

Client: NORTHGATE

Project name: TRONOX REMEDIATION

Test no.: PSS-1

Location: Nevada | Henderson NV



Depth	Point resistance	Corrected point resistance	Sleeve friction resistance	Corrected local friction	Friction ratio = ft/qt*100%	Pore pressure behind cone	Unit weight [SBT Fr 1986]
	qc	qt	fs	ft	Rf	U ₂	UW
[ft]	[T/ft ²]	[T/ft ²]	[T/ft ²]	[T/ft ²]	[%]	[lb/in ²]	[lb/ft ³]
0.32	101.58	101.58	0.13	0.13	0.12	-0.12	123.49
0.57	164.61	164.62	0.32	0.32	0.20	0.44	124.13
0.82	225.14	225.15	0.69	0.69	0.30	1.05	125.72
1.07	302.80	302.84	1.47	1.47	0.48	2.61	127.31
1.32	350.26	350.30	2.36	2.36	0.67	2.94	126.51
1.57	363.81	363.84	2.97	2.97	0.82	2.39	124.13
1.82	380.07	380.10	3.39	3.39	0.89	2.32	124.13
2.07	399.25	399.31	3.09	3.09	0.78	4.31	125.72
2.32	444.43	444.53	3.17	3.17	0.71	7.06	127.31
2.57	480.24	480.34	2.58	2.58	0.54	7.43	127.31
2.82	493.01	493.08	2.62	2.62	0.53	5.27	127.31
3.07	514.38	514.49	3.60	3.60	0.70	8.34	127.31
3.32	578.90	579.17	2.93	2.93	0.51	19.72	127.31
3.57	595.34	595.55	4.45	4.45	0.75	15.30	127.31
3.82	546.51	546.71	6.27	6.27	1.16	14.39	124.92
4.07	462.34	462.37	6.80	6.80	1.47	2.76	124.13
4.32	399.79	399.81	3.88	3.88	0.92	1.48	124.76
4.57	359.43	359.52	0.00	0.00	0.00	6.93	127.31

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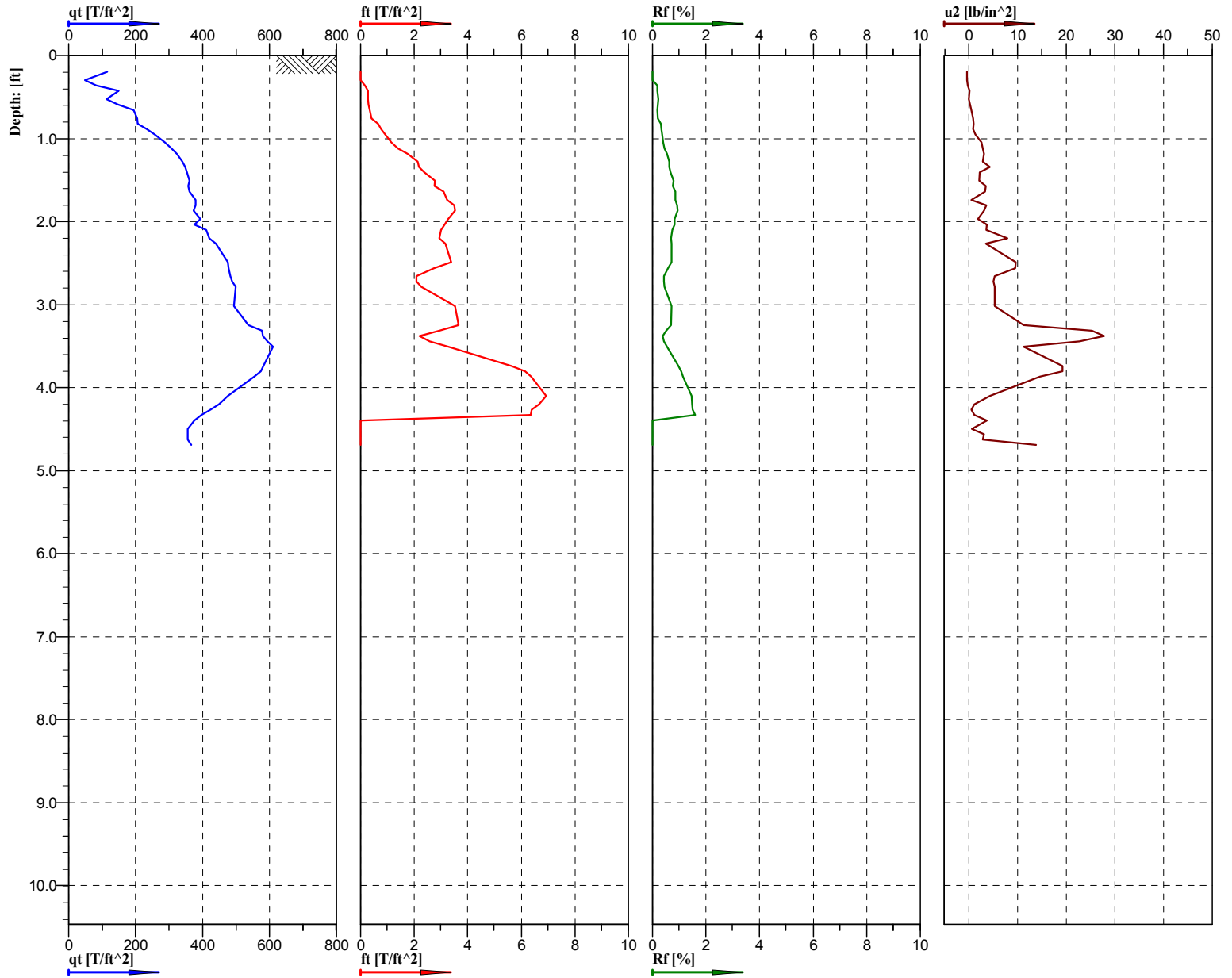
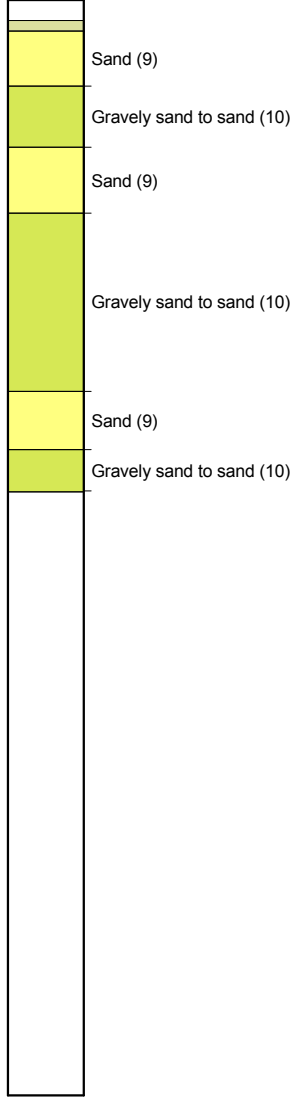
Location: Nevada Facility Henderson NV

Test no.: PSS-1



Depth	Normalized cone resistance	Normalized friction ratio	Relative density	Effective friction angle	Undrained shear strength	Constrained modulus	I _c	N160	N160Ic
	Q _t	FR	I _D	Φ	S _u	M	I _c	(N1) ₆₀	(N1) _{60Ic}
[ft]	[]	[%]	[%]	[deg]	[T/ft ²]	[T/ft ²]	[]	[blows]	[blows]
0.32	225505.60	0.12	102.13	48.00		837.94	0.40	20	13
0.57	6105.40	0.20	132.03	48.00		1357.85	0.61	36	21
0.82	5556.70	0.30	135.52	48.00		1857.17	0.75	51	30
1.07	5301.00	0.48	139.09	48.00		2497.92	0.93	72	42
1.32	4717.80	0.67	139.56	48.00		2889.37	1.07	86	51
1.57	4104.80	0.82	138.12	48.00		3000.95	1.14	91	54
1.82	3693.70	0.89	137.23	48.00		3134.98	1.17	96	57
2.07	3401.60	0.78	136.75	48.00		3293.35	1.11	99	59
2.32	3346.10	0.71	138.05	48.00		3666.25	1.07	110	64
2.57	3176.30	0.54	138.43	48.00		3961.56	0.94	114	67
2.82	2970.60	0.53	137.84	48.00		4066.55	0.93	117	69
3.07	2783.80	0.70	137.52	48.00		4243.02	1.07	127	74
3.32	2888.20	0.51	139.73	48.00		4776.47	0.92	137	80
3.57	2760.80	0.75	139.48	48.00		4911.50	1.08	147	87
3.82	2364.70	1.16	135.92	48.00		4508.38	1.28	143	84
4.07	1858.30	1.47	130.20	48.00		3812.53	1.40	126	74
4.32	1538.20	0.92	125.29	48.00		3296.28	0.86	97	57
4.57	1293.00	0.00	121.41	48.00		2963.77	0.00	68	40

Classification by Robertson 1986



Location:	Nevada Facility, Henderson, NV	Position:		Ground level:		Test No.:	PSS-1
Project ID:		Client:	NORTHGATE	Date:	10-4-10	Scale:	1 : 22
Project:	TRONOX REMEDIATION			Page:	1/1	Fig.:	
				File:	CA04O1001C.cpd		

Client: NORTHGATE

Project name: TRONOX REMEDIATION

Location: Nevada Henderson NV

Test no.: PSS-2



Depth	Point resistance	Corrected point resistance	Sleeve friction resistance	Corrected local friction	Friction ratio = ft/qt*100%	Pore pressure behind cone	Unit weight [SBT Fr 1986]
	qc	qt	fs	ft	Rf	U ₂	UW
[ft]	[T/ft ²]	[T/ft ²]	[T/ft ²]	[T/ft ²]	[%]	[lb/in ²]	[lb/ft ³]
0.29	140.75	140.76	0.55	0.55	0.31	0.67	122.85
0.54	252.15	252.17	1.61	1.61	0.65	1.60	124.92
0.79	236.68	236.69	2.40	2.40	1.01	1.23	124.13
1.04	285.10	285.14	3.35	3.35	1.17	2.93	124.13
1.29	322.28	322.34	3.80	3.80	1.18	3.95	124.13
1.54	282.77	282.81	4.17	4.17	1.49	3.41	121.74
1.79	240.90	240.92	3.85	3.85	1.60	1.20	120.94
2.04	206.37	206.40	2.90	2.90	1.40	2.18	121.74
2.29	221.66	221.70	2.80	2.80	1.26	2.55	124.13
2.54	232.37	232.42	2.71	2.71	1.17	3.92	124.13
2.79	256.80	256.86	2.63	2.63	1.02	4.64	124.13
3.04	284.56	284.64	3.57	3.57	1.26	5.85	124.13
3.29	281.96	282.05	3.91	3.91	1.39	6.34	124.13
3.54	283.84	283.92	3.93	3.93	1.38	6.13	123.33
3.79	285.60	285.70	3.84	3.84	1.35	7.51	124.13
4.04	275.07	275.19	3.39	3.39	1.23	8.63	124.13
4.29	276.22	276.34	3.12	3.12	1.13	8.73	124.13
4.54	251.13	251.24	2.99	2.99	1.19	7.40	124.13
4.79	222.95	223.03	2.57	2.57	1.15	6.16	124.13
5.04	215.15	215.28	3.45	3.45	1.60	9.37	121.58
5.29	231.56	231.68	4.65	4.65	2.02	8.56	120.15
5.54	200.89	200.98	4.51	4.51	2.24	6.45	118.56
5.79	176.48	176.58	2.88	2.88	1.62	7.60	120.94
6.04	157.23	157.30	1.84	1.84	1.17	5.44	121.74
6.29	152.27	152.31	2.05	2.05	1.35	2.76	120.94

6.54	157.00	157.02	2.38	2.38	1.52	1.33	120.94
6.79	179.52	179.51	2.35	2.35	1.31	-0.22	120.94
7.04	206.27	206.30	2.49	2.49	1.21	2.50	122.53
7.29	229.58	229.65	3.11	3.11	1.35	5.26	120.94
7.54	281.05	281.27	4.49	4.49	1.58	16.68	120.94
7.79	319.36	319.67	6.46	6.46	2.02	22.98	120.94
8.04	357.23	357.68	6.78	6.78	1.90	32.88	120.94
8.29	400.85	401.19	6.59	6.59	1.65	24.59	122.22
8.54	416.06	416.20	6.74	6.74	1.62	10.11	121.74
8.79	412.51	412.71	6.47	6.47	1.57	14.61	122.53
9.04	445.51	445.87	7.04	7.04	1.58	26.10	123.06
9.29	472.51	472.78	8.32	8.32	1.76	19.50	120.94
9.54	460.72	460.88	7.16	7.16	1.55	11.84	123.06
9.79	430.83	430.95	7.12	7.12	1.65	8.41	121.74
10.04	399.33	399.46	7.31	7.31	1.83	9.21	120.94
10.29	354.31	354.39	6.51	6.51	1.84	5.92	120.94
10.54	325.75	325.83	7.55	7.55	2.34	5.51	120.15
10.79	276.30	276.41	6.73	6.73	2.42	8.63	119.35
11.04	307.77	308.05	5.34	5.34	1.78	20.59	121.74
11.29	356.32	356.68	4.24	4.24	1.19	26.29	124.13
11.54	337.16	337.20	4.49	4.49	1.33	2.61	124.13
11.79	356.63	356.69	5.00	5.00	1.40	4.42	124.13
12.04	381.40	381.51	5.34	5.34	1.40	8.30	124.13
12.29	377.91	378.00	4.77	4.77	1.26	6.64	124.13
12.54	367.24	367.33	5.16	5.16	1.41	6.14	124.13
12.79	400.37	400.48	5.78	5.78	1.45	7.94	124.13
13.04	452.91	453.03	5.87	5.87	1.30	8.90	124.13
13.29	445.84	445.96	3.23	3.23	0.72	8.66	126.51
13.54	449.16	449.25	4.24	4.24	0.94	6.38	126.25
13.79	452.44	452.48	6.47	6.47	1.43	3.38	124.13
14.04	438.40	438.48	6.24	6.24	1.42	6.26	124.13
14.29	432.58	432.77	7.25	7.25	1.68	13.52	121.74
14.54	417.08	417.28	6.48	6.48	1.55	14.65	123.06
14.79	414.45	414.63	4.21	4.21	1.02	13.34	125.40

15.04	371.82	371.89	5.40	5.40	1.45	5.37	124.13
15.29	334.31	334.40	5.79	5.79	1.74	6.73	121.58
15.54	282.51	282.61	5.48	5.48	1.95	7.40	120.94
15.79	245.22	245.32	5.25	5.25	2.14	7.86	119.67
16.04	239.13	239.24	4.81	4.81	2.01	8.27	119.35
16.29	266.45	266.57	3.65	3.65	1.39	9.11	122.22
16.54	327.89	328.08	2.53	2.53	0.77	13.41	124.13
16.79	349.46	349.58	4.33	4.33	1.24	8.85	124.13
17.04	335.50	335.59	4.73	4.73	1.41	6.32	123.49
17.29	322.96	323.07	3.59	3.59	1.11	8.16	124.13
17.54	326.15	326.27	4.20	4.20	1.29	8.99	124.13
17.79	325.08	325.19	5.50	5.50	1.69	8.23	121.74
18.04	324.96	325.09	5.70	5.70	1.75	9.74	120.94
18.29	374.38	374.54	5.30	5.30	1.43	11.60	122.53
18.54	465.33	465.58	3.78	3.78	0.82	17.98	126.03
18.79	484.21	484.37	3.98	3.98	0.82	12.11	127.31
19.04	475.79	476.03	4.82	4.82	1.02	18.03	125.19
19.29	459.43	459.61	7.83	7.83	1.71	12.91	122.00
19.54	452.05	452.32	8.96	8.96	1.98	19.20	120.94
19.79	445.27	445.56	6.49	6.49	1.46	21.14	123.49
20.04	415.30	415.52	8.08	8.08	1.96	15.47	122.00
20.29	372.46	372.65	8.05	8.05	2.15	13.53	120.94
20.54	319.33	319.46	5.48	5.48	1.71	10.10	122.00
20.79	299.69	299.80	2.90	2.90	0.97	7.80	124.13
21.04	290.51	290.58	3.31	3.31	1.14	5.37	124.13
21.29	263.35	263.41	3.75	3.75	1.42	4.79	121.74
21.54	232.56	232.61	2.99	2.99	1.29	3.71	123.49
21.79	221.88	221.93	2.85	2.85	1.28	3.95	123.33
22.04	222.74	222.83	3.24	3.24	1.46	6.67	120.94
22.29	252.90	253.01	4.11	4.11	1.62	8.29	120.94
22.54	281.07	281.24	4.76	4.76	1.70	12.25	120.94
22.79	277.78	277.96	5.01	5.01	1.80	12.76	120.94
23.04	265.23	265.42	4.35	4.35	1.64	13.70	120.94
23.29	250.98	251.12	3.61	3.61	1.44	10.63	122.00

23.54	245.16	245.27	3.57	3.57	1.46	7.98	121.74
23.79	235.97	236.08	3.71	3.71	1.57	7.98	120.94
24.04	214.77	214.86	3.18	3.18	1.48	6.12	120.94
24.29	203.40	203.48	2.53	2.53	1.25	6.27	122.53
24.54	211.83	211.90	2.60	2.60	1.23	4.97	123.33
24.79	245.09	245.16	2.99	2.99	1.22	4.90	124.13
25.04	277.26	277.34	2.91	2.91	1.05	5.69	124.13
25.29	326.04	326.12	2.82	2.82	0.87	5.54	124.13
25.54	390.40	390.51	3.05	3.05	0.78	7.47	126.51
25.79	479.82	479.98	3.52	3.52	0.74	11.49	127.31
26.04	556.39	556.62	3.86	3.86	0.70	16.88	127.31
26.29	557.24	557.51	3.22	3.22	0.58	20.05	127.31
26.54	537.09	537.19	3.64	3.64	0.68	7.83	127.31
26.79	542.57	542.72	3.59	3.59	0.66	11.22	127.31
27.04	544.45	544.60	3.46	3.46	0.64	11.27	127.31
27.29	536.53	536.71	3.48	3.48	0.65	13.05	127.31
27.54	517.68	517.84	1.71	1.71	0.33	12.15	127.31
27.79	534.49	534.58	0.00	0.00	0.00	6.38	127.31
28.04	543.61	543.62	0.00	0.00	0.00	0.58	127.31

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Project name: TRONOX REMEDIATION

Location: Nevada Facility Henderson NV

Test no.: PSS-2



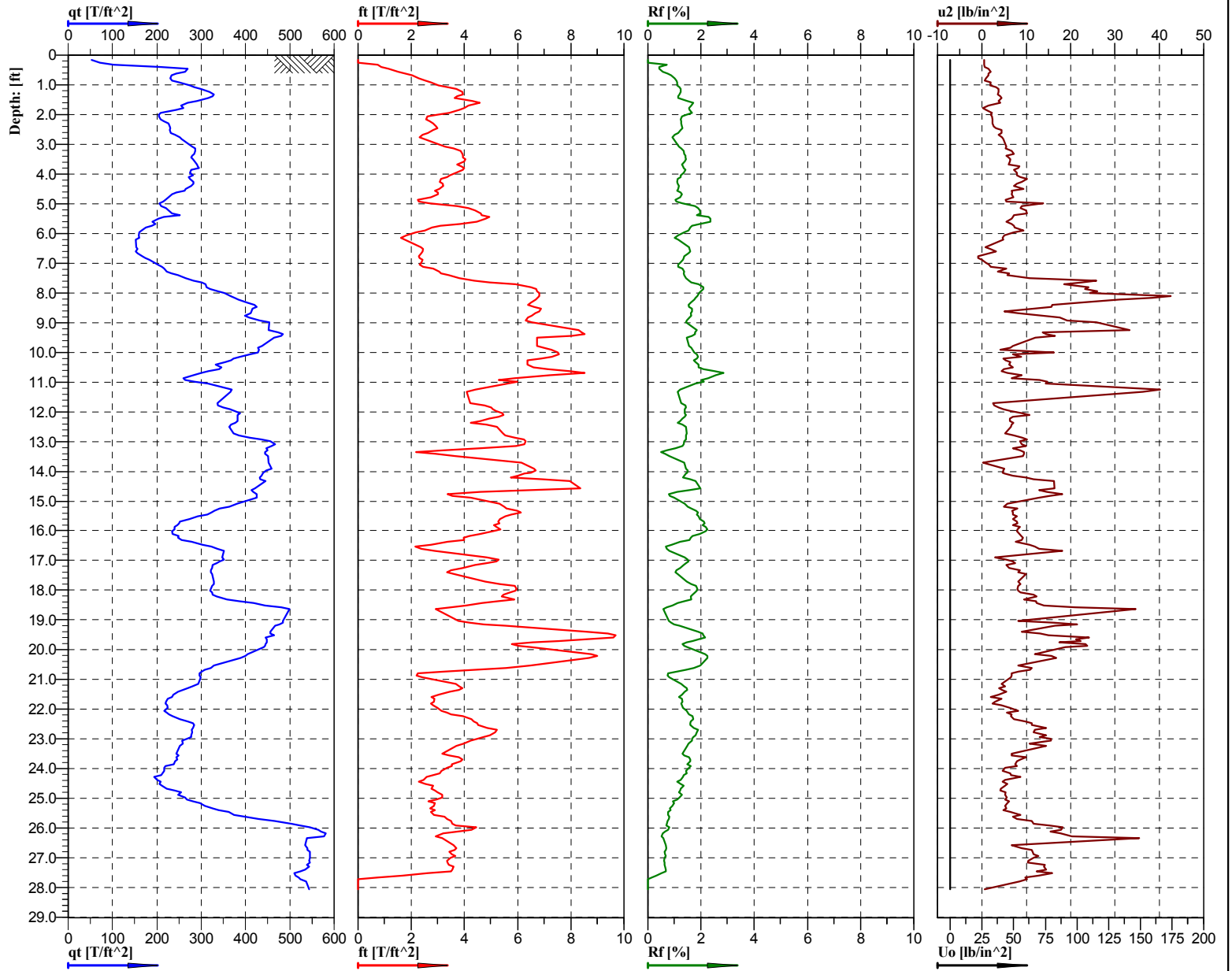
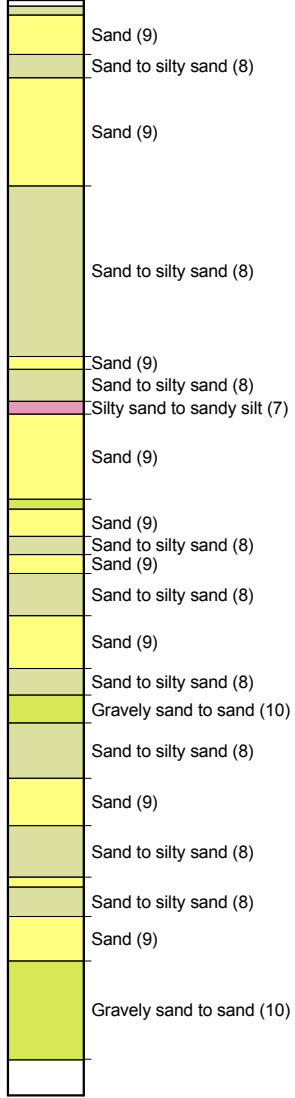
Depth	Normalized cone resistance	Normalized friction ratio	Relative density	Effective friction angle	Undrained shear strength	Constrained modulus	Ic	N160	N160Ic
	Qt	FR	I _D	Φ	S _U	M	I _c	(N1) ₆₀	(N1) _{60Ic}
[ft]	[]	[%]	[%]	[deg]	[T/ft ²]	[T/ft ²]	[]	[blows]	[blows]
0.29	111625.60	0.31	112.86	48.00		1161.20	0.68	33	20
0.54	10355.30	0.65	145.58	48.00		2080.22	1.16	64	37
0.79	5999.20	1.01	137.30	48.00		1952.38	1.26	62	36
1.04	5041.20	1.17	137.52	48.00		2351.90	1.31	75	44
1.29	4424.30	1.18	137.44	48.00		2658.68	1.30	85	50
1.54	3275.80	1.49	131.08	48.00		2332.50	1.39	77	45
1.79	2386.10	1.60	124.28	48.00		1986.76	1.43	66	39
2.04	1789.80	1.40	118.10	48.00		1701.85	1.38	56	33
2.29	1679.80	1.26	118.22	48.00		1827.94	1.34	59	35
2.54	1565.60	1.17	117.89	48.00		1916.26	1.32	62	36
2.79	1558.00	1.02	119.24	48.00		2117.73	1.26	67	39
3.04	1545.20	1.26	120.61	48.00		2346.77	1.35	76	45
3.29	1440.90	1.39	119.47	48.00		2325.25	1.40	77	45
3.54	1357.90	1.39	118.72	48.00		2340.62	1.40	77	45
3.79	1269.90	1.35	117.83	48.00		2355.18	1.40	78	46
4.04	1141.30	1.23	115.78	48.00		2268.30	1.37	74	44
4.29	1074.20	1.13	114.96	48.00		2277.67	1.35	74	43
4.54	918.40	1.19	111.32	48.00		2070.46	1.39	68	40
4.79	776.00	1.15	107.22	48.00		1837.62	1.41	61	36
5.04	709.30	1.60	105.44	48.00		1773.53	1.54	61	36
5.29	725.00	2.02	106.77	48.00		1908.69	1.64	68	40
5.54	604.20	2.25	102.14	48.00		1655.34	1.72	61	36
5.79	507.40	1.62	97.71	47.79		1453.92	1.62	52	30
6.04	430.70	1.17	93.81	47.35		1294.74	1.54	44	26
6.29	401.00	1.35	92.34	47.09		1253.43	1.60	43	26
6.54	396.20	1.52	92.60	47.05		1292.12	1.65	45	27

6.79	435.30	1.32	95.84	47.39		1477.60	1.58	49	30
7.04	484.60	1.21	99.39	47.75		1698.51	1.52	54	34
7.29	522.80	1.35	101.99	47.94		1891.00	1.55	60	38
7.54	617.80	1.59	107.22	48.00		2316.74	1.57	72	48
7.79	679.10	2.02	110.47	48.00		2633.41	1.65	83	55
8.04	738.80	1.90	113.28	48.00		2946.87	1.62	90	61
8.29	801.90	1.65	116.10	48.00		3305.70	1.54	98	67
8.54	806.90	1.62	116.75	48.00		3429.38	1.54	99	69
8.79	779.50	1.57	116.12	48.00		3400.52	1.53	97	69
9.04	818.10	1.58	117.92	48.00		3673.91	1.52	103	74
9.29	839.80	1.76	119.14	48.00		3895.82	1.56	109	80
9.54	799.30	1.55	118.05	48.00		3797.52	1.52	104	77
9.79	723.40	1.65	115.69	48.00		3550.41	1.56	97	73
10.04	655.90	1.83	113.15	48.00		3290.48	1.62	90	69
10.29	568.40	1.84	109.41	48.00		2918.63	1.65	80	61
10.54	509.90	2.34	106.63	47.86		2682.82	1.76	75	59
10.79	424.00	2.42	101.62	47.28		2275.03	1.81	65	51
11.04	461.20	1.78	104.22	47.53		2535.93	1.67	67	54
11.29	517.50	1.19	108.13	47.90		2936.91	1.50	73	59
11.54	475.10	1.33	106.16	47.69		2776.05	1.56	69	57
11.79	496.80	1.41	107.59	47.83		2936.80	1.57	73	60
12.04	522.60	1.40	109.29	47.97		3141.45	1.56	77	64
12.29	507.90	1.27	108.75	47.90		3112.35	1.53	75	63
12.54	483.30	1.41	107.63	47.74		3024.19	1.58	73	62
12.79	515.30	1.45	109.74	47.89		3297.58	1.58	79	68
13.04	571.80	1.30	113.03	48.00		3730.98	1.51	87	75
13.29	552.20	0.72	112.32	48.00		3672.50	1.29	79	69
13.54	546.90	0.94	112.29	48.00		3699.55	1.39	81	72
13.79	537.50	1.43	112.14	48.00		3726.04	1.56	85	76
14.04	512.40	1.42	111.01	47.93		3610.44	1.57	82	74
14.29	496.60	1.68	110.36	47.83		3563.15	1.64	82	75
14.54	469.30	1.56	109.03	47.65		3435.25	1.61	78	71
14.79	459.20	1.03	108.60	47.57		3413.27	1.47	73	68
15.04	403.60	1.46	105.23	47.12		3060.54	1.63	69	64
15.29	358.70	1.74	101.98	46.63		2751.13	1.72	63	59
15.54	298.20	1.95	96.87	45.85		2323.74	1.81	55	52

15.79	254.70	2.15	92.68	45.25		2015.98	1.88	48	46
16.04	244.50	2.02	91.74	45.08		1965.72	1.87	47	45
16.29	268.20	1.40	94.54	45.44		2191.08	1.71	49	47
16.54	325.20	0.78	100.30	46.21		2698.35	1.46	55	53
16.79	340.90	1.24	101.93	46.42		2875.63	1.60	61	60
17.04	322.30	1.41	100.53	46.16		2760.02	1.67	59	59
17.29	305.40	1.12	99.23	45.93		2656.64	1.61	55	55
17.54	304.30	1.29	99.32	45.92		2682.87	1.65	56	57
17.79	299.30	1.70	99.03	45.86		2673.87	1.76	58	58
18.04	294.90	1.76	98.81	45.81		2672.91	1.77	58	59
18.29	335.10	1.44	102.57	46.33		3080.74	1.67	64	65
18.54	409.80	0.82	108.61	47.16		3831.67	1.42	72	75
18.79	416.60	0.82	109.47	47.24		3986.51	1.42	74	78
19.04	407.40	1.02	108.89	47.16		3917.64	1.50	75	78
19.29	389.30	1.71	107.75	46.98		3782.03	1.69	77	81
19.54	378.50	1.98	107.10	46.86		3721.76	1.76	77	81
19.79	368.40	1.46	106.51	46.76		3665.88	1.65	72	77
20.04	338.90	1.97	104.29	46.38		3417.88	1.78	70	75
20.29	300.20	2.16	100.91	45.87		3064.14	1.85	64	69
20.54	253.80	1.72	96.41	45.23		2625.21	1.80	54	58
20.79	235.80	0.97	94.46	44.92		2462.88	1.62	47	52
21.04	225.20	1.15	93.35	44.71		2386.72	1.69	46	51
21.29	201.90	1.43	90.37	44.19		2162.46	1.80	43	48
21.54	176.00	1.29	86.63	43.61		1908.20	1.81	38	43
21.79	165.80	1.29	85.13	43.38		1819.93	1.83	36	41
22.04	164.80	1.46	85.09	43.35		1827.23	1.87	37	42
22.29	185.00	1.63	88.48	43.81		2076.12	1.87	42	47
22.54	203.50	1.70	91.43	44.22		2308.86	1.86	46	52
22.79	199.00	1.81	90.95	44.10		2281.69	1.89	46	52
23.04	188.20	1.65	89.48	43.87		2178.12	1.87	43	50
23.29	176.10	1.44	87.74	43.62		2060.06	1.84	40	47
23.54	169.70	1.47	86.89	43.48		2011.61	1.86	39	46
23.79	161.90	1.58	85.65	43.27		1935.71	1.90	38	45
24.04	145.60	1.49	82.81	42.81		1760.48	1.91	35	41
24.29	136.30	1.26	81.09	42.49		1666.51	1.88	32	38
24.54	140.70	1.24	82.12	42.65		1735.78	1.86	33	40

24.79	161.20	1.23	86.11	43.25		2010.05	1.82	38	45
25.04	180.60	1.06	89.52	43.71		2275.42	1.74	41	50
25.29	210.30	0.87	93.97	44.37		2677.73	1.63	46	56
25.54	249.40	0.78	99.00	45.15		3208.81	1.55	54	65
25.79	304.00	0.74	104.76	45.92		3946.87	1.47	64	78
26.04	349.30	0.70	108.92	46.24		4579.00	1.41	73	89
26.29	345.80	0.58	108.80	46.19		4586.19	1.35	71	88
26.54	329.40	0.68	107.60	46.13		4418.42	1.42	70	86
26.79	330.50	0.66	107.79	46.10		4463.91	1.41	70	87
27.04	328.60	0.64	107.76	46.05		4479.28	1.40	70	87
27.29	320.60	0.65	107.19	46.01		4414.07	1.41	69	86
27.54	305.90	0.33	106.01	45.93		4258.29	1.02	60	75
27.79	312.70	0.00	106.79	45.93		4396.25	0.00	47	59
28.04	315.70	0.00	107.17	45.91		4470.72	0.00	48	60

Classification by Robertson 1986



Location: Nevada Facility, Henderson, NV	Position: NORTHGATE	Ground level:	Test No.: PSS-2
Project ID:	Client: NORTHGATE	Date: 10-4-10	Scale: 1 : 61
Project: TRONOX REMEDIATION		Page: 1/1	Fig.:
		File: CA04O1002C.cpd	

Client: NORTHGATE

Project name: TRONOX REMEDIATION

Location: Nevada Henderson NV

Test no.: PSS-3



Depth	Point resistance	Corrected point resistance	Sleeve friction resistance	Corrected local friction	Friction ratio = ft/qt*100%	Pore pressure behind cone	Unit weight [SBT Fr 1986]
	qc	qt	fs	ft	Rf	U ₂	UW
[ft]	[T/ft ²]	[T/ft ²]	[T/ft ²]	[T/ft ²]	[%]	[lb/in ²]	[lb/ft ³]
0.33	250.98	251.00	1.68	1.68	0.60	1.94	124.13
0.58	388.19	388.25	4.27	4.27	1.09	4.64	124.13
0.83	480.80	480.89	7.72	7.72	1.57	6.72	123.06
1.08	693.18	693.34	13.26	13.26	1.91	11.65	120.94
1.33	645.86	646.13	16.11	16.11	2.52	19.40	120.94
1.58	525.32	525.56	15.14	15.14	2.88	17.94	120.94
1.83	451.82	452.10	12.73	12.73	2.81	20.39	120.94
2.08	407.26	407.52	9.61	9.61	2.35	19.00	120.94
2.33	347.76	347.97	6.62	6.62	1.90	15.43	120.94
2.58	311.87	312.07	5.00	5.00	1.60	14.50	121.74
2.83	299.94	300.13	3.20	3.20	1.06	13.78	124.13
3.08	309.81	309.93	3.62	3.62	1.17	9.14	124.13
3.33	330.14	330.28	4.04	4.04	1.21	10.04	124.13
3.58	385.60	385.73	5.76	5.76	1.49	9.64	124.13
3.83	382.21	382.37	5.93	5.93	1.55	11.53	122.53
4.08	377.96	378.15	6.12	6.12	1.62	13.34	120.94
4.33	384.77	384.96	6.32	6.32	1.64	14.36	120.94
4.58	389.88	390.08	6.47	6.47	1.66	14.61	120.94
4.83	340.11	340.32	6.40	6.40	1.89	15.48	120.94
5.08	294.93	295.18	6.01	6.01	2.04	18.13	120.94
5.33	292.72	292.96	5.13	5.13	1.76	17.55	120.94
5.58	333.43	333.69	5.50	5.50	1.65	19.00	120.94
5.83	401.98	402.28	6.22	6.22	1.55	21.95	122.85
6.08	379.01	379.29	6.57	6.57	1.74	20.21	120.94
6.33	341.23	341.50	5.24	5.24	1.53	19.43	122.53

6.58	363.71	364.04	3.13	3.13	0.83	23.93	126.03
6.83	466.67	466.95	6.21	6.21	1.33	20.45	124.13
7.08	431.61	431.91	6.35	6.35	1.48	21.72	123.49
7.33	324.16	324.37	5.39	5.39	1.67	15.15	120.94
7.58	275.79	276.00	4.96	4.96	1.79	14.98	120.94
7.83	241.76	241.99	4.44	4.44	1.84	16.28	120.94
8.08	216.53	216.71	4.85	4.85	2.25	13.69	118.40
8.33	204.70	204.95	4.91	4.91	2.41	17.91	118.56
8.58	277.26	277.61	4.07	4.07	1.52	25.27	122.53
8.83	351.34	351.63	4.32	4.32	1.22	20.98	123.06
9.08	341.91	342.00	6.18	6.18	1.82	6.82	120.94
9.33	288.85	289.01	6.09	6.09	2.11	11.02	119.67
9.58	283.13	283.31	5.33	5.33	1.88	12.80	120.94
9.83	275.38	275.57	4.69	4.69	1.70	13.63	120.94
10.08	250.94	251.13	4.13	4.13	1.64	14.24	120.94
10.33	258.55	258.75	4.03	4.03	1.56	15.15	120.94
10.58	286.37	286.60	4.21	4.21	1.47	16.68	122.00
10.83	304.82	305.01	4.82	4.82	1.58	13.74	121.74
11.08	339.17	339.37	6.17	6.17	1.81	14.75	120.94
11.33	408.66	409.06	8.87	8.87	2.16	28.94	120.94
11.58	415.05	415.50	10.85	10.85	2.67	32.77	120.94
11.83	281.02	281.33	9.56	9.56	3.40	22.95	120.94
12.08	226.55	226.85	7.73	7.73	3.41	22.08	120.94
12.33	184.79	185.12	6.36	6.36	3.44	24.42	120.94
12.58	198.18	198.57	6.43	6.43	3.25	29.00	120.94
12.83	195.10	195.44	5.99	5.99	3.06	24.98	119.35
13.08	182.80	183.10	4.68	4.68	2.56	21.63	118.40
13.33	190.90	191.27	3.53	3.53	1.85	27.12	120.94
13.58	252.89	253.61	6.65	6.65	2.51	52.35	119.88
13.83	286.61	287.57	11.29	11.29	3.97	70.28	124.13
14.08	233.47	234.34	12.91	12.91	5.54	63.98	130.49
14.33	222.06	223.02	12.70	12.70	5.70	70.41	130.49
14.58	267.26	268.23	10.05	10.05	3.84	70.43	123.33
14.83	319.55	320.37	7.73	7.73	2.42	59.74	119.67

15.08	309.42	310.11	6.84	6.84	2.20	50.75	120.94
15.33	277.23	277.77	5.86	5.86	2.11	39.01	120.15
15.58	268.85	269.32	5.20	5.20	1.94	34.08	120.31
15.83	314.09	314.56	3.01	3.01	0.97	34.29	123.33
16.08	331.05	331.47	2.73	2.73	0.83	30.21	124.13
16.33	299.47	299.77	3.63	3.63	1.22	21.71	124.13
16.58	286.04	286.33	4.24	4.24	1.48	21.40	122.22
16.83	283.89	284.19	4.11	4.11	1.46	21.82	122.53
17.08	326.20	326.46	3.57	3.57	1.10	19.29	124.13
17.33	307.09	307.26	4.03	4.03	1.33	12.04	122.53
17.58	312.78	312.92	5.52	5.52	1.76	10.37	120.94
17.83	381.01	381.21	9.00	9.00	2.39	14.54	120.94
18.08	384.26	384.51	12.63	12.63	3.31	18.46	120.94
18.33	384.19	384.58	12.05	12.05	3.16	28.35	120.94
18.58	365.21	365.72	8.52	8.52	2.37	37.32	121.58
18.83	373.96	374.29	3.84	3.84	1.02	23.85	124.13
19.08	299.73	300.01	3.19	3.19	1.07	20.55	124.13
19.33	213.24	213.48	2.45	2.45	1.15	17.65	124.13
19.58	175.91	176.14	2.20	2.20	1.25	16.17	121.74
19.83	165.00	165.22	2.20	2.20	1.33	15.95	120.94
20.08	170.90	171.12	2.01	2.01	1.17	15.99	122.53
20.33	179.36	179.57	2.09	2.09	1.16	15.32	122.00
20.58	192.83	193.02	2.52	2.52	1.30	14.32	120.94
20.83	212.48	212.67	2.82	2.82	1.33	14.21	122.53
21.08	206.24	206.43	2.97	2.97	1.45	13.67	121.74
21.33	188.21	188.40	2.98	2.98	1.58	13.40	120.94
21.58	196.95	197.11	3.02	3.02	1.54	11.93	120.94
21.83	197.60	197.75	2.92	2.92	1.48	10.62	120.94
22.08	177.98	178.11	2.58	2.58	1.45	9.97	120.94
22.33	158.77	158.91	2.11	2.11	1.33	10.40	120.94
22.58	166.37	166.53	1.88	1.88	1.13	11.34	122.22
22.83	187.76	187.92	1.96	1.96	1.04	11.64	124.13
23.08	209.66	209.82	2.39	2.39	1.13	11.89	124.13
23.33	219.06	219.23	2.94	2.94	1.34	12.83	121.74

23.58	219.03	219.22	3.12	3.12	1.43	13.67	120.94
23.83	225.96	226.14	2.84	2.84	1.26	13.34	123.06
24.08	245.99	246.18	2.92	2.92	1.18	13.83	124.13
24.33	264.03	264.23	3.58	3.58	1.35	14.79	123.33
24.58	276.63	276.85	4.76	4.76	1.72	15.88	120.94
24.83	347.86	348.11	6.41	6.41	1.85	18.33	120.94
25.08	458.86	459.18	6.01	6.01	1.33	23.02	124.13
25.33	544.37	544.73	2.73	2.73	0.50	26.28	127.31
25.58	498.61	498.92	0.00	0.00	0.00	22.19	127.31

Client: NORTHGATE

Project name: TRONOX REMEDIATION

Location: Nev. Henderson NV

Test no.: PSS-3



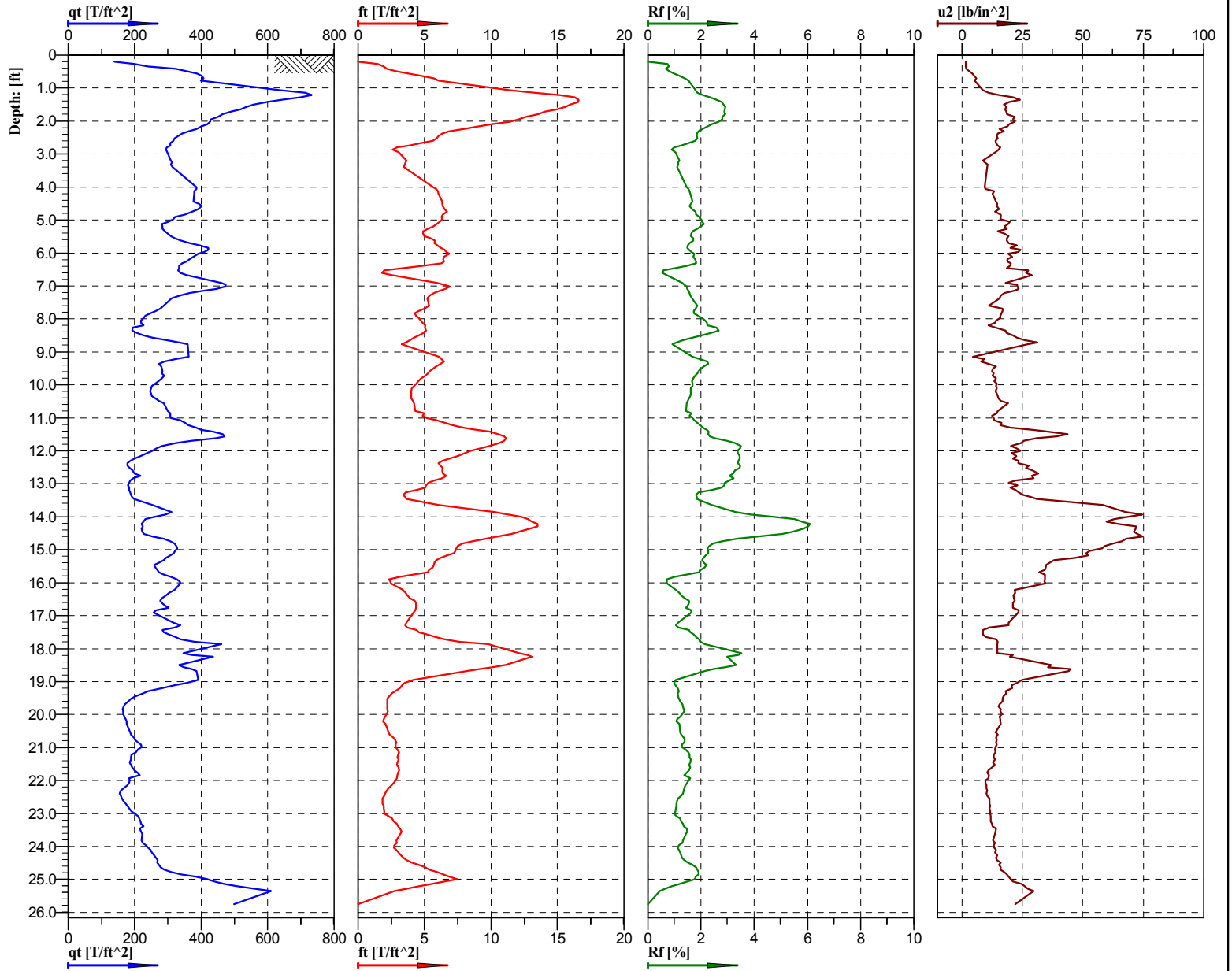
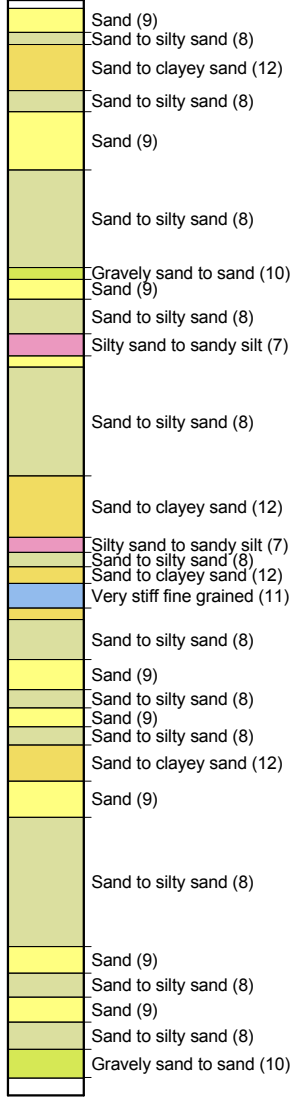
Depth	Normalized cone resistance	Normalized friction ratio	Relative density	Effective friction angle	Undrained shear strength	Constrained modulus	Ic	N160	N160Ic
	Qt	FR	I _D	Φ	S _U	M	I _c	(N1) ₆₀	(N1) _{60Ic}
[ft]	[]	[%]	[%]	[deg]	[T/ft ²]	[T/ft ²]	[]	[blows]	[blows]
0.32	287560.10	0.60	129.02	48.00		2070.71	1.17	65	39
0.57	16340.80	1.09	158.65	48.00		3202.89	1.45	107	63
0.82	11987.10	1.57	157.11	48.00		3966.99	1.54	137	81
1.07	12013.30	1.91	162.73	48.00		5719.55	1.62	202	119
1.32	9274.10	2.52	157.71	48.00		5329.95	1.69	193	114
1.57	6130.80	2.88	149.05	48.00		4335.16	1.71	158	93
1.82	4479.40	2.81	142.37	48.00		3729.00	1.68	135	79
2.07	3493.60	2.35	137.37	48.00		3361.13	1.59	118	69
2.32	2735.80	1.91	131.87	48.00		2929.33	1.50	100	59
2.57	2174.90	1.65	126.94	48.00		2603.44	1.44	87	51
2.82	1826.40	1.06	123.73	48.00		2474.70	1.26	78	46
3.07	1681.70	1.17	123.04	48.00		2555.45	1.31	82	48
3.32	1640.90	1.21	123.54	48.00		2723.12	1.33	88	52
3.57	1641.30	1.49	125.83	48.00		3180.39	1.42	105	62
3.82	1600.30	1.55	125.34	48.00		3152.57	1.44	105	62
4.07	1559.50	1.59	124.83	48.00		3122.08	1.45	104	61
4.32	1495.20	1.63	124.37	48.00		3154.93	1.46	106	62
4.57	1440.40	1.66	124.10	48.00		3215.94	1.47	108	64
4.82	1194.50	1.89	119.39	48.00		2805.31	1.55	97	57
5.07	988.60	2.04	114.67	48.00		2432.78	1.60	86	50
5.32	931.20	1.76	113.75	48.00		2414.29	1.55	83	49
5.57	1011.10	1.65	116.76	48.00		2750.18	1.51	94	55
5.82	1166.80	1.55	121.50	48.00		3315.97	1.47	112	66
6.07	1074.40	1.72	119.69	48.00		3174.99	1.52	109	64
6.32	925.60	1.58	116.03	48.00		2850.50	1.50	96	57

6.57	922.90	0.83	116.55	48.00		3000.06	1.23	91	55
6.82	1132.80	1.33	123.25	48.00		3848.91	1.41	120	75
7.07	1025.50	1.48	120.55	48.00		3559.77	1.46	112	70
7.32	739.90	1.67	111.80	48.00		2672.41	1.56	85	55
7.57	603.00	1.80	106.66	48.00		2273.17	1.63	72	47
7.82	516.30	1.84	102.51	47.87		1992.55	1.67	63	42
8.07	461.00	2.17	99.74	47.59		1829.98	1.75	59	40
8.32	420.00	2.38	97.46	47.24		1721.72	1.81	56	38
8.57	569.10	1.40	106.36	47.86		2419.93	1.53	70	49
8.82	673.60	1.30	112.10	48.00		2968.82	1.46	83	59
9.07	623.20	1.82	110.19	48.00		2816.97	1.63	82	59
9.32	522.30	2.14	105.33	47.89		2395.75	1.72	71	52
9.57	493.30	1.93	104.15	47.81		2325.36	1.69	68	50
9.82	468.40	1.71	103.03	47.64		2268.61	1.66	64	48
10.07	417.70	1.66	100.10	47.24		2070.88	1.67	58	44
10.32	414.00	1.58	100.22	47.21		2107.79	1.65	58	44
10.57	451.10	1.48	103.06	47.52		2359.20	1.61	63	49
10.82	466.90	1.58	104.46	47.64		2510.95	1.63	67	52
11.07	509.40	1.82	107.19	47.88		2794.32	1.67	75	59
11.32	600.60	2.16	112.15	48.00		3369.13	1.70	90	72
11.57	631.10	2.52	113.82	48.00		3608.98	1.75	97	79
11.82	421.90	3.32	102.43	47.19		2465.45	1.94	70	57
12.07	311.90	3.42	94.31	46.03		1865.52	2.01	54	45
12.32	249.80	3.44	88.31	45.15		1522.00	2.06	45	37
12.57	249.70	3.37	88.57	45.15		1549.97	2.05	45	38
12.82	254.50	3.10	89.38	45.23		1612.25	2.02	45	39
13.07	232.10	2.57	87.13	44.85		1504.09	1.97	41	36
13.32	238.00	1.86	88.10	44.95		1571.38	1.85	41	35
13.57	308.60	2.52	95.39	45.94		2085.53	1.89	54	48
13.82	343.80	3.98	99.08	46.80	18.28	2365.60	2.04	64	57
14.07	276.10	5.56	93.02		15.51	1926.34	2.22	56	50
14.32	257.50	5.72	91.36	45.32	14.67	1832.80	2.24	53	48
14.57	304.00	3.85	96.22	45.91		2205.63	2.05	59	53
14.82	357.90	2.46	101.29	46.62		2633.26	1.85	65	59

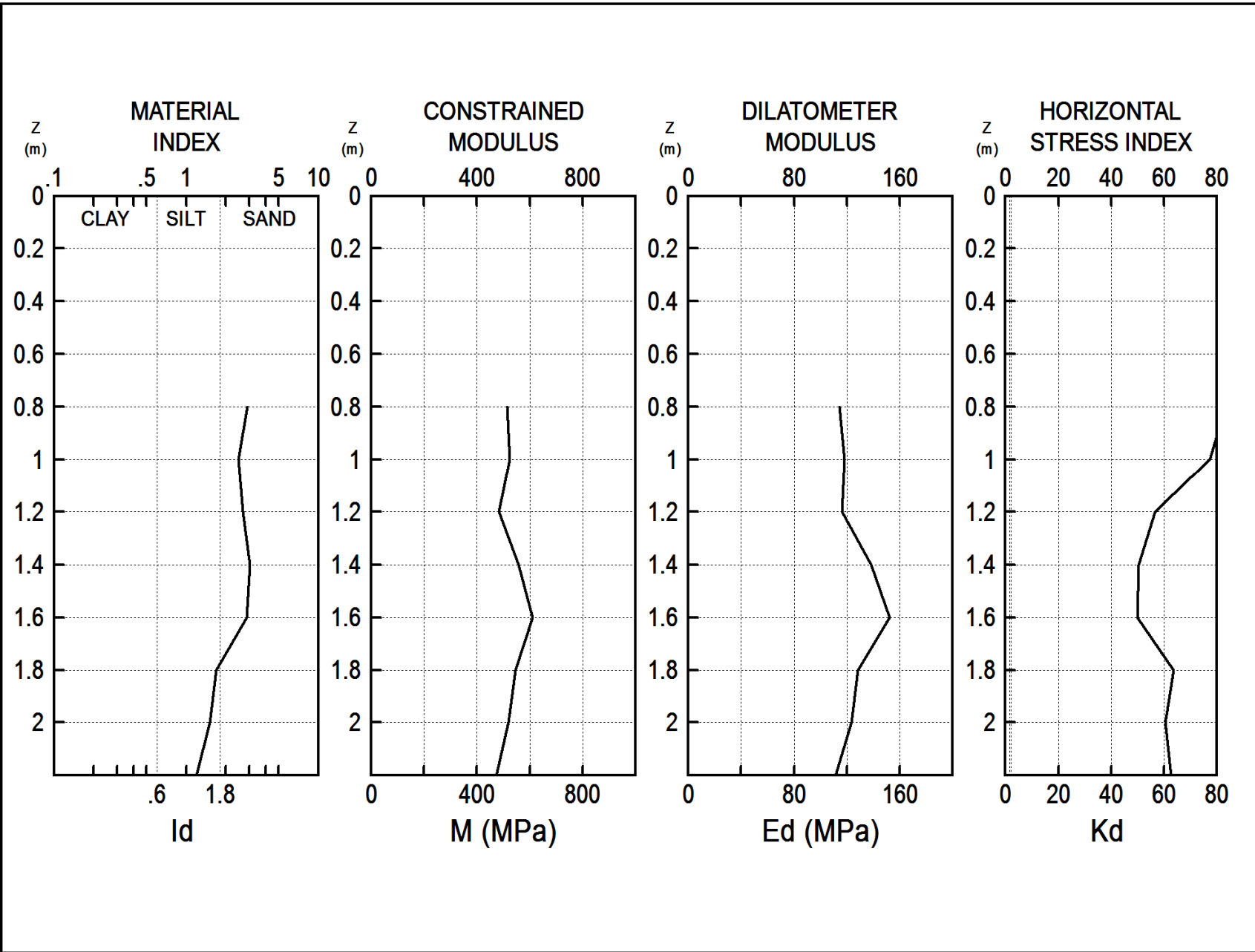
15.07	345.10	2.22	100.48	46.46		2582.15	1.82	62	58
15.32	300.20	2.12	96.73	45.86		2284.01	1.84	55	51
15.57	286.00	1.95	95.62	45.69		2214.12	1.82	52	49
15.82	333.10	0.93	100.22	46.31		2626.06	1.51	55	53
16.07	338.40	0.89	100.92	46.38		2706.99	1.49	57	54
16.32	303.80	1.22	98.03	45.92		2464.99	1.64	54	52
16.57	282.10	1.50	96.14	45.65		2322.51	1.73	52	50
16.82	279.90	1.48	96.10	45.59		2347.31	1.72	52	51
17.07	313.20	1.10	99.71	46.03		2684.70	1.59	56	55
17.32	299.30	1.25	98.44	45.86		2581.64	1.65	55	54
17.57	288.60	1.72	97.62	45.72		2522.74	1.77	55	55
17.82	353.00	2.40	103.44	46.51		3136.10	1.84	70	70
18.07	326.90	3.48	101.68	46.23		2951.13	2.00	69	71
18.32	344.00	3.25	103.07	46.42		3129.56	1.97	72	74
18.57	324.10	2.38	101.78	46.19		3007.95	1.84	66	68
18.82	326.00	1.03	102.22	46.20		3078.44	1.56	60	63
19.07	258.90	1.08	95.47	45.22		2465.59	1.64	49	52
19.32	189.00	1.15	86.89	43.89		1820.63	1.75	38	40
19.57	152.30	1.24	80.92	42.99		1485.42	1.84	32	34
19.82	136.80	1.34	78.14	42.51		1353.18	1.90	29	31
20.07	140.10	1.18	78.97	42.62		1401.75	1.85	30	32
20.32	145.30	1.17	80.18	42.79		1471.34	1.84	31	33
20.57	152.00	1.28	81.67	43.00		1560.08	1.85	33	35
20.82	165.50	1.34	84.23	43.36		1717.61	1.84	36	39
21.07	161.00	1.46	83.62	43.24		1692.53	1.87	35	39
21.32	145.30	1.60	80.88	42.80		1543.61	1.93	33	36
21.57	148.30	1.56	81.64	42.89		1596.26	1.92	33	37
21.82	148.80	1.49	81.85	42.88		1620.52	1.91	34	37
22.07	132.50	1.46	78.74	42.34		1458.42	1.93	30	34
22.32	116.80	1.34	75.33	41.78		1299.86	1.94	27	31
22.57	119.20	1.16	76.05	41.85		1340.10	1.89	27	31
22.82	132.80	1.06	79.29	42.35		1512.38	1.83	30	34
23.07	149.20	1.14	82.81	42.92		1719.55	1.82	34	39
23.32	154.40	1.35	83.92	43.07		1797.04	1.86	35	41

23.57	152.70	1.44	83.76	43.02		1796.78	1.88	36	41
23.82	155.60	1.27	84.48	43.11		1853.76	1.84	36	42
24.07	167.90	1.19	86.77	43.43		2018.95	1.80	38	45
24.32	178.30	1.36	88.65	43.67		2167.74	1.82	41	49
24.57	185.20	1.73	89.85	43.80		2271.77	1.89	44	52
24.82	230.50	1.86	96.02	44.74		2859.56	1.86	54	65
25.07	301.40	1.34	103.99	45.89		3775.70	1.66	67	80
25.32	353.60	0.50	108.70	46.31		4481.34	1.03	67	80
25.57	319.10	0.00	106.08	46.11		4103.23	0.00	46	55

Classification by Robertson 1986



Location: Nevada Facility, Henderson, NV	Position: NORTHGATE	Ground level:	Test No.: PSS-3
Project ID:	Client: NORTHGATE	Date: 10-4-10	Scale: 1 : 55
Project: TRONOX REMEDIATION		Page: 1/1	Fig.:
		File: CA04O1003C.csv	



Lankelma, Inc.

Northgate Environmental Management, Inc

Henderson, NV

INTERPRETED GEOTECHNICAL PARAMETERS

14 OCT 2010

TEST
SA-1

SA-1	LEGEND Z = Depth Below Ground Level Po,P1,P2 = Corrected A,B,C readings Id = Material Index Ed = Dilatometer Modulus Ud = Pore Press. Index = (P2-Uo)/(Po-Uo) Gamma = Bulk unit weight Sigma' = Effective overb. stress Uo = Pore pressure	INTERPRETED PARAMETERS Phi = Safe floor value of Friction Angle Ko = In situ earth press. coeff. M = Constrained modulus (at Sigma') Cu = Undrained shear strength Ocr = Overconsolidation ratio (OCR = 'relative OCR'- generally realistic. If accurate independent OCR available, apply suitable factor)	GENERAL PARAMETERS DeltaA = 10 kPa DeltaB = 96 kPa GammaTop = 17.0 kN/m ³ FactorEd = 34.7 Zm = 0.0 kPa Zabs = 0.0 m Zw > Zfinal
14 OCT 2010			
Lankelma, Inc. Northgate Environmental Management, Inc Henderson, NV			

Water Level below end of sounding

Reduction formulae according to Marchetti, ASCE Geot.Jnl.Mar. 1980, Vol.109, 299-321; Phi according to TC16 ISSMGE, 2001

Z (m)	A (kPa)	B (kPa)	C (kPa)	Po (kPa)	P1 (kPa)	P2 (kPa)	Gamma (kN/m ³)	Sigma' (kPa)	Uo (kPa)	Id	Kd	Ed (MPa)	Ud	Ko	Ocr	Phi (Deg)	M (MPa)	Cu (kPa)	SA-1 DESCRIPTION
0.8	1280	4520		1133	4424		21.1	14	0	2.90	83.3	114.2				48	514.7		SILTY SAND
1.0	1530	4880		1378	4784		21.1	18	0	2.47	77.3	118.2				48	524.4		SILTY SAND
1.2	1400	4700		1250	4604		21.1	22	0	2.68	56.7	116.4				47	482.2		SILTY SAND
1.4	1500	5400		1320	5304		21.1	26	0	3.02	50.3	138.2				47	557.0		SILTY SAND
1.6	1720	6000		1521	5904		21.1	30	0	2.88	49.9	152.1				47	611.7		SILTY SAND
1.8	2370	6000		2204	5904		20.6	35	0	1.68	63.5	128.4				47	545.7		SANDY SILT
2.0	2510	6000		2351	5904		20.6	39	0	1.51	60.6	123.3					518.5		SANDY SILT
2.2	2830	6000		2687	5904		20.6	43	0	1.20	62.6	111.6		5.2	>99.9		472.9	699	SILT