Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 02-0916-2137-3205
Job No: 02-226SH
Client: PACIFIC SOILS
Project: CPT Site Investigation
Site: BORREGO WASH
Location: CPT-07
Engineer: T. MCCARTHY
CPT Date: 02/12/09
CPT Time: 13:49
CPT File: 226C07.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 8.53 (ft): 28.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-02	0.00	1000.0	0.08	10	342.4	0.0	342.4	0.0	50	95.0	1.0	-0.17	0.0	68.5
1.48	5.0E-02	0.00	1000.0	0.21	10	250.4	0.0	250.4	0.0	50	95.0	1.0	-0.25	0.0	50.1
2.46	5.0E-02	0.00	644.5	0.14	10	188.8	0.0	188.8	0.0	50	93.2	1.0	-0.18	0.0	37.8
3.44	5.0E-03	0.00	315.4	0.14	10	129.1	0.0	129.1	0.0	46	77.5	1.0	-0.12	0.0	32.3
4.43	5.0E-02	0.00	323.6	0.09	10	166.1	0.0	166.1	0.0	48	81.8	1.0	-0.09	0.0	32.5
5.41	5.0E-02	0.00	310.1	0.16	10	176.0	0.0	176.0	0.0	46	83.5	1.0	-0.13	0.0	34.5
6.40	5.0E-02	0.00	235.0	0.26	10	145.2	0.0	145.2	0.1	46	78.0	1.0	-0.15	0.0	28.4
7.30	5.0E-02	0.00	214.3	0.28	10	141.6	0.0	141.6	0.6	46	77.2	1.0	-0.14	0.0	27.7
8.20	5.0E-03	0.00	119.1	0.24	9	83.7	0.0	83.7	3.0	42	62.2	1.0	-0.08	0.0	20.5
9.19	5.0E-03	0.00	71.4	0.33	9	53.3	0.0	53.3	5.0	40	49.3	1.0	-0.06	0.0	13.1
10.17	5.0E-03	0.00	58.2	0.23	9	45.8	0.0	45.8	5.0	40	44.9	1.0	-0.02	0.0	11.2
11.15	5.0E-04	0.00	60.1	0.81	9	49.5	15.3	64.8	13.8	40	47.1	1.0	-0.12	2.8	18.9
12.14	5.0E-03	0.00	78.6	0.34	9	67.2	0.0	67.2	5.0	42	55.9	1.0	-0.07	0.0	16.4
13.21	5.0E-03	0.00	115.7	1.06	9	102.6	15.4	118.0	9.9	42	68.0	1.0	-0.21	2.2	27.3
14.27	5.0E-02	0.00	143.0	0.59	9	131.7	0.5	132.2	5.2	44	75.2	1.0	-0.17	0.1	25.8
15.26	5.0E-02	0.00	101.4	0.24	9	96.8	0.0	96.8	4.1	42	66.4	1.0	-0.07	0.0	19.0
16.24	5.0E-02	0.00	105.1	0.25	9	103.6	0.0	103.6	4.0	42	68.3	1.0	-0.08	0.0	20.3
17.22	5.0E-02	0.00	109.7	0.44	9	111.3	0.0	111.3	5.0	42	70.3	1.0	-0.13	0.0	21.8
18.21	5.0E-03	0.00	65.4	0.24	9	68.7	0.0	68.7	5.0	40	56.5	1.0	-0.03	0.0	16.8
19.19	5.0E-03	0.00	73.7	0.33	9	79.3	0.0	79.3	5.0	40	60.6	1.0	-0.07	0.0	19.4
20.18	5.0E-03	0.00	46.0	0.81	7	51.1	23.3	74.4	16.7	38	48.0	1.0	-0.10	3.0	15.5
21.16	5.0E-02	0.00	84.0	0.43	9	94.7	0.0	94.7	5.0	42	65.7	1.0	-0.10	0.0	18.5
22.15	5.0E-02	0.00	101.1	0.70	9	116.4	11.5	127.9	8.4	42	71.6	1.0	-0.16	1.4	24.1
23.13	5.0E-02	0.00	81.9	0.40	9	96.7	0.0	96.7	5.0	42	66.3	1.0	-0.09	0.0	18.9
24.11	5.0E-02	0.00	65.0	0.44	9	78.6	0.0	78.6	5.0	40	60.4	1.0	-0.08	0.0	15.4
25.10	5.0E-02	0.00	124.0	0.34	9	151.8	0.0	151.8	3.9	42	79.2	1.0	-0.11	0.0	29.7
26.08	5.0E-02	0.00	119.8	0.43	9	149.6	0.0	149.6	4.9	42	78.8	1.0	-0.13	0.0	29.3
27.07	5.0E-02	0.00	101.5	0.62	9	129.3	10.0	139.3	7.7	42	74.6	1.0	-0.15	1.2	26.5
28.05	5.0E-02	0.00	59.0	0.39	9	77.0	0.0	77.0	5.0	40	59.8	1.0	-0.06	0.0	15.1
29.04	5.0E-04	0.00	28.7	0.83	7	38.5	35.6	74.2	23.0	36	39.9	1.0	-0.06	5.4	18.0
30.02	5.0E-02	0.00	59.6	0.42	9	79.1	0.0	79.1	5.0	40	60.6	1.0	-0.07	0.0	15.5
31.00	5.0E-02	0.00	91.7	0.38	9	122.1	0.0	122.1	5.0	42	73.0	1.0	-0.10	0.0	23.9
31.99	5.0E-02	0.00	113.2	0.70	9	151.7	11.0	162.7	7.5	42	79.2	1.0	-0.17	1.3	31.0
32.97	5.0E-02	0.00	150.8	0.89	9	203.2	11.3	214.5	7.0	44	87.6	1.0	-0.22	1.4	41.1
33.96	5.0E-02	0.00	103.9	0.57	9	141.6	8.3	149.9	7.1	42	77.3	1.0	-0.14	1.0	28.7
34.94	5.0E-04	0.00	18.8	1.38	6	27.0	100.6	127.6	34.5	32	30.0	1.0	-0.05	8.6	17.4
35.92	5.0E-02	0.00	56.1	0.45	9	78.3	0.0	78.3	5.0	40	60.3	1.0	-0.07	0.0	15.3
36.91	5.0E-03	0.00	44.3	0.52	9	62.7	20.7	83.5	14.3	38	53.9	1.0	-0.06	2.8	18.2
37.89	5.0E-03	0.00	40.9	0.65	7	58.5	26.1	84.6	16.5	38	51.9	1.0	-0.07	3.4	17.7
38.88	5.0E-03	0.00	46.0	0.50	9	66.0	20.1	86.1	13.7	38	55.3	1.0	-0.06	2.8	18.9
39.86	5.0E-02	0.00	68.7	0.43	9	98.5	0.0	98.5	5.0	40	66.9	1.0	-0.08	0.0	19.3
40.85	5.0E-02	0.00	61.4	0.53	9	88.9	17.4	106.2	11.1	40	63.9	1.0	-0.09	2.0	19.4

Gregg In Situ, Inc.
Run No: 02-0916-2137-3205
CPT File: 226C07.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-02	0.00	78.9	0.26	9	114.5	0.0	114.5	5.0	42	71.2	1.0	-0.05	0.0	22.4
42.81	5.0E-02	0.00	58.2	0.67	9	85.6	22.9	108.6	12.9	40	62.8	1.0	-0.10	2.6	19.3
43.80	5.0E-02	0.00	74.9	0.62	9	110.4	17.6	128.0	10.2	40	70.1	1.0	-0.12	2.0	23.6
44.78	5.0E+00	0.00	111.8	0.34	9	165.1	0.0	165.1	4.5	42	81.7	1.0	-0.11	0.0	26.9
45.77	5.0E+00	0.00	103.6	0.15	9	154.3	0.0	154.3	3.0	42	79.7	1.0	-0.03	0.0	25.2
46.75	5.0E+00	0.00	101.4	0.17	9	152.1	0.0	152.1	3.3	42	79.3	1.0	-0.04	0.0	24.8
47.74	5.0E-02	0.00	99.2	0.46	9	149.9	0.0	149.9	5.0	42	78.9	1.0	-0.12	0.0	29.3
48.72	5.0E+00	0.00	169.1	0.40	9	255.8	0.0	255.8	2.7	44	94.2	1.0	-0.15	0.0	41.7
49.70	5.0E-02	0.00	103.7	0.68	9	158.7	13.8	172.5	8.0	42	80.5	1.0	-0.16	1.6	32.7
50.69	5.0E-02	0.00	103.0	0.72	9	158.6	15.6	174.2	8.4	42	80.5	1.0	-0.16	1.8	32.9

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 02-0916-2137-3260
Job No: 02-226SH
Client: PACIFIC SOILS
Project: CPT Site Investigation
Site: BORREGO WASH
Location: CPT-08
Engineer: T. MCCARTHY
CPT Date: 02/12/09
CPT Time: 14:44
CPT File: 226C08.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.75 (ft): 32.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	72.8	0.13	0.17	0.6	8	120.9	0.03	0.03	0.00	2.00	17.4	34.8	UnDef	0.33
1.48	68.9	0.23	0.33	1.8	8	120.9	0.09	0.09	0.00	2.00	16.5	33.0	UnDef	0.29
2.46	53.9	0.18	0.33	1.3	8	120.9	0.15	0.15	0.00	2.00	12.9	25.8	UnDef	0.18
3.44	54.5	0.19	0.36	1.5	8	120.9	0.21	0.21	0.00	2.00	13.1	26.1	UnDef	0.19
4.43	40.7	0.10	0.23	1.2	8	120.9	0.27	0.27	0.00	1.93	9.8	18.8	UnDef	0.12
5.41	56.6	0.13	0.23	0.9	8	120.9	0.33	0.33	0.00	1.75	13.6	23.7	UnDef	0.16
6.40	62.7	0.20	0.31	0.4	8	120.9	0.39	0.39	0.00	1.61	15.0	24.1	UnDef	0.17
7.30	66.7	0.21	0.31	0.9	8	120.9	0.44	0.44	0.00	1.51	16.0	24.0	UnDef	0.17
8.20	66.2	0.26	0.40	1.0	8	120.9	0.50	0.50	0.00	1.42	15.9	22.5	UnDef	0.15
9.19	124.3	0.94	0.76	0.8	9	124.1	0.56	0.56	0.00	1.34	23.8	31.9	UnDef	0.00
10.17	273.4	1.80	0.66	2.9	9	124.1	0.62	0.62	0.00	1.27	52.4	66.6	UnDef	0.00
11.15	368.3	4.28	1.16	1.9	9	124.1	0.68	0.68	0.00	1.21	70.5	85.7	UnDef	0.00
12.14	245.5	1.87	0.76	0.5	9	124.1	0.74	0.74	0.00	1.16	47.0	54.7	UnDef	0.00
13.21	156.6	0.74	0.47	1.1	9	124.1	0.81	0.81	0.00	1.11	30.0	33.4	UnDef	0.00
14.27	103.8	0.28	0.27	0.5	9	124.1	0.87	0.87	0.00	1.07	19.9	21.3	UnDef	0.20
15.26	81.2	0.20	0.25	-0.4	8	120.9	0.93	0.93	0.00	1.04	19.4	20.1	UnDef	0.13
16.24	92.0	0.59	0.64	-2.0	8	120.9	0.99	0.99	0.00	1.00	22.0	22.1	UnDef	0.17
17.22	115.5	0.74	0.64	-2.0	9	124.1	1.05	1.05	0.00	0.98	22.1	21.6	UnDef	0.23
18.21	44.4	0.45	1.01	-2.5	7	117.8	1.11	1.11	0.00	0.95	14.2	13.5	UnDef	0.11
19.19	44.1	0.46	1.05	-2.8	7	117.8	1.17	1.17	0.00	0.92	14.1	13.0	UnDef	0.12
20.18	65.9	0.71	1.08	-2.8	7	117.8	1.23	1.23	0.00	0.90	21.1	19.0	UnDef	0.14
21.16	169.5	0.55	0.32	-2.7	9	124.1	1.29	1.29	0.00	0.88	32.5	28.6	UnDef	0.37
22.15	202.7	0.82	0.41	-2.9	9	124.1	1.35	1.35	0.00	0.86	38.8	33.4	UnDef	0.00
23.13	230.1	2.34	1.02	-2.6	9	124.1	1.41	1.41	0.00	0.84	44.1	37.1	UnDef	0.00
24.11	203.2	1.91	0.94	-2.3	9	124.1	1.47	1.47	0.00	0.82	38.9	32.1	UnDef	0.00
25.10	214.7	2.55	1.19	-2.5	9	124.1	1.53	1.53	0.00	0.81	41.1	33.2	UnDef	0.00
26.08	210.9	0.97	0.46	-1.6	9	124.1	1.59	1.59	0.00	0.79	40.4	32.0	UnDef	0.00
27.07	316.3	2.15	0.68	-0.6	9	124.1	1.65	1.65	0.00	0.78	60.6	47.1	UnDef	0.00
28.05	577.1	2.60	0.45	2.7	10	127.3	1.72	1.72	0.00	0.76	92.1	70.3	UnDef	0.00
29.04	526.2	7.79	1.48	-3.2	9	124.1	1.78	1.78	0.00	0.75	100.8	75.6	UnDef	0.00
30.02	195.0	4.61	2.36	-8.2	7	117.8	1.84	1.84	0.00	0.74	62.3	45.9	UnDef	0.00
31.00	55.6	0.44	0.79	-8.0	8	120.9	1.90	1.90	0.00	0.73	13.3	9.7	UnDef	0.12
31.99	93.1	0.40	0.43	-8.2	8	120.9	1.96	1.96	0.00	0.72	22.3	15.9	UnDef	0.11
32.97	126.8	0.27	0.21	-10.1	9	124.1	2.02	1.98	0.03	0.71	24.3	17.2	UnDef	0.14
33.96	143.1	0.36	0.25	-10.4	9	124.1	2.08	2.02	0.06	0.70	27.4	19.3	UnDef	0.17
34.94	189.6	0.50	0.26	-6.0	9	124.1	2.14	2.05	0.09	0.70	36.3	25.4	UnDef	0.28
35.92	198.1	0.30	0.15	3.9	9	124.1	2.20	2.08	0.12	0.69	37.9	26.3	UnDef	0.31
36.91	329.8	0.72	0.22	4.5	10	127.3	2.26	2.11	0.15	0.69	52.6	36.3	UnDef	0.00
37.89	670.7	2.26	0.34	5.9	10	127.3	2.32	2.14	0.18	0.68	107.0	73.2	UnDef	0.00
38.88	738.8	3.24	0.44	-2.8	10	127.3	2.39	2.17	0.21	0.68	117.9	80.0	UnDef	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 02-0916-2137-3260
Job No: 02-226SH
Client: PACIFIC SOILS
Project: CPT Site Investigation
Site: BORREGO WASH
Location: CPT-08
Engineer: T. MCCARTHY
CPT Date: 02/12/09
CPT Time: 14:44
CPT File: 226C08.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.75 (ft): 32.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
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Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-03	0.00	1000.0	0.17	10	139.3	0.0	139.3	0.0	50	95.0	1.0	-0.24	0.0	34.8
1.48	5.0E-03	0.00	771.3	0.33	10	132.1	0.0	132.1	0.0	50	90.6	1.0	-0.27	0.0	33.0
2.46	5.0E-03	0.00	361.5	0.33	10	103.3	0.0	103.3	0.0	48	76.3	1.0	-0.20	0.0	25.8
3.44	5.0E-03	0.00	260.8	0.36	10	104.4	0.0	104.4	0.5	46	71.8	1.0	-0.18	0.0	26.1
4.43	5.0E-03	0.00	151.1	0.24	9	77.0	0.0	77.0	1.8	44	59.8	1.0	-0.10	0.0	18.8
5.41	5.0E-03	0.00	172.0	0.23	9	96.9	0.0	96.9	1.1	44	66.4	1.0	-0.11	0.0	23.7
6.40	5.0E-03	0.00	161.0	0.32	9	98.6	0.0	98.6	2.2	44	66.9	1.0	-0.13	0.0	24.1
7.30	5.0E-03	0.00	150.2	0.31	9	98.3	0.0	98.3	2.5	44	66.8	1.0	-0.12	0.0	24.0
8.20	5.0E-03	0.00	132.6	0.40	9	92.1	0.0	92.1	4.0	44	64.9	1.0	-0.13	0.0	22.5
9.19	5.0E-02	0.00	222.4	0.76	9	163.0	0.0	163.0	3.9	46	81.3	1.0	-0.24	0.0	31.9
10.17	5.0E-02	0.00	441.8	0.66	10	340.4	0.0	340.4	0.7	48	95.0	1.0	-0.29	0.0	66.6
11.15	5.0E-02	0.00	541.8	1.17	9	437.6	0.0	437.6	2.6	50	95.0	1.0	-0.37	0.0	85.7
12.14	5.0E-02	0.00	331.0	0.76	9	279.4	0.0	279.4	2.2	48	95.0	1.0	-0.27	0.0	54.7
13.21	5.0E-02	0.00	193.3	0.47	9	170.7	0.0	170.7	2.6	44	82.6	1.0	-0.18	0.0	33.4
14.27	5.0E-02	0.00	118.1	0.27	9	108.8	0.0	108.8	3.4	42	69.7	1.0	-0.09	0.0	21.3
15.26	5.0E-03	0.00	86.1	0.25	9	82.3	0.0	82.3	5.0	42	61.7	1.0	-0.06	0.0	20.1
16.24	5.0E-03	0.00	91.8	0.65	9	90.4	9.9	100.3	8.7	42	64.4	1.0	-0.14	1.4	23.6
17.22	5.0E-02	0.00	108.8	0.65	9	110.2	7.5	117.7	7.4	42	70.1	1.0	-0.16	0.9	22.5
18.21	5.0E-04	0.00	39.0	1.03	7	41.2	29.6	70.9	20.7	38	41.9	1.0	-0.10	4.8	18.2
19.19	5.0E-04	0.00	36.7	1.08	7	39.9	32.5	72.4	21.8	38	41.0	1.0	-0.10	5.1	18.1
20.18	5.0E-04	0.00	52.7	1.10	7	58.2	29.4	87.6	17.6	38	51.8	1.0	-0.14	5.0	24.0
21.16	5.0E-02	0.00	130.7	0.32	9	146.2	0.0	146.2	3.4	44	78.2	1.0	-0.11	0.0	28.6
22.15	5.0E-02	0.00	149.4	0.41	9	170.9	0.0	170.9	3.4	44	82.6	1.0	-0.15	0.0	33.4
23.13	5.0E-02	0.00	162.3	1.02	9	189.7	12.4	202.1	7.3	44	85.6	1.0	-0.24	1.5	38.6
24.11	5.0E-02	0.00	137.2	0.95	9	164.0	14.0	177.9	7.9	44	81.4	1.0	-0.21	1.7	33.8
25.10	5.0E-02	0.00	139.2	1.19	9	169.8	22.3	192.1	9.3	44	82.5	1.0	-0.24	2.6	35.8
26.08	5.0E-02	0.00	131.4	0.46	9	163.5	0.0	163.5	4.6	44	81.4	1.0	-0.14	0.0	32.0
27.07	5.0E-02	0.00	190.3	0.68	9	240.7	0.0	240.7	4.2	44	92.5	1.0	-0.21	0.0	47.1
28.05	5.0E+00	0.00	335.4	0.45	10	431.2	0.0	431.2	0.3	48	95.0	1.0	-0.23	0.0	70.3
29.04	5.0E-02	0.00	295.1	1.49	9	386.2	14.8	401.0	6.4	46	95.0	1.0	-0.34	1.8	77.4
30.02	5.0E-04	0.00	105.2	2.39	7	140.8	71.1	211.9	17.6	42	77.1	1.0	-0.30	12.2	58.1
31.00	5.0E-03	0.00	28.3	0.81	7	39.5	36.6	76.1	23.0	36	40.7	1.0	-0.05	4.2	13.8
31.99	5.0E-03	0.00	46.6	0.44	9	65.2	0.0	65.2	5.0	38	55.0	1.0	-0.05	0.0	15.9
32.97	5.0E-02	0.00	62.8	0.21	9	88.0	0.0	88.0	5.0	40	63.6	1.0	-0.02	0.0	17.2
33.96	5.0E-02	0.00	70.0	0.25	9	98.6	0.0	98.6	5.0	40	66.9	1.0	-0.04	0.0	19.3
34.94	5.0E-02	0.00	91.6	0.27	9	129.7	0.1	129.8	5.0	42	74.7	1.0	-0.07	0.0	25.4
35.92	5.0E-02	0.00	94.4	0.16	9	134.5	0.0	134.5	3.6	42	75.8	1.0	-0.03	0.0	26.3
36.91	5.0E+00	0.00	155.5	0.22	9	222.4	0.0	222.4	1.5	44	90.2	1.0	-0.10	0.0	36.3
37.89	5.0E+00	0.00	312.4	0.34	10	448.7	0.0	448.7	0.0	46	95.0	1.0	-0.19	0.0	73.2
38.88	5.0E+00	0.00	339.2	0.44	10	490.7	0.0	490.7	0.2	48	95.0	1.0	-0.22	0.0	80.0

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 02-0916-2137-3315
Job No: 02-226SH
Client: PACIFIC SOILS
Project: CPT Site Investigation
Site: BORREGO WASH
Location: CPT-09
Engineer: T. MCCARTHY
CPT Date: 02/12/09
CPT Time: 15:23
CPT File: 226C09.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.14 (ft): 30.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	52.0	0.31	0.60	2.9	8	120.9	0.03	0.03	0.00	2.00	12.4	24.9	UnDef	0.17
1.48	36.7	0.37	1.00	3.0	7	117.8	0.09	0.09	0.00	2.00	11.7	23.4	UnDef	0.11
2.46	14.5	0.20	1.39	1.6	6	114.6	0.15	0.15	0.00	2.00	5.5	11.1	1.14	0.08
3.44	10.5	0.13	1.27	1.3	5	114.6	0.20	0.20	0.00	2.00	5.0	10.1	0.83	0.08
4.43	9.6	0.17	1.74	1.3	5	114.6	0.26	0.26	0.00	1.97	4.6	9.1	0.75	0.09
5.41	9.7	0.12	1.26	1.2	5	114.6	0.31	0.31	0.00	1.78	4.6	8.3	0.75	0.09
6.40	9.2	0.11	1.22	1.0	5	114.6	0.37	0.37	0.00	1.64	4.4	7.2	0.71	0.09
7.30	10.7	0.11	1.04	0.9	6	114.6	0.42	0.42	0.00	1.54	4.1	6.3	0.83	0.09
8.20	11.6	0.21	1.81	0.9	5	114.6	0.47	0.47	0.00	1.45	5.6	8.1	0.89	0.12
9.19	12.0	0.21	1.75	0.8	5	114.6	0.53	0.53	0.00	1.37	5.7	7.9	0.91	0.13
10.17	9.8	0.23	2.36	0.6	5	114.6	0.59	0.59	0.00	1.30	4.7	6.1	0.73	0.10
11.15	9.1	0.20	2.20	0.5	5	114.6	0.64	0.64	0.00	1.25	4.4	5.4	0.68	0.10
12.14	9.5	0.22	2.29	0.5	5	114.6	0.70	0.70	0.00	1.20	4.5	5.4	0.70	0.10
13.21	11.3	0.34	2.97	0.4	4	114.6	0.76	0.76	0.00	1.15	7.2	8.3	0.85	0.10
14.27	17.7	0.58	3.28	0.4	5	114.6	0.82	0.82	0.00	1.10	8.5	9.4	1.35	0.16
15.26	51.1	1.32	2.59	0.5	6	114.6	0.88	0.88	0.00	1.07	19.6	20.9	4.02	0.23
16.24	58.7	1.59	2.72	0.9	6	114.6	0.94	0.94	0.00	1.03	22.5	23.2	4.62	0.27
17.22	70.3	1.77	2.52	1.2	6	114.6	0.99	0.99	0.00	1.00	26.9	27.1	5.55	0.28
18.21	92.8	2.11	2.27	1.2	7	117.8	1.05	1.05	0.00	0.98	29.6	28.9	UnDef	0.34
19.19	134.1	3.28	2.44	1.4	7	117.8	1.11	1.11	0.00	0.95	42.8	40.7	UnDef	0.00
20.18	162.6	3.62	2.23	1.5	7	117.8	1.16	1.16	0.00	0.93	51.9	48.1	UnDef	0.00
21.16	266.5	4.58	1.72	1.5	8	120.9	1.22	1.22	0.00	0.90	63.8	57.7	UnDef	0.00
22.15	296.4	2.87	0.97	0.4	9	124.1	1.28	1.28	0.00	0.88	56.8	50.1	UnDef	0.00
23.13	494.7	2.47	0.50	6.7	10	127.3	1.35	1.35	0.00	0.86	79.0	68.1	UnDef	0.00
24.11	283.9	1.53	0.54	10.6	10	127.3	1.41	1.41	0.00	0.84	45.3	38.2	UnDef	0.00
25.10	86.0	0.75	0.87	8.4	8	120.9	1.47	1.47	0.00	0.83	20.6	17.0	UnDef	0.16
26.08	74.4	0.62	0.83	7.2	8	120.9	1.53	1.53	0.00	0.81	17.8	14.4	UnDef	0.14
27.07	83.7	0.36	0.43	7.0	8	120.9	1.59	1.59	0.00	0.79	20.0	15.9	UnDef	0.11
28.05	117.5	0.48	0.41	6.5	9	124.1	1.65	1.65	0.00	0.78	22.5	17.5	UnDef	0.15
29.04	163.6	0.64	0.39	5.5	9	124.1	1.71	1.71	0.00	0.76	31.3	24.0	UnDef	0.25
30.02	166.2	0.62	0.37	5.1	9	124.1	1.77	1.77	0.00	0.75	31.8	23.9	UnDef	0.25
31.00	182.1	0.38	0.21	5.0	9	124.1	1.83	1.80	0.03	0.75	34.9	26.0	UnDef	0.30
31.99	210.3	0.38	0.18	4.3	10	127.3	1.89	1.83	0.06	0.74	33.6	24.8	UnDef	0.41
32.97	210.1	0.40	0.19	4.0	10	127.3	1.96	1.86	0.09	0.73	33.5	24.6	UnDef	0.40
33.96	258.0	1.76	0.68	4.0	9	124.1	2.02	1.89	0.12	0.73	49.4	35.9	UnDef	0.00
34.94	294.1	2.15	0.73	4.5	9	124.1	2.08	1.93	0.15	0.72	56.3	40.6	UnDef	0.00
35.92	267.5	0.77	0.29	4.3	10	127.3	2.14	1.96	0.18	0.72	42.7	30.5	UnDef	0.00
36.91	125.2	0.84	0.67	3.7	9	124.1	2.20	1.99	0.22	0.71	24.0	17.0	UnDef	0.20
37.89	76.2	0.33	0.44	4.4	8	120.9	2.26	2.02	0.25	0.70	18.2	12.8	UnDef	0.09
38.88	148.5	0.70	0.47	4.8	9	124.1	2.32	2.05	0.28	0.70	28.4	19.9	UnDef	0.18
39.86	203.9	0.68	0.33	4.6	9	124.1	2.38	2.08	0.31	0.69	39.0	27.1	UnDef	0.33
40.85	211.3	0.76	0.36	4.4	9	124.1	2.45	2.11	0.34	0.69	40.5	27.9	UnDef	0.35

Gregg In Situ, Inc.
Run No: 02-0916-2137-3315
CPT File: 226C09.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	180.2	0.48	0.27	4.2	9	124.1	2.51	2.14	0.37	0.68	34.5	23.6	UnDef	0.24
42.81	117.9	0.56	0.48	4.1	9	124.1	2.57	2.17	0.40	0.68	22.6	15.3	UnDef	0.12
43.80	79.3	0.68	0.86	4.2	8	120.9	2.63	2.20	0.43	0.67	19.0	12.8	UnDef	0.15
44.78	132.0	1.15	0.87	4.1	9	124.1	2.69	2.23	0.46	0.67	25.3	16.9	UnDef	0.23
45.77	371.7	1.63	0.44	4.0	10	127.3	2.75	2.26	0.49	0.67	59.3	39.5	UnDef	0.00
46.75	364.6	1.30	0.36	4.1	10	127.3	2.81	2.29	0.52	0.66	58.2	38.5	UnDef	0.00
47.74	449.0	2.51	0.56	4.4	10	127.3	2.88	2.32	0.55	0.66	71.7	47.0	UnDef	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 02-0916-2137-3315
Job No: 02-226SH
Client: PACIFIC SOILS
Project: CPT Site Investigation
Site: BORREGO WASH
Location: CPT-09
Engineer: T. MCCARTHY
CPT Date: 02/12/09
CPT Time: 15:23
CPT File: 226C09.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.14 (ft): 30.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-03	0.00	1000.0	0.60	10	99.6	0.0	99.6	0.0	50	95.0	1.0	-0.35	0.0	24.9
1.48	5.0E-04	0.00	414.0	1.00	9	70.3	0.0	70.3	2.7	48	72.7	1.0	-0.32	0.0	23.4
2.46	5.0E-05	0.00	98.2	1.40	9	27.7	7.9	35.6	13.3	42	38.8	10.0	-0.22	1.8	12.9
3.44	5.0E-06	0.00	51.0	1.30	7	20.1	12.4	32.6	19.3	UnDef	UnDef	10.0	UnDef	3.2	13.2
4.43	5.0E-06	0.00	36.2	1.78	7	18.4	25.9	44.4	26.9	UnDef	UnDef	6.0	UnDef	5.2	14.3
5.41	5.0E-06	0.00	29.8	1.30	7	16.9	22.6	39.5	26.4	UnDef	UnDef	6.0	UnDef	4.6	12.9
6.40	5.0E-06	0.00	23.8	1.27	7	14.8	28.5	43.3	29.7	UnDef	UnDef	6.0	UnDef	5.1	12.3
7.30	5.0E-05	0.00	24.4	1.09	7	16.2	25.0	41.2	27.7	34	30.0	6.0	-0.06	3.9	10.2
8.20	5.0E-06	0.00	23.5	1.89	6	16.5	59.4	75.9	34.3	UnDef	UnDef	6.0	UnDef	7.7	15.8
9.19	5.0E-06	0.00	21.5	1.83	6	16.1	64.2	80.3	35.4	UnDef	UnDef	6.0	UnDef	7.9	15.7
10.17	5.0E-06	0.00	15.6	2.52	6	12.5	49.8	62.3	45.7	UnDef	UnDef	6.0	UnDef	6.1	12.2
11.15	5.0E-06	0.00	13.2	2.37	6	11.1	44.5	55.6	48.4	UnDef	UnDef	6.0	UnDef	5.4	10.9
12.14	5.0E-06	0.00	12.5	2.47	6	11.1	44.3	55.4	50.1	UnDef	UnDef	6.0	UnDef	5.4	10.8
13.21	5.0E-07	0.00	13.9	3.18	4	12.7	50.9	63.6	51.7	UnDef	UnDef	6.0	UnDef	8.3	16.6
14.27	5.0E-06	0.00	20.5	3.44	6	19.1	76.5	95.6	45.0	UnDef	UnDef	6.0	UnDef	9.4	18.7
15.26	5.0E-05	0.00	57.2	2.64	7	53.4	63.1	116.4	25.3	40	49.3	10.0	-0.24	10.7	31.6
16.24	5.0E-05	0.00	61.8	2.76	7	59.4	67.2	126.6	24.9	40	52.3	10.0	-0.26	11.6	34.8
17.22	5.0E-05	0.00	69.9	2.55	7	69.1	60.7	129.9	22.5	40	56.7	10.0	-0.26	11.2	38.3
18.21	5.0E-04	0.00	87.5	2.30	7	88.7	52.6	141.3	18.9	42	63.8	1.0	-0.27	8.8	37.7
19.19	5.0E-04	0.00	120.2	2.46	7	124.8	56.5	181.3	16.7	42	73.6	1.0	-0.32	9.9	50.6
20.18	5.0E-04	0.00	138.6	2.24	7	147.4	50.4	197.9	14.5	44	78.4	1.0	-0.32	9.1	57.2
21.16	5.0E-03	0.00	216.9	1.73	9	235.8	29.3	265.1	9.1	46	91.9	1.0	-0.33	4.3	62.0
22.15	5.0E-02	0.00	229.9	0.97	9	256.0	0.1	256.1	5.0	46	94.2	1.0	-0.26	0.0	50.1
23.13	5.0E+00	0.00	366.7	0.50	10	417.4	0.0	417.4	0.3	48	95.0	1.0	-0.24	0.0	68.1
24.11	5.0E+00	0.00	200.6	0.54	9	234.1	0.0	234.1	2.9	46	91.7	1.0	-0.20	0.0	38.2
25.10	5.0E-03	0.00	57.5	0.88	9	69.4	25.0	94.4	14.9	40	56.8	1.0	-0.12	3.4	20.4
26.08	5.0E-03	0.00	47.6	0.85	7	58.9	26.7	85.6	16.7	38	52.1	1.0	-0.10	3.5	17.9
27.07	5.0E-03	0.00	51.7	0.44	9	65.0	0.0	65.0	5.0	38	54.9	1.0	-0.06	0.0	15.9
28.05	5.0E-02	0.00	70.2	0.41	9	89.5	0.0	89.5	5.0	40	64.1	1.0	-0.08	0.0	17.5
29.04	5.0E-02	0.00	94.7	0.40	9	122.5	0.0	122.5	5.0	42	73.1	1.0	-0.10	0.0	24.0
30.02	5.0E-02	0.00	92.9	0.38	9	122.2	0.0	122.2	5.0	42	73.0	1.0	-0.10	0.0	23.9
31.00	5.0E-02	0.00	100.1	0.21	9	132.8	0.0	132.8	3.8	42	75.4	1.0	-0.06	0.0	26.0
31.99	5.0E+00	0.00	113.8	0.18	9	152.0	0.0	152.0	2.8	42	79.3	1.0	-0.06	0.0	24.8
32.97	5.0E+00	0.00	111.7	0.19	9	150.6	0.0	150.6	2.9	42	79.0	1.0	-0.06	0.0	24.6
33.96	5.0E-02	0.00	135.1	0.69	9	183.4	6.3	189.7	6.2	44	84.7	1.0	-0.18	0.8	36.7
34.94	5.0E-02	0.00	151.7	0.74	9	207.4	4.9	212.4	5.9	44	88.2	1.0	-0.20	0.6	41.2
35.92	5.0E+00	0.00	135.7	0.29	9	187.2	0.0	187.2	2.9	44	85.2	1.0	-0.11	0.0	30.5
36.91	5.0E-02	0.00	61.9	0.68	9	86.9	21.7	108.6	12.5	40	63.3	1.0	-0.11	2.4	19.4
37.89	5.0E-03	0.00	36.7	0.45	7	52.5	0.0	52.5	5.0	38	48.8	1.0	-0.03	0.0	12.8
38.88	5.0E-02	0.00	71.4	0.48	9	101.6	0.0	101.6	5.0	40	67.7	1.0	-0.09	0.0	19.9
39.86	5.0E-02	0.00	97.0	0.34	9	138.4	0.0	138.4	5.0	42	76.6	1.0	-0.09	0.0	27.1
40.85	5.0E-02	0.00	99.1	0.36	9	142.4	0.0	142.4	5.0	42	77.4	1.0	-0.10	0.0	27.9

Gregg In Situ, Inc.
Run No: 02-0916-2137-3315
CPT File: 226C09.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-02	0.00	83.1	0.27	9	120.6	0.0	120.6	5.0	42	72.7	1.0	-0.06	0.0	23.6
42.81	5.0E-02	0.00	53.2	0.49	9	78.3	0.0	78.3	5.0	40	60.3	1.0	-0.07	0.0	15.3
43.80	5.0E-03	0.00	34.9	0.89	7	52.3	38.5	90.9	20.9	38	48.7	1.0	-0.08	4.6	17.4
44.78	5.0E-02	0.00	58.1	0.89	9	86.5	31.1	117.6	14.9	40	63.1	1.0	-0.13	3.4	20.3
45.77	5.0E+00	0.00	163.4	0.44	9	242.0	0.0	242.0	3.2	44	92.6	1.0	-0.16	0.0	39.5
46.75	5.0E+00	0.00	158.0	0.36	9	235.8	0.0	235.8	2.7	44	91.9	1.0	-0.14	0.0	38.5
47.74	5.0E+00	0.00	192.1	0.56	9	288.4	0.0	288.4	3.3	44	95.0	1.0	-0.20	0.0	47.0

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 02-0916-2137-3370
Job No: 02-226SH
Client: PACIFIC SOILS
Project: CPT Site Investigation
Site: BORREGO WASH
Location: CPT-10
Engineer: T. MCCARTHY
CPT Date: 02/13/09
CPT Time: 07:29
CPT File: 226C10.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.60 (ft): 31.5
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	80.5	0.20	0.24	14.2	8	120.9	0.03	0.03	0.00	2.00	19.3	38.6	UnDef	0.42
1.48	58.4	0.50	0.86	8.2	8	120.9	0.09	0.09	0.00	2.00	14.0	28.0	UnDef	0.21
2.46	54.5	0.30	0.55	5.9	8	120.9	0.15	0.15	0.00	2.00	13.1	26.1	UnDef	0.19
3.44	109.3	1.10	1.00	4.2	8	120.9	0.21	0.21	0.00	2.00	26.2	52.3	UnDef	0.00
4.43	89.8	0.34	0.38	2.5	8	120.9	0.27	0.27	0.00	1.93	21.5	41.5	UnDef	0.00
5.41	35.3	0.13	0.37	0.2	7	117.8	0.33	0.33	0.00	1.75	11.3	19.7	UnDef	0.10
6.40	44.3	0.16	0.37	1.2	8	120.9	0.39	0.39	0.00	1.61	10.6	17.1	UnDef	0.11
7.30	45.2	0.20	0.45	-0.3	8	120.9	0.44	0.44	0.00	1.51	10.8	16.3	UnDef	0.11
8.20	36.6	0.43	1.16	-0.7	7	117.8	0.49	0.49	0.00	1.42	11.7	16.6	UnDef	0.11
9.19	93.6	0.42	0.45	2.8	8	120.9	0.55	0.55	0.00	1.35	22.4	30.2	UnDef	0.25
10.17	65.7	0.29	0.43	0.5	8	120.9	0.61	0.61	0.00	1.28	15.7	20.1	UnDef	0.13
11.15	47.9	0.21	0.43	-0.9	8	120.9	0.67	0.67	0.00	1.22	11.5	14.0	UnDef	0.10
12.14	63.4	0.52	0.82	0.8	8	120.9	0.73	0.73	0.00	1.17	15.2	17.8	UnDef	0.14
13.21	33.0	0.62	1.87	1.7	6	114.6	0.79	0.79	0.00	1.12	12.6	14.2	2.58	0.13
14.27	33.8	0.58	1.72	-0.1	6	114.6	0.85	0.85	0.00	1.08	13.0	14.0	2.64	0.13
15.26	56.0	0.38	0.69	-0.8	8	120.9	0.91	0.91	0.00	1.05	13.4	14.0	UnDef	0.12
16.24	98.9	0.57	0.58	-2.1	8	120.9	0.97	0.97	0.00	1.01	23.7	24.0	UnDef	0.19
17.22	117.8	1.27	1.08	-0.6	8	120.9	1.03	1.03	0.00	0.98	28.2	27.8	UnDef	0.29
18.21	56.4	0.54	0.96	-1.9	7	117.8	1.09	1.09	0.00	0.96	18.0	17.2	UnDef	0.12
19.19	51.9	0.34	0.66	-3.1	8	120.9	1.15	1.15	0.00	0.93	12.4	11.6	UnDef	0.11
20.18	50.0	0.52	1.04	-2.3	7	117.8	1.21	1.21	0.00	0.91	16.0	14.5	UnDef	0.12
21.16	88.1	0.44	0.50	-3.1	8	120.9	1.27	1.27	0.00	0.89	21.1	18.7	UnDef	0.14
22.15	147.1	0.67	0.46	-1.3	9	124.1	1.33	1.33	0.00	0.87	28.2	24.5	UnDef	0.26
23.13	160.0	0.75	0.47	-1.3	9	124.1	1.39	1.39	0.00	0.85	30.6	26.0	UnDef	0.30
24.11	142.1	0.89	0.63	-1.2	9	124.1	1.45	1.45	0.00	0.83	27.2	22.6	UnDef	0.27
25.10	101.9	1.02	1.00	-2.5	8	120.9	1.51	1.51	0.00	0.81	24.4	19.9	UnDef	0.20
26.08	132.1	0.64	0.49	-0.7	9	124.1	1.57	1.57	0.00	0.80	25.3	20.2	UnDef	0.18
27.07	155.5	1.22	0.78	-1.4	9	124.1	1.63	1.63	0.00	0.78	29.8	23.3	UnDef	0.31
28.05	225.1	2.12	0.94	3.4	9	124.1	1.69	1.69	0.00	0.77	43.1	33.1	UnDef	0.00
29.04	292.2	2.63	0.90	3.5	9	124.1	1.75	1.75	0.00	0.76	56.0	42.3	UnDef	0.00
30.02	543.1	1.55	0.28	3.6	10	127.3	1.81	1.81	0.00	0.74	86.7	64.4	UnDef	0.00
31.00	575.7	2.89	0.50	-2.6	10	127.3	1.88	1.88	0.00	0.73	91.9	67.1	UnDef	0.00
31.99	491.5	3.20	0.65	5.1	10	127.3	1.94	1.92	0.02	0.72	78.4	56.5	UnDef	0.00
32.97	419.8	1.42	0.34	4.7	10	127.3	2.00	1.96	0.05	0.71	67.0	47.9	UnDef	0.00
33.96	272.7	0.89	0.33	-3.8	10	127.3	2.07	1.99	0.08	0.71	43.5	30.9	UnDef	0.00
34.94	327.1	1.61	0.49	-2.9	10	127.3	2.13	2.02	0.11	0.70	52.2	36.7	UnDef	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 02-0916-2137-3370
Job No: 02-226SH
Client: PACIFIC SOILS
Project: CPT Site Investigation
Site: BORREGO WASH
Location: CPT-10
Engineer: T. MCCARTHY
CPT Date: 02/13/09
CPT Time: 07:29
CPT File: 226C10.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.60 (ft): 31.5
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-03	0.01	1000.0	0.24	10	154.2	0.0	154.2	0.0	50	95.0	1.0	-0.27	0.0	38.6
1.48	5.0E-03	0.00	653.4	0.86	9	111.9	0.0	111.9	0.7	50	85.9	1.0	-0.35	0.0	28.0
2.46	5.0E-03	0.00	365.3	0.55	10	104.4	0.0	104.4	0.6	48	76.6	1.0	-0.25	0.0	26.1
3.44	5.0E-03	0.00	523.7	1.00	9	209.3	0.0	209.3	2.0	48	91.7	1.0	-0.34	0.0	52.3
4.43	5.0E-03	0.00	334.1	0.38	10	169.7	0.0	169.7	0.0	48	82.4	1.0	-0.21	0.0	41.5
5.41	5.0E-04	0.00	107.1	0.38	9	60.4	0.0	60.4	5.0	42	52.8	1.0	-0.11	0.0	19.7
6.40	5.0E-03	0.00	114.0	0.37	9	69.8	0.0	69.8	4.7	42	57.0	1.0	-0.11	0.0	17.1
7.30	5.0E-03	0.00	101.8	0.45	9	66.8	0.0	66.8	5.0	42	55.7	1.0	-0.12	0.0	16.3
8.20	5.0E-04	0.00	73.1	1.18	9	51.0	17.7	68.7	14.7	40	48.0	1.0	-0.17	3.2	19.8
9.19	5.0E-03	0.00	168.5	0.45	9	123.3	0.0	123.3	3.2	44	73.3	1.0	-0.17	0.0	30.2
10.17	5.0E-03	0.00	106.4	0.44	9	82.2	0.0	82.2	5.0	42	61.7	1.0	-0.12	0.0	20.1
11.15	5.0E-03	0.00	70.3	0.44	9	57.2	0.0	57.2	5.0	40	51.2	1.0	-0.09	0.0	14.0
12.14	5.0E-03	0.00	85.8	0.83	9	72.6	13.1	85.7	10.7	42	58.1	1.0	-0.16	1.9	19.6
13.21	5.0E-05	0.00	40.6	1.92	7	36.3	46.8	83.0	26.1	38	38.2	6.0	-0.16	7.7	21.9
14.27	5.0E-05	0.00	38.6	1.77	7	35.8	45.4	81.1	25.9	38	37.8	6.0	-0.15	7.5	21.5
15.26	5.0E-03	0.00	60.3	0.70	9	57.4	15.2	72.6	12.8	40	51.3	1.0	-0.11	2.1	16.2
16.24	5.0E-03	0.00	100.8	0.59	9	98.2	6.9	105.1	7.5	42	66.8	1.0	-0.14	1.0	25.1
17.22	5.0E-03	0.00	113.2	1.09	9	113.5	18.4	131.9	10.2	42	70.9	1.0	-0.21	2.7	30.4
18.21	5.0E-04	0.00	50.7	0.98	7	52.9	25.1	78.0	17.1	38	49.0	1.0	-0.12	4.4	21.6
19.19	5.0E-03	0.00	44.2	0.67	7	47.4	19.6	67.0	16.0	38	45.9	1.0	-0.08	2.6	14.2
20.18	5.0E-04	0.00	40.4	1.07	7	44.5	31.3	75.9	20.5	38	44.1	1.0	-0.11	5.1	19.6
21.16	5.0E-03	0.00	68.5	0.51	9	76.6	11.5	88.0	9.9	40	59.6	1.0	-0.09	1.7	20.4
22.15	5.0E-02	0.00	109.9	0.46	9	125.0	0.0	125.0	5.0	42	73.7	1.0	-0.13	0.0	24.5
23.13	5.0E-02	0.00	114.2	0.47	9	132.9	0.0	132.9	5.0	42	75.4	1.0	-0.13	0.0	26.0
24.11	5.0E-02	0.00	97.1	0.64	9	115.5	10.6	126.2	8.2	42	71.4	1.0	-0.14	1.3	23.9
25.10	5.0E-03	0.00	66.5	1.01	9	81.2	27.3	108.5	14.4	40	61.3	1.0	-0.15	3.7	23.6
26.08	5.0E-02	0.00	83.1	0.49	9	103.2	0.0	103.2	5.0	42	68.2	1.0	-0.11	0.0	20.2
27.07	5.0E-02	0.00	94.3	0.79	9	119.2	16.8	135.9	9.6	42	72.3	1.0	-0.16	1.9	25.3
28.05	5.0E-02	0.00	132.0	0.95	9	169.3	15.9	185.2	8.2	44	82.4	1.0	-0.21	1.9	35.0
29.04	5.0E-02	0.00	165.7	0.90	9	216.0	8.7	224.6	6.4	44	89.3	1.0	-0.23	1.0	43.3
30.02	5.0E+00	0.00	298.3	0.29	10	394.5	0.0	394.5	0.0	46	95.0	1.0	-0.18	0.0	64.4
31.00	5.0E+00	0.00	305.7	0.50	10	411.2	0.0	411.2	0.9	46	95.0	1.0	-0.23	0.0	67.1
31.99	5.0E+00	0.00	254.3	0.65	9	346.7	0.0	346.7	2.6	46	95.0	1.0	-0.23	0.0	56.5
32.97	5.0E+00	0.00	213.5	0.34	9	293.7	0.0	293.7	1.1	46	95.0	1.0	-0.16	0.0	47.9
33.96	5.0E+00	0.00	136.1	0.33	9	189.2	0.0	189.2	3.2	44	85.6	1.0	-0.12	0.0	30.9
34.94	5.0E+00	0.00	160.8	0.49	9	225.2	0.0	225.2	3.7	44	90.5	1.0	-0.17	0.0	36.7

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 02-0916-2137-3425
Job No: 02-226SH
Client: PACIFIC SOILS
Project: CPT Site Investigation
Site: BORREGO WASH
Location: CPT-11
Engineer: T. MCCARTHY
CPT Date: 02/13/09
CPT Time: 08:00
CPT File: 226C11.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.60 (ft): 31.5
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	131.4	0.44	0.33	2.5	9	124.1	0.03	0.03	0.00	2.00	25.2	50.3	UnDef	0.00
1.48	83.0	0.80	0.96	2.8	8	120.9	0.09	0.09	0.00	2.00	19.9	39.8	UnDef	0.45
2.46	108.0	0.45	0.42	3.5	9	124.1	0.15	0.15	0.00	2.00	20.7	41.4	UnDef	0.00
3.44	106.3	0.40	0.38	2.7	9	124.1	0.21	0.21	0.00	2.00	20.4	40.7	UnDef	0.00
4.43	93.3	0.33	0.36	0.6	9	124.1	0.27	0.27	0.00	1.91	17.9	34.2	UnDef	0.00
5.41	33.5	0.17	0.50	-0.4	7	117.8	0.33	0.33	0.00	1.73	10.7	18.5	UnDef	0.10
6.40	41.2	0.20	0.48	-0.9	7	117.8	0.39	0.39	0.00	1.60	13.1	21.0	UnDef	0.10
7.30	87.0	0.31	0.36	-0.9	8	120.9	0.44	0.44	0.00	1.50	20.8	31.2	UnDef	0.27
8.20	96.7	0.47	0.48	-1.0	8	120.9	0.50	0.50	0.00	1.42	23.1	32.8	UnDef	0.30
9.19	80.1	0.59	0.74	-1.0	8	120.9	0.56	0.56	0.00	1.34	19.2	25.7	UnDef	0.20
10.17	74.6	0.34	0.46	-1.3	8	120.9	0.62	0.62	0.00	1.27	17.8	22.7	UnDef	0.15
11.15	131.8	0.58	0.44	-0.7	9	124.1	0.68	0.68	0.00	1.21	25.2	30.6	UnDef	0.44
12.14	76.2	0.53	0.70	-1.7	8	120.9	0.74	0.74	0.00	1.16	18.3	21.2	UnDef	0.16
13.21	84.8	0.50	0.58	-1.4	8	120.9	0.80	0.80	0.00	1.12	20.3	22.7	UnDef	0.17
14.27	81.9	0.76	0.92	-1.0	8	120.9	0.87	0.87	0.00	1.07	19.6	21.1	UnDef	0.18
15.26	59.5	0.59	0.99	-2.0	7	117.8	0.93	0.93	0.00	1.04	19.0	19.7	UnDef	0.13
16.24	92.9	0.93	1.01	-2.5	8	120.9	0.99	0.99	0.00	1.01	22.2	22.4	UnDef	0.20
17.22	136.6	0.94	0.68	-3.4	9	124.1	1.05	1.05	0.00	0.98	26.2	25.6	UnDef	0.32
18.21	167.7	0.78	0.46	-2.9	9	124.1	1.11	1.11	0.00	0.95	32.1	30.5	UnDef	0.43
19.19	125.4	0.73	0.58	-3.2	9	124.1	1.17	1.17	0.00	0.93	24.0	22.2	UnDef	0.24
20.18	86.9	0.58	0.67	-3.1	8	120.9	1.23	1.23	0.00	0.90	20.8	18.8	UnDef	0.15
21.16	136.9	0.76	0.56	-2.9	9	124.1	1.29	1.29	0.00	0.88	26.2	23.1	UnDef	0.26
22.15	165.9	0.90	0.54	-2.7	9	124.1	1.35	1.35	0.00	0.86	31.8	27.4	UnDef	0.35
23.13	197.7	1.58	0.80	-1.6	9	124.1	1.41	1.41	0.00	0.84	37.9	31.9	UnDef	0.00
24.11	250.6	1.90	0.76	1.2	9	124.1	1.47	1.47	0.00	0.82	48.0	39.6	UnDef	0.00
25.10	222.7	1.43	0.64	-2.4	9	124.1	1.53	1.53	0.00	0.81	42.7	34.5	UnDef	0.00
26.08	218.9	2.01	0.92	-2.4	9	124.1	1.59	1.59	0.00	0.79	41.9	33.2	UnDef	0.00
27.07	200.9	1.10	0.55	-2.1	9	124.1	1.65	1.65	0.00	0.78	38.5	29.9	UnDef	0.44
28.05	211.2	1.32	0.63	-2.4	9	124.1	1.72	1.72	0.00	0.76	40.5	30.9	UnDef	0.00
29.04	354.2	5.08	1.43	-1.4	8	120.9	1.78	1.78	0.00	0.75	84.8	63.6	UnDef	0.00
30.02	540.3	2.23	0.41	-2.3	10	127.3	1.84	1.84	0.00	0.74	86.2	63.6	UnDef	0.00
31.00	560.2	7.19	1.28	-4.9	9	124.1	1.90	1.90	0.00	0.73	107.3	77.9	UnDef	0.00
31.99	260.1	4.29	1.65	0.4	8	120.9	1.96	1.94	0.02	0.72	62.3	44.7	UnDef	0.00
32.97	62.9	1.05	1.67	-0.3	7	117.8	2.02	1.97	0.05	0.71	20.1	14.3	UnDef	0.25
33.96	13.1	0.32	2.43	0.5	5	114.6	2.08	2.00	0.08	0.71	6.3	4.4	0.88	0.09
34.94	16.0	0.27	1.71	5.5	6	114.6	2.13	2.02	0.11	0.70	6.1	4.3	1.11	0.10
35.92	47.9	0.56	1.18	5.1	7	117.8	2.19	2.05	0.14	0.70	15.3	10.7	UnDef	0.18
36.91	62.0	1.08	1.74	1.3	7	117.8	2.25	2.08	0.17	0.69	19.8	13.7	UnDef	0.29
37.89	108.0	1.29	1.19	0.1	8	120.9	2.31	2.11	0.20	0.69	25.9	17.8	UnDef	0.23
38.88	101.8	0.61	0.60	-0.6	8	120.9	2.37	2.13	0.23	0.68	24.4	16.7	UnDef	0.15
39.86	60.6	0.68	1.12	-1.0	7	117.8	2.42	2.16	0.26	0.68	19.3	13.1	UnDef	0.17
40.85	94.7	0.69	0.73	-1.2	8	120.9	2.48	2.19	0.29	0.68	22.7	15.3	UnDef	0.15

Gregg In Situ, Inc.
Run No: 02-0916-2137-3425
CPT File: 226C11.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	68.8	0.39	0.56	5.1	8	120.9	2.54	2.22	0.32	0.67	16.5	11.1	UnDef	0.12
42.81	55.3	0.68	1.24	7.6	7	117.8	2.60	2.25	0.35	0.67	17.7	11.8	UnDef	0.20
43.80	103.9	1.29	1.24	8.2	8	120.9	2.66	2.28	0.38	0.66	24.9	16.5	UnDef	0.23
44.78	180.6	2.33	1.29	7.7	8	120.9	2.72	2.30	0.41	0.66	43.2	28.5	UnDef	0.45

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 02-0916-2137-3425
Job No: 02-226SH
Client: PACIFIC SOILS
Project: CPT Site Investigation
Site: BORREGO WASH
Location: CPT-11
Engineer: T. MCCARTHY
CPT Date: 02/13/09
CPT Time: 08:00
CPT File: 226C11.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.60 (ft): 31.5
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-02	0.00	1000.0	0.33	10	251.6	0.0	251.6	0.0	50	95.0	1.0	-0.29	0.0	50.3
1.48	5.0E-03	0.00	913.0	0.96	10	159.0	0.0	159.0	0.5	50	95.0	1.0	-0.39	0.0	39.8
2.46	5.0E-02	0.00	713.4	0.42	10	206.8	0.0	206.8	0.0	50	95.0	1.0	-0.29	0.0	41.4
3.44	5.0E-02	0.00	499.7	0.38	10	203.5	0.0	203.5	0.0	48	90.6	1.0	-0.25	0.0	40.7
4.43	5.0E-02	0.00	340.2	0.36	10	174.6	0.0	174.6	0.0	48	83.2	1.0	-0.21	0.0	34.2
5.41	5.0E-04	0.00	99.5	0.50	9	56.8	2.9	59.7	6.8	42	51.0	1.0	-0.13	0.6	19.1
6.40	5.0E-04	0.00	104.4	0.49	9	64.5	0.0	64.5	5.0	42	54.7	1.0	-0.13	0.0	21.0
7.30	5.0E-03	0.00	194.7	0.36	9	127.7	0.0	127.7	1.7	44	74.3	1.0	-0.16	0.0	31.2
8.20	5.0E-03	0.00	192.7	0.48	9	133.9	0.0	133.9	2.7	44	75.6	1.0	-0.18	0.0	32.8
9.19	5.0E-03	0.00	142.4	0.74	9	104.9	3.8	108.7	6.3	44	68.6	1.0	-0.19	0.6	26.2
10.17	5.0E-03	0.00	119.6	0.46	9	92.8	0.0	92.8	5.0	42	65.1	1.0	-0.14	0.0	22.7
11.15	5.0E-02	0.00	193.2	0.44	9	156.5	0.0	156.5	2.4	44	80.1	1.0	-0.18	0.0	30.6
12.14	5.0E-03	0.00	102.2	0.70	9	86.8	8.4	95.2	8.3	42	63.2	1.0	-0.16	1.2	22.5
13.21	5.0E-03	0.00	104.5	0.59	9	92.6	5.8	98.4	7.2	42	65.1	1.0	-0.14	0.9	23.5
14.27	5.0E-03	0.00	93.4	0.93	9	86.1	15.5	101.6	10.7	42	63.0	1.0	-0.17	2.2	23.3
15.26	5.0E-04	0.00	63.2	1.00	9	60.5	21.7	82.2	14.9	40	52.9	1.0	-0.14	3.9	23.6
16.24	5.0E-03	0.00	93.2	1.02	9	91.5	18.6	110.2	11.3	42	64.7	1.0	-0.18	2.7	25.0
17.22	5.0E-02	0.00	129.7	0.69	9	130.7	5.6	136.3	6.5	44	75.0	1.0	-0.18	0.7	26.3
18.21	5.0E-02	0.00	150.6	0.47	9	156.0	0.0	156.0	3.9	44	80.0	1.0	-0.16	0.0	30.5
19.19	5.0E-02	0.00	106.4	0.58	9	113.5	6.6	120.1	7.0	42	70.9	1.0	-0.15	0.8	23.0
20.18	5.0E-03	0.00	69.8	0.68	9	76.8	15.5	92.2	11.3	40	59.7	1.0	-0.12	2.2	21.0
21.16	5.0E-02	0.00	105.3	0.56	9	118.0	6.4	124.5	6.9	42	72.0	1.0	-0.14	0.8	23.9
22.15	5.0E-02	0.00	121.9	0.55	9	139.7	3.1	142.8	5.8	42	76.9	1.0	-0.15	0.4	27.7
23.13	5.0E-02	0.00	139.2	0.80	9	162.9	8.6	171.5	6.9	44	81.3	1.0	-0.20	1.0	32.9
24.11	5.0E-02	0.00	169.3	0.76	9	202.2	2.1	204.3	5.4	44	87.5	1.0	-0.21	0.3	39.8
25.10	5.0E-02	0.00	144.3	0.65	9	176.1	2.4	178.5	5.5	44	83.5	1.0	-0.18	0.3	34.8
26.08	5.0E-02	0.00	136.4	0.92	9	169.7	13.8	183.6	7.8	44	82.4	1.0	-0.21	1.6	34.9
27.07	5.0E-02	0.00	120.4	0.55	9	152.8	4.0	156.8	5.9	42	79.4	1.0	-0.15	0.5	30.4
28.05	5.0E-02	0.00	122.1	0.63	9	157.8	6.5	164.3	6.5	42	80.4	1.0	-0.16	0.8	31.7
29.04	5.0E-03	0.00	198.4	1.44	9	260.1	25.4	285.5	8.3	46	94.7	1.0	-0.29	3.8	67.4
30.02	5.0E+00	0.00	293.1	0.41	10	390.1	0.0	390.1	0.5	46	95.0	1.0	-0.21	0.0	63.6
31.00	5.0E-02	0.00	294.0	1.29	9	397.8	5.1	403.0	5.5	46	95.0	1.0	-0.32	0.6	78.5
31.99	5.0E-03	0.00	132.8	1.66	9	182.5	43.5	226.0	12.2	44	84.5	1.0	-0.27	6.1	50.8
32.97	5.0E-04	0.00	30.9	1.73	7	43.8	77.2	121.1	28.9	36	43.6	1.0	-0.12	9.5	23.8
33.96	5.0E-06	-0.01	5.5	2.88	4	9.1	36.2	45.3	73.4	UnDef	UnDef	1.5	UnDef	4.4	8.9
34.94	5.0E-05	0.00	6.8	1.98	4	11.0	44.0	55.0	61.2	30	30.0	3.0	0.03	4.3	8.6
35.92	5.0E-04	0.00	22.3	1.24	7	32.7	69.5	102.2	30.5	34	35.2	1.0	-0.06	7.9	18.6
36.91	5.0E-04	0.00	28.8	1.80	7	42.1	89.1	131.2	30.4	36	42.5	1.0	-0.12	10.1	23.9
37.89	5.0E-03	0.00	50.2	1.22	7	72.8	43.3	116.1	19.0	38	58.2	1.0	-0.14	5.4	23.2
38.88	5.0E-03	0.00	46.6	0.62	9	68.2	24.2	92.4	14.8	38	56.3	1.0	-0.08	3.3	19.9
39.86	5.0E-04	-0.01	26.9	1.17	7	40.3	56.9	97.2	26.9	36	41.2	1.0	-0.08	7.6	20.7
40.85	5.0E-03	0.00	42.1	0.75	7	62.6	30.4	93.1	17.2	38	53.9	1.0	-0.08	3.9	19.3

Gregg In Situ, Inc.
Run No: 02-0916-2137-3425
CPT File: 226C11.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-03	0.00	29.8	0.59	7	45.2	29.8	75.0	19.9	36	44.5	1.0	-0.03	3.7	14.7
42.81	5.0E-04	0.00	23.5	1.30	7	36.1	73.4	109.5	30.1	34	38.1	1.0	-0.07	8.5	20.3
43.80	5.0E-03	0.00	44.5	1.28	7	67.4	49.3	116.7	20.8	38	56.0	1.0	-0.13	5.9	22.4
44.78	5.0E-03	0.00	77.2	1.31	7	116.4	42.1	158.6	15.0	40	71.6	1.0	-0.19	5.7	34.2

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 02-0916-2137-3479
Job No: 02-226SH
Client: PACIFIC SOILS
Project: CPT Site Investigation
Site: BORREGO WASH
Location: CPT-12
Engineer: T. MCCARTHY
CPT Date: 02/13/09
CPT Time: 08:51
CPT File: 226C12.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.45 (ft): 31.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	81.8	0.28	0.34	2.7	8	120.9	0.03	0.03	0.00	2.00	19.6	39.2	UnDef	0.44
1.48	146.6	0.44	0.30	3.8	9	124.1	0.09	0.09	0.00	2.00	28.1	56.2	UnDef	0.00
2.46	107.8	0.41	0.38	4.3	9	124.1	0.15	0.15	0.00	2.00	20.6	41.3	UnDef	0.00
3.44	93.9	0.35	0.37	4.1	9	124.1	0.21	0.21	0.00	2.00	18.0	36.0	UnDef	0.00
4.43	98.5	0.42	0.43	3.7	9	124.1	0.27	0.27	0.00	1.91	18.9	36.1	UnDef	0.00
5.41	122.2	1.49	1.22	1.8	8	120.9	0.33	0.33	0.00	1.73	29.2	50.6	UnDef	0.00
6.40	115.0	0.73	0.64	4.3	9	124.1	0.39	0.39	0.00	1.59	22.0	35.1	UnDef	0.00
7.30	96.6	0.53	0.55	2.6	8	120.9	0.45	0.45	0.00	1.49	23.1	34.5	UnDef	0.34
8.20	97.2	0.31	0.31	0.9	9	124.1	0.50	0.50	0.00	1.41	18.6	26.2	UnDef	0.30
9.19	132.8	0.67	0.50	-0.3	9	124.1	0.57	0.57	0.00	1.33	25.4	33.8	UnDef	0.00
10.17	122.5	0.81	0.66	0.3	9	124.1	0.63	0.63	0.00	1.26	23.5	29.6	UnDef	0.40
11.15	176.8	0.79	0.45	1.2	9	124.1	0.69	0.69	0.00	1.21	33.9	40.8	UnDef	0.00
12.14	288.7	1.75	0.61	2.4	9	124.1	0.75	0.75	0.00	1.16	55.3	63.9	UnDef	0.00
13.21	329.4	2.57	0.78	4.7	9	124.1	0.82	0.82	0.00	1.11	63.1	69.9	UnDef	0.00
14.27	428.8	2.90	0.68	6.3	10	127.3	0.88	0.88	0.00	1.06	68.4	72.9	UnDef	0.00
15.26	375.1	3.21	0.85	6.7	9	124.1	0.94	0.94	0.00	1.03	71.8	74.0	UnDef	0.00
16.24	303.6	2.16	0.71	6.8	9	124.1	1.01	1.01	0.00	1.00	58.1	58.0	UnDef	0.00
17.22	173.8	1.26	0.72	7.3	9	124.1	1.07	1.07	0.00	0.97	33.3	32.3	UnDef	0.00
18.21	140.1	0.78	0.56	6.3	9	124.1	1.13	1.13	0.00	0.94	26.8	25.3	UnDef	0.29
19.19	167.1	1.25	0.75	5.5	9	124.1	1.19	1.19	0.00	0.92	32.0	29.4	UnDef	0.43
20.18	169.3	0.98	0.58	5.1	9	124.1	1.25	1.25	0.00	0.89	32.4	29.0	UnDef	0.39
21.16	238.8	2.96	1.24	4.8	9	124.1	1.31	1.31	0.00	0.87	45.7	40.0	UnDef	0.00
22.15	116.0	0.90	0.78	4.1	8	120.9	1.37	1.37	0.00	0.85	27.8	23.7	UnDef	0.22
23.13	102.8	0.71	0.69	3.8	8	120.9	1.43	1.43	0.00	0.84	24.6	20.6	UnDef	0.18
24.11	186.2	0.79	0.42	3.4	9	124.1	1.49	1.49	0.00	0.82	35.7	29.2	UnDef	0.39
25.10	284.5	1.67	0.59	2.8	9	124.1	1.55	1.55	0.00	0.80	54.5	43.8	UnDef	0.00
26.08	278.6	2.32	0.83	3.1	9	124.1	1.61	1.61	0.00	0.79	53.4	42.0	UnDef	0.00
27.07	279.6	1.47	0.53	3.6	10	127.3	1.67	1.67	0.00	0.77	44.6	34.5	UnDef	0.00
28.05	157.2	0.71	0.45	2.7	9	124.1	1.74	1.74	0.00	0.76	30.1	22.8	UnDef	0.23
29.04	25.0	0.36	1.44	1.9	6	114.6	1.80	1.80	0.00	0.75	9.6	7.2	1.86	0.15
30.02	15.5	0.23	1.48	2.3	6	114.6	1.85	1.85	0.00	0.73	6.0	4.4	1.09	0.10
31.00	14.7	0.27	1.84	3.5	5	114.6	1.91	1.91	0.00	0.72	7.0	5.1	1.02	0.09
31.99	28.0	0.42	1.51	5.7	6	114.6	1.96	1.93	0.03	0.72	10.7	7.7	2.08	0.17
32.97	33.7	0.36	1.06	5.7	7	117.8	2.02	1.96	0.06	0.71	10.8	7.7	UnDef	0.23
33.96	79.3	0.64	0.80	6.7	8	120.9	2.08	1.99	0.09	0.71	19.0	13.5	UnDef	0.14
34.94	161.7	1.04	0.64	4.7	9	124.1	2.14	2.02	0.12	0.70	31.0	21.8	UnDef	0.28
35.92	198.7	1.00	0.50	4.2	9	124.1	2.20	2.05	0.15	0.70	38.1	26.6	UnDef	0.36
36.91	150.7	0.71	0.47	4.9	9	124.1	2.26	2.08	0.18	0.69	28.9	20.0	UnDef	0.18
37.89	56.0	0.67	1.21	6.0	7	117.8	2.32	2.11	0.22	0.69	17.9	12.3	UnDef	0.18
38.88	24.5	0.55	2.24	5.6	6	114.6	2.38	2.13	0.25	0.68	9.4	6.4	1.77	0.13
39.86	17.6	0.23	1.30	6.2	6	114.6	2.44	2.16	0.28	0.68	6.8	4.6	1.22	0.10
40.85	15.8	0.17	1.06	6.5	6	114.6	2.49	2.18	0.31	0.68	6.0	4.1	1.06	0.09

Gregg In Situ, Inc.
Run No: 02-0916-2137-3479
CPT File: 226C12.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	27.7	0.46	1.66	9.3	6	114.6	2.55	2.21	0.34	0.67	10.6	7.1	2.01	0.15
42.81	40.3	0.48	1.18	9.8	7	117.8	2.61	2.24	0.37	0.67	12.9	8.6	UnDef	0.29
43.80	15.5	0.21	1.34	10.2	6	114.6	2.66	2.26	0.40	0.66	5.9	3.9	1.03	0.09
44.78	24.5	0.45	1.85	12.8	6	114.6	2.72	2.29	0.43	0.66	9.4	6.2	1.74	0.13
45.77	77.8	0.60	0.77	13.2	8	120.9	2.78	2.32	0.46	0.66	18.6	12.2	UnDef	0.14
46.75	186.9	0.83	0.45	11.9	9	124.1	2.84	2.35	0.49	0.65	35.8	23.4	UnDef	0.24
47.74	166.2	1.24	0.75	11.0	9	124.1	2.90	2.38	0.52	0.65	31.8	20.7	UnDef	0.29
48.72	113.8	1.28	1.12	10.5	8	120.9	2.96	2.41	0.55	0.64	27.3	17.6	UnDef	0.23
49.70	44.2	1.20	2.72	10.4	6	114.6	3.02	2.43	0.58	0.64	16.9	10.9	3.29	0.33
50.69	61.0	2.26	3.71	10.1	5	114.6	3.07	2.46	0.61	0.64	29.2	18.6	4.63	0.00
51.67	58.9	1.82	3.08	10.7	6	114.6	3.13	2.48	0.65	0.63	22.6	14.3	4.46	0.00
52.66	94.2	1.22	1.30	10.2	8	120.9	3.19	2.51	0.68	0.63	22.6	14.2	UnDef	0.23
53.64	112.9	1.29	1.14	9.6	8	120.9	3.25	2.54	0.71	0.63	27.0	17.0	UnDef	0.23
54.63	116.1	1.67	1.43	9.2	8	120.9	3.31	2.57	0.74	0.62	27.8	17.3	UnDef	0.29
55.61	122.3	1.82	1.49	7.7	8	120.9	3.37	2.60	0.77	0.62	29.3	18.2	UnDef	0.32
56.59	164.4	2.45	1.49	7.5	8	120.9	3.43	2.63	0.80	0.62	39.4	24.3	UnDef	0.43
57.58	303.9	6.28	2.07	7.9	8	120.9	3.49	2.66	0.83	0.61	72.8	44.7	UnDef	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 02-0916-2137-3479
Job No: 02-226SH
Client: PACIFIC SOILS
Project: CPT Site Investigation
Site: BORREGO WASH
Location: CPT-12
Engineer: T. MCCARTHY
CPT Date: 02/13/09
CPT Time: 08:51
CPT File: 226C12.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 9.45 (ft): 31.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-03	0.00	1000.0	0.34	10	156.7	0.0	156.7	0.0	50	95.0	1.0	-0.30	0.0	39.2
1.48	5.0E-02	0.00	1000.0	0.30	10	280.8	0.0	280.8	0.0	50	95.0	1.0	-0.29	0.0	56.2
2.46	5.0E-02	0.00	712.1	0.38	10	206.5	0.0	206.5	0.0	50	95.0	1.0	-0.28	0.0	41.3
3.44	5.0E-02	0.00	441.4	0.37	10	179.8	0.0	179.8	0.0	48	87.1	1.0	-0.23	0.0	36.0
4.43	5.0E-02	0.00	359.4	0.43	10	184.4	0.0	184.4	0.0	48	84.8	1.0	-0.23	0.0	36.1
5.41	5.0E-03	0.00	365.2	1.22	9	207.0	0.0	207.0	4.2	48	88.1	1.0	-0.33	0.0	50.6
6.40	5.0E-02	0.00	291.0	0.64	9	179.4	0.0	179.4	2.0	46	84.0	1.0	-0.24	0.0	35.1
7.30	5.0E-03	0.00	214.0	0.55	9	141.0	0.0	141.0	2.7	46	77.1	1.0	-0.20	0.0	34.5
8.20	5.0E-02	0.00	191.6	0.32	9	133.9	0.0	133.9	1.4	44	75.6	1.0	-0.15	0.0	26.2
9.19	5.0E-02	0.00	233.8	0.51	9	172.8	0.0	172.8	2.0	46	83.0	1.0	-0.20	0.0	33.8
10.17	5.0E-02	0.00	194.4	0.67	9	151.4	0.0	151.4	4.0	44	79.2	1.0	-0.21	0.0	29.6
11.15	5.0E-02	0.00	256.1	0.45	9	208.6	0.0	208.6	1.2	46	88.4	1.0	-0.20	0.0	40.8
12.14	5.0E-02	0.00	384.5	0.61	10	326.4	0.0	326.4	0.8	48	95.0	1.0	-0.26	0.0	63.9
13.21	5.0E-02	0.00	403.2	0.78	9	357.1	0.0	357.1	1.6	48	95.0	1.0	-0.29	0.0	69.9
14.27	5.0E+00	0.00	485.1	0.68	10	446.8	0.0	446.8	0.5	48	95.0	1.0	-0.30	0.0	72.9
15.26	5.0E-02	0.00	396.4	0.86	9	377.8	0.0	377.8	2.1	48	95.0	1.0	-0.30	0.0	74.0
16.24	5.0E-02	0.00	301.0	0.71	9	296.3	0.0	296.3	2.3	46	95.0	1.0	-0.26	0.0	58.0
17.22	5.0E-02	0.00	162.1	0.73	9	164.8	1.8	166.5	5.4	44	81.6	1.0	-0.20	0.2	32.5
18.21	5.0E-02	0.00	123.3	0.56	9	129.2	3.0	132.1	5.8	42	74.6	1.0	-0.16	0.4	25.6
19.19	5.0E-02	0.00	139.6	0.75	9	150.0	6.2	156.2	6.5	44	78.9	1.0	-0.19	0.7	30.1
20.18	5.0E-02	0.00	134.5	0.58	9	148.3	1.8	150.1	5.5	44	78.6	1.0	-0.17	0.2	29.2
21.16	5.0E-02	0.00	181.2	1.25	9	204.1	17.0	221.2	7.9	44	87.7	1.0	-0.27	2.0	42.0
22.15	5.0E-03	0.00	83.7	0.79	9	97.0	17.0	114.0	10.6	42	66.4	1.0	-0.15	2.4	26.2
23.13	5.0E-03	0.00	70.9	0.70	9	84.1	17.2	101.3	11.4	40	62.3	1.0	-0.12	2.4	23.0
24.11	5.0E-02	0.00	123.9	0.43	9	149.2	0.0	149.2	4.7	42	78.7	1.0	-0.13	0.0	29.2
25.10	5.0E-02	0.00	182.4	0.59	9	223.5	0.0	223.5	3.8	44	90.3	1.0	-0.19	0.0	43.8
26.08	5.0E-02	0.00	171.7	0.84	9	214.7	4.7	219.4	5.8	44	89.2	1.0	-0.22	0.6	42.6
27.07	5.0E+00	0.00	166.0	0.53	9	211.5	0.0	211.5	3.8	44	88.7	1.0	-0.18	0.0	34.5
28.05	5.0E-02	0.00	89.5	0.46	9	116.7	0.0	116.7	5.0	42	71.7	1.0	-0.11	0.0	22.8
29.04	5.0E-05	0.00	12.9	1.55	6	18.3	73.1	91.4	43.1	30	30.0	6.0	-0.02	7.2	14.3
30.02	5.0E-05	0.01	7.4	1.69	4	11.2	44.7	55.9	56.9	30	30.0	3.0	0.03	4.4	8.7
31.00	5.0E-06	0.01	6.7	2.11	4	10.4	41.5	51.9	62.8	UnDef	UnDef	3.0	UnDef	5.1	10.2
31.99	5.0E-05	0.01	13.4	1.62	6	19.7	78.7	98.4	42.8	32	30.0	6.0	-0.03	7.7	15.4
32.97	5.0E-04	0.00	16.2	1.12	6	23.6	94.3	117.8	35.1	32	30.0	1.0	-0.02	7.7	15.4
33.96	5.0E-03	0.00	38.8	0.82	7	55.0	32.5	87.5	18.9	38	50.2	1.0	-0.08	4.1	17.5
34.94	5.0E-02	0.00	79.1	0.65	9	111.4	17.0	128.4	10.0	42	70.4	1.0	-0.13	2.0	23.8
35.92	5.0E-02	0.00	96.0	0.51	9	135.9	8.2	144.1	7.1	42	76.1	1.0	-0.12	1.0	27.6
36.91	5.0E-02	0.00	71.4	0.48	9	102.3	0.0	102.3	5.0	40	67.9	1.0	-0.09	0.0	20.0
37.89	5.0E-04	0.00	25.5	1.26	7	37.7	63.5	101.3	28.5	34	39.3	1.0	-0.08	7.9	20.3
38.88	5.0E-05	0.00	10.4	2.49	4	16.4	65.6	82.0	54.4	30	30.0	3.0	-0.03	6.4	12.8
39.86	5.0E-05	-0.01	7.0	1.51	4	11.7	47.0	58.7	56.6	30	30.0	3.0	0.04	4.6	9.2
40.85	5.0E-05	-0.01	6.1	1.26	4	10.5	41.8	52.3	58.0	30	30.0	1.5	0.06	4.1	8.2

Gregg In Situ, Inc.
Run No: 02-0916-2137-3479
CPT File: 226C12.COR

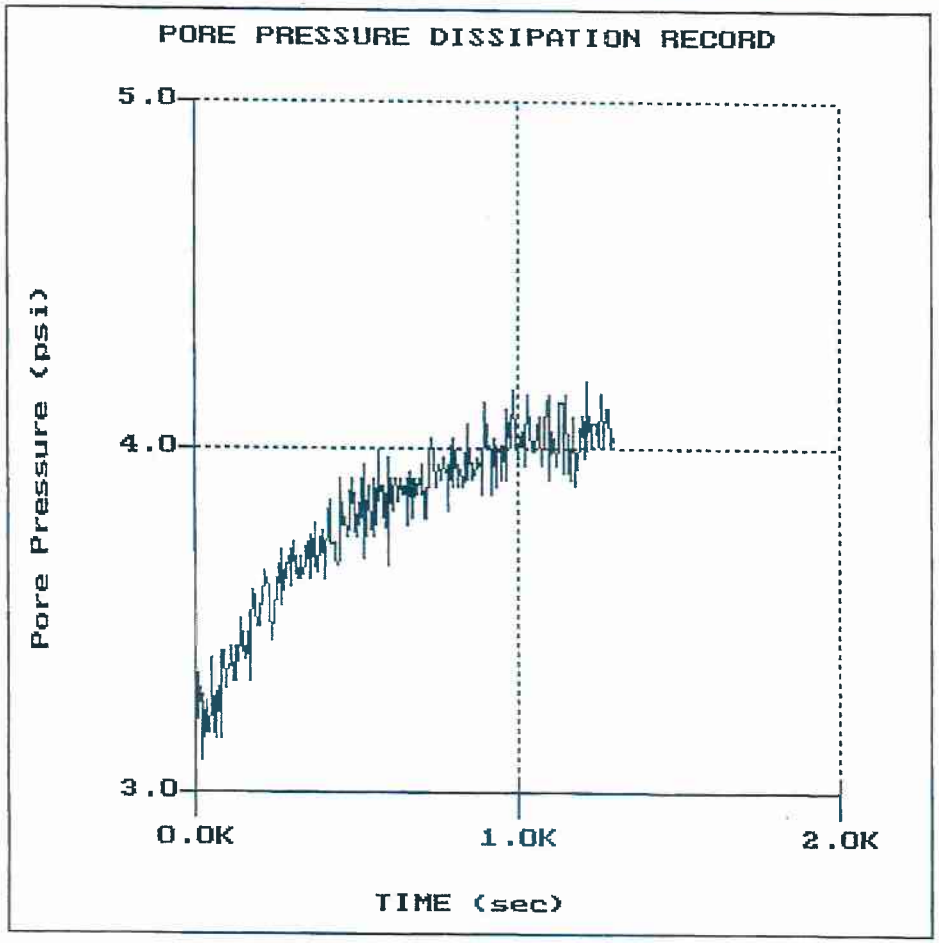
Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-05	0.00	11.4	1.83	6	18.2	72.9	91.1	47.9	30	30.0	3.0	-0.02	7.1	14.3
42.81	5.0E-04	0.00	16.8	1.26	6	26.3	105.4	131.7	35.6	32	30.0	1.0	-0.04	8.6	17.2
43.80	5.0E-05	-0.01	5.7	1.61	4	10.1	40.4	50.4	63.2	30	30.0	1.5	0.06	3.9	7.9
44.78	5.0E-05	0.00	9.5	2.08	6	15.9	63.4	79.3	53.7	30	30.0	3.0	-0.01	6.2	12.4
45.77	5.0E-03	0.00	32.4	0.80	7	50.0	37.4	87.4	21.0	36	47.4	1.0	-0.06	4.5	16.7
46.75	5.0E-02	0.00	78.4	0.45	9	119.4	0.0	119.4	5.0	42	72.4	1.0	-0.10	0.0	23.4
47.74	5.0E-02	0.00	68.7	0.76	9	105.5	24.9	130.4	12.1	40	68.8	1.0	-0.13	2.8	23.5
48.72	5.0E-03	0.00	46.1	1.15	7	71.8	45.4	117.2	19.5	38	57.8	1.0	-0.13	5.6	23.2
49.70	5.0E-05	-0.01	16.9	2.92	6	27.7	110.9	138.7	46.2	32	30.5	6.0	-0.11	10.9	21.7
50.69	5.0E-06	-0.01	23.5	3.91	6	38.0	152.2	190.2	44.4	UnDef	UnDef	6.0	UnDef	18.6	37.2
51.67	5.0E-05	-0.01	22.4	3.26	6	36.6	146.2	182.8	42.5	34	38.4	6.0	-0.16	14.3	28.6
52.66	5.0E-03	0.00	36.2	1.34	7	58.2	59.7	117.8	24.0	38	51.8	1.0	-0.12	6.6	20.8
53.64	5.0E-03	0.00	43.2	1.18	7	69.3	48.9	118.2	20.5	38	56.8	1.0	-0.12	5.9	22.9
54.63	5.0E-03	0.00	43.9	1.48	7	70.9	61.2	132.1	22.4	38	57.4	1.0	-0.14	7.1	24.4
55.61	5.0E-03	0.00	45.8	1.53	7	74.2	63.0	137.3	22.2	38	58.7	1.0	-0.15	7.3	25.5
56.59	5.0E-03	0.00	61.3	1.52	7	99.3	57.0	156.3	18.7	40	67.1	1.0	-0.18	7.2	31.5
57.58	5.0E-03	0.00	113.1	2.09	7	182.5	71.9	254.4	15.6	42	84.5	1.0	-0.28	9.6	54.2

3.3 PORE PRESSURE DISSIPATION PLOTS

PACIFIC SOILS

Site: BORREGO WASH
Location: CPT-02

Engineer: T. MCCARTHY
Date:09:12:02 08:33

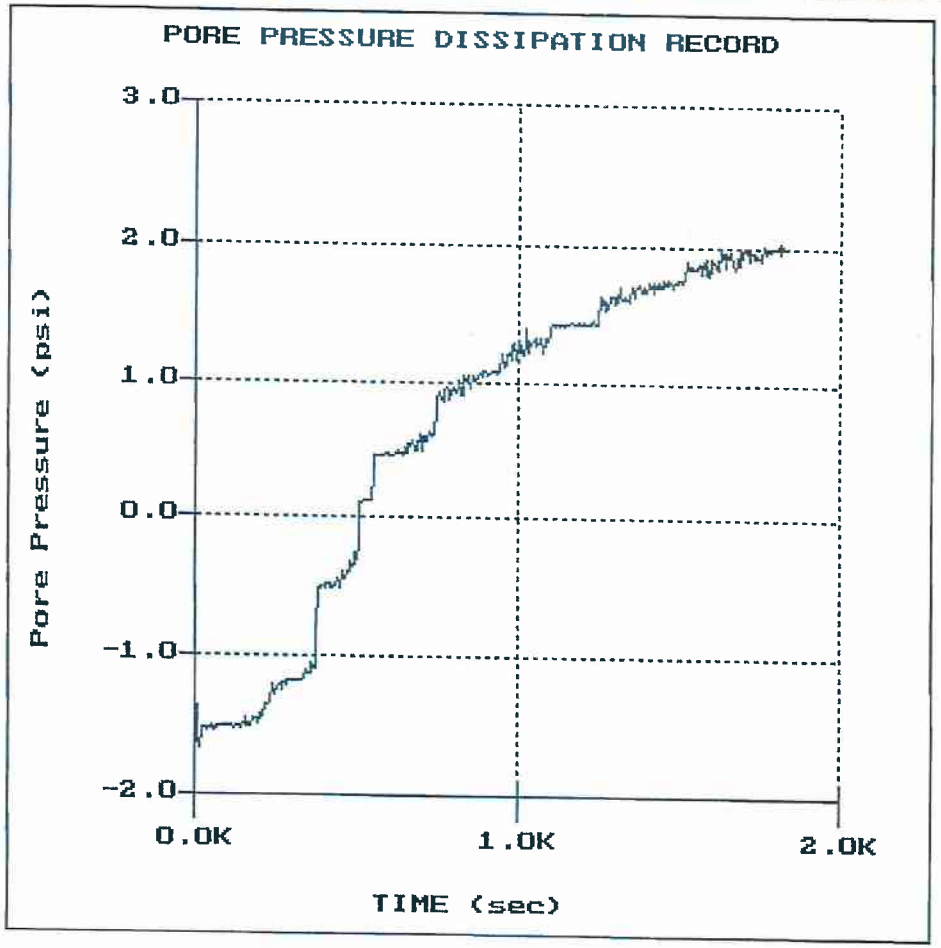


File: 226C02.PPC
Depth (m): 16.90
(ft): 55.45
Duration : 1295.0s
U-min: 3.09 25.0s
U-max: 4.19 1215.0s

PACIFIC SOILS

Site: BORREGO WASH
Location: CPT-04

Engineer: T. MCCARTHY
Date:09:12:02 10:34

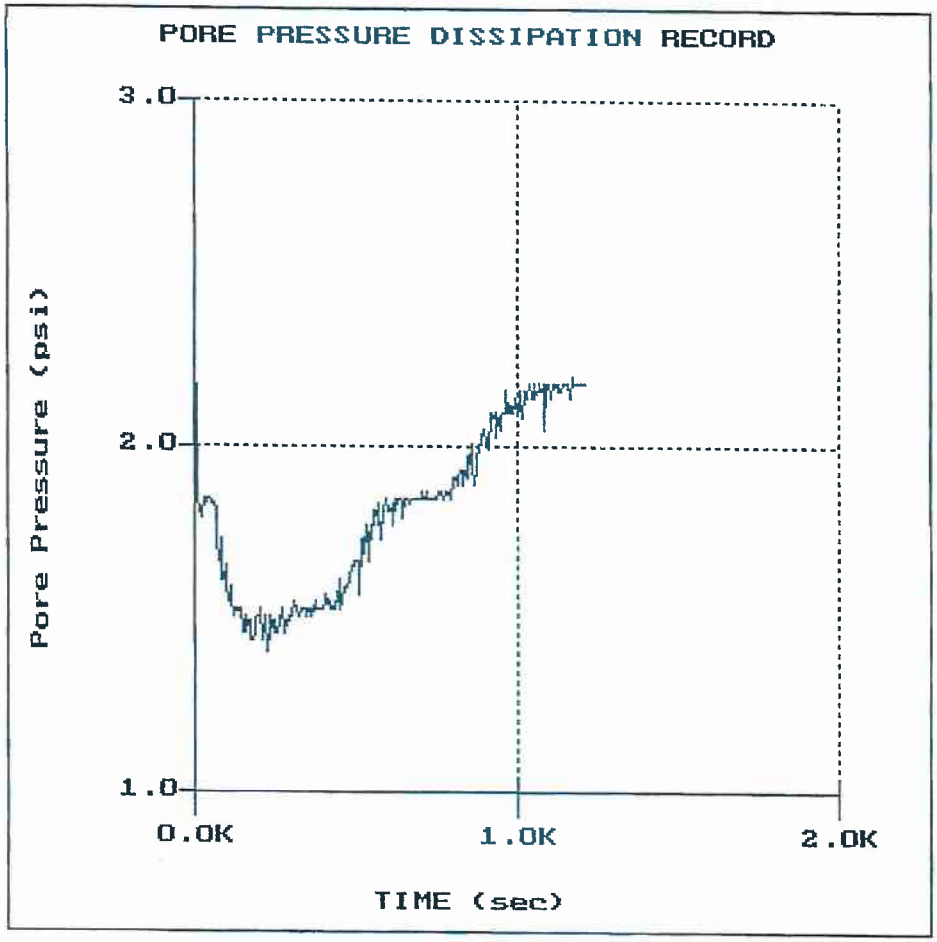


File: 226C04.PPC
Depth (m): 9.15
(ft): 30.02
Duration : 1820.0s
U-min: -1.67 15.0s
U-max: 2.03 1810.0s

PACIFIC SOILS

Site: BORREGO WASH
Location: CPT-06

Engineer: T. MCCARTHY
Date:09:12:02 12:58

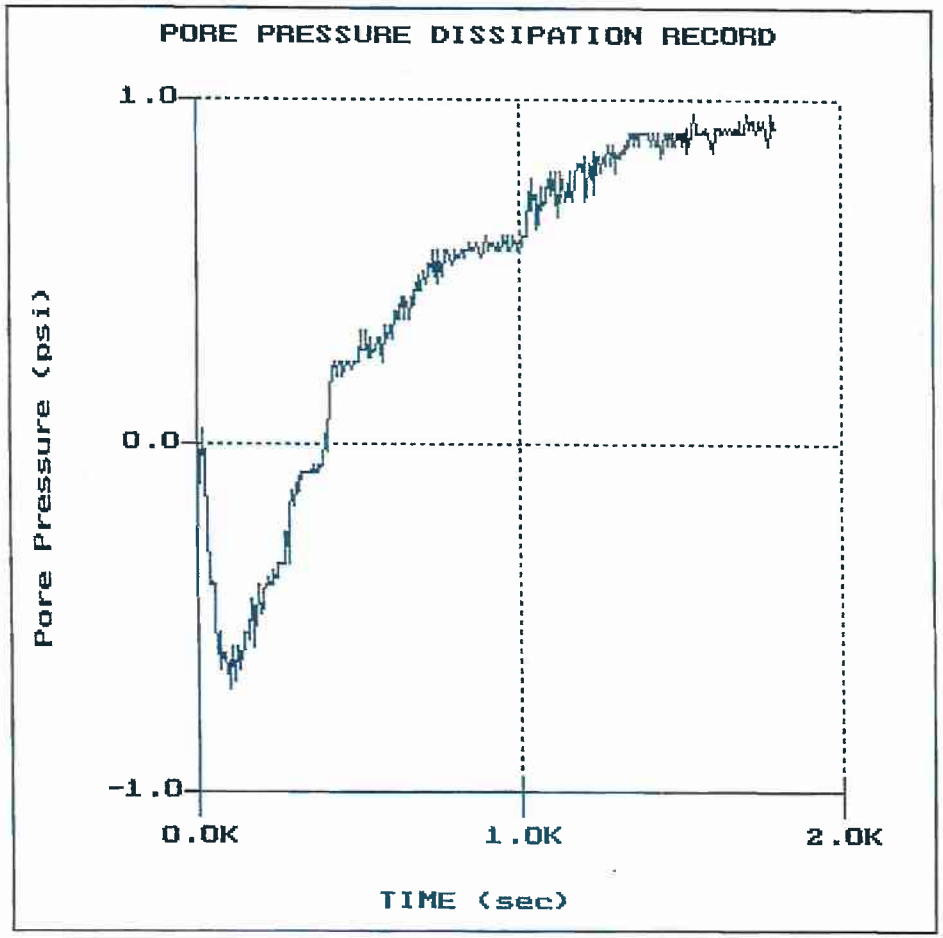


File: 226C06.PPC
Depth (m): 9.80
(ft): 32.15
Duration : 1210.0s
U-min: 1.40 225.0s
U-max: 2.48 0.0s

PACIFIC SOILS

Site: BORREGO WASH
Location: CPT-07

Engineer: T. MCCARTHY
Date:09:12:02 13:49

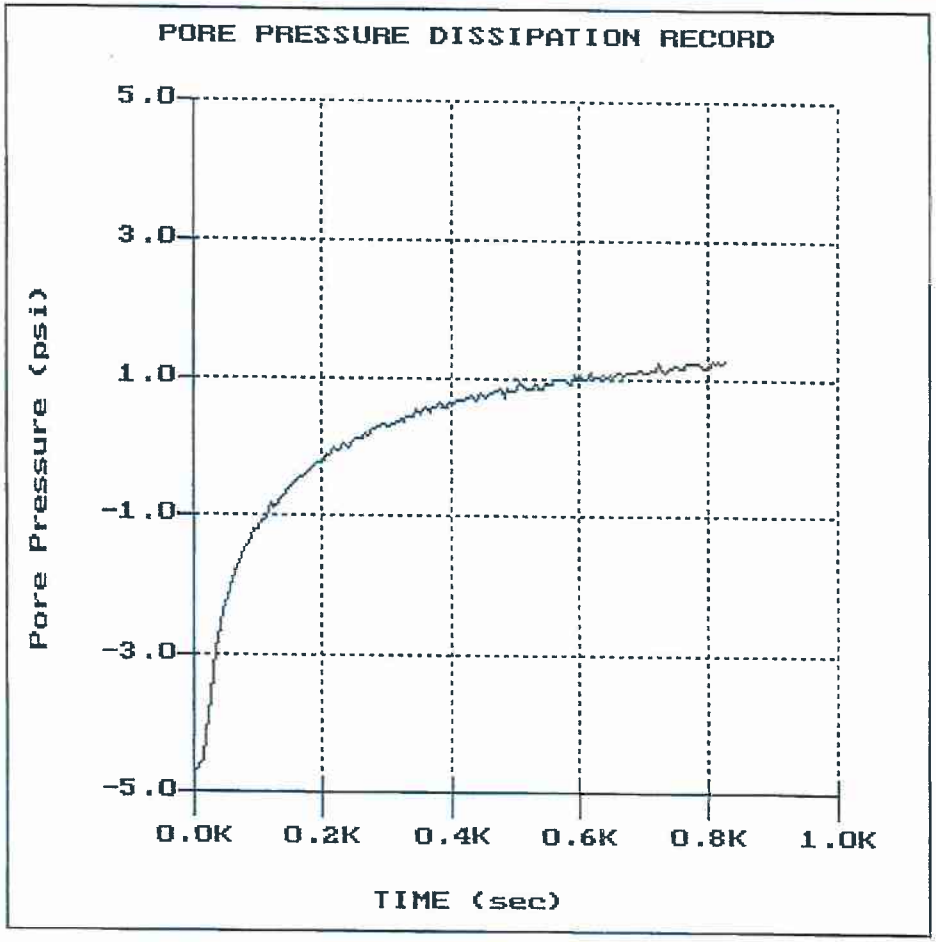


File: 226C07.PPC
Depth (m): 9.20
(ft): 30.18
Duration : 1800.0s
U-min: -0.71 100.0s
U-max: 0.96 1785.0s

PACIFIC SOILS

Site: BORREGO WASH
Location: CPT-08

Engineer: T. MCCARTHY
Date:09:12:02 14:44

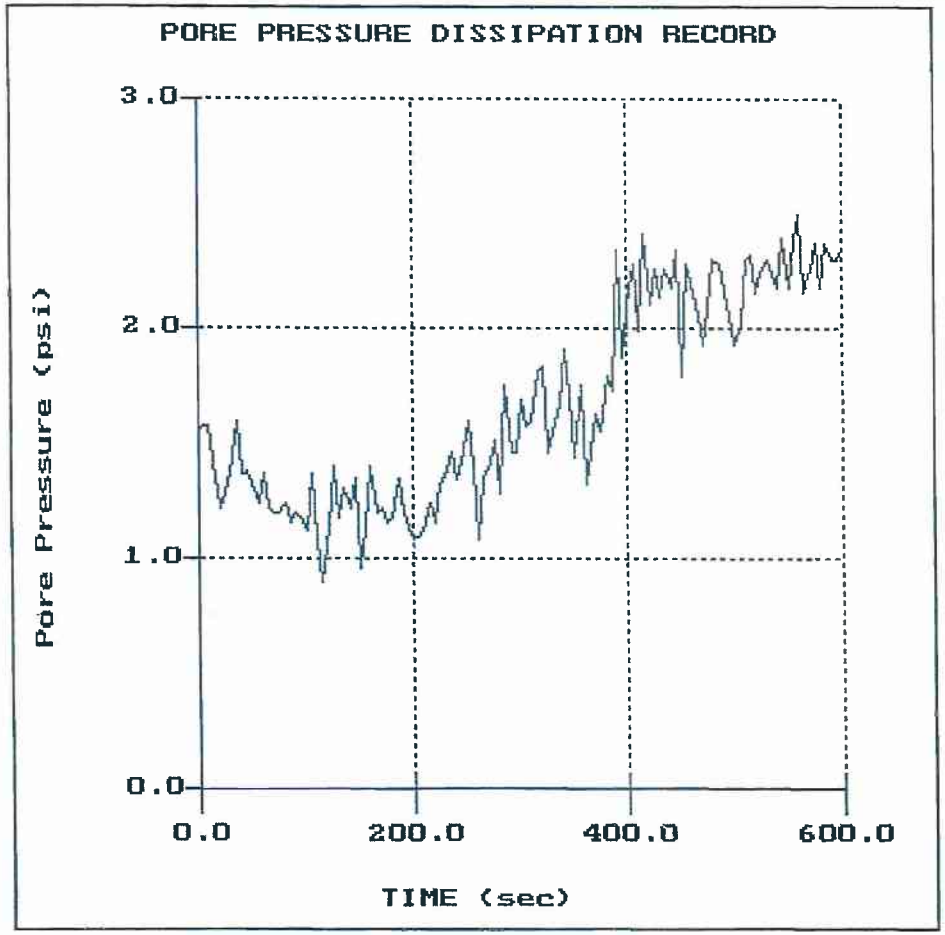


File: 226C08.PPC
Depth (m): 10.70
(ft): 35.10
Duration : 825.0s
U-min: -4.76 0.0s
U-max: 1.26 815.0s

PACIFIC SOILS

Site: BORREGO WASH
Location: CPT-09

Engineer: T. MCCARTHY
Date:09:12:02 15:23

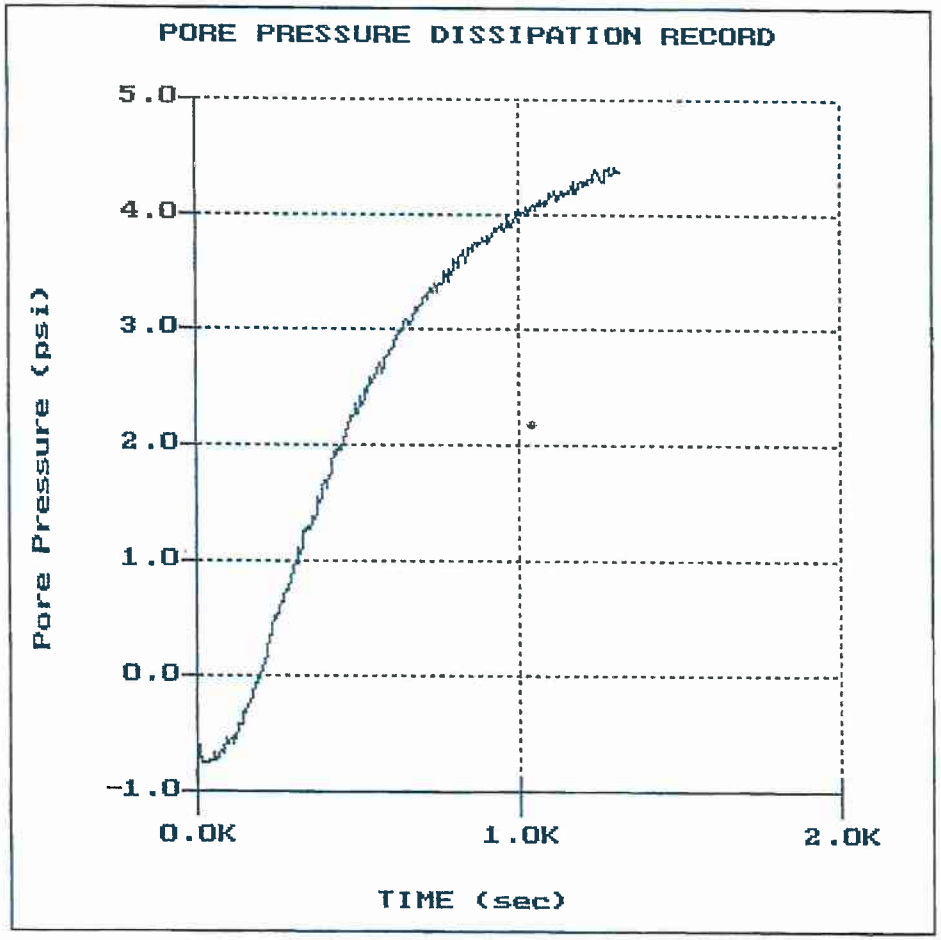


File: 226C09.PPC
Depth (m): 10.70
(ft): 35.10
Duration : 600.0s
U-min: 0.90 115.0s
U-max: 2.50 560.0s

PACIFIC SOILS

Site: BORREGO WASH
Location: CPT-11

Engineer: T. MCCARTHY
Date:09:13:02 08:00

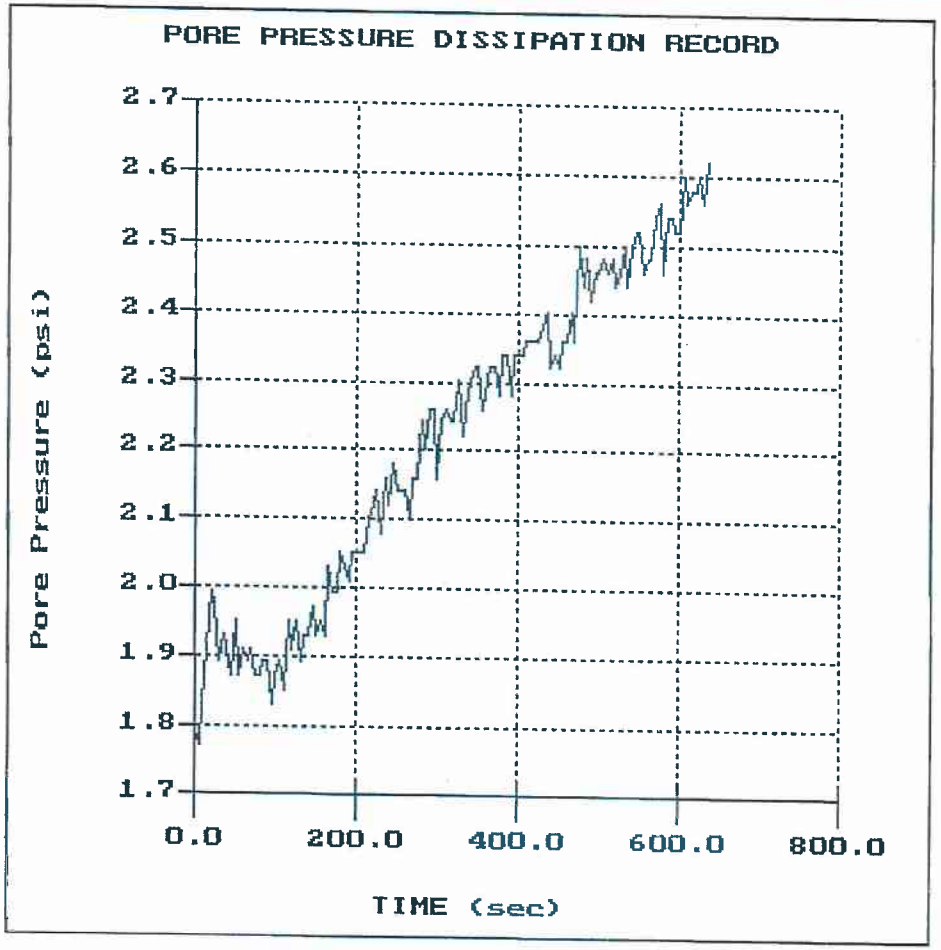


File: 226C11.PPC
Depth (m): 12.70
(ft): 41.67
Duration : 1310.0s
U-min: -0.75 35.0s
U-max: 4.41 1300.0s

PACIFIC SOILS

Site: BORREGO WASH
Location: CPT-12

Engineer: T. MCCARTHY
Date:09:13:02 08:51



File: 226C12.PPC
Depth (m): 11.30
(ft): 37.07
Duration : 635.0s
U-min: 1.77 5.0s
U-max: 2.62 635.0s

GREGG IN SITU, INC.
September 17, 2002
02-226sh

PACIFIC SOILS
Borrego Wash
Irvine, Ca.

We hope the information presented is sufficient for your purposes. We recommend that all data be carefully reviewed by qualified personnel to verify the data and make appropriate recommendations. If you have any questions, please do not hesitate to contact our office at (562) 427-6899.

Sincerely,
GREGG IN SITU, INC.

Brian Savela
Operations Manager

APPENDIX

ELECTRICAL PIEZOCONE

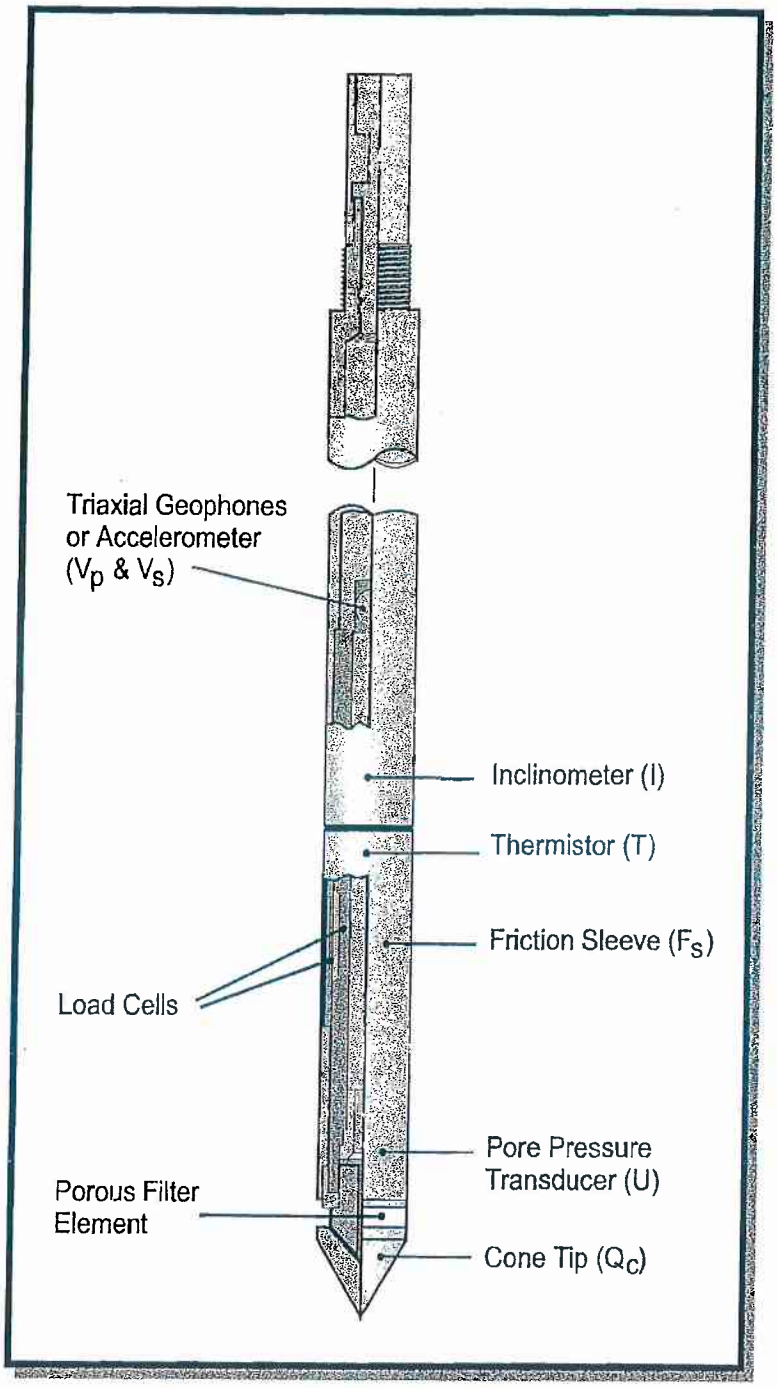
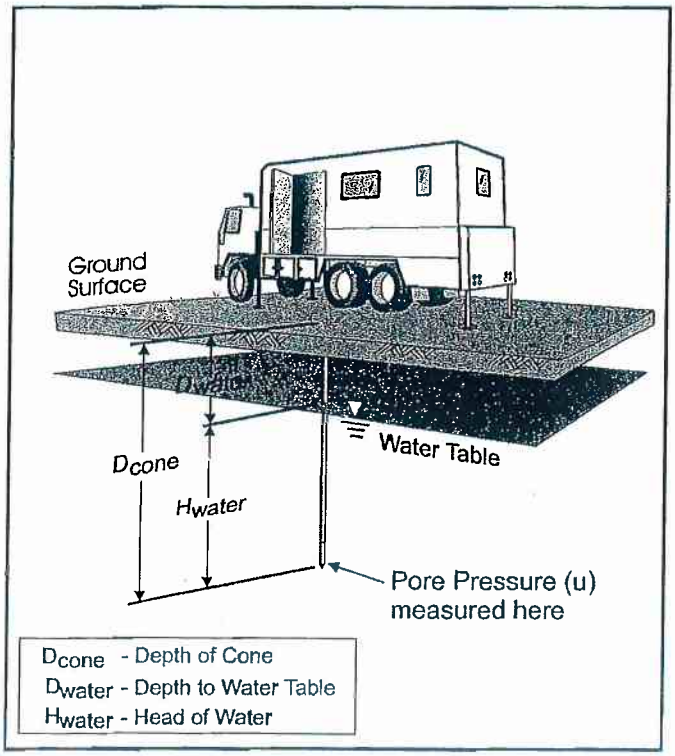
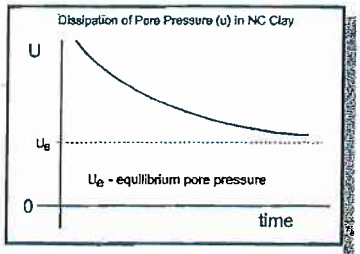
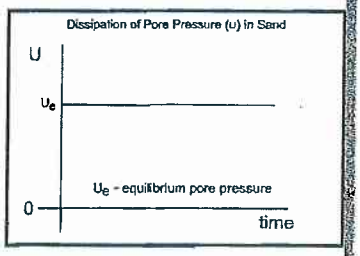


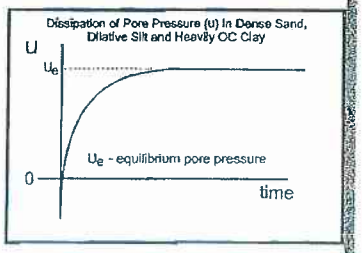
Figure 1

PPDT CORRELATION









Water Table Calculation

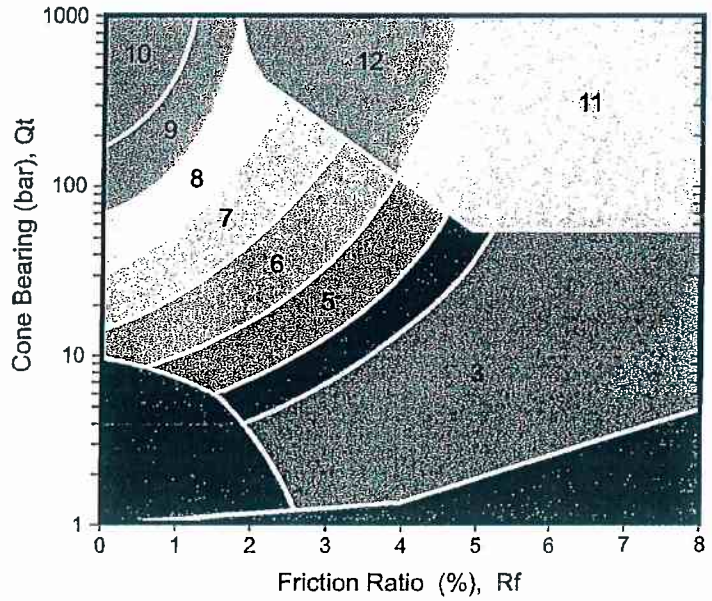
$$D_{water} = D_{cone} - H_{water}$$

where $H_{water} = U_e$ (depth units)

Useful Conversion Factors:
1psi = 0.704m = 2.31 feet (water)
1tsf = 0.958 bar = 13.9 psi
1m = 3.28 feet

Figure 2

SOIL CLASSIFICATION CHART



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

After Robertson and Campenella

Figure 3

REFERENCES

Robertson, P.K. and Campanella, R.G. and Wightman, A., 1983 "SPT-CPT Correlations", Journal of the Geotechnical Division, ASCE, Vol. 109, No. GT11, Nov., pp. 1449-1460.

Robertson, P.K. and Wride C.E., 1998 "Evaluating Cyclic Liquefaction Potential Using The Cone Penetration Test", Journal of Geotechnical Division, Mar. 1998, pp. 442-459.

Robertson, P.K. and Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of In Situ 86, ASCE Specialty Conference, Blacksburg, Virginia.

Robertson, P.K. and Campanella, R.G., 1988, "Guidelines for Use, Interpretation and Application of the CPT and CPTU", UBC, Soil Mechanics Series No. 105, Civil Eng. Dept., Vancouver, B.C., V6T 1W5, Canada.

Robertson, P.K., Campanella, R.G., Gillespie, D. and Rice, A., 1986, "Seismic CPT to Measure In Situ Shear Wave Velocity", Journal of Geotechnical Engineering, ASCE, Vol. 112, No. 8, pp. 791-803.

Gregg In Situ CPT Interpretations as of January 7, 1999 (Release 1.00.19)

Gregg In Situ's interpretation routine should be considered a calculator of current published CPT correlations and is subject to change to reflect the current state of practice. The interpreted values are not considered valid for all soil types. The interpretations are presented only as a guide for geotechnical use and should be carefully scrutinized for consideration in any geotechnical design. Reference to current literature is strongly recommended.

The CPT interpretations are based on values of tip, sleeve friction and pore pressure averaged over a user specified interval (typically 0.25m). Note that Qt is the recorded tip value, Qc, corrected for pore pressure effects. Since all Gregg In Situ cones have equal end area friction sleeves, pore pressure corrections to sleeve friction, Fs, are not required.

The tip correction is: $Qt = Qc + (1-a) \bullet Ud$

where: *Qt* is the corrected tip load
Qc is the recorded tip load
Ud is the recorded dynamic pore pressure
a is the Net Area Ratio for the cone (typically 0.85 for Gregg In Situ cones)

Effective vertical overburden stresses are calculated based on a hydrostatic distribution of equilibrium pore pressures below the water table or from a user defined equilibrium pore pressure profile (this can be obtained from CPT dissipation tests). The stress calculations use unit weights assigned to the Soil Behavior Type zones or from a user defined unit weight profile.

Details regarding the interpretation methods for all of the interpreted parameters is given in table 1. The appropriate references referred to in table 1 are listed in table 2.

The estimated Soil Behavior Type is based on the charts developed by Robertson and Campanella shown in figure 1.

Table 1 CPT Interpretation Methods

Interpreted Parameter	Description	Equation	Ref
Depth	mid layer depth		
AvgQt	Averaged corrected tip (Qt)	$AvgQt = \frac{1}{n}\sum_{i=1}^{n} Qt_i$	
AvgFs	Averaged sleeve friction (Fs)	$AvgFs = \frac{1}{n}\sum_{i=1}^{n} Fs_i$	
AvgRf	Averaged friction ratio (Rf)	$AvgRf = 100\% \bullet \frac{AvgFs}{AvgQt}$	
AvgUd	Averaged dynamic pore pressure (Ud)	$AvgUd = \frac{1}{n}\sum_{i=1}^{n} Ud_i$	
SBT	Soil Behavior Type as defined by Robertson and Campanella		1

CPT Interpretations

U.Wt.	Unit Weight of soil determined from: 1) uniform value or 2) value assigned to each SBT zone 3) user supplied unit weight profile		
TStress	Total vertical overburden stress at mid layer depth	$TStress = \sum_{i=1}^{n} \gamma_i h_i$ where γ_i is layer unit weight h_i is layer thickness	
EStress	Effective vertical overburden stress at mid layer depth	$EStress = TStress - Ueq$	
Ueq	Equilibrium pore pressure determined from: 1) hydrostatic from water table depth 2) user supplied profile		
Cn	SPT N_{60} overburden correction factor	$Cn=(\sigma_v')^{-0.5}$ where σ_v' *is in tsf* $0.5 < C_n < 2.0$	
N_{60}	SPT N value at 60% energy calculated from Qt/N ratios assigned to each SBT zone		3
$(N1)_{60}$	SPT N_{60} value corrected for overburden pressure	$N1_{60} = Cn \bullet N_{60}$	3
$\Delta(N1)_{60}$	Equivalent Clean Sand Correction to $(N1)_{60}$	$\Delta(N1)_{60} = \frac{K_{SPT}}{1 - K_{SPT}} \bullet (N1)_{60}$ Where: K_{SPT} is defined as: 0.0 for FC < 5% 0.0167 • (FC - 5) for 5% < FC < 35% 0.5 for FC > 35% FC - Fines Content in %	7
$(N1)_{60cs}$	Equivalent Clean Sand $(N1)_{60}$	$(N1)_{60cs} = (N1)_{60} + \Delta(N1)_{60}$	7
Su	Undrained shear strength - Nkt is use selectable	$Su = \frac{Qt - \sigma_v}{N_{kt}}$	2
k	Coefficient of permeability (assigned to each SBT zone)		6
Bq	Pore pressure parameter	$Bq = \frac{\Delta u}{Qt - \sigma_v}$	2
Qtn	Normalized Qt for Soil Behavior Type classification as defined by Robertson, 1990	$Qtn = \frac{Qt - \sigma_v}{\sigma'_v}$	4
Rfn	Normalized Rf for Soil Behavior Type classification as defined by Robertson, 1990	$Rfn = 100\% \bullet \frac{f_s}{Qt - \sigma_v}$	4
SBTn	Normalized Soil Behavior Type (slightly modified from that published by Robertson, 1990. This version includes all the soil zones of the original non-normalized SBT chart - see figure 1)		4
Qc1	Normalized Qt for seismic analysis	$qc1 = qc \bullet (Pa/\sigma_v')^{0.5}$ where: Pa = atm. pressure	5
Qc1N	Dimensionless Normalized Qt1	qc1N = qc1 / Pa where: Pa = atm. pressure	

GREGG

CPT Interpretations

ΔQc1N1	Equivalent clean sand correction	$\Delta qc1N = \frac{K_{CPT}}{1 - K_{CPT}} \bullet qc1N$ Where: K_{CPT} is defined as: 0.0 for FC < 5% 0.0267 • (FC - 5) for 5% < FC < 35% 0.5 for FC > 35% FC - Fines Content in %	5
Qc1Ncs	Clean Sand equivalent Qc1N	$qc1Ncs = qc1N + \Delta qc1N$	5
Ic	Soil index for estimating grain characteristics	$Ic = [(3.47 - \log Q)^2 + (\log F + 1.22)^2]^{0.5}$	5
FC	Fines content (%)	$FC=1.75(Ic^{3.25}) - 3.7$ $FC=100$ for $Ic > 3.5$ $FC=0$ for $Ic < 1.26$ $FC = 5\%$ if $1.64 < Ic < 2.6$ AND $Rfn<0.5$	8
PHI	Friction Angle	Campanella and Robertson Durunoglu and Mitchel Janbu	1
Dr	Relative Density	Ticino Sand Hokksund Sand Schmertmann 1976 Jamiolkowski - All Sands	1
OCR	Over Consolidation Ratio		1
State Parameter			9
CRR	Cyclic Resistance Ratio		7

GREGG

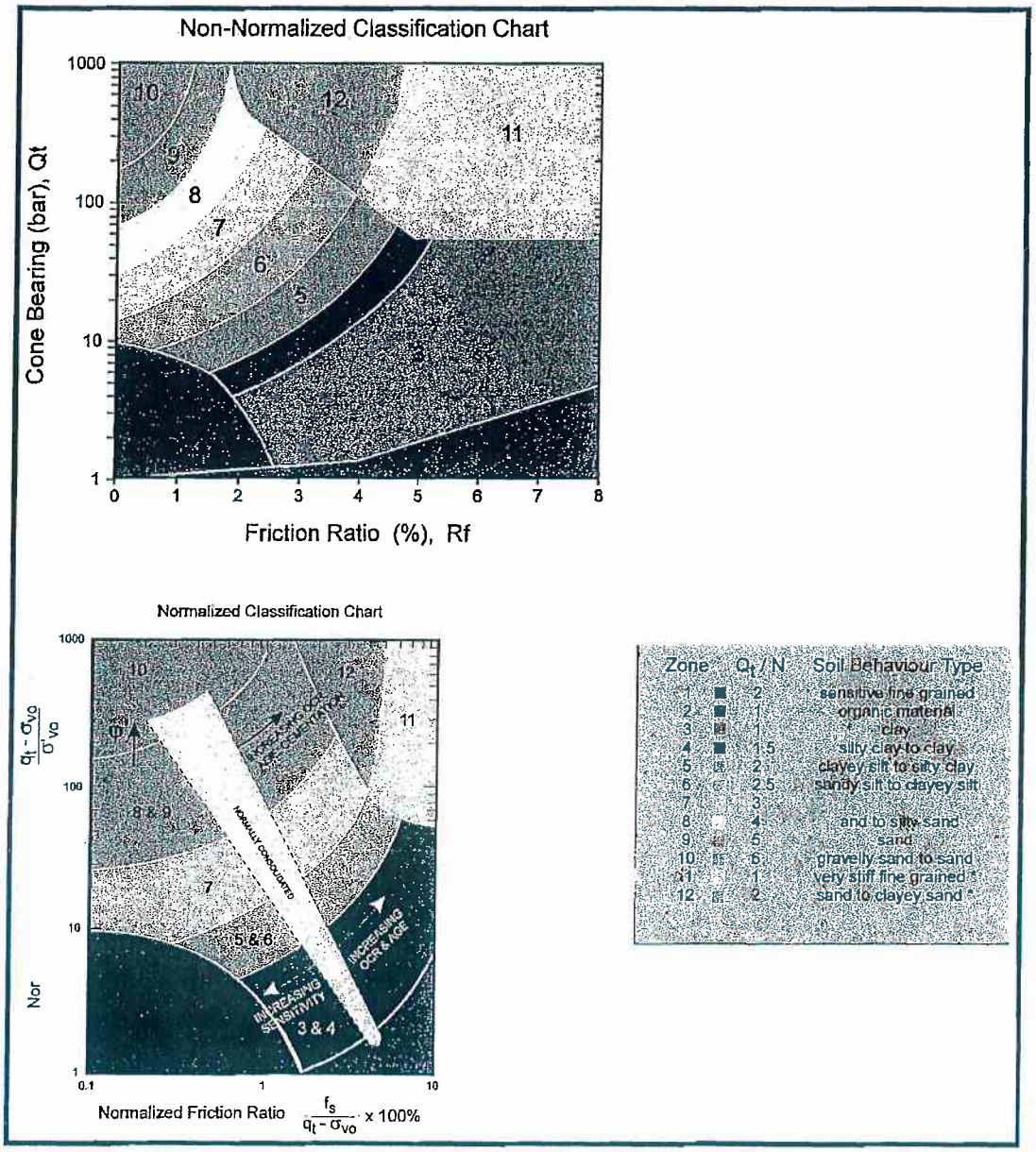


Figure 1 Non-Normalized and Normalized Soil Behavior Type Classification Charts

Table 2 References

No.	Reference
1	Robertson, P.K. and Campanella, R.G., 1986, "Guidelines for Use, Interpretation and Application of the CPT and CPTU", UBC, Soil Mechanics Series No. 105, Civil Eng. Dept., Vancouver, B.C., Canada
2	Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.
3	Robertson, P.K. and Campanella, R.G., 1989, "Guidelines for Geotechnical Design Using CPT and CPTU", UBC, Soil Mechanics Series No. 120, Civil Eng. Dept., Vancouver, B.C., Canada
4	Robertson, P.K., 1990, "Soil Classification Using the Cone Penetration Test", Canadian Geotechnical Journal, Volume 27.
5	Robertson, P.K. and Fear, C.E., 1995, "Liquefaction of Sands and its Evaluation", Keynote Lecture, First International Conference on Earthquake Geotechnical Engineering, Tokyo, Japan.
6	Gregg In Situ Internal Report
7	Robertson, P.K. and Wride, C.E., 1997, "Cyclic Liquefaction and its Evaluation Based on SPT and CPT", NCEER Workshop Paper, January 22, 1997
8	Wride, C.E. and Robertson, P.K., 1997, "Phase II Data Review Report (Massey and Kidd Sites, Fraser River Delta)", Volume 1 - Data Report (June 1997), University of Alberta.
9	Plewes, H.D., Davies, M.P. and Jefferies, M.G., 1992, "CPT Based Screening Procedure for Evaluating Liquefaction Susceptibility", 45th Canadian Geotechnical Conference, Toronto, Ontario, October 1992.

BUCKET AUGER BORING & TRENCH LOGS BY PSE (1981, 1988, & 1989) IN PSE REPORT (2002)

PACIFIC SOILS ENGINEERING, INC.

BORING LOG

Logged by JK

BORING NO. 9

DATE 12/16/81

W.O. 101016

SURFACE EL.

Depth ft.	SAMPLE	BLOWS/ft.	GROUP SYB.	DESCRIPTION and REMARKS	Unit Dry Wt. (lbs/cu.ft.)	% Moisture
0			SM	ALLUVIUM(Qal): Silty fine sand, gray-brown, moist, medium dense, slightly clayey;		
	B	2				
5	R	2				
				@ 7.0 ft. becomes wet;		
				below 9.0 ft. very clayey		
10	R	2				
				TOTAL DEPTH 10.0 ft. No Water No Caving		

MAP SYMBOL B-9

PLATE A-9

PACIFIC SOILS ENGINEERING, INC.

BORING LOG

Logged by JK

BORING NO. 10

DATE 12/16/81

W.O. 101016

SURFACE EL.

Depth ft.	SAMPLE	BLOWS/ft.	GROUP SYB.	DESCRIPTION and REMARKS	Unit Dry Wt. (lbs/cu.ft.)	% Moisture
0			SM	ALLUVIUM(Qal): Silty sand, light brown, moist, medium dense;		
	B			@ 3.0 ft. becomes gray-brown		
5	R	1	SM	Silty fine sand, occasionally clayey, brown, moist, medium dense		
			SM	Silty sand, brown, moist, medium dense		
10			SC	Clayey sand, brown, moist to very moist, medium dense;		
				@ 13.0 ft. becomes wet;		
15				@ 15.0 ft. becomes saturated, water encountered		
	R	push		TOTAL DEPTH 17.0 ft. Water @ 15.0 ft. No Caving		

MAP SYMBOL B-10

PLATE A-10

PACIFIC SOILS ENGINEERING, INC.

BORING LOG

Logged by JK

BORING NO. 11

DATE 12/16/81

W.O. 101016

SURFACE EL.

Depth ft.	SAMPLE	BLOWS/ft.	GROUP SYB.	DESCRIPTION and REMARKS	Unit Dry Wt. (lbs/cu.ft.)	% Moisture
0			SM	ALLUVIUM(Qal): Silty sand, occasionally cleaner, brown, moist, medium dense		
	B					
			SP	Fine to coarse grained sand, brown, damp to moist, medium dense, lenses of silt		
5	R	2		@ 5.0 ft. becomes gravelly up to 1: diameter; @ 6.0 ft. becomes moist		
				@ 9.0 ft. becomes cobbly up to 6" diameter		
10						
15				@ 15.0 ft. cobbles (frequent) up to 10" diameter		
			SC	Clayey fine sand, gray-brown, wet, medium dense, mottled; @ 18.0 ft. water encountered		
20	R	Push		TOTAL DEPTH 20.0 ft. Slight Caving 3.0 to 16.0 ft. Water @ 18.0 ft.		

MAP SYMBOL B-11

PLATE A-11

PACIFIC SOILS ENGINEERING, INC.

BORING LOG

Logged by JK

BORING NO. 12

DATE 12/16/81

W.O. 101016

SURFACE EL.

Depth ft.	SAMPLE	BLOWS/ft.	GROUP SYB.	DESCRIPTION and REMARKS	Unit Dry Wt. (lbs/cu.ft.)	% Moisture
0			SM	ALLUVIUM(Qal): Silty fine sand, brown, moist, medium dense		
	B					
			SP	Coarse to fine grained sand, light brown, moist, loose to medium dense;		
5				@ 5.0 ft. becomes gravelly up to 2" diameter; @ 6.0 ft. cobbles to 6" diameter;		
10	R	1		@ 10.0 ft. only trace of cobbles to 6" diameter		
			ML/SM	Sandy silt/silty sand, brown, moist to wet, medium dense		
			SP	Gravelly fine to medium grained sand, light brown, moist, medium dense;		
15				@ 16.0 ft. becomes cobbly up to 4" diameter		
				CAPISTRANO FORMATION, OSO MEMBER (Tco): Silty fine sandstone, light gray, moist, medium dense to dense		
20	R	13				
				TOTAL DEPTH 20.0 ft.		
				Slight Caving from 3.0 to 12.0 ft. No Water		

MAP SYMBOL B-12

PLATE A-12

PACIFIC SOILS ENGINEERING, INC.

BORING LOG

Logged by JK/DA

BORING NO. 13

DATE 12/16/81

W.O. 101016

SURFACE EL.

Depth ft.	SAMPLE	BLOWS/ft.	GROUP SYB.	DESCRIPTION and REMARKS	Unit Dry Wt. (lbs/cu.ft.)	% Moisture
0			ML	FILL (Qaf): Sandy silt, brown, damp, medium dense with angular sandstone fragments		
			SM	MONTEREY FORMATION (Tm): Silty fine sandstone, tan to buff, dense, moderately well bedded, siltstone laminations;		
5				@ 5.0 ft. Attitude: N40W 12SW - Bedding		
				@ 6.0 ft. Attitude: N25E 8SE - Bedding		
				@ 7.0 ft. gray fine sandy siltstone with interbedded sandstone laminations		
				@ 9.0 ft. Attitude: N35W 10SW - Bedding		
10				@ 10.0 ft. light gray silty fine sandstone, medium dense, massive;		
				@13.0 ft. becomes dark gray, well-bedded siltstone with sandstone interbeds		
				@ 13.0 ft. Attitude: N80W 30SW - Bedding		
				below 14.0 ft. more sandstone beds, then siltstone beds		
15	R	7		@ 15.0 ft. Attitude: N70W 45SW - Bedding	98.6	9.1
				@ 19.0 ft. Attitude: N80W 57SW - Bedding		
20						
				@ 22.0 ft. Attitude: N85W 60SW - Bedding		
25						

continued on next page

MAP SYMBOL B-13

PLATE A-13

PACIFIC SOILS ENGINEERING, INC.

BORING LOG

Logged by JK/DA

BORING NO. 13

DATE 12/16/81

W.O. 101016

SURFACE EL.

Depth ft.	SAMPLE	BLOWS/ft.	GROUP SYB.	DESCRIPTION and REMARKS (Monterey Formation cont. from 3.0 ft.)	Unit Dry Wt. (lbs/cu.ft.)	% Moisture
25	B			@ 25.0 ft. 1/4" gypsum layer along bedding; @ 25.0 ft. Attitude: E-W 65S - Bedding		
				@ 29.0 ft. Attitude: N75W 84SW - Bedding		
30	R	18	ML	last 5.0 ft. uncemented	98.6	14.1
35				TOTAL DEPTH 35.0 ft.		
				No Caving, No Water		

PLATE A-13

PACIFIC SOILS ENGINEERING, INC.

BORING LOG

Logged by JK

BORING NO. 14

DATE 12/17/81

W.O. 101016

SURFACE EL.

Depth ft.	SAMPLE	BLOWS/ft.	GROUP SYB.	DESCRIPTION and REMARKS	Unit Dry Wt. (lbs/cu.ft.)	% Moisture
0			ML	ALLUVIUM(Qal): Sandy silt, brown, moist, medium dense		
	B					
			SM	Silty sand, brown, moist, medium dense		
			SC	Clayey sand, brown, moist, medium dense		
5						
	R	Push				
10				TOTAL DEPTH 10.0 ft.		
				No Water, No Caving		

MAP SYMBOL B-14

PLATE A-14

25 (6/8)	0 - 6.0	SM	ALLUVIUM (Qal): Silty sand, brown, moist, loose, dense below 1.0 ft. Total Depth 6.0 ft. No Water No Caving
26 (6/8)	0 - 7.0	SC	TERRACE DEPOSIT (Qt): Slightly clayey sand with abundant cobbles, red/brown, moist, medium dense Total Depth 7.0 ft. No Water No Caving
27 (6/8)	0 - 6.0	SW-SC	TERRACE DEPOSIT (Qt): Slightly clayey sand with abundant pebbles and cobbles, red/brown, moist, medium dense to dense Total Depth 6.0 ft. No Water No Caving
28 (6/8)	0 - 3.0	SC	SOIL: Clayey sand, brown, damp, medium dense
	3.0 - 7.0	SC	TERRACE DEPOSIT (Qt): Clayey sand with abundant cobbles and pebbles, red/brown, moist, dense Total Depth 7.0 ft. No Water No Caving

MAP SYMBOL T-25 THROUGH T-28

29 (6/8)	0 - 6.0	SM	ALLUVIUM (Qal): Silty sand, brown, moist, medium dense; dense at 3.0 ft., roots to 3.0 ft. Total Depth 6.0 ft. No Water No Caving
30 (6/8)	0 - 6.0	SC	ALLUVIUM (Qal): Clayey sand, brown, moist, medium dense, dense at 3.0 ft., roots to 3.5 ft. Total Depth 6.0 ft. No Water No Caving
31 (5/8)	0 - 5.0	SM/ SC	POSSIBLE ALLUVIUM OR ARTIFICIAL FILL (Qal/Qaf): Layered silty sand and clayey sand, brown and light brown, moist, loose to 1.0 ft. and medium dense below; roots to 2.0 ft. Total Depth 5.0 ft. No Water No Caving
32 (5/8)	0 - 6.0	SW/ SM	ALLUVIUM (Qal): Well graded sand (slightly silty) with pebbles, light brown, moist, medium dense, bedded Total Depth 6.0 ft. No Water No Caving

MAP SYMBOL T-29 THROUGH T-32

33 (5/8)	0 - 6.0	SM	ALLUVIUM (Qal): Silty clay to fine sand with pebbles, light brown, moist, medium dense Total Depth 6.0 ft. No Water No Caving
34 (5/8)	0 - 6.0	SM	ALLUVIUM (Qal): Medium to fine silty sand with pebbles, light brown, moist, medium dense Total Depth 6.0 ft. No Water No Caving
35 (5/8)	0 - 6.0	SW	ALLUVIUM (Qal): Coarse to fine sand with gravel, light brown, moist, medium dense Total Depth 6.0 ft. No Water No Caving
36 (5/8)	0 - 6.0	SW	ALLUVIUM (Qal): Coarse to fine sand, occasional pebbles, light brown, moist, dense, bedded Total Depth 6.0 ft. No Water No Caving
37 (5/8)	0 - 2.0	SC	SOIL: Clayey sand, dark brown, damp, medium dense
	2.0 - 10.0	SC	TERRACE DEPOSIT (Qt): Clayey sand, red/brown moist, dense, slight caving at 9.0 ft. Total Depth 10.0 ft. No Water Slight Caving at 9.0 ft.

MAP SYMBOL T-33 THROUGH T-37

38 (5/8)	0 - 2.0	SM	SOIL: Silty sand, brown, damp, medium dense
	2.0 - 14.0	SW/ SM	TERRACE DEPOSIT (Qt): Well graded sand with gravel and cobbles, red/brown, damp to moist, uncemented, medium dense
			@ 7.0 ft. slightly silty
			@ 11.0 ft. slight caving
			Total Depth 14.0 ft. No Water Slight Caving at 11.0 ft.

- -

39 (5/8)	0 - 2.0	SC	SOIL: Clayey sand, brown, damp, dense
	2.0 - 10.0		CAPISTRANO FORMATION - OSO MEMBER (Tco): Silty fine sandstone, light brown/gray, damp, dense, moderately well bedded, friable, moderately fractured
			Attitudes: N70W, 40NE - Bedding N35W, 32NE - Bedding N55W, 75NE - Caliche lined fracture
			Total Depth 10.0 ft. No Water No Caving

- -

The following test pits were excavated on 12/17/81:

40 (5/8)	0 - 5.0	SC	SOIL: Clayey sand, brown, damp, dense
	5.0 - 13.0		MONTEREY FORMATION (Tm): Silty medium grained sandstone, tan, damp, massive, friable
			Total Depth 13.0 ft. No Water No Caving

41 (5/8)	0 - 5.0	SC	SOIL: Clayey sand, brown, damp, dense, occasional cobbles
	5.0 - 14.0	SC	TERRACE DEPOSIT (Qt): Clayey sand with occasional cobbles and pebbles, red/brown, damp to moist, medium dense Total Depth 14.0 ft. No Water No Caving

- -

42 (5/8)	0 - 3.0	SM	COLLUVIUM (Qcol): Silty sand with cobbles, brown, dry and becomes damp at 1.0 ft., loose and becomes dense at 1.0 ft.; @ 2.0 ft. red/brown
	3.0 - 7.0	SM	TERRACE DEPOSIT (Qt): Silty sand, red/brown, damp, medium dense Total Depth 7.0 ft. No Water No Caving

- -

43 (5/8)	0 - 1.0	SC	SOIL: Clayey sand, brown, moist, medium dense
	1.0 - 9.0	SC	TERRACE DEPOSIT (Qt): Clayey sand, red/brown, moist, medium dense to dense, occasional cobbles up to 6" in diameter
		SM	@ 6.0 ft. silty sand, light brown, medium dense

- -

44 (3/5)	0 - 0.5	SM	SOIL: Silty sand, brown, dry, loose

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PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 1A

DATE OBSERVED 10/10/88 METHOD OF DRILLING 24" Bucket

LOGGED BY tcs GROUND ELEVATION 653' WORK ORDER No. 101597

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0						ARTIFICIAL FILL (Qaf): Clayey sand, brown, dry, medium dense @ 1.0 ft., slightly moist
						ALLUVIUM (Qal): Lean clay, brown/dark brown, moist, moderately firm @ 4.0 ft., sandy clay, brown, moist, medium dense, white mineralization
5	R	4		116.7	12.0	
						@ 7.0 ft., clayey sand, brown/dark brown, moist, medium dense
10	R	4		114.6	14.0	@ 10.0 ft., sandy clay, brown/dark brown, moist, medium dense @ 11.0 ft., clayey sand, brown, moist, medium dense
15	R	9		114.9	14.3	@ 15.0 ft., slightly clayey sand, tan, moist, dense, slightly micaceous
						@ 18.0 ft., silty sand, tan, moist, dense, micaceous, rust staining
20	R	7		107.0	19.0	
25	R	15		102.6	11.7	CAPISTRANO FORMATION, OSO MEMBER (Tco): Sandstone, light brown/tan, moist, hard, slightly micaceous

Continued on next page

PLATE A-1A

MAP SYMBOL B-1A

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 1A Cont.

DATE OBSERVED 10/10/88 METHOD OF DRILLING 24" Bucket

LOGGED BY tcs GROUND ELEVATION 653' WORK ORDER No. 101597

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25						
						Total Depth 26.0 ft. No Water, No Caving
30						
35						
40						
45						
50						

PLATE A-1A

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 2A

DATE OBSERVED 10/10/88 METHOD OF DRILLING 24" Bucket

LOGGED BY tcs GROUND ELEVATION 576' WORK ORDER No. 101597

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0						ARTIFICIAL FILL (Qaf): Lean clay, gray, dry, blocky, porous
						ALLUVIUM (Qal): Sandy clay, brown/dark brown, moist, moderately firm
						@ 3.5 ft., clayey sand, brown, moist, medium dense
5	R	4		110.8	11.3	
						@ 6.0 ft., sand lense
						@ 8.0 ft., clayey sand/sandy clay, brown, moist, medium dense
10	R	3		114.1	16.4	
						@ 11.0 ft., slightly clayey sand, brown, very moist to wet, medium dense
15	R	N/R				@ 15.0 ft., sand lense, water
						@ 18.0 ft., clayey sand, brown/olive, moist, medium dense
20						
25						

Continued on next page

MAP SYMBOL B-2A

PLATE A-2A

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 2A Cont.

DATE OBSERVED 10/10/88 METHOD OF DRILLING 24" Bucket

LOGGED BY tcs GROUND ELEVATION 576' WORK ORDER No. 101597

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25						
	R	10		112.7	17.6	@ 28.0 ft., very dense
30						
35						
						CAPISTRANO FORMATION, OSO MEMBER (Tco): Sandstone, buff white/tan/light olive, moist, very hard, rust staining
	R	30/4"		113.5	13.2	
40						Total Depth 40.0 ft. Water @ 15.0 ft., No Caving
45						
50						

PLATE A-2A

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 3A

DATE OBSERVED 12/12/88 METHOD OF DRILLING Bucket Auger

LOGGED BY TCS GROUND ELEVATION 632' WORK ORDER No. 101597

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SP			ARTIFICIAL FILL (Qaf): Sand, tan, moist to very moist, loose, clayey sand
			SM			ALLUVIUM (Qal): Slightly silty sand, tan, moist to very moist, loose, medium dense, occasional rootlets
5	R	1	CL	109.0	16.8	@ 4.0 ft. lean clay, dark gray/black, very moist, soft to moderately firm
			CL			@ 7.0 ft. Sandy clay, dark brown, moist to very moist, medium dense
10	R	2	SC	112.0	15.4	@ 9.0 ft. Clayey sand, dark brown/brown, moist medium dense @ 12.0 ft. brown/gray-brown
15	R	3		105.8	10.7	
			SP			@ 16.0 ft. Sand, tan, moist, medium dense to dense
20	R	2	SC	100.6	12.8	@ 19.0 ft. Clayey sand, tan/brown, very moist, medium dense
			SP			@ 21.0 ft. Sand, tan, moist, medium dense to dense
25	R	5		98.0	11.5	

Continued on the next page

MAP SYMBOL B-3A

PLATE A-3A

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 3A Cont'd

DATE OBSERVED 12/12/88 METHOD OF DRILLING Bucket Auger

LOGGED BY TCS GROUND ELEVATION 632' WORK ORDER No. 101597

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25						
			SC			@ 28.0 ft. Clayey sand, brown, moist, medium dense
30	R	4		82.9	11.5	
						@ 32.0 ft. wet
			SP			@ 33.0 ft. Sand, coarse, tan, saturated, dense
						@ 34.0 ft. water
35						Total Depth 35.0 ft. Water @ 35.0 ft., No Caving
40						
45						
50						

PLATE A-3A

T-5A	0.0 - 15.0	SM/SC	ALLUVIUM (Qal): Silty/clayey sand, dark gray to black, dry, dense, porous, occasional rootlets @ 4.0 ft., gradational color change to a medium brown silty/clayey sand, slightly moist, medium dense, occasional pebbles @ 8.0 ft., becomes moist @ 10.0 ft., becomes wet @ 12.0 ft., seepage Note: water @ 10.0 ft., 1/2 hour after trench completed, Seepage @ 12.0 ft., No Caving
T-6A	0.0 - 14.5	SM/SC	ALLUVIUM (Qal): Silty/clayey sand, medium to dark brown, dry, dense, slightly porous, occasional rootlets @ 4.5 ft., 6" sand lense, light gray, loose, 6' long @ 5.0 ft., becomes medium brown, slightly moist to moist, porous., abundant roots where moisture begins @ 12.0 ft., becomes moist to wet with depth, seepage, slight caving
	14.5 - 15.5		CAPISTRANO FORMATION, OSO MEMBER (Tco): Fine to medium grained sandstone, buff white, dry, moderately hard to hard, poorly cemented, occasional rootlets
T-7A	0.0 - 15.5	SM/SC	ALLUVIUM (Qal): Silty/clayey sand, dark brown, dry, medium dense to dense, occasional rootlets @ 4.0 ft., becomes medium brown, moist, loose to medium dense

MAP SYMBOL T-5A THROUGH T-7A

T-7A Continued

		@ 11.0 ft., becomes wet, slight seepage, slight caving
15.5 - 16.0		CAPISTRANO FORMATION, OSO MEMBER (Tco): Fine to medium grained sandstone, buff white, dry, moderately hard to hard, poorly cemented, friable, slightly weathered Seepage @ 11.0 ft., No Caving

---

T-8A

0.0 - 11.0	SM/SC	ALLUVIUM (Qal): Silty/clayey sand, dark brown, dry, medium dense to dense, occasional rootlets @ 3.0 ft., becomes slightly moist, loose to medium dense @ 10.0 ft., bulk
11.0 - 14.0		CAPISTRANO FORMATION, OSO MEMBER (Tco): Fine to medium grained sandstone, brown to tan, moist, soft, poorly cemented, moderately to highly weathered @ 13.5 ft., becomes buff white, moderately hard to hard, poorly cemented, slightly weathered No Water, No Caving

---

T-9A

0.0 - 3.0	SC	SOIL: Clayey sand, orange brown, dry, dense, porous, moderately abundant pebbles and cobbles, occasional rootlets
3.0 - 16.0	SP	TERRACE DEPOSIT (Qt): Pebbly fine to coarse grained sand, light tan, dry, loose to medium dense, porous, moderately abundant cobbles, occasional rootlets @ 5.0 ft., fine to coarse grained sand, light tan, dry, loose to medium dense, porous, occasional pebbles

MAP SYMBOL T-7A THROUGH T-9A

T-9A Continued

@ 7.5 ft., pebbly fine to coarse grained sand, light tan, dry, loose to medium dense, porous, moderately abundant cobbles
@ 9.0 ft., fine to coarse grained sand, light tan, dry, loose to medium dense, porous, occasional pebbles and cobbles

No Water, No Caving

T-10A

0.0 - 3.0	SM	SOIL: Silty sand, medium brown, dry, medium dense, porous, occasional rootlets
3.0 - 16.0		TERRACE DEPOSIT (Qt): Pebbly fine to coarse grained sand, light tan, dry, loose to moderately hard, porous, abundant cobbles @ 10.0 ft., slight iron staining subrounded to rounded pebbles and cobbles

Note: at bottom of trench slight clay content with slight evidence of white precipitate webbing, possibly close to bedrock contact, hit a large boulder @ 16.0 ft. could not advance

No Water, No Caving

T-11A

0.0 - 4.0	SOIL/FILL: Silty/clayey sand, brown to dark gray, dry to slightly moist, loose, porous, rootlets to 4.0 ft. with tan sand interbedded (6"-1')
4.0 - 15.5	ALLUVIUM (Qal): Fine grained silty sand, light to medium brown, moist to wet, loose, porous, rootlets in upper 1.0 ft.

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 5D

DATE OBSERVED 10-5-89 METHOD OF DRILLING 30" Bucket

LOGGED BY FE GROUND ELEVATION 667' WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SC			ALLUVIUM/COLLULVIUM (Qac): Clayey sand, brown, moist, loose, fine grained
5	R	3		113.3	8.5	
10	R	2		105.3	11.3	
			SC			Slightly clayey sand, light brown, moist, loose, fine grained
15	R	1	SM	105.6	9.2	Silty sand, light brown, moist, loose to medium dense, fine grained
			SC			Clayey sand, brown, wet, loose, fine grained
20	B	1		103.3 121.0	23.4 12.0	Lab max. density
						@ 22.0 ft. ground water
						@ 23.0 ft. caving
						@ 24.0 ft. slightly clayey sand, light brown
25						

Continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 5D Continued

DATE OBSERVED 10-5-89 METHOD OF DRILLING 30" Bucket

LOGGED BY FE GROUND ELEVATION 667' WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25				105.0	20.1	
30				120.1	14.3	CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine to medium -grained sandstone, light gray, moist, hard
						Total Depth 32.0 ft. Ground Wate @ 22.0 ft. Caving @ 23.0 ft.
35						
40						
45						
50						

PLATE A-5D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 6D

DATE OBSERVED 10-6-89 METHOD OF DRILLING 30" Bucket

LOGGED BY FE GROUND ELEVATION 702' WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SM			SOIL: Silty sand, brown, dry, loose, fine grained
						CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine to medium-grained sandstone, light gray to light yellow-gray, moist, hard, occasional brown silty fine grained sand inclusions up to 2", speroidal oxidation staining, gray, subangular sandstone clasts up to 8" diameter, starting at 18 ft.
5						
10	R	20		130.7	8.9	
	B			117.0	13.5	Lab max. density
15						
20	R	15		123.8	8.8	
						@ 22.0 ft., moderately hard
						@ 24.5 ft., 4" clay bed, light gray, moist, moderately plastic; Attitude: 42E, 3SE - clay bed
25						

Continued on next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 6D Continued

DATE OBSERVED 10-6-89 METHOD OF DRILLING 30" Bucket

LOGGED BY FE GROUND ELEVATION 702' WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sy.b.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25						@ 25.0 ft., slightly clayey
30	R	30		129.5	8.9	
35						
40	R	32		119.7	13.0	
45						Total Depth 45.0 ft. No Water, No Caving
50						

PLATE A-6D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 7D

DATE OBSERVED 10-6-89 METHOD OF DRILLING 30" Bucket

LOGGED BY FE GROUND ELEVATION 593' WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SC			SOIL: Clayey sand, brown, moist, loose, fine grained
			GW			STREAM TERRACE DEPOSIT(Qt): Gravelly sand, red-brown, damp loose, medium to coarse some clay
5						@ 6.0 ft., yellow brown fine to medium grained
10				94.7	11.8	
	R	1				
15						
						@ 17.0 ft., 4' thick, cobbly sand bed
20	B			129.5	19.0	Lab max. density
	R	10		110.1	8.6	CAPISTRANO FORMATION-OSO MEMBER (Tco): Very fine to medium grained silty clayey sandstone, light yellow-brown, moist, hard, massive
25						

Continued on next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 7D Continued

DATE OBSERVED 10-6-89 METHOD OF DRILLING 30" Bucket

LOGGED BY FE GROUND ELEVATION 593' WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25						
30	R	37		112.9	14.6	
35						
40	R	12		110.5	17.1	
45						Total Depth 43.0 ft. Refusal @ 43.0 ft. No Water, Some Caving @ 17.0 ft.
50						

PLATE A-7D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 8D

DATE OBSERVED 10-6-89 METHOD OF DRILLING 30" Bucket

LOGGED BY FE GROUND ELEVATION 597' WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SC			SOIL: Clayey sand, brown, moist, loose, fine to medium grained
						STREAM TERRACE DEPOSIT (Qt): Gravelly fine to coarse-grained,damp, loose to medium dense
5						@ 5.0 ft. Gravelly slightly clayey sand, light red-brown, damp, loose, coarse-grained
10	R	2		100.7	3.9	
15	R	5		107.9	3.3	@ 15.0 ft., fine to medium grained sand
20	R	10/8"		118.2	4.4	CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine grained sandstone, light gray, moist, hard
25						Total Depth 22.0 ft. No Water, No Caving

PLATE A-8D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 9D

DATE OBSERVED 10-6-89 METHOD OF DRILLING 30" Bucket

LOGGED BY FE GROUND ELEVATION 692' WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0						WEATHERED BEDROCK: White fine grained sandstone, dry to damp, caliche filled fractures and, abundant roots
5						CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine to medium grained sandstone, white, damp, hard, massive, some caliche filled fractures
10	R	20		129.4	5.5	
15						@ 15.0 ft., very hard, no caliche
						@ 19.0 ft., 1"-2" thick white, moist, diatomaceous bed @ 19.0 ft., Attitude: N70W, 6NE - diatomaceous bed
20	R	17		121.5	7.3	
	B			118.0	14.0	Lab max. density
25						

Continued on next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 9D Continued

DATE OBSERVED 10-6-89 METHOD OF DRILLING 30" Bucket

LOGGED BY FE GROUND ELEVATION 692' WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25						
						@ 29.0 ft., abundant iron oxide staining
30	R	15		121.9	10.0	
						@ 34.0 ft., Attitude: N20E, 77NW - green siltstone fill fracture ¼" thick, enters hole @ 33.0 ft., and pinches out @ 41.0 ft.
35						@ 35.0 ft., very hard gray sandstone clasts up to 6" diameter
40	R	16		121.1	14.3	
45						
50						

Continued on next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 9D Continued

DATE OBSERVED 10-6-89 METHOD OF DRILLING 30" Bucket

LOGGED BY FE GROUND ELEVATION 692' WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
50	R	20		120.2	10.8	
55						
60	R	24		122.1	12.3	@ 59.0 ft., Attitude: N40W, 70SW - green siltstone filled fracture 1/8" thick
65						
70						Total Depth 70.0 ft.
75						

PLATE A-9D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 12D

DATE OBSERVED 10/9/89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 629 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0						ALLUVIUM /COLLUVIUM (Qac): Clayey sand, brown, moist, loose, fine to medium-grained
5	R	1		120.4	13.5	
10	R	1		118.6	11.2	
15	R	2		119.3	14.1	
20	R	2		118.0	14.3	
						@ 22.0 ft. occasional gravel and cobbles @ 23.0 ft. clayey sand, light reddish-brown, moist, medium dense, some sandy clay layers
	B.			117.0	13.0	Lab max. density
25						

Continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 12D Cont'd

DATE OBSERVED 10-9-89 METHOD OF DRILLING 30"Bucket Auger

LOGGED BY FE GROUND ELEVATION 629 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25	R	3		113.6	17.7	
30	R	5		118.0	10.5	
			ML			Clayey silt, light gray, moist, stiff, moderate plastic
35			SC			Clayey sand, brown, moist, medium dense, gravelly
						@ 39.0 ft. ground water
40	R	10		114.0	15.5	@ 40.0 ft. Silty sand, brown, asturated, dense, coarse to medium grained
						Total Depth 41.0 ft. Caving @ 39.0 ft. Ground water @ 39.0 ft.
45						
50						

PLATE A-12D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 17D

DATE OBSERVED 10-11-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 701 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0						SOIL: Clayey sand, brown, moist, loose, fine grained, some roots
5			SC			STREAM TERRACE DEPOSIT (Qt): Clayey sand, light reddish-brown, damp to moist, fine to medium grained, some rounded to sub-angular gravel up to 1" diameter
10	R	2		103.1	14.5	
15						
20	R	4		116.5	7.6	
	B			118.5	10.5	
25						

Continued on the next page

PLATE A-17D

... ENGINEERING, INC.

LOG OF BORING No. 17D Cont'd

DATE OBSERVED 10-11-89 METHOD OF DRILLING 30: Bucket Auger

LOGGED BY FE GROUND ELEVATION 701 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs./cu.ft.)	% Moisture	Description and Remarks
25						@ 25.0 ft. silty sand/sand, light brown, damp to moist, fine to medium grained, some gravel
30	R	7		102.9	3.6	
35						@ 35.0 ft. gravelly cobbley sand, brown, moist, medium to coarse-grained cobbles up to 4", sub-angular to sub-rounded volcanic and metamorphic clasts
40	R	7	GC	109.1	7.4	Gravelly clayey sand, light brown, moist, dense, medium to coarse-grained, occaisonal cobbles up to 4"
45						CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine to medium grained sandstone, white, damp, hard.
						Total Depth 45.0 ft. No Water, No Caving

PLATE A-17D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 18D

DATE OBSERVED 10-11-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 719 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu. ft.)	% Moisture	Description and Remarks
0			SC			SOIL: Clayey sand, brown, moist, medium to coarse-grained, some gravel and cobbles up to 3"
						STREAM TERRACE DEPOSIT (Qt): Silty sand, tan to light brown, damp to moist, loose to medium dense, fine to medium grained, some coarse sand and gravel up to 3/4"
5						
	B			120.0	12.5	Lab max. density
10	R	4		108.6	12.5	
15	R	4		101.6	13.4	
						@ 17.0 ft. Sand, light brown, moist, medium dense, medium to coarse-grained
20	R	5		102.4	4.3	
						@ 24.0 ft. slightly clayey sand, light gray, moist, medium dense
25						

Continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 18D Cont'd

DATE OBSERVED 10-11-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 666 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25	R	8		115.8	13.0	
						CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine to medium grained sandstone, light gray, moist, moderately hard, massive
30						Total Depth 30.0 ft. No Water, Minor Caving
35						
40						
45						
50						

PLATE A-18D

GEO SOILS ENGINEERING, INC.

LOG OF BORING No. 21D

DATE OBSERVED 10-12-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 808 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SM			SOIL: Silty sand, brown, dry, loose to medium dense, fine grained
						CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine to medium grained sandstone, light greenish gray, damp, moderately hard, massive to very poorly bedded
						@ 3.0 ft. Attitude: 67W, 7SW - oxidized bed
5	R	9		109.2	4.3	
10						
15	R	20		111.8	7.0	
20						@ 20.0 ft. hard
25						

PLATE A-21D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 21D Cont'd

DATE OBSERVED 10-12-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 808 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25	R	20				
30						@ 30.0 ft., spheriodal oxidation
35	R	21				
40						
45	R	20				@ 45.0 ft., 55W, 7SW - micaceous bed
0						

Continued on next page

PLATE A-21D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 21D Cont'd

DATE OBSERVED 10-21-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 808 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
50						
55	R	22		116.9	10.5	
60						
65						Total Depth 65.0 ft. No Water, No Caving
70						
75						

PLATE A-21D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 22D

DATE OBSERVED 10-12-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 790 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SM			SOIL: Silty sand, brown, dry to damp, loose, fine to medium grained
						CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine to medium-grained sandstone, white, damp, hard to very well-cemented, massive to very poorly bedded
5	R	10		123.6	9.3	
10						
15	R	17		123.3	10.6	
20						
25						

Continued on the next page

LOG OF BORING No. 22D Cont'd

DATE OBSERVED 10-12-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 790 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25	R	20		120.5	12.8	
						@ 28.0 ft. Attitude: 40E, 16NW - bedding
30						
35	R	20		122.5	12.6	@ 35.0 ft. 2' well-cemented bed
40						
						@ 42.0 ft. 2' very well-cemented bed
45	R	30/8"		128.3	9.1	
						@ 47.0 ft. undulatory bedding
0						

Continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 22D Cont'd

DATE OBSERVED 10-12-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 790 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
50						
55	R	25		123.2	11.5	
60						
						@ 64.0 ft. flow folding
65	R	25		120.0	8.8	
70						
75						

PLATE A-22D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 22D Cont'd

DATE OBSERVED 10-12-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY Fe GROUND ELEVATION 790 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
75	R	30/7"		110.7	12.9	
80						Total Depth 80.0 ft. No Water, No Caving
85						
90						
95						
00						

PLATE A-22D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 23D

DATE OBSERVED 10-13-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 755 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SM			SOIL: Silty sand, brown, damp, loose, fine to medium grained
						CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine to medium grained sandstone, light greenish gray, damp, hard, massive to very poorly bedded, abundant iron oxide staining and spherical silty sand flow structures up to 12" in diameter
5	R	8		117.9	11.3	
10						
15	R	15		118.2	9.5	
20						
25						

Continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 23D

DATE OBSERVED 10-13-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 755 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25	R	22		119.0	6.9	
30						
35	R	25		117.8	7.6	
40						@ 40.0 ft. Attitude: 35E, 3NW - Bedding
45	R	25		118.3	8.4	
0						

Continued on the next page

PLATE A-23D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 23D

DATE OBSERVED 10-13-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 755 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
50						
55	R	30		111.2	8.5	
60						Total Depth 60.0 ft. No Water, No Caving
65						
70						
75						

PLATE A-23D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 25D

DATE OBSERVED 10-16-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 655 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SM			STREAM TERRACE DEPOSITS (Qt): Gravelly silty sand, light reddish brown, moist, loose, medium to fine grained, some coarse sand
5	R	5		108.9	7.7	
10						@ 10.0 ft. silty sand, tan, dry, moderate dense, fine grained
15	R	5		106.0	7.5	
20						
25						@ 24.0ft. Gravelly sand, tan, damp, moderately dense

Continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 25D Cont'd

DATE OBSERVED 10-16-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 655 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25	R	10		110.8	3.5	
						@ 28.0 ft. sandy gravel/gravelly sand, tan, damp to dry, dense, sub-angular to rounded volcanic clasts to 4" diameter, fine to coarse-grained sand
30	R	15/15"				@ 30.0 ft. damp to moist
						@ 33.0 ft. clasts to 6" diameter Refusal @ 33.0 ft.
						Total Depth 33.0ft. No Water, Caving @ 32.0 ft.
35						
40						
45						
50						

PLATE A-25D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 26D

DATE OBSERVED 10-16-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 752 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs./cu.ft.)	% Moisture	Description and Remarks
0			SC			SOIL: Clayey sand, light brown, dry to damp, loose, fine to medium grained
						CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine to medium grained sandstone, light greenish gray, damp to moist, hard, speroidal flow structures and and iron oxide staining abundantly, massive to very poorly bedded
5	R	15		115.8	8.8	
10						
15	R	20		122.8	7.8	
20						
25						

Continued on the next page

PLATE A-26D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 26D Cont'd

DATE OBSERVED 10-16-89 METHOD OF DRILLING 30" Bucket Auger

LOGGED BY FE GROUND ELEVATION 752 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25	R	18		118.9	15.1	
30						
35	R	25		125.1	9.4	@ 35.0 ft. Attitude: N22W, 15SW - Bedding Attitude: N80E, 12NE - Apparent Bedding
40						Total Depth 40.0 ft. No Water, No Caving
45						
50						

PLATE A-26D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 28D

DATE OBSERVED 10-16-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 646 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs./cu.ft.)	% Moisture	Description and Remarks
0			SC			ARTIFICIAL FILL (Qaf): Clayey sand, gray-brown, very moist, loose to medium dense
			GP			ALLUVIUM (Qac): Gravelly sand, gray-brown, moist, medium dense sub-rounded gravel to 1" diameter
5				104.8	6.2	@ 5.0 ft. tan
10				105.5	4.8	
15				104.3	3.4	
20				111.0	3.9	
25						@ 25.0 ft. interlensed silty sand and slight clayey sand

Continued on the next page

PLATE A-28D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 28D Cont'd

DATE OBSERVED 10-16-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 646 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25				106.1	17.8	
30				108.4	4.5	@ 30.0 ft. coarse grained sand gravel content increasing
35				102.6	17.5	
			SC			Clayey sand, brown/dark brown, moist, medium dense slightly micaceous slightly porous
40			SC	108.2	7.3	@ 40.0 ft. Slightly Clayey sand, tan/light olive, moist, medium dense
45			SC/ SP	101.4	6.6	@ 45.0 ft. Slightly Clayey sand/sand interlensed salmon/tan, moist, medium dense to dense, slightly micaceous
50						

Continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 28D Cont'd

DATE OBSERVED _____ METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 646 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
50			GC	95.6	12.6	Gravelly clayey sand, olive/reddish brown, moist, dense, interlensed silty sand, highly micaceous
55						
60			SC	104.0	21.3	Clayey sand, olive/gray, very moist, dense
65						
70			GP	99.6	21.3	Gravelly sand coarse, tan/olive, moist, sandstone fragments
						Total Depth 71.0 ft. Water @ 54.0 ft. Cobbles impeded advancement
75						

PLATE A-28D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 29D

DATE OBSERVED 10-16-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 628 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SP/ SC			ARTIFICIAL FILL (Qaf): Sand/clayey sand, brown, moist, loose
			SC			ALLUVIUM (Qac): Clayey sand, gray/brown, moist, loose to medium dense
5				109.6	2.7	@ 5.0 ft. tan/light brown, slightly moist to moist
			SP			Sand, tan/light brown, slightly moist to moist, medium dense, occasional lenses of micaceous silt
10			SP	89.1	22.7	Sand medium to coarse, tan, slightly moist to moist, medium dense, occasional gravel
15			GP	111.0	2.4	Gravelly sand, tan, slightly moist, dense
20				116.5	2.8	
25						

Continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 29D Cont'd

DATE OBSERVED 10-16-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 628 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25				114.9	2.6	
30				109.9	7.0	
35			SC	112.8	13.5	OLDER ALLUVIUM (Qoal): Clayey sand, gray/brown, moist, medium dense, slightly porous, white mineralization
40				117.1	14.5	@ 40.0 ft. Slightly clayey sand, brown, very moist to wet, medium dense
45			SC/ML	92.4	20.0	Clayey sand/clayey silt, olive/yellow-brown, moist to very moist, medium dense, highly micaceous
			SM			Silty sand, olive/gray, white mineralization, moist, medium dense
50						

Continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 29D Cont'd

DATE OBSERVED 10-16-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 628 WORK ORDER No. 10675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs./cu.ft.)	% Moisture	Description and Remarks
50				84.3	38.7	
55						CAPISTRANO FORMATION -OSO MEMBER (Tco): Sandstone, olive, white, soft, highly weathered, abundant white mineralized; @ 54.0 ft. Sandstone, gray moist, hard to very hard, heavy drilling resistance
60				114.8	16.9	Total Depth 60.0 ft. Water @ 45.0 ft.
65						
70						
75						

PLATE A-29D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 30D

DATE OBSERVED 10-16-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 654 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sy.b.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SC			ARTIFICIAL FILL (Qaf): Clayey sand, dark brown, very moist, loose to medium dense; @ 0.5 ft. gray-brown, wet
			SC			ALLUVIUM (Qac): Clayey sand, gray-brown/brown, very moist, loose to medium dense @ 4.0 ft. medium dense, occasional gravel
5				117.7	14.2	
10				117.8	15.0	@ 10.0 ft. light brown /gray-brown, moist to very moist, silt content increasing, micaceous
15				117.4	15.1	@ 15.0 ft. sand, grain size increasing
20				108.9	20.7	@ 20.0 ft. light gray-brown/olive, medium dense to dense
			SC			@ 25.0 ft. slightly clayey sand, tan/white, very moist, loose to medium dense
25						Total Depth 31.0 ft. Water @ 23.0 ft. Rose to 18½ after 15 minutes

PLATE A-30D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 31D

DATE OBSERVED 10-17-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 614 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0						ARTIFICIAL FILL (Qaf):
			SC			Clayey sand, dark brown, very moist, loose to medium dense
			SC			Clayey sand, reddish-brown, very moist, loose to medium dense; @ 3.0 ft. slight clayey sand, medium brown/ gray-brown, moist to very moist
5						
			SC	88.9	24.8	ALLUVIUM (Qac): Clayey sand, brown, moist, loose, interlensed organic stringers
			ML			Clayey silt, gray-brown/brown, moist to very moist, soft, white precipitate
			SC			Clayey sand, dark brown, moist, medium dense, slightly micaceous
10				111.0	18.5	
15			SC	115.0	15.8	Clayey sand, gray-brown/brown, moist, medium dense, micaceous
20				111.3	12.3	@ 20.0 ft. gray-brown/tan, mottling sand increasing with depth
			SC	113.4	8.5	Slight clayey sand, tan, moist, loose to medium dense micaceous
25						

PLATE A-31D

continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 31D Cont'd

DATE OBSERVED 10-17-89 METHOD OF DRILLING

LOGGED BY TCS GROUND ELEVATION 614 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25						
30				100.3	25.3	
35			SP	108.9	19.4	@ 35.0 ft. Sand, coarse, gray/brown saturated, medium dense
40						
45						
0						

Continued on the next page

PLATE A-31D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 31D Cont'd

DATE OBSERVED 10-17-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 614 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
50						
						CAPISTRANO FORMATION-OSO MEMBER (Tco): Sandstone/gray-dark gray, interbeds, moist, hard, micaceous
55				112.6	19.3	
						Total Depth 56.0 ft. Water @ 31.0 ft.
60						
65						
70						
75						

PLATE 31D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 32D

DATE OBSERVED 10-17-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 551 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SM			ALLUVIUM (Qac): Silty sand, light gray, dry, soft @ 1.0 ft. slightly moist, light brown/tan, mottling
			SC	103.2	4.4	Slight clayey sand, dark brown, moist, medium dense
5						
10			SP	109.1	12.0	Sand, gray-brown, moist, medium dense
15			SC	104.2	22.2	Clayey sand, light olive, brown, gray, moist, medium dense, slightly porous, micaceous
20			SP	95.2	28.6	Sand, gray/dark gdray, saturated, loose to medium dense
25						

PLATE 32D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 32D Cont'd

DATE OBSERVED 10-17-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 551 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
50						
						CAPISTRANO FORMATION -OSO MEMBER (Tco): Sandstone, light gray/white, moist, hard
55				122.5	13.5	
						Total Depth 56.0 ft. Water @ 20.0 ft.
60						
65						
70						
75						

PLATE A-32D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 33D

DATE OBSERVED 10-18-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 595 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sy.b.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SM			ALLUVIUM (Qac): Silty sand, light brown, dry, scattered gravel and cobbles; @ 1.0 ft. slightly moist
			GP			Gravelly sand, light brown, slightly moist, loose
5						@ 5.0 ft. tan/salmon, slightly moist to medium dense
10				115.2	2.7	
15				123.0	3.6	
20				105.8	2.0	@ 20.0 ft. Coarse grained, medium dense, gravel content decreasing
25						

Continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 33D Cont'd

DATE OBSERVED 10-18-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 595 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25			ML/ SM			Clayey silt/silty sand, interlensed, light reddish brown/tan, very moist, soft to medium firm
30			ML/ SM	110.4	17.0	Clayey silt/silty sand, interlensed, light reddish-brown, tan, very moist, soft to moderately firm
35						
40			SP	122.5	13.5	Coarse-grained sand, gray/light olive, moist, very dense
45						
			GP	130.9	7.1	@ 50.0 ft. Gravelly Sand, gray/tan, moist, very moist very dense
50						

Total Depth 50.0 ft.
Water @ 36.0 ft.

PLATE A-33D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 34D

DATE OBSERVED 10-18-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 615 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SM			ALLUVIUM (Qac): Silty sand, light brown, dry, loose @ 1.0 ft. slightly moist
5						Gravelly sand, tan/light brown, slightly moist, loose
10			SC	99.6	14.0	Slightly clayey sand, tan/light brown, slightly moist, medium dense, white mineralization
15			SP	114.0	1.8	Medium to coarse grained sand, salmon/tan, dry to to slightly moist, medium dense, occasional gravel
20			GP	111.4	1.8	Gravelly sand, light brown, slightly moist to moist, medium dense
25						

Continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 34D Cont'd

DATE OBSERVED 10-18-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 615 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sy.b.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25						
30			SM	102.6	11.7	Silty sand, tan, slightly moist, medium dense interbeds
35						
			GP			Gravelly sand, gray, slightly moist, very dense
40				135.8	7.1	
45						
50						

Continued on the next page

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 34D Cont'd

DATE OBSERVED 10-18-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 615 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
50				139.7	6.8	
55						CAPISTRANO FORMATION-OSO MEMBER (Tco): Sandstone, dark gray, moist, very hard
60						Total Depth 61.0 ft. Water @ 31.5 ft.
65						
70						
75						

PLATE A-34D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 35D Cont'd

DATE OBSERVED 10-18-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 636 WORK ORDER No. 101675

Depth ft.	Sample	Blows/ft.	Group Sym.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
25						
30			SM	107.8	19.9	Slight silty sand, light olive, very moist, medium dense to dense, micaceous
35						CAPISTRANO FORMATION-OSO MEMBER (Tco): Silty sandstone, light olive gray, moist, moderately hard
40				111.0	13.1	
						Total Depth 41.0 ft. No Water
45						
50						

PLATE A-35D

PACIFIC SOILS ENGINEERING, INC.

LOG OF BORING No. 35D

DATE OBSERVED 10-18-89 METHOD OF DRILLING Hollowstem

LOGGED BY TCS GROUND ELEVATION 636 WORK ORDER No. Hollowstem

Depth ft.	Sample	Blows/ft.	Group Syb.	Unit Dry Wt. (lbs/cu.ft.)	% Moisture	Description and Remarks
0			SC			ARTIFICIAL FILL (Qaf): Clayey sand, dark brown, very moist, loose to medium dense
			SC			ALLUVIUM (Qac): Clayey sand, brown/gray-brown, moist, loose
5			SC	107.6	9.6	Clayey coarse sand, brown, moist, loose
10				119.0	13.9	@ 10.0 ft. medium brown/gray-brown, medium dense
15			SC	109.5	12.8	Slightly clayey sand, tan/light brown, moist, loose to medium dense, porous
20				111.3	13.3	@ 20.0 ft. scattered gravel/clay content increasing
25						

Continued on the next page

PLATE A-35D

Work Order 101675

October 10, 1989

T-17D

0.0 - 3.0	SM/SC	SOIL: Silty sand/clayey sand, gray brown, damp, loose to medium dense, porous
3.0 - 16.0		CAPISTRANO FORMATION-OSO MEMBER(Tco): Medium to coarse grained sandstone, light gray, moist, medium dense, moderately cemented, massive Attitude: N10E, 17NW - Possible bedding

Total Depth 16.0 ft.
No Water, No Caving

T-18D

0.0 - 3.0	SC	SOIL: Clayey sand, light brown-gray, dry to damp, medium dense, porous
3.0 - 11.0		CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine to medium-grained sandstone, light gray, damp to moist, moderately hard, moderately cemented, massive

Total Depth 11.0 ft.
No Water, No Caving

T-19D

0.0 - 14.0	SM/CL	ALLUVIUM/COLLUVIUM (Qac): Silty sand/clayey sand, brown, damp to moist, loose to medium dense, porous
14.0 - 18.0		CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine to medium-grained sandstone, light brown-gray, moist, moderately hard, moderately cemented, massive

Total Depth 18.0 ft.
No Water, No Caving

Work Order 101675

October 10, 1989

T-20D

0.0 - 4.0	SM	ALLUVIUM/COLLUVIUM (Qac): Silty sand, gray-brown, moist, loose
4.0 - 8.0		CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine grained sandstone, light gray-brown, moist, moderately hard, moderately cemented, massive

Total Depth 8.0 ft.
No Water, No Caving

T-21D

0.0 - 2.0	SM	SOIL: Silty sand, gray-brown, dry, loose, porous
2.0 - 8.0		CAPISTRANO FORMATION-OSO MEMBER(Tco): Medium grained sandstone, light gray-brown to tan, damp, moderately hard, moderately cemented, massive

Attitude: N50W, 80SW - Fracture

Total Depth 8.0 ft.
No Water, No Caving

T-22D

0.0 - 3.0	SM	SOIL: Silty sand, light gray-brown, dry, loose, porous
3.0 - 10.0		CAPISTRANO FORMATION-OSO MEMBER (Tco): Medium grained sandstone, light gray, damp, moderately hard, moderately cemented, massive

Total Depth 10.0 ft.
No Water, No Caving

Work Order 101675

October 10, 1989

T-26D
Broke 6" waterline - unable to continue

T-27D

0.0 - 6.0	SM	ALLUVIUM/COLLUVIUM (Qac): Silty sand, gray-brown, dry, loose
6.0 - 8.0		CAPISTRANO FORMATION (Tco): Fine grained sandstone, light gray-brown, moist, moderately hard, poorly to moderately cemented, massive

Total Depth 8.0 ft.
No Water, No Caving

T-28D

0.0 - 9.0	SC/SM	ALLUVIUM/COLLUVIUM (Qac): Clayey sand/silty sand, gray-brown, dry, loose
9.0 - 12.0		CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine grained sandstone, light gray-brown, moist, moderately hard, moderately cemented

Total Depth 12.0 ft.
No Water, No Caving

Work Order 101675

October 10, 1989

T-29D

0.0 - 18.0	SC/SM	ALLUVIUM/COLLUVIUM (Qac): Clayey sand/silty sand, gray-brown, dry to 3.0 ft. and moist below, loose to medium dense
		@ 6.0 ft. brown
		@ 12.0 ft. water and minor caving
		Total Depth 18.0 ft. @ 12.0 ft. Water & Minor Caving

T-30D

0.0 -18.0	SC/SM	ALLUVIUM/COLLUVIUM (Qac): Clayey sand/silty sand, brown, dry to 3.0 ft. and moist below, loose to medium dense
		@ 17.0 ft. Free water
		Total Depth 18.0 ft. Water @ 17.0 ft., No Caving

T-31D

0.0 - 1.0	SM	SOIL: Silty sand, brown, dry, loose
1.0 - 9.0		CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine to medium-grained sandstone, light gray-brown, damp, moderately hard, moderately cemented
		Attitude: N10E, 7NW - Bedding
		Total Depth 9.0 ft. No Water, No Caving

Work Order 101675

October 10, 1989

T-32D

0.0 - 1.0	SM	SOIL: Silty sand, brown, dry, loose
1.0 - 8.0		CAPISTRANO FORMATION-OSO MEMBER (Tco): Fine grained sandstone, light gray, damp, moderately hard to hard, moderately cemented

Total Depth 8.0 ft.
No Water, No Caving

T-33D

0.0 - 19.0	SC	TERRACE DEPOSIT (Qt): Clayey sand, reddish-brown, dry to 6.0 and moist below, medium dense to dense

@ 18.0 ft. cobbles

Total Depth 19.0 ft.
No Water, No Caving

T-34D

0.0 - 10.0	SC	ALLUVIUM/COLLUVIUM (Qac): Clayey sand, gray-brown, dry to 3.0 ft. and damp below, loose to medium dense
10.0 - 14.0		CAPISTRANO FORMATION-OSO MEMBER (Tco): Medium grained sandstone, light gray, moist, moderately hard, moderately cemented, massive

Total Depth 14.0 ft.
No Water, No Caving

BORING LOGS BY L&A (1988)
IN PSE REPORT (2002)

GEOTECHNICAL BORING LOG

DATE 4-21-88 DRILL HOLE NO. B-1 SHEET 1 OF 2

PROJECT FOOTHILL RANCH · BAKER PROPERTIES PROJECT NO. 186/419-04

DRILLING CO. INTERSTATE TYPE OF RIG HOLLOW-STEM

HOLE DIAMETER 8" DRIVE WEIGHT 140 # DROP 30 IN.

ELEVATION TOP OF HOLE ____ REF. OR DATUM SEE GEOTECHNICAL MAP

LOGGED BY MWM

SAMPLED BY MWM

Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	Geotechnical Description
							TOPSOIL 0-2' MEDIUM BROWN, VERY MOIST, LOOSE TO MEDIUM
							ALLUVIUM
	38	1	9 9 13	105.6	8.3		5' ORANGE BROWN, MOIST, MEDIUM DENSE, MEDIUM GRAINED SAND, LARGE PIECE OF GRAVEL AT TIP
		SPT	41 37 41				10' ORANGE BROWN, MOIST, VERY DENSE, GRAVELLY COARSE SAND @ 12 DIFFICULT DRILLING DUE TO GRAVELS
		1	47 50/4"	NO RECOVERY			15' ORANGE BROWN, MOIST, DENSE, GRAVELLY SAND. GRAVEL DIAMETER ≃ 2"
		SPT	50 32 26	NO RECOVERY			25'

(1/77) LEIGHTON & ASSOCIATES

MAP SYMBOL B-1C

GEOTECHNICAL BORING LOG

4-21-88 DRILL HOLE NO. B-1 SHEET 2 OF 2

ECT FOOTHILL RANCH - BAKER PROPERTIES PROJECT NO. 186/419-04

.LING CO. INTERSTATE TYPE OF RIG HOLLOW-STEM

. DIAMETER 8" DRIVE WEIGHT 140 # DROP 30 IN.

'ATION TOP OF HOLE ____ REF. OR DATUM SEE GEOTECHNICAL MAP

GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY MWM SAMPLED BY MWM
		SPT (2)	30 48 50/4				30' LIGHT BROWN, VERY MOIST, VERY DENSE SILTY SAND WITH GRAVELS, APPROXIMATELY 20% * GRAVELS MAY HAVE CONTRIBUTED TO HIGH BLOW COUNTS CAPISTRANO FORMATION - OSO MEMBER
	94	2	45 50/4"	114.7	16.1		35' WHITE, VERY MOIST, VERY DENSE, SILTY SANDSTONE TOTAL DEPTH - 36' NO WATER

1/77)

LEIGHTON & ASSOCIATES

E 4-21-88 DRILL HOLE NO. B-2 SHEET 1 OF 3

JECT FOOTHILL RANCH - BAKER PROPERTIES PROJECT NO. 1861419-04

LLING CO. INTERSTATE TYPE OF RIG HOLLOW-STEM

E DIAMETER 8" DRIVE WEIGHT 140 # DROP 30 IN.

VATION TOP OF HOLE ____ REF. OR DATUM SEE GEOTECHNICAL MAP

GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY MWM SAMPLED BY MWM
							TOPSOIL 1' DARK BROWN, VERY MOIST (RAINING) SAND, WITH SOME SILT
							ALLUVIUM
		1	19 23 27	DISTURBED	2.2		5' ORANGE/LIGHT BROWN, DAMP, DENSE, COARSE SAND WITH SMALL GRAVELS
		SPT	6 6 9				10' ORANGE/LIGHT BROWN, MOIST, LOOSE TO MEDIUM DENSE, GRAVELLY COARSE SAND, GRAVELS UP TO 1" DIAMETER
	10	2	11 17 24	106.3	2.2		15' ORANGE/LIGHT BROWN, DAMP, MEDIUM DENSE GRAVELLY COARSE SAND, GRAVELS UP TO 2" DIA.
							20'
							23' GRAVELS, DIFFULT DRILLING
		SPT	34 50/2"				25' ORANGE/WHITE, DAMP TO MOIST, VERY DENSE, GRAVELLY SAND. 30-40% GRAVELS

1/77)

LEIGHTON & ASSOCIATES

MAP SYMBOL B-2C

OTECHNICAL BORING LOG

'E 4-21-88 DRILL HOLE NO. B-2 SHEET 2 OF 3

IJECT FOOTHILL RANCH - BAKER PROPERTIES PROJECT NO. 1861419-04

LLING CO. INTERSTATE TYPE OF RIG HOLLOW-STEM

.E DIAMETER 8" DRIVE WEIGHT 140 # DROP 30 IN.

:VATION TOP OF HOLE ____ REF. OR DATUM SEE GEOTECHNICAL MAP

GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY MWM SAMPLED BY MWM
			60/3"	NO RECOVERY			35' GRAVELS PREVENTED SAMPLE RECOVERY
	22	3	23 40 50/4"	110.1	4.3		40' ORANGE/LIGHT BROWN, DAMP TO MOIST, VERY DENSE GRAVELLY SAND, GRAVELS WITH 2" DIAMETER
		SPT	100 30 40				50' ORANGE/LIGHT BROWN, DAMP, DENSE, GRAVELLY SAND 52'-56' EXTREMELY DIFFICULT DRILLING - DRILLING SLOW

TECHNICAL BORING LOG

E 4-21-88 DRILL HOLE NO. B-2 SHEET 3 OF 3

JECT FOOTHILL RANCH · BAKER PROPERTIES PROJECT NO. 186419-04

LLING CO. INTERSTATE TYPE OF RIG HOLLOW-STEM

E DIAMETER 8" DRIVE WEIGHT 140 # DROP 30 IN.

VATION TOP OF HOLE ____ REF. OR DATUM SEE GEOTECHNICAL MAP

GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY MWM SAMPLED BY MWM
			70/3"	NO	RECOVERY		60'
							CAPISTRANO FORMATION - OSO MEMBER
	83	4	72 50/3"	105.7	18.0		65' GRAYISH WHITE (SALT AND PEPPER IN APPEARANCE) MOIST TO VERY MOIST, VERY DENSE, SILTY FINE SAND ABUNDANT MICAS
							TOTAL DEPTH = 66'

1/77)

LEIGHTON & ASSOCIATES

TECHNICAL BORING LOG

TE 4-21-88 DRILL HOLE NO. B-3 SHEET 1 OF 3

OJECT FOOTHILL RANCH · BAKER PROPERTIES PROJECT NO. 186/419-04

ILLING CO. INTERSTATE TYPE OF RIG HOLLOW-STEM

LE DIAMETER 8" DRIVE WEIGHT 140 # DROP 30 IN.

EVATION TOP OF HOLE ____ REF. OR DATUM SEE GEOTECHNICAL MAP

GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
							LOGGED BY MWM SAMPLED BY MWM
							TOPSOIL DARK BROWN, VERY MOIST, LOOSE, SILTY SAND, ORGANICS
							ALLUVIUM
	16	1	11 16 17	101.7	3.8		5' ORANGE/LIGHT BROWN, MOIST, MEDIUM DENSE COARSE GRAVELLY SAND
		SPT	11 11 11				10' ORANGE LIGHT BROWN, MOIST, MEDIUM DENSE, GRAVELLY COARSE SAND * STANDARD PENETRATION SAMPLER DAMAGED BY GRAVELS, MAY AFFECT BLOW COUNTS
	61	2	12 16 21	103.9	13.9		15' BROWNISH ORANGE, VERY MOIST, MEDIUM DENSE, MEDIUM GRAINED SAND
							20'
			75/3"	NO RECOVERY			25' GRAVEL LAYER DIFFICULT DRILLING

1/77) LEIGHTON & ASSOCIATES

MAP SYMBOL B-3C

GEOTECHNICAL BORING LOG

TE 4-21-88 DRILL HOLE NO. B-3 SHEET 2 OF 3

OJECT FOOTHILL RANCH · BAKER PROPERTIES PROJECT NO. 186/419-04

ILLING CO. INTERSTATE TYPE OF RIG HOLLOW-STEM

LE DIAMETER 8" DRIVE WEIGHT 140 # DROP 30 IN.

EVATION TOP OF HOLE ____ REF. OR DATUM SEE GEOTECHNICAL MAP

GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY MWM SAMPLED BY MWM
		3	60 75 35/3"		3.8		30' ORANGE, LIGHT BROWN, MOIST, VERY DENSE, GRAVELLY SAND. GRAVEL ≃ 20-30% AND UP TO 2½" DIAMETER.
							35'
			4 53 46				40' MEDIUM BROWN, VERY MOIST, SILTY SAND, WITH GRAVELS
							45'
							46' GRAVEL LAYER ~1' THICK
	62	4	26 50/3"	104.2	13.9		50' ORANGE BROWN, VERY MOIST, SILTY FINE SAND WITH GRAVEL - LARGE PEBBLE AT TIP OF SAMPLER.
							55'

GEOTECHNICAL BORING LOG

DATE 4-21-88 DRILL HOLE NO. B-3 SHEET 3 OF 3

PROJECT FOOTHILL RANCH - BAKER PROPERTIES PROJECT NO. 1861419-04

DRILLING CO. INTERSTATE TYPE OF RIG HOLLOW-STEM

HOLE DIAMETER 8" DRIVE WEIGHT 140 # DROP 30 IN.

ELEVATION TOP OF HOLE ____ REF. OR DATUM SEE GEOTECHNICAL MAP

FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION LOGGED BY MWM SAMPLED BY MWM
		92	5	13 15 21	123.1	12.3		60' LIGHT BROWN, WET, MEDIUM DENSE, SILTY SAND WATER AT 61'
								CAPISTRANO FORMATION - OSO MEMBER
		98	6	75/5"	111.0	18.6		70' GRAY/WHITE (SALT AND PEPPER TEXTURE) MOIST TO WET, VERY DENSE, SILTY SANDSTONE
								TOTAL DEPTH 70' WATER AT 61'