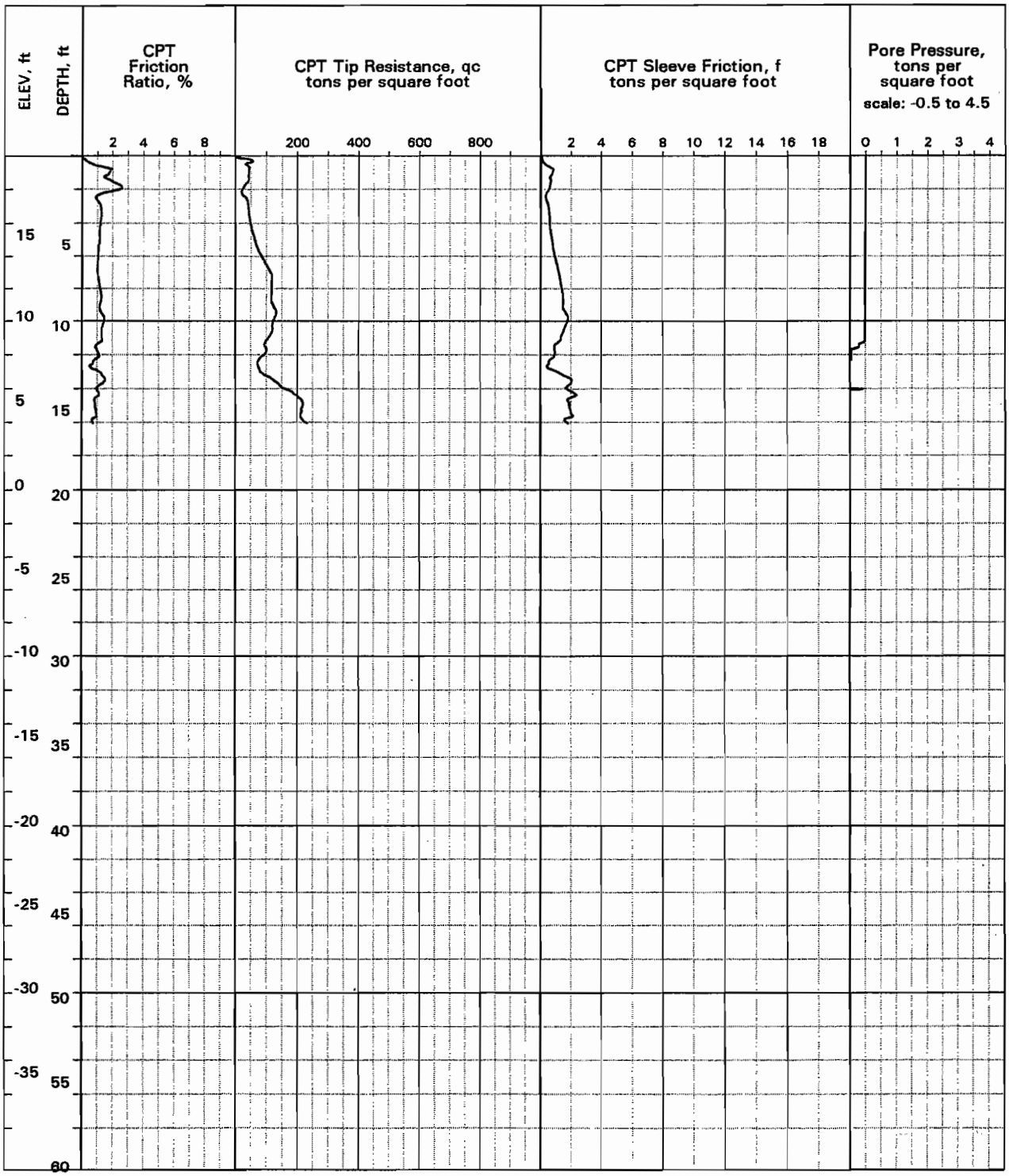
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 21 97

LOG OF CPT NO. CPT113
Los Osos Wastewater Project

CPT W/PP
4/4/97\12:31

PLATE A-46

April 1997
Project No. 95-92-4286



LOCATION: , West shoulder Third Street, 400 ft south of El Morro
SURFACE EL: 20.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 11.5 ft
COMPLETION DEPTH: 16.1 ft

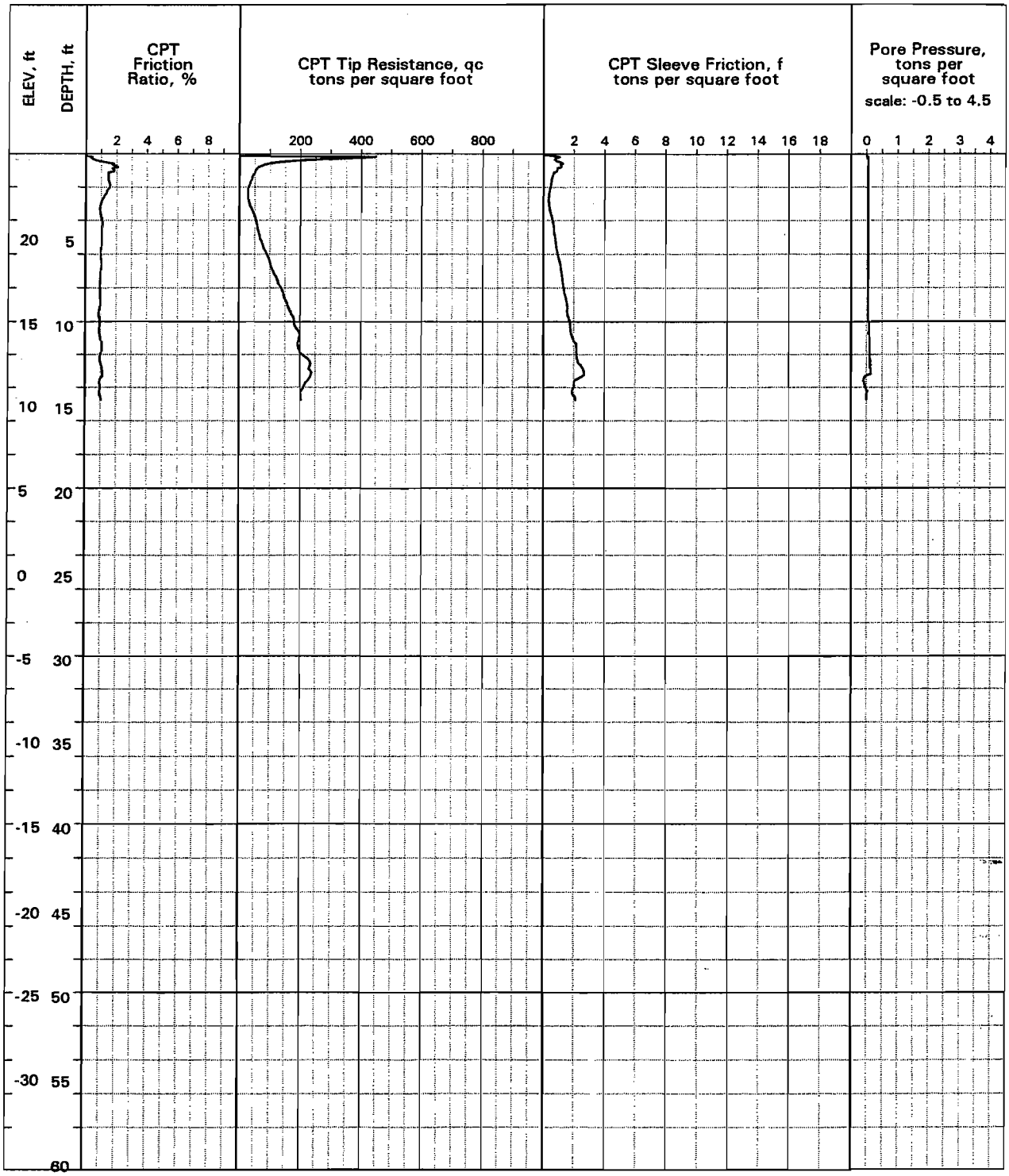
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 21 97

LOG OF CPT NO. CPT114
Los Osos Wastewater Project

CPT W/PP
4/4/97\12:32

PLATE A-47

April 1997
Project No. 95-92-4286



LOCATION: , South shoulder El Morro, 25 ft west of Fifth Street
SURFACE EL: 25.5 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 10 ft
COMPLETION DEPTH: 14.8 ft

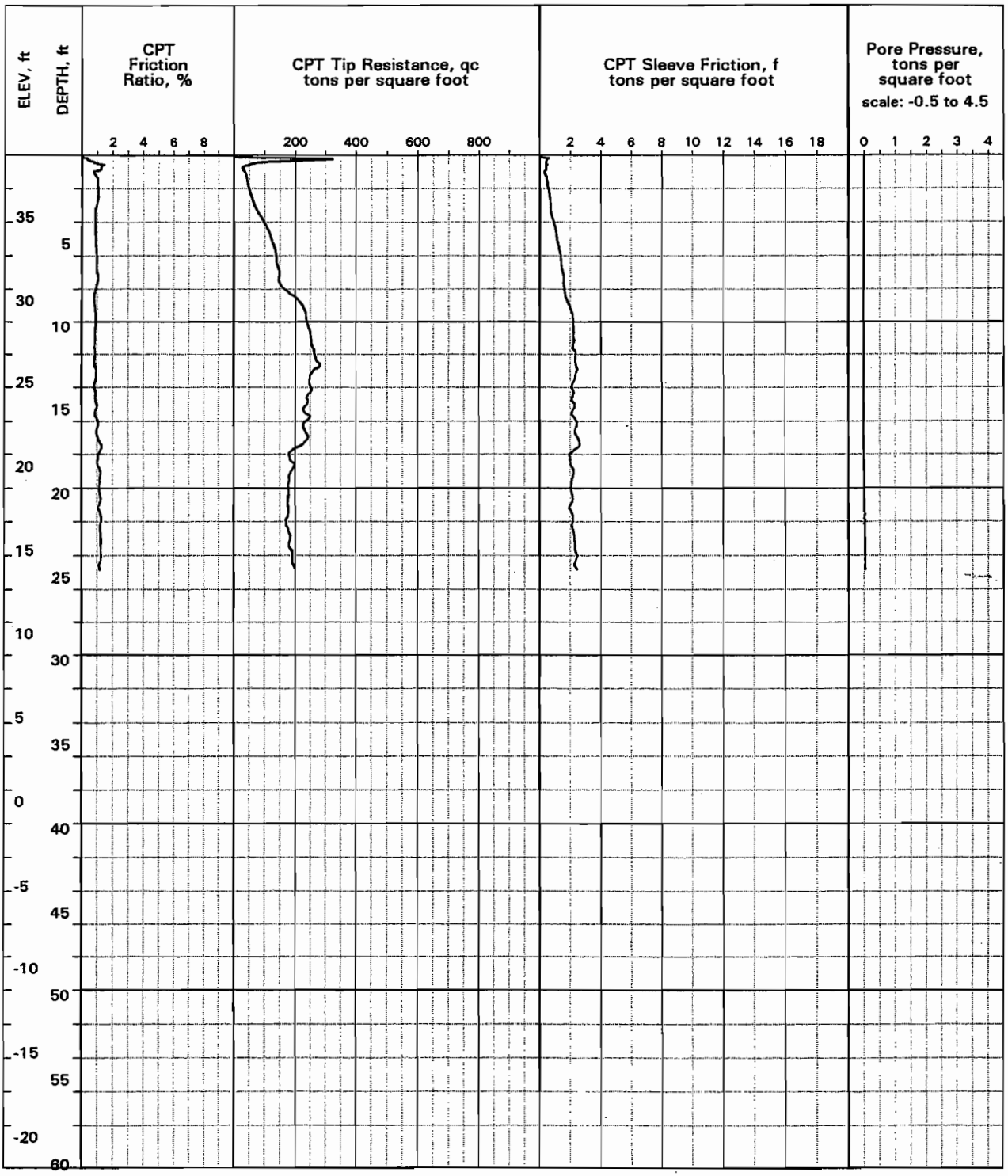
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 21 97

LOG OF CPT NO. CPT115
Los Osos Wastewater Project

CPT W/PP
4/4/97\12:32

PLATE A-48

April 1997
Project No. 95-92-4286



LOCATION: , West shoulder Sixth Street, 210 ft north of Paso Robles
SURFACE EL: 39.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 22 ft
COMPLETION DEPTH: 24.9 ft

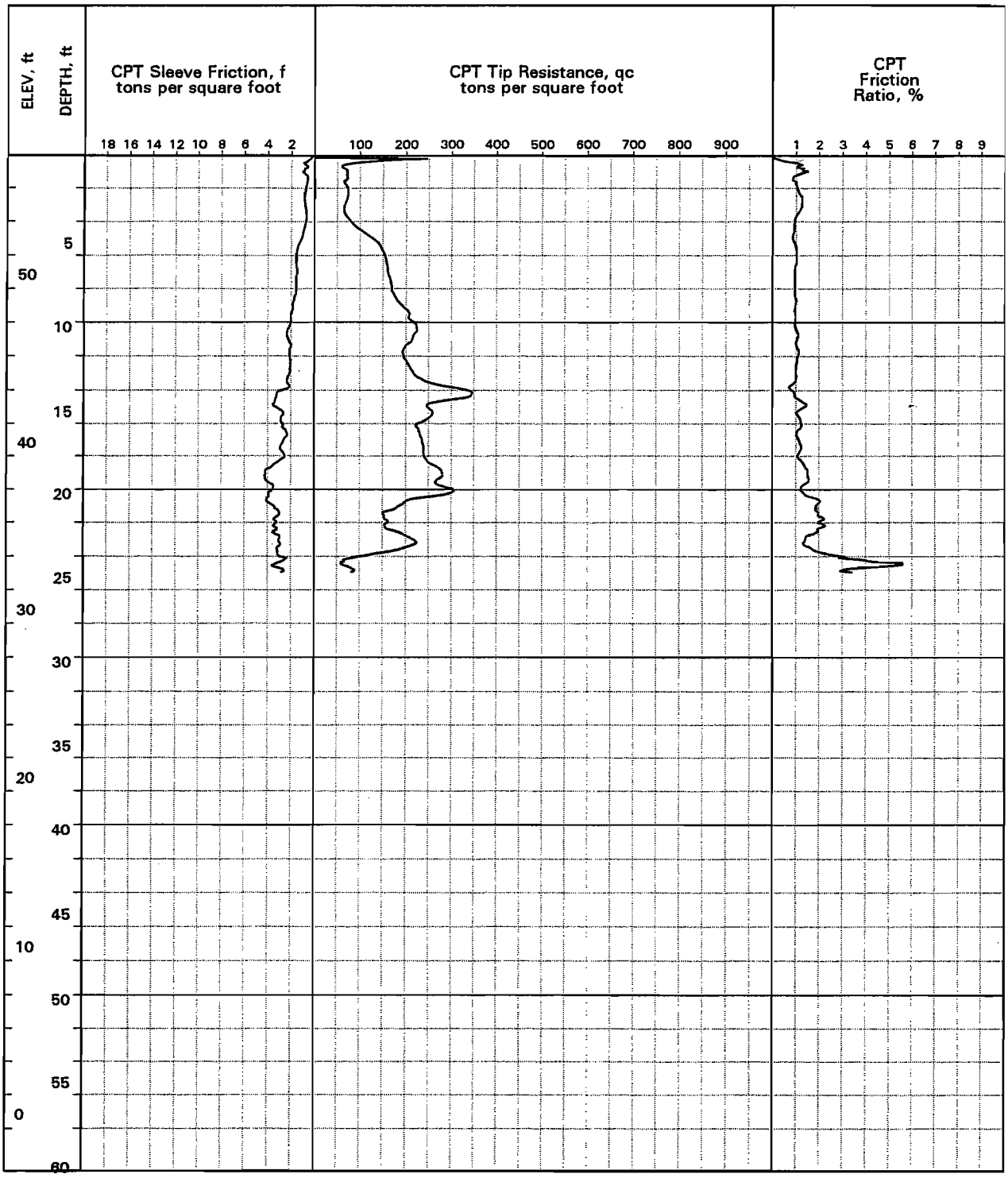
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 21 97

LOG OF CPT NO. CPT116
Los Osos Wastewater Project

CPT W/PP
4/4/97\14:46

PLATE A-49

April 1997
Project No. 95-92-4286



LOCATION: East shoulder 12th Street, 165 ft south of El Morro

SURFACE EL: 57.5 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 25.0 ft
TESTING DATE: JAN 21 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

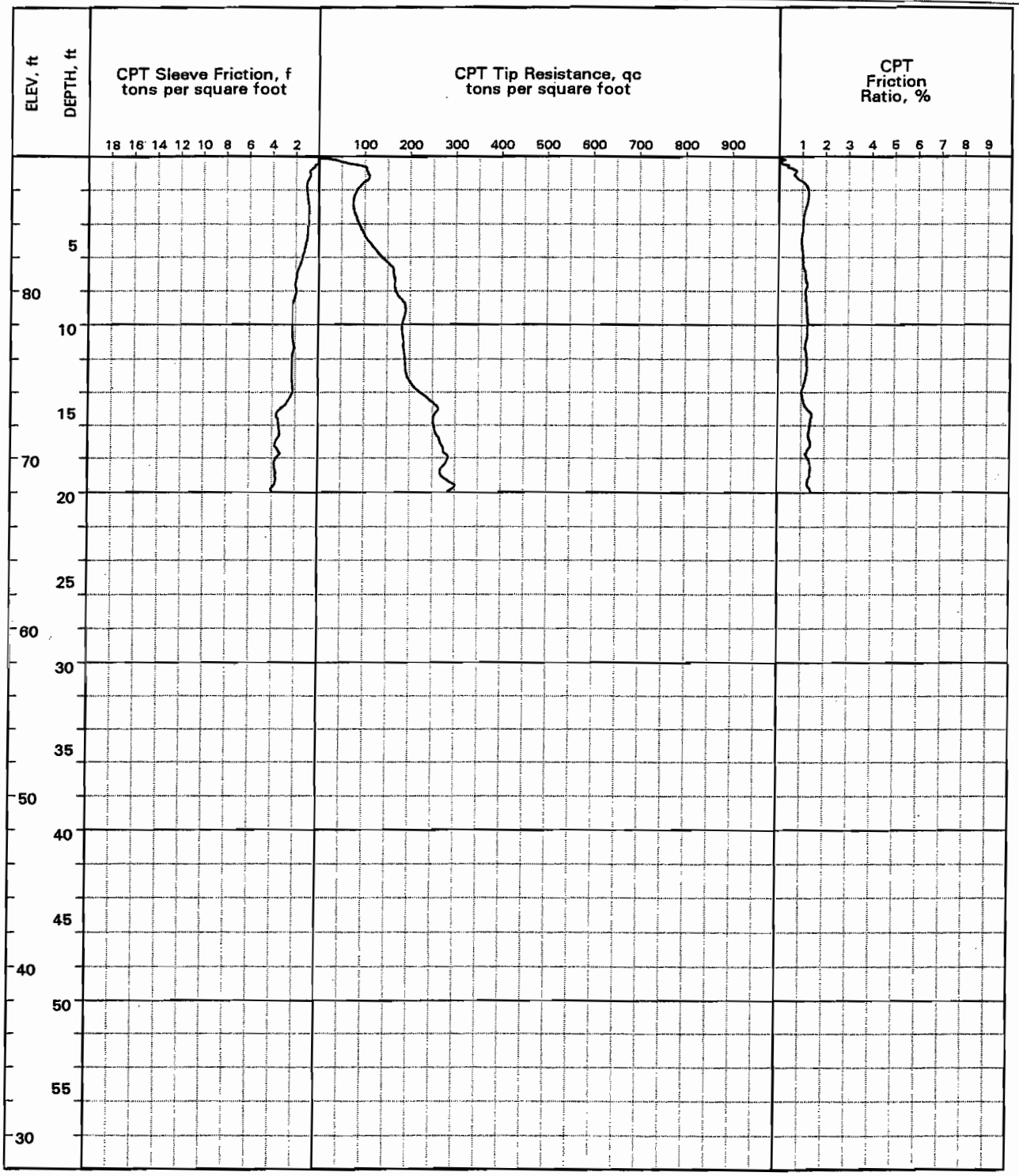
LOG OF CPT NO: CPT117

Los Osos Wastewater Project

CPT(54286/CPT117)
4/4/97\14:57

PLATE A-50

April 1997
Project No. 95-92-4286



LOCATION: West shoulder Fifteenth Street, 25 ft south of El Morro

SURFACE EL: 88.5 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 20.0 ft
TESTING DATE: JAN 21 97

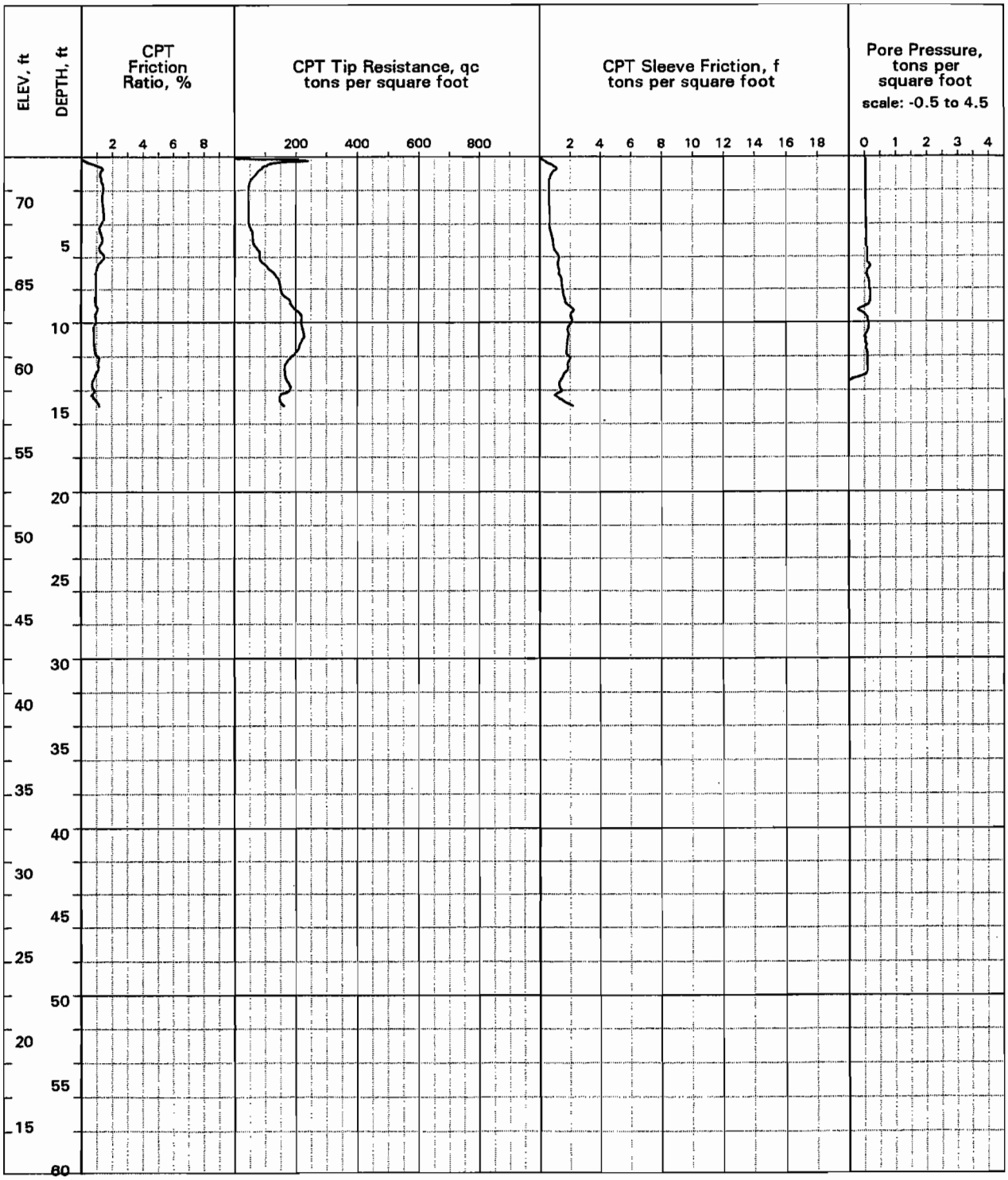
TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT118
Los Osos Wastewater Project

CPT(54286/CPT118)
4/4/97\11:09

PLATE A-51

April 1997
Project No. 95-92-4286



LOCATION: , South shoulder Paso Robles, 70 ft west of Sixteenth Street
SURFACE EL: 73.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 4 ft
COMPLETION DEPTH: 15.0 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 21 97

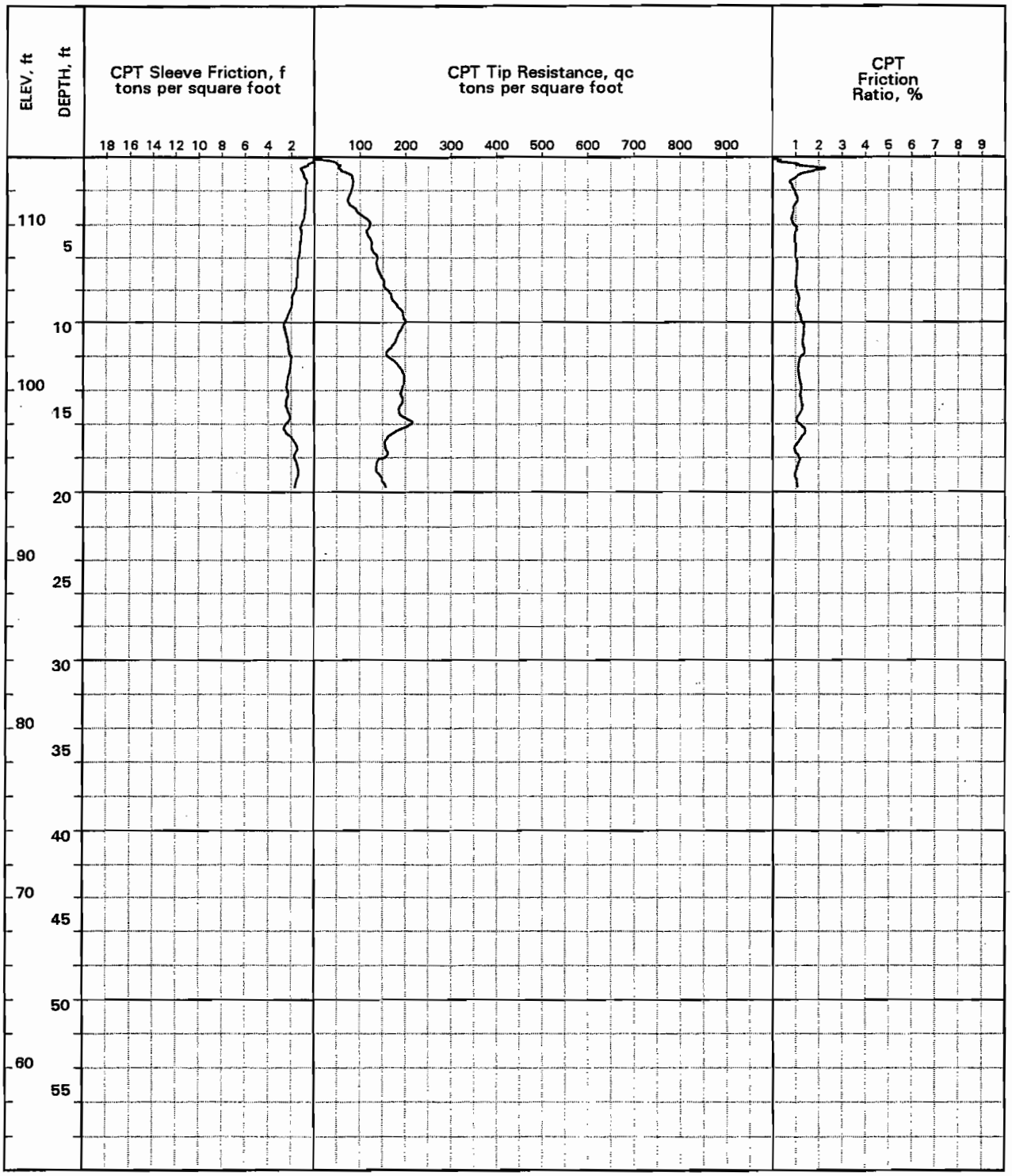
LOG OF CPT NO. CPT119

Los Osos Wastewater Project

CPT W/PP
4/4/97\12:33

PLATE A-52

April 1997
Project No. 95-92-4286



LOCATION: West shoulder Fifteenth Street, 40 ft north of Pismo Avenue
SURFACE EL: 114.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 19.7 ft
TESTING DATE: JAN 21 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT120

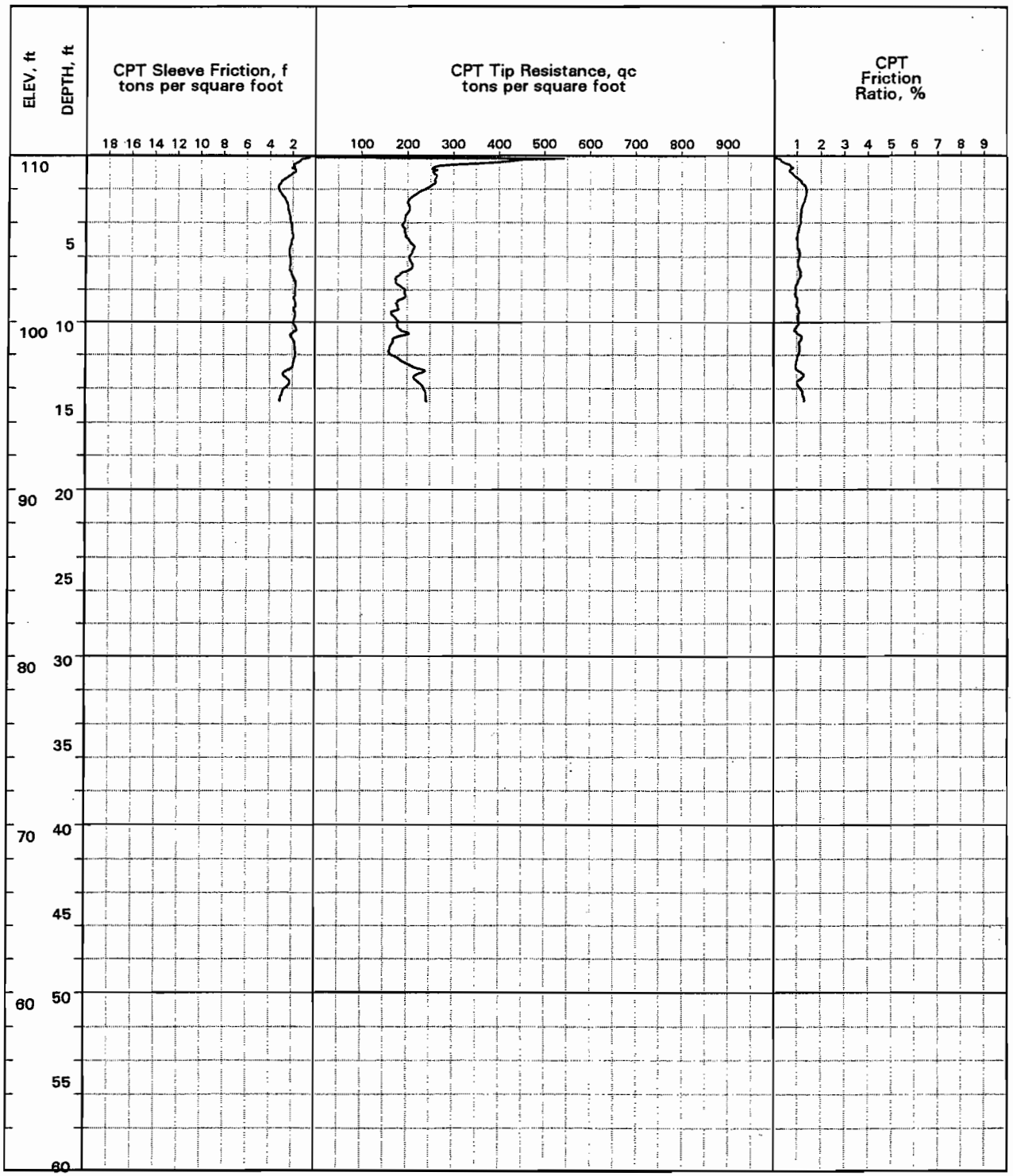
Los Osos Wastewater Project

CPT(54286/CPT120)
4/4/97\11:10

PLATE A-53

April 1997

Project No. 95-92-4286



LOCATION: 12th Street, 180 ft north of Pismo Avenue

SURFACE EL: 111.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 14.8 ft
TESTING DATE: JAN 21 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

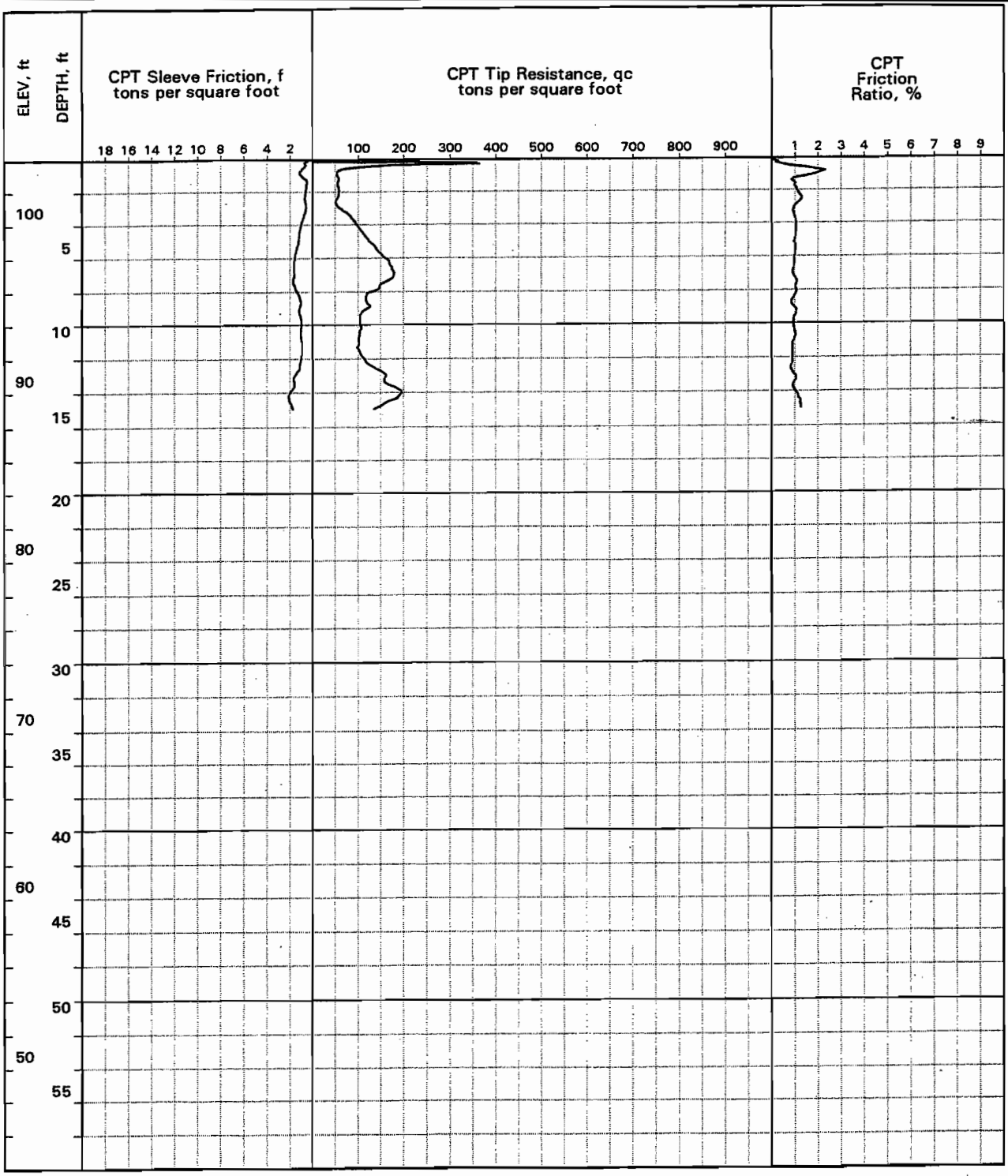
LOG OF CPT NO: CPT121

Los Osos Wastewater Project

CPT(54286/CPT121)
4/4/97\14:57

PLATE A-54

April 1997
Project No. 95-92-4286



LOCATION: East shoulder Nonth Street, 20 ft south of Pismo Avenue

SURFACE EL: 103.5 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 15.0 ft
TESTING DATE: JAN 21 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

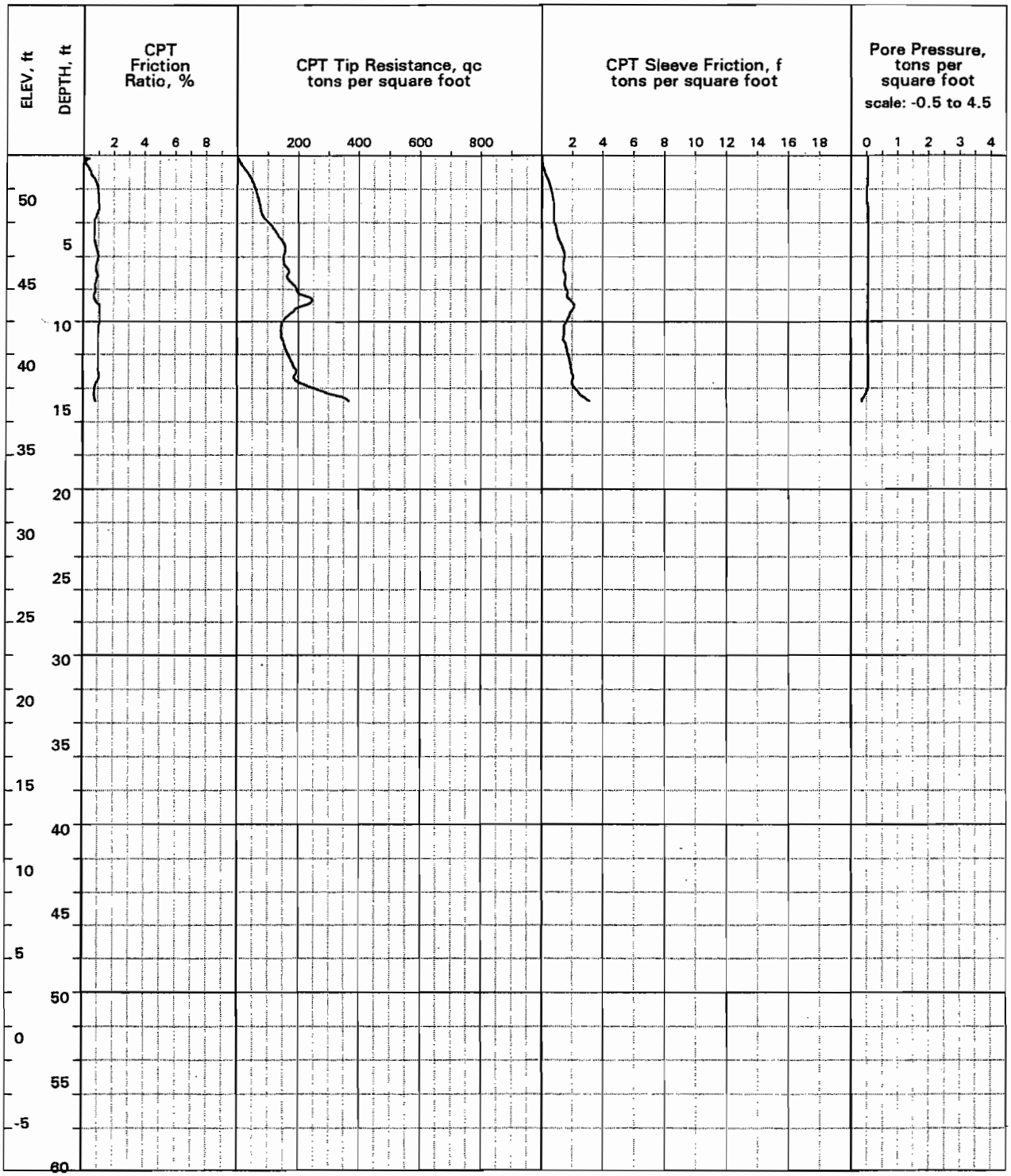
LOG OF CPT NO: CPT122

Los Osos Wastewater Project

PLATE A-55

CPT(54286/CPT122)
4/4/97\11:10

April 1997
Project No. 95-92-4286



LOCATION: , Pismo Avenue, 150 ft west of Seventh Street
SURFACE EL: 53.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 14 ft
COMPLETION DEPTH: 14.8 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 21 97

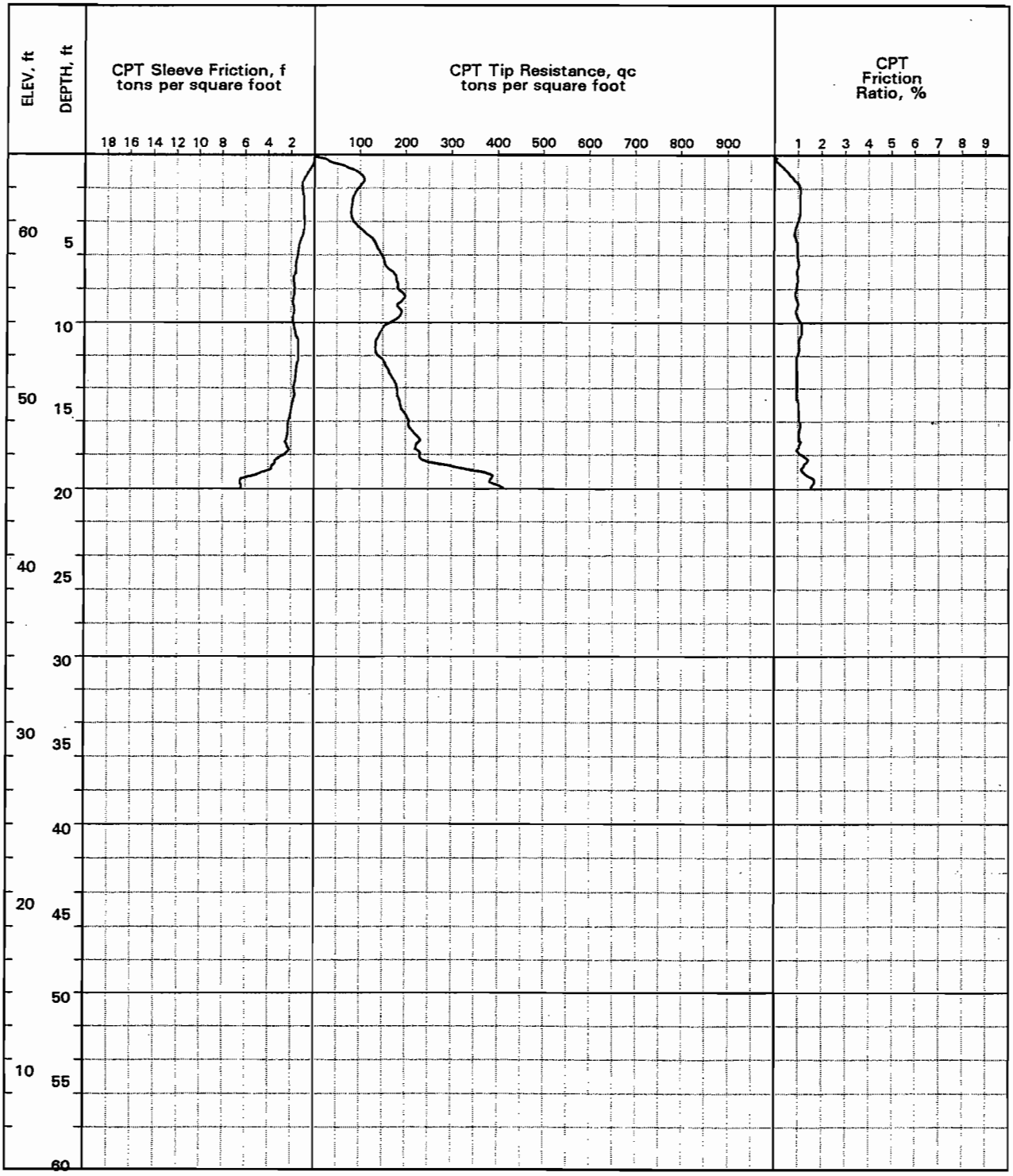
LOG OF CPT NO. CPT123
Los Osos Wastewater Project

CPT W/PP
4/4/97\14:43

PLATE A-56

April 1997

Project No. 95-92-4286



LOCATION: East shoulder Fifth Street, 175 ft south of Romona Avenue
SURFACE EL: 65.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 20.0 ft
TESTING DATE: JAN 21 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

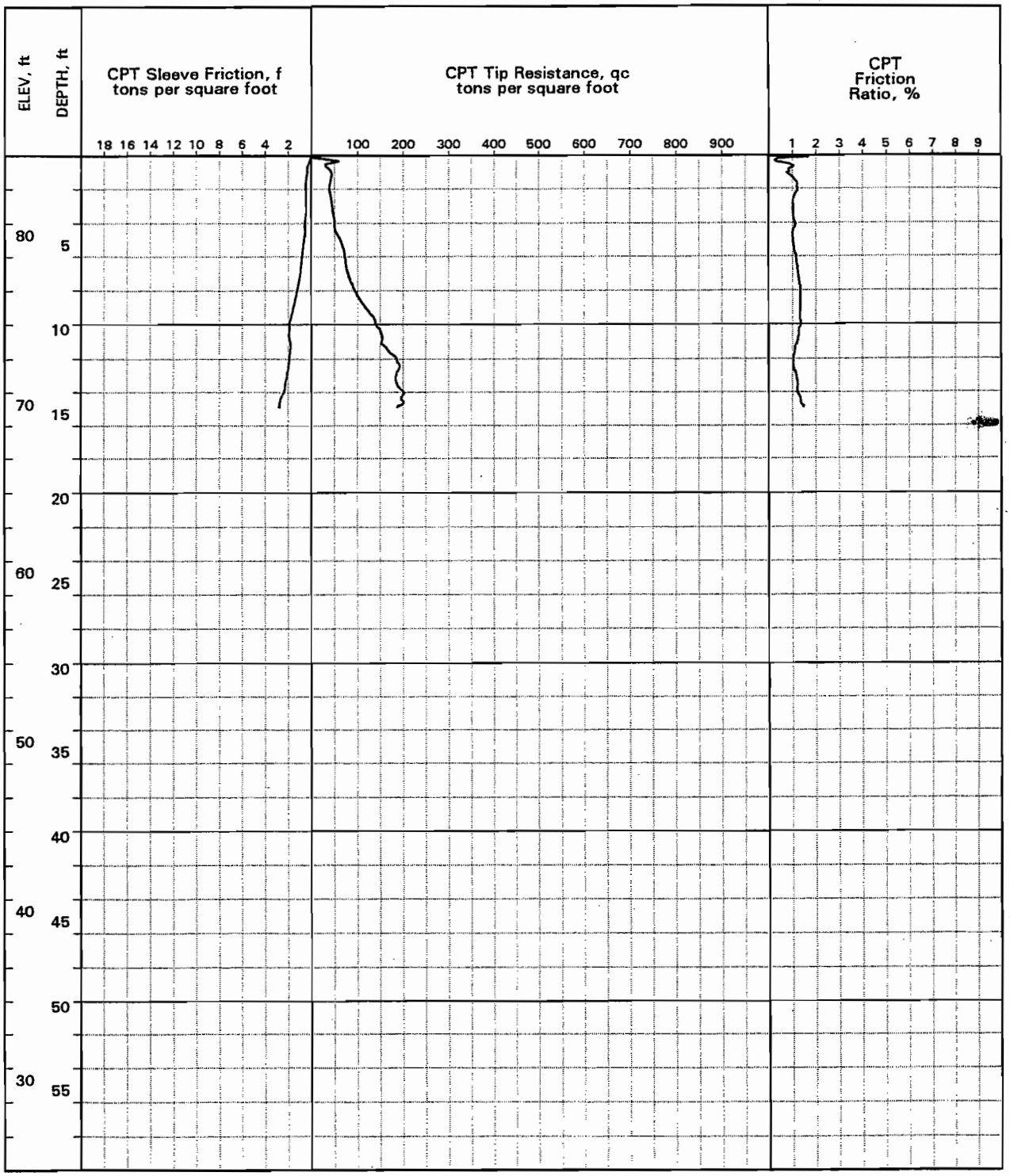
LOG OF CPT NO: CPT124

Los Osos Wastewater Project

CPT(54286/CPT124)
4/4/97\14:57

PLATE A-57

April 1997
Project No. 95-92-4286



LOCATION: South shoulder Romona Avenue, 110 ft east of Eleventh Street
SURFACE EL: 85.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 14.9 ft
TESTING DATE: JAN 21 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

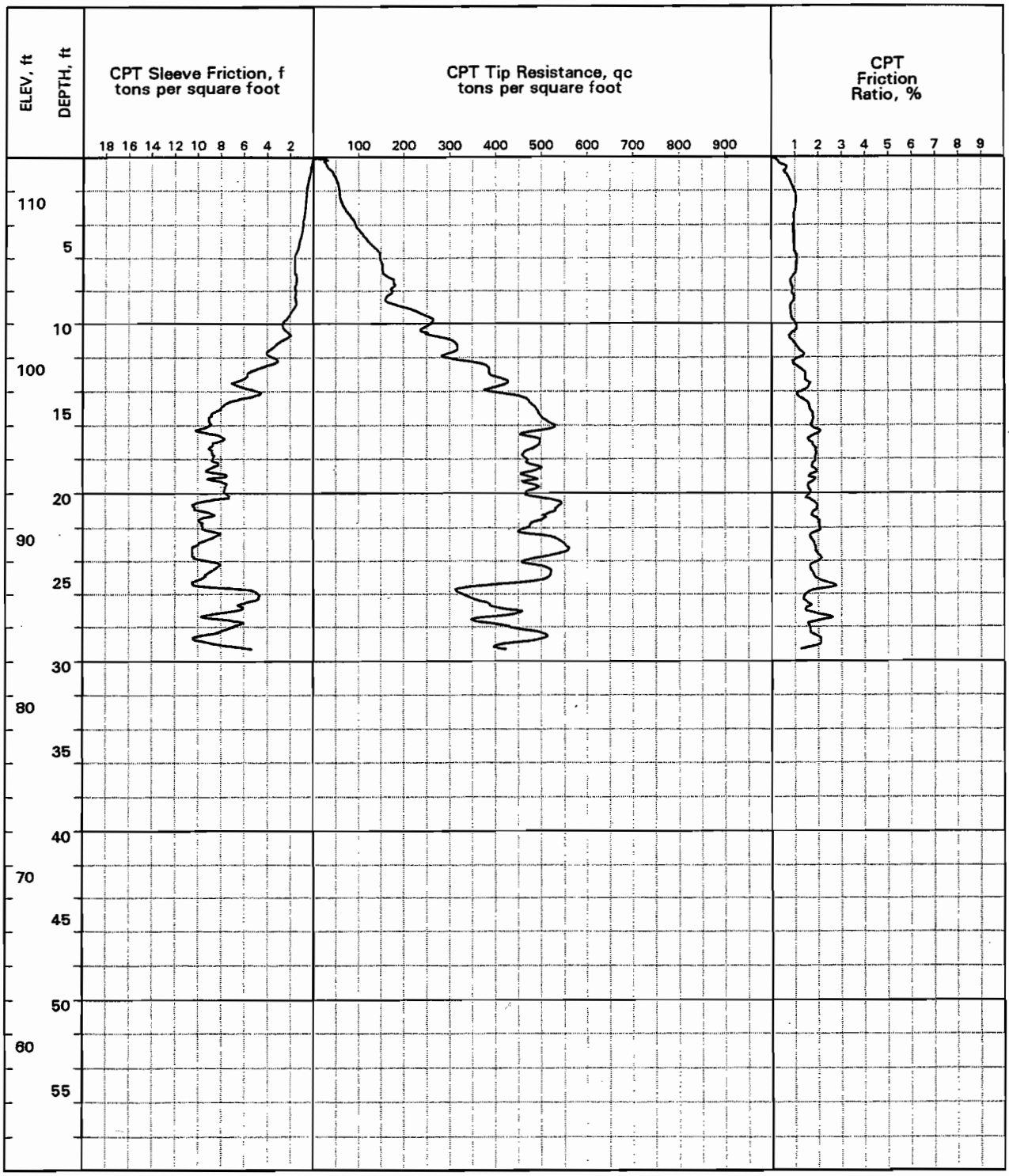
LOG OF CPT NO: CPT125

Los Osos Wastewater Project

PLATE A-58

CPT(54286/CPT125)
4/4/97\11:10

April 1997
Project No. 95-92-4286



LOCATION: South shoulder Romona Avenue, 110 ft east of Thirteenth Street
SURFACE EL: 113.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 29.4 ft
TESTING DATE: JAN 21 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

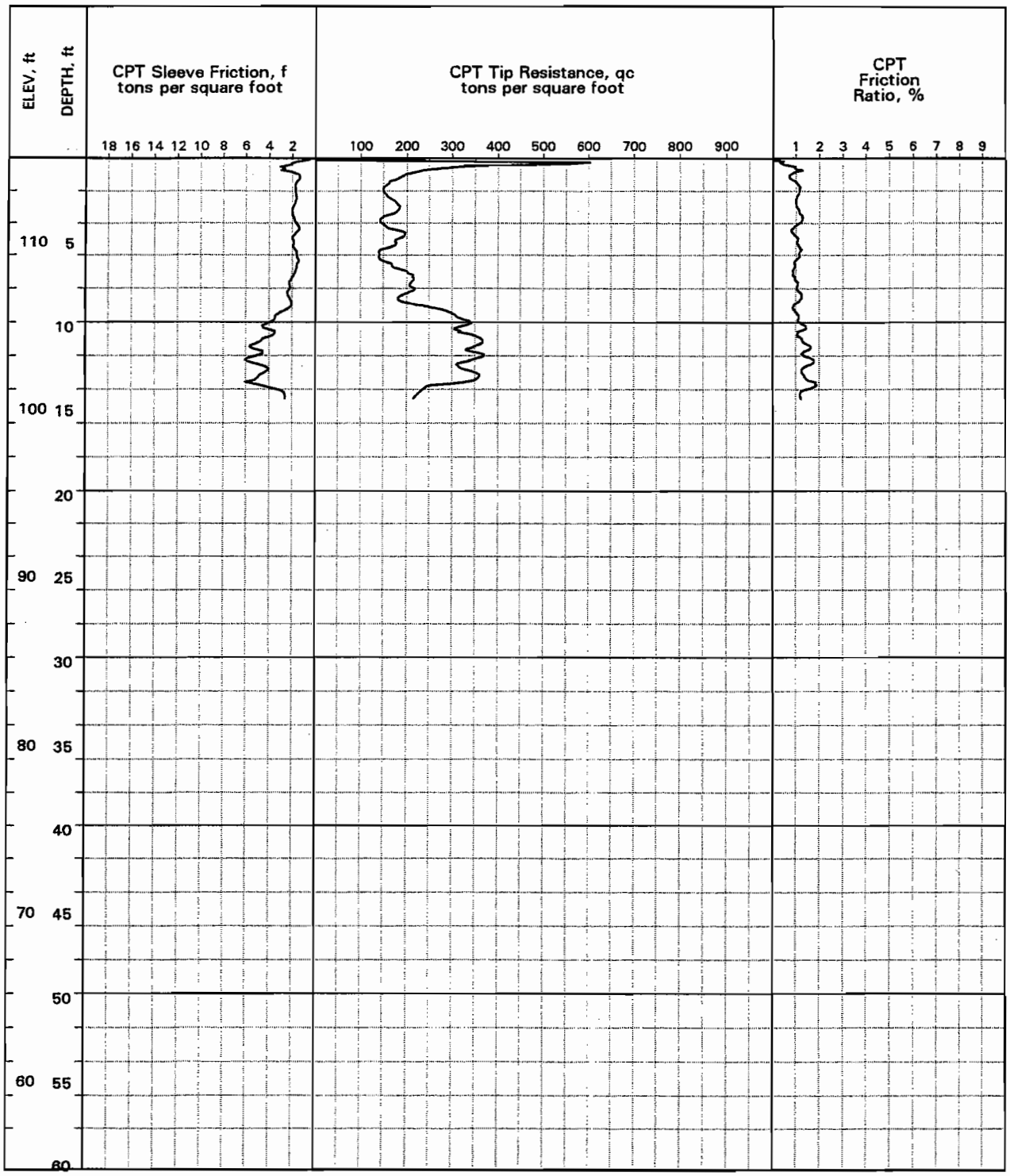
LOG OF CPT NO: CPT126

Los Osos Wastewater Project

CPT(54286/CPT126)
4/4/97\11:11

PLATE A-59

April 1997
Project No. 95-92-4286



LOCATION: West shoulder 17th Street, 225 ft north Nipomo Avenue

SURFACE EL: 115.5 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 14.6 ft
TESTING DATE: JAN 21 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

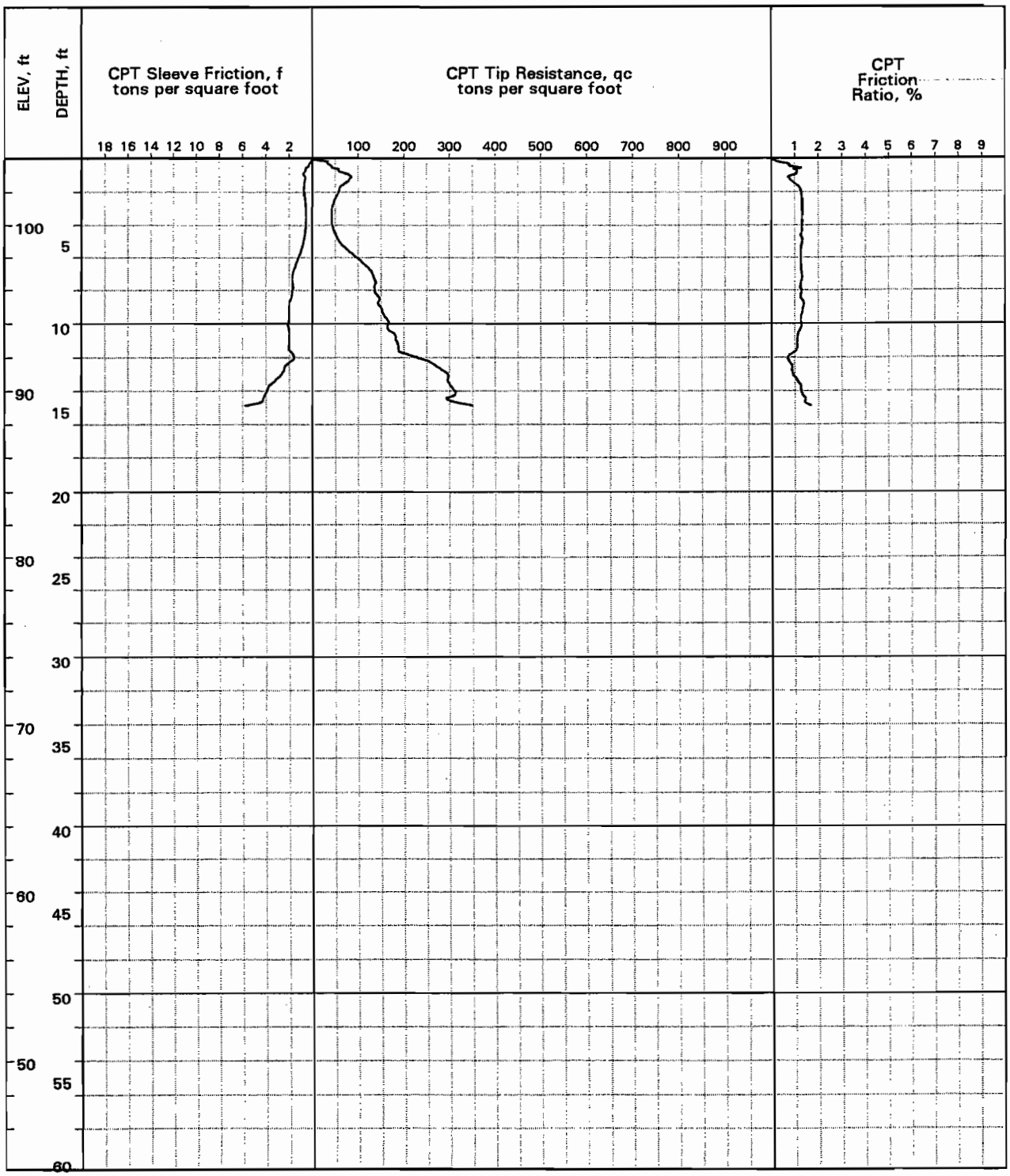
LOG OF CPT NO: CPT127

Los Osos Wastewater Project

CPT(54286/CPT127)
4/4/97\14:59

PLATE A-60

April 1997
Project No. 95-92-4286



LOCATION: East shoulder Seventh Street, 60 ft north Nipomo Avenue

SURFACE EL: 104.5 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 14.9 ft
TESTING DATE: JAN 21 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

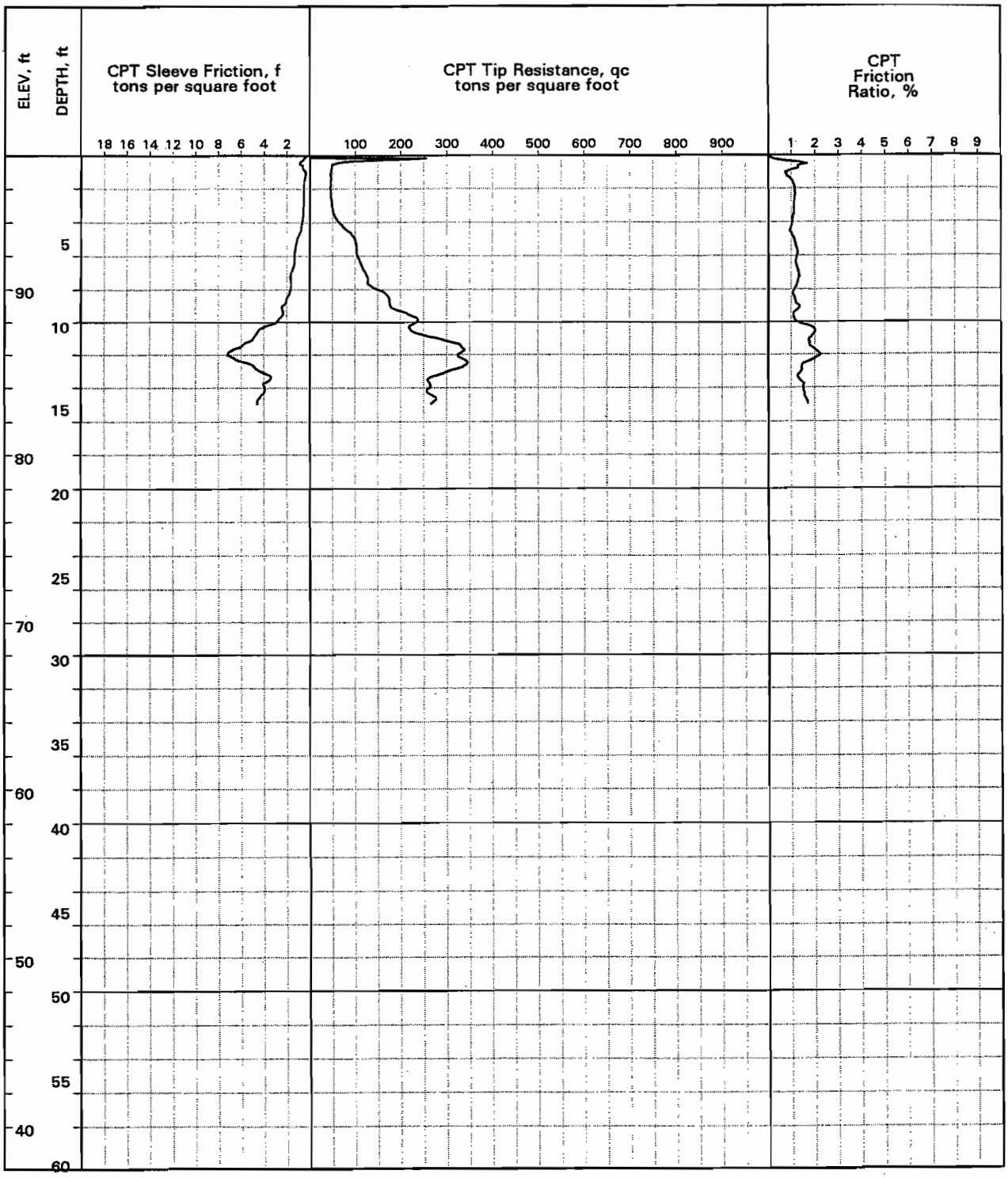
LOG OF CPT NO: CPT128

Los Osos Wastewater Project

PLATE A-61

CPT(54286/CPT128)
4/4/97\14:59

April 1997
Project No. 95-92-4286



LOCATION: Ferrel Drive, 1150 ft north of Bush Street intersection

SURFACE EL: 98.5 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 15.0 ft
TESTING DATE: JAN 21 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

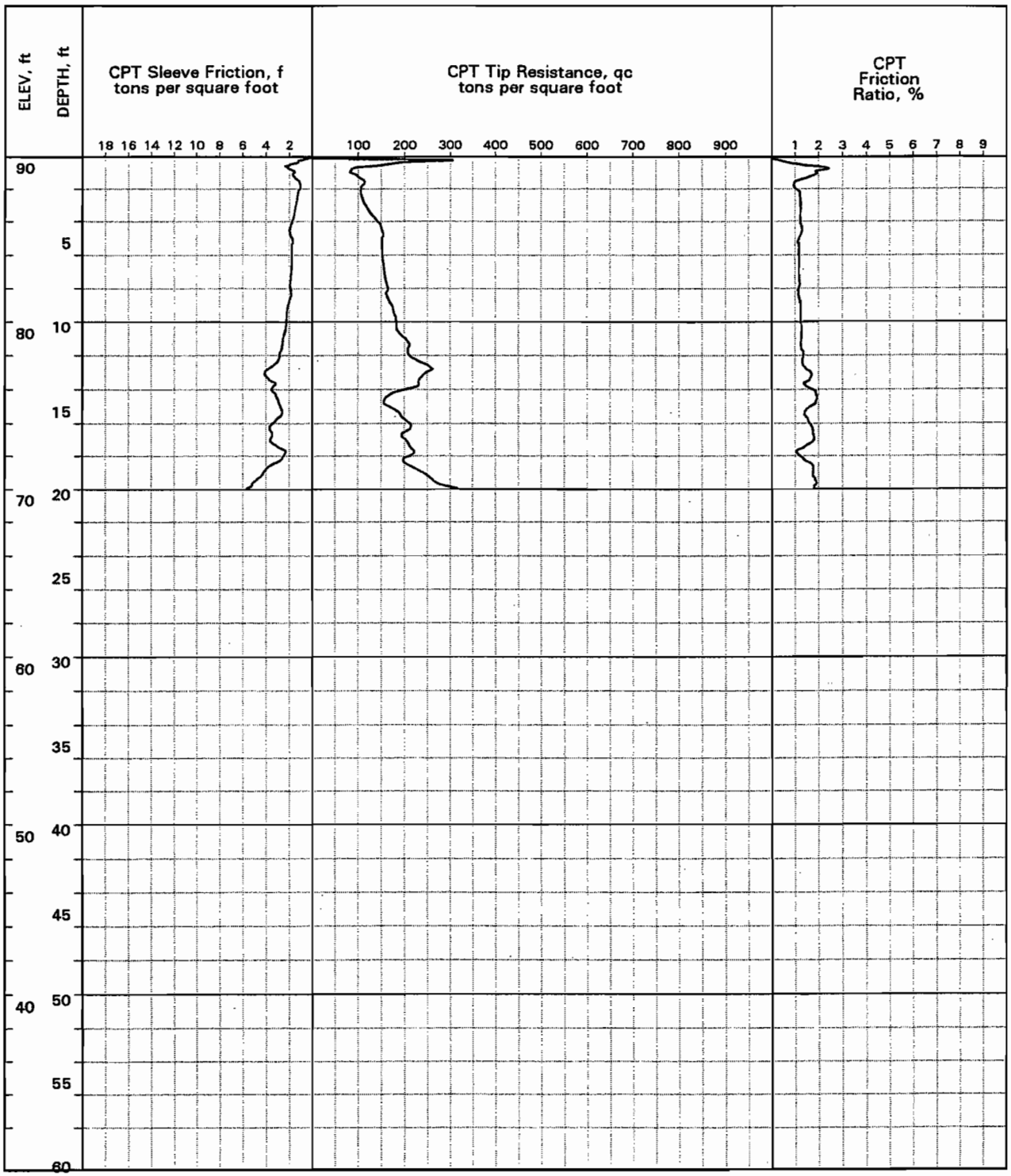
LOG OF CPT NO: CPT129

Los Osos Wastewater Project

PLATE A-62

CPT(54286/CPT129)
4/4/97\14:59

April 1997
Project No. 95-92-4286



LOCATION: South shoulder Santa Ynez, 45 ft east of Eighth Street

SURFACE EL: 91.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 20.0 ft
TESTING DATE: JAN 22 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

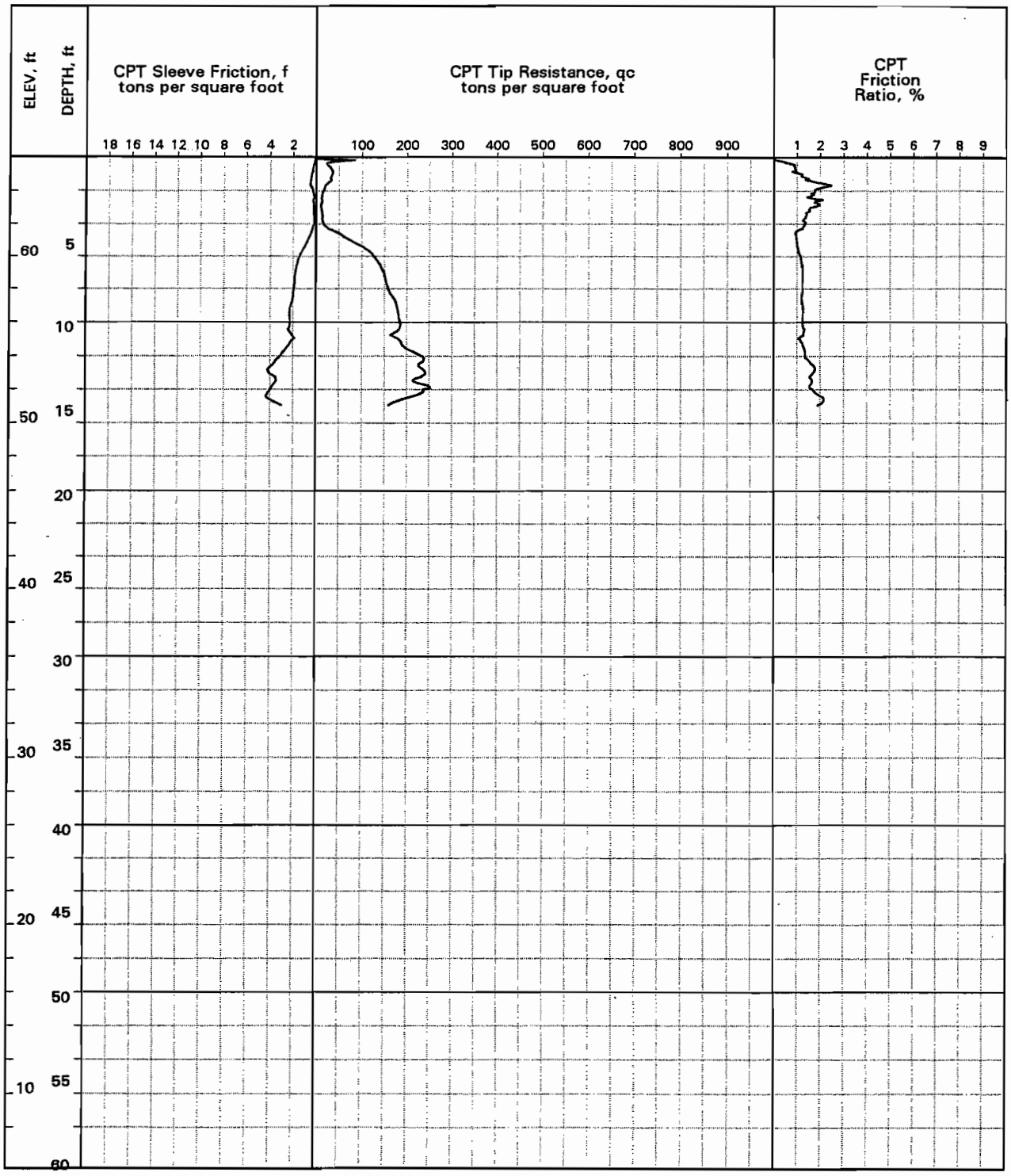
LOG OF CPT NO: CPT130

Los Osos Wastewater Project

CPT(54286/CPT130)
4/4/97\15:00

PLATE A-63

April 1997
Project No. 95-92-4286



LOCATION: South shoulder Santa Ynez, 70 ft east of Eleventh Street

SURFACE EL: 66.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 15.0 ft
TESTING DATE: JAN 22 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

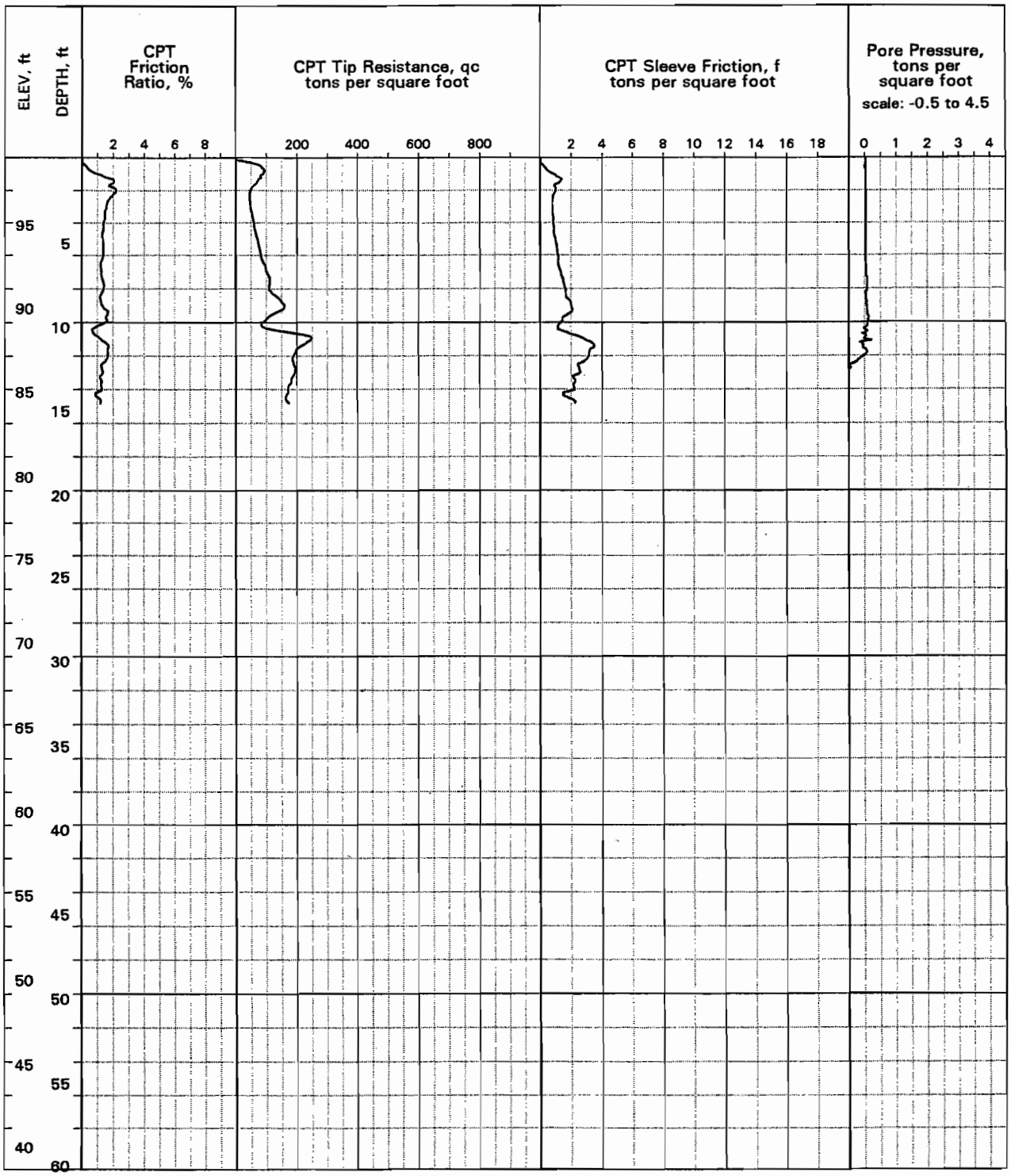
LOG OF CPT NO: CPT131

Los Osos Wastewater Project

CPT(54286/CPT131)
4/4/97\15:00

PLATE A-64

April 1997
Project No. 95-92-4286



LOCATION: , West shoulder Fairchild, 35 ft south of Santa Ynez
SURFACE EL: 99.5 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 10.5 ft
COMPLETION DEPTH: 14.9 ft

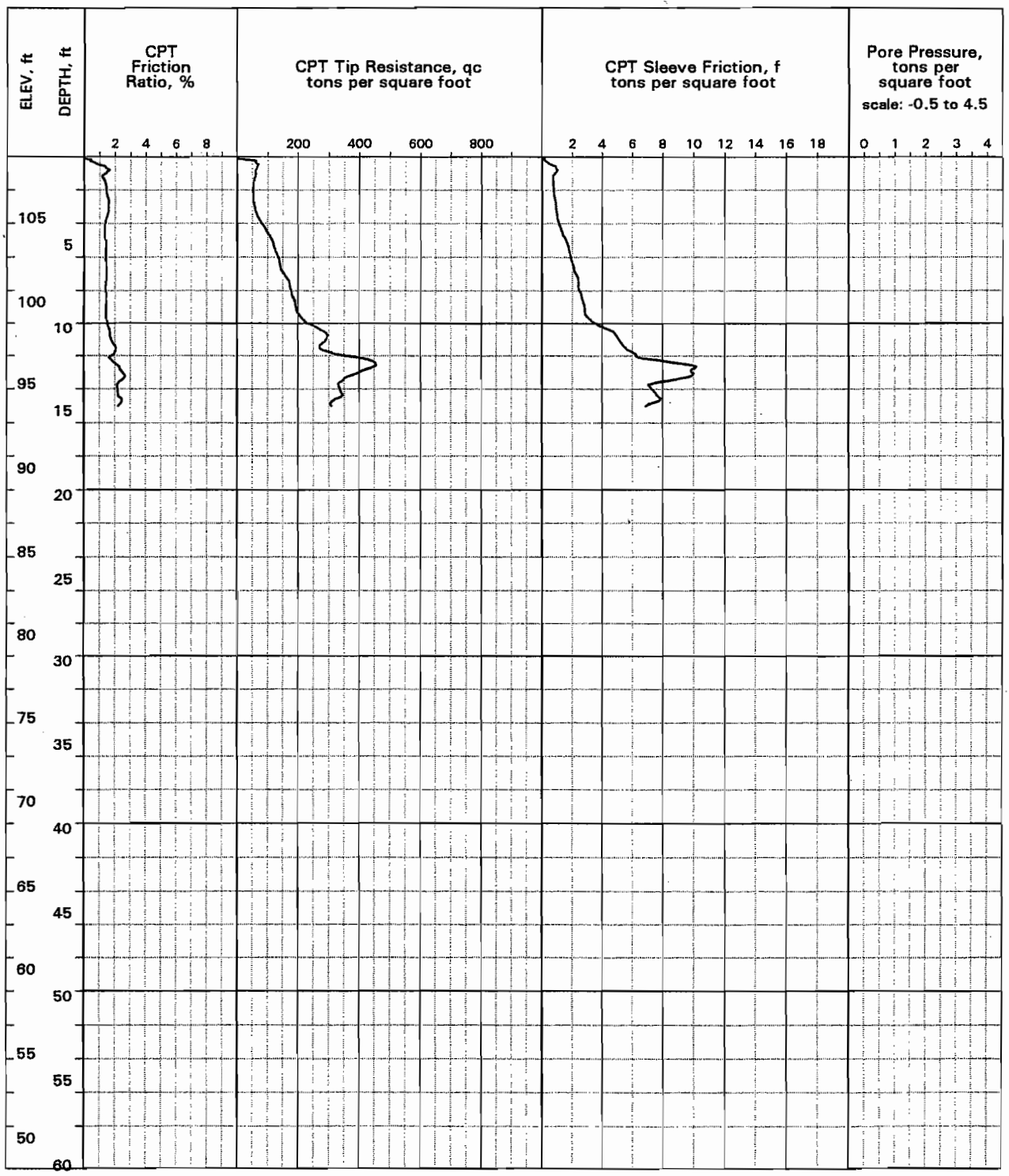
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 21 97

LOG OF CPT NO. CPT132
Los Osos Wastewater Project

CPT W/PP
4/4/97\14:43

PLATE A-65

April 1997
Project No. 95-92-4286



LOCATION: , North shoulder Santa Ynez Avenue, 70 ft west of Mountain View
SURFACE EL: 109.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER:
COMPLETION DEPTH: 15.1 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 22 97

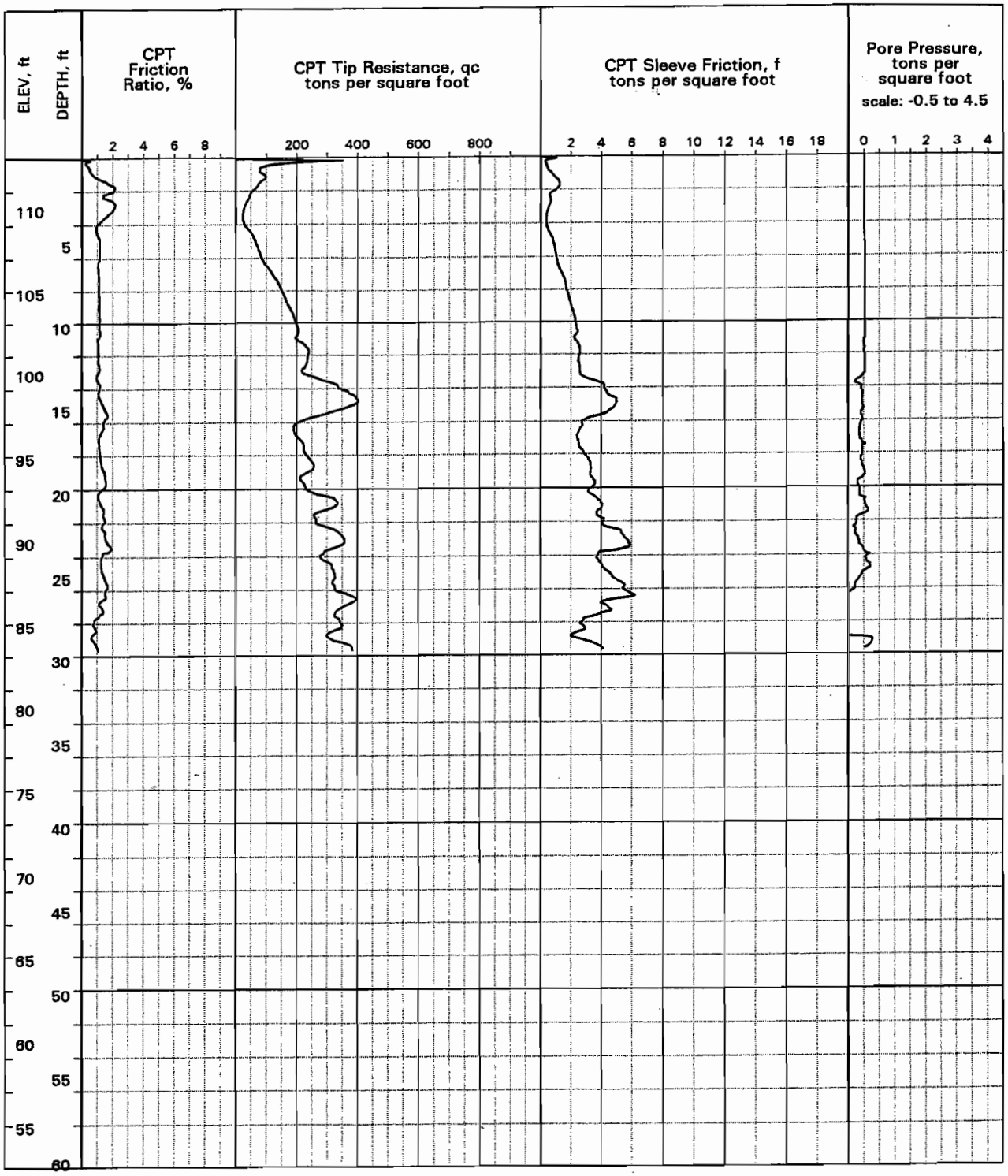
LOG OF CPT NO. CPT133

Los Osos Wastewater Project

CPT W/PP
4/4/97\14:44

PLATE A-66

April 1997
Project No. 95-92-4286



LOCATION: , West shoulder Fairchild Avenue, 35 ft south Santa Ynez
SURFACE EL: 113.5 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 13 ft
COMPLETION DEPTH: 29.7 ft

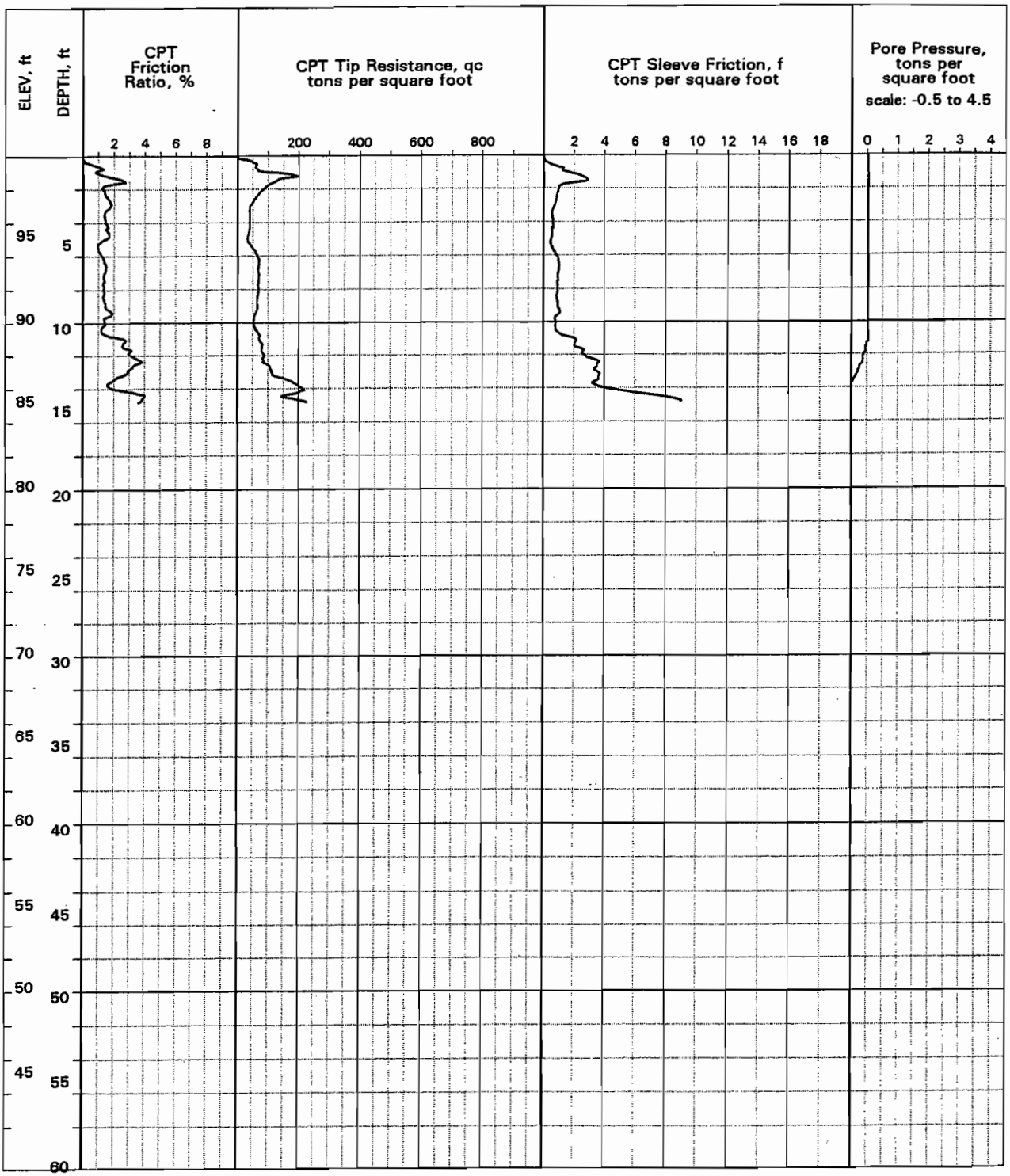
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 21 97

LOG OF CPT NO. CPT134
Los Osos Wastewater Project

PLATE A-67

CPT W/PP
4/4/97\12:36

April 1997
Project No. 95-92-4286



LOCATION: , North shoulder Santa Ynez Ave, 40 ft west Mountain View
SURFACE EL: 100.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 11 ft
COMPLETION DEPTH: 14.9 ft

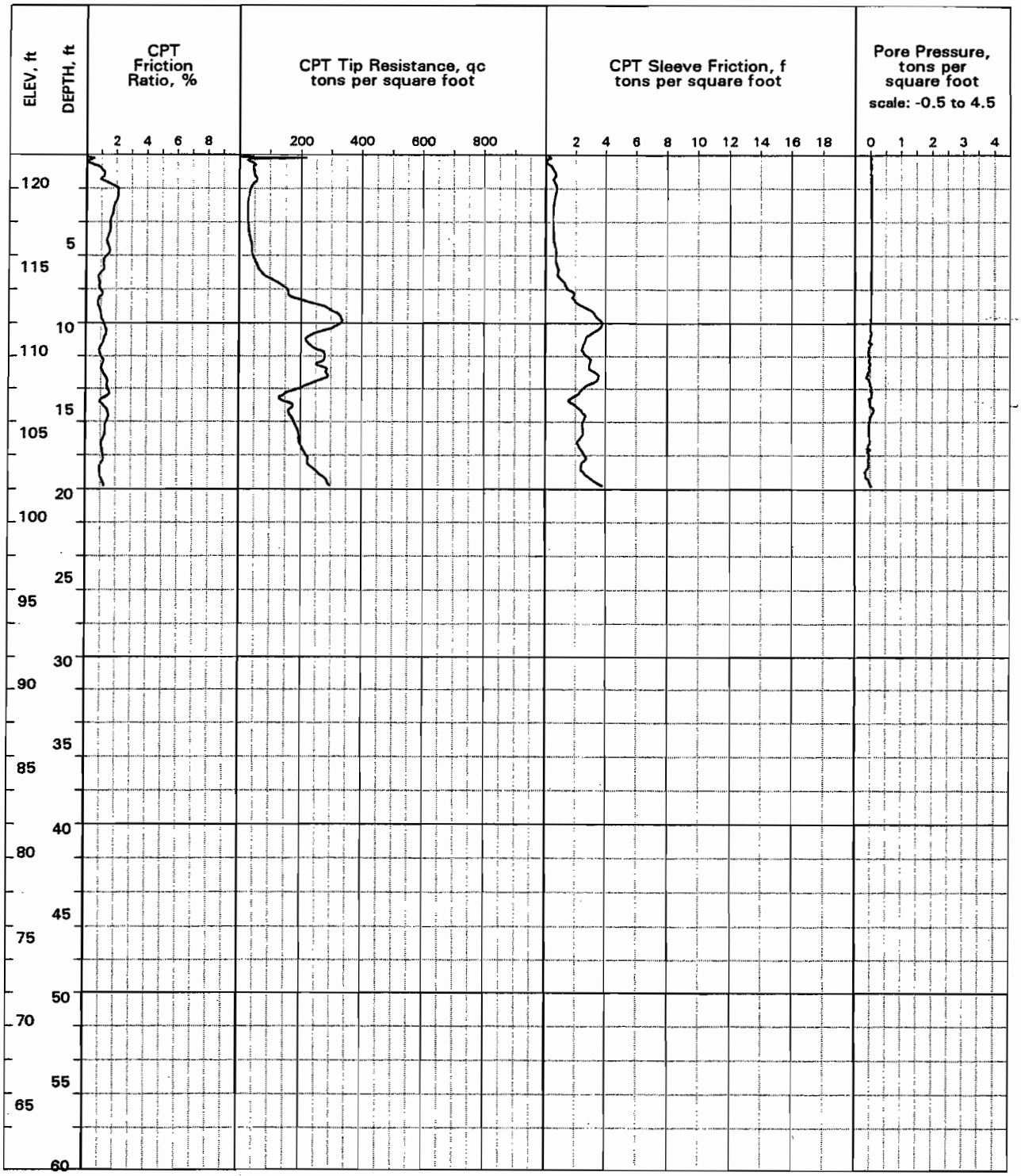
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 21 97

LOG OF CPT NO. CPT135
Los Osos Wastewater Project

CPT W/PP
4/4/97\14:44

PLATE A-68

April 1997
Project No. 95-92-4286



LOCATION: , North shoulder Los Olivos Ave, 50 ft east of Fairchild Ave.
SURFACE EL: 122.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 11 ft
COMPLETION DEPTH: 19.9 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 22 97

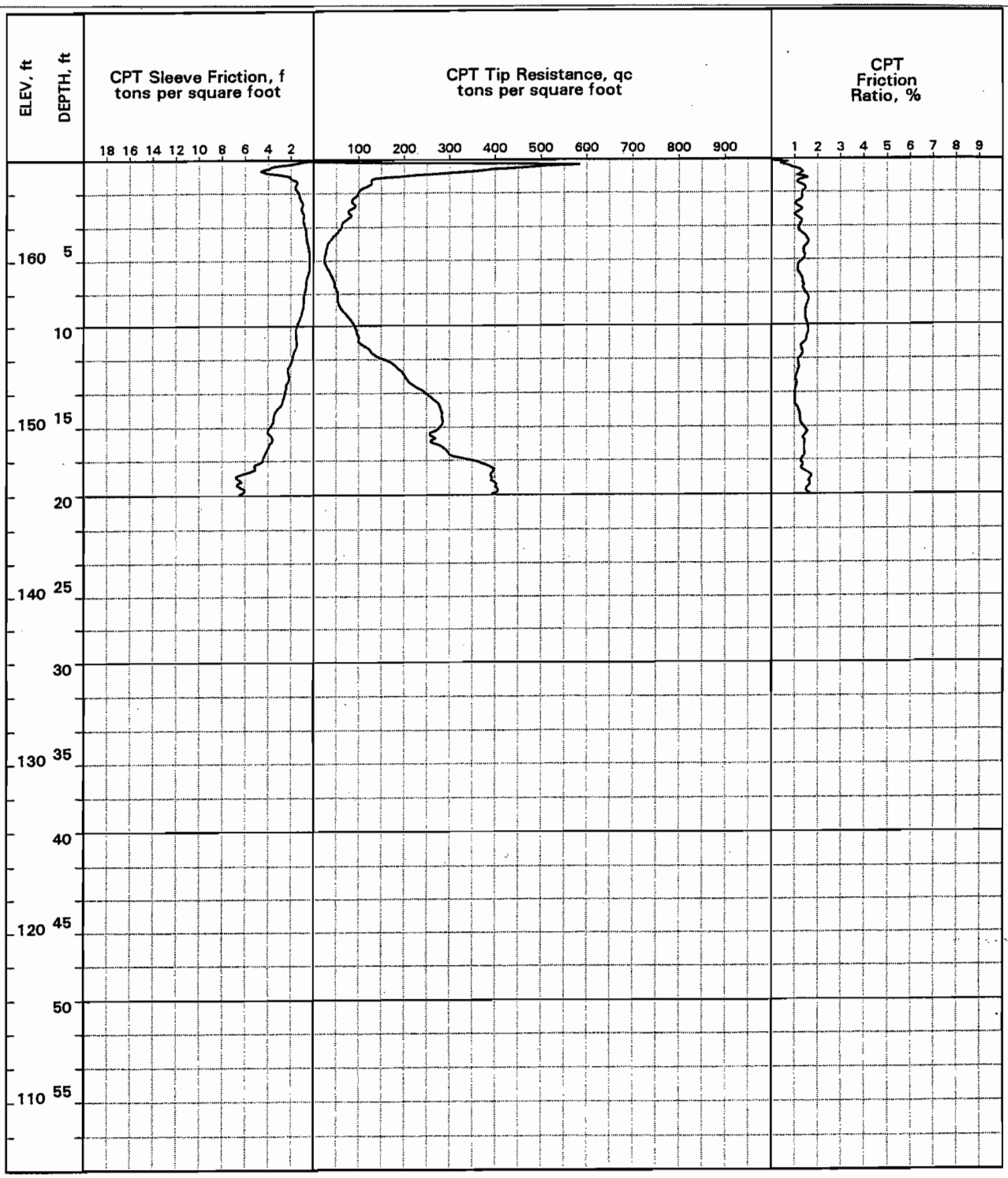
LOG OF CPT NO. CPT136

Los Osos Wastewater Project

CPT W/PP
4/4/97\14:46

PLATE A-69

April 1997
Project No. 95-92-4286



LOCATION: East shoulder Bayview Avenue, 65 ft south of Highland Drive
SURFACE EL: 166.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 20.0 ft
TESTING DATE: JAN 22 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

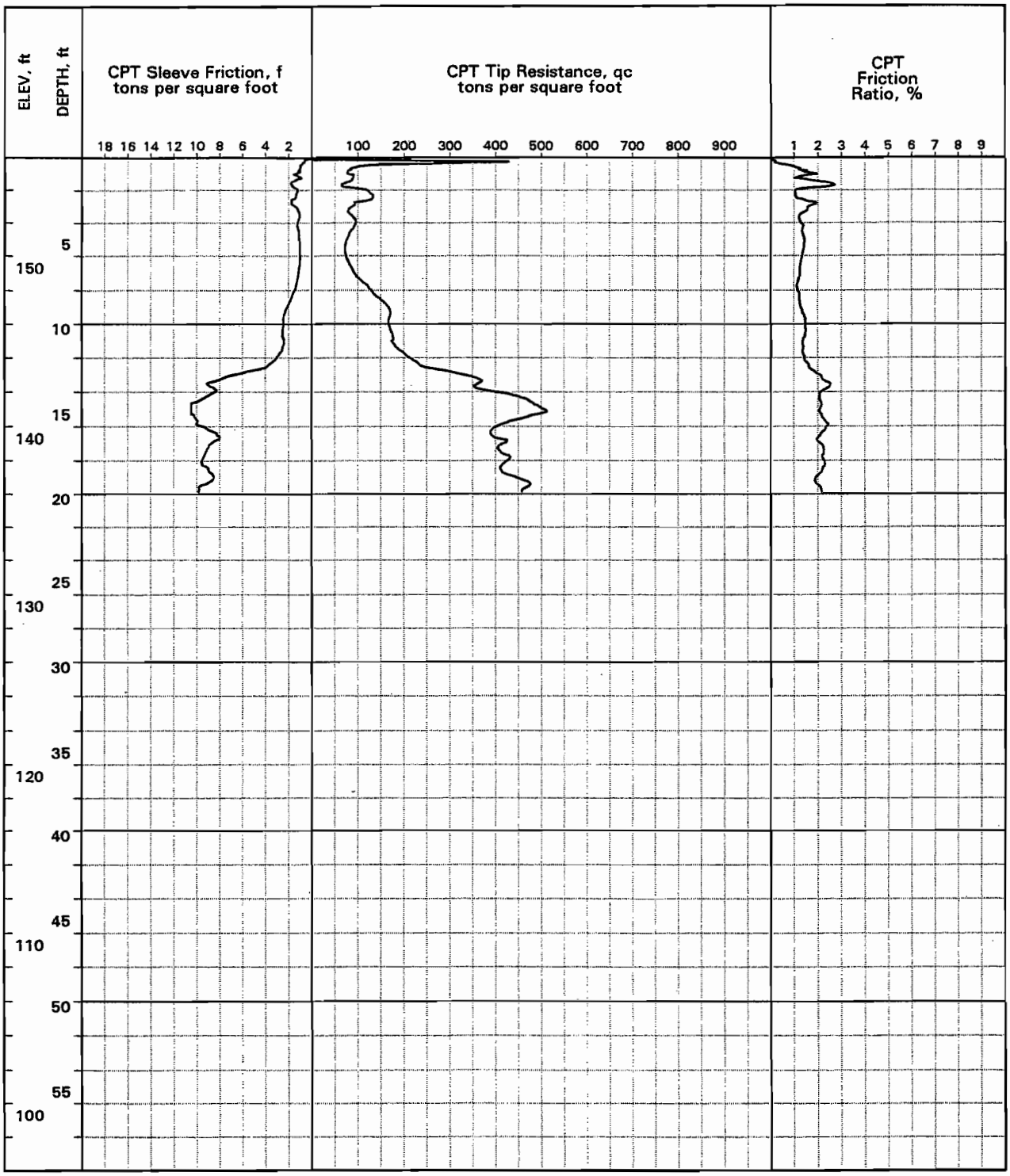
LOG OF CPT NO: CPT137

Los Osos Wastewater Project

CPT(54286/CPT137)
4/4/97\11:12

PLATE A-70

April 1997
Project No. 95-92-4286



LOCATION: East shoulder South Bay Boulevard, 170 ft north Los Osos Valley Road
SURFACE EL: 157.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 19.9 ft
TESTING DATE: JAN 22 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

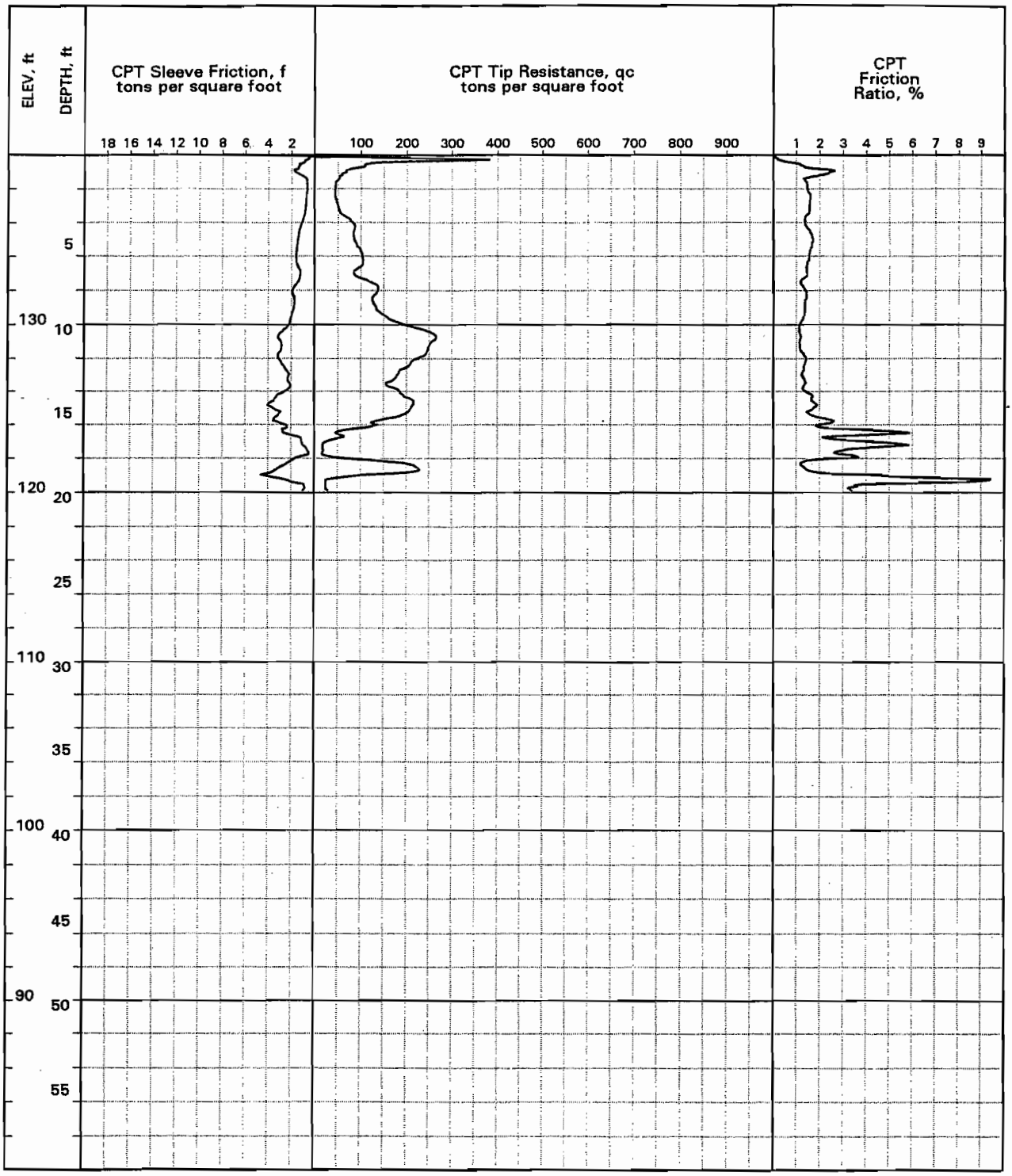
LOG OF CPT NO: CPT138

Los Osos Wastewater Project

CPT(54286/CPT138)
4/4/97\11:12

PLATE A-71

April 1997
Project No. 95-92-4286



LOCATION: West shoulder Fairchild, 200 ft north Los Osos Valley Road
SURFACE EL: 140.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 19.9 ft
TESTING DATE: JAN 22 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

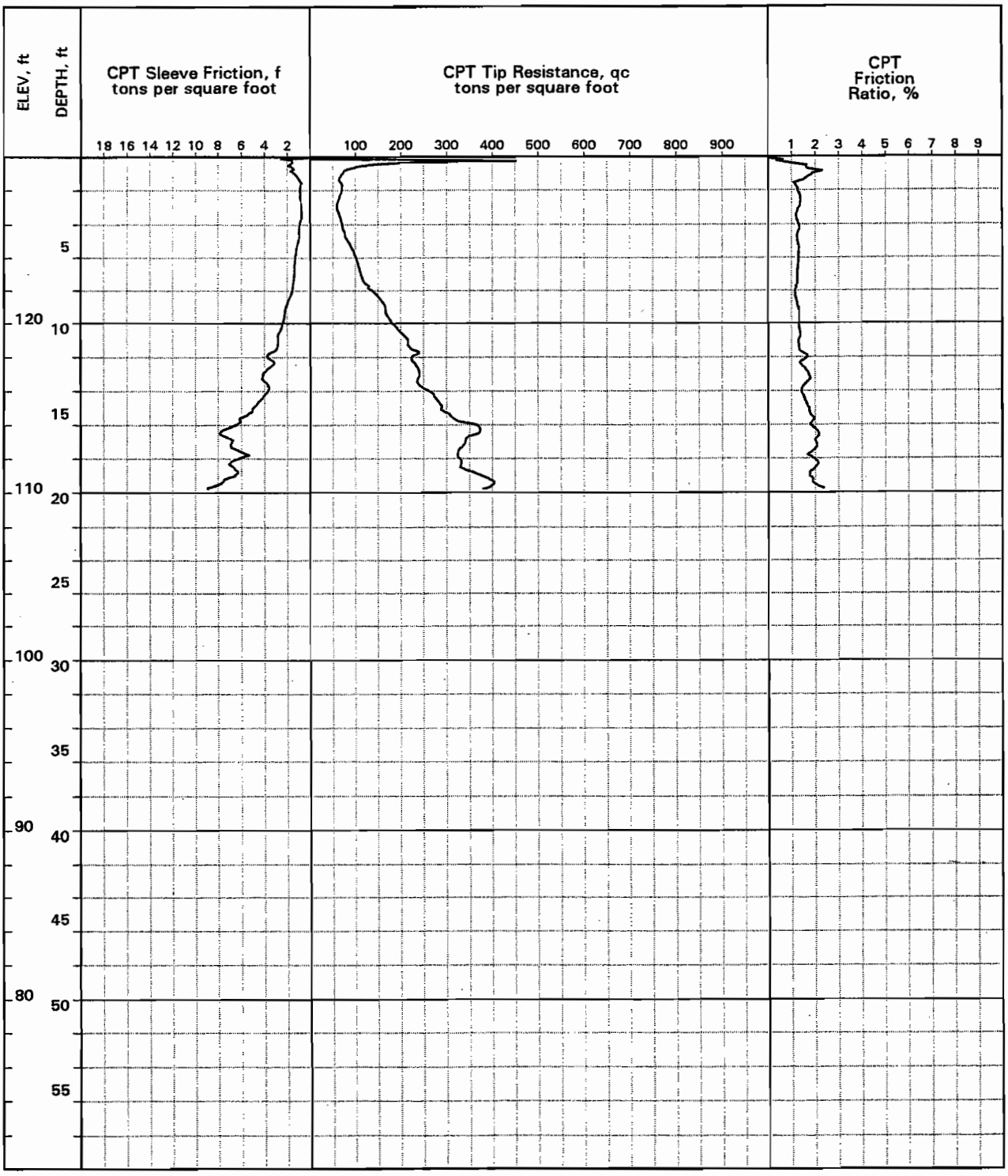
LOG OF CPT NO: CPT139

Los Osos Wastewater Project

CPT(54286/CPT139)
4/4/97\11:12

PLATE A-72

April 1997
Project No. 95-92-4286



LOCATION: West shoulder Tenth Street, 300 ft north of Los Osos Valley Road
SURFACE EL: 130.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 19.8 ft
TESTING DATE: JAN 22 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

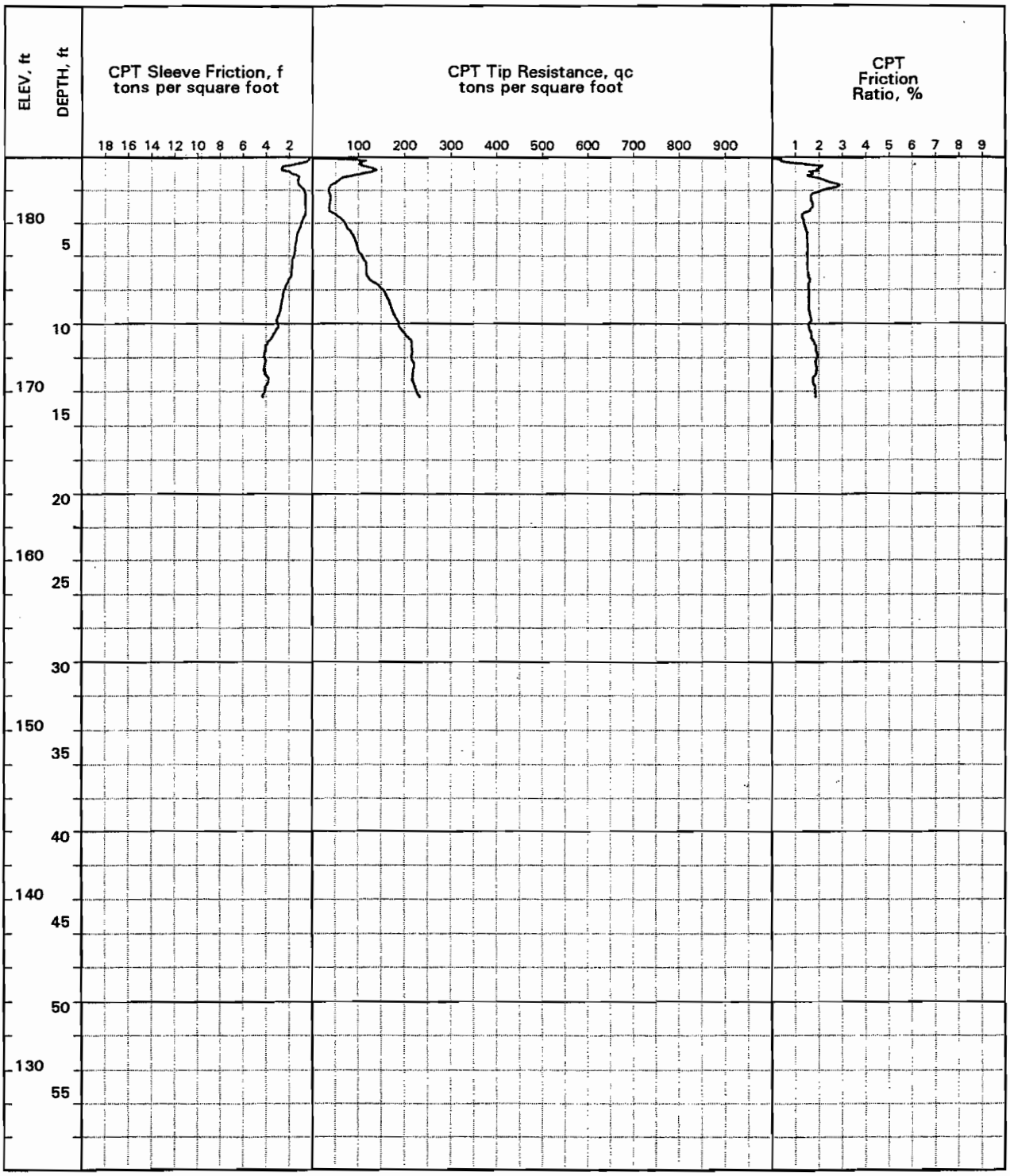
LOG OF CPT NO: CPT140

Los Osos Wastewater Project

CPT(54286/CPT140)
4/4/97\11:13

PLATE A-73

April 1997
Project No. 95-92-4286



LOCATION: East shoulder Bayview Drive, 65 ft north of Highland Drive
SURFACE EL: 184.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 14.4 ft
TESTING DATE: JAN 22 97

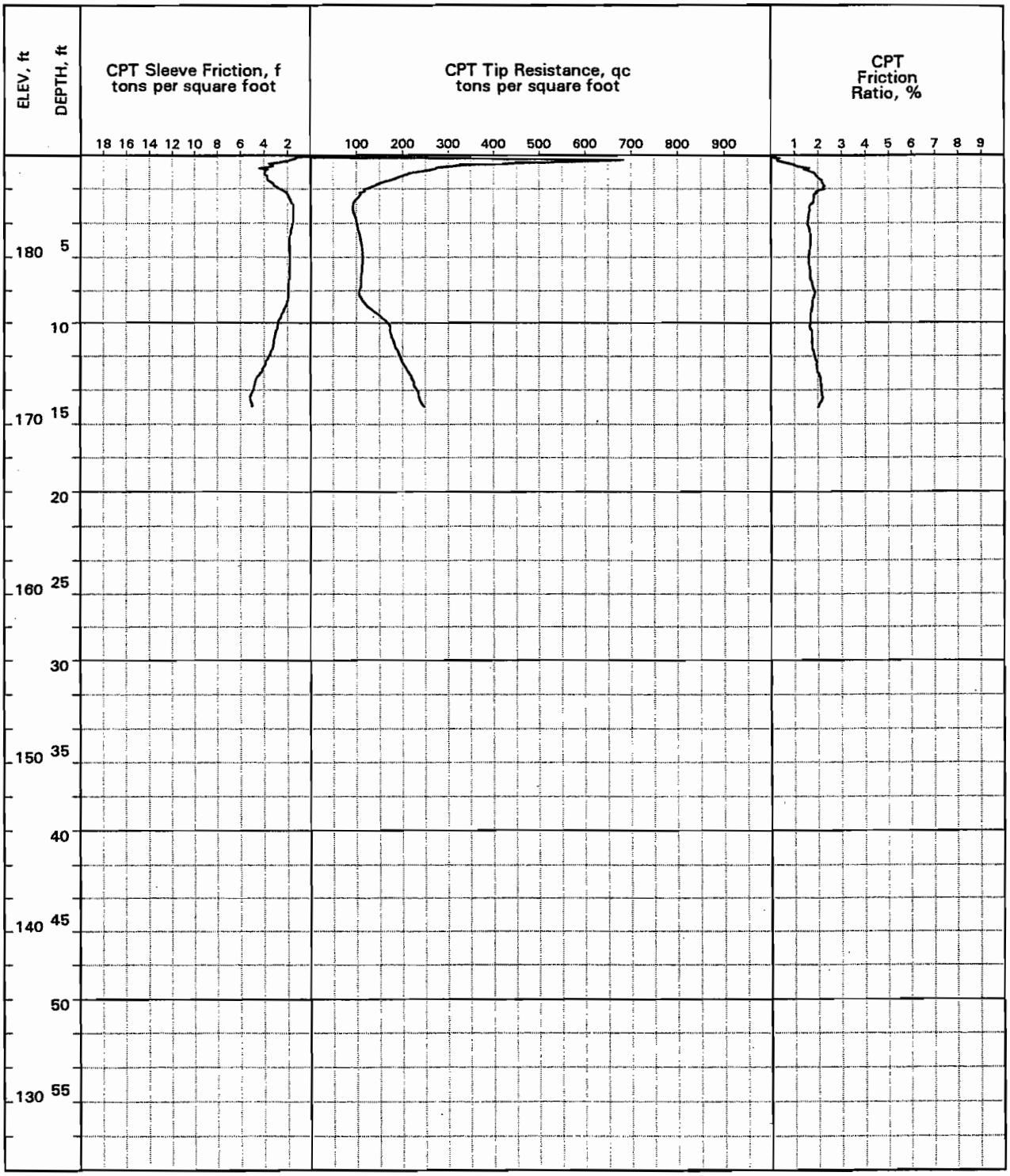
TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT141
Los Osos Wastewater Project

CPT(54286/CPT141)
4/4/97\11:13

PLATE A-74

April 1997
Project No. 95-92-4286



LOCATION: East shoulder Palasades Drive, 25 ft north of Highland Drive
SURFACE EL: 186.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 15.0 ft
TESTING DATE: JAN 22 97

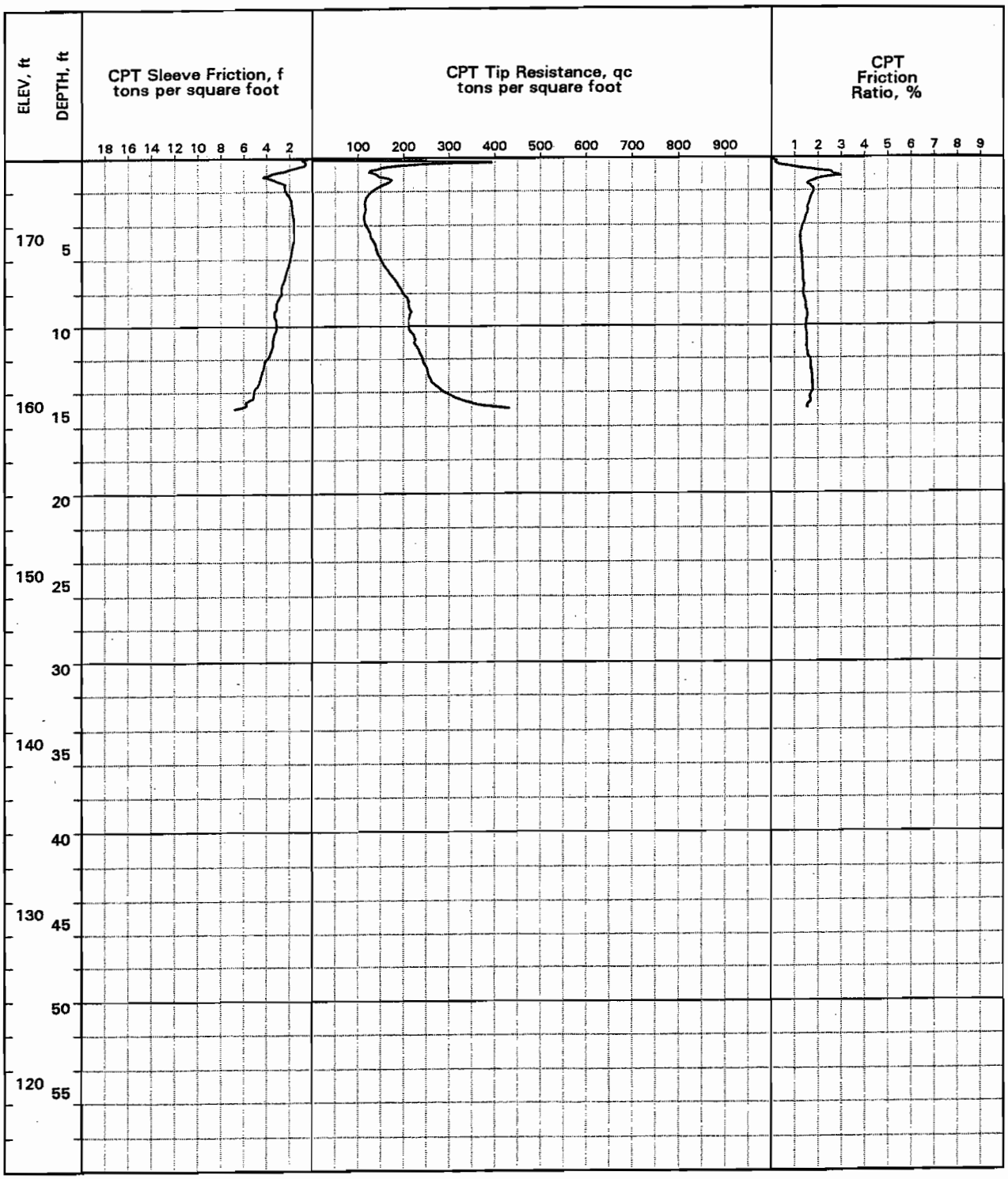
TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT142
Los Osos Wastewater Project

CPT(54286/CPT142)
4/4/97\11:13

PLATE A-75

April 1997
Project No. 95-92-4286



LOCATION: East shoulder Ravenna, 25 ft north Highland Drive

SURFACE EL: 175.0 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 15.0 ft
TESTING DATE: JAN 22 97

TESTING METHOD: Cone Penetrometer
TESTED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

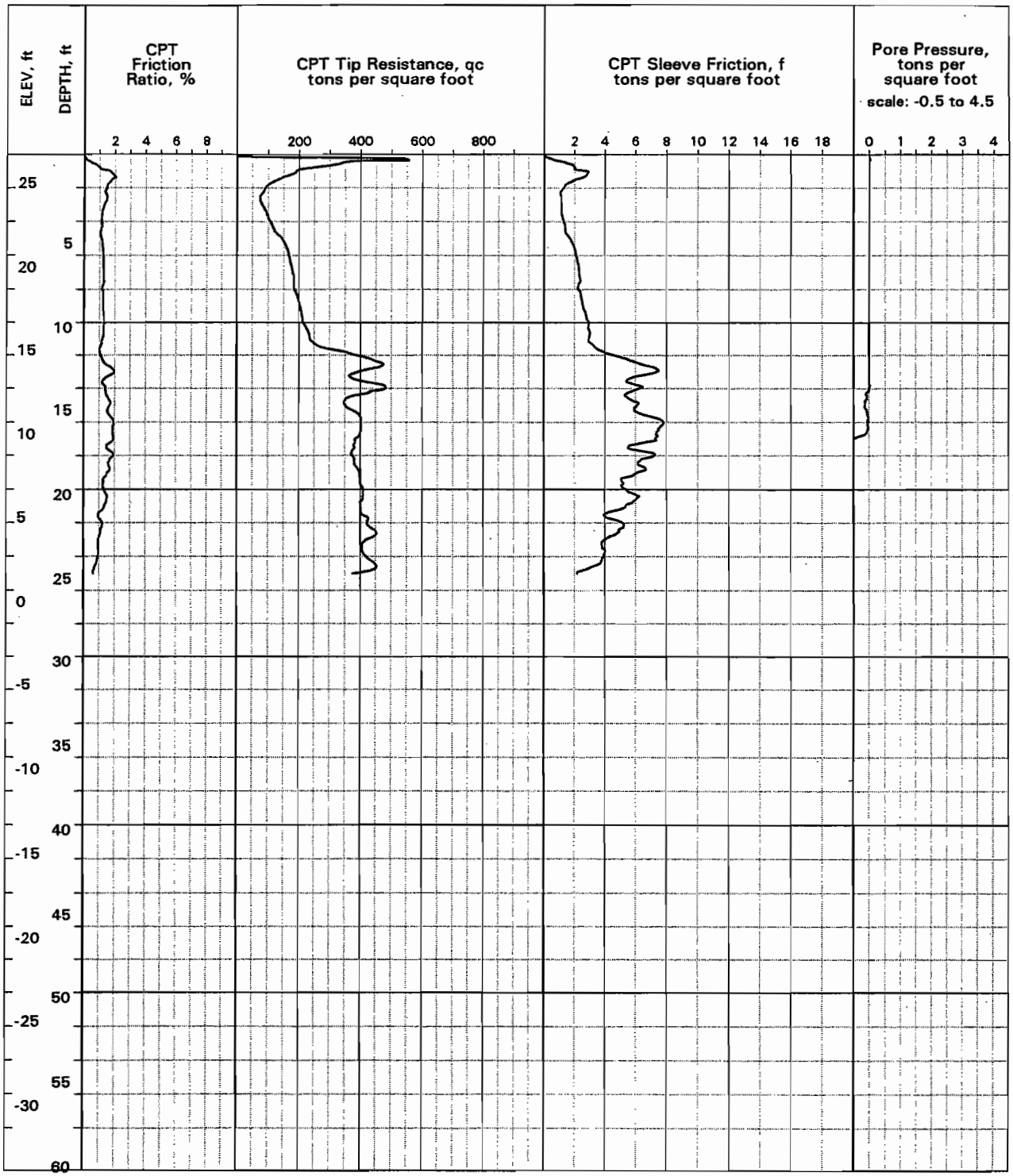
LOG OF CPT NO: CPT143

Los Osos Wastewater Project

PLATE A-76

CPT(54286/CPT143)
4/4/97\11:14

April 1997
Project No. 95-92-4286



LOCATION: , South shoulder Romona Ave, 410 ft east Broderson Ave.
SURFACE EL: 27.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 14 ft
COMPLETION DEPTH: 25.0 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 22 97

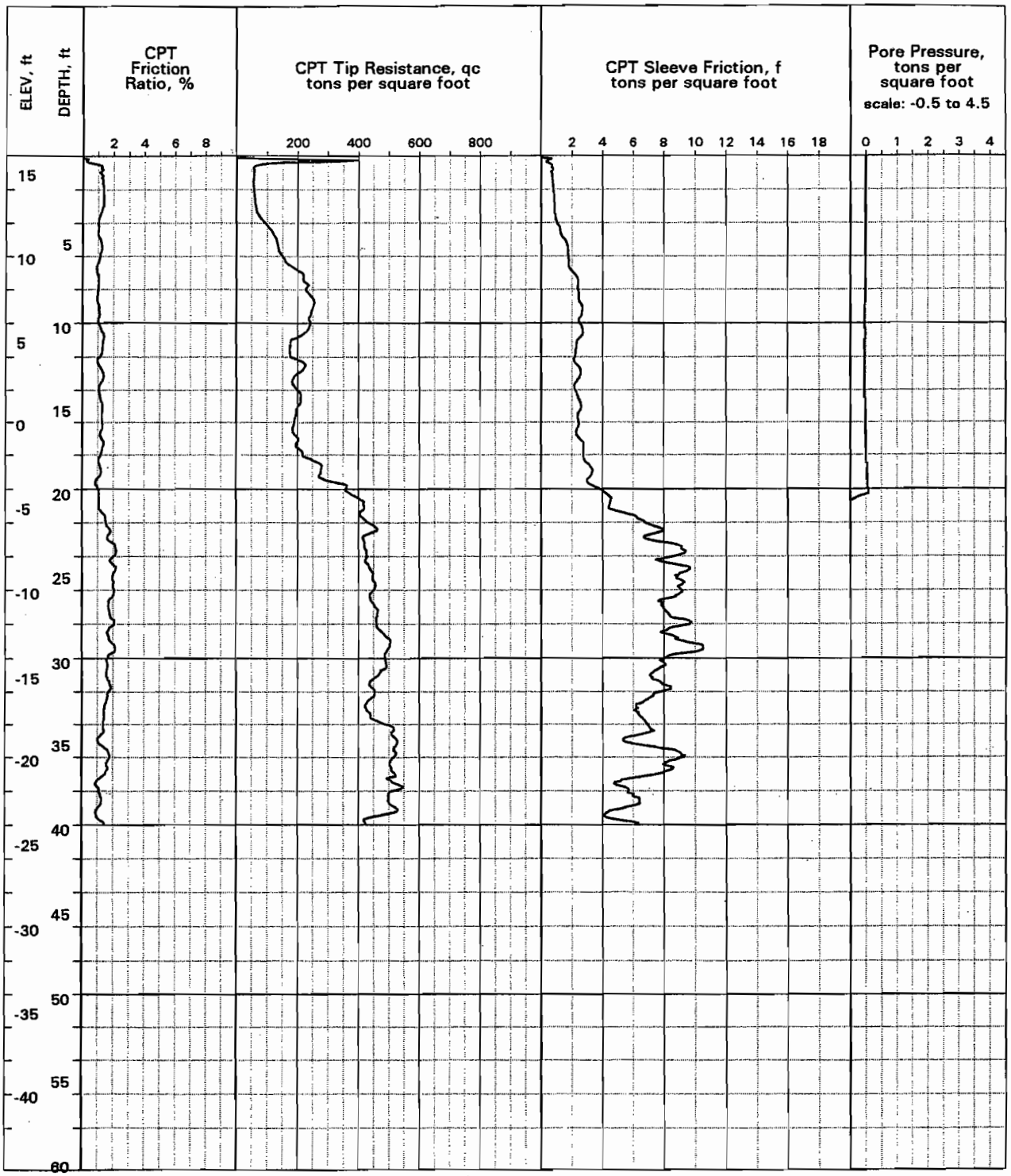
LOG OF CPT NO. CPT144

Los Osos Wastewater Project

CPT W/PP
4/4/97\14:47

PLATE A-77

April 1997
Project No. 95-92-4286



LOCATION: , South shoulder Mitchel Drive, 215 ft west of Doris Avenue
SURFACE EL: 16.5 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 20 ft
COMPLETION DEPTH: 39.9 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 22 97

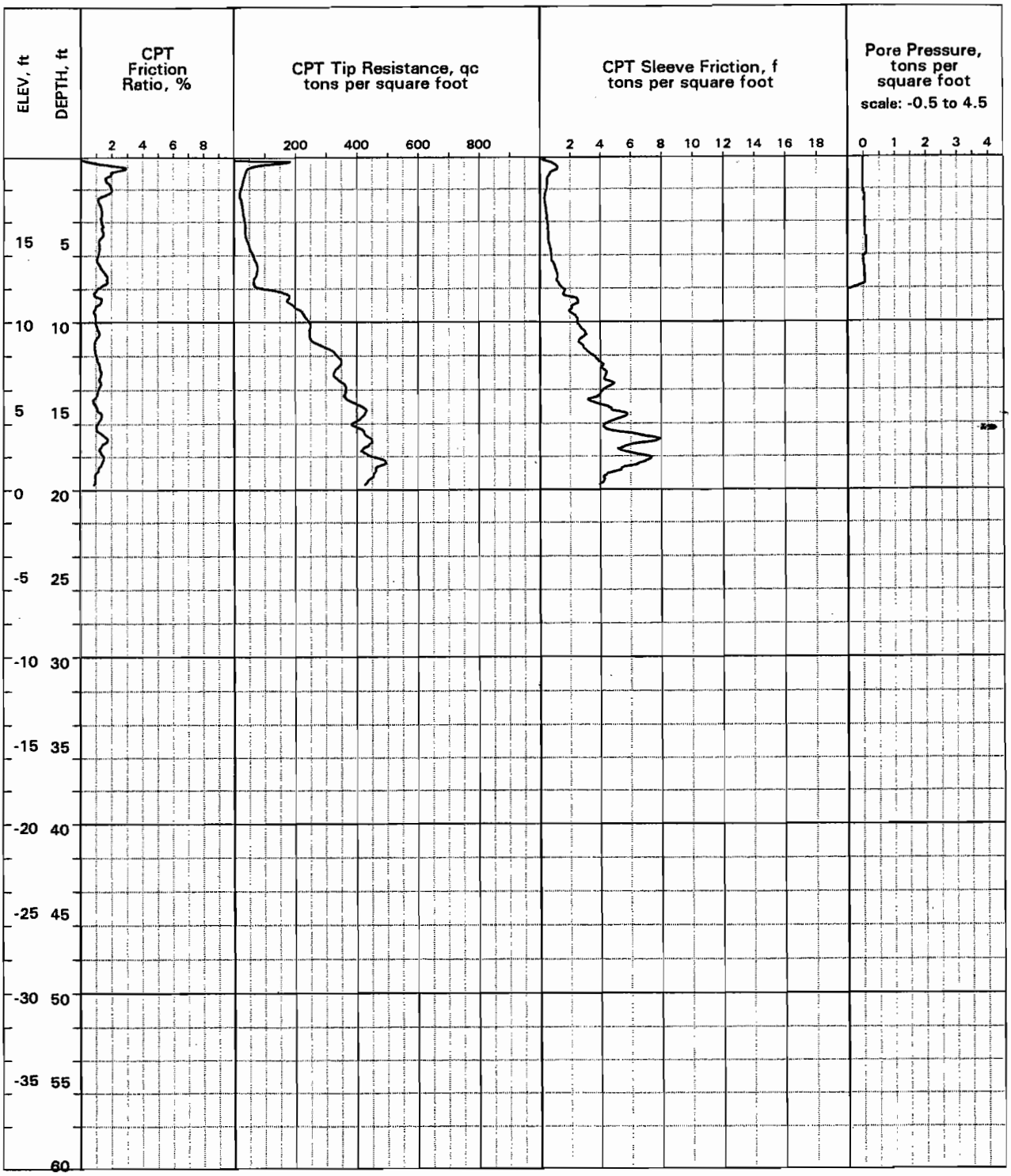
LOG OF CPT NO. CPT145

Los Osos Wastewater Project

CPT W/PP
4/4/97\12:38

PLATE A-78

April 1997
Project No. 95-92-4286



LOCATION: , North shoulder Mitchel Drive, 100 ft west of Pine Avenue
SURFACE EL: 20.5 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 13.5 ft
COMPLETION DEPTH: 19.7 ft

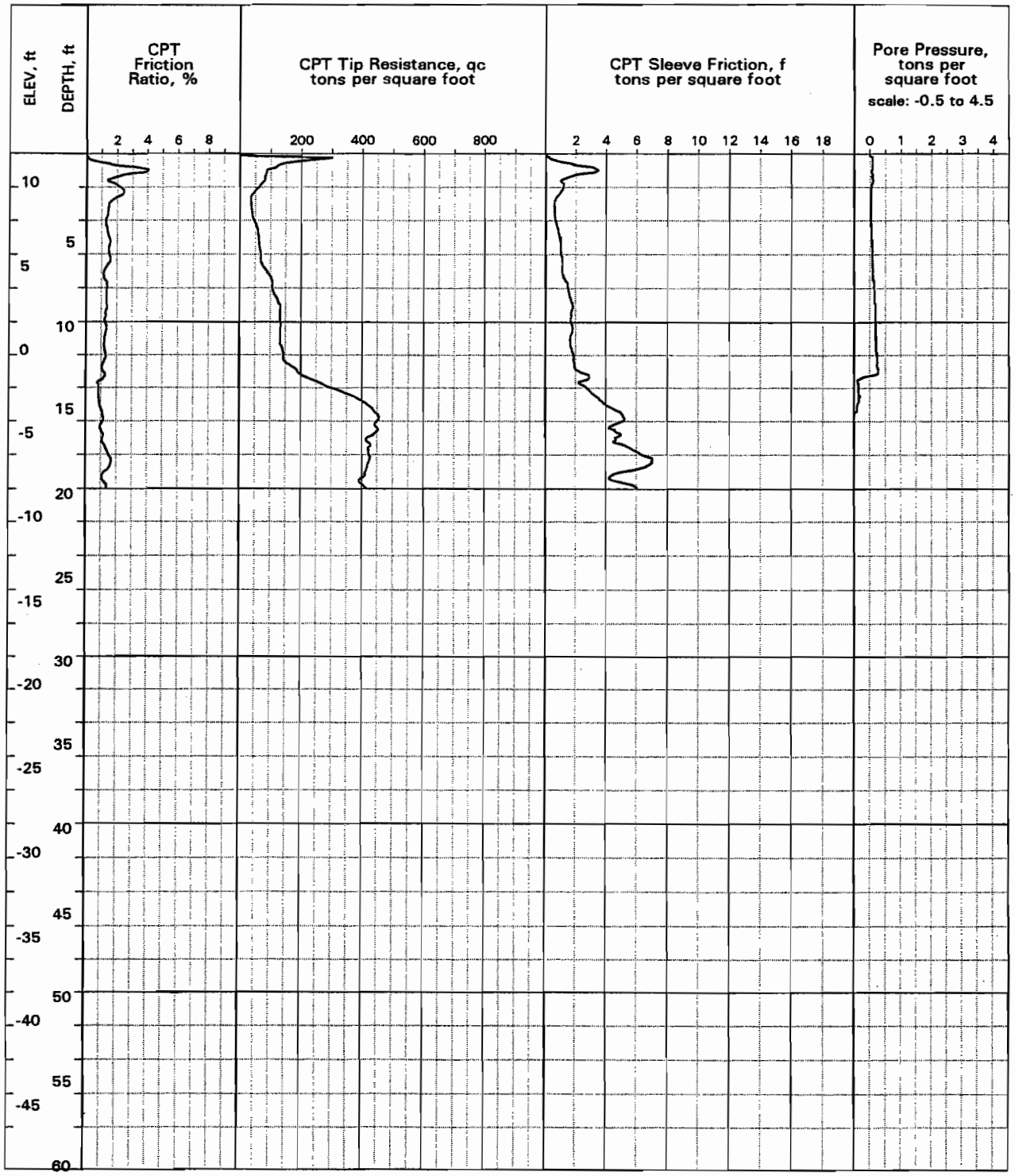
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 23 97

LOG OF CPT NO. CPT146
Los Osos Wastewater Project

CPT W/PP
4/4/97\14:47

PLATE A-79

April 1997
Project No. 95-92-4286



LOCATION: , North shoulder of Binscarth, 40 ft east of Maple Avenue
SURFACE EL: 12.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 4 ft
COMPLETION DEPTH: 20.0 ft

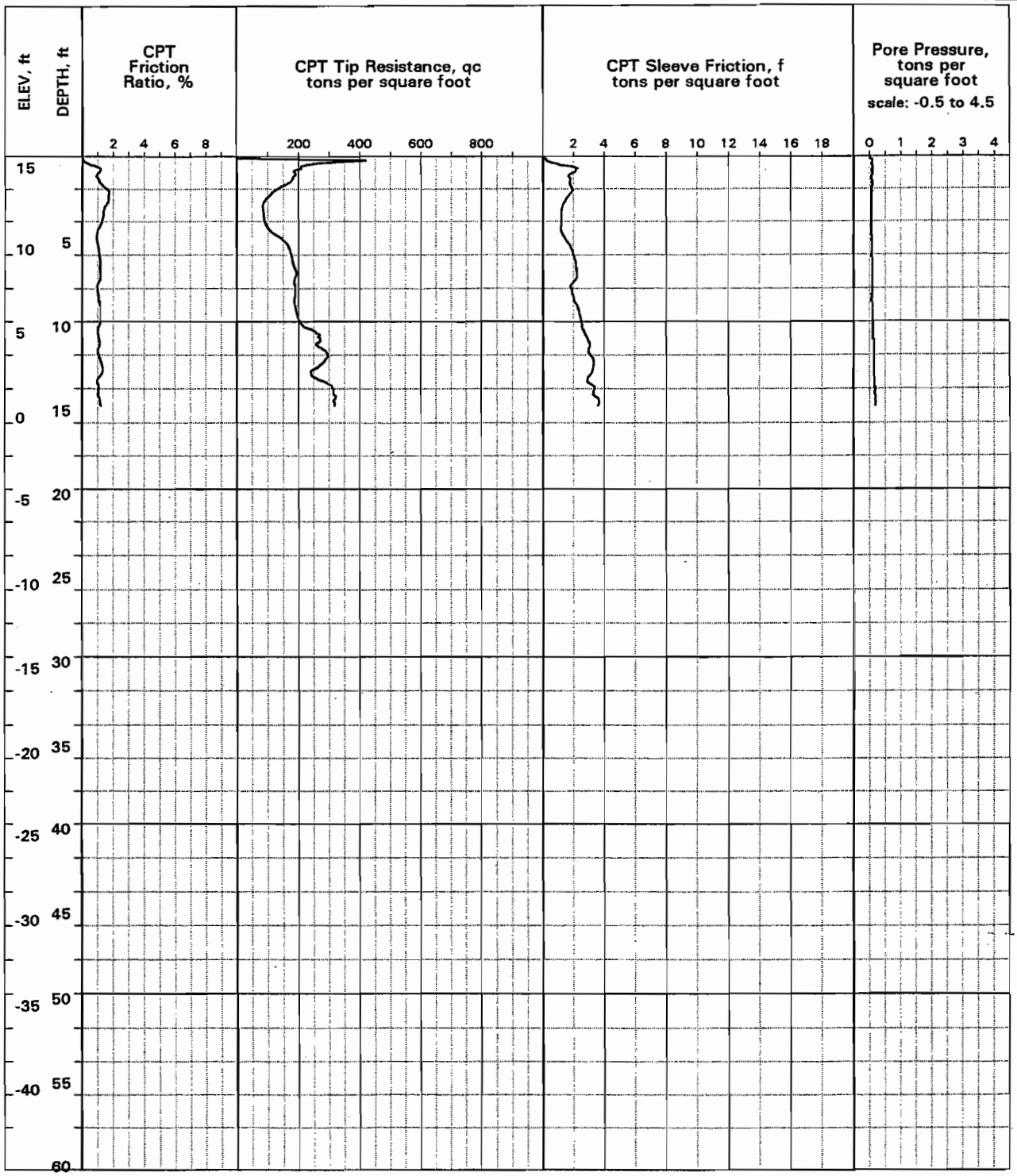
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 23 97

LOG OF CPT NO. CPT147
Los Osos Wastewater Project

CPT W/PP
4/4/97\12:39

PLATE A-80

April 1997
Project No. 95-92-4286



LOCATION: , North shoulder of Butte Drive, 100 ft west of Nevada Court
SURFACE EL: 16.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 3 ft
COMPLETION DEPTH: 15.1 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 23 97

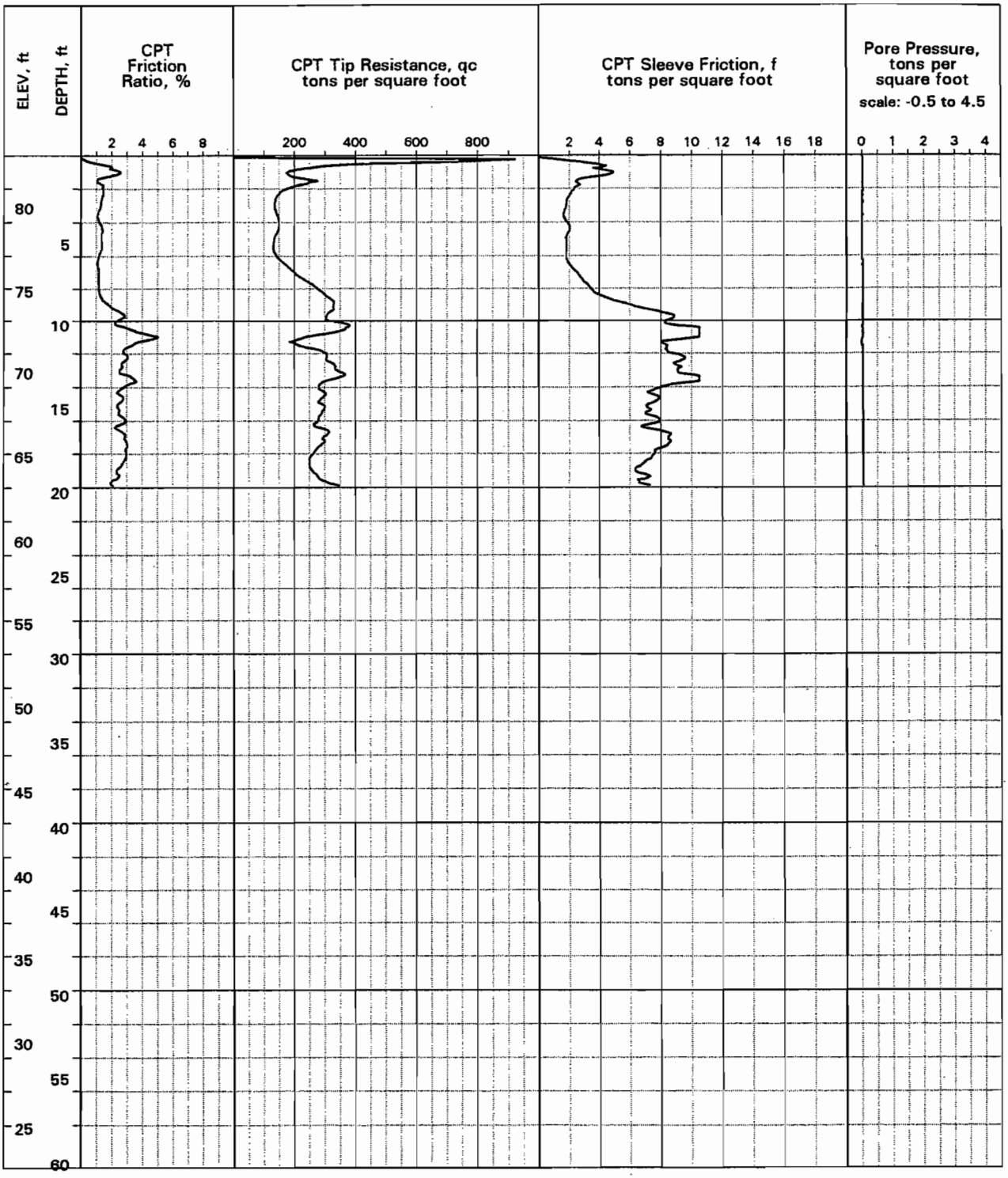
LOG OF CPT NO. CPT148

Los Osos Wastewater Project

CPT W/PP
4/4/97\12:39

PLATE A-81

April 1997
Project No. 95-92-4286



LOCATION: , Northeast corner of Doris Avenue and Rosina intersection
SURFACE EL: 83.5 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 19.9 ft

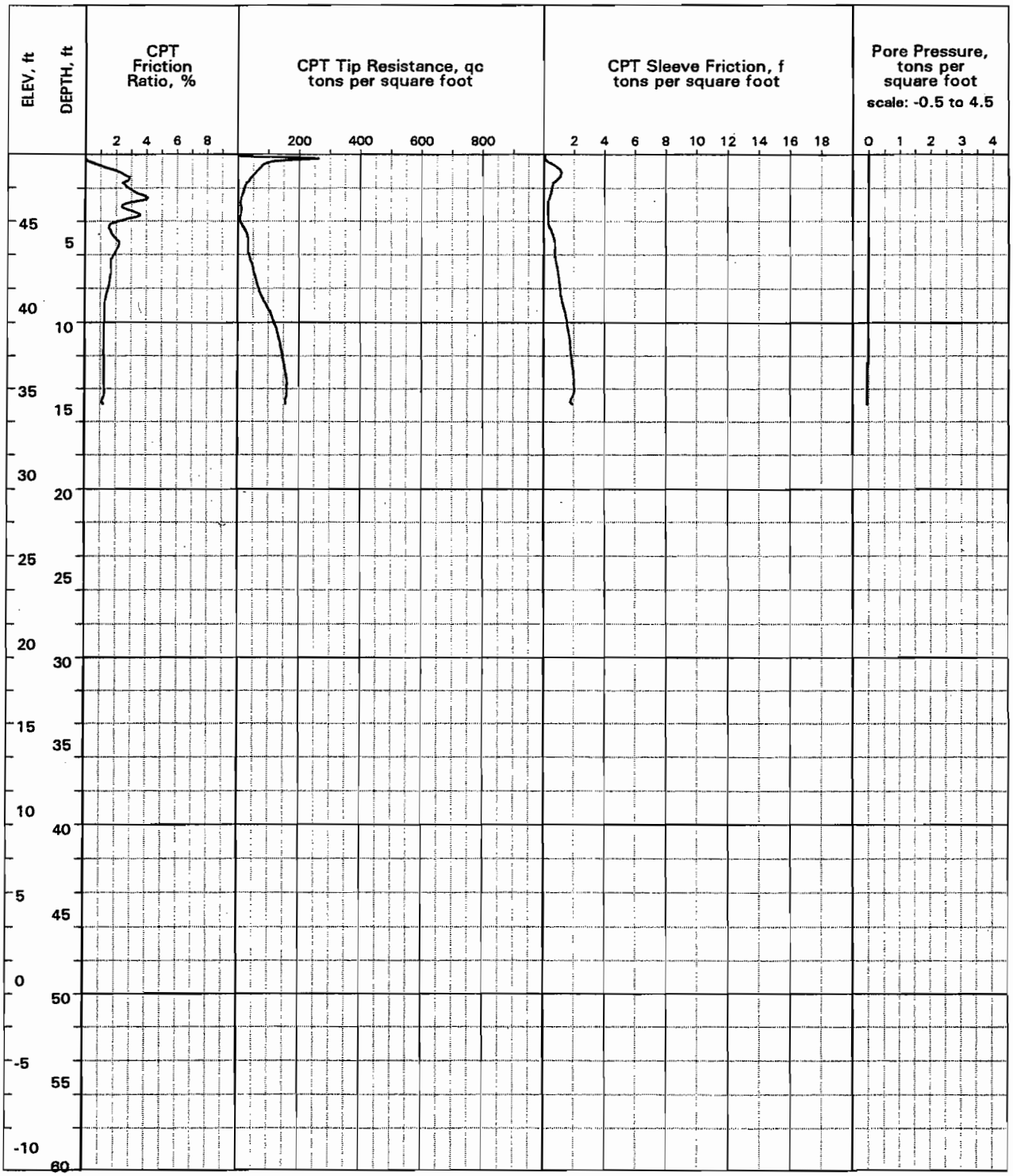
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 23 97

LOG OF CPT NO. CPT149
Los Osos Wastewater Project

CPT W/PP
4/4/97\12:40

PLATE A-82

April 1997
Project No. 95-92-4286



LOCATION: , Southeast corner of Skyline and Broderson intersection
SURFACE EL: 49.5 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 15.0 ft

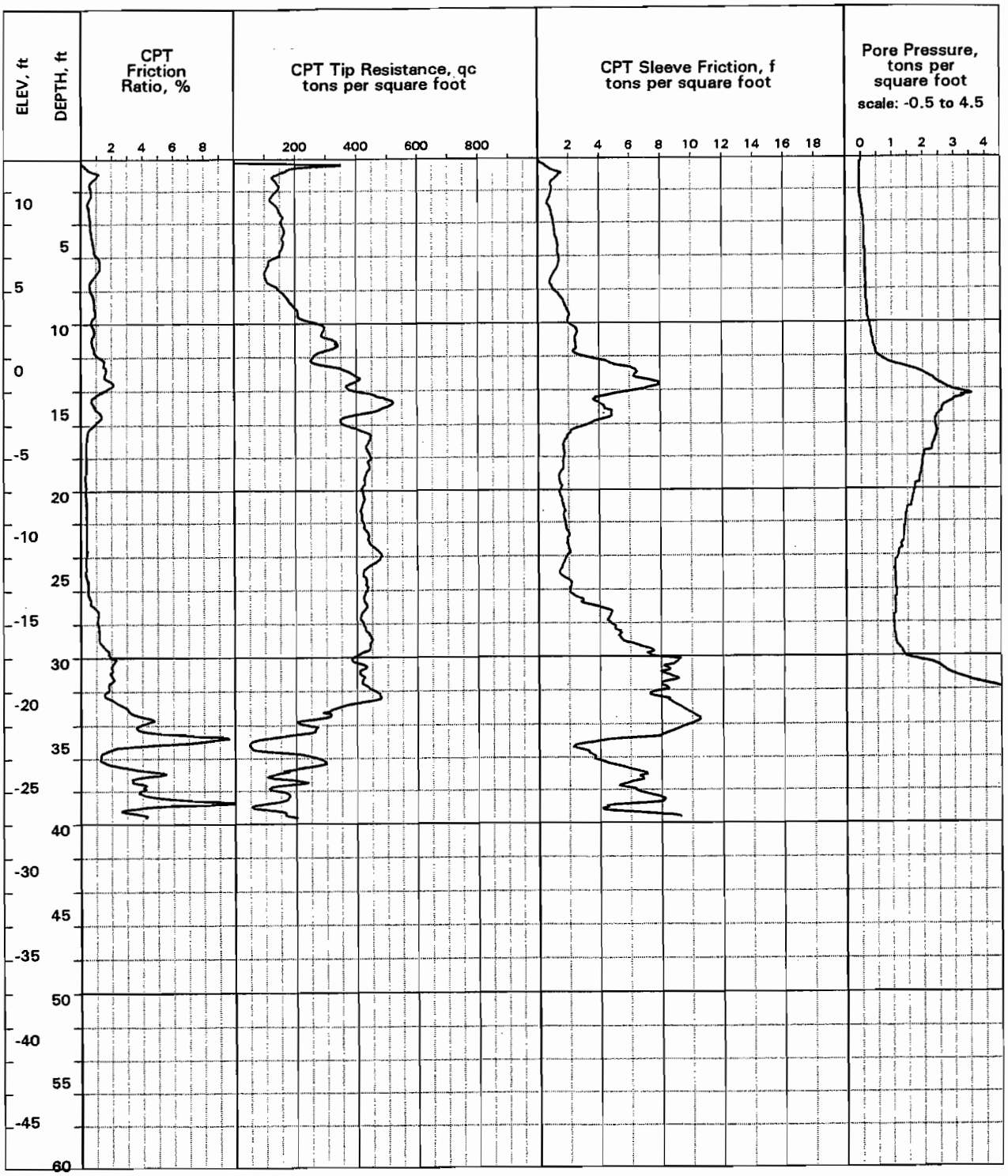
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: JAN 23 97

LOG OF CPT NO. CPT150
Los Osos Wastewater Project

CPT W/PP
4/4/97\14:47

PLATE A-83

April 1997
Project No. 95-92-4286



LOCATION: , East shoulder Solano Street, 50 ft south of Butte Drive
SURFACE EL: 13.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 3 ft
COMPLETION DEPTH: 39.7 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: FEB 6 97

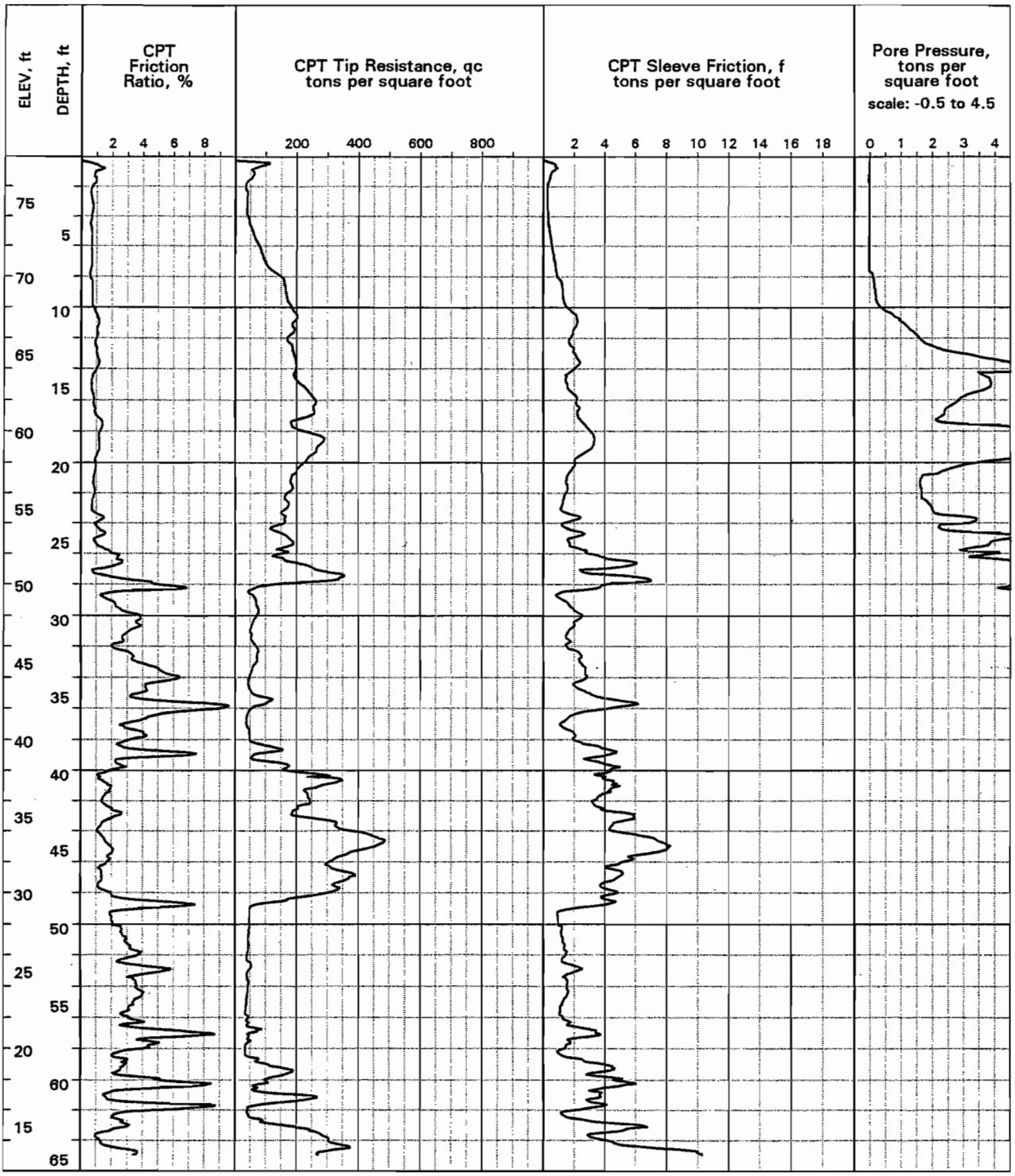
LOG OF CPT NO. CPT151

Los Osos Wastewater Project

PLATE A-84

CPT W/PP
4/4/97\12:40

April 1997
Project No. 95-92-4286



LOCATION: , Parking lot near Pismo Site, 350 feet east of South Bay Blvd. EXPLORATION METHOD: Cone Penetrometer
SURFACE EL: 78.5 ft +/- (rel. MSL datum) PERFORMED BY: Fugro Geosciences
DEPTH TO GROUND WATER: 10 ft EXPLORATION DATE: FEB 6 97
COMPLETION DEPTH: 64.8 ft

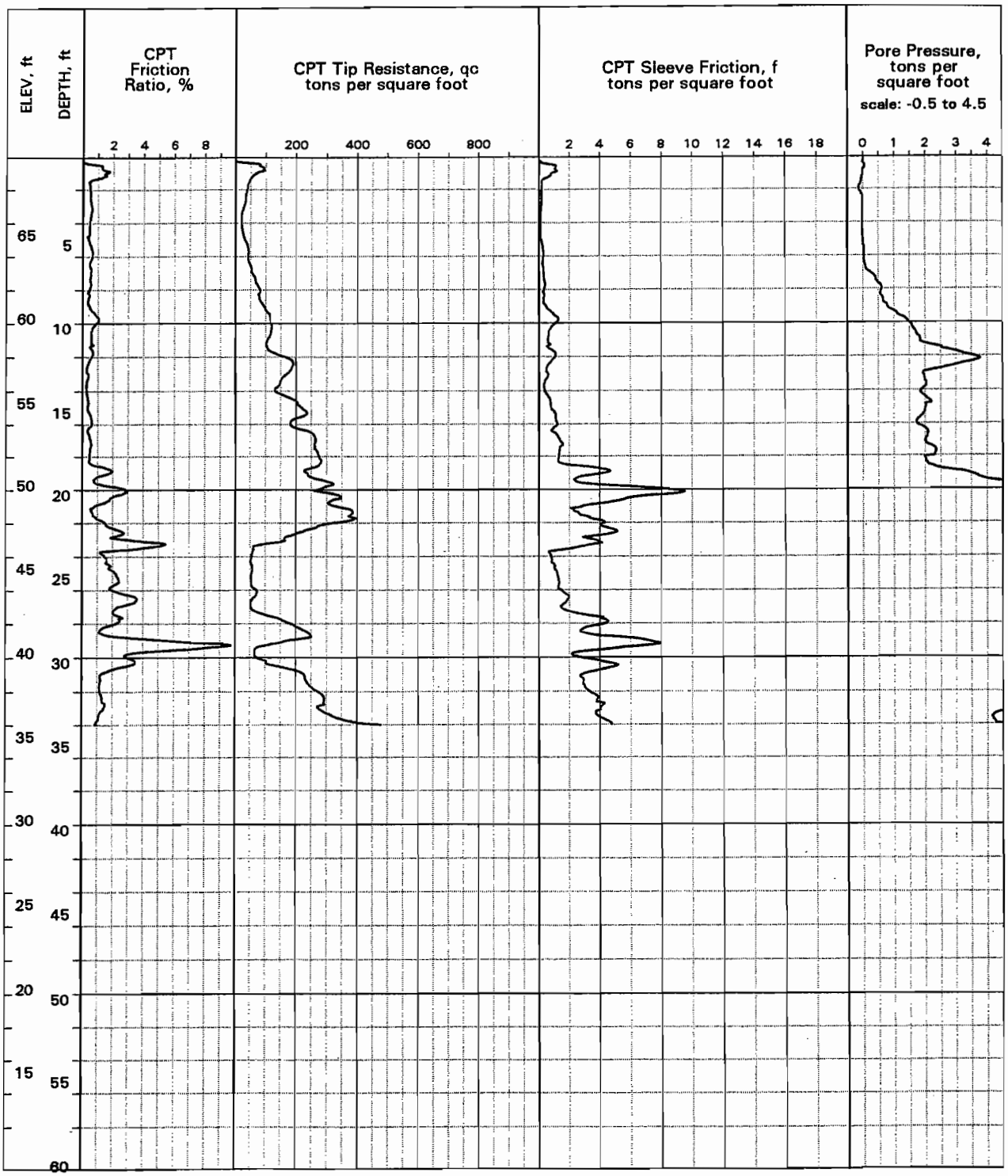
LOG OF CPT NO. CPT301

Los Osos Wastewater Project

CPT W/PP
4/4/97\14:50

PLATE A-85

April 1997
Project No. 95-92-4286



LOCATION: , Parking lot near Pismo Site, 755 feet east of South Bay Blvd.
SURFACE EL: 70.0 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 7 ft
COMPLETION DEPTH: 33.8 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: FEB 6 97

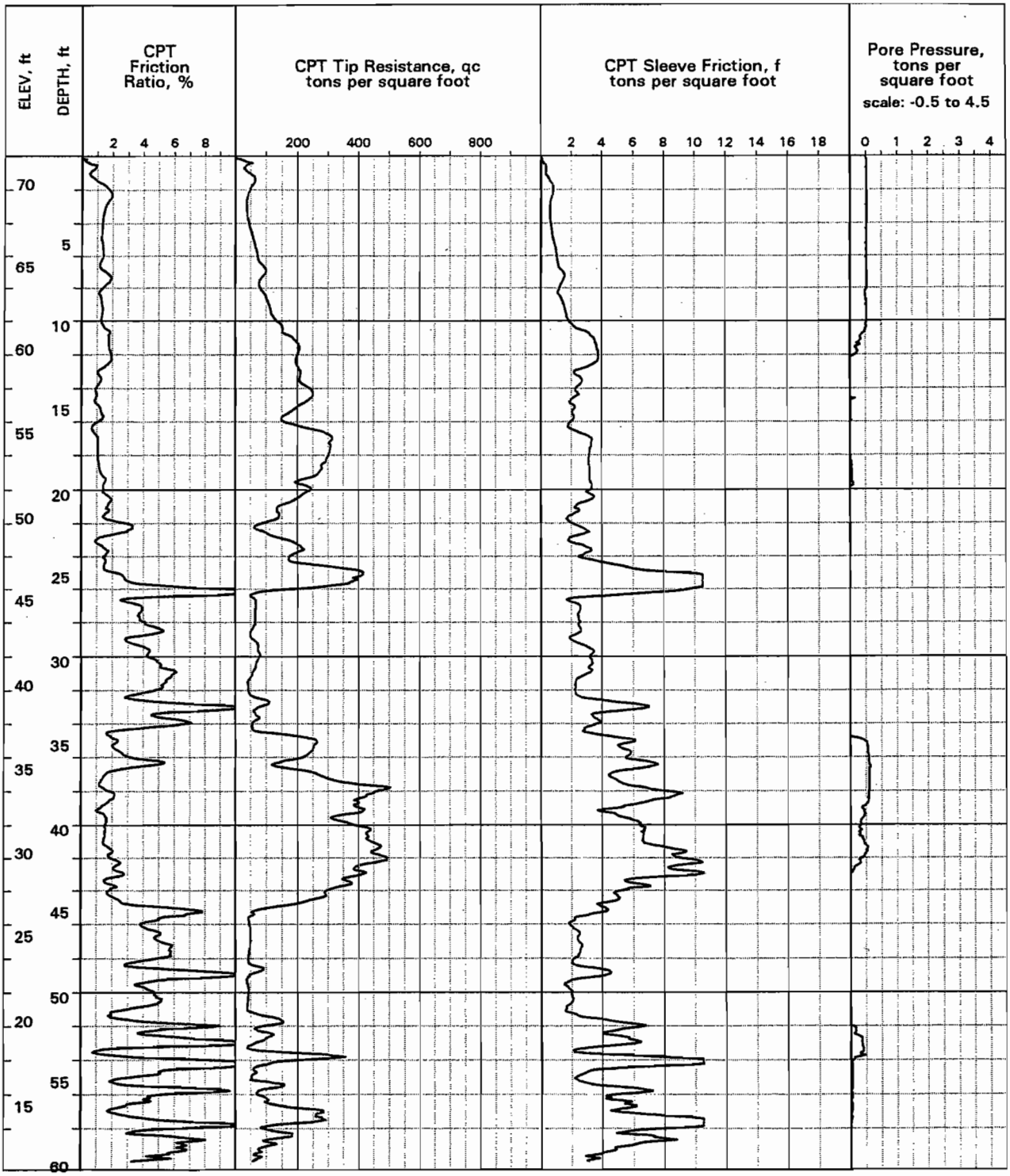
LOG OF CPT NO. CPT302

Los Osos Wastewater Project

PLATE A-86

CPT W/PP
4/4/97\12:42

April 1997
Project No. 95-92-4286



LOCATION: , Parking lot near Pismo Site, 600 feet east of South Bay Blvd. EXPLORATION METHOD: Cone Penetrometer
SURFACE EL: 72.0 ft +/- (rel. MSL datum) PERFORMED BY: Fugro Geosciences
DEPTH TO GROUND WATER: 10 ft EXPLORATION DATE: JAN 22 97
COMPLETION DEPTH: 59.8 ft

LOG OF CPT NO. CPT303

Los Osos Wastewater Project

CPT W/PP
4/4/97\12:42

PLATE A-87

ATTACHMENT C3
TEST PIT LOGS
FUGRO WEST, INC. (1997)

LOCATION: West shoulder of 10th St., 110 ft north of Santa Maria

SURFACE EL: 76 ft +/- (rel. MSL datum)

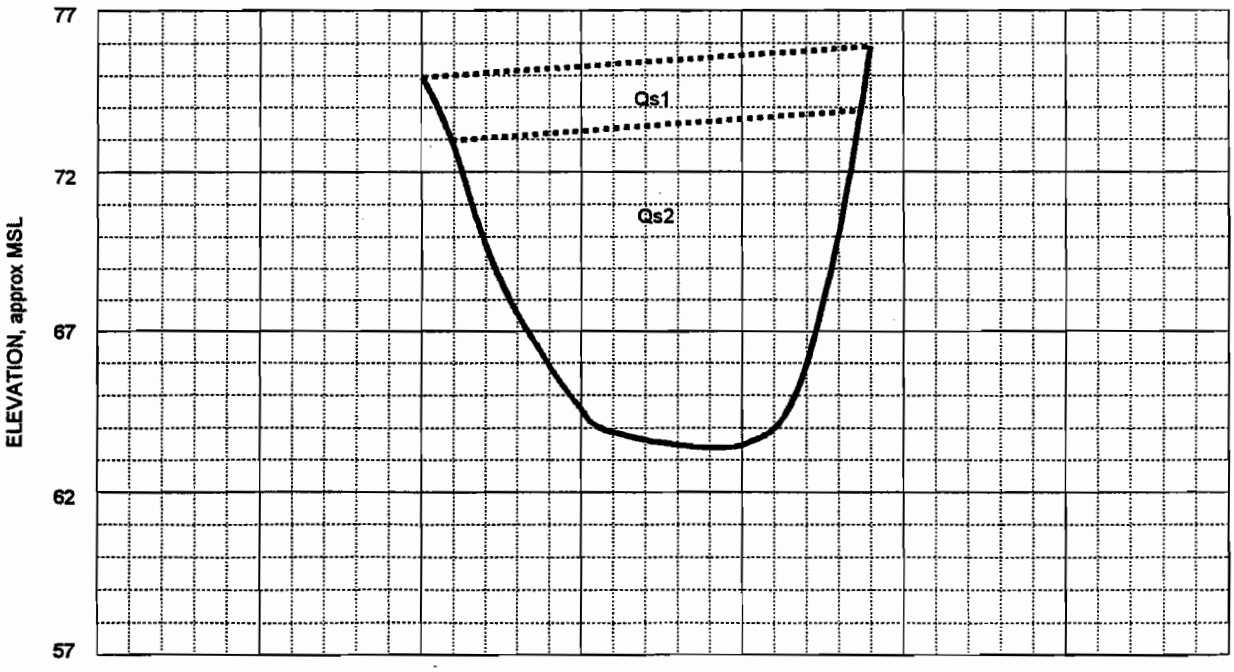
ELEV, ft	DEPTH, ft	GEOLOGIC UNIT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
		Qs1	**Sand Dune Deposits (Qs):** Silty SAND (SM): dark to medium brown, moist				7			
74	2	Qs2	Fine SAND with silt (SP-SM): light orange-brown, moist							
72	4		slight sloughing of sidewalls							
70	6									
68	8									
66	10									
			West wall of trench caved at 11 ft							
64	12		East wall of trench caved at 12.5 ft							
62	14									
60	16									

The log and data presented are a simplification of actual conditions encountered at the time of excavating at the excavated location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 12.5 ft
DEPTH TO WATER: Not Encountered.
EXPLORATION DATE: FEB 6 97

LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

TEST PIT GRAPHICAL REPRESENTATION



LOG OF TEST PIT NO. T-101

Los Osos Wastewater Project

LOCATION: West shoulder of 1st St., 110 ft south of Santa Maria

SURFACE EL: 14 ft +/- (rel. MSL datum)

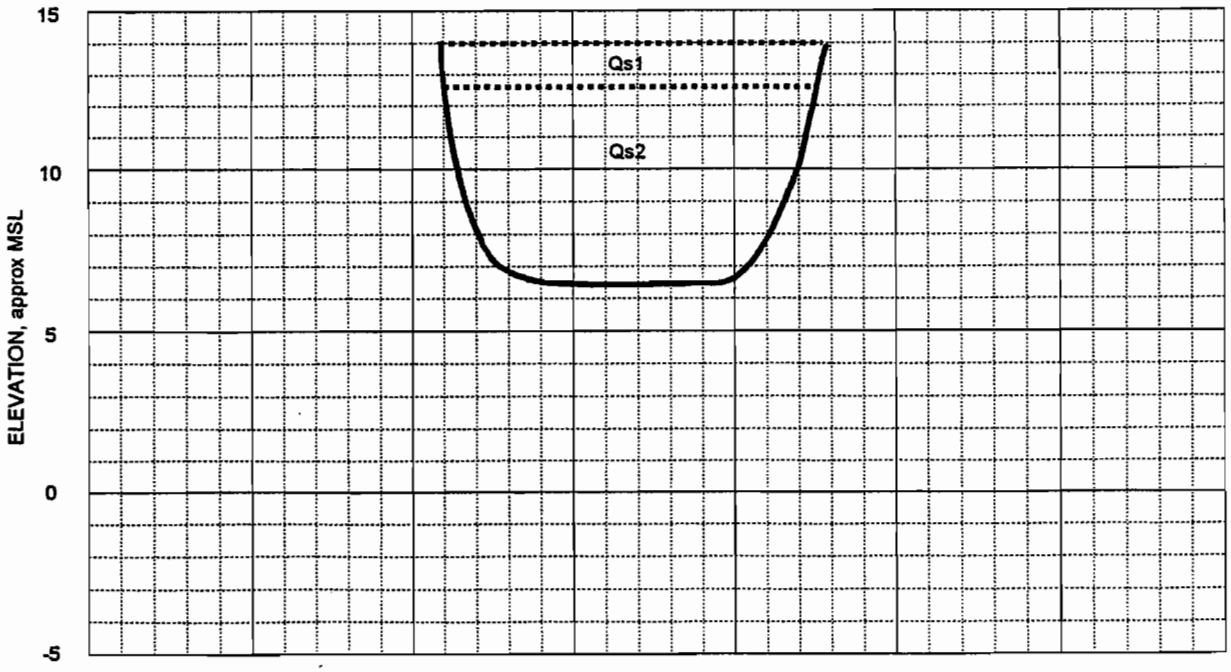
ELEV, ft	DEPTH, ft	GEOLOGIC UNIT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
12	2	Qs1	**Sand Dune Deposits (Qs):**							
		Qs2	Silty SAND (SM): dark brown, moist to dry, roots to 2.5 ft				2			
10	4		Fine SAND (SP): yellowish-brown, moist							
8	6									
			West wall of trench caved at 6.5 ft							
6	8		East wall of trench caved at 7.5 ft							
4	10									
2	12									
0	14									
-2	16									

The log and data presented are a simplification of actual conditions encountered at the time of excavating at the excavated location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 7.5 ft
DEPTH TO WATER: Not Encountered
EXPLORATION DATE: FEB 6 97

LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

TEST PIT GRAPHICAL REPRESENTATION



LOG OF TEST PIT NO. T-102

Los Osos Wastewater Project

PLATE A-89

LOCATION: Dirt path on Pismo Ave., 170 ft east of 4th St.

SURFACE EL: 24 ft +/- (rel. MSL datum)

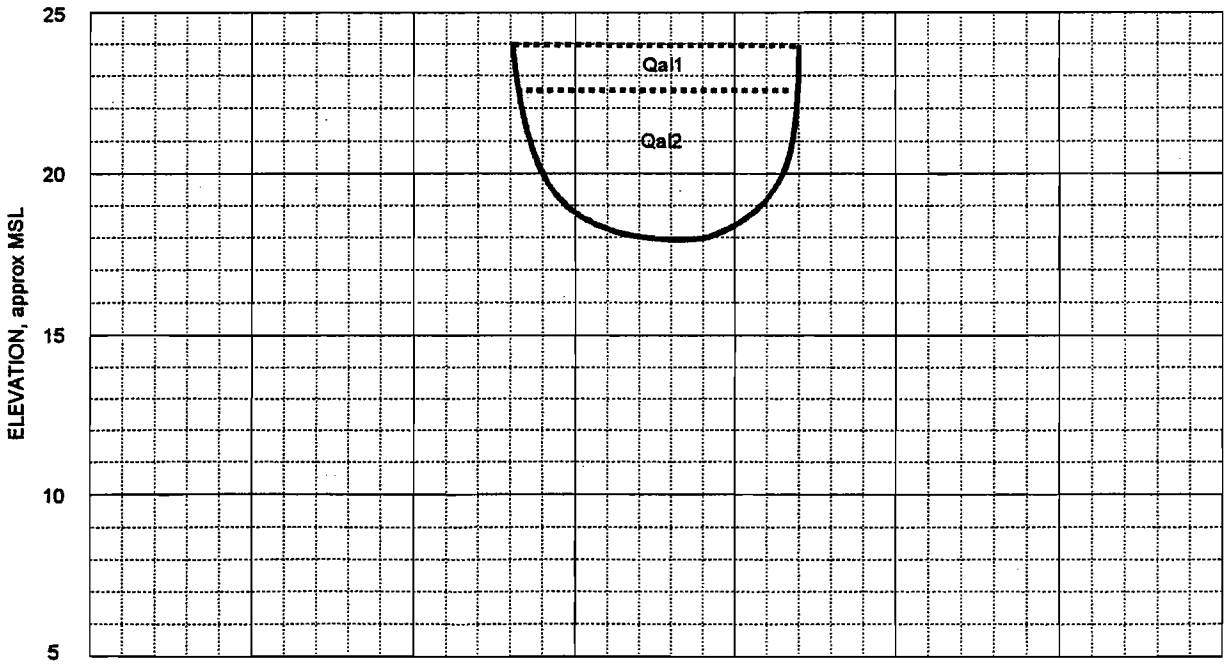
ELEV, ft	DEPTH, ft	GEOLOGIC UNIT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
		Qal1	**Alluvium (Qal):**							
22	2	Qal2	Fine silty SAND (SM): yellowish brown, moist							
20	4		Fine SAND (SP): dark gray to black, wet							
			Trench walls caved heavily below watertable				4			
18	6									
16	8									
14	10									
12	12									
10	14									
8	16									

The log and data presented are a simplification of actual conditions encountered at the time of excavating at the excavated location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 6 ft
DEPTH TO WATER: 4 ft
EXPLORATION DATE: FEB 6 97

LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

TEST PIT GRAPHICAL REPRESENTATION



LOG OF TEST PIT NO. T-103

Los Osos Wastewater Project

LOCATION: West lane of 13th St., 5 ft south of Pismo Ave.

SURFACE EL: 115 ft +/- (rel. MSL datum)

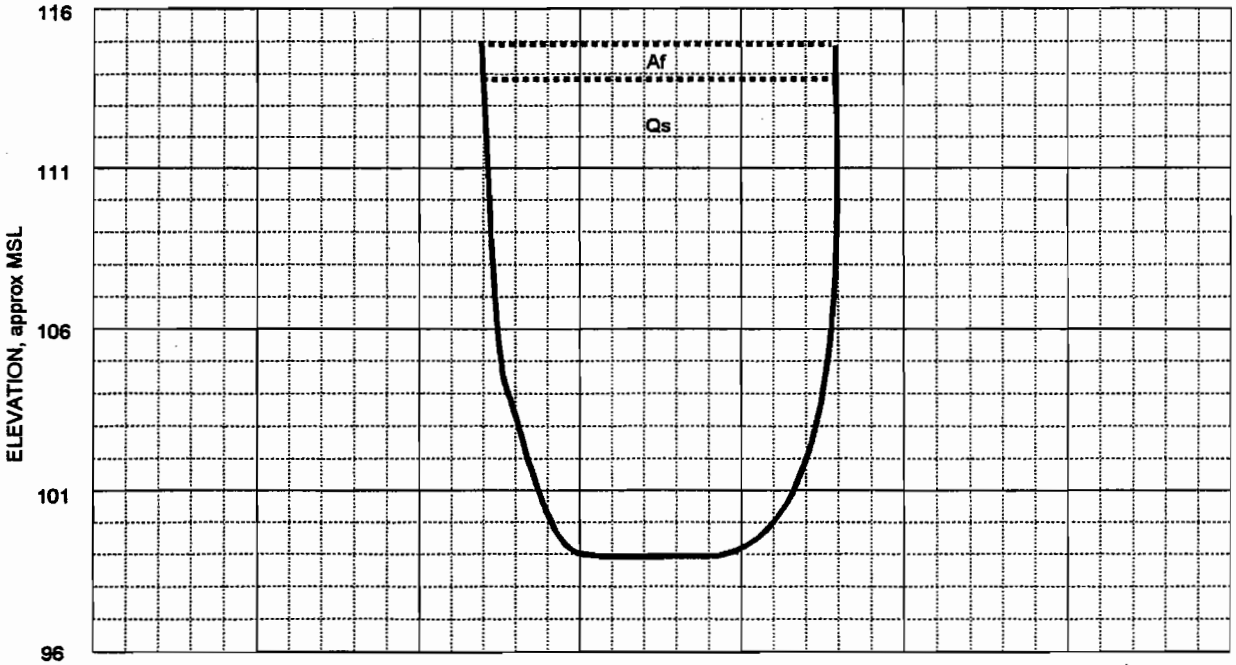
ELEV, ft	DEPTH, ft	GEOLOGIC UNIT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
114		Af	8" Aggregate base							
		Qs	**Sand Dune Deposits (Qs):**							
	2		Fine SAND with silt (SP-SM): dark yellowish-brown, dry							
112										
	4									
110			Grades to SAND (SP): brownish-yellow, moist							
	6									
108										
	8									
106										
	10									
104										
	12						1			
102										
	14									
100										
	16		Wall of trench caved at 16 ft after completing depth of excavation							
98										

The log and data presented are a simplification of actual conditions encountered at the time of excavating at the excavated location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 16 ft
DEPTH TO WATER: Not Encountered
EXPLORATION DATE: FEB 6 97

LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

TEST PIT GRAPHICAL REPRESENTATION



LOG OF TEST PIT NO. T-104

Los Osos Wastewater Project

LOCATION: East lane of Fairchild, 25 ft north of Los Olivos

SURFACE EL: 122 ft +/- (rel. MSL datum)

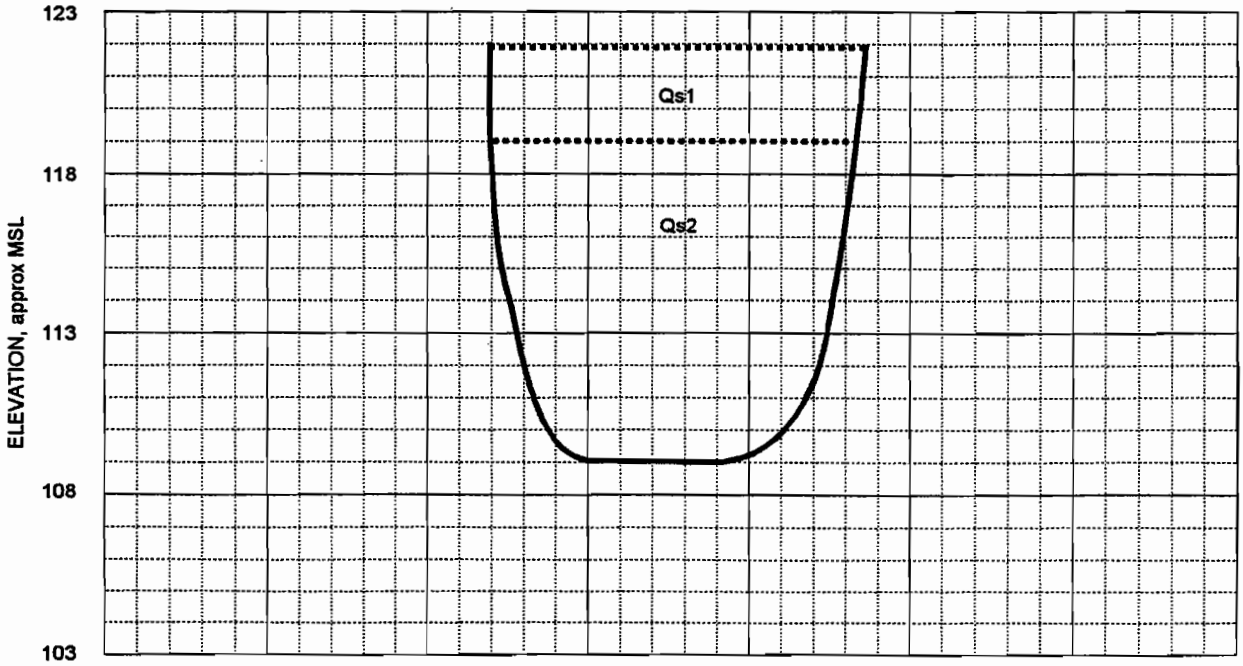
ELEV, ft	DEPTH, ft	GEOLOGIC UNIT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
120	2	Qs1	**Sand Dune Deposits (Qs):** Fine silty SAND (SM): dark brown, moist							
118	4	Qs2	Fine SAND with silt (SP-SM): yellowish brown, moist							
116	6		West wall of trench caved at 6.5 ft							
114	8		Wet at 8 ft East wall of trench caved at 8.5 ft							
112	10		Yellowish-brown to tan, wet, water seepage							
110	12									
108	14									
106	16									

The log and data presented are a simplification of actual conditions encountered at the time of excavating at the excavated location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 13 ft
DEPTH TO WATER: 11 ft
EXPLORATION DATE: FEB 6 97

LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

TEST PIT GRAPHICAL REPRESENTATION



LOG OF TEST PIT NO. T-105

Los Osos Wastewater Project

LOCATION: East lane of Fairchild, 25 ft north of Los Olivos

SURFACE EL: 129 ft +/- (rel. MSL datum)

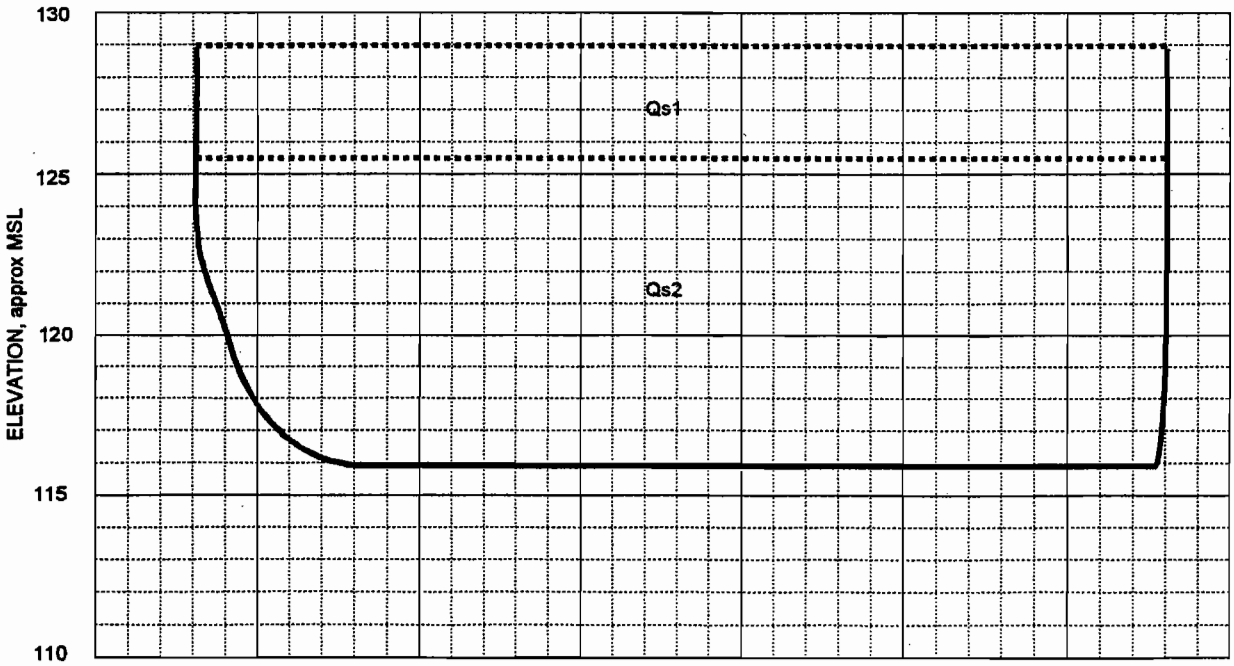
ELEV, ft	DEPTH, ft	GEOLOGIC UNIT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
128		Qs1	**Sand Dune Deposits (Qs):** Fine silty SAND (SM): brown, dry to moist							
	2									
126										
	4	Qs2	SAND with silt (SP-SM): brownish-yellow, moist							
124			East wall caved at 5 ft							
	6									
122			West wall caved at 7 ft							
	8		Iron oxide mottling at 8 ft							
120										
	10		Trench wall caved heavily as lengthened trench							
118										
	12									
116										
	14									
114										
	16									
112										

The log and data presented are a simplification of actual conditions encountered at the time of excavating at the excavated location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 13 ft
DEPTH TO WATER: Not Encountered
EXPLORATION DATE: FEB 7 97

LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

TEST PIT GRAPHICAL REPRESENTATION



LOG OF TEST PIT NO. T-106

Los Osos Wastewater Project

PLATE A-93

LOCATION: North shoulder of Romona, west of 7th St.

SURFACE EL: 89 ft +/- (rel. MSL datum)

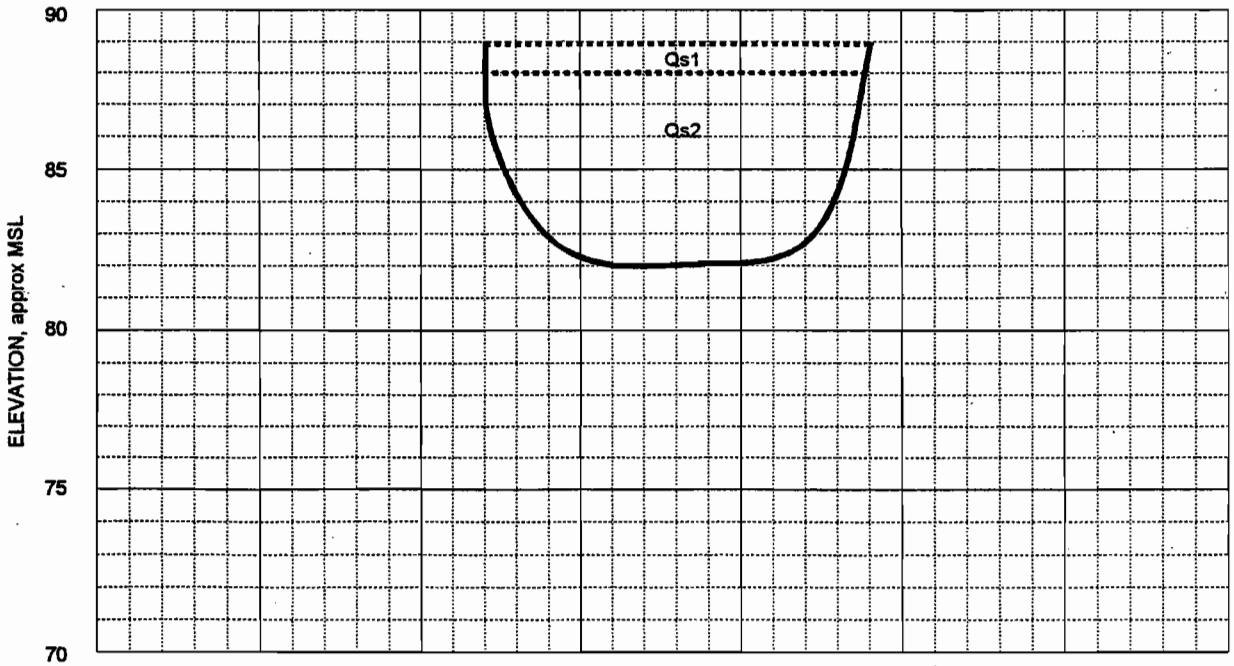
ELEV, ft	DEPTH, ft	GEOLOGIC UNIT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	Su, ksf
88		Qs1	**Sand Dune Deposits (Qs):**							
		Qs2	Silty fine SAND (SM): light brown to tan, dry							
86	2									
			Fine SAND with silt (SP-SM): yellowish-brown, moist							
84	4									
	6									
82			Trench walls caved at 7 ft							
	8									
80										
	10									
78										
	12									
76										
	14									
74										
	16									
72										

The log and data presented are a simplification of actual conditions encountered at the time of excavating at the excavated location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 7 ft
DEPTH TO WATER: Not Encountered
EXPLORATION DATE: FEB 7 97

LOGGED BY: CLLovato
CHECKED BY: JDBlanchard

TEST PIT GRAPHICAL REPRESENTATION



LOG OF TEST PIT NO. T-107

Los Osos Wastewater Project

ATTACHMENT C4
LABORATORY DATA
FUGRO WEST, INC. (1997)

LOCATION / SAMPLE NUMBER / DEPTH,ft	SAMPLE CLASSIFICATION						COMPACTION TEST		DIRECT SHEAR TEST		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				PERMEABILITY (k), x10^{-3}cm/sec	SAND EQUIVALENT (SE)	TEST LISTING
	UWW pcf	UDW pcf	MC %	FINES %	LL,%	PI,%	MAX DD pcf	OPT MC %	C	PHI	Qu,ksf	Su,ksf	R	pH	Cl	SO4			
DH-101 1	SAND (SP)																		T
1.5	112.3	111.5	0.7																
DH-101 2	SAND (SP)						110	9					3393	6.33	9	19	4.7	45	CO, k, P, SE
2.0																			
DH-101 3	SAND (SP)																		S, T
4.5	110.3	109.4	0.8	2															
DH-102 1	SAND (SP)																		T
1.0	110.2	105.1	4.9																
DH-102 2	SAND (SP)						113	10	0.1	31.0							1.8	38	D, k, P, S, SE
2.0				3															
DH-102 4	SAND (SP)																		T
9.5	133.3	113.6	17.3																
DH-102 5	SAND (SP)																	77	SE
14.5																			
DH-102 6	SAND (SP)																		T
19.5	134.5	115.2	16.8																
DH-102 8	SAND (SP)																		T
29.5	132.5	110.2	20.2																
DH-102 9	SAND (SP)																		S
40.0				3															

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvene
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm
pH = pH
Cl = Chloride, ppm
SO4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Density
S = Grain Size Analysis
H = Hydrometer
A = Atterberg Limits
D = Direct Shear Test
C = Consolidation Test
P = Compaction Test
Q = UC Triaxial
U = UU Triaxial
SE = Sand Equivalent
EI = Expansion Index

* = Composite sample

PLATE B-1a

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project

TUGRO

LABSMRY6

LOCATION / SAMPLE NUMBER / DEPTH,ft	SAMPLE CLASSIFICATION						COMPACTION TEST		DIRECT SHEAR TEST		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				PERMEABILITY (k), x10^{-3}cm/sec	SAND EQUIVALENT (SE)	TEST LISTING
	UWW pcf	UDW pcf	MC %	FINES %	LL,%	PI,%	MAX DD pcf	OPT MC %	C	PHI	Qu,ksf	Su,ksf	R	pH	Cl	SO4			
DH-103 1	SAND (SP)								0.1	34.0									D, T
1.5	106.9	105.4	1.4																
DH-103 2	SAND (SP)						112	11									3.7	66	k, P, SE
2.0																			
DH-103 3A	SAND (SP)																		S
5.0				1															
DH-103 3B	SAND (SP)												11979	6.98	7	18			CO, T
11.0	124.7	105.1	18.7	1															
DH-104 1	SAND (SP)																		T
1.5	112.7	110.4	2.1																
DH-104 2	SAND (SP)						111	9									4.8	48	k, P, SE
2.0																			
DH-104 3	SAND (SP)																		S
5.5				1															
DH-104 4	SAND (SP)								0.1	33.0									D, T
9.0	107.2	104.9	2.2																
DH-104 6	SAND (SP)								0.0	36.0									D, T
20.0	110.0	107.0	2.8																
DH-104 7	SAND (SP)												26136	7.50	<0.1	<0.1			CO
25.0																			

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm
pH = pH
Cl = Chloride, ppm
SO4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Density
S = Grain Size Analysis
H = Hydrometer
A = Atterberg Limits
D = Direct Shear Test
C = Consolidation Test
P = Compaction Test
Q = UC Triaxial
U = UU Triaxial
SE = Sand Equivalent
EI = Expansion Index

* = Composite sample

PLATE B-1b

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project

UGRO

LABSMRY6

LOCATION / SAMPLE NUMBER / DEPTH,ft	SAMPLE CLASSIFICATION						COMPACTION TEST		DIRECT SHEAR TEST		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				PERMEABILITY (k), x10^-3cm/sec	SAND EQUIVALENT (SE)	TEST LISTING
	UWW pcf	UDW pcf	MC %	FINES %	LL,%	PI,%	MAX DD pcf	OPT MC %	C	PHI	Qu,ksf	Su,ksf	R	pH	Cl	SO4			
DH-104 8 30.0	SAND (SP)																		
	109.1	106.6	2.4																T
DH-105 1 1.0	SAND (SP)																		
	108.8	105.8	2.8																T
DH-105 2 2.0	SAND (SP)						114	11									1.2	59	
				1															k, P, S, SE
DH-105 3 4.5	SAND (SP)																		
				1															S
DH-105 4 9.5	SAND (SP)								0.2	32.0									
	108.3	105.8	2.4																D, T
DH-105 6 19.5	SAND (SP)																	79	
	111.5	107.8	3.4																SE, T
DH-105 8 30.0	SAND (SP)																		
	110.8	107.4	3.2																T
DH-106 1 1.0	Clayey SAND with gravel (SC)																		
	135.5	122.0	11.1																T
DH-106 2 2.0	Clayey SAND with gravel (SC)																		
				24	30	10													A, S, R-VALUE = 19
DH-106 3A 4.5	SAND (SP)																		
				2															S

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm
pH = pH
Cl = Chloride, ppm
SO4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Density
S = Grain Size Analysis
H = Hydrometer
A = Atterberg Limits
D = Direct Shear Test
C = Consolidation Test
P = Compaction Test
Q = UC Triaxial
U = UU Triaxial
SE = Sand Equivalent
EI = Expansion Index

* = Composite sample

PLATE B-1c

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project

FUGRO

LOCATION / SAMPLE NUMBER / DEPTH,ft	SAMPLE CLASSIFICATION: UWW pcf	UDW pcf	MC %	FINES %	LL,%	PI,%	COMPACTION TEST: MAX DD pcf	OPT MC %	DIRECT SHEAR TEST: C	PHI	COMPRESSIVE STRENGTH TESTS: Qu,ksf	Su,ksf	CORROSIVITY TESTS: R	pH	Cl	SO4	PERMEABILITY (k), x10^-3cm/sec	SAND EQUIVALENT (SE)	TEST LISTING
DH-106 3B	SAND (SP)								0.2	36.0									D, T
9.5	115.3	110.1	4.7																
DH-106 4	SAND (SP)																		S
14.5				3															
DH-106 5	SAND (SP)																		T
19.5	115.1	110.4	4.3																
DH-106 7	SAND (SP)																		T
29.5	110.9	106.3	4.3																
DH-107 1	SAND (SP)																		T
1.0	111.9	108.6	3.0																
DH-107 2	SAND (SP)																	42	SE
2.0																			
DH-107 3	SAND (SP)																		S
4.5				2															
DH-107 4	SAND (SP)								0.1	39.0									D, T
9.5	130.5	112.1	16.4																
DH-107 7	SAND (SP)																		T
29.5	126.7	103.0	23.0																
DH-108 1	SAND (SP)								0.1	35.0									D, T
0.5	104.5	100.2	4.3																

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm
pH = pH
Cl = Chloride, ppm
SO4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Density
S = Grain Size Analysis
H = Hydrometer
A = Atterberg Limits
D = Direct Shear Test
C = Consolidation Test
P = Compaction Test
Q = UC Triaxial
U = UU Triaxial
SE = Sand Equivalent
EI = Expansion Index

* = Composite sample

PLATE B-1d

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project

FUGRO

TABSMRY6

LOCATION / SAMPLE NUMBER / DEPTH,ft	SAMPLE CLASSIFICATION						COMPACTION TEST		DIRECT SHEAR TEST		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				PERMEABILITY (k), x10^-3cm/sec	SAND EQUIVALENT (SE)	TEST LISTING
		UWW pcf	UDW pcf	MC %	FINES %	LL,%	PI,%	MAX DD pcf	OPT MC %	C	PHI	Qu,ksf	Su,ksf	R	pH	Cl	SO4			
DH-108 2	SAND (SP)													26136	5.56	7	69			CO, S, T
4.5		108.5	103.1	5.2	1															
DH-108 3	SAND (SP)																		75	SE
9.5																				
DH-109 1	SAND (SP)									0.2	34.0									D, T
1.0		109.1	105.1	3.8																
DH-109 2	SAND (SP)							113	11	0.1	33.0							5.5	39	D, k, P, S, SE,
2.0					3															
DH-109 4	SAND (SP)													11979	6.89	9	18			CO
10.0																				
DH-110 1	SAND with gravel (SP)																			T
1.0		132.1	118.4	11.6																
DH-110 2	SAND with gravel (SP)							120	10	0.1	33.0									D, P
2.0																				
DH-110 3	SAND with silt (SP-SM)																			S
4.5					5															
DH-110 5	SAND (SP)																			T
19.5		137.5	117.8	16.8																
DH-110 8	SAND with silt (SP-SM)																			T
39.5		133.5	113.6	17.5																

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm
pH = pH
Cl = Chloride, ppm
SO4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Density
S = Grain Size Analysis
H = Hydrometer
A = Atterberg Limits
D = Direct Shear Test
C = Consolidation Test
P = Compaction Test
Q = UC Triaxial
U = UU Triaxial
SE = Sand Equivalent
EI = Expansion Index

" = Composite sample

PLATE B-1e

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project

FUGRO

LOCATION / SAMPLE NUMBER / DEPTH,ft	SAMPLE CLASSIFICATION						COMPACTION TEST		DIRECT SHEAR TEST		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				PERMEABILITY (k), x10^{-3}cm/sec	SAND EQUIVALENT (SE)	TEST LISTING
	UWW pcf	UDW pcf	MC %	FINES %	LL, %	PI, %	MAX DD pcf	OPT MC %	C	PHI	Qu, ksf	Su, ksf	R	pH	Cl	SO4			
DH-111 1	SAND (SP)																		
1.5	111.1	108.1	2.8																T
DH-111 2	SAND (SP)						110	12					27951	7.82	<1.0	<10	6.5	70	CO, k, P, S, SE
2.0				1															
DH-111 3	SAND (SP)								0.1	35.0									D, T
4.5	110.5	108.1	2.2																
DH-111 4	SAND (SP)																	78	SE
9.5																			
DH-111 5	SAND (SP)																		T
14.5	111.2	106.5	4.4																
DH-112 1	SAND with silt (SP-SM)								0.7	30.0									D, T
1.5	138.5	126.2	9.8																
DH-112 2	Sandy SILT with gravel (ML)																	20	SE, R-VALUE = 35
2.0																			
DH-112 3	SAND (SP)																		S
5.0				2															
DH-112 4	SAND (SP)												9801	5.50	19	14			CO, T
9.0	110.4	105.4	4.7	2															
DH-113 1	Silty SAND (SM)								0.1	34.0									D, T
1.0	107.2	104.9	2.2																

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm
pH = pH
Cl = Chloride, ppm
SO4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Density
S = Grain Size Analysis
H = Hydrometer
A = Atterberg Limits
D = Direct Shear Test
C = Consolidation Test
P = Compaction Test
Q = UC Triaxial
U = UU Triaxial
SE = Sand Equivalent
EI = Expansion Index

* = Composite sample

PLATE B-1f

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project

TUGRO

LOCATION / SAMPLE NUMBER	DEPTH, ft	SAMPLE CLASSIFICATION	UWW pcf	UDW pcf	MC %	FINES %	LL, %	PI, %	COMPACTION TEST MAX DD pcf	COMPACTION TEST OPT MC %	DIRECT SHEAR TEST C	DIRECT SHEAR TEST PHI	COMPRESSIVE STRENGTH TESTS Qu, ksf	COMPRESSIVE STRENGTH TESTS Su, ksf	CORROSIVITY TESTS R	CORROSIVITY TESTS pH	CORROSIVITY TESTS Cl	CORROSIVITY TESTS SO4	PERMEABILITY (k), x10^-3cm/sec	SAND EQUIVALENT (SE)	TEST LISTING
DH-113	2	SAND (SP)							109	11					7986	6.50	8	16	4.0	56	CO, k, P, S, SE
	2.0					2															
DH-113	3	Clayey SAND (SC)																			S
	9.0					17															
DH-114	1	SAND (SP)																			T
	1.0		111.5	106.7	4.5																
DH-114	2	SAND (SP)																		41	SE, R-VALUE = 61
	2.0																				
DH-114	4	SAND (SP)									0.0	39.0									D, T
	9.5		108.0	102.6	5.3																
DH-114	7	SAND (SP)																			T
	29.5		132.2	112.3	17.7																
DH-114	9	Lean CLAY with pockets of SAND (CL)																			T
	39.5		135.4	112.9	19.9																
DH-115	1	Silty SAND (SM)									0.0	39.0									D, T
	1.0		105.6	102.4	3.1																
DH-115	2	Silty SAND (SM)							118	10					3230	5.71	347	46	0.2	24	CO, k, P, SE
	2.0																				
DH-115	3	Silty SAND (SM)																			S
	4.5					13															

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm
pH = pH
Cl = Chloride, ppm
SO4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Density
S = Grain Size Analysis
H = Hydrometer
A = Atterberg Limits
D = Direct Shear Test
C = Consolidation Test
P = Compaction Test
Q = UC Triaxial
U = UU Triaxial
SE = Sand Equivalent
EI = Expansion Index

* = Composite sample

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project

PLATE B-1g

UGRO

LOCATION / SAMPLE NUMBER / DEPTH,ft	SAMPLE CLASSIFICATION	UWW pcf	UDW pcf	MC %	FINES %	LL,%	PI,%	COMPACTION TEST MAX DD pcf	COMPACTION TEST OPT MC %	DIRECT SHEAR TEST C	DIRECT SHEAR TEST PHI	COMPRESSIVE STRENGTH TESTS Qu,ksf	COMPRESSIVE STRENGTH TESTS Su,ksf	CORROSIVITY TESTS R	CORROSIVITY TESTS pH	CORROSIVITY TESTS Cl	CORROSIVITY TESTS SO4	PERMEABILITY (k), x10^{-3}cm/sec	SAND EQUIVALENT (SE)	TEST LISTING
DH-115 4	Silty SAND (SM)																			
9.5		113.6	108.6	4.6																T
DH-116 1	SAND (SP)							109	12	0.1	31.0								36	D, P, SE
2.0																				
DH-116 2	SAND (SP)																			S
4.5					4															
DH-117 1	SAND (SP)																			T
0.5		109.8	103.0	6.6																
DH-117 2	SAND (SP)							108	13	0.1	32.0							1.6		D, k, P
2.0																				
DH-117 3	SAND (SP)																		40	S, SE
4.5					2															
DH-117 4	SAND (SP)																			T
9.5		133.8	114.1	17.3																
DH-117 5	SAND with silt (SP-SM)																			S
14.5					11															
DH-117 7	SAND (SP)																			T
19.5		130.0	106.8	21.7																
DH-117 9	SAND (SP)																			T
29.5		130.2	108.9	19.6																

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm
pH = pH
Cl = Chloride, ppm
SO4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Density
S = Grain Size Analysis
H = Hydrometer
A = Atterberg Limits
D = Direct Shear Test
C = Consolidation Test
P = Compaction Test
Q = UC Triaxial
U = UU Triaxial
SE = Sand Equivalent
EI = Expansion Index

* = Composite sample

PLATE B-1h

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project

LABSMRY6

LOCATION / SAMPLE NUMBER / DEPTH,ft	SAMPLE CLASSIFICATION	UWW pcf	UDW pcf	MC %	FINES %	LL, %	PI, %	COMPACTION TEST MAX DD pcf	COMPACTION TEST OPT MC %	DIRECT SHEAR TEST C	DIRECT SHEAR TEST PHI	COMPRESSIVE STRENGTH TESTS Qu,ksf	COMPRESSIVE STRENGTH TESTS Su,ksf	CORROSIVITY TESTS R	CORROSIVITY TESTS pH	CORROSIVITY TESTS Cl	CORROSIVITY TESTS SO4	PERMEABILITY (k), x10^{-3}cm/sec	SAND EQUIVALENT (SE)	TEST LISTING
DH-201 1	SAND with silt (SP-SM)																			
2.0		104.7	99.9	4.8																T
DH-201 2	SAND with silt (SP-SM)							102	12	0.0	33.0							2.6		D, k, P
4.0																				
DH-201 3	SAND with silt (SP-SM)																			
5.0		109.0	103.2	5.6																C, T
DH-201 5	SAND with silt (SP-SM)									0.2	34.0									D, T
15.0		113.4	105.3	7.7																
DH-201 6	SAND with silt (SP-SM)																			S
20.0					6															
DH-201 7	SAND with silt (SP-SM)																			T
25.0		120.0	109.7	9.4																
DH-201 9	SAND with silt (SP-SM)																	1.8		k, T
35.0		110.7	104.0	6.4																
DH-202 1	SAND (SP)																			T
2.0		107.3	101.6	5.6																
DH-202 3	SAND (SP)									0.2	35.0									D, T
5.0		109.0	103.7	5.1																
DH-202 5	SAND (SP)																	3.3		k, T
15.0		112.1	103.2	8.6																

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm
pH = pH
Cl = Chloride, ppm
SO4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Density
S = Grain Size Analysis
H = Hydrometer
A = Atterberg Limits
D = Direct Shear Test
C = Consolidation Test
P = Compaction Test
Q = UC Triaxial
U = UU Triaxial
SE = Sand Equivalent
EI = Expansion Index

* = Composite sample

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project

April 1997
Project No. 95-92-4286

PLATE B-1i

UGRO

LABSMRY6

LOCATION / SAMPLE NUMBER / DEPTH,ft	SAMPLE CLASSIFICATION						COMPACTION TEST		DIRECT SHEAR TEST		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				PERMEABILITY (k), x10^-3cm/sec	SAND EQUIVALENT (SE)	TEST LISTING
	UWW pcf	UDW pcf	MC %	FINES %	LL,%	PI,%	MAX DD pcf	OPT MC %	C	PHI	Qu,ksf	Su,ksf	R	pH	Cl	SO4			
DH-202 7	SAND (SP)																		
25.0	113.8	104.4	9.0																T
DH-202 8	SAND (SP)																		
30.0				1															S
DH-202 9	SAND (SP)																		
35.0	108.8	103.9	4.7																T
DH-202 10	SAND (SP)																		
40.0				1															S
DH-203 1	Silty SAND (SM)																		
2.0	106.4	101.9	4.4																T
DH-203 2	Silty SAND (SM)						103	13	0.4	34.0							1.2		D, k, P
3.0																			
DH-203 3	SAND with silt (SP-SM)																		
5.0	107.5	102.9	4.5																T
DH-203 5	SAND with silt (SP-SM)																		
15.0	116.3	103.7	12.1																T
DH-203 7	SAND (SP)																		
25.0	114.3	107.7	6.1																T
DH-203 9	SAND (SP)																		
35.0	113.6	107.4	5.8																T

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Direct Shear Test
C = Assigned Coheeion, ksf
PHI = Assigned Friction Angle, degrees

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm
pH = pH
Cl = Chloride, ppm
SO4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Density
S = Grain Size Analysis
H = Hydrometer
A = Atterberg Limits
D = Direct Shear Test
C = Consolidation Test
P = Compaction Test
Q = UC Triaxial
U = UU Triaxial
SE = Sand Equivalent
EI = Expansion Index

* = Composite sample

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project

PLATE B-1j

LABSMRY8

LOCATION / SAMPLE NUMBER / DEPTH,ft	SAMPLE CLASSIFICATION						COMPACTION TEST		DIRECT SHEAR TEST		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				PERMEABILITY (k), x10^-3cm/sec	SAND EQUIVALENT (SE)	TEST LISTING
		UWW pcf	UDW pcf	MC %	FINES %	LL,%	PI,%	MAX DD pcf	OPT MC %	C	PHI	Qu,ksf	Su,ksf	R	pH	Cl	SO4			
DH-204 1	Silty SAND (SP-SM)																			
1.5		96.7	94.2	2.7																T
DH-204 3	Silty SAND (SP-SM)																			
5.0		99.5	97.4	2.2																T
DH-204 5	Silty SAND (SP-SM)																			
15.0		107.2	103.5	3.6																C, T
DH-301 1	SAND (SP)									0.0	38.0									
1.5		109.0	102.4	6.4																D, T,
DH-301 2	SAND (SP)							101	12	0.2	32.0			79860	5.39	<0.5	<0.5		79	D, CO, P, SE
3.0																				
DH-301 3	SAND (SP)																			
5.0		108.5	104.1	4.2	2															C, S, T,
DH-301 5	SAND (SP)																			
15.0		110.9	104.6	6.0																C, T
DH-301 7	SAND with silt (SP-SM)																			
25.0		131.7	109.9	19.8																T
DH-301 9	SAND (SP)									0.1	37.0									
35.0		128.2	104.7	22.4	1															D, S, T
DH-301 10	Lean CLAY (CL)																			
40.0				20.2		49	21													A, M

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm
pH = pH
Cl = Chloride, ppm
SO4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Density
S = Grain Size Analysis
H = Hydrometer
A = Atterberg Limits
D = Direct Shear Test
C = Consolidation Test
P = Compaction Test
Q = UC Triaxial
U = UU Triaxial
SE = Sand Equivalent
EI = Expansion Index

* = Composite sample

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project

April 1997
Project No. 95-92-4286

PLATE B-1k

FUGRO

LABSUM78

LOCATION / SAMPLE NUMBER / DEPTH,ft	SAMPLE CLASSIFICATION						COMPACTION TEST		DIRECT SHEAR TEST		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				PERMEABILITY (k), x10^{-3}cm/sec	SAND EQUIVALENT (SE)	TEST LISTING
	UWW pcf	UDW pcf	MC %	FINES %	LL,%	PI,%	MAX DD pcf	OPT MC %	C	PHI	Qu,ksf	Su,ksf	R	pH	Cl	SO4			
DH-301	SAND (SP)																		
11																			T
45.0	133.7	118.7	12.6																
T-101	SAND with silt (SP-SM)																		
A																			S
1.5				7															
T-102	SAND (SP)																		
C																			S
1.5				2															
T-103	SAND (SP)																		
E																			S
5.5				4															
T-104	SAND (SP)																		
F																		78	S, SE
12.0				1															

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm
pH = pH
Cl = Chloride, ppm
SO4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Density
S = Grain Size Analysis
H = Hydrometer
A = Atterberg Limits
D = Direct Shear Test
C = Consolidation Test
P = Compaction Test
Q = UC Triaxial
U = UU Triaxial
SE = Sand Equivalent
EI = Expansion Index

* = Composite sample

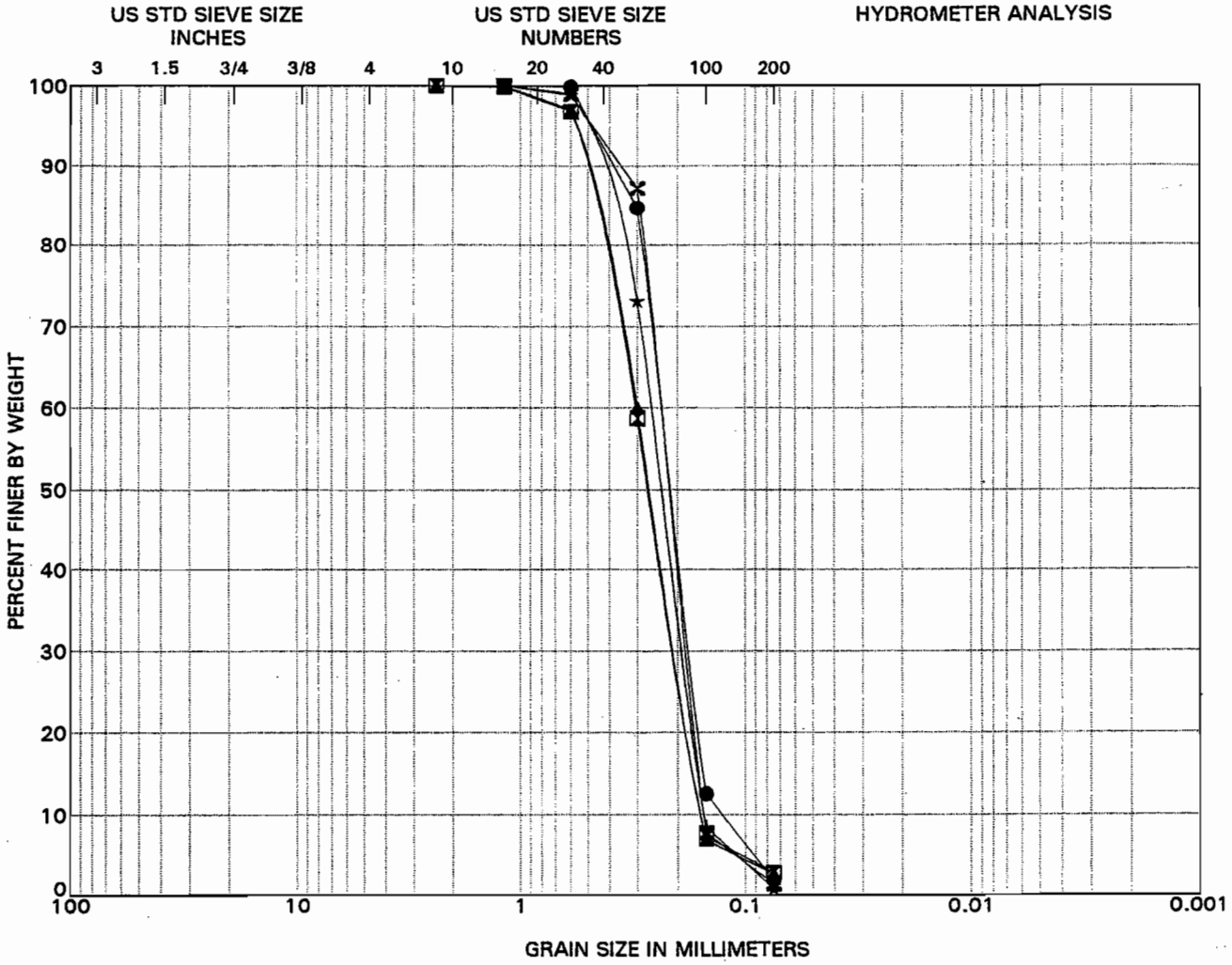
SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project

April 1997
Project No. 95-92-4286

FUGRO

PLATE B-11

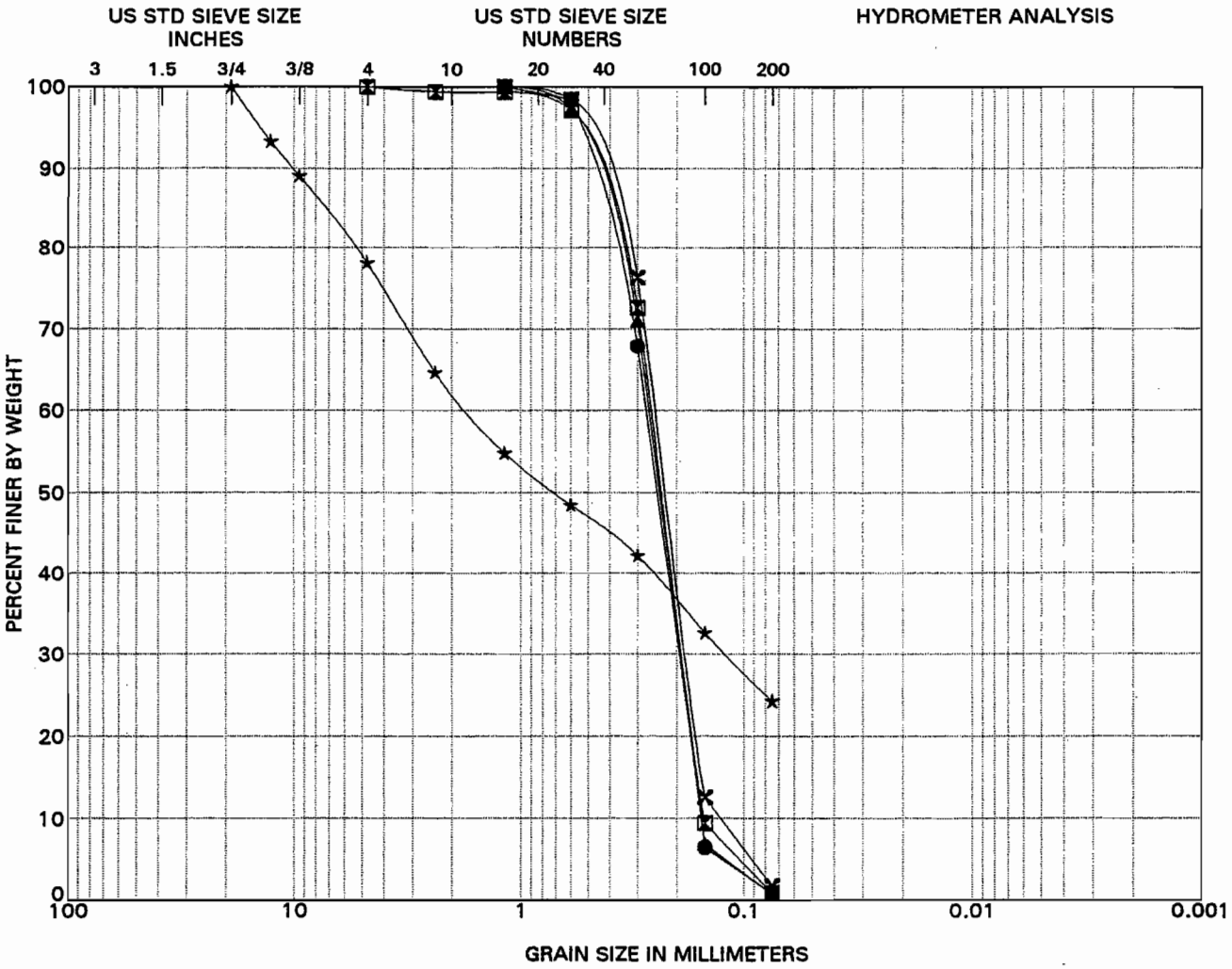


GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

LEGEND	(location)	(depth, ft)	CLASSIFICATION	Cc	Cu
●	DH-101	4.5	SAND (SP)	1.0	1.9
⊠	DH-102	2.0	SAND (SP)	0.9	2.0
▲	DH-102	40.0	SAND (SP)	0.9	1.9
★	DH-103	5.0	SAND (SP)	0.9	1.7
✕	DH-103	11.0	SAND (SP)	0.9	1.5

GRAIN SIZE CURVES
Los Osos Wastewater Project

PLATE B-2a

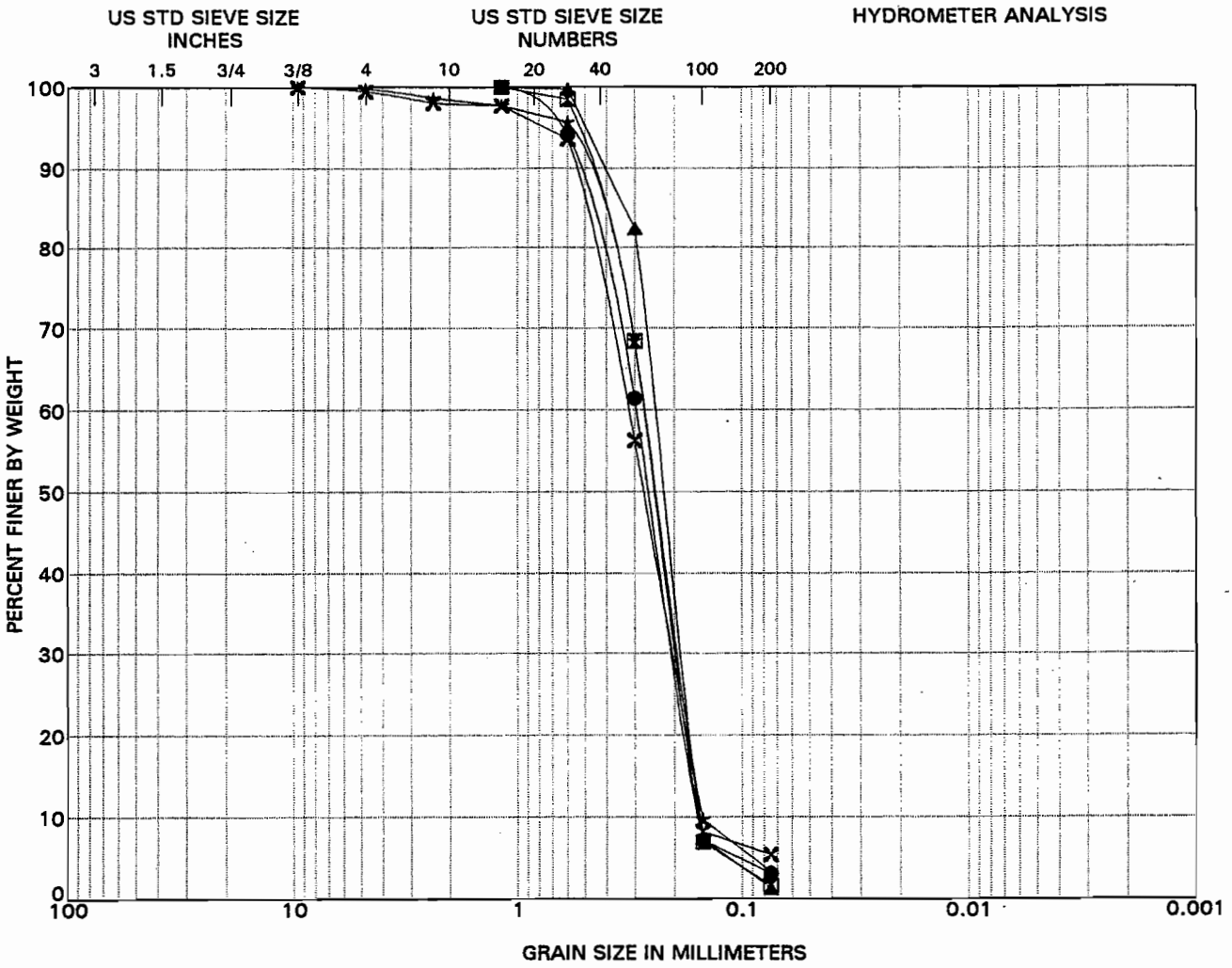


GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

LEGEND	(location)	(depth,ft)	CLASSIFICATION	Cc	Cu
●	DH-104	5.5	SAND (SP)	0.9	1.8
⊠	DH-105	2.0	SAND (SP)	0.9	1.7
▲	DH-105	4.5	SAND (SP)	0.9	1.7
★	DH-106	2.0	Clayey SAND with gravel (SC)		
✕	DH-106	4.5	SAND (SP)	1.0	2.0

GRAIN SIZE CURVES
Los Osos Wastewater Project

PLATE B-2b

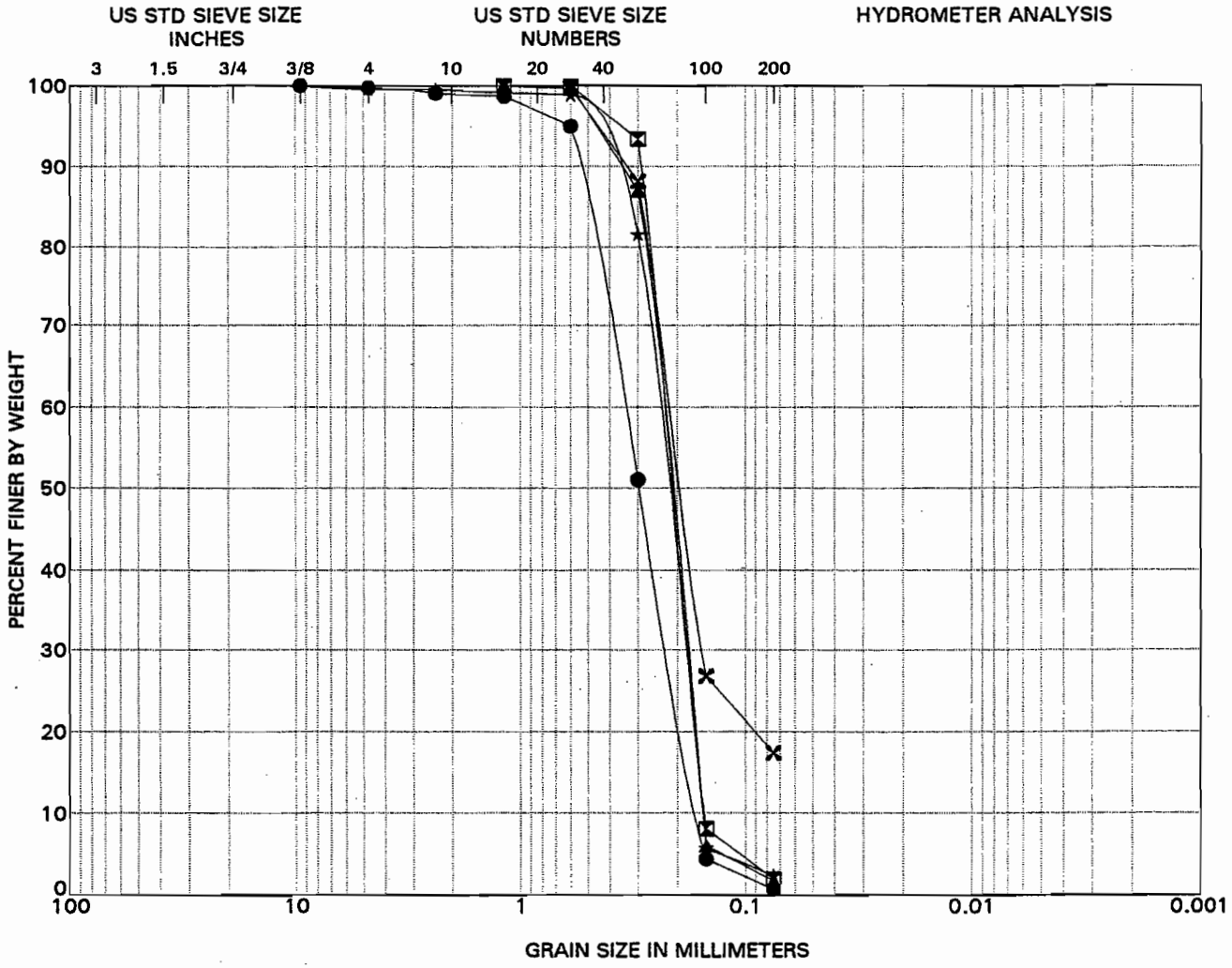


GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

LEGEND	(location)	(depth, ft)	CLASSIFICATION	Cc	Cu
●	DH-106	14.5	SAND (SP)	0.9	1.9
⊠	DH-107	4.5	SAND (SP)	0.9	1.8
▲	DH-108	4.5	SAND (SP)	0.9	1.6
★	DH-109	2.0	SAND (SP)	0.9	1.8
✕	DH-110	4.5	SAND with silt (SP-SM)	0.9	2.1

GRAIN SIZE CURVES
Los Osos Wastewater Project

PLATE B-2c

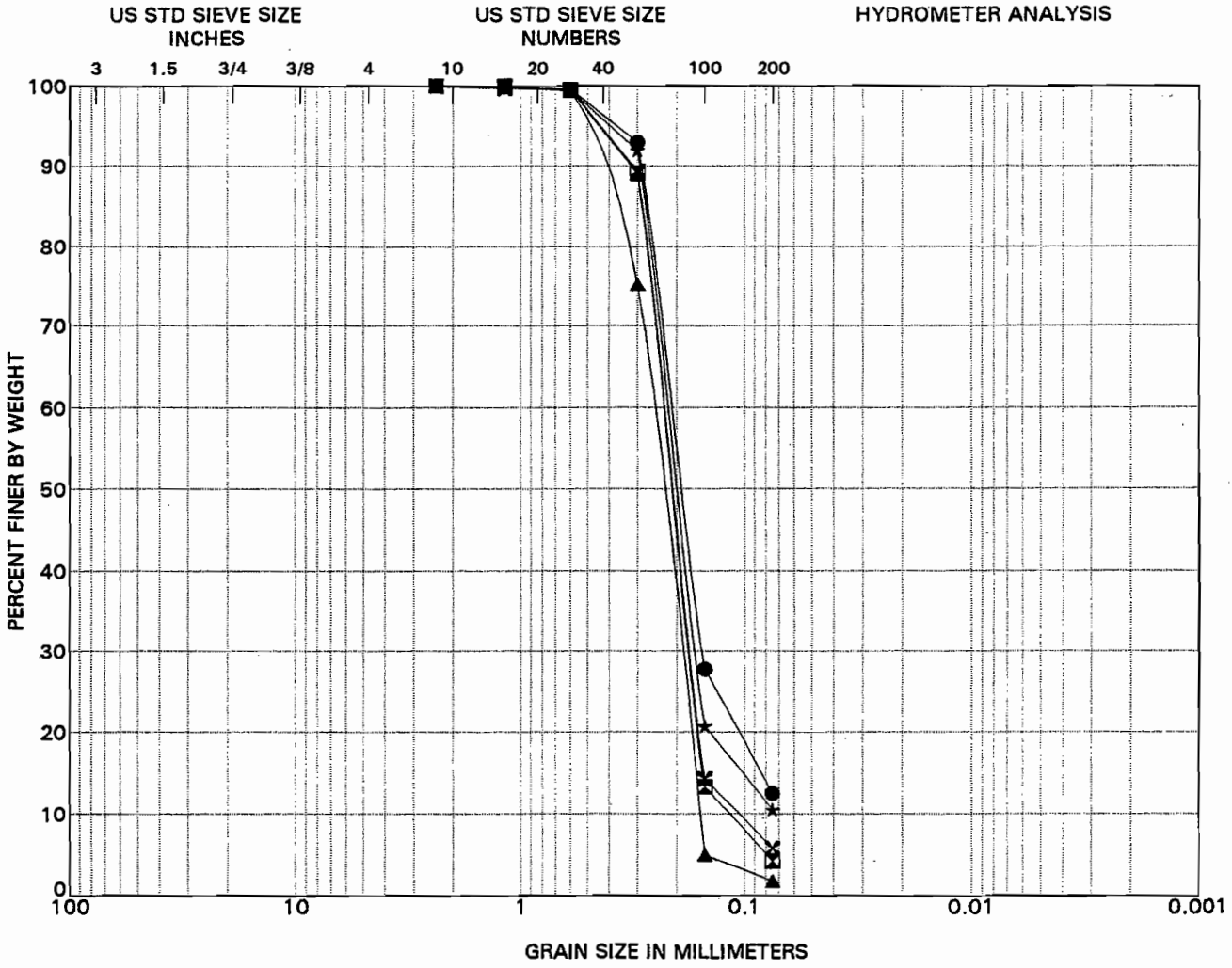


GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

LEGEND			CLASSIFICATION	Cc	Cu
	(location)	(depth, ft)			
●	DH-111	2.0	SAND (SP)	0.9	2.1
⊠	DH-112	5.0	SAND (SP)	0.9	1.5
▲	DH-112	9.0	SAND (SP)	0.9	1.5
★	DH-113	2.0	SAND (SP)	0.9	1.6
✕	DH-113	9.0	Clayey SAND (SC)		

GRAIN SIZE CURVES
Los Osos Wastewater Project

PLATE B-2d

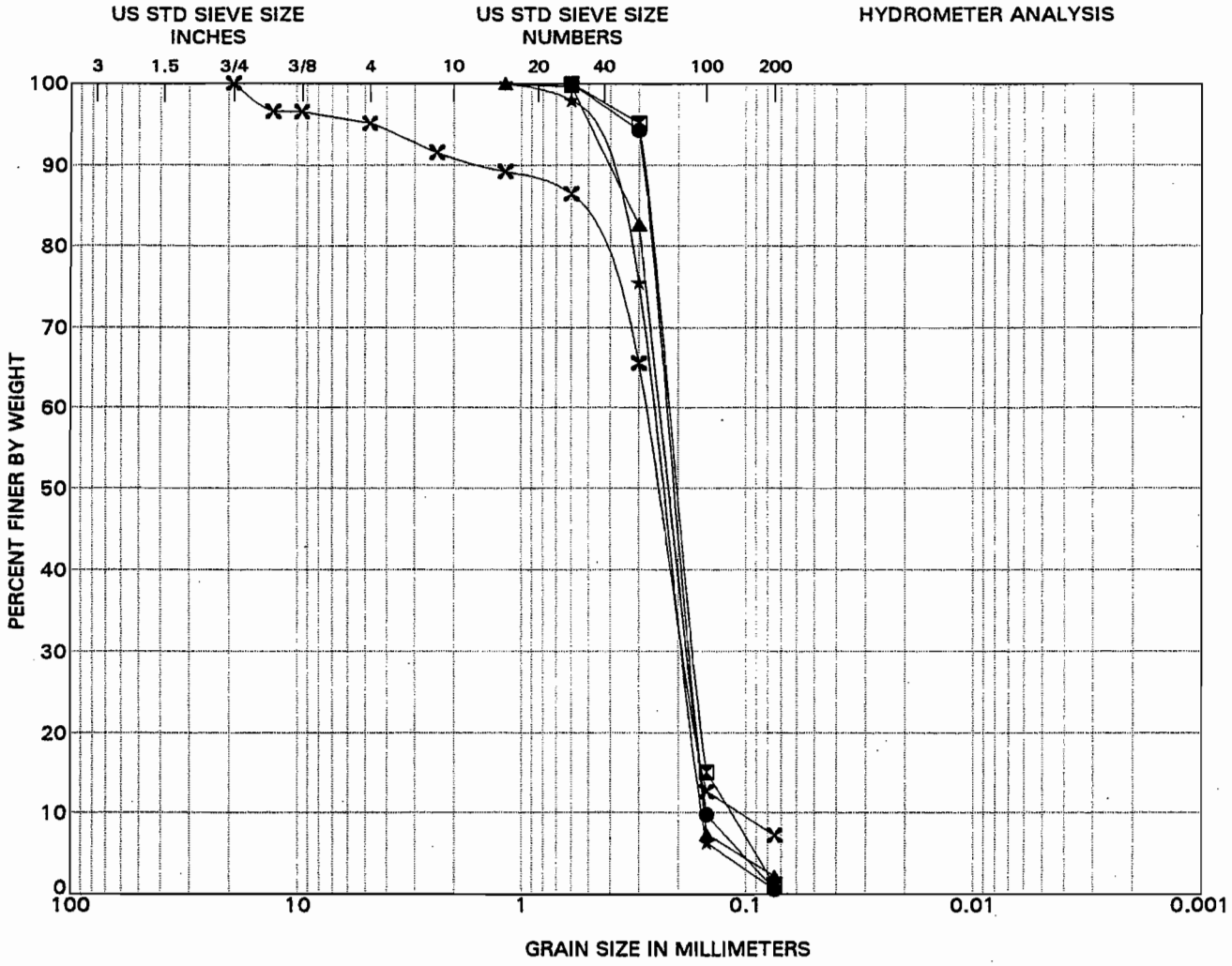


GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

LEGEND	(location)	(depth, ft)	CLASSIFICATION	Cc	Cu
●	DH-115	4.5	Silty SAND (SM)		
⊠	DH-116	4.5	SAND (SP)	1.1	2.0
▲	DH-117	4.5	SAND (SP)	0.9	1.6
★	DH-117	14.5	SAND with silt (SP-SM)	1.8	3.1
✕	DH-201	20.0	SAND with silt (SP-SM)	1.2	2.2

GRAIN SIZE CURVES
Los Osos Wastewater Project

PLATE B-2e

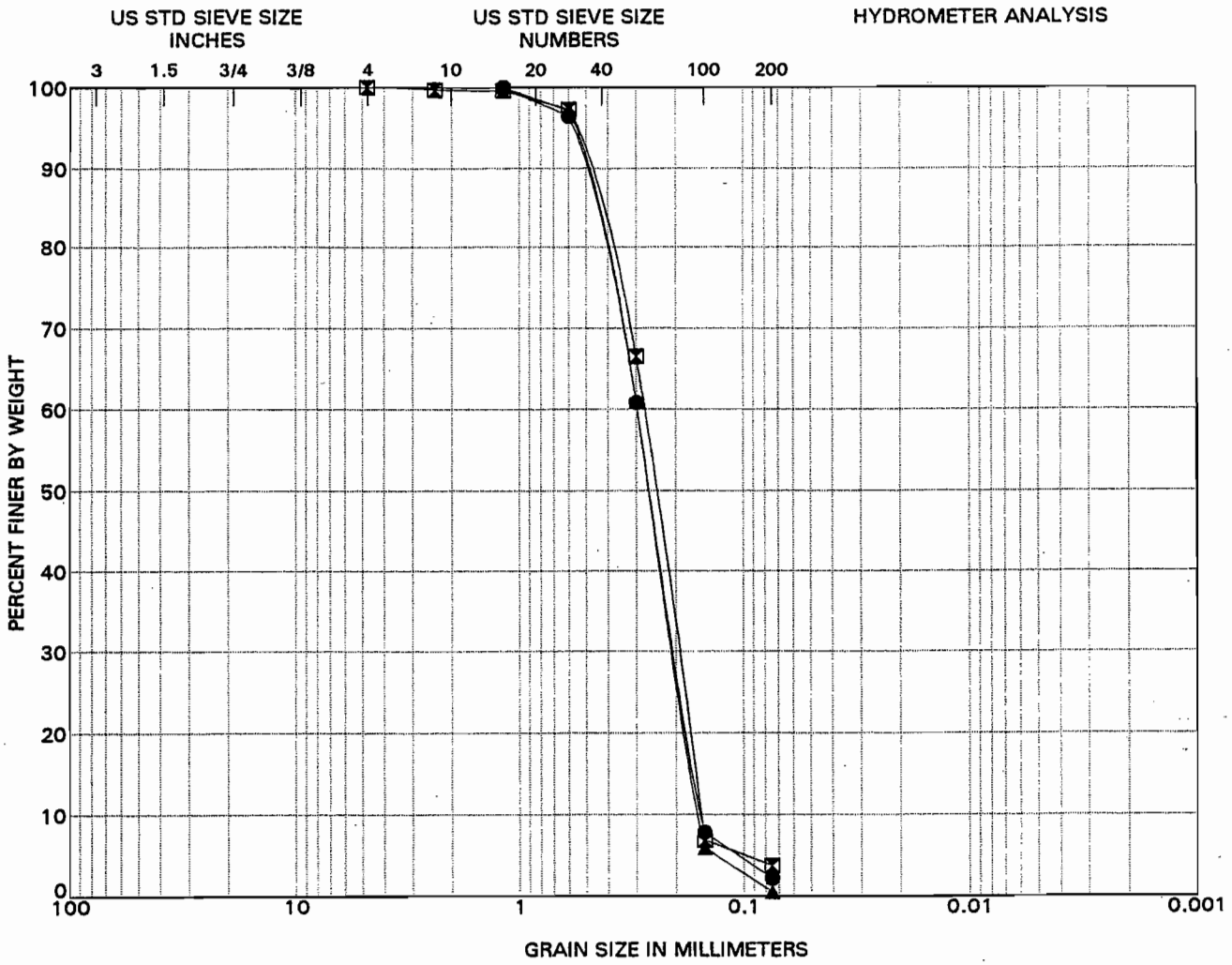


GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

LEGEND			CLASSIFICATION	Cc	Cu
	(location)	(depth, ft)			
●	DH-202	30.0	SAND (SP)	0.9	1.5
⊠	DH-202	40.0	SAND (SP)	1.1	1.9
▲	DH-301	5.0	SAND (SP)	0.9	1.6
★	DH-301	35.0	SAND (SP)	0.9	1.7
✕	T-101	1.5	SAND with silt (SP-SM)	1.2	2.6

GRAIN SIZE CURVES
Los Osos Wastewater Project

PLATE B-2f

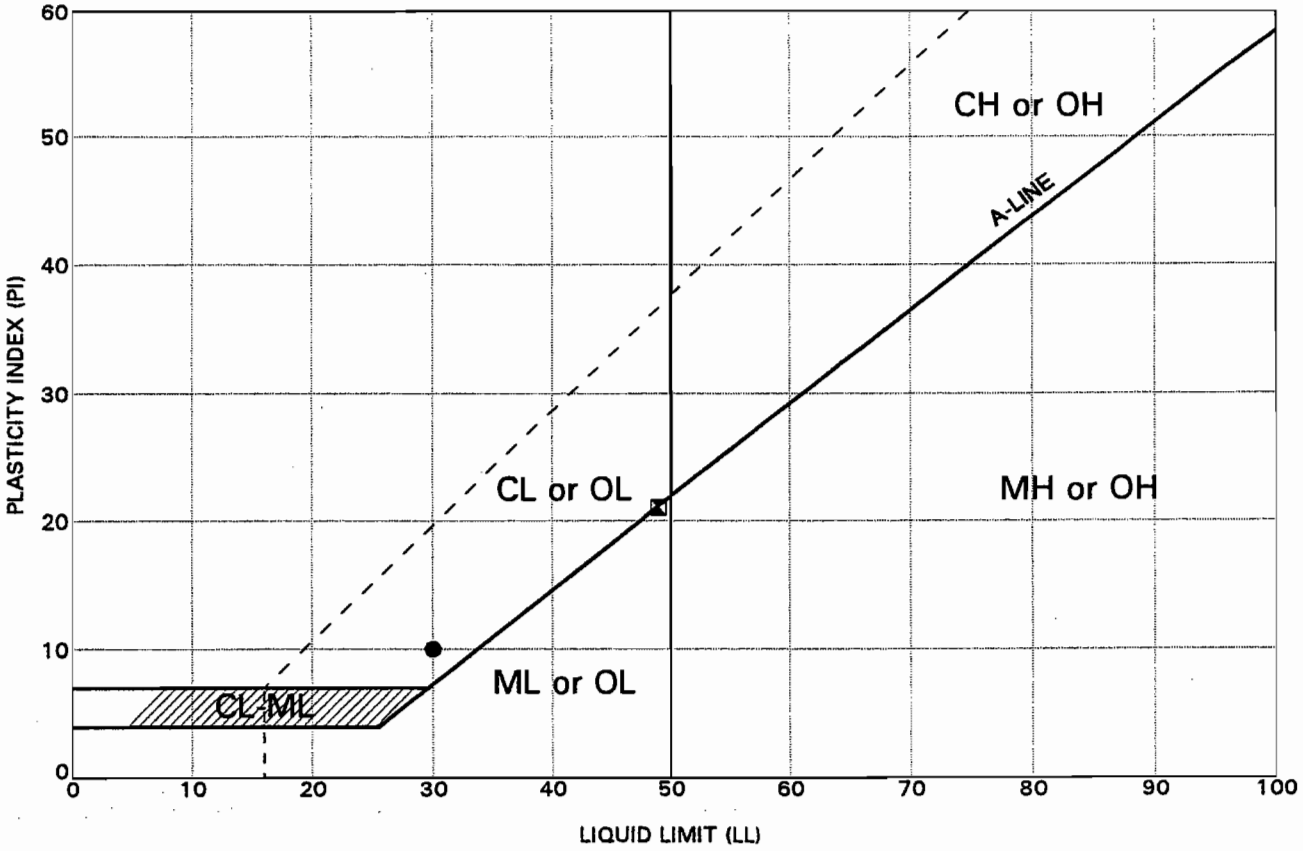


GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

LEGEND	(location)	(depth, ft)	CLASSIFICATION	Cc	Cu
●	T-102	1.5	SAND (SP)	0.9	1.9
⊠	T-103	5.5	SAND (SP)	0.9	1.8
▲	T-104	12.0	SAND (SP)	0.9	1.9

GRAIN SIZE CURVES
Los Osos Wastewater Project

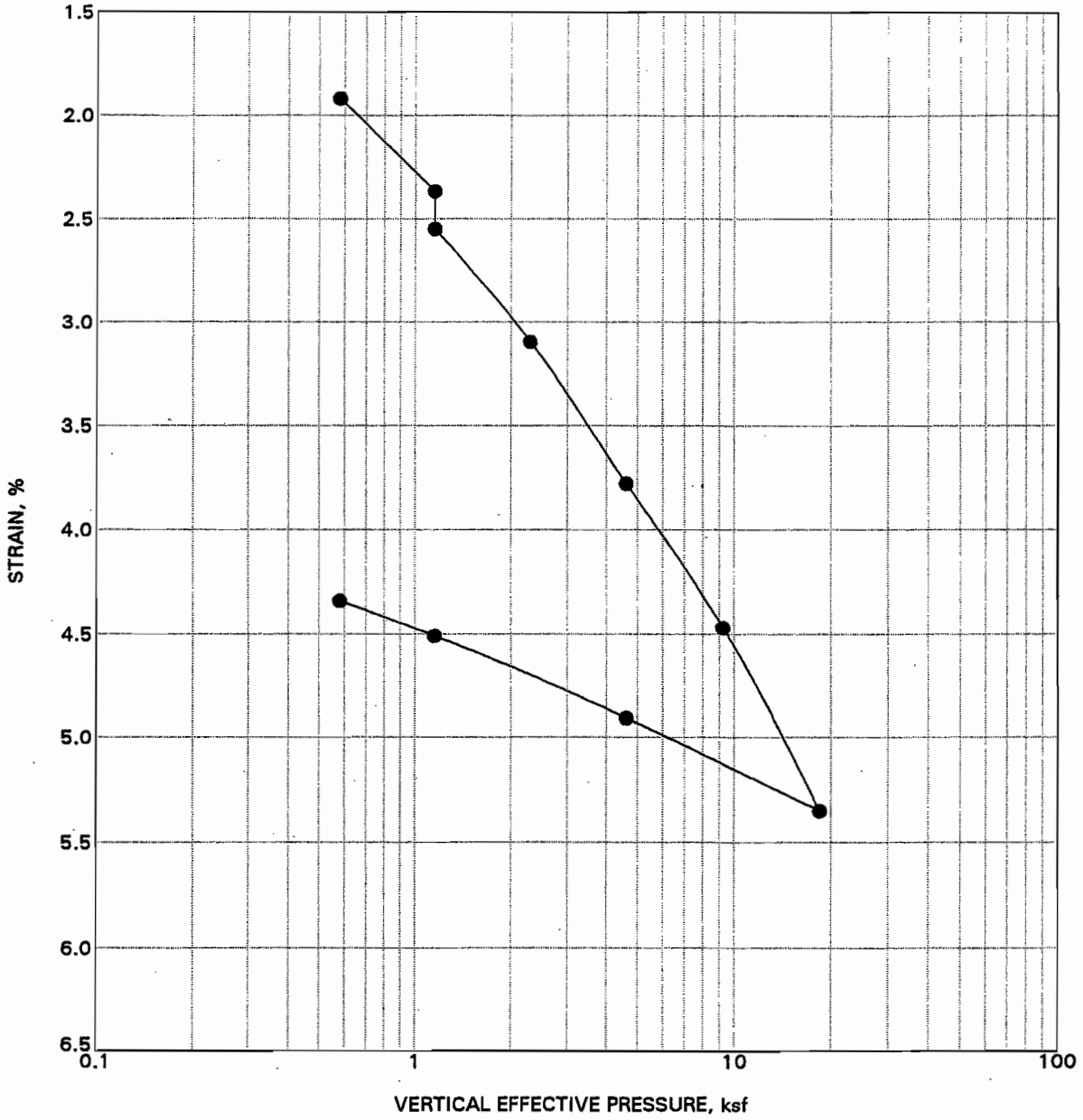
PLATE B-2g



LEGEND (location)	(depth, ft)	CLASSIFICATION	ATTERBERG LIMITS TEST RESULTS LIQUID LIMIT(LL)	PLASTIC LIMIT(PL)	PLASTICITY INDEX (PI)
● DH-106	2.0	Clayey SAND with gravel (SC)	30	20	10
⊠ DH-301	40.0	Lean CLAY (CL)	49	28	21

PLASTICITY CHART
Los Osos Wastewater Project

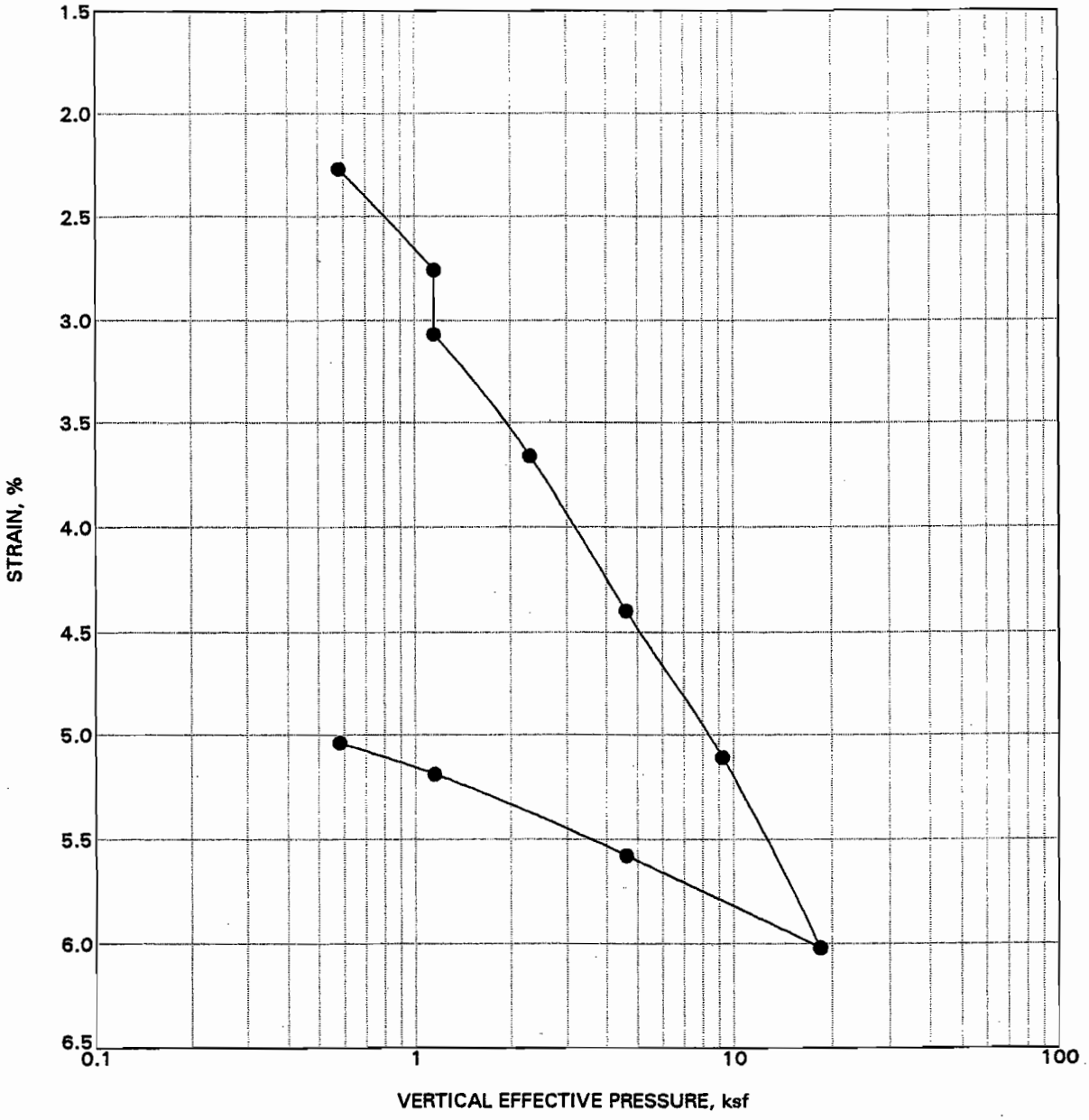
PLATE B-3



LOCATION	DH-201
DEPTH, ft	5.0
INITIAL MOISTURE CONTENT, %	6
UNIT DRY WEIGHT, pcf	103
MATERIAL DESCRIPTION	SAND with silt (SP-SM)

CONSOLIDATION TEST RESULTS

Los Osos Wastewater Project



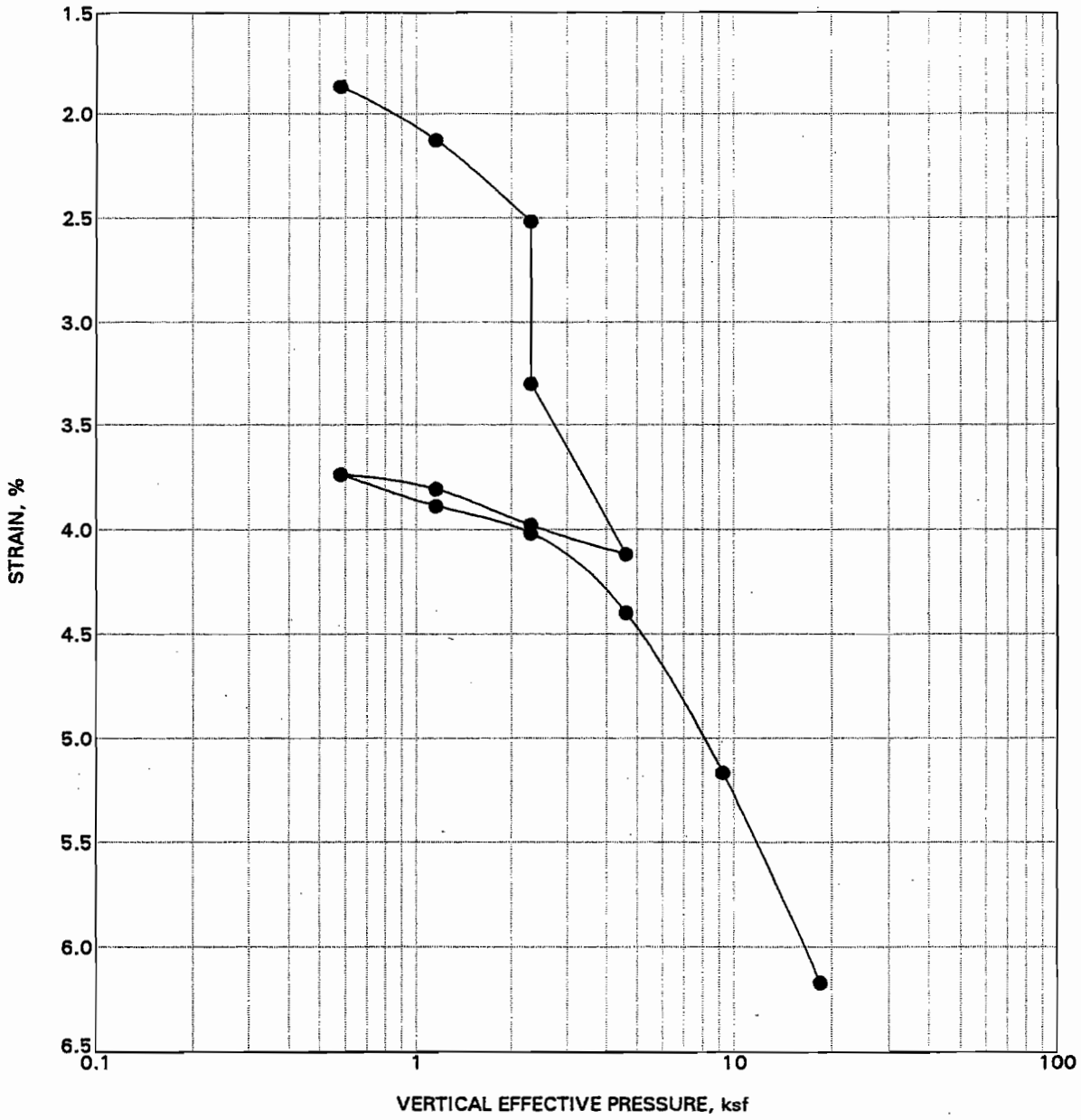
LOCATION	DH-204
DEPTH, ft	15.0
INITIAL MOISTURE CONTENT, %	4
UNIT DRY WEIGHT, pcf	103
MATERIAL DESCRIPTION	Silty SAND (SP-SM)

CONSOLIDATION TEST RESULTS

Los Osos Wastewater Project

CONSOLID

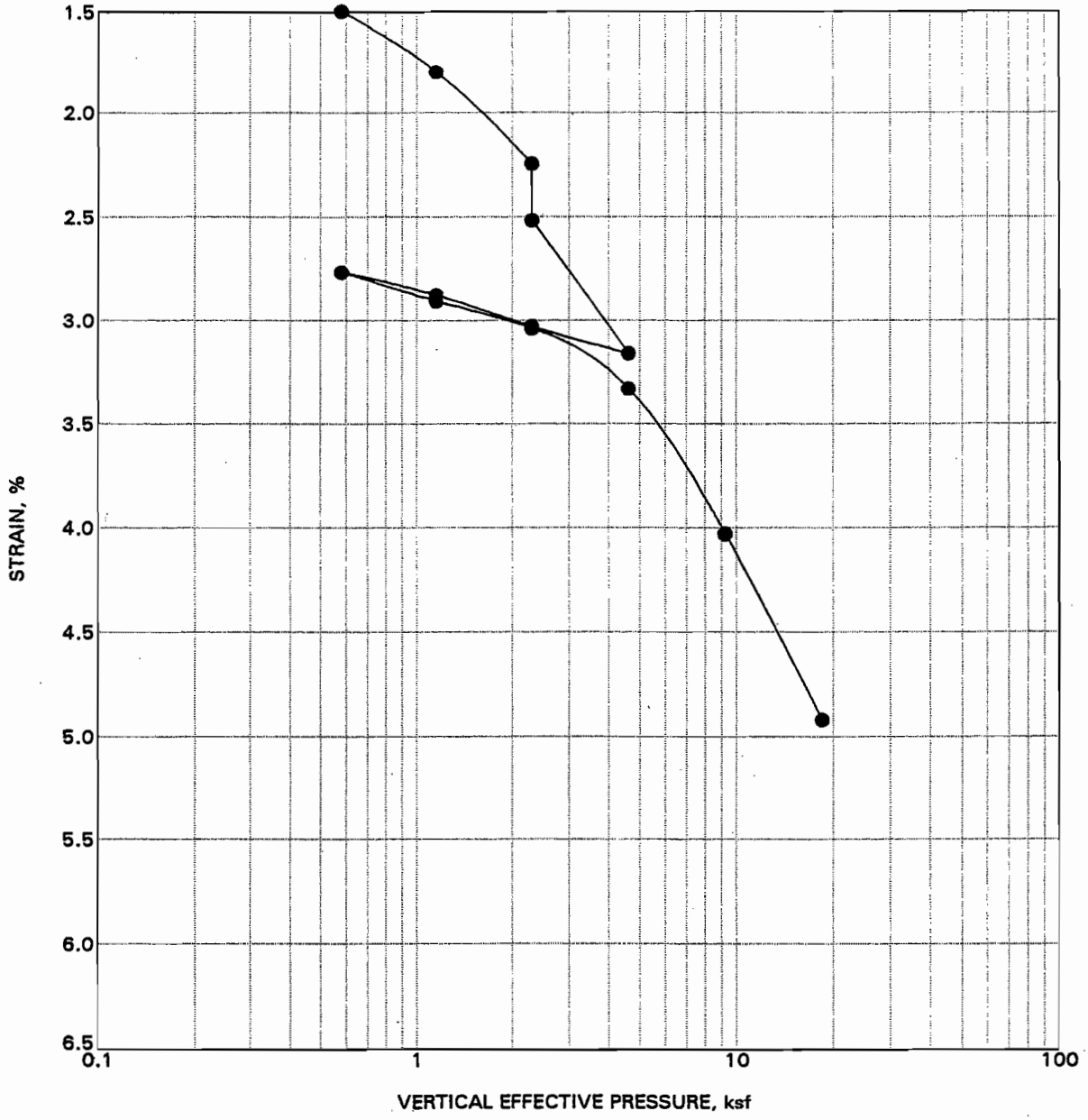
PLATE B-4b



LOCATION	DH-301
DEPTH, ft	5.0
INITIAL MOISTURE CONTENT, %	4
UNIT DRY WEIGHT, pcf	104
MATERIAL DESCRIPTION	SAND (SP)

CONSOLIDATION TEST RESULTS

Los Osos Wastewater Project



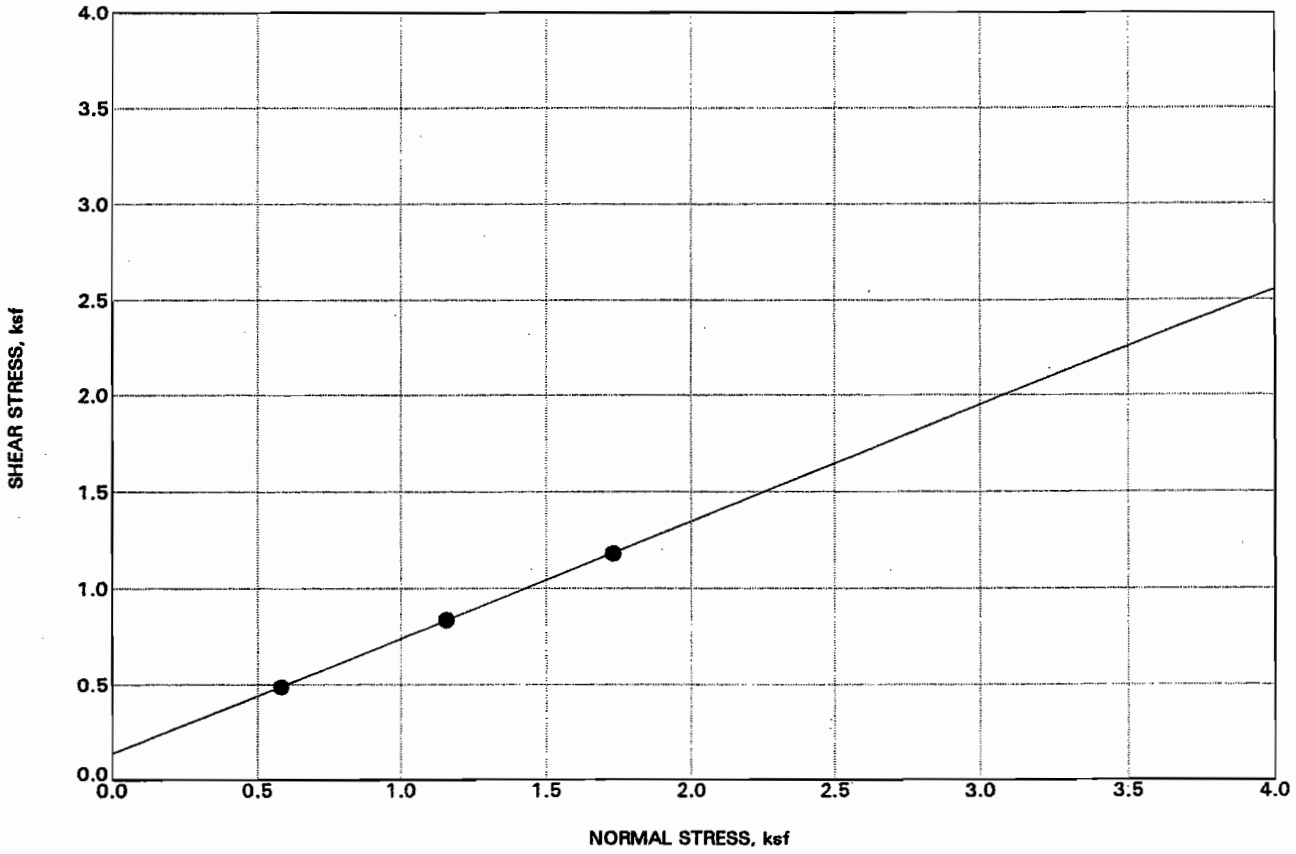
LOCATION	DH-301
DEPTH, ft	15.0
INITIAL MOISTURE CONTENT, %	6
UNIT DRY WEIGHT, pcf	105
MATERIAL DESCRIPTION	SAND (SP)

CONSOLIDATION TEST RESULTS

Los Osos Wastewater Project

CONSOLID

PLATE B-4d



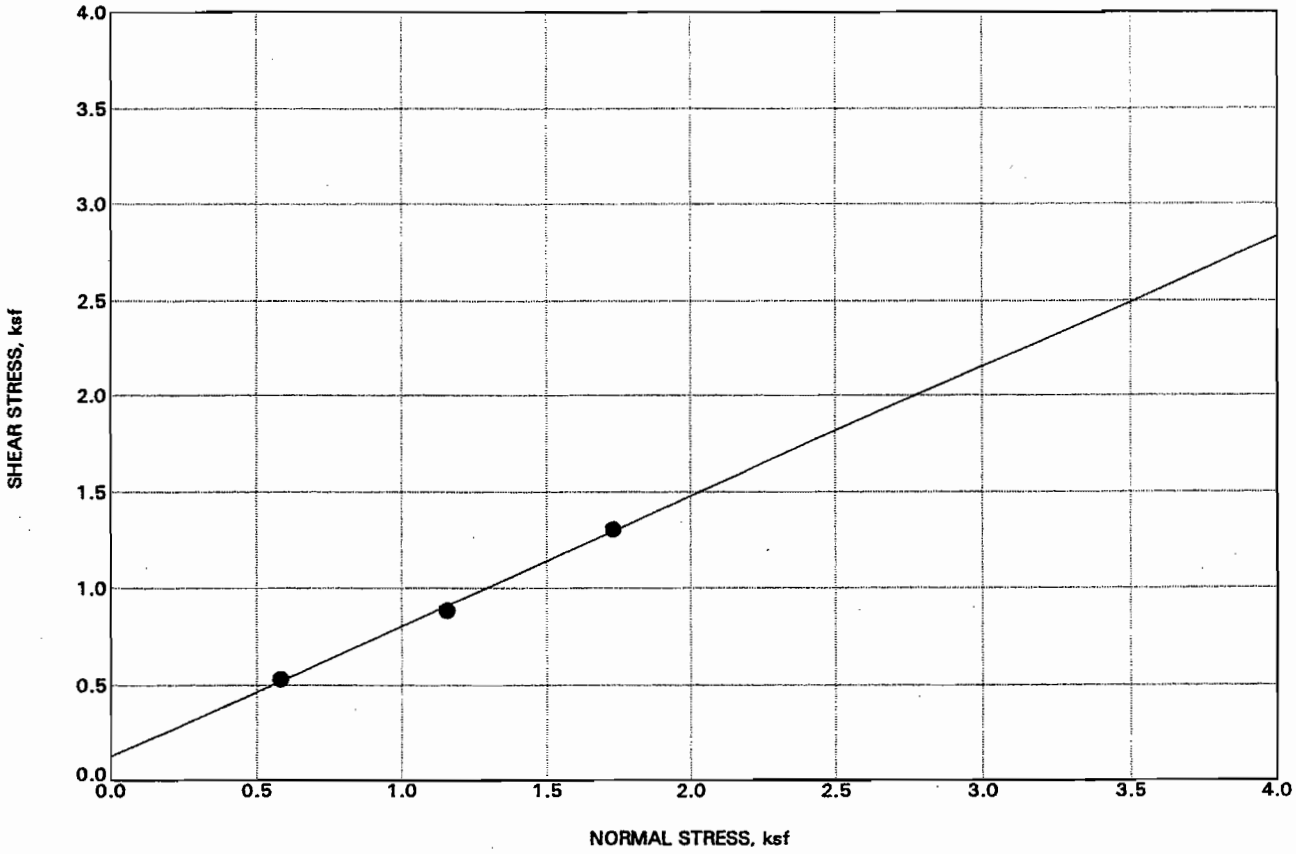
EFFECTIVE COHESION, ksf	0.10
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	31
LOCATION	DH-102
DEPTH, ft	2.0
MOISTURE CONTENT, %	
UNIT DRY WEIGHT, pcf	
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS

Los Osos Wastewater Project

PLATE B-5a

DIRECTSH(54286)

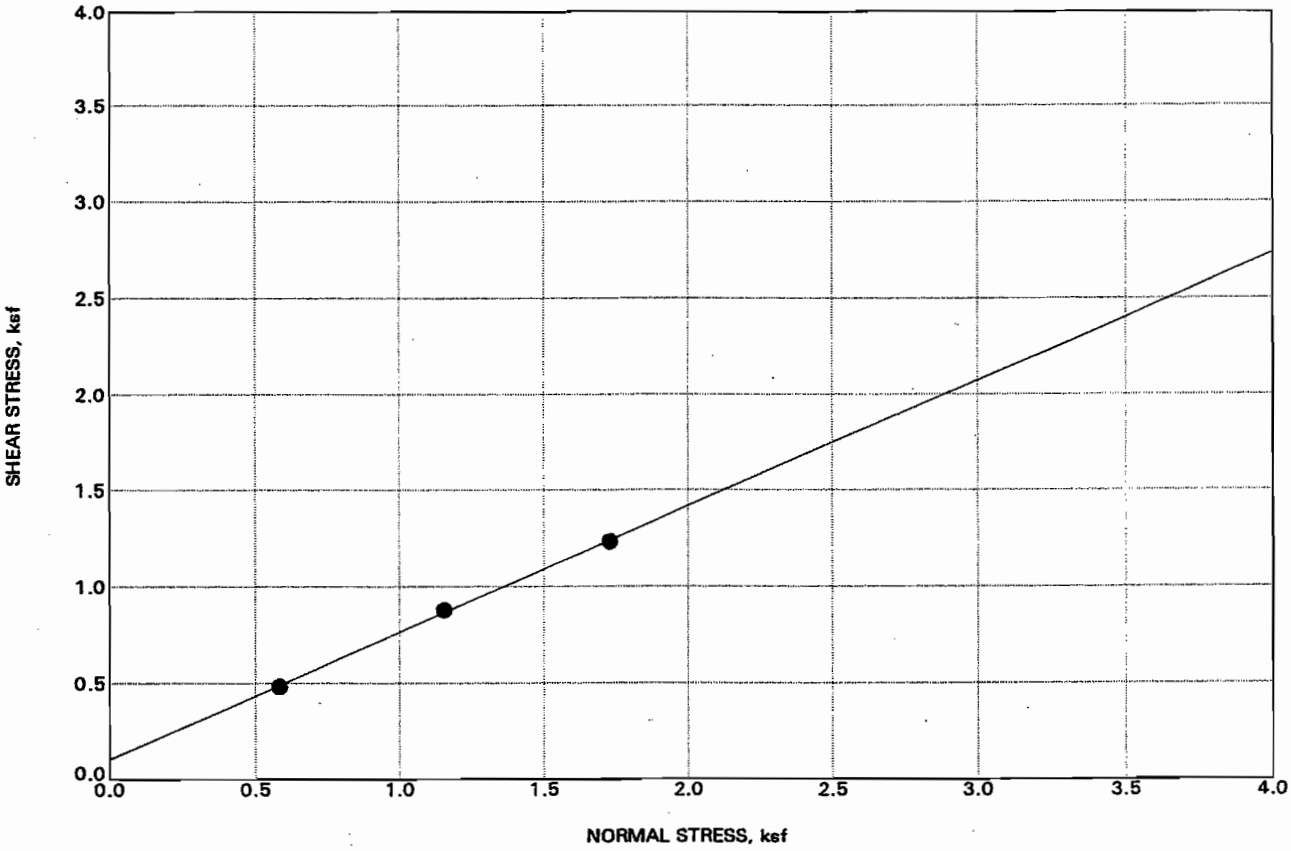


EFFECTIVE COHESION, ksf	0.13
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	34

LOCATION	DH-103
DEPTH, ft	1.5
MOISTURE CONTENT, %	1
UNIT DRY WEIGHT, pcf	105
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5b

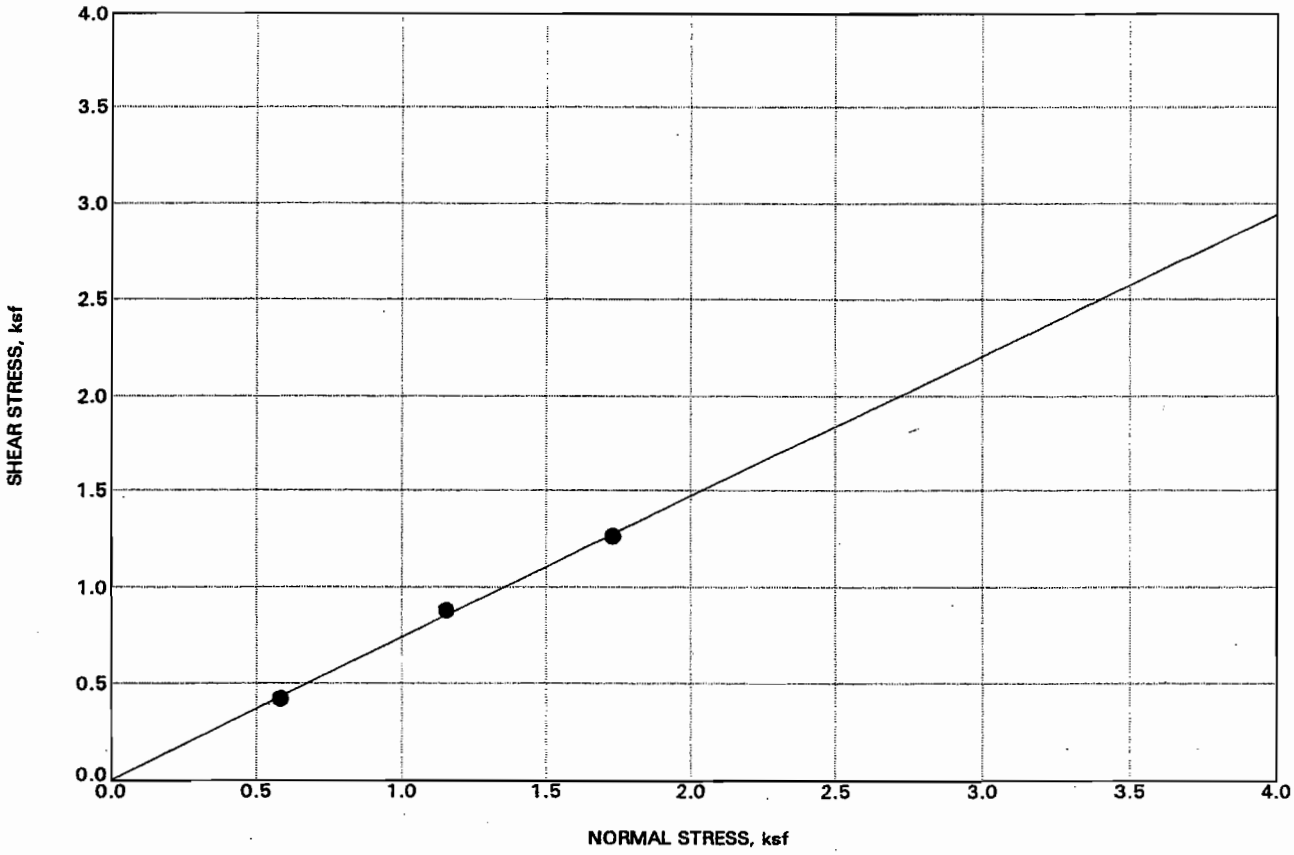


EFFECTIVE COHESION, ksf	0.11
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	33

LOCATION	DH-104
DEPTH, ft	9.0
MOISTURE CONTENT, %	2
UNIT DRY WEIGHT, pcf	105
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5c

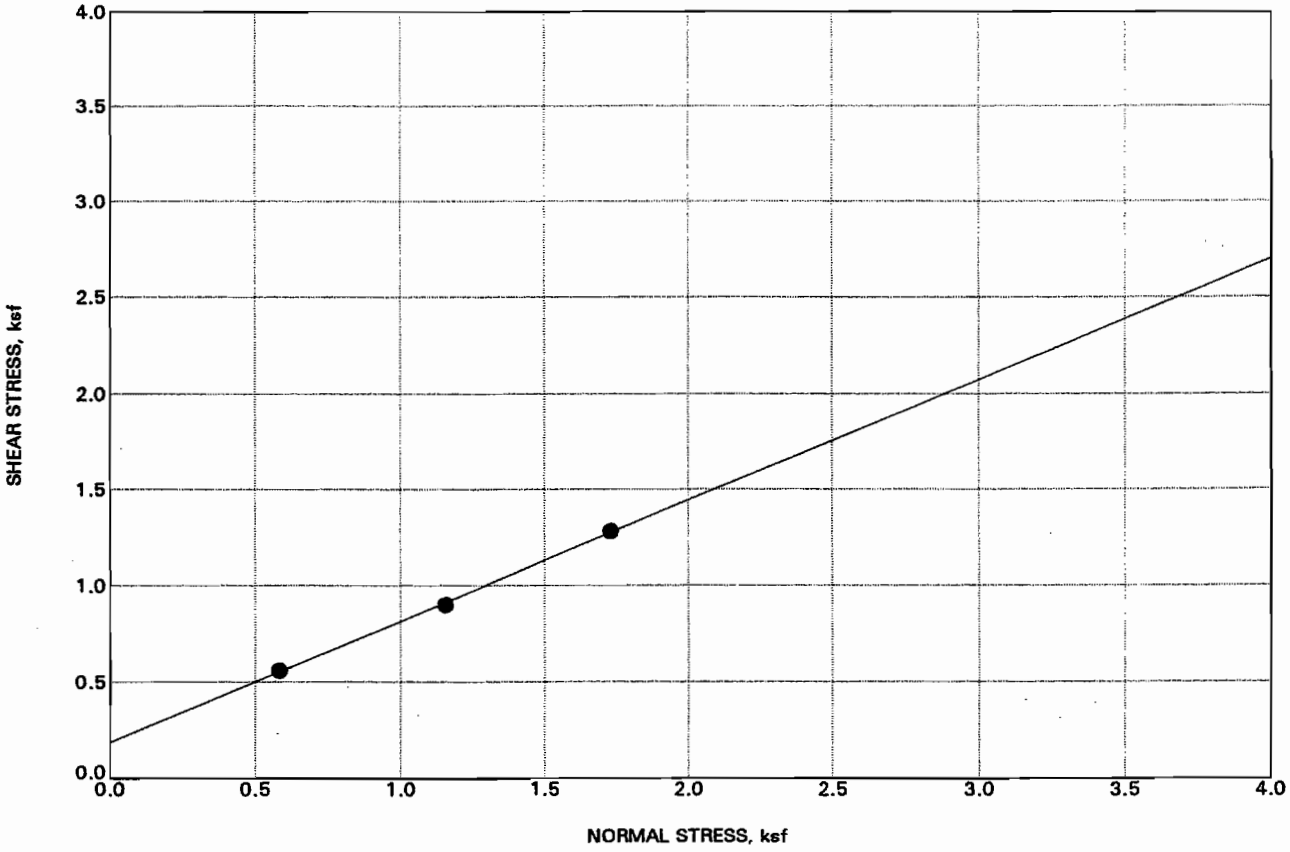


EFFECTIVE COHESION, ksf	0.01
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	36

LOCATION	DH-104
DEPTH, ft	20.0
MOISTURE CONTENT, %	3
UNIT DRY WEIGHT, pcf	107
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5d

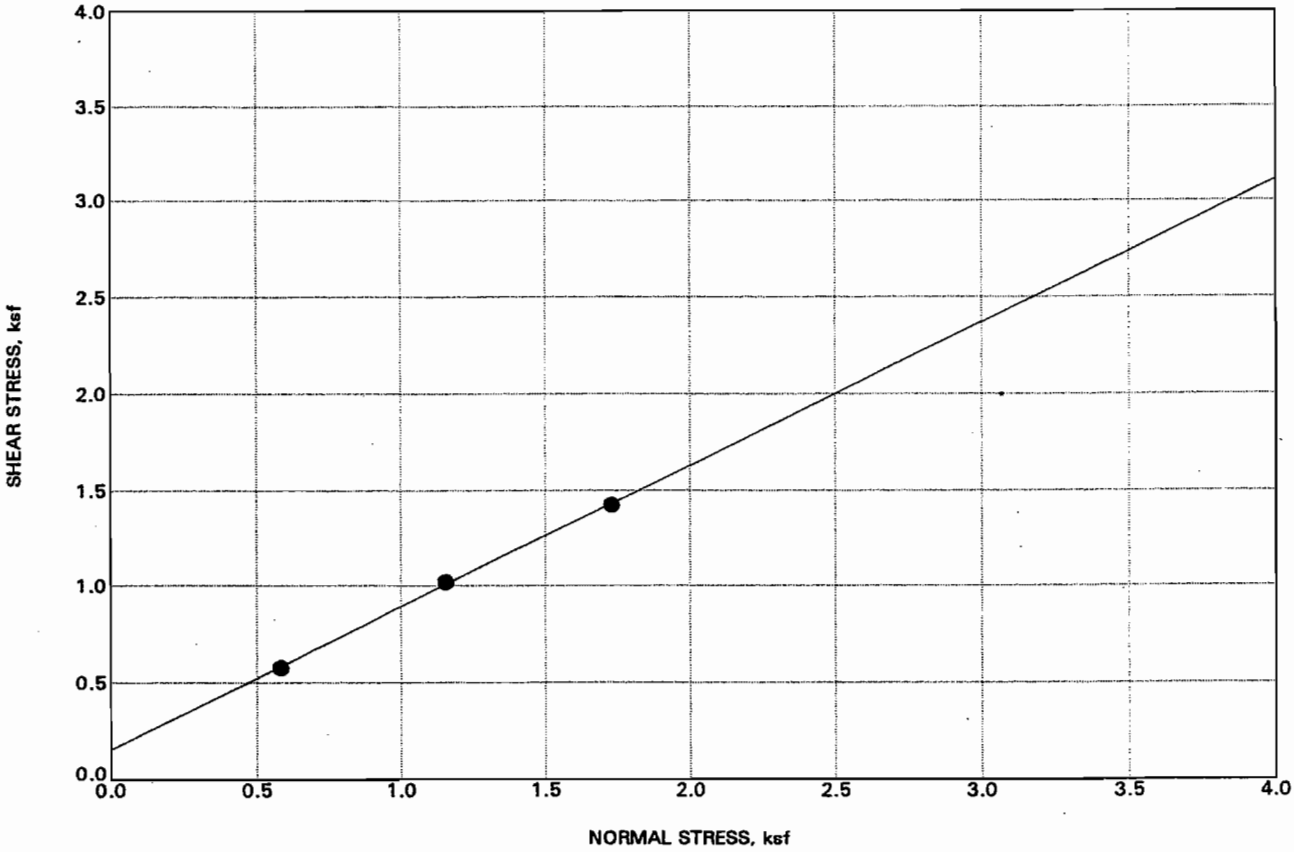


EFFECTIVE COHESION, ksf	0.19
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	32

LOCATION	DH-105
DEPTH, ft	9.5
MOISTURE CONTENT, %	2
UNIT DRY WEIGHT, pcf	106
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5e

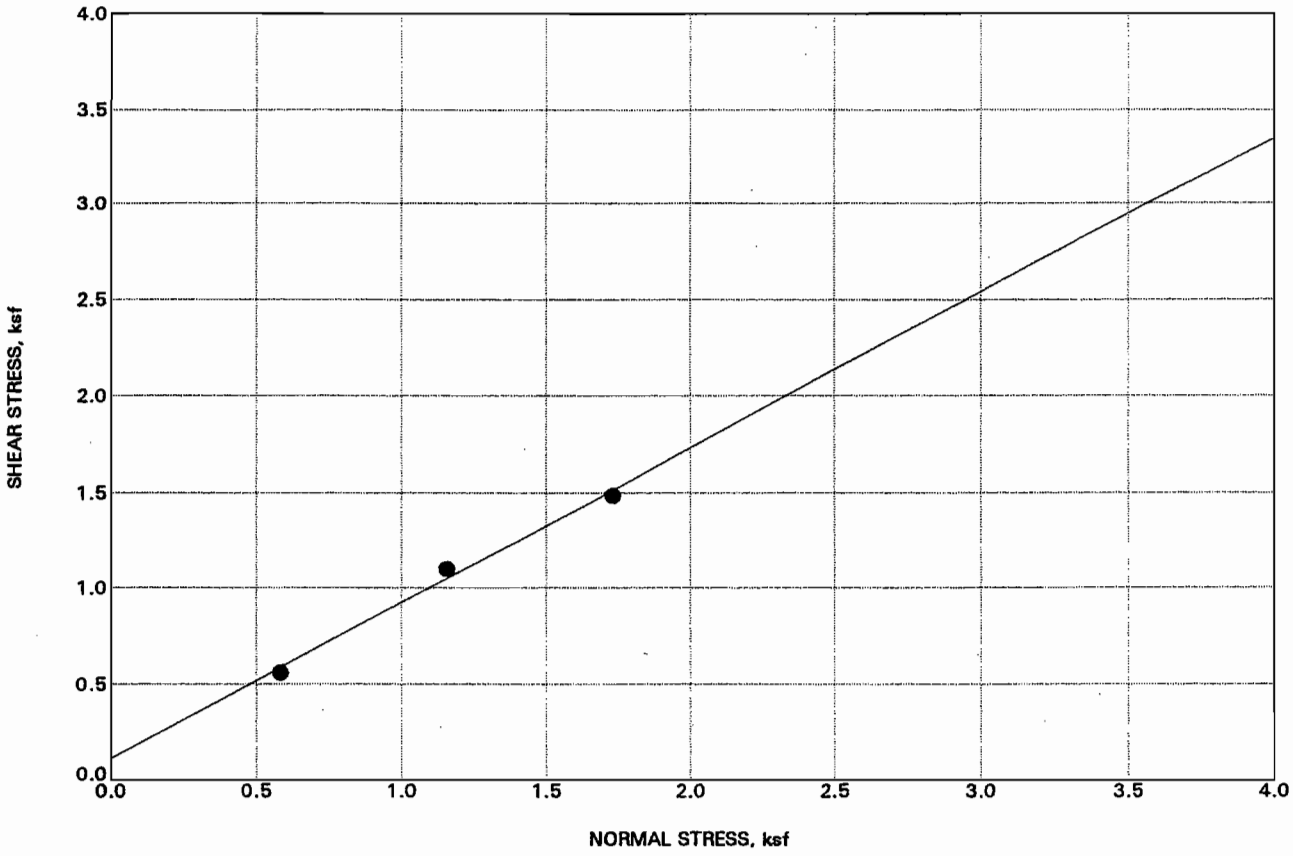


EFFECTIVE COHESION, ksf	0.15
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	36

LOCATION	DH-106
DEPTH, ft	9.5
MOISTURE CONTENT, %	5
UNIT DRY WEIGHT, pcf	110
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5f

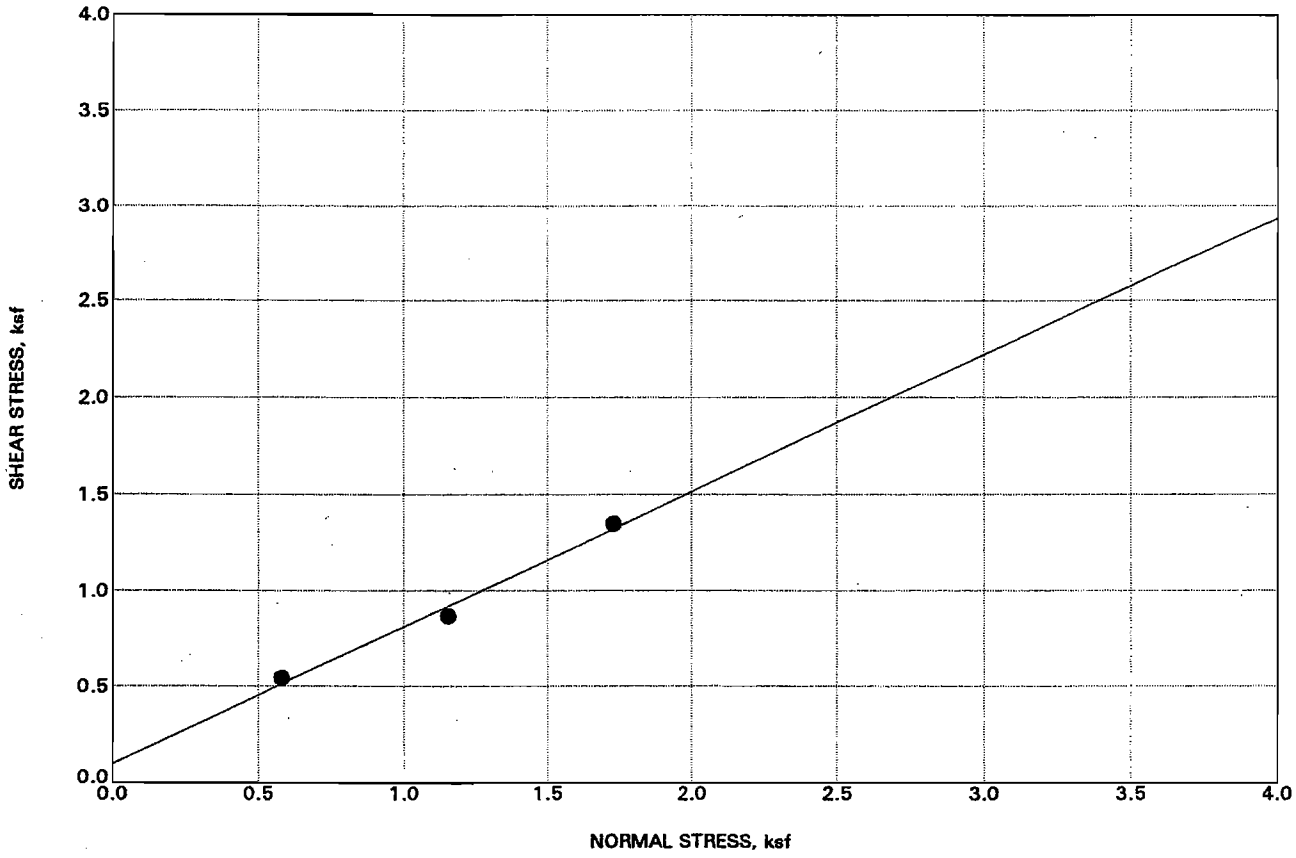


EFFECTIVE COHESION, ksf	0.11
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	39

LOCATION	DH-107
DEPTH, ft	9.5
MOISTURE CONTENT, %	16
UNIT DRY WEIGHT, pcf	112
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

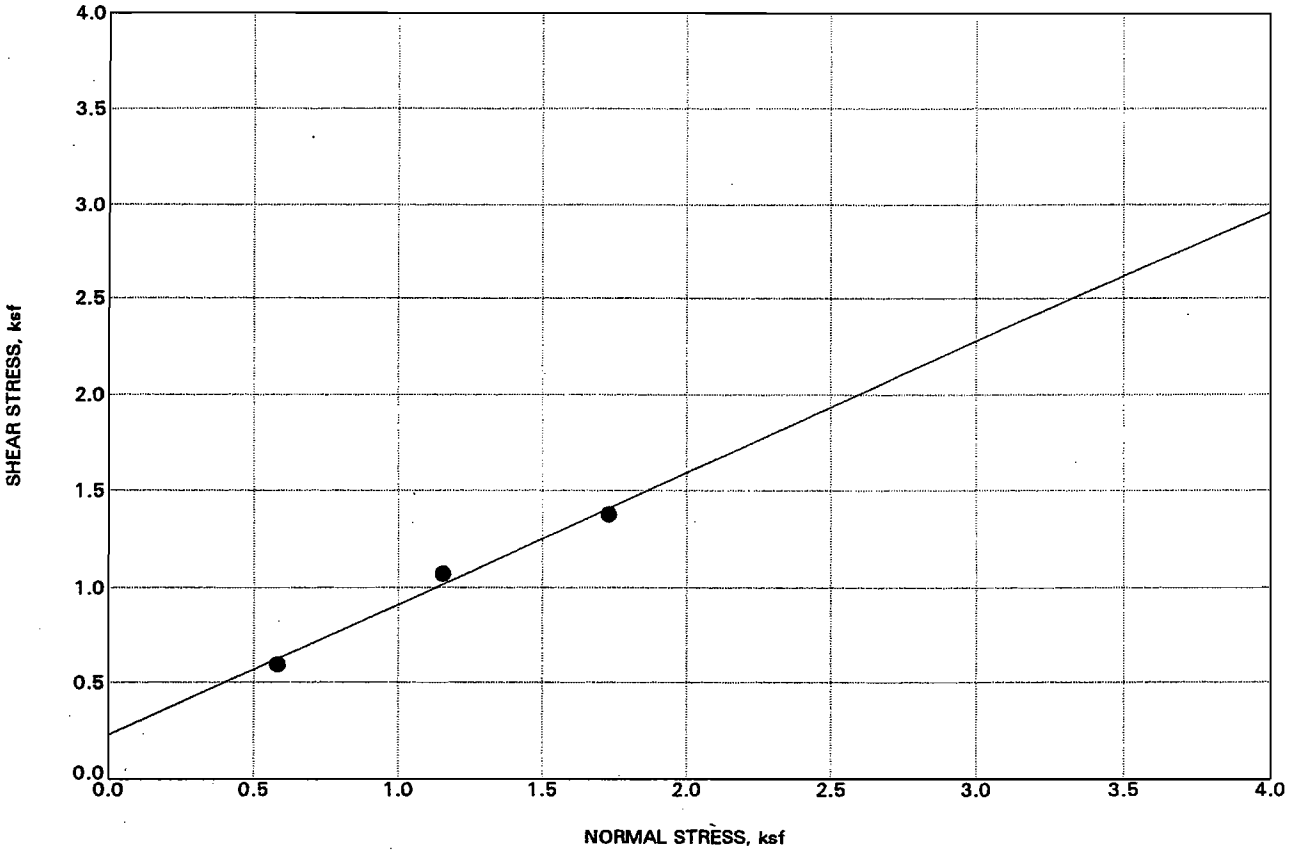
PLATE B-5g



EFFECTIVE COHESION, ksf	0.10
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	35
LOCATION	DH-108
DEPTH, ft	0.5
MOISTURE CONTENT, %	4
UNIT DRY WEIGHT, pcf	100
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

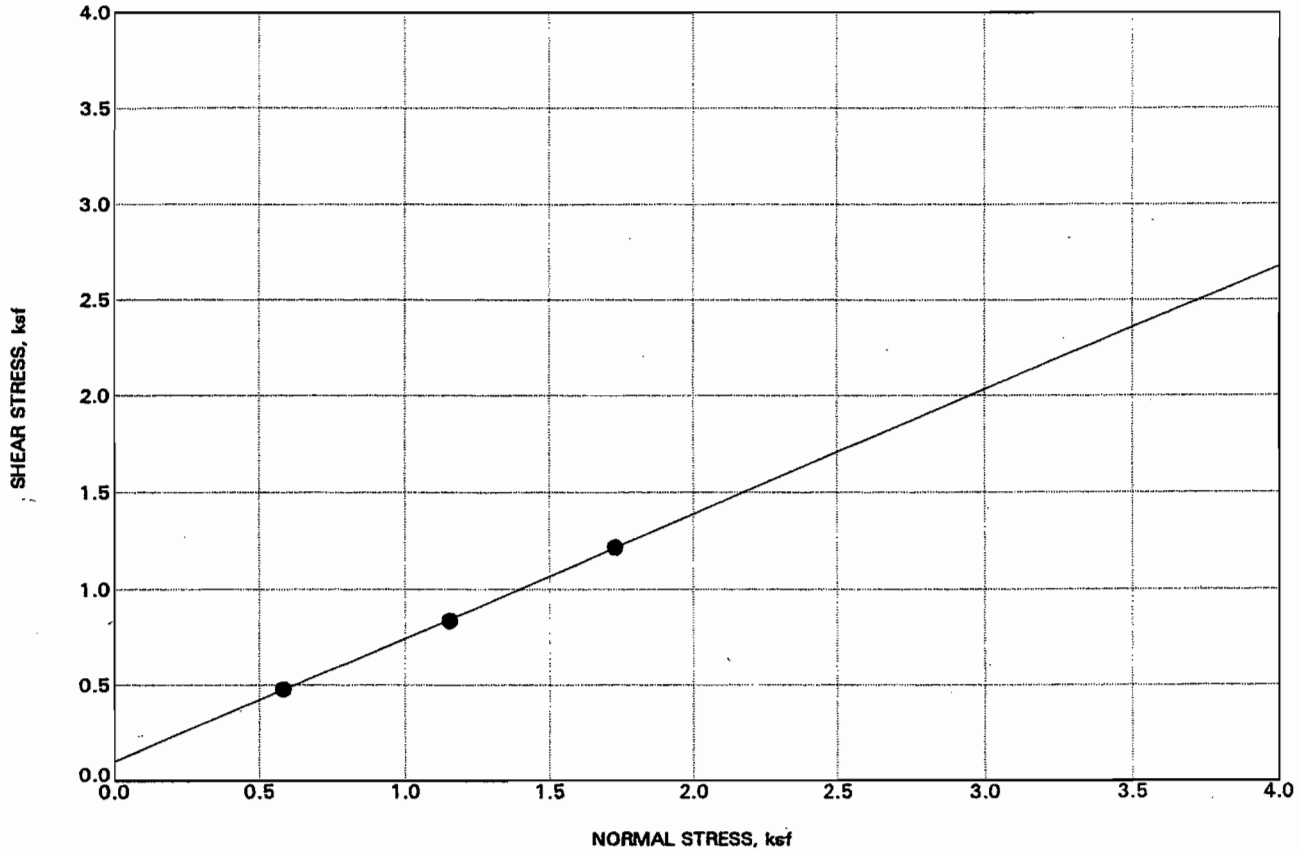
PLATE B-5h



EFFECTIVE COHESION, ksf	0.22
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	34
LOCATION	DH-109
DEPTH, ft	1.0
MOISTURE CONTENT, %	4
UNIT DRY WEIGHT, pcf	105
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5i

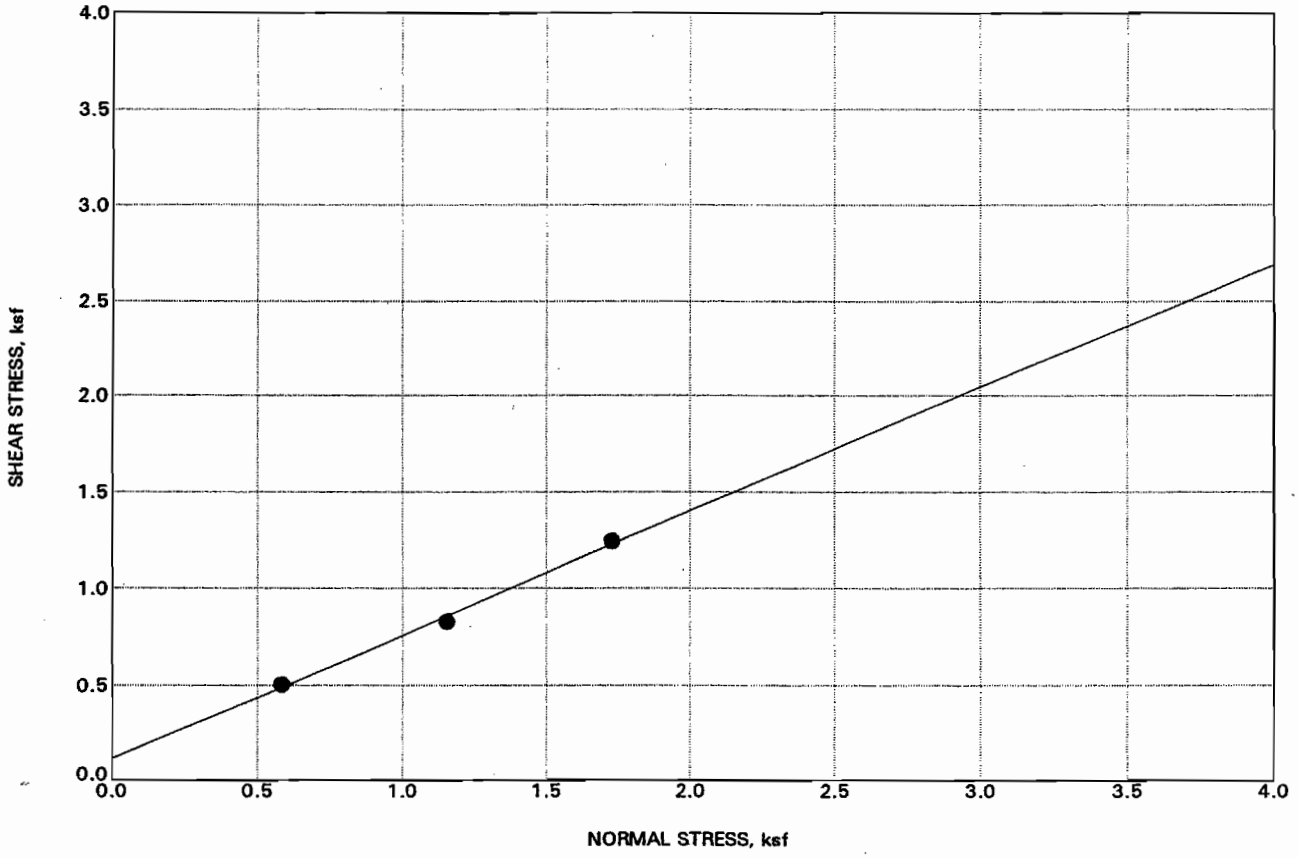


EFFECTIVE COHESION, ksf	0.10
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	33
LOCATION	DH-109
DEPTH, ft	2.0
MOISTURE CONTENT, %	
UNIT DRY WEIGHT, pcf	
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5j

DIRECTSH(54286)

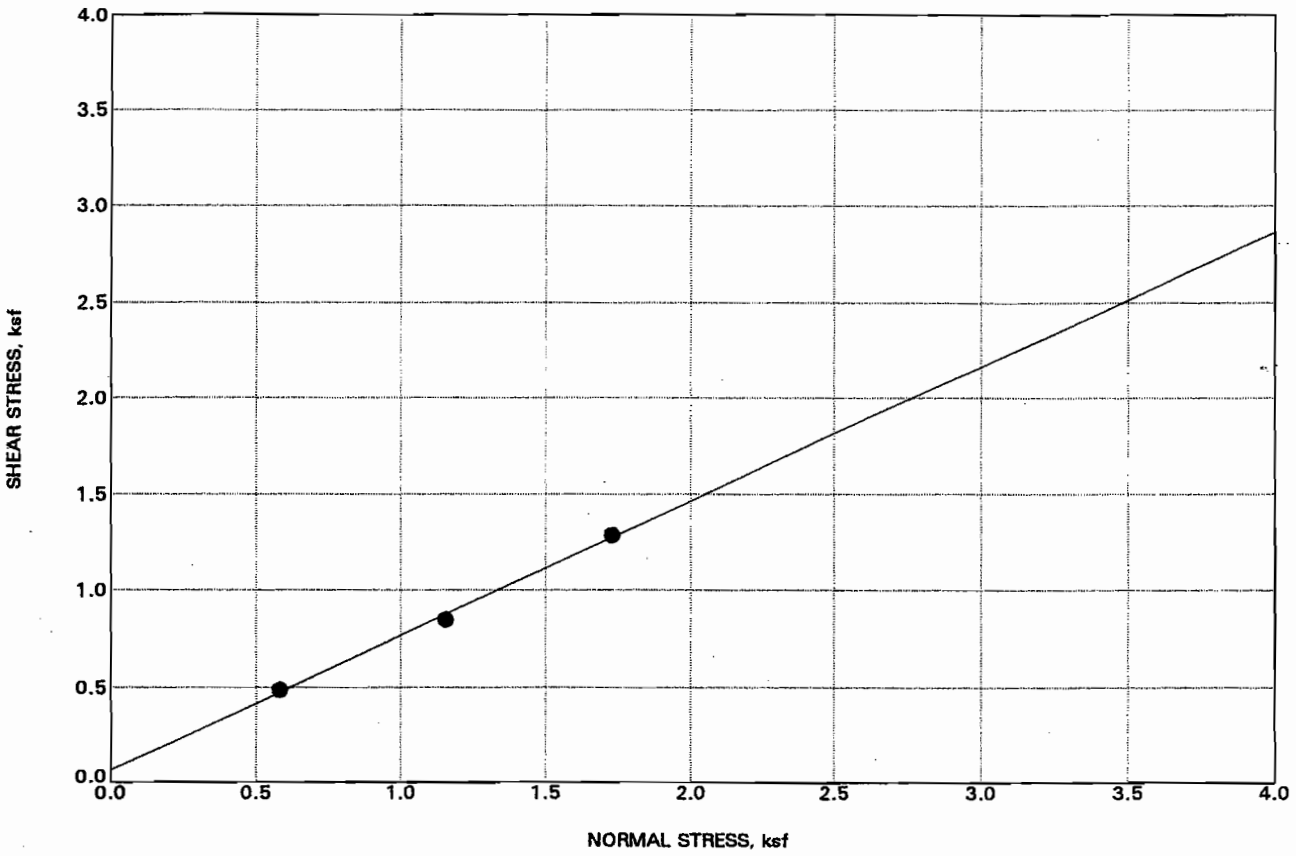


EFFECTIVE COHESION, ksf	0.11
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	33

LOCATION	DH-110
DEPTH, ft	2.0
MOISTURE CONTENT, %	
UNIT DRY WEIGHT, pcf	
MATERIAL DESCRIPTION	SAND with gravel (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5k

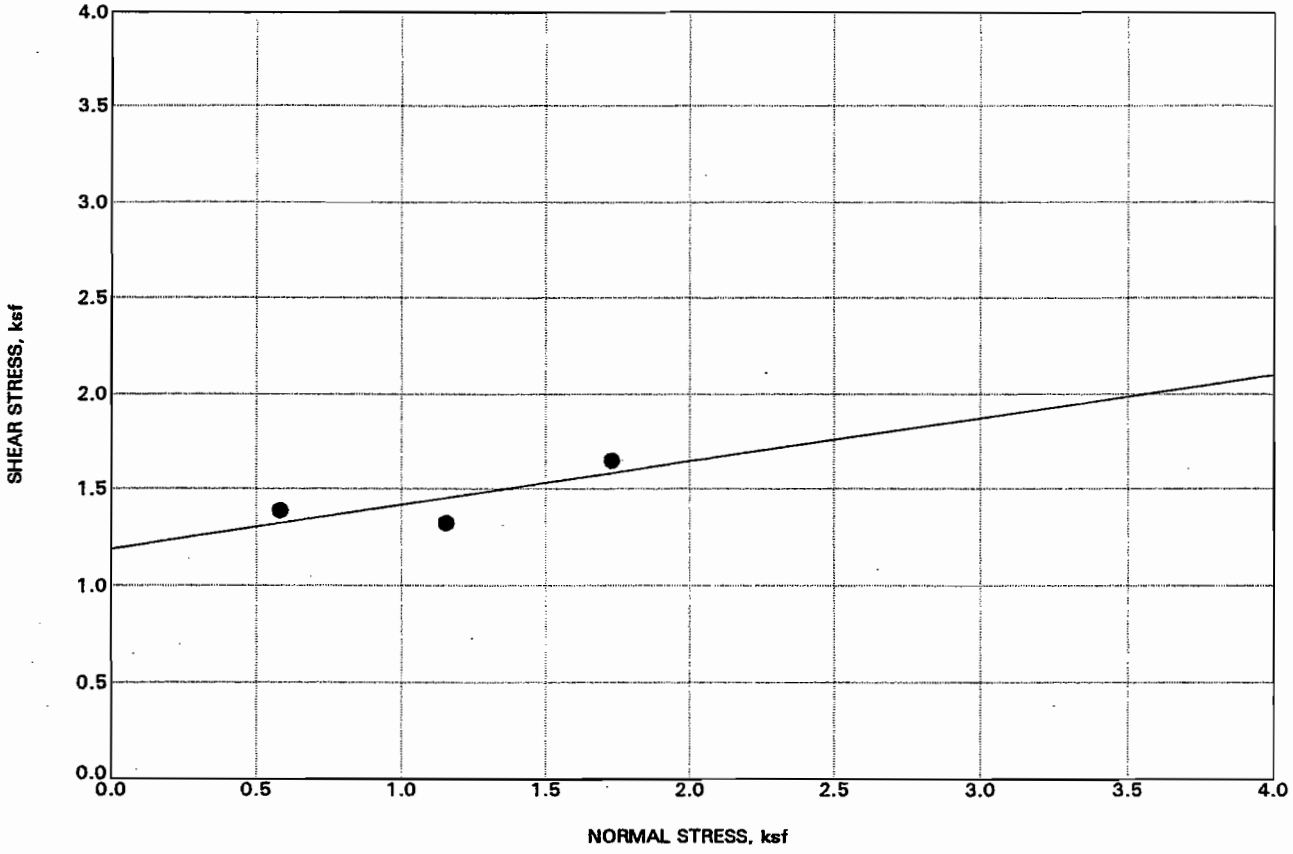


EFFECTIVE COHESION, ksf	0.07
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	35

LOCATION	DH-111
DEPTH, ft	4.5
MOISTURE CONTENT, %	2
UNIT DRY WEIGHT, pcf	108
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

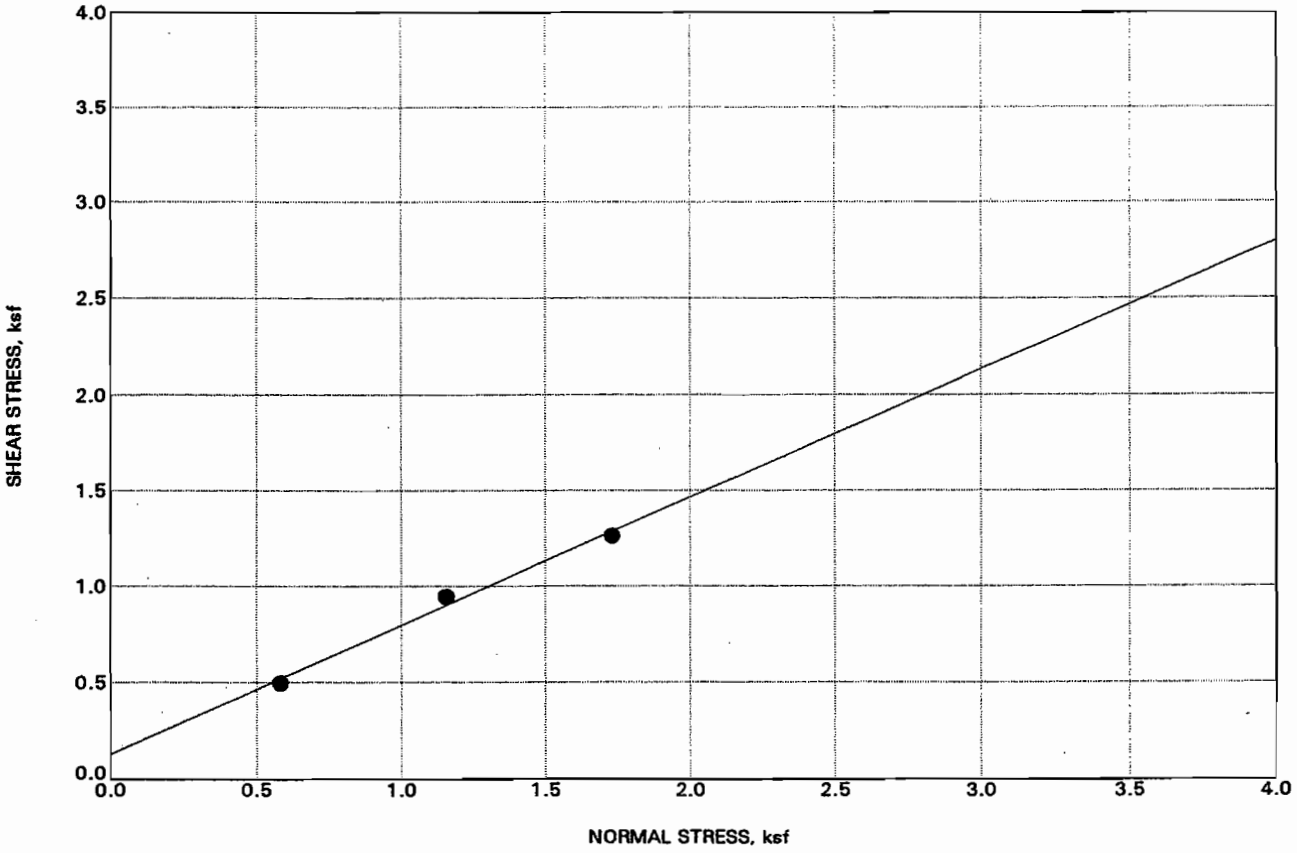
PLATE B-5I



EFFECTIVE COHESION, ksf	0.65
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	30
LOCATION	DH-112
DEPTH, ft	1.5
MOISTURE CONTENT, %	10
UNIT DRY WEIGHT, pcf	126
MATERIAL DESCRIPTION	SAND with silt (SP-SM)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5m

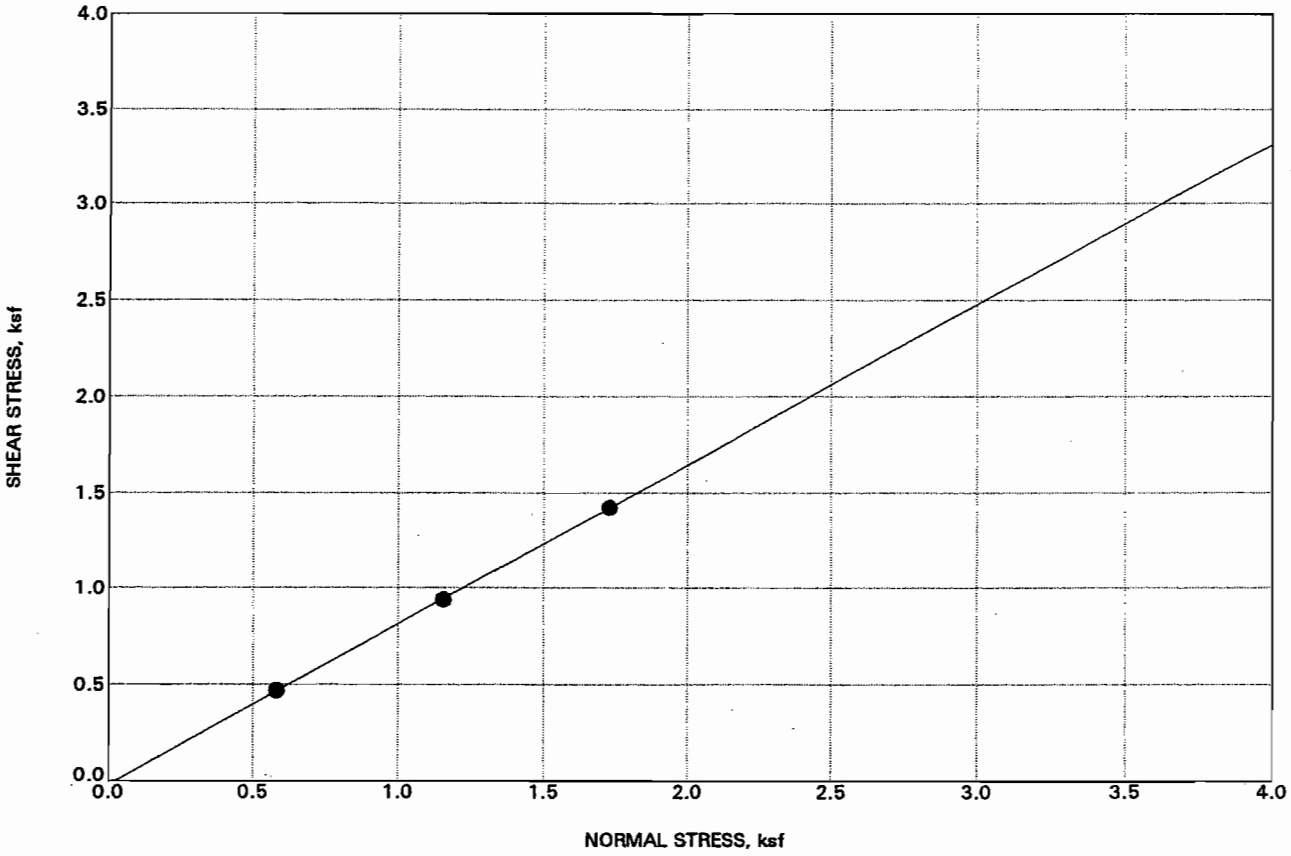


EFFECTIVE COHESION, ksf	0.13
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	34

LOCATION	DH-113
DEPTH, ft	1.0
MOISTURE CONTENT, %	2
UNIT DRY WEIGHT, pcf	105
MATERIAL DESCRIPTION	Silty SAND (SM)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5n

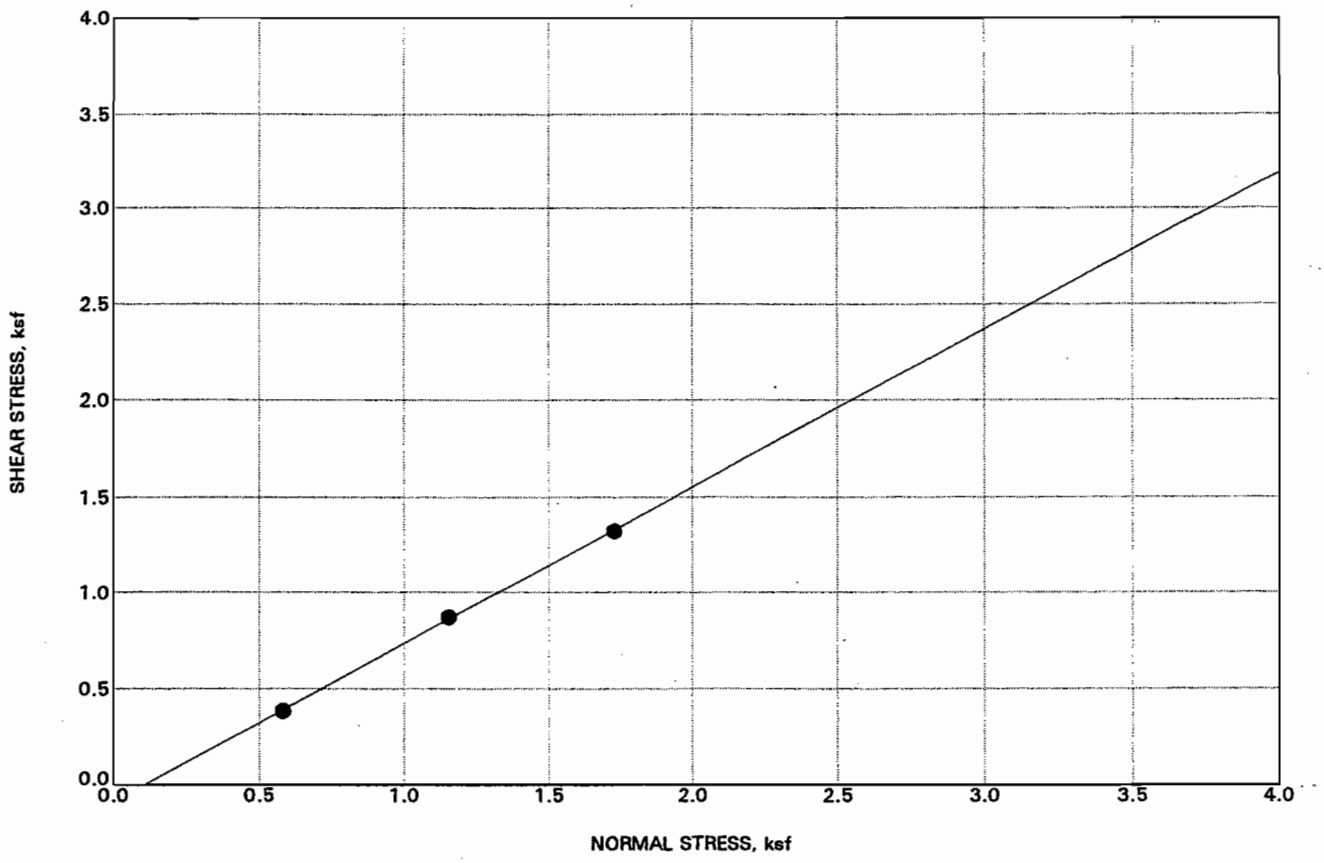


EFFECTIVE COHESION, ksf	0.00
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	39

LOCATION	DH-114
DEPTH, ft	9.5
MOISTURE CONTENT, %	5
UNIT DRY WEIGHT, pcf	103
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

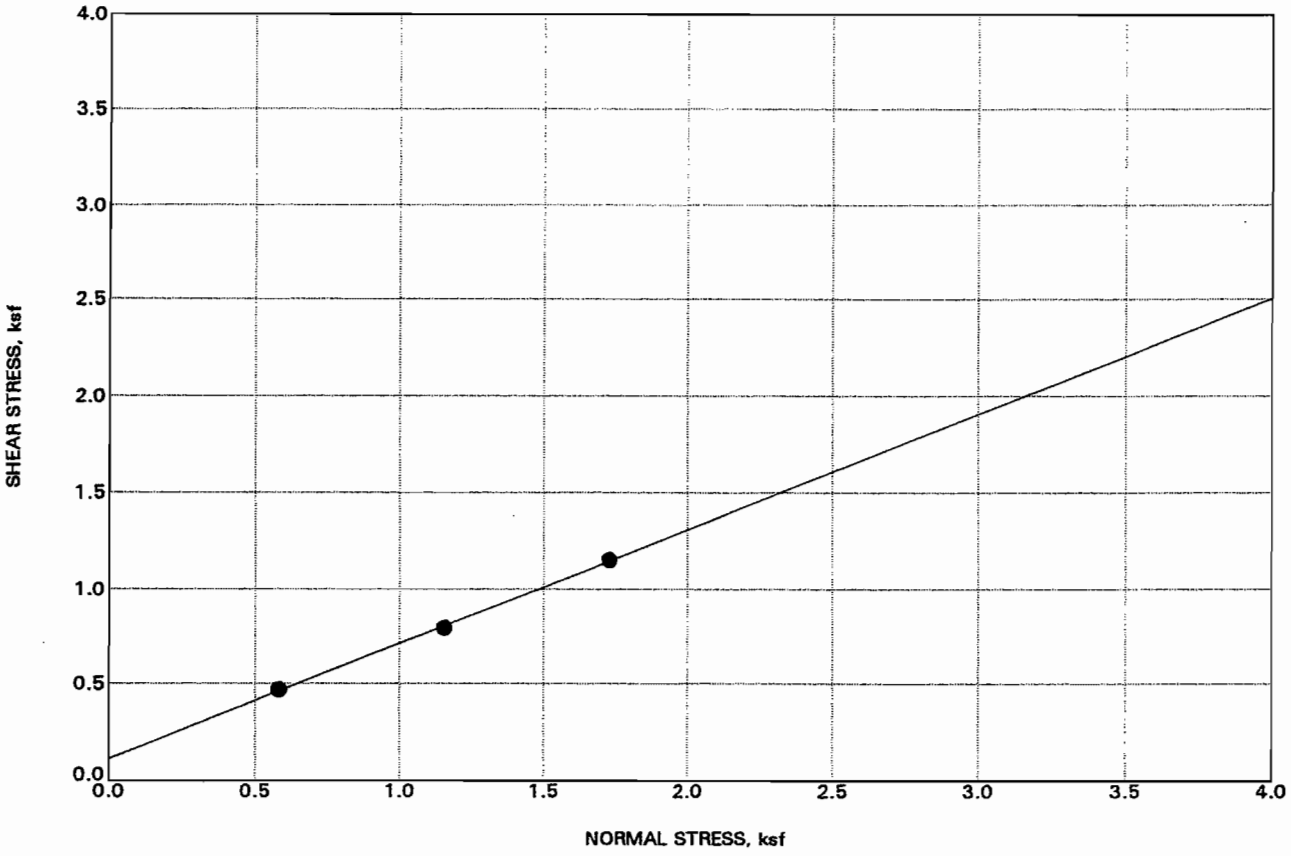
PLATE B-5o



EFFECTIVE COHESION, ksf	0.00
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	39
LOCATION	DH-115
DEPTH, ft	1.0
MOISTURE CONTENT, %	3
UNIT DRY WEIGHT, pcf	102
MATERIAL DESCRIPTION	Silty SAND (SM)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5p

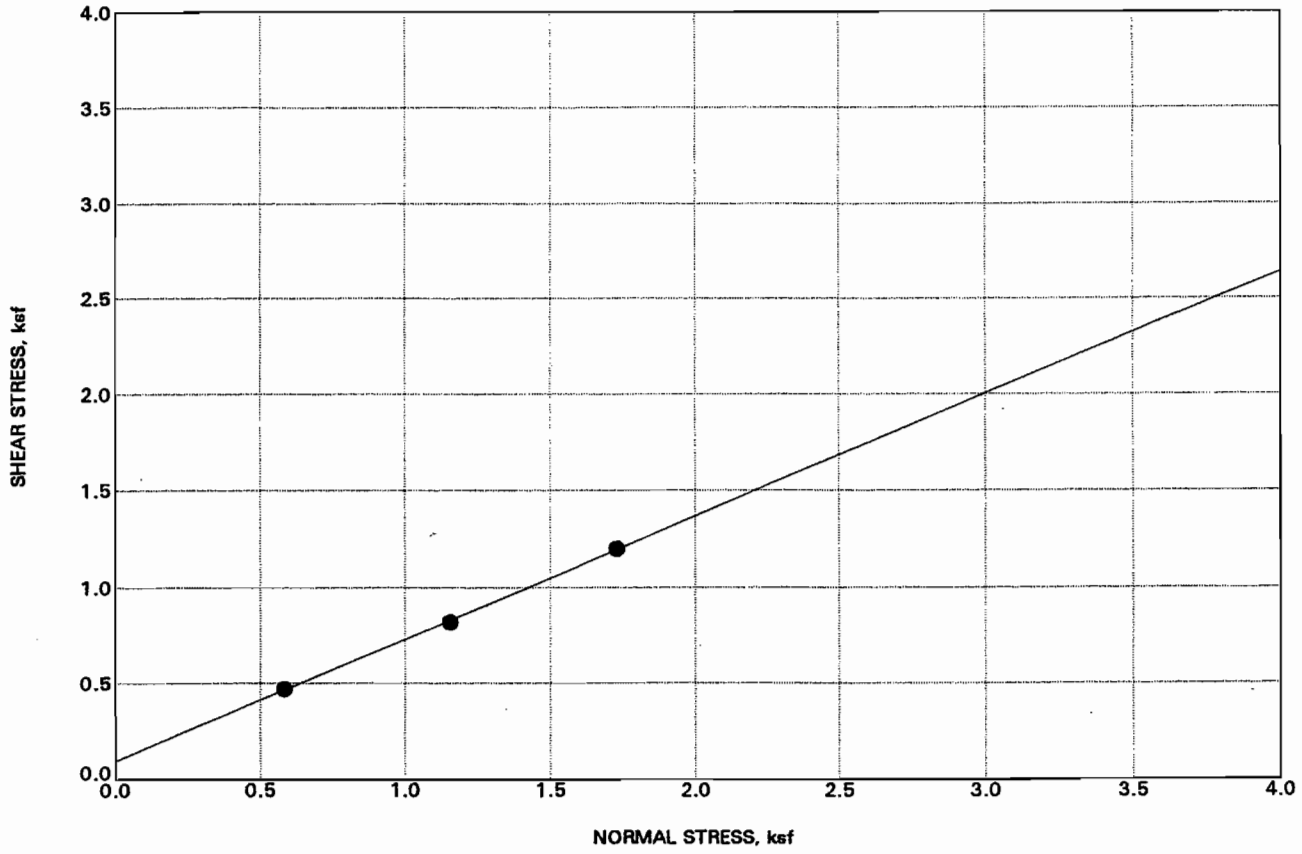


EFFECTIVE COHESION, ksf	0.11
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	31
LOCATION	DH-116
DEPTH, ft	2.0
MOISTURE CONTENT, %	
UNIT DRY WEIGHT, pcf	
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS

Los Osos Wastewater Project

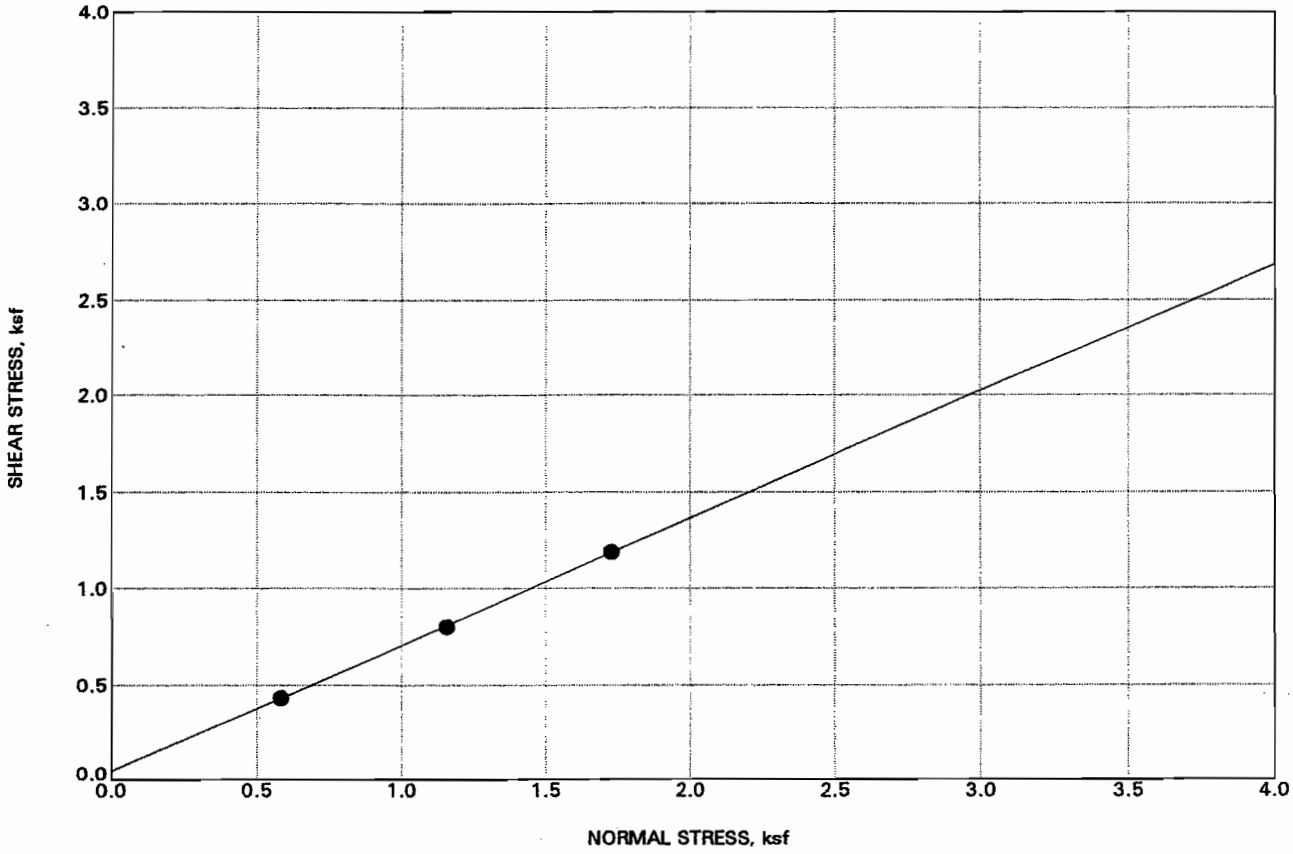
PLATE B-5q



EFFECTIVE COHESION, ksf	0.09
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	32
LOCATION	DH-117
DEPTH, ft	2.0
MOISTURE CONTENT, %	
UNIT DRY WEIGHT, pcf	
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5r

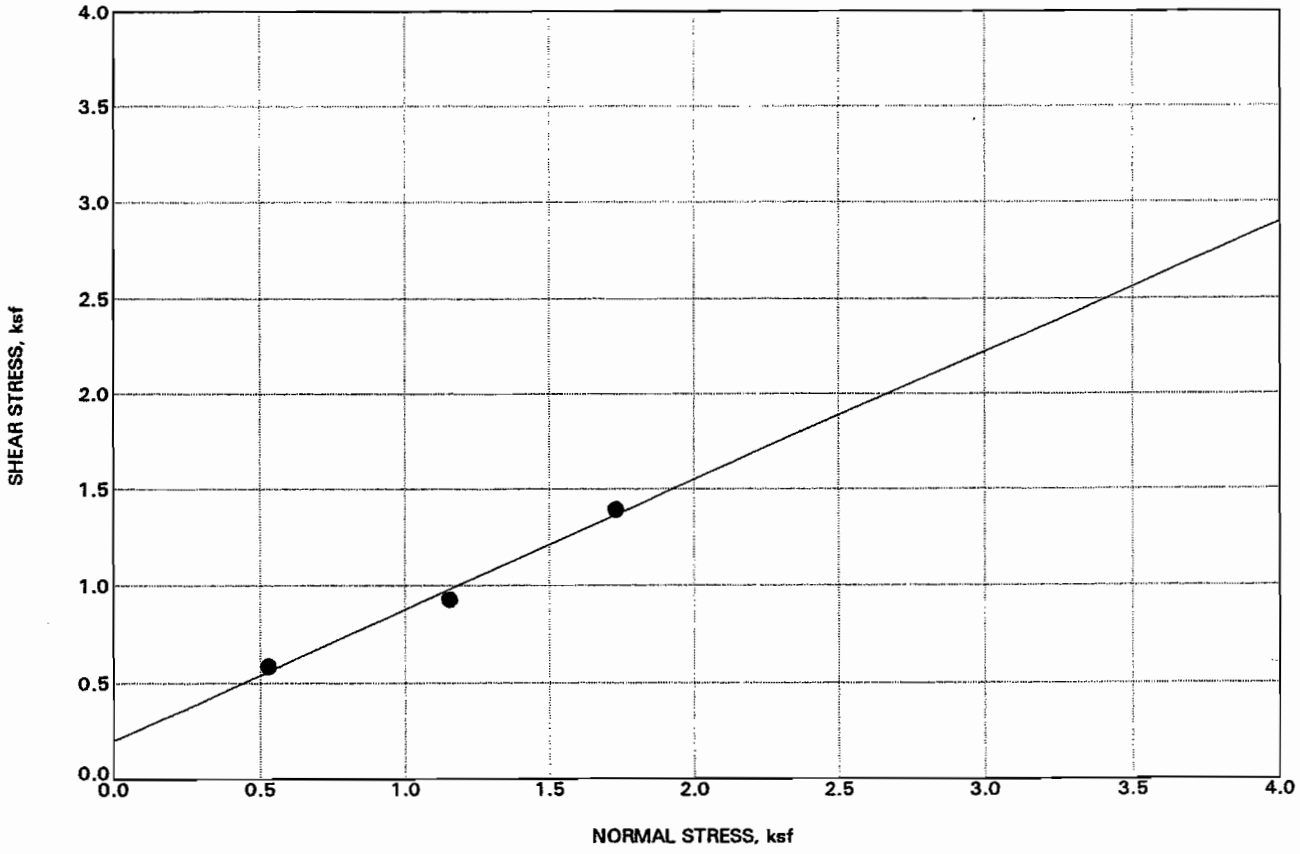


EFFECTIVE COHESION, ksf	0.04
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	33

LOCATION	DH-201
DEPTH, ft	4.0
MOISTURE CONTENT, %	
UNIT DRY WEIGHT, pcf	
MATERIAL DESCRIPTION	Fine SAND with silt (SP-SM)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5s

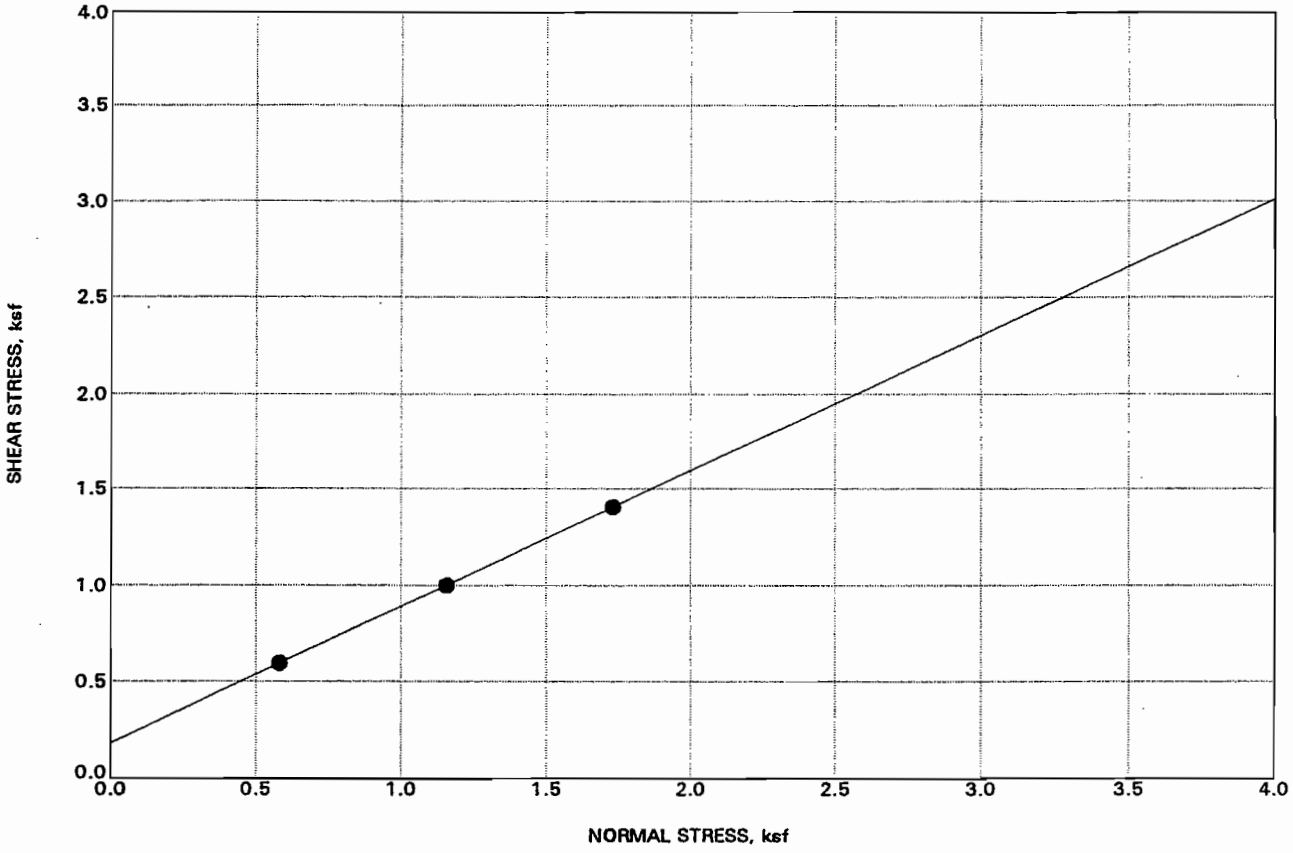


EFFECTIVE COHESION, ksf	0.20
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	34

LOCATION	DH-201
DEPTH, ft	15.0
MOISTURE CONTENT, %	8
UNIT DRY WEIGHT, pcf	105
MATERIAL DESCRIPTION	Fine SAND with silt (SP-SM)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5t

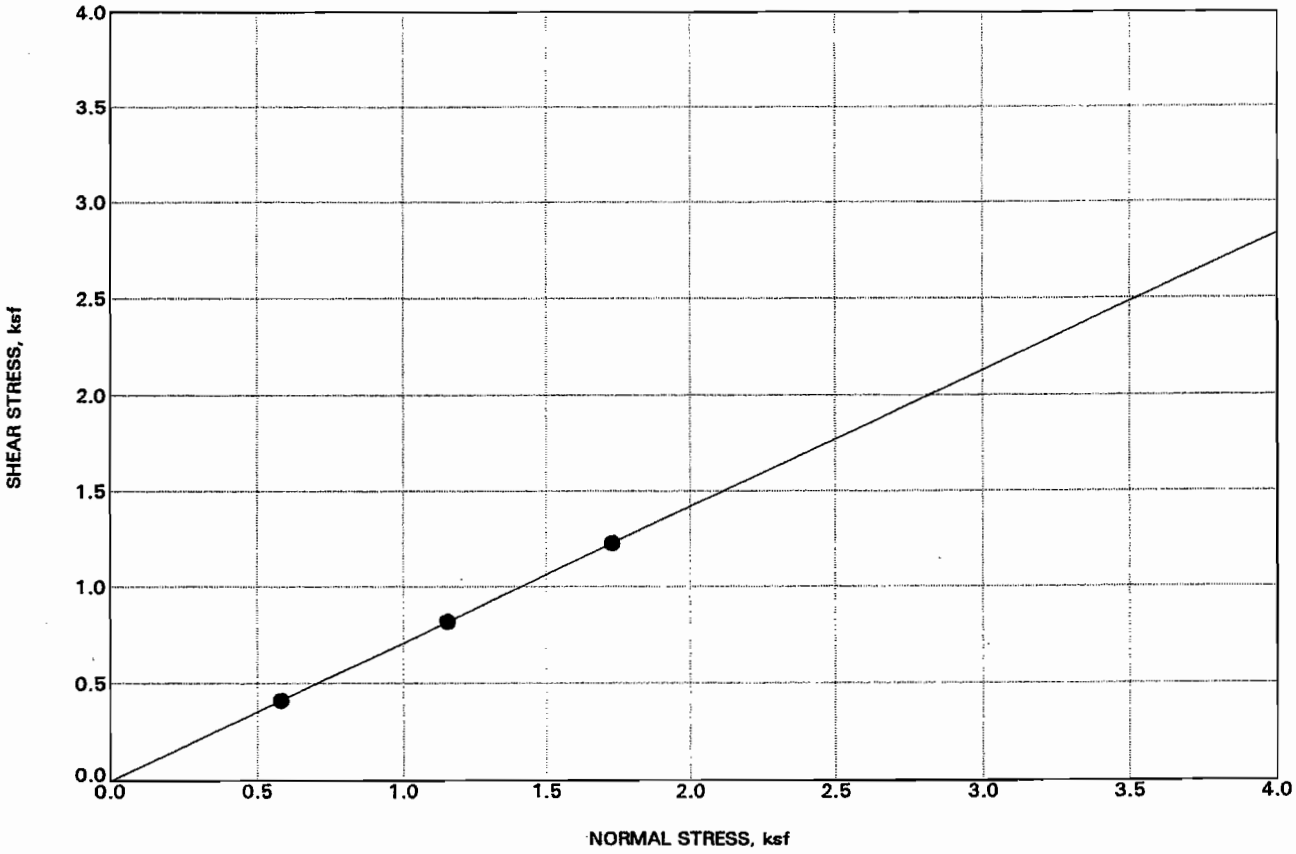


EFFECTIVE COHESION, ksf	0.18
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	35

LOCATION	DH-202
DEPTH, ft	5.0
MOISTURE CONTENT, %	5
UNIT DRY WEIGHT, pcf	104
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

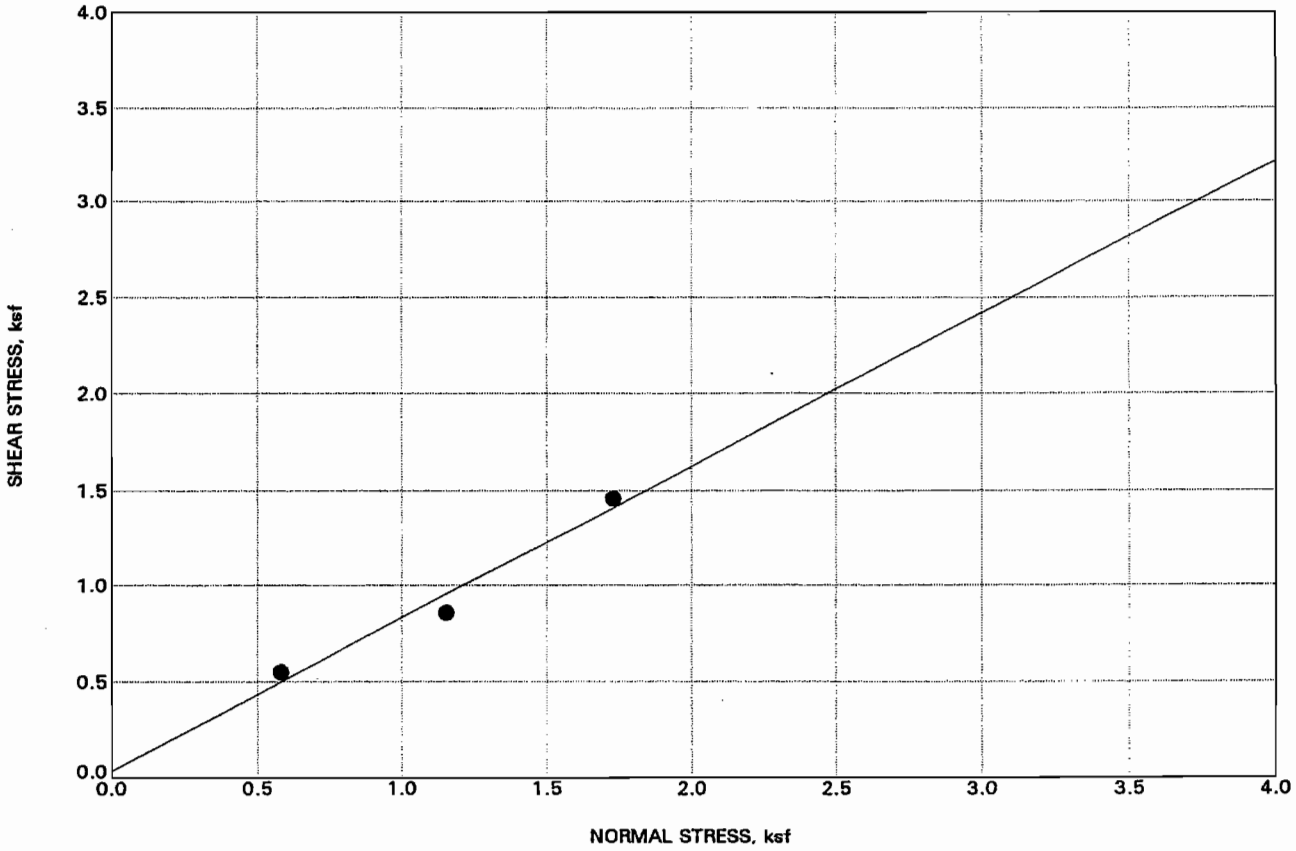
PLATE B-5u



EFFECTIVE COHESION, ksf	0.40
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	34
LOCATION	DH-203
DEPTH, ft	3.0
MOISTURE CONTENT, %	
UNIT DRY WEIGHT, pcf	
MATERIAL DESCRIPTION	Silty SAND (SM)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

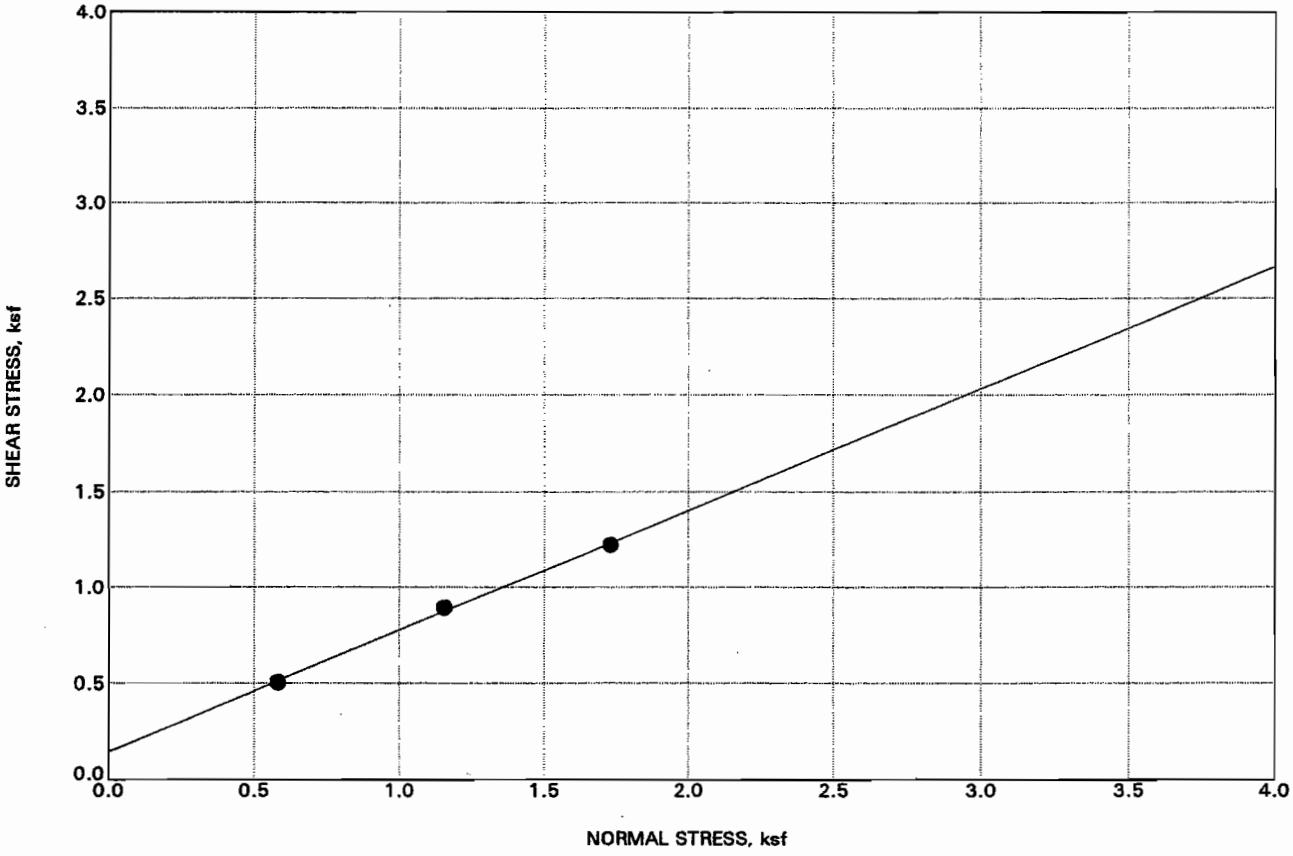
PLATE B-5v



EFFECTIVE COHESION, ksf	0.04
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	38
LOCATION	DH-301
DEPTH, ft	1.5
MOISTURE CONTENT, %	6
UNIT DRY WEIGHT, pcf	102
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5w

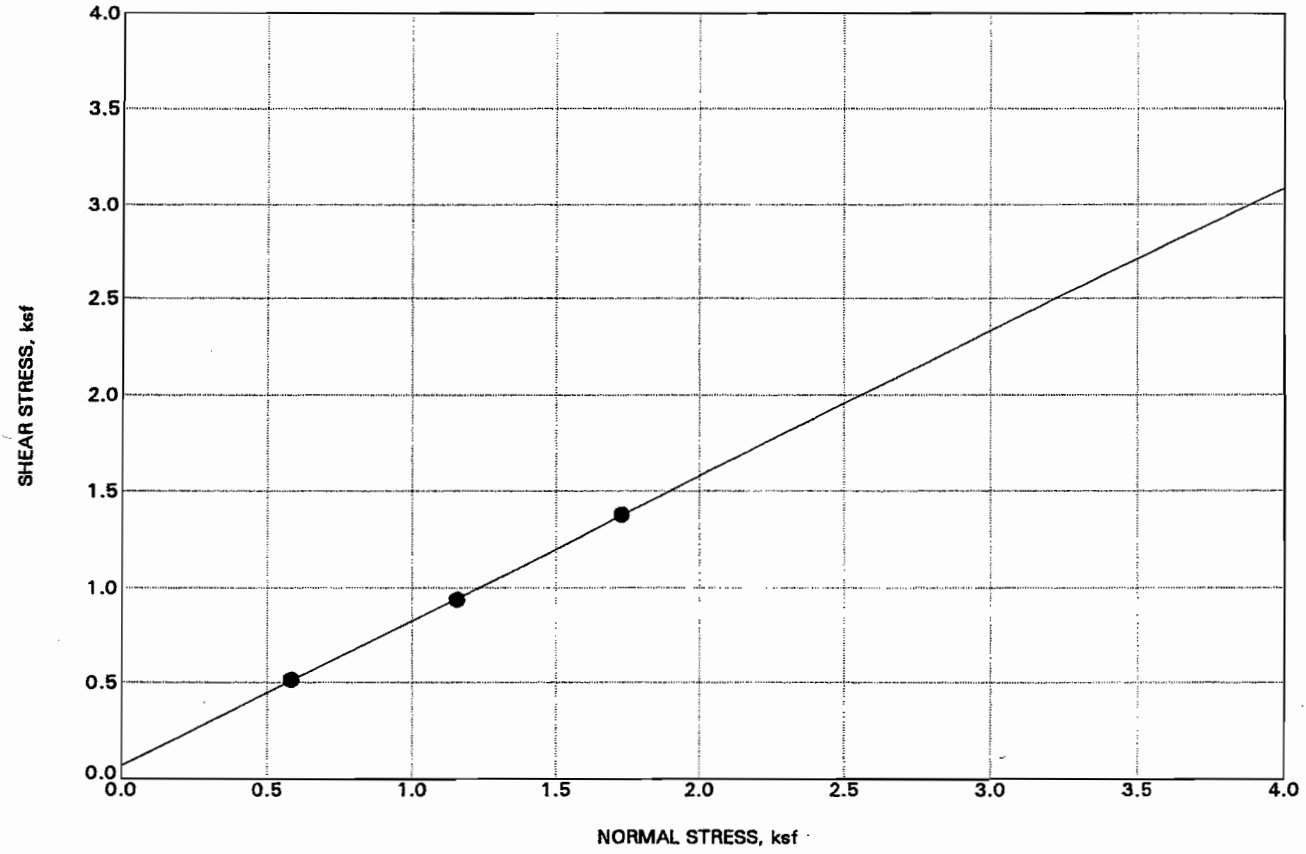


EFFECTIVE COHESION, ksf	0.15
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	32
LOCATION	DH-301
DEPTH, ft	3.0
MOISTURE CONTENT, %	
UNIT DRY WEIGHT, pcf	
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5x

DIRECTSH(54286)

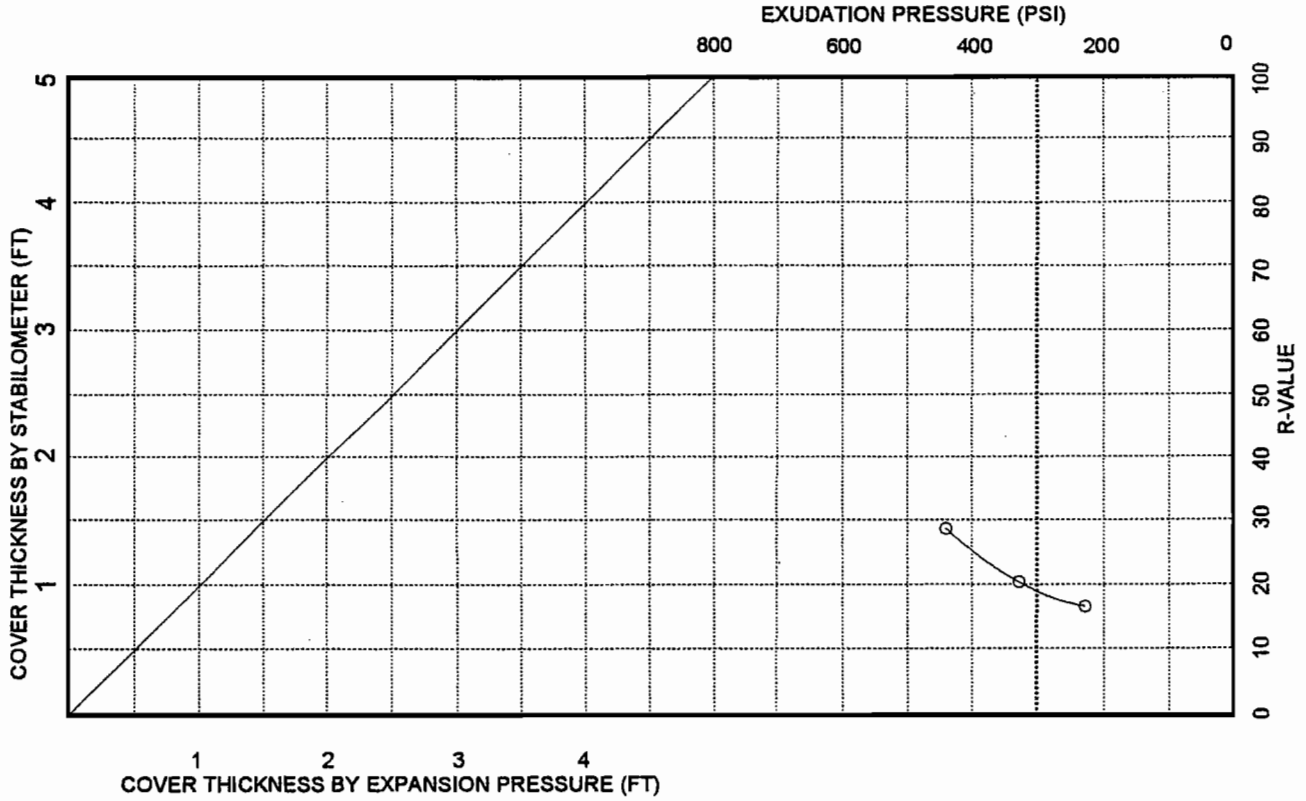


EFFECTIVE COHESION, ksf	0.07
EFFECTIVE ANGLE OF INTERNAL FRICTION, deg	37

LOCATION	DH-301
DEPTH, ft	35.0
MOISTURE CONTENT, %	22
UNIT DRY WEIGHT, pcf	105
MATERIAL DESCRIPTION	SAND (SP)
SAMPLE CONDITION	

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project

PLATE B-5y

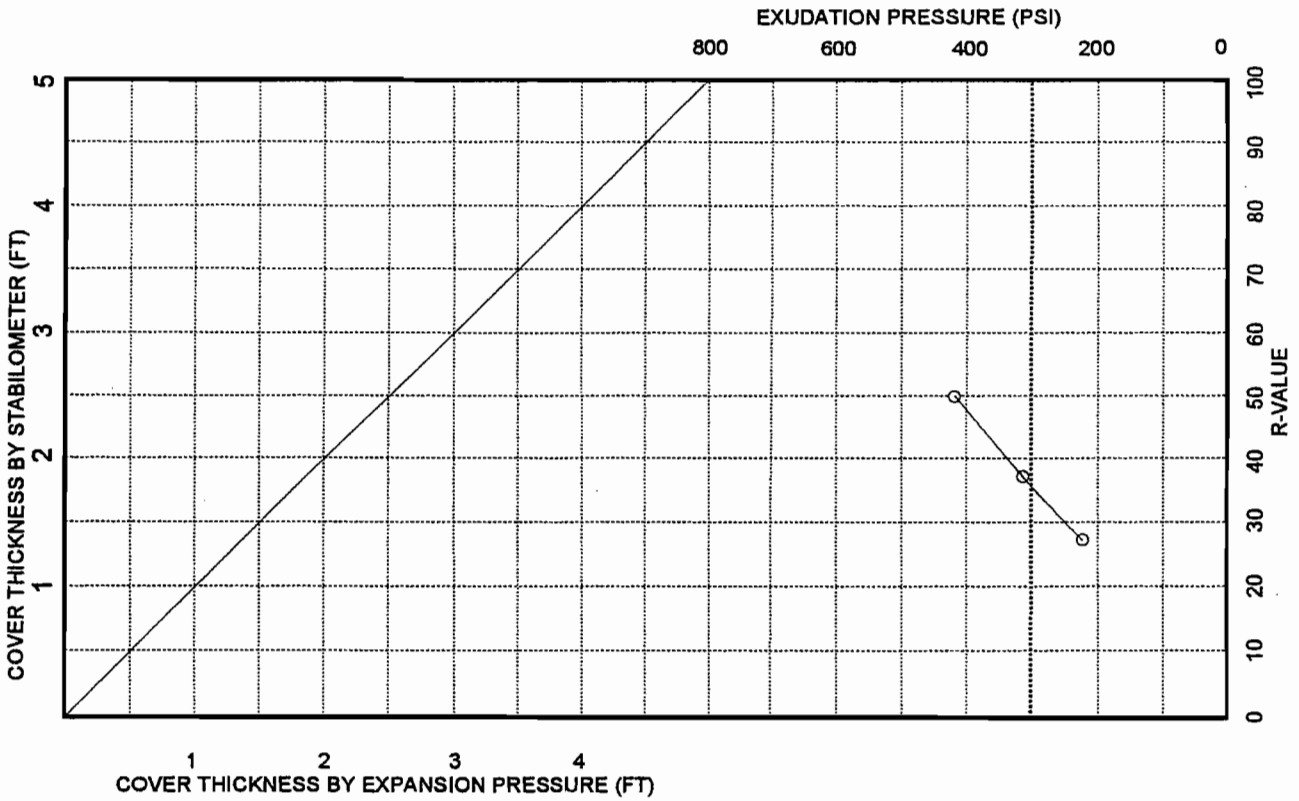


SAMPLE NO. DH-106 at 2 to 5 feet
DESCRIPTION: Clayey SAND with gravel (SC)
TESTED BY: Fugro West, Inc.

SPECIMEN	A	B	C
EXUDATION PRESSURE (PSI)	229	336	436
EXPANSION DIAL (0.0001")	0	9	15
EXPANSION PRESSURE (PSF)	0	39	65
RESISTANCE VALUE, "R"	17	21	28
% MOISTURE AT TEST	11.2	10.5	9.8
DRY DENSITY AT TEST (PCF)	131.2	133.5	135.7
R-VALUE AT 300 PSI EXUDATION PRESSURE			19

R-VALUE TEST RESULTS
Los Osos Wastewater Project

PLATE B-6a

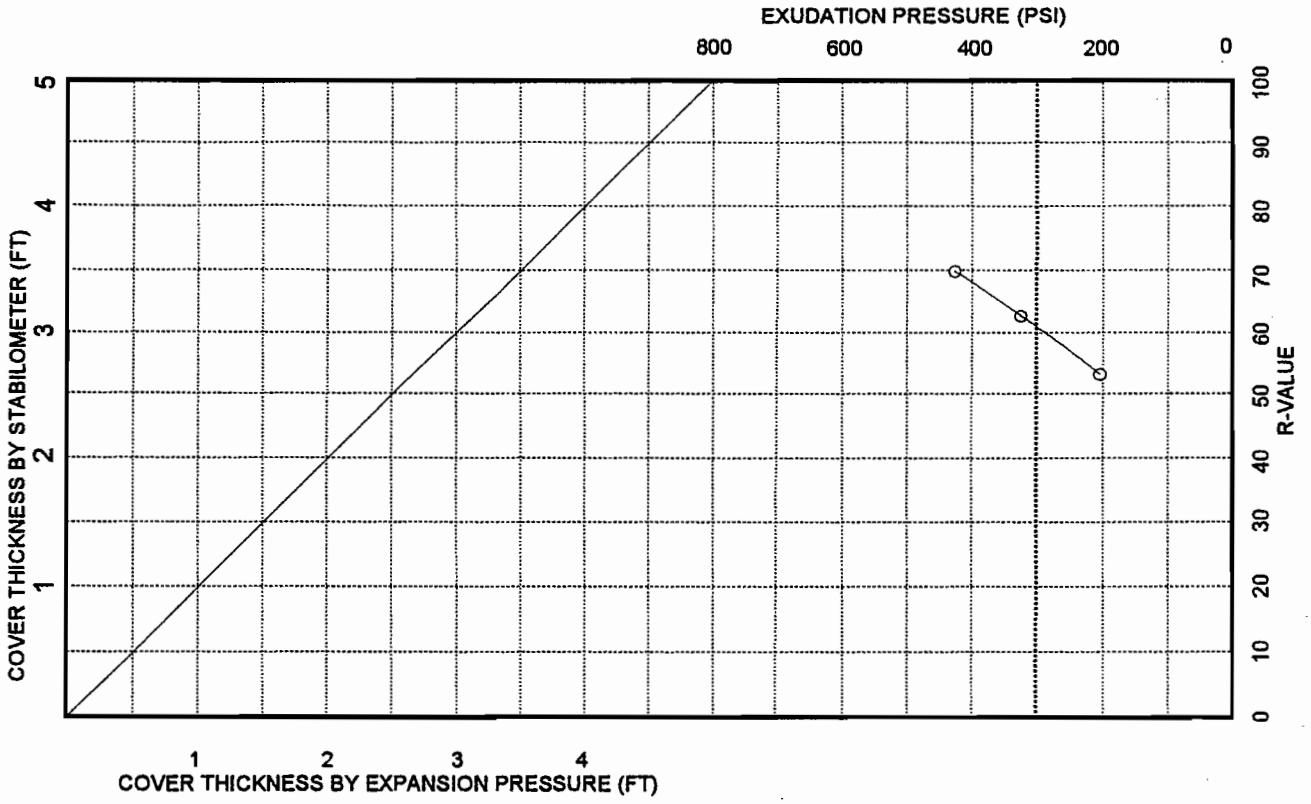


SAMPLE NO. DH-112 at 2 to 5 feet
DESCRIPTION: Sandy SILT with gravel (ML)
TESTED BY: Fugro West, Inc.

SPECIMEN	A	B	C
EXUDATION PRESSURE (PSI)	231	318	415
EXPANSION DIAL (0.0001")	0	7	16
EXPANSION PRESSURE (PSF)	0	30	69
RESISTANCE VALUE, "R"	27	37	50
% MOISTURE AT TEST	11.8	11.0	10.3
DRY DENSITY AT TEST (PCF)	127.3	128.5	129.6
R-VALUE AT 300 PSI EXUDATION PRESSURE			35

R-VALUE TEST RESULTS
Los Osos Wastewater Project

PLATE B-6b

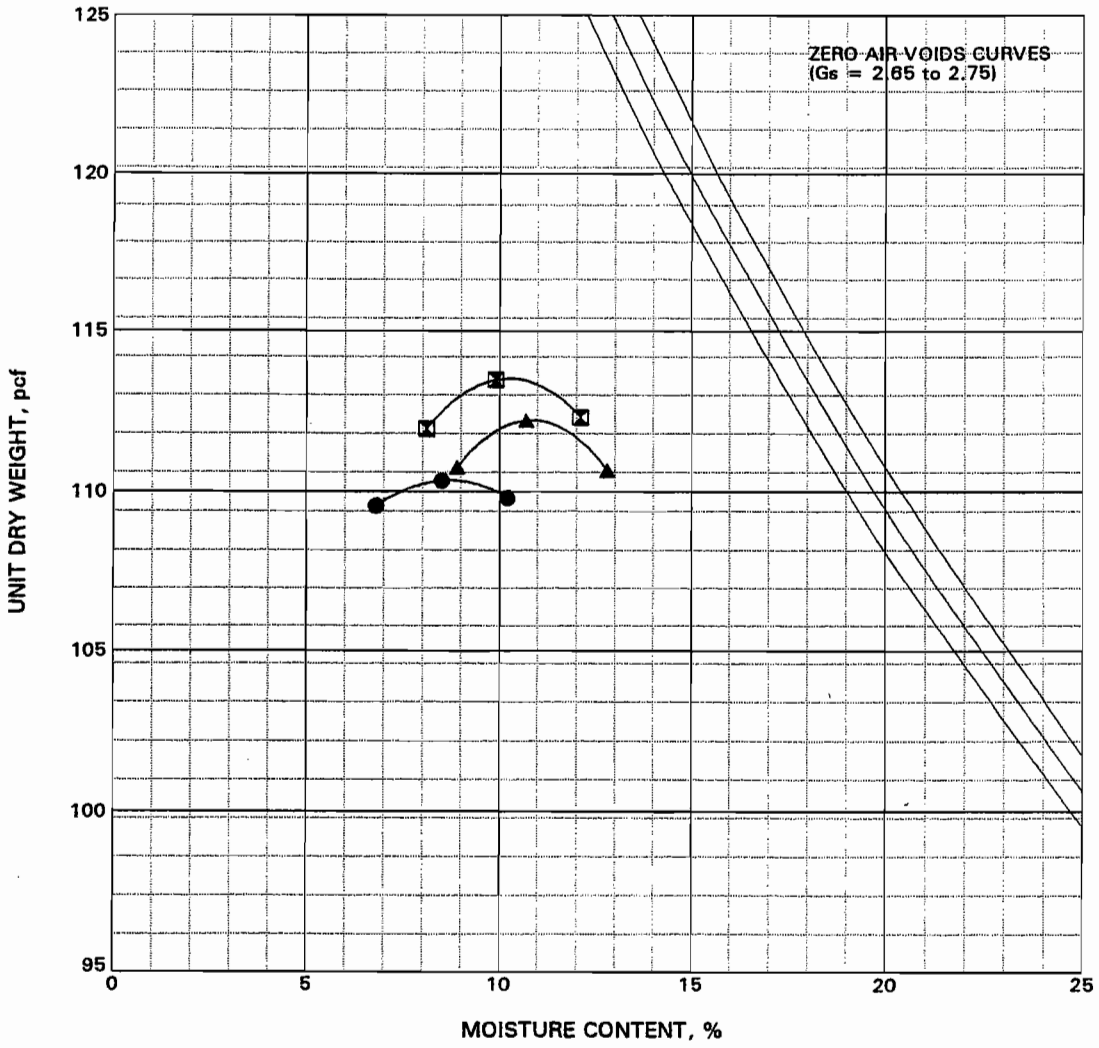


SAMPLE NO. DH-114 at 2 to 5 feet
DESCRIPTION: SAND (SP)
TESTED BY: Fugro West, Inc.

SPECIMEN	A	B	C
EXUDATION PRESSURE (PSI)	208	321	425
EXPANSION DIAL (0.0001")	0	0	5
EXPANSION PRESSURE (PSF)	0	0	22
RESISTANCE VALUE, "R"	53	63	69
% MOISTURE AT TEST	11.5	11.0	10.5
DRY DENSITY AT TEST (PCF)	109.0	109.7	110.6
R-VALUE AT 300 PSI EXUDATION PRESSURE			61

R-VALUE TEST RESULTS
Los Osos Wastewater Project

PLATE B-6c



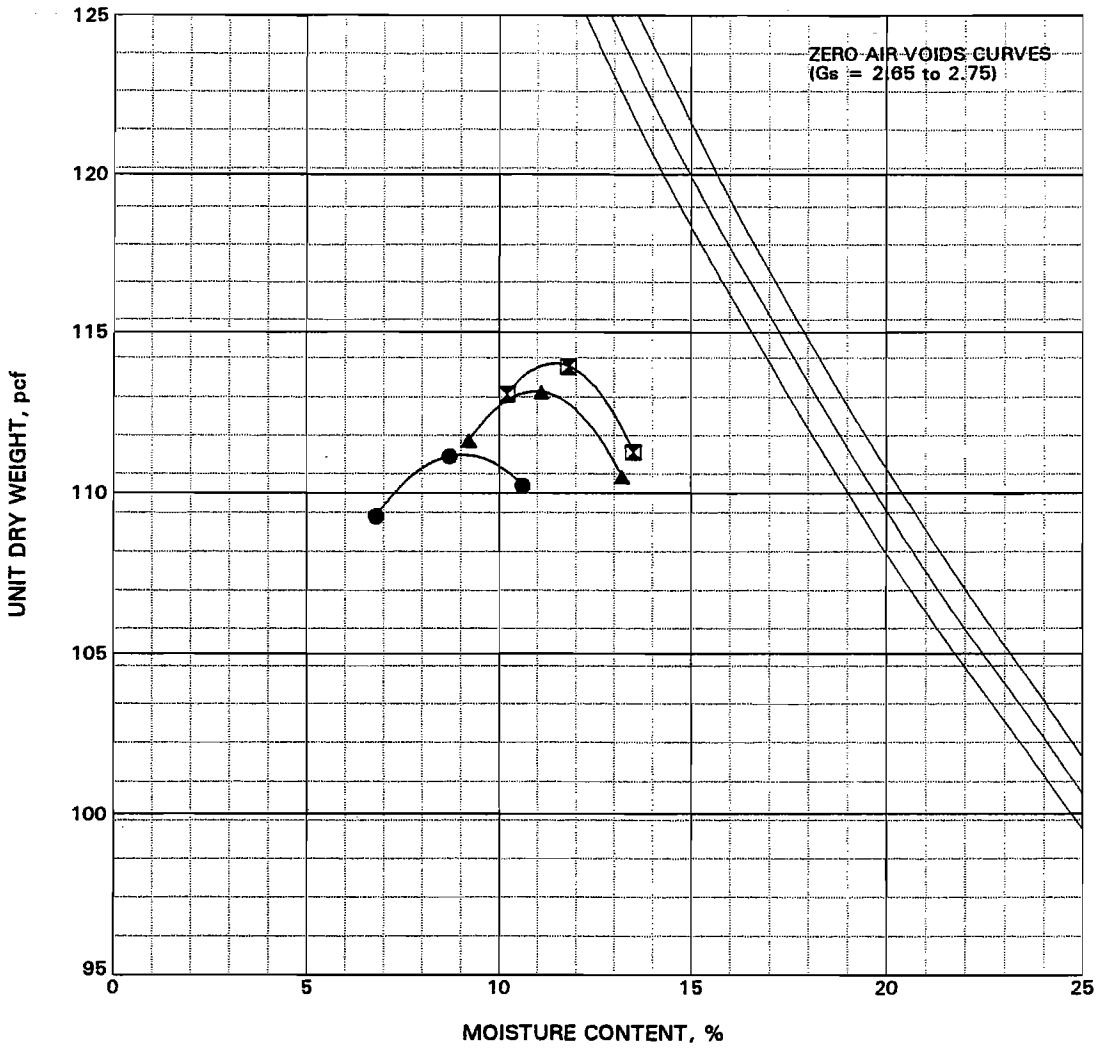
LEGEND	(location)	(depth, ft)	CLASSIFICATION	MAXIMUM UNIT DRY WEIGHT, pcf	OPTIMUM WATER CONTENT, %
●	DH-101	2.0	SAND (SP)	110.3	8.5
⊠	DH-102	2.0	SAND (SP)	113.5	10.2
▲	DH-103	2.0	SAND (SP)	112.3	10.7

Test Method: ASTM D1557

COMPACTION TEST RESULTS
Los Osos Wastewater Project

PROCTOR54286

PLATE B-7a

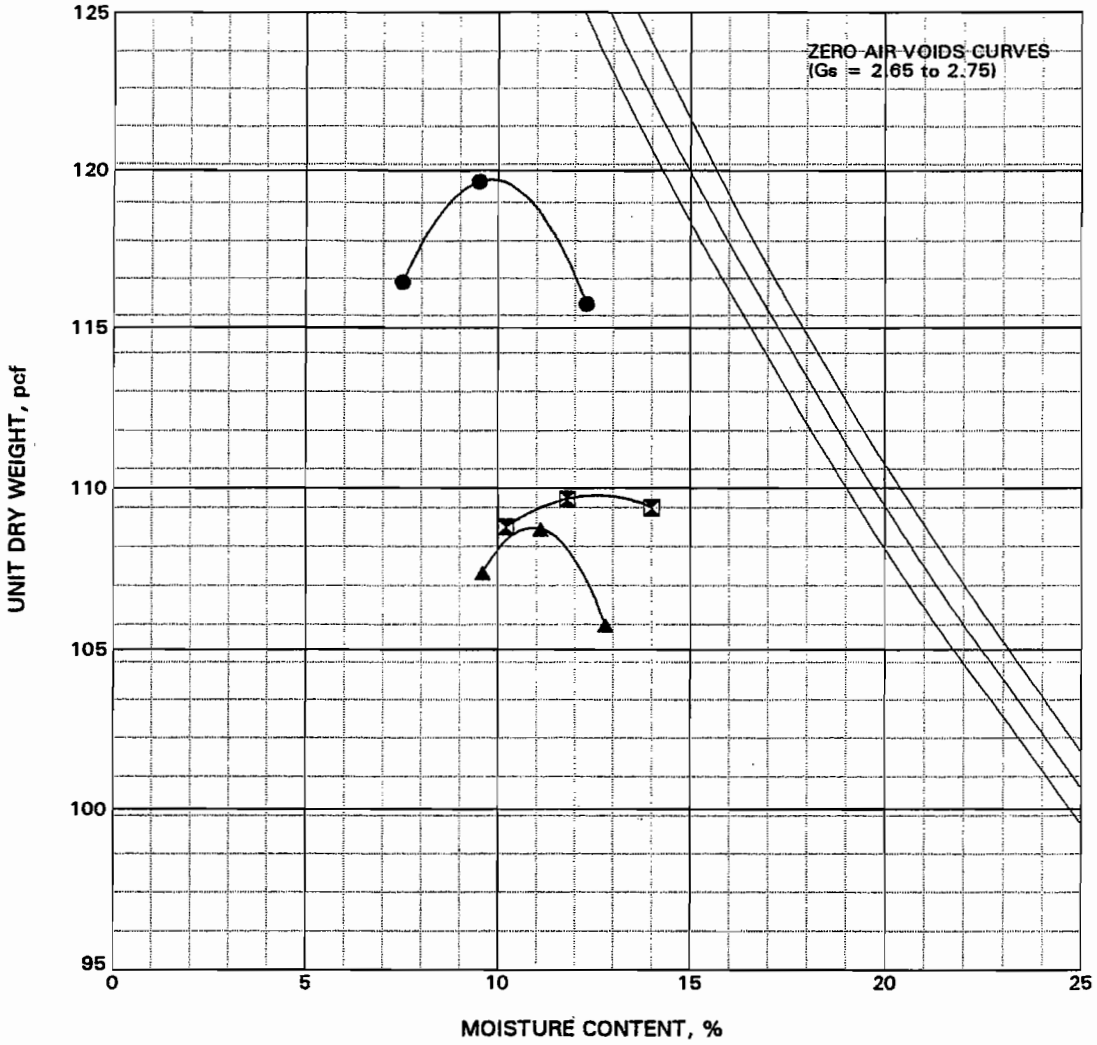


LEGEND	(location)	(depth, ft)	CLASSIFICATION	MAXIMUM UNIT DRY WEIGHT, pcf	OPTIMUM WATER CONTENT, %
●	DH-104	2.0	SAND (SP)	111.2	9.0
⊠	DH-105	2.0	SAND (SP)	114.0	11.2
▲	DH-109	2.0	SAND (SP)	113.2	10.8

Test Method: ASTM D1557

COMPACTION TEST RESULTS
Los Osos Wastewater Project

PLATE B-7b



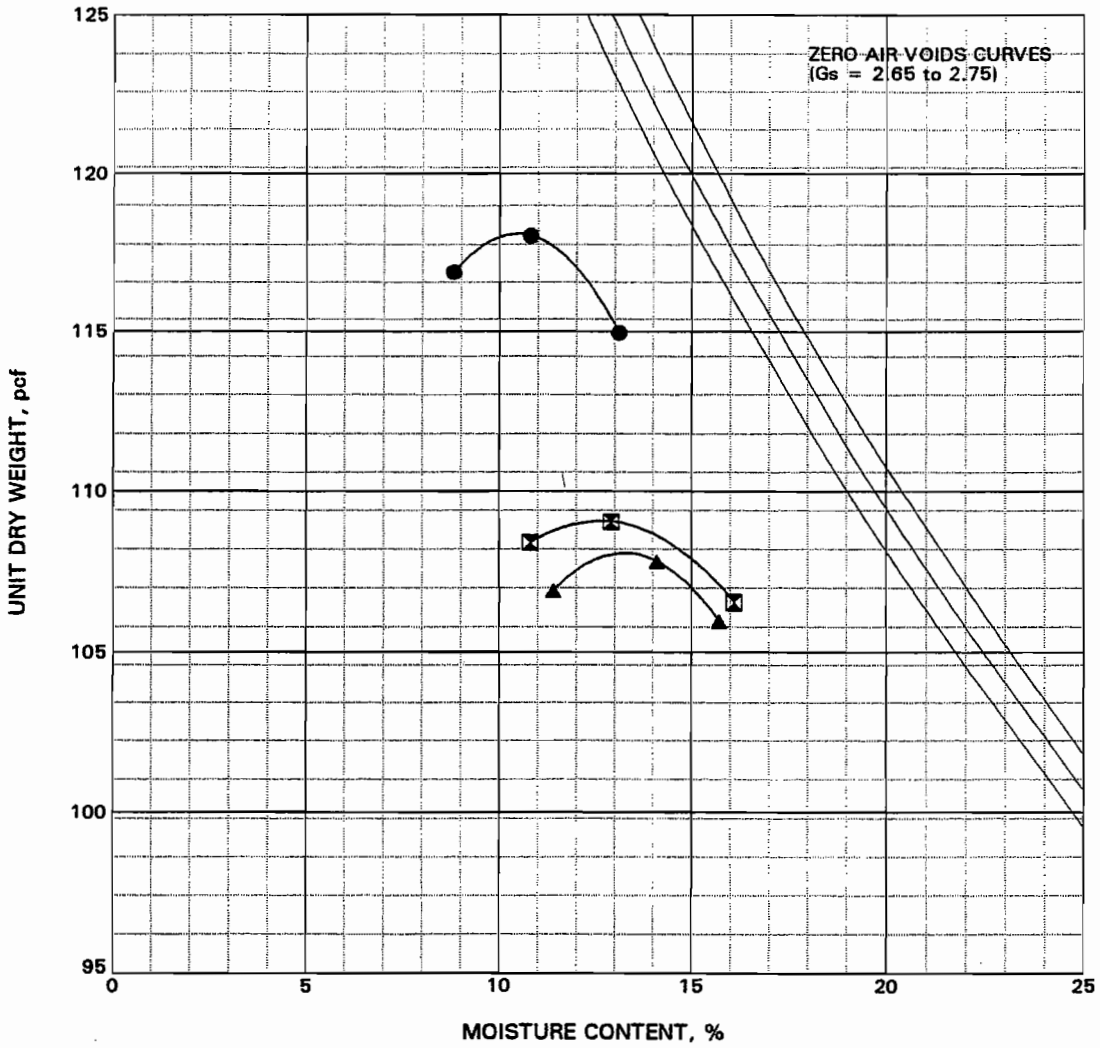
LEGEND (location)	(depth, ft)	CLASSIFICATION	MAXIMUM UNIT DRY WEIGHT, pcf	OPTIMUM WATER CONTENT, %
● DH-110	2.0	SAND with gravel (SP)	119.7	9.5
⊠ DH-111	2.0	SAND (SP)	109.7	12.2
▲ DH-113	2.0	SAND (SP)	108.8	10.8

Test Method: ASTM D1557

COMPACTION TEST RESULTS
Los Osos Wastewater Project

PROCTOR54286

PLATE B-7c



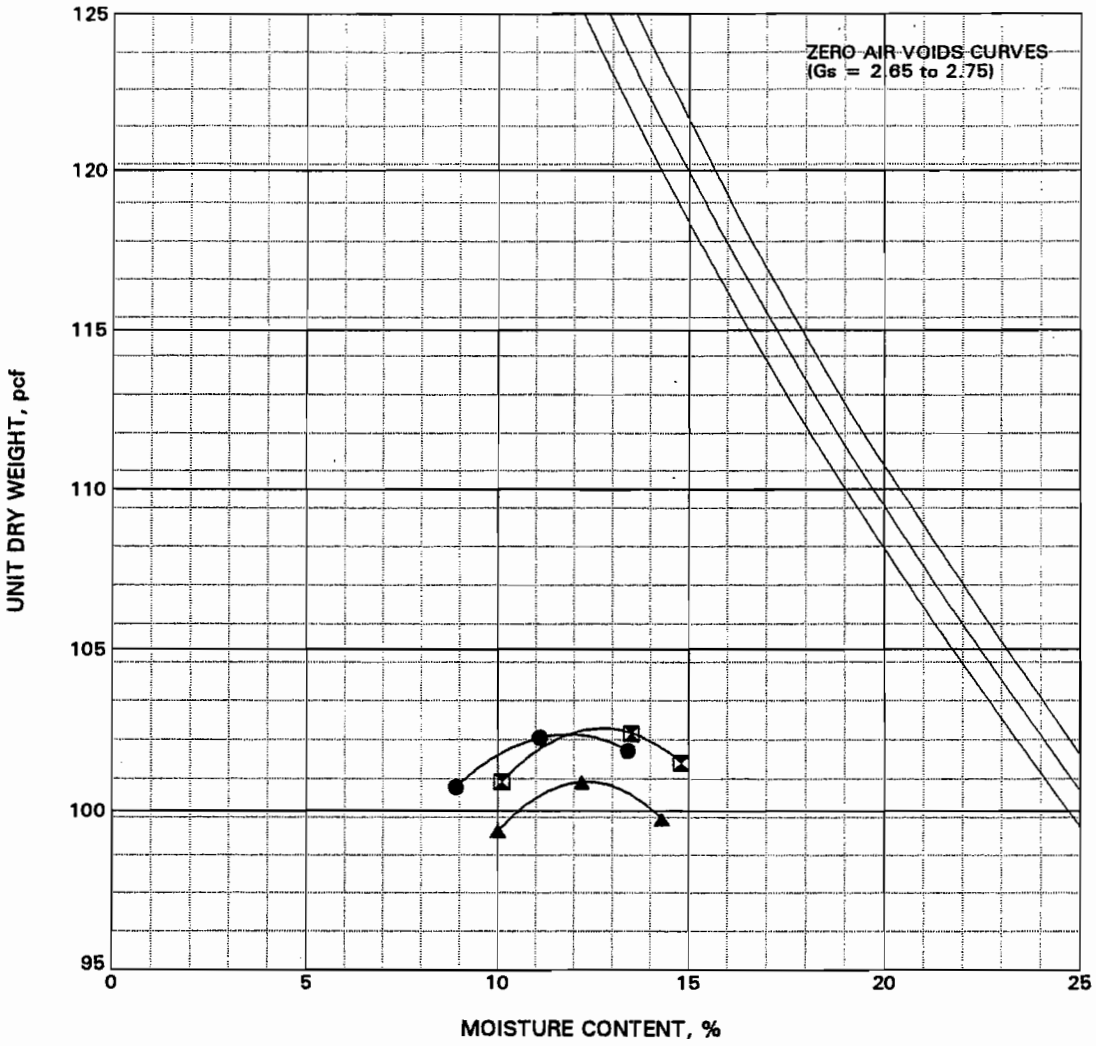
LEGEND			CLASSIFICATION	MAXIMUM UNIT DRY WEIGHT, pcf	OPTIMUM WATER CONTENT, %
	(location)	(depth, ft)			
●	DH-115	2.0	Silty SAND (SM)	118.2	10.4
⊠	DH-116	2.0	SAND (SP)	109.1	12.2
▲	DH-117	2.0	SAND (SP)	108.2	13.0

Test Method: ASTM D1557

COMPACTION TEST RESULTS
Los Osos Wastewater Project

PROCTOR54286

PLATE B-7d



LEGEND			CLASSIFICATION	MAXIMUM UNIT DRY WEIGHT, pcf	OPTIMUM WATER CONTENT, %
	(location)	(depth,ft)			
●	DH-201	4.0	SAND with silt (SP-SM)	102.4	11.8
⊠	DH-203	3.0	Silty SAND (SM)	102.6	12.6
▲	DH-301	3.0	SAND (SP)	100.9	12.2

Test Method: ASTM D1557

COMPACTION TEST RESULTS
Los Osos Wastewater Project

PROCTOR54286

PLATE B-7e

ATTACHMENT D1
BORING LOGS
FUGRO WEST, INC. (1996)

M&E Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/30/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING NO. 1 Sheet 2 of 3

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" CALIFORNIA MODIFIED SPLIT SPOON

AUTOHAMMER:140# HAMMER, 30" DROP

SURFACE ELEVATION: ~195' ABOVE MSL

DRILLING	START	FINISH		
TIME	1450	1745		
DATE	10/30/95	10/30/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
						21		SP	
						22			
						23			
						24			
						25			
						26			
						27			
						28			
						29			
					14				
CAL	18	14	1625	29 - 30.5	21	30			ORANGE BROWN MEDIUM SAND, SOME FINE SAND, MOIST TO DRY,
					37				VERY DENSE
						31			
						32			
						33			
						34		SC	REDDISH BROWN FINE TO MEDIUM SAND WITH SOME CLAY, MOIST,
					14				VERY DENSE
CAL	18	18	1637	34 - 35.5	22	35		SP	GRADES TO REDDISH BROWN FINE TO MEDIUM SAND WITH TRACE TO
					29				LITTLE CLAY, SLIGHTLY MOIST TO DRY, VERY DENSE
						36			PERFORM FALLING HEAD TEST AT 35.5' BGS
						37			
						38			
						39			
						40			
						41			
						42			

M&E Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. [illegible] DATE [illegible]
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING NO. 1
Sheet 3 of 3

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" CALIFORNIA MODIFIED SPLIT SPOON

AUTOHAMMER: 140# HAMMER, 30" DROP

SURFACE ELEVATION: ~195' ABOVE MSL

DRILLING	START	FINISH		
TIME	1450	1745		
DATE	10/30/95	10/30/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
						41		SP	
						42			
						43			
						44			
						45			
						46			
						47			
						48			
						49			
					35				
CAL	17	17	1741	49 - 50.4	47	50			LIGHT YELLOW BROWN FINE TO MEDIUM SAND, DRY, VERY DENSE
					50/5"				
						51			BORING COMPLETED AT A DEPTH OF 50.5 FEET BGS ON 10/30/95
						52			NO GROUNDWATER ENCOUNTERED ON 10/30/95
						53			
						54			
						55			
						56			
						57			
						58			
						59			
						60			
						61			
						62			

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/31/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 4
Sheet 1 of 3

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" CALIFORNIA MODIFIED SPLIT SPOON

AUTOHAMMER: 140# HAMMER, 30" DROP

SURFACE ELEVATION: ~235' ABOVE MSL

DRILLING	START	FINISH		
TIME	1035	1255		
DATE	10/31/95	10/31/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
								SP	
						1			
						2			
						3			
						4			
					4				
CAL	18	18	1044	4 - 5.5	6	5			ORANGE BROWN FINE TO MEDIUM SAND, DRY, MEDIUM DENSE
					7				
						6			
						7			
						8			
						9			
						10			
						11			
						12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
					13				
CAL	18	18	1102	19 - 20.5	16	20			AS ABOVE, EXCEPT DRY TO SLIGHTLY MOIST, DENSE
					21				
						21			PERFORM FALLING HEAD TEST AT 20.5' BGS
						22			

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EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/31/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 4
Sheet 2 of 3

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" CALIFORNIA MODIFIED SPLIT SPOON
AUTOHAMMER: 140# HAMMER, 30" DROP

SURFACE ELEVATION: ~235' ABOVE MSL

DRILLING	START	FINISH		
TIME	1035	1255		
DATE	10/31/95	10/31/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
								SP	
						21			
						22			
						23			
						24			
						25			
						26			
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
					10				
CAL	18	18	1215	34 - 35.5	19	35			AS ABOVE, VERY DENSE
					44				
						36			
						37			
						38			
						39			
						40			
						41			
						42			

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/31/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 4
Sheet 3 of 3

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" CALIFORNIA MODIFIED SPLIT SPOON

AUTOHAMMER: 140# HAMMER, 30" DROP

SURFACE ELEVATION: ~235' ABOVE MSL

DRILLING	START	FINISH		
TIME	1035	1255		
DATE	10/31/95	10/31/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
						41		SP	
						42			
						43			
						44			
						45			
						46			
						47			
						48			
						49			
					25				
CAL	18	18	1249	49 - 50.5	33	50			AS ABOVE, EXCEPT MOTTLED ORANGE BROWN/YELLOW BROWN
					44				
						51			PERFORM FALLING HEAD TEST AT 50.5' BGS
						52			BORING COMPLETED AT A DEPTH OF 50.5 FEET BGS ON 10/3195
						53			NO GROUNDWATER ENCOUNTERED ON 10/3195
						54			
						55			
						56			
						57			
						58			
						59			
						60			
						61			
						62			

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EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/26/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 5
Sheet 1 of 3

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" CALIFORNIA MODIFIED SPLIT SPOON
AUTO HAMMER: 140 # HAMMER, 30" DROP

SURFACE ELEVATION: ~185' ABOVE MSL

DRILLING	START	FINISH		
TIME	1330	1630		
DATE	10/26/95	10/26/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
								SP	
						1			BROWN FINE TO MEDIUM SAND, DRY
						2			
						3			
						4			
						5			
						6			
						7			
						8			
						9			AS ABOVE
						10			
						11			
						12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
					10	20			
CAL	18	18	1400	20 - 21.5	14	21			YELLOW BROWN FINE TO MEDIUM SAND, MOIST, MEDIUM DENSE
					16				
						22			PERFORM FALLING HEAD TEST AT 21.5' BGS

M&E Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/26/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 5
Sheet 2 of 3

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" CALIFORNIA MODIFIED SPLIT SPOON
AUTO HAMMER: 140# HAMMER, 30" DROP

SURFACE ELEVATION: ~185' ABOVE MSL

DRILLING	START	FINISH		
TIME	1330	1630		
DATE	10/26/95	10/26/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
						21		SP	
						22			
						23			
						24			
						25			
						26			
						27			
						28			
						29			
						30			
						31			
					11	32			
CAL	18	18	1507	32- 33.5	22	33			LIGHT YELLOW BROWN FINE TO MEDIUM SAND, DRY, VERY DENSE
					30				
						34			
						35			
						36			
						37			
						38			
						39			
						40			
						41			
						42			

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/26/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 5
Sheet 3 of 3

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" CALIFORNIA MODIFIED SPLIT SPOON

AUTO HAMMER: 140# HAMMER, 30" DROP

SURFACE ELEVATION: ~185' ABOVE MSL

DRILLING	START	FINISH		
TIME	1330	1630		
DATE	10/26/95	10/26/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
					4			SP	
CAL	18	18	1531	40 - 41.5	21	41			AS ABOVE
					38				
						42			
						43			
						44			
						45			
					20				MOTTLED ORANGE/REDDISH BROWN FINE TO MEDIUM SAND, DAMP
CAL	18	0	1545		29	46			TO WET, VERY DENSE, NO SAMPLE RECOVERY,
CAL	18	18	1600	45 - 46.5	36				RESAMPLE WITH SAND CATCHER
						47			
						48			
						49			
					4				AS ABOVE
CAL	18	18	1624	49 - 50.5	29	50			NO FREE WATER AFTER OVERNIGHT SETTLING
					44			SC	ORANGE BROWN CLAYEY SAND, MOIST, VERY DENSE
						51			PERFORM FALLING HEAD TEST AT 50.5' BGS
						52			
									BORING COMPLETED AT A DEPTH OF 50.5 FEET BGS ON 10/26/95
						53			NO GROUNDWATER ENCOUNTERED ON 10/26/95
						54			
						55			
						56			
						57			
						58			
						59			
						60			
						61			
						62			

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT NO. 016888 DATE 10/25/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING NO. 8
Sheet 1 of 4

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" CALIFORNIA SPLIT SPOON SAMPLER
18" STANDARD PENETRATION TEST AT 100' AND DEEPER
AUTO HAMMER: 140# HAMMER, 30 " DROP, DOWNHOLE HAMMER
AT 110' AND DEEPER

SURFACE ELEVATION: ~185' ABOVE MSL

DRILLING	START	FINISH	START	FINISH
TIME	950	1720	830	1140
DATE	10/25/95	10/25/95	10/27/95	10/27/95

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
								SP	
						1			BROWN FINE TO MEDIUM SAND, PREDOMINANTLY FINE SAND, DRY
						2			
						3			
						4			
					3	5			
					4				
CAL	18	18	1000	4.5 - 6	4	6			AS ABOVE, RED BROWN, TRACE SILT, LOOSE
						7			
						8			
						9			
						10			
						11			
					8	12			
					14				
CAL	18	18	1016	12 - 13.5	18	13			BECOMES ORANGE BROWN, MOIST, DENSE
						14			
						15			
						16			
						17			
						18			
						19			TIGHT DRILLING
					34				
CAL	17	17	1034	19.5 - 20.9	48	20		SW	LIGHT BROWN FINE TO MEDIUM SAND AND ANGULAR GRAVEL (TO 1/2"),
					50/5"	21		SP	DRY, VERY DENSE
									LIGHT YELLOW BROWN FINE TO MEDIUM SAND, DRY, VERY DENSE
						22			

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/25/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 8 Sheet 2 of 4

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" CALIFORNIA SPLIT SPOON SAMPLER
18" STANDARD PENETRATION TEST AT 100' AND DEEPER
AUTO HAMMER: 140# HAMMER, 30 " DROP, DOWNHOLE HAMMER
AT 110' AND DEEPER

SURFACE ELEVATION: ~185' ABOVE MSL

DRILLING	START	FINISH	START	FINISH
TIME	950	1720	830	1140
DATE	10/25/95	10/25/95	10/27/95	10/27/95

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
						21		SP	
						22			
						23			
						24			
						25			
						26			
						27			
						28			
						29			
						30			
						31			
						32			
						33			
					34	34			
CAL	16	16	1107	34 - 35.3	50	35			ORANGE BROWN FINE TO MEDIUM SAND, DRY, VERY DENSE
					50/4"				
						36			PERFORM FALLING HEAD TEST AT 35.5' BGS
						37			
						38			
						39			
						40			
						41			
						42			

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT NO. [illegible] DATE [illegible]
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING NO. 8
Sheet 3 of 4

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" CALIFORNIA SPLIT SPOON SAMPLER
18" STANDARD PENETRATION TEST AT 100' AND DEEPER
AUTO HAMMER: 140# HAMMER, 30 " DROP, DOWNHOLE HAMMER
AT 110' AND DEEPER

SURFACE ELEVATION: ~185' ABOVE MSL

DRILLING	START	FINISH	START	FINISH
TIME	950	1720	830	1140
DATE	10/25/95	10/25/95	10/27/95	10/27/95

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
						41		SP	EASIER DRILLING
						42			
						43			
						44			
						45			
						46			
						47			
						48			
					24				
CAL	16	16	1240	48 - 49.3	43	49			ORANGE BROWN FINE TO MEDIUM SAND, PREDOMINANTLY MEDIUM SAND, MOIST TO DAMP, VERY DENSE
					50/4"				
						50			
						51			
						52			
						53			
						54			
						55			
						56			
						57			
						58			
						59			
					24				
CAL	16	16	1313	59 - 60.3	50	60			ORANGE BROWN FINE TO MEDIUM SAND, DRY, VERY DENSE
					50/4"				
						61			
						62			

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/25/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 8
Sheet 4 of 4

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" CALIFORNIA SPLIT SPOON SAMPLER
18" STANDARD PENETRATION TEST AT 100' AND DEEPER
AUTO HAMMER: 140# HAMMER, 30 " DROP, DOWNHOLE HAMMER
AT 110' AND DEEPER

SURFACE ELEVATION: ~185' ABOVE MSL

DRILLING	START	FINISH	START	FINISH
TIME	950	1720	830	1140
DATE	10/25/95	10/25/95	10/27/95	10/27/95

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
								SP	
					14	70			AS ABOVE
CAL	11	11	1348	69 - 69.9	50/5"				
					29				
CAL	17	17	1410	79 - 80.4	47	80			AS ABOVE
					50/5"				
					22				
CAL	17	17	1452	89 - 90.4	49	90			AS ABOVE, TRACE TO LITTLE LOCAL CLAY
					50/5"				
SPT	6	6	1530	99 - 99.5	115/6"	100			LIGHT BROWN FINE SAND, DRY, WELL INDURATED
					18				
SPT	17	17	1630	109 - 110.4	44	110			ORANGE BROWN FINE TO MEDIUM SAND, DRY, VERY DENSE
					50/5"				
					19				
SPT	18	18	1704	119 - 120.5	45	120			AS ABOVE, REDDISH BROWN, TRACE SILT AND CLAY, SLIGHTLY MOIST
					49				
10/27/95					23				
SPT	16	16	840	129 - 130.3	36	130			ORANGE BROWN FINE TO MEDIUM SAND, SLIGHTLY MOIST
					50/4"				
					30				
SPT	11	11	920	139 - 139.9	50/5"	140			AS ABOVE, LIGHT ORANGE BROWN, MOIST
					18				
SPT	17	17	1027	149 - 150.4	43	150			AS ABOVE
					50/5"				
									GROUNDWATER AT 158.5 FEET BGS
					6				
SPT	18	18	1130	159 - 160.5	10	160			BROWN FINE TO MEDIUM SAND, WET, MEDIUM DENSE
					8				
									BORING COMPLETED AT A DEPTH OF 165' BGS ON 10/27/95
						170			GROUNDWATER ENCOUNTERED AT A DEPTH OF 158.5' BGS ON 10/27/95
									GROUNDWATER MEASURED AT 158' BGS ON 11/4/95

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 11/1/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 9
Sheet 1 of 3

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" STANDARD PENETRATION TEST
AUTO HAMMER: 140 # HAMMER, 30" DROP

SURFACE ELEVATION: ~55' ABOVE MSL

DRILLING	START	FINISH		
TIME	750	950		
DATE	11/1/95	11/1/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
						1		AF	BROWN FINE TO COARSE SAND AND 3/4" GRAVEL, DRY (ROAD BASE)
						2		SP	BROWN FINE SAND, DRY
						3			
						4			
					5				
SPT	18	18	805	4 - 5.5	8	5			ORANGE BROWN FINE TO MEDIUM SAND, DRY,
					15				MEDIUM DENSE, PREDOMINANTLY FINE SAND
						6			
						7			
						8			
						9			
						10			
						11			
						12			
						13			
						14			
					7				
					12				
SPT	18	18	823	14 - 15.5	12	15			AS ABOVE, TRACE TO LITTLE SILT
						16			
						17			
						18			
						19			
						20			
						21			
						22			

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 11/1/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 9
Sheet 2 of 3

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" STANDARD PENETRATION TEST
AUTO HAMMER: 140 # HAMMER, 30" DROP

SURFACE ELEVATION: ~55' ABOVE MSL

DRILLING	START	FINISH		
TIME	750	950		
DATE	11/1/95	11/1/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
								SP	
						21			
						22			
						23			
						24			
					8				
					15				
SPT	18	18	840	24 - 25.5	25	25			AS ABOVE
						26			
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
					10				
SPT	18	18	859	34 - 35.5	22	35			AS ABOVE, LIGHT ORANGE BROWN
					42				
						36			
						37			
						38			
						39			
						40			
						41			
						42			

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 11/1/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 9
Sheet 3 of 3

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" STANDARD PENETRATION TEST
AUTO HAMMER: 140 # HAMMER, 30" DROP

SURFACE ELEVATION: ~55' ABOVE MSL

DRILLING	START	FINISH		
TIME	750	950		
DATE	11/1/95	11/1/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
						41		SP	
						42			
						43			EASY DRILLING AT 43' BGS - PROBABLE GROUNDWATER CONTACT
					6	44			
					15				
SPT	17.5	17.5	930	44 - 45.5	50/5.5"	45			MEDIUM ORANGE BROWN FINE TO MEDIUM SAND, WET, VERY DENSE
						46			
						47			
						48			
						49			
						50			
						51			
						52			UNABLE TO SAMPLE DUE TO FLOWING SANDS
						53		SC	PILOT BIT HAD LIGHT BROWN CLAYEY FINE TO MEDIUM SAND, WET
						54			BORING COMPLETED AT A DEPTH OF 54.5' BGS ON 11/1/95.
						55			GROUNDWATER ENCOUNTERED AT A DEPTH OF 43' BGS ON 11/1/95
									GROUNDWATER LEVEL MEASURED AT A DEPTH OF 42' BGS ON 11/1/95
						56			
						57			
						58			
						59			
						60			
						61			
						62			

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EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/31/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 12
Sheet 1 of 4

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" STANDARD PENETRATION TEST

DOWNHOLE HAMMER: 140# HAMMER, 30" DROP

SURFACE ELEVATION: ~70' ABOVE MSL

DRILLING	START	FINISH		
TIME	910	1120		
DATE	10/31/95	10/31/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
								AF	ASPHALT
								SP	YELLOW BROWN FINE TO MEDIUM SAND, DRY
						1			
						2			
						3			
						4			
						5			
						6			
						7			
						8			
						9			
					13				
					21				
SPT	18	18	923	9 - 10.5	27	10			AS ABOVE, DENSE
						11			
						12			
						13			
						14			
						15			
						16			
						17			TRACE TO LITTLE FINE GRAVEL AT 17' BGS, TRACE CLAY
						18			
						19			
						20			
						21			
					18				
					25				
SPT	18	18	938	21 - 22.5	42	22		SM	LIGHT BROWN WITH SOME ORANGE BROWN STAINING, SILTY FINE TO MEDIUM SAND, DRY, VERY DENSE

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/31/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 12
Sheet 2 of 4

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" STANDARD PENETRATION TEST

DOWNHOLE HAMMER: 140# HAMMER, 30" DROP

SURFACE ELEVATION: ~70' ABOVE MSL

DRILLING	START	FINISH		
TIME	910	1120		
DATE	10/31/95	10/31/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
						21		SP	
						22		SM	LIGHT BROWN WITH SOME ORANGE BROWN STAINING, SILTY FINE TO MEDIUM SAND, DRY, VERY DENSE
						23			
						24		SP	
						25			
						26			
						27			
						28			
					13	29			
SPT	18	18	951	29 - 30.5	22	30			ORANGE BROWN FINE TO MEDIUM SAND, DRY, VERY DENSE
					33				
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			
						39			
					28				
					33				
SPT	18	18	1005	39 - 40.5	35	40			AS ABOVE
						41			
						42			

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/31/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 12
Sheet 3 of 4

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" STANDARD PENETRATION TEST
DOWNHOLE HAMMER: 140# HAMMER, 30" DROP

SURFACE ELEVATION: ~70' ABOVE MSL

DRILLING	START	FINISH		
TIME	910	1120		
DATE	10/31/95	10/31/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
						41		SP	
						42			
						43			
						44			
						45			
						46			
						47			
						48			
					38	49			AS ABOVE
SPT	11	11	1020	49 - 49.9	50/5"	50			
						51			AS ABOVE, EXCEPT MEDIUM TO LIGHT BROWN, TRACE COARSE SAND, MOIST TO DAMP
						52			
						53			BECOMES WET AT 53' BGS
					3	54			
SPT	18	18	1030	54 - 55.5	18	55			ORANGE BROWN FINE TO MEDIUM SAND, WET, VERY DENSE
					48				
						56			
						57			BECOMES DRY TO MOIST AT 57' BGS
						58			
						59			
						60			
						61			
						62			

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/31/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 12
Sheet 4 of 4

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" STANDARD PENETRATION TEST

DOWNHOLE HAMMER: 140# HAMMER, 30" DROP

SURFACE ELEVATION: ~70' ABOVE MSL

DRILLING	START	FINISH		
TIME	910	1120		
DATE	10/31/95	10/31/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
								SP	
						61			DRY ZONE FROM ~57 TO 64 FEET BGS
						62			
						63			
						64			BECOMES WET AT 64' BGS
					27				
SPT	11	11	1049	64 - 64.9	50/5"	65			LIGHT BROWN, FINE TO MEDIUM SAND, LITTLE SILT, WET, VERY DENSE
						66			
						67			
						68			
						69			
					10				
					30				
SPT	18	18	1113	69 - 70.5	30	70			AS ABOVE
						71			BORING COMPLETED AT A DEPTH OF 70.5' BGS ON 10/31/95
						72			GROUNDWATER ENCOUNTERED AT DEPTHS OF 57 AND 64 FEET BGS ON 10/31/95
						73			GROUNDWATER MEASURED AT A DEPTH OF 59 FEET BGS ON 11/1/95
						74			
						75			
						76			
						77			
						78			
						79			
						80			
						81			
						82			

M&E Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/31/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 14 Sheet 1 of 2

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" STANDARD PENETRATION TEST

DOWNHOLE HAMMER: 140# HAMMER, 30 " DROP

SURFACE ELEVATION: ~55' ABOVE MSL

DRILLING	START	FINISH
TIME	1330	1430
DATE	10/31/95	10/31/95

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
								SP	
						1			MEDIUM TO DARK BROWN FINE TO MEDIUM SAND WITH LITTLE SILT, DRY
						2			
						3			
						4			
						5			
						6			
						7			
						8			
					5	9			
SPT	18	18	1338	9 - 10.5	9	10			AS ABOVE, LESS SILT (TRACE TO LITTLE), MEDIUM DENSE
					11				
						11			BECOMES MEDIUM ORANGE BROWN
						12			
						13			
						14			
						15			
						16			
						17			
						18			
					4	19			
SPT	18	18	1350	19 - 20.5	7	20			BECOMES LIGHT ORANGE BROWN, DRY TO SLIGHTLY MOIST
					10				
						21			
						22			

Metcalf & Eddy

EXPLORATORY BORING LOG

PROJECT No. 018508 DATE 10/31/95
CLIENT SAN LUIS OBISPO COUNTY
LOCATION LOS OSOS, CALIFORNIA
LOGGED BY TMR DRILLER S&G

BORING No. 14
Sheet 2 of 2

Drilling method: CME 75 HIGH TORQUE, 8 " HOLLOW STEM AUGER

Sampling Method 18" STANDARD PENETRATION TEST

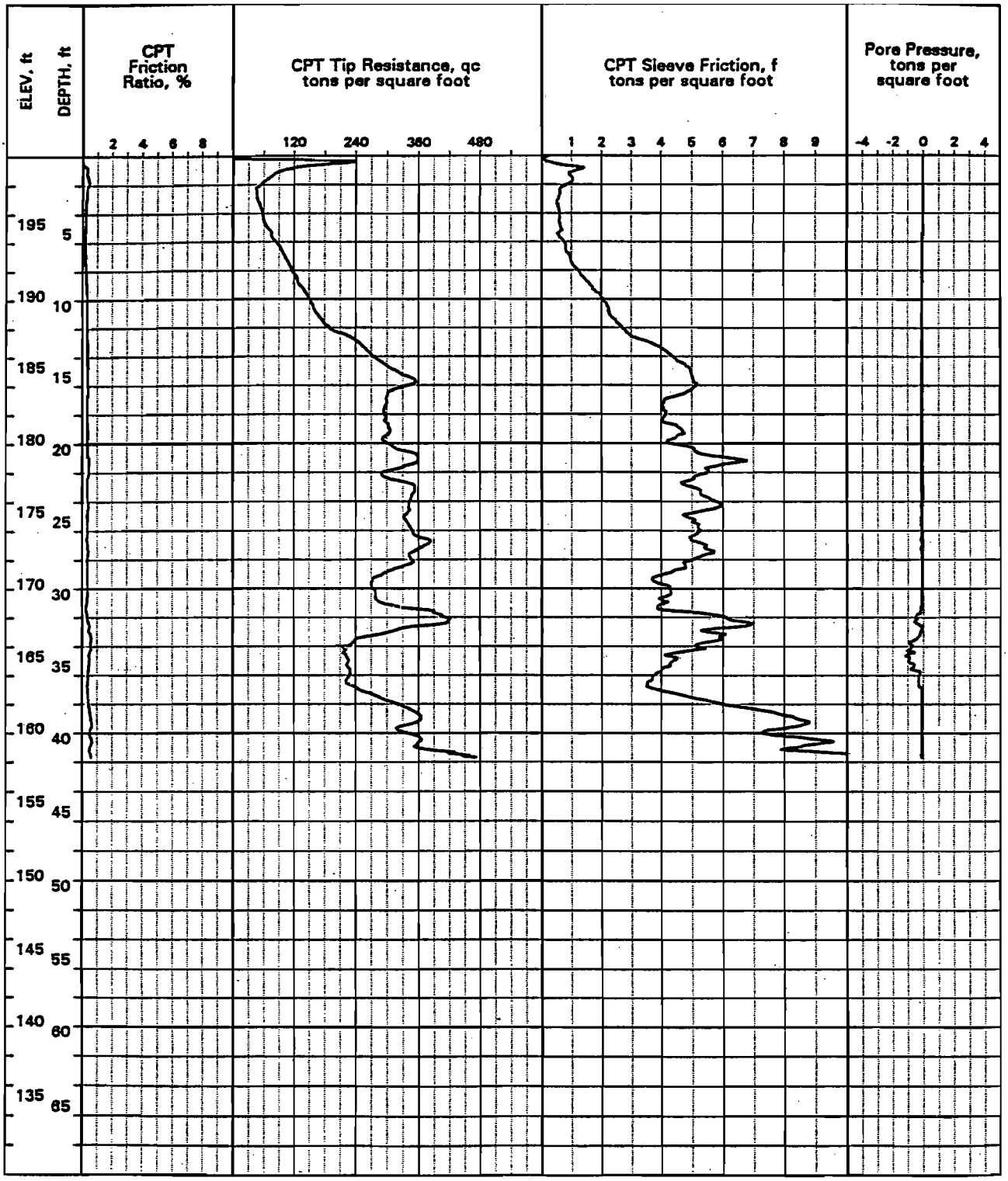
DOWNHOLE HAMMER: 140# HAMMER, 30" DROP

SURFACE ELEVATION: ~55' ABOVE MSL

DRILLING	START	FINISH		
TIME	1330	1430		
DATE	10/31/95	10/31/95		

SAMPLER TYPE	INCHES DRIVEN	INCHES RECOVERED	TIME	SAMPLE DEPTH IN FEET	BLOWS PER 6 INCHES	DEPTH IN FEET	SAMPLE	SOIL GROUP SYMBOL (U.S.C.S.)	DESCRIPTION
						21		SP	
						22			
						23			
						▽24			BECOMES WET AT 24' BGS
						25			
						26			
						27			
						28			
					18				
					34				
SPT	16	16	1405	28 - 29.3	50/4"	29	■		AS ABOVE, LIGHT BROWN, VERY DENSE
						30			
						31			
						32			
						33			
						34			
					13				
					19				
SPT	18	18	1420	34 - 35.5	23	35	■		AS ABOVE, LITTLE SILT, DENSE
						36			BORING COMPLETED AT A DEPTH OF 35.5 ' BGS ON 10/31/95
						37			GROUNDWATER ENCOUNTERED AT A DEPTH OF 24' BGS ON 10/31/95
						38			GROUNDWATER MEASURED AT A DEPTH OF 21 FEET BGS ON 11/1/95
						39			
						40			
						41			
						42			

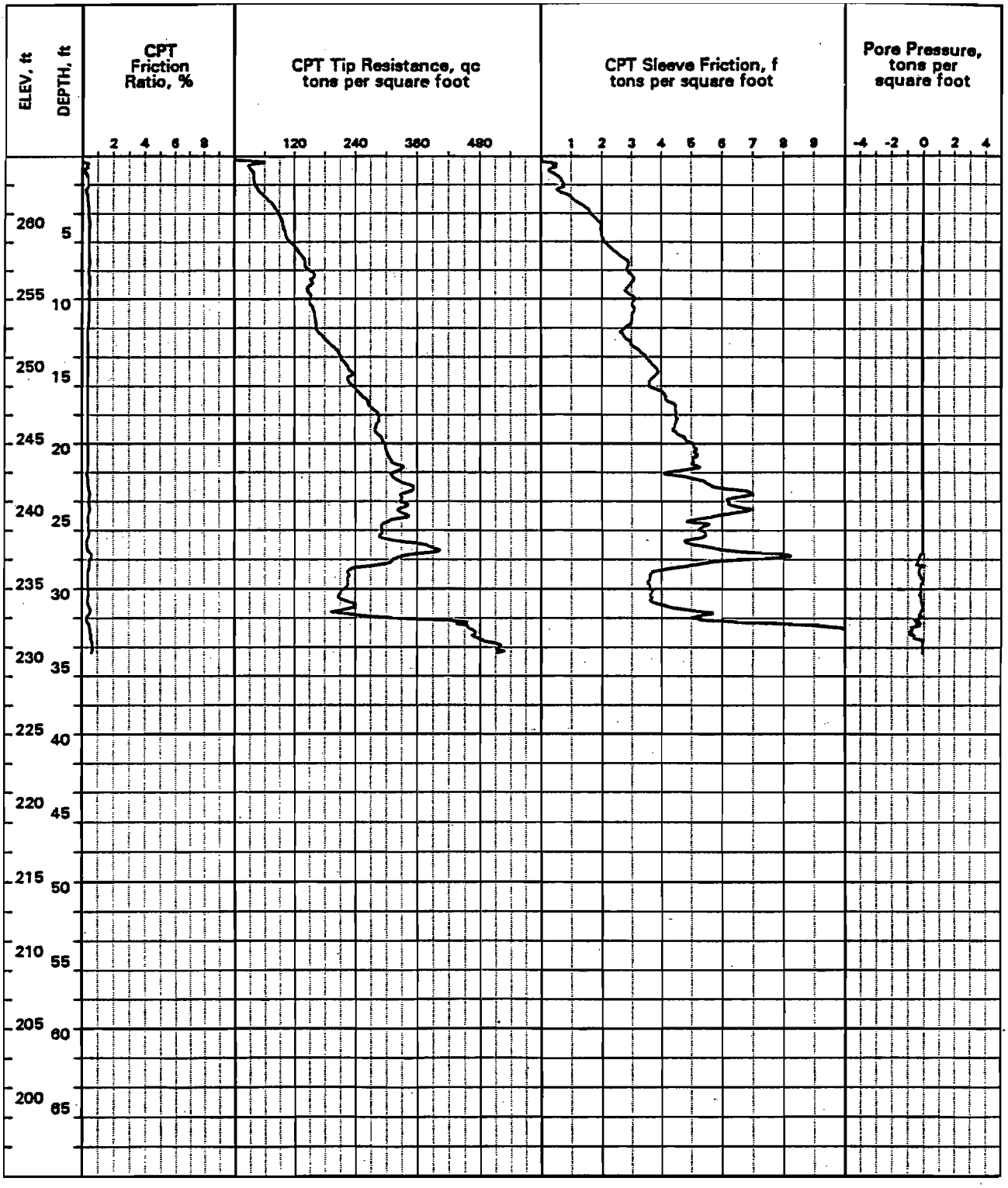
ATTACHMENT D2
CPT/CPTU LOGS
FUGRO WEST, INC. (1996)



LOCATION: N 669,961, E 1,152,088
SURFACE EL: 200 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 42.4 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 19, 1995

LOG OF CPT NO. CPT-01
Los Osos Sewer

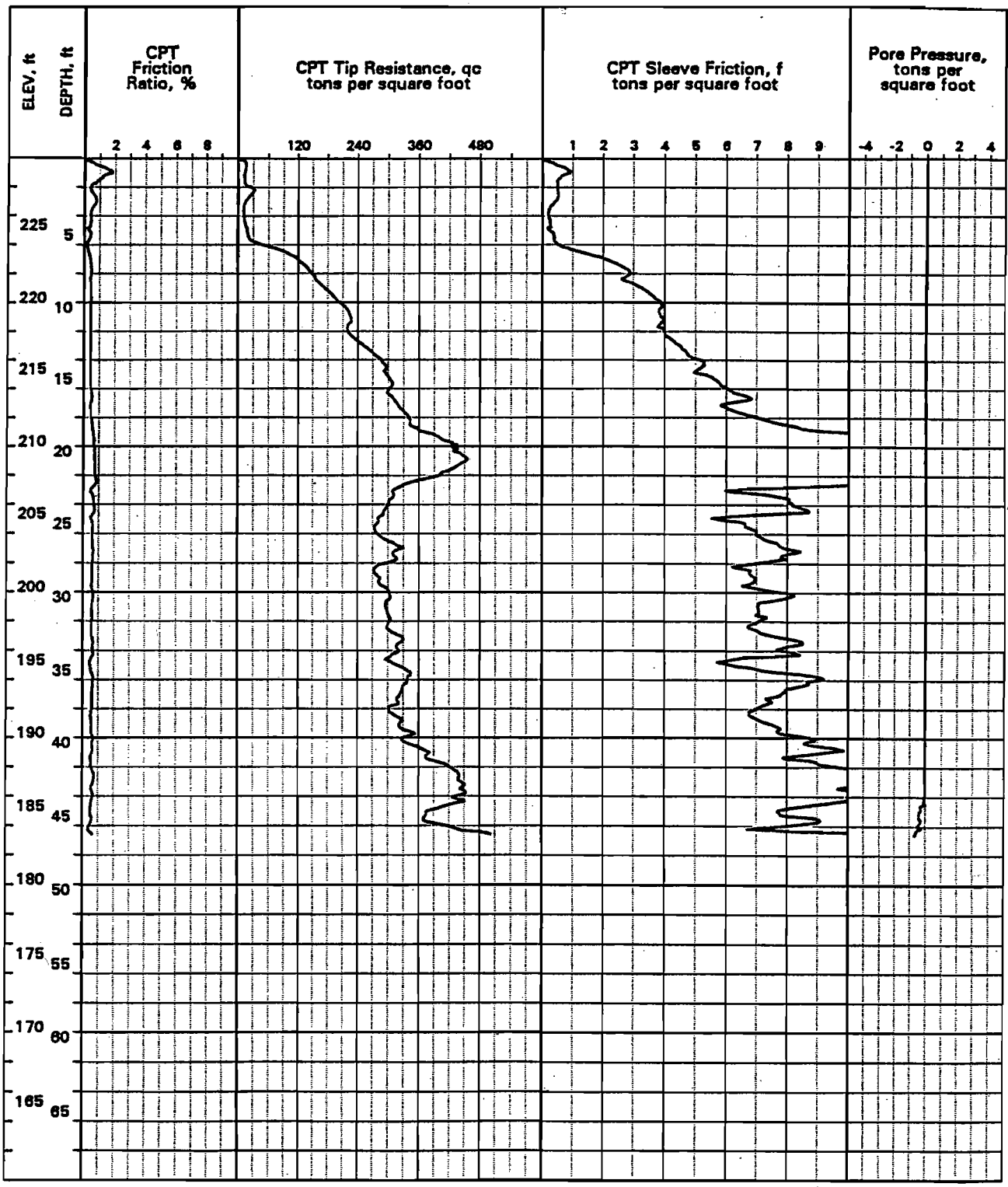


LOCATION: N 669,175, E 1,152,031
SURFACE EL: 265 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 34.8 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 19, 1995

LOG OF CPT NO. CPT-02
Los Osos Sewer

February 1996
Project No. 95-42-4281



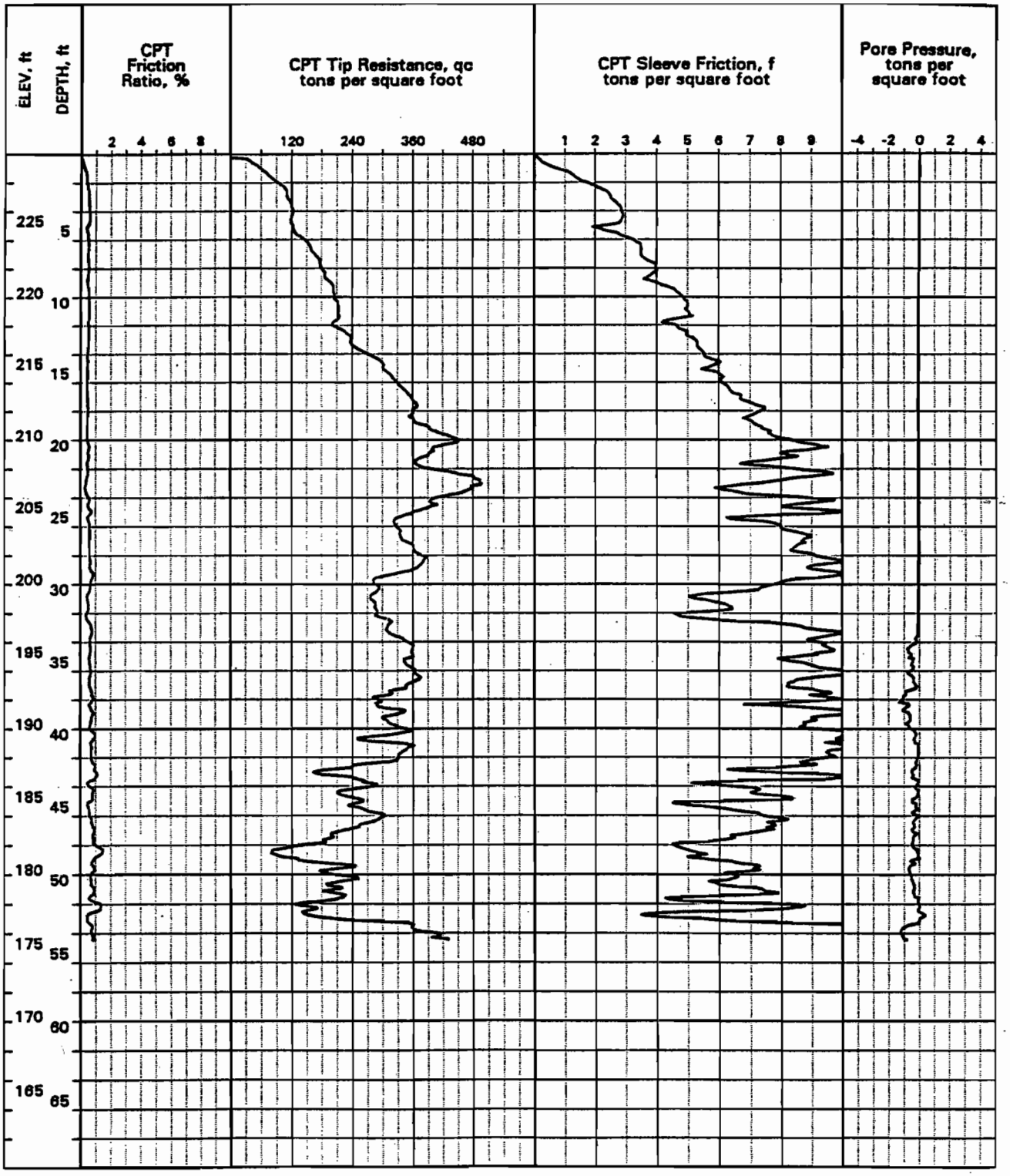
LOCATION: N 669,585, E 1,151,644
SURFACE EL: 230 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 47.1 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 19, 1995

LOG OF CPT NO. CPT-03
Los Osos Sewer

54281CPT
12/18/95\14:14

PLATE 14

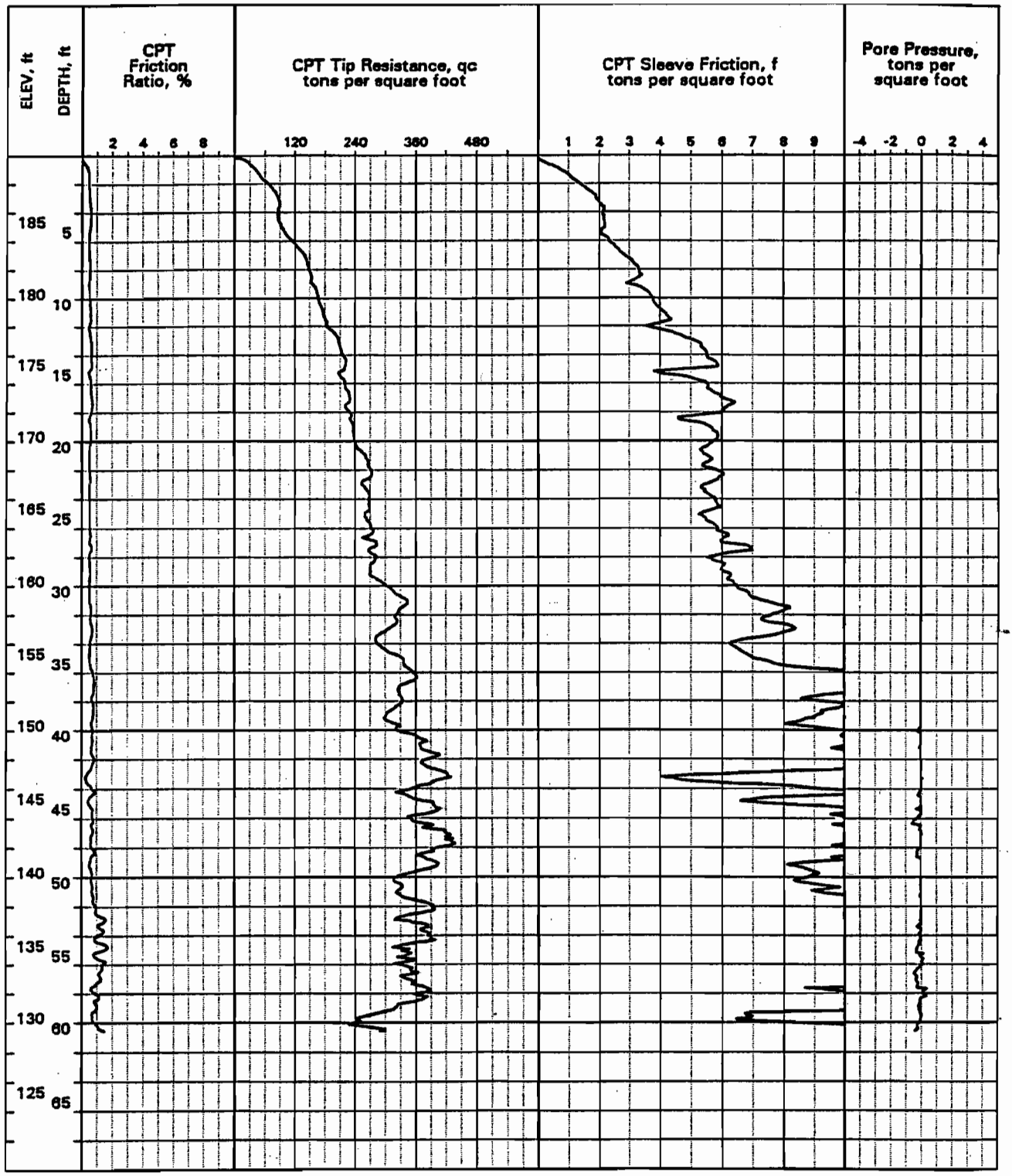


LOCATION: N 669,608, E 1,151,212
SURFACE EL: 230 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 54.8 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 19, 1995

LOG OF CPT NO. CPT-04
Los Osos Sewer

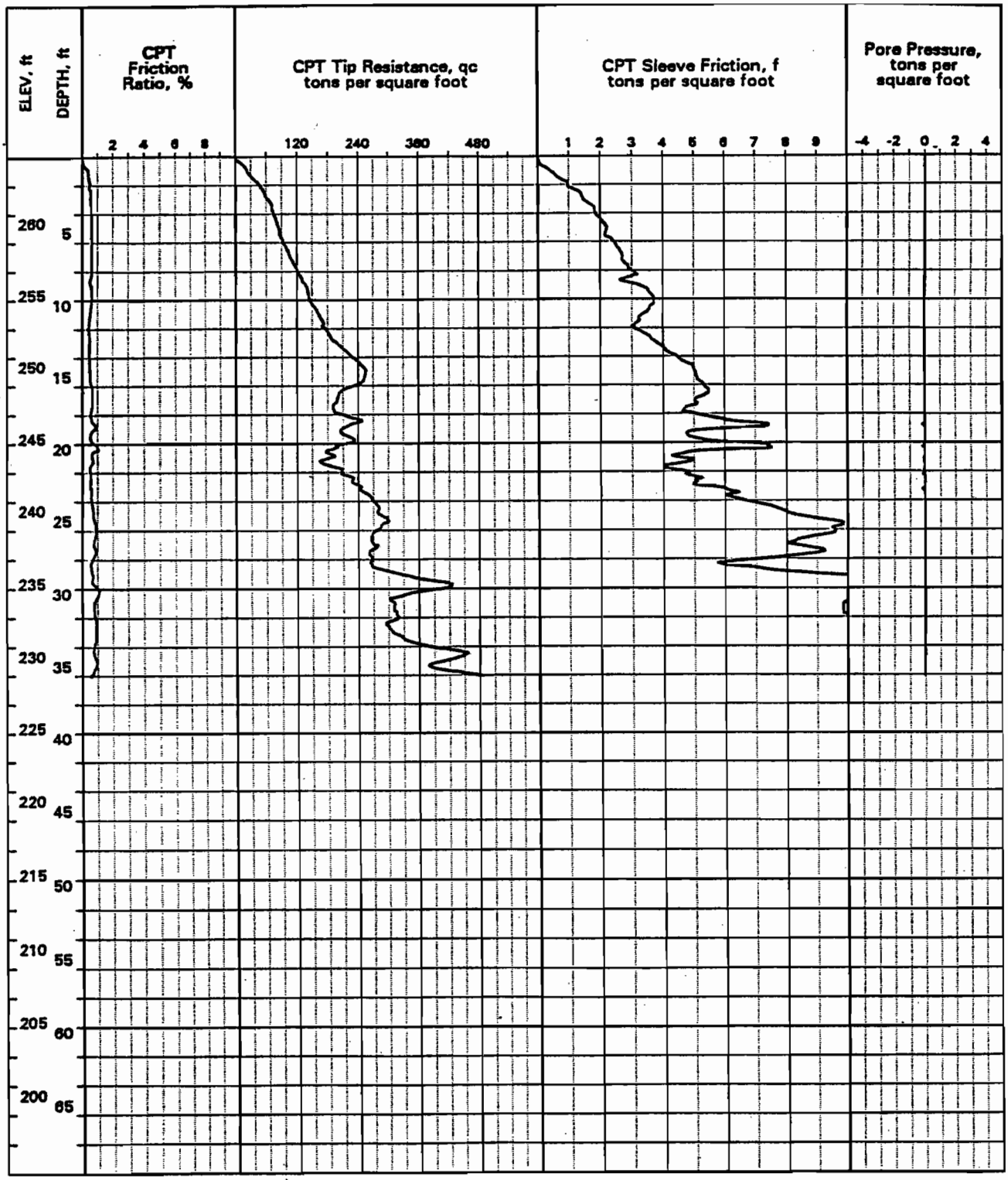
February 1996
Project No. 95-42-4281



LOCATION: N 669,972, E 1,150,677
SURFACE EL: 190 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 61.6 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 19, 1995

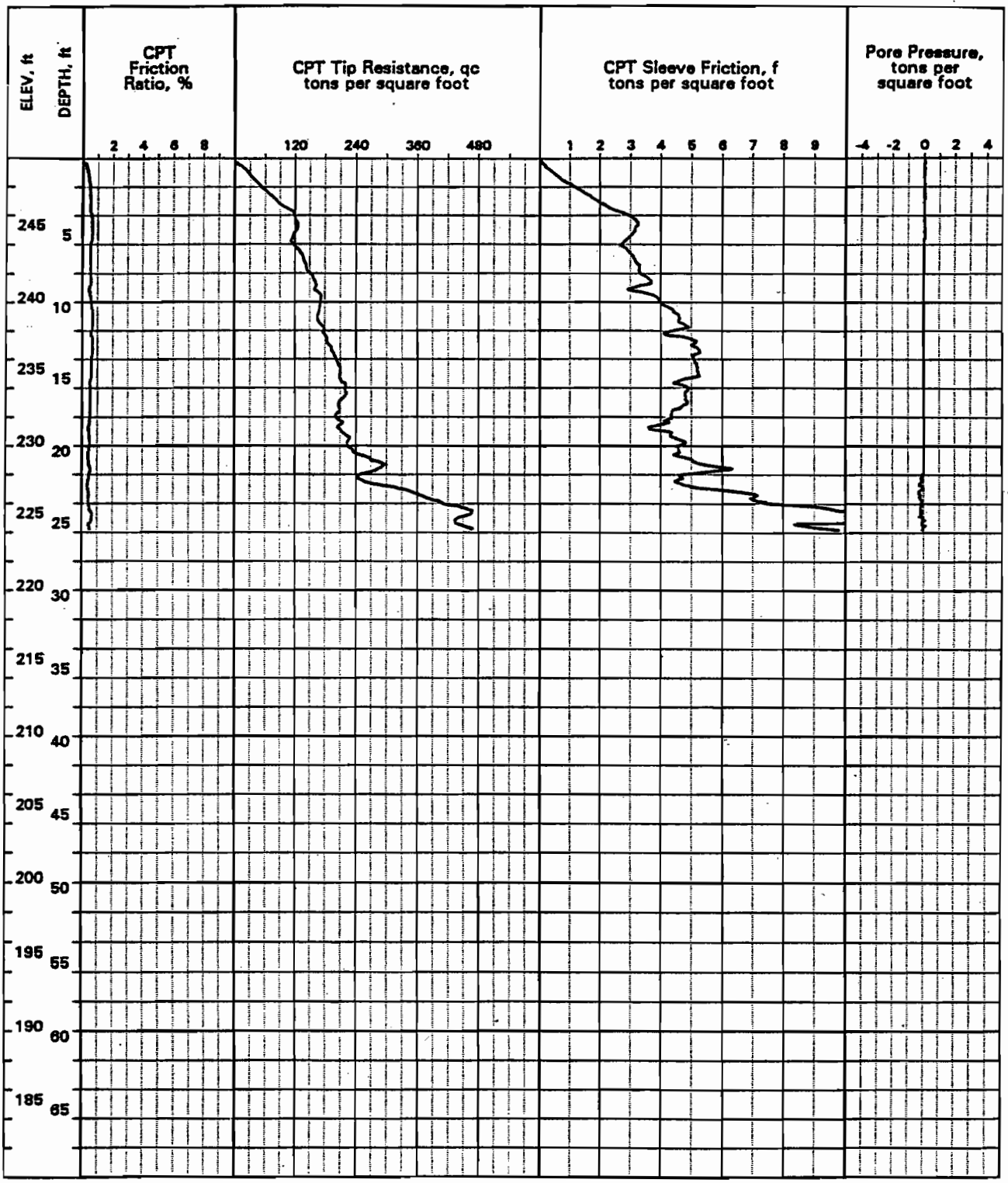
LOG OF CPT NO. CPT-05
Los Osos Sewer



LOCATION: N 669,301, E 1,151,508
SURFACE EL: 265 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 36.4 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 19, 1995

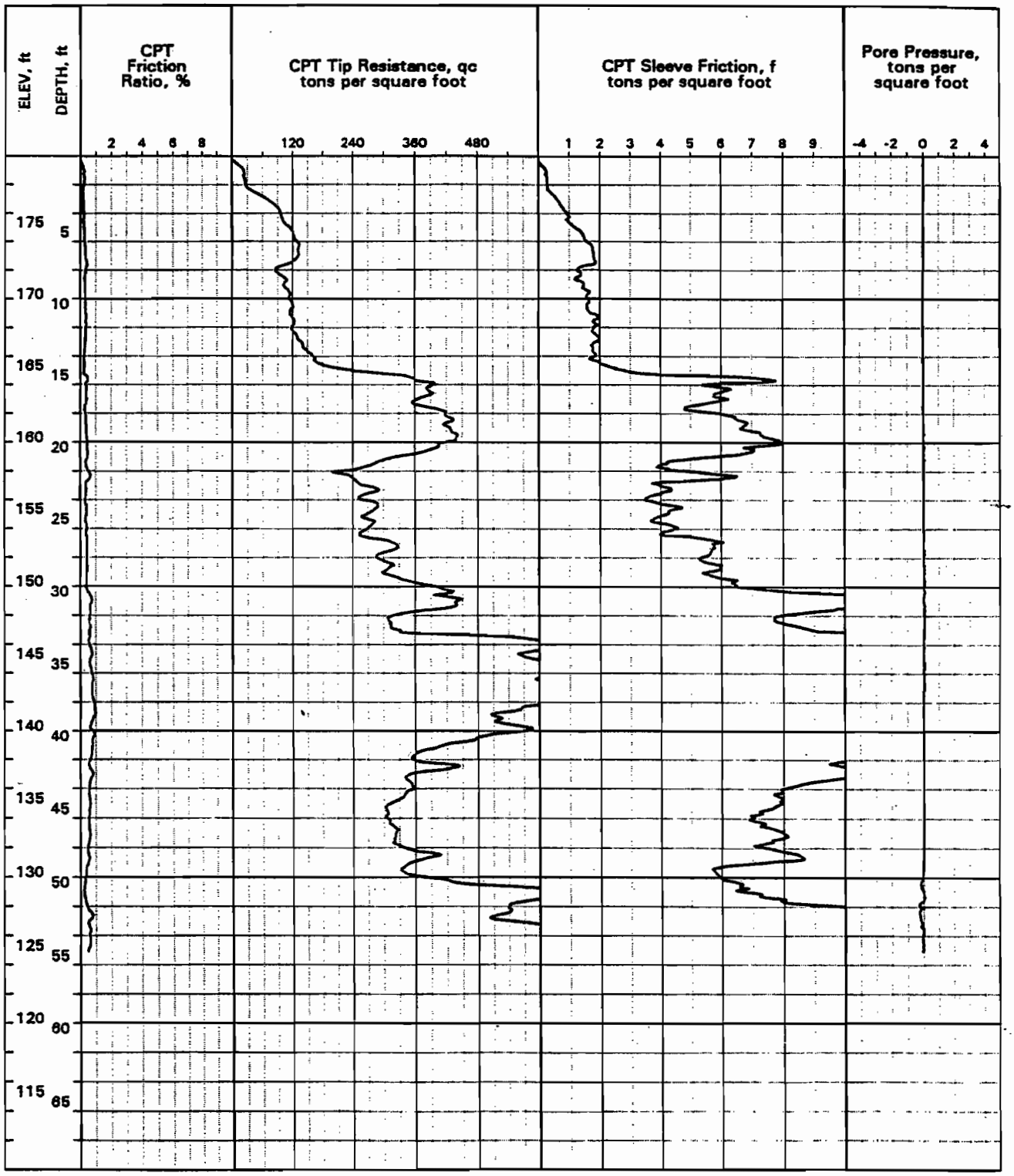
LOG OF CPT NO. CPT-06
Los Osos Sewer



LOCATION: N 669,414, E 1,150,563
SURFACE EL: 250 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 26.2 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 19, 1995

LOG OF CPT NO. CPT-07
Los Osos Sewer

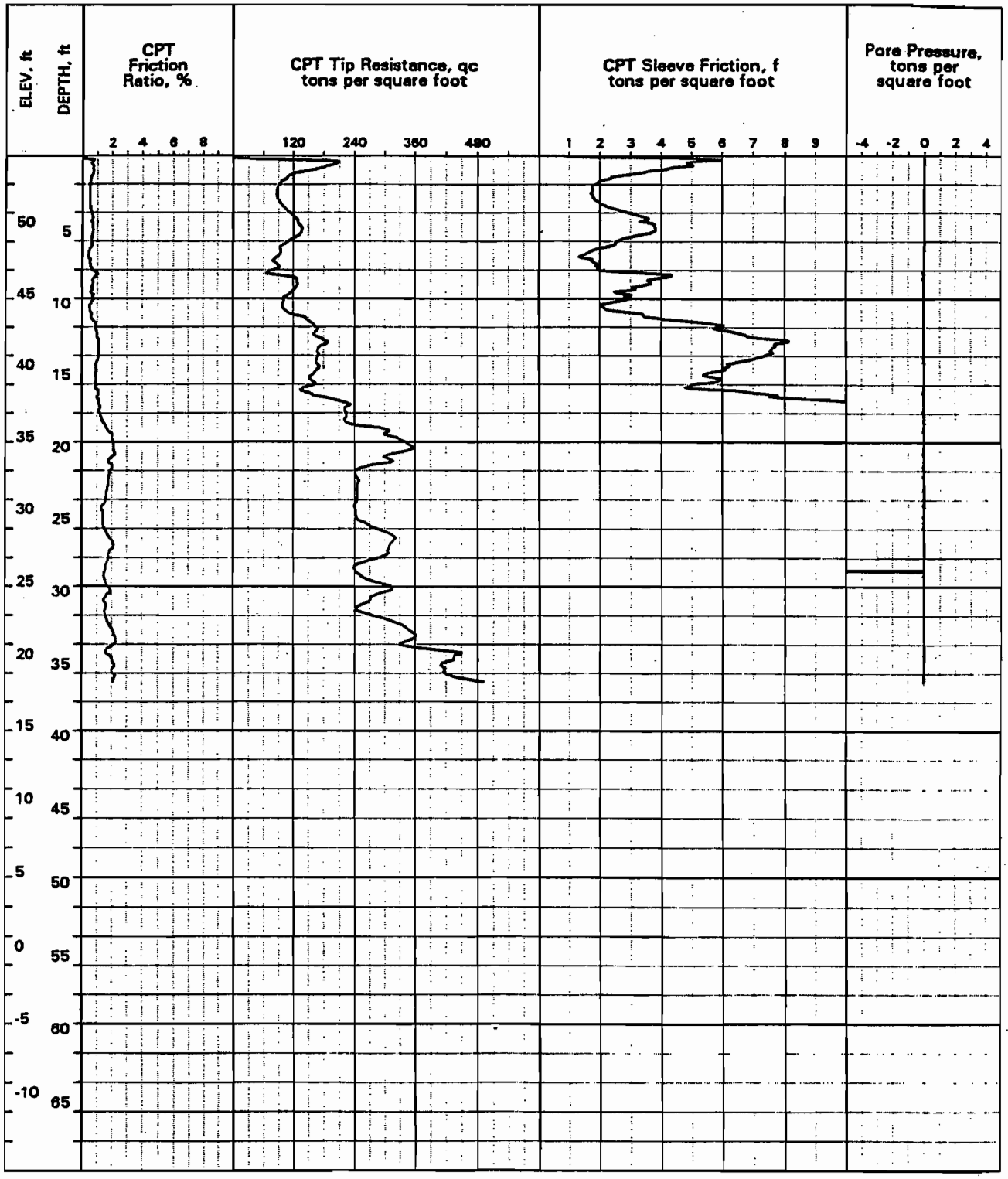


LOCATION: N 670,291, E 1,151,405
SURFACE EL: 180 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 55.4 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 19, 1995

LOG OF CPT NO. CPT-08
Los Osos Sewer

February 1996
Project No. 95-42-4281



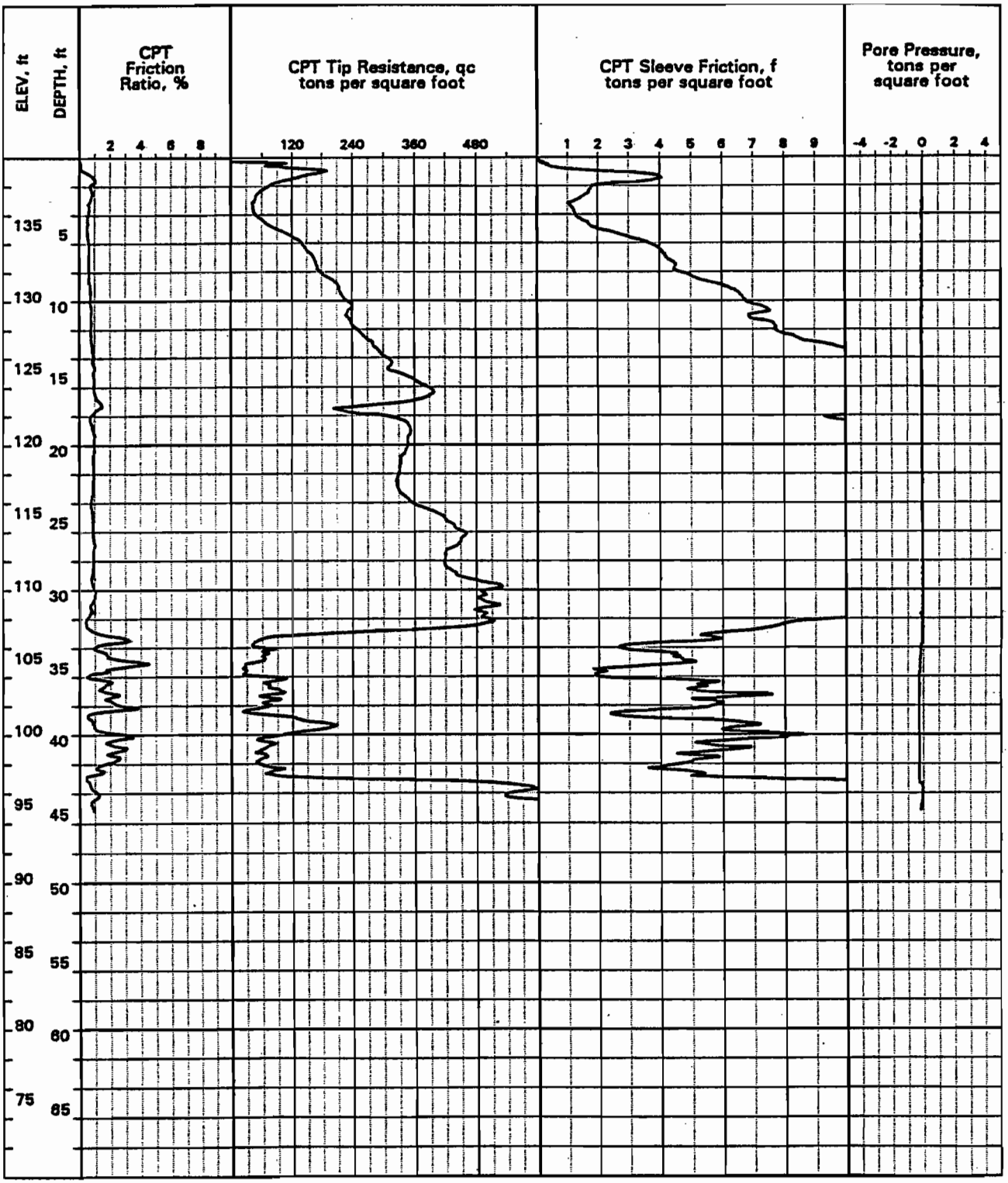
LOCATION: N 672,989, E 1,150,415
SURFACE EL: 55 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 37.1 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 20, 1995

LOG OF CPT NO. CPT-09
Los Osos Sewer

PLATE 20

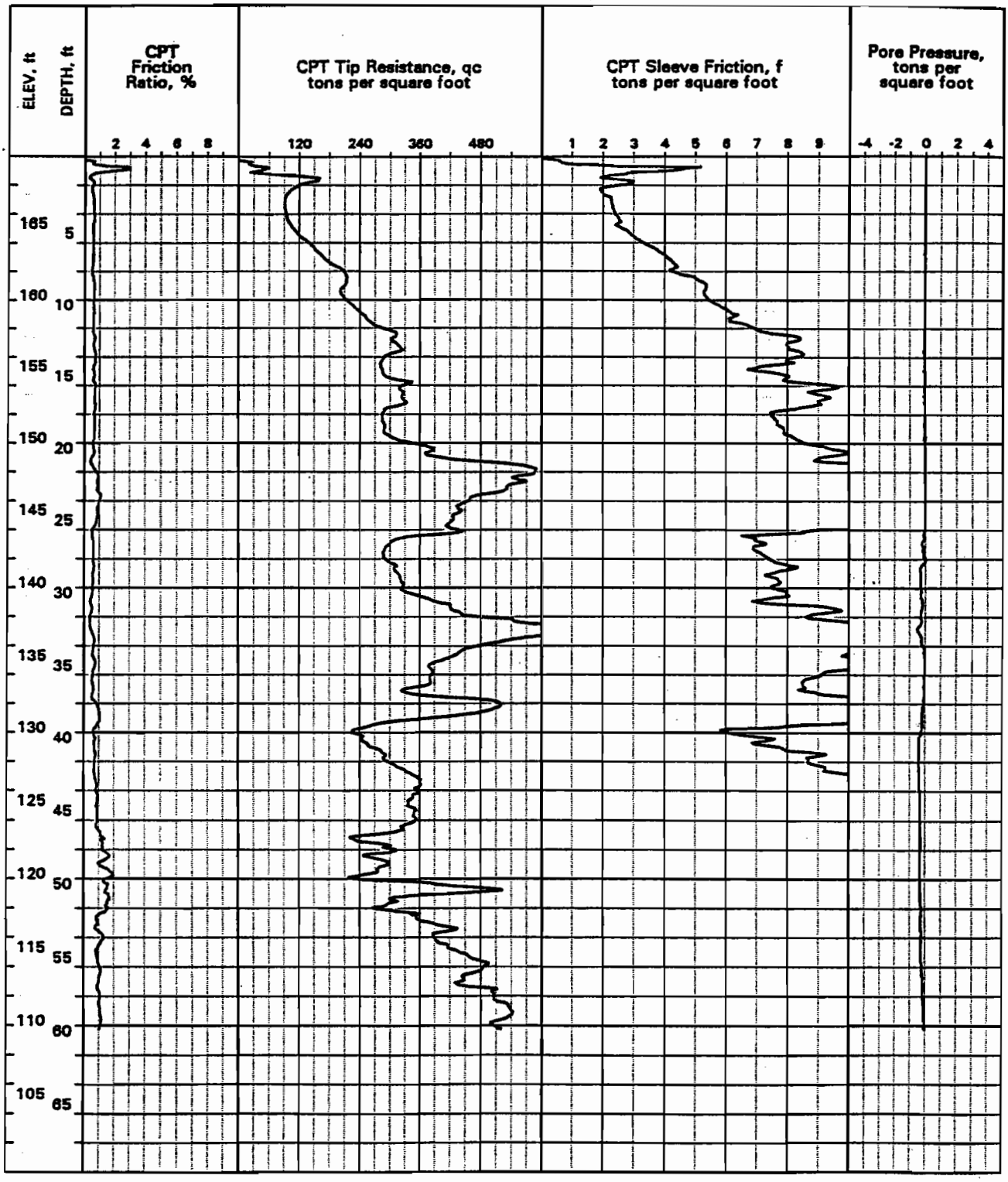
54281CPT
01/29/96\11:04



LOCATION: N 670,359, E 1,149,959
SURFACE EL: 140 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 45.6 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 19, 1995

LOG OF CPT NO. CPT-10
Los Osos Sewer

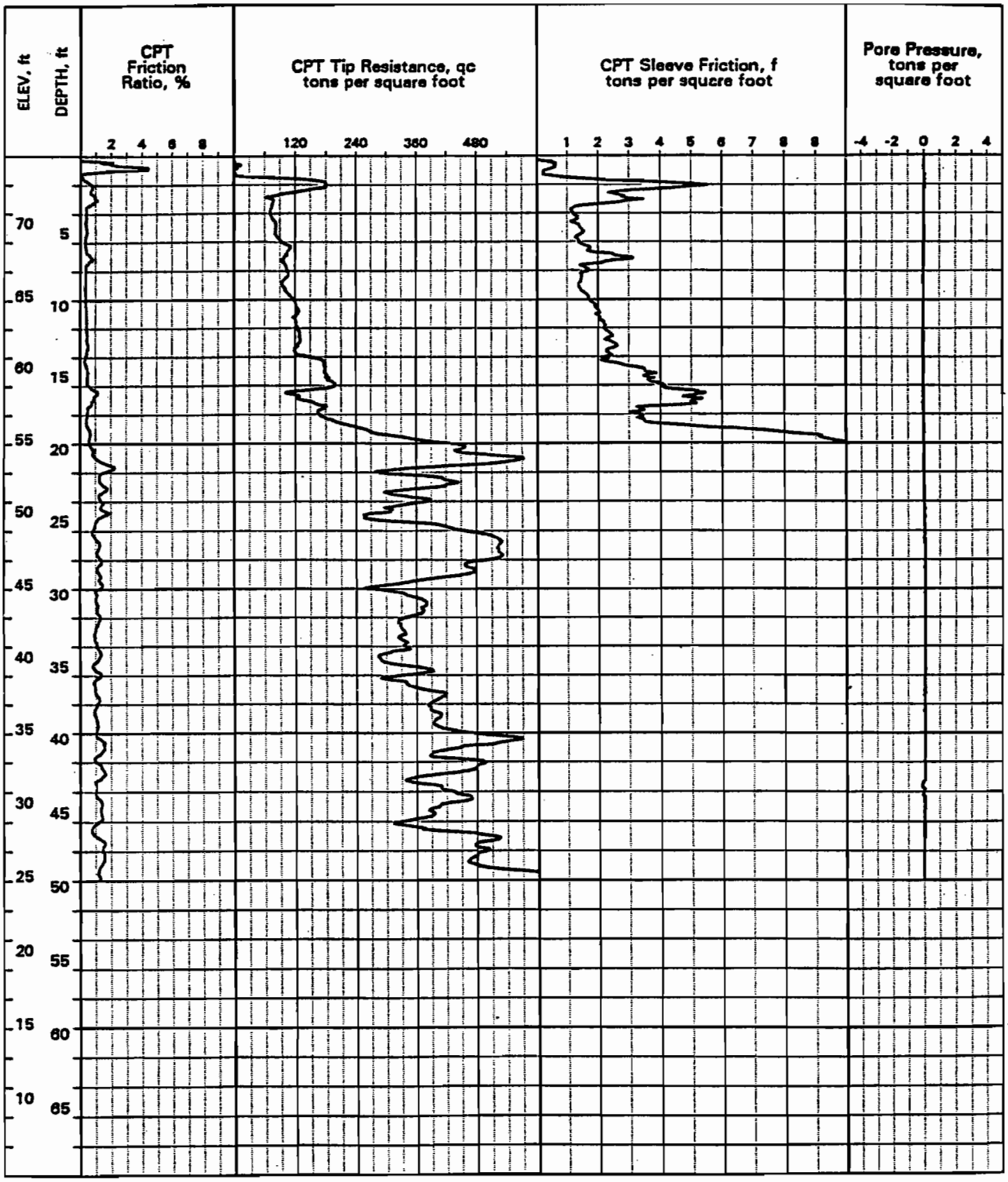


LOCATION: N 670,160, E 1,153,067
SURFACE EL: 170 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 60.7 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 19, 1995

LOG OF CPT NO. CPT-11
Los Osos Sewer

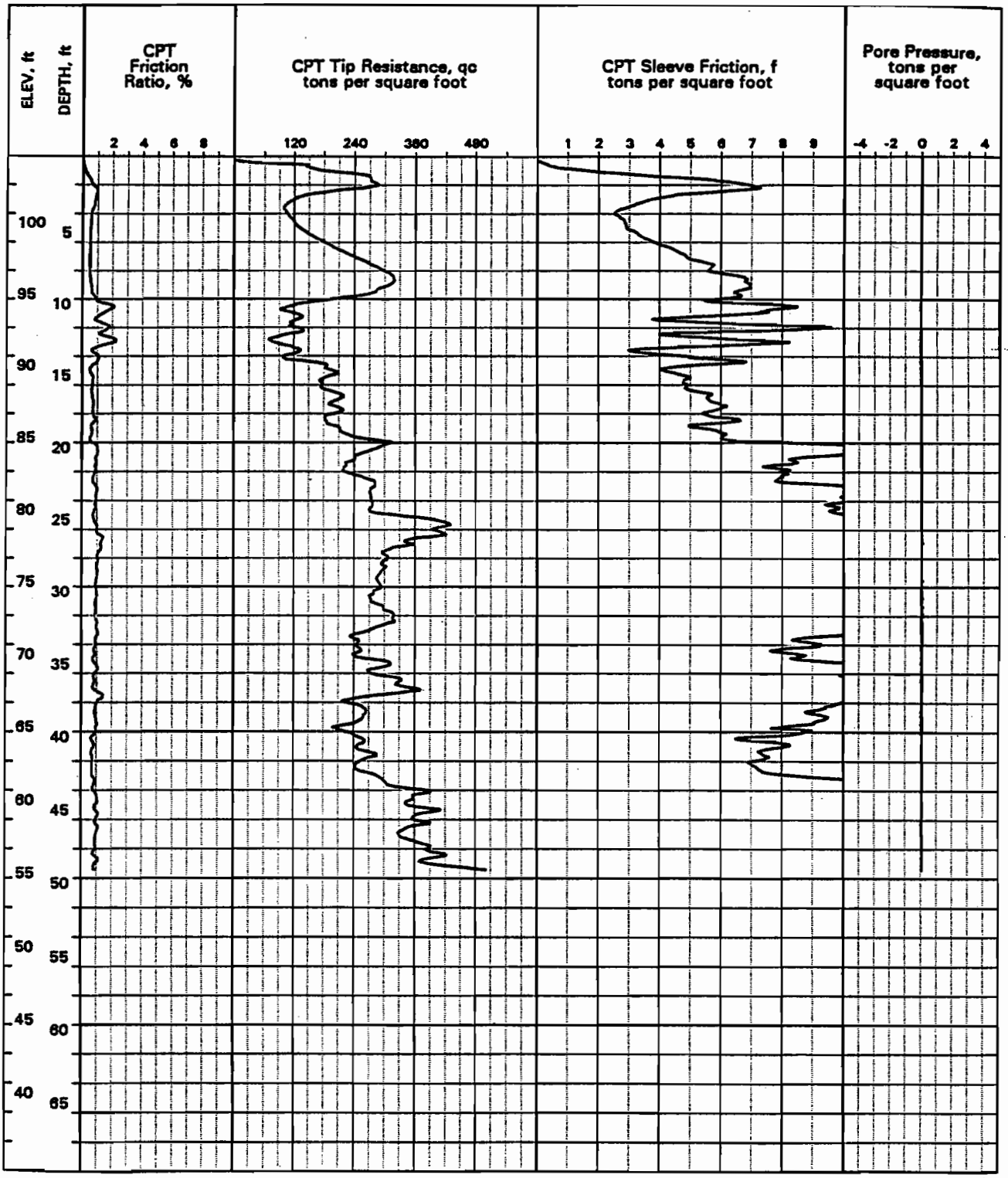
February 1996
Project No. 95-42-4281



LOCATION: N 671,532, E 1,148,172
SURFACE EL: 75 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 50.3 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 20, 1995

LOG OF CPT NO. CPT-12
Los Osos Sewer

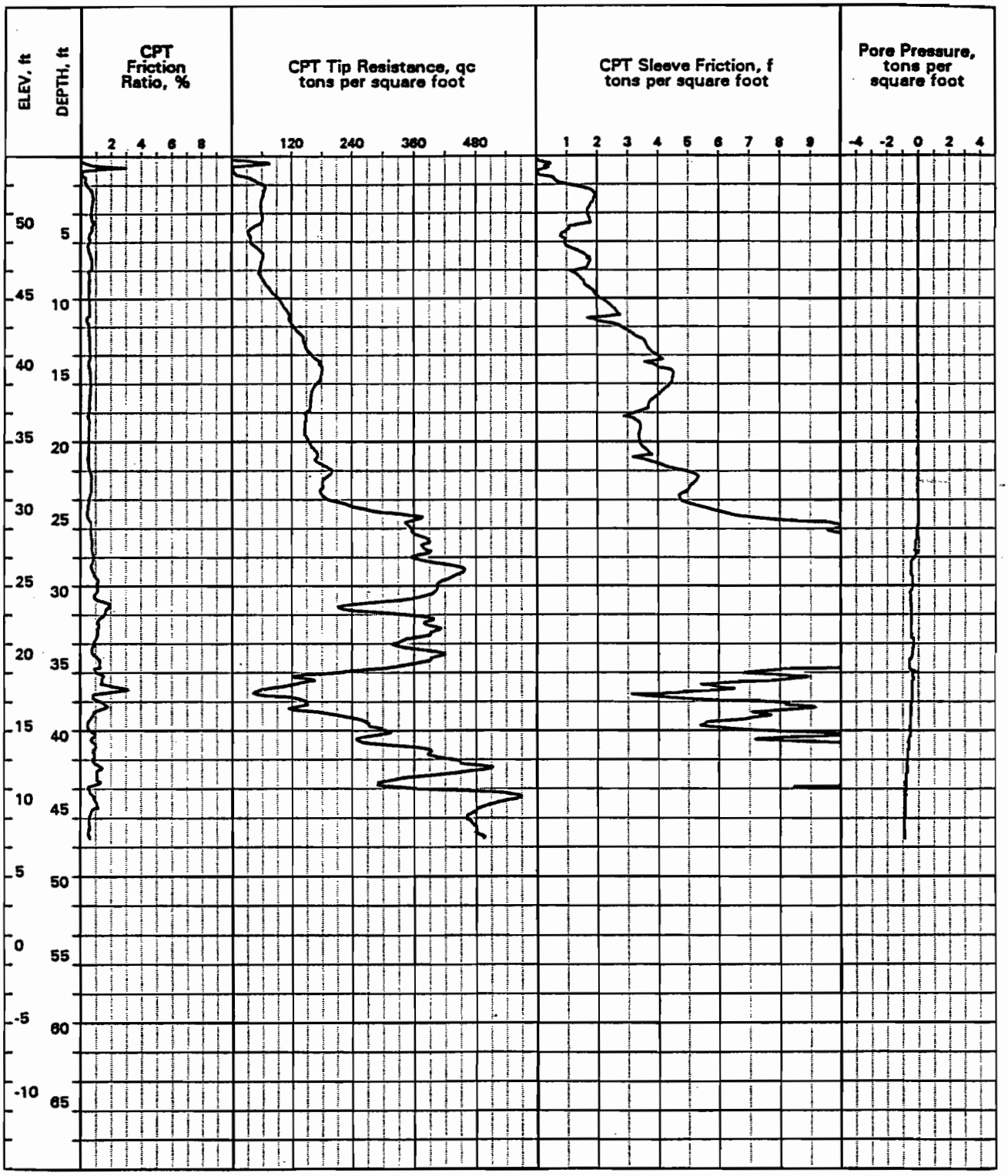


LOCATION: N 671,703, E 1,150,745
SURFACE EL: 105 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: Not Encountered
COMPLETION DEPTH: 50.0 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 20, 1995

LOG OF CPT NO. CPT-13
Los Osos Sewer

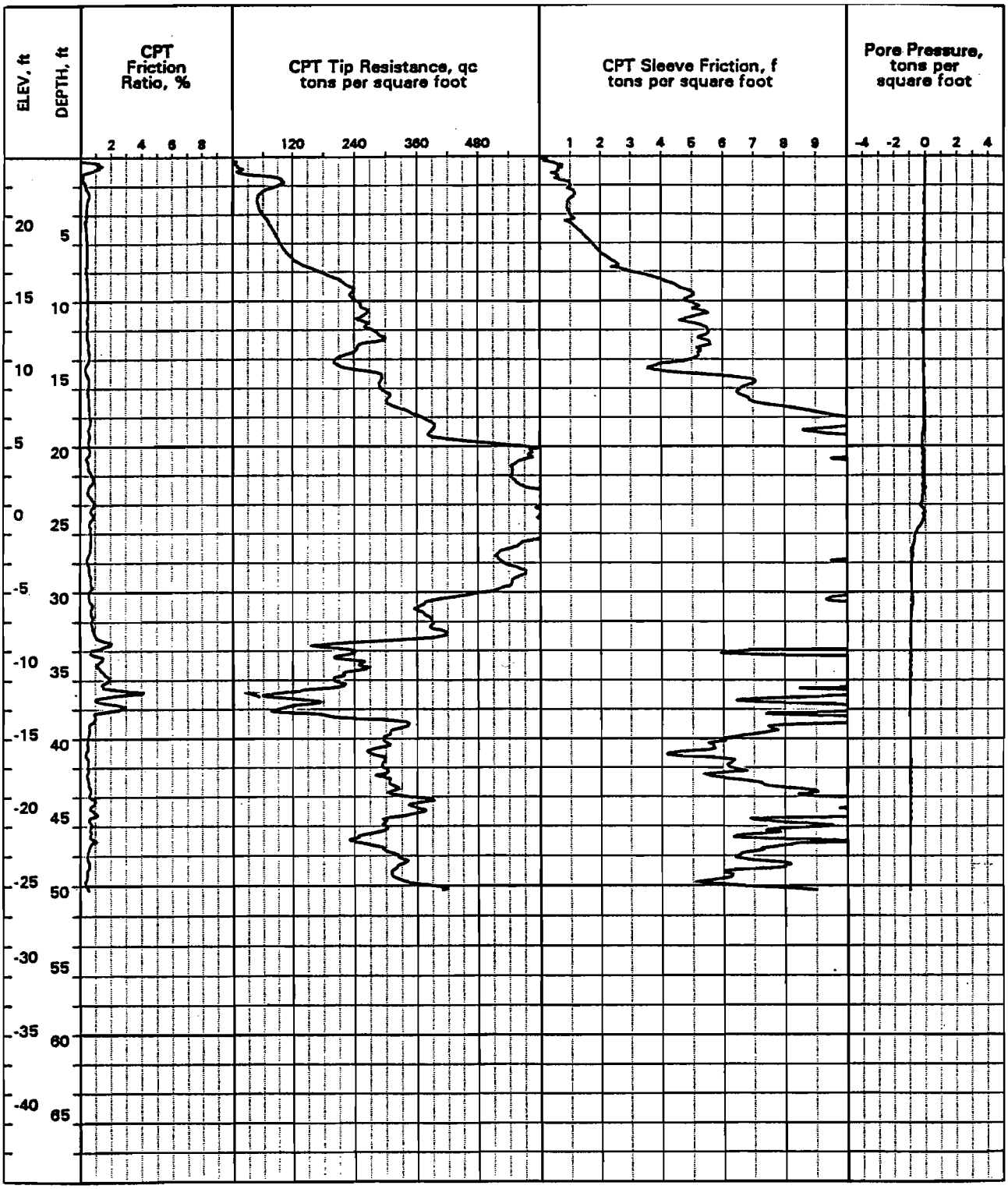
February 1996
Project No. 95-42-4281



LOCATION: N 672,790, E 1,152,191
SURFACE EL: 55 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 25 ft
COMPLETION DEPTH: 47.9 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 20, 1995

LOG OF CPT NO. CPT-14
Los Osos Sewer

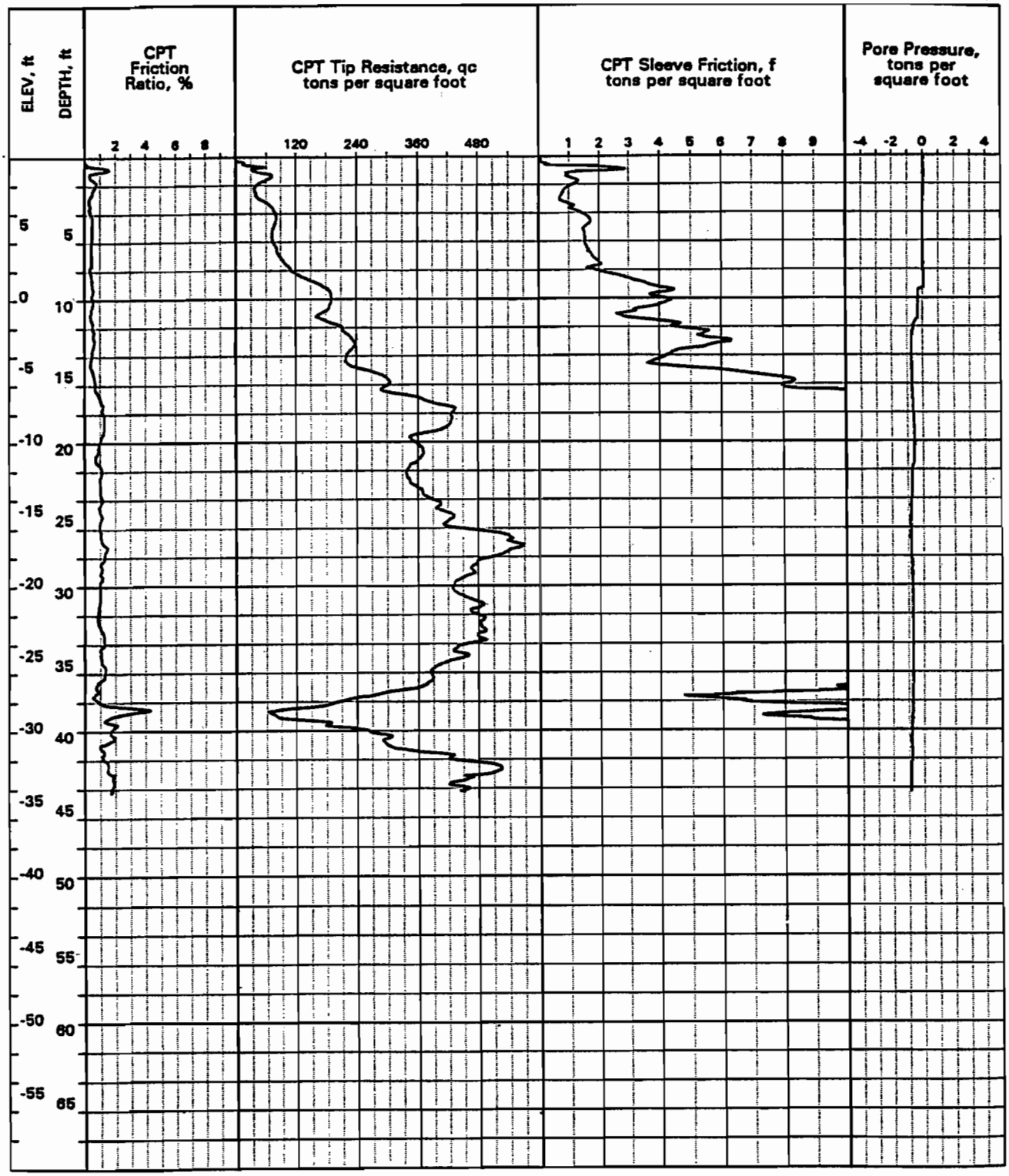


LOCATION: N 673,325, E 1,151,701
SURFACE EL: 25 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 18 ft
COMPLETION DEPTH: 50.8 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 20, 1995

LOG OF CPT NO. CPT-15
Los Osos Sewer

February 1996
Project No. 95-42-4281



LOCATION: N 673,820, E 1,151,223
SURFACE EL: 10 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 9 ft
COMPLETION DEPTH: 44.8 ft

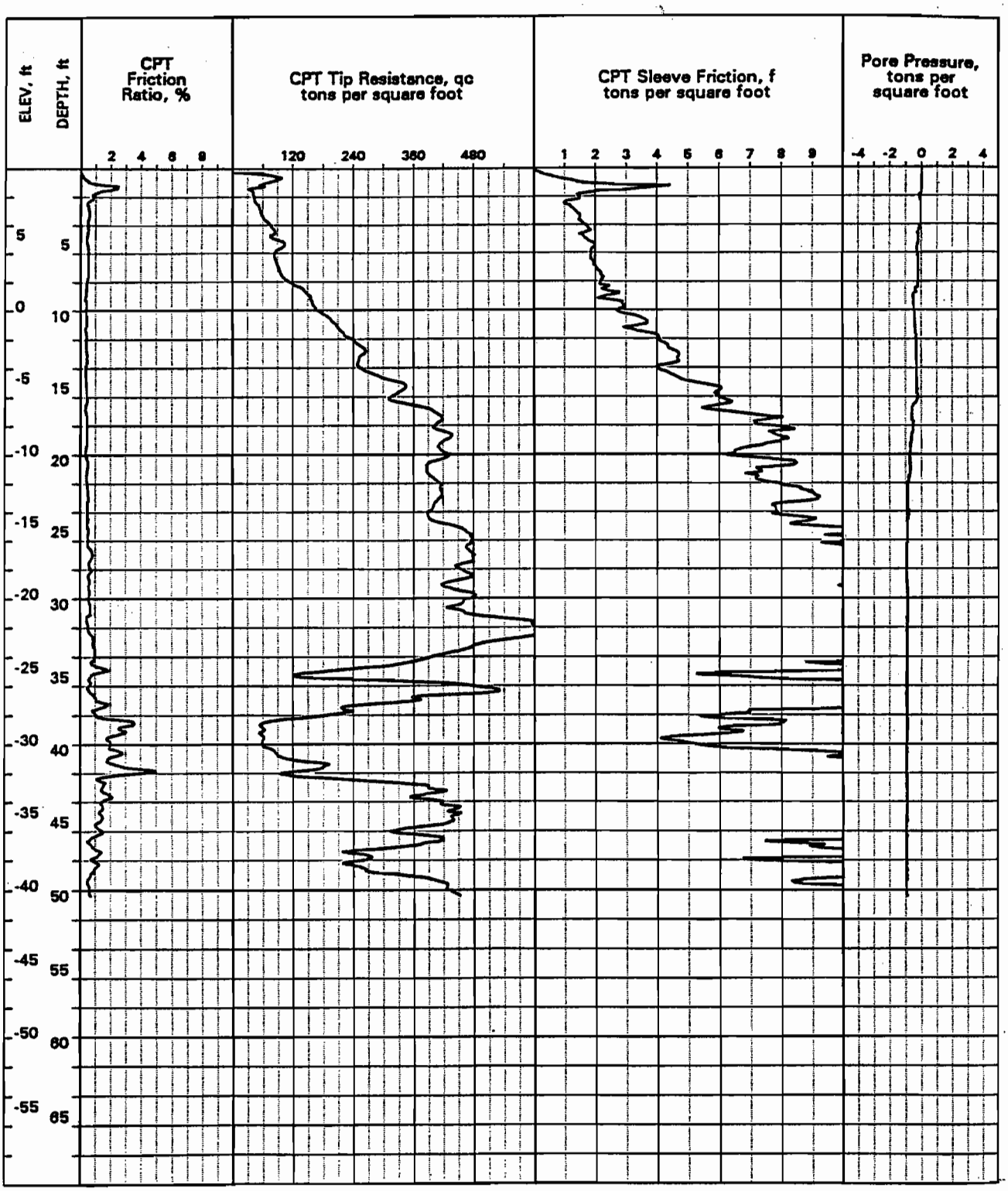
EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 20, 1995

LOG OF CPT NO. CPT-16

Los Osos Sewer

54281CPT

PLATE 27

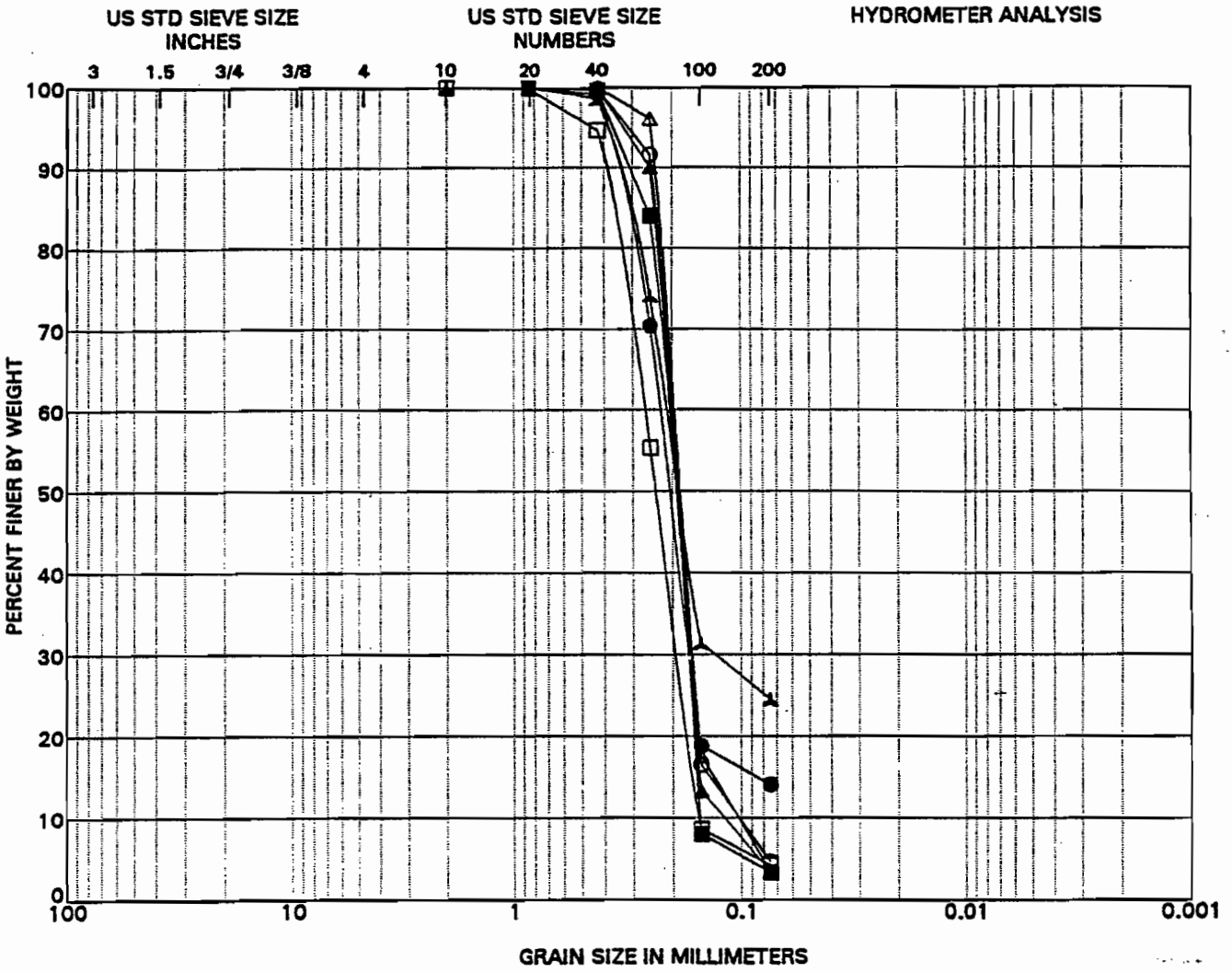


LOCATION: N 673,604, E 1,149,538
SURFACE EL: 10 ft +/- (rel. MSL datum)
DEPTH TO GROUND WATER: 5 ft
COMPLETION DEPTH: 50.8 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
EXPLORATION DATE: October 20, 1995

LOG OF CPT NO. CPT-17
Los Osos Sewer

ATTACHMENT D3
LABORATORY DATA
FUGRO WEST, INC. (1996)

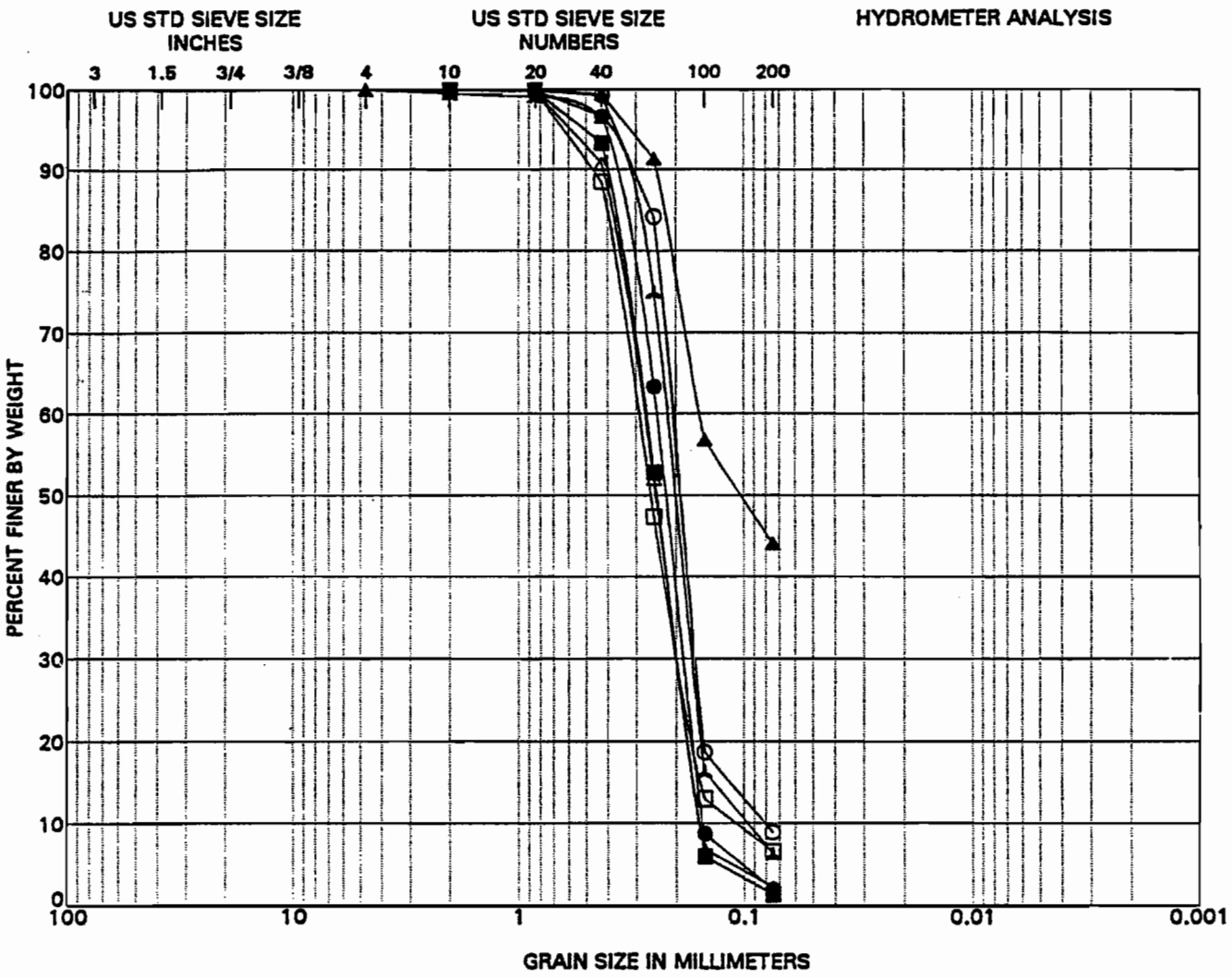


GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

LEGEND	(location)	(depth,ft)	CLASSIFICATION	Cc	Cu
○	01	5.0	Fine SAND with silt (SP-SM)	1.3	2.0
●	01	35.0	Silty fine SAND (SM)		
△	04	5.0	Fine SAND with silt (SP-SM)	1.3	1.9
▲	04	20.0	Fine SAND (SP)	1.2	1.7
□	04	50.0	Fine SAND with silt (SP-SM)	0.9	1.7
■	05	21.0	Fine SAND (SP)	0.9	1.4
⅄	05	50.0	Silty fine SAND (SM)		

GRAIN SIZE CURVES
Los Osos Sewer

PLATE 29



GRAVEL		SAND			SILT or CLAY
coarse	fine	coarse	medium	fine	

LEGEND			CLASSIFICATION	Cc	Cu
	(location)	(depth, ft)			
○	08	6.0	Fine SAND with silt (SP-SM)	1.6	2.6
●	08	35.0	Fine SAND (SP)	0.9	1.6
△	08	49.0	Fine SAND (SP)	0.9	1.8
▲	08	100.0	Silty fine SAND (SP)		
□	08	150.0	Fine SAND with silt (SP-SM)	1.2	2.7
■	09	5.5	Fine SAND (SP)	0.9	1.8
⅄	12	10.0	Fine SAND with silt (SP-SM)	1.3	2.3

GRAIN SIZE CURVES
Los Osos Sewer

JOB No.:	4280	JOB NAME:	LOS OSOS SEWER			Date:	11/08/95	
BORING No.:	DH-1	MATERIAL DESCRIPTION:	REDDISH BROWN FINE SAND W/SILT			Page _ of _	1	1
SAMPLE No.:	35	SAMPLE DEPTH (ft):	35			PERMEAMETER No.:	1	
BURETTE DIAMETER (cm):	1.128	AREA, a (cm^2):	1.00			SPECIFIC GRAVITY:	2.65	

SPECIMEN INFORMATION

INITIAL MOISTURE CONTENT AND DENSITY						FINAL MOISTURE CONTENT		
REMOLDED SAMPLE			UNDISTURBED SAMPLE					
Maximum Dry Unit Weight (pcf):			Wet Weight of Sample (g):		743.6	Final Wet Sample Weight (g):		
Soil Moisture Content (%):			Moisture Sample Tare No.:		129	Moisture Sample Tare No.:		
Desired Relative Compaction (%):			Wet Weight of Moisture Sample & Tare (g):		131.2	Wet Weight of Moisture Sample & Tare (g):		
			Dry Weight of Moisture Sample & Tare (g):		120.8	Dry Weight of Moisture Sample & Tare (g):		
			Tare Weight of Moisture Sample (g):		19.1	Tare Weight of Moisture Sample (g):		
Initial Diameter, D (in)(cm):			Initial Diameter, D (in)(cm):	2.4		Final Diameter, D (in)(cm):		
Initial Samp. Ht., L (in)(cm):			Initial Samp. Ht., L (in)(cm):	5.32		Final Samp. Ht., L (in)(cm):		
Initial Samp.Area, A (in)(cm):	0	0	Initial Samp.Area, A (in)(cm):	4.523893421 17	29.186350796	Final Samp.Area, A (in)(cm):	0	0
Initial Samp. Vol. (cu-in)(cc):	0	0	Initial Samp. Vol. (cu-in)(cc):	24.0871130008	394.389321036	Final Samp. Vol. (cu-in)(cc):	0	0
Initial Sample Moist Soil Weight (g):		0.000	Initial Sample Moisture Content (%):		10.226	Final Moisture Content (%):		ERR
Initial Sample Saturation (%):		0.00	Initial Sample Saturation (%):		48.40	Final Saturation (%):		ERR
Initial Sample Dry Unit Weight (pcf):		0.00	Initial Sample Dry Unit Weight (pcf):		106.79	Final Sample Dry Unit Weight (pcf):		ERR

B-VALUE CHECK

Initial Pore Pressure (psi):	80	Final Pore Pressure (psi):	89.6	Delta Pore Pressure (psi):	9.60
Initial Cell Pressure (psi):	83	Final Cell Pressure (psi):	93	Delta Cell Pressure (psi):	10.00
		B-value:	0.960	(should be greater than 0.95)	

PERMEABILITY DATA

Note: cm H2O = 70.338 * (psi)

$$Kt = \frac{aL}{2A(t1-to)}\,[Ln\,(ho / h1)]$$

K=Permeability (cm/sec)
a=Area of Burette (cm2)
A=Area of Sample (cm2)
L=Length of Sample (cm)
to=Initial Time (sec)
t1=Time at h1 (sec)
ho=Initial Head (cm)
h1=Head at t1 (cm)

Date	Hour	Temp. (C)	Elapsed Time (sec)	Applied Press.Dif. (psi)	Top. Bur. Reading (cm)	Bot. Bur. Reading (cm)	Burette Difference (cm)	Delta T (t1-to) (sec)	h (cm)	Kt (cm/sec)	K20 (cm/sec)
11/08/95	11:52:30	20	0	0.5	24.000	0.100	23.900	0	59.089		
11/08/95	11:53:00	20	30	0.5	22.300	1.800	20.500	30	55.689	4.57E-04	4.59E-04
11/08/95	11:53:30	20	60	0.5	20.800	3.300	17.500	30	52.689	4.27E-04	4.29E-04
11/08/95	11:54:00	20	90	0.5	19.400	4.700	14.700	30	49.689	4.21E-04	4.23E-04
11/08/95	11:54:30	20	120	0.5	18.100	6.000	12.100	30	47.289	4.13E-04	4.15E-04
11/08/95	11:55:00	20	150	0.5	17.000	7.100	9.900	30	45.089	3.67E-04	3.69E-04
11/08/95	11:55:30	20	180	0.5	15.900	8.200	7.700	30	42.889	3.86E-04	3.88E-04
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
Tested by:	TCM G	Date:	11/08/95	Computed by:	TCM G	Date:	11/08/95	Average Result:			3.05E-04

PERMEABILITY TEST RESULTS
Los Osos Sewer

PLATE 31

JOB No.:	4280	JOB NAME:	LOS OSOS SEWER			Date:	11/15/95		
BORING No.:	OH-4	MATERIAL DESCRIPTION:	DARK ORANGE FINE SAND			Page: _ of _	1	1	
SAMPLE No.:	20	SAMPLE DEPTH (ft):	20			PERMEAMETER No.:	1		
BURETTE DIAMETER (cm):	1.128	AREA, a (cm^2):	1.00			SPECIFIC GRAVITY:	2.65		
SPECIMEN INFORMATION									
INITIAL MOISTURE CONTENT AND DENSITY						FINAL MOISTURE CONTENT			
REMOLDED SAMPLE			UNDISTURBED SAMPLE						
Maximum Dry Unit Weight (pcf):			Wet Weight of Sample (g):		633.3	Final Wet Sample Weight (g):		701.9	
Soil Moisture Content (%):			Moisture Sample Tare No.:		133	Moisture Sample Tare No.:		JRC	
Desired Relative Compaction (%):			Wet Weight of Moisture Sample & Tare (g):		153.7	Wet Weight of Moisture Sample & Tare (g):		1034.2	
			Dry Weight of Moisture Sample & Tare (g):		147.3	Dry Weight of Moisture Sample & Tare (g):		925.3	
			Tare Weight of Moisture Sample (g):		32.9	Tare Weight of Moisture Sample (g):		332.3	
Initial Diameter, D (in)(cm):			Initial Diameter, D (in)(cm):	2.4		Final Diameter, D (in)(cm):	2.4		
Initial Samp. Ht., L (in)(cm):			Initial Samp. Ht., L (in)(cm):	5		Final Samp. Ht., L (in)(cm):	5		
Initial Samp.Area, A (in)(cm):	0	0	Initial Samp.Area, A (in)(cm):	4.52389342117	29.186350796	Final Samp.Area, A (in)(cm):	4.52389342117	29.186350796	
Initial Samp. Vol. (cu-in)(cc):	0	0	Initial Samp. Vol. (cu-in)(cc):	22.6194671058	370.686655109	Final Samp. Vol. (cu-in)(cc):	22.6194671058	370.686655109	
Initial Sample Moist Soil Weight (g):		0.000	Initial Sample Moisture Content (%):		5.594	Final Moisture Content (%):		18.364	
Initial Sample Saturation (%):		0.00	Initial Sample Saturation (%):		23.27	Final Saturation (%):		74.22	
Initial Sample Dry Unit Weight (pcf):		0.00	Initial Sample Dry Unit Weight (pcf):		101.01	Final Sample Dry Unit Weight (pcf):		99.87	
B-VALUE CHECK									
Initial Pore Pressure (psi):		80	Final Pore Pressure (psi):		89.6	Delta Pore Pressure (psi):		9.60	
Initial Cell Pressure (psi):		83	Final Cell Pressure (psi):		93	Delta Cell Pressure (psi):		10.00	
			B-value:	0.960	(should be greater than 0.95)				

PERMEABILITY DATA

Note: cm H2O = 70.336 * (psi)

$$k_2 = \frac{aL}{2A(t_1 - t_0)} [Ln (h_0 / h_1)]$$

K=Permeability (cm/sec) L=Length of Sample (cm) ho=Initial Head (cm)
a=Area of Buret (cm2) to=Initial Time (sec) h1=Head at t1 (cm)
A=Area of Sample (cm2) t1=Time at h1 (sec)

Date	Hour	Temp. (C)	Elapsed Time (sec)	Applied Press.Dif. (psi)	Top. Bur. Reading (cm)	Bot. Bur. Reading (cm)	Burette Difference (cm)	Delta T (t1-to) (sec)	h (cm)	k2 (cm/sec)	K20 (cm/sec)
11/15/95	16:00:00	20	0	0.2	24.000	0.100	23.900	0	37.9758		
11/15/95	16:00:10	20	10	0.2	22.500	1.600	20.900	10	34.9758	1.79E-03	1.80E-03
11/15/95	16:00:20	20	20	0.2	21.000	3.100	17.900	10	31.9758	1.95E-03	1.96E-03
11/15/95	16:00:30	20	30	0.2	19.800	4.300	15.500	10	28.5758	1.70E-03	1.70E-03
11/15/95	16:00:40	20	40	0.2	18.600	5.500	13.100	10	27.1758	1.84E-03	1.85E-03
11/15/95	16:00:50	20	50	0.2	17.900	6.500	11.100	10	25.1758	1.66E-03	1.67E-03
11/15/95	16:01:00	20	60	0.2	16.800	7.500	9.100	10	23.1758	1.80E-03	1.81E-03
11/15/95	16:01:10	20	70	0.2	15.800	8.300	7.500	10	21.5758	1.56E-03	1.56E-03
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
Tested by:	TOM G	Date:	11/15/95	Computed by:	TOM G	Date:	11/15/95	Average Result:			1.78E-03

PERMEABILITY TEST RESULTS
Los Osos Sewer

PLATE 32

JOB No.:	4280	JOB NAME:	LOS OSOS SEWER			Date:	11/15/95	
BORING No.:	DH-4	MATERIAL DESCRIPTION:	DARK YELLOWISH ORANGE FINE SAND			Page: _ of _	1	1
SAMPLE No.:	50	SAMPLE DEPTH (ft):	50			PERMEAMETER No.:	1	
BURETTE DIAMETER (cm):	1.128	AREA, a (cm^2):	1.00			SPECIFIC GRAVITY:	2.66	

SPECIMEN INFORMATION

INITIAL MOISTURE CONTENT AND DENSITY						FINAL MOISTURE CONTENT		
REMOLDED SAMPLE			UNDISTURBED SAMPLE					
Maximum Dry Unit Weight (pcf):			Wet Weight of Sample (g):		679.6	Final Wet Sample Weight (g):		756.5
Soil Moisture Content (%):			Moisture Sample Tare No.:		132	Moisture Sample Tare No.:		4
Desired Relative Compaction (%):			Wet Weight of Moisture Sample & Tare (g):		147.8	Wet Weight of Moisture Sample & Tare (g):		827.5
			Dry Weight of Moisture Sample & Tare (g):		139.6	Dry Weight of Moisture Sample & Tare (g):		704.2
			Tare Weight of Moisture Sample (g):		18.7	Tare Weight of Moisture Sample (g):		71
Initial Diameter, D (in)(cm):			Initial Diameter, D (in)(cm):	2.4		Final Diameter, D (in)(cm):	2.4	
Initial Samp. Ht., L (in)(cm):			Initial Samp. Ht., L (in)(cm):	5.3		Final Samp. Ht., L (in)(cm):	5.3	
Initial Samp.Area, A (in)(cm):	0	0	Initial Samp.Area, A (in)(cm):	4.52388342117	29.186350796	Final Samp.Area, A (in)(cm):	4.52388342117	29.186350796
Initial Samp. Vol. (cu-in)(cc):	0	0	Initial Samp. Vol. (cu-in)(cc):	23.9788361322	392.908864416	Final Samp. Vol. (cu-in)(cc):	23.9788361322	392.908864416
Initial Sample Moist Soil Weight (g):		0.000	Initial Sample Moisture Content (%):		6.671	Final Moisture Content (%):		19.473
Initial Sample Saturation (%):		0.00	Initial Sample Saturation (%):		28.60	Final Saturation (%):		80.18
Initial Sample Dry Unit Weight (pcf):		0.00	Initial Sample Dry Unit Weight (pcf):		101.04	Final Sample Dry Unit Weight (pcf):		100.61

B-VALUE CHECK

Initial Pore Pressure (psi):	80	Final Pore Pressure (psi):	88.6	Delta Pore Pressure (psi):	9.60
Initial Cell Pressure (psi):	83	Final Cell Pressure (psi):	93	Delta Cell Pressure (psi):	10.00
		B-value:	0.960	(should be greater than 0.95)	

PERMEABILITY DATA

Note: cm H2O = 70.338 * (psi)

$$Kt = \frac{a L}{2A(t1-to)} [Ln (ho / h1)]$$

K=Permeability (cm/sec)
a=Area of Burette (cm2)
A=Area of Sample (cm2)
L=Length of Sample (cm)
to=Initial Time (sec)
t1=Time at h1 (sec)
ho=Initial Head (cm)
h1=Head at t1 (cm)

Date	Hour	Temp. (C)	Elapsed Time (sec)	Applied Press.Dif. (psi)	Top. Bur. Reading (cm)	Bot. Bur. Reading (cm)	Burette Difference (cm)	Delta T (t1-to) (sec)	h (cm)	Kt (cm/sec)	K20 (cm/sec)
11/15/95	9:00:00	20	0	0.5	25.000	0.200	24.800	0	58.989		
11/15/95	9:00:15	20	15	0.5	22.000	3.200	18.800	15	53.989	1.62E-03	1.63E-03
11/15/95	9:00:30	20	30	0.5	19.200	6.200	13.000	15	48.189	1.75E-03	1.75E-03
11/15/95	9:00:45	20	45	0.5	17.000	9.000	8.000	15	43.189	1.68E-03	1.69E-03
11/15/95	9:01:00	20	60	0.5	14.900	11.200	3.700	15	38.889	1.61E-03	1.62E-03
11/15/95	9:01:15	20	75	0.5	13.000	13.300	-0.300	15	34.889	1.67E-03	1.68E-03
11/15/95	9:01:30	20	90	0.5	11.300	15.200	-3.800	15	31.289	1.67E-03	1.68E-03
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
Tested by:	TOM G	Date:	11/15/95	Computed by:	TOM G	Date:	11/15/95	Average Result:			1.68E-03

PERMEABILITY TEST RESULTS
Los Osos Sewer

JOB No..	4280	JOB NAME:	LOS OSOS SEWER			Date:	11/15/95	
BORING No..	OH-6	MATERIAL DESCRIPTION:	DARK YELLOWISH ORANGE FINE SAND			Page: _ of _	1	1
SAMPLE No..	21	SAMPLE DEPTH (ft):	21			PERMEAMETER No..	1	
BURETTE DIAMETER (cm):	1.128	AREA, a (cm^2):	1.00			SPECIFIC GRAVITY:	2.65	

SPECIMEN INFORMATION

INITIAL MOISTURE CONTENT AND DENSITY						FINAL MOISTURE CONTENT		
REMOLDED SAMPLE			UNDISTURBED SAMPLE					
Maximum Dry Unit Weight (pcf):			Wet Weight of Sample (g):		685.2	Final Wet Sample Weight (g):		722.1
Soil Moisture Content (%):			Moisture Sample Tare No.:		112	Moisture Sample Tare No.:		6
Desired Relative Compaction (%):			Wet Weight of Moisture Sample & Tare (g):		143.1	Wet Weight of Moisture Sample & Tare (g):		792.5
			Dry Weight of Moisture Sample & Tare (g):		132.5	Dry Weight of Moisture Sample & Tare (g):		679
			Tare Weight of Moisture Sample (g):		19.4	Tare Weight of Moisture Sample (g):		70.4
Initial Diameter, D (in)(cm):			Initial Diameter, D (in)(cm):	2.4		Final Diameter, D (in)(cm):	2.39	
Initial Samp. Ht., L (in)(cm):			Initial Samp. Ht., L (in)(cm):	5.25		Final Samp. Ht., L (in)(cm):	5.2	
Initial Samp.Area, A (in)(cm):	0	0	Initial Samp.Area, A (in)(cm):	4.52388342117	29.188360798	Final Samp.Area, A (in)(cm):	4.48627284914	28.9436379136
Initial Samp. Vol. (cu-in)(cc):	0	0	Initial Samp. Vol. (cu-in)(cc):	23.7504404611	389.199987865	Final Samp. Vol. (cu-in)(cc):	23.3286188156	382.287589562
Initial Sample Moist Soil Weight (g):		0.000	Initial Sample Moisture Content (%):		9.372	Final Moisture Content (%):		18.649
Initial Sample Saturation (%):		0.00	Initial Sample Saturation (%):		35.73	Final Saturation (%):		74.45
Initial Sample Dry Unit Weight (pcf):		0.00	Initial Sample Dry Unit Weight (pcf):		97.58	Final Sample Dry Unit Weight (pcf):		98.39

B-VALUE CHECK

Initial Pore Pressure (psi):	80	Final Pore Pressure (psi):	89.6	Delta Pore Pressure (psi):	9.60
Initial Cell Pressure (psi):	83	Final Cell Pressure (psi):	93	Delta Cell Pressure (psi):	10.00
		B-value:	0.960	(should be greater than 0.95)	

PERMEABILITY DATA

Note: cm H2O = 70.338 * (psi)

$$Kt = \frac{aL}{2A(t1-to)}\,[Ln\,(ho / h1)]$$

K=Permeability (cm/sec) L=Length of Sample (cm) ho=Initial Head (cm)
a=Area of Burette (cm2) to=Initial Time (sec) h1=Head at t1 (cm)
A=Area of Sample (cm2) t1=Time at h1 (sec)

Date	Hour	Temp. (C)	Elapsed Time (sec)	Applied Press.Dif. (psi)	Top. Bur. Reading (cm)	Bot. Bur. Reading (cm)	Burette Difference (cm)	Delta T (t1-to) (sec)	h (cm)	Kt (cm/sec)	K20 (cm/sec)
11/15/95	9:00:00	20	0	0.5	25.000	0.100	24.900	0	60.089		
11/15/95	9:00:15	20	15	0.5	22.300	2.800	19.500	15	54.688	1.43E-03	1.44E-03
11/15/95	9:00:30	20	30	0.5	20.100	5.000	15.100	15	50.288	1.29E-03	1.29E-03
11/15/95	9:00:45	20	45	0.5	18.100	7.000	11.100	15	46.288	1.26E-03	1.27E-03
11/15/95	9:01:00	20	60	0.5	18.100	9.000	7.100	15	42.288	1.38E-03	1.38E-03
11/15/95	9:01:15	20	75	0.5	14.300	10.800	3.500	15	38.688	1.35E-03	1.36E-03
11/15/95	9:01:30	20	90	0.5	12.600	12.500	0.100	15	36.288	1.40E-03	1.41E-03
11/15/95	9:01:45	20	105	0.5	11.100	14.000	-2.900	15	32.288	1.36E-03	1.36E-03
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK

Tested by:	TOM G	Date:	11/15/95	Computed by:	TOM G	Date:	11/15/95	Average Result:	1.34E-03

PERMEABILITY TEST RESULTS

Los Osos Sewer

JOB No.:	4280	JOB NAME:	LOS OSOS SEWER	Date:	11/15/96
BORING No.:	DH-5	MATERIAL DESCRIPTION:	GRAYISH ORANGE CLAYEY SAND	Page: _ of _	1 1
SAMPLE No.:	50	SAMPLE DEPTH (ft):	50	PERMEAMETER No.:	1
BURETTE DIAMETER (cm):	1.128	AREA, a (cm^2):	1.00	SPECIFIC GRAVITY:	2.65

SPECIMEN INFORMATION

INITIAL MOISTURE CONTENT AND DENSITY							FINAL MOISTURE CONTENT		
REMOLDED SAMPLE			UNDISTURBED SAMPLE						
Maximum Dry Unit Weight (pcf):			Wet Weight of Sample (g):		795.9		Final Wet Sample Weight (g):		803.8
Soil Moisture Content (%):			Moisture Sample Tare No.:		141		Moisture Sample Tare No.:		A1
Desired Relative Compaction (%):			Wet Weight of Moisture Sample & Tare (g):		142.8		Wet Weight of Moisture Sample & Tare (g):		833.4
			Dry Weight of Moisture Sample & Tare (g):		127.4		Dry Weight of Moisture Sample & Tare (g):		715.8
			Tare Weight of Moisture Sample (g):		19.1		Tare Weight of Moisture Sample (g):		29.6
Initial Diameter, D (in)(cm):			Initial Diameter, D (in)(cm):	2.4			Final Diameter, D (in)(cm):	2.4	
Initial Samp. Ht., L (in)(cm):			Initial Samp. Ht., L (in)(cm):	5.1			Final Samp. Ht., L (in)(cm):	5.1	
Initial Samp.Area, A (in)(cm):	0	0	Initial Samp.Area, A (in)(cm):	4.52369342117	29.186350796		Final Samp.Area, A (in)(cm):	4.52369342117	29.186350796
Initial Samp. Vol. (cu-in)(cc):	0	0	Initial Samp. Vol. (cu-in)(cc):	23.071856448	378.079886212		Final Samp. Vol. (cu-in)(cc):	23.071856448	378.079886212
Initial Sample Moist Soil Weight (g):		0.000	Initial Sample Moisture Content (%):		14.220		Final Moisture Content (%):		17.138
Initial Sample Saturation (%):		0.00	Initial Sample Saturation (%):		86.19		Final Saturation (%):		98.85
Initial Sample Dry Unit Weight (pcf):		0.00	Initial Sample Dry Unit Weight (pcf):		115.08		Final Sample Dry Unit Weight (pcf):		113.30

B-VALUE CHECK

Initial Pore Pressure (psi):	80	Final Pore Pressure (psi):	89.8	Delta Pore Pressure (psi):	9.80
Initial Cell Pressure (psi):	93	Final Cell Pressure (psi):	93	Delta Cell Pressure (psi):	10.00
		B-value:	0.980	(should be greater than 0.95)	

PERMEABILITY DATA

Note: cm H2O = 70.338 * (psi)

$$Kt = \frac{aL}{2A(t1-to)} [Ln (ho / h1)]$$

K=Permeability (cm/sec)
a=Area of Burette (cm2)
A=Area of Sample (cm2)
L=Length of Sample (cm)
to=Initial Time (sec)
t1=Time at h1 (sec)
ho=Initial Head (cm)
h1=Head at t1 (cm)

Date	Hour	Temp. (C)	Elapsed Time (sec)	Applied Press.Dif. (psi)	Top. Bur. Reading (cm)	Bot. Bur. Reading (cm)	Burette Difference (cm)	Delta T (t1-to) (sec)	h (cm)	Kt (cm/sec)	K20 (cm/sec)
11/15/96	11:39	20	0	1	23.000	0.400	22.600	0	92.978		
11/15/96	11:47	20	480	1	21.600	1.900	19.700	480	90.078	1.46E-05	1.47E-05
11/15/96	12:03	20	1440	1	18.900	4.600	14.300	960	84.678	1.43E-05	1.43E-05
11/15/96	12:15	20	2160	1	17.000	6.600	10.400	720	80.778	1.45E-05	1.46E-05
11/15/96	12:34	20	3300	1	14.400	9.200	5.200	1140	75.578	1.29E-05	1.30E-05
11/15/96	12:48	20	4140	1	12.300	11.200	1.100	840	71.478	1.47E-05	1.48E-05
11/15/96	13:03	20	5040	1	10.400	13.200	-2.800	900	67.578	1.38E-05	1.39E-05
11/15/96	13:21	20	6120	1	8.300	15.500	-7.200	1080	63.178	1.39E-05	1.39E-05
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK

Tested by:	TOM G	Date:	11/15/96	Computed by:	TOM G	Date:	11/15/96

Average Result: 1.41E-05

PERMEABILITY TEST RESULTS
Los Osos Sewer

PLATE 35

JOB No.:	4280	JOB NAME:	LOS OSOS SEWER			Date:	11/15/95	
BORING No.:	DH-6	MATERIAL DESCRIPTION:	PALE YELLOWISH ORANGE FINE SAND			Page: _ of _	1	1
SAMPLE No.:	36	SAMPLE DEPTH (ft):	36			PERMEAMETER No.:	1	
BURETTE DIAMETER (cm):	1.128	AREA, a (cm^2):	1.00			SPECIFIC GRAVITY:	2.65	

SPECIMEN INFORMATION

INITIAL MOISTURE CONTENT AND DENSITY						FINAL MOISTURE CONTENT		
REMOLDED SAMPLE			UNDISTURBED SAMPLE					
Maximum Dry Unit Weight (pcf):			Wet Weight of Sample (g):		239.7	Final Wet Sample Weight (g):		255.9
Soil Moisture Content (%):			Moisture Sample Tare No.:		138	Moisture Sample Tare No.:		BB
Desired Relative Compaction (%):			Wet Weight of Moisture Sample & Tare (g):		151.9	Wet Weight of Moisture Sample & Tare (g):		308
			Dry Weight of Moisture Sample & Tare (g):		148.6	Dry Weight of Moisture Sample & Tare (g):		254.7
			Tare Weight of Moisture Sample (g):		19	Tare Weight of Moisture Sample (g):		52.1
Initial Diameter, D (in)(cm):			Initial Diameter, D (in)(cm):	2.4		Final Diameter, D (in)(cm):	2.39	
Initial Samp. Ht., L (in)(cm):			Initial Samp. Ht., L (in)(cm):	2.1		Final Samp. Ht., L (in)(cm):	2	
Initial Samp.Area, A (in)(cm):	0	0	Initial Samp.Area, A (in)(cm):	4.52388342117	29.186360799	Final Samp.Area, A (in)(cm):	4.48627284914	28.9436379135
Initial Samp. Vol. (cu-in)(cc):	0	0	Initial Samp. Vol. (cu-in)(cc):	9.50017918446	155.679886146	Final Samp. Vol. (cu-in)(cc):	9.57254559829	147.033680601
Initial Sample Moist Soil Weight (g):		0.000	Initial Sample Moisture Content (%):		2.546	Final Moisture Content (%):		28.308
Initial Sample Saturation (%):		0.00	Initial Sample Saturation (%):		8.83	Final Saturation (%):		75.59
Initial Sample Dry Unit Weight (pcf):		0.00	Initial Sample Dry Unit Weight (pcf):		93.73	Final Sample Dry Unit Weight (pcf):		86.02

B-VALUE CHECK

Initial Pore Pressure (psi):	80	Final Pore Pressure (psi):		88.6	Delta Pore Pressure (psi):		8.60
Initial Cell Pressure (psi):	83	Final Cell Pressure (psi):		93	Delta Cell Pressure (psi):		10.00
		B-value:	0.960	(should be greater than 0.95)			

PERMEABILITY DATA

Note: cm H2O = 70.338 * (psi)

$$Kt = \frac{aL}{2A(t1-to)} [Ln (ho / h1)]$$

K=Permeability (cm/sec) L=Length of Sample (cm) ho=Initial Head (cm)
a=Area of Burette (cm2) to=Initial Time (sec) h1=Head at t1 (cm)
A=Area of Sample (cm2) t1=Time at h1 (sec)

Date	Hour	Temp. (C)	Elapsed Time (sec)	Applied Press.Dif. (psi)	Top. Bur. Reading (cm)	Bot. Bur. Reading (cm)	Burette Difference (cm)	Delta T (t1-to) (sec)	h (cm)	Kt (cm/sec)	K20 (cm/sec)
11/15/95	13:10:00	20	0	0.1	24.000	0.000	24.000	0	31.0378		
11/15/95	13:10:05	20	5	0.1	23.400	0.600	22.800	5	29.8378	7.20E-04	7.23E-04
11/15/95	13:10:10	20	10	0.1	22.800	1.200	21.600	5	28.6378	7.50E-04	7.53E-04
11/15/95	13:10:15	20	15	0.1	22.200	1.800	20.400	5	27.4378	7.82E-04	7.85E-04
11/15/95	13:10:20	20	20	0.1	21.650	2.400	19.250	5	26.2878	7.82E-04	7.86E-04
11/15/95	13:10:25	20	25	0.1	21.100	3.000	18.100	5	25.1378	8.17E-04	8.21E-04
11/15/95	13:10:30	20	30	0.1	20.600	3.500	17.100	5	24.1378	7.41E-04	7.45E-04
11/15/95	13:10:35	20	35	0.1	20.100	4.000	16.100	5	23.1378	7.73E-04	7.76E-04
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
Tested by:	TOM G	Date:	11/15/95	Computed by:	TOM G	Date:	11/15/95	Average Result:			7.78E-04

PERMEABILITY TEST RESULTS
Los Osos Sewer

JOB No.:	4280	JOB NAME:	LOS OSOS SEWER	Date:	11/15/95
BORING No.:	DH-6	MATERIAL DESCRIPTION:	DARK ORANGE FINE SAND	Page: _ of _	1
SAMPLE No.:	49	SAMPLE DEPTH (ft):	49	PERMEAMETER No.:	1
BURETTE DIAMETER (cm):	1.128	AREA, a (cm^2):	1.00	SPECIFIC GRAVITY:	2.65

SPECIMEN INFORMATION

INITIAL MOISTURE CONTENT AND DENSITY

REMOLDED SAMPLE			UNDISTURBED SAMPLE			FINAL MOISTURE CONTENT		
Maximum Dry Unit Weight (pcf):			Wet Weight of Sample (g):		722.2	Final Wet Sample Weight (g):		737
Soil Moisture Content (%):			Moisture Sample Tare No.:		143	Moisture Sample Tare No.:		A2
Desired Relative Compaction (%):			Wet Weight of Moisture Sample & Tare (g):		194.1	Wet Weight of Moisture Sample & Tare (g):		766.5
			Dry Weight of Moisture Sample & Tare (g):		173.7	Dry Weight of Moisture Sample & Tare (g):		658.9
			Tare Weight of Moisture Sample (g):		19.3	Tare Weight of Moisture Sample (g):		29.5
Initial Diameter, D (in)(cm):			Initial Diameter, D (in)(cm):	2.4		Final Diameter, D (in)(cm):	2.4	
Initial Samp. Ht., L (in)(cm):			Initial Samp. Ht., L (in)(cm):	4.9		Final Samp. Ht., L (in)(cm):	4.9	
Initial Samp.Area, A (in)(cm):	0	0	Initial Samp.Area, A (in)(cm):	4.52389342117	29.186360796	Final Samp.Area, A (in)(cm):	4.52389342117	29.186360796
Initial Samp. Vol. (cu-in)(cc):	0	0	Initial Samp. Vol. (cu-in)(cc):	22.16707777637	363.253322007	Final Samp. Vol. (cu-in)(cc):	22.16707777637	363.253322007
Initial Sample Moist Soil Weight (g):		0.000	Initial Sample Moisture Content (%):		13.212	Final Moisture Content (%):		17.098
Initial Sample Saturation (%):		0.00	Initial Sample Saturation (%):		66.88	Final Saturation (%):		85.88
Initial Sample Dry Unit Weight (pcf):		0.00	Initial Sample Dry Unit Weight (pcf):		108.63	Final Sample Dry Unit Weight (pcf):		108.17

B-VALUE CHECK

Initial Pore Pressure (psi):	80	Final Pore Pressure (psi):		89.6	Delta Pore Pressure (psi):	9.60
Initial Cell Pressure (psi):	83	Final Cell Pressure (psi):		93	Delta Cell Pressure (psi):	10.00
		B-value:	0.960	(should be greater than 0.95)	

PERMEABILITY DATA

Note: cm H2O = 70.338 * (psi)

$$Kt = \frac{aL}{2A(t1-to)} [Ln (ho / h1)]$$

K=Permeability (cm/sec) L=Length of Sample (cm) ho=Initial Head (cm)
a=Area of Burette (cm2) to=Initial Time (sec) h1=Head at t1 (cm)
A=Area of Sample (cm2) t1=Time at h1 (sec)

Date	Hour	Temp. (C)	Elapsed Time (sec)	Applied Press.Dif. (psi)	Top. Bur. Reading (cm)	Bot. Bur. Reading (cm)	Burette Difference (cm)	Delta T (t1-to) (sec)	h (cm)	Kt (cm/sec)	K20 (cm/sec)
11/15/95	13:10:00	20	0	0.5	24.000	0.300	23.700	0	58.888		
11/15/95	13:10:05	20	5	0.5	23.200	1.100	22.100	5	57.288	1.17E-03	1.19E-03
11/15/95	13:10:10	20	10	0.5	22.400	1.900	20.500	5	56.688	1.21E-03	1.21E-03
11/15/95	13:10:15	20	15	0.5	21.700	2.600	19.100	5	54.288	1.09E-03	1.09E-03
11/15/95	13:10:20	20	20	0.5	20.900	3.400	17.500	5	52.688	1.27E-03	1.28E-03
11/15/95	13:10:25	20	25	0.5	20.100	4.200	15.900	5	51.088	1.31E-03	1.32E-03
11/15/95	13:10:30	20	30	0.5	19.400	4.900	14.500	5	49.688	1.18E-03	1.19E-03
11/15/95	13:10:35	20	35	0.5	18.600	5.500	13.100	5	48.288	1.22E-03	1.22E-03
11/15/95	13:10:40	20	40	0.5	17.900	6.200	11.700	5	46.888	1.25E-03	1.26E-03
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
		20	0				0.000	0	0	BLANK	BLANK
Tested by:	TOM G	Date:	11/15/95	Computed by:	TOM G	Date:	11/15/95	Average Result:			1.23E-03

PERMEABILITY TEST RESULTS
Los Osos Sewer