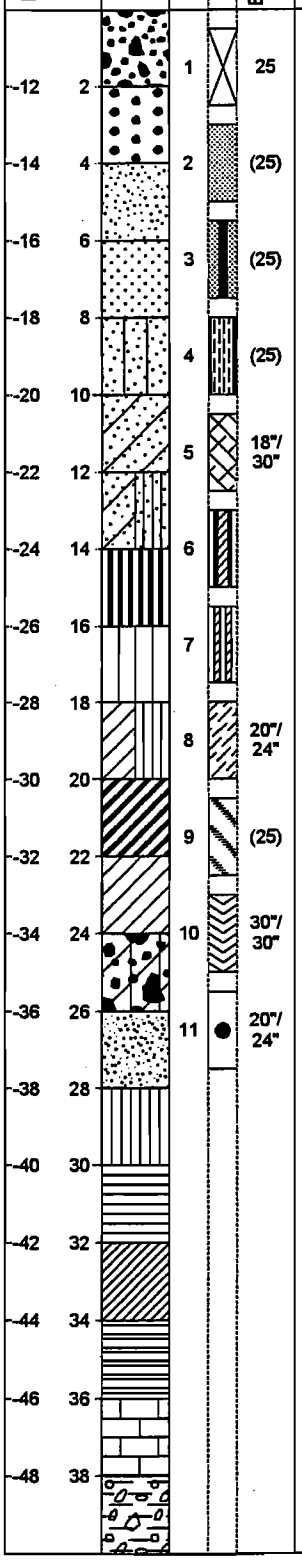
APPENDIX A

LOCATION: The drill hole location referencing local landmarks or coordinates
SURFACE EL: Using local, MSL, MLLW or other datum



MATERIAL DESCRIPTION

COARSE GRAINED	Well graded GRAVEL (GW)
	Poorly graded GRAVEL (GP)
	Well graded SAND (SW)
	Poorly graded SAND (SP)
	Silty SAND (SM)
	Clayey SAND (SC)
	Silty, Clayey SAND (SC-SM)
FINE GRAINED	Elastic SILT (MH)
	SILT (ML)
	Silty CLAY (CL-ML)
	Fat CLAY (CH)
	Lean CLAY (CL)
ROCK	CONGLOMERATE
	SANDSTONE
	SILTSTONE
	MUDSTONE
	CLAYSTONE
	SHALE
	LIMESTONE
	Paving and/or Base Materials

General Notes

Soil Texture Symbol

Sloped line in symbol column indicates transitional boundary

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 Thin-walled Tube, pushed 2 7/8" ID, 3" OD
5 Bulk Bag Sample (from cuttings)
6 Hand Auger Sample
7 CME Core Sample
8 Lexan Sample
9 Pitcher Sample
10 Vibracore Sample
11 No Sample Recovered

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

Blow counts for California Liner Sampler shown in ( )

Length of sample symbol approximates recovery length

Classification of Soils per ASTM D2487 or D2488

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

Strength Legend

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

Water Level Symbols

Initial or perched water level
Final ground water level
Seepages encountered

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

KEY TO TERMS & SYMBOLS USED ON LOGS

LOCATION: Intersection of 4th St., and Santa Lucia Ave.

SURFACE EL: 20.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
					DUNE SAND DEPOSITS (Qs)							
18	2	1		(11)	Silty fine SAND (SM): loose, brown to dark brown, dry	103	101	3				
16	4	2		11	Poorly graded SAND (SP): medium dense, red-yellow, moist			3	1			
14	6											
12	8	A										
10	10	3		(37)		131	127	4				
8	12											
6	14	4		18	- wet below 13.5'							
4	16											
2	18											
0	20	5		(18)		132	108	22				
					- Water added to augers to reduce the potential for sand to flow up into augers							
-2	22				**ESTUARINE DEPOSITS (Qoe)**							
-4	24	6		(32)	Sand with clay (SP-SC): medium dense, light brown with dark orange iron oxide stains, wet, with lenses of lean CLAY (CL)	128	106	21				
-6	26											
-8	28											
-10	30	7		5	- loose							
-12	32											
-14	34	8		(18)	Silty SAND (SM): medium dense, gray to dark gray, wet, with lean CLAY (CL) pockets			25				
-16	36											
-18	38											
-20	40	9		15								
-22	42				Hole caved below 12 feet after augers were removed.							
-24	44											
-26	46											
-28	48											
-30	50											

COMPLETION DEPTH: 40.5 ft
DEPTH TO WATER: 13.5 ft
BACKFILLED WITH: Slurry
DRILLING DATE: August 11, 2003

DRILLING METHOD: 8-in. dia. Hollow Stem Auger
HAMMER TYPE: Automatic Trip
DRILLED BY: S/G Testing
LOGGED BY: NJDerbidge
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-401

Los Osos Wastewater Project
Los Osos, California

LOCATION: 8th St., 200' north of Santa Ysabel Ave.

SURFACE EL: 28.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
						DUNE SAND DEPOSITS (Qs)							
26	2					Silty SAND (SM): loose, to medium dense, red-brown, dry							
24	4		1	X	14								
22	6												
20	8												
18	10		2		(29)	Poorly graded SAND (SP): medium dense, red-yellow, moist	108	106	2				
16	12												
14	14		3	X	18				7	2			
12	16												
10	18												
8	20		4		(38)	- wet below 19', brown	131	109	20				
6	22												
4	24		5	X	29	- Water added to augers to reduce the potential for sand to flow up into augers							
2	26												
0	28												
-2	30		6	X	28	- yellow-brown							
-4	32												
-6	34		7	X	28								
-8	36												
-10	38												
-12	40		8	X	38	- dense							
-14	42					Hole caved below 18' after augers were removed.							
-16	44												
-18	46												
-20	48												
-22	50												

COMPLETION DEPTH: 40.5 ft
DEPTH TO WATER: 19 ft
BACKFILLED WITH: Slurry
DRILLING DATE: August 11, 2003

DRILLING METHOD: 8-in. dia. Hollow Stem Auger
HAMMER TYPE: Automatic Trip
DRILLED BY: S/G Testing
LOGGED BY: NJDerbidge
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-402

Los Osos Wastewater Project
Los Osos, California

LOCATION: 13th St., 200' north of Santa Ysabel Ave.

SURFACE EL: 81.5 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
						ARTIFICIAL FILL (af)							
80	2		1		(21)	3.25" Asphalt concrete over 8" of base consisting of silty SAND (SM): dense, light brown, dry	108	106	2				
						DUNE SAND DEPOSITS (Qs)							
78	4		2		13	Sand with silt (SP-SM): medium dense, red-brown, dry, fine							
76	6												
74	8												
72	10		3		(26)	Poorly graded SAND (SP): medium dense, red-yellow, moist	107	104	3				
70	12		A										
68	14		4		19								
66	16												
64	18												
62	20		5		(49)	- dense, light brown	108	103	5				
60	22												
58	24		6		31								
56	26												
54	28												
52	30		7		(40)	- medium dense							
50	32												
48	34		8		30								
46	36												
44	38												
42	40		9		(85)	- very dense, wet							
40	42					Hole caved below 37 feet after augers were removed.							
38	44												
36	46												
34	48												
32	50												
30													

COMPLETION DEPTH: 40.5 ft
DEPTH TO WATER: 39 ft
BACKFILLED WITH: Slurry/concrete cap
DRILLING DATE: August 11, 2003

DRILLING METHOD: 8-in. dia. Hollow Stem Auger
HAMMER TYPE: Automatic Trip
DRILLED BY: S/G Testing
LOGGED BY: NJDerbidge
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-403

Los Osos Wastewater Project
Los Osos, California

Montgomery Watson Harza
Project No. 3055.001

FUGRO

LOCATION: Paso Robles Ave., 40' east of 3rd St.

SURFACE EL: 20.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	SAMPLE NO.	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
				DUNE SAND DEPOSITS (Qs)							
18	2	1	(15)	Poorly graded SAND with silt (SP-SM): loose, to medium dense, red-yellow, dry	104	103	2				
16	4	2	11	- moist		100	8				
		A									
14	6	3	(21)		111	106	5				
12	8										
10	10	4	23	- wet			19	9			
8	12										
6	14	5	(49)	- dense, water added to augers to reduce the potential for sand to flow up into augers	130	107	21				
4	16										
2	18										
0	20	6	47								
-2	22										
-4	24	7	(50/5")								
-6	26										
-8	28										
-10	30	8	n/a								
-12	32										
-14	34			Hole terminated at 34 feet due to sand flowing up into augers and binding between center bit and augers. Hole caved below 12 feet after augers were removed.							
-16	36										
-18	38										
-20	40										
-22	42										
-24	44										
-26	46										
-28	48										
-30	50										

COMPLETION DEPTH: 34.0 ft
DEPTH TO WATER: 9.5 ft
BACKFILLED WITH: Slurry
DRILLING DATE: August 12, 2003

DRILLING METHOD: 8-in. dia. Hollow Stem Auger
HAMMER TYPE: Automatic Trip
DRILLED BY: S/G Testing
LOGGED BY: NJDerbidge
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-404

Los Osos Wastewater Project
Los Osos, California

LOCATION: Maintenance yard at the intersection of Nipomo Ave. and South Bay Blvd.

SURFACE EL: 107.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
106						**DUNE SAND DEPOSITS (Qs)**							
	2					Poorly graded SAND (SP): loose, to medium dense, red-yellow, dry, fine							
104			1		(14)		106	102	4				
	4		A		10	- moist		100	7				
102			2										
	6												
100													
	8		3		(24)		109	104	5				
98													
	10		4		17								
96													
	12												
94													
	14												
92			5		(46)	- dense, with faint iron oxide stains	116	108	8				
	16												
90													
	18												
88													
	20		6		24	- medium dense							
86													
	22												
84						**PASO ROBLES FORMATION (Qtp)**							
	24					Poorly graded SAND (SP): dense, red-yellow, wet							
82			7		(47)								
	26												
80													
	28												
78													
	30		8		(88/11")	- with pockets of brown lean CLAY (CL)							
76													
	32												
74													
	34												
72			9		59								
	36												
70													
	36												
68													
	40		10		(31)	Sandy lean CLAY with gravel (CL): stiff, to very stiff, red-yellow, wet							
66						Hole caved below 25 feet after augers were removed.							
	42												
64													
	44												
62													
	46												
60													
	48												
58													
	50												
56													

COMPLETION DEPTH: 40.5 ft
DEPTH TO WATER: 23.5 ft
BACKFILLED WITH: Slurry
DRILLING DATE: August 12, 2003

DRILLING METHOD: 8-in. dia. Hollow Stem Auger
HAMMER TYPE: Automatic Trip
DRILLED BY: S/G Testing
LOGGED BY: NJDerbidge
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-405

Los Osos Wastewater Project
Los Osos, California

LOCATION: Intersection of Santa Ynez Ave., and Mountain View Ave.

SURFACE EL: 100.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
						ARTIFICIAL FILL (af)							
						3" Asphalt concrete over 6" of aggregate base							
98	2		1		(14)	DUNE SAND DEPOSITS (Qs) Silty SAND (SM): loose, red-brown, moist, fine:	108	105	4				
96	4		2		6	Sand with silt (SP-SM: loose, light brown, moist, fine:							
94	6												
92	8												
90	10		3		(25)	- medium dense, with iron oxide stains	131	119	9				
88	12												
86	14		4		32	- red-yellow, with black specs							
84	16												
82	18												
80	20		5		(50)	PASO ROBLES FORMATION (Qtp) Clayey SAND (SC): very dense, red-brown, moist, with black specs, sand partings	118	107	11	25			
78	22												
76	24		6		22	Sandy lean CLAY (CL): very stiff, red-brown, moist, with sand partings			20		34	27	
74	26												
72	28												
70	30		7		(68)	- hard, with layers of SAND with clay and gravel (SP-SC)	140	122	15	11			
68	32												
66	34		8		30				18		39	19	
64	36												
62	38												
60	40		9		(56)	- with layers of SAND with gravel (SP)							
58	42												
56	44												
54	46												
52	48												
50	50												

COMPLETION DEPTH: 40.5 ft
DEPTH TO WATER: Not Enconutered
BACKFILLED WITH: Slurry
DRILLING DATE: August 12, 2003

DRILLING METHOD: 8-in. dia. Hollow Stem Auger
HAMMER TYPE: Automatic Trip
DRILLED BY: S/G Testing
LOGGED BY: NJDerbidge
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-406

Los Osos Wastewater Project
Los Osos, California

LOCATION: Intersection of Bay Oaks Dr., and Crest Ave.

SURFACE EL: 182.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
		af				**ARTIFICIAL FILL (af)**							
180	2		1		(24)	4" Asphalt concrete over 8" aggregate base	108	104	3				
						DUNE SAND DEPOSITS (Qs)							
						Poorly graded SAND (SP): medium dense, red-yellow, moist							
178	4		2		15								
176	6												
174	8												
172	10		3		(29)		108	103	4				
			A										
170	12												
168	14		4		17	- light brown							
166	16												
164	18												
162	20		5		(30)		107	101	6				
						Hole caved below 18.5 feet after augers were removed.							
160	22												
158	24												
156	26												
154	28												
152	30												
150	32												
148	34												
146	36												
144	38												
142	40												
140	42												
138	44												
136	46												
134	48												
132	50												

COMPLETION DEPTH: 20.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings/concrete cap
DRILLING DATE: August 13, 2003

DRILLING METHOD: 8-in. dia. Hollow Stem Auger
HAMMER TYPE: Automatic Trip
DRILLED BY: S/G Testing
LOGGED BY: NJDerbidge
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-408

Los Osos Wastewater Project
Los Osos, California

LOCATION: Bay View Heights Dr., 75' north of Bay Oaks Dr.

SURFACE EL: 136.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
						ARTIFICIAL FILL (af) 4" Asphalt concrete over 20" aggregate base consisting of lean CLAY with gravel (CL): very stiff, brown, moist							
134	2		1		10				5	2			
						DUNE SAND DEPOSITS (Qs) Poorly graded SAND (SP): medium dense, red-brown, moist, fine							
132	4		2		(20)		108	103	5				
130	6												
128	6												
126	10		3 A		19	- red-yellow							
124	12												
122	14		4		(48)		108	103	4				
120	16												
118	16												
116	20		5		46								
						Hole caved below 18.5 feet after augers were removed.							
114	22												
112	24												
110	26												
108	28												
106	30												
104	32												
102	34												
100	36												
98	38												
96	40												
94	42												
92	44												
90	46												
88	46												
86	50												

COMPLETION DEPTH: 20.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings/concrete cap
DRILLING DATE: August 13, 2003

DRILLING METHOD: 8-in. dia. Hollow Stem Auger
HAMMER TYPE: Automatic Trip
DRILLED BY: S/G Testing
LOGGED BY: NJDerbidge
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-409

Los Osos Wastewater Project
Los Osos, California

LOCATION: Intersection of Lilac Dr. and Palisades Ave.

SURFACE EL: 145.5 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
						ARTIFICIAL FILL (af)							
144	2		1		18	4" Asphalt concrete over 16" aggregate base							
						DUNE SAND DEPOSITS							
142	4					Silty SAND (SM): medium dense, red-brown, dry, fine							
140	6		2		(24)		101	98	3				
138	8												
136	10		3 A		23	SAND with silt (SP-SM): medium dense, yellow-brown, moist, fine							
134	12												
132	14												
130	16		4		(44)	Poorly-graded SAND (SP): medium dense, yellow-brown, moist, with few SILT (ML) pockets	107	104	3				
128	18												
126	20		5		38	- dense							
124	22					Hole cave below 16.5 feet after augers were removed.							
122	24												
120	26												
118	28												
116	30												
114	32												
112	34												
110	36												
108	38												
106	40												
104	42												
102	44												
100	46												
98	48												
96	50												
94													

COMPLETION DEPTH: 20.5 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings/concrete cap
DRILLING DATE: August 13, 2003

DRILLING METHOD: 8-in. dia. Hollow Stem Auger
HAMMER TYPE: Automatic Trip
DRILLED BY: S/G Testing
LOGGED BY: NJDerbidge
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-410

Los Osos Wastewater Project
Los Osos, California

Montgomery Watson Harza
Project No. 3055.001

LOCATION: Lilac Dr., 50' east of Broderson Ave.

SURFACE EL: 143.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
142						**ARTIFICIAL FILL (af)**							
						4.5" Asphalt concrete over 10.5" aggregate base							
140	2		1		(13)	**DUNE SAND DEPOSITS (Qs)**	99	97	2	3			
	4		2		8	Poorly graded SAND (SP): loose to medium dense, red-brown, dry			2				
138			A										
	6					- light brown							
136													
	8					- red-yellow							
134			3		(32)		106	103	3				
	10												
132													
	12												
130													
	14		4		20								
128													
	16												
126													
	18												
124			5		21								
	20												
122													
	22												
120													
	24												
118													
	26												
116													
	28												
114													
	30												
112													
	32												
110													
	34												
108													
	36												
106													
	38												
104													
	40												
102													
	42												
100													
	44												
98													
	46												
96													
	48												
94													
	50												
92													

COMPLETION DEPTH: 20.0 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Cuttings/concrete cap
DRILLING DATE: August 13, 2003

DRILLING METHOD: 8-in. dia. Hollow Stem Auger
HAMMER TYPE: Automatic Trip
DRILLED BY: S/G Testing
LOGGED BY: NJDerbidge
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-411

Los Osos Wastewater Project
Los Osos, California

LOCATION: Intersection of Santa Maria Ave and 18th St.

SURFACE EL: 120.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	PIEZOMETER	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
						ARTIFICIAL FILL (af) Gravel, Aggregate base, and pieces of asphalt concrete:					1			
-118	2					**DUNE SAND DEPOSITS (Qs)** SAND with silt (SP-SM): medium dense, light brown, dry, moist below 3'								
-116	4					Poorly-graded SAND (SP): medium dense, light brown, moist, fine								
-114	6													
-112	8													
-110	10													
-108	12													
-106	14													
-104	16													
-102	18													
-100	20													
-98	22													
-96	24													
-94	26					Note: Hole reamed to 4' diameter to a depth of 23'. Drywell installed in hole.								
-92	28													
-90	30													
-88	32													
-86	34													
-84	36													
-82	38													
-80	40													
-78	42													
-76	44													
-74	46													
-72	48													
-70	50													

COMPLETION DEPTH: 26.0 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: drywell
DRILLING DATE: September 25, 2003

DRILLING METHOD: 36-in. dia. Bucket Auger
HAMMER TYPE: none
DRILLED BY: Tri-Valley 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 NO. DW-1
Los Osos Wastewater Project
Los Osos, California

LOCATION: South side of Lupine, 50' west of Donna Ave.

SURFACE EL: 13.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
12						**ARTIFICIAL FILL (af)/DUNE SAND DEPOSITS (Qs)**							
	2		1			SAND with silt (SP-SM): loose to medium dense, light brown, dry, with fine roots		97	9				
10			A			**ALLUVIUM (Qal)/ESTUARINE DEPOSITS (Qoe)**	105	102	3				
	4		2			SAND with silt (SP-SM): medium dense, red-brown, moist, with fine roots							
8													
	6					Sand with silt (SP-SM): medium dense, light gray, wet							
6													
	8					Fat CLAY (CH): medium stiff, light gray with brown mottles, moist to wet			32		57	35	
4			3										
	10												
2													
	12												
0													
	14												
-2													
	16												
-4													
	18												
-6													
	20												
-6													
	22												
-10													
	24												
-12													
	26												
-14													
	28												
-16													
	30												
-18													
	32												
-20													
	34												
-22													
	36												
-24													
	38												
-26													
	40												
-28													
	42												
-30													
	44												
-32													
	46												
-34													
	48												
-36													
	50												
-38													

COMPLETION DEPTH: 9.0 ft
DEPTH TO WATER: 5.5 ft
BACKFILLED WITH: Cuttings
DRILLING DATE: August 7, 2003

DRILLING METHOD: 4-in. dia. Hand Auger
HAMMER TYPE: Hand
DRILLED BY: Fugro
LOGGED BY: CLovato
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 NO. HA-401

Los Osos Wastewater Project
Los Osos, California

LOCATION: 65' west of 3rd St., 300' south of El Morro Ave.

SURFACE EL: 12.5 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
12						**ARTIFICIAL FILL (af)** Silty SAND with gravel (SM): medium dense, light brown, moist							
10	2		A			**ALLUVIUM (Qal)/ESTUARINE DEPOSITS (Qoe)** Poorly graded SAND (SP): loose to medium dense, light brown, wet - seepage							
8	4												
6	6												
4	8												
2	10												
0	12												
-2	14												
-4	16												
-6	18												
-8	20												
-10	22												
-12	24												
-14	26												
-16	28												
-18	30												
-20	32												
-22	34												
-24	36												
-26	36												
-28	40												
-30	42												
-32	44												
-34	46												
-36	48												
-38	50												

COMPLETION DEPTH: 12.5 ft
DEPTH TO WATER: 4 ft
BACKFILLED WITH: Cuttings
DRILLING DATE: August 8, 2003

DRILLING METHOD: 4-in. dia. Hand Auger
HAMMER TYPE: Hand
DRILLED BY: Fugro
LOGGED BY: CLovato
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 NO. HA-402
Los Osos Wastewater Project
Los Osos, California

LOCATION: 155' south of El Morro Ave., 90' east of 8th St.

SURFACE EL: 26.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
						ARTIFICIAL FILL (af)							
			A			Mix of silty SAND (SM) and GRAVEL (GP)		98	6				
24	2		1			**DUNE SAND DEPOSITS (Qs)**	109	103	6				
22	4					SAND with silt (SP-SM): medium dense, moderate brown, moist							
20	6					- dark gray, wet - caving and sloughing noted							
18	8												
16	10												
14	12												
12	14												
10	16												
8	18												
6	20												
4	22												
2	24												
0	26												
-2	28												
-4	30												
-6	32												
-8	34												
-10	36												
-12	36												
-14	40												
-16	42												
-18	44												
-20	46												
-22	48												
-24	50												

COMPLETION DEPTH: 10.0 ft
DEPTH TO WATER: 5.5 ft
BACKFILLED WITH: Cuttings
DRILLING DATE: August 8, 2003

DRILLING METHOD: 4-in. dia. Hand Auger
HAMMER TYPE: Hand
DRILLED BY: Fugro
LOGGED BY: CLovato
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 NO. HA-403

Los Osos Wastewater Project
Los Osos, California

LOCATION: Intersection of Santa Maria Ave and 18th St.

SURFACE EL: 120.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	DRYWELL	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
						ARTIFICIAL FILL (af) Gravel, Aggregate base, and pieces of asphalt concrete:					1			
-118	2					**DUNE SAND DEPOSITS (Qs)** SAND with silt (SP-SM): medium dense, light brown, dry, moist below 3'								
-116	4					Poorly-graded SAND (SP): medium dense, light brown, moist, fine								
-114	6													
-112	8													
-110	10													
-108	12													
-106	14													
-104	16													
-102	18													
-100	20													
-98	22													
-96	24													
-94	26					Note: Hole reamed to 4' diameter to a depth of 23'. Drywell installed in hole.								
-92	28													
-90	30													
-88	32													
-86	34													
-84	36													
-82	38													
-80	40													
-78	42													
-76	44													
-74	46													
-72	48													
-70	50													

COMPLETION DEPTH: 26.0 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: drywell
DRILLING DATE: September 25, 2003

DRILLING METHOD: 36-in. dia. Bucket Auger
HAMMER TYPE: none
DRILLED BY: Tri-Valley 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 NO. DW-1

Los Osos Wastewater Project
Los Osos, California

LOCATION: Intersection of Santa Maria and 18th St. 11' north of DW-1.

SURFACE EL.: 120.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
						DUNE SAND DEPOSITS (Qs) Sand with silt (SP-SM): medium dense, light brown, dry							
118	2												
						Grades to poorly-graded SAND (SP): medium dense, light brown, moist							
116	4												
			1		(20)	- orange brown	110	106	4				
114	6												
112	8												
110	10		2		17								
108	12												
106	14												
			3		(40)	- light brown to tan	113	108	4				
104	16												
102	18												
100	20		4		29				4	3			
98	22												
96	24												
			5		(55)	- dense, very few pockets of light gray/buff, dry silty SAND (SM) from 24.5 ft to 25 ft	114	108	5				
94	26												
92	28												
90	30		6		29	- very few nodules (0.25 inch diameter) of light gray/buff silty SAND (SM) to sandy SILT (ML)							
88	32												
86	34												
			7		(51)		108	102	6				
84	36												
82	38												
80	40		8		48				5	3			
78	42												
76	44												
			9		(34)	- with 0.25 inch diameter pockets of sandy SILT (ML) to silty SAND (SM), slightly cemented, light gray/buff	106	103	3				
74	46												
72	48												
70	50		10		82				5	3			
						2" steel casing installed; backfilled with native sand.							

COMPLETION DEPTH: 51.0 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native Materials
DRILLING DATE: September 26, 2003

DRILLING METHOD: 8-in. dia. Hollow Stem Auger
HAMMER TYPE: Automatic Trip
DRILLED BY: S/G Drilling Company
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 NO. HP-1
Los Osos Wastewater Project
Los Osos, California

LOCATION: 18th St. approximately 50' North of Santa Maria Ave.

SURFACE EL: 113.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
112						**ARTIFICIAL FILL (af)**							
	2					Aggregate base:							
110						**DUNE SAND DEPOSITS (Qs)**							
	4					Sand with silt (SP-SM): loose, light brown, dry							
108			1		(17)	Grades to poorly-graded SAND (SP): medium dense, light brown, dry	113	108	5				
	6					- medium dense, orange brown to brown, moist							
106													
	8												
104													
	10		2		18								
102													
	12												
100													
	14												
98			3		(34)	- with pockets of light brown to light gray/buff sandy SILT (ML) from 14 ft to 24 ft, dry	113	108	4				
	16												
96													
	18												
94													
	20		4		22								
92													
	22												
90													
	24												
88			5		(34)		109	103	6				
	26												
86													
	28												
84													
	30		6		32								
82													
	32												
80													
	34												
78			7		(58)	- dense	113	108	5				
	36												
76													
	38												
74													
	40		8		50								
72													
	42												
70													
	44												
68			9		(50/6")		108	102	6				
	46												
66													
	48												
64													
	50		10		41				4	2			
62						2" steel casing installed; backfilled with native sand.							

COMPLETION DEPTH: 51.0 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Native Materials
DRILLING DATE: September 26, 2003

DRILLING METHOD: 8-in. dia. Hollow Stem Auger
HAMMER TYPE: Automatic Trip
DRILLED BY: S/G Drilling Company
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 NO. HP-2
Los Osos Wastewater Project
Los Osos, California

LOCATION: 16 feet north of Prototype Percolation Line

SURFACE EL: 197.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	PIEZOMETER	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
196						**DUNE SAND DEPOSITS (Qds)**								
	2					Sand with silt (SP-SM): loose, dark brown, moist, with roots down to 3.5 feet								
194						- moderate brown below 3 feet								
	4					- dark brown below 4 feet								
192														
	6					- medium dense below 5.5 feet								
190						- brown below 6.5 feet								
	8													
188														
	10		1			Sand (SP) to SAND with silt (SP-SM): medium dense to dense, light brown, dry to moist, with nodules of weakly cemented SAND with silt (SP-SM) to silty SAND (SM)								
186						- drive sample was not recovered; grab sample obtained								
	12													
184														
	14					Installed 1-inch PVC pipe monitoring well with 12" perforated section.								
182														
	16													
180														
	18													
178														
	20													
176														
	22													
174														
	24													
172														
	26													
170														
	28													
168														
	30													
166														
	32													
164														
	34													
162														
	36													
160														
	38													
158														
	40													
156														
	42													
154														
	44													
152														
	46													
150														
	48													
148														
	50													
146														

COMPLETION DEPTH: 10.0 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Monitoring Well
DRILLING DATE: March 26, 2003

DRILLING METHOD: 4-in. dia. Hand Auger
HAMMER TYPE: Hand
DRILLED BY: Fugro
LOGGED BY: CLovato
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 NO. MW-3

Los Osos Wastewater Project
Los Osos, California

LOCATION: Terminus of Alexander into Highland

SURFACE EL: 182.0 ft +/- (rel. MSL datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER BLOW COUNT	MATERIAL DESCRIPTION	PIEZOMETER	UNIT WET WEIGHT, pcf	UNIT DRY WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, S_u, ksf
180	2					ARTIFICIAL FILL (af) 4" of SAND with silt and gravel (SP-SM): brown, dry								
178	4					DUNE SAND (Qds) Silty SAND (SW): medium dense, dark brown to black, moist								
176	6					loose below 2 feet								
174	8					Sand with silt (SP-SM): loose, moderate brown, moist								
172	10					SAND (SP): medium dense, light yellowish brown, moist								
170	12					grading to silty SAND with clay (SW): medium dense, to dense, light brown with reddish brown mottles, moist								
168	14					Installed 1-inch PVC monitoring well with 18-inch perforated section at bottom.								
166	16													
164	18													
162	20													
160	22													
158	24													
156	26													
154	28													
152	30													
150	32													
148	34													
146	36													
144	38													
142	40													
140	42													
138	44													
136	46													
134	48													
132	50													

COMPLETION DEPTH: 10.0 ft
DEPTH TO WATER: Not Encountered
BACKFILLED WITH: Monitoring Well
DRILLING DATE: March 26, 2003

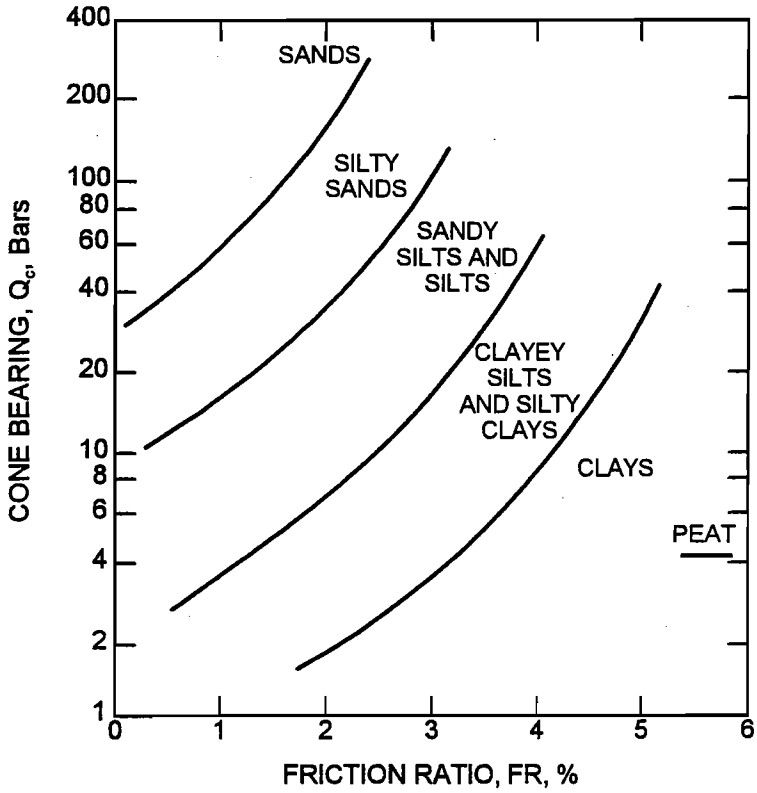
DRILLING METHOD: 4-in. dia. Hand Auger
HAMMER TYPE: Hand
DRILLED BY: Fugro
LOGGED BY: CLovato
CHECKED BY: JDBlanchard

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 NO. MW-4

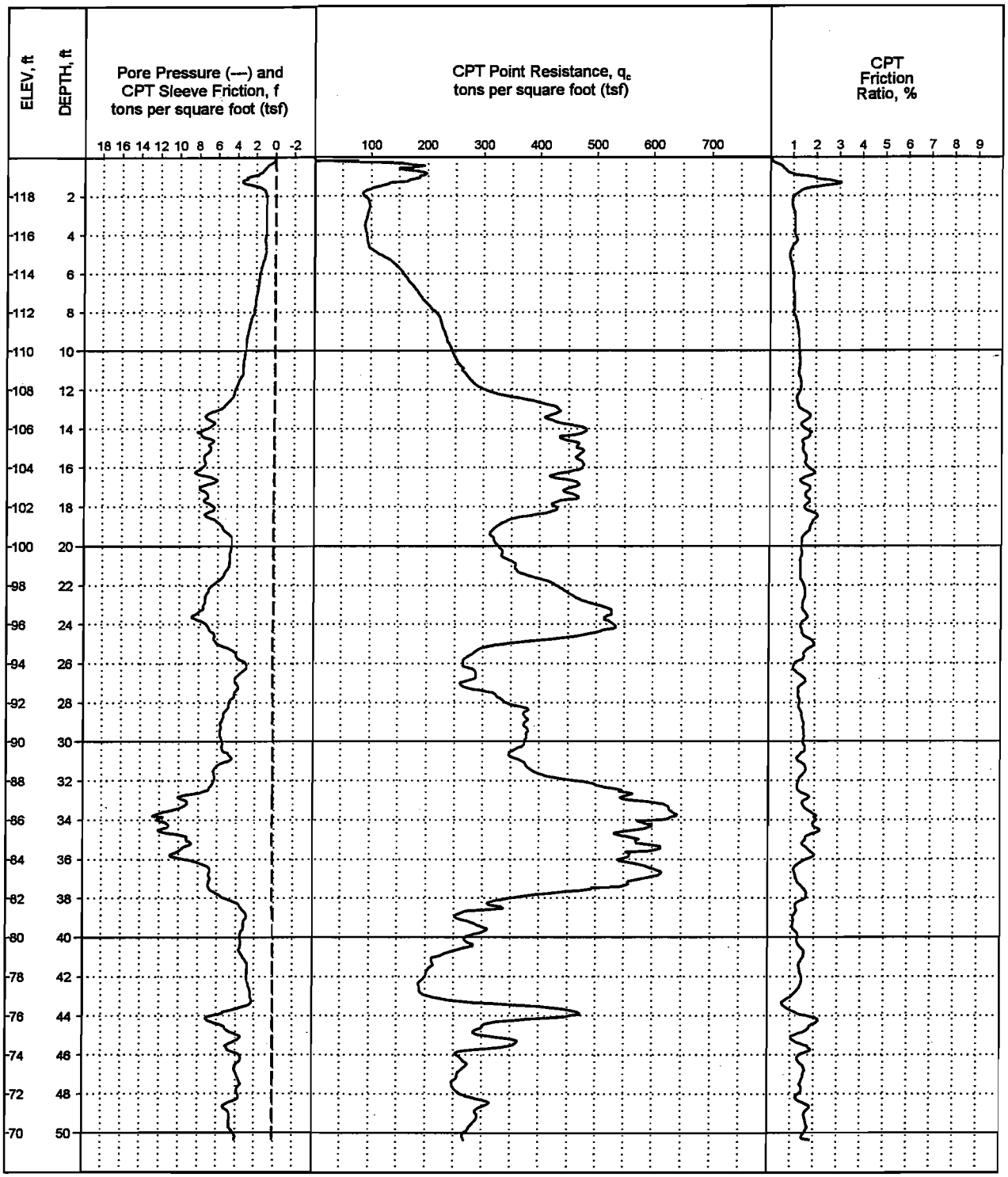
Los Osos Wastewater Project
Los Osos, California

1 BAR = 100 KPA = 1.02 KG/CM^2



CAMPANELLA AND ROBERTSON CLASSIFICATION CHART

SOIL CLASSIFICATION CHART
Los Osos Wastewater Project
Los Osos, California

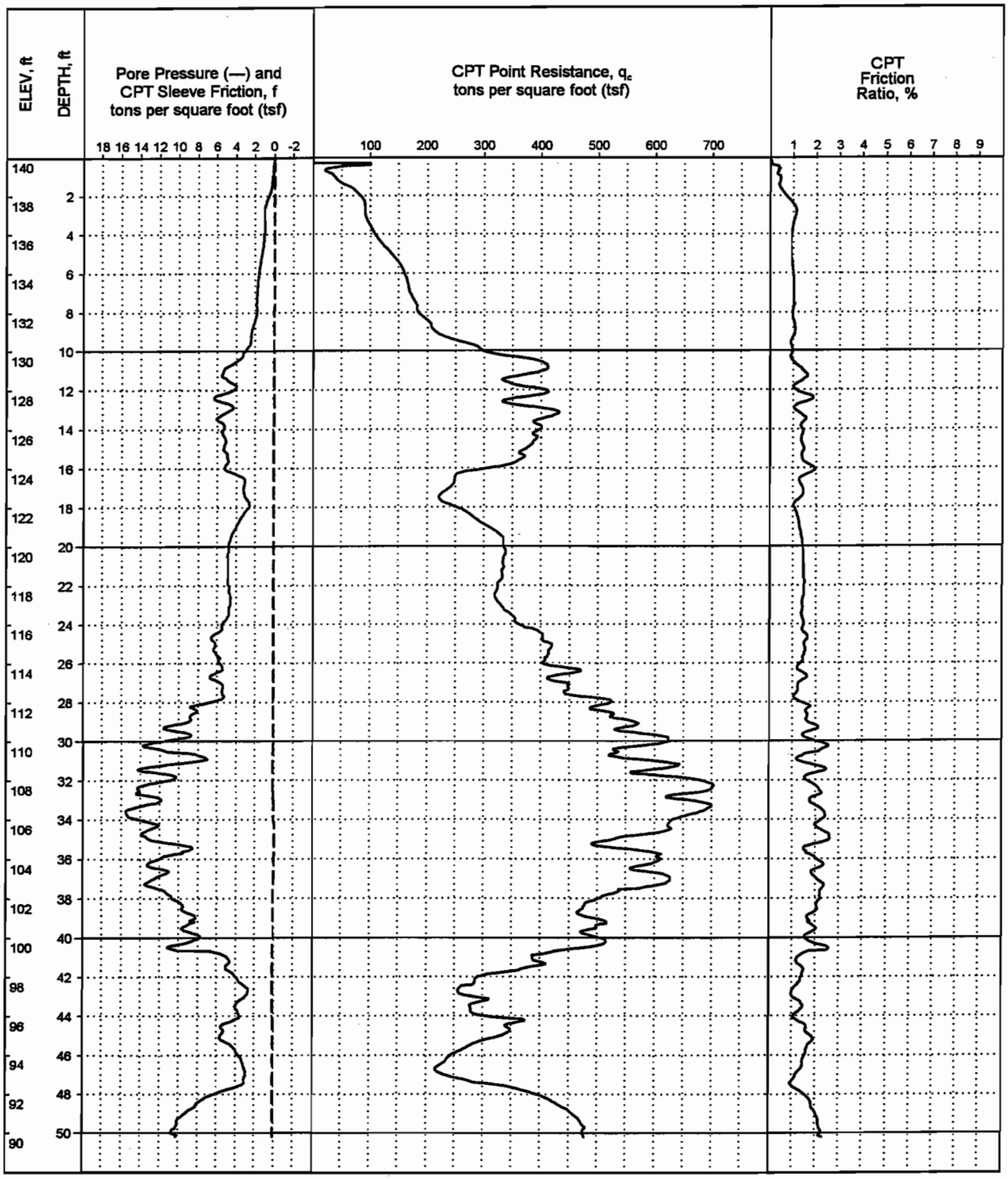


LOCATION: Santa Maria Ave., 125' east of 13th St.
SURFACE EL: 120 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 50.3 ft
EXPLORATION DATE: August 6, 2003
DEPTH TO WATER: Not Encountered

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT-401

Los Osos Wastewater Project
Los Osos, California

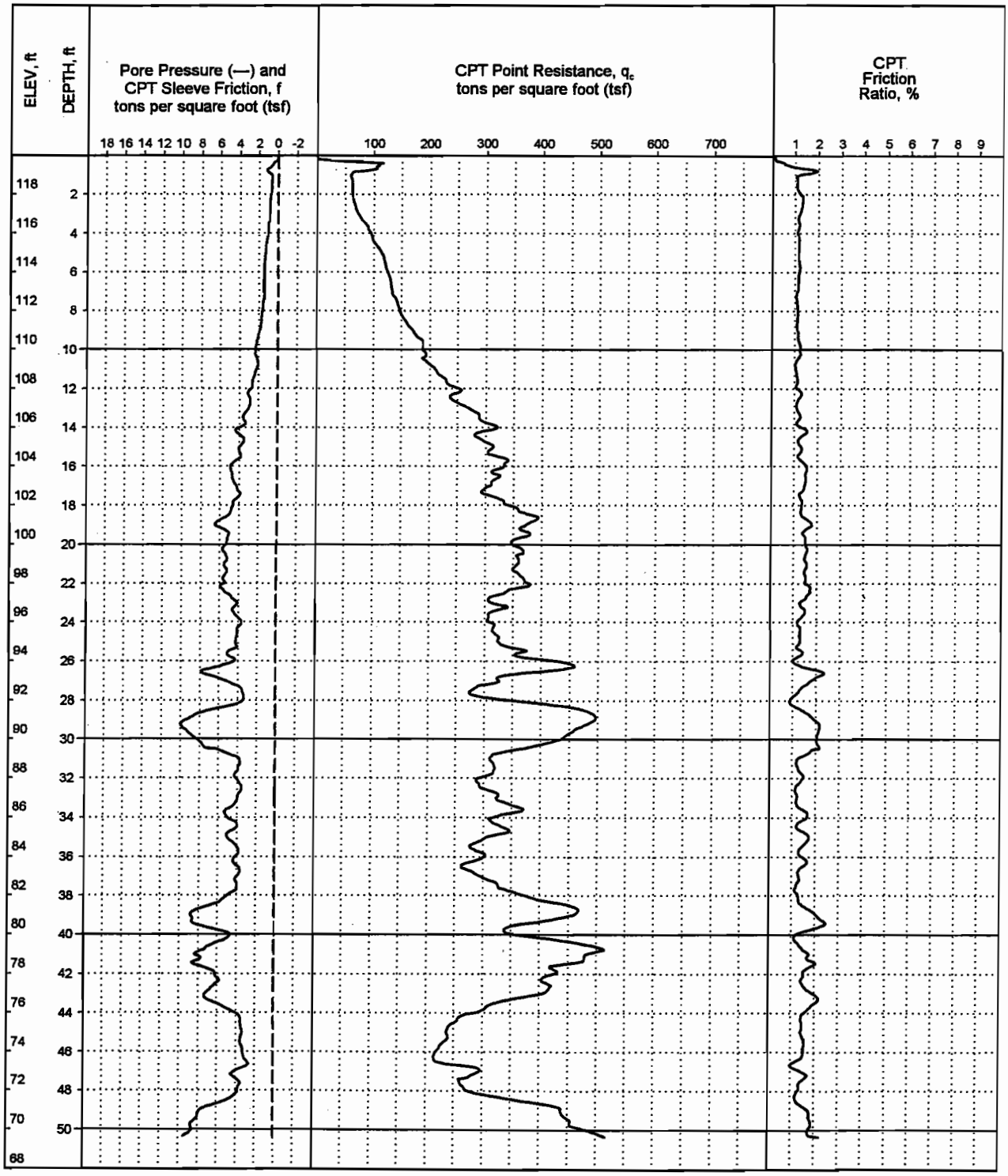


LOCATION: Santa Maria Ave., 120' west of 16th St.
SURFACE EL: 141 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 50.2 ft
EXPLORATION DATE: August 6, 2003
DEPTH TO WATER: Not Encountered

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT-402

Los Osos Wastewater Project
Los Osos, California

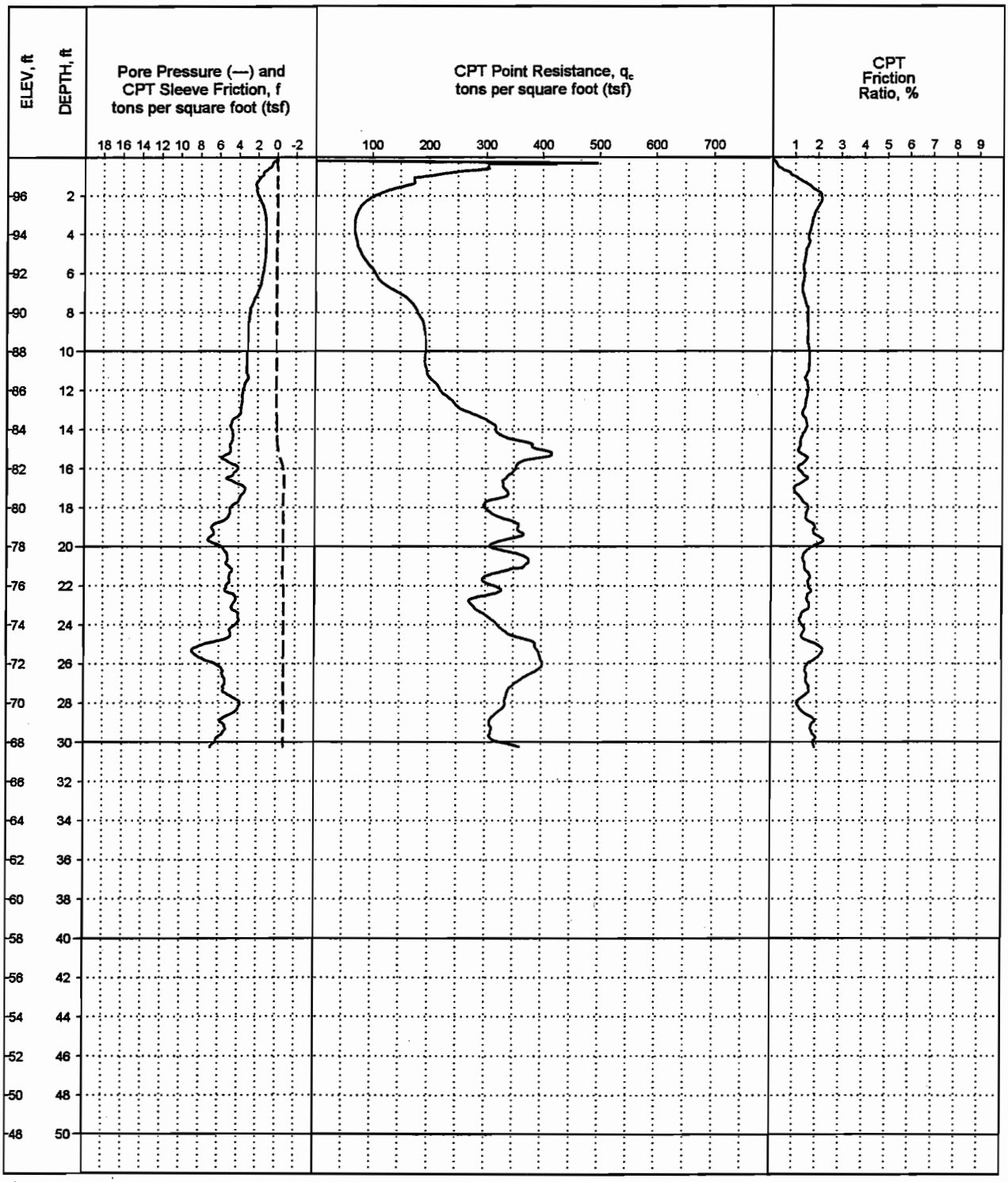


LOCATION: East end of Santa Maria Ave., 345' east of 17th St.
SURFACE EL: 120 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 50.3 ft
EXPLORATION DATE: August 6, 2003
DEPTH TO WATER: Not Encountered

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT-403

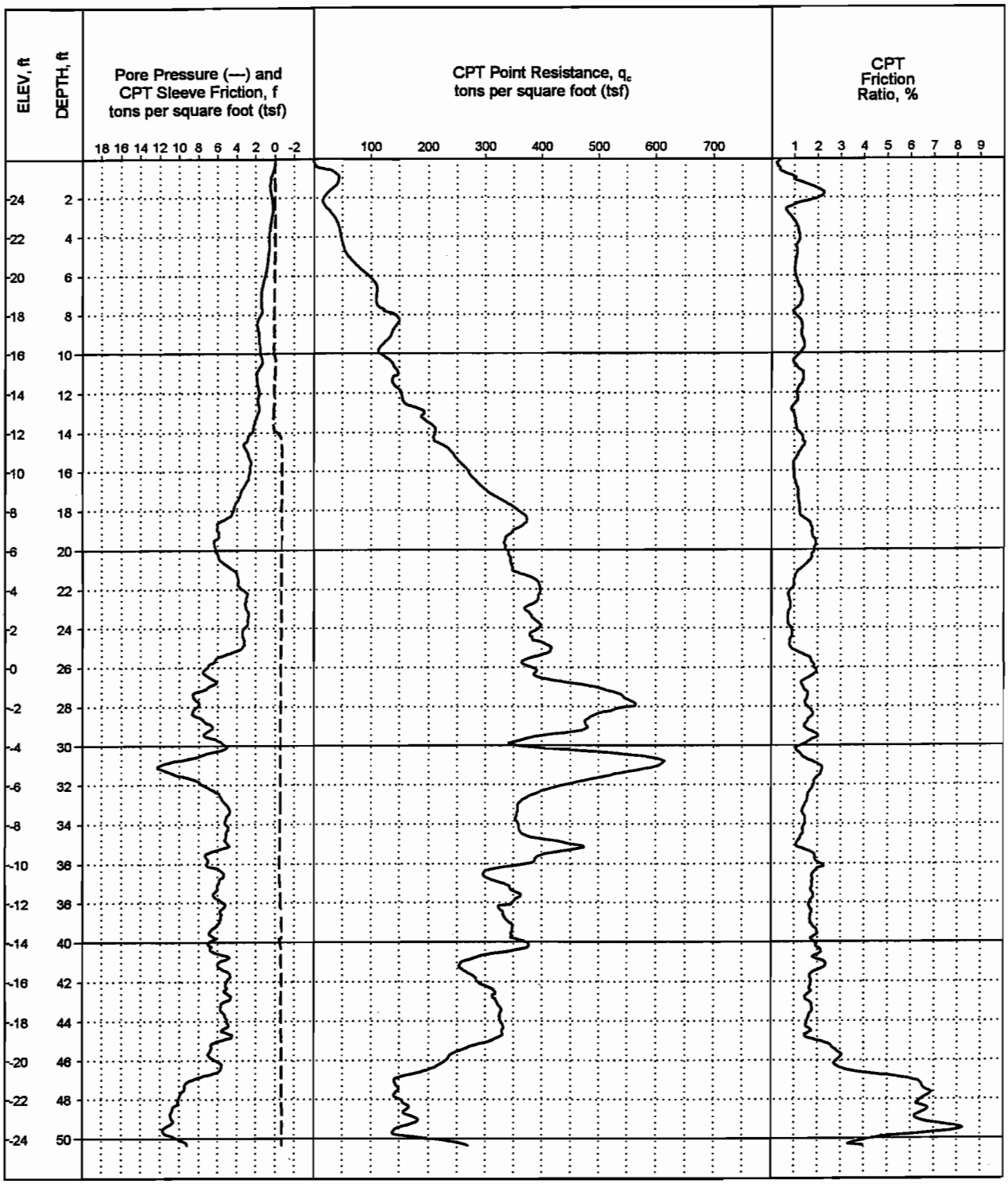
Los Osos Wastewater Project
Los Osos, California



LOCATION: 13th St., 260' north of San Luis Ave.
SURFACE EL: 98 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 30.3 ft
EXPLORATION DATE: August 7, 2003
DEPTH TO WATER: 16.7 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

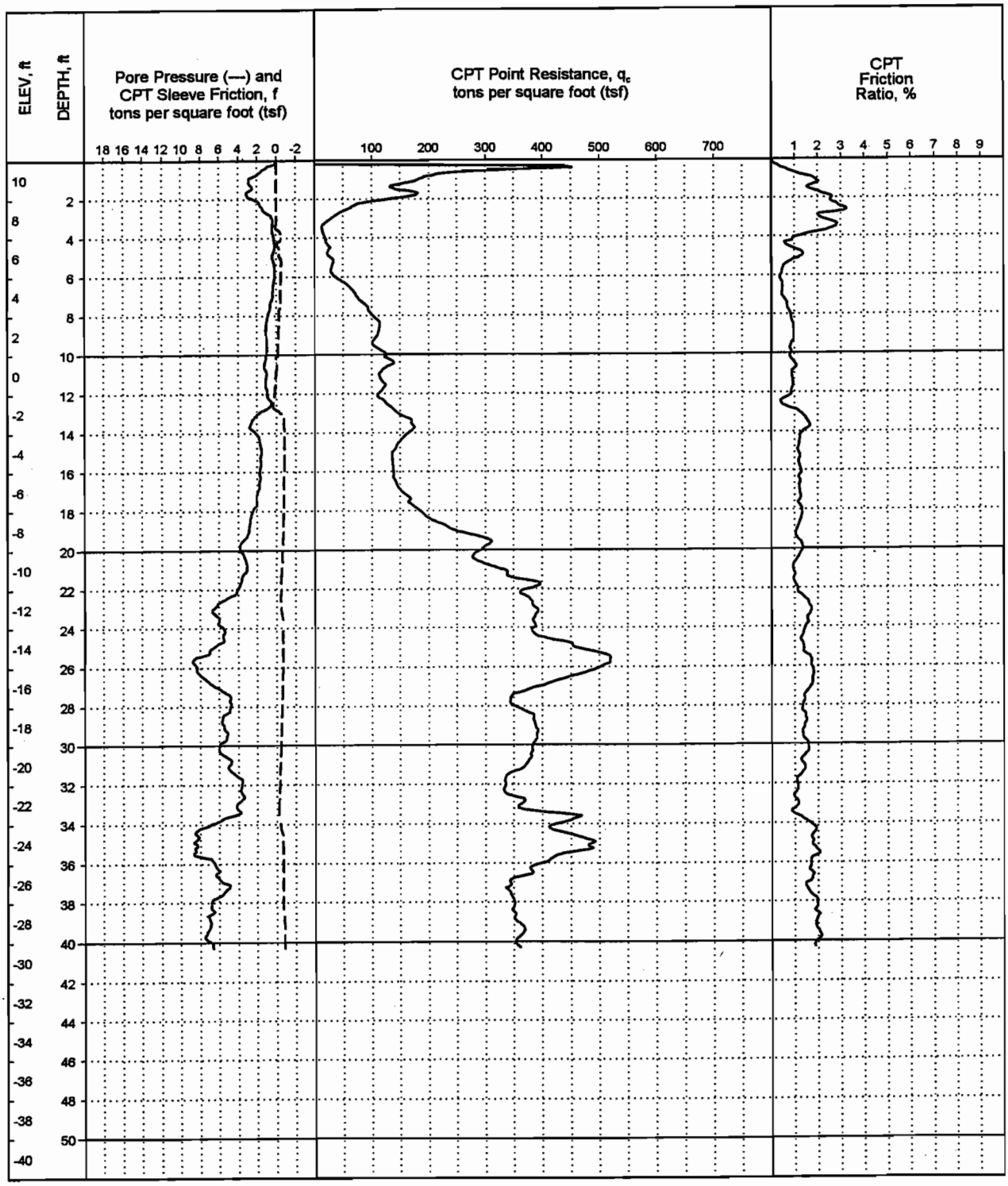
LOG OF CPT NO: CPT-404
Los Osos Wastewater Project
Los Osos, California



LOCATION: 158' south of El Morro Ave., 90' east of 8th St.
SURFACE EL: 26 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 50.3 ft
EXPLORATION DATE: August 6, 2003
DEPTH TO WATER: 6 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT-405
Los Osos Wastewater Project
Los Osos, California

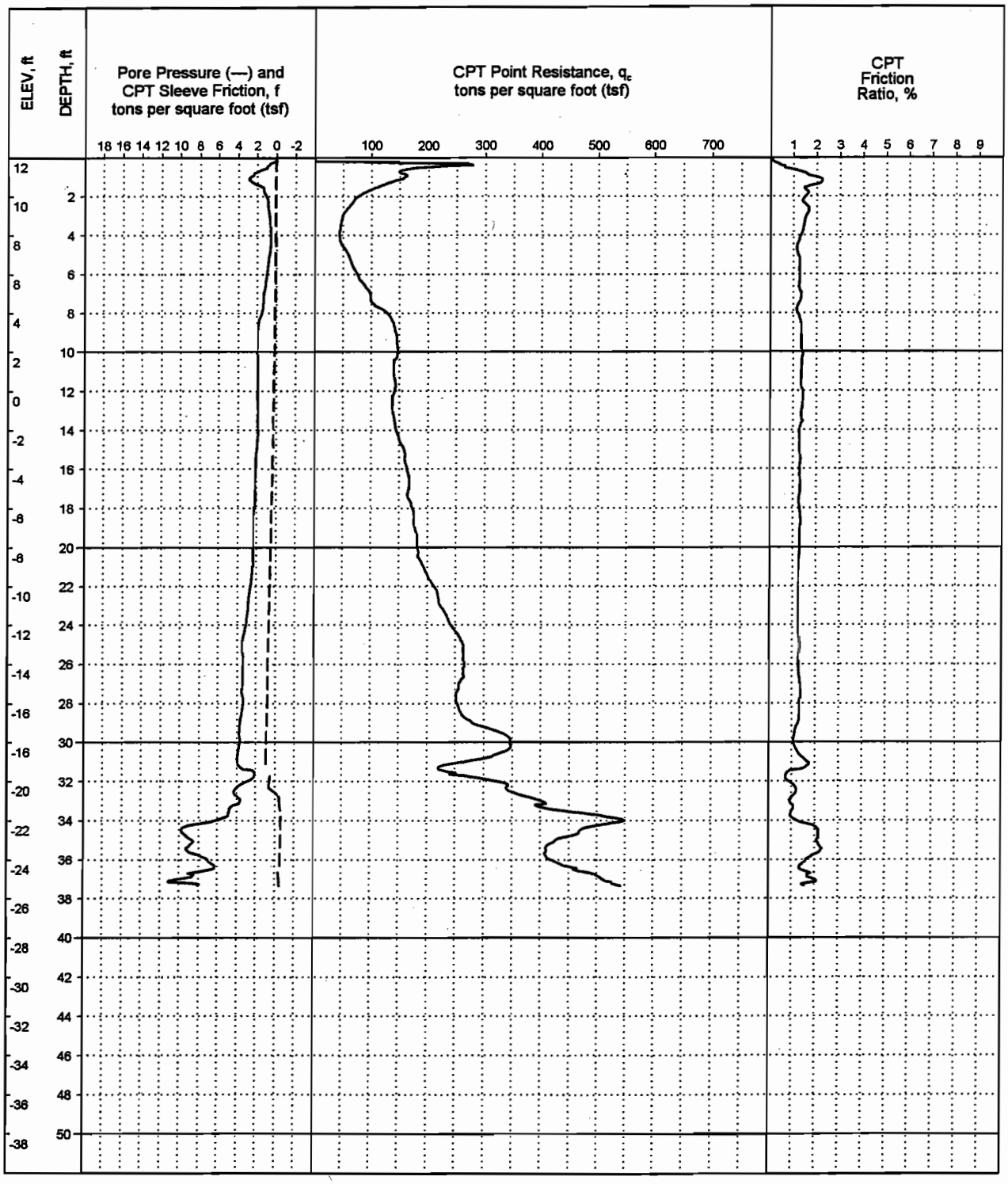


LOCATION: Intersection of 2nd St., and El Morro Ave.
SURFACE EL: 11 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 40.3 ft
EXPLORATION DATE: August 6, 2003
DEPTH TO WATER: 2.6 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT-406

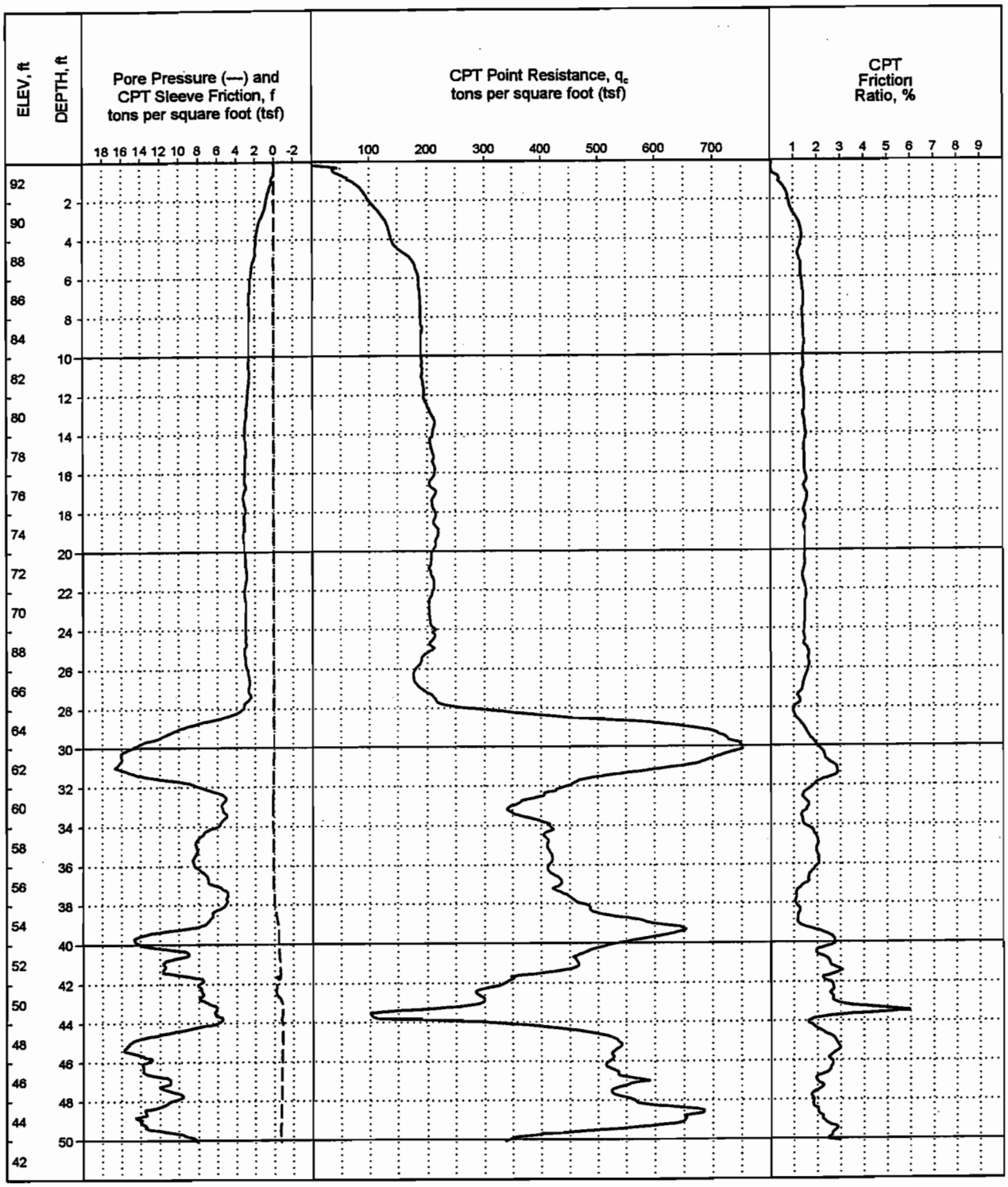
Los Osos Wastewater Project
Los Osos, California



LOCATION: 50' west of 3rd St., 310' south of El Morro Ave.
SURFACE EL: 13 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 37.3 ft
EXPLORATION DATE: August 6, 2003
DEPTH TO WATER: 3.5 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

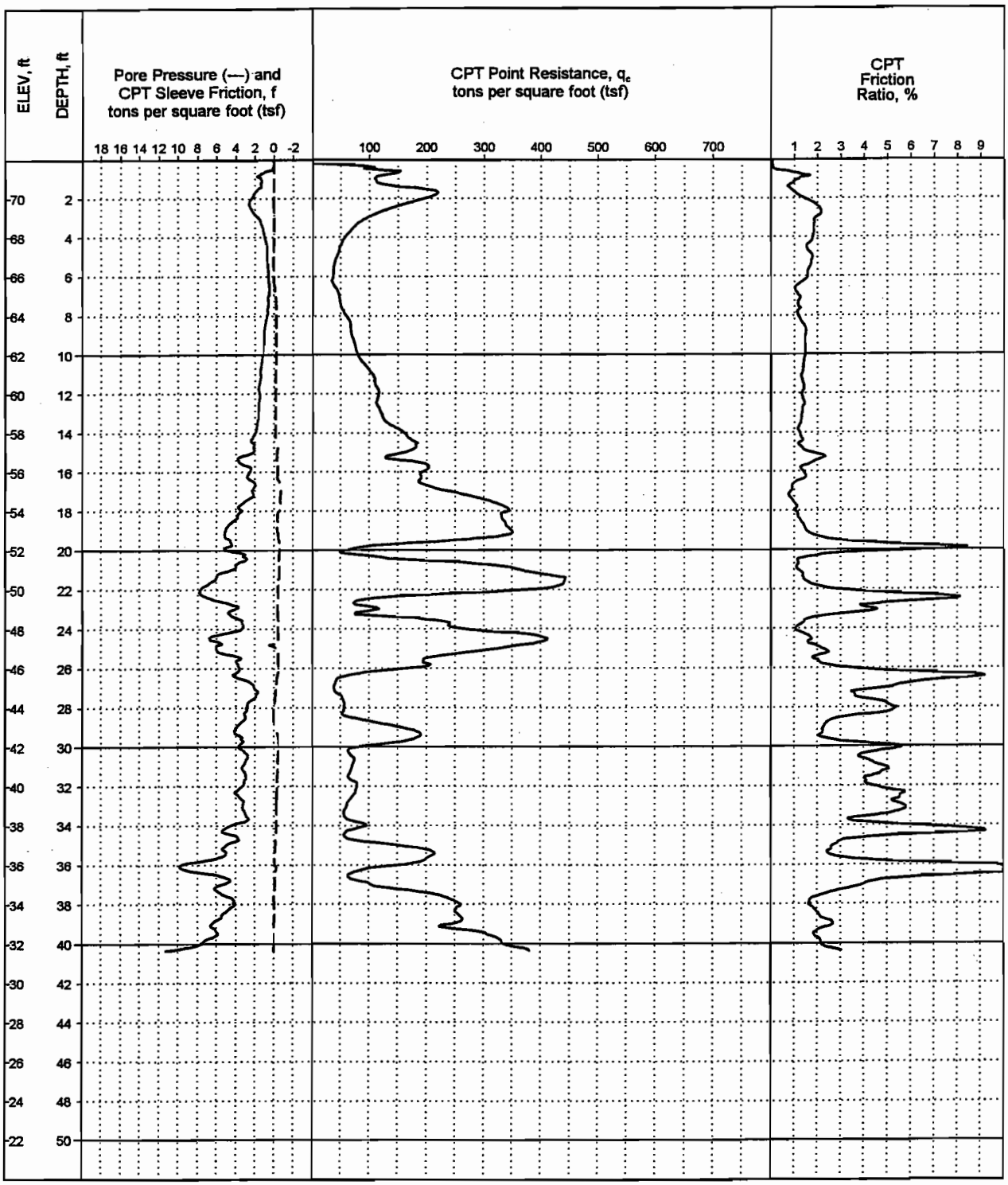
LOG OF CPT NO: CPT-407
Los Osos Wastewater Project
Los Osos, California



LOCATION: Pismo Ave., 125' west of 10th St.
SURFACE EL: 93 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 50.1 ft
EXPLORATION DATE: August 7, 2003
DEPTH TO WATER: 40.5 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

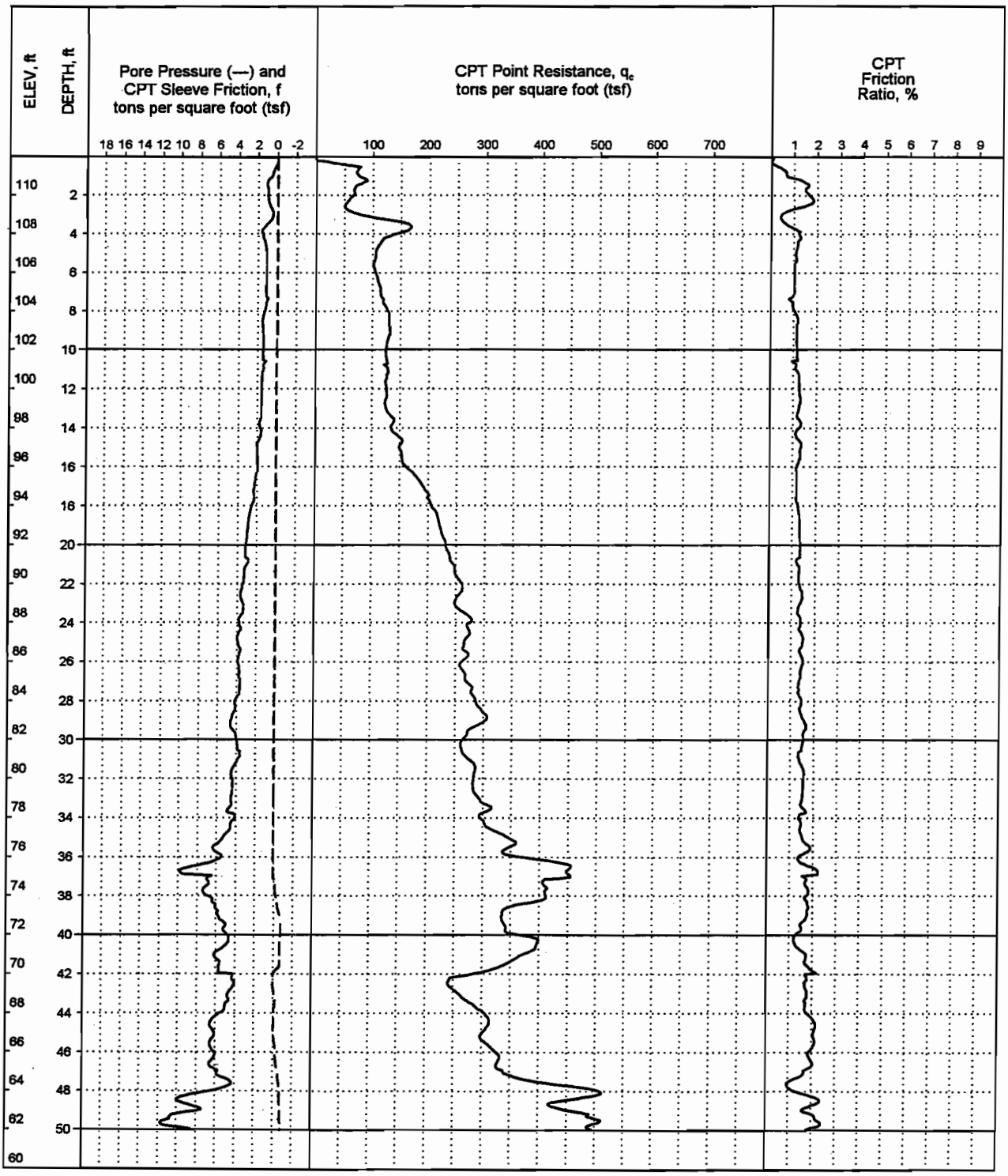
LOG OF CPT NO: CPT-408
Los Osos Wastewater Project
Los Osos, California



LOCATION: 18th St., 60' south of Paso Robles Ave.
SURFACE EL: 72 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 40.4 ft
EXPLORATION DATE: August 6, 2003
DEPTH TO WATER: 7.9 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT-409
Los Osos Wastewater Project
Los Osos, California

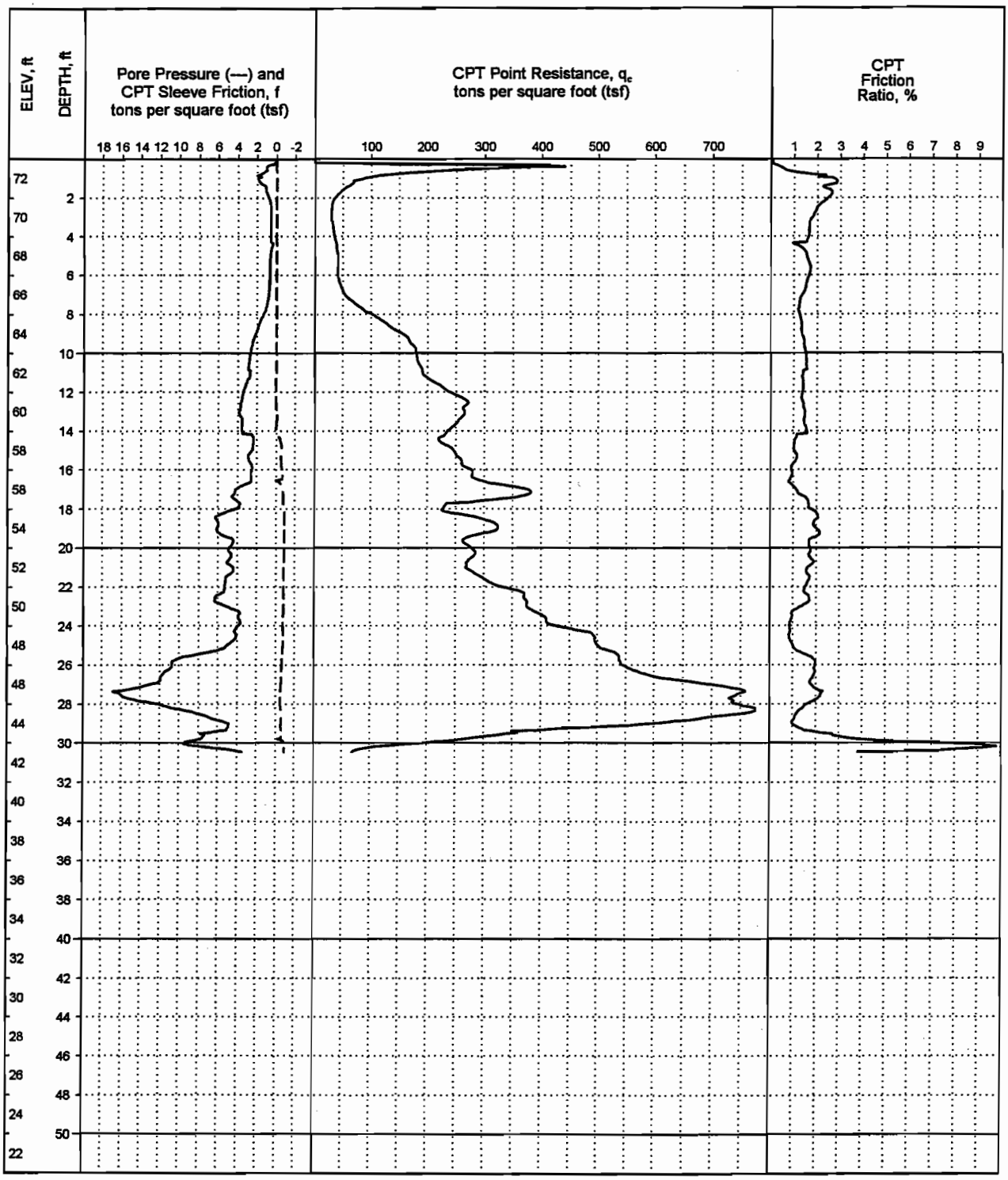


LOCATION: Pismo Ave., 155' west of 16th St.
SURFACE EL: 112 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 50.0 ft
EXPLORATION DATE: August 6, 2003
DEPTH TO WATER: 42.5 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT-410

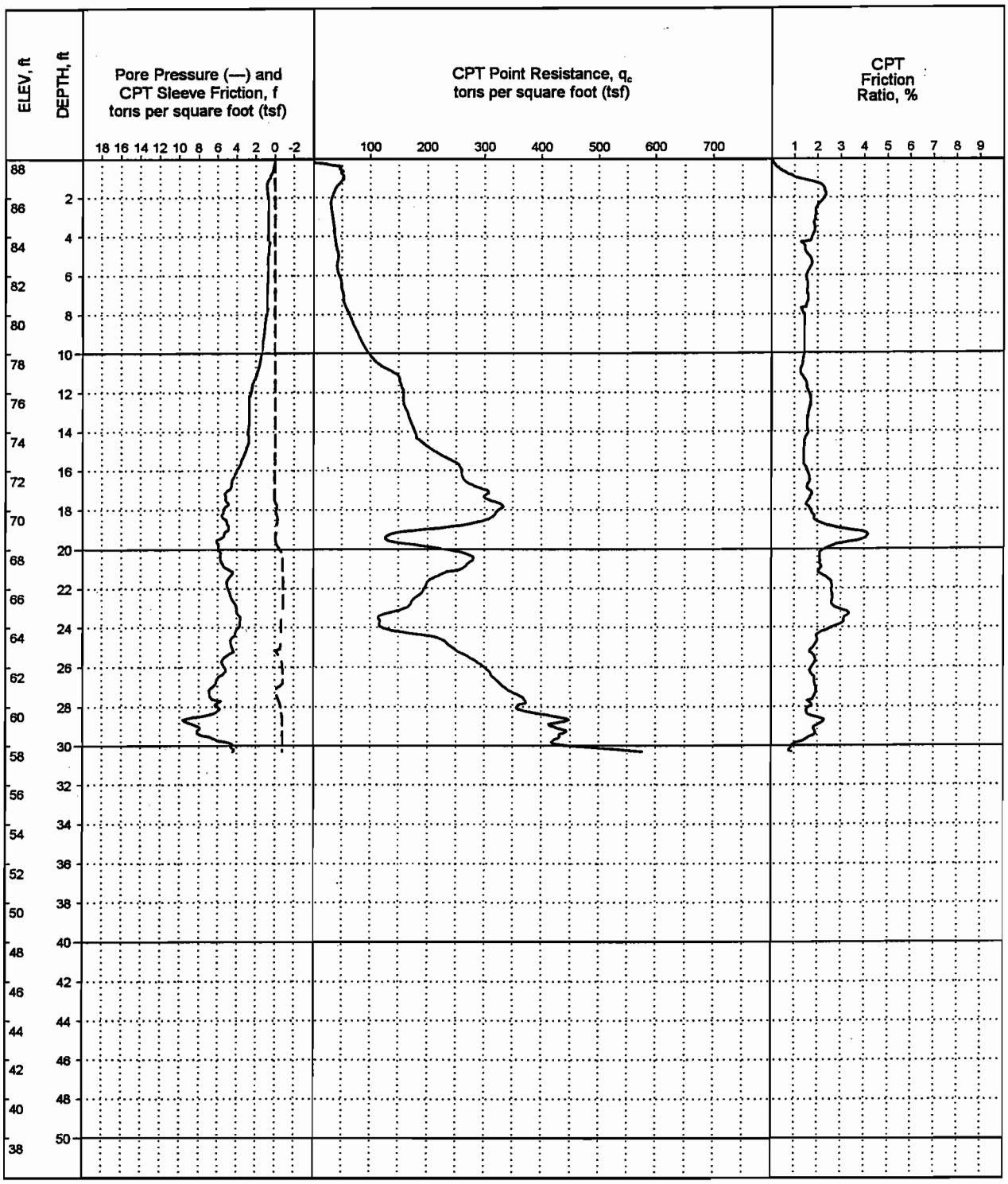
Los Osos Wastewater Project
Los Osos, California



LOCATION: 9th St., 130' north of Ramona Ave.
SURFACE EL: 73 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 30.5 ft
EXPLORATION DATE: August 7, 2003
DEPTH TO WATER: 14.5 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

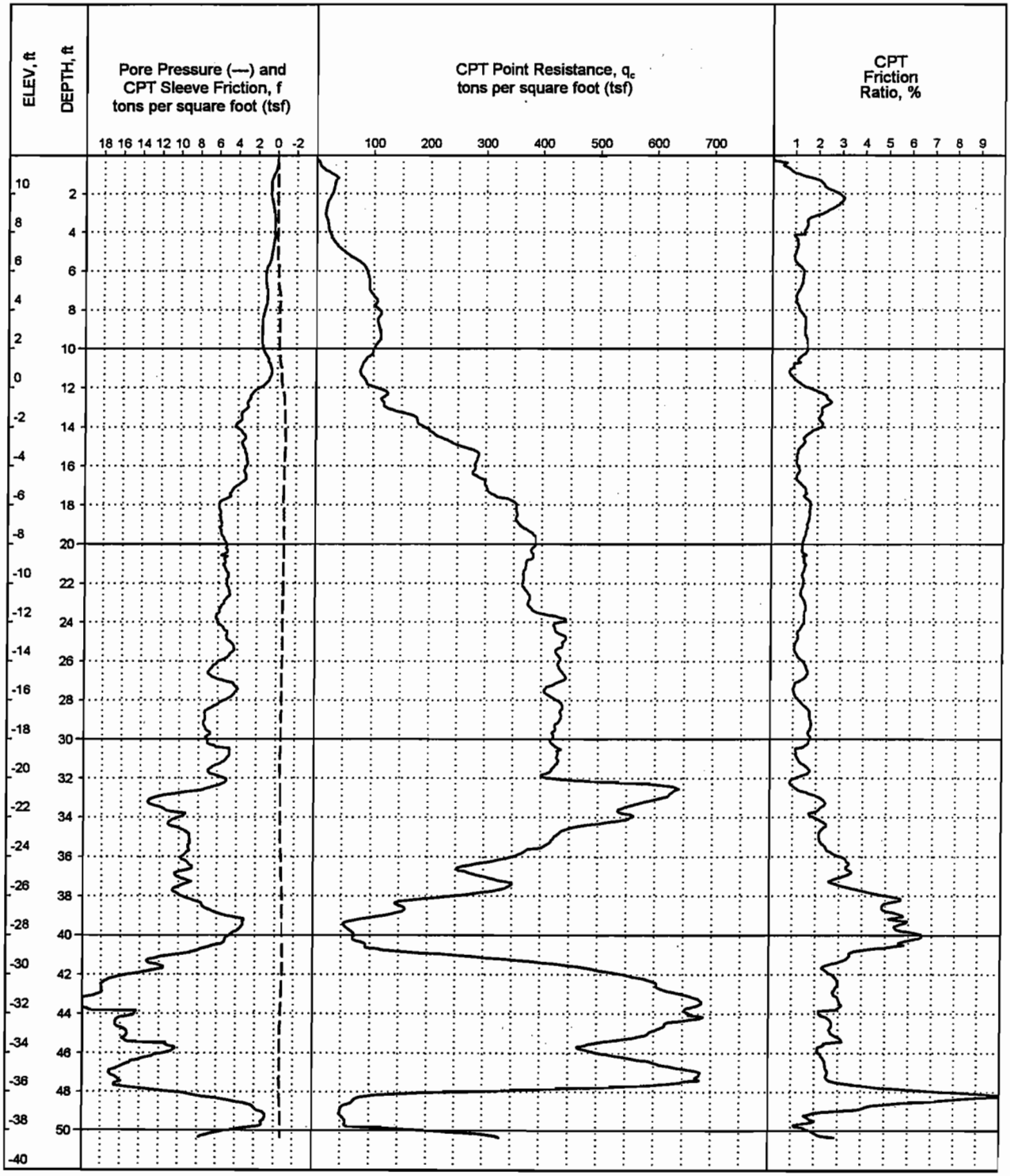
LOG OF CPT NO: CPT-411
Los Osos Wastewater Project
Los Osos, California



LOCATION: San Luis Ave., 45' east of 9th St.
SURFACE EL: 89 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 30.3 ft
EXPLORATION DATE: August 7, 2003
DEPTH TO WATER: 20.5 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT-412
Los Osos Wastewater Project
Los Osos, California



LOCATION: Donna Ave., 50' south of Lupine St.
SURFACE EL: 12 ft +/- (rel. MSL datum)
COMPLETION DEPTH: 50.3 ft
EXPLORATION DATE: August 7, 2003
DEPTH TO WATER: 5 ft

EXPLORATION METHOD: Cone Penetrometer
PERFORMED BY: Fugro Geosciences
REVIEWED BY: JDBlanchard

LOG OF CPT NO: CPT-413
Los Osos Wastewater Project
Los Osos, California

APPENDIX B

EXPLORATION	DEPTH, ft	SAMPLE NUMBER	MATERIAL DESCRIPTION	UWW pcf	UDW pcf	MC%	FINES %	ATTERBERG LIMITS		COMPACTION TEST		DIRECT SHEAR		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				PERMEABILITY (ft/min)	SAND EQUIVALENT (SE)	COMMENTS
								LL	PI	MAX DD pcf	OPT MC %	C ksf	PHI deg	Qu, ksf	S_u (Cell Prs.) ksf	R	pH	Cl	So_4			
DH-401	1.5	1	Silty SAND (SM)	103	101	3																
DH-401	4.0	2	Poorly graded SAND (SP)			3	1															
DH-401	9.0	3	Poorly graded SAND (SP)	131	127	4														3.27E-2		
DH-401	19.0	5	SAND with clay (SP-SC)	132	108	22																
DH-401	24.0	6	SAND with clay (SP-SC)	128	106	21																
DH-401	34.0	8	Silty SAND (SM)			25																
DH-402	9.0	2	Poorly graded SAND (SP)	108	106	2																
DH-402	14.0	3	Poorly graded SAND (SP)			7	2															
DH-402	19.0	4	Poorly graded SAND (SP)	131	109	20														2.06E-2		
DH-403	1.0	1	SAND with silt (SP-SM)	108	106	2																
DH-403	9.0	3	Poorly-graded SAND (SP)	107	104	3																
DH-403	11.0	A	Poorly-graded SAND (SP)																		34	
DH-403	19.0	5	Poorly-graded SAND (SP)	108	103	5														2.44E-2		
DH-404	1.5	1	Poorly graded SAND with silt (SP-SM)	104	103	2																
DH-404	3.0	A	Poorly graded SAND with silt (SP-SM)		100	8				111	8	0.20	28									
DH-404	5.0	3	Poorly graded SAND with silt (SP-SM)	111	106	5																
DH-404	9.0	4	Poorly graded SAND with silt (SP-SM)			19	9															
DH-404	14.0	5	Poorly graded SAND with silt (SP-SM)	130	107	21														9.06E-3		
DH-405	2.0	1	Poorly graded SAND (SP)	106	102	4																
DH-405	2.0	A	Poorly graded SAND (SP)		100	7				111	7	0.24	27									
DH-405	7.0	3	Poorly graded SAND (SP)	109	104	5																
DH-405	14.0	5	Poorly graded SAND (SP)	116	108	8														8.46E-3		
DH-406	2.0	1	Silty SAND (SM)	108	105	4																
DH-406	9.0	3	SAND with silt (SP-SM)	131	119	9																
DH-406	19.0	5	Clayey SAND (SC)	118	107	11	25															
DH-406	24.0	6	Lean CLAY (CL)			20		34	27													
DH-406	29.0	7	SAND with clay and gravel (SP-SC)	140	122	15	11															
DH-406	34.0	8	Lean CLAY (CL)			18		39	19													
DH-407	1.0	1	Silty SAND (SM)	107	105	2															66	
DH-407	7.0	A	Poorly graded SAND (SP)							108	11										45	

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % Passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

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, satur.
pH = pH
Cl = Chloride, ppm
SO_4 = Sulfate, ppm

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project
Los Osos, California

Montgomery Watson Harza
Project No. 3055.001

PLATE B-1a

FUGRO

EXPLORATION	DEPTH, ft	SAMPLE NUMBER	MATERIAL DESCRIPTION	UWW pcf	UDW pcf	MC%	FINES %	ATTERBERG LIMITS		COMPACTION TEST		DIRECT SHEAR		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				PERMEABILITY (ft/min)	SAND EQUIVALENT (SE)	COMMENTS
								LL	PI	MAX DD pcf	OPT MC %	C ksf	PHI deg	Qu, ksf	S_u (Cell Prs.) ksf	R	pH	Cl	So_4			
DH-407	9.0	3	Poorly-graded SAND (SP)	107	104	2																
DH-407	19.0	5	Poorly-graded SAND (SP)	128	113	14																
DH-408	1.0	1	Poorly-graded SAND (SP)	108	104	3																
DH-408	9.0	3	Poorly-graded SAND (SP)	108	103	4																
DH-408	9.0	A	Poorly-graded SAND (SP)																		53	
DH-408	19.0	5	Poorly-graded SAND (SP)	107	101	6																
DH-409	2.0	1	Poorly graded SAND (SP)			5	2															
DH-409	4.0	2	Poorly graded SAND (SP)	108	103	5																
DH-409	9.0	A	Poorly graded SAND (SP)																		36	
DH-409	14.0	4	Poorly graded SAND (SP)	108	103	4																
DH-410	4.0	2	Silty SAND (SM)	101	98	3															61	
DH-410	9.0	A	SAND with silt (SP-SM)																		47	
DH-410	14.0	4	Poorly-graded SAND (SP)	107	104	3																
DH-411	1.5	1	Poorly graded SAND (SP)	99	97	2	3															
DH-411	3.5	2	Poorly graded SAND (SP)			2															55	
DH-411	4.0	A	Poorly graded SAND (SP)							112	12											
DH-411	8.5	3	Poorly graded SAND (SP)	106	103	3																
DH-412	4.0	2	Silty SAND (SM)	101	97	4															44	
DH-412	9.0	3	Silty SAND (SM)			15	21															
DH-412	14.0	4	Poorly-graded SAND (SP)	118	105	13																
HA-401	2.0	A	SAND with silt (SP-SM)		97	9				108	9	0.25	29									
HA-401	3.0	2	SAND with silt (SP-SM)	105	102	3																
HA-401	8.0	3	Fat CLAY (CH)			32		57	35													
HA-403	0.5	A	SAND with silt (SP-SM)		98	6				109	6	0.20	28									
HA-403	1.5	1	SAND with silt (SP-SM)	109	103	6																
HP-1	4.5	1	Poorly-graded SAND (SP)	110	106	4																
HP-1	14.5	3	Poorly-graded SAND (SP)	113	108	4														2.68E-2		
HP-1	19.5	4	Poorly-graded SAND (SP)			4	3															
HP-1	24.5	5	Poorly-graded SAND (SP)	114	108	5																
HP-1	34.5	7	Poorly-graded SAND (SP)	108	102	6														3.72E-2		

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % Passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

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, satur.
pH = pH
Cl = Chloride, ppm
SO_4 = Sulfate, ppm

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project
Los Osos, California

Montgomery Watson Harza
Project No. 3055.001

EXPLORATION	DEPTH, ft	SAMPLE NUMBER	MATERIAL DESCRIPTION	UWW pcf	UDW pcf	MC%	FINES %	ATTERBERG LIMITS		COMPACTION TEST		DIRECT SHEAR		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				PERMEABILITY (ft/min)	SAND EQUIVALENT (SE)	COMMENTS
								LL	PI	MAX DD pcf	OPT MC %	C ksf	PHI deg	Qu, ksf	S_u (Cell Prs.) ksf	R	pH	Cl	So_4			
HP-1	39.5	8	Poorly-graded SAND (SP)			5	3															
HP-1	44.5	9	Poorly-graded SAND (SP)	106	103	3														3.86E-2		
HP-1	49.5	10	Poorly-graded SAND (SP)			5	3															
HP-2	4.0	1	Poorly-graded SAND (SP)	113	108	5																
HP-2	14.0	3	Poorly-graded SAND (SP)	113	108	4																
HP-2	24.0	5	Poorly-graded SAND (SP)	109	103	6																
HP-2	34.0	7	Poorly-graded SAND (SP)	113	108	5																
HP-2	44.0	9	Poorly-graded SAND (SP)	108	102	6														2.60E-2		
HP-2	49.0	10	Poorly-graded SAND (SP)			4	2															
L-1	4.5	1	Poorly-graded SAND (SP)	101	98	3														1.23E-2		
L-2	4.5	1	Poorly-graded SAND (SP)	102	100	3														6.35E-3		
L-3	4.5	1	Poorly-graded SAND (SP)	104	102	2	2															
P-1	4.5	1	Poorly-graded SAND (SP)	108	103	5														1.65E-2		
P-2	4.8	1	Poorly-graded SAND (SP)			5	1															
P-6	4.8	1	Poorly-graded SAND (SP)			4	1															
P-7	4.5	1	Poorly-graded SAND (SP)	103	98	4														2.07E-2		
P-10	4.9	1	Poorly-graded SAND (SP)	111	105	6	1															
P-12	4.5	1	Poorly-graded SAND (SP)	115	109	5														1.05E-2		
P-14	5.0	1	Poorly-graded SAND (SP)	104	99	5	1															
P-16	5.0	1	Poorly-graded SAND (SP)	107	104	3														1.93E-2		
P-17	4.5	1	Poorly-graded SAND (SP)	110	104	6	1													8.62E-3		
P-23	4.5	1	Poorly-graded SAND (SP)	114	108	5														1.66E-2		
P-24	4.5	1	Poorly-graded SAND (SP)	110	105	5	1															
P-26	4.5	1	Poorly-graded SAND (SP)	100	95	5														6.48E-3		
P-28	4.5	1	Poorly-graded SAND (SP)	95	92	4	2															
P-3W1	4.5	1	Poorly-graded SAND (SP)	106	104	3	5															
P-3W2	4.5	1	Poorly-graded SAND (SP)	97	90	8	5													1.91E-2		
P-3W3	4.5	1	Poorly-graded SAND (SP)	106	103	3	1													2.20E-2		
P-SP1	4.5	1	Poorly-graded SAND (SP)	116	108	7	1													6.90E-3		
P-SP2	4.5	1	Poorly-graded SAND (SP)	110	104	5	3													1.06E-2		

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % Passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

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, satur.
pH = pH
Cl = Chloride, ppm
SO_4 = Sulfate, ppm

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project
Los Osos, California

Montgomery Watson Harza
Project No. 3055.001

EXPLORATION	DEPTH, ft	SAMPLE NUMBER	MATERIAL DESCRIPTION	UWW pcf	UDW pcf	MC%	FINES %	ATTERBERG LIMITS		COMPACTION TEST		DIRECT SHEAR		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				PERMEABILITY (ft/min)	SAND EQUIVALENT (SE)	COMMENTS
								LL	PI	MAX DD pcf	OPT MC %	C ksf	PHI deg	Qu, ksf	S_u (Cell Prs.) ksf	R	pH	Cl	So_4			
P-SP3	4.5	1	Poorly-graded SAND (SP)	115	107	8	1															
S	0.0	S-A	Poorly graded GRAVEL (GP)				1															
S	3.5	S-1	Poorly graded SAND (SP)	100	97	3														1.45E-2		K
S	4.0	S-4	Poorly graded SAND (SP)																	1.68E-2		K
TH-1	19.5		Poorly-graded SAND with silt (SP-SM)	109	108	1	11													1.27E-3		
TH-2	9.0		Poorly-graded SAND (SP)	115	110	5														7.45E-3		
TH-3	19.0		Poorly-graded SAND (SP)	115	110	4														3.92E-2		
TH-3	29.0		SAND with silt (SP-SM)	113	109	4	10													2.54E-2		
TH-4	30.0		Lean CLAY (CL)	136	109	25														2.76E-7		
TH-5	29.0		Poorly-graded SAND (SP)	112	109	3	1													2.70E-2		
TH-5	39.0		Poorly-graded SAND (SP)	114	100	14	2													2.49E-2		
TH-5	44.0		Silty SAND (SM)			18	13															

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % Passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

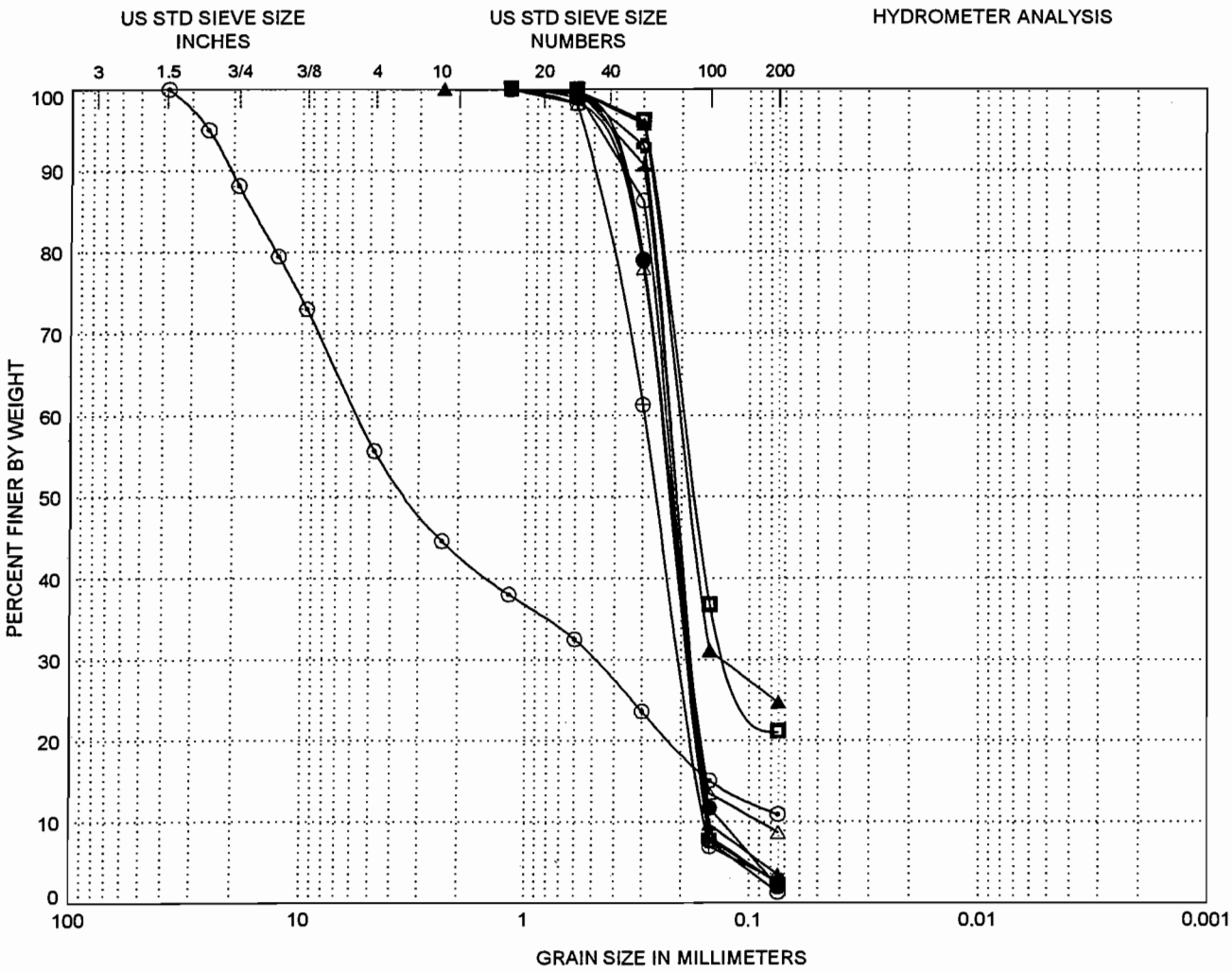
Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm, satur.
pH = pH
Cl = Chloride, ppm
SO_4 = Sulfate, ppm

SUMMARY OF LABORATORY TEST RESULTS

Los Osos Wastewater Project
Los Osos, California

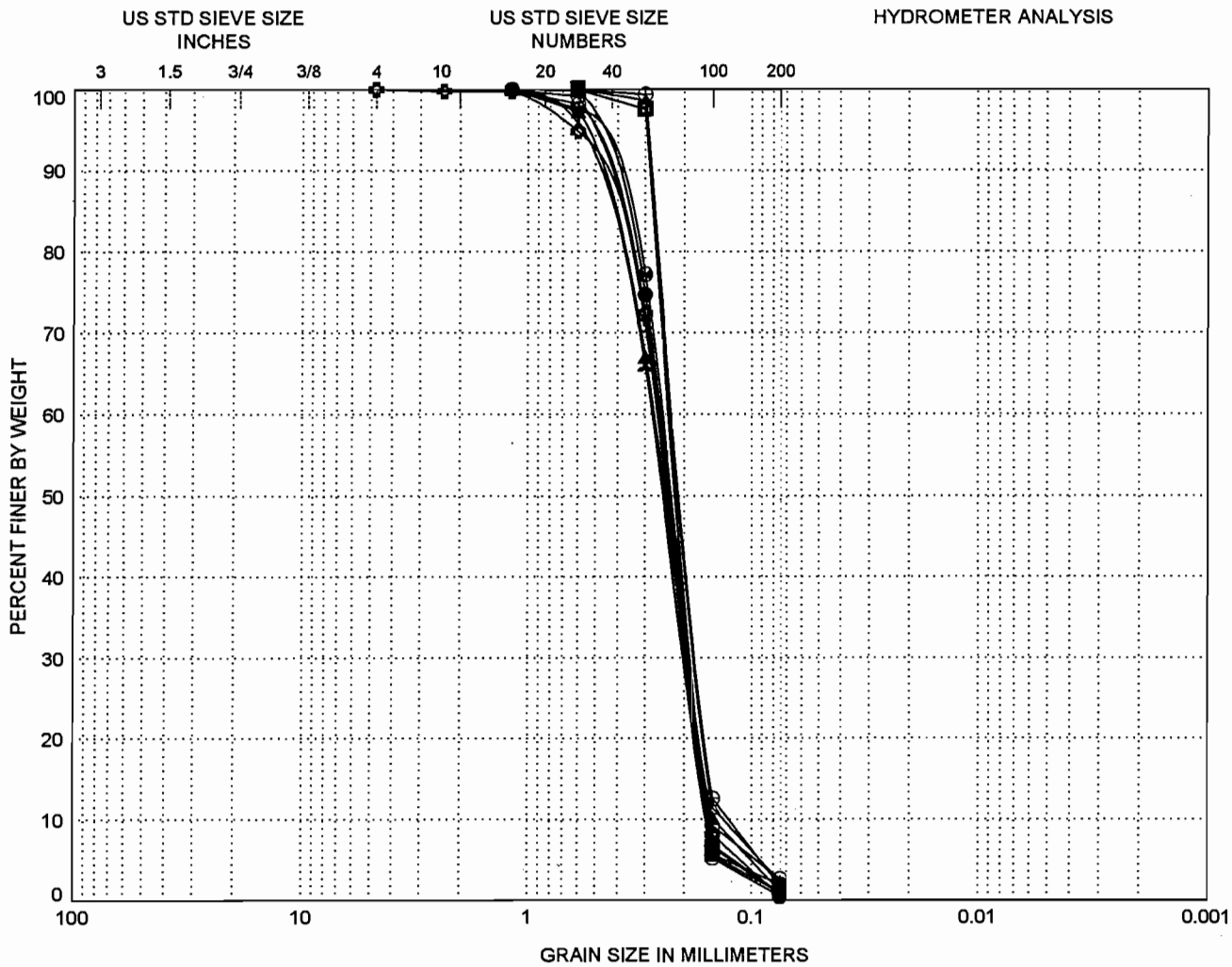
Montgomery Watson Harza
Project No. 3055.001



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

LEGEND	(location)	(depth,ft)	CLASSIFICATION	Cc	Cu
○	DH-401	4.0	Poorly graded SAND (SP)	0.9	1.6
●	DH-402	14.0	Poorly graded SAND (SP)	1.0	1.9
△	DH-404	9.0	Poorly graded SAND with silt (SP-SM)	1.4	2.8
▲	DH-406	19.0	Clayey SAND (SC)		
⊙	DH-406	29.0	SAND with clay and gravel (SP-SC)	0.7	88.7
✿	DH-409	2.0	Poorly graded SAND (SP)	0.9	1.5
⅄	DH-411	1.5	Poorly graded SAND (SP)	0.9	1.5
◘	DH-412	9.0	Silty SAND (SM)		
⊗	HP-1	19.5	Poorly-graded SAND (SP)	0.9	1.6
⊕	HP-1	39.5	Poorly-graded SAND (SP)	0.9	1.9

GRAIN SIZE CURVES
Los Osos Wastewater Project
Los Osos, California

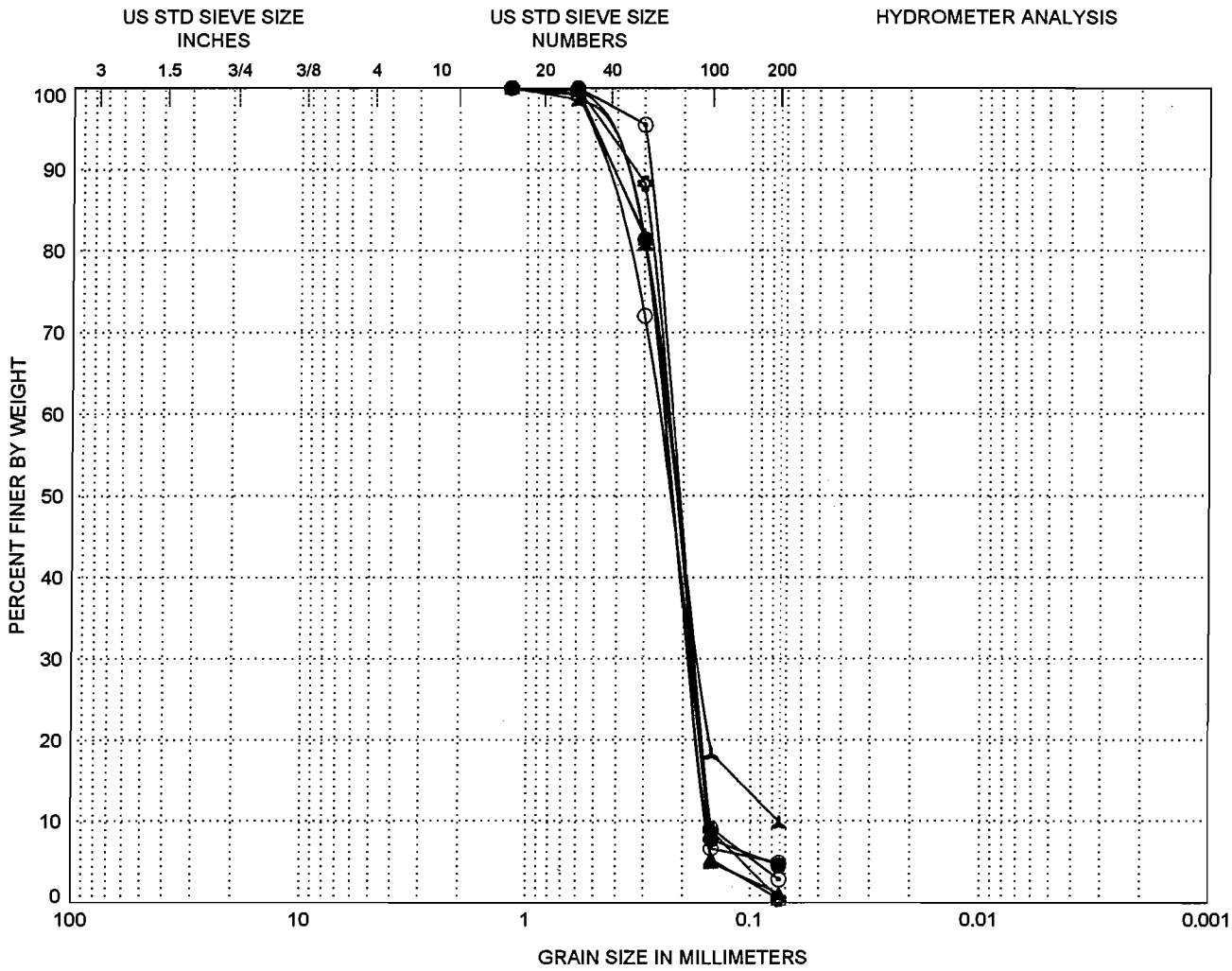


GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

LEGEND	(location)	(depth,ft)	CLASSIFICATION	Cc	Cu
○	HP-1	49.5	Poorly-graded SAND (SP)	0.9	1.7
●	HP-2	49.0	Poorly-graded SAND (SP)	0.9	1.7
△	L-3	4.5	Poorly-graded SAND (SP)	1.0	1.6
▲	P-2	4.8	Poorly-graded SAND (SP)	0.9	1.9
⊙	P-6	4.8	Poorly-graded SAND (SP)	0.9	1.7
✿	P-10	4.9	Poorly-graded SAND (SP)	0.9	1.7
⅄	P-14	5.0	Poorly-graded SAND (SP)	0.9	1.8
◘	P-17	4.5	Poorly-graded SAND (SP)	0.9	1.5
⊗	P-24	4.5	Poorly-graded SAND (SP)	0.9	1.6
⊕	P-28	4.5	Poorly-graded SAND (SP)	1.1	1.7

GRAIN SIZE CURVES
Los Osos Wastewater Project
Los Osos, California

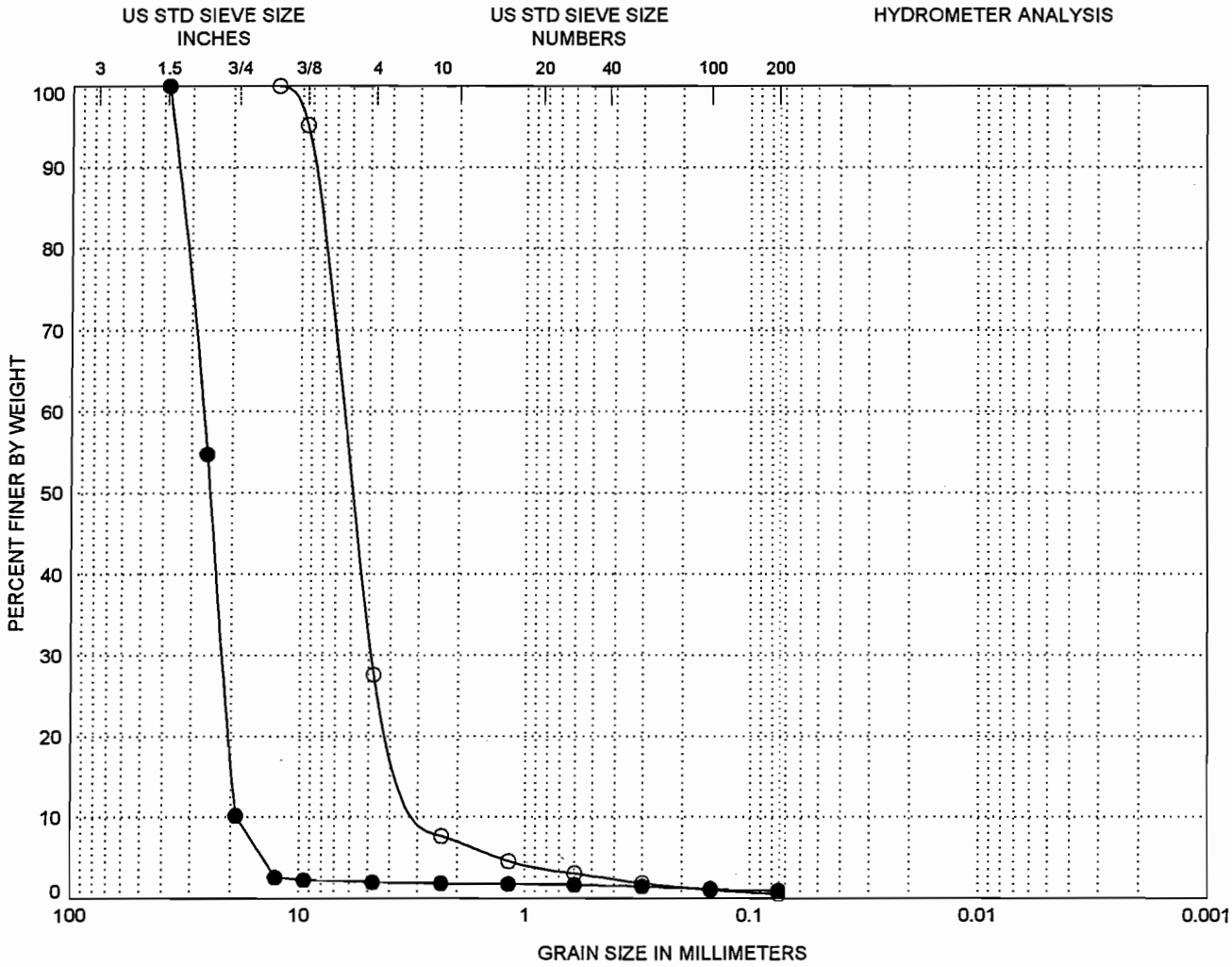
PLATE B-2b



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

LEGEND	(location)	(depth,ft)	CLASSIFICATION	Cc	Cu
○	P-3W1	4.5	Poorly-graded SAND (SP)	0.9	1.7
●	P-3W2	4.5	Poorly-graded SAND (SP)	0.9	1.6
△	P-3W3	4.5	Poorly-graded SAND (SP)	0.9	1.6
▲	P-SP1	4.5	Poorly-graded SAND (SP)	0.9	1.6
⊙	P-SP2	4.5	Poorly-graded SAND (SP)	0.9	1.5
✿	P-SP3	4.5	Poorly-graded SAND (SP)	0.9	1.5
⅄	TH-3	29.0	SAND with silt (SP-SM)	1.6	3.1

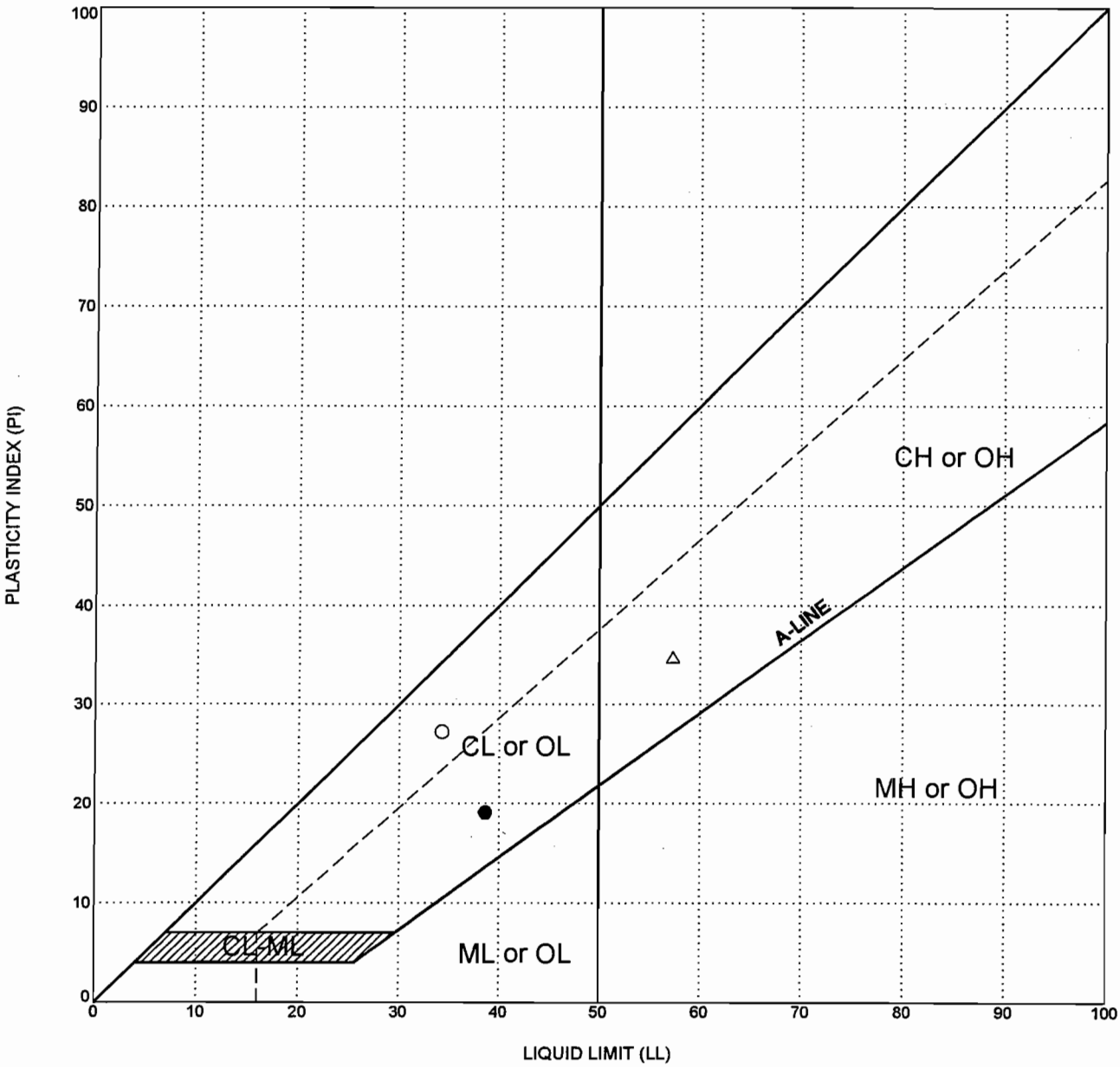
GRAIN SIZE CURVES
Los Osos Wastewater Project
Los Osos, California



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

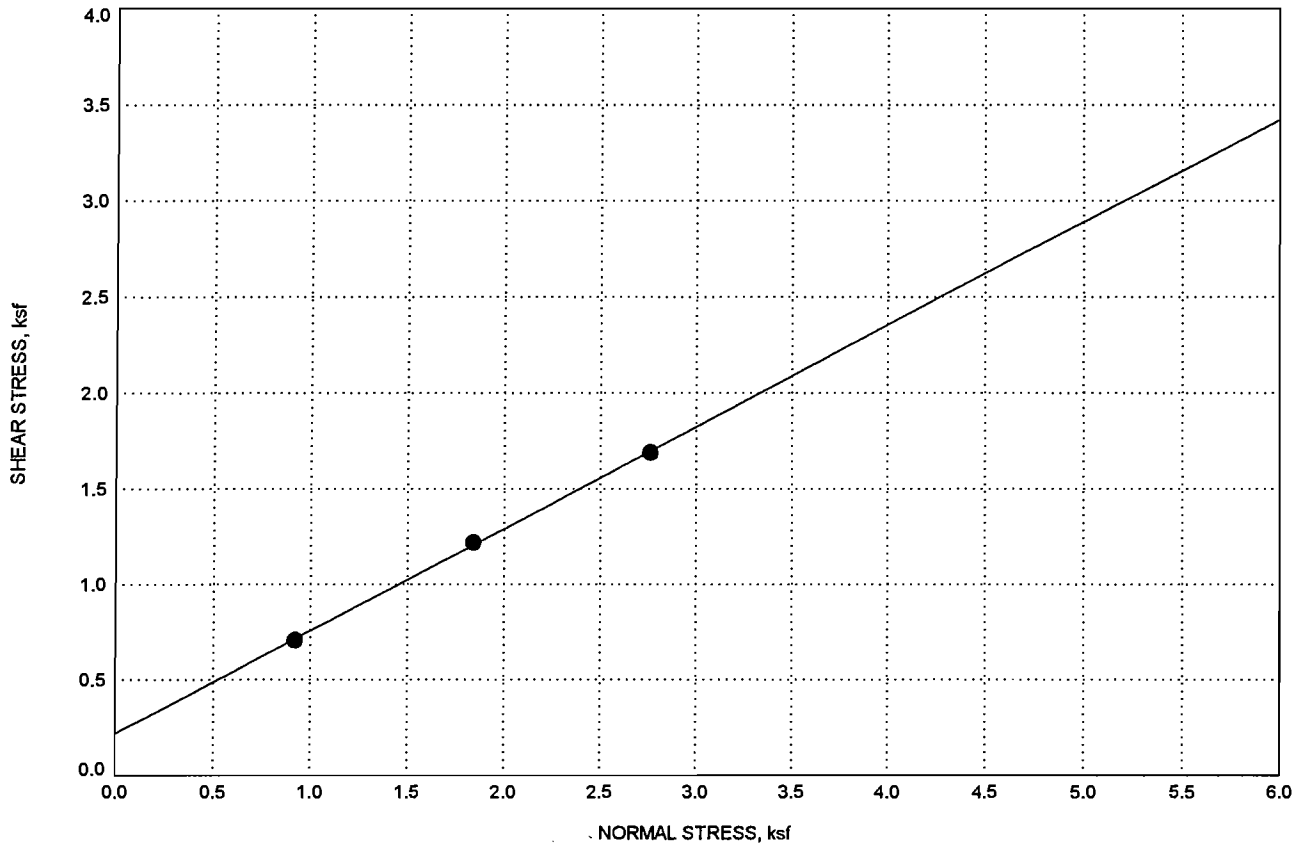
LEGEND	(location)	(depth,ft)	CLASSIFICATION	Cc	Cu
○	DW-1	0.0	Poorly-graded GRAVEL with sand (GP) - Drywell	1.4	2.6
●	S	0.0	Poorly graded GRAVEL (GP) - Percolation Line	0.9	1.4

GRAIN SIZE CURVES
Los Osos Wastewater Project
Los Osos, California



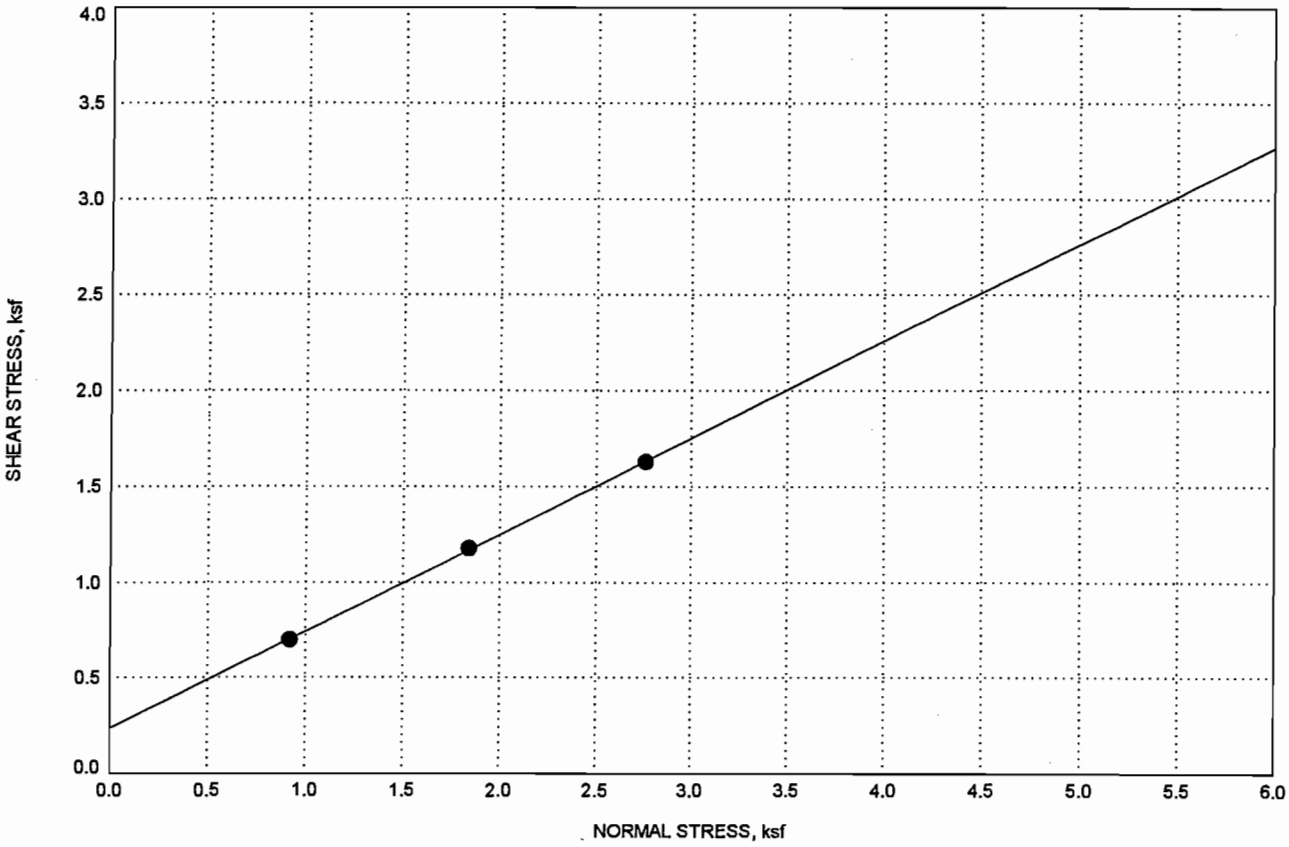
LEGEND	location	depth, ft	CLASSIFICATION	ATTERBERG LIMITS TEST RESULTS LIQUID LIMIT(LL)	PLASTIC LIMIT(PL)	PLASTICITY INDEX (PI)
○	DH-406	24.0	Lean CLAY (CL)	34	7	27
●	DH-406	34.0	Lean CLAY (CL)	39	20	19
△	HA-401	8.0	Fat CLAY (CH)	57	22	35

PLASTICITY CHART
Los Osos Wastewater Project
Los Osos, California



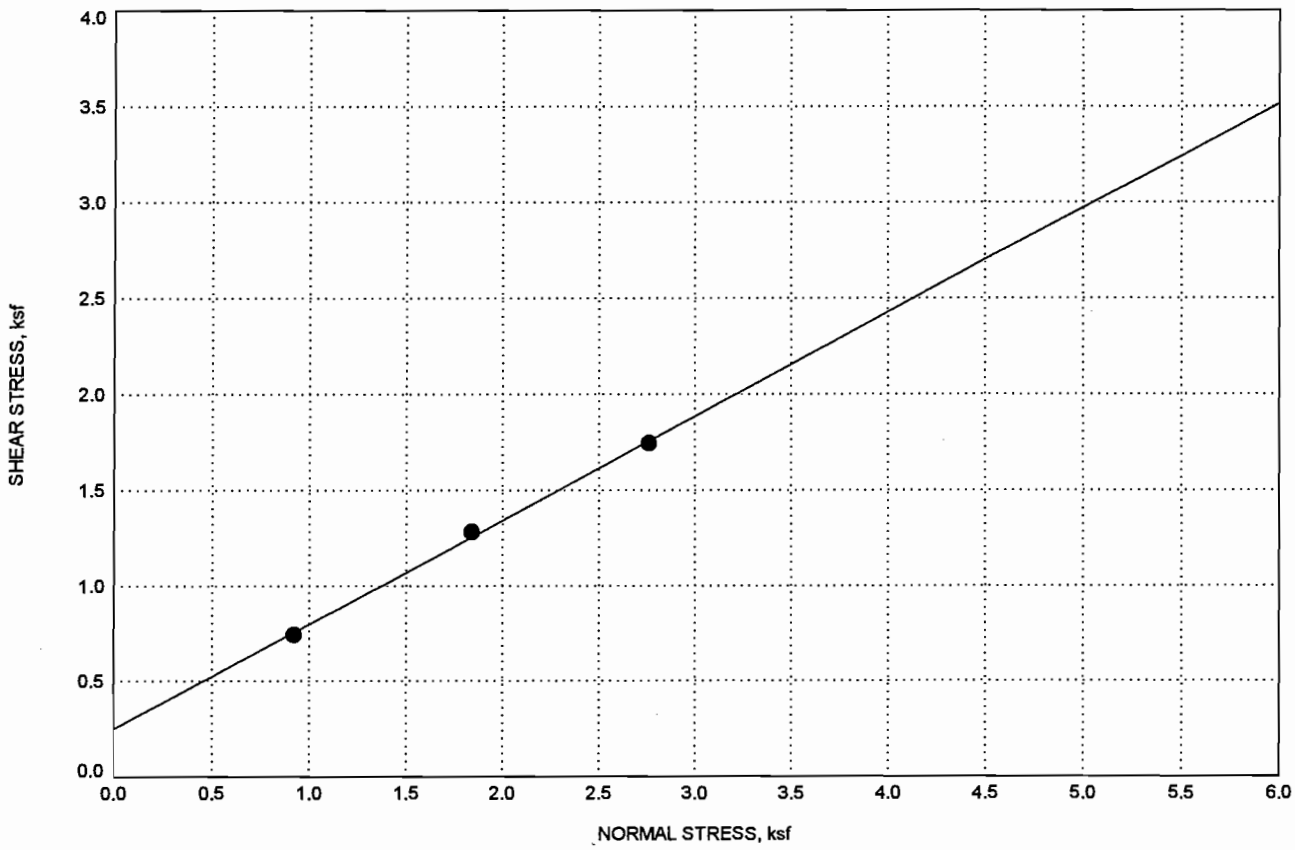
COHESION, ksf	0.2
ANGLE OF INTERNAL FRICTION, deg	28
LOCATION	DH-404
DEPTH, ft	3-6
MOISTURE CONTENT, %	7.5
UNIT DRY WEIGHT, pcf	99.5
MATERIAL DESCRIPTION	Poorly graded SAND with silt (SP-SM)
SAMPLE CONDITION	Remold to 90 % R.C.

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project
Los Osos, California



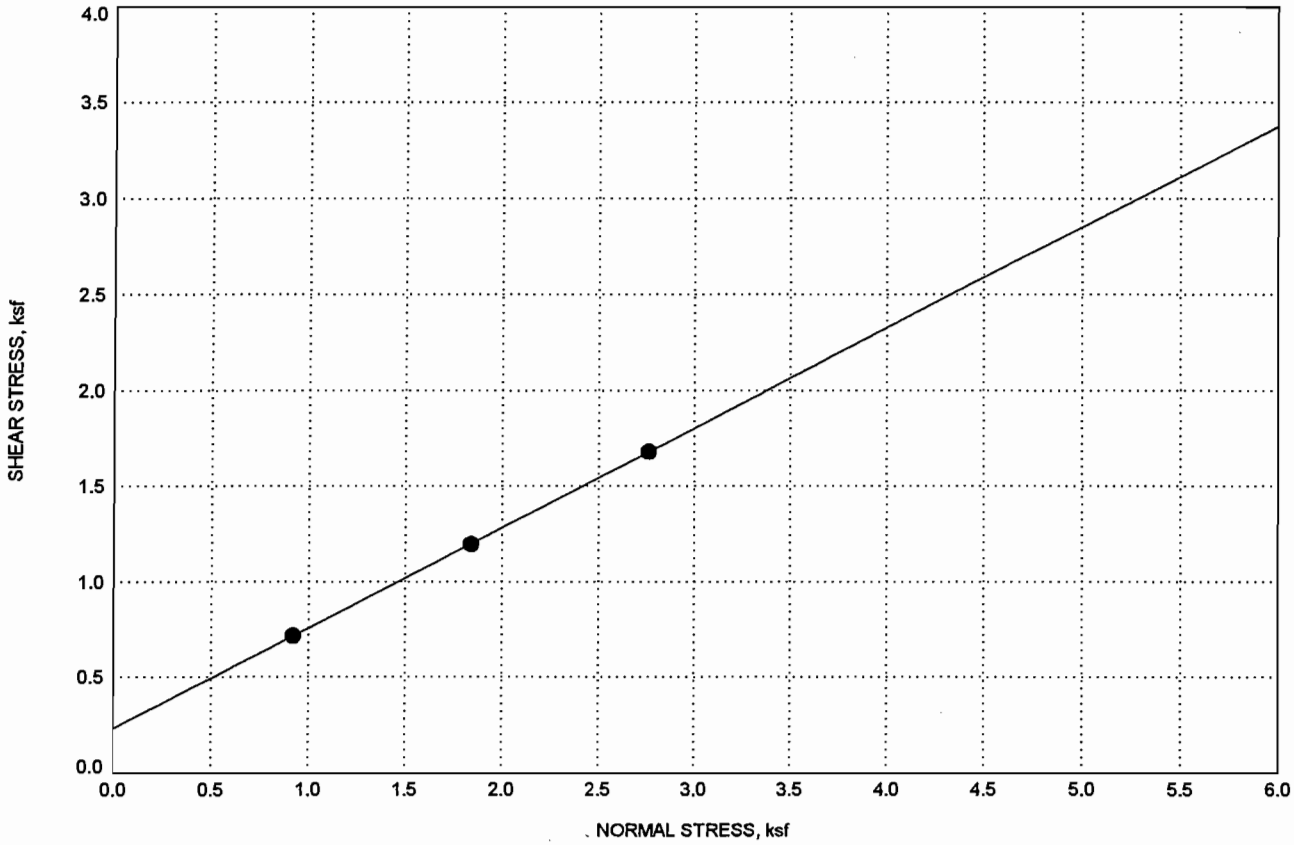
COHESION, ksf	0.2
ANGLE OF INTERNAL FRICTION, deg	27
LOCATION	DH-405
DEPTH, ft	2-5
MOISTURE CONTENT, %	7.0
UNIT DRY WEIGHT, pcf	99.5
MATERIAL DESCRIPTION	Poorly graded SAND (SP)
SAMPLE CONDITION	Remold to 90 % R.C.

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project
Los Osos, California



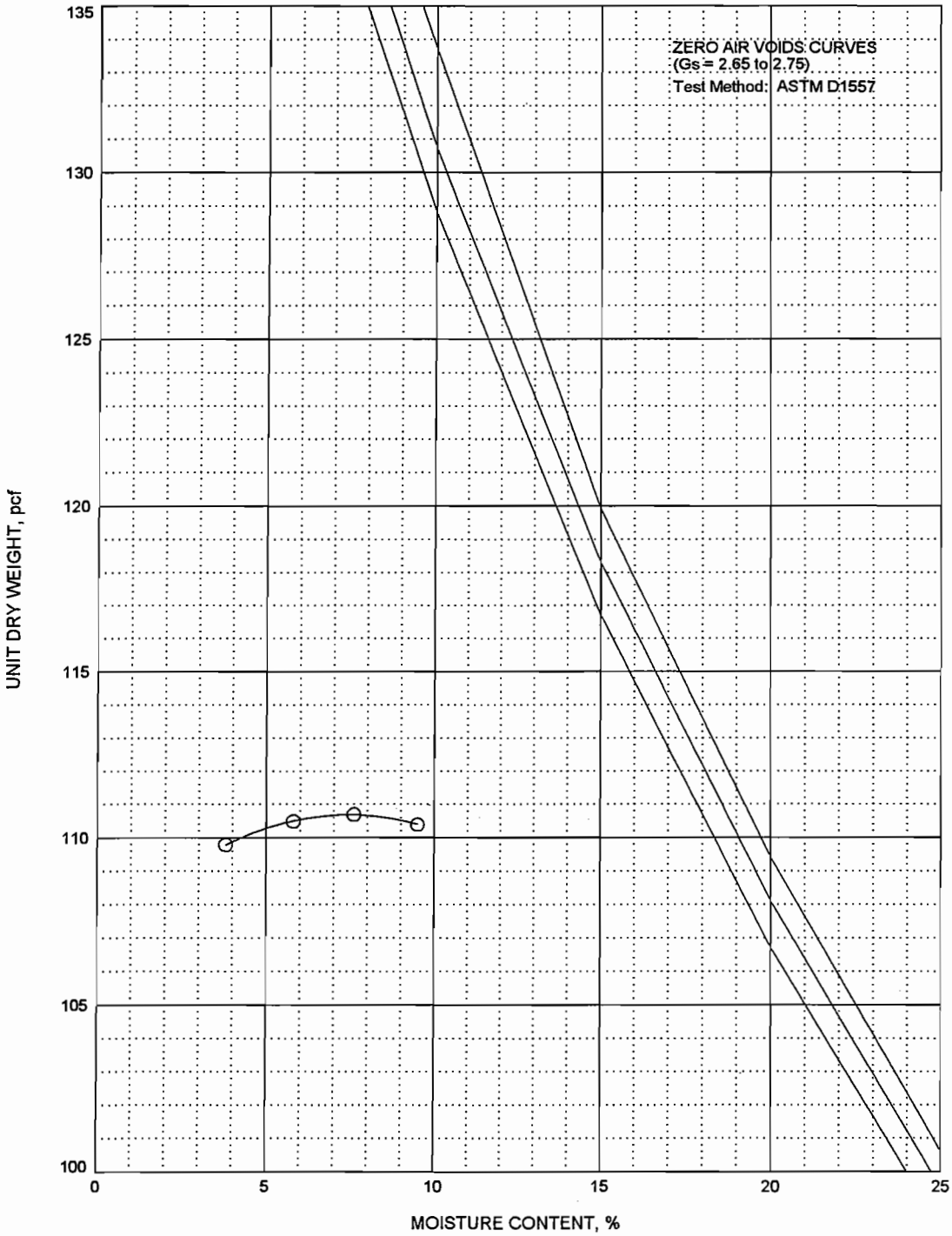
COHESION, ksf	0.3
ANGLE OF INTERNAL FRICTION, deg	29
LOCATION	HA-401
DEPTH, ft	2-5
MOISTURE CONTENT, %	8.5
UNIT DRY WEIGHT, pcf	96.8
MATERIAL DESCRIPTION	SAND with silt (SP-SM)
SAMPLE CONDITION	Remold to 90 % R.C.

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project
Los Osos, California



COHESION, ksf	0.2
ANGLE OF INTERNAL FRICTION, deg	28
LOCATION	HA-403
DEPTH, ft	0.5-5
MOISTURE CONTENT, %	6.0
UNIT DRY WEIGHT, pcf	98.1
MATERIAL DESCRIPTION	SAND with silt (SP-SM)
SAMPLE CONDITION	Remold to 90 % R.C.

DIRECT SHEAR TEST RESULTS
Los Osos Wastewater Project
Los Osos, California

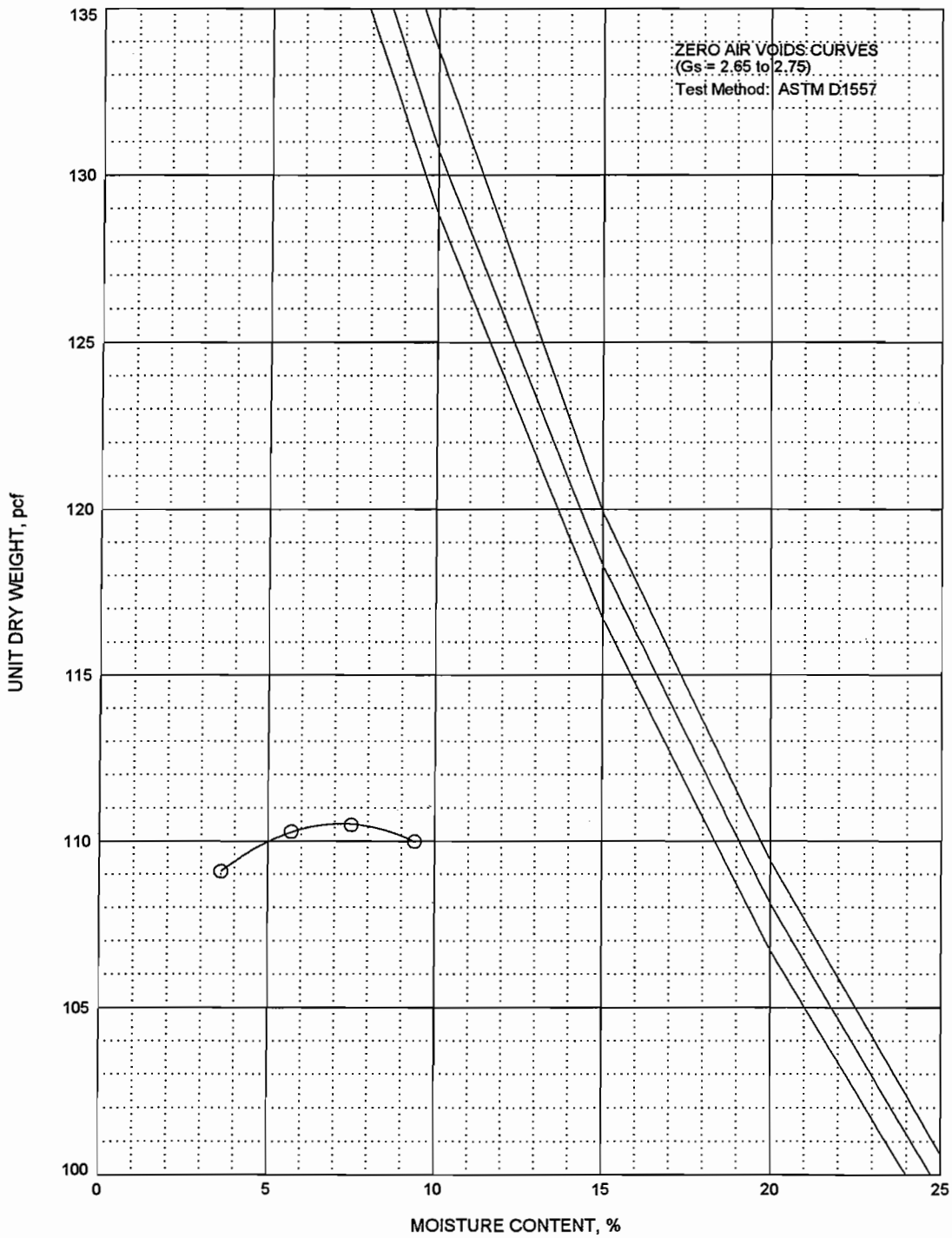


LEGEND (location)	depth, ft	CLASSIFICATION	MAXIMUM UNIT DRY WEIGHT, pcf	OPTIMUM WATER CONTENT, %
○ DH-404	3.0	Poorly graded SAND with silt (SP-SM)	110.5	7.5

COMPACTION TEST RESULTS

Los Osos Wastewater Project

Los Osos, California

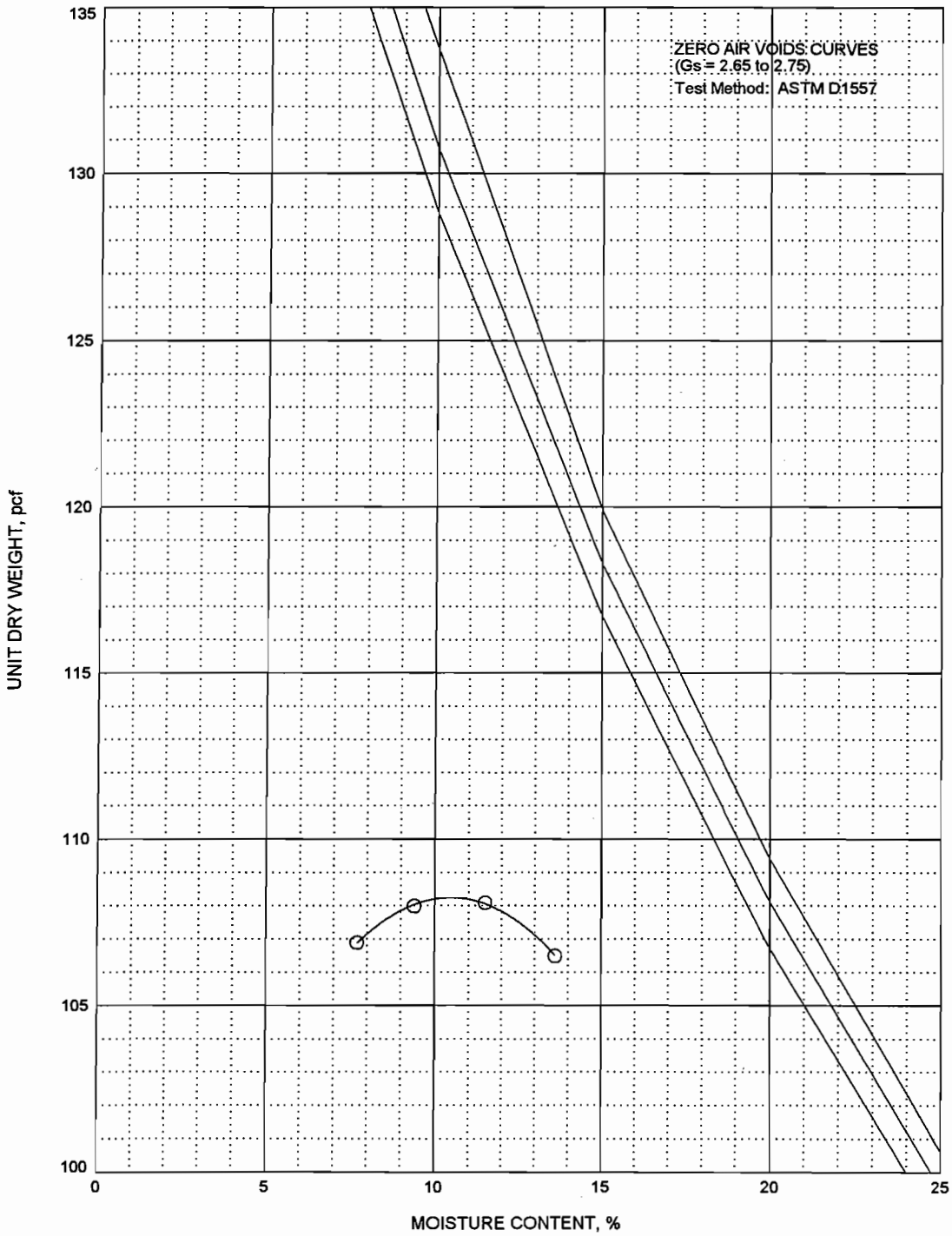


LEGEND (location)	depth, ft	CLASSIFICATION	MAXIMUM UNIT DRY WEIGHT, pcf	OPTIMUM WATER CONTENT, %
○ DH-405	2.0	Poorly graded SAND (SP)	110.5	7.0

COMPACTION TEST RESULTS

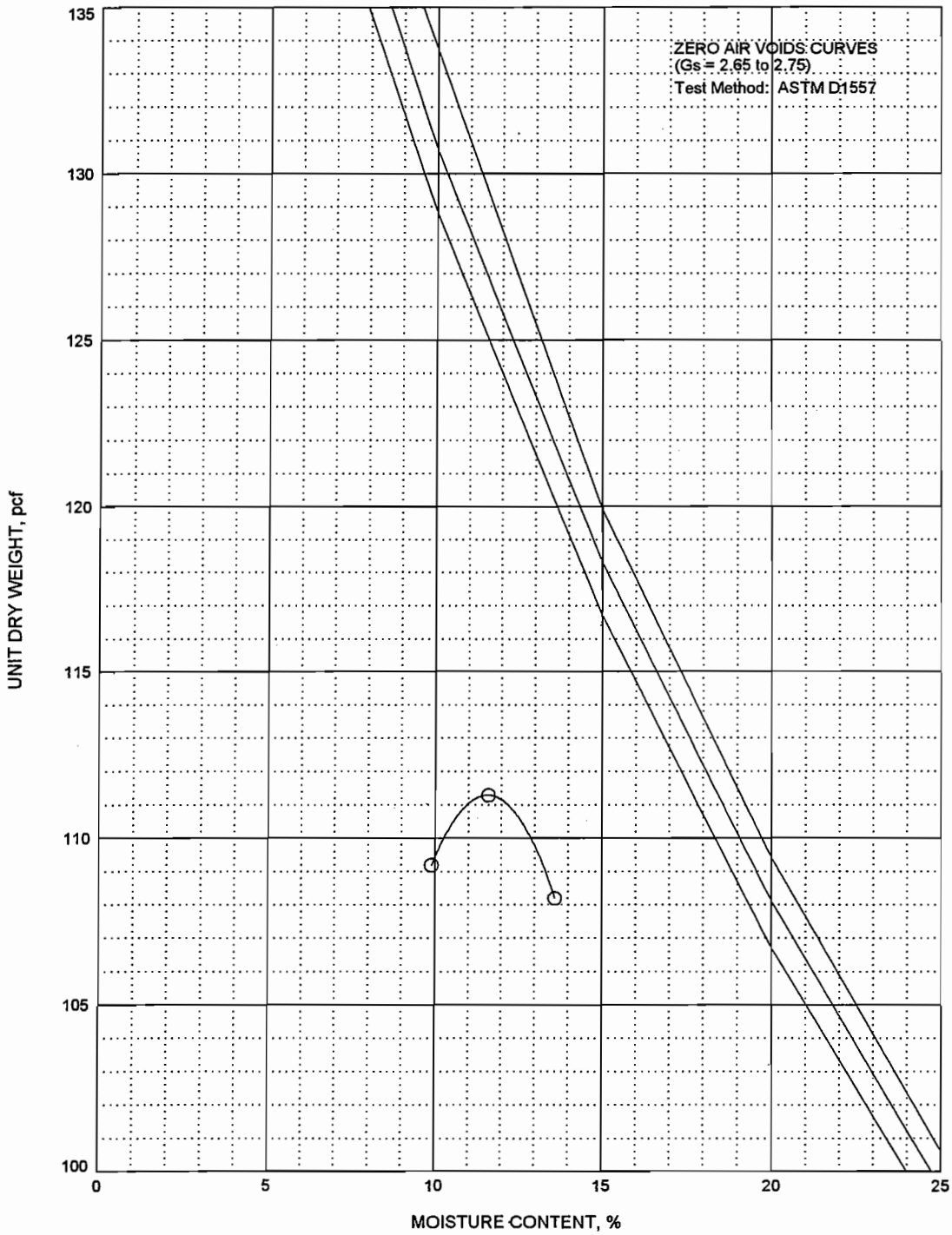
Los Osos Wastewater Project

Los Osos, California



LEGEND (location)	depth, ft	CLASSIFICATION	MAXIMUM UNIT DRY WEIGHT, pcf	OPTIMUM WATER CONTENT, %
○ DH-407	7.0	Poorly graded SAND (SP)	108.0	10.5

COMPACTION TEST RESULTS
Los Osos Wastewater Project
Los Osos, California

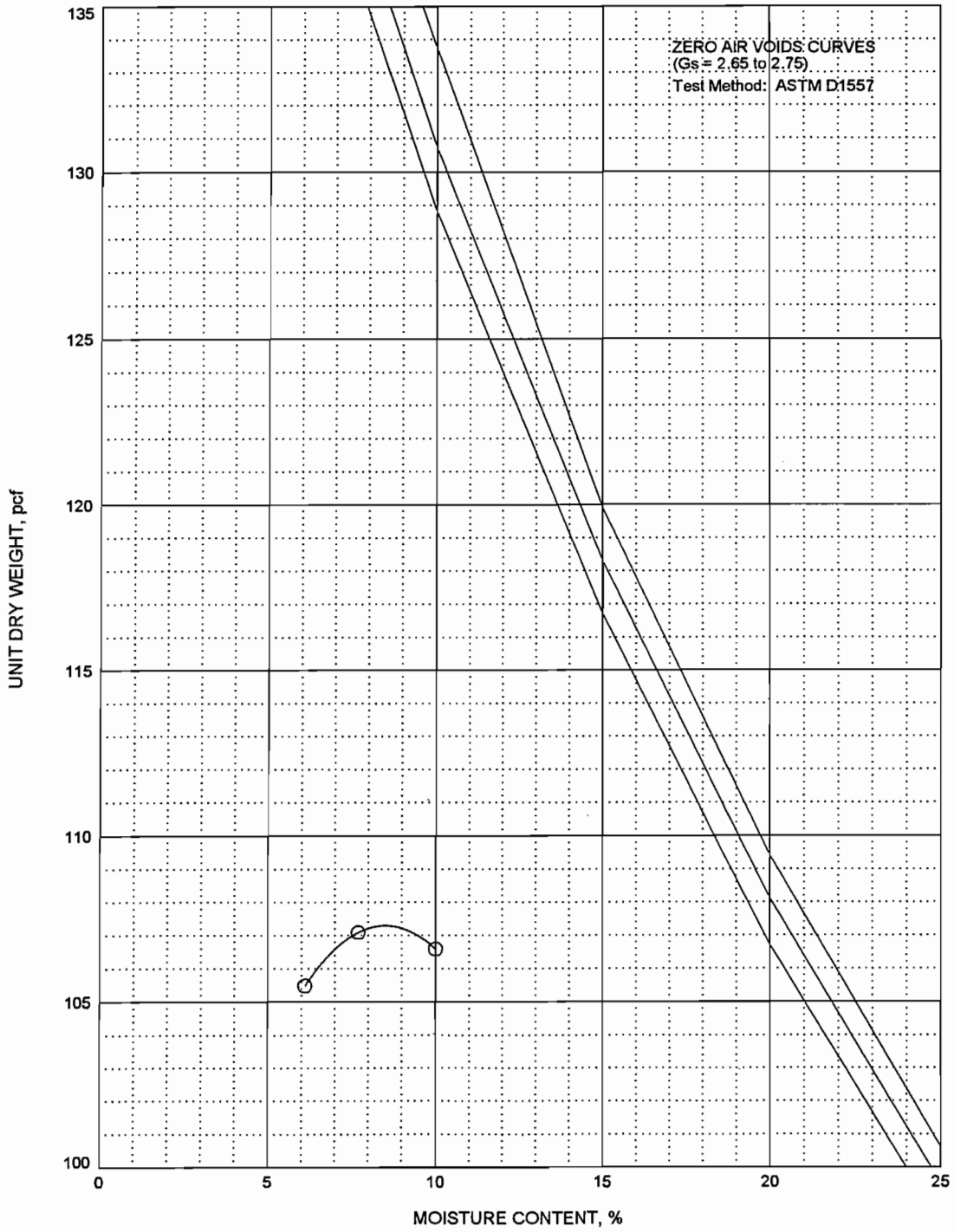


LEGEND (location)	depth, ft	CLASSIFICATION	MAXIMUM UNIT DRY WEIGHT, pcf	OPTIMUM WATER CONTENT, %
○ DH-411	4.0	Poorly graded SAND (SP)	111.5	11.5

COMPACTION TEST RESULTS

Los Osos Wastewater Project
Los Osos, California

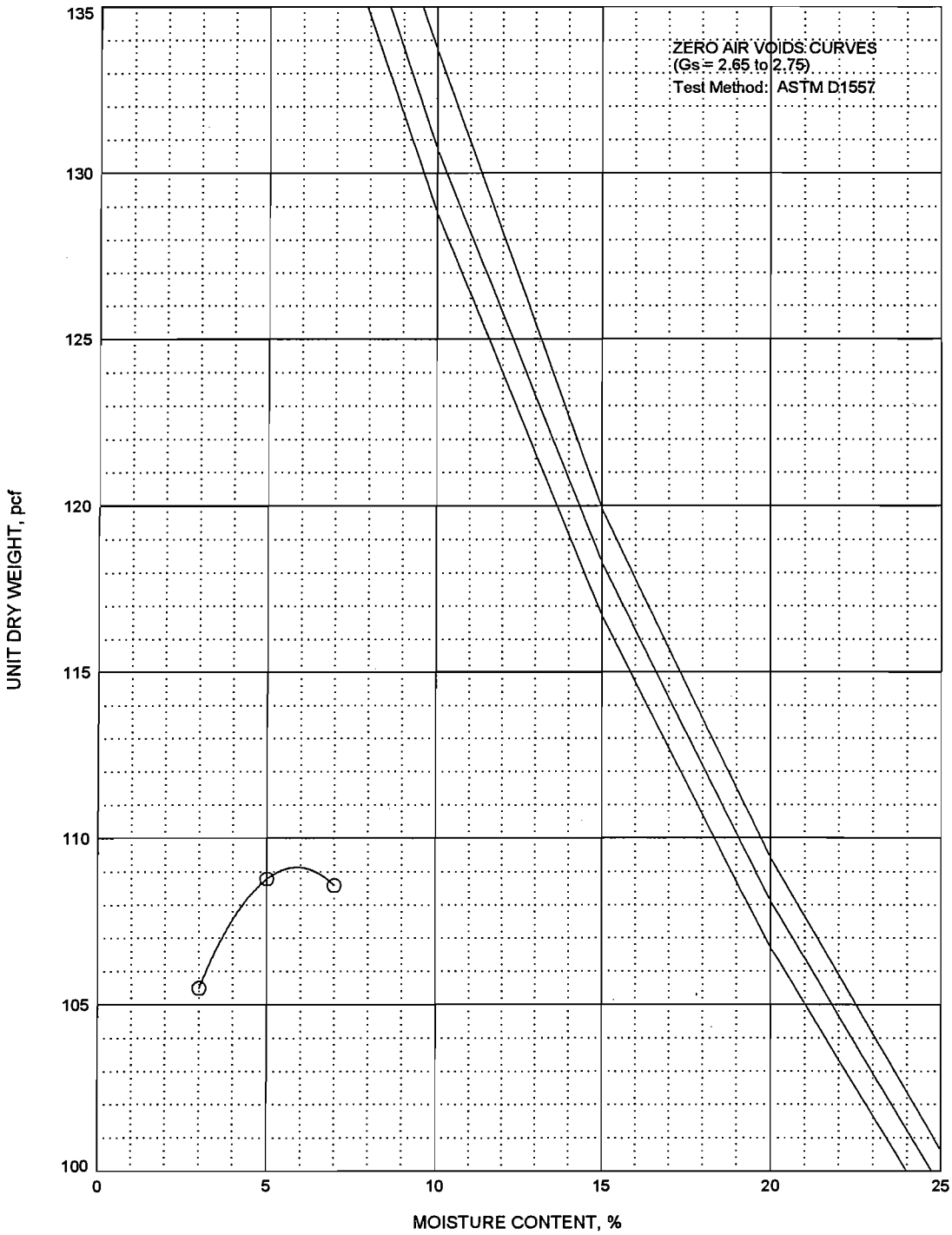
PLATE B-5d



LEGEND (location)	depth, ft	CLASSIFICATION	MAXIMUM UNIT DRY WEIGHT, pcf	OPTIMUM WATER CONTENT, %
○ HA-401	2.0	SAND with silt (SP-SM)	107.5	8.5

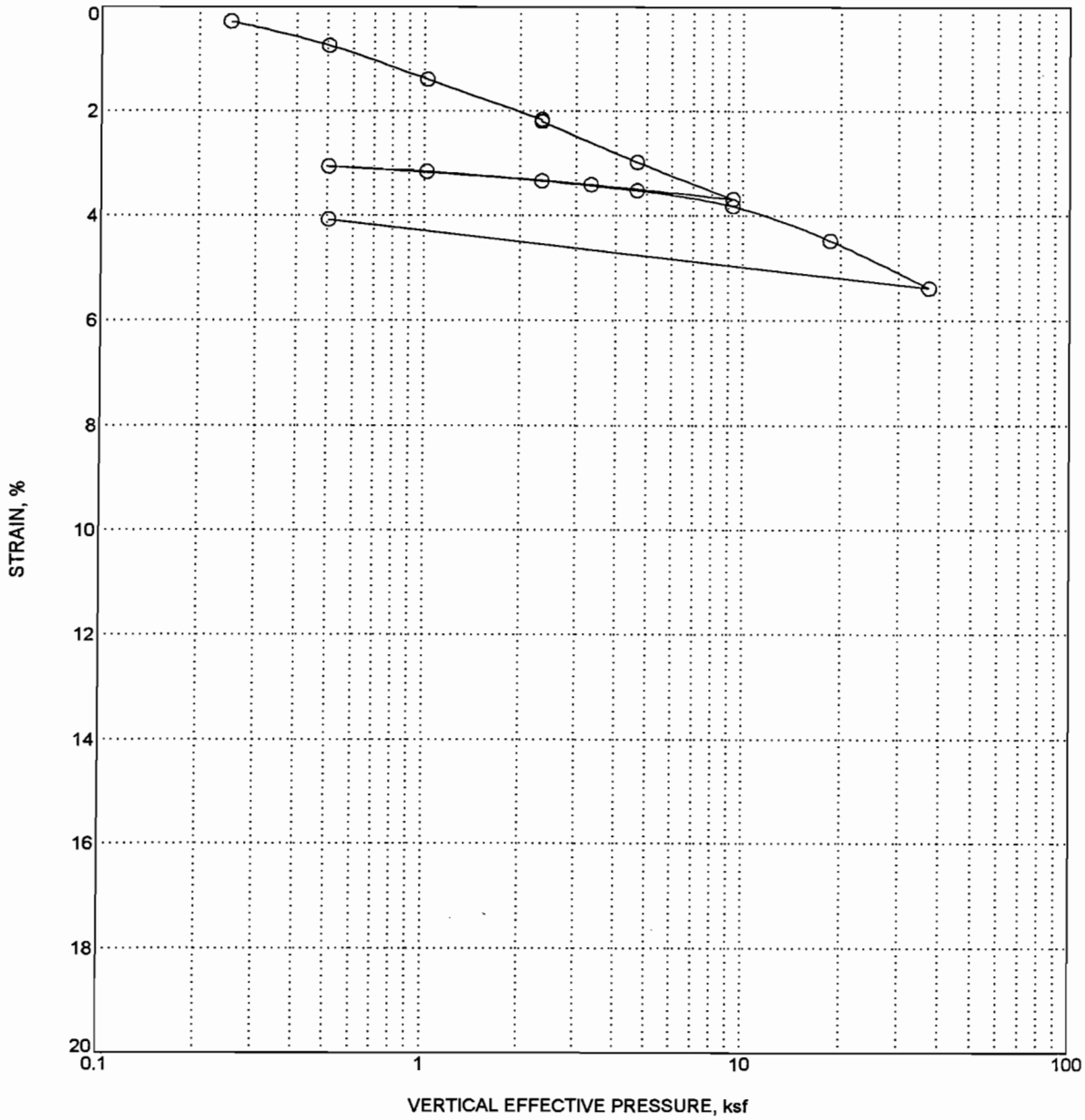
COMPACTION TEST RESULTS

Los Osos Wastewater Project
Los Osos, California



LEGEND (location)	depth, ft	CLASSIFICATION	MAXIMUM UNIT DRY WEIGHT, pcf	OPTIMUM WATER CONTENT, %
○ HA-403	0.5	SAND with silt (SP-SM)	109.0	6.0

COMPACTION TEST RESULTS
Los Osos Wastewater Project
Los Osos, California



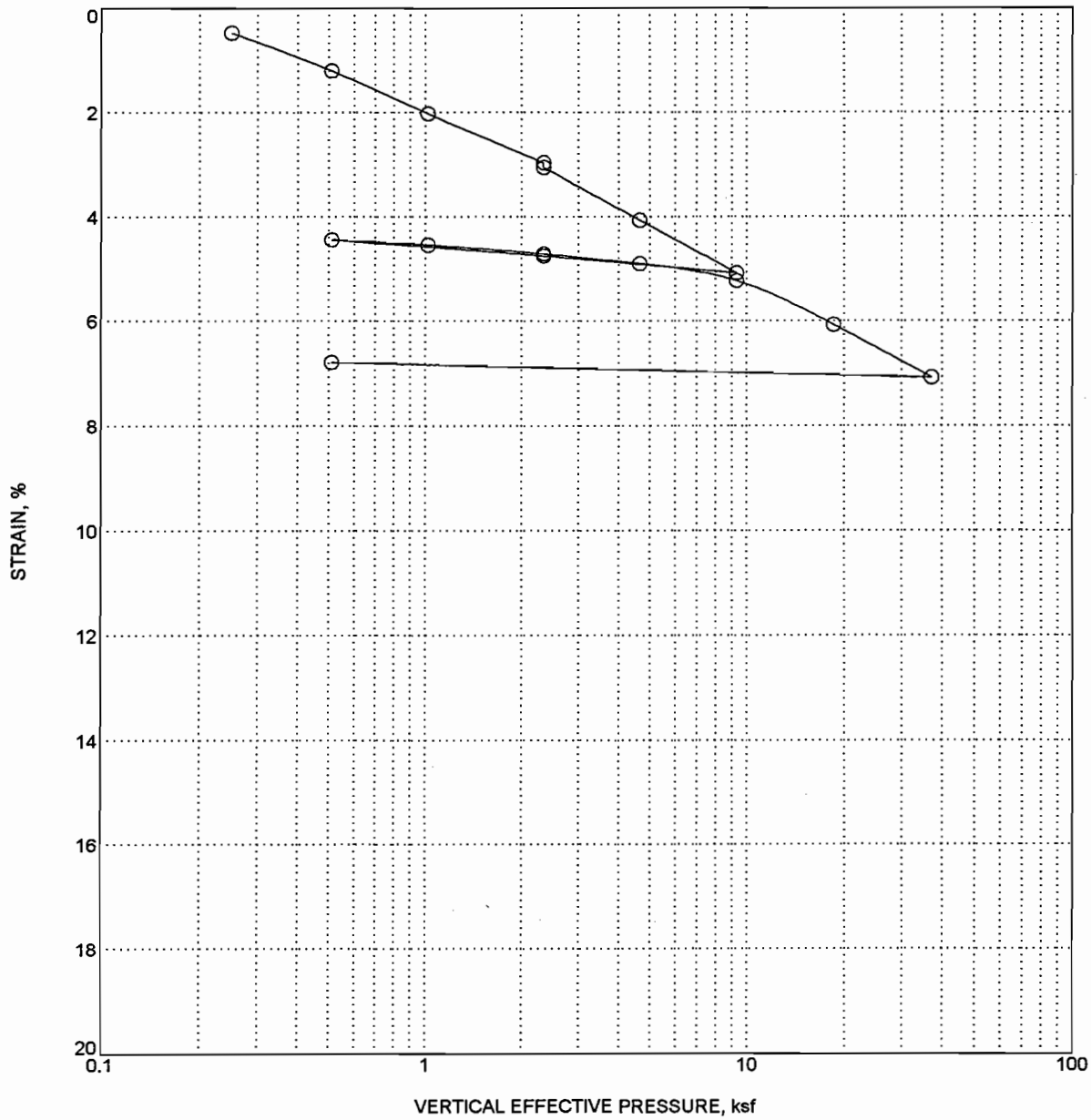
LOCATION	DH-404
DEPTH, ft	1.5
INITIAL MOISTURE CONTENT, %	2
UNIT DRY WEIGHT, pcf	103
MATERIAL DESCRIPTION	Poorly graded SAND with silt (SP-SM)
SAMPLE CONDITION	Driven Ring

CONSOLIDATION TEST RESULTS

Los Osos Wastewater Project

Los Osos, California

PLATE B-6a

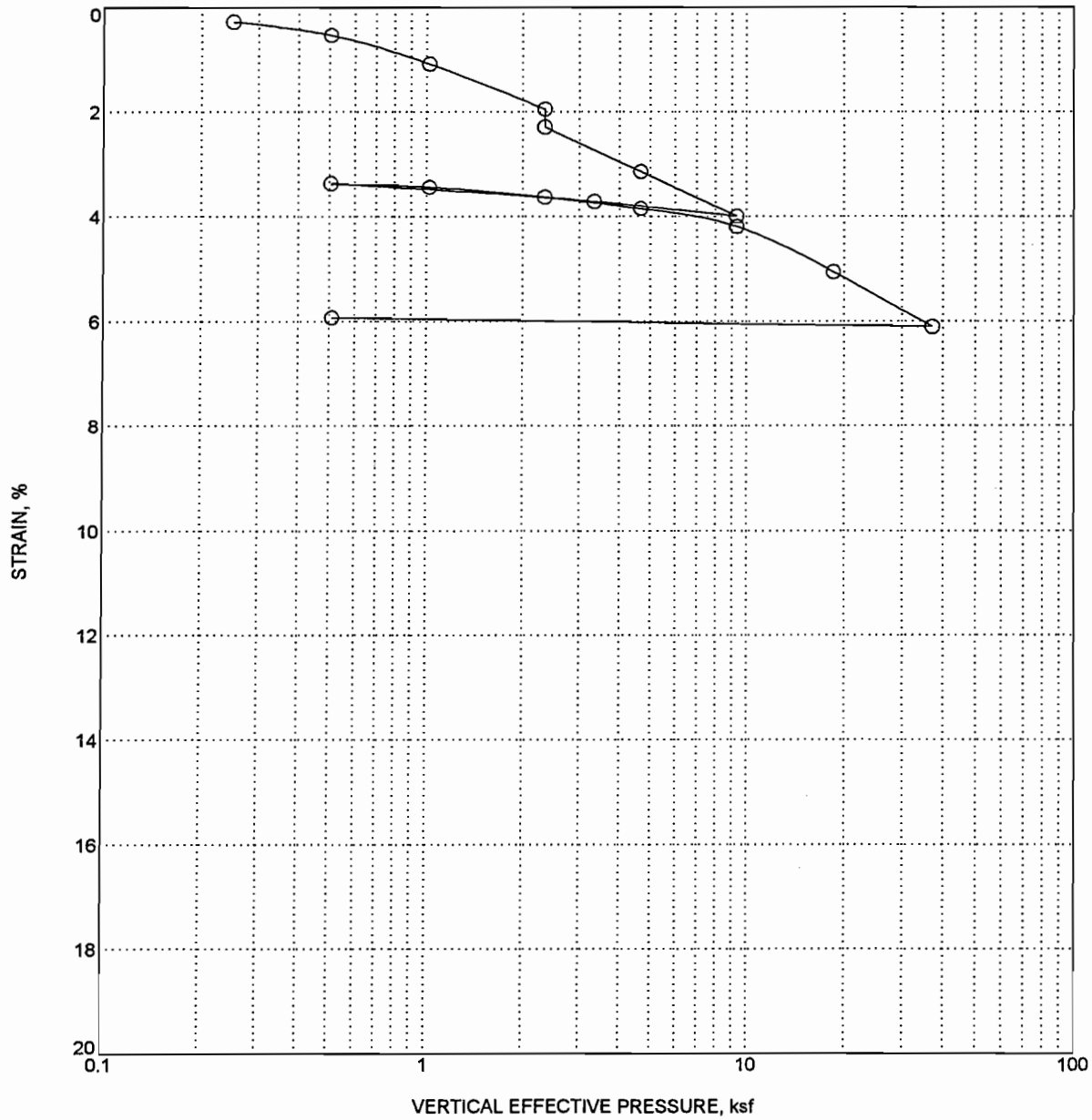


LOCATION	DH-405
DEPTH, ft	2.0
INITIAL MOISTURE CONTENT, %	4
UNIT DRY WEIGHT, pcf	102
MATERIAL DESCRIPTION	Poorly graded SAND (SP)
SAMPLE CONDITION	Driven Ring

CONSOLIDATION TEST RESULTS

Los Osos Wastewater Project

Los Osos, California



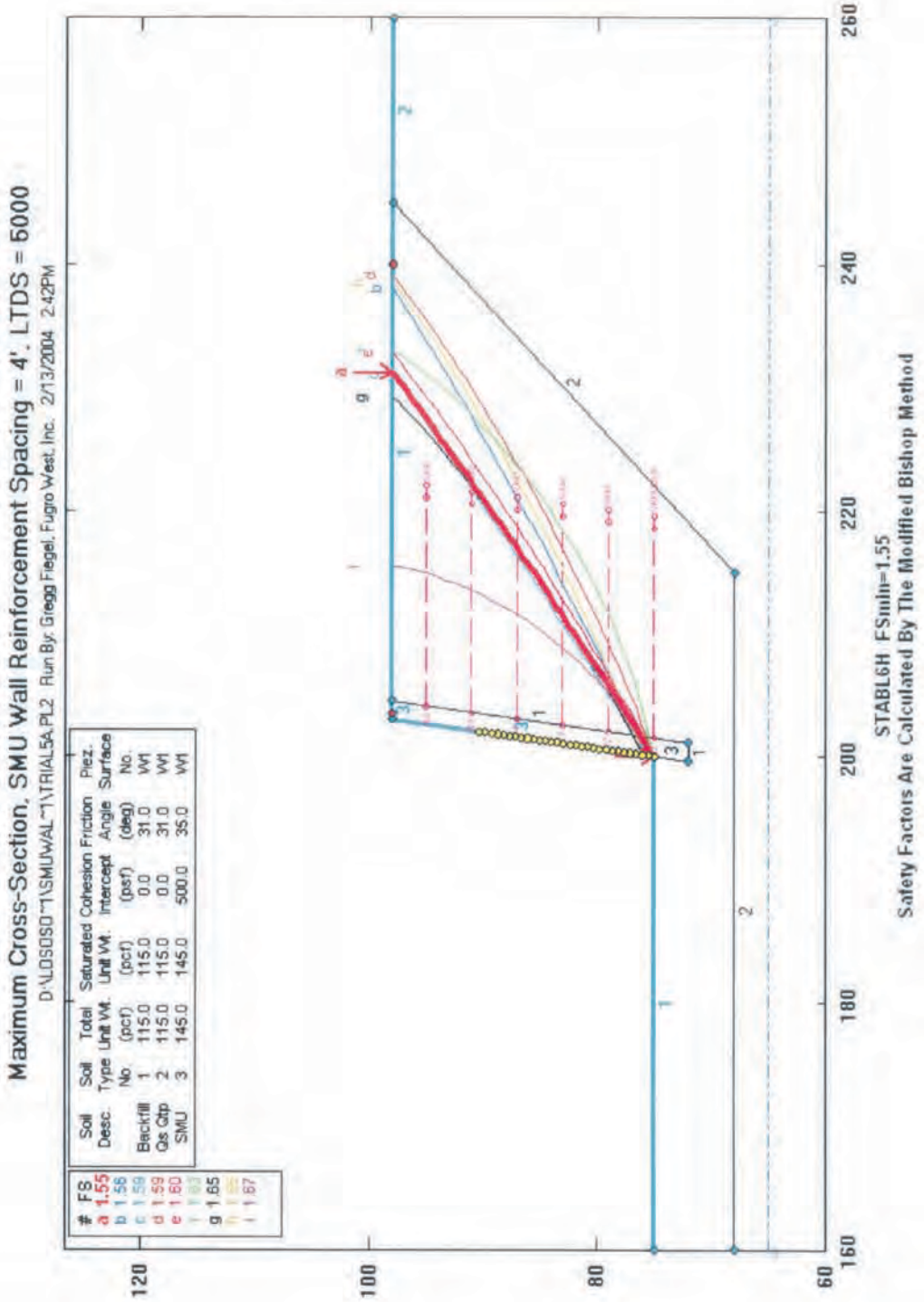
LOCATION	HA-401
DEPTH, ft	3.0
INITIAL MOISTURE CONTENT, %	3
UNIT DRY WEIGHT, pcf	102
MATERIAL DESCRIPTION	SAND with silt (SP-SM)
SAMPLE CONDITION	Driven Ring

CONSOLIDATION TEST RESULTS

Los Osos Wastewater Project

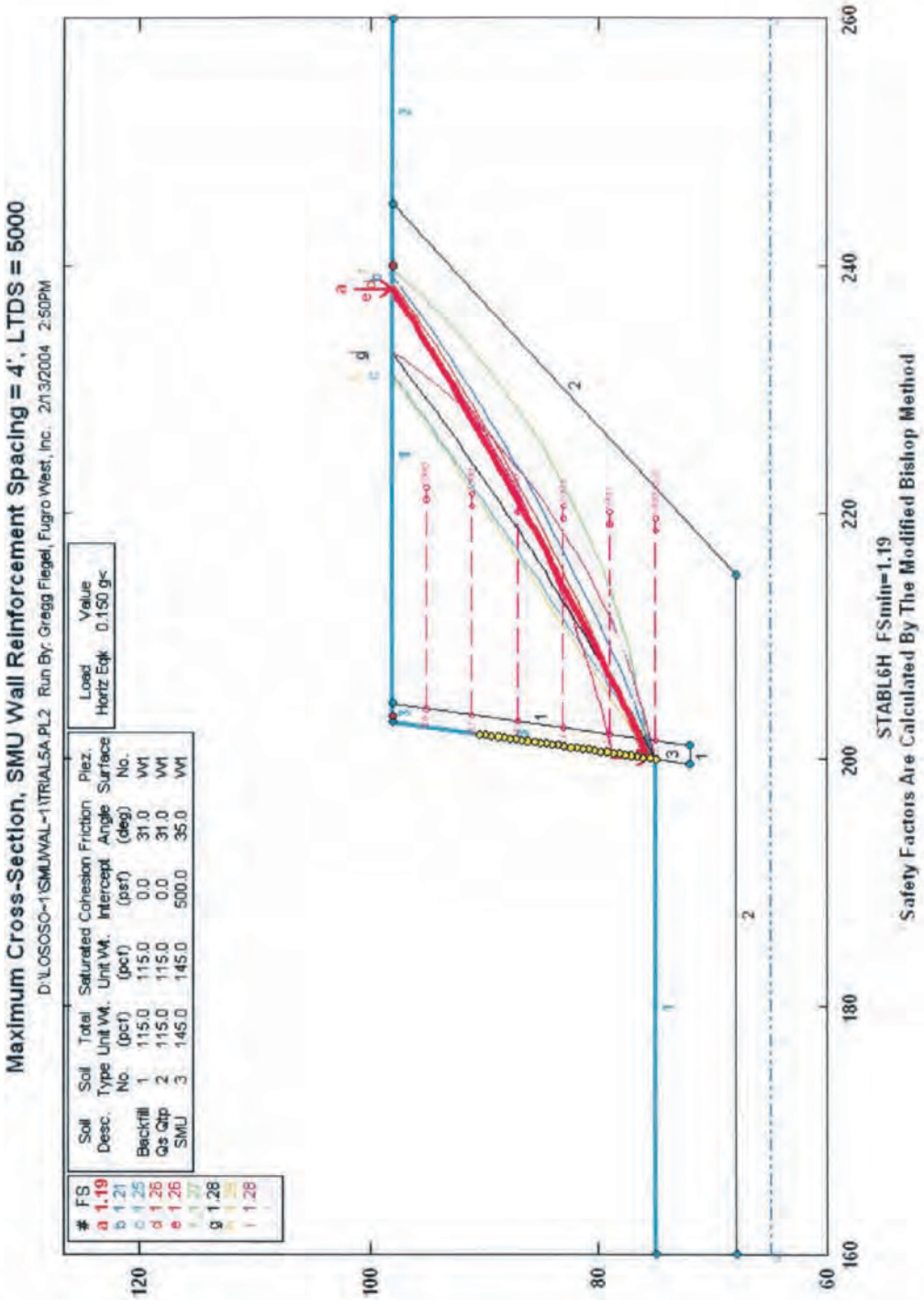
Los Osos, California

APPENDIX C



SLOPE STABILITY RESULTS: SMU RETAINING WALL, STATIC CASE

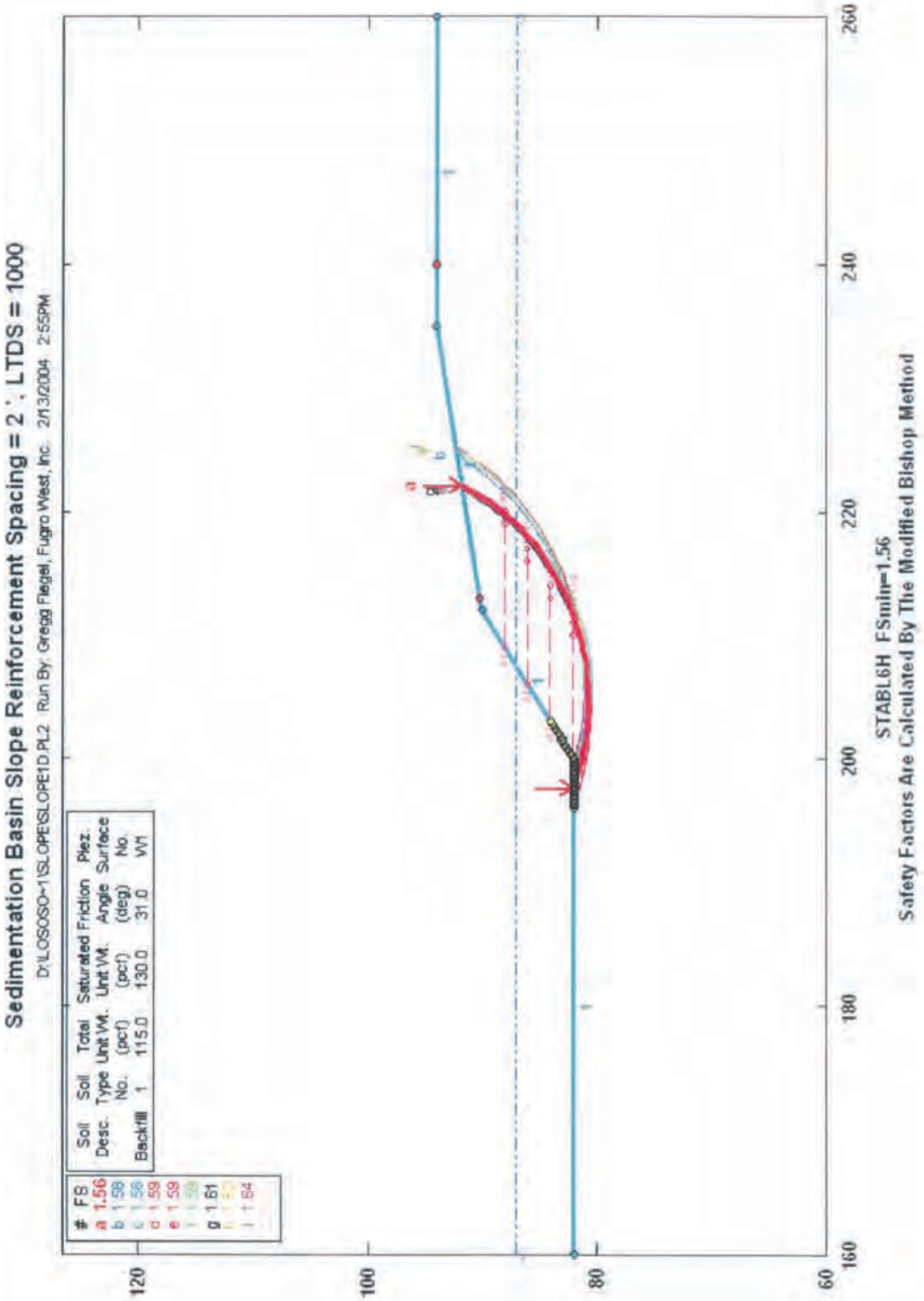
Los Osos Wastewater Project
Los Osos, California



SLOPE STABILITY RESULTS: SMU RETAINING WALL, PSEUDOSTATIC CASE

Los Osos Wastewater Project
Los Osos, California

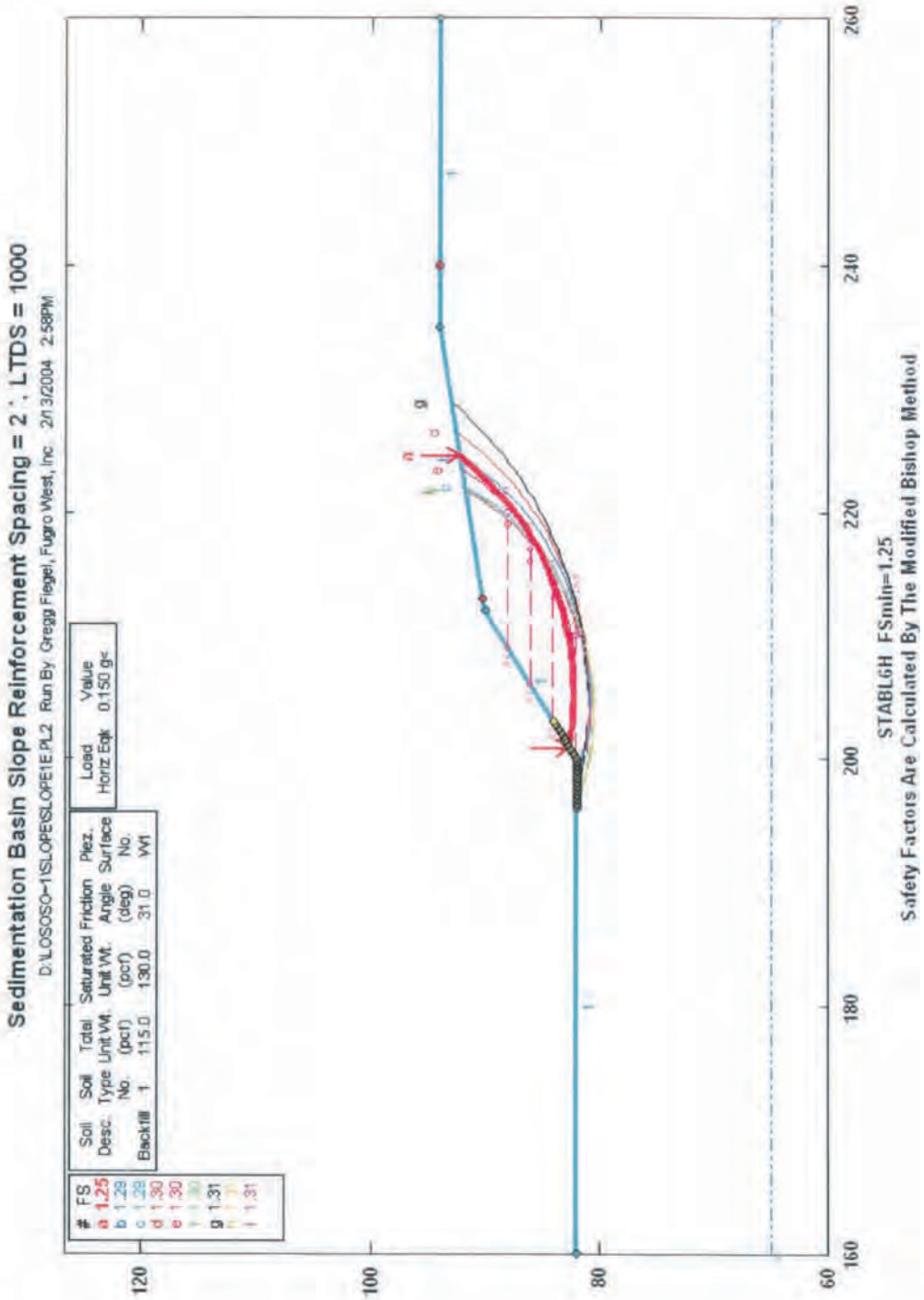
PLATE C-2



SLOPE STABILITY RESULTS: SEDIMENTATION BASIN, STATIC CASE

Los Osos Wastewater Project
Los Osos, California

PLATE C-3



SLOPE STABILITY RESULTS: SEDIMENTATION BASIN, PSEUDOSTATIC CASE

Los Osos Wastewater Project
Los Osos, California