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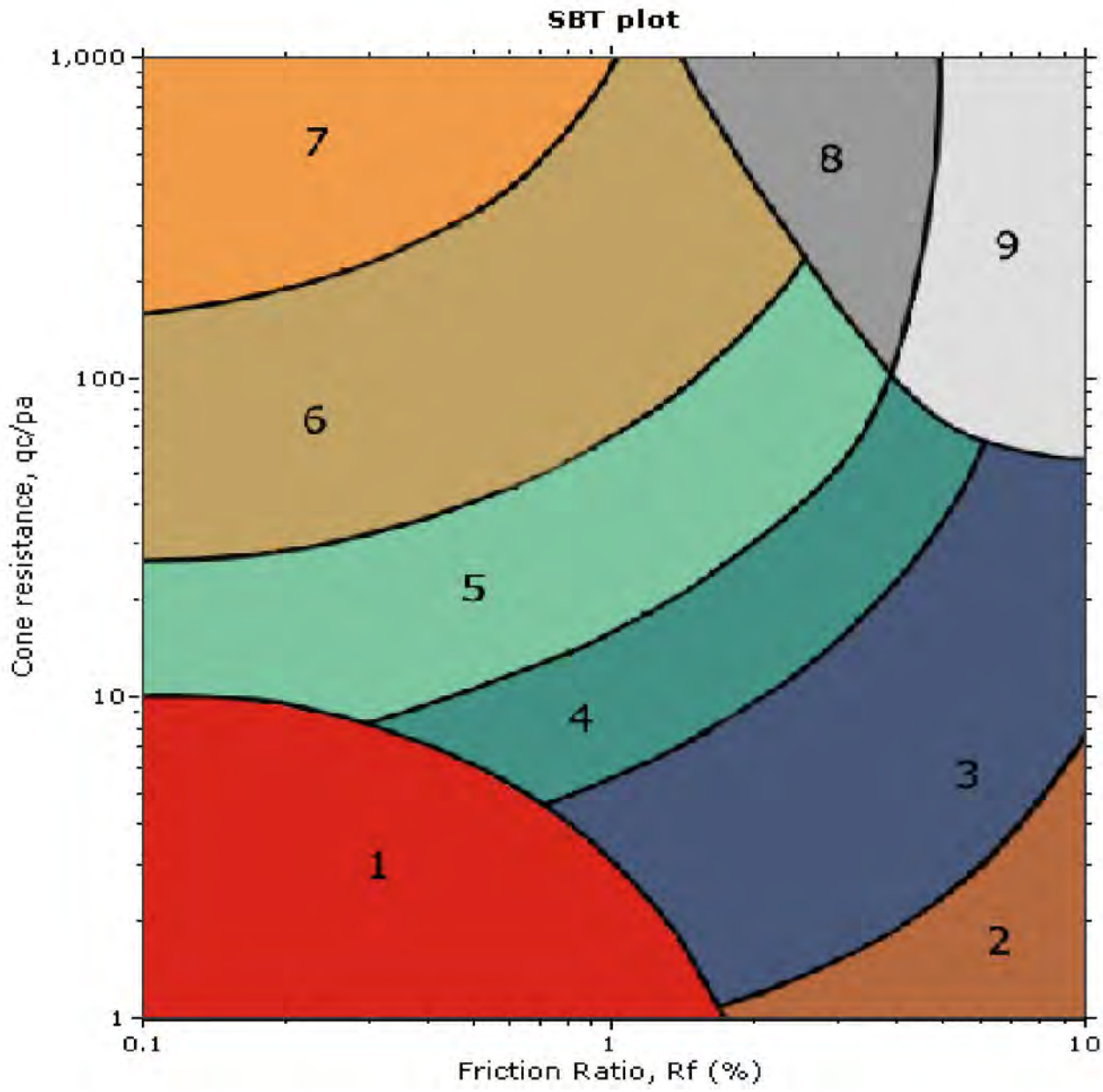


SBT legend

1. Sensitive fine grained	4. Clayey silt to silty clay	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to clayey sand
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

	C-1	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	70.5	0.42	-0.11	0.59	70.4987	0.5958	6	1.9237	114.3032	0.05715	0	0.0572	1232.5	0.5962	-1E-04	6	0.4904	2	1.6738	133.1462
2	67.3	1.39	-0.02	2.07	67.2998	2.0654	5	2.26572	122.947	0.11863	0	0.1186	566.33	2.069	-2E-05	5	0.6388	2	2.0555	126.9835
3	28.3	0.28	-0.36	1	28.2956	0.9896	5	2.37705	109.1099	0.17318	0	0.1732	162.39	0.9957	-9E-04	5	0.6688	2	2.1277	53.15604
4	81.2	0.38	-0.36	0.47	81.1956	0.468	6	1.8179	113.9155	0.23014	0	0.2301	351.81	0.4693	-3E-04	6	0.4568	2	1.5641	153.0382
5	24.7	0.06	-0.36	0.26	24.6956	0.243	5	2.1874	97.5066	0.27889	0	0.2789	87.549	0.2457	-0.001	6	0.5894	2	1.9062	46.15163
6	14.6	0.07	-0.7	0.47	14.5914	0.4797	5	2.49854	97.35114	0.32757	0	0.3276	43.545	0.4908	-0.004	5	0.7164	2	2.2334	26.96108
7	57.3	0.26	-0.82	0.46	57.29	0.4538	6	1.9453	110.2882	0.38271	0	0.3827	148.7	0.4569	-0.001	6	0.5316	1.7171	1.7429	92.34877
8	33.8	0.09	-0.82	0.27	33.79	0.2664	6	2.069	101.2381	0.43333	0	0.4333	76.977	0.2698	-0.002	6	0.58	1.6784	1.8639	52.90949
9	21.4	0.05	-0.82	0.25	21.39	0.2338	5	2.24297	95.82206	0.48124	0	0.4812	43.448	0.2391	-0.003	6	0.6501	1.6689	2.0415	32.9782
10	17.8	0.04	-0.93	0.25	17.7886	0.2249	5	2.31611	93.73966	0.52811	0	0.5281	32.684	0.2317	-0.004	5	0.6868	1.6117	2.132	26.29065
11	67.9	0.49	-1.03	0.72	67.8874	0.7218	6	1.98183	115.3391	0.58578	0	0.5858	114.89	0.7281	-0.001	6	0.587	1.415	1.8624	90.00043
12	148.2	3.18	-2.16	2.15	148.174	2.1461	5	2.0396	130.9273	0.65124	0	0.6512	226.52	2.1556	-0.001	6	0.6271	1.3558	1.9591	189.0251
13	98.6	2.92	-6.39	2.96	98.5218	2.9638	5	2.26171	129.3078	0.7159	0	0.7159	136.62	2.9855	-0.005	5	0.7172	1.3234	2.1873	122.3276
14	89.8	3.08	-7.34	3.43	89.7102	3.4333	5	2.33652	129.4696	0.78063	0	0.7806	113.92	3.4634	-0.006	5	0.7548	1.2581	2.2773	105.7335
15	82.7	2.75	-4.7	3.33	82.6425	3.3276	5	2.3501	128.4403	0.84485	0	0.8449	96.819	3.362	-0.004	5	0.7689	1.1889	2.3066	91.91123
16	53.7	1.99	-3.31	3.71	53.6595	3.7086	4	2.51318	125.0201	0.90736	0	0.9074	58.138	3.7724	-0.005	4	0.8396	1.1377	2.4846	56.72183
17	50.6	1.93	-6.4	3.82	50.5217	3.8201	4	2.54074	124.6492	0.96969	0	0.9697	51.101	3.8949	-0.009	4	0.8597	1.0779	2.5298	50.47908
18	86.6	2.14	-7.1	2.48	86.5131	2.4736	5	2.24243	126.7168	1.03305	0	1.0331	82.746	2.5035	-0.006	5	0.7539	1.0182	2.2444	82.25899
19	76.4	3.01	-7.8	3.95	76.3045	3.9447	4	2.42825	128.9067	1.0975	0	1.0975	68.526	4.0023	-0.007	4	0.8338	0.97	2.4459	68.94346
20	43.7	2.09	-7.97	4.79	43.6025	4.7933	4	2.65584	124.8727	1.15994	0	1.1599	36.59	4.9243	-0.014	4	0.933	0.9179	2.6985	36.81648
21	32.7	1.07	-7.84	3.29	32.604	3.2818	4	2.63429	119.265	1.21957	0	1.2196	25.734	3.4093	-0.018	4	0.9369	0.8754	2.7014	25.96586
22	37.4	1.72	-7.75	4.61	37.3051	4.6106	4	2.69176	123.0666	1.2811	0	1.2811	28.12	4.7746	-0.015	3	0.9664	0.8313	2.7711	28.30113
23	33	1.36	-7.94	4.15	32.9028	4.1334	4	2.69847	121.042	1.34162	0	1.3416	23.525	4.3091	-0.018	3	0.9798	0.7925	2.7989	23.63785
24	44.5	1.38	-7.11	3.11	44.413	3.1072	4	2.51867	121.8805	1.40256	0	1.4026	30.666	3.2085	-0.012	4	0.9152	0.7727	2.6216	31.40724
25	40.3	1.83	-7.29	4.55	40.2108	4.551	4	2.6646	123.7031	1.46441	0	1.4644	26.459	4.723	-0.014	3	0.9812	0.727	2.7873	26.62076
26	32.9	1.15	-7.09	3.5	32.8132	3.5047	4	2.65111	119.8081	1.52432	0.01872	1.5056	20.782	3.6754	-0.017	4	0.986	0.7063	2.7947	20.88482
27	30.6	0.72	-6.84	2.36	30.5163	2.3594	4	2.56459	116.2048	1.58242	0.04992	1.5325	18.88	2.4884	-0.019	4	0.9586	0.7011	2.7195	19.17163
28	49.9	1.34	-6.08	2.7	49.8256	2.6894	5	2.43943	121.9457	1.64339	0.08112	1.5623	30.841	2.7811	-0.011	4	0.9051	0.7028	2.5749	32.00315
29	47.4	2.11	-5.84	4.46	47.3285	4.4582	4	2.60845	125.1424	1.70596	0.11232	1.5936	28.628	4.6249	-0.012	3	0.9749	0.6708	2.7548	28.92328
30	28.2	1	-6.27	3.55	28.1233	3.5558	4	2.70557	118.4093	1.76517	0.14352	1.6217	16.254	3.7939	-0.023	3	1	0.6525	2.8879	16.25388
31	86.2	1.69	-8.9	1.97	86.0911	1.963	5	2.17284	124.9775	1.82766	0.17472	1.6529	50.978	2.0056	-0.01	5	0.8046	0.6984	2.3005	55.62048
32	96.6	1.69	-11.38	1.75	96.4607	1.752	5	2.10299	125.2549	1.89029	0.20592	1.6844	56.146	1.787	-0.011	5	0.7796	0.696	2.2309	62.20435
33	29.9	0.81	-11.04	2.73	29.7649	2.7213	4	2.6119	117.0058	1.94879	0.23712	1.7117	16.251	2.912	-0.037	4	1	0.6182	2.8178	16.25086
34	17	0.87	-11.04	5.17	16.8649	5.1587	3	2.97934	116.1431	2.00686	0.26832	1.7385	8.5463	5.8554	-0.072	3	1	0.6086	3.2238	8.54626
35	22.1	0.38	-11.04	1.72	21.9649	1.73	4	2.60009	110.7267	2.06222	0.29952	1.7627	11.291	1.9093	-0.055	4	1	0.6003	2.8453	11.29098
36	31.5	1.04	-10.93	3.33	31.3662	3.3157	4	2.64988	118.9625	2.1217	0.33072	1.791	16.329	3.5562	-0.038	3	1	0.5908	2.8689	16.32874
37	28.5	1.44	-10.81	5.09	28.3677	5.0762	3	2.80647	121.0985	2.18225	0.36192	1.8203	14.385	5.4992	-0.044	3	1	0.5813	3.0313	14.38496
38	41.5	1.5	-11.04	3.62	41.3649	3.6263	4	2.58708	122.3171	2.24341	0.39312	1.8503	21.143	3.8342	-0.03	3	1	0.5719	2.8024	21.14339
39	97.4	4.83	-10.59	4.96	97.2704	4.9655	9	2.43734	132.959	2.30989	0.42432	1.8856	50.362	5.0863	-0.013	4	0.9311	0.5839	2.603	52.40626
40	66.6	3.32	-10.47	4.99	66.4719	4.9946	4	2.54477	129.2874	2.37454	0.45552	1.919	33.401	5.1796	-0.019	3	0.9852	0.5563	2.7413	33.69745
41	39.3	0.96	-10.36	2.44	39.1732	2.4507	4	2.49111	118.9189	2.43399	0.48672	1.9473	18.867	2.613	-0.034	4	0.9839	0.5488	2.7343	19.05332
42	45.1	1.68	-10.36	3.73	44.9732	3.7356	4	2.56981	123.3504	2.49567	0.51792	1.9778	21.478	3.955	-0.03	3	1	0.535	2.8059	21.4777
43	91.1	2.6	-10.5	2.86	90.9715	2.858	5	2.27318	128.264	2.5598	0.54912	2.0107	43.971	2.9408	-0.015	4	0.8845	0.5668	2.4641	47.35648
44	83.4	3.61	-12.52	4.33	83.2468	4.3365	4	2.43453	130.449	2.62503	0.58032	2.0447	39.429	4.4777	-0.018	4	0.9522	0.534	2.6386	40.6909
45	34.6	1.22	-12.5	3.54	34.447	3.5417	4	2.63845	120.359	2.68521	0.61152	2.0737	15.317	3.8411	-0.048	3	1	0.5103	2.9115	15.31659
46	42.4	1.41	-12.29	3.33	42.2496	3.3373	4	2.55568	121.916	2.74616	0.64272	2.1034	18.78	3.5693	-0.039	3	1	0.503	2.8224	18.78035
47	79.1	3.1	-11.95	3.93	78.9537	3.9264	4	2.41691	129.2055	2.81077	0.67392	2.1369	35.633	4.0713	-0.02	4	0.9577	0.5101	2.6416	36.70909
48	87.8	3.82	-11.67	4.36	87.6572	4.3579	4	2.42174	130.9887	2.87626	0.70512	2.1711	39.049	4.5057	-0.018	4	0.9604	0.5014	2.6444	40.17692
49	133.2	9.75	-11.42	7.33	133.06	7.3275	9	2.49505	137.28	2.9449	0.73632	2.2086	58.914	7.4934	-0.012	9	0.9808	0.4859	2.6937	59.75296
50	118.9	7.08	-11.01	5.96	118.765	5.9613	9	2.44895	136.2442	3.01302	0.76752	2.2455	51.548	6.1165	-0.013	3	0.9702	0.4819	2.6612	52.7177
51	87.6	4.73	-11.27	5.4	87.4621	5.4081	9	2.49505	132.5467	3.0793	0.79872	2.2806	37.001	5.6054	-0.019	3	1	0.464	2.7372	37.00062
52	78.3	3.56	-11.27	4.55	78.1621	4.5546	4	2.4685	130.1933	3.14439	0.82992	2.3145	32.412	4.7456	-0.022	4	0.9982	0.4578	2.7262	32.45738
53	55.4	2.6	-11.38	4.71	55.2607	4.705	4	2.57908	127.0482	3.20792	0.86112	2.3468	22.18	4.9949	-0.032	3	1	0.4509	2.8622	22.18035
54	47.8	2.11	-11.35	4.43	47.6611	4.4271	4	2.60415	125.1594	3.2705	0.89232	2.3782	18.666	4.7533	-0.039	3	1	0.4449	2.9041	18.6658
55	54.2	2.46	-11.27	4.55	54.0621	4.5503	4	2.57496	126.5898	3.33379	0.92352	2.4103	21.047	4.8494	-0.034	3	1	0.439	2.8706	21.0467
56	61.5	3.3	-11.15	5.38	61.3635	5.3778	4	2.5918	129.0482	3.39832	0.95472	2.4436	23.721	5.6931	-0.03	3	1	0.433	2.8793	23.72127
57	54.3	3.08	-11.15	5.68	54.1635	5.6865	4	2.64585	128.239	3.46244	0.98592	2.4765	20.473	6.0748	-0.035	3	1	0.4273	2.9453	20.47275
58	73	4.26	-11.68	5.85	72.857	5.8471	9	2.57129	131.3353	3.5281	1.01712	2.511	27.61	6.1446	-0.027	3	1	0.4214	2.8549	27.61027
59	111.7	6.25	-11.28	5.61	111.562	5.6023	9	2.44301	135.1792	3.59569	1.04832	2.5474	42.383	5.7889	-0.017	3	1	0.4154	2.7068	42.38337
60	144.5	4.96	-11.95	3.44	144.354	3.436	8	2.20595	134.1162	3.66275	1.07952	2.5832	54.463	3.5255	-0.014	4	0.9066	0.4452	2.4506	59.19689
61	180.4	9.71	-11.51	5.39	180.259	5.3867	9	2.31125	137.28	3.73139	1.11072	2.6207	67.36	5.5006	-0.011	9	0.9431	0.4252	2.5426	70.93026
62	78.1	5.13	-11.41	6.58	77.9603	6.5803	9	2.59286	132.8602	3.79782	1.14192	2.6559	27.924	6.9172	-0.026	3	1	0.3984	2.8879	27.92368
63	96	5.82	-11.15	6.07	95.8635	6.0711	9	2.51036	134.2877	3.86496	1.17312	2.6918	34.177	6.3262	-0.021	3	1	0.3931	2.799	34.17677
64	135	9.21	-11.15	6.83	134.864	6.8291	9	2.4663	137.28	3.9336	1.20432	2.7293	47.972	7.0343	-0.015	3	1	0.3877	2.7339	47.97225
65	115.5	9.19	-11.14	7.97	115.364	7.9661	9	2.55962	137.28	4.00224	1.23552	2.7667	40.25	8.2524	-0.018	3	1	0.3824	2.8362	40.25026

66	180.6	7.5	-11.23	4.16	180.463	4.156	8	2.21669	137.28	4.07088	1.26672	2.8042	62.903	4.2519	-0.012	4	0.9247	0.4061	2.4708	67.69474
67	281	10.43	-12.63	3.72	280.845	3.7138	8	2.07309	137.28	4.13952	1.29792	2.8416	97.377	3.7694	-0.008	8	0.8568	0.4289	2.2898	112.1697
68	232.5	10.65	-13.31	4.58	232.337	4.5839	9	2.19371	137.28	4.20816	1.32912	2.879	79.238	4.6684	-0.01	9	0.914	0.4006	2.4333	86.36057
69	249.7	11.12	-12.86	4.45	249.543	4.4562	8	2.16732	137.28	4.2768	1.36032	2.9165	84.096	4.5339	-0.009	9	0.9049	0.3996	2.4044	92.61389
70	320.5	11.28	-13.43	3.52	320.336	3.5213	8	2.02465	137.28	4.34544	1.39152	2.9539	106.97	3.5697	-0.007	8	0.8435	0.4206	2.2409	125.6129
71	311.7	11.68	-13.43	3.75	311.536	3.7492	8	2.05432	137.28	4.41408	1.42272	2.9914	102.67	3.8031	-0.008	8	0.8592	0.4095	2.2774	118.8485
72	297.9	9.04	-13.2	3.04	297.738	3.0362	8	1.98488	137.28	4.48272	1.45392	3.0288	96.822	3.0826	-0.008	5	0.8374	0.4145	2.2154	114.8823
73	359.4	9.97	-13.31	2.77	359.237	2.7753	8	1.91013	137.28	4.55136	1.48512	3.0662	115.67	2.8109	-0.007	5	0.805	0.4246	2.1257	142.3415
74	709.2	10.1	-13.88	1.42	709.03	1.4245	6	1.51707	137.28	4.62	1.51632	3.1037	226.96	1.4338	-0.004	6	0.6326	0.5063	1.6682	337.0207
75	631	4.12	-14.56	0.65	630.822	0.6531	7	1.24648	136.3554	4.68818	1.54752	3.1407	199.36	0.658	-0.004	6	0.5356	0.5584	1.4079	330.4221
76	556.8	8.2	-15.24	1.47	556.613	1.4732	6	1.57741	137.28	4.75682	1.57872	3.1781	173.64	1.4859	-0.005	6	0.6702	0.4785	1.7574	249.5703
77	658.7	11.1	-15.36	1.69	658.512	1.6856	8	1.59689	137.28	4.82546	1.60992	3.2155	203.29	1.6981	-0.004	6	0.6744	0.4726	1.764	291.9385
78	218.1	10.99	-15.46	5.04	217.911	5.0434	9	2.24361	137.28	4.8941	1.64112	3.253	65.484	5.1592	-0.013	4	0.9696	0.3366	2.534	67.75974
79	149.3	11.7	-15.24	7.85	149.113	7.8464	9	2.49337	137.28	4.96274	1.67232	3.2904	43.809	8.1165	-0.019	3	1	0.3216	2.8067	43.80918
80	222.8	0	-15.24	0	222.613	0	0	0	769.6	5.34754	1.70352	3.644	59.623	0	-0.013	0	1	0.2904	0	0

	C-2	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	91.6	1.6	-0.34	1.75	91.5958	1.7468	5	2.1183	124.7283	0.06236	0	0.0624	1467.7	1.748	-3E-04	6	0.5815	2	1.9122	173.0135
2	76.2	1.7	-0.13	2.23	76.1984	2.231	5	2.24958	124.723	0.12473	0	0.1247	609.93	2.2347	-1E-04	5	0.6353	2	2.0456	143.7919
3	40.2	1.19	-0.74	2.95	40.1909	2.9609	4	2.53663	120.553	0.185	0	0.185	216.25	2.9746	-0.001	5	0.7441	2	2.3238	75.61788
4	90.5	1.09	-0.23	1.21	90.4972	1.2045	6	2.01424	121.8904	0.24595	0	0.246	366.95	1.2077	-2E-04	6	0.5461	2	1.7966	170.5898
5	27.9	0.28	-0.11	1	27.8987	1.0036	5	2.38546	109.0755	0.30049	0	0.3005	91.845	1.0146	-3E-04	5	0.6792	2	2.139	52.16513
6	32.9	0.48	-0.11	1.46	32.8987	1.459	5	2.41362	113.4214	0.3572	0	0.3572	91.103	1.475	-2E-04	5	0.6977	2	2.1805	61.50876
7	47.7	0.64	-0.5	1.34	47.6939	1.3419	5	2.26151	116.4321	0.41541	0	0.4154	113.81	1.3537	-8E-04	5	0.6542	1.8435	2.0597	82.37116
8	25.3	0.26	-0.32	1.02	25.2961	1.0278	5	2.42732	108.2944	0.46956	0	0.4696	52.872	1.0473	-9E-04	5	0.7192	1.7938	2.2237	42.0876
9	43.9	0.49	-0.26	1.12	43.8968	1.1163	5	2.24443	114.2757	0.5267	0	0.5267	82.344	1.1298	-4E-04	5	0.6699	1.5958	2.0875	65.40825
10	205.4	3.48	-1.1	1.69	205.387	1.6944	6	1.86993	132.3833	0.59289	0	0.5929	345.42	1.6993	-4E-04	6	0.5585	1.3819	1.7862	267.471
11	53	2.34	-3.01	4.42	52.9632	4.4182	4	2.57177	126.1737	0.65598	0	0.656	79.74	4.4736	-0.004	4	0.8207	1.4805	2.4652	73.18973
12	57.1	1.88	-3.61	3.3	57.0558	3.295	4	2.45797	124.7538	0.71835	0	0.7184	78.426	3.337	-0.005	5	0.7888	1.3573	2.3738	72.2658
13	115.3	2.9	-3.99	2.52	115.251	2.5162	5	2.16333	129.64	0.78317	0	0.7832	146.16	2.5335	-0.003	5	0.6905	1.2309	2.1088	133.1614
14	76.2	3.37	-3	4.43	76.1633	4.4247	4	2.46629	129.7288	0.84804	0	0.848	88.811	4.4745	-0.003	9	0.8132	1.1972	2.4228	85.21539
15	53.4	2.31	-4.02	4.33	53.3508	4.3298	4	2.56323	126.0971	0.91109	0	0.9111	57.557	4.4051	-0.006	4	0.8592	1.1372	2.5356	56.35746
16	57.4	2.59	-3.4	4.52	57.3584	4.5155	4	2.55499	127.1109	0.97464	0	0.9746	57.851	4.5935	-0.004	4	0.8656	1.0737	2.5446	57.21529
17	73	1.91	-3.95	2.61	72.9517	2.6182	5	2.31189	125.469	1.03738	0	1.0374	69.323	2.6559	-0.004	5	0.7814	1.0156	2.316	69.02407
18	39.5	1.76	-1.48	4.47	39.4819	4.4577	4	2.66392	123.3731	1.09906	0	1.0991	34.923	4.5854	-0.003	4	0.9277	0.9654	2.6922	35.01934
19	53.9	2.9	-2.5	5.38	53.8694	5.3834	4	2.62972	127.7851	1.16295	0	1.163	45.321	5.5022	-0.003	3	0.9217	0.9166	2.6686	45.65766
20	36.6	1.49	-2.27	4.09	36.5722	4.0741	4	2.66069	121.9679	1.22394	0	1.2239	28.881	4.2152	-0.005	4	0.9462	0.8713	2.7253	29.10789
21	50.1	2.2	-2.7	4.38	50.067	4.3941	4	2.58694	125.5852	1.28673	0	1.2867	37.91	4.51	-0.004	4	0.9235	0.8347	2.658	38.48157
22	36.5	1.64	-2.41	4.49	36.4705	4.4968	4	2.69122	122.6629	1.34806	0	1.3481	26.054	4.6694	-0.005	3	0.9763	0.7894	2.789	26.20381
23	22.3	1.22	-4.42	5.5	22.2459	5.4842	3	2.9067	119.2925	1.40771	0	1.4077	14.803	5.8546	-0.015	3	1	0.7517	3.0395	14.80292
24	25	0.8	-4.99	3.22	24.9389	3.2078	4	2.71661	116.4835	1.46595	0	1.466	16.012	3.4082	-0.015	3	1	0.7218	2.8643	16.01212
25	36	1.85	-4.77	5.16	35.9416	5.1472	3	2.73687	123.5089	1.5277	0	1.5277	22.527	5.3757	-0.01	3	1	0.6926	2.8788	22.52655
26	24.8	1.13	-4.77	4.57	24.7416	4.5672	3	2.81917	118.9911	1.5872	0.01248	1.5747	14.704	4.8803	-0.015	3	1	0.6719	2.9907	14.70383
27	36.7	1.15	-4.65	3.13	36.6431	3.1384	4	2.58342	120.0774	1.64724	0.04368	1.6036	21.824	3.2861	-0.011	4	0.9718	0.6677	2.7451	22.08169
28	54.3	2.48	-4.43	4.56	54.2458	4.5718	4	2.57544	126.6573	1.71057	0.07488	1.6357	32.118	4.7206	-0.008	4	0.9649	0.6569	2.7232	32.61289
29	60.4	2.46	-4.31	4.08	60.3473	4.0764	4	2.50744	126.858	1.774	0.10608	1.6679	35.118	4.1999	-0.007	4	0.9411	0.6516	2.6564	36.07222
30	31.4	1.13	-4.43	3.62	31.3458	3.605	4	2.67409	119.5682	1.83378	0.13728	1.6965	17.396	3.829	-0.015	3	1	0.6237	2.8674	17.39581
31	35.5	1.33	-5.31	3.77	35.435	3.7534	4	2.64638	121.0596	1.89431	0.16848	1.7258	19.435	3.9653	-0.016	3	1	0.6131	2.8399	19.43453
32	58.5	1.83	-7.38	3.12	58.4097	3.133	4	2.4353	124.6137	1.95662	0.19968	1.7569	32.132	3.2416	-0.013	4	0.9258	0.6254	2.6049	33.36444
33	29.9	1.07	-7.45	3.61	29.8088	3.5895	4	2.68922	119.0463	2.01614	0.23088	1.7853	15.568	3.8499	-0.028	3	1	0.5927	2.9065	15.56785
34	24.9	1.07	-7.52	4.33	24.808	4.3131	3	2.80179	118.5984	2.07544	0.26208	1.8134	12.536	4.7069	-0.035	3	1	0.5835	3.0345	12.53613
35	26	1.1	-7.49	4.23	25.9083	4.2457	3	2.78314	118.9066	2.13489	0.29328	1.8416	12.909	4.627	-0.035	3	1	0.5746	3.0199	12.90903
36	51.1	1.76	-7.36	3.44	51.0099	3.4503	4	2.50659	123.9979	2.19689	0.32448	1.8724	26.07	3.6056	-0.018	4	0.9713	0.5744	2.7105	26.49985
37	54.2	2.81	-7.15	5.2	54.1125	5.1929	4	2.61682	127.5654	2.26067	0.35568	1.905	27.219	5.4193	-0.017	3	1	0.5554	2.8213	27.21888
38	41.2	1.78	-7.1	4.34	41.1131	4.3295	4	2.64251	123.5545	2.32245	0.38688	1.9356	20.041	4.5887	-0.023	3	1	0.5467	2.8708	20.04092
39	45.7	2.43	-7.15	5.33	45.6125	5.3275	4	2.67541	126.0855	2.38549	0.41808	1.9674	21.971	5.6215	-0.022	3	1	0.5378	2.8999	21.97147
40	119.8	7.89	-6.86	6.6	119.716	6.5906	9	2.48261	137.0562	2.45402	0.44928	2.0047	58.492	6.7285	-0.008	3	0.9568	0.5426	2.6558	60.13087
41	70.1	3.53	-6.7	5.03	70.018	5.0416	4	2.53308	129.863	2.51895	0.48048	2.0385	33.113	5.2297	-0.014	3	0.9939	0.5211	2.7484	33.24484
42	38.9	1.64	-6.7	4.23	38.818	4.2249	4	2.65291	122.8151	2.58036	0.51168	2.0687	17.517	4.5257	-0.027	3	1	0.5115	2.9113	17.51726
43	55	2.57	-6.7	4.68	54.918	4.6797	4	2.57921	126.9482	2.64384	0.54288	2.101	24.881	4.9164	-0.02	3	1	0.5036	2.8207	24.88113
44	143.4	4.31	-6.92	3	143.315	3.0074	5	2.16211	133.0708	2.71037	0.57408	2.1363	65.817	3.0653	-0.008	5	0.8433	0.553	2.3419	73.47874
45	161.5	3.22	-6.92	1.99	161.415	1.9949	6	1.99134	131.2275	2.77598	0.60528	2.1707	73.082	2.0298	-0.007	5	0.7783	0.5716	2.1669	85.70381
46	30.3	1.24	-6.81	4.1	30.2167	4.1037	4	2.72358	120.1584	2.83606	0.63648	2.1996	12.448	4.5288	-0.041	3	1	0.4811	3.0265	12.44807
47	33.5	1.65	-6.83	4.94	33.4164	4.9377	3	2.74677	122.4941	2.89731	0.66768	2.2296	13.688	5.4065	-0.038	3	1	0.4746	3.043	13.68795
48	84.7	4.46	-6.61	5.27	84.6191	5.2707	9	2.4953	132.036	2.96333	0.69888	2.2645	36.06	5.462	-0.014	3	0.9998	0.4674	2.7369	36.06624
49	106	4.92	-6.33	4.64	105.923	4.6449	9	2.3917	133.3019	3.02998	0.73008	2.2999	44.738	4.7817	-0.012	4	0.9573	0.4756	2.6204	46.24439
50	79	4.44	-6.36	5.63	78.9222	5.6258	9	2.53635	131.8331	3.0959	0.76128	2.3346	32.479	5.8555	-0.016	3	1	0.4532	2.7903	32.4791
51	58.7	2.07	-6.24	3.52	58.6236	3.531	4	2.47106	125.5243	3.15866	0.79248	2.3662	23.441	3.7321	-0.022	4	1	0.4472	2.7607	23.44073
52	127.9	8.43	-6.77	6.59	127.817	6.5954	9	2.46675	137.28	3.2273	0.82368	2.4036	51.834	6.7662	-0.011	3	0.992	0.4431	2.6973	52.17785
53	77.2	3.23	-6.69	4.19	77.1181	4.1884	4	2.44475	129.4487	3.29202	0.85488	2.4371	30.292	4.3752	-0.018	4	1	0.4342	2.7236	30.29206
54	59.8	3.17	-6.7	5.31	59.718	5.3083	4	2.59535	128.6878	3.35637	0.88608	2.4703	22.816	5.6244	-0.024	3	1	0.4283	2.888	22.81582
55	56.6	3.22	-6.7	5.69	56.518	5.6973	4	2.6342	128.668	3.4207	0.91728	2.5034	21.21	6.0643	-0.026	3	1	0.4227	2.9335	21.20989
56	42.4	1.93	-6.7	4.55	42.318	4.5607	4	2.64957	124.217	3.48281	0.94848	2.5343	15.324	4.9697	-0.037	3	1	0.4175	2.9819	15.32365
57	47	1.76	-6.58	3.76	46.9195	3.7511	4	2.55793	123.7941	3.54471	0.97968	2.565	16.91	4.0577	-0.034	3	1	0.4125	2.8928	16.91006
58	55.6	2.09	-6.58	3.76	55.5195	3.7645	4	2.50746	125.462	3.60744	1.01088	2.5966	19.993	4.026	-0.029	3	1	0.4075	2.8347	19.99263
59	64.4	4.44	-6.58	6.89	64.3195	6.903	9	2.66137	131.3341	3.6731	1.04208	2.631	23.05	7.3211	-0.025	3	1	0.4022	2.9642	23.05047
60	61.1	3.88	-6.45	6.37	61.0211	6.3585	3	2.64855	130.2193	3.73821	1.07328	2.6649	21.495	6.7734	-0.027	3	1	0.3971	2.9623	21.49503
61	271.7	10.04	-6.57	3.69	271.62	3.6964	8	2.07869	137.28	3.80685	1.10448	2.7024	99.103	3.7489	-0.006	8	0.8476	0.4517	2.2829	114.3274
62	285.8	10.91	-4.72	3.82	285.742	3.8181	8	2.07973	137.28	3.87549	1.13568	2.7398	102.88	3.8706	-0.005	8	0.8497	0.4456	2.2838	118.6912
63	154.2	8.81	-6.13	5.72	154.125	5.7161	9	2.36987	137.28	3.94413	1.16688	2.7773	54.075	5.8663	-0.011	4	0.9858	0.3862	2.6363	54.82071
64	53.6	3.45	-6.24	6.45	53.5236	6.4458	3	2.6901	129.04	4.00865	1.19808	2.8106	17.617	6.9676	-0.033	3	1	0.3765	3.0336	17.61738
65	114.4	7.59	-6.58	6.64	114.319	6.6393	9	2.4967	136.6601	4.07698	1.22928	2.8477	38.713	6.8848	-0.015	3	1	0.3716	2.7888	38.71275
66	104.8	6.5	-6.27	6.21	104.723	6.2068	9	2.49515	135.3119	4.14464	1.26048	2.8842	34.873	6.4626	-0.017	3	1	0.3669	2.7996	34.87276
67	125.2	8.44	-6.24	6.75	125.124	6.7453	9	2.48003	137.28	4.21328	1.29168	2.9216	41.385	6.9804	-0.014	3	1	0.3622	2.7738	41.38497
68	213.5	8.61	-6.36	4.03	213.422	4.0343	8	2.16594	137.28	4.28192	1.32288	2.959	70.678	4.1169	-0.009	4	0.9138	0.3907	2.4226	77.22934
69	145.2	6.8	-5.82	4.68	145.129	4.6855	9	2.31328	136.4379	4.35014	1.35408	2.9961	46.988	4.8303	-0.013	4	0.9881	0.3576	2.6151	47.57516
70	226.8	10.06	-5.42	4.44	226.734	4.4369	8	2.18709	137.28	4.41878	1.38528	3.0335	73.287	4.5251	-0.008	4	0.9264	0.3769	2.4468	79.1914
71	247.4	10.15	-5.13	4.1	247.337	4.1037	8	2.13852	137.28	4.48742	1.41648	3.0709	79.08	4.1795	-0.007	4	0.9081	0.38	2.3935	87.21571
72	241.7	11.72	-5.11	4.85	241.637	4.8502	9	2.20614	137.28	4.55606	1.44768	3.1084	76.272	4.9435	-0.008	9	0.938	0.3639	2.4684	81.53775
73	339.1	11.68	-5.38	3.44	339.034	3.4451	8	2.00439	137.28	4.6247	1.47888	3.1458	106.3	3.4927	-0.006	8	0.8502	0.396	2.2344	125.1566
74	650.5	11.15	-7.65	1.71	650.406	1.7143	8	1.6058	137.28	4.69334	1.51008	3.1833	202.85	1.7268	-0.003	6	0.6758	0.4751	1.7718	289.898

	C-3	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	85.3	0.99	0.06	1.16	85.3007	1.1606	6	2.02366	121.0421	0.06052	0	0.0605	1408.4	1.1614	5E-01	6	0.5393	2	1.8017	161.1182
2	73.3	0.88	0.17	1.2	73.3021	1.2005	5	2.08407	119.8105	0.12043	0	0.1204	607.69	1.2025	0.0002	6	0.5641	2	1.8592	138.3255
3	34.3	1.15	-0.17	3.36	34.2979	3.353	4	2.62397	119.9161	0.18038	0	0.1804	189.14	3.3707	-4E-04	4	0.777	2	2.4108	64.48781
4	125.2	2.02	-0.4	1.61	125.195	1.6135	6	1.99749	127.196	0.24398	0	0.244	512.13	1.6166	-2E-04	6	0.5477	2	1.8011	236.1784
5	52.8	0.67	-0.34	1.26	52.7958	1.269	5	2.21163	117.0152	0.30249	0	0.3025	173.54	1.2764	-5E-04	6	0.6195	2	1.9822	99.22115
6	32.5	0.53	-0.25	1.64	32.4969	1.6309	5	2.446	114.1165	0.35955	0	0.3596	89.383	1.6492	-6E-04	5	0.7112	2	2.2159	60.74501
7	22.1	0.24	-0.28	1.07	22.0966	1.0861	5	2.49011	107.3789	0.41324	0	0.4132	52.472	1.1068	-9E-04	5	0.727	1.9809	2.2502	40.59432
8	24.8	0.27	-0.28	1.08	24.7966	1.0889	5	2.44756	108.5219	0.4675	0	0.4675	52.041	1.1098	-8E-04	5	0.7261	1.8096	2.242	41.60788
9	208.3	1.43	-0.33	0.69	208.296	0.6865	6	1.58087	125.9102	0.53045	0	0.5305	391.68	0.6883	-1E-04	6	0.4412	1.3561	1.4867	266.2852
10	100.9	4.99	-3.25	4.94	100.86	4.9474	9	2.42639	133.2858	0.5971	0	0.5971	167.92	4.9769	-0.002	9	0.7615	1.5461	2.3185	146.5015
11	52.2	2.36	-5.06	4.52	52.1381	4.5264	4	2.58409	126.1977	0.6602	0	0.6602	77.974	4.5845	-0.007	4	0.826	1.4764	2.4786	71.82951
12	37.1	1.5	-5.5	4.05	37.0327	4.0505	4	2.655	122.0473	0.72122	0	0.7212	50.347	4.1309	-0.011	4	0.8616	1.3913	2.565	47.7463
13	19	0.87	-6.05	4.58	18.926	4.5969	3	2.90875	116.4243	0.77943	0	0.7794	23.282	4.7943	-0.024	3	0.9681	1.3444	2.8378	23.0557
14	15.5	0.78	-4.1	5.05	15.4498	5.0486	3	3.0024	115.1304	0.837	0	0.837	17.459	5.3378	-0.02	3	1	1.2642	2.9591	17.45864
15	27.4	1.14	-3.55	4.17	27.3566	4.1672	4	2.76011	119.3006	0.89665	0	0.8967	29.51	4.3084	-0.01	4	0.9329	1.167	2.7309	29.1837
16	41	2.44	-7.11	5.97	40.913	5.9639	3	2.74346	125.8503	0.95957	0	0.9596	41.637	6.1071	-0.013	3	0.9358	1.0958	2.7309	41.37635
17	43.4	2.69	-7.89	6.22	43.3034	6.212	3	2.73958	126.7025	1.02292	0	1.0229	41.333	6.3623	-0.013	3	0.9441	1.0324	2.7449	41.255
18	36.2	1.32	-0.63	3.64	36.1923	3.6472	4	2.63119	121.056	1.08345	0	1.0835	32.405	3.7597	-0.001	4	0.9134	0.9786	2.6568	32.47111
19	34.1	1.62	-4.01	4.77	34.0509	4.7576	3	2.72967	122.4057	1.14465	0	1.1447	28.748	4.9231	-0.009	3	0.9611	0.9272	2.7744	28.83579
20	29.7	1.29	-4.03	4.34	29.6507	4.3507	4	2.74676	120.4015	1.20485	0	1.2049	23.609	4.5349	-0.01	3	0.9787	0.8806	2.8131	23.67464
21	27.4	1.21	-3.35	4.44	27.359	4.4227	3	2.77737	119.7369	1.26472	0.00312	1.2616	20.683	4.637	-0.009	3	1	0.8387	2.8634	20.68342
22	33.7	1.38	-3.26	4.08	33.6601	4.0998	4	2.68882	121.2043	1.32533	0.03432	1.291	25.046	4.2679	-0.008	3	0.9684	0.8248	2.7753	25.20415
23	52.2	1.88	-3.12	3.59	52.1618	3.6042	4	2.51305	124.535	1.38759	0.06552	1.3221	38.405	3.7027	-0.006	4	0.9001	0.8184	2.5919	39.26945
24	62.2	2.71	-3.01	4.35	62.1632	4.3595	4	2.5201	127.6385	1.45141	0.09672	1.3547	44.816	4.4637	-0.005	4	0.9051	0.7996	2.6012	45.87885
25	57.1	2.26	-2.67	3.97	57.0673	3.9602	4	2.515	126.1013	1.51446	0.12792	1.3865	40.066	4.0682	-0.006	4	0.9087	0.7822	2.6064	41.0675
26	62.7	2.12	-2.67	3.37	62.6673	3.3829	4	2.43752	125.8616	1.57739	0.15912	1.4183	43.073	3.4703	-0.006	4	0.8821	0.7723	2.5326	44.58737
27	59.4	2.94	-2.57	4.95	59.3685	4.9521	4	2.57452	128.1224	1.64145	0.19032	1.4511	39.781	5.0929	-0.007	4	0.9396	0.7432	2.6796	40.54705
28	28.6	1.02	-2.67	3.58	28.5673	3.5705	4	2.70161	118.5924	1.70075	0.22152	1.4792	18.163	3.7965	-0.015	3	1	0.7153	2.8505	18.16253
29	85	2.29	-3.23	2.7	84.9605	2.6954	5	2.27481	127.1684	1.76434	0.25272	1.5116	55.038	2.7525	-0.006	5	0.8277	0.7444	2.3778	58.52764
30	26.9	1.46	-3.11	5.44	26.8619	5.4352	3	2.84407	121.0664	1.82487	0.28392	1.541	16.248	5.8314	-0.02	3	1	0.6867	3.0079	16.24783
31	26.7	1.81	-3.12	6.79	26.6618	6.7887	3	2.91361	122.6205	1.88618	0.31512	1.5711	15.77	7.3056	-0.022	3	1	0.6735	3.0829	15.77003
32	21.7	0.65	-3.01	3	21.6632	3.0005	4	2.74607	114.6207	1.94349	0.34632	1.5972	12.347	3.2962	-0.029	3	1	0.6625	2.9458	12.34664
33	24.9	1.1	-3.12	4.41	24.8618	4.4245	3	2.80842	118.8061	2.00289	0.37752	1.6254	14.064	4.8121	-0.026	3	1	0.651	3.0017	14.06381
34	41.4	2.65	-3.01	6.4	41.3632	6.4067	3	2.76293	126.4811	2.06613	0.40872	1.6574	23.71	6.7435	-0.016	3	1	0.6384	2.9304	23.70986
35	39.5	1.9	-2.89	4.82	39.4646	4.8144	4	2.68762	123.9321	2.1281	0.43992	1.6882	22.116	5.0889	-0.017	3	1	0.6268	2.8686	22.11646
36	25.6	1.12	-2.86	4.37	25.565	4.381	3	2.79652	119.0059	2.1876	0.47112	1.7165	13.619	4.791	-0.029	3	1	0.6164	3.0113	13.61937
37	34.5	1.93	-2.84	5.6	34.4652	5.5999	3	2.77563	123.7164	2.24946	0.50232	1.7471	18.439	5.9909	-0.022	3	1	0.6056	2.9747	18.43916
38	38.4	2.27	-2.67	5.91	38.3673	5.9165	3	2.76018	125.1652	2.31204	0.53352	1.7785	20.273	6.2959	-0.02	3	1	0.5949	2.959	20.2726
39	29	1.36	-2.78	4.7	28.966	4.6952	3	2.77668	120.7312	2.37241	0.56472	1.8077	14.711	5.114	-0.029	3	1	0.5853	3.0035	14.71137
40	28.7	1.68	-2.78	5.84	28.666	5.8606	3	2.84639	122.2519	2.43353	0.59592	1.8376	14.275	6.4043	-0.03	3	1	0.5758	3.077	14.27527
41	22	0.68	-2.67	3.12	21.9673	3.0955	4	2.74972	114.9849	2.49103	0.62712	1.8639	10.449	3.4914	-0.042	3	1	0.5677	3.0191	10.44918
42	31.7	1.24	-2.55	3.93	31.6688	3.9155	4	2.69478	120.2729	2.55116	0.65832	1.8928	15.383	4.2586	-0.029	3	1	0.559	2.938	15.38301
43	41.8	1.49	-2.43	3.58	41.7703	3.5671	4	2.57909	122.292	2.61231	0.68952	1.9228	20.365	3.8051	-0.022	3	1	0.5503	2.8128	20.36519
44	37.7	1.67	-2.38	4.43	37.6709	4.4331	4	2.67682	122.8745	2.67375	0.72072	1.953	17.919	4.7718	-0.025	3	1	0.5418	2.9187	17.91944
45	39	1.97	-2.43	5.06	38.9703	5.0551	3	2.70651	124.1661	2.73583	0.75192	1.9839	18.264	5.4368	-0.026	3	1	0.5334	2.9496	18.26416
46	105.4	2.2	-2.35	2.09	105.371	2.0879	5	2.13	127.4001	2.79953	0.78312	2.0164	50.869	2.1448	-0.009	5	0.8264	0.5869	2.3126	56.89226
47	65.8	3.29	-2.5	5.01	65.7694	5.0023	4	2.54831	129.1951	2.86413	0.81432	2.0498	30.688	5.2301	-0.016	3	1	0.5162	2.7731	30.68839
48	62	2.83	-2.06	4.56	61.9748	4.5664	4	2.53588	127.9481	2.9281	0.84552	2.0826	28.353	4.7928	-0.017	3	1	0.5081	2.7717	28.35265
49	117.1	5.65	-2.01	4.83	117.075	4.826	9	2.37851	134.5584	2.99538	0.87672	2.1187	53.845	4.9527	-0.009	4	0.9306	0.5241	2.5725	56.50224
50	81.2	4.14	-1.82	5.1	81.1777	5.0999	9	2.4956	131.39	3.06107	0.90792	2.1532	36.28	5.2998	-0.013	3	0.9902	0.4948	2.7236	36.53249
51	79.8	2.69	-1.55	3.37	79.781	3.3717	5	2.36463	128.1929	3.12517	0.93912	2.1861	35.066	3.5092	-0.014	4	0.9439	0.5041	2.5989	36.52332
52	109.2	6.25	-1.75	5.73	109.179	5.7246	9	2.45612	135.1265	3.19273	0.97032	2.2224	47.69	5.897	-0.01	3	0.9734	0.4856	2.6724	48.64151
53	126.9	9.76	-1.65	7.69	126.88	7.6923	9	2.52403	137.28	3.26137	1.00152	2.2599	54.702	7.8953	-0.009	3	0.999	0.4686	2.7353	54.74265
54	73.8	2.97	-1.53	4.02	73.7813	4.0254	4	2.44453	128.7267	3.32574	1.03272	2.293	30.726	4.2154	-0.016	4	0.9901	0.465	2.7057	30.96145
55	57.2	3.02	-1.42	5.28	57.1826	5.2813	4	2.60621	128.2273	3.38985	1.06392	2.3259	23.127	5.6141	-0.022	3	1	0.4549	2.8832	23.12741
56	63.4	3.86	-1.3	6.09	63.3841	6.0899	3	2.62358	130.2741	3.45499	1.09512	2.3599	25.395	6.4409	-0.02	3	1	0.4484	2.8952	25.3951
57	55	2.97	-1.19	5.4	54.9854	5.4014	4	2.62484	128.0096	3.51899	1.12632	2.3927	21.51	5.7708	-0.024	3	1	0.4422	2.9144	21.51002
58	74	4.9	-1.08	6.62	73.9868	6.6228	9	2.60916	132.397	3.58519	1.15752	2.4277	29	6.9601	-0.018	3	1	0.4359	2.8783	28.99963
59	58.8	3.78	-1.08	6.43	58.7868	6.43	3	2.66273	129.9372	3.65016	1.18872	2.4614	22.4	6.8557	-0.023	3	1	0.4299	2.9531	22.40014
60	67.9	3.53	-1.06	5.2	67.887	5.1998	4	2.55201	129.7876	3.71505	1.21992	2.4951	25.719	5.5008	-0.02	3	1	0.4241	2.8436	25.71884
61	120.8	8.62	-1.19	7.13	120.785	7.1366	9	2.5089	137.28	3.78369	1.25112	2.5326	46.199	7.3674	-0.011	3	1	0.4178	2.7598	46.19874
62	124.4	9.18	-0.9	7.38	124.389	7.3801	9	2.51382	137.28	3.85233	1.28232	2.57	46.901	7.6159	-0.011	3	1	0.4117	2.7664	46.90116
63	197	9.92	-1.7	5.04	196.979	5.0361	9	2.26599	137.28	3.92097	1.31352	2.6075	74.041	5.1384	-0.007	9	0.922	0.4354	2.4886	79.43797
64	191.5	10.12	-2.1	5.29	191.474	5.2853	9	2.2903	137.28	3.98961	1.34472	2.6449	70.886	5.3978	-0.008	9	0.9357	0.4243	2.5202	75.18447
65	171.8	10.83	-1.99	6.3	171.776	6.3047	9	2.38025	137.28	4.05825	1.37592	2.6823	62.527	6.4573	-0.009	9	0.9772	0.4029	2.6253	63.86665
66	84.7	4.58	-1.65	5.4	84.6798	5.4086	9	2.50385	132.232	4.12437	1.40712	2.7173	29.646	5.6855	-0.019	3	1	0.3894	2.8093	29.64594
67	106.6	7.63	-1.99	7.15	106.576	7.1592	9	2.54102	136.5275	4.19263	1.43832	2.7543	37.172	7.4524	-0.015	3	1	0.3842	2.8261	37.17187
68	122.3	8.48	-1.99	6.94	122.276	6.9352	9	2.49562	137.28	4.26127	1.46952	2.7918	42.272	7.1856	-0.014	3	1	0.379	2.777	42.27248
69	165.2	11.7	-1.76	7.08	165.178	7.0833	9	2.43218	137.28	4.32991	1.50072	2.8292	56.853	7.2739	-0.01	3	1	0.374	2.6974	56.85313
70	156.3	9.9	-1.76	6.34	156.278	6.3349	9	2.40397	137.28	4.39855	1.53192	2.8666	52.982	6.5183	-0.011	3	1	0.3691	2.6806	52.98197
71	247.7	13.87	-1.37	5.6	247.683	5.5999	9	2.25502	137.28	4.46719	1.56312	2.9041	83.75	5.7028	-0.007	9	0.9376	0.3881	2.4928	89.19671
72	189.9	10.22	-0.51	5.38	189.894	5.382	9	2.29888	137.28	4.53583	1.59432	2.9415	63.014	5.5137	-0.009	4	0.9674	0.3719	2.5671	65.14991
73	193.4	10.38	-0.42	5.37	193.395	5.3673	9	2.29369	137.28	4.60447	1.62552	2.979	63.375	5.4982	-0.009	4	0.9683	0.3671	2.5647	65.49149
74	209	11.63	-0.85	5.56	208.99	5.5649	9	2.28959	137.28	4.67311	1.65672	3.0164	67.735	5.6922	-0.008	9	0.9672	0.363	2.5573	70.09999
75	189.4	0	-0.4	0	189.395	0	0	0	769.6	5.05791	1.68792	3.37	54.7	0	-0.009	0	1	0.314	0	0

	C-4	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	121.1	2.07	-0.17	1.71	121.098	1.7094	5	2.02553	127.2937	0.06365	0	0.0637	1901.7	1.7103	-1E-04	6	0.5498	2	1.8289	228.7749
2	80.8	1.1	-0.06	1.37	80.7993	1.3614	5	2.0862	121.6807	0.12449	0	0.1245	648.06	1.3635	-5E-05	6	0.5677	2	1.8684	152.4887
3	35	1.09	-0.23	3.12	34.9972	3.1145	4	2.59618	119.5732	0.18427	0	0.1843	188.92	3.131	-5E-04	5	0.7661	2	2.3816	65.80219
4	98.8	1.92	-0.51	1.95	98.7938	1.9434	5	2.12725	126.2468	0.2474	0	0.2474	398.33	1.9483	-4E-04	6	0.5964	2	1.9284	186.269
5	51.6	0.77	-0.35	1.49	51.5957	1.4924	5	2.26233	117.977	0.30639	0	0.3064	167.4	1.5013	-5E-04	5	0.6407	2	2.0374	96.94536
6	22.8	0.4	-0.74	1.77	22.7909	1.7551	4	2.59036	111.1921	0.36198	0	0.362	61.962	1.7834	-0.002	5	0.7655	2	2.358	42.39446
7	22	0.29	-0.74	1.3	21.9909	1.3187	5	2.53542	108.7519	0.41636	0	0.4164	51.817	1.3442	-0.002	5	0.7448	2	2.297	40.77955
8	29.8	0.38	-0.85	1.29	29.7896	1.2756	5	2.41657	111.4699	0.47209	0	0.4721	62.101	1.2962	-0.002	5	0.718	1.7851	2.2202	49.46084
9	201.7	2.51	-1.01	1.25	201.688	1.2445	6	1.7734	129.9481	0.53707	0	0.5371	374.54	1.2478	-4E-04	6	0.5142	1.4172	1.6772	269.4201
10	51.8	3.55	-4.8	6.87	51.7413	6.8611	3	2.72022	129.1665	0.60165	0	0.6017	84.999	6.9418	-0.007	9	0.8669	1.6314	2.5932	78.84549
11	44.5	2.07	-5.17	4.66	44.4367	4.6583	4	2.64122	124.8485	0.66407	0	0.6641	65.915	4.729	-0.009	4	0.8471	1.4838	2.5336	61.38358
12	45.1	2.27	-5.74	5.04	45.0297	5.0411	4	2.66186	125.5557	0.72685	0	0.7269	60.952	5.1238	-0.009	4	0.8661	1.3844	2.5762	57.96286
13	31.7	1.36	-5.98	4.29	31.6268	4.3002	4	2.72274	120.9455	0.78732	0	0.7873	39.17	4.4099	-0.014	4	0.8988	1.3043	2.6549	38.01597
14	37.6	1.6	-5.85	4.27	37.5284	4.2634	4	2.66621	122.552	0.8486	0	0.8486	43.224	4.3621	-0.011	4	0.8883	1.2165	2.6196	42.17111
15	62.1	2.53	-7.37	4.08	62.0098	4.08	4	2.49967	127.1296	0.91217	0	0.9122	66.981	4.1409	-0.009	4	0.8351	1.132	2.4724	65.36187
16	58	3.65	-9.27	6.31	57.8865	6.3054	3	2.66062	129.6435	0.97699	0	0.977	58.25	6.4137	-0.012	3	0.9061	1.075	2.6507	57.81536
17	31.6	1.65	-8.94	5.23	31.4906	5.2397	3	2.78322	122.3493	1.03816	0	1.0382	29.333	5.4183	-0.021	3	0.9651	1.0185	2.7981	29.31355
18	39.3	1.63	-8.8	4.17	39.1923	4.159	4	2.64517	122.7937	1.09956	0	1.0996	34.644	4.279	-0.017	4	0.9206	0.9652	2.6737	34.74945
19	37.2	1.78	-9.26	4.81	37.0867	4.7996	4	2.70581	123.3032	1.16121	0	1.1612	30.938	4.9547	-0.019	3	0.9537	0.9151	2.7529	31.07133
20	33.4	1.43	-9.14	4.3	33.2881	4.2958	4	2.7062	121.4376	1.22193	0	1.2219	26.242	4.4595	-0.021	3	0.9644	0.8704	2.7734	26.37704
21	23.7	0.88	-9.14	3.73	23.5881	3.7307	4	2.77717	117.0451	1.28045	0	1.2805	17.422	3.9448	-0.03	3	1	0.8264	2.8751	17.42172
22	25.1	1	-9.14	3.99	24.9881	4.0019	3	2.77799	118.121	1.33951	0	1.3395	17.655	4.2286	-0.028	3	1	0.7899	2.8898	17.65464
23	30.4	1.02	-9.03	3.36	30.2895	3.3675	4	2.66575	118.7352	1.39888	0	1.3989	20.653	3.5306	-0.023	4	0.9773	0.7612	2.7852	20.78393
24	39.6	1.27	-8.91	3.22	39.4909	3.2159	4	2.56634	120.9862	1.45937	0.00312	1.4563	26.116	3.3393	-0.017	4	0.9429	0.74	2.6876	26.59695
25	44.2	1.93	-8.91	4.38	44.0909	4.3773	4	2.62436	124.3171	1.52153	0.03432	1.4872	28.624	4.5338	-0.016	3	0.9676	0.7194	2.7487	28.94143
26	56.4	2.09	-10.32	3.71	56.2737	3.714	4	2.49917	125.4949	1.58428	0.06552	1.5188	36.009	3.8216	-0.015	4	0.92	0.7171	2.6195	37.0662
27	20	0.91	-10.73	4.59	19.8687	4.5801	3	2.89166	116.8718	1.64271	0.09672	1.546	11.789	4.9929	-0.048	3	1	0.6844	3.0713	11.78914
28	21	1.05	-10.85	5.04	20.8672	5.0318	3	2.9024	118.0385	1.70173	0.12792	1.5738	12.178	5.4786	-0.047	3	1	0.6723	3.0858	12.17772
29	14.4	0.4	-10.85	2.82	14.2672	2.8036	3	2.87364	110.0496	1.75676	0.15912	1.5976	7.8306	3.1973	-0.075	3	1	0.6623	3.1003	7.83058
30	11	0.33	-10.73	3.04	10.8687	3.0363	3	2.99023	107.9784	1.81075	0.19032	1.6204	5.5898	3.6432	-0.106	3	1	0.653	3.2537	5.58983
31	16.8	0.81	-10.73	4.88	16.6687	4.8594	3	2.96646	115.5917	1.86854	0.22152	1.647	8.986	5.4729	-0.067	3	1	0.6424	3.1886	8.98598
32	25.1	1.18	-10.65	4.71	24.9696	4.7257	3	2.82611	119.3303	1.92821	0.25272	1.6755	13.752	5.1212	-0.044	3	1	0.6315	3.0264	13.75206
33	26.6	0.98	-10.62	3.71	26.47	3.7023	4	2.73695	118.1137	1.98727	0.28392	1.7034	14.373	4.0028	-0.043	3	1	0.6212	2.9442	14.37332
34	33.5	1.69	-10.62	5.06	33.37	5.0644	3	2.75488	122.666	2.0486	0.31512	1.7335	18.069	5.3957	-0.034	3	1	0.6104	2.951	18.06853
35	38	2.26	-10.51	5.97	37.8714	5.9676	3	2.76679	125.1012	2.11115	0.34632	1.7648	20.263	6.3199	-0.031	3	1	0.5996	2.9603	20.2627
36	95.6	2.65	-10.51	2.78	95.4714	2.7757	5	2.24967	128.5212	2.17541	0.37752	1.7979	51.892	2.8404	-0.012	5	0.8499	0.6373	2.4	56.18975
37	157.7	2.92	-9.82	1.85	157.58	1.853	6	1.97385	130.4533	2.24064	0.40872	1.8319	84.796	1.8798	-0.007	5	0.7376	0.6671	2.1024	97.92994
38	45.8	2.37	-10.47	5.19	45.6719	5.1892	4	2.66672	125.9057	2.30359	0.43992	1.8637	23.27	5.4648	-0.028	3	1	0.5678	2.8733	23.27036
39	26.4	1.13	-10.39	4.29	26.2728	4.301	3	2.78235	119.1376	2.36316	0.47112	1.892	12.637	4.7261	-0.051	3	1	0.5592	3.0329	12.63699
40	61.2	4.02	-10.52	6.58	61.0712	6.5825	3	2.65982	130.4806	2.4284	0.50232	1.9261	30.447	6.8551	-0.021	3	1	0.5494	2.8589	30.44675
41	49.6	2.86	-10.5	5.79	49.4715	5.7811	3	2.6775	127.4757	2.49214	0.53352	1.9586	23.986	6.0878	-0.027	3	1	0.5402	2.8959	23.98598
42	58.3	3.3	-10.5	5.67	58.1715	5.6729	4	2.62453	128.9179	2.5566	0.56472	1.9919	27.921	5.9337	-0.024	3	1	0.5312	2.8408	27.92086
43	72.4	5.3	-10.53	7.34	72.2711	7.3335	9	2.65021	132.9139	2.62305	0.59592	2.0271	34.358	7.6097	-0.019	3	1	0.522	2.8559	34.35792
44	96.7	4.61	-10.5	4.77	96.5715	4.7737	9	2.42586	132.6003	2.68935	0.62712	2.0622	45.525	4.9104	-0.015	4	0.9471	0.5315	2.6229	47.16197
45	73.1	4.71	-10.4	6.45	72.9727	6.4545	9	2.60417	132.0739	2.75539	0.65832	2.0971	33.484	6.7078	-0.02	3	1	0.5046	2.8235	33.48354
46	63	4.36	-10.5	6.93	62.8715	6.9348	3	2.66918	131.1455	2.82096	0.68952	2.1314	28.174	7.2606	-0.024	3	1	0.4964	2.9003	28.17365
47	54.7	2.79	-10.5	5.12	54.5715	5.1126	4	2.60934	127.5337	2.88473	0.72072	2.164	23.885	5.3979	-0.029	3	1	0.489	2.8613	23.88472
48	50.4	2.72	-10.5	5.41	50.2715	5.4106	4	2.65156	127.1476	2.9483	0.75192	2.1964	21.546	5.7477	-0.032	3	1	0.4818	2.9127	21.54596
49	60.3	2.89	-10.5	4.8	60.1715	4.8029	4	2.56075	128.0296	3.01232	0.78312	2.2292	25.641	5.0561	-0.027	3	1	0.4747	2.8194	25.64113
50	53.3	2.7	-10.5	5.08	53.1715	5.0779	4	2.61478	127.2304	3.07593	0.81432	2.2616	22.15	5.3897	-0.031	3	1	0.4679	2.8849	22.15036
51	40.1	1.85	-10.5	4.64	39.9715	4.6283	4	2.6716	123.7681	3.13782	0.84552	2.2923	16.068	5.0226	-0.043	3	1	0.4616	2.9691	16.06845
52	85.1	5.33	-10.5	6.27	84.9715	6.2727	9	2.55346	133.3501	3.20449	0.87672	2.3278	35.127	6.5185	-0.02	3	1	0.4546	2.8002	35.12671
53	229.6	3.1	-10.28	1.35	229.474	1.3509	6	1.76343	131.8077	3.2704	0.90792	2.3625	95.749	1.3705	-0.007	6	0.7004	0.5697	1.9384	121.7974
54	55.2	3.54	-10.16	6.43	55.0756	6.4275	3	2.68104	129.2982	3.33505	0.93912	2.3959	21.595	6.8418	-0.032	3	1	0.4416	2.9639	21.59525
55	59.2	3.81	-10.16	6.46	59.0756	6.4494	3	2.66235	130.007	3.40005	0.97032	2.4297	22.914	6.8432	-0.031	3	1	0.4355	2.9455	22.91433
56	59	3.65	-10.28	6.19	58.8742	6.1997	3	2.65026	129.6848	3.46489	1.00152	2.4634	22.493	6.5873	-0.031	3	1	0.4295	2.9397	22.49328
57	121.5	3.69	-10.35	3.04	121.373	3.0402	5	2.21114	131.5291	3.53066	1.03272	2.4979	47.176	3.1313	-0.015	4	0.9057	0.4593	2.4587	51.15678
58	28.4	0.68	-10.39	2.4	28.2728	2.4051	4	2.5958	115.6004	3.58846	1.06392	2.5245	9.7778	2.7548	-0.073	3	1	0.4191	2.9841	9.77779
59	54.1	3.85	-10.28	7.15	53.9742	7.133	3	2.72109	129.8632	3.65339	1.09512	2.5583	19.67	7.6509	-0.036	3	1	0.4136	3.0268	19.66987
60	104.6	6.51	-10.28	6.23	104.474	6.2312	9	2.49713	135.3173	3.72105	1.12632	2.5947	38.83	6.4613	-0.019	3	1	0.4078	2.7676	38.82997
61	52.8	3.84	-10.28	7.29	52.6742	7.2901	3	2.73515	129.7847	3.78594	1.15752	2.6284	18.6	7.8547	-0.039	3	1	0.4026	3.0522	18.59987
62	99.5	6.14	-10.39	6.18	99.3728	6.1788	9	2.50709	134.7671	3.85332	1.18872	2.6646	35.848	6.428	-0.02	3	1	0.3971	2.7897	35.84757
63	86.2	5.74	-10.39	6.67	86.0728	6.6688	9	2.57112	133.9237	3.92028	1.21992	2.7004	30.423	6.987	-0.024	3	1	0.3918	2.8651	30.42277
64	138.5	6.58	-10.16	4.75	138.376	4.7552	9	2.33048	136.081	3.98832	1.25112	2.7372	49.097	4.8963	-0.015	4	0.971	0.3974	2.6019	50.47066
65	287	13.75	-9.71	4.79	286.881	4.7929	9	2.16502	137.28	4.05696	1.28232	2.7746	101.93	4.8617	-0.007	9	0.8866	0.4254	2.374	113.713
66	347.7	13.05	-10.16	3.76	347.576	3.7546	8	2.03214	137.28	4.1256	1.31352	2.8121	122.13	3.7997	-0.006	8	0.8315	0.4436	2.227	144.0003
67	119.1	9.32	-10.39	7.84	118.973	7.8337	9	2.54611	137.28	4.19424	1.34472	2.8495	40.28	8.12	-0.018	3	1	0.3713	2.8307	40.27991
68	215.6	9.69	-10.5	4.5	215.471	4.4971	9	2.20366	137.28	4.26288	1.37592	2.887	73.159	4.5879	-0.01	4	0.9213	0.3967	2.4515	79.17701
69	450.8	2.56	-10.39	0.57	450.673	0.568	7	1.28691	132.0535	4.32891	1.40712	2.9218	152.76	0.5736	-0.005	6	0.5457	0.5745	1.4615	242.3321
70	461.6	11.78	-9.71	2.55	461.481	2.5527	8	1.82664	137.28	4.39755	1.43832	2.9592	154.46	2.5772	-0.005	5	0.7553	0.4599	2.0085	198.6633
71	91.4	3.35	-9.26	3.67	91.2867	3.6698	5	2.35339	130.127	4.46261	1.46952	2.9931	29.008	3.8584	-0.025	4	1	0.3535	2.7006	29.00812
72	163.4	8.26	-9.14	5.06	163.288	5.0585	9	2.31178	137.28	4.53125	1.50072	3.0305	52.386	5.2029	-0.014	4	0.9864	0.3542	2.6062	53.14361

	C-5	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	123.5	0.94	0	0.76	123.5	0.7611	6	1.7836	121.5654	0.06078	0	0.0608	2030.8	0.7615	0	6	0.4466	2	1.5583	233.3206
2	99.8	0.93	0	0.93	99.8	0.9319	6	1.9107	120.9675	0.12127	0	0.1213	821.98	0.933	0	6	0.4982	2	1.6863	188.4094
3	81	0.55	-0.11	0.68	80.9987	0.679	6	1.90316	116.615	0.17957	0	0.1796	450.06	0.6805	-1E-04	6	0.4917	2	1.662	152.7615
4	122	0.91	-1.02	0.75	121.988	0.746	6	1.78245	121.298	0.24022	0	0.2402	506.81	0.7475	-6E-04	6	0.4568	1.9684	1.5617	226.4917
5	45.5	0.34	-0.23	0.75	45.4972	0.7473	5	2.13744	111.689	0.29607	0	0.2961	152.67	0.7522	-4E-04	6	0.5837	2	1.889	85.43763
6	15.1	0.05	-0.45	0.36	15.0945	0.3313	5	2.43112	94.97185	0.34355	0	0.3436	42.936	0.339	-0.002	5	0.6889	2	2.1592	27.88173
7	17.4	0.07	-0.46	0.39	17.3944	0.4024	5	2.40024	97.7797	0.39244	0	0.3924	43.323	0.4117	-0.002	5	0.6839	1.9706	2.139	31.66357
8	24.9	0.1	-0.57	0.4	24.893	0.4017	5	2.25441	101.2637	0.44308	0	0.4431	55.182	0.409	-0.002	6	0.6474	1.7569	2.0389	40.59628
9	197	0.7	-0.68	0.35	196.992	0.3553	6	1.42622	120.5472	0.50335	0	0.5034	390.36	0.3563	-3E-04	6	0.3786	1.3249	1.3266	246.0239
10	146.2	5.88	-1.05	4.02	146.187	4.0222	8	2.25756	135.392	0.57104	0	0.571	255	4.038	-5E-04	8	0.698	1.5381	2.1551	211.6666
11	63.3	3.13	-4.13	4.95	63.2495	4.9487	4	2.556	128.735	0.63541	0	0.6354	98.541	4.9989	-0.005	9	0.8122	1.5131	2.4467	89.54081
12	41.6	1.3	-5.08	3.12	41.5378	3.1297	4	2.54217	121.2803	0.69605	0	0.6961	58.676	3.183	-0.009	4	0.815	1.4068	2.4452	54.30135
13	34.5	1.66	-8.32	4.84	34.3982	4.8258	3	2.73081	122.6089	0.75736	0	0.7574	44.419	4.9345	-0.018	4	0.8966	1.3496	2.6527	42.90932
14	45.6	1.67	-7.5	3.67	45.5082	3.6697	4	2.56074	123.3355	0.81902	0	0.819	54.564	3.7369	-0.012	4	0.8434	1.2411	2.5055	52.4191
15	39.9	1.12	-7.38	2.82	39.8097	2.8134	4	2.525	120.0861	0.87907	0	0.8791	44.286	2.8769	-0.014	4	0.8397	1.1684	2.4884	42.98957
16	52.7	1.27	-7.27	2.42	52.611	2.4139	5	2.39037	121.6858	0.93991	0	0.9399	54.975	2.4579	-0.01	5	0.7979	1.0991	2.3711	53.67383
17	58.1	1.9	-7.16	3.28	58.0124	3.2752	4	2.45101	124.8717	1.00235	0	1.0024	56.877	3.3328	-0.009	4	0.8301	1.046	2.448	56.35564
18	75.2	3.22	-9.25	4.29	75.0868	4.2884	4	2.46009	129.3609	1.06703	0	1.067	69.37	4.3502	-0.009	4	0.8418	0.993	2.4709	69.46226
19	63.3	2.38	-8.72	3.76	63.1933	3.7662	4	2.46869	126.7285	1.13039	0	1.1304	54.904	3.8348	-0.01	4	0.8547	0.9451	2.4967	55.43377
20	56.2	2.25	-8.62	4	56.0945	4.0111	4	2.52417	126.0269	1.1934	0	1.1934	46.004	4.0983	-0.011	4	0.8854	0.8989	2.5696	46.64235
21	15.9	0.6	-8.81	3.79	15.7922	3.7994	3	2.91736	113.2641	1.25004	0	1.25	11.633	4.1259	-0.044	3	1	0.8465	3.0249	11.63336
22	10.2	0.37	-9.15	3.69	10.088	3.6677	3	3.06395	108.6338	1.30435	0	1.3044	6.7341	4.2124	-0.075	3	1	0.8112	3.222	6.7341
23	36.4	1.22	-8.85	3.37	36.2917	3.3617	4	2.60645	120.4862	1.3646	0	1.3646	25.595	3.493	-0.018	4	0.9465	0.786	2.7085	25.94617
24	58.1	2.57	-8.86	4.43	57.9916	4.4317	4	2.54578	127.081	1.42814	0.02808	1.4001	40.401	4.5436	-0.012	4	0.9215	0.7726	2.6386	41.29822
25	35	0.92	-7.05	2.63	34.9137	2.6351	4	2.54964	118.3267	1.4873	0.05928	1.428	23.408	2.7523	-0.017	4	0.9351	0.7555	2.6706	23.86775
26	30.8	0.7	-7.04	2.28	30.7138	2.2791	4	2.55307	116.0144	1.54531	0.09048	1.4548	20.049	2.3999	-0.02	4	0.943	0.7406	2.6882	20.41642
27	55.2	1.58	-6.93	2.87	55.1152	2.8667	5	2.42643	123.3973	1.60701	0.12168	1.4853	36.025	2.9528	-0.012	4	0.8884	0.7399	2.5407	37.41417
28	50.7	1.33	-6.25	2.63	50.6235	2.6272	5	2.42749	121.9297	1.66797	0.15288	1.5151	32.312	2.7168	-0.012	4	0.8943	0.7254	2.5526	33.56119
29	70.3	3.12	-6.02	4.44	70.2263	4.4428	4	2.49081	128.9668	1.73245	0.18408	1.5484	44.236	4.5552	-0.009	4	0.9174	0.7052	2.609	45.6501
30	49.2	2.63	-6.06	5.36	49.1258	5.3536	4	2.65496	126.8452	1.79588	0.21528	1.5806	29.944	5.5567	-0.014	3	0.9912	0.6718	2.7981	30.05065
31	65.4	2.87	-6.02	4.4	65.3263	4.3933	4	2.50809	128.1793	1.85997	0.24648	1.6135	39.335	4.5221	-0.011	4	0.9336	0.6744	2.6435	40.45327
32	43.8	2.03	-8.39	4.65	43.6973	4.6456	4	2.64547	124.6648	1.9223	0.27768	1.6446	25.401	4.8594	-0.021	3	0.9986	0.6438	2.8105	25.41692
33	40.6	1.53	-8.31	3.79	40.4983	3.7779	4	2.606	122.4104	1.9835	0.30888	1.6746	22.999	3.9725	-0.024	3	0.9901	0.6347	2.7831	23.10428
34	78	2.43	-9.43	3.12	77.8846	3.12	5	2.34695	127.3904	2.0472	0.34008	1.7071	44.424	3.2042	-0.013	4	0.8804	0.6563	2.4918	47.039
35	28.9	1.27	-9.66	4.43	28.7818	4.4125	3	2.76043	120.2146	2.10731	0.37128	1.736	15.365	4.7611	-0.04	3	1	0.6095	2.9691	15.36523
36	23.2	0.83	-9.77	3.62	23.0804	3.5961	4	2.77416	116.564	2.16559	0.40248	1.7631	11.862	3.9685	-0.053	3	1	0.6001	3.0079	11.86247
37	21.6	0.62	-9.54	2.89	21.4832	2.886	4	2.73852	114.2546	2.22272	0.43368	1.789	10.766	3.219	-0.058	3	1	0.5914	2.9881	10.76586
38	43.1	2.15	-9.43	4.99	42.9846	5.0018	4	2.67342	125.045	2.28524	0.46488	1.8204	22.358	5.2826	-0.028	3	1	0.5813	2.876	22.35787
39	27.1	0.8	-9.31	2.97	26.9861	2.9645	4	2.66839	116.6759	2.34358	0.49608	1.8475	13.338	3.2464	-0.047	3	1	0.5727	2.9148	13.3383
40	37.1	1.67	-9.13	4.5	36.9883	4.515	4	2.68805	122.8299	2.40499	0.52728	1.8777	18.418	4.8289	-0.034	3	1	0.5635	2.913	18.41777
41	56.9	1.44	-8.75	2.54	56.7929	2.5355	5	2.38034	122.7916	2.46639	0.55848	1.9079	28.474	2.6506	-0.022	4	0.9258	0.5794	2.5859	29.74813
42	70.2	2.12	-8.63	3.02	70.0944	3.0245	5	2.36874	126.1348	2.52945	0.58968	1.9398	34.831	3.1377	-0.018	4	0.9196	0.5727	2.5657	36.57025
43	111.6	6.25	-8.5	5.6	111.496	5.6056	9	2.44337	135.1778	2.59704	0.62088	1.9762	55.106	5.7393	-0.011	4	0.9408	0.5556	2.6171	57.18372
44	47.4	2.21	-8.35	4.67	47.2978	4.6725	4	2.62329	125.4796	2.65978	0.65208	2.0077	22.233	4.9509	-0.028	3	1	0.527	2.8589	22.23337
45	27.2	0.96	-8.45	3.56	27.0966	3.5429	4	2.71678	118.0199	2.71879	0.68328	2.0355	11.976	3.938	-0.053	3	1	0.5198	3.0026	11.97623
46	51.5	2.42	-8.63	4.7	51.3944	4.7087	4	2.60084	126.3464	2.78197	0.71448	2.0675	23.513	4.9782	-0.027	3	1	0.5118	2.8425	23.5128
47	31.3	1.11	-8.41	3.56	31.1971	3.558	4	2.67186	119.4259	2.84168	0.74568	2.096	13.528	3.9146	-0.048	3	1	0.5048	2.959	13.52833
48	43.9	1.77	-8.29	4.05	43.7985	4.0412	4	2.60193	123.6677	2.90351	0.77688	2.1266	19.23	4.3282	-0.034	3	1	0.4976	2.8679	19.22993
49	41.9	2.49	-8.29	5.96	41.7985	5.9572	3	2.73673	126.051	2.96654	0.80808	2.1585	17.991	6.4122	-0.036	3	1	0.4902	3.0025	17.99061
50	34	1.58	-8.18	4.68	33.8999	4.6608	4	2.72486	122.2119	3.02764	0.83928	2.1884	14.107	5.1179	-0.046	3	1	0.4835	3.0177	14.10744
51	238.1	2.29	-8.63	0.96	237.994	0.9622	6	1.64247	129.6807	3.09249	0.87048	2.222	105.72	0.9749	-0.006	6	0.64	0.622	1.7972	138.0826
52	534.9	3.54	-9.4	0.66	534.785	0.662	7	1.29252	134.8424	3.15991	0.90168	2.2582	235.42	0.6659	-0.003	6	0.4896	0.69	1.3978	346.6553
53	386.6	5.1	-11.44	1.32	386.46	1.3197	6	1.61872	136.7217	3.22827	0.93288	2.2954	166.96	1.3308	-0.005	6	0.6256	0.616	1.7505	223.1111
54	48.2	1.32	-11.13	2.74	48.0638	2.7464	4	2.45711	121.7479	3.28914	0.96408	2.3251	19.257	2.9481	-0.039	4	1	0.4551	2.7623	19.2574
55	39	1.02	-11.08	2.63	38.8644	2.6245	4	2.51305	119.3432	3.34881	0.99528	2.3535	15.09	2.872	-0.05	4	1	0.4496	2.8401	15.09032
56	62.8	2.48	-11.02	3.95	62.6651	3.9575	4	2.48688	127.0092	3.41232	1.02648	2.3858	24.835	4.1855	-0.031	3	1	0.4435	2.7744	24.83522
57	91.5	4.88	-11.02	5.34	91.3651	5.3412	9	2.47905	132.8816	3.47876	1.05768	2.4211	36.301	5.5526	-0.021	3	1	0.437	2.74	36.30051
58	70.7	3.69	-11.01	5.23	70.5652	5.2292	4	2.54296	130.2063	3.54386	1.08888	2.455	27.3	5.5057	-0.028	3	1	0.431	2.8251	27.30016
59	71.6	4.46	-10.69	6.25	71.4692	6.2405	9	2.59847	131.6241	3.60967	1.12008	2.4896	27.257	6.5724	-0.028	3	1	0.425	2.8795	27.25726
60	52.9	3.16	-10.68	5.98	52.7693	5.9883	3	2.67016	128.363	3.67385	1.15128	2.5226	19.462	6.4365	-0.039	3	1	0.4195	2.9785	19.46243
61	26.9	1.52	-10.68	5.69	26.7693	5.6782	3	2.85824	121.3527	3.73453	1.18248	2.5521	9.026	6.5987	-0.085	3	1	0.4146	3.2376	9.02597
62	318	5.65	-10.9	1.78	317.867	1.7775	6	1.7734	136.9945	3.80303	1.21368	2.5894	121.29	1.799	-0.006	6	0.7156	0.5271	1.9501	156.4462
63	459.4	2.97	-10.01	0.65	459.277	0.6467	7	1.32487	133.1866	3.86962	1.24488	2.6247	173.51	0.6522	-0.004	6	0.5354	0.6148	1.472	264.6197
64	490.6	3.16	-9.59	0.64	490.483	0.6443	7	1.30585	133.8006	3.93652	1.27608	2.6604	182.88	0.6495	-0.004	6	0.5291	0.614	1.4509	282.3264
65	450.4	2.34	-8.75	0.52	450.293	0.5197	7	1.25814	131.3939	4.00222	1.30728	2.6949	165.6	0.5243	-0.004	6	0.5162	0.6172	1.4124	260.3293
66	443.5	3.24	-8.52	0.73	443.396	0.7307	6	1.37593	133.7374	4.06909	1.33848	2.7306	160.89	0.7375	-0.004	6	0.5647	0.5854	1.5359	243.0731
67	74.9	3.49	-6.09	4.67	74.8255	4.6642	4	2.48866	129.9415	4.13406	1.36968	2.7644	25.572	4.937	-0.026	3	1	0.3828	2.8132	25.57226
68	280.7	8.9	-4.74	3.17	280.642	3.1713	8	2.01434	137.28	4.2027	1.40088	2.8018	98.664	3.2195	-0.006	5	0.8309	0.4453	2.2265	116.3298
69	444	4.61	-12.12	1.04	443.852	1.0386	6	1.49891	136.3203	4.27086	1.43208	2.8388	154.85	1.0487	-0.005	6	0.6208	0.5419	1.6698	225.1311

	C-6	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	152.1	2.21	-0.52	1.45	152.094	1.4531	6	1.90608	128.3284	0.06416	0	0.0642	2369.4	1.4537	-3E-04	6	0.5057	2	1.713	287.361
2	83.2	2.21	-0.48	2.65	83.1941	2.6564	5	2.27653	126.8569	0.12759	0	0.1276	651.03	2.6605	-4E-04	5	0.6488	2	2.0807	157.0096
3	76.8	2.17	0.06	2.83	76.8007	2.8255	5	2.31991	126.5282	0.19086	0	0.1909	401.4	2.8325	6E-05	5	0.6682	2	2.1237	144.8054
4	173.2	2.59	-0.34	1.49	173.196	1.4954	6	1.87693	129.8063	0.25576	0	0.2558	676.18	1.4976	-1E-04	6	0.5065	2	1.6913	326.8855
5	38.1	0.73	-0.59	1.92	38.0928	1.9164	5	2.43303	116.8466	0.31418	0	0.3142	120.24	1.9323	-0.001	5	0.7066	2	2.2092	71.40782
6	17.2	0.28	-0.68	1.65	17.1917	1.6287	4	2.67473	107.8946	0.36813	0	0.3681	45.7	1.6643	-0.003	5	0.7966	2	2.439	31.7993
7	16.9	0.27	-0.8	1.6	16.8902	1.5986	4	2.6769	107.5854	0.42192	0	0.4219	39.031	1.6395	-0.004	5	0.8006	2	2.4426	31.1278
8	25.9	0.35	-0.8	1.34	25.8902	1.3519	5	2.48138	110.526	0.47719	0	0.4772	53.256	1.3773	-0.002	5	0.7418	1.8052	2.2818	43.35643
9	69.2	2.2	-0.41	3.19	69.195	3.1794	5	2.38824	126.3744	0.54037	0	0.5404	127.05	3.2045	-4E-04	5	0.7328	1.6362	2.2502	106.1659
10	109.1	6	-5.27	5.5	109.036	5.5028	9	2.44267	134.8246	0.60779	0	0.6078	178.4	5.5336	-0.004	9	0.7703	1.5327	2.3402	157.065
11	52.3	1.91	-5.62	3.65	52.2312	3.6568	4	2.51709	124.6541	0.67011	0	0.6701	76.944	3.7043	-0.008	4	0.8019	1.4424	2.4154	70.28682
12	41.7	1.54	-5.84	3.7	41.6285	3.6994	4	2.59105	122.5252	0.73138	0	0.7314	55.918	3.7655	-0.01	4	0.8397	1.3636	2.5062	52.70433
13	58.7	1.94	-5.68	3.3	58.6305	3.3089	4	2.45091	125.05	0.7939	0	0.7939	72.851	3.3543	-0.007	5	0.7984	1.2578	2.3902	68.75154
14	51.2	1.87	-5.68	3.66	51.1305	3.6573	4	2.52367	124.4473	0.85612	0	0.8561	58.723	3.7196	-0.008	4	0.8355	1.1936	2.4803	56.7126
15	46.8	1.44	-5.57	3.07	46.7318	3.0814	4	2.50003	122.316	0.91728	0	0.9173	49.946	3.1431	-0.009	4	0.8362	1.1269	2.4746	48.79118
16	57.3	2.13	-5.57	3.73	57.2318	3.7217	4	2.4947	125.6748	0.98012	0	0.9801	57.393	3.7866	-0.007	4	0.8434	1.0667	2.4859	56.70887
17	99	3.55	-5.34	3.59	98.9346	3.5882	5	2.3233	130.7475	1.04549	0	1.0455	93.63	3.6266	-0.004	5	0.7861	1.0095	2.3272	93.38969
18	95.3	4.31	-5.34	4.52	95.2346	4.5257	9	2.41156	132.0739	1.11153	0	1.1115	84.679	4.5791	-0.004	9	0.8283	0.96	2.4299	85.39793
19	92.4	3.95	-5.22	4.28	92.3361	4.2779	9	2.40112	131.3604	1.17721	0	1.1772	77.436	4.3331	-0.004	4	0.8329	0.915	2.4337	78.82896
20	58.7	2.33	-5.22	3.97	58.6361	3.9737	4	2.50795	126.3906	1.24041	0	1.2404	46.272	4.0595	-0.007	4	0.8854	0.8687	2.5635	47.12265
21	31.6	0.96	-5.21	3.04	31.5362	3.0441	4	2.62387	118.39	1.2996	0	1.2996	23.266	3.175	-0.012	4	0.9456	0.8233	2.7144	23.52765
22	31.8	1.08	-5.22	3.4	31.7361	3.4031	4	2.65349	119.2672	1.35923	0	1.3592	22.349	3.5553	-0.012	4	0.9658	0.7852	2.7601	22.54053
23	122.5	2.46	-6.69	2.01	122.418	2.0095	5	2.0733	128.5832	1.42353	0	1.4235	84.996	2.0332	-0.004	5	0.7352	0.8041	2.1459	91.94381
24	51.6	0.93	-10.56	1.8	51.4708	1.8069	5	2.31523	119.3525	1.4832	0.02496	1.4582	34.279	1.8605	-0.016	5	0.843	0.7631	2.4246	36.05019
25	38.5	0.76	-10.22	1.97	38.3749	1.9805	5	2.43937	117.1593	1.54178	0.05616	1.4856	24.793	2.0634	-0.022	4	0.8994	0.737	2.5694	25.65453
26	38.2	0.7	-10.22	1.85	38.0749	1.8385	5	2.42211	116.5384	1.60005	0.08736	1.5127	24.113	1.9191	-0.023	4	0.8969	0.7257	2.5596	25.01757
27	51.4	1.13	-10.11	2.21	51.2763	2.2038	5	2.37241	120.7685	1.66044	0.11856	1.5419	32.179	2.2775	-0.017	4	0.8764	0.7189	2.5021	33.71123
28	62.2	2.09	-9.99	3.36	62.0777	3.3668	4	2.43889	125.7343	1.7233	0.14976	1.5735	38.356	3.4629	-0.014	4	0.9027	0.6989	2.5672	39.86652
29	84.9	3.94	-9.88	4.65	84.7791	4.6474	9	2.45248	131.1335	1.78887	0.18096	1.6079	51.614	4.7476	-0.011	4	0.9069	0.6842	2.574	53.66521
30	117	4.83	-9.88	4.13	116.879	4.1325	9	2.32538	133.4069	1.85557	0.21216	1.6434	69.991	4.1991	-0.008	4	0.8573	0.6856	2.4392	74.52877
31	79.7	4.35	-9.2	5.46	79.5874	5.4657	9	2.52432	131.7038	1.92142	0.24336	1.6781	46.283	5.6009	-0.012	3	0.9439	0.6471	2.6627	47.49525
32	55.8	2.22	-9.03	3.99	55.6895	3.9864	4	2.52441	125.911	1.98438	0.27456	1.7098	31.41	4.1337	-0.017	4	0.9553	0.6323	2.6885	32.09169
33	68.3	3.01	-9.32	4.42	68.1859	4.4144	4	2.49722	128.6323	2.0487	0.30576	1.7429	37.946	4.5511	-0.015	4	0.9447	0.6241	2.6566	39.00783
34	46.9	2.65	-9.2	5.67	46.7874	5.6639	3	2.68731	126.7817	2.11209	0.33696	1.7751	25.167	5.9317	-0.022	3	1	0.5961	2.873	25.16739
35	20.1	0.95	-9.31	4.74	19.9861	4.7533	3	2.90024	117.2009	2.17069	0.36816	1.8025	9.8835	5.3325	-0.058	3	1	0.587	3.1491	9.88354
36	50.3	3.04	-9.2	6.06	50.1874	6.0573	3	2.68837	127.9574	2.23467	0.39936	1.8353	26.128	6.3396	-0.022	3	1	0.5765	2.8815	26.12792
37	78.4	4.38	-9.09	5.59	78.2887	5.5947	9	2.53669	131.7139	2.30052	0.43056	1.87	40.636	5.7641	-0.014	3	0.9722	0.5749	2.7132	41.28471
38	61.5	3	-8.97	4.88	61.3902	4.8868	4	2.56052	128.3519	2.3647	0.46176	1.9029	31.018	5.0826	-0.019	3	0.9919	0.5587	2.7597	31.16572
39	55.8	2.49	-8.95	4.48	55.6905	4.4711	4	2.56058	126.7508	2.42807	0.49296	1.9351	27.524	4.675	-0.021	3	0.9982	0.5474	2.7733	27.55381
40	53	1.97	-8.74	3.72	52.893	3.7245	4	2.51889	124.9111	2.49053	0.52416	1.9664	25.632	3.9085	-0.023	4	0.9877	0.5422	2.742	25.82882
41	74.9	3.39	-8.52	4.53	74.7957	4.5324	4	2.47934	129.7279	2.55539	0.55536	2	36.12	4.6927	-0.016	4	0.967	0.5403	2.6832	36.88727
42	66.9	4.1	-8.32	6.15	66.7982	6.1379	4	2.61156	130.8434	2.62082	0.58656	2.0343	31.548	6.3886	-0.018	3	1	0.5202	2.8262	31.54832
43	26.6	1.33	-8.4	5.02	26.4972	5.0194	3	2.82477	120.3507	2.68099	0.61776	2.0632	11.543	5.5844	-0.051	3	1	0.5128	3.109	11.54316
44	15.4	0.51	-8.4	3.32	15.2972	3.334	3	2.89372	111.9973	2.73699	0.64896	2.088	6.0153	4.0605	-0.1	3	1	0.5068	3.2533	6.01533
45	43.6	2.29	-8.34	5.27	43.4979	5.2646	4	2.68586	125.5355	2.79976	0.68016	2.1196	19.201	5.6268	-0.031	3	1	0.4992	2.9434	19.20089
46	65.5	4.08	-8.06	6.23	65.4014	6.2384	3	2.62286	130.7561	2.86514	0.71136	2.1538	29.036	6.5242	-0.021	3	1	0.4913	2.8579	29.03562
47	30	1.19	-7.95	3.98	29.9027	3.9796	4	2.71798	119.8318	2.92505	0.74256	2.1825	12.361	4.4111	-0.049	3	1	0.4848	3.0218	12.36094
48	28.8	1.18	-7.95	4.11	28.7027	4.1111	4	2.74065	119.6701	2.98489	0.77376	2.2111	11.631	4.5883	-0.052	3	1	0.4785	3.0531	11.63109
49	31	1.3	-8.06	4.21	30.9014	4.2069	4	2.72368	120.5588	3.04517	0.80496	2.2402	12.435	4.6668	-0.05	3	1	0.4723	3.0349	12.43465
50	17.5	0.99	-7.86	5.66	17.4038	5.6884	3	2.99676	117.1653	3.10375	0.83616	2.2676	6.3063	6.9231	-0.098	3	1	0.4666	3.3727	6.30628
51	283.7	2.67	-7.07	0.94	283.613	0.9414	6	1.58445	131.2317	3.16936	0.86736	2.302	121.83	0.9521	-0.005	6	0.6206	0.6173	1.7363	163.6125
52	42.2	0.67	-5.2	1.58	42.1364	1.5901	5	2.3488	116.4651	3.2276	0.89856	2.329	16.706	1.722	-0.033	4	0.9781	0.4622	2.6713	16.99762
53	54.7	2.07	-4.32	3.78	54.6471	3.7879	4	2.51419	125.353	3.29027	0.92976	2.3605	21.757	4.0306	-0.024	3	1	0.4483	2.807	21.75665
54	65.3	3.84	-4.54	5.9	65.2444	5.8856	4	2.60415	130.3066	3.35543	0.96096	2.3945	25.847	6.2047	-0.021	3	1	0.4419	2.8783	25.84668
55	104.4	4.27	-4.44	4.09	104.346	4.0922	9	2.35261	132.2286	3.42154	0.99216	2.4294	41.543	4.2309	-0.013	4	0.9573	0.4513	2.6039	43.04524
56	175.8	8.88	-6.02	5.05	175.726	5.0533	9	2.29388	137.28	3.49018	1.02336	2.4668	69.821	5.1557	-0.008	9	0.9224	0.4581	2.5071	74.56432
57	40.4	1.78	-6.59	4.41	40.3193	4.4148	4	2.65448	123.507	3.55193	1.05456	2.4974	14.722	4.8412	-0.042	3	1	0.4237	2.988	14.72242
58	75.2	3.21	-6.81	4.27	75.1167	4.2734	4	2.45883	129.3391	3.6166	1.08576	2.5308	28.251	4.4895	-0.022	3	1	0.4181	2.7534	28.25146
59	131.1	5.45	-6.89	4.16	131.016	4.1598	9	2.29758	134.5691	3.68389	1.11696	2.5669	49.605	4.2802	-0.013	4	0.9432	0.4335	2.5494	52.16792
60	311.3	6.73	-6.94	2.16	311.215	2.1625	6	1.84955	137.28	3.75253	1.14816	2.6044	118.06	2.1889	-0.005	5	0.7467	0.5104	2.0301	148.3062
61	442.9	4.56	-6.64	1.03	442.819	1.0298	6	1.49642	136.2348	3.82065	1.17936	2.6413	166.21	1.0387	-0.004	6	0.6037	0.5757	1.6496	238.8348
62	427.4	4.73	-5.22	1.11	427.336	1.1069	6	1.53102	136.4158	3.88885	1.21056	2.6783	158.1	1.117	-0.004	6	0.6211	0.5617	1.6907	224.7856
63	156.6	4.8	-5.22	3.07	156.536	3.0664	5	2.14531	134.0739	3.95589	1.24176	2.7141	56.217	3.1459	-0.011	5	0.8928	0.4313	2.4001	62.18895
64	135.8	6.36	-5.36	4.68	135.734	4.6856	9	2.33015	135.7852	4.02378	1.27296	2.7508	47.88	4.8288	-0.013	4	0.9729	0.3947	2.6054	49.13515
65	359.2	7.95	-7.87	2.21	359.104	2.2139	8	1.82537	137.28	4.09242	1.30416	2.7883	127.32	2.2394	-0.005	5	0.7489	0.484	2.0128	162.3989

	C-7	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	134.6	1.26	0.04	0.94	134.6	0.9361	6	1.81213	123.9191	0.06196	0	0.062	2171.4	0.9365	2E-05	6	0.4617	2	1.5979	254.3002
2	58.2	0.77	-0.02	1.32	58.1998	1.323	5	2.18892	118.2708	0.12109	0	0.1211	479.61	1.3258	-2E-05	6	0.6029	2	1.961	109.7783
3	61.4	1.15	0.04	1.87	61.4005	1.873	5	2.267	121.3364	0.18176	0	0.1818	336.8	1.8785	5E-05	5	0.6403	2	2.0518	115.7136
4	136.9	1.98	-0.15	1.45	136.898	1.4463	6	1.9364	127.2676	0.2454	0	0.2454	556.86	1.4489	-8E-05	6	0.5244	2	1.7397	258.2964
5	32	0.22	-0.6	0.7	31.9927	0.6877	5	2.25301	107.6449	0.29922	0	0.2992	105.92	0.6942	-0.001	6	0.6253	2	1.9978	59.90586
6	22.7	0.14	-0.72	0.63	22.6912	0.617	5	2.36528	103.4998	0.35097	0	0.351	63.653	0.6267	-0.002	5	0.6691	2	2.1062	42.22673
7	22.6	0.13	-0.83	0.56	22.5898	0.5755	5	2.35429	102.9467	0.40244	0	0.4024	55.132	0.5859	-0.003	5	0.6742	1.9189	2.1108	40.23763
8	42.3	0.51	-0.94	1.21	42.2885	1.206	5	2.27686	114.4774	0.45968	0	0.4597	90.995	1.2193	-0.002	5	0.6677	1.7448	2.0897	68.97601
9	192.2	4.68	-1.15	2.43	192.186	2.4351	5	2.01171	134.389	0.52688	0	0.5269	363.77	2.4418	-4E-04	8	0.6022	1.5218	1.9092	275.6491
10	119.3	3.76	-2.79	3.15	119.266	3.1526	5	2.22814	131.6238	0.59269	0	0.5927	200.23	3.1684	-0.002	8	0.6877	1.4897	2.1252	167.0736
11	47.4	1.89	-6.51	3.98	47.3203	3.9941	4	2.5745	124.3363	0.65486	0	0.6549	71.261	4.0501	-0.01	4	0.8202	1.4822	2.4652	65.36973
12	64.5	2.6	-7.66	4.04	64.4062	4.0369	4	2.48509	127.4218	0.71857	0	0.7186	88.632	4.0824	-0.009	4	0.7998	1.3628	2.4028	82.02389
13	60.6	2.32	-6.96	3.84	60.5148	3.8338	4	2.48723	126.436	0.78178	0	0.7818	76.406	3.884	-0.008	4	0.8104	1.278	2.4231	72.14398
14	51.4	1.73	-7.07	3.37	51.3135	3.3714	4	2.49771	123.8866	0.84373	0	0.8437	59.818	3.4278	-0.01	4	0.8237	1.205	2.4507	57.47701
15	68.4	2.81	-6.75	4.11	68.3174	4.1132	4	2.47382	128.1339	0.90779	0	0.9078	74.256	4.1686	-0.007	4	0.8247	1.1347	2.4455	72.28842
16	80.1	3.51	-6.51	4.39	80.0203	4.3864	4	2.44944	130.1471	0.97287	0	0.9729	81.252	4.4404	-0.006	4	0.8247	1.0717	2.4375	80.06421
17	99.8	4.32	-6.79	4.33	99.7169	4.3323	9	2.38426	132.2031	1.03897	0	1.039	94.977	4.3779	-0.005	9	0.8084	1.0149	2.3866	94.64512
18	82.9	3.9	-6.55	4.71	82.8198	4.709	9	2.46337	131.0019	1.10447	0	1.1045	73.986	4.7727	-0.006	4	0.8477	0.9643	2.4817	74.47068
19	79.4	3.54	-6.21	4.46	79.324	4.4627	4	2.45761	130.188	1.16956	0	1.1696	66.824	4.5295	-0.006	4	0.8544	0.918	2.491	67.80538
20	41.8	1.74	-5.71	4.17	41.7301	4.1697	4	2.62643	123.4246	1.23128	0	1.2313	32.892	4.2964	-0.01	4	0.9327	0.8682	2.689	33.22893
21	51.3	2.2	-5.71	4.29	51.2301	4.2944	4	2.57283	125.6412	1.2941	0	1.2941	38.588	4.4056	-0.008	4	0.9189	0.8311	2.6449	39.22263
22	51.1	2.28	-5.37	4.46	51.0343	4.4676	4	2.58638	125.8932	1.35704	0	1.357	36.607	4.5896	-0.008	4	0.9328	0.7929	2.6736	37.22409
23	43	1.85	-5.49	4.3	42.9328	4.3091	4	2.6277	123.9424	1.41902	0	1.419	29.255	4.4564	-0.01	4	0.9597	0.7545	2.7364	29.60376
24	40.7	1.14	-7.06	2.81	40.6136	2.8069	4	2.51783	120.2644	1.47915	0.02184	1.4573	26.854	2.913	-0.014	4	0.9241	0.7439	2.6381	27.51426
25	42.6	0.9	-6.22	2.11	42.5239	2.1165	5	2.42291	118.6468	1.53847	0.05304	1.4854	27.592	2.1959	-0.012	4	0.8911	0.7391	2.5479	28.62962
26	42.1	0.92	-6.06	2.2	42.0258	2.1891	5	2.43621	118.7789	1.59786	0.08424	1.5136	26.709	2.2757	-0.013	4	0.9005	0.7244	2.569	27.67804
27	71.9	3.01	-5.59	4.19	71.8316	4.1904	4	2.46529	128.7593	1.66224	0.11544	1.5468	45.364	4.2896	-0.007	4	0.9068	0.7087	2.5815	46.99826
28	85.4	4.78	-4.57	5.6	85.3441	5.6009	9	2.51359	132.5638	1.72852	0.14664	1.5819	52.858	5.7166	-0.006	4	0.9269	0.6889	2.6299	54.43584
29	62.8	2.83	-4.35	4.51	62.7468	4.5102	4	2.52828	127.9783	1.79251	0.17784	1.6147	37.75	4.6428	-0.008	4	0.9419	0.6716	2.6652	38.68894
30	72.2	3.7	-4.7	5.13	72.1425	5.1287	4	2.53033	130.28	1.85765	0.20904	1.6486	42.633	5.2643	-0.008	4	0.9444	0.6578	2.6676	43.69714
31	37.9	1.65	-4.87	4.37	37.8404	4.3604	4	2.67041	122.7973	1.91905	0.24024	1.6788	21.397	4.5934	-0.016	3	1	0.6303	2.8497	21.39691
32	73.8	2.6	-6.11	3.52	73.7252	3.5266	4	2.40217	127.7514	1.98293	0.27144	1.7115	41.918	3.6241	-0.01	4	0.9029	0.6478	2.5504	43.9222
33	20.7	0.7	-6.4	3.37	20.6217	3.3945	4	2.79616	115.0428	2.04045	0.30264	1.7378	10.692	3.7673	-0.041	3	1	0.6089	3.0305	10.69234
34	19.8	0.5	-5.28	2.54	19.7354	2.5335	4	2.73374	112.4737	2.09668	0.33384	1.7628	10.006	2.8347	-0.04	3	1	0.6002	2.9828	10.00581
35	22.9	0.8	-4.81	3.49	22.8411	3.5025	4	2.77033	116.2692	2.15482	0.36504	1.7898	11.558	3.8673	-0.034	3	1	0.5912	3.0101	11.55803
36	62.8	3.26	-6.08	5.2	62.7256	5.1972	4	2.57436	129.0125	2.21932	0.39624	1.8231	33.189	5.3879	-0.014	3	0.9861	0.5848	2.7557	33.44046
37	80.8	3.66	-3.13	4.53	80.7617	4.5319	4	2.45764	130.4758	2.28456	0.42744	1.8571	42.257	4.6638	-0.008	4	0.9398	0.5894	2.6295	43.71256
38	59.6	2.67	-3.3	4.48	59.5596	4.4829	4	2.54159	127.4254	2.34828	0.45864	1.8896	30.276	4.6669	-0.012	3	0.9833	0.5654	2.74	30.57108
39	18.8	0.76	-5	4.04	18.7388	4.0558	3	2.87718	115.411	2.40598	0.48984	1.9161	8.5238	4.6532	-0.052	3	1	0.5522	3.1642	8.52381
40	104.5	5.82	-1.41	5.57	104.483	5.5703	9	2.45799	134.4977	2.47323	0.52104	1.9522	52.254	5.7054	-0.006	4	0.945	0.5606	2.6313	54.0439
41	73.9	3.92	-1.4	5.31	73.8829	5.3057	9	2.53493	130.7608	2.53861	0.55224	1.9864	35.917	5.4945	-0.009	3	0.9869	0.5371	2.7375	36.21444
42	22.3	0.7	-2.31	3.15	22.2717	3.143	4	2.74917	115.2306	2.59623	0.58344	2.0128	9.7753	3.5577	-0.038	3	1	0.5257	3.0474	9.77526
43	15.3	1	-3.41	6.56	15.2583	6.5538	3	3.08028	116.9179	2.65468	0.61464	2.04	6.1781	7.9343	-0.068	3	1	0.5187	3.4162	6.17809
44	69.5	2.61	-3.76	3.75	69.454	3.7579	4	2.44002	127.6339	2.7185	0.64584	2.0727	32.198	3.911	-0.014	4	0.9628	0.5234	2.6631	33.01336
45	58.5	2.84	-2.33	4.85	58.4715	4.8571	4	2.57271	127.832	2.78242	0.67704	2.1054	26.451	5.0997	-0.015	3	1	0.5026	2.8121	26.45087
46	56.5	2.84	-3.67	5.04	56.4551	5.0306	4	2.59423	127.7464	2.84629	0.70824	2.1381	25.074	5.2976	-0.018	3	1	0.4949	2.8404	25.07368
47	28.6	1.32	-3.77	4.64	28.5539	4.6228	3	2.77666	120.4778	2.90653	0.73944	2.1671	11.835	5.1467	-0.039	3	1	0.4883	3.0783	11.83492
48	26.6	1.19	-3.98	4.47	26.5513	4.4819	3	2.7909	119.5418	2.9663	0.77064	2.1957	10.742	5.0456	-0.045	3	1	0.4819	3.1058	10.74164
49	14.2	0.33	-3.9	2.36	14.1523	2.3318	4	2.83085	108.6223	3.02061	0.80184	2.2188	5.017	2.9645	-0.097	3	1	0.4769	3.2455	5.01703
50	441	5.72	-2.38	1.3	440.971	1.2971	6	1.581	137.28	3.08925	0.83304	2.2562	194.08	1.3063	-0.002	6	0.6047	0.6326	1.7005	261.8031
51	64.9	2.1	32	3.21	65.2917	3.2163	5	2.40937	125.8924	3.1522	0.86424	2.288	27.159	3.3795	0.0232	4	0.9789	0.4701	2.6787	27.60547
52	75.7	4.16	1.05	5.49	75.7129	5.4944	9	2.53982	131.2553	3.21783	0.89544	2.3224	31.216	5.7383	-0.011	3	1	0.4556	2.7962	31.21576
53	59.3	2.14	-2.87	3.62	59.2649	3.6109	4	2.47473	125.7942	3.28072	0.92664	2.3541	23.782	3.8225	-0.02	4	1	0.4495	2.7627	23.78173
54	37.2	2.17	-2.19	5.84	37.1732	5.8375	3	2.76551	124.7584	3.3431	0.95784	2.3853	14.183	6.4144	-0.033	3	1	0.4436	3.0795	14.18297
55	27.7	1.74	-2.53	6.31	27.669	6.2886	3	2.8788	122.4224	3.40431	0.98904	2.4153	10.046	7.1709	-0.048	3	1	0.4381	3.2248	10.04637
56	28.4	1.55	-3.04	5.48	28.3628	5.4649	3	2.8286	121.6367	3.46513	1.02024	2.4449	10.184	6.2255	-0.05	3	1	0.4328	3.181	10.18354
57	23.4	1.03	-2.65	4.43	23.3676	4.4078	3	2.82752	118.1738	3.52422	1.05144	2.4728	8.0247	5.1907	-0.063	3	1	0.4279	3.2136	8.02472
58	133.3	2.85	-1.55	2.13	133.281	2.1383	5	2.06857	129.8673	3.58915	1.08264	2.5065	51.742	2.1975	-0.009	5	0.848	0.4813	2.308	58.99144
59	431.8	7.46	0.7	1.73	431.809	1.7276	6	1.69188	137.28	3.65779	1.11384	2.544	168.3	1.7424	-0.002	6	0.6716	0.5548	1.8403	224.4978
60	348.5	3.16	2.58	0.91	348.532	0.9067	6	1.51434	132.9673	3.72428	1.14504	2.5792	133.69	0.9165	-0.003	6	0.6124	0.5795	1.6801	188.8259
61	65.9	2.95	11.81	4.47	66.0446	4.4667	4	2.51027	128.4071	3.78848	1.17624	2.6122	23.832	4.7385	-0.005	3	1	0.4051	2.8237	23.83246
62	37.4	1.54	11.74	4.09	37.5437	4.1019	4	2.65447	122.2733	3.84962	1.20744	2.6422	12.752	4.5705	-0.011	3	1	0.4005	3.0207	12.7524
63	158.5	5.12	18.75	3.23	158.73	3.2256	8	2.15921	134.58	3.91691	1.23864	2.6783	57.803	3.3072	0.0007	4	0.8942	0.4359	2.4082	63.77243

	C-8	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	132.1	2.75	-0.47	2.08	132.094	2.0819	5	2.06246	129.5841	0.06479	0	0.0648	2037.7	2.0829	-3E-04	6	0.5677	2	1.8758	249.5576
2	38.1	1.42	-0.01	3.72	38.0999	3.7271	4	2.62124	121.7156	0.12565	0	0.1257	302.22	3.7394	-2E-05	4	0.775	2	2.4123	71.7776
3	47.9	1.26	-0.05	2.62	47.8994	2.6305	5	2.44562	121.3991	0.18635	0	0.1864	256.04	2.6408	-8E-05	5	0.7099	2	2.2339	90.18557
4	83.8	2.44	-0.39	2.91	83.7952	2.9119	5	2.30336	127.5989	0.25015	0	0.2502	333.98	2.9206	-3E-04	5	0.6662	2	2.1113	157.9141
5	37.7	0.74	-0.39	1.96	37.6952	1.9631	5	2.44308	116.9206	0.30861	0	0.3086	121.15	1.9793	-8E-04	5	0.7103	2	2.2196	70.66692
6	27.8	0.48	-0.66	1.73	27.7919	1.7271	4	2.51571	113.01	0.36511	0	0.3651	75.118	1.7501	-0.002	5	0.7379	2	2.2851	51.84123
7	53.5	0.67	-0.66	1.26	53.4919	1.2525	5	2.20367	117.0471	0.42364	0	0.4236	125.27	1.2625	-9E-04	6	0.6362	1.7903	2.0115	89.78901
8	287.5	5.96	-0.81	2.07	287.49	2.0731	6	1.85319	137.1403	0.49221	0	0.4922	583.08	2.0767	-2E-04	8	0.5436	1.5159	1.7596	411.1734
9	129.2	4.87	-1.13	3.77	129.186	3.7698	8	2.26722	133.7114	0.55906	0	0.5591	230.08	3.7861	-6E-04	8	0.6983	1.5612	2.1573	189.789
10	71.3	3	-1.58	4.2	71.2807	4.2087	4	2.46893	128.7162	0.62342	0	0.6234	113.34	4.2459	-0.002	9	0.7783	1.5094	2.3592	100.7938
11	66.2	2.53	-2.43	3.82	66.1703	3.8235	4	2.45981	127.288	0.68707	0	0.6871	95.308	3.8636	-0.003	4	0.7849	1.4034	2.3685	86.85275
12	59.7	2.42	-2.7	4.05	59.667	4.0559	4	2.50921	126.7104	0.75042	0	0.7504	78.511	4.1075	-0.003	4	0.8136	1.3226	2.4354	73.64106
13	65.9	2.24	-1.42	3.41	65.8826	3.4	4	2.42401	126.3866	0.81361	0	0.8136	79.975	3.4425	-0.002	5	0.7916	1.2312	2.3701	75.71441
14	68.9	2.64	-1.18	3.83	68.8856	3.8324	4	2.44871	127.6975	0.87746	0	0.8775	77.505	3.8819	-0.001	4	0.8107	1.1639	2.4125	74.80685
15	59.2	2.22	-1.07	3.75	59.1869	3.7508	4	2.48701	126.0595	0.94049	0	0.9405	61.932	3.8114	-0.001	4	0.8346	1.1033	2.4675	60.73628
16	86.3	3.19	-0.85	3.7	86.2896	3.6969	4	2.37181	129.6316	1.00531	0	1.0053	84.834	3.7404	-7E-04	4	0.7995	1.0418	2.3674	83.96761
17	84.5	3.41	-1.78	4.03	84.4782	4.0365	4	2.40671	130.0678	1.07034	0	1.0703	77.926	4.0883	-0.002	4	0.8215	0.9906	2.4172	78.0864
18	78.9	4	-2.88	5.07	78.8648	5.072	9	2.50176	131.0678	1.13588	0	1.1359	68.431	5.1461	-0.003	4	0.8668	0.9404	2.5278	69.08046
19	44.9	2.01	-2.55	4.47	44.8688	4.4797	4	2.62616	124.6569	1.1982	0	1.1982	36.447	4.6026	-0.004	4	0.927	0.8911	2.6781	36.77897
20	52.4	2.31	-2.65	4.42	52.3676	4.4111	4	2.57465	126.0517	1.26123	0	1.2612	40.521	4.52	-0.004	4	0.9148	0.8516	2.6382	41.13186
21	56	2.02	-2.43	3.62	55.9703	3.6091	4	2.49192	125.2324	1.32385	0	1.3239	41.279	3.6965	-0.003	4	0.8911	0.819	2.5681	42.29815
22	56.7	2.83	1.09	4.99	56.7133	4.99	4	2.5903	127.7318	1.38771	0	1.3877	39.868	5.1152	0.0014	4	0.9371	0.7756	2.6809	40.55441
23	27.8	0.82	1.2	2.95	27.8147	2.9481	4	2.65671	116.9303	1.44618	0	1.4462	18.233	3.1098	0.0033	4	0.9827	0.7356	2.7935	18.33225
24	26.1	0.65	1.2	2.5	26.1147	2.489	4	2.63214	115.0765	1.50372	0.01872	1.485	16.573	2.6411	0.0028	4	0.9807	0.7172	2.7835	16.68172
25	40.6	1.03	1.66	2.55	40.6203	2.5357	4	2.48875	119.5223	1.56348	0.04992	1.5136	25.805	2.6372	0.0018	4	0.921	0.7191	2.6229	26.54482
26	80.9	2.91	2.21	3.6	80.9271	3.5958	4	2.38123	128.8029	1.62788	0.08112	1.5468	51.268	3.6697	0.001	4	0.8727	0.718	2.4919	53.80591
27	69.1	2.44	2.76	3.52	69.1338	3.5294	4	2.42142	127.1298	1.69144	0.11232	1.5791	42.709	3.6179	0.0013	4	0.8947	0.6989	2.5455	44.54816
28	62.1	2.48	3.05	3.99	62.1373	3.9912	4	2.49207	126.9886	1.75494	0.14352	1.6114	37.472	4.1072	0.0013	4	0.9277	0.6769	2.6283	38.62874
29	81	3.13	2.4	3.86	81.0294	3.8628	4	2.40415	129.3392	1.81961	0.17472	1.6449	48.155	3.9515	-2E-05	4	0.8936	0.6742	2.5343	50.47025
30	27.2	0.85	1.93	3.12	27.2236	3.1223	4	2.6798	117.1409	1.87818	0.20592	1.6723	15.156	3.3537	-0.003	3	1	0.6327	2.8789	15.15642
31	54	1	-1.06	1.86	53.987	1.8523	5	2.30625	119.9999	1.93818	0.23712	1.7011	30.598	1.9213	-0.006	5	0.8714	0.6612	2.4685	32.52479
32	25.4	0.45	-0.27	1.78	25.3967	1.7719	4	2.55409	112.3179	1.99434	0.26832	1.726	13.559	1.9229	-0.012	4	0.9907	0.6158	2.7781	13.62075
33	21.2	0.64	-0.25	3.03	21.1969	3.0193	4	2.75518	114.4542	2.05156	0.29952	1.752	10.927	3.3428	-0.017	3	1	0.6039	2.9923	10.92745
34	28.9	1.29	-0.57	4.47	28.893	4.4648	3	2.76265	120.3384	2.11173	0.33072	1.781	15.037	4.8168	-0.014	3	1	0.5941	2.9795	15.03711
35	77	2.98	0.38	3.87	77.0047	3.8699	4	2.4194	128.8556	2.17616	0.36192	1.8142	41.245	3.9824	-0.004	4	0.9211	0.6086	2.5854	43.03819
36	63.3	2.19	0.98	3.46	63.312	3.4591	4	2.44138	126.1243	2.23922	0.39312	1.8461	33.082	3.5859	-0.005	4	0.938	0.5933	2.6258	34.24456
37	54.4	3.54	1.43	6.49	54.4175	6.5053	3	2.6884	129.2689	2.30386	0.42432	1.8795	27.727	6.7929	-0.006	3	1	0.563	2.8845	27.72685
38	90.5	4.89	1.77	5.4	90.5217	5.402	9	2.4854	132.874	2.37029	0.45552	1.9148	46.037	5.5473	-0.004	4	0.9545	0.5677	2.6609	47.29797
39	72.7	3.12	1.84	4.29	72.7225	4.2903	4	2.4694	129.052	2.43482	0.48672	1.9481	36.08	4.4389	-0.005	4	0.9576	0.5574	2.665	37.02512
40	119.8	4.78	1.14	3.99	119.814	3.9895	9	2.3067	133.3913	2.50152	0.51792	1.9836	59.141	4.0746	-0.004	4	0.8875	0.5725	2.4758	63.47294
41	23.6	1.11	0.52	4.71	23.6064	4.7021	3	2.84281	118.7459	2.56089	0.54912	2.0118	10.461	5.2743	-0.024	3	1	0.526	3.1268	10.46118
42	22.9	0.5	0.52	2.19	22.9064	2.1828	4	2.64328	112.8371	2.61731	0.58032	2.037	9.9603	2.4644	-0.027	3	1	0.5195	2.9508	9.96032
43	33.3	1.46	0.86	4.39	33.3105	4.383	4	2.71197	121.5912	2.6781	0.61152	2.0666	14.823	4.7662	-0.018	3	1	0.512	2.9814	14.82274
44	113.8	5.32	1.47	4.67	113.818	4.6741	9	2.37481	134.0492	2.74513	0.64272	2.1024	52.831	4.7897	-0.005	4	0.9277	0.5289	2.5668	55.51975
45	25.1	1.48	0.73	5.87	25.1089	5.8943	3	2.88957	121.0014	2.80563	0.67392	2.1317	10.463	6.6358	-0.028	3	1	0.4964	3.1896	10.46264
46	19.7	0.79	0.93	3.99	19.7114	4.0078	3	2.85695	115.8177	2.86354	0.70512	2.1584	7.8057	4.689	-0.038	3	1	0.4902	3.1969	7.80565
47	25	0.88	0.79	3.49	25.0097	3.5186	4	2.74136	117.1878	2.92213	0.73632	2.1858	10.105	3.9842	-0.031	3	1	0.4841	3.0647	10.10496
48	158.1	3.5	0.75	2.21	158.109	2.2137	5	2.03177	131.7872	2.98802	0.76752	2.2205	69.859	2.2563	-0.005	5	0.7996	0.5529	2.2166	81.04901
49	411	3.08	2.47	0.75	411.03	0.7493	6	1.40495	133.182	3.05462	0.79872	2.2559	180.85	0.755	-0.002	6	0.5386	0.6651	1.5268	256.4597
50	81.1	2.46	-5.87	3.04	81.0282	3.036	5	2.32656	127.5767	3.1184	0.82992	2.2885	34.044	3.1575	-0.016	4	0.94	0.4843	2.5757	35.65749
51	20.3	0.76	-8.21	3.77	20.1995	3.7625	3	2.8313	115.5941	3.1762	0.86112	2.3151	7.3532	4.4645	-0.085	3	1	0.4571	3.2054	7.35322
52	36.4	1.33	-8.31	3.65	36.2983	3.6641	4	2.63161	121.1183	3.23676	0.89232	2.3444	14.102	4.0228	-0.045	3	1	0.4513	2.9521	14.1021
53	58.5	3.22	-8.27	5.51	58.3988	5.5138	4	2.61414	128.7478	3.30113	0.92352	2.3776	23.174	5.8442	-0.028	3	1	0.445	2.8945	23.1735
54	122.7	4.02	-8.44	3.28	122.597	3.279	5	2.23379	132.1803	3.36722	0.95472	2.4125	49.421	3.3717	-0.013	4	0.905	0.4743	2.4678	53.4455
55	202.1	4.03	-8.44	2	201.997	1.9951	6	1.92988	133.4164	3.43393	0.98592	2.448	81.112	2.0296	-0.008	5	0.776	0.5216	2.1264	97.87751
56	125.3	2.82	-5.83	2.25	125.229	2.2519	5	2.10334	129.6379	3.49875	1.01712	2.4816	49.052	2.3166	-0.012	5	0.8607	0.4801	2.3446	55.23776
57	34.8	2	-5.96	5.77	34.7271	5.7592	3	2.78198	123.9955	3.56075	1.04832	2.5124	12.405	6.4172	-0.047	3	1	0.4212	3.1237	12.40485
58	45.2	2.22	-5.98	4.91	45.1268	4.9195	4	2.65356	125.398	3.62345	1.07952	2.5439	16.315	5.349	-0.036	3	1	0.4159	2.9819	16.31467
59	321.7	3.01	-8.23	0.94	321.599	0.936	6	1.54715	132.4153	3.68966	1.11072	2.5789	123.27	0.9468	-0.005	6	0.6273	0.5718	1.7194	171.8096
60	76.6	0.86	2.01	1.12	76.6246	1.1224	5	2.05082	119.7504	3.74953	1.14192	2.6076	27.947	1.1801	-0.014	5	0.8722	0.4554	2.3588	31.36279
61	29.1	0	69.3	0	29.9482	0	0	0	769.6	4.13433	1.17312	2.9612	8.7174	0	0.1479	0	1	0.3573	0	0

	C-9	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	142.6	2.04	0.96	1.43	142.612	1.4305	6	1.92056	127.5857	0.06379	0	0.0638	2234.5	1.4311	0.0005	6	0.51	2	1.7243	269.4393
2	97.7	1.78	0.26	1.82	97.7032	1.8218	5	2.11088	125.6658	0.12663	0	0.1266	770.59	1.8242	0.0002	6	0.5832	2	1.9088	184.4359
3	243.3	4.19	10.14	1.72	243.424	1.7213	6	1.82963	134.1562	0.1937	0	0.1937	1255.7	1.7227	0.003	6	0.4936	2	1.6651	459.7459
4	63.6	1.32	3.76	2.07	63.646	2.074	5	2.28483	122.4328	0.25492	0	0.2549	248.67	2.0823	0.0043	5	0.6524	2	2.0744	119.8197
5	31.3	0.37	-0.15	1.17	31.2982	1.1822	5	2.38056	111.3953	0.31062	0	0.3106	99.761	1.194	-4E-04	5	0.6801	2	2.1401	58.57161
6	33	0.48	-0.19	1.45	32.9977	1.4547	5	2.4118	113.4287	0.36733	0	0.3673	88.831	1.471	-4E-04	5	0.6975	2	2.1789	61.67677
7	74.8	1.25	-0.23	1.67	74.7972	1.6712	5	2.16998	122.4278	0.42855	0	0.4286	173.54	1.6808	-2E-04	6	0.6304	1.7678	1.9955	124.252
8	308.7	4.15	3.19	1.34	308.739	1.3442	6	1.68174	134.6658	0.49588	0	0.4959	621.61	1.3463	0.0008	6	0.4803	1.4392	1.5933	419.2468
9	133.4	5.95	54.02	4.44	134.061	4.4383	9	2.31426	135.2674	0.56351	0	0.5635	236.9	4.457	0.0291	9	0.7173	1.5713	2.2065	198.247
10	63	3.03	87.35	4.73	64.0692	4.7293	4	2.53755	128.5288	0.62778	0	0.6278	101.06	4.7761	0.0991	9	0.804	1.5216	2.4262	91.22796
11	87.2	4.35	62.55	4.94	87.9656	4.9451	9	2.46318	131.9479	0.69375	0	0.6938	125.8	4.9844	0.0516	9	0.7898	1.3957	2.3795	115.1138
12	70.4	3.77	44.52	5.31	70.9449	5.314	4	2.54678	130.3763	0.75894	0	0.7589	92.479	5.3714	0.0457	9	0.8301	1.3177	2.4777	87.40163
13	72.6	3.54	61.67	4.81	73.3548	4.8259	4	2.50551	129.9972	0.82394	0	0.8239	88.03	4.8807	0.0612	9	0.8245	1.229	2.4551	84.24774
14	71.1	3.54	69.31	4.92	71.9484	4.9202	4	2.51736	129.95	0.88891	0	0.8889	79.94	4.9817	0.0702	9	0.8385	1.1573	2.4842	77.72193
15	82.6	4.69	86.59	5.6	83.6599	5.606	9	2.51929	132.3761	0.9551	0	0.9551	86.593	5.6708	0.0754	9	0.8488	1.0908	2.5029	85.26167
16	78.8	4.21	100.58	5.26	80.0311	5.2605	9	2.50992	131.478	1.02084	0	1.0208	77.397	5.3284	0.0917	9	0.8543	1.0311	2.5094	76.99403
17	120.5	6.58	118.83	5.38	121.954	5.3955	9	2.40703	135.7729	1.08873	0	1.0887	111.02	5.4441	0.0708	9	0.8229	0.9768	2.4185	111.5781
18	80.5	4.29	68.75	5.26	81.3415	5.2741	9	2.50633	131.6553	1.15455	0	1.1546	69.453	5.35	0.0617	9	0.8708	0.9269	2.5361	70.2399
19	46.1	1.97	51.14	4.21	46.726	4.2161	4	2.59504	124.6088	1.21686	0	1.2169	37.399	4.3288	0.0809	4	0.9174	0.8796	2.6507	37.83295
20	51.4	1.76	60.32	3.37	52.1383	3.3756	4	2.49315	124.0513	1.27888	0	1.2789	39.769	3.4605	0.0854	4	0.8862	0.8454	2.5609	40.63559
21	81.9	3.65	83.74	4.39	82.925	4.4016	4	2.44056	130.5202	1.34414	0	1.3441	60.694	4.4741	0.0739	4	0.8699	0.8121	2.5099	62.61296
22	51.6	1.37	94.22	2.59	52.7533	2.597	5	2.41091	122.247	1.40527	0	1.4053	36.54	2.6681	0.1321	4	0.8719	0.7808	2.5075	37.89203
23	41.4	0.99	81.31	2.33	42.3952	2.3352	5	2.45137	119.3368	1.46494	0	1.4649	27.94	2.4188	0.143	4	0.8989	0.7464	2.5709	28.87413
24	41.8	1.38	80.43	3.22	42.7845	3.2255	4	2.5416	121.7893	1.52583	0.00312	1.5227	27.096	3.3448	0.1403	4	0.9412	0.7099	2.6749	27.68183
25	52	1.45	87.3	2.72	53.0686	2.7323	5	2.42403	122.6768	1.58717	0.03432	1.5529	33.153	2.8166	0.1214	4	0.8966	0.709	2.5537	34.49459
26	76.4	3.98	146.58	5.08	78.1941	5.0899	9	2.5053	131.0103	1.65267	0.06552	1.5872	48.226	5.1998	0.137	4	0.9255	0.6871	2.6256	49.70466
27	62.4	2.73	146.06	4.24	64.1878	4.2532	4	2.50279	127.7705	1.71656	0.09672	1.6198	38.566	4.37	0.1668	4	0.9321	0.6724	2.6387	39.69837
28	92.5	5.6	28.01	6.03	92.8428	6.0317	9	2.51651	133.9277	1.78352	0.12792	1.6556	55.001	6.1498	0.0207	3	0.9352	0.6579	2.6427	56.61863
29	147.8	4.65	5.55	3.14	147.868	3.1447	5	2.16905	133.7026	1.85037	0.15912	1.6913	86.337	3.1846	0.0017	5	0.799	0.6875	2.2798	94.8703
30	56.7	2.26	20.89	3.97	56.9557	3.968	4	2.51621	126.0965	1.91342	0.19032	1.7231	31.944	4.1059	0.0239	4	0.9529	0.6283	2.6807	32.68572
31	22.1	0.89	14.06	3.99	22.2721	3.996	3	2.81548	116.9877	1.97192	0.22152	1.7504	11.597	4.3842	0.039	3	1	0.6045	3.042	11.59747
32	18.2	0.7	13.98	3.78	18.3711	3.8103	3	2.86673	114.761	2.0293	0.25272	1.7766	9.1985	4.2835	0.0461	3	1	0.5956	3.1162	9.19848
33	48.6	1.9	18.05	3.88	48.8209	3.8918	4	2.55695	124.451	2.09152	0.28392	1.8076	25.852	4.066	0.0217	4	0.9833	0.5906	2.7501	26.08404
34	70.4	2.18	46.75	3.07	70.9722	3.0716	5	2.36981	126.3694	2.15471	0.31512	1.8396	37.409	3.1678	0.0443	4	0.9068	0.6056	2.5447	39.38712
35	56.9	1.51	57.62	2.62	57.6053	2.6213	5	2.38573	123.1735	2.21629	0.34632	1.87	29.62	2.7262	0.0687	4	0.9218	0.5916	2.5802	30.96873
36	67.4	2.3	69.12	3.36	68.246	3.3702	4	2.41068	126.6659	2.27963	0.37752	1.9021	34.681	3.4866	0.0697	4	0.931	0.5792	2.6006	36.11203
37	93.8	5.98	144.74	6.25	95.5716	6.2571	9	2.52162	134.4787	2.34687	0.40872	1.9382	48.1	6.4146	0.1074	3	0.9695	0.5561	2.6976	48.99581
38	107.3	7.51	88.44	6.92	108.383	6.9292	9	2.52522	136.4525	2.41509	0.43992	1.9752	53.65	7.0871	0.0559	3	0.9721	0.5451	2.6999	54.59117
39	54.9	4	74.45	7.15	55.8113	7.167	3	2.71328	130.2245	2.4802	0.47112	2.0091	26.545	7.5003	0.0917	3	1	0.5267	2.9284	26.54495
40	33.4	2.38	26.72	7.05	33.7271	7.0567	3	2.85419	125.1971	2.5428	0.50232	2.0405	15.283	7.6321	0.0456	3	1	0.5186	3.1058	15.28277
41	35.7	1.63	16.84	4.53	35.9061	4.5396	4	2.69895	122.5801	2.60409	0.53352	2.0706	16.083	4.8946	0.0204	3	1	0.511	2.9616	16.08348
42	31.2	0.94	20.3	2.98	31.4485	2.989	4	2.61965	118.2291	2.66321	0.56472	2.0985	13.717	3.2656	0.0312	3	1	0.5042	2.9066	13.71714
43	99.5	4.03	55.16	4.02	100.175	4.023	4	2.35803	131.7058	2.72906	0.59592	2.1331	45.682	4.1356	0.0346	4	0.9279	0.5218	2.5634	48.05112
44	43.3	1.95	50.49	4.43	43.918	4.4401	4	2.62995	124.3829	2.79125	0.62712	2.1641	19.004	4.7414	0.0731	3	1	0.4889	2.8975	19.0038
45	19.9	0.69	38.91	3.38	20.3763	3.3863	4	2.79956	114.9083	2.84871	0.65832	2.1904	8.002	3.9367	0.1223	3	1	0.4831	3.1438	8.00204
46	10	0.45	28.98	4.32	10.3547	4.3459	3	3.09836	110.1297	2.90377	0.68952	2.2143	3.365	6.0395	0.1875	3	1	0.4779	3.5588	3.36499
47	135.9	1.96	17.19	1.44	136.11	1.44	6	1.93681	127.1792	2.96736	0.72072	2.2466	59.263	1.4721	0.0039	5	0.7697	0.5602	2.1347	70.48667
48	265.8	0	8.6	0	265.905	0	0	0	769.6	3.35216	0.75192	2.6002	100.97	0	-5E-04	0	1	0.4069	0	0

	C-10	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	136.7	1.43	1.67	1.05	136.72	1.0459	6	1.83914	124.8833	0.06244	0	0.0624	2188.6	1.0464	0.0009	6	0.4739	2	1.6297	258.3063
2	269.8	3.04	3.2	1.13	269.839	1.1266	6	1.65779	132.0599	0.12847	0	0.1285	2099.4	1.1271	0.0009	6	0.4211	2	1.4831	509.7981
3	172.4	4.81	5.51	2.79	172.467	2.7889	5	2.08706	134.3255	0.19563	0	0.1956	880.58	2.7921	0.0023	8	0.5913	2	1.9214	325.6224
4	56.7	1.68	4.4	2.95	56.7539	2.9602	5	2.42693	123.9178	0.25759	0	0.2576	219.32	2.9737	0.0056	5	0.7094	2	2.2238	106.7873
5	48.2	0.65	3.77	1.36	48.2461	1.3473	5	2.25854	116.5737	0.31588	0	0.3159	151.74	1.3561	0.0057	6	0.638	2	2.0292	90.59617
6	99.1	1.48	2.56	1.5	99.1313	1.493	5	2.04654	124.3507	0.37806	0	0.3781	261.21	1.4987	0.0019	6	0.5793	1.8152	1.8677	169.4154
7	274.4	6.22	3.93	2.26	274.448	2.2664	6	1.89656	137.28	0.4467	0	0.4467	613.4	2.2701	0.001	8	0.5532	1.6113	1.7905	417.2561
8	244.7	7.25	4.7	2.96	244.758	2.9621	8	2.02096	137.28	0.51534	0	0.5153	473.95	2.9684	0.0014	8	0.6077	1.5483	1.9249	357.3977
9	101.3	5.99	7.49	5.91	101.392	5.9078	9	2.48626	134.6352	0.58265	0	0.5827	173.02	5.9419	0.0054	9	0.782	1.5945	2.374	151.9134
10	103.2	5.34	7.1	5.17	103.287	5.1701	9	2.43521	133.8399	0.64957	0	0.6496	158.01	5.2028	0.005	9	0.7734	1.4584	2.343	141.4659
11	111.6	6.35	7.02	5.69	111.686	5.6856	9	2.4479	135.2981	0.71722	0	0.7172	154.72	5.7223	0.0046	9	0.7892	1.3592	2.3755	142.5445
12	72.2	4.37	6.97	6.04	72.2853	6.0455	9	2.58467	131.5026	0.78297	0	0.783	91.322	6.1117	0.007	9	0.8482	1.291	2.5226	87.24203
13	76.1	3.87	6.54	5.08	76.1801	5.0801	9	2.51192	130.7415	0.84834	0	0.8483	88.799	5.1373	0.0063	9	0.8306	1.2015	2.4683	85.5366
14	84.4	4.48	6.82	5.3	84.4835	5.3028	9	2.49779	132.0648	0.91438	0	0.9144	91.395	5.3608	0.0059	9	0.8349	1.1296	2.4715	89.21806
15	73	4.19	6.66	5.74	73.0815	5.7333	9	2.56385	131.2216	0.97999	0	0.98	73.574	5.8113	0.0067	9	0.8693	1.069	2.5538	72.84014
16	102	5.22	6.74	5.11	102.083	5.1135	9	2.43452	133.6449	1.04681	0	1.0468	96.518	5.1665	0.0048	9	0.8285	1.0089	2.4384	96.34021
17	227.8	5.24	6.54	2.3	227.88	2.2995	6	1.9478	135.6315	1.11463	0	1.1146	203.45	2.3108	0.0021	6	0.6492	0.9668	1.9594	207.1933
18	84.3	1.19	4.26	1.42	84.3521	1.4108	5	2.08216	122.3611	1.17581	0	1.1758	70.74	1.4307	0.0037	5	0.7116	0.9277	2.1154	72.92479
19	749.4	4.47	9.16	0.6	749.512	0.5964	7	1.17268	137.28	1.24445	0	1.2445	601.29	0.5974	0.0009	7	0.3613	0.9431	1.1873	666.9203
20	84.4	3.03	16.91	3.58	84.607	3.5813	5	2.36708	129.207	1.30905	0	1.3091	63.632	3.6376	0.0146	4	0.8372	0.8368	2.4286	65.87514
21	86.7	2.32	16.16	2.67	86.8978	2.6698	5	2.26507	127.3186	1.37271	0	1.3727	62.304	2.7127	0.0136	5	0.806	0.8108	2.3384	65.53169
22	39.7	1.11	14.48	2.79	39.8772	2.7835	4	2.52139	120.0246	1.43272	0	1.4327	26.833	2.8873	0.0271	4	0.9222	0.7562	2.6362	27.47355
23	38.9	0.95	14.39	2.43	39.0761	2.4312	4	2.4897	118.8362	1.49214	0	1.4921	25.188	2.5277	0.0276	4	0.9188	0.7292	2.6198	25.90095
24	35.2	0.77	14.25	2.17	35.3744	2.1767	4	2.4926	117.0564	1.55067	0	1.5507	21.812	2.2765	0.0303	4	0.9301	0.7008	2.6421	22.40297
25	88.5	3.13	15.24	3.53	88.6865	3.5293	5	2.34881	129.5595	1.61545	0.02808	1.5874	54.853	3.5948	0.0123	4	0.8637	0.7045	2.463	57.97082
26	218.3	9.57	15.57	4.38	218.491	4.3801	8	2.19074	137.28	1.68409	0.05928	1.6248	133.44	4.4141	0.0049	9	0.7946	0.7112	2.277	145.7222
27	148.5	6.68	19.29	4.49	148.736	4.4912	9	2.2921	136.3675	1.75227	0.09048	1.6618	88.449	4.5447	0.0088	9	0.8427	0.6836	2.3984	94.95985
28	107.9	5.79	20.29	5.35	108.148	5.3538	9	2.43523	134.544	1.81954	0.12168	1.6979	62.625	5.4454	0.0126	4	0.9064	0.6514	2.5616	65.45819
29	36.2	1.51	19.23	4.14	36.4354	4.1443	4	2.66697	122.0563	1.88057	0.15288	1.7277	20.001	4.3699	0.0356	3	1	0.6124	2.8576	20.00057
30	30	0.83	18.75	2.76	30.2295	2.7457	4	2.60916	117.2221	1.93918	0.18408	1.7551	16.119	2.9339	0.0412	4	1	0.6029	2.8226	16.1189
31	38.2	1.85	18.02	4.8	38.4206	4.8151	4	2.6959	123.6716	2.00102	0.21528	1.7857	20.395	5.0797	0.0297	3	1	0.5925	2.8942	20.39468
32	90.1	3.08	18.59	3.41	90.3275	3.4098	5	2.33231	129.4863	2.06576	0.24648	1.8193	48.515	3.4896	0.0124	4	0.8847	0.6191	2.4889	51.64418
33	67.9	2	19.61	2.94	68.14	2.9351	5	2.368	125.6395	2.12858	0.27768	1.8509	35.665	3.0298	0.0172	4	0.9083	0.6018	2.5471	37.54067
34	62.8	2.71	19.98	4.29	63.0446	4.2986	4	2.51146	127.6728	2.19242	0.30888	1.8835	32.307	4.4534	0.0186	4	0.969	0.5719	2.703	32.89075
35	64.5	2.12	20.6	3.27	64.7521	3.274	4	2.41742	125.9415	2.25539	0.34008	1.9153	32.63	3.3922	0.0183	4	0.9364	0.5737	2.613	33.88572
36	91.4	6.04	20.89	6.58	91.6557	6.5899	9	2.55053	134.4498	2.32261	0.37128	1.9513	45.781	6.7612	0.0127	3	0.9829	0.548	2.7313	46.26242
37	83.8	5.26	22.01	6.25	84.0694	6.2567	9	2.55543	133.2273	2.38923	0.40248	1.9868	41.113	6.4398	0.0145	3	0.9915	0.5354	2.7482	41.3323
38	91.2	6.38	22.39	6.97	91.4741	6.9747	9	2.57078	134.8456	2.45665	0.43368	2.023	44.003	7.1671	0.0132	3	0.9989	0.5234	2.7644	44.03415
39	168.7	4.73	23.5	2.8	168.988	2.799	5	2.09365	134.1531	2.52373	0.46488	2.0589	80.853	2.8415	0.0074	5	0.8051	0.5851	2.2514	92.05141
40	117.7	7.5	23.63	6.36	117.989	6.3565	9	2.47335	136.6499	2.59205	0.49608	2.096	55.057	6.4993	0.0104	3	0.9634	0.5176	2.6618	56.45259
41	100.3	5.89	24.68	5.86	100.602	5.8548	9	2.48516	134.4929	2.6593	0.52728	2.132	45.939	6.0137	0.0128	3	0.9759	0.5047	2.6904	46.72024
42	53.9	3.47	23.12	6.4	54.183	6.4042	3	2.6845	129.1122	2.72385	0.55848	2.1654	23.765	6.7432	0.0215	3	1	0.4887	2.9297	23.76456
43	18.9	0.83	21.91	4.32	19.1682	4.3301	3	2.88778	116.111	2.78191	0.58968	2.1922	7.4747	5.0652	0.0603	3	1	0.4827	3.2319	7.47471
44	15.4	0.75	20.75	4.78	15.654	4.7911	3	2.98349	114.8754	2.83935	0.62088	2.2185	5.7764	5.8527	0.0681	3	1	0.477	3.3593	5.77635
45	17.6	1.17	20.45	6.53	17.8503	6.5545	3	3.02953	118.4494	2.89857	0.65208	2.2465	6.6556	7.8252	0.0549	3	1	0.471	3.3871	6.6556
46	434.7	5.38	20.2	1.24	434.947	1.2369	6	1.56689	137.28	2.96721	0.68328	2.2839	189.14	1.2454	0.0018	6	0.6018	0.6294	1.6894	256.9509
47	287.4	2.87	9.23	1	287.513	0.9982	6	1.59986	131.7936	3.03311	0.71448	2.3186	122.69	1.0089	-2E-04	6	0.6275	0.6112	1.7524	164.3339
48	110.6	4.68	2.86	4.23	110.635	4.2301	9	2.34806	133.0422	3.09963	0.74568	2.354	45.683	4.3521	-0.005	4	0.9451	0.4697	2.5813	47.73174
49	215.6	3.9	2.74	1.81	215.634	1.8086	6	1.87884	133.3358	3.1663	0.77688	2.3894	88.92	1.8356	-0.003	5	0.7488	0.5434	2.0622	109.111
50	220.6	4	2.53	1.81	220.631	1.813	6	1.87354	133.5769	3.23309	0.80808	2.425	89.648	1.8399	-0.003	5	0.7495	0.5371	2.0595	110.3522
51	293.1	3.8	2.32	1.3	293.128	1.2964	6	1.68281	133.8946	3.30003	0.83928	2.4608	117.78	1.3111	-0.002	6	0.6716	0.5674	1.8504	155.4035
52	134.9	3.71	2.72	2.75	134.933	2.7495	5	2.1482	131.8269	3.36595	0.87048	2.4955	52.723	2.8199	-0.005	5	0.8766	0.4714	2.3846	58.61155
53	134.7	4.92	3.5	3.65	134.743	3.6514	8	2.2451	133.8889	3.43289	0.90168	2.5312	51.876	3.7469	-0.005	4	0.9183	0.4489	2.4879	55.71056
54	116.4	5.95	3.5	5.11	116.443	5.1098	9	2.39982	134.9237	3.50035	0.93288	2.5675	43.99	5.2682	-0.006	4	0.9857	0.4174	2.6621	44.55082
55	231.8	6.66	4.04	2.87	231.849	2.8726	8	2.02286	137.28	3.56899	0.96408	2.6049	87.635	2.9175	-0.003	5	0.8221	0.4768	2.2281	102.8652
56	94.9	6.75	3.87	7.1	94.9474	7.1092	9	2.56785	135.349	3.63667	0.99528	2.6414	34.569	7.3923	-0.008	3	1	0.4006	2.8448	34.56923
57	113.4	7.06	3.99	6.22	113.449	6.2231	9	2.47569	136.1118	3.70472	1.02648	2.6782	40.976	6.4332	-0.007	3	1	0.3951	2.7504	40.97616
58	192.4	6.92	4.49	3.6	192.455	3.5957	8	2.14895	137.2543	3.77335	1.05768	2.7157	69.479	3.6676	-0.004	4	0.887	0.4334	2.3846	77.28924
59	250.2	5.83	4.24	2.33	250.252	2.3297	6	1.929	136.6406	3.84167	1.08888	2.7528	89.513	2.366	-0.003	5	0.7972	0.4666	2.144	108.6689
60	36.1	1.92	4.52	5.3	36.1553	5.3104	3	2.74463	123.7951	3.90357	1.12008	2.7835	11.587	5.9532	-0.025	3	1	0.3801	3.1254	11.58681
61	52.9	3.5	4.86	6.6	52.9595	6.6088	3	2.70131	129.1195	3.96813	1.15128	2.8169	17.392	7.1441	-0.016	3	1	0.3756	3.0451	17.39227
62	35	2.45	4.43	7	35.0542	6.9892	3	2.83964	125.5033	4.03088	1.18248	2.8484	10.892	7.8973	-0.028	3	1	0.3715	3.2253	10.8915
63	31.6	1.47	4.9	4.64	31.66	4.6431	3	2.74521	121.5172	4.09164	1.21368	2.878	9.5791	5.3322	-0.031	3	1	0.3677	3.1597	9.57913
64	32.9	1.22	5.12	3.7	32.9627	3.7012	4	2.66547	120.2516	4.15176	1.24488	2.9069	9.9113	4.2345	-0.03	3	1	0.364	3.0872	9.91127
65	42.5	2	6.36	4.71	42.5779	4.6973	4	2.6568	124.4926	4.21401	1.27608	2.9379	13.058	5.2132	-0.021	3	1	0.3602	3.0487	13.05812
66	77.1	3.13	6.68	4.05	77.1818	4.0554	4	2.43397	129.2206	4.27862	1.30728	2.9713	24.535	4.2934	-0.011	3	1	0.3561	2.7857	24.53544
67	42.2	1.88	7.05	4.45	42.2863	4.4459	4	2.64196	124.0231	4.34063	1.33848	3.0022	12.639	4.9545	-0.022	3	1	0.3525	3.0456	12.63949
68	65.3	4.12	7.26	6.3	65.3889	6.3008	3	2.62623	130.827	4.40605	1.36968	3.0364	20.084	6.756	-0.014	3	1	0.3485	2.9829	20.08415
69	73	4.11	7.82	5.62	73.0957	5.6228	9	2.55728	131.081	4.47159	1.40088	3.0707	22.348	5.9892	-0.012	3	1	0.3446	2.9133	22.348
70	31.3	1.77	7.84	5.64	31.396	5.6377	3	2.8064	122.8557	4.53301	1.43208	3.1009	8.6629	6.589	-0.032	3	1	0.3412	3.2511	8.66286
71	93	3.38	9.12	3.63	93.1116	3.6301	5	2.34421	130.2405	4.59813	1.46328	3.1349	28.235	3.8186	-0.009	4	1	0.3375	2.7063	28.23529
72	43.8	1.55	9.42	3.53	43.9153	3.5295	4	2.56016	122.703	4.65949	1.49448	3.165	12.403	3.9485	-0.021	3	1	0.3343	2.9912	12.40308
73	45.4	1.35	9.73	2.97	45.5191	2.9658	4	2.49709	121.7796	4.72037	1.52568	3.1947	12.771	3.3089	-0.02	3	1	0.3312	2.935	12.77077
74	43.5	1.39	10.65	3.2	43.6304	3.1859	4	2.53171	121.8899	4.78132	1.55688	3.2244	12.048	3.578	-0.02	3	1	0.3282	2.9755	12.04831
75	52.8	2.41	10.75	4.54	52.9316	4.5531	4	2.58143	126.388	4.84451	1.58808	3.2564	14.767	5.0117	-0.017	3	1	0.3249	2.9966	14.76679
76	33.4	1.19	10.95	3.55	33.534	3.5486	4	2.64769	120.1113	4.90457	1.61928	3.2853	8.7144	4.1566	-0.029	3	1	0.3221	3.1274	8.71444
77	31.9	0.98	11.48	3.05	32.0405	3.0586	4	2.61997	118.5795	4.96386	1.65048	3.3134	8.1719	3.6194	-0.03	3	1	0.3193	3.1153	8.17192
78	113.9	4.74	11.29	4.15	114.038	4.1565	9	2.33394	133.2093	5.03046	1.68168	3.3488	32.551	4.3483	-0.008	4	1	0.316	2.6991	32.55144
79	41.8	1.31	11.57	3.12	41.9416	3.1234	4	2.53848	121.3599	5.09114	1.71288	3.3783	10.908	3.5549	-0.024	3	1	0.3132	3.0086	10.90811
80	44.6	1.72	11.74	3.84	44.7437	3.8441	4	2.58009	123.5101	5.1529	1.74408	3.4088	11.614	4.3444	-0.023	3	1	0.3104	3.0391	11.61423
81	40.1	1.05	12.26	2.6	40.2501	2.6087	4	2.49982	119.6407	5.21272	1.77528	3.4374	10.193	2.9968	-0.025	3	1	0.3078	2.9898	10.19286
82	40.7	0.99	12.56	2.43	40.8537	2.4233	4	2.47405	119.2465	5.27234	1.80648	3.4659	10.266	2.7824	-0.025	3	1	0.3053	2.969	10.26624
83	49.3	1.67	12.87	3.37	49.4575	3.3766	4	2.50964	123.5385	5.33411	1.83768	3.4964	12.62	3.7848	-0.021	3	1	0.3026	2.974	12.61956
84	46	1.15	14	2.5	46.1714	2.4907	5	2.44172	120.6411	5.39443	1.86888	3.5256	11.566	2.8202	-0.021	3	1	0.3001	2.9296	11.56611
85	55.3	1.7	14.5	3.07	55.4775	3.0643	4	2.44449	123.9489	5.45641	1.90008	3.5563	14.065	3.3986	-0.017	3	1	0.2975	2.9083	14.06538
86	50.3	2.21	15.08	4.38	50.4846	4.3776	4	2.58325	125.6386	5.51923	1.93128	3.588	12.532	4.9149	-0.019	3	1	0.2949	3.0463	12.53234

87	58.9	2.23	16.32	3.78	59.0998	3.7733	4	2.48932	126.0888	5.58227	1.96248	3.6198	14.785	4.1669	-0.015	3	1	0.2923	2.9455	14.78469
88	94.4	5.01	17.04	5.3	94.6086	5.2955	9	2.46676	133.1591	5.64885	1.99368	3.6552	24.338	5.6318	-0.009	3	1	0.2895	2.868	24.33805
89	176.8	7.88	18.61	4.45	177.028	4.4513	9	2.2461	137.28	5.71749	2.02488	3.6926	46.393	4.5998	-0.004	4	1	0.2866	2.6072	46.39274
90	256.3	9.88	18.63	3.85	256.528	3.8514	8	2.10674	137.28	5.78613	2.05608	3.7301	67.222	3.9403	-0.003	4	0.9533	0.3009	2.4312	71.29289
91	246.8	10.08	18.57	4.08	247.027	4.0805	8	2.13669	137.28	5.85477	2.08728	3.7675	64.014	4.1796	-0.003	4	0.9698	0.2919	2.4703	66.52143
92	320.1	8.41	18.61	2.63	320.328	2.6254	8	1.91441	137.28	5.92341	2.11848	3.8049	82.631	2.6749	-0.002	5	0.8747	0.3265	2.2166	97.00968
93	376.4	10.02	16.66	2.66	376.604	2.6606	8	1.88411	137.28	5.99205	2.14968	3.8424	96.454	2.7036	-0.003	5	0.8585	0.3305	2.1696	115.7632

	C-11	In situ data						Basic output data												
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	64.1	1.61	0.94	2.51	64.1115	2.5113	5	2.33923	123.9037	0.06195	0	0.062	1033.9	2.5137	0.0011	5	0.6656	2	2.1329	121.0643
2	242.8	3.51	2.3	1.45	242.828	1.4455	6	1.77054	132.8545	0.12838	0	0.1284	1890.5	1.4462	0.0007	6	0.4655	2	1.5996	458.7429
3	84.8	2.41	2.83	2.84	84.8346	2.8408	5	2.29186	127.5385	0.19215	0	0.1922	440.51	2.8473	0.0024	5	0.6588	2	2.0991	159.9884
4	38.2	1.21	2.76	3.17	38.2338	3.1647	4	2.57209	120.5532	0.25242	0	0.2524	150.47	3.1858	0.0052	5	0.7615	2	2.361	71.79108
5	41.5	0.91	2.76	2.18	41.5338	2.191	5	2.44038	118.6702	0.31176	0	0.3118	132.22	2.2076	0.0048	5	0.7113	2	2.222	77.91647
6	208.1	4.67	2.42	2.24	208.13	2.2438	6	1.9625	134.5678	0.37904	0	0.379	548.09	2.2479	0.0008	8	0.5629	1.7822	1.8243	349.9208
7	401.4	11.88	3.79	2.96	401.446	2.9593	8	1.9115	137.28	0.44768	0	0.4477	895.72	2.9626	0.0007	8	0.5658	1.6269	1.8232	616.5421
8	141.1	7.27	6.85	5.15	141.184	5.1493	9	2.35372	136.8597	0.51611	0	0.5161	272.55	5.1682	0.0035	9	0.7256	1.6836	2.2344	223.8233
9	100.4	4.96	7.04	4.94	100.486	4.936	9	2.42659	133.2327	0.58273	0	0.5827	171.44	4.9648	0.0051	9	0.7593	1.5729	2.3143	148.5064
10	103.7	4.63	6.3	4.46	103.777	4.4615	9	2.38342	132.8075	0.64913	0	0.6491	158.87	4.4896	0.0044	9	0.7537	1.4452	2.2915	140.8566
11	91.8	4.47	6.51	4.86	91.8797	4.8651	9	2.44579	132.2532	0.71526	0	0.7153	127.46	4.9032	0.0051	9	0.7867	1.3608	2.3691	117.2445
12	105.1	5.61	6.66	5.34	105.182	5.3336	9	2.44119	134.2451	0.78238	0	0.7824	133.44	5.3736	0.0046	9	0.7955	1.2715	2.3843	125.45
13	83.2	4.29	6.33	5.15	83.2775	5.1515	9	2.49195	131.7127	0.84824	0	0.8482	97.177	5.2045	0.0055	9	0.8233	1.1996	2.449	93.45303
14	104.6	6.43	6.4	6.14	104.678	6.1426	9	2.49162	135.2316	0.91586	0	0.9159	113.3	6.1968	0.0044	9	0.833	1.1278	2.4664	110.5967
15	78.6	3.57	6.51	4.53	78.6797	4.5374	4	2.46539	130.2299	0.98097	0	0.981	79.206	4.5947	0.006	4	0.8319	1.065	2.4554	78.20441
16	121.4	6.16	6.45	5.07	121.479	5.0708	9	2.38623	135.2808	1.04861	0	1.0486	114.85	5.115	0.0039	9	0.81	1.0073	2.3896	114.651
17	86.1	4.36	6.5	5.06	86.1796	5.0592	9	2.47648	131.9147	1.11457	0	1.1146	76.321	5.1255	0.0055	9	0.8539	0.9566	2.4966	76.90298
18	78.1	2.87	5.9	3.68	78.1722	3.6714	4	2.39799	128.6171	1.17888	0	1.1789	65.311	3.7276	0.0055	4	0.8329	0.9139	2.4336	66.50079
19	94.4	2.87	5.97	3.04	94.4731	3.0379	5	2.28184	129.0791	1.24342	0	1.2434	74.979	3.0784	0.0046	5	0.7956	0.8795	2.3275	77.4933
20	70.3	2.28	6.13	3.24	70.375	3.2398	5	2.38907	126.6769	1.30675	0	1.3068	52.855	3.3011	0.0064	4	0.8471	0.8363	2.4548	54.5883
21	57.4	1.79	6.13	3.11	57.475	3.1144	4	2.43845	124.4127	1.36896	0	1.369	40.984	3.1904	0.0079	4	0.8764	0.7979	2.524	42.30983
22	53.9	1.56	5.92	2.89	53.9725	2.8904	5	2.43547	123.253	1.43059	0.02184	1.4088	37.297	2.9691	0.0077	4	0.8816	0.777	2.5324	38.58306
23	61.9	2.19	5.99	3.53	61.9733	3.5338	4	2.4545	126.0722	1.49362	0.05304	1.4406	41.983	3.6211	0.0063	4	0.8912	0.7596	2.5538	43.41612
24	75.6	3.1	6.13	4.09	75.675	4.0965	4	2.44291	129.102	1.55817	0.08424	1.4739	50.285	4.1826	0.0048	4	0.8883	0.745	2.5421	52.18109
25	115.8	5.68	6.01	4.9	115.874	4.9019	9	2.38662	134.572	1.62546	0.11544	1.51	75.66	4.9716	0.0028	9	0.8655	0.7351	2.4777	79.36587
26	83.7	4.49	6.21	5.36	83.776	5.3595	9	2.50368	132.0606	1.69149	0.14664	1.5449	53.134	5.47	0.0037	4	0.9189	0.7063	2.6136	54.7897
27	110.2	4.33	6.31	3.93	110.277	3.9265	9	2.32358	132.4655	1.75772	0.17784	1.5799	68.688	3.9901	0.0026	4	0.8503	0.7112	2.4287	72.93743
28	30.7	1.06	5.82	3.46	30.7712	3.4448	4	2.66706	119.0551	1.81725	0.20904	1.6082	18.004	3.661	0.0073	3	1	0.6579	2.8436	18.00385
29	20.5	0.52	5.82	2.54	20.5712	2.5278	4	2.71868	112.8619	1.87368	0.24024	1.6334	11.447	2.7811	0.0096	3	1	0.6478	2.9299	11.44672
30	28.3	0.88	5.9	3.11	28.3722	3.1016	4	2.66417	117.4955	1.93243	0.27144	1.661	15.918	3.3283	0.0058	3	1	0.637	2.86	15.91809
31	54.2	2.34	6.11	4.31	54.2748	4.3114	4	2.55675	126.2334	1.99555	0.30264	1.6929	30.881	4.476	0.0026	4	0.9662	0.6351	2.7193	31.37662
32	49.6	1.79	6.28	3.61	49.6769	3.6033	4	2.52801	124.057	2.05757	0.33384	1.7237	27.626	3.759	0.0025	4	0.9613	0.6255	2.7027	28.15207
33	71	3.69	6.6	5.2	71.0808	5.1913	4	2.5385	130.2241	2.12269	0.36504	1.7577	39.233	5.3511	0.0016	3	0.9616	0.6139	2.6991	40.00623
34	91.1	5.66	7.12	6.21	91.1872	6.207	9	2.53114	133.9618	2.18967	0.39624	1.7934	49.624	6.3597	0.0013	3	0.9578	0.6033	2.6848	50.74177
35	100.8	6.16	7.48	6.11	100.892	6.1056	9	2.49901	134.8279	2.25708	0.42744	1.8296	53.909	6.2453	0.0011	3	0.9476	0.5951	2.6535	55.47806
36	47.6	3.48	7.27	7.28	47.689	7.2973	3	2.76366	128.8219	2.32149	0.45864	1.8629	24.354	7.6707	0.0014	3	1	0.568	2.9616	24.35378
37	100.3	7.13	7.37	7.1	100.39	7.1023	9	2.55328	135.8857	2.38944	0.48984	1.8996	51.59	7.2755	0.0004	3	0.9764	0.5648	2.7206	52.30778
38	148.5	11.06	7.81	7.44	148.596	7.443	9	2.47477	137.28	2.45808	0.52104	1.937	75.444	7.5682	0.0003	9	0.942	0.5657	2.6255	78.13476
39	149.2	10.82	8.31	7.24	149.302	7.2471	9	2.46388	137.28	2.52672	0.55224	1.9745	74.336	7.3718	0.0003	9	0.9417	0.5557	2.6199	77.08957
40	93.6	6	8.37	6.4	93.7025	6.4033	9	2.53479	134.455	2.59394	0.58344	2.0105	45.316	6.5856	0.0002	3	0.9835	0.5319	2.7256	45.79775
41	42.4	2.54	8.12	5.98	42.4994	5.9766	3	2.73282	126.237	2.65706	0.61464	2.0424	19.507	6.3751	-8E-04	3	1	0.5181	2.9749	19.5074
42	15.6	0.78	7.94	4.97	15.6972	4.969	3	2.99268	115.1691	2.71465	0.64584	2.0688	6.2754	6.0081	-0.006	3	1	0.5115	3.3371	6.27538
43	48.9	1.79	7.76	3.66	48.995	3.6534	4	2.53649	124.0233	2.77666	0.67704	2.0996	22.013	3.8729	-0.003	3	1	0.504	2.7919	22.01273
44	82.2	2.58	7.58	3.13	82.2928	3.1352	5	2.33223	127.963	2.84064	0.70824	2.1324	37.26	3.2472	-0.002	4	0.9238	0.5234	2.5526	39.30236
45	293.8	8.45	5.07	2.87	293.862	2.8755	8	1.96762	137.28	2.90928	0.73944	2.1698	134.09	2.9043	-0.001	5	0.7551	0.5814	2.1062	159.8785
46	187.8	2.45	0.77	1.31	187.809	1.3045	6	1.80937	129.5972	2.97408	0.77064	2.2034	83.885	1.3255	-0.004	6	0.7081	0.5949	1.9784	103.915
47	128.4	4.96	0.73	3.86	128.409	3.8627	8	2.2772	133.8307	3.04099	0.80184	2.2392	55.989	3.9564	-0.006	4	0.902	0.5086	2.4817	60.25839
48	79.7	4.71	0.98	5.92	79.712	5.9088	9	2.55024	132.2894	3.10714	0.83304	2.2741	33.686	6.1484	-0.01	3	1	0.4653	2.7944	33.68582
49	102.4	5.45	1.23	5.32	102.415	5.3215	9	2.44741	133.9684	3.17412	0.86424	2.3099	42.964	5.4917	-0.008	3	0.981	0.4649	2.6816	43.60644
50	141.6	5.25	1.23	3.71	141.615	3.7072	8	2.23729	134.4852	3.24136	0.89544	2.3459	58.985	3.7941	-0.006	4	0.8951	0.4904	2.45	64.12472
51	243.8	4.08	1.63	1.67	243.82	1.6734	6	1.81946	133.9655	3.30835	0.92664	2.3817	100.98	1.6964	-0.003	6	0.7221	0.5566	1.993	126.5245
52	86.8	4.62	1.61	5.32	86.8197	5.3214	9	2.49156	132.3565	3.37453	0.95784	2.4167	34.529	5.5366	-0.01	3	1	0.4378	2.7543	34.52877
53	47.3	2.07	1.99	4.38	47.3244	4.3741	4	2.60255	125.0021	3.43703	0.98904	2.448	17.928	4.7166	-0.019	3	1	0.4322	2.9152	17.92793
54	42.6	2	2.53	4.7	42.631	4.6914	4	2.65604	124.4957	3.49927	1.02024	2.479	15.785	5.111	-0.021	3	1	0.4268	2.9799	15.78505
55	55.4	1.71	2.76	3.09	55.4338	3.0848	4	2.44675	123.9899	3.56127	1.05144	2.5098	20.668	3.2965	-0.016	4	1	0.4216	2.7683	20.66774
56	59.8	1.65	3.14	2.75	59.8384	2.7574	5	2.38899	123.9151	3.62323	1.08264	2.5406	22.127	2.9352	-0.015	4	1	0.4165	2.7137	22.12686
57	67.3	3.52	2.88	5.22	67.3353	5.2276	4	2.55608	129.7469	3.6881	1.11384	2.5743	24.724	5.5305	-0.014	3	1	0.411	2.8576	24.72444
58	27.5	1.04	3.06	3.79	27.5375	3.7767	4	2.72965	118.645	3.74742	1.14504	2.6024	9.1416	4.3716	-0.039	3	1	0.4066	3.1236	9.14163
59	29.1	0.97	3.37	3.31	29.1413	3.3286	4	2.67516	118.2732	3.80656	1.17624	2.6303	9.6318	3.8287	-0.037	3	1	0.4023	3.0713	9.63179
60	26.7	0.86	3.52	3.22	26.7431	3.2158	4	2.69394	117.183	3.86515	1.20744	2.6577	8.6081	3.7591	-0.042	3	1	0.3981	3.1063	8.60813
61	26.5	1.42	3.6	5.35	26.5441	5.3496	3	2.84309	120.8341	3.92557	1.23864	2.6869	8.418	6.2781	-0.043	3	1	0.3938	3.2477	8.41798
62	30.9	0.97	4.17	3.14	30.951	3.134	4	2.63826	118.4201	3.98478	1.26984	2.7149	9.9326	3.5971	-0.036	3	1	0.3897	3.0446	9.93255
63	31.8	1.26	4.29	3.96	31.8525	3.9557	4	2.69591	120.4041	4.04498	1.30104	2.7439	10.134	4.5312	-0.036	3	1	0.3856	3.0972	10.13416
64	31.8	1.22	4.44	3.84	31.8544	3.8299	4	2.68645	120.1681	4.10506	1.33224	2.7728	10.008	4.3965	-0.036	3	1	0.3816	3.0936	10.00759
65	66.4	2.64	4.98	3.97	66.461	3.9723	4	2.4707	127.6101	4.16887	1.36344	2.8054	22.204	4.2381	-0.016	3	1	0.3772	2.8145	22.20412
66	47.4	1.81	4.96	3.82	47.4607	3.8137	4	2.55943	124.027	4.23088	1.39464	2.8362	15.242	4.1869	-0.024	3	1	0.3731	2.9365	15.24194
67	40.4	1.19	5.05	2.95	40.4618	2.941	4	2.53252	120.5693	4.29117	1.42584	2.8653	12.624	3.29	-0.029	3	1	0.3693	2.9375	12.62356
68	36.2	1.04	5.41	2.86	36.2662	2.8677	4	2.56095	119.3165	4.35083	1.45704	2.8938	11.029	3.2586	-0.033	3	1	0.3657	2.9826	11.02894
69	35	1.66	5.59	4.73	35.0684	4.7336	4	2.71896	122.656	4.41215	1.48824	2.9239	10.485	5.4149	-0.035	3	1	0.3619	3.1331	10.48467
70	34.8	1.53	6.1	4.38	34.8747	4.3871	4	2.6978	122.0458	4.47318	1.51944	2.9537	10.293	5.0327	-0.036	3	1	0.3582	3.1197	10.29255
71	33.7	1.15	6.57	3.4	33.7804	3.4043	4	2.6333	119.879	4.53312	1.55064	2.9825	9.8064	3.932	-0.037	3	1	0.3548	3.0718	9.80638
72	34.4	1.19	6.74	3.45	34.4825	3.451	4	2.63058	120.1793	4.59321	1.58184	3.0114	9.9255	3.9814	-0.037	3	1	0.3514	3.0707	9.92549
73	33.8	1.11	6.91	3.28	33.8846	3.2758	4	2.6212	119.6275	4.65302	1.61304	3.04	9.6157	3.7973	-0.038	3	1	0.3481	3.0698	9.61571
74	38.3	1.32	7.73	3.45	38.3946	3.438	4	2.59494	121.2001	4.71362	1.64424	3.0694	10.973	3.9191	-0.032	3	1	0.3447	3.0317	10.97323
75	47.2	1.37	8.07	2.9	47.2988	2.8965	4	2.47789	121.9808	4.77461	1.67544	3.0992	13.721	3.2217	-0.026	3	1	0.3414	2.903	13.72115
76	52.1	1.49	8.46	2.85	52.2036	2.8542	5	2.44221	122.8358	4.83603	1.70664	3.1294	15.136	3.1456	-0.023	3	1	0.3381	2.8626	15.13635
77	56.1	1.98	9.48	3.52	56.216	3.5221	4	2.48304	125.0968	4.89858	1.73784	3.1607	16.236	3.8583	-0.021	3	1	0.3348	2.8928	16.23592
78	101.3	6.49	9.94	6.4	101.422	6.399	9	2.51405	135.2225	4.96619	1.76904	3.1972	30.169	6.7285	-0.011	3	1	0.331	2.8558	30.16923
79	142.3	9.28	11.63	6.52	142.442	6.5149	9	2.43614	137.28	5.03483	1.80024	3.2346	42.481	6.7536	-0.007	3	1	0.3271	2.7555	42.4807
80	207.8	10	12.83	4.81	207.957	4.8087	9	2.23651	137.28	5.10347	1.83144	3.272	61.996	4.9297	-0.004	4	0.9708	0.3342	2.5349	64.07493
81	225.1	10.85	13.86	4.82	225.27	4.8165	9	2.21904	137.28	5.17211	1.86264	3.3095	66.505	4.9296	-0.004	4	0.9642	0.333	2.5127	69.27494
82	335.1	8.28	14.78	2.47	335.281	2.4696	8	1.88142	137.28	5.24075	1.89384	3.3469	98.61	2.5088	-0.003	5	0.8207	0.3887	2.1319	121.226
83	425.7	10.85	10.89	2.55	425.833	2.548	8	1.84207	137.28	5.30939	1.92504	3.3844	124.26	2.5801	-0.003	5	0.799	0.395	2.0702	156.9715
84	411.4	11.17	10.45	2.71	411.528	2.7143	8	1.87329	137.28	5.37803	1.95624	3.4218	118.7	2.7502	-0.003	5	0.8155	0.384	2.1089	147.3987
85	327.2	7.72	10.11	2.36	327.324	2.3585	8	1.86977	137.28	5.44667	1.98744	3.4592	93.049	2.3984	-0.004	5	0.8269	0.3755	2.134	114.2294
86	280	10.93	9.53	3.9	280.117	3.902	8	2.09221	137.28	5.51531	2.01864	3.4967	78.532	3.9803	-0.005	4	0.9235	0.3316	2.381	86.05238

87	283.7	9.44	8.52	3.33	283.804	3.3262	8	2.02957	137.28	5.58395	2.04984	3.5341	78.724	3.393	-0.005	5	0.901	0.3374	2.3197	88.70579
88	334.4	8.39	8.14	2.51	334.5	2.5082	8	1.88773	137.28	5.65259	2.08104	3.5716	92.074	2.5513	-0.005	5	0.8425	0.3588	2.1611	111.5237

	C-12	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	181.6	2.93	1.09	1.61	181.613	1.6133	6	1.888	130.8245	0.06541	0	0.0654	2775.4	1.6139	0.0004	6	0.5033	2	1.7065	343.1558
2	77.4	1.7	0.73	2.2	77.4089	2.1961	5	2.2399	124.7614	0.12779	0	0.1278	604.74	2.1998	0.0007	5	0.6317	2	2.036	146.0742
3	33.8	0.85	0.46	2.51	33.8056	2.5144	4	2.54738	117.669	0.18663	0	0.1866	180.14	2.5283	0.001	5	0.7452	2	2.3264	63.5455
4	46.7	0.84	0.46	1.79	46.7056	1.7985	5	2.34661	118.3708	0.24581	0	0.2458	189	1.808	0.0007	5	0.6709	2	2.1242	87.81678
5	283.2	6.73	0.77	2.38	283.209	2.3763	6	1.90619	137.28	0.31445	0	0.3145	899.64	2.379	0.0002	8	0.5386	1.9223	1.7677	513.9561
6	429.3	12.31	0.54	2.87	429.307	2.8674	8	1.8859	137.28	0.38309	0	0.3831	1119.6	2.87	9E-05	8	0.55	1.7486	1.7886	708.8073
7	184.5	10.27	-0.04	5.57	184.5	5.5664	9	2.31793	137.28	0.45173	0	0.4517	407.43	5.5801	-2E-05	9	0.707	1.8253	2.1921	317.4894
8	146.1	8.2	0.38	5.61	146.105	5.6124	9	2.37615	137.28	0.52037	0	0.5204	279.77	5.6325	0.0002	9	0.7353	1.6851	2.2593	231.8569
9	143	8.8	0.06	6.15	143.001	6.1538	9	2.41456	137.28	0.58901	0	0.589	241.78	6.1793	3E-05	9	0.76	1.5608	2.3154	210.0654
10	86.9	4.99	-0.63	5.75	86.8923	5.7427	9	2.51727	132.9223	0.65547	0	0.6555	131.56	5.7864	-5E-04	9	0.8042	1.4698	2.4221	119.789
11	108.6	6.99	-0.69	6.43	108.592	6.437	9	2.49869	135.9321	0.72344	0	0.7234	149.1	6.4801	-5E-04	9	0.8092	1.3602	2.4271	138.6682
12	96.2	6.19	-0.61	6.44	96.1925	6.435	9	2.52969	134.7471	0.79081	0	0.7908	120.64	6.4884	-5E-04	9	0.8299	1.2733	2.4734	114.8069
13	108.3	6.53	-0.92	6.04	108.289	6.0302	9	2.47644	135.4272	0.85853	0	0.8585	125.13	6.0784	-6E-04	9	0.8196	1.1869	2.4381	120.5018
14	91.6	4.86	-0.84	5.31	91.5897	5.3063	9	2.47615	132.8575	0.92496	0	0.925	98.021	5.3604	-7E-04	9	0.8282	1.1178	2.4527	95.78191
15	68.8	3.82	-0.92	5.55	68.7887	5.5532	4	2.57005	130.3975	0.99015	0	0.9902	68.473	5.6343	-1E-03	9	0.8732	1.0597	2.5628	67.89886
16	46.8	2.67	-1.31	5.72	46.784	5.7071	3	2.68975	126.8365	1.05357	0	1.0536	43.405	5.8386	-0.002	3	0.9295	1.004	2.7026	43.39191
17	63.6	3.63	-1.3	5.72	63.5841	5.709	4	2.60132	129.8323	1.11849	0	1.1185	55.848	5.8112	-0.002	4	0.9035	0.9511	2.6264	56.14804
18	74.5	4.54	-1.23	6.1	74.4849	6.0952	9	2.57922	131.855	1.18442	0.00936	1.1751	62.38	6.1937	-0.001	3	0.9019	0.9098	2.615	63.02547
19	50.2	2.16	-1.23	4.3	50.1849	4.3041	4	2.57976	125.4567	1.24714	0.04056	1.2066	40.559	4.4138	-0.003	4	0.9097	0.8874	2.6316	41.04294
20	50.8	2.27	-1.23	4.47	50.7849	4.4698	4	2.58801	125.8491	1.31007	0.07176	1.2383	39.954	4.5882	-0.003	4	0.9173	0.8657	2.6478	40.47636
21	35.4	1.94	-1.23	5.49	35.3849	5.4826	3	2.76105	123.8184	1.37198	0.10296	1.269	26.803	5.7037	-0.006	3	0.9926	0.8349	2.8411	26.83872
22	48.3	2.17	-1.38	4.49	48.2831	4.4943	4	2.60492	125.3962	1.43468	0.13416	1.3005	36.023	4.632	-0.005	4	0.9334	0.8249	2.6823	36.52099
23	47.3	2.26	-1.33	4.78	47.2837	4.7797	4	2.63048	125.6426	1.4975	0.16536	1.3321	34.37	4.936	-0.006	3	0.9481	0.8039	2.7167	34.78411
24	42.8	2.68	-1.38	6.27	42.7831	6.2642	3	2.74581	126.6458	1.56082	0.19656	1.3643	30.216	6.5013	-0.007	3	0.9983	0.7759	2.8446	30.22894
25	39.8	2.62	-1.42	6.59	39.7826	6.5858	3	2.78322	126.3028	1.62397	0.22776	1.3962	27.33	6.8661	-0.009	3	1	0.7578	2.8922	27.33012
26	46	3.05	-1.38	6.63	45.9831	6.6329	3	2.74309	127.768	1.68786	0.25896	1.4289	31	6.8856	-0.008	3	1	0.7405	2.8549	30.99963
27	24.3	1.45	-1.46	5.98	24.2821	5.9715	3	2.90401	120.7699	1.74824	0.29016	1.4581	15.454	6.4348	-0.018	3	1	0.7257	3.0525	15.45448
28	34.6	1.29	-1.46	3.72	34.5821	3.7303	4	2.65236	120.7768	1.80863	0.32136	1.4873	22.036	3.9361	-0.013	3	0.985	0.7151	2.7944	22.1491
29	44.1	2.31	-1.35	5.24	44.0835	5.2401	4	2.68039	125.6317	1.87145	0.35256	1.5189	27.791	5.4724	-0.011	3	0.9953	0.6978	2.8172	27.8385
30	34.7	1.38	-1.3	3.99	34.6841	3.9788	4	2.67042	121.2774	1.93208	0.38376	1.5483	21.153	4.2135	-0.015	3	1	0.6834	2.8288	21.15319
31	145	9.9	-0.92	6.83	144.989	6.8281	9	2.44899	137.28	2.00072	0.41496	1.5858	90.17	6.9237	-0.003	9	0.8953	0.6961	2.5465	94.07127
32	127.5	9.14	1.3	7.17	127.516	7.1677	9	2.49729	137.28	2.06936	0.44616	1.6232	77.283	7.286	-0.003	9	0.9198	0.6746	2.6062	79.98144
33	64.8	3.56	1.61	5.49	64.8197	5.4922	4	2.58312	129.7367	2.13423	0.47736	1.6569	37.834	5.6792	-0.006	3	0.9686	0.6477	2.7304	38.36947
34	22.3	1.31	1.61	5.86	22.3197	5.8693	3	2.92559	119.8214	2.19414	0.50856	1.6856	11.94	6.5091	-0.02	3	1	0.6277	3.1403	11.93982
35	39.1	2.1	2.36	5.37	39.1289	5.3669	3	2.72381	124.6436	2.25647	0.53976	1.7167	21.479	5.6953	-0.01	3	1	0.6164	2.911	21.4786
36	61.4	2.13	2.48	3.46	61.4304	3.4673	4	2.45123	125.8475	2.31939	0.57096	1.7484	33.808	3.6034	-0.007	4	0.9312	0.6265	2.6203	34.99657
37	157.9	7.91	2.79	5.01	157.934	5.0084	9	2.31625	137.28	2.38803	0.60216	1.7859	87.098	5.0853	-0.003	9	0.8648	0.636	2.441	93.48655
38	116.3	6.7	3.36	5.76	116.341	5.7589	9	2.44197	135.7902	2.45592	0.63336	1.8226	62.486	5.8831	-0.003	9	0.9226	0.6055	2.5886	65.17188
39	73.6	3.92	3.47	5.33	73.6425	5.323	9	2.53692	130.7528	2.5213	0.66456	1.8567	38.304	5.5117	-0.006	3	0.973	0.5786	2.7169	38.89058
40	35.3	2.62	3.55	7.41	35.3435	7.413	3	2.85584	126.0142	2.58431	0.69576	1.8886	17.346	7.9978	-0.013	3	1	0.5603	3.0795	17.34621
41	19.6	1.49	3.47	7.61	19.6425	7.5856	3	3.04234	120.4518	2.64453	0.72696	1.9176	8.8643	8.7658	-0.028	3	1	0.5518	3.3226	8.8643
42	16.1	0.53	3.4	3.29	16.1416	3.2834	3	2.87111	112.4098	2.70074	0.75816	1.9426	6.9191	3.9432	-0.038	3	1	0.5447	3.1959	6.91909
43	55	1.85	3.34	3.35	55.0409	3.3611	4	2.47511	124.5484	2.76301	0.78936	1.9737	26.488	3.5388	-0.011	4	0.972	0.5456	2.6996	26.95481
44	165.3	1.76	3.61	1.06	165.344	1.0645	6	1.78434	126.8662	2.82645	0.82056	2.0059	81.02	1.083	-0.003	6	0.6822	0.6464	1.935	99.28441
45	562.2	0	4.55	0	562.256	0	0	0	769.6	3.21125	0.85176	2.3595	236.93	0	-9E-04	0	1	0.4485	0	0

	C-12B	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	190.9	3.14	-0.47	1.64	190.894	1.6449	6	1.88033	131.4526	0.06573	0	0.0657	2903.4	1.6455	-2E-04	6	0.5015	2	1.7018	360.6976
2	346.3	6.85	0.17	1.98	346.302	1.978	6	1.79196	137.28	0.13437	0	0.1344	2576.3	1.9788	4E-05	8	0.4856	2	1.6515	654.3145
3	82.6	4.27	0.08	5.17	82.601	5.1694	9	2.49537	131.6586	0.2002	0	0.2002	411.6	5.182	7E-05	9	0.7427	2	2.3183	155.7512
4	39.1	2.04	0.03	5.22	39.1004	5.2173	3	2.71526	124.4297	0.26241	0	0.2624	148	5.2526	6E-05	9	0.8216	2	2.5177	73.41019
5	72.2	2.93	0	4.05	72.2	4.0582	4	2.45342	128.5747	0.3267	0	0.3267	220	4.0766	0	8	0.729	2	2.2666	135.8525
6	137.8	4.76	-0.38	3.46	137.795	3.4544	8	2.22007	133.7016	0.39355	0	0.3936	349.14	3.4643	-2E-04	8	0.6547	1.9107	2.0622	248.1174
7	458.9	10.14	-0.45	2.21	458.894	2.2097	8	1.7722	137.28	0.46219	0	0.4622	991.87	2.2119	-7E-05	8	0.517	1.5345	1.6934	664.8193
8	246.9	10.45	-0.72	4.23	246.891	4.2326	8	2.15045	137.28	0.53083	0	0.5308	464.11	4.2418	-2E-04	8	0.659	1.5755	2.0575	366.8171
9	109.4	6.72	-1.53	6.15	109.381	6.1437	9	2.48043	135.6616	0.59866	0	0.5987	181.71	6.1775	-0.001	9	0.7832	1.5622	2.3752	160.6049
10	123.5	6.43	-2.64	5.21	123.468	5.2078	9	2.39144	135.6343	0.66648	0	0.6665	184.25	5.2361	-0.002	9	0.761	1.4216	2.3084	164.9812
11	63.5	3.68	-2.83	5.8	63.4654	5.7984	4	2.60698	129.9278	0.73144	0	0.7314	85.768	5.866	-0.003	9	0.8479	1.3676	2.5279	81.08466
12	66.7	3.84	-2.91	5.76	66.6644	5.7602	4	2.59098	130.3592	0.79662	0	0.7966	82.684	5.8299	-0.003	9	0.8524	1.2738	2.5318	79.29134
13	78.4	4.32	-3.22	5.51	78.3606	5.513	9	2.53149	131.6152	0.86243	0	0.8624	89.86	5.5743	-0.003	9	0.8402	1.1875	2.4917	86.9711
14	89.3	4.43	-3.22	4.96	89.2606	4.963	9	2.46041	132.1169	0.92849	0	0.9285	95.136	5.0152	-0.003	9	0.8227	1.1135	2.4378	92.95658
15	84.2	4.58	-3.14	5.44	84.1616	5.4419	9	2.50759	132.2171	0.99459	0	0.9946	83.619	5.507	-0.003	9	0.8497	1.054	2.5006	82.84479
16	149.4	7.3	-3.2	4.89	149.361	4.8875	9	2.32116	137.0271	1.06311	0	1.0631	139.49	4.9225	-0.002	9	0.7866	0.9963	2.3264	139.6349
17	105.9	5.74	-3.04	5.42	105.863	5.4221	9	2.44521	134.4285	1.13032	0	1.1303	92.657	5.4806	-0.002	9	0.8431	0.9459	2.4664	93.62196
18	114.7	5.68	-3.06	4.96	114.663	4.9537	9	2.39301	134.5463	1.1976	0	1.1976	94.744	5.006	-0.002	9	0.8311	0.9022	2.4265	96.74641
19	70.2	4.6	-0.54	6.55	70.1934	6.5533	9	2.6199	131.8063	1.2635	0	1.2635	54.555	6.6735	-6E-04	3	0.9295	0.848	2.6767	55.24105
20	49.9	2.2	-0.69	4.4	49.8916	4.4096	4	2.58909	125.5766	1.32629	0	1.3263	36.617	4.53	-0.001	4	0.9299	0.8105	2.6698	37.20196
21	46.8	1.8	-0.77	3.85	46.7906	3.8469	4	2.56647	123.9518	1.38826	0	1.3883	32.704	3.9646	-0.001	4	0.9307	0.7767	2.6641	33.32572
22	54.7	2.02	-1.07	3.69	54.6869	3.6938	4	2.50616	125.1759	1.45085	0.00624	1.4446	36.851	3.7944	-0.002	4	0.9131	0.7526	2.6107	37.86266
23	46.8	1.86	-1.15	3.99	46.7859	3.9756	4	2.57657	124.1915	1.51295	0.03744	1.4755	30.683	4.1084	-0.003	4	0.9467	0.7299	2.6953	31.23152
24	59.6	2.18	-1.07	3.66	59.5869	3.6585	4	2.47718	125.9429	1.57592	0.06864	1.5073	38.487	3.7579	-0.003	4	0.9092	0.7249	2.5926	39.74449
25	86.2	4.81	-0.77	5.58	86.1906	5.5807	9	2.50969	132.6337	1.64223	0.09984	1.5424	54.816	5.6891	-0.002	4	0.9204	0.7069	2.6177	56.48623
26	129.7	8.29	-0.61	6.4	129.693	6.392	9	2.45195	137.28	1.71087	0.13104	1.5798	81.01	6.4775	-0.001	9	0.8969	0.698	2.5513	84.42912
27	131.1	5.11	-0.4	3.9	131.095	3.8979	8	2.27488	134.0992	1.77792	0.16224	1.6157	80.039	3.9515	-0.001	4	0.8331	0.7028	2.3791	85.89734
28	49.8	2.77	-0.38	5.55	49.7954	5.5628	3	2.66323	127.2577	1.84155	0.19344	1.6481	29.096	5.7764	-0.005	3	1	0.642	2.8199	29.09618
29	20.5	0.89	-0.38	4.34	20.4954	4.3425	3	2.86638	116.7849	1.89995	0.22464	1.6753	11.1	4.7861	-0.014	3	1	0.6316	3.0804	11.09971
30	26.7	1.4	-0.46	5.27	26.6944	5.2446	3	2.83541	120.7441	1.96032	0.25584	1.7045	14.511	5.6602	-0.012	3	1	0.6208	3.0365	14.51122
31	63.7	3.99	-0.61	6.28	63.6925	6.2645	3	2.63162	130.5283	2.02558	0.28704	1.7385	35.471	6.4702	-0.005	3	0.997	0.6095	2.7945	35.5231
32	77.4	3.96	-0.54	5.12	77.3934	5.1167	9	2.50992	130.9483	2.09106	0.31824	1.7728	42.476	5.2588	-0.005	4	0.9505	0.6123	2.6681	43.57573
33	73.9	3.67	-0.38	4.96	73.8954	4.9665	4	2.51293	130.279	2.1562	0.34944	1.8068	39.706	5.1158	-0.005	4	0.9568	0.5994	2.6804	40.63561
34	121.1	10.32	-0.2	8.53	121.098	8.5221	9	2.57233	137.28	2.22484	0.38064	1.8442	64.458	8.6816	-0.003	9	0.9734	0.5823	2.7196	65.41754
35	126.2	10.93	0.18	8.66	126.202	8.6607	9	2.56842	137.28	2.29348	0.41184	1.8816	65.852	8.821	-0.003	9	0.9752	0.5704	2.7196	66.79996
36	149.2	10.97	0.64	7.35	149.208	7.3522	9	2.46931	137.28	2.36212	0.44304	1.9191	76.519	7.4704	-0.003	9	0.9379	0.5721	2.6168	79.40182
37	35.4	2.63	0.37	7.42	35.4045	7.4284	3	2.856	126.0463	2.42514	0.47424	1.9509	16.905	7.9747	-0.014	3	1	0.5424	3.0868	16.90472
38	251.8	7.64	0.38	3.03	251.805	3.0341	8	2.02301	137.28	2.49378	0.50544	1.9883	125.39	3.0645	-0.002	5	0.7629	0.618	2.1493	145.6167
39	367.4	10.6	1.11	2.89	367.414	2.885	8	1.92006	137.28	2.56242	0.53664	2.0258	180.1	2.9053	-0.001	8	0.7193	0.6268	2.0303	216.1185
40	239.1	11.38	-3.6	4.76	239.056	4.7604	9	2.20149	137.28	2.63106	0.56784	2.0632	114.59	4.8134	-0.004	9	0.8401	0.5706	2.3412	127.5019
41	44.1	3.05	-4.06	6.93	44.0503	6.9239	3	2.76942	127.6633	2.69489	0.59904	2.0959	19.732	7.3751	-0.022	3	1	0.5049	3.0147	19.73205
42	29.1	1.76	-4.35	6.06	29.0468	6.0592	3	2.85243	122.6245	2.7562	0.63024	2.126	12.366	6.6944	-0.036	3	1	0.4977	3.1367	12.36642
43	21.3	1.52	-4.59	7.15	21.2438	7.155	3	3.0002	120.7888	2.8166	0.66144	2.1552	8.5503	8.2487	-0.054	3	1	0.491	3.3175	8.55029
44	25.7	1.51	-4.82	5.88	25.641	5.889	3	2.8827	121.1993	2.8772	0.69264	2.1846	10.42	6.6333	-0.046	3	1	0.4844	3.1909	10.42033

	C-13	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	138.6	2.28	1.3	1.65	138.616	1.6448	6	1.97289	128.3303	0.06417	0	0.0642	2159.3	1.6456	0.0007	6	0.5313	2	1.7803	261.8858
2	57.6	1.67	1.76	2.9	57.6215	2.8982	5	2.41581	123.9111	0.12612	0	0.1261	455.88	2.9046	0.0022	5	0.6984	2	2.2111	108.6759
3	29.5	0.6	1.91	2.01	29.5234	2.0323	4	2.53629	114.7901	0.18352	0	0.1835	159.88	2.045	0.0047	5	0.7376	2	2.307	55.45722
4	130.6	3.11	2.25	2.38	130.628	2.3808	5	2.10945	130.457	0.24874	0	0.2487	524.15	2.3854	0.0012	6	0.5961	2	1.9274	246.4376
5	423.6	10.2	3.96	2.41	423.648	2.4077	8	1.82146	137.28	0.31738	0	0.3174	1333.8	2.4095	0.0007	8	0.5167	1.863	1.7098	745.3608
6	235	9.38	4.95	3.99	235.061	3.9905	8	2.13964	137.28	0.38602	0	0.386	607.93	3.997	0.0015	8	0.6339	1.8949	2.0088	420.2609
7	190.4	11.73	6.2	6.16	190.476	6.1583	9	2.34806	137.28	0.45466	0	0.4547	417.94	6.173	0.0024	9	0.7194	1.8361	2.2244	329.7355
8	238.4	8.51	6.56	3.57	238.48	3.5684	8	2.09512	137.28	0.5233	0	0.5233	454.72	3.5763	0.002	8	0.6365	1.5654	1.9994	352.0323
9	145.5	9.53	5.99	6.55	145.573	6.5465	9	2.43271	137.28	0.59194	0	0.5919	244.92	6.5733	0.003	9	0.7675	1.5617	2.3348	213.9856
10	169.4	11.14	5.82	6.57	169.471	6.5734	9	2.39873	137.28	0.66058	0	0.6606	255.55	6.5991	0.0025	9	0.7663	1.4348	2.3222	228.9039
11	111.8	8.08	6.05	7.23	111.874	7.2224	9	2.53205	137.0651	0.72912	0	0.7291	152.44	7.2698	0.0039	9	0.8228	1.3586	2.4624	142.7046
12	127.3	7.84	6.36	6.16	127.378	6.1549	9	2.44285	137.161	0.7977	0	0.7977	158.68	6.1937	0.0036	9	0.7993	1.2533	2.3922	149.9332
13	133.6	6.6	6.39	4.93	133.678	4.9372	9	2.35247	136.019	0.86571	0	0.8657	153.42	4.9694	0.0035	9	0.7741	1.1681	2.3178	146.6142
14	106.3	6.43	6.28	6.05	106.377	6.0446	9	2.48184	135.2709	0.93334	0	0.9333	112.97	6.0981	0.0043	9	0.8316	1.11	2.4607	110.6127
15	71.4	4.25	6.2	5.95	71.4759	5.9461	9	2.5822	131.2714	0.99898	0	0.999	70.549	6.0303	0.0063	9	0.879	1.0519	2.5769	70.05988
16	173.6	5.69	6.01	3.27	173.674	3.2763	8	2.14151	135.5718	1.06676	0	1.0668	161.8	3.2965	0.0025	8	0.7183	0.9942	2.1467	162.1759
17	84.1	3.36	6.07	4	84.1743	3.9917	4	2.40406	129.9509	1.13174	0	1.1317	73.376	4.0461	0.0053	4	0.8286	0.9458	2.4282	74.22681
18	81.9	3.7	6.2	4.51	81.9759	4.5135	4	2.45212	130.5917	1.19704	0	1.197	67.482	4.5804	0.0055	4	0.8556	0.8998	2.4909	68.69505
19	92.5	4.8	5.82	5.18	92.5712	5.1852	9	2.46541	132.7926	1.26343	0	1.2634	72.27	5.2569	0.0046	9	0.8683	0.8573	2.5158	73.97791
20	61.5	2.66	5.9	4.32	61.5722	4.3201	4	2.52	127.479	1.32717	0	1.3272	45.394	4.4153	0.0071	4	0.9012	0.8153	2.5942	46.42146
21	60.7	2.4	5.9	3.95	60.7722	3.9492	4	2.49532	126.6944	1.39052	0	1.3905	42.705	4.0417	0.0072	4	0.9003	0.782	2.584	43.88399
22	61.9	2.46	5.74	3.97	61.9703	3.9697	4	2.49115	126.9227	1.45398	0.0156	1.4384	42.073	4.065	0.0066	4	0.9048	0.7575	2.5897	43.32101
23	67.7	2.83	5.74	4.18	67.7703	4.1759	4	2.48104	128.1662	1.51806	0.0468	1.4713	45.031	4.2716	0.0055	4	0.904	0.7423	2.5835	46.479
24	60.1	2.57	5.67	4.27	60.1694	4.2713	4	2.52316	127.1709	1.58165	0.078	1.5037	38.964	4.3866	0.0056	4	0.9261	0.7222	2.6377	39.98861
25	43.5	2.06	5.48	4.73	43.5671	4.7283	4	2.65185	124.7649	1.64403	0.1092	1.5348	27.314	4.9138	0.0068	3	0.9852	0.6932	2.7892	27.46499
26	32.9	1.25	5.36	3.81	32.9656	3.7918	4	2.67251	120.4295	1.70425	0.1404	1.5639	19.99	3.9986	0.0079	3	1	0.6766	2.8328	19.99006
27	35.9	1.26	5.36	3.49	35.9656	3.5034	4	2.6214	120.7003	1.7646	0.1716	1.593	21.47	3.6841	0.0063	4	0.9861	0.668	2.7843	21.59186
28	66.6	3.46	5.42	5.18	66.6663	5.19	4	2.55653	129.5968	1.82939	0.2028	1.6266	39.861	5.3365	0.0029	3	0.9531	0.6638	2.6933	40.67209
29	68.9	2.36	5.72	3.41	68.97	3.4218	4	2.41232	126.8801	1.89283	0.234	1.6588	40.436	3.5183	0.0027	4	0.9015	0.6667	2.5535	42.26681
30	110.8	5.76	5.96	5.2	110.873	5.1951	9	2.4183	134.5667	1.96012	0.2652	1.6949	64.259	5.2886	0.0015	4	0.8995	0.6545	2.5439	67.3731
31	178.1	10.16	6.48	5.7	178.179	5.7021	9	2.33483	137.28	2.02876	0.2964	1.7324	101.68	5.7678	0.001	9	0.8638	0.6532	2.4453	108.7432
32	204.9	9.2	7.28	4.49	204.989	4.488	9	2.21441	137.28	2.0974	0.3276	1.7698	114.64	4.5344	0.001	9	0.8194	0.6561	2.3236	125.8043
33	78.2	6.14	6.97	7.84	78.2853	7.8431	9	2.65213	134.1853	2.16449	0.3588	1.8057	42.156	8.0661	0.0019	3	1	0.586	2.8155	42.15609
34	201.4	6.61	6.76	3.28	201.483	3.2807	8	2.10484	137.0307	2.23301	0.39	1.843	108.11	3.3174	0.0005	5	0.7845	0.6471	2.2241	121.8452
35	205.7	8.44	7.57	4.1	205.793	4.1012	8	2.1805	137.28	2.30165	0.4212	1.8805	108.21	4.1476	0.0006	9	0.8168	0.6252	2.3042	120.2358
36	87.6	5.96	7.98	6.79	87.6977	6.7961	9	2.57275	134.2445	2.36877	0.4524	1.9164	44.526	6.9847	0.0014	3	0.9887	0.5559	2.7509	44.82622
37	81.8	4.7	7.29	5.74	81.8892	5.7395	9	2.53307	132.3395	2.43494	0.4836	1.9513	40.718	5.9154	0.0005	3	0.9793	0.5492	2.7218	41.23729
38	76.3	4.23	7.35	5.53	76.39	5.5374	9	2.53998	131.3991	2.50064	0.5148	1.9858	37.208	5.7248	0.0002	3	0.9878	0.537	2.7398	37.4961
39	56.3	3.38	7.27	5.99	56.389	5.9941	3	2.65144	129.0173	2.56515	0.546	2.0192	26.657	6.2798	-4E-04	3	1	0.524	2.8724	26.65674
40	44.7	1.84	6.59	4.11	44.7807	4.1089	4	2.60016	124.0055	2.62715	0.5772	2.05	20.563	4.365	-0.002	3	1	0.5162	2.8481	20.56321
41	141.5	1.76	6.88	1.25	141.584	1.2431	6	1.87961	126.4879	2.69039	0.6084	2.082	66.712	1.2672	-8E-04	5	0.7297	0.6103	2.0502	80.10687
42	25.6	0.61	6.58	2.38	25.6805	2.3753	4	2.6255	114.5709	2.74768	0.6396	2.1081	10.879	2.6599	-0.007	3	1	0.5019	2.9372	10.87857
43	717.8	0	6.87	0	717.884	0	0	0	769.6	3.13248	0.6708	2.4617	290.35	0	-3E-04	0	1	0.4298	0	0

	C-13A	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	102.4	0.42	-0.07	0.42	102.399	0.4102	6	1.70199	115.2137	0.05761	0	0.0576	1776.6	0.4104	-5E-05	6	0.4042	2	1.4473	193.4425
2	76.4	0.25	0.01	0.32	76.4001	0.3272	6	1.77108	110.7033	0.11296	0	0.113	675.36	0.3277	1E-05	6	0.4281	2	1.5033	144.1954
3	61.5	0.2	0.08	0.33	61.501	0.3252	6	1.85615	108.5415	0.16723	0	0.1672	366.76	0.3261	9E-05	6	0.462	2	1.5856	115.931
4	284.8	2.37	0.15	0.83	284.802	0.8322	6	1.54326	130.3698	0.23241	0	0.2324	1224.4	0.8328	4E-05	6	0.3882	1.8012	1.3845	484.4239
5	361.4	5.48	0.07	1.52	361.401	1.5163	6	1.68503	137.084	0.30096	0	0.301	1199.8	1.5176	1E-05	6	0.4594	1.7818	1.5601	608.0836
6	163	6.1	0.31	3.74	163.004	3.7422	8	2.20447	135.9263	0.36892	0	0.3689	440.84	3.7507	0.0001	8	0.6477	1.9787	2.0477	304.128
7	120.8	3.28	3.18	2.71	120.839	2.7144	5	2.17469	130.6565	0.43425	0	0.4343	277.27	2.7242	0.0019	8	0.6418	1.771	2.0245	201.5309
8	123.7	4	1.07	3.23	123.713	3.2333	5	2.22657	132.1659	0.50033	0	0.5003	246.26	3.2464	0.0006	8	0.6729	1.6553	2.0981	192.7567
9	100.4	3.14	3.72	3.13	100.446	3.1261	5	2.27356	129.8865	0.56527	0	0.5653	176.69	3.1438	0.0027	5	0.6984	1.5494	2.1569	146.2551
10	140.1	4.91	1.56	3.5	140.119	3.5042	8	2.22057	133.9694	0.63226	0	0.6323	220.62	3.5201	0.0008	8	0.6925	1.4284	2.1329	188.3048
11	104.1	4.27	4.78	4.1	104.159	4.0995	9	2.35371	132.2242	0.69837	0	0.6984	148.15	4.1272	0.0033	8	0.7499	1.3656	2.2753	133.5229
12	96.4	3.68	1.41	3.81	96.4173	3.8167	4	2.35103	130.9478	0.76384	0	0.7638	125.23	3.8472	0.0011	8	0.7583	1.2803	2.2884	115.7397
13	114.7	4.17	-1.04	3.64	114.687	3.636	5	2.28689	132.2857	0.82999	0	0.83	137.18	3.6625	-7E-04	8	0.7439	1.198	2.2429	128.9093
14	88.3	3.77	-0.27	4.27	88.2967	4.2697	4	2.4129	130.91	0.89544	0	0.8954	97.607	4.3134	-2E-04	9	0.8	1.1429	2.3823	94.40269
15	143.2	3	-4.35	2.1	143.147	2.0958	5	2.04156	130.4168	0.96065	0	0.9607	148.01	2.1099	-0.002	5	0.6679	1.0667	2.0274	143.3357
16	102.2	4.46	-0.06	4.36	102.199	4.364	9	2.38005	132.4964	1.0269	0	1.0269	98.522	4.4083	-4E-05	9	0.8052	1.0244	2.3797	97.94929
17	117.4	4.18	-0.76	3.57	117.391	3.5608	5	2.27348	132.36	1.09308	0	1.0931	106.39	3.5942	-5E-04	5	0.7726	0.9752	2.286	107.184
18	115.9	5.51	-3.18	4.76	115.861	4.7557	9	2.37613	134.3494	1.16025	0	1.1603	98.858	4.8038	-0.002	9	0.8201	0.9272	2.4022	100.5113
19	64.6	2.32	0.49	3.6	64.606	3.591	4	2.44706	126.5956	1.22355	0	1.2236	51.802	3.6603	0.0006	4	0.859	0.8827	2.4964	52.87414
20	71.9	2.94	0.8	4.09	71.9098	4.0885	4	2.45699	128.5898	1.28785	0	1.2879	54.837	4.163	0.0008	4	0.8704	0.8428	2.5182	56.25212
21	83.6	3.37	1.25	4.03	83.6153	4.0304	4	2.40911	129.9564	1.35282	0	1.3528	60.808	4.0966	0.0011	4	0.8589	0.8097	2.4799	62.95349
22	83.6	3.95	1.64	4.72	83.6201	4.7238	9	2.46175	131.1185	1.41838	0	1.4184	57.954	4.8053	0.0014	4	0.8871	0.7711	2.5458	59.90393
23	79.9	4.28	1.73	5.36	79.9212	5.3553	9	2.51631	131.5953	1.48418	0	1.4842	52.849	5.4566	0.0016	4	0.9166	0.7333	2.6151	54.36136
24	56.6	2.97	1.56	5.24	56.6191	5.2456	4	2.60689	128.081	1.54822	0.01872	1.5295	36.006	5.3931	0.0017	3	0.9622	0.7015	2.7292	36.51124
25	33.7	1.08	1.56	3.2	33.7191	3.2029	4	2.61634	119.415	1.60793	0.04992	1.558	20.61	3.3633	0.0019	4	0.9798	0.6845	2.7721	20.77176
26	32.9	0.77	1.72	2.34	32.9211	2.3389	4	2.53648	116.8811	1.66637	0.08112	1.5853	19.716	2.4636	0.0014	4	0.954	0.68	2.7007	20.08614
27	43.2	1.08	1.87	2.49	43.2229	2.4987	5	2.46418	120.0207	1.72638	0.11232	1.6141	25.709	2.6026	0.0005	4	0.9245	0.6768	2.6193	26.5428
28	70.9	3.07	2.31	4.33	70.9283	4.3283	4	2.47946	128.8729	1.79082	0.14352	1.6473	41.97	4.4404	0.0003	4	0.9249	0.664	2.6164	43.38904
29	77.4	2.69	2.94	3.48	77.436	3.4738	5	2.38293	128.1201	1.85488	0.17472	1.6802	44.985	3.5591	0.0005	4	0.8905	0.6625	2.5218	47.32072
30	120.3	7.7	3.25	6.4	120.34	6.3986	9	2.47078	136.8905	1.92332	0.20592	1.7174	68.951	6.5025	0.0002	9	0.9205	0.6403	2.5963	71.65636
31	133.2	7.93	-6.21	5.95	133.124	5.9569	9	2.42028	137.28	1.99196	0.23712	1.7548	74.726	6.0473	-0.005	9	0.9036	0.6331	2.5472	78.45894
32	80.2	5.26	-6.1	6.57	80.1253	6.5647	9	2.58472	133.1101	2.05852	0.26832	1.7902	43.608	6.7378	-0.009	3	0.9802	0.5973	2.7442	44.06484
33	68.7	4.1	-5.79	5.98	68.6291	5.9741	9	2.59502	130.9094	2.12397	0.29952	1.8245	36.452	6.1649	-0.011	3	0.9922	0.5824	2.7703	36.60811
34	320.5	11	-5.66	3.43	320.431	3.4329	8	2.01496	137.28	2.19261	0.33072	1.8619	170.92	3.4565	-0.002	8	0.7437	0.6569	2.1147	197.5601
35	117.8	8.13	-9.16	6.91	117.688	6.9081	9	2.50363	137.2338	2.26123	0.36192	1.8993	60.773	7.0434	-0.009	9	0.9537	0.5724	2.6608	62.44269
36	88.4	4.98	-8.93	5.65	88.2907	5.6405	9	2.50685	132.9465	2.3277	0.39312	1.9346	44.435	5.7932	-0.012	3	0.9653	0.5585	2.6869	45.37556
37	71.2	3.57	-9.08	5.03	71.0889	5.0219	4	2.52751	129.9824	2.39269	0.42432	1.9684	34.9	5.1968	-0.016	3	0.9825	0.5434	2.7282	35.28039
38	63.3	3.52	-9.39	5.57	63.1851	5.5709	4	2.59504	129.5918	2.45749	0.45552	2.002	30.334	5.7964	-0.019	3	1	0.5285	2.8081	30.33393
39	81.5	3.57	-9.59	4.39	81.3826	4.3867	4	2.44471	130.3123	2.52265	0.48672	2.0359	38.734	4.527	-0.015	4	0.9554	0.5351	2.6482	39.88172
40	19.4	1.96	-9.24	10.2	19.2869	10.162	3	3.13694	122.4133	2.58385	0.51792	2.0659	8.085	11.734	-0.071	3	1	0.5122	3.4362	8.085
41	76.4	1.57	-9.47	2.06	76.2841	2.0581	5	2.22494	124.1436	2.64592	0.54912	2.0968	35.119	2.1321	-0.017	5	0.8806	0.5476	2.4428	38.10702
42	25.7	1.11	-9.24	4.33	25.5869	4.3382	3	2.79341	118.9424	2.70539	0.58032	2.1251	10.767	4.8511	-0.054	3	1	0.4979	3.0944	10.76739
43	318.2	3.28	-7.9	1.03	318.103	1.0311	6	1.58273	133.0172	2.7719	0.61152	2.1604	145.96	1.0402	-0.004	6	0.6045	0.6495	1.7118	193.5731
44	126.2	4.52	-10.04	3.59	126.077	3.5851	8	2.2565	133.1063	2.83846	0.64272	2.1957	56.126	3.6677	-0.011	4	0.8898	0.5223	2.4548	60.83021
45	36.6	1.3	-9.25	3.56	36.4868	3.5629	4	2.62173	120.964	2.89894	0.67392	2.225	15.096	3.8705	-0.04	3	1	0.4756	2.9185	15.09553
46	39.4	1.12	-9.08	2.86	39.2889	2.8507	4	2.53307	120.054	2.95897	0.70512	2.2539	16.119	3.0829	-0.037	3	1	0.4695	2.8355	16.11907
47	51.3	2.01	-8.55	3.92	51.1954	3.9261	4	2.54515	124.9786	3.02145	0.73632	2.2851	21.081	4.1724	-0.028	3	1	0.463	2.8272	21.08142
48	39	1.11	-8.21	2.86	38.8995	2.8535	4	2.5366	119.9641	3.08144	0.76752	2.3139	15.479	3.099	-0.038	3	1	0.4573	2.8509	15.47941
49	42.7	0.93	-7.78	2.19	42.6048	2.1829	5	2.43085	118.8914	3.14088	0.79872	2.3422	16.849	2.3566	-0.034	4	1	0.4518	2.7511	16.84934
50	80	3.55	-7.57	4.44	79.9073	4.4427	4	2.45405	130.2265	3.206	0.82992	2.3761	32.281	4.6283	-0.018	4	0.9988	0.4458	2.7201	32.3133
51	31.9	1.01	-8.85	3.16	31.7917	3.1769	4	2.63329	118.7812	3.26539	0.86112	2.4043	11.865	3.5406	-0.053	3	1	0.4401	2.9781	11.86486
52	30.7	0.89	-8.85	2.92	30.5917	2.9093	4	2.62124	117.7618	3.32427	0.89232	2.432	11.212	3.264	-0.056	3	1	0.4351	2.9772	11.21217
53	28.6	0.67	-8.45	2.34	28.4966	2.3512	4	2.58703	115.5112	3.38202	0.92352	2.4585	10.215	2.6678	-0.061	3	1	0.4304	2.9606	10.21538
54	28.4	0.65	-8.39	2.31	28.2973	2.297	4	2.58323	115.2723	3.43966	0.95472	2.4849	10.003	2.6149	-0.063	3	1	0.4258	2.9634	10.00332
55	29	0.74	-8.32	2.57	28.8982	2.5607	4	2.60525	116.2724	3.4978	0.98592	2.5119	10.112	2.9133	-0.062	3	1	0.4212	2.9857	10.11211
56	34.6	1.06	-8.03	3.08	34.5017	3.0723	4	2.59693	119.3342	3.55746	1.01712	2.5403	12.181	3.4255	-0.052	3	1	0.4165	2.9604	12.18113
57	37.3	1.4	-6.86	3.76	37.216	3.7618	4	2.63144	121.5545	3.61824	1.04832	2.5699	13.073	4.1669	-0.046	3	1	0.4117	2.9874	13.07348
58	32.7	1.07	-6.67	3.28	32.6184	3.2804	4	2.63402	119.266	3.67787	1.07952	2.5984	11.138	3.6972	-0.054	3	1	0.4072	3.0114	11.13801
59	36.9	1.06	-6.33	2.88	36.8225	2.8787	4	2.55704	119.493	3.73762	1.11072	2.6269	12.595	3.2039	-0.047	3	1	0.4028	2.9316	12.59466
60	79.3	2.42	-7.1	3.05	79.2131	3.0551	5	2.33526	127.4015	3.80132	1.14192	2.6594	28.357	3.2091	-0.022	4	0.9858	0.4031	2.6509	28.72956
61	45	0.71	-6.66	1.57	44.9185	1.5806	5	2.32518	117.0454	3.85984	1.17312	2.6867	15.282	1.7292	-0.04	4	1	0.3938	2.7111	15.28205
62	56.8	1.29	-6.13	2.27	56.725	2.2741	5	2.34874	121.9838	3.92083	1.20432	2.7165	19.438	2.443	-0.031	4	1	0.3895	2.7099	19.43819
63	44.8	0.8	-6.33	1.79	44.7225	1.7888	5	2.35983	117.908	3.97979	1.23552	2.7443	14.846	1.9635	-0.042	4	1	0.3856	2.7517	14.84648
64	40.8	0.74	-6.25	1.81	40.7235	1.8171	5	2.39596	117.1091	4.03834	1.26672	2.7716	13.236	2.0172	-0.047	4	1	0.3818	2.7998	13.23598
65	47.1	0.84	-5.98	1.79	47.0268	1.7862	5	2.34242	118.3875	4.09754	1.29792	2.7996	15.334	1.9567	-0.04	4	1	0.378	2.7392	15.33398
66	48.4	0.77	-5.87	1.59	48.3282	1.5933	5	2.30222	117.8174	4.15645	1.32912	2.8273	15.623	1.7432	-0.04	4	1	0.3742	2.705	15.62314
67	44.4	0.88	-5.79	2	44.3291	1.9852	5	2.39128	118.5838	4.21574	1.36032	2.8554	14.048	2.1938	-0.044	4	1	0.3706	2.7984	14.04817
68	54.7	1.19	-5.48	2.18	54.6329	2.1782	5	2.3484	121.3017	4.27639	1.39152	2.8849	17.455	2.3632	-0.035	4	1	0.3668	2.7393	17.4554
69	64	1.66	-5.25	2.6	63.9357	2.5964	5	2.35014	124.1208	4.33845	1.42272	2.9157	20.44	2.7854	-0.03	4	1	0.3629	2.7268	20.43993
70	157.8	8.29	-6.66	5.25	157.718	5.2562	9	2.33399	137.28	4.40709	1.45392	2.9532	51.914	5.4073	-0.013	4	0.9887	0.3625	2.6221	52.51942
71	359.5	11.69	-9.78	3.25	359.38	3.2528	8	1.97038	137.28	4.47573	1.48512	2.9906	118.67	3.2938	-0.006	8	0.8218	0.4258	2.1793	142.8068
72	232.4	6.66	-7.76	2.87	232.305	2.8669	8	2.02168	137.28	4.54437	1.51632	3.0281	75.217	2.9241	-0.009	5	0.8607	0.4045	2.2768	87.07723
73	220.4	7.99	-10.69	3.63	220.269	3.6274	8	2.11969	137.28	4.61301	1.54752	3.0655	70.35	3.705	-0.011	4	0.9051	0.3819	2.3859	77.82585
74	324.1	8.61	-11.09	2.66	323.964	2.6577	8	1.91643	137.28	4.68165	1.57872	3.1029	102.9	2.6967	-0.007	5	0.8144	0.4164	2.1458	125.6341
75	374.2	7.94	-11.69	2.12	374.057	2.1227	8	1.80061	137.28	4.75029	1.60992	3.1404	117.6	2.15	-0.007	5	0.7677	0.4338	2.0184	151.409
76	338.8	6.34	-11.69	1.87	338.657	1.8721	6	1.77703	137.28	4.81893	1.64112	3.1778	105.05	1.8991	-0.007	5	0.7656	0.4309	2.0081	135.9415
77	328.9	9.75	-12.07	2.97	328.752	2.9658	8	1.95426	137.28	4.88757	1.67232	3.2153	100.73	3.0105	-0.008	5	0.8381	0.394	2.1941	120.5858
78	274.1	8.64	-11.76	3.15	273.956	3.1538	8	2.01775	137.28	4.95621	1.70352	3.2527	82.701	3.2119	-0.009	5	0.873	0.3752	2.2811	95.37727
79	301.1	7.51	-11.92	2.5	300.954	2.4954	8	1.90983	137.28	5.02485	1.73472	3.2901	89.945	2.5378	-0.009	5	0.831	0.3896	2.166	108.9506
80	301.6	0	-12.07	0	301.452	0	0	0	769.6	5.40965	1.76592	3.6437	81.247	0	-0.009	0	1	0.2904	0	0

	C-14	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	102.7	1.1	-0.07	1.07	102.699	1.0711	6	1.93939	122.2657	0.06113	0	0.0611	1678.9	1.0717	-5E-05	6	0.5084	2	1.7206	194.0029
2	67.1	1.07	0.23	1.6	67.1028	1.5946	5	2.19213	121.0254	0.12165	0	0.1217	550.63	1.5975	0.0003	6	0.6078	2	1.9739	126.6055
3	59.5	0.89	1.1	1.5	59.5135	1.4955	5	2.21439	119.3849	0.18134	0	0.1813	327.19	1.5	0.0013	6	0.6173	2	1.9915	112.1476
4	366.3	8.32	2.9	2.27	366.336	2.2711	8	1.83048	137.28	0.24998	0	0.25	1464.5	2.2727	0.0006	8	0.5087	2	1.6977	691.9625
5	233.4	8.8	4.21	3.77	233.452	3.7695	8	2.12021	137.28	0.31862	0	0.3186	731.7	3.7747	0.0013	8	0.6185	2	1.9776	440.66
6	89.6	4.69	35.83	5.21	90.0386	5.2089	9	2.47445	132.5554	0.3849	0	0.3849	232.93	5.2312	0.0288	9	0.7452	2	2.3018	169.4603
7	100.3	4.89	20.74	4.86	100.554	4.8631	9	2.42131	133.1303	0.45146	0	0.4515	221.73	4.885	0.0149	9	0.7354	1.8708	2.2665	176.9847
8	85.5	4.37	7.46	5.1	85.5913	5.1057	9	2.48144	131.9147	0.51742	0	0.5174	164.42	5.1367	0.0063	9	0.7669	1.7308	2.3425	139.1622
9	83.3	4.64	19.34	5.55	83.5367	5.5544	9	2.51655	132.2941	0.58357	0	0.5836	142.15	5.5935	0.0168	9	0.7913	1.6014	2.3983	125.5471
10	120.3	7.17	26.85	5.94	120.629	5.9439	9	2.44399	136.3746	0.65175	0	0.6518	184.08	5.9762	0.0161	9	0.779	1.4586	2.3563	165.3845
11	110.9	6.49	39.88	5.82	111.388	5.8265	9	2.45716	135.4511	0.71948	0	0.7195	153.82	5.8644	0.026	9	0.793	1.3578	2.3852	142.0159
12	95.1	4.93	36.3	5.16	95.5443	5.1599	9	2.45526	133.0653	0.78601	0	0.786	120.56	5.2027	0.0276	9	0.8009	1.2688	2.3979	113.6281
13	94.9	4.35	45.06	4.55	95.4515	4.5573	9	2.4133	132.1471	0.85208	0	0.8521	111.02	4.5983	0.0343	9	0.7943	1.1877	2.3726	106.1848
14	79.5	4.1	38.64	5.12	79.973	5.1267	9	2.50149	131.2825	0.91773	0	0.9177	86.143	5.1863	0.0352	9	0.8367	1.1265	2.4759	84.16379
15	65.5	3.57	32.02	5.41	65.8919	5.418	4	2.57399	129.7973	0.98262	0	0.9826	66.057	5.5	0.0355	4	0.8737	1.0668	2.565	65.44252
16	80.2	3.71	42.1	4.6	80.7153	4.5964	4	2.4625	130.5736	1.04791	0	1.0479	76.025	4.6569	0.0381	4	0.8399	1.0082	2.4682	75.9072
17	83.8	3.82	3.77	4.56	83.8461	4.556	4	2.44893	130.8802	1.11335	0	1.1134	74.31	4.6173	0.0033	4	0.8434	0.958	2.4691	74.90451
18	60.6	2.42	3.28	3.98	60.6402	3.9908	4	2.49928	126.7499	1.17673	0	1.1767	50.533	4.0697	0.004	4	0.873	0.9114	2.5391	51.2194
19	62.2	2.46	4.44	3.95	62.2544	3.9515	4	2.48835	126.9339	1.24019	0	1.2402	49.197	4.0319	0.0052	4	0.8773	0.87	2.5424	50.16513
20	60.9	2.13	4.61	3.49	60.9564	3.4943	4	2.45599	125.8286	1.30311	0	1.3031	45.778	3.5706	0.0056	4	0.8736	0.8336	2.5249	46.99848
21	76.2	3.51	6.23	4.6	76.2763	4.6017	4	2.47879	130.0302	1.36812	0	1.3681	54.753	4.6857	0.006	4	0.8884	0.7959	2.5555	56.34568
22	63.5	3.06	7.56	4.82	63.5925	4.8119	4	2.54533	128.5827	1.43241	0	1.4324	43.395	4.9228	0.0088	4	0.9243	0.7558	2.6417	44.40251
23	66.2	3	7.13	4.52	66.2873	4.5258	4	2.51346	128.5391	1.49668	0	1.4967	43.289	4.6303	0.0079	4	0.9197	0.7269	2.6217	44.51137
24	52.4	2.43	6.12	4.64	52.4749	4.6308	4	2.58937	126.4273	1.5599	0	1.5599	32.64	4.7727	0.0087	4	0.9607	0.6888	2.7215	33.14214
25	37.6	1.1	4.77	2.93	37.6584	2.921	4	2.55388	119.8188	1.61981	0.0312	1.5886	22.686	3.0523	0.0087	4	0.9577	0.6776	2.71	23.07898
26	27.9	0.71	5.06	2.55	27.9619	2.5392	4	2.61415	115.8893	1.67775	0.0624	1.6154	16.272	2.7012	0.0115	4	0.9924	0.6572	2.7969	16.32411
27	48	1.64	7.01	3.42	48.0858	3.4106	4	2.52143	123.3373	1.73942	0.0936	1.6458	28.16	3.5386	0.0089	4	0.9482	0.6578	2.6778	28.81243
28	80.2	3.03	15.01	3.77	80.3837	3.7694	4	2.39847	129.0821	1.80396	0.1248	1.6792	46.797	3.856	0.0122	4	0.8955	0.6613	2.535	49.11141
29	79.3	3.06	15.44	3.85	79.489	3.8496	4	2.40854	129.1269	1.86852	0.156	1.7125	45.325	3.9423	0.0123	4	0.9036	0.6472	2.5522	47.47883
30	141.3	7.33	24.15	5.17	141.596	5.1767	9	2.35489	136.9269	1.93699	0.1872	1.7498	79.815	5.2485	0.0111	9	0.877	0.6433	2.4776	84.91006
31	140.8	9.62	4.19	6.83	140.851	6.8299	9	2.45595	137.28	2.00563	0.2184	1.7872	77.688	6.9286	0.0006	9	0.9197	0.6175	2.5854	81.02807
32	71.5	4.08	7.11	5.7	71.587	5.6994	9	2.56758	130.9765	2.07112	0.2496	1.8215	38.164	5.8692	0.0038	3	0.9797	0.5873	2.739	38.58661
33	89.4	5.85	6.94	6.53	89.485	6.5374	9	2.55403	134.1574	2.13819	0.2808	1.8574	47.027	6.6974	0.0025	3	0.9739	0.5781	2.7193	47.72213
34	241.8	9.3	30.29	3.84	242.171	3.8403	8	2.11866	137.28	2.20683	0.312	1.8948	126.64	3.8756	0.0078	8	0.7914	0.6306	2.2357	143.0096
35	185.3	10.45	-9.8	5.64	185.18	5.6432	9	2.32213	137.28	2.27547	0.3432	1.9323	94.658	5.7134	-0.006	9	0.8785	0.5892	2.4588	101.8421
36	66.1	3.34	-9.96	5.07	65.9781	5.0623	4	2.55131	129.3132	2.34013	0.3744	1.9657	32.374	5.2484	-0.017	3	0.9936	0.5404	2.7564	32.5033
37	86.9	4.69	-10.34	5.4	86.7734	5.4049	9	2.49699	132.4653	2.40636	0.4056	2.0008	42.167	5.559	-0.014	3	0.9695	0.5393	2.6897	42.99616
38	31.7	1.82	-10.34	5.78	31.5734	5.7643	3	2.81145	123.0732	2.4679	0.4368	2.0311	14.33	6.2531	-0.041	3	1	0.521	3.0689	14.32994
39	39.1	0.76	-10.42	1.96	38.9725	1.9501	5	2.42994	117.197	2.5265	0.468	2.0585	17.705	2.0853	-0.033	4	0.975	0.5226	2.697	18.00192
40	29.9	1.37	-10.41	4.63	29.7726	4.6016	3	2.76199	120.8518	2.58692	0.4992	2.0877	13.022	5.0394	-0.046	3	1	0.5068	3.0403	13.02167
41	85.5	1.76	-10.37	2.06	85.3731	2.0615	5	2.19029	125.2541	2.64955	0.5304	2.1192	39.036	2.1276	-0.015	5	0.8658	0.5481	2.403	42.85071
42	192.4	2.16	-10.11	1.12	192.276	1.1234	6	1.75494	128.7328	2.71392	0.5616	2.1523	88.074	1.1395	-0.007	6	0.6814	0.6164	1.9147	110.4318
43	356.3	4.56	-9.66	1.28	356.182	1.2803	6	1.62809	135.7038	2.78177	0.5928	2.189	161.45	1.2903	-0.004	6	0.6219	0.6363	1.7539	212.5249
44	53.2	1.82	-2.24	3.41	53.1726	3.4228	4	2.49132	124.3445	2.84394	0.624	2.2199	22.671	3.6162	-0.016	4	1	0.4766	2.7629	22.67115
45	41.5	1.69	-5.8	4.07	41.429	4.0793	4	2.62202	123.1936	2.90554	0.6552	2.2503	17.119	4.3869	-0.028	3	1	0.4702	2.9103	17.11896
46	31.7	0.9	-4.98	2.86	31.639	2.8446	4	2.60377	117.9257	2.9645	0.6864	2.2781	12.587	3.1387	-0.036	3	1	0.4645	2.9265	12.58703
47	39.7	1.46	-3.83	3.68	39.6531	3.6819	4	2.60496	122.0163	3.02551	0.7176	2.3079	15.87	3.9861	-0.027	3	1	0.4585	2.9094	15.87047
48	37.4	0.77	-3.06	2.07	37.3626	2.0609	5	2.45922	117.1898	3.0841	0.7488	2.3353	14.678	2.2463	-0.028	4	1	0.4531	2.7883	14.67836
49	69.6	2.6	-2.73	3.73	69.5666	3.7374	4	2.4378	127.6098	3.14791	0.78	2.3679	28.05	3.9146	-0.015	4	0.9966	0.4481	2.7147	28.12765
50	58.5	2.5	-3.01	4.28	58.4632	4.2762	4	2.53203	126.8987	3.21136	0.8112	2.4002	23.02	4.5247	-0.019	3	1	0.4409	2.8215	23.02006
51	51.5	2.47	-1.34	4.79	51.4836	4.7976	4	2.60624	126.5003	3.27461	0.8424	2.4322	19.821	5.1235	-0.019	3	1	0.435	2.906	19.82107
52	36.6	0.8	-0.74	2.19	36.5909	2.1863	5	2.48235	117.4185	3.33332	0.8736	2.4597	13.521	2.4055	-0.028	4	1	0.4302	2.8346	13.52091
53	35.8	0.73	1.29	2.04	35.8158	2.0382	5	2.47062	116.6963	3.39167	0.9048	2.4869	13.038	2.2514	-0.025	4	1	0.4255	2.8315	13.03814
54	32	1.26	1.51	3.95	32.0185	3.9352	4	2.69272	120.4167	3.45187	0.936	2.5159	11.355	4.4107	-0.029	3	1	0.4206	3.0509	11.35454
55	30.3	0.7	2.1	2.3	30.3257	2.3083	4	2.56083	115.9834	3.50987	0.9672	2.5427	10.546	2.6104	-0.03	3	1	0.4161	2.9438	10.54634
56	38.9	1.17	4.58	3	38.9561	3.0034	4	2.55087	120.3528	3.57004	0.9984	2.5716	13.76	3.3064	-0.019	3	1	0.4115	2.9087	13.76008
57	48.3	1.85	7.13	3.82	48.3873	3.8233	4	2.55424	124.2341	3.63216	1.0296	2.6026	17.197	4.1336	-0.012	3	1	0.4066	2.8923	17.19657
58	37.4	0.97	8.96	2.59	37.5097	2.586	4	2.52059	118.8889	3.6916	1.0608	2.6308	12.855	2.8683	-0.012	3	1	0.4022	2.8963	12.85465
59	62.7	2.11	14.49	3.35	62.8774	3.3557	4	2.43399	125.8352	3.75452	1.092	2.6625	22.206	3.5688	-8E-04	4	1	0.3974	2.7661	22.20557
60	39.9	1.03	15.99	2.56	40.0957	2.5689	4	2.49671	119.4906	3.81427	1.1232	2.6911	13.482	2.8389	0.0008	3	1	0.3932	2.8768	13.48218
61	36.9	1.03	9.26	2.78	37.0133	2.7828	4	2.54571	119.2955	3.87392	1.1544	2.7195	12.186	3.1081	-0.015	3	1	0.3891	2.9354	12.18578
62	35.7	0.83	12.27	2.32	35.8502	2.3152	4	2.50493	117.638	3.93273	1.1856	2.7471	11.618	2.6005	-0.009	3	1	0.3852	2.908	11.61845
63	38.7	1.18	13.31	3.05	38.8629	3.0363	4	2.5548	120.4093	3.99294	1.2168	2.7761	12.561	3.384	-0.007	3	1	0.3811	2.9465	12.5606
64	33.6	0.85	14.78	2.51	33.7809	2.5162	4	2.54783	117.6672	4.05177	1.248	2.8038	10.603	2.8592	-0.006	3	1	0.3774	2.9641	10.60326
65	36.6	0.89	25.89	2.4	36.9169	2.4108	4	2.50628	118.2202	4.11088	1.2792	2.8317	11.585	2.7129	0.0178	3	1	0.3737	2.9194	11.58534
66	42.2	1.04	29.52	2.44	42.5613	2.4435	5	2.4629	119.7069	4.17074	1.3104	2.8603	13.422	2.709	0.0212	3	1	0.3699	2.8666	13.42171
67	36.8	0.89	30.8	2.39	37.177	2.394	4	2.50199	118.2373	4.22985	1.3416	2.8883	11.407	2.7013	0.0266	3	1	0.3664	2.9239	11.40728
68	47.1	1.59	43.7	3.34	47.6349	3.3379	4	2.51789	123.0877	4.2914	1.3728	2.9186	14.851	3.6684	0.0409	3	1	0.3625	2.9097	14.85079
69	70.2	2.23	72.12	3.13	71.0828	3.1372	5	2.37596	126.5391	4.35467	1.404	2.9507	22.615	3.3419	0.0568	4	1	0.3586	2.7418	22.61457
70	111.8	6.15	41.71	5.47	112.311	5.4759	9	2.43331	135.0775	4.42221	1.4352	2.987	36.119	5.7003	0.0145	3	1	0.3542	2.7497	36.11921
71	210.4	6.93	19.63	3.29	210.64	3.29	8	2.09501	137.28	4.49085	1.4664	3.0245	68.161	3.3616	-3E-04	5	0.8923	0.3918	2.3601	76.32643
72	221.4	7.3	2.23	3.3	221.427	3.2968	8	2.08371	137.28	4.55949	1.4976	3.0619	70.828	3.3661	-0.006	5	0.8895	0.3886	2.3481	79.6545
73	243.6	6.77	3.64	2.78	243.645	2.7786	8	1.99887	137.28	4.62813	1.5288	3.0993	77.119	2.8324	-0.005	5	0.8566	0.3983	2.257	89.96893
74	290.7	8.95	5.37	3.08	290.766	3.0781	8	1.99528	137.28	4.69677	1.56	3.1368	91.199	3.1286	-0.004	5	0.8518	0.3963	2.2397	107.1411
75	375.1	8.81	8.71	2.35	375.207	2.348	8	1.83772	137.28	4.76541	1.5912	3.1742	116.7	2.3783	-0.003	5	0.7847	0.4223	2.0588	147.8475
76	318.4	10.29	6.48	3.23	318.479	3.231	8	1.99338	137.28	4.83405	1.6224	3.2117	97.659	3.2808	-0.004	5	0.854	0.3874	2.2364	114.8408
77	263.1	9.71	7.28	3.69	263.189	3.6894	8	2.085	137.28	4.90269	1.6536	3.2491	79.495	3.7594	-0.004	4	0.9001	0.3643	2.3528	88.92111
78	247.5	9.47	7.01	3.82	247.586	3.8249	8	2.11216	137.28	4.97133	1.6848	3.2865	73.821	3.9033	-0.005	4	0.9175	0.3535	2.3914	81.0535
79	298.5	10.67	8.73	3.57	298.607	3.5733	8	2.04524	137.28	5.03997	1.716	3.324	88.318	3.6346	-0.004	5	0.8863	0.3626	2.3073	100.5933
80	260.9	8.12	8.39	3.11	261.003	3.1111	8	2.02383	137.28	5.10861	1.7472	3.3614	76.127	3.1732	-0.004	5	0.887	0.3587	2.3043	86.75109
81	251.6	8.77	7.7	3.49	251.694	3.4844	8	2.07393	137.28	5.17725	1.7784	3.3989	72.53	3.5576	-0.005	5	0.9111	0.3453	2.3632	80.455
82	209.9	7.1	7.1	3.38	209.987	3.3812	8	2.10561	137.28	5.24589	1.8096	3.4363	59.582	3.4678	-0.006	4	0.9357	0.3322	2.4208	64.26974
83	266.3	9.74	8.36	3.66	266.402	3.6561	8	2.07892	137.28	5.31453	1.8408	3.4737	75.161	3.7306	-0.005	4	0.9185	0.3356	2.3704	82.80802
84	288.5	10.09	10.05	3.5	288.623	3.4959	8	2.04443	137.28	5.38317	1.872	3.5112	80.668	3.5624	-0.004	5	0.9038	0.3382	2.33	90.53242
85	256.5	9.31	11.93	3.63	256.646	3.6276	8	2.08439	137.28	5.45181	1.9032	3.5486	70.787	3.7063	-0.004	4	0.9288	0.325	2.3885	77.15309
86	505.6	7.79	-5.78	1.54	505.529	1.541	6	1.61469	137.28	5.52045	1.9344	3.5861	139.43	1.558	-0.005	6	0.7207	0.4149	1.839	196.0785

87	253.9	7.24	-9.19	2.85	253.788	2.8528	8	1.99869	137.28	5.58909	1.9656	3.6235	68.497	2.917	-0.011	5	0.902	0.3295	2.3112	77.27755
88	321.2	9.56	-8.74	2.98	321.093	2.9773	8	1.96087	137.28	5.65773	1.9968	3.6609	86.163	3.0307	-0.008	5	0.88	0.3355	2.2486	100.007
89	353	8.84	-8.43	2.51	352.897	2.505	8	1.8754	137.28	5.72637	2.028	3.6984	93.871	2.5463	-0.008	5	0.846	0.3469	2.1546	113.8211
90	313.6	0	-8.58	0	313.495	0	0	0	769.6	6.11117	2.0592	4.052	75.86	0	-0.009	0	1	0.2611	0	0

	C-15	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	39.8	0.77	0.38	1.94	39.8047	1.9345	5	2.42058	117.3442	0.05867	0	0.0587	677.43	1.9373	0.0007	5	0.6886	2	2.1939	75.12651
2	38.6	0.83	0.46	2.14	38.6056	2.15	5	2.45968	117.8186	0.11758	0	0.1176	327.33	2.1565	0.0009	5	0.7075	2	2.2362	72.74881
3	246.7	4.69	1.2	1.9	246.715	1.901	6	1.86067	135.0138	0.18509	0	0.1851	1332	1.9024	0.0004	8	0.5065	2	1.7002	465.9819
4	285.9	8.01	2.61	2.8	285.932	2.8014	8	1.96421	137.28	0.25373	0	0.2537	1125.9	2.8039	0.0007	8	0.5568	2	1.8236	539.9793
5	83.1	3.97	3.54	4.77	83.1433	4.7749	9	2.46693	131.1415	0.3193	0	0.3193	259.39	4.7933	0.0031	9	0.7372	2	2.2889	156.5512
6	94.3	4.53	3.91	4.8	94.3479	4.8014	9	2.43413	132.4154	0.38551	0	0.3855	243.74	4.8211	0.003	9	0.7296	2	2.2609	177.6045
7	119.3	5.45	3.83	4.56	119.347	4.5665	9	2.35431	134.3415	0.45268	0	0.4527	262.65	4.5839	0.0023	9	0.7133	1.8324	2.2082	205.901
8	88.7	5	3.91	5.63	88.7479	5.6339	9	2.50507	132.9885	0.51917	0	0.5192	169.94	5.6671	0.0032	9	0.7767	1.7384	2.3679	144.9556
9	122.6	6.43	4.01	5.24	122.649	5.2426	9	2.39547	135.618	0.58698	0	0.587	207.95	5.2678	0.0024	9	0.7505	1.5562	2.2909	179.5224
10	86.8	4.96	3.82	5.72	86.8468	5.7112	9	2.51553	132.8769	0.65342	0	0.6534	131.91	5.7545	0.0032	9	0.8032	1.4728	2.4197	119.9744
11	74.5	4.66	3.75	6.25	74.5459	6.2512	9	2.58753	132.0479	0.71944	0	0.7194	102.62	6.3121	0.0037	9	0.8396	1.3825	2.5076	96.46074
12	108.9	5.59	3.85	5.13	108.947	5.1309	9	2.41856	134.3048	0.7866	0	0.7866	137.5	5.1682	0.0026	9	0.7877	1.2631	2.3632	129.1162
13	88.6	4.72	3.75	5.33	88.6459	5.3246	9	2.48613	132.564	0.85288	0	0.8529	102.94	5.3763	0.0031	9	0.8219	1.1939	2.4449	99.05892
14	96.9	4.67	3.84	4.82	96.947	4.8171	9	2.42789	132.7044	0.91923	0	0.9192	104.47	4.8632	0.0029	9	0.8091	1.1206	2.4033	101.6973
15	120.4	3.89	3.89	3.23	120.448	3.2296	5	2.23352	131.8966	0.98518	0	0.9852	121.26	3.2563	0.0023	5	0.7439	1.0546	2.224	119.0622
16	145.9	7.19	4.1	4.92	145.95	4.9263	9	2.3297	136.8597	1.05361	0	1.0536	137.52	4.9622	0.002	9	0.7888	1.0034	2.3333	137.4004
17	88.8	4.3	4.5	4.84	88.8551	4.8393	9	2.45313	131.8878	1.11955	0	1.1196	78.367	4.9011	0.0037	9	0.8455	0.9534	2.474	79.05307
18	53.4	1.91	4.52	3.57	53.4553	3.5731	4	2.50287	124.7106	1.18191	0	1.1819	44.228	3.6539	0.0062	4	0.8761	0.9076	2.5465	44.83862
19	80.5	3.3	4.29	4.1	80.5525	4.0967	4	2.42508	129.7118	1.24676	0	1.2468	63.609	4.1611	0.0039	4	0.8519	0.8696	2.4748	65.17416
20	76.6	3.37	4.36	4.4	76.6534	4.3964	4	2.46236	129.7444	1.31164	0	1.3116	57.441	4.473	0.0042	4	0.8749	0.8287	2.5271	59.00593
21	72.6	3.47	4.36	4.78	72.6534	4.7761	4	2.50481	129.8276	1.37655	0	1.3766	51.779	4.8683	0.0044	4	0.8999	0.7892	2.5848	53.16069
22	70.4	3.27	4.37	4.65	70.4535	4.6414	4	2.50416	129.3183	1.44121	0	1.4412	47.885	4.7383	0.0046	4	0.9083	0.7553	2.5986	49.26143
23	72.5	3.35	4.44	4.62	72.5544	4.6172	4	2.49408	129.5668	1.50599	0	1.506	47.177	4.7151	0.0045	4	0.9122	0.7247	2.6007	48.66257
24	31.2	1.32	4.36	4.21	31.2534	4.2236	4	2.72122	120.6981	1.56634	0	1.5663	18.953	4.4464	0.0106	3	1	0.6755	2.8802	18.95311
25	32.5	1.36	4.14	4.19	32.5507	4.1781	4	2.70507	121.0158	1.62685	0.01872	1.6081	19.23	4.3979	0.009	3	1	0.658	2.8724	19.2297
26	57.6	1.62	4.36	2.8	57.6534	2.8099	5	2.4063	123.6901	1.68869	0.04992	1.6388	34.15	2.8947	0.0047	4	0.8994	0.6747	2.5504	35.6864
27	72.3	3.01	4.59	4.16	72.3562	4.16	4	2.46082	128.7771	1.75308	0.08112	1.672	42.228	4.2633	0.0035	4	0.9202	0.6564	2.601	43.79794
28	88.3	4.41	4.9	4.99	88.36	4.991	9	2.46507	132.059	1.81911	0.11232	1.7068	50.704	5.0959	0.0028	4	0.9224	0.6434	2.6024	52.62079
29	96.2	5.43	5.05	5.64	96.2618	5.6409	9	2.48386	133.7903	1.88601	0.14352	1.7425	54.162	5.7536	0.0023	4	0.9322	0.6281	2.6238	56.02518
30	140.3	10.45	5.37	7.45	140.366	7.4448	9	2.48817	137.28	1.95465	0.17472	1.7799	77.762	7.55	0.0015	9	0.9312	0.6161	2.6166	80.59509
31	74.6	4.08	5.77	5.47	74.6706	5.464	9	2.54179	131.0794	2.02019	0.20592	1.8143	40.044	5.6159	0.0029	3	0.9679	0.5934	2.7089	40.74245
32	147.4	9.26	6.15	6.28	147.475	6.279	9	2.41447	137.28	2.08883	0.23712	1.8517	78.515	6.3692	0.0014	9	0.9098	0.601	2.5513	82.57897
33	222.7	11.84	6.85	5.32	222.784	5.3146	9	2.25824	137.28	2.15747	0.26832	1.8892	116.79	5.3665	0.001	9	0.8463	0.6123	2.3794	127.6709
34	68.3	3.95	6.89	5.78	68.3843	5.7762	4	2.58478	130.6279	2.22278	0.29952	1.9233	34.401	5.9702	0.003	3	0.9996	0.5503	2.7788	34.40827
35	80.8	4.16	6.28	5.15	80.8769	5.1436	9	2.49949	131.4162	2.28849	0.33072	1.9578	40.142	5.2934	0.0016	3	0.967	0.5515	2.6886	40.96436
36	67.3	2.93	5.91	4.35	67.3723	4.349	4	2.49586	128.4059	2.35269	0.36192	1.9908	32.661	4.5063	0.001	4	0.9743	0.5402	2.7036	33.19574
37	53	1.98	5.36	3.72	53.0656	3.7312	4	2.51846	124.9561	2.41517	0.39312	2.0221	25.049	3.9092	-1E-04	4	0.9941	0.5253	2.7508	25.14552
38	26.3	1.28	5.44	4.85	26.3666	4.8546	3	2.81651	120.0583	2.4752	0.42432	2.0509	11.649	5.3576	-0.001	3	1	0.5159	3.0946	11.64934
39	86.8	2.78	5.3	3.2	86.8649	3.2004	5	2.32303	128.6412	2.53952	0.45552	2.084	40.463	3.2968	-9E-04	4	0.9126	0.5387	2.5291	42.93275
40	92.7	2.73	5.2	2.94	92.7637	2.943	5	2.27688	128.6686	2.60385	0.48672	2.1171	42.586	3.028	-0.001	4	0.897	0.5368	2.4837	45.73884
41	321.2	5.22	5.88	1.63	321.272	1.6248	6	1.73858	136.4413	2.67207	0.51792	2.1542	147.9	1.6384	-3E-04	6	0.6635	0.6239	1.8677	187.8685
42	180.4	5.1	3.43	2.83	180.442	2.8264	5	2.07994	134.8641	2.73951	0.54912	2.1904	81.128	2.87	-0.002	5	0.8114	0.5541	2.2514	93.06172
43	32.7	1.61	-9.33	4.93	32.5858	4.9408	3	2.75481	122.2531	2.80063	0.58032	2.2203	13.415	5.4054	-0.042	3	1	0.4766	3.0497	13.41485
44	35	1.03	-9.27	2.96	34.8865	2.9524	4	2.58196	119.1512	2.86021	0.61152	2.2487	14.242	3.2161	-0.04	3	1	0.4705	2.8896	14.24223
45	38.4	1	-9.27	2.61	38.2865	2.6119	4	2.51662	119.1617	2.91979	0.64272	2.2771	15.532	2.8275	-0.037	4	1	0.4647	2.826	15.5317
46	36.5	1.61	-9.19	4.44	36.3875	4.4246	4	2.68704	122.5223	2.98105	0.67392	2.3071	14.48	4.8194	-0.04	3	1	0.4586	2.9923	14.47966
47	31.8	0.73	-9.19	2.31	31.6875	2.3038	4	2.54533	116.3976	3.03925	0.70512	2.3341	12.274	2.5482	-0.048	3	1	0.4533	2.8834	12.27364
48	33	0.8	-9.11	2.42	32.8885	2.4325	4	2.54752	117.1583	3.09783	0.73632	2.3615	12.615	2.6854	-0.047	3	1	0.4481	2.8865	12.6151
49	33.4	0.92	-9.04	2.75	33.2894	2.7637	4	2.5788	118.2105	3.15693	0.76752	2.3894	12.611	3.0532	-0.047	3	1	0.4428	2.9188	12.6108
50	47.1	1.81	-8.73	3.86	46.9931	3.8516	4	2.56551	124.0029	3.21894	0.79872	2.4202	18.087	4.1349	-0.033	3	1	0.4372	2.8755	18.08691
51	25.6	0.68	-8.42	2.67	25.4969	2.667	4	2.65882	115.3483	3.27661	0.82992	2.4467	9.0818	3.0603	-0.065	3	1	0.4325	3.0363	9.0818
52	29.4	0.82	-8.35	2.8	29.2978	2.7989	4	2.62495	117.057	3.33514	0.86112	2.474	10.494	3.1584	-0.056	3	1	0.4277	2.9924	10.49413
53	32.4	1.22	-8.19	3.78	32.2998	3.7771	4	2.67793	120.202	3.39524	0.89232	2.5029	11.548	4.2208	-0.051	3	1	0.4228	3.0334	11.54832
54	30.4	0.88	-8.12	2.91	30.3006	2.9042	4	2.62394	117.6558	3.45407	0.92352	2.5306	10.609	3.2779	-0.056	3	1	0.4181	2.9978	10.60899
55	33.2	0.75	-8.04	2.28	33.1016	2.2658	4	2.526	116.7019	3.51242	0.95472	2.5577	11.569	2.5347	-0.052	3	1	0.4137	2.9034	11.56868
56	44.8	1.61	-7.74	3.59	44.7053	3.6014	4	2.56063	123.0244	3.57393	0.98592	2.588	15.893	3.9143	-0.038	3	1	0.4089	2.904	15.89304
57	42.7	2.08	-7.58	4.88	42.6072	4.8818	4	2.66853	124.7813	3.63632	1.01712	2.6192	14.879	5.3373	-0.04	3	1	0.404	3.0117	14.87893
58	34.4	0.92	-7.5	2.68	34.3082	2.6816	4	2.56035	118.2841	3.69546	1.04832	2.6471	11.564	3.0053	-0.052	3	1	0.3997	2.9455	11.56445
59	32.1	1.01	-7.2	3.17	32.0119	3.1551	4	2.62907	118.798	3.75486	1.07952	2.6753	10.562	3.5743	-0.057	3	1	0.3955	3.0213	10.56202
60	32	1.09	-7.12	3.42	31.9129	3.4156	4	2.65273	119.3482	3.81454	1.11072	2.7038	10.392	3.8792	-0.058	3	1	0.3913	3.048	10.3921
61	32.3	0.72	-6.82	2.25	32.2165	2.2349	4	2.53151	116.3371	3.8727	1.14192	2.7308	10.379	2.5402	-0.058	3	1	0.3875	2.943	10.37937
62	34	0.78	-6.28	2.31	33.9231	2.2993	4	2.52168	117.0486	3.93123	1.17312	2.7581	10.874	2.6007	-0.054	3	1	0.3836	2.9319	10.87409
63	27.3	0.71	-6.2	2.59	27.2241	2.608	4	2.63047	115.8241	3.98914	1.20432	2.7848	8.3434	3.0557	-0.071	3	1	0.38	3.0664	8.34344
64	34.9	0.8	-6.05	2.3	34.826	2.2971	4	2.51255	117.2979	4.04779	1.23552	2.8123	10.944	2.5993	-0.054	3	1	0.3763	2.9294	10.94424
65	41.1	1.17	-5.81	2.86	41.0289	2.8517	4	2.51908	120.4793	4.10803	1.26672	2.8413	12.994	3.1689	-0.046	3	1	0.3724	2.9178	12.99431
66	41.4	1	-5.59	2.41	41.3316	2.4195	5	2.46976	119.3484	4.1677	1.29792	2.8698	12.95	2.6908	-0.046	3	1	0.3687	2.8777	12.95006
67	46.5	0.96	-5.36	2.07	46.4344	2.0674	5	2.38705	119.3336	4.22737	1.32912	2.8983	14.563	2.2745	-0.041	4	1	0.3651	2.7942	14.56293
68	56.4	1.87	-4.98	3.33	56.339	3.3192	4	2.46409	124.6839	4.28971	1.36032	2.9294	17.768	3.5928	-0.033	3	1	0.3612	2.8429	17.76797
69	88.9	4	-4.67	4.5	88.8428	4.5023	9	2.42891	131.3583	4.35539	1.39152	2.9639	28.506	4.7344	-0.02	3	1	0.357	2.7663	28.50578
70	215.3	8.79	-4.14	4.08	215.249	4.0836	8	2.16841	137.28	4.42403	1.42272	3.0013	70.244	4.1693	-0.008	4	0.9184	0.3839	2.4295	76.48061
71	175	9.37	-3.81	5.36	174.953	5.3557	9	2.31612	137.28	4.49267	1.45392	3.0388	56.096	5.4969	-0.01	4	0.986	0.3534	2.6042	56.9318
72	220.7	10.48	-3.24	4.75	220.66	4.7494	9	2.21846	137.28	4.56131	1.48512	3.0762	70.249	4.8496	-0.008	4	0.9434	0.3654	2.4865	74.62602
73	332.8	6.77	-2.81	2.03	332.766	2.0345	6	1.81155	137.28	4.62995	1.51632	3.1136	105.39	2.0632	-0.005	5	0.774	0.4337	2.0381	134.5031
74	396.5	11.88	-2.71	3	396.467	2.9965	8	1.91882	137.28	4.69859	1.54752	3.1511	124.33	3.0324	-0.004	5	0.8119	0.4123	2.1332	152.6612
75	384.3	4.16	-2.45	1.08	384.27	1.0826	6	1.5497	135.2172	4.7662	1.57872	3.1875	119.06	1.0962	-0.005	6	0.6743	0.4754	1.7665	170.5158
76	335.8	9.22	-2.41	2.74	335.771	2.7459	8	1.92073	137.28	4.83484	1.60992	3.2249	102.62	2.786	-0.005	5	0.8252	0.3987	2.1588	124.6948
77	254.6	9.3	-1.77	3.65	254.578	3.6531	8	2.08882	137.28	4.90348	1.64112	3.2624	76.532	3.7248	-0.007	4	0.9041	0.3613	2.3617	85.25843
78	301	10.73	-2.22	3.57	300.973	3.5651	8	2.04267	137.28	4.97212	1.67232	3.2998	89.703	3.625	-0.006	5	0.8829	0.3664	2.3012	102.4854
79	310.5	9.03	-2.05	2.91	310.475	2.9085	8	1.95952	137.28	5.04076	1.70352	3.3372	91.523	2.9565	-0.006	5	0.8529	0.3754	2.2177	108.3728
80	292.2	0	-2.37	0	292.171	0	0	0	769.6	5.42556	1.73472	3.6908	77.691	0	-0.007	0	1	0.2867	0	0

	C-16	In situ data										Basic output data								
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	30.5	1.19	-0.24	3.91	30.4971	3.902	4	2.70591	119.8798	0.05994	0	0.0599	507.79	3.9097	-6E-04	4	0.8022	2	2.4916	57.53122
2	26.1	0.96	-0.61	3.68	26.0925	3.6792	4	2.7399	117.9278	0.1189	0	0.1189	218.44	3.6961	-0.002	4	0.8165	2	2.5221	49.09448
3	186.1	3.58	0.14	1.92	186.102	1.9237	6	1.93972	132.3501	0.18508	0	0.1851	1004.5	1.9256	5E-05	6	0.5315	2	1.7657	351.4133
4	189.5	3.79	0.1	2	189.501	2	6	1.94793	132.8113	0.25148	0	0.2515	752.53	2.0026	4E-05	6	0.5387	2	1.7763	357.7135
5	169.8	2.85	0.38	1.68	169.805	1.6784	6	1.92013	130.458	0.31671	0	0.3167	535.15	1.6815	0.0002	6	0.5324	1.9007	1.7502	304.4461
6	190	3.68	-1.3	1.94	189.984	1.937	6	1.9364	132.602	0.38301	0	0.383	495.02	1.9409	-5E-04	6	0.5518	1.7519	1.7948	313.9254
7	219.2	3.87	-1.07	1.77	219.187	1.7656	6	1.86624	133.3191	0.44967	0	0.4497	486.44	1.7693	-4E-04	6	0.5382	1.585	1.7509	327.6494
8	234.1	4.76	-0.61	2.03	234.093	2.0334	6	1.89774	134.9942	0.51717	0	0.5172	451.64	2.0379	-2E-04	6	0.5606	1.4938	1.8012	329.7496
9	350.8	6.76	-0.35	1.93	350.796	1.9271	6	1.77938	137.28	0.58581	0	0.5858	597.82	1.9303	-7E-05	8	0.5298	1.3678	1.7117	452.7204
10	359.8	11.55	-0.46	3.21	359.794	3.2102	8	1.9651	137.28	0.65445	0	0.6545	548.77	3.216	-9E-05	8	0.6082	1.3394	1.9088	454.6004
11	182.7	9.27	20.3	5.07	182.948	5.067	9	2.28539	137.28	0.72309	0	0.7231	252.01	5.0871	0.008	9	0.7321	1.3214	2.2248	227.5731
12	133.7	4.27	19.87	3.19	133.943	3.1879	5	2.20019	132.8376	0.78951	0	0.7895	168.65	3.2068	0.0107	8	0.7064	1.2298	2.1491	154.758
13	110.8	3.58	17.77	3.22	111.018	3.2247	5	2.25559	131.0901	0.85505	0	0.8551	128.84	3.2498	0.0116	5	0.7353	1.1696	2.2172	121.7712
14	92.2	2.23	16.86	2.41	92.4064	2.4133	5	2.21487	127.179	0.91864	0	0.9186	99.59	2.4375	0.0133	5	0.728	1.1084	2.1904	95.8342
15	53.9	1.3	17.16	2.41	54.11	2.4025	5	2.37995	121.9252	0.97961	0	0.9796	54.236	2.4468	0.0233	5	0.7998	1.0636	2.3714	53.40595
16	104.1	2.95	16.85	2.83	104.306	2.8282	5	2.23006	129.5218	1.04437	0	1.0444	98.875	2.8568	0.0118	5	0.7503	1.0099	2.2334	98.5528
17	104.3	2.89	16.31	2.76	104.5	2.7656	5	2.22225	129.3759	1.10906	0	1.1091	93.224	2.7952	0.0114	5	0.7555	0.9651	2.2391	94.30205
18	91.2	3.08	16.72	3.37	91.4047	3.3696	5	2.32505	129.5153	1.17381	0	1.1738	76.87	3.4135	0.0133	5	0.8035	0.92	2.357	78.45329
19	52.3	1.74	16.47	3.31	52.5016	3.3142	4	2.48541	123.9846	1.23581	0	1.2358	41.484	3.3941	0.0231	4	0.8772	0.8727	2.5426	42.28232
20	71.6	2.88	16.39	4.02	71.8006	4.0111	4	2.45126	128.4352	1.30002	0	1.3	54.23	4.0851	0.0167	4	0.8698	0.836	2.5151	55.70414
21	66.7	1.82	16.23	2.72	66.8987	2.7205	5	2.35028	124.9046	1.36248	0	1.3625	48.101	2.7771	0.0178	5	0.8401	0.8087	2.4293	50.08533
22	35.7	1.44	15.95	4	35.8952	4.0117	4	2.66198	121.6725	1.42331	0	1.4233	24.22	4.1773	0.0333	3	0.9764	0.7486	2.7797	24.38982
23	58.4	1.52	15.85	2.6	58.594	2.5941	5	2.37725	123.2633	1.48494	0	1.4849	38.459	2.6616	0.02	4	0.8681	0.7451	2.4874	40.21721
24	47.9	1.55	15.96	3.23	48.0954	3.2228	4	2.50433	122.9248	1.54641	0	1.5464	30.101	3.3298	0.0247	4	0.928	0.7032	2.6372	30.93525
25	66.8	1.63	15.85	2.43	66.994	2.4331	5	2.31594	124.1013	1.60846	0	1.6085	40.651	2.4929	0.0175	5	0.8582	0.6981	2.4457	43.13857
26	40.9	1.16	16.08	2.81	41.0968	2.8226	4	2.51559	120.4205	1.66867	0	1.6687	23.629	2.9421	0.0294	4	0.9519	0.6482	2.6846	24.15249
27	51.9	1.54	16.14	2.94	52.0976	2.956	4	2.45331	123.0724	1.7302	0	1.7302	29.111	3.0575	0.0231	4	0.9309	0.6327	2.6217	30.11743
28	24.3	0.95	15.7	3.86	24.4922	3.8788	4	2.7757	117.6968	1.78905	0.02184	1.7672	12.847	4.1845	0.0488	3	1	0.5987	2.9945	12.84686
29	24.4	0.63	15.62	2.58	24.5912	2.5619	4	2.66045	114.7013	1.8464	0.05304	1.7934	12.683	2.7699	0.0471	3	1	0.59	2.8923	12.68276
30	18.8	1.07	15.55	5.65	18.9903	5.6345	3	2.96562	117.9467	1.90538	0.08424	1.8211	9.3815	6.2628	0.0606	3	1	0.581	3.2103	9.38149
31	44.7	1.67	14.86	3.71	44.8819	3.7209	4	2.56925	123.3017	1.96703	0.11544	1.8516	23.177	3.8914	0.0222	4	0.9952	0.573	2.7753	23.23936
32	48.4	1.9	14.95	3.91	48.583	3.9108	4	2.55995	124.4391	2.02925	0.14664	1.8826	24.728	4.0813	0.02	4	0.9938	0.5641	2.7674	24.81708
33	70.1	2.99	15.15	4.25	70.2854	4.2541	4	2.47647	128.6575	2.09357	0.17784	1.9157	35.596	4.3847	0.0134	4	0.9563	0.5669	2.6655	36.53175
34	148.9	3.72	14.93	2.49	149.083	2.4953	5	2.08815	132.0898	2.15962	0.20904	1.9506	75.323	2.5319	0.0059	5	0.7944	0.6152	2.2366	85.41691
35	75.6	2.7	4.13	3.57	75.6506	3.569	4	2.39843	128.0904	2.22366	0.24024	1.9834	37.02	3.6771	0.0008	4	0.9328	0.5565	2.5951	38.61646
36	120.3	2.86	4.44	2.38	120.354	2.3763	5	2.13225	129.6441	2.28849	0.27144	2.0171	58.534	2.4224	0.0004	5	0.823	0.588	2.3035	65.61418
37	160.5	1.83	4.61	1.14	160.556	1.1398	6	1.81426	127.0799	2.35203	0.30264	2.0494	77.196	1.1567	0.0002	6	0.6978	0.6305	1.9707	94.26329
38	114.3	2.26	4.36	1.97	114.353	1.9763	5	2.08824	127.7965	2.41592	0.33384	2.0821	53.762	2.019	-2E-04	5	0.8144	0.5762	2.2727	60.9598
39	41.5	1.3	4.27	3.12	41.5523	3.1286	4	2.54196	121.2811	2.47657	0.36504	2.1115	18.506	3.3269	-0.001	4	1	0.5011	2.8083	18.50591
40	66.5	1.43	4.13	2.15	66.5506	2.1487	5	2.28096	123.1273	2.53813	0.39624	2.1419	29.886	2.2339	-0.002	4	0.9106	0.5262	2.5163	31.83079
41	31.5	1.66	3.72	5.27	31.5455	5.2622	3	2.78398	122.3978	2.59933	0.42744	2.1719	13.328	5.7348	-0.006	3	1	0.4872	3.0683	13.32767
42	23.3	1.1	3.68	4.73	23.345	4.7119	3	2.84702	118.6525	2.65865	0.45864	2.2	9.4028	5.3175	-0.009	3	1	0.481	3.1654	9.40284
43	52.3	1.47	3.74	2.81	52.3458	2.8083	5	2.43651	122.7436	2.72003	0.48984	2.2302	22.252	2.9622	-0.004	4	0.9885	0.4785	2.7113	22.44344
44	64.5	3.86	2.14	5.98	64.5262	5.9821	4	2.61265	130.3177	2.78518	0.52104	2.2641	27.269	6.2519	-0.006	3	1	0.4673	2.8641	27.26902
45	36.9	2.01	2.14	5.45	36.9262	5.4433	3	2.74581	124.1818	2.84728	0.55224	2.295	14.849	5.8981	-0.012	3	1	0.461	3.0406	14.84897
46	36	1.29	2.14	3.59	36.0262	3.5807	4	2.62726	120.8765	2.90771	0.58344	2.3243	14.249	3.8951	-0.013	3	1	0.4552	2.9399	14.24896
47	47.3	1.59	1.99	3.36	47.3244	3.3598	4	2.5219	123.0718	2.96925	0.61464	2.3546	18.838	3.5847	-0.011	3	1	0.4494	2.8225	18.83756
48	32.3	1.28	2.18	3.97	32.3267	3.9596	4	2.69146	120.5553	3.02953	0.64584	2.3837	12.291	4.369	-0.017	3	1	0.4439	3.0212	12.29069
49	40.3	2.13	2.18	5.28	40.3267	5.2819	3	2.70971	124.8209	3.09194	0.67704	2.4149	15.419	5.7205	-0.014	3	1	0.4382	3.0195	15.41876
50	37.9	1.66	1.05	4.39	37.9129	4.3785	4	2.67107	122.8462	3.15336	0.70824	2.4451	14.216	4.7757	-0.018	3	1	0.4327	2.996	14.21586
51	54	2.05	-2.23	3.8	53.9727	3.7982	4	2.51881	125.2517	3.21599	0.73944	2.4766	20.495	4.0389	-0.018	3	1	0.4273	2.8273	20.49495
52	138.1	2.78	-4.98	2.02	138.039	2.0139	5	2.03898	129.7709	3.28087	0.77064	2.5102	53.684	2.063	-0.008	5	0.8352	0.486	2.2741	61.89615
53	144	5.34	-5.74	3.71	143.93	3.7101	8	2.23334	134.6491	3.3482	0.80184	2.5464	55.209	3.7985	-0.009	4	0.913	0.4486	2.472	59.59438
54	105.3	1.58	-5.67	1.5	105.231	1.5015	5	2.02933	124.9747	3.41068	0.83304	2.5776	39.501	1.5518	-0.012	5	0.8477	0.4701	2.2985	45.2369
55	140	1.95	-5.51	1.39	139.933	1.3935	6	1.91822	127.2093	3.47429	0.86424	2.6101	52.282	1.429	-0.009	5	0.7986	0.4863	2.1653	62.70841
56	135.1	1.62	-5.28	1.2	135.035	1.1997	6	1.88369	125.7659	3.53717	0.89544	2.6417	49.777	1.232	-0.01	5	0.7898	0.4855	2.1382	60.33276
57	90.6	1.54	-5.28	1.7	90.5354	1.701	5	2.11402	124.4202	3.59938	0.92664	2.6727	32.527	1.7714	-0.015	5	0.8962	0.4359	2.4139	35.81221
58	87.7	5.22	-5.18	5.96	87.6366	5.9564	9	2.52749	133.2728	3.66602	0.95784	2.7082	31.006	6.2165	-0.016	3	1	0.3907	2.8229	31.00629
59	63.5	3.82	-5.03	6.02	63.4384	6.0216	4	2.6196	130.2	3.73112	0.98904	2.7421	21.774	6.3979	-0.023	3	1	0.3859	2.9412	21.77447
60	19.4	1.38	-5.08	7.12	19.3378	7.1363	3	3.02904	119.8525	3.79104	1.02024	2.7708	5.6109	8.8764	-0.089	2	1	0.3819	3.4792	5.61092
61	23	1.03	-5.44	4.48	22.9334	4.4913	3	2.83901	118.128	3.85011	1.05144	2.7987	6.8187	5.3974	-0.076	3	1	0.3781	3.2804	6.81871
62	117.2	2.97	-5.48	2.54	117.133	2.5356	5	2.16118	129.8541	3.91504	1.08264	2.8324	39.972	2.6233	-0.013	5	0.9222	0.4033	2.4603	43.15334
63	53	1.45	-4.9	2.73	52.94	2.739	5	2.42552	122.6709	3.97637	1.11384	2.8625	17.105	2.9614	-0.03	4	1	0.3696	2.8044	17.10502
64	78.4	2.99	-4.52	3.82	78.3447	3.8165	4	2.40991	128.9222	4.04083	1.14504	2.8958	25.659	4.024	-0.02	4	1	0.3654	2.7525	25.65924
65	88.7	3.08	-4.15	3.47	88.6492	3.4744	5	2.34381	129.4406	4.10555	1.17624	2.9293	28.861	3.6431	-0.017	4	1	0.3612	2.6856	28.86126
66	96.5	3.15	-3.91	3.27	96.4521	3.2659	5	2.29946	129.8108	4.17046	1.20744	2.963	31.144	3.4135	-0.016	4	0.9967	0.3583	2.641	31.2519
67	113.8	4.99	-3.68	4.38	113.755	4.3866	9	2.35308	133.5793	4.23725	1.23864	2.9986	36.523	4.5563	-0.014	4	1	0.3529	2.6772	36.52285
68	95.6	4.09	-3.45	4.29	95.5578	4.2801	9	2.39184	131.6988	4.3031	1.26984	3.0333	30.085	4.482	-0.017	4	1	0.3488	2.733	30.08472
69	107.1	4.89	-3.37	4.57	107.059	4.5676	9	2.3831	133.2832	4.36974	1.30104	3.0687	33.463	4.762	-0.015	4	1	0.3448	2.7178	33.46338
70	111.5	8.3	-3.35	7.44	111.459	7.4467	9	2.54388	137.2526	4.43836	1.33224	3.1061	34.455	7.7555	-0.015	3	1	0.3407	2.8611	34.45471
71	88.1	5.23	-3.14	5.93	88.0616	5.939	9	2.52519	133.2986	4.50501	1.36344	3.1416	26.597	6.2592	-0.019	3	1	0.3368	2.8721	26.59703
72	57.2	3.54	-3.08	6.18	57.1623	6.1929	3	2.65826	129.3889	4.56971	1.39464	3.1751	16.564	6.731	-0.031	3	1	0.3333	3.0432	16.56424
73	46.7	2.37	-3.06	5.09	46.6626	5.079	4	2.65355	125.958	4.63269	1.42584	3.2069	13.106	5.6389	-0.039	3	1	0.33	3.0692	13.10628
74	51.2	2.39	-3.02	4.67	51.163	4.6713	4	2.59967	126.2441	4.69581	1.45704	3.2388	14.347	5.1434	-0.036	3	1	0.3267	3.0134	14.34718
75	98.8	5.39	-3.06	5.46	98.7626	5.4575	9	2.46569	133.7988	4.76271	1.48824	3.2745	28.707	5.7341	-0.018	3	1	0.3231	2.8218	28.70689
76	332.2	9.75	-2.5	2.94	332.169	2.9353	8	1.94813	137.28	4.83135	1.51944	3.3119	98.837	2.9786	-0.005	5	0.8434	0.382	2.1961	118.1679
77	424.6	10.01	-2.16	2.36	424.574	2.3577	8	1.813	137.28	4.89999	1.55064	3.3494	125.3	2.3852	-0.004	5	0.7848	0.4048	2.0373	160.5595
78	50.2	2.83	-2.45	5.64	50.17	5.6408	3	2.66551	127.4328	4.96371	1.58184	3.3819	13.367	6.2602	-0.039	3	1	0.3129	3.0921	13.36727
79	48.4	1.23	-2.68	2.55	48.3672	2.5431	5	2.43265	121.2465	5.02433	1.61304	3.4113	12.706	2.8378	-0.042	3	1	0.3102	2.8977	12.70572
80	77.1	4.74	-2.97	6.15	77.0637	6.1508	9	2.57302	132.2534	5.09046	1.64424	3.4462	20.885	6.5858	-0.026	3	1	0.307	2.963	20.8847
81	81.4	3.61	-2.76	4.44	81.3662	4.4367	4	2.44852	130.3933	5.15565	1.67544	3.4802	21.898	4.7369	-0.025	3	1	0.304	2.851	21.89825
82	91.2	4.61	-2.64	5.05	91.1677	5.0566	9	2.461	132.4599	5.22188	1.70664	3.5152	24.449	5.3639	-0.022	3	1	0.301	2.852	24.44947
83	57.1	3.33	-2.6	5.83	57.0682	5.8351	4	2.63923	128.9374	5.28635	1.73784	3.5485	14.593	6.4308	-0.037	3	1	0.2982	3.071	14.59255
84	102.8	5.69	-2.53	5.54	102.769	5.5367	9	2.46021	134.2921	5.3535	1.76904	3.5845	27.177	5.841	-0.02	3	1	0.2952	2.8444	27.17721
85	152.8	10.27	-2.1	6.73	152.774	6.7223	9	2.43099	137.28	5.42214	1.80024	3.6219	40.684	6.9697	-0.013	3	1	0.2921	2.7782	40.6837
86	44.2	1.91	-2.14	4.31	44.1738	4.3238	4	2.62	124.2455	5.48426	1.83144	3.6528	10.592	4.9367	-0.051	3	1	0.2897	3.1048	10.59169

87	64.5	3.15	-2.13	4.88	64.4739	4.8857	4	2.54631	128.8284	5.54867	1.86264	3.686	15.986	5.3458	-0.034	3	1	0.2871	2.9884	15.98609
88	264.9	9.63	-1.79	3.64	264.878	3.6356	8	2.07811	137.28	5.61731	1.89384	3.7235	69.629	3.7144	-0.008	4	0.9403	0.3064	2.3972	75.062
89	81.4	4.58	-1.37	5.63	81.3832	5.6277	9	2.52809	132.1352	5.68338	1.92504	3.7583	20.142	6.0502	-0.027	3	1	0.2815	2.9493	20.14182
90	87.9	4.44	-1.3	5.05	87.8841	5.0521	9	2.47066	132.0955	5.74943	1.95624	3.7932	21.653	5.4058	-0.025	3	1	0.279	2.893	21.65319

	C-17	In situ data									Basic output data									
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	24.8	0.85	-0.21	3.43	24.7974	3.4278	4	2.73689	116.9132	0.05846	0	0.0585	423.2	3.4359	-6E-04	4	0.8109	2	2.5148	46.76077
2	35.2	1.2	-0.16	3.41	35.198	3.4093	4	2.62042	120.2907	0.1186	0	0.1186	295.77	3.4208	-3E-04	4	0.7727	2	2.4071	66.30597
3	43.2	0.82	-0.49	1.89	43.194	1.8984	5	2.38777	118.0038	0.1776	0	0.1776	242.2	1.9063	-8E-04	5	0.683	2	2.1642	81.30814
4	156	2.4	-0.1	1.54	155.999	1.5385	6	1.91666	128.9937	0.2421	0	0.2421	643.35	1.5409	-5E-05	6	0.5196	2	1.7274	294.406
5	130.7	2.63	0.05	2.01	130.701	2.0122	5	2.05455	129.2318	0.30672	0	0.3067	425.13	2.017	3E-05	6	0.576	2	1.8674	246.4661
6	150	2.54	0.06	1.69	150.001	1.6933	6	1.95886	129.3129	0.37137	0	0.3714	402.91	1.6975	3E-05	6	0.5535	1.7851	1.8006	252.4387
7	173.6	3.23	0.26	1.86	173.603	1.8606	6	1.94782	131.4278	0.43709	0	0.4371	396.18	1.8653	0.0001	6	0.563	1.6451	1.8176	269.2232
8	216.5	2.17	0.71	1	216.509	1.0023	6	1.68351	129.0561	0.50161	0	0.5016	430.62	1.0046	0.0002	6	0.4764	1.4271	1.5826	291.3265
9	322.5	8.05	0.46	2.5	322.506	2.4961	8	1.89412	137.28	0.57025	0	0.5703	564.55	2.5005	0.0001	8	0.5704	1.4227	1.8202	432.8765
10	398.6	14.16	19.32	3.55	398.836	3.5503	8	1.98308	137.28	0.63889	0	0.6389	623.26	3.556	0.0035	8	0.6144	1.3634	1.9271	513.0773
11	205.7	9.04	16.01	4.39	205.896	4.3906	8	2.20533	137.28	0.70753	0	0.7075	290	4.4057	0.0056	8	0.7007	1.3258	2.1443	257.098
12	149	4.48	17.6	3	149.215	3.0024	5	2.15074	133.4522	0.77426	0	0.7743	191.72	3.018	0.0085	8	0.6862	1.239	2.098	173.8225
13	119.4	4.25	14.28	3.55	119.575	3.5543	5	2.26785	132.5265	0.84052	0	0.8405	141.26	3.5794	0.0087	8	0.7383	1.1853	2.2268	133.0017
14	92.6	2.72	13.65	2.93	92.7671	2.9321	5	2.27568	128.6419	0.90485	0	0.9049	101.52	2.961	0.0107	5	0.7493	1.1244	2.2478	97.61649
15	89.1	1.47	13.85	1.65	89.2695	1.6467	5	2.10885	124.0455	0.96687	0	0.9669	91.329	1.6647	0.0113	5	0.6942	1.0646	2.0957	88.84446
16	82.9	2.15	10.91	2.59	83.0335	2.5893	5	2.26909	126.6508	1.03019	0	1.0302	79.6	2.6218	0.0096	5	0.7638	1.0206	2.2706	79.09883
17	77.6	2.68	11.74	3.45	77.7437	3.4472	5	2.3793	128.1026	1.09424	0	1.0942	70.048	3.4964	0.011	4	0.8146	0.973	2.396	70.48531
18	79.5	1.4	11.38	1.76	79.6393	1.7579	5	2.16452	123.4101	1.15595	0	1.156	67.895	1.7838	0.0104	5	0.7408	0.9366	2.1945	69.4697
19	53.9	1.87	10.78	3.45	54.032	3.4609	4	2.48977	124.5819	1.21824	0	1.2182	43.352	3.5408	0.0147	4	0.8761	0.8839	2.542	44.11602
20	47.8	1.93	10.76	4.03	47.9317	4.0266	4	2.57306	124.5208	1.2805	0	1.2805	36.432	4.1371	0.0166	4	0.9179	0.8394	2.6439	37.00738
21	39.7	0.64	10.76	1.61	39.8317	1.6068	5	2.37102	115.9928	1.3385	0	1.3385	28.759	1.6626	0.0201	5	0.8513	0.8186	2.4617	29.78143
22	51.6	1.36	10.68	2.63	51.7307	2.629	5	2.42076	122.1456	1.39957	0	1.3996	35.962	2.7021	0.0153	4	0.8752	0.7829	2.5168	37.2394
23	46.2	1.21	10.76	2.61	46.3317	2.6116	5	2.45427	121.0217	1.46008	0	1.4601	30.732	2.6966	0.0173	4	0.8979	0.7489	2.5688	31.75979
24	42.7	1.12	10.65	2.62	42.8304	2.615	4	2.48017	120.2645	1.52021	0	1.5202	27.174	2.7112	0.0186	4	0.9174	0.7172	2.6124	28.00012
25	34.1	1.06	10.53	3.09	34.2289	3.0968	4	2.6018	119.3149	1.57987	0	1.5799	20.666	3.2467	0.0232	4	0.9767	0.676	2.761	20.85979
26	60.7	2.38	10.82	3.9	60.8324	3.9124	4	2.49207	126.6356	1.64319	0	1.6432	36.021	4.021	0.0132	4	0.9315	0.6637	2.6343	37.12365
27	49.5	2.89	10.79	5.81	49.6321	5.8229	3	2.67887	127.56	1.70697	0	1.707	28.076	6.0302	0.0162	3	1	0.6199	2.844	28.07615
28	27.3	1.63	2.81	5.98	27.3344	5.9632	3	2.86645	121.9149	1.76793	0.0312	1.7367	14.721	6.3755	0.0067	3	1	0.6093	3.0656	14.72107
29	23.2	0.92	2.93	3.95	23.2359	3.9594	3	2.79888	117.3336	1.82659	0.0624	1.7642	12.135	4.2972	0.0069	3	1	0.5998	3.0211	12.13545
30	24.9	0.84	2.95	3.38	24.9361	3.3686	4	2.73019	116.8402	1.88501	0.0936	1.7914	12.868	3.6441	0.0052	3	1	0.5907	2.9574	12.86755
31	87.2	2.86	2.8	3.28	87.2343	3.2785	5	2.32959	128.8591	1.94944	0.1248	1.8246	46.741	3.3535	0.0009	4	0.8846	0.6175	2.488	49.77382
32	58.3	3.14	2.99	5.38	58.3366	5.3826	4	2.6066	128.5612	2.01372	0.156	1.8577	30.318	5.575	0.0011	3	1	0.5696	2.7963	30.31823
33	81.2	3.93	3.11	4.83	81.2381	4.8376	9	2.47773	131.0109	2.07923	0.1872	1.892	41.838	4.9647	0.0005	4	0.9506	0.5755	2.6536	43.05614
34	75.6	2.15	3.03	2.84	75.6371	2.8425	5	2.32639	126.4233	2.14244	0.2184	1.924	38.198	2.9254	0	4	0.8984	0.5844	2.5117	40.59086
35	141	2.14	3.11	1.51	141.038	1.5173	6	1.94231	127.9088	2.20639	0.2496	1.9568	70.949	1.5414	-2E-04	5	0.7403	0.6344	2.0938	83.23163
36	216.9	2.38	3.39	1.1	216.941	1.0971	6	1.7116	129.7368	2.27126	0.2808	1.9905	107.85	1.1087	-2E-04	6	0.6463	0.6647	1.8427	134.861
37	139.7	2.5	3.49	1.79	139.743	1.789	6	1.99723	129.024	2.33577	0.312	2.0238	67.896	1.8194	-4E-04	5	0.7686	0.6075	2.1597	78.8892
38	67.9	2.75	-5.97	4.06	67.8269	4.0544	4	2.4713	127.9584	2.39975	0.3432	2.0566	31.814	4.2032	-0.012	4	0.9724	0.524	2.6904	32.40347
39	32.3	0.99	-5.85	3.06	32.2284	3.0718	4	2.61927	118.6681	2.45909	0.3744	2.0847	14.28	3.3256	-0.027	3	1	0.5076	2.8973	14.27998
40	88.9	2.86	-6.03	3.22	88.8262	3.2198	5	2.3185	128.9032	2.52354	0.4056	2.1179	40.748	3.3139	-0.01	4	0.9139	0.5304	2.5283	43.2572
41	31.8	1.78	-6	5.63	31.7266	5.6104	3	2.80168	122.9224	2.585	0.4368	2.1482	13.566	6.1081	-0.03	3	1	0.4926	3.0802	13.56556
42	34.3	2.27	-6	6.64	34.2266	6.6323	3	2.83031	124.8867	2.64744	0.468	2.1794	14.49	7.1883	-0.029	3	1	0.4855	3.1054	14.48953
43	83.4	5.64	-5.92	6.77	83.3275	6.7685	9	2.5848	133.7161	2.7143	0.4992	2.2151	36.393	6.9964	-0.011	3	1	0.4777	2.8121	36.39256
44	36	2.59	-5.85	7.2	35.9284	7.2088	3	2.84211	125.97	2.77729	0.5304	2.2469	14.754	7.8127	-0.029	3	1	0.4709	3.1239	14.75424
45	20.3	1.21	-5.87	5.99	20.2282	5.9818	3	2.96263	119.0004	2.83679	0.5616	2.2752	7.6439	6.9575	-0.057	3	1	0.4651	3.3083	7.64393
46	38.2	1.01	-5.92	2.66	38.1275	2.649	4	2.52198	119.2244	2.8964	0.5928	2.3036	15.294	2.8668	-0.029	4	1	0.4593	2.835	15.29395
47	79.1	2.89	-5.92	3.65	79.0275	3.657	4	2.39356	128.6945	2.96075	0.624	2.3368	32.552	3.7993	-0.014	4	0.971	0.4634	2.6517	33.31019
48	42.2	2.34	-5.77	5.54	42.1294	5.5543	3	2.71228	125.6156	3.02355	0.6552	2.3684	16.512	5.9838	-0.027	3	1	0.4468	3.01	16.51181
49	31.7	1.84	-5.77	5.84	31.6294	5.8174	3	2.8137	123.1575	3.08513	0.6864	2.3987	11.9	6.4461	-0.039	3	1	0.4411	3.1387	11.89971
50	32.1	1.92	-5.77	6.02	32.0294	5.9945	3	2.81905	123.4996	3.14688	0.7176	2.4293	11.889	6.6476	-0.039	3	1	0.4356	3.1477	11.88931
51	88.5	2.18	-5.69	2.47	88.4304	2.4652	5	2.23476	126.9058	3.21034	0.7488	2.4615	34.621	2.5581	-0.014	4	0.9209	0.4596	2.5033	37.01255
52	150.1	2.42	-5.54	1.61	150.032	1.613	6	1.94324	128.9593	3.27482	0.78	2.4948	58.825	1.649	-0.008	5	0.7943	0.506	2.1685	70.17502
53	126.7	5.83	-5.16	4.6	126.637	4.6037	9	2.34173	134.9793	3.34231	0.8112	2.5311	48.712	4.7285	-0.01	4	0.9568	0.4341	2.5901	50.5809
54	105.6	2.82	-5.16	2.68	105.537	2.6721	5	2.20824	129.2206	3.40692	0.8424	2.5645	39.824	2.7612	-0.012	4	0.9158	0.4445	2.477	42.90519
55	169.4	3.88	-5.01	2.29	169.339	2.2913	5	2.02455	132.7087	3.47327	0.8736	2.5997	63.802	2.3393	-0.007	5	0.8321	0.4733	2.2548	74.19755
56	132.8	2.05	-5.01	1.55	132.739	1.5444	6	1.96614	127.4465	3.53699	0.9048	2.6322	49.085	1.5867	-0.01	5	0.8211	0.4732	2.2217	57.77769
57	98.7	4.77	-4.92	4.84	98.6398	4.8358	9	2.42455	132.9016	3.60344	0.936	2.6674	35.628	5.0191	-0.014	3	1	0.3967	2.7145	35.62824
58	132.8	5.92	-4.7	4.46	132.742	4.4598	9	2.31849	135.2063	3.67105	0.9672	2.7039	47.736	4.5866	-0.01	4	0.964	0.4048	2.5877	49.37444
59	29.1	1.53	-5.01	5.26	29.0387	5.2688	3	2.81024	121.5991	3.73185	0.9984	2.7335	9.2582	6.0458	-0.054	3	1	0.3871	3.2052	9.25821
60	27.5	1.58	-5.01	5.78	27.4387	5.7583	3	2.85471	121.6962	3.79269	1.0296	2.7631	8.5578	6.6819	-0.059	3	1	0.3829	3.259	8.55779
61	184.4	1.4	-4.93	0.76	184.34	0.7595	6	1.64965	125.457	3.85542	1.0608	2.7946	64.583	0.7757	-0.008	6	0.7043	0.5046	1.8943	86.06396
62	55.7	3	-4.77	5.38	55.6416	5.3917	4	2.62082	128.1121	3.91948	1.092	2.8275	18.293	5.8002	-0.028	3	1	0.3742	2.9678	18.29266
63	83.4	2.13	-4.24	2.56	83.3481	2.5556	5	2.26385	126.5917	3.98278	1.1232	2.8596	27.754	2.6838	-0.018	4	0.9781	0.3782	2.6053	28.36651
64	86.7	3.25	-4.09	3.75	86.6499	3.7507	4	2.37536	129.7781	4.04766	1.1544	2.8933	28.55	3.9345	-0.018	4	1	0.3657	2.7114	28.54985
65	77	2.83	-4.01	3.68	76.9509	3.6777	4	2.40311	128.476	4.1119	1.1856	2.9263	24.891	3.8853	-0.02	4	1	0.3616	2.7523	24.89114
66	75.2	2.62	-3.9	3.48	75.1523	3.4863	4	2.39285	127.8542	4.17583	1.2168	2.959	23.986	3.6914	-0.021	4	1	0.3576	2.75	23.98639
67	81.8	2.9	-3.78	3.55	81.7537	3.5472	5	2.37388	128.8025	4.24023	1.248	2.9922	25.905	3.7413	-0.02	4	1	0.3536	2.7285	25.90492
68	114.3	6.5	-3.63	5.69	114.256	5.689	9	2.44228	135.5244	4.30799	1.2792	3.0288	36.301	5.9119	-0.014	3	1	0.3494	2.7596	36.30079
69	114.3	5.43	-3.4	4.75	114.258	4.7524	9	2.37954	134.2084	4.3751	1.3104	3.0647	35.855	4.9416	-0.014	4	1	0.3453	2.7077	35.85453
70	84.5	3.6	-3.17	4.26	84.4612	4.2623	4	2.42475	130.4641	4.44033	1.3416	3.0987	25.824	4.4988	-0.02	3	1	0.3415	2.7828	25.82377
71	82.5	4.78	-3.17	5.8	82.4612	5.7967	9	2.53455	132.48	4.50657	1.3728	3.1338	24.876	6.1318	-0.021	3	1	0.3377	2.8867	24.87568
72	52	2.6	-3.25	5	51.9602	5.0038	4	2.61688	126.898	4.57002	1.404	3.166	14.968	5.4864	-0.035	3	1	0.3342	3.0175	14.96839
73	38	2.01	-3.25	5.28	37.9602	5.295	3	2.72885	124.2491	4.63214	1.4352	3.1969	10.425	6.031	-0.05	3	1	0.331	3.1644	10.42498
74	48.4	3.3	-2.84	6.82	48.3652	6.8231	3	2.73769	128.4676	4.69638	1.4664	3.23	13.52	7.5569	-0.038	3	1	0.3276	3.1423	13.51987
75	318.1	8.21	-2.41	2.58	318.071	2.5812	8	1.90969	137.28	4.76502	1.4976	3.2674	95.888	2.6205	-0.005	5	0.8266	0.3938	2.1572	116.5964
76	270.5	11.82	-1.64	4.37	270.48	4.37	8	2.14245	137.28	4.83366	1.5288	3.3049	80.381	4.4495	-0.006	9	0.9268	0.348	2.414	87.36495
77	71.3	3.89	-1.97	5.46	71.2759	5.4577	4	2.55435	130.617	4.89897	1.56	3.339	19.879	5.8605	-0.026	3	1	0.3169	2.9441	19.87949
78	40	1.15	-2.02	2.87	39.9753	2.8768	4	2.53006	120.2897	4.95911	1.5912	3.3679	10.397	3.2842	-0.05	3	1	0.3142	3.0055	10.397
79	53	2.88	-1.94	5.43	52.9763	5.4364	4	2.63775	127.6936	5.02296	1.6224	3.4006	14.102	6.0058	-0.037	3	1	0.3112	3.0627	14.1016
80	67.2	3.44	-2.17	5.12	67.1734	5.1211	4	2.54999	129.5728	5.08774	1.6536	3.4341	18.079	5.5407	-0.029	3	1	0.3081	2.9584	18.07895
81	62.6	2.93	-1.94	4.68	62.5763	4.6823	4	2.54115	128.2258	5.15186	1.6848	3.4671	16.563	5.1024	-0.032	3	1	0.3052	2.9636	16.56287
82	63.3	2.78	-1.94	4.4	63.2763	4.3934	4	2.51739	127.8684	5.21579	1.716	3.4998	16.59	4.7881	-0.032	3	1	0.3023	2.9451	16.5897
83	84.3	4.46	-2	5.29	84.2755	5.2922	9	2.49779	132.0261	5.2818	1.7472	3.5346	22.349	5.646	-0.024	3	1	0.2994	2.8958	22.34868
84	99.4	5.38	-1.79	5.42	99.3781	5.4137	9	2.46127	133.8004	5.3487	1.7784	3.5703	26.337	5.7216	-0.02	3	1	0.2964	2.8479	26.33653
85	76.6	4.02	-1.81	5.25	76.5779	5.2496	9	2.52142	131.0325	5.41422	1.8096	3.6046	19.742	5.649	-0.027	3	1	0.2935	2.9356	19.74234
86	57.3	2.83	-1.79	4.94	57.2781	4.9408	4	2.58422	127.7559	5.4781	1.8408	3.6373	14.241	5.4633	-0.038	3	1	0.2909	3.0328	14.24134

87	161.5	9.19	-1.56	5.69	161.481	5.6911	9	2.35717	137.28	5.54674	1.872	3.6747	42.434	5.8935	-0.013	3	1	0.2879	2.7121	42.4341
88	71.5	3.51	-1.41	4.92	71.4827	4.9103	4	2.51853	129.8719	5.61167	1.9032	3.7085	17.762	5.3286	-0.03	3	1	0.2853	2.953	17.76231
89	63.1	3.2	-1.26	5.07	63.0846	5.0726	4	2.5648	128.8905	5.67612	1.9344	3.7417	15.343	5.5741	-0.035	3	1	0.2828	3.0138	15.3428
90	36.3	1.63	-1.49	4.49	36.2818	4.4926	4	2.69256	122.6055	5.73742	1.9656	3.7718	8.098	5.3365	-0.068	3	1	0.2805	3.2177	8.09803
91	62.2	2.4	-1.29	3.86	62.1842	3.8595	4	2.48122	126.7505	5.8008	1.9968	3.804	14.822	4.2566	-0.037	3	1	0.2782	2.9504	14.82215
92	40.4	2.58	-1.33	6.38	40.3837	6.3887	3	2.76913	126.2268	5.86391	2.028	3.8359	8.9991	7.474	-0.062	3	1	0.2758	3.273	8.99912
93	53.9	2.46	-1.18	4.57	53.8856	4.5652	4	2.57697	126.5818	5.9272	2.0592	3.868	12.399	5.1295	-0.045	3	1	0.2736	3.0616	12.39874
94	49	1.58	-1.1	3.22	48.9865	3.2254	4	2.49881	123.1098	5.98876	2.0904	3.8984	11.03	3.6746	-0.05	3	1	0.2714	3.0132	11.02972
95	55	1.74	-0.97	3.16	54.9881	3.1643	4	2.45699	124.0975	6.0508	2.1216	3.9292	12.455	3.5556	-0.045	3	1	0.2693	2.9623	12.45477
96	95.6	5.9	-0.73	6.17	95.5911	6.1721	9	2.51682	134.3807	6.118	2.1528	3.9652	22.565	6.5942	-0.025	3	1	0.2669	2.9391	22.56461
97	131.8	9.87	-0.36	7.49	131.796	7.4889	9	2.50523	137.28	6.18664	2.184	4.0026	31.382	7.8577	-0.018	3	1	0.2644	2.8928	31.38157
98	117.3	9.36	-0.11	7.98	117.299	7.9796	9	2.55619	137.28	6.25528	2.2152	4.0401	27.485	8.4291	-0.02	3	1	0.2619	2.9545	27.48547
99	71.7	3.39	0.2	4.72	71.7025	4.7279	4	2.50521	129.6248	6.32009	2.2464	4.0737	16.05	5.1849	-0.034	3	1	0.2597	2.9785	16.04992
100	73	4.15	0.2	5.68	73.0025	5.6847	9	2.5613	131.1487	6.38566	2.2776	4.1081	16.216	6.2297	-0.034	3	1	0.2576	3.0275	16.21611

	C-18	In situ data									Basic output data									
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	30.8	1.01	0.38	3.28	30.8047	3.2787	4	2.65261	118.7042	0.05935	0	0.0594	518.02	3.2851	0.0009	4	0.7802	2	2.4342	58.11373
2	90.6	4.25	0.65	4.69	90.608	4.6905	9	2.43725	131.8499	0.12528	0	0.1253	722.26	4.697	0.0005	9	0.7171	2	2.2603	171.0273
3	30.2	1.2	0.71	3.98	30.2087	3.9724	4	2.71417	119.9178	0.18524	0	0.1852	162.08	3.9969	0.0017	4	0.8123	2	2.5027	56.74932
4	243.1	0	0.55	0	243.107	0	0	0	769.6	0.57004	0	0.57	425.48	0	0.0002	0	1	1.8562	0	0

	C-18A	In situ data									Basic output data									
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	30.5	1.11	-0.4	3.65	30.4951	3.6399	4	2.68581	119.3704	0.05969	0	0.0597	509.93	3.6471	-1E-03	4	0.7938	2	2.4698	57.528
2	108.1	3.99	0.08	3.69	108.101	3.691	5	2.30814	131.8185	0.12559	0	0.1256	859.71	3.6953	5E-05	8	0.6679	2	2.1311	204.0914
3	22.3	1.3	0.23	5.84	22.3028	5.8289	3	2.9238	119.7635	0.18548	0	0.1855	119.25	5.8777	0.0008	3	0.8934	2	2.7157	41.80545

	C-18C	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	31.7	1.16	-1.04	3.65	31.6873	3.6608	4	2.67502	119.7863	0.05989	0	0.0599	528.06	3.6677	-0.002	4	0.7901	2	2.46	59.781
2	31.7	1.24	-0.67	3.92	31.6918	3.9127	4	2.69433	120.2746	0.12003	0	0.12	263.03	3.9276	-0.002	4	0.8014	2	2.4822	59.67589
3	18.4	0.76	-1.22	4.11	18.3851	4.1338	3	2.88883	115.3645	0.17771	0	0.1777	102.45	4.1741	-0.005	4	0.8754	2	2.6693	34.41493
4	109.8	2.33	-0.29	2.12	109.796	2.1221	5	2.12284	127.9205	0.24167	0	0.2417	453.32	2.1268	-2E-04	6	0.5969	2	1.9305	207.0767
5	90.2	2.7	0.66	2.99	90.2081	2.9931	5	2.29046	128.5196	0.30593	0	0.3059	293.86	3.0033	0.0005	8	0.6654	2	2.1021	169.93
6	191.5	4.04	-1.29	2.11	191.484	2.1098	6	1.96332	133.3041	0.37258	0	0.3726	512.93	2.114	-5E-04	6	0.5604	1.7949	1.8186	324.188
7	227.6	5.31	-1.84	2.33	227.577	2.3333	6	1.95328	135.7254	0.44045	0	0.4405	515.7	2.3378	-6E-04	8	0.5704	1.6487	1.8365	353.9041
8	229.1	5.18	-1.53	2.26	229.081	2.2612	6	1.94055	135.5601	0.50823	0	0.5082	449.75	2.2662	-5E-04	8	0.5753	1.5248	1.8408	329.3812
9	149.5	3.79	-0.05	2.54	149.499	2.5351	5	2.09272	132.233	0.57434	0	0.5743	259.3	2.5449	-2E-05	5	0.6364	1.4752	1.9929	207.6337
10	295.8	9.11	0	3.08	295.8	3.0798	8	1.99165	137.28	0.64298	0	0.643	459.04	3.0865	0	8	0.6149	1.3584	1.9279	378.9187
11	215.4	8.69	4.05	4.03	215.45	4.0334	8	2.16366	137.28	0.71162	0	0.7116	301.76	4.0468	0.0014	8	0.6855	1.3125	2.1046	266.3615
12	110.5	5.85	0.92	5.29	110.511	5.2936	9	2.42568	134.6722	0.77896	0	0.779	140.87	5.3312	0.0006	9	0.7894	1.2735	2.3686	132.0722
13	106.9	4.87	0.77	4.55	106.909	4.5553	9	2.38255	133.2498	0.84559	0	0.8456	125.43	4.5916	0.0005	9	0.7821	1.1917	2.3413	119.4518
14	72	2.33	0.54	3.23	72.0066	3.2358	5	2.38183	126.8916	0.90903	0	0.909	78.213	3.2772	0.0006	5	0.7899	1.1275	2.3541	75.75692
15	92.3	4.38	0.54	4.75	92.3066	4.7451	9	2.43608	132.1157	0.97509	0	0.9751	93.665	4.7957	0.0004	9	0.8198	1.0693	2.4244	92.29571
16	127.4	4.52	0.15	3.55	127.402	3.5478	8	2.25013	133.1318	1.04165	0	1.0417	121.31	3.5771	9E-05	8	0.7572	1.0119	2.252	120.8465
17	99.1	3.77	0.15	3.8	99.1018	3.8042	4	2.34228	131.1916	1.10725	0	1.1073	88.503	3.8472	0.0001	4	0.8012	0.9643	2.3593	89.30492
18	76.5	3.24	0.15	4.23	76.5018	4.2352	4	2.45067	129.4517	1.17198	0	1.172	64.276	4.3011	0.0001	4	0.8523	0.9166	2.4852	65.25395
19	63.3	2.94	-0.15	4.64	63.2982	4.6447	4	2.53522	128.2787	1.23612	0	1.2361	50.207	4.7372	-2E-04	4	0.8945	0.8702	2.5881	51.03779
20	50.5	2.21	-0.18	4.37	50.4978	4.3764	4	2.58309	125.6393	1.29894	0	1.2989	37.876	4.492	-3E-04	4	0.9237	0.8275	2.6568	38.47385
21	69.5	2.39	-0.19	3.45	69.4977	3.439	4	2.41164	126.9911	1.36243	0	1.3624	50.01	3.5077	-2E-04	4	0.8631	0.804	2.4897	51.77147
22	40.7	1.04	-0.46	2.56	40.6944	2.5556	4	2.49037	119.5975	1.42223	0	1.4222	27.613	2.6482	-8E-04	4	0.9085	0.7644	2.6016	28.37027
23	70.6	2.25	-0.44	3.19	70.5946	3.1872	5	2.383	126.5876	1.48552	0	1.4855	46.522	3.2557	-5E-04	4	0.8676	0.745	2.4861	48.6592
24	78.8	2.43	-0.38	3.09	78.7954	3.0839	5	2.33982	127.4188	1.54923	0	1.5492	49.861	3.1458	-4E-04	4	0.8574	0.7212	2.4512	52.64719
25	45.9	1.3	-0.46	2.83	45.8944	2.8326	4	2.48098	121.5235	1.60999	0	1.61	27.506	2.9356	-8E-04	4	0.9284	0.6773	2.6304	28.34472
26	41.2	1.99	-0.46	4.84	41.1944	4.8308	4	2.67554	124.3754	1.67218	0	1.6722	23.635	5.0352	-8E-04	3	1	0.6328	2.8442	23.6351
27	19.7	0.98	-0.46	4.97	19.6944	4.976	3	2.91809	117.3926	1.73088	0	1.7309	10.378	5.4555	-0.002	3	1	0.6113	3.1386	10.37825
28	13.7	0.53	-0.61	3.87	13.6925	3.8707	3	2.97128	112.0085	1.78688	0.0234	1.7635	6.7512	4.4517	-0.006	3	1	0.6	3.2349	6.75122
29	22.8	1.14	-0.69	5	22.7916	5.0019	3	2.87207	118.8554	1.84631	0.0546	1.7917	11.69	5.4428	-0.005	3	1	0.5906	3.0977	11.69008
30	49	1.99	-0.62	4.06	48.9924	4.0619	4	2.56907	124.7982	1.90871	0.0858	1.8229	25.829	4.2265	-0.003	3	0.9887	0.584	2.7625	25.98792
31	73.9	3.18	-0.77	4.31	73.8906	4.3037	4	2.46585	129.2302	1.97332	0.117	1.8563	38.742	4.4218	-0.002	4	0.9438	0.5883	2.6401	39.98435
32	38.4	2.43	-0.69	6.34	38.3916	6.3295	3	2.78122	125.6651	2.03616	0.1482	1.888	19.256	6.684	-0.005	3	1	0.5605	2.993	19.25647
33	138.4	3.82	-0.49	2.76	138.394	2.7602	5	2.14254	132.1025	2.10221	0.1794	1.9228	70.882	2.8028	-0.002	5	0.8139	0.615	2.2912	79.2176
34	85.6	2.84	-0.38	3.32	85.5954	3.3179	5	2.33896	128.7615	2.16659	0.2106	1.956	42.653	3.4041	-0.003	4	0.9039	0.5739	2.5222	45.24802
35	128	2.97	-0.31	2.32	127.996	2.3204	5	2.10682	130.0704	2.23162	0.2418	1.9898	63.204	2.3616	-0.002	5	0.8089	0.6	2.2699	71.30984
36	97.5	3.46	-0.23	3.55	97.4972	3.5488	5	2.32376	130.5239	2.29689	0.273	2.0239	47.038	3.6344	-0.003	4	0.9027	0.5569	2.5107	50.10175
37	109.3	1.66	-0.15	1.52	109.298	1.5188	6	2.02086	125.4286	2.3596	0.3042	2.0554	52.028	1.5523	-0.003	5	0.7867	0.5931	2.2033	59.94388
38	33.7	1.55	-0.23	4.61	33.6972	4.5998	4	2.72278	122.057	2.42063	0.3354	2.0852	14.999	4.9558	-0.011	3	1	0.5074	2.9883	14.9991
39	43.6	1.82	-0.23	4.17	43.5972	4.1746	4	2.61326	123.8602	2.48256	0.3666	2.116	19.431	4.4267	-0.009	3	1	0.5001	2.8708	19.43073
40	42.4	2.07	-0.46	4.9	42.3944	4.8827	4	2.67011	124.7338	2.54493	0.3978	2.1471	18.559	5.1946	-0.011	3	1	0.4928	2.9313	18.55943
41	28.1	1.55	-0.54	5.51	28.0934	5.5173	3	2.83446	121.6134	2.60573	0.429	2.1767	11.709	6.0814	-0.018	3	1	0.4861	3.1278	11.70913
42	31	1.56	-0.54	5.03	30.9934	5.0333	3	2.77607	121.9001	2.66668	0.4602	2.2065	12.838	5.5072	-0.018	3	1	0.4796	3.0695	12.83795
43	68.7	4.96	-0.51	7.21	68.6938	7.2205	9	2.65859	132.305	2.73284	0.4914	2.2414	29.428	7.5196	-0.008	3	1	0.4721	2.8981	29.42798
44	23.7	1.69	-0.61	7.13	23.6925	7.1331	3	2.96522	121.8306	2.79375	0.5226	2.2712	9.2019	8.0866	-0.027	3	1	0.4659	3.2876	9.20185
45	27	1.48	-0.61	5.48	26.9925	5.483	3	2.84515	121.1778	2.85434	0.5538	2.3005	10.492	6.1314	-0.025	3	1	0.4599	3.1668	10.49241
46	53.4	1.53	-0.61	2.86	53.3925	2.8656	5	2.43629	123.0846	2.91588	0.585	2.3309	21.656	3.0311	-0.012	4	1	0.454	2.7297	21.6556
47	31	1.57	-0.61	5.07	30.9925	5.0657	3	2.77801	121.9468	2.97686	0.6162	2.3607	11.868	5.604	-0.024	3	1	0.4482	3.1007	11.86776
48	31	1.84	-0.61	5.95	30.9925	5.9369	3	2.8262	123.1079	3.03841	0.6474	2.391	11.691	6.5822	-0.025	3	1	0.4425	3.1504	11.69135
49	25	0.81	-0.61	3.26	24.9925	3.241	4	2.71873	116.5796	3.0967	0.6786	2.4181	9.055	3.6993	-0.033	3	1	0.4376	3.0843	9.05498
50	53.6	2.47	-0.69	4.62	53.5916	4.6089	4	2.58161	126.5981	3.16	0.7098	2.4502	20.583	4.8977	-0.015	3	1	0.4319	2.8807	20.58265
51	137.8	2.62	-0.52	1.9	137.794	1.9014	5	2.02091	129.3328	3.22466	0.741	2.4837	54.182	1.947	-0.006	5	0.8256	0.4944	2.2521	62.87437
52	170.3	4.61	-0.32	2.7	170.296	2.7071	5	2.08008	133.9838	3.29166	0.7722	2.5195	66.286	2.7604	-0.005	5	0.8453	0.4803	2.2995	75.80575
53	87.5	5.38	0.08	6.15	87.501	6.1485	9	2.53879	133.4899	3.3584	0.8034	2.555	32.933	6.3939	-0.009	3	1	0.4141	2.8135	32.9325
54	109.1	1.82	0.15	1.67	109.102	1.6682	5	2.04988	126.0975	3.42145	0.8346	2.5869	40.853	1.7222	-0.008	5	0.8553	0.4655	2.3172	46.4946
55	105	4.7	0.25	4.47	105.003	4.4761	9	2.38138	132.9459	3.48792	0.8658	2.6221	38.715	4.6299	-0.008	4	0.9878	0.408	2.6608	39.1466
56	143.3	3.59	0.23	2.51	143.303	2.5052	5	2.10039	131.7331	3.55379	0.897	2.6568	52.601	2.5689	-0.006	5	0.8724	0.4479	2.3536	59.1573
57	85.2	6.71	0.3	7.87	85.2037	7.8753	9	2.63152	135.0414	3.62131	0.9282	2.6931	30.293	8.2248	-0.011	3	1	0.3929	2.9178	30.29299
58	48.3	3.79	0.38	7.86	48.3047	7.846	3	2.78385	129.4776	3.68605	0.9594	2.7267	16.364	8.4942	-0.021	3	1	0.3881	3.1159	16.3639
59	25.1	1.35	0.08	5.36	25.101	5.3783	3	2.8624	120.3279	3.74621	0.9906	2.7556	7.7496	6.3218	-0.046	3	1	0.384	3.2778	7.74955
60	24.7	1.75	0	7.05	24.7	7.085	3	2.95026	122.1875	3.80731	1.0218	2.7855	7.5005	8.3761	-0.049	3	1	0.3799	3.3654	7.5005
61	393	5.88	0.23	1.5	393.003	1.4962	6	1.66019	137.28	3.87595	1.053	2.823	137.84	1.5111	-0.003	6	0.6852	0.5105	1.8411	187.7397
62	74	2.29	0.84	3.09	74.0103	3.0942	5	2.35952	126.8318	3.93936	1.0842	2.8552	24.542	3.2681	-0.015	4	1	0.3706	2.7082	24.54183
63	74.7	2.6	1.07	3.48	74.7131	3.48	4	2.394	127.7838	4.00325	1.1154	2.8879	24.485	3.677	-0.015	4	1	0.3664	2.7421	24.48525
64	69.7	2.35	1.15	3.37	69.7141	3.3709	4	2.40439	126.8752	4.06669	1.1466	2.9201	22.481	3.5797	-0.016	4	1	0.3624	2.7628	22.48127
65	69.7	2.36	1.23	3.39	69.7151	3.3852	4	2.40573	126.9063	4.13015	1.1778	2.9524	22.215	3.5984	-0.017	4	1	0.3584	2.7683	22.21451
66	70.8	2.35	1.3	3.31	70.8159	3.3185	5	2.39477	126.9134	4.1936	1.209	2.9846	22.322	3.5274	-0.017	4	1	0.3545	2.7611	22.32201
67	71.7	2.82	1.38	3.93	71.7169	3.9321	4	2.44518	128.2783	4.25774	1.2402	3.0175	22.356	4.1803	-0.017	3	1	0.3507	2.8084	22.35567
68	95.9	4.73	1.73	4.93	95.9212	4.9311	9	2.43872	132.7719	4.32413	1.2714	3.0527	30.005	5.1639	-0.013	3	1	0.3466	2.7763	30.00499
69	117.6	5.61	1.91	4.77	117.623	4.7695	9	2.3732	134.5178	4.39139	1.3026	3.0888	36.659	4.9544	-0.01	4	1	0.3426	2.7017	36.65906
70	66.7	3.48	2.07	5.22	66.7253	5.2154	4	2.55789	129.6411	4.45621	1.3338	3.1224	19.943	5.5886	-0.019	3	1	0.3389	2.9292	19.94267
71	55.5	2.83	2.22	5.1	55.5272	5.0966	4	2.60327	127.6802	4.52005	1.365	3.1551	16.167	5.5482	-0.024	3	1	0.3354	2.9953	16.16684
72	63.6	3.67	2.3	5.76	63.6282	5.7679	4	2.60452	129.9141	4.585	1.3962	3.1888	18.516	6.2158	-0.021	3	1	0.3318	2.9841	18.51577
73	44.2	2.8	2.37	6.33	44.229	6.3307	3	2.73942	127.0474	4.64853	1.4274	3.2211	12.288	7.0742	-0.032	3	1	0.3285	3.1544	12.28777
74	81.3	5.03	2.53	6.18	81.331	6.1846	9	2.56033	132.8194	4.71494	1.4586	3.2563	23.528	6.5652	-0.017	3	1	0.3249	2.9247	23.52829
75	233.8	10.27	2.83	4.39	233.835	4.392	8	2.17636	137.28	4.78358	1.4898	3.2938	69.541	4.4837	-0.006	4	0.9446	0.3421	2.4626	74.05222
76	102.5	5.58	3.29	5.45	102.54	5.4418	9	2.45481	134.1438	4.85065	1.521	3.3297	29.339	5.712	-0.013	3	1	0.3178	2.8139	29.33932
77	46.4	1.27	3.22	2.74	46.4394	2.7348	4	2.46691	121.3815	4.91134	1.5522	3.3591	12.363	3.0582	-0.032	3	1	0.315	2.9263	12.36271
78	48.8	1.74	3.14	3.56	48.8384	3.5628	4	2.52983	123.8082	4.97324	1.5834	3.3898	12.94	3.9667	-0.031	3	1	0.3121	2.9778	12.94018
79	91.3	5.16	3.29	5.65	91.3403	5.6492	9	2.4983	133.2892	5.03989	1.6146	3.4253	25.195	5.9791	-0.016	3	1	0.3089	2.8751	25.19507
80	87.8	4.52	3.6	5.14	87.8441	5.1455	9	2.47698	132.225	5.106	1.6458	3.4602	23.911	5.463	-0.017	3	1	0.3058	2.8645	23.91135

	C-19	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	30.9	1.28	-0.66	4.15	30.8919	4.1435	4	2.71931	120.4446	0.06022	0	0.0602	511.96	4.1516	-0.002	4	0.808	2	2.5069	58.27704
2	25.4	1.14	0.46	4.5	25.4056	4.4872	3	2.80548	119.1202	0.11978	0	0.1198	211.1	4.5085	0.0013	4	0.8432	2	2.592	47.79446
3	23.4	0.96	-2.87	4.1	23.3649	4.1087	3	2.80753	117.6585	0.17861	0	0.1786	129.81	4.1404	-0.009	4	0.8459	2	2.5918	43.82588
4	57.6	1.35	-0.28	2.34	57.5966	2.3439	5	2.35268	122.3536	0.23979	0	0.2398	239.2	2.3537	-4E-04	5	0.6778	2	2.1431	108.4139
5	23	0.38	0	1.65	23	1.6522	4	2.57232	110.839	0.29521	0	0.2952	76.911	1.6737	0	5	0.7542	2	2.3367	42.91583
6	59	0.95	0	1.61	59	1.6102	5	2.23764	119.8412	0.35513	0	0.3551	165.14	1.6199	0	5	0.6359	2	2.0186	110.8486
7	42.5	1.01	-0.08	2.38	42.499	2.3765	5	2.45551	119.4891	0.41487	0	0.4149	101.44	2.4	-1E-04	5	0.7254	1.9722	2.2456	78.43999
8	57	1.24	0	2.18	57	2.1754	5	2.33428	121.7063	0.47573	0	0.4757	118.82	2.1938	0	5	0.6973	1.7461	2.1652	93.27774
9	97.9	2.2	0.03	2.25	97.9004	2.2472	5	2.17515	127.2207	0.53934	0	0.5393	180.52	2.2596	2E-05	5	0.6566	1.5565	2.0504	143.2222
10	314.4	10.71	2.11	3.41	314.426	3.4062	8	2.01606	137.28	0.60798	0	0.608	516.17	3.4128	0.0005	8	0.6208	1.4105	1.9476	418.3391
11	113.3	6.16	3.38	5.43	113.341	5.4349	9	2.42833	135.1117	0.67553	0	0.6755	166.78	5.4675	0.0022	9	0.7759	1.4165	2.3454	150.8255
12	134.6	5.88	2.83	4.36	134.635	4.3674	9	2.30752	135.1912	0.74313	0	0.7431	180.17	4.3916	0.0015	9	0.7409	1.2993	2.2455	164.4102
13	119.3	4.22	2.6	3.54	119.332	3.5364	5	2.26669	132.4697	0.80936	0	0.8094	146.44	3.5605	0.0016	8	0.7337	1.2173	2.2184	136.3511
14	131.8	4.33	2.53	3.28	131.831	3.2845	5	2.21464	132.9009	0.87581	0	0.8758	149.52	3.3065	0.0014	8	0.723	1.1465	2.1823	141.893
15	144.9	4.81	2.62	3.31	144.932	3.3188	8	2.19292	133.9012	0.94276	0	0.9428	152.73	3.3405	0.0013	8	0.7233	1.0871	2.175	147.9298
16	112.8	4.81	2.6	4.26	112.832	4.263	9	2.34544	133.2906	1.00941	0	1.0094	110.78	4.3015	0.0017	9	0.7896	1.0379	2.341	109.6874
17	98.2	4.12	2.53	4.19	98.231	4.1942	9	2.37744	131.8196	1.07532	0	1.0753	90.351	4.2406	0.0019	9	0.8106	0.987	2.3878	90.62714
18	75.2	3.99	2.57	5.3	75.2315	5.3036	9	2.52977	130.9344	1.14079	0	1.1408	64.947	5.3853	0.0025	4	0.8784	0.9361	2.5576	65.54417
19	69.2	2.49	1.95	3.6	69.2239	3.597	4	2.42706	127.2814	1.20443	0	1.2044	56.475	3.6607	0.0021	4	0.8483	0.896	2.4706	57.59553
20	79.6	3.66	2.07	4.6	79.6253	4.5965	4	2.46632	130.4412	1.26965	0	1.2697	61.715	4.671	0.0019	4	0.8706	0.8533	2.5213	63.18682
21	44.3	2.32	1.99	5.24	44.3244	5.2341	4	2.6784	125.6766	1.33249	0	1.3325	32.264	5.3964	0.0033	3	0.9664	0.8003	2.7648	32.5155
22	61.2	2.42	1.68	3.95	61.2206	3.9529	4	2.49343	126.7731	1.39587	0	1.3959	42.858	4.0452	0.002	4	0.9002	0.7793	2.583	44.06003
23	81.7	2.73	1.76	3.35	81.7215	3.3406	5	2.35463	128.3595	1.46005	0	1.4601	54.972	3.4014	0.0016	4	0.8516	0.7602	2.4473	57.66178
24	60.7	2.86	1.76	4.71	60.7215	4.71	4	2.5518	127.9755	1.52404	0	1.524	38.842	4.8313	0.0021	4	0.9392	0.7099	2.6695	39.71372
25	57.2	2.51	1.68	4.38	57.2206	4.3865	4	2.54649	126.8755	1.58748	0	1.5875	35.045	4.5117	0.0022	4	0.9463	0.6812	2.6803	35.81648
26	30.9	1.25	1.68	4.05	30.9206	4.0426	4	2.7118	120.2733	1.64761	0	1.6476	17.767	4.2702	0.0041	3	1	0.6422	2.8904	17.76687
27	14.9	0.53	1.61	3.56	14.9197	3.5524	3	2.91902	112.2178	1.70372	0.01872	1.685	7.8433	4.0103	0.0074	3	1	0.628	3.1555	7.8433
28	30.2	0.78	1.3	2.57	30.2159	2.5814	4	2.59236	116.7664	1.76211	0.04992	1.7122	16.618	2.7413	0.0015	4	0.9956	0.6193	2.7937	16.65385
29	22.9	0.51	1.3	2.24	22.9159	2.2255	4	2.64811	112.983	1.8186	0.08112	1.7375	12.142	2.4174	0.0006	4	1	0.609	2.8744	12.14249
30	63.1	2.46	1.3	3.9	63.1159	3.8976	4	2.47991	126.9674	1.88208	0.11232	1.7698	34.6	4.0174	-3E-04	4	0.9423	0.6159	2.6468	35.64287
31	85.7	3	0.99	3.49	85.7121	3.5001	5	2.35589	129.1659	1.94666	0.14352	1.8031	46.455	3.5814	-9E-04	4	0.8926	0.6214	2.5118	49.19288
32	63.2	3.05	-0.38	4.83	63.1954	4.8263	4	2.54811	128.5435	2.01094	0.17472	1.8362	33.321	4.9849	-0.003	3	0.9766	0.5837	2.729	33.75315
33	89.2	3.46	-1.3	3.88	89.1841	3.8796	4	2.37832	130.3065	2.07609	0.20592	1.8702	46.578	3.9721	-0.003	4	0.9082	0.5962	2.5444	49.07846
34	111.8	2.13	-1.08	1.9	111.787	1.9054	5	2.08358	127.3077	2.13974	0.23712	1.9026	57.629	1.9426	-0.003	5	0.7936	0.6277	2.2406	65.04765
35	162.5	2.46	-1.07	1.52	162.487	1.514	6	1.89954	129.2738	2.20438	0.26832	1.9361	82.788	1.5348	-0.002	5	0.7189	0.6477	2.0402	98.11325
36	161.3	2.09	-1.3	1.3	161.284	1.2959	6	1.85254	128.063	2.26841	0.29952	1.9689	80.764	1.3143	-0.002	6	0.7044	0.6457	1.9979	97.03991
37	50.7	0.91	-2.56	1.79	50.6687	1.796	5	2.31882	119.1551	2.32799	0.33072	1.9973	24.203	1.8825	-0.011	4	0.9155	0.559	2.5474	25.53792
38	41.6	1.25	-2.68	3	41.5672	3.0072	4	2.53028	120.995	2.38849	0.36192	2.0266	19.333	3.1905	-0.014	4	1	0.5221	2.7821	19.33255
39	75.8	2.92	-2.91	3.85	75.7644	3.8541	4	2.42276	128.6672	2.45282	0.39312	2.0597	35.593	3.983	-0.008	4	0.9514	0.5306	2.6345	36.76547
40	35	2.2	-2.98	6.3	34.9635	6.2923	3	2.80743	124.7094	2.51518	0.42432	2.0909	15.519	6.78	-0.02	3	1	0.5061	3.0663	15.51918
41	42.1	2.56	-3.06	6.09	42.0626	6.0862	3	2.74165	126.2692	2.57831	0.45552	2.1228	18.6	6.4836	-0.017	3	1	0.4985	2.9951	18.60016
42	64.8	4.01	-3.06	6.18	64.7626	6.1919	3	2.62309	130.6055	2.64361	0.48672	2.1569	28.8	6.4554	-0.011	3	1	0.4906	2.8571	28.8002
43	43.6	2.87	-3.14	6.59	43.5616	6.5884	3	2.75667	127.191	2.70721	0.51792	2.1893	18.661	7.025	-0.018	3	1	0.4833	3.0178	18.66103
44	24.6	1.53	-3.21	6.21	24.5607	6.2295	3	2.91308	121.1906	2.7678	0.54912	2.2187	9.8225	7.0206	-0.036	3	1	0.4769	3.2264	9.82245
45	49.4	1.85	-3.21	3.74	49.3607	3.7479	4	2.54201	124.2827	2.82994	0.58032	2.2496	20.684	3.9759	-0.017	3	1	0.4704	2.8199	20.68379
46	37	2.38	-3.24	6.44	36.9603	6.4393	3	2.79799	125.4203	2.89265	0.61152	2.2811	14.935	6.9861	-0.025	3	1	0.4639	3.0874	14.93454
47	33.4	2.04	-3.22	6.11	33.3606	6.115	3	2.81276	124.0425	2.95468	0.64272	2.312	13.152	6.7092	-0.029	3	1	0.4577	3.1171	13.1516
48	48.7	2.56	-3.23	5.27	48.6605	5.2609	4	2.65222	126.6246	3.01799	0.67392	2.3441	19.471	5.6088	-0.02	3	1	0.4514	2.9379	19.47148
49	80.8	2.3	-3.19	2.84	80.761	2.8479	5	2.3073	127.0766	3.08153	0.70512	2.3764	32.688	2.9609	-0.012	4	0.9421	0.4666	2.5703	34.25568
50	92.8	5.35	-3.06	5.77	92.7626	5.7674	9	2.5013	133.5914	3.14832	0.73632	2.412	37.153	5.97	-0.011	3	1	0.4387	2.7557	37.15346
51	72.6	5.24	-2.91	7.23	72.5644	7.2212	9	2.64385	132.8405	3.21474	0.76752	2.4472	28.338	7.5559	-0.014	3	1	0.4324	2.911	28.3381
52	120	2.31	-2.83	1.92	119.965	1.9256	5	2.06573	128.0735	3.27878	0.79872	2.4801	47.05	1.9797	-0.009	5	0.847	0.486	2.3088	53.59855
53	113.2	5.27	-2.76	4.66	113.166	4.6569	9	2.37505	133.9661	3.34576	0.82992	2.5158	43.652	4.7987	-0.009	4	0.9717	0.431	2.6314	44.7345
54	82.8	1.59	-2.76	1.92	82.7662	1.9211	5	2.17866	124.4352	3.40798	0.86112	2.5469	31.159	2.0036	-0.013	5	0.9116	0.449	2.4678	33.67461
55	77.1	2.3	-2.68	2.98	77.0672	2.9844	5	2.33605	126.9624	3.47146	0.89232	2.5791	28.535	3.1252	-0.015	4	0.9776	0.4185	2.6391	29.10987
56	51.1	3.09	-2.83	6.06	51.0654	6.0511	3	2.68302	128.119	3.53552	0.92352	2.612	18.197	6.5012	-0.024	3	1	0.4051	3.0029	18.19672
57	45.7	3.13	-2.76	6.85	45.6662	6.8541	3	2.75571	127.9406	3.59949	0.95472	2.6448	15.906	7.4406	-0.027	3	1	0.4001	3.0856	15.90562
58	21.5	1.19	-2.83	5.53	21.4654	5.5438	3	2.92134	119.0232	3.659	0.98592	2.6731	6.6614	6.683	-0.067	3	1	0.3958	3.3445	6.66136
59	286.7	3.79	-2.91	1.32	286.664	1.3221	6	1.69549	133.8209	3.72591	1.01712	2.7088	104.45	1.3395	-0.004	6	0.6991	0.5183	1.8917	138.5989
60	60.8	2.75	-2.76	4.53	60.7662	4.5255	4	2.53874	127.6903	3.78976	1.04832	2.7414	20.783	4.8266	-0.022	3	1	0.386	2.8734	20.78342
61	61.9	2.16	-2.45	3.5	61.87	3.4912	4	2.45121	125.9672	3.85274	1.07952	2.7732	20.921	3.723	-0.022	3	1	0.3815	2.7977	20.92053
62	61.5	2.27	-2.37	3.69	61.471	3.6928	4	2.47075	126.3149	3.9159	1.11072	2.8052	20.517	3.9441	-0.022	3	1	0.3772	2.8203	20.51744
63	62	2.14	-2.37	3.45	61.971	3.4532	4	2.44731	125.9031	3.97885	1.14192	2.8369	20.442	3.6902	-0.023	3	1	0.373	2.803	20.44186
64	63.2	2.51	-2.37	3.98	63.171	3.9733	4	2.48576	127.1168	4.04241	1.17312	2.8693	20.607	4.245	-0.023	3	1	0.3688	2.8395	20.6074
65	74.7	3.68	-2.39	4.93	74.6708	4.9283	4	2.50745	130.3244	4.10757	1.20432	2.9033	24.305	5.2152	-0.02	3	1	0.3645	2.8456	24.30488
66	87.1	3.86	-2.3	4.44	87.0719	4.4331	4	2.42931	131.0485	4.1731	1.23552	2.9376	28.22	4.6563	-0.017	3	1	0.3602	2.7646	28.22013
67	83.6	4.09	-2.14	4.9	83.5738	4.8939	9	2.47374	131.372	4.23878	1.26672	2.9721	26.694	5.1554	-0.018	3	1	0.356	2.8125	26.6936
68	119.4	5.93	-1.91	4.97	119.377	4.9675	9	2.38353	134.9598	4.30626	1.29792	3.0083	38.25	5.1534	-0.012	3	1	0.3517	2.701	38.25043
69	67.6	3.86	-1.99	5.71	67.5756	5.7121	4	2.58439	130.4303	4.37148	1.32912	3.0424	20.775	6.1072	-0.023	3	1	0.3478	2.9422	20.77474
70	51.4	3.33	-1.97	6.48	51.3759	6.4816	3	2.70362	128.6811	4.43582	1.36032	3.0755	15.263	7.0942	-0.032	3	1	0.344	3.0848	15.2626
71	28.5	1.41	-2.07	4.94	28.4747	4.9518	3	2.79789	120.9536	4.49629	1.39152	3.1048	7.7231	5.8803	-0.064	3	1	0.3408	3.2597	7.72306
72	67.3	4.28	-2.07	6.36	67.2747	6.362	9	2.62159	131.1751	4.56188	1.42272	3.1392	19.978	6.8248	-0.025	3	1	0.3371	2.9876	19.97756
73	103	6.43	-2.03	6.25	102.975	6.2442	9	2.50158	135.1916	4.62948	1.45392	3.1756	30.97	6.5382	-0.016	3	1	0.3332	2.839	30.96958
74	53.7	2.51	-1.91	4.69	53.6766	4.6762	4	2.58573	126.7195	4.69284	1.48512	3.2077	15.271	5.1241	-0.033	3	1	0.3299	2.9916	15.27061
75	34.7	1.61	-1.84	4.65	34.6775	4.6428	4	2.7166	122.4049	4.75404	1.51632	3.2377	9.2421	5.3804	-0.055	3	1	0.3268	3.1744	9.24213
76	41.9	1.8	-2.14	4.3	41.8738	4.2986	4	2.63466	123.681	4.81588	1.54752	3.2684	11.338	4.8573	-0.046	3	1	0.3237	3.0771	11.33839
77	86.8	4.53	-1.99	5.22	86.7756	5.2204	9	2.4852	132.2113	4.88199	1.57872	3.3033	24.792	5.5316	-0.021	3	1	0.3203	2.8568	24.79173
78	78	3.69	-1.88	4.73	77.977	4.7322	4	2.48183	130.4499	4.94721	1.60992	3.3373	21.883	5.0527	-0.024	3	1	0.3171	2.8699	21.88295
79	63	3.05	-1.84	4.85	62.9775	4.843	4	2.55023	128.5351	5.01148	1.64112	3.3704	17.199	5.2617	-0.031	3	1	0.314	2.9599	17.19877
80	42.2	0	-1.77	0	42.1783	0	0	0	769.6	5.39628	1.67232	3.724	9.8771	0	-0.049	0	1	0.2841	0	0

	C-20	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	43.7	1.67	-0.17	3.81	43.6979	3.8217	4	2.58567	123.2365	0.06162	0	0.0616	708.17	3.8271	-3E-04	4	0.7597	2	2.38	82.47986
2	23.8	1.27	-3.61	5.33	23.7558	5.3461	3	2.87819	119.7466	0.12149	0	0.1215	194.53	5.3735	-0.011	4	0.8721	2	2.6675	44.6728
3	18.3	0.91	-1.29	4.98	18.2842	4.977	3	2.94255	116.6691	0.17983	0	0.1798	100.68	5.0264	-0.005	3	0.8976	2	2.7273	34.2203
4	20.2	0.51	-1.1	2.5	20.1865	2.5264	4	2.72512	112.6737	0.23616	0	0.2362	84.477	2.5563	-0.004	4	0.8125	2	2.4969	37.70952
5	22.5	0.44	-0.98	1.95	22.488	1.9566	4	2.62208	111.8568	0.29209	0	0.2921	75.99	1.9824	-0.003	5	0.7746	2	2.3904	41.95397
6	27.3	0.45	-0.37	1.66	27.2955	1.6486	5	2.51048	112.4938	0.34834	0	0.3483	77.359	1.6699	-1E-03	5	0.7344	2	2.2781	50.93456
7	21.4	0.53	-0.23	2.47	21.3972	2.477	4	2.6997	113.0972	0.40489	0	0.4049	51.847	2.5247	-8E-04	4	0.8127	2	2.4767	39.67893
8	27.4	0.58	-0.15	2.14	27.3982	2.1169	4	2.57287	114.3598	0.46207	0	0.4621	58.295	2.1532	-4E-04	5	0.7742	1.8993	2.3665	48.34943
9	265.4	5.79	0.36	2.18	265.404	2.1816	6	1.89103	136.7336	0.53043	0	0.5304	499.35	2.186	0.0001	8	0.5616	1.4738	1.8022	368.9274
10	261.1	10.44	-4.4	4	261.046	3.9993	8	2.11691	137.28	0.59907	0	0.5991	434.75	4.0085	-0.001	8	0.6557	1.4521	2.0405	357.4268
11	151.6	5.69	-3.53	3.75	151.557	3.7544	8	2.22415	135.2396	0.66669	0	0.6667	226.33	3.771	-0.002	8	0.6995	1.3814	2.1469	196.9895
12	97.2	5.12	-3.41	5.27	97.1583	5.2698	9	2.458	133.3828	0.73338	0	0.7334	131.48	5.3098	-0.003	9	0.7944	1.338	2.3871	121.9351
13	112.2	4.34	-3.67	3.87	112.155	3.8696	8	2.31406	132.5236	0.79965	0	0.7997	139.26	3.8974	-0.002	8	0.75	1.2338	2.2626	129.84
14	132.5	4.18	-3.83	3.15	132.453	3.1558	5	2.19978	132.6544	0.86597	0	0.866	151.95	3.1766	-0.002	5	0.7161	1.1543	2.1654	143.5488
15	115.9	3.87	-3.83	3.34	115.853	3.3404	5	2.25556	131.764	0.93186	0	0.9319	123.33	3.3675	-0.002	5	0.7455	1.0994	2.2346	119.4005
16	120.8	5.2	-4.08	4.31	120.75	4.3064	9	2.33095	134.0265	0.99887	0	0.9989	119.89	4.3423	-0.002	9	0.7827	1.0461	2.3242	118.3954
17	152.7	5.83	-3.98	3.82	152.651	3.8192	8	2.22831	135.435	1.06659	0	1.0666	142.12	3.846	-0.002	8	0.7516	0.994	2.2341	142.4034
18	118.5	5.41	-3.87	4.57	118.453	4.5672	9	2.35633	134.2693	1.13372	0	1.1337	103.48	4.6114	-0.002	9	0.8092	0.9457	2.3769	104.8532
19	110.6	4.26	-3.98	3.85	110.551	3.8534	5	2.31655	132.3523	1.1999	0	1.1999	91.134	3.8957	-0.003	4	0.8024	0.904	2.3509	93.42651
20	94	3.97	-4.06	4.23	93.9503	4.2256	9	2.39221	131.4396	1.26562	0	1.2656	73.233	4.2833	-0.003	4	0.8405	0.8603	2.4426	75.35466
21	84.6	2.33	-4.06	2.76	84.5503	2.7558	5	2.28324	127.2833	1.32926	0	1.3293	62.607	2.7998	-0.004	5	0.8078	0.8317	2.3486	65.41374
22	105.5	2.98	-4.44	2.83	105.446	2.8261	5	2.2267	129.6223	1.39407	0	1.3941	74.639	2.864	-0.003	5	0.7919	0.8038	2.2986	79.04792
23	82.8	3.14	-4.36	3.79	82.7466	3.7947	4	2.39234	129.4137	1.45878	0	1.4588	55.723	3.8628	-0.004	4	0.8657	0.7573	2.4845	58.179
24	51.2	2.32	-4.36	4.53	51.1466	4.536	4	2.5905	126.0258	1.52179	0	1.5218	32.61	4.6751	-0.006	4	0.9565	0.7064	2.7153	33.12878
25	89.5	3.38	-4.52	3.78	89.4447	3.7789	4	2.36882	130.1425	1.58686	0	1.5869	55.366	3.8471	-0.004	4	0.871	0.7026	2.4824	58.33629
26	26	1.13	-4.59	4.36	25.9438	4.3556	3	2.79007	119.1068	1.64641	0.01248	1.6339	14.87	4.6507	-0.014	3	1	0.6476	2.9736	14.87049
27	26.9	1.1	-4.67	4.08	26.8428	4.0979	4	2.76142	118.993	1.70591	0.04368	1.6622	15.122	4.376	-0.015	3	1	0.6366	2.9512	15.12241
28	23.1	1.17	-4.9	5.1	23.04	5.0781	3	2.87297	119.0719	1.76545	0.07488	1.6906	12.584	5.4995	-0.02	3	1	0.6259	3.0758	12.58429
29	34.9	1.22	-4.94	3.51	34.8395	3.5018	4	2.6315	120.3866	1.82564	0.10608	1.7196	19.199	3.6954	-0.014	3	1	0.6153	2.8244	19.19904
30	70.8	2.55	-4.9	3.6	70.74	3.6048	4	2.42134	127.5085	1.88939	0.13728	1.7521	39.296	3.7037	-0.007	4	0.9155	0.6302	2.5784	41.00753
31	84.5	3.26	-4.98	3.86	84.439	3.8608	4	2.39221	129.7375	1.95426	0.16848	1.7858	46.19	3.9522	-0.006	4	0.9048	0.6228	2.5462	48.54932
32	83.1	3.1	-4.9	3.73	83.04	3.7331	4	2.38598	129.3285	2.01893	0.19968	1.8193	44.536	3.8262	-0.007	4	0.9068	0.6118	2.5471	46.84381
33	34.7	2.01	-4.82	5.81	34.641	5.8024	3	2.78505	124.0259	2.08094	0.23088	1.8501	17.599	6.1732	-0.018	3	1	0.5719	2.9984	17.59946
34	79.8	2.36	-4.75	2.96	79.7419	2.9596	5	2.32323	127.2341	2.14456	0.26208	1.8825	41.221	3.0413	-0.008	4	0.8913	0.5984	2.4982	43.88597
35	158.3	1.88	-4.67	1.19	158.243	1.1881	6	1.83143	127.2418	2.20818	0.29328	1.9149	81.485	1.2049	-0.004	6	0.6912	0.6637	1.97	97.86615
36	95.5	1.6	-4.67	1.68	95.4428	1.6764	5	2.09304	124.8286	2.27059	0.32448	1.9461	47.876	1.7173	-0.007	5	0.8057	0.612	2.2669	53.89259
37	31.1	0.92	-4.71	2.95	31.0424	2.9637	4	2.62157	118.0401	2.32961	0.35568	1.9739	14.546	3.2042	-0.024	3	1	0.536	2.8812	14.54596
38	30.9	1.35	-4.75	4.37	30.8419	4.3772	4	2.73599	120.8302	2.39003	0.38688	2.0032	14.204	4.7449	-0.026	3	1	0.5282	2.9945	14.20356
39	32.6	1.42	-4.75	4.37	32.5419	4.3636	4	2.71803	121.331	2.45069	0.41808	2.0326	14.804	4.719	-0.025	3	1	0.5206	2.9791	14.80418
40	33.8	2.15	-4.9	6.37	33.74	6.3723	3	2.82213	124.4543	2.51292	0.44928	2.0636	15.132	6.885	-0.026	3	1	0.5127	3.0789	15.13205
41	52	3.06	-4.9	5.89	51.94	5.8914	3	2.66944	128.0891	2.57696	0.48048	2.0965	23.546	6.199	-0.017	3	1	0.5047	2.9071	23.54563
42	29.3	1.79	-4.82	6.11	29.241	6.1215	3	2.8535	122.7644	2.63835	0.51168	2.1267	12.509	6.7287	-0.032	3	1	0.4975	3.1343	12.50908
43	19.2	1.07	-5.1	5.59	19.1376	5.5911	3	2.96088	117.9655	2.69733	0.54288	2.1545	7.6308	6.5084	-0.055	3	1	0.4911	3.2909	7.63083
44	25.8	1.31	-5.05	5.1	25.7382	5.0897	3	2.83813	120.169	2.75741	0.57408	2.1833	10.526	5.7004	-0.041	3	1	0.4846	3.1458	10.52554
45	43.1	1.59	-5.08	3.69	43.0378	3.6944	4	2.5802	122.8402	2.81883	0.60528	2.2136	18.169	3.9534	-0.024	3	1	0.478	2.8615	18.16941
46	34.6	2.62	-4.98	7.6	34.539	7.5856	3	2.86998	125.9581	2.88181	0.63648	2.2453	14.099	8.2762	-0.031	3	1	0.4713	3.1554	14.09912
47	30.9	1.91	-5.12	6.21	30.8373	6.1938	3	2.84074	123.3689	2.9435	0.66768	2.2758	12.257	6.8474	-0.037	3	1	0.4649	3.146	12.25662
48	68.7	2.91	-5.05	4.24	68.6382	4.2396	4	2.48223	128.4012	3.0077	0.69888	2.3088	28.426	4.4339	-0.016	3	1	0.4583	2.7478	28.42601
49	125.5	6.25	-4.9	4.98	125.44	4.9825	9	2.37185	135.4652	3.07543	0.73008	2.3454	52.173	5.1077	-0.009	4	0.9495	0.4697	2.594	54.31377
50	81.5	4.81	-4.54	5.9	81.4444	5.9059	9	2.54425	132.4955	3.14168	0.76128	2.3804	32.895	6.1428	-0.014	3	1	0.4445	2.8013	32.8948
51	168.9	3.79	-4.44	2.24	168.846	2.2447	5	2.01839	132.5299	3.20794	0.79248	2.4155	68.574	2.2881	-0.007	5	0.8118	0.5117	2.2245	80.0968
52	137.4	5.93	-4.27	4.32	137.348	4.3175	9	2.29838	135.3018	3.27559	0.82368	2.4519	54.681	4.423	-0.008	4	0.9298	0.4578	2.5285	58.00457
53	115.5	2.12	-4.18	1.83	115.449	1.8363	5	2.06231	127.3518	3.33927	0.85488	2.4844	45.126	1.891	-0.01	5	0.8475	0.4851	2.3096	51.39717
54	115.6	4.4	-4.13	3.81	115.549	3.8079	8	2.30052	132.6968	3.40562	0.88608	2.5195	44.51	3.9235	-0.011	4	0.9432	0.4412	2.5554	46.75864
55	47	2.86	-3.98	6.09	46.9513	6.0914	3	2.70958	127.3482	3.46929	0.91728	2.552	17.038	6.5774	-0.028	3	1	0.4146	3.0274	17.03831
56	41.4	3.17	-4.36	7.69	41.3466	7.6669	3	2.82075	127.7911	3.53319	0.94848	2.5847	14.63	8.3833	-0.033	3	1	0.4094	3.1474	14.62967
57	92.3	1.94	-4.43	2.1	92.2458	2.1031	5	2.17256	126.1554	3.59627	0.97968	2.6166	33.88	2.1884	-0.015	5	0.9131	0.4375	2.463	36.65307
58	543.6	0	-6.87	0	543.516	0	0	0	769.6	3.98107	1.01088	2.9702	181.65	0	-0.003	0	1	0.3562	0	0

	C-21	In situ data			Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	69.8	1.12	0.69	1.61	69.8085	1.6044	5	2.18084	121.456	0.06073	0	0.0607	1148.5	1.6058	0.0007	6	0.6009	2	1.9634	131.8348
2	19.2	1.05	-0.17	5.49	19.1979	5.4693	3	2.95352	117.8351	0.11965	0	0.1197	159.46	5.5036	-6E-04	3	0.8993	2	2.7393	36.06111
3	39.5	0.86	-0.83	2.18	39.4898	2.1778	5	2.4556	118.1337	0.17871	0	0.1787	219.97	2.1877	-0.002	5	0.7096	2	2.2339	74.30457
4	105.4	2.13	0.52	2.02	105.406	2.0208	5	2.11967	127.1643	0.24229	0	0.2423	434.03	2.0254	0.0004	6	0.5946	2	1.9243	198.7776
5	57.4	1.06	0.44	1.85	57.4054	1.8465	5	2.28505	120.576	0.30258	0	0.3026	188.72	1.8563	0.0006	5	0.6526	2	2.069	107.9338
6	50.1	0.94	0.2	1.88	50.1025	1.8762	5	2.33467	119.365	0.36227	0	0.3623	137.3	1.8898	0.0003	5	0.6735	2	2.1165	94.01721
7	82.7	1.9	0.14	2.29	82.7017	2.2974	5	2.23323	125.7366	0.42513	0	0.4251	193.53	2.3093	0.0001	5	0.6554	1.8177	2.0613	141.3415
8	84.9	2.41	0.14	2.84	84.9017	2.8386	5	2.29138	127.5404	0.4889	0	0.4889	172.66	2.855	0.0001	5	0.6897	1.7032	2.1436	135.8738
9	91.7	1.84	0.21	2	91.7026	2.0065	5	2.15993	125.7537	0.55178	0	0.5518	165.19	2.0186	0.0002	5	0.652	1.5289	2.037	131.7053
10	393.8	9.98	3.21	2.53	393.839	2.534	8	1.85616	137.28	0.62042	0	0.6204	633.79	2.538	0.0006	8	0.5641	1.3514	1.7974	502.2101
11	158	6.11	2.83	3.86	158.035	3.8662	8	2.22381	135.8628	0.68835	0	0.6884	228.58	3.8832	0.0013	8	0.7027	1.3527	2.1526	201.1533
12	115	5.88	2.13	5.11	115.026	5.1119	9	2.40313	134.8073	0.75576	0	0.7558	151.2	5.1457	0.0013	9	0.7779	1.2992	2.3411	140.3104
13	138	4.57	1.52	3.31	138.019	3.3112	5	2.2051	133.4075	0.82246	0	0.8225	166.81	3.331	0.0008	8	0.7127	1.1967	2.1617	155.1626
14	166.3	4.94	1.52	2.97	166.319	2.9702	5	2.11838	134.4321	0.88968	0	0.8897	185.94	2.9862	0.0007	8	0.6888	1.1268	2.0909	176.1746
15	110.7	3.04	1.52	2.75	110.719	2.7457	5	2.2033	129.8872	0.95462	0	0.9546	114.98	2.7696	0.001	5	0.7285	1.0779	2.1873	111.8135
16	154.7	5.07	0.98	3.28	154.712	3.2771	8	2.17139	134.4457	1.02184	0	1.0218	150.41	3.2989	0.0005	8	0.7246	1.0256	2.1688	148.9675
17	133.8	4.15	1.13	3.1	133.814	3.1013	5	2.19109	132.6267	1.08815	0	1.0882	121.97	3.1268	0.0006	5	0.7403	0.9795	2.2017	122.8634
18	92.9	4.67	1.36	5.02	92.9167	5.026	9	2.45379	132.6008	1.15446	0	1.1545	79.485	5.0892	0.0011	9	0.85	0.9286	2.4816	80.5308
19	83.4	3.35	1.13	4.02	83.4138	4.0161	4	2.40863	129.907	1.21941	0	1.2194	67.405	4.0757	0.001	4	0.8418	0.8874	2.4519	68.93503
20	66.4	3.77	1.16	5.68	66.4142	5.6765	4	2.58718	130.2154	1.28452	0	1.2845	50.704	5.7885	0.0013	3	0.9204	0.8366	2.6499	51.49282
21	106.4	3.88	1.13	3.65	106.414	3.6461	5	2.30837	131.5756	1.3503	0	1.3503	77.807	3.693	0.0008	4	0.8177	0.8192	2.3722	81.34333
22	108.1	4.14	0.98	3.83	108.112	3.8294	5	2.32051	132.0888	1.41635	0	1.4164	75.331	3.8802	0.0007	4	0.83	0.785	2.3962	79.15925
23	96	4.24	1	4.42	96.0122	4.4161	9	2.40107	131.974	1.48234	0	1.4823	63.771	4.4854	0.0008	4	0.87	0.7458	2.4928	66.62858
24	56.6	3.01	1.13	5.31	56.6138	5.3167	4	2.61127	128.1787	1.54643	0	1.5464	35.609	5.466	0.0015	3	0.966	0.6931	2.737	36.07259
25	48.6	3.05	0.75	6.27	48.6092	6.2745	3	2.70903	127.9035	1.61038	0	1.6104	29.185	6.4895	0.0012	3	1	0.6571	2.8547	29.18497
26	14.5	0.64	0.67	4.43	14.5082	4.4113	3	2.98649	113.5295	1.66714	0.0312	1.6359	7.8493	4.984	0.0013	3	1	0.6468	3.2107	7.84934
27	19.2	0.85	0.67	4.43	19.2082	4.4252	3	2.89317	116.2903	1.72529	0.0624	1.6629	10.514	4.8619	-8E-04	3	1	0.6363	3.1032	10.51359
28	39.4	1.5	0.52	3.82	39.4064	3.8065	4	2.61686	122.1988	1.78639	0.0936	1.6928	22.224	3.9872	-0.001	3	0.9956	0.6264	2.7962	22.26952
29	55.9	1.46	0.52	2.6	55.9064	2.6115	5	2.39409	122.8541	1.84781	0.1248	1.723	31.374	2.7008	-0.002	4	0.9064	0.6428	2.5581	32.83951
30	82.6	2.71	0.6	3.28	82.6073	3.2806	5	2.34565	128.332	1.91198	0.156	1.756	45.955	3.3583	-0.001	4	0.884	0.6391	2.495	48.73672
31	60.1	2.8	0.83	4.66	60.1102	4.6581	4	2.55119	127.7957	1.97588	0.1872	1.7887	32.501	4.8164	-0.002	3	0.9732	0.5999	2.7259	32.96189
32	77.4	4.03	0.98	5.21	77.412	5.2059	9	2.51562	131.0771	2.04142	0.2184	1.823	41.344	5.3469	-0.002	3	0.9582	0.5938	2.6822	42.29415
33	58.5	2.26	0.98	3.87	58.512	3.8625	4	2.49965	126.1622	2.1045	0.2496	1.8549	30.41	4.0066	-0.003	4	0.9626	0.5826	2.6897	31.05546
34	87.9	2.22	1.06	2.53	87.913	2.5252	5	2.24407	127.0245	2.16801	0.2808	1.8872	45.435	2.5891	-0.002	5	0.8595	0.6082	2.4137	49.2841
35	115.6	0.87	1.06	0.75	115.613	0.7525	6	1.80322	120.8382	2.22843	0.312	1.9164	59.165	0.7673	-0.002	6	0.687	0.665	1.9586	71.25509
36	38.3	0.94	0.98	2.45	38.312	2.4535	4	2.49882	118.7106	2.28778	0.3432	1.9446	18.525	2.6094	-0.008	4	0.9862	0.5487	2.7408	18.6814
37	32.2	0.6	0.75	1.86	32.2092	1.8628	5	2.48334	115.0025	2.34528	0.3744	1.9709	15.153	2.0091	-0.011	4	0.9908	0.54	2.7477	15.23942
38	52.4	1.66	0.75	3.18	52.4092	3.1674	4	2.47222	123.6359	2.4071	0.4056	2.0015	24.982	3.3199	-0.007	4	0.9739	0.5375	2.7012	25.40168
39	26.5	1.53	0.83	5.77	26.5102	5.7714	3	2.86618	121.3769	2.46779	0.4368	2.031	11.838	6.3638	-0.016	3	1	0.521	3.1368	11.83775
40	52.4	3.04	0.75	5.81	52.4092	5.8005	3	2.6618	128.063	2.53182	0.468	2.0638	24.167	6.095	-0.008	3	1	0.5127	2.8939	24.16747
41	62.7	4.26	0.92	6.79	62.7113	6.793	3	2.66297	130.9695	2.59731	0.4992	2.0981	28.652	7.0865	-0.007	3	1	0.5043	2.8876	28.65152
42	25.9	1.63	0.83	6.28	25.9102	6.291	3	2.89932	121.7843	2.6582	0.5304	2.1278	10.928	7.0102	-0.02	3	1	0.4973	3.1905	10.9277
43	21.2	1.38	0.83	6.5	21.2102	6.5063	3	2.97231	120.0779	2.71824	0.5616	2.1566	8.5744	7.4627	-0.027	3	1	0.4906	3.2887	8.57442
44	47.9	1.42	0.67	2.96	47.9082	2.964	4	2.48062	122.2743	2.77938	0.5928	2.1866	20.639	3.1466	-0.012	4	1	0.4839	2.7561	20.63904
45	53.6	3.19	0.81	5.95	53.6099	5.9504	3	2.66354	128.4707	2.84361	0.624	2.2196	22.872	6.2837	-0.011	3	1	0.4767	2.9203	22.87171
46	36.5	2.38	0.83	6.5	36.5102	6.5187	3	2.80551	125.3904	2.90631	0.6552	2.2511	14.928	7.0825	-0.018	3	1	0.47	3.0915	14.92771
47	61.1	1.5	0.83	2.45	61.1102	2.4546	5	2.34749	123.269	2.96794	0.6864	2.2815	25.484	2.5799	-0.011	4	0.9562	0.4797	2.6194	26.35643
48	86.6	2.4	0.95	2.77	86.6116	2.771	5	2.27782	127.5586	3.03172	0.7176	2.3141	36.117	2.8715	-0.008	4	0.9218	0.4861	2.5243	38.39765
49	114.2	5.87	1.15	5.14	114.214	5.1395	9	2.40684	134.7775	3.09911	0.7488	2.3503	47.277	5.2828	-0.006	4	0.9662	0.4625	2.6374	48.57047
50	130.4	5.13	1.52	3.93	130.419	3.9335	8	2.27938	134.1152	3.16617	0.78	2.3862	53.329	4.0314	-0.005	4	0.9174	0.4743	2.5039	57.03481
51	152.5	5.96	1.6	3.91	152.52	3.9077	8	2.23659	135.5943	3.23396	0.8112	2.4228	61.618	3.9924	-0.005	4	0.9001	0.4744	2.4537	66.93245
52	95.4	2.07	1.67	2.17	95.4204	2.1694	5	2.17188	126.7125	3.29732	0.8424	2.4549	37.526	2.247	-0.008	5	0.8929	0.4717	2.4324	41.06674
53	123.6	2.99	1.67	2.42	123.62	2.4187	5	2.13033	130.0346	3.36234	0.8736	2.4887	48.321	2.4863	-0.006	5	0.8719	0.4744	2.3731	53.91672
54	98.3	6.74	2.08	6.86	98.3255	6.8548	9	2.54612	135.4234	3.43005	0.9048	2.5253	37.579	7.1026	-0.008	3	1	0.419	2.8075	37.57864
55	56.4	3.68	2.2	6.52	56.4269	6.5217	3	2.67896	129.6411	3.49487	0.936	2.5589	20.686	6.9523	-0.015	3	1	0.4135	2.9822	20.68572
56	79.9	2.59	1.75	3.24	79.9214	3.2407	5	2.35141	127.92	3.55883	0.9672	2.5916	29.465	3.3917	-0.011	4	0.9837	0.4143	2.6536	29.89982
57	403.4	7.36	1.82	1.82	403.422	1.8244	6	1.72732	137.28	3.62747	0.9984	2.6291	152.07	1.8409	-0.002	6	0.6941	0.5317	1.8887	200.8902
58	44.3	1.33	2.72	3.01	44.3333	3	4	2.5089	121.606	3.68827	1.0296	2.6587	15.288	3.2722	-0.021	3	1	0.398	2.8695	15.28771
59	88.7	3.12	3.06	3.52	88.7375	3.516	5	2.34741	129.5374	3.75304	1.0608	2.6922	31.566	3.6713	-0.01	4	0.9902	0.3966	2.6559	31.85534
60	87.3	3.33	3.28	3.81	87.3402	3.8127	4	2.37849	129.9754	3.81803	1.092	2.726	30.639	3.987	-0.01	4	1	0.3882	2.6926	30.63875
61	77	3.15	3.37	4.08	77.0413	4.0887	4	2.43716	129.2627	3.88266	1.1232	2.7595	26.512	4.3057	-0.012	3	1	0.3835	2.7615	26.51192
62	85	3.17	3.58	3.73	85.0438	3.7275	4	2.37866	129.5501	3.94743	1.1544	2.793	29.035	3.9089	-0.011	4	1	0.3788	2.7041	29.03522
63	98.8	5.06	3.7	5.12	98.8453	5.1191	9	2.44346	133.3386	4.0141	1.1856	2.8285	33.527	5.3358	-0.01	3	1	0.3741	2.7519	33.52697
64	99.5	3.63	3.89	3.65	99.5476	3.6465	5	2.32693	130.9256	4.07957	1.2168	2.8628	33.348	3.8023	-0.01	4	0.9955	0.3713	2.6501	33.4973
65	124.5	7.53	4.31	6.04	124.553	6.0456	9	2.44202	136.8111	4.14797	1.248	2.9	41.519	6.2539	-0.008	3	1	0.3649	2.7375	41.51928
66	109	6.16	4.5	5.64	109.055	5.6485	9	2.45174	135.0176	4.21548	1.2792	2.9363	35.705	5.8756	-0.009	3	1	0.3604	2.7627	35.70489
67	72.9	4.09	4.58	5.6	72.9561	5.6061	9	2.55682	131.0406	4.281	1.3104	2.9706	23.118	5.9556	-0.014	3	1	0.3562	2.9009	23.11823
68	67.7	4.58	4.39	6.76	67.7537	6.7598	9	2.64003	131.6881	4.34685	1.3416	3.0053	21.099	7.2232	-0.016	3	1	0.3521	2.9875	21.09874
69	57.2	3.45	4.35	6.02	57.2532	6.0259	3	2.64883	129.2043	4.41145	1.3728	3.0387	17.39	6.5289	-0.02	3	1	0.3482	3.0186	17.3899
70	173.6	8.04	4.54	4.63	173.656	4.6299	9	2.26495	137.28	4.48009	1.404	3.0761	54.997	4.7525	-0.006	4	0.9703	0.3551	2.5578	56.76987
71	155.3	9.21	4.8	5.92	155.359	5.9282	9	2.38119	137.28	4.54873	1.4352	3.1135	48.437	6.107	-0.007	3	1	0.3398	2.685	48.43702
72	43.4	2.54	4.5	5.86	43.4551	5.8451	3	2.71917	126.2912	4.61187	1.4664	3.1455	12.349	6.5391	-0.029	3	1	0.3364	3.1305	12.34892
73	52.6	2.44	4.73	4.63	52.6579	4.6337	4	2.58853	126.4658	4.67511	1.4976	3.1775	15.101	5.0852	-0.024	3	1	0.333	2.9932	15.10077
74	112.2	8.8	4.58	7.84	112.256	7.8392	9	2.56051	137.28	4.74375	1.5288	3.215	33.441	8.1851	-0.011	3	1	0.3291	2.8871	33.4414
75	78.7	3.59	4.96	4.56	78.7607	4.5581	4	2.46661	130.2733	4.80888	1.56	3.2489	22.762	4.8545	-0.016	3	1	0.3257	2.8456	22.76223
76	68.4	3.2	5.09	4.67	68.4623	4.6741	4	2.51466	129.09	4.87343	1.5912	3.2822	19.374	5.0323	-0.019	3	1	0.3224	2.9082	19.37369
77	50.1	2.2	4.96	4.38	50.1607	4.3859	4	2.58579	125.5897	4.93622	1.6224	3.3138	13.647	4.8646	-0.028	3	1	0.3193	3.0148	13.64723
78	151.4	8.83	5.05	5.83	151.462	5.8299	9	2.38118	137.28	5.00486	1.6536	3.3513	43.702	6.0291	-0.009	3	1	0.3157	2.7107	43.70202
79	281.8	7.04	5.42	2.5	281.866	2.4976	8	1.92545	137.28	5.0735	1.6848	3.3887	81.681	2.5434	-0.005	5	0.8483	0.3726	2.1991	97.45935
80	51.8	0	5.57	0	51.8682	0	0	0	769.6	5.4583	1.716	3.7423	12.401	0	-0.028	0	1	0.2827	0	0

	C-22	In situ data									Basic output data									
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn
1	37.9	1.98	-0.4	5.22	37.8951	5.225	3	2.72526	124.1349	0.06207	0	0.0621	609.55	5.2335	-8E-04	9	0.8145	2	2.5237	71.51073
2	18.4	0.86	-1.03	4.71	18.3874	4.6771	3	2.92318	116.2693	0.1202	0	0.1202	151.97	4.7079	-0.004	4	0.8861	2	2.7046	34.52803
3	100.4	3.79	-0.12	3.78	100.399	3.775	5	2.3361	131.262	0.18583	0	0.1858	539.26	3.782	-9E-05	8	0.6807	2	2.1573	189.4187
4	65.5	1.54	0.22	2.34	65.5027	2.3511	5	2.31273	123.6308	0.24765	0	0.2477	263.5	2.36	0.0002	5	0.6644	2	2.1068	123.3429
5	34.5	0.77	0.3	2.24	34.5037	2.2317	4	2.50781	116.9956	0.30615	0	0.3062	111.7	2.2516	0.0006	5	0.7355	2	2.2862	64.63901
6	19.6	0.43	0.15	2.2	19.6018	2.1937	4	2.69946	111.3536	0.36182	0	0.3618	53.175	2.2349	0.0006	5	0.8087	2	2.4714	36.36682
7	33	0.92	0.07	2.79	33.0009	2.7878	4	2.58412	118.1893	0.42092	0	0.4209	77.402	2.8238	0.0002	5	0.7728	2	2.3698	61.5815
8	71.5	1.31	0.07	1.84	71.5009	1.8322	5	2.21122	122.661	0.48225	0	0.4823	147.27	1.8446	7E-05	5	0.6555	1.6738	2.0549	112.3443
9	76.9	1.57	0	2.04	76.9	2.0416	5	2.22001	124.1632	0.54433	0	0.5443	140.27	2.0562	0	5	0.6712	1.5623	2.0883	112.7368
10	262.7	8.33	0.64	3.17	262.708	3.1708	8	2.02933	137.28	0.61297	0	0.613	427.58	3.1782	0.0002	8	0.6243	1.4061	1.9563	348.292
11	86.8	4.73	1.65	5.45	86.8202	5.448	9	2.49955	132.5287	0.67923	0	0.6792	126.82	5.491	0.0014	9	0.8012	1.4264	2.4113	116.1226
12	122.5	4.78	1.1	3.9	122.513	3.9016	8	2.29312	133.4456	0.74596	0	0.746	163.24	3.9255	0.0007	8	0.7352	1.2931	2.2301	148.8063
13	89.3	3.82	0.15	4.28	89.3018	4.2776	4	2.41037	131.034	0.81147	0	0.8115	109.05	4.3169	0.0001	9	0.7872	1.2324	2.3589	103.062
14	133.7	3.84	0.22	2.88	133.703	2.872	5	2.16537	132.0566	0.8775	0	0.8775	151.37	2.891	0.0001	5	0.7045	1.1409	2.1337	143.2232
15	119.9	3.97	0.38	3.31	119.905	3.311	5	2.24313	132.0345	0.94352	0	0.9435	126.08	3.3372	0.0002	5	0.7423	1.0888	2.2248	122.4123
16	77.9	2.81	0.38	3.6	77.9047	3.607	4	2.39327	128.4542	1.00775	0	1.0078	76.306	3.6542	0.0004	4	0.8082	1.0402	2.3898	75.59522
17	49.7	1.5	0.35	3.02	49.7043	3.0179	4	2.47432	122.7651	1.06913	0	1.0691	45.49	3.0842	0.0005	4	0.8494	0.9912	2.4905	45.56149
18	109.1	3.75	0.48	3.44	109.106	3.437	5	2.28169	131.3872	1.13482	0	1.1348	95.144	3.4732	0.0003	5	0.7812	0.9468	2.3033	96.61183
19	102	4.48	0.22	4.39	102.003	4.392	9	2.38275	132.5245	1.20108	0	1.2011	83.925	4.4444	0.0002	9	0.8283	0.9003	2.4187	85.77179
20	86.8	3.28	-0.13	3.78	86.7984	3.7789	4	2.37733	129.8495	1.26601	0	1.266	67.561	3.8348	-1E-04	4	0.8355	0.8608	2.4295	69.58389
21	73	1.97	-0.18	2.7	72.9978	2.6987	5	2.32103	125.6969	1.32886	0	1.3289	53.933	2.7488	-2E-04	5	0.8236	0.8289	2.3903	56.14415
22	78.2	2.01	-0.77	2.57	78.1906	2.5706	5	2.28505	126.0116	1.39186	0	1.3919	55.177	2.6172	-7E-04	5	0.8171	0.7993	2.3653	58.01367
23	65.2	2.57	-0.7	3.94	65.1914	3.9422	4	2.47396	127.3664	1.45555	0	1.4556	43.788	4.0323	-8E-04	4	0.8996	0.7506	2.5741	45.21234
24	53	2.88	-0.7	5.44	52.9914	5.4348	4	2.63758	127.6943	1.51939	0	1.5194	33.877	5.5953	-1E-03	3	0.9736	0.7031	2.7605	34.20204
25	31.8	2.03	-1.62	6.39	31.7802	6.3876	3	2.84105	123.8882	1.58134	0.01248	1.5689	19.249	6.7221	-0.004	3	1	0.6744	2.9949	19.24892
26	20.8	0.89	-1.67	4.29	20.7796	4.2831	3	2.85795	116.8185	1.63975	0.04368	1.5961	11.992	4.65	-0.009	3	1	0.663	3.0463	11.99185
27	24.2	0.6	-2.31	2.48	24.1717	2.4822	4	2.658	114.3023	1.6969	0.07488	1.622	13.856	2.6697	-0.011	4	1	0.6523	2.8517	13.85608
28	40.1	1.6	-2.96	4.01	40.0638	3.9936	4	2.62606	122.7114	1.75825	0.10608	1.6522	23.185	4.1769	-0.008	3	0.9934	0.6423	2.7953	23.25281
29	63.7	2.39	-4.99	3.75	63.6389	3.7556	4	2.4657	126.7763	1.82164	0.13728	1.6844	36.701	3.8662	-0.008	4	0.9263	0.6501	2.6154	37.98074
30	61.6	3.64	-5.68	5.91	61.5305	5.9158	4	2.62233	129.7723	1.88653	0.16848	1.7181	34.716	6.1029	-0.01	3	0.9915	0.6184	2.7818	34.85937
31	95.8	4.16	-7.69	4.34	95.7059	4.3467	9	2.3966	131.8268	1.95244	0.19968	1.7528	53.489	4.4372	-0.008	4	0.9003	0.6348	2.5385	56.24925
32	76.8	2.69	-8.36	3.51	76.6977	3.5073	4	2.38881	128.0968	2.01649	0.23088	1.7856	41.824	3.602	-0.011	4	0.9057	0.6226	2.5484	43.94002
33	147.4	2.22	-8.53	1.51	147.296	1.5072	6	1.92718	128.2833	2.08063	0.26208	1.8186	79.852	1.5288	-0.006	5	0.7194	0.6773	2.056	92.95888
34	158.5	3.02	-8.99	1.91	158.39	1.9067	6	1.98175	130.7122	2.14599	0.29328	1.8527	84.333	1.9329	-0.006	5	0.7425	0.6597	2.1126	97.41729
35	125.3	3.28	-9.2	2.62	125.187	2.6201	5	2.15304	130.7427	2.21136	0.32448	1.8869	65.174	2.6672	-0.008	5	0.8164	0.6236	2.3024	72.47588
36	22	0.97	-9.28	4.43	21.8864	4.432	3	2.85051	117.5749	2.27015	0.35568	1.9145	10.246	4.9449	-0.052	3	1	0.5527	3.1165	10.24633
37	75.1	1.52	-9.33	2.03	74.9858	2.0271	5	2.22582	123.8649	2.33208	0.38688	1.9452	37.35	2.0921	-0.015	5	0.8633	0.5912	2.4164	40.5916
38	32.3	2.05	-9.35	6.37	32.1856	6.3693	3	2.8363	123.9908	2.39408	0.41808	1.976	15.077	6.8812	-0.037	3	1	0.5355	3.0799	15.0767
39	50.1	2.68	-9.35	5.37	49.9856	5.3616	4	2.65032	127.0253	2.45759	0.44928	2.0083	23.666	5.6388	-0.024	3	1	0.5269	2.8772	23.66568
40	92.9	6.26	-9.37	6.75	92.7853	6.7468	9	2.55552	134.7414	2.52496	0.48048	2.0445	44.148	6.9355	-0.013	3	0.9955	0.5191	2.7521	44.27938
41	52	3.73	-9.35	7.2	51.8856	7.1889	3	2.73479	129.5352	2.58973	0.51168	2.0781	23.722	7.5666	-0.024	3	1	0.5092	2.9654	23.7222
42	31.4	2.07	-9.28	6.62	31.2864	6.6163	3	2.85671	123.9927	2.65172	0.54288	2.1088	13.578	7.229	-0.042	3	1	0.5018	3.1281	13.57839
43	44	2.15	-9.28	4.9	43.8864	4.899	4	2.66067	125.0956	2.71427	0.57408	2.1402	19.238	5.222	-0.03	3	1	0.4944	2.9212	19.23761
44	53	2.53	-9.28	4.78	52.8864	4.7838	4	2.59735	126.7414	2.77764	0.60528	2.1724	23.067	5.049	-0.025	3	1	0.4871	2.8528	23.0665
45	30.4	2.12	-9.2	7.01	30.2874	6.9996	3	2.88406	124.0882	2.83968	0.63648	2.2032	12.458	7.7238	-0.047	3	1	0.4803	3.1751	12.45808
46	29.9	1.62	-9.2	5.45	29.7874	5.4385	3	2.81182	122.0794	2.90072	0.66768	2.233	12.04	6.0253	-0.049	3	1	0.4738	3.1159	12.04036
47	110.4	2.42	-9.2	2.2	110.287	2.1943	5	2.13212	128.2087	2.96483	0.69888	2.266	47.363	2.2549	-0.013	5	0.8525	0.5225	2.35	52.99198
48	119.3	7.52	-9.02	6.31	119.19	6.3093	9	2.46817	136.694	3.03318	0.73008	2.3031	50.435	6.474	-0.012	3	0.9833	0.4654	2.6887	51.09307
49	106.8	2.44	-8.82	2.29	106.692	2.287	5	2.15508	128.1881	3.09727	0.76128	2.336	44.347	2.3553	-0.013	5	0.8699	0.5021	2.3869	49.16003
50	169.2	4.59	-8.74	2.71	169.093	2.7145	5	2.0829	133.9347	3.16424	0.79248	2.3718	69.96	2.7663	-0.009	5	0.8323	0.5108	2.2837	80.10148
51	124.6	3.29	-8.82	2.65	124.492	2.6427	5	2.15746	130.7514	3.22961	0.82368	2.4059	50.401	2.7131	-0.012	5	0.8735	0.488	2.3876	55.92158
52	212.9	7.18	-8.63	3.38	212.794	3.3742	8	2.10166	137.28	3.29825	0.85488	2.4434	85.741	3.4273	-0.007	5	0.8399	0.4952	2.2948	98.03487
53	118.4	8.23	-8.13	6.96	118.3	6.9569	9	2.50486	137.28	3.36689	0.88608	2.4808	46.329	7.1607	-0.013	3	1	0.4265	2.7496	46.329
54	27.7	2.18	-8.2	7.9	27.5996	7.8987	3	2.94982	124.0658	3.42893	0.91728	2.5117	9.6235	9.0192	-0.062	3	1	0.4213	3.3038	9.62345
55	246.2	3.68	-8.13	1.49	246.1	1.4953	6	1.77843	133.2333	3.49554	0.94848	2.5471	95.249	1.5169	-0.006	6	0.7211	0.5307	1.9698	121.6887
56	332.3	3.43	-8.15	1.03	332.2	1.0325	6	1.57146	133.4502	3.56227	0.97968	2.5826	127.25	1.0437	-0.005	6	0.6359	0.567	1.7415	176.0957
57	78.1	2.34	-8.43	3	77.9968	3.0001	5	2.33412	127.1178	3.62583	1.01088	2.615	28.441	3.1464	-0.022	4	0.9807	0.4118	2.6429	28.9408
58	113.4	3.58	-8.13	3.16	113.3	3.1597	5	2.24314	131.1397	3.6914	1.04208	2.6493	41.373	3.2662	-0.015	4	0.9358	0.4236	2.5194	43.88433
59	115.5	4.7	-8.13	4.08	115.4	4.0728	9	2.3238	133.1762	3.75798	1.07328	2.6847	41.585	4.2099	-0.015	4	0.9694	0.4055	2.6043	42.78606
60	107.6	7.72	-8.05	7.18	107.501	7.1813	9	2.53995	136.6344	3.8263	1.10448	2.7218	38.09	7.4463	-0.016	3	1	0.3888	2.8187	38.09036
61	93	3.93	-7.98	4.24	92.9023	4.2303	4	2.39568	131.3381	3.89197	1.13568	2.7563	32.294	4.4152	-0.019	4	1	0.3839	2.7061	32.29353
62	150.5	10.95	-7.59	7.28	150.407	7.2802	9	2.46384	137.28	3.96061	1.16688	2.7937	52.42	7.4771	-0.012	3	1	0.3787	2.7291	52.41968
63	99.4	4.74	-7.36	4.77	99.3099	4.7729	9	2.41827	132.872	4.02705	1.19808	2.829	33.681	4.9747	-0.018	3	1	0.374	2.7291	33.68115
64	103.7	5.47	-7.21	5.28	103.612	5.2793	9	2.4416	134.0235	4.09406	1.22928	2.8648	34.738	5.4965	-0.018	3	1	0.3694	2.7502	34.73835
65	60.2	3.36	-7.21	5.59	60.1118	5.5896	4	2.61032	129.1298	4.15862	1.26048	2.8981	19.307	6.005	-0.032	3	1	0.3651	2.9606	19.30654
66	43	2.39	-7.26	5.55	42.9111	5.5697	3	2.70765	125.8151	4.22153	1.29168	2.9299	13.205	6.1774	-0.047	3	1	0.3612	3.0923	13.20532
67	34.7	1.79	-7.29	5.16	34.6108	5.1718	3	2.74995	123.1756	4.28312	1.32288	2.9602	10.245	5.9022	-0.061	3	1	0.3574	3.1644	10.245
68	54.8	4.24	-7.29	7.74	54.7108	7.7499	3	2.74486	130.6022	4.34842	1.35408	2.9943	16.819	8.419	-0.037	3	1	0.3534	3.1046	16.81918
69	376.8	5.48	-6.98	1.45	376.715	1.4547	6	1.66004	137.1852	4.41701	1.38528	3.0317	122.8	1.4719	-0.005	6	0.7042	0.4765	1.8649	167.6596
70	67.7	4.13	-6.44	6.11	67.6212	6.1076	4	2.60651	130.9266	4.48248	1.41648	3.066	20.593	6.5412	-0.03	3	1	0.3451	2.9654	20.59321
71	40.5	1.46	-6.9	3.6	40.4155	3.6125	4	2.59327	122.0628	4.54351	1.44768	3.0958	11.587	4.07	-0.054	3	1	0.3418	3.0226	11.58722
72	34.5	1.13	-6.9	3.28	34.4155	3.2834	4	2.61681	119.796	4.60341	1.47888	3.1245	9.5413	3.7904	-0.066	3	1	0.3387	3.072	9.54133
73	54.8	2.42	-6.88	4.42	54.7158	4.4229	4	2.56239	126.4991	4.66665	1.51008	3.1566	15.856	4.8353	-0.04	3	1	0.3352	2.9629	15.85552
74	74.7	3.45	-6.67	4.62	74.6184	4.6235	4	2.48656	129.8504	4.73158	1.54128	3.1903	21.906	4.9366	-0.029	3	1	0.3317	2.8628	21.90602
75	111	7.26	-6.6	6.55	110.919	6.5453	9	2.49923	136.2612	4.79971	1.57248	3.2272	32.883	6.8413	-0.019	3	1	0.3279	2.8351	32.88253
76	45.4	1.55	-6.44	3.42	45.3212	3.42	4	2.54081	122.7799	4.8611	1.60368	3.2574	12.421	3.8309	-0.051	3	1	0.3248	2.9827	12.42089
77	162.9	9.32	-6.22	5.72	162.824	5.724	9	2.35731	137.28	4.92974	1.63488	3.2949	47.921	5.9027	-0.013	3	1	0.3211	2.677	47.92134
78	295.1	8.76	-5.75	2.97	295.03	2.9692	8	1.97863	137.28	4.99838	1.66608	3.3323	87.036	3.0204	-0.007	5	0.8619	0.3721	2.2419	101.9818
79	62.1	3.4	-5.6	5.48	62.0315	5.4811	4	2.59493	129.293	5.06303	1.69728	3.3658	16.926	5.9682	-0.037	3	1	0.3144	3.0013	16.92594
80	58.4	3.56	-5.67	6.1	58.3306	6.1031	3	2.64772	129.4795	5.12777	1.72848	3.3993	15.651	6.6914	-0.04	3	1	0.3113	3.0597	15.65117
81	192.1	10.44	-5.62	5.44	192.031	5.4366	9	2.30005	137.28	5.19641	1.75968	3.4367	54.364	5.5878	-0.012	4	1	0.3079	2.6228	54.36417
82	70.4	3.2	-5.52	4.55	70.3324	4.5498	4	2.49814	129.1558	5.26098	1.79088	3.4701	18.752	4.9177	-0.034	3	1	0.3049	2.9123	18.75201
83	48.4	1.67	-5.37	3.46	48.3343	3.4551	4	2.52374	123.4825	5.32273	1.82208	3.5007	12.287	3.8827	-0.051	3	1	0.3023	2.99	12.28675
84	36.1	1.18	-5.45	3.29	36.0333	3.2748	4	2.60116	120.2249	5.38284	1.85328	3.5296	8.6839	3.8499	-0.073	3	1	0.2998	3.1092	8.68393
85	35.8	1.17	-5.45	3.27	35.7333	3.2743	4	2.60382	120.1422	5.44291	1.88448	3.5584	8.5123	3.8626	-0.075	3	1	0.2974	3.1171	8.51229
86	39.5	0.81	-5.45	2.05	39.4333	2.0541	5	2.44005	117.6919	5.50176	1.91568	3.5861	9.462	2.3872	-0.068	3	1	0.2951	2.962	9.46203

87	64.3	2.01	-5.37	3.13	64.2343	3.1292	5	2.4058	125.532	5.56452	1.94688	3.6176	16.218	3.426	-0.04	3	1	0.2925	2.8613	16.21768
88	79.7	3.19	-5.28	4.01	79.6354	4.0058	4	2.42099	129.4358	5.62924	1.97808	3.6512	20.269	4.3105	-0.032	3	1	0.2898	2.8493	20.26922
89	118.8	9.22	-5.14	7.77	118.737	7.7651	9	2.54341	137.28	5.69788	2.00928	3.6886	30.646	8.1565	-0.021	3	1	0.2869	2.9117	30.64556
90	234.1	8.25	-4.59	3.53	234.044	3.525	8	2.09499	137.28	5.76652	2.04048	3.726	61.265	3.614	-0.01	4	0.9529	0.3013	2.4304	65.00762
91	82.5	3.24	-4.45	3.94	82.4455	3.9299	4	2.40483	129.6342	5.83134	2.07168	3.7597	20.378	4.229	-0.031	3	1	0.2814	2.8422	20.37798
92	77	3.68	-4.48	4.78	76.9452	4.7826	4	2.48908	130.3976	5.89654	2.10288	3.7937	18.728	5.1796	-0.034	3	1	0.2789	2.9275	18.72828
93	62.1	3.71	-4.37	5.97	62.0465	5.9794	4	2.62351	129.9321	5.9615	2.13408	3.8274	14.653	6.615	-0.044	3	1	0.2765	3.0777	14.65347
94	60.1	2.59	-4.42	4.32	60.0459	4.3134	4	2.52689	127.2226	6.02511	2.16528	3.8598	13.996	4.7945	-0.046	3	1	0.2741	3.0023	13.99563
95	47.2	1.45	-4.36	3.07	47.1466	3.0755	4	2.49666	122.3882	6.08631	2.19648	3.8898	10.556	3.5314	-0.061	3	1	0.272	3.0185	10.55582
96	75.3	8.41	-4.2	11.18	75.2486	11.176	9	2.78625	136.3907	6.1545	2.22768	3.9268	17.595	12.172	-0.037	3	1	0.2695	3.2037	17.59542
97	262.7	9.35	-3.68	3.56	262.655	3.5598	8	2.07217	137.28	6.22314	2.25888	3.9643	64.686	3.6462	-0.01	4	0.9598	0.2815	2.4191	68.21751
98	260.7	10.12	-3.3	3.88	260.66	3.8825	8	2.10617	137.28	6.29178	2.29008	4.0017	63.565	3.9785	-0.01	4	0.9762	0.2729	2.4584	65.60802
99	232.7	8.35	-2.84	3.59	232.665	3.5889	8	2.10295	137.28	6.36042	2.32128	4.0391	56.028	3.6897	-0.011	4	0.9842	0.2676	2.475	57.2293
100	656.5	0	-2.42	0	656.47	0	0	0	769.6	6.74522	2.35248	4.3927	147.91	0	-0.004	0	1	0.2409	0	0

Kettner Substation Relocation
San Diego, CA

CPT Shear Wave Measurements

	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
C-1						
	10.11	9.11	10.39	14.15	734.41	
	20.09	19.09	19.73	23.03	856.88	1052.03
	30.28	29.28	29.70	30.15	985.20	1400.27
	40.03	39.03	39.35	38.14	1031.70	1207.15
	50.02	49.02	49.27	44.46	1108.28	1570.47
	60.11	59.11	59.32	51.00	1163.16	1536.20
	69.96	68.96	69.14	57.89	1194.35	1425.24
	80.08	79.08	79.24	64.57	1227.16	1511.51
C-8						
	10.13	9.13	10.41	11.93	872.55	
	20.10	19.10	19.74	19.15	1031.00	1292.82
	30.00	29.00	29.43	25.29	1163.62	1577.24
	39.98	38.98	39.30	32.04	1226.57	1462.44
	50.06	49.06	49.31	40.51	1217.33	1182.38
	60.12	59.12	59.33	50.26	1180.48	1027.38
C-10						
	70.04	69.04	69.22	55.08	1256.73	
	79.97	78.97	79.13	64.50	1226.79	1051.73
	89.97	88.97	89.11	72.04	1236.96	1323.91

Shear Wave Source Offset = 5 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
C-15						
	10.19	9.19	10.46	10.89	960.71	
	20.16	19.16	19.80	17.70	1118.74	1371.44
	30.07	29.07	29.50	24.08	1224.95	1519.62
	40.04	39.04	39.36	30.99	1270.05	1427.21
	50.08	49.08	49.33	40.67	1213.03	1030.49
	60.07	59.07	59.28	51.21	1157.61	943.76
	70.03	69.03	69.21	60.52	1143.60	1066.55
	80.03	79.03	79.19	67.85	1167.10	1361.14
C-16						
	10.28	9.28	10.54	11.65	904.83	
	20.23	19.23	19.87	18.64	1065.95	1334.50
	30.08	29.08	29.51	27.85	1059.49	1046.40
	40.07	39.07	39.39	34.97	1126.36	1387.91
	50.70	49.70	49.95	45.24	1104.13	1028.46
	60.07	59.07	59.28	55.29	1072.19	928.39
	70.14	69.14	69.32	62.48	1109.48	1396.29
	80.09	79.09	79.25	69.76	1136.01	1363.64
	90.17	89.17	89.31	76.23	1171.59	1555.21

Shear Wave Source Offset = 5 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

C-22	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
	10.12	9.12	10.40	11.72	887.43	
	20.10	19.10	19.74	19.48	1013.53	1203.98
	30.14	29.14	29.57	27.01	1094.63	1304.42
	40.01	39.01	39.33	35.60	1104.75	1136.59
	50.03	49.03	49.28	42.72	1153.66	1398.20
	60.19	59.19	59.40	49.11	1209.55	1583.18
	70.03	69.03	69.21	58.42	1184.71	1053.71
	79.98	78.98	79.14	64.72	1222.78	1575.76
	90.01	89.01	89.15	72.25	1233.91	1329.64
	99.94	98.94	99.07	78.71	1258.62	1534.97

Shear Wave Source Offset = 5 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

Presented below is a list of formulas used for the estimation of various soil properties. The formulas are presented in SI unit system and assume that all components are expressed in the same units.

:: Unit Weight, g (kN/m³) ::

$$g = g_w \cdot \left(0.27 \cdot \log(R_f) + 0.36 \cdot \log(\frac{q_t}{p_a}) + 1.236\right)$$

where g_w = water unit weight

:: Permeability, k (m/s) ::

$I_c < 3.27$ and $I_c > 1.00$ then $k = 10^{0.952-3.04 \cdot I_c}$

$I_c \leq 4.00$ and $I_c > 3.27$ then $k = 10^{-4.52-1.37 \cdot I_c}$

:: N_{SPT} (blows per 30 cm) ::

$$N_{60} = \left(\frac{q_c}{P_a}\right) \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

$$N_{1(60)} = Q_{tn} \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

:: Young's Modulus, Es (MPa) ::

$(q_t - \sigma_v) \cdot 0.015 \cdot 10^{0.55 \cdot I_c + 1.68}$

(applicable only to $I_c < I_{c\_cutoff}$)

:: Relative Density, Dr (%) ::

$100 \cdot \sqrt{\frac{Q_{tn}}{k_{DR}}}$ (applicable only to SBT_n: 5, 6, 7 and 8 or $I_c < I_{c\_cutoff}$)

:: State Parameter, ψ ::

$\psi = 0.56 - 0.33 \cdot \log(Q_{tn,cs})$

:: Peak drained friction angle, φ (°) ::

$\varphi = 17.60 + 11 \cdot \log(Q_{tn})$

(applicable only to SBT_n: 5, 6, 7 and 8)

:: 1-D constrained modulus, M (MPa) ::

If $I_c > 2.20$

$\alpha = 14$ for $Q_{tn} > 14$

$\alpha = Q_{tn}$ for $Q_{tn} \leq 14$

$M_{CPT} = \alpha \cdot (q_t - \sigma_v)$

If $I_c \leq 2.20$

$M_{CPT} = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$

:: Small strain shear Modulus, Go (MPa) ::

$G_0 = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$

:: Shear Wave Velocity, Vs (m/s) ::

$$V_s = \left(\frac{G_0}{\rho}\right)^{0.50}$$

:: Undrained peak shear strength, Su (kPa) ::

$N_{kt} = 10.50 + 7 \cdot \log(F_r)$ or user defined

$$S_u = \frac{(q_t - \sigma_v)}{N_{kt}}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Remolded undrained shear strength, Su(rem) (kPa) ::

$S_{u(rem)} = f_s$ (applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Overconsolidation Ratio, OCR ::

$$k_{OCR} = \left[\frac{Q_{tn}^{0.20}}{0.25 \cdot (10.50 \cdot +7 \cdot \log(F_r))}\right]^{1.25}$$ or user defined

$OCR = k_{OCR} \cdot Q_{tn}$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: In situ Stress Ratio, Ko ::

$$K_O = 0.1 \cdot \left(\frac{q_t - \sigma_v}{\sigma'_{vo}}\right)$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Soil Sensitivity, S_t ::

$$S_t = \frac{N_S}{F_r}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Effective Stress Friction Angle, φ' (°) ::

$\varphi' = 29.5° \cdot B_q^{0.121} \cdot (0.256 + 0.336 \cdot B_q + \log Q_t)$

(applicable for $0.10 < B_q < 1.00$)

References

- Robertson, P.K., Cabal K.L., Guide to Cone Penetration Testing for Geotechnical Engineering, Gregg Drilling & Testing, Inc., 4th Edition, July 2010
- Robertson, P.K., Interpretation of Cone Penetration Tests - a unified approach., Can. Geotech. J. 46(11): 1337–1355 (2009)

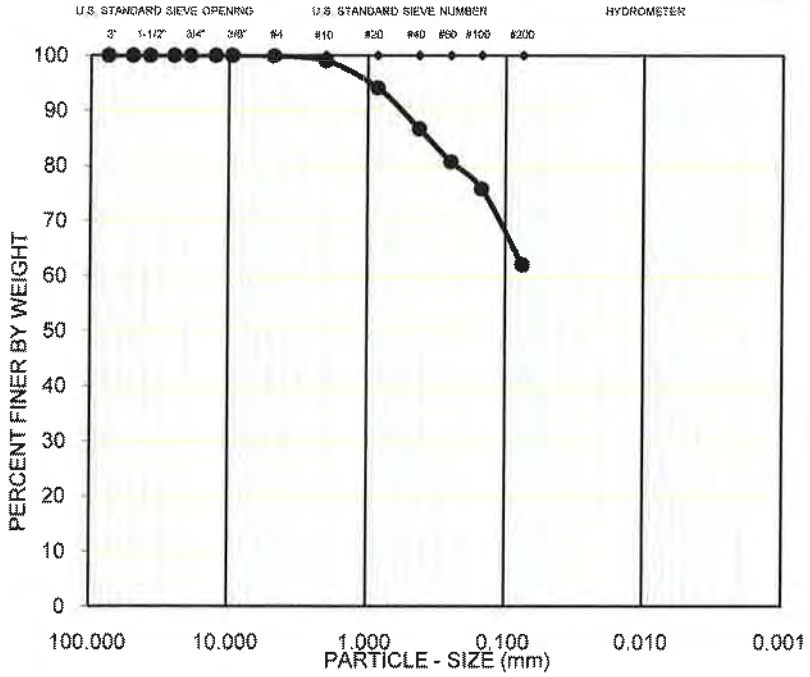
APPENDIX D

Geotechnical Laboratory Testing

Sieve Analysis

(ASTM D422)

G Force Lab No.	9392		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	7/15/2013	By:	JLN
Boring No.:	B-1	Depth:	10'
Sample Description:	Brown Sandy Silt (ML)		



Sieve Size	% Passing
3"	100
2"	100
1-1/2"	100
1"	100
3/4"	100
1/2"	100
3/8"	100
#4	100
#10	99
#20	94
#40	87
#60	81
#100	76
#200	62

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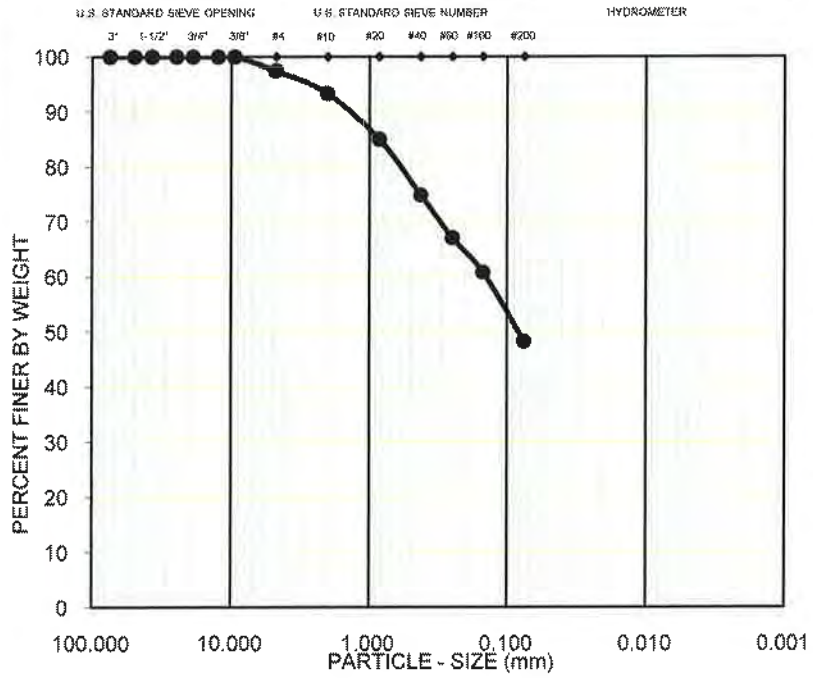
Sieve Analysis

(ASTM D422)

G Force Lab No. 9396
Date Sampled: July 10 and 11, 2013 By: JW
Date Submitted: 7/15/2013 By: JLN
Boring No.: B-2 Depth: 30'
Sample Description: Brown Silty Sand (SM)



Sieve Size	% Passing
3"	100
2"	100
1-1/2"	100
1"	100
3/4"	100
1/2"	100
3/8"	100
#4	97
#10	93
#20	85
#40	75
#60	67
#100	61
#200	48

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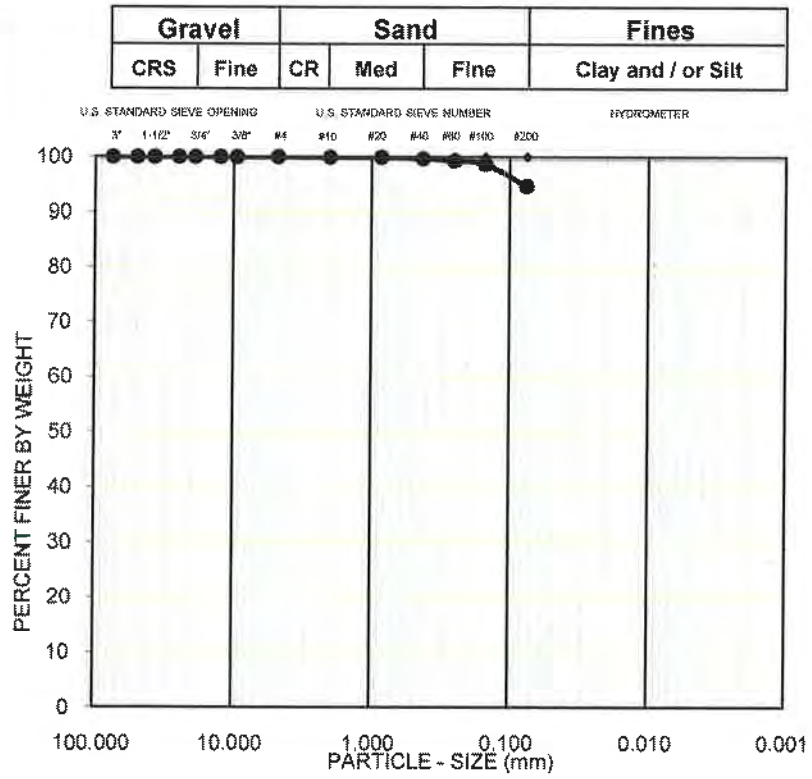
Sieve Analysis

(ASTM D422)

G Force Lab No. 9406
Date Sampled: July 10 and 11, 2013 By: JW
Date Submitted: 7/15/2013 By: JLN
Boring No.: B-3 Depth: 45'
Sample Description: Tan Fat Clay (CH)



Sieve Size	% Passing
3"	100
2"	100
1-1/2"	100
1"	100
3/4"	100
1/2"	100
3/8"	100
#4	100
#10	100
#20	100
#40	100
#60	99
#100	99
#200	95

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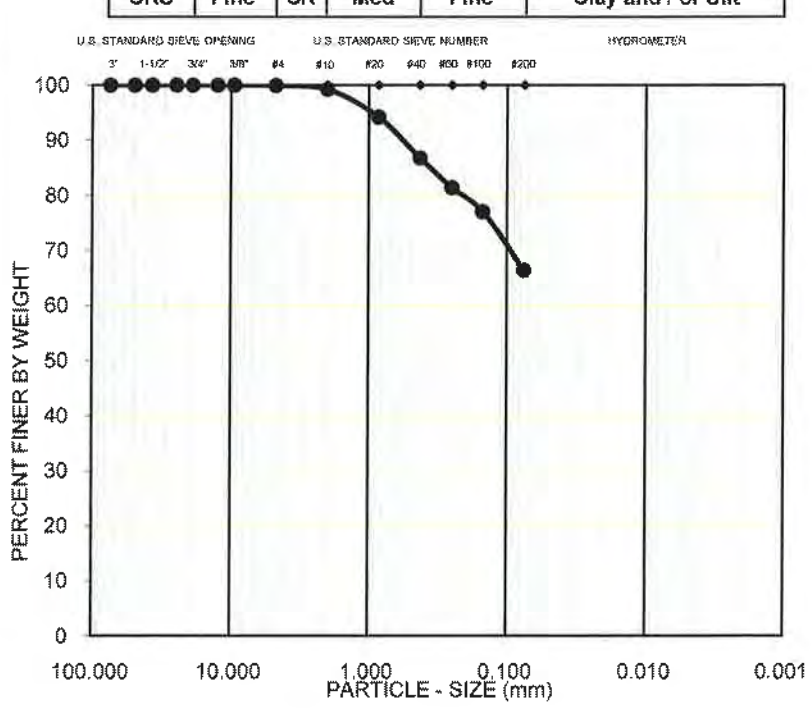
Sieve Analysis

(ASTM D422)

G Force Lab No. 9408
Date Sampled: July 10 and 11, 2013 By: JW
Date Submitted: 7/15/2013 By: JLN
Boring No.: B-4 Depth: 10'
Sample Description: Brown Sandy Silt (ML)



Sieve Size	% Passing
3"	100
2"	100
1-1/2"	100
1"	100
3/4"	100
1/2"	100
3/8"	100
#4	100
#10	99
#20	94
#40	87
#60	81
#100	77
#200	66

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Amount of Material in Soils Finer than No. 200 Sieve (ASTM D1140)

Lab No.	9397	9399	9401	9404	9405	9409
Boring No.	B-2	B-3	B-3	B-3	B-3	B-4
Depth, ft.	40'	0 - 5'	10'	30'	35'	15'
Total Dry Mass, g	333.1	378.3	436.8	410.6	273.0	264.2
% Passing No. 200	**66.3**	**54.2**	**60.5**	**53.1**	**62.1**	**59.3**

Lab No.	9411	9412	9413	9414	9418	9421
Boring No.	B-4	B-4	B-4	B-4	B-5	B-5
Depth, ft.	25'	30'	35'	40'	25'	40'
Total Dry Mass, g	134.3	266.9	364.8	240.0	369.9	173.3
% Passing No. 200	**82.7**	**57.6**	**50.1**	**68.8**	**56.3**	**56.5**

Method: A
Sampled By: JW
Date Sampled: July 10 and 11, 2013
Engineer: JLN

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Amount of Material in Soils Finer than No. 200 Sieve (ASTM D1140)

Lab No.	9444	9399	9446	9449	9452	9454
Boring No.	B-1	B-2	B-3	B-4	B-5	B-5
Depth, ft.	20'	20'	20'	20'	20'	30'
Total Dry Mass, g	296.7	222.4	280.3	195.7	280.2	205.4
% Passing	**63.4**	**57.4**	**56.4**	**56.5**	**59.1**	**52.6**

Lab No.	9455
Boring No.	B-5
Depth, ft.	35'
Total Dry Mass, g	261.6
% Passing No. 200	**55.7**

Method: A
Sampled By: JW
Date Sampled: July 10 and 11, 2013
Engineer: JLN
Date submitted: 7-30-2013

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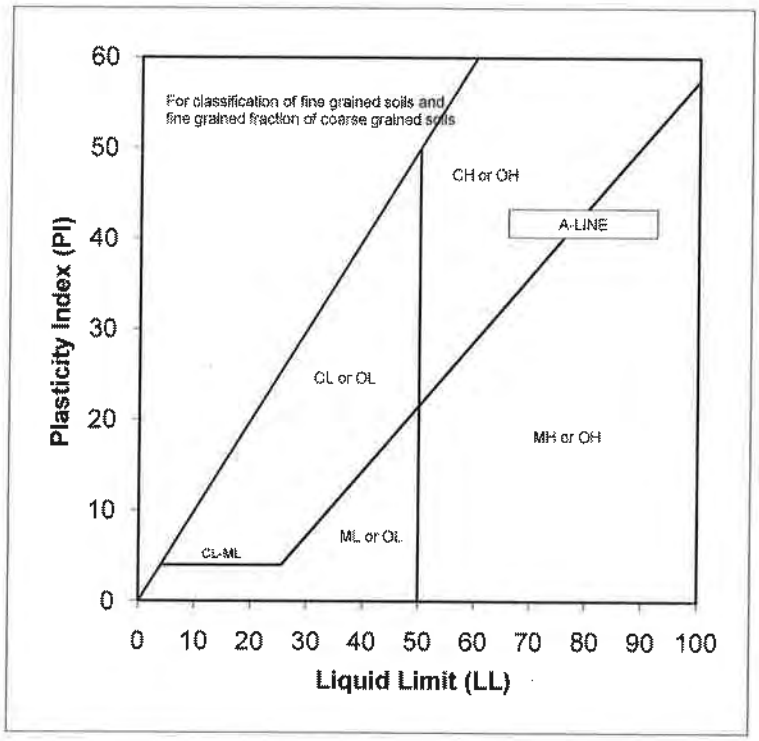
Atterberg Limits

(ASTM D4318)

G Force Lab No.	9396		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	7/15/2013	By:	JLN
Boring No.:	B-2	Depth (ft.):	30'
Sample Description:	Brown Silty Sand (SM)		

Liquid Limit	0
Plastic Limit	0
Plasticity Index	***NP**
Classification	**(SM)**



* Sample is designated as Non-Plastic

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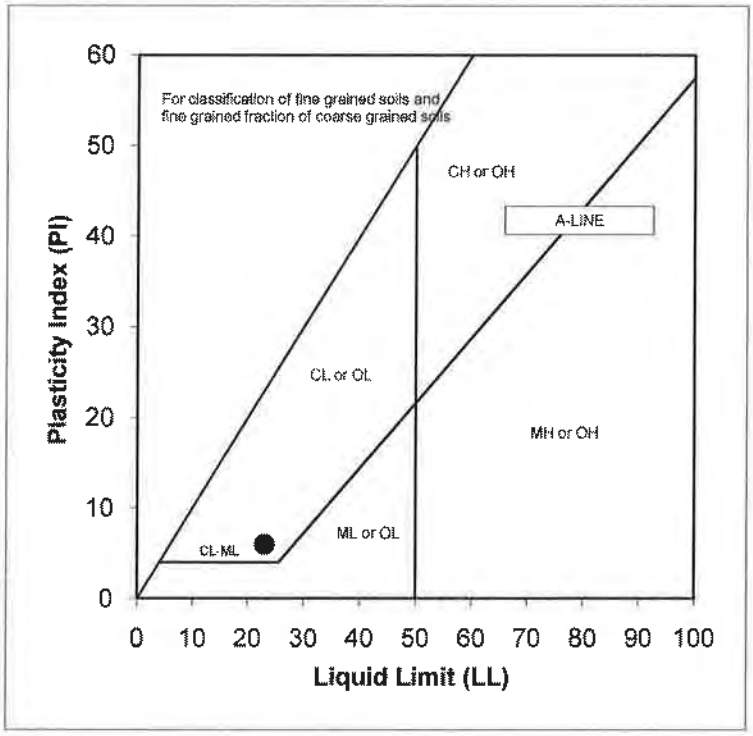
Atterberg Limits

(ASTM D4318)

G Force Lab No.	9447		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	7/30/2013	By:	JLN
Boring No.:	B-3	Depth (ft.):	30'
Sample Description:	Brown Sandy Lean Clay to Sandy Silt (CL-ML)		

Liquid Limit	23
Plastic Limit	17
Plasticity Index	**6**
Classification	**(ML)**



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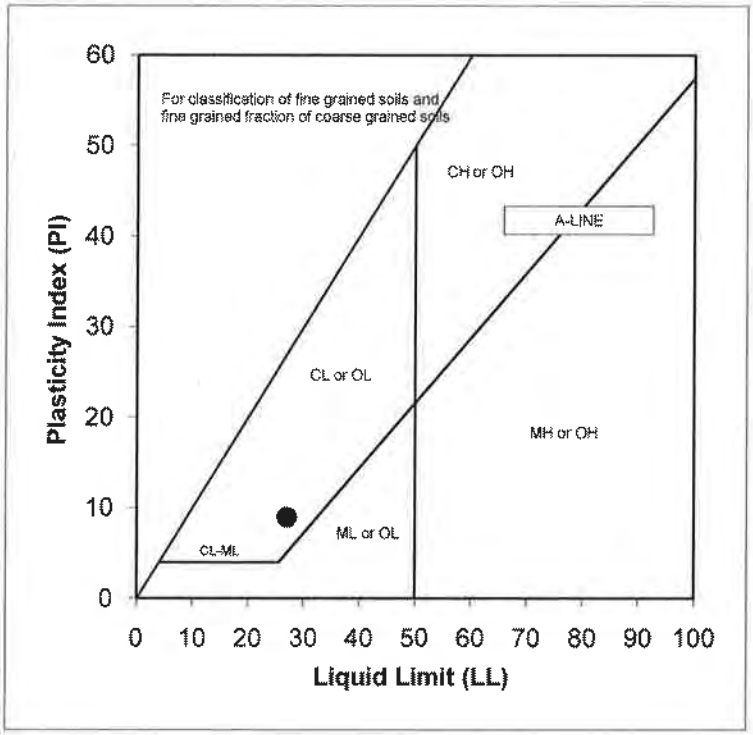
Atterberg Limits

(ASTM D4318)

G Force Lab No.	9405		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	7/15/2013	By:	JLN
Boring No.:	B-3	Depth (ft.):	35'
Sample Description:	Brown Sandy Lean Clay (CL)		

Liquid Limit	27
Plastic Limit	18
Plasticity Index	**9**
Classification	**(CL)**



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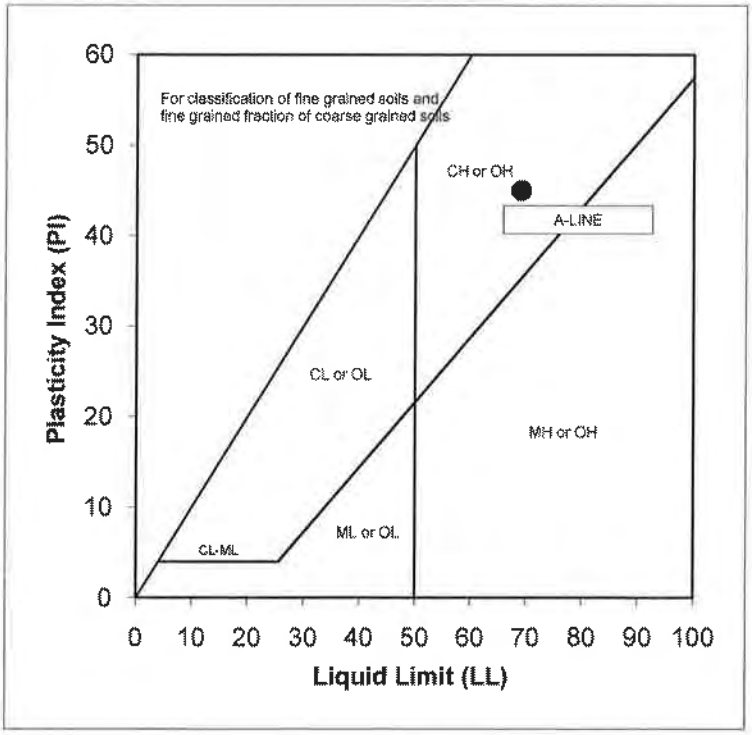
Atterberg Limits

(ASTM D4318)

G Force Lab No.	9448		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	7/30/2013	By:	JLN
Boring No.:	B-3	Depth (ft.):	45'
Sample Description:	Olive Gray Fat Clay (CH)		

Liquid Limit	69
Plastic Limit	24
Plasticity Index	**45**
Classification	**(CH)**



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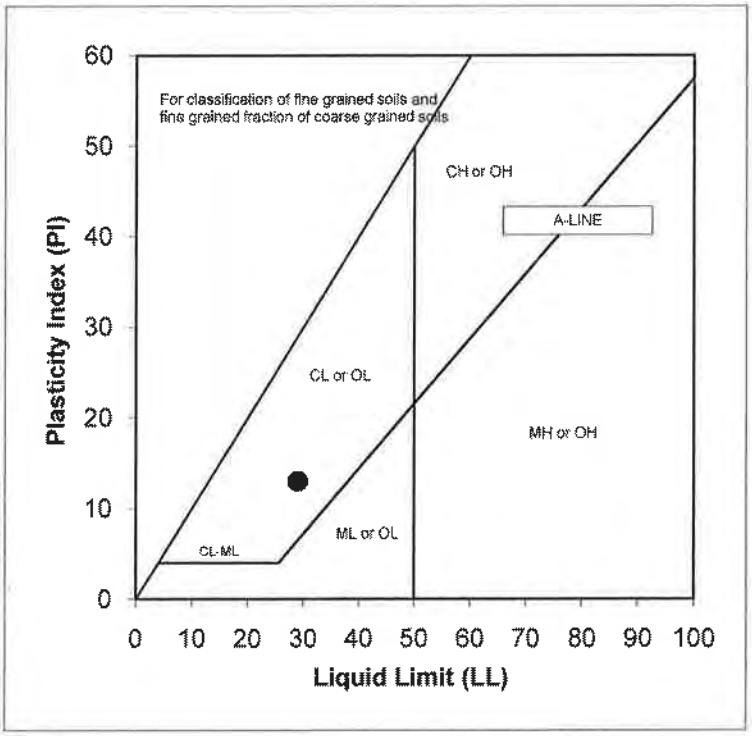
Atterberg Limits

(ASTM D4318)

G Force Lab No.	9449		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	7/30/2013	By:	JLN
Boring No.:	B-4	Depth (ft.):	20'
Sample Description:	Brown Clayey Sand (CL/ML)		

Liquid Limit	29
Plastic Limit	16
Plasticity Index	**13**
Classification	**(CL)**



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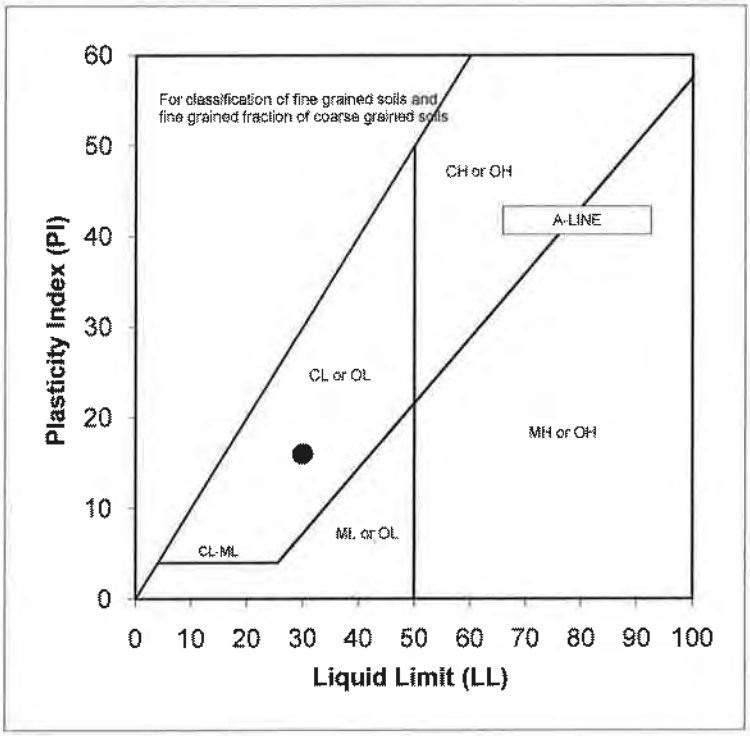
Atterberg Limits

(ASTM D4318)

G Force Lab No.	9411		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	7/15/2013	By:	JLN
Boring No.:	B-4	Depth (ft.):	25'
Sample Description:	Brown Sandy Lean Clay (CL)		

Liquid Limit	30
Plastic Limit	14
Plasticity Index	**16**
Classification	**(CL)**



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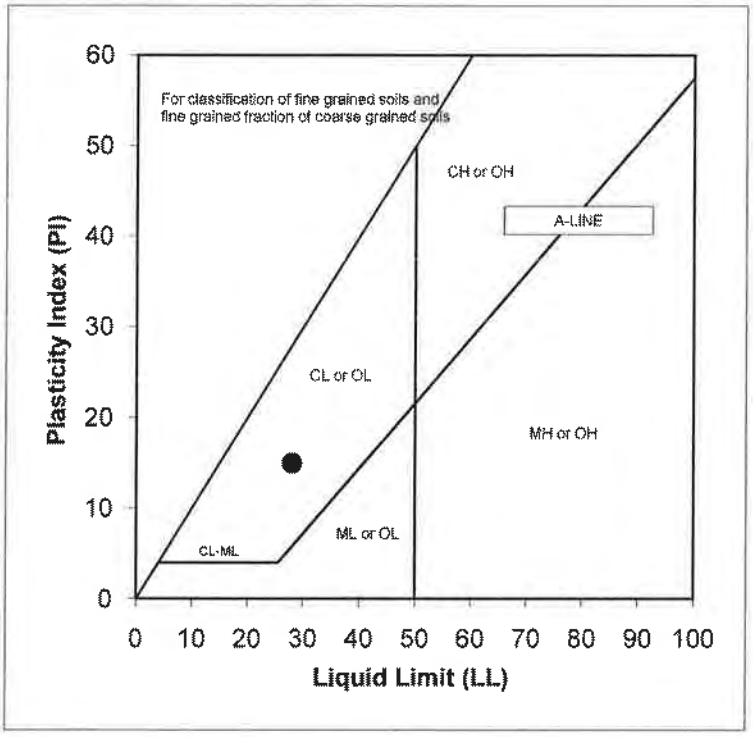
Atterberg Limits

(ASTM D4318)

G Force Lab No.	9450		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	7/30/2013	By:	JLN
Boring No.:	B-4	Depth (ft.):	30'
Sample Description:	Brown Sandy Clay (CL)		

Liquid Limit	28
Plastic Limit	14
Plasticity Index	**15**
Classification	**(CL)**



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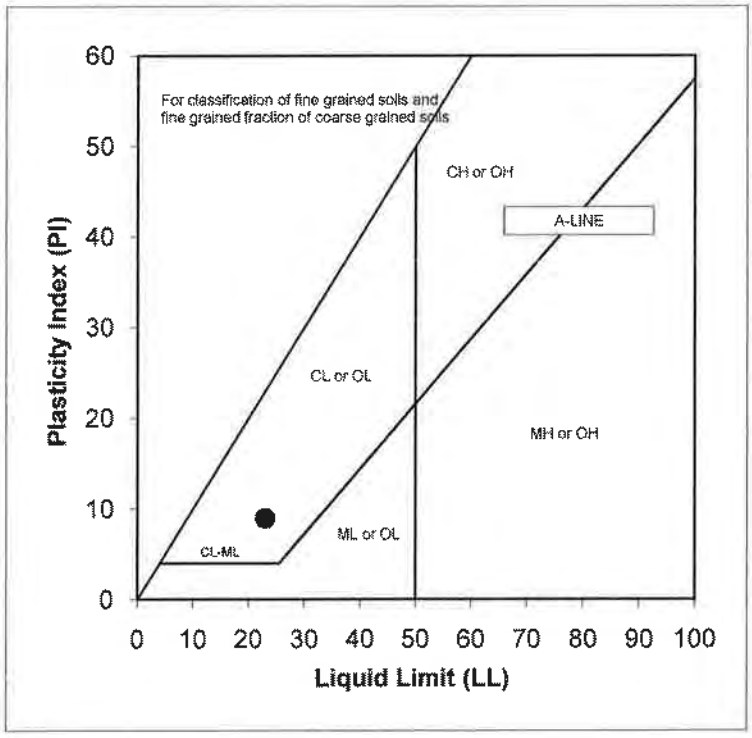
Atterberg Limits

(ASTM D4318)

G Force Lab No.	9451		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	7/30/2013	By:	JLN
Boring No.:	B-4	Depth (ft.):	35'
Sample Description:	Brown Silty Sand (CL/ML)		

Liquid Limit	23
Plastic Limit	14
Plasticity Index	**9**
Classification	**(CL)**



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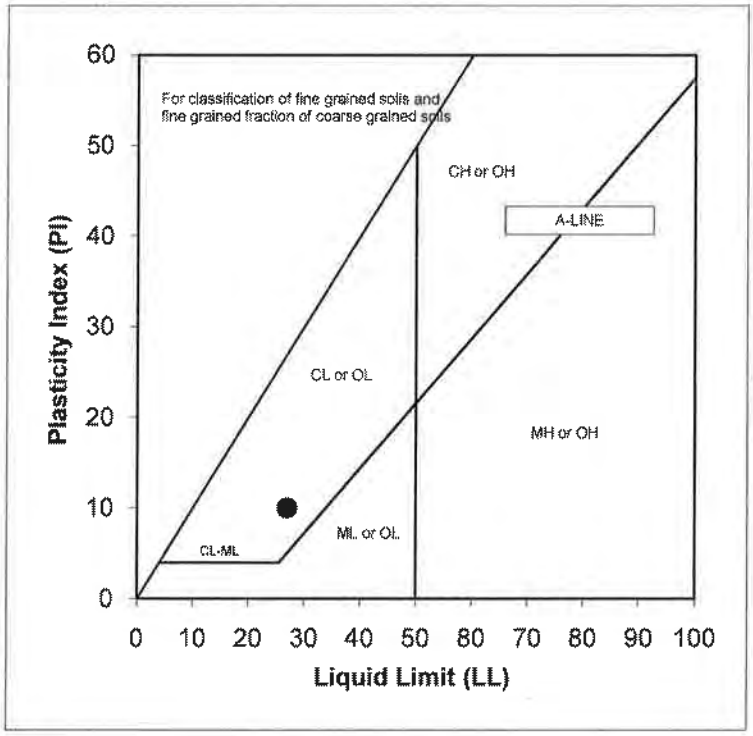
Atterberg Limits

(ASTM D4318)

G Force Lab No.	9453		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	7/30/2013	By:	JLN
Boring No.:	B-5	Depth (ft.):	25'
Sample Description:	Brown Clayey Sand (CL/ML)		

Liquid Limit	27
Plastic Limit	17
Plasticity Index	**10**
Classification	**(CL)**



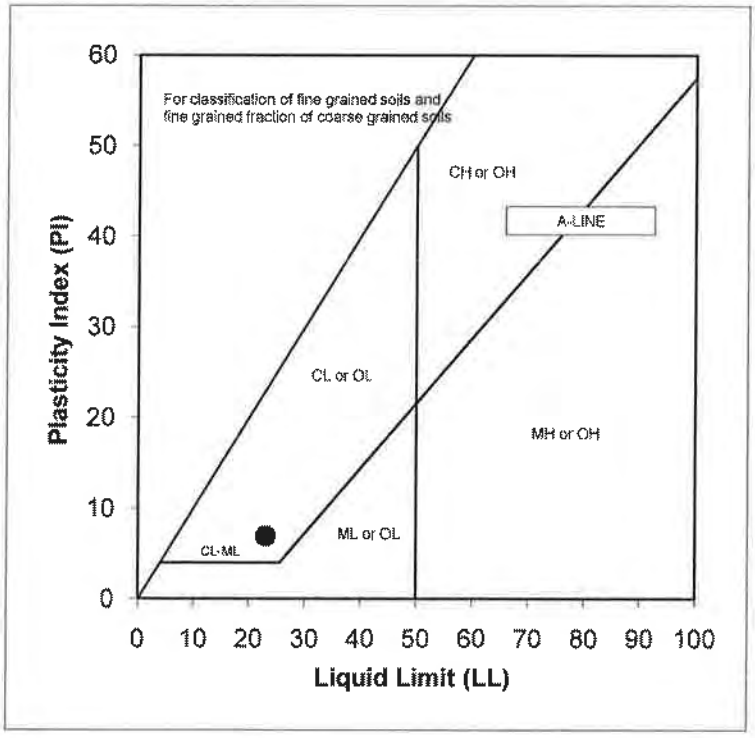
Reviewed by: _____
Neal W. Clements, P.E., C54902

Atterberg Limits

(ASTM D4318)

G Force Lab No.	9454		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	7/30/2013	By:	JLN
Boring No.:	B-5	Depth (ft.):	30'
Sample Description:	Brown Silty Sand (CL/ML)		

Liquid Limit	23
Plastic Limit	16
Plasticity Index	**7**
Classification	**(CL)**



Reviewed by: _____

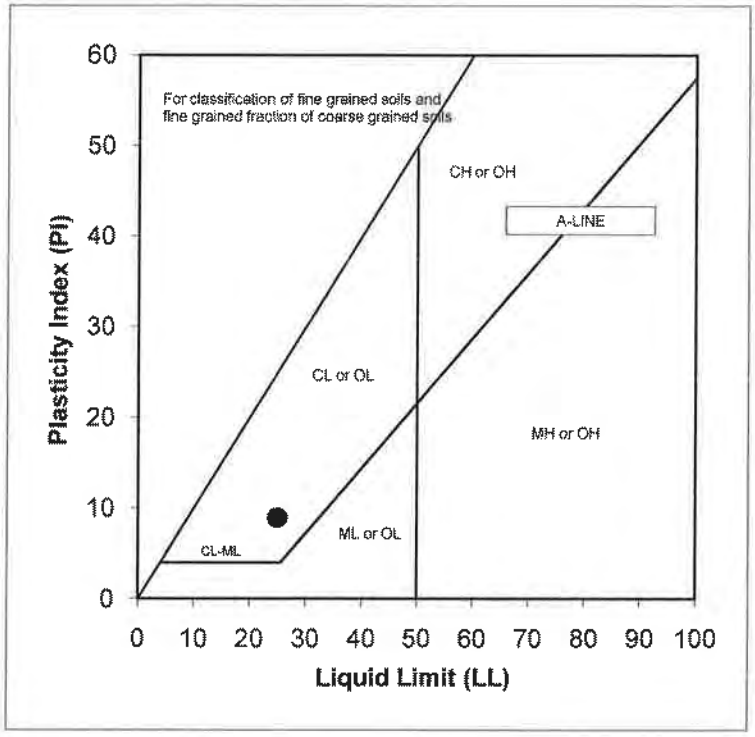
Neal W. Clements, P.E., C54902

Atterberg Limits

(ASTM D4318)

G Force Lab No.	9455		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	7/30/2013	By:	JLN
Boring No.:	B-5	Depth (ft.):	35'
Sample Description:	Brown Clayey Sand (CL/ML)		

Liquid Limit	25
Plastic Limit	16
Plasticity Index	**9**
Classification	**(CL)**



Reviewed by: _____
Neal W. Clements, P.E., C54902

Expansion Index (ASTM D4829)

G Force Lab No.	9391		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	07/15/13	By:	JLN
Sample Location:	B-1 @ 5'		
Sample Description:	Brown Silty Sand (SM)		

Initial Water Content, %	9.1
Dry Density, pcf	112.3
Saturation, %	49.1
Initial Dial Reading, in.	0.0000
Final Dial Reading, in.	0.0318
Final Water Content, %	16.7
Expansion Index	**31**
Potential Expansion	**Low**

Checked by: _____
Adam Thomas, Lab Manager

Reviewed by: _____
Neal W. Clements, P.E., C54902

Expansion Index (ASTM D4829)

G Force Lab No.	9415		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	07/15/13	By:	JLN
Sample Location:	B-5 @ 5'		
Sample Description:	Light Brown Sandy Silt (ML)		

Initial Water Content, %	11.5
Dry Density, pcf	103.9
Saturation, %	49.9
Initial Dial Reading, in.	0.0000
Final Dial Reading, in.	0.0514
Final Water Content, %	25.5
Expansion Index	**51**
Potential Expansion	**Medium**

Checked by: _____
Adam Thomas, Lab Manager

Reviewed by: _____
Neal W. Clements, P.E., C54902

♦ 4035 Pacific Highway, San Diego, CA 92110 ♦ Tel: 619-583-6633 ♦
www.gforceca.com

Soil Density and Moisture Content

Lab No.	9391	9393	9395	9396	9397	9398
Boring No.	B-1	B-1	B-2	B-2	B-2	B-2
Depth, ft.	5'	15'	10'	30'	40'	50'
Moisture Content, %	8.0	15.2	13.0	19.8	19.1	22.6
Dry Density, pcf	107.5	109.1	102.6	114.2	114.5	107.2

Lab No.	9400	9402	9403	9408	9410	9416
Boring No.	B-3	B-3	B-3	B-4	B-4	B-5
Depth, ft.	5'	15'	25'	10'	20'	10'
Moisture Content, %	12.8	11.2	14.7	15.2	14.2	12.3
Dry Density, pcf	115.6	113.2	121.1	113.4	118.1	106.3

Lab No.	9417	9419	9421
Boring No.	B-5	B-5	B-5
Depth, ft.	20'	30'	40'
Moisture Content, %	14.3	18.3	22.2
Dry Density, pcf	118.9	120.3	102.5

Moisture Content

Lab No.	9401	9411	9415
Boring No.	B-3	B-4	B-5
Depth, ft.	10'	25'	5'
Moisture Content, %	11.4	13.7	8.3

Sampled By: JW
Date Sampled: July 10 and 11, 2013
Engineer: JLN

Checked by: _____
Adam Thomas, Lab Manager

Reviewed by: _____
Neal W. Clements, P.E., C54902

Soil Density and Moisture Content

Lab No.	9445
Boring No.	B-2
Depth, ft.	20'
Moisture Content, %	16.1
Dry Density, pcf	114.4

Sampled By: JW
Date Sampled: July 10 and 11, 2013
Engineer: JLN
Date Submitted :7-30-13

Reviewed by: _____
Neal W. Clements, P.E., C54902

Specific Gravity of Soils (ASTM D854)

G Force Lab No.	9403		
Date Sampled:	July 10 and 11, 2013	By:	JW
Date Submitted:	07/15/13	By:	JLN
Boring No.	B-3	Depth:	25'
Sample Description:	Brown Silty, Clayey, Sand (SC)		

Percent Passing #4 Sieve, %:	100.0
Method:	B
Specific Gravity @ Test Temp.	2.728
Vol. of Pycnometer, mL	500.81
Dry Wt. of Soil:	75.43
Test Temperature, °C	25.1
Specific Gravity @ 20 °C	**2.725**

Checked by: _____
Adam Thomas, Lab Manager

Reviewed by: _____
Neal W. Clements, P.E., C54902

Geosyntec Consultants **July 25, 2013**

Kettner Substation Relocation **GF13578**

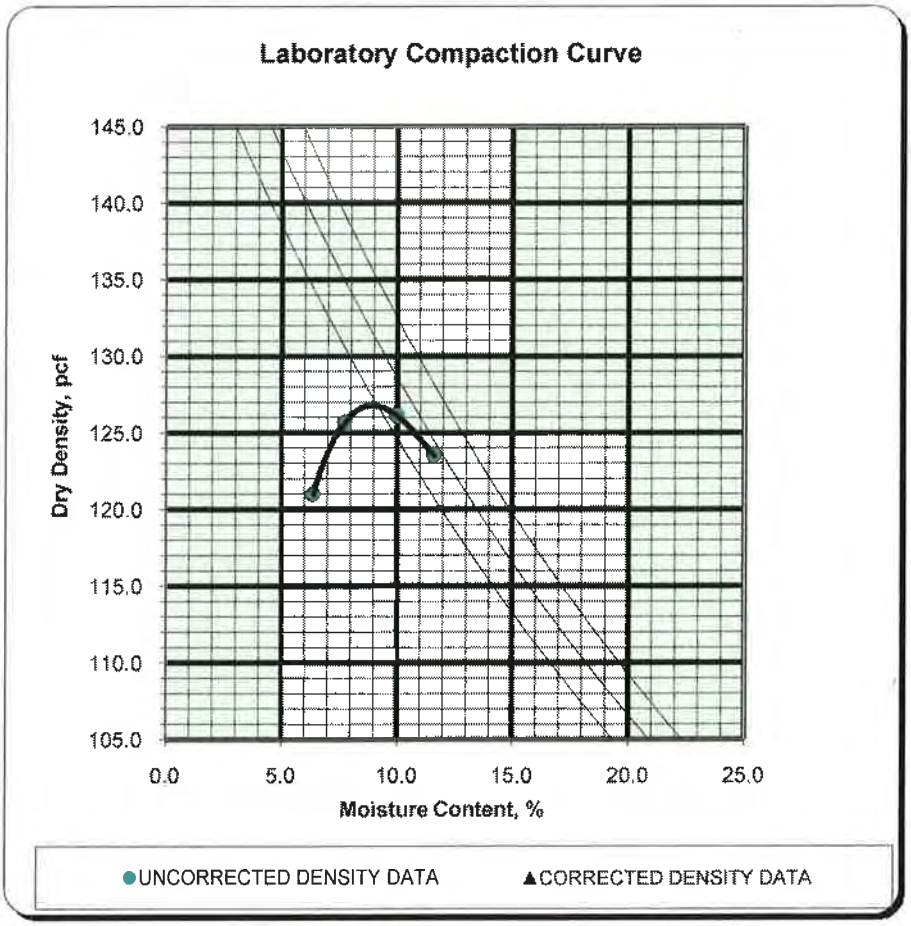
Geosyntec Project No. SC0368-30

LABORATORY COMPACTION CURVE

G Force Lab No.:	**9394**		
Boring No.	**B-2**	EL., ft.:	**0 - 5'**
Soil Description:	**Brown Sandy Clay (CL)**		
Source of Soil:	**Native**		

Test Designation:	**ASTM D1557**	Method	**A**
% +3/4" **0.2**	% +3/8" **0.5**		% +#4 **1.1**
Oversize Correction Applied?	**No**		
Method of Sample Preparation:	**Dry**		
Type of Rammer Used:	**Manual**		

M/D Curve No. B-2



Test Results

Maximum Density, pcf	**127.0**
Optimum Moisture, %	**9.0**

Reviewed by: _____

Neal W. Clements, P.E., C54902

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Soil Corrosivity

(ASTM D4972,CTM 417,CTM 422)

Lab Number	Boring No.	Depth	Sulfate %	Chloride %	PH	Resistivity (OHM-cm)
9390	B-1	0 - 5'	0.034	0.016	8.30	1215

Lab Number	Boring No.	Depth	Sulfate %	Chloride %	PH	Resistivity (OHM-cm)
9407	B-4	5'	0.031	0.111	8.13	265

Date Sampled: July 10 and 11, 2013
Sampled By: JW
Date Submitted: 7/15/2013
Submitted By: JLN

Reviewed by: _____
Neal W. Clements, P.E., C54902

R-Value Test Results

Subject: On 7/15/12, One soil sample was submitted to G Force for the above referenced project. The sample was identified as B-3 @ 0' - 5'. Lab No. 9399 was assigned to the sample. The sample was submitted to Southern California Soil and Testing, Inc. for R-value determinations. Results from Southern California Soil and Testing were received on 7/26/13.

Results: Attached are R-value test results as reported by Southern California Soil and Testing, Inc..

Checked by: _____
Neal W. Clements, P.E., C54902

SOUTHERN CALIFORNIA SOIL AND TESTING, INC.

6280 RIVERDALE STREET, P. O. BOX 600627, SAN DIEGO, CA 92180 (619) 280-4321

☑ CAL-TEST 301
☐ ASTM D 2844

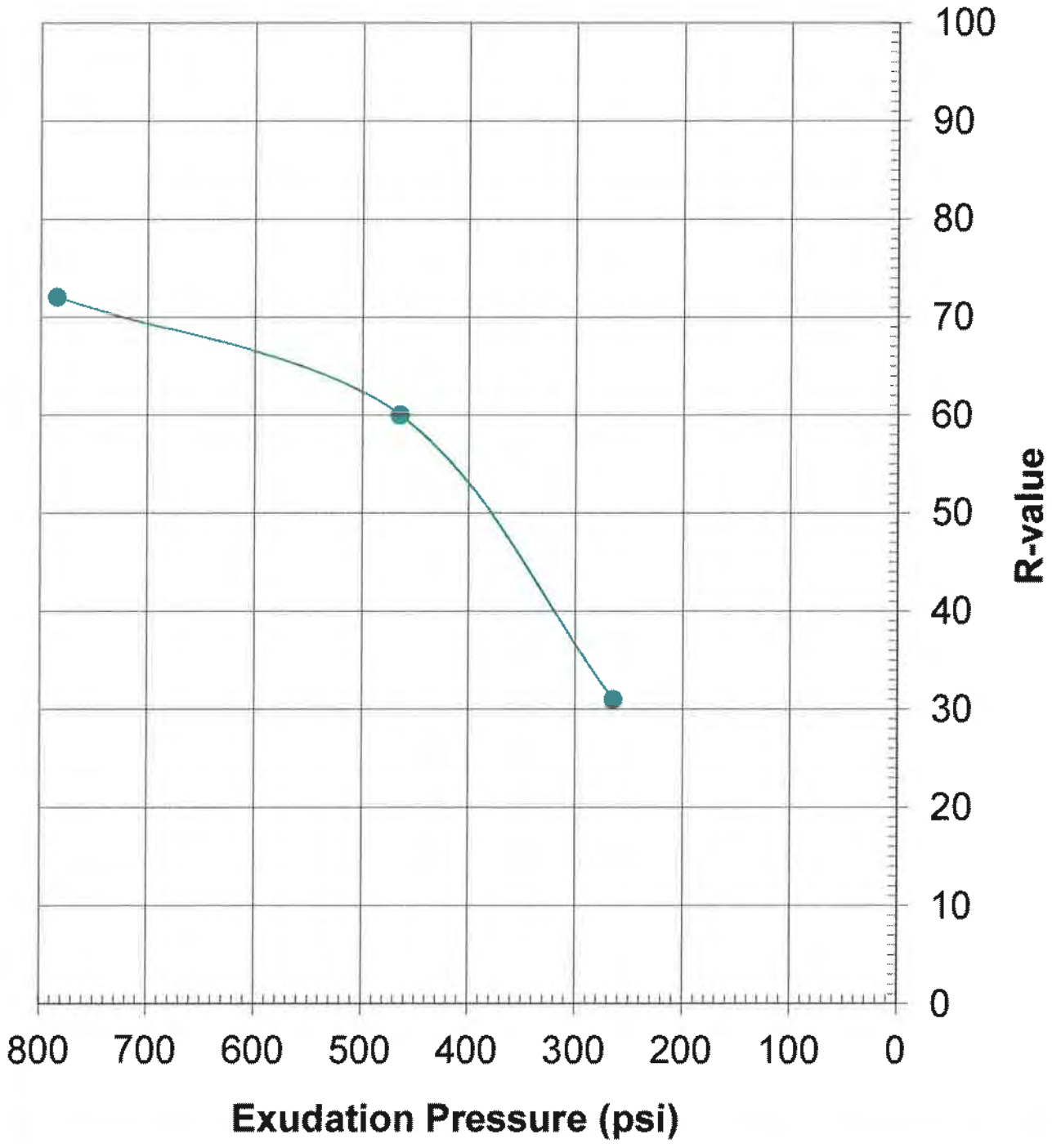
Job Name: G-Force #GF13580L **Job No.:** 1312123
Date: 07/24/13 **Street:** n/a
Sample #: Lab #9399 **Station:** n/a
Source: B3@0-5' **By:** DRB
Description: Brown F-M Silty Sand w/ Trace Gravel

Test Specimen		A	B	C	D
Date Tested		7/24/2013	7/24/2013	7/24/2013	
Compactor Air Pressure	PSI	225	350	350	
Initial Moisture	%	5.6	5.6	5.6	
Soil Wt. Added	GRAMS	1060	1080	1080	
Water Added	ML	50	40	35	
Water Added	%	5	3.9	3.4	
Moisture At Compaction	%	10.6	9.5	9	
Weight of Briquette & Tare	GRAMS	3163	3159	3168	
Net Weight of Briquette	GRAMS	1103	1114	1109	
Briquette Height	IN	2.44	2.45	2.45	
Density	PCF	123.8	125.8	125.8	
Exudation Pressure	PSI	265	465	785	
Expansion Pressure	PSF	0	0	0	
PH at 1000 Pounds	PSI	35	19	13	
PH at 2000 Pounds	PSI	70	37	25	
Displecement	Turns	6.50	5.55	5.20	
R' Value		33	60	72	
Stabilometer Thickness	FT	0.99	0.58	0.4	
Expension Thickness	FT	0	0	0	
Expension Dial Reading		0000	0000	0000	
R' Value Modifier		-2	0	0	
Corrected R-Value		31	60	72	
R-Value by Exudation Pressure			36		
Gravel Equivalent		0	0	0	
Traffic Index		4.5	4.5	4.5	
R-Value by Expansion Pressure			N/A		
R-Value at Equivalent			**36**		

Grain Size Distribution

	As Received Minus #4 Sample			As Tested Plus #4 Sample		
		% Ret.	% Pass	Wt. Ret.	% Ret	% Pass
Totel Equals						
Total + #4						
Total - #4						
Sieve						
1						
3/4						
1/2						
3/8						
#4						

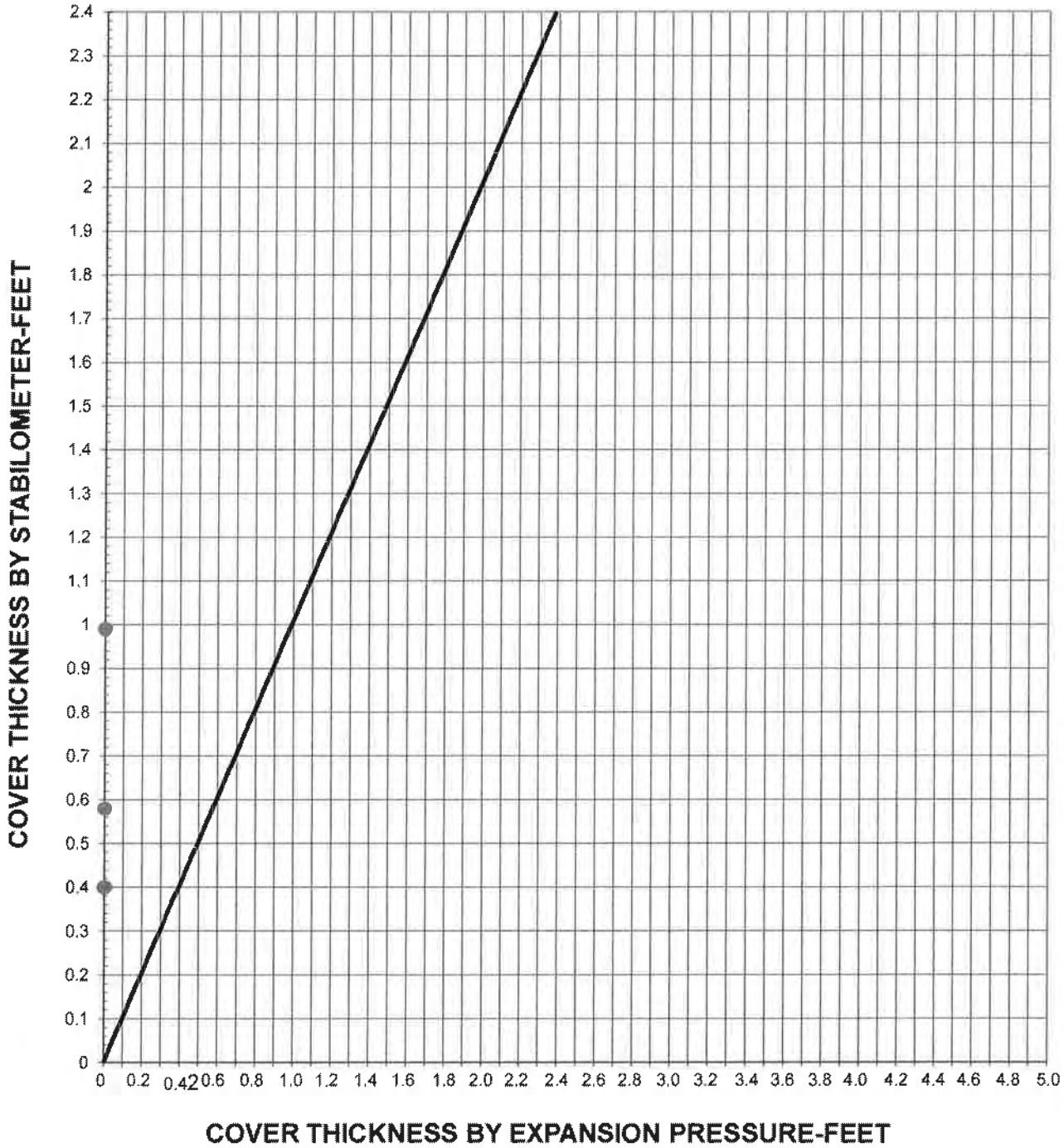
R-value By Exudation Pressure



SOUTHERN CALIFORNIA SOIL AND TESTING, INC.

Job Name:		G-Force #GF13580L	
By:	DRB	Date:	7/24/2013
Job No.:	1312123	Sample No.:	Lab #9399
R-Value by Ex.:	36	Plate No.:	

EXPANSION PRESSURE CHART



SOUTHERN CALIFORNIA SOIL AND TESTING, INC.	Job Name:		G-Force #GF13580L	
	By:	ORB	Date:	7/24/2013
	Job No.:	1312123	Sample No.:	Lab #9399
	Gravel Equ:	0	Plate No.:	

APPENDIX E

Seismic Evaluations

Geosyntec consultants

2100 Main Street, Suite 150
Huntington Beach, California 92648
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FAX 714.969.0820
www.geosyntec.com

21 November 2013

Ms. Jennifer Nevius, P.E., G.E.
Senior Engineer
Geosyntec Consultants, Inc.
10875 Rancho Bernardo Rd., Suite 200
San Diego, CA 92127

Subject: Seismic Evaluations
Vine Substation
San Diego, California

Dear Ms. Nevius:

This letter report presents the results of the seismic evaluations performed by Geosyntec Consultants, Inc. (Geosyntec) to support planning, design, and construction of the proposed Vine Substation in San Diego, California.

PROJECT DESCRIPTION

San Diego Gas and Electric Company (SDG&E) plans to relocate the existing Kettner Substation from its current location south of Palm Street and west of Kettner Boulevard to its new location south of Vine Street and west of Kettner Boulevard (site) in San Diego, California. The project was previously called "Kettner Substation Relocation", but has been renamed, as the Kettner Substation will remain in operation. The approximate location of this site with respect to the major highways in the area is shown on Figure 1.

A plan view of the site is shown on Figure 2; the site extends over approximately 1.5 acres and is presently developed as a commercial parking lot. The approximate coordinates of the geometric center of the site are 32.739 North Latitude and -117.179 West Longitude.

PURPOSE AND SCOPE OF EVALUATIONS

The purposes of these engineering evaluations were: (i) assessment of soil liquefaction potential at the site; (ii) evaluation of soil liquefaction impacts, if any; and (iii) development of seismic parameters for structural design.

To achieve these objectives, Geosyntec:

- Evaluated seismic hazard parameters;
- Developed design ground motions;
- Performed site response analysis;
- Evaluated soil liquefaction potential;
- Evaluated soil liquefaction-induced site impacts; and
- Developed structural design parameters.

The above outlined engineering evaluations were based upon site-specific geological, hydrogeological, and geotechnical information.

SUBSURFACE CONDITIONS

Knowledge of the site subsurface conditions was developed from a review of regional geologic conditions, previous geotechnical investigations by others, and the current investigation.

Benton [1974; 1977] previously performed investigations at the site that included hollow stem drilling, excavation of test pits, and geotechnical laboratory testing. For the current study, Geosyntec [2013] advanced five borings and twenty six Cone Penetration Test (CPT) soundings, and performed geotechnical laboratory testing. Six of these CPT soundings also included shear wave velocity measurements.

The approximate location of these explorations are shown on Figure 2 along with the locations of geotechnical cross-sections (designated as Section A-A' through Section D-D') developed by Geosyntec [2013]. These cross-sections are reproduced herein on Figure 3 (Section A-A'), Figure 4 (Section B-B'), Figure 5 (Section C-C') and Figure 6 (Section D-D'). These cross-sections indicate that the site has been graded in the past, with fill thickness extending up to approximately 12 feet below the existing ground surface (bgs). The underlying colluvium and old paralic deposits are very gently sloping alternating layers of silty sand (SM), clayey sand (SC), low plasticity silt (ML) and low plasticity clay (CL).

Groundwater, as observed in boreholes and inferred from the CPT soundings, was estimated at approximately 24 to 25 feet bgs. However, information on the depth to

bedrock that is required for execution of site response analysis is lacking and cannot be inferred from existing information.

Inferred site stratigraphy and the moist unit weight profile established as representative of broader site conditions is presented on Figure 7. Moist unit weight profile was determined by previous and current geotechnical laboratory test data and correlation to representative CPT data (CPT C-1, C-8, C-15, C-16, and C-22).

Similarly, Figure 8 presents shear wave velocity (V_s) profile established as representative of the broader site conditions. This profile was determined by evaluation of the V_s data collected from CPTs C-1, C-8, C-10, C-15, C-16, and C-22. The average V_s over the top 100 feet, or approximately 30 meters, of the profile (V_{s30}) is 1,300 feet per second (ft/s). Based upon this information, the site may be classified as Site Class C in accordance with the site classification scheme presented in the International Building Code (IBC) and adopted by the 2013 edition of the California Building Code (2013 CBC).

EVALUATION OF SEISMIC HAZARD PARAMETERS

Geosyntec performed probabilistic seismic hazard analysis (PSHA) to evaluate seismic hazard parameters at the geometric center of the site. The PSHA was performed for:

- Free-field site conditions that are representative of conditions at the top of soil profile at the site; and
- Hypothetical bedrock outcrop conditions that are representative of bedrock underlying the site.

The geometric center of the site was established at approximate geographic coordinates are 32.739 North Latitude and -117.179 West Longitude. A V_s value of 2,500 ft/s was assigned to the hypothetical bedrock outcrop at the site based upon Burger [1992]. The evaluation for free-field site conditions was performed for V_{s30} equal to 1,300 ft/s that was established based upon site-specific measurements.

To establish the design earthquake, probabilistic seismic hazard analysis was performed for an event with 2% probability of exceedance (PE) in 50 years by the means of the United States Geological Survey (USGS) on-line tools. The latest available (i.e., 2008) USGS database was used for this evaluation.

The results of the probabilistic seismic hazard analysis are presented on Figures 9 and 10. Figure 9 indicates that seismic hazard at the site is governed by a Moment Magnitude (**M**) 6.64 event on the San Diego section of Rose Canyon Fault Zone (RCFZ). Figure 9 further indicates that the RCFZ is approximately 1 km (0.6 miles) from the geometric center of the site. Figure 10 compares bedrock outcrop and free-field ground surface (target) acceleration response spectra (5% viscous damping) and shows a characteristic shift to the right when bedrock conditions transition to the free-field soil conditions.

As shown on Figure 10, the 2% PE in 50 years free-field Peak Ground Acceleration (PGA) is 0.60 g. This PGA, along with **M**6.64, may be used for evaluation of soil liquefaction potential at the site. The bedrock outcrop Peak Horizontal Ground Acceleration (PHGA) is 0.56 g.

EVALUATION OF DESIGN GROUND MOTIONS

In order to characterize design ground motions in time domain, Geosyntec established a suite of five acceleration time histories (design ground motions; accelerograms) for the site. As the depth to bedrock cannot be inferred from existing field exploration data, the design ground motions were initially selected to conform to the ground surface (i.e., free-field soil conditions) target spectrum. The selection process was as follows:

- Screen the Next Generation Attenuation (NGA) database of acceleration time histories on the basis of site conditions, earthquake magnitude, and PGA similar to those established for the site;
- Plot the acceleration response spectra of the candidate accelerograms (24 motions) against the target soil acceleration response spectrum; and
- Out of 24 candidate motions, select 5 motions that most closely conform to the target free-field (soil) spectrum over a broad range of periods.

Following the above outlined methodology, Geosyntec established a suite of 5 design accelerograms that conform to the target soil spectrum. These accelerograms include:

- The NGA No. 1095 accelerogram, recorded in the 1994 **M**6.7 Northridge, California earthquake at the Whittier - S. Alta Drive station;
- The NGA No. 730 accelerogram, recorded in the 1988 **M**6.8, Spitak, Armenia earthquake at the Gukasian station;

- The NGA No. 2550 accelerogram, recorded in the 1999 **M**7.6 Chi-Chi, Taiwan earthquake at the HWA050 station;
- The NGA No. 1012 accelerogram, recorded in the 1994 **M**6.7 Northridge earthquake at Los Angeles 00 station; and
- The NGA No.: 1056 accelerogram, recorded in the 1994 **M**6.7, Northridge earthquake at Phelan Wilson Ranch station;

The acceleration response spectra of the above listed accelerograms, scaled to a free-field (soil) PGA of 0.60 g, are plotted against the free-field (soil) target acceleration response spectrum on Figure 11. Figure 11 indicates that the acceleration response spectra of these accelerograms match and/or exceed the target acceleration response spectrum over a broad range of periods. Therefore, these accelerograms scaled to a PGA of 0.60 g are selected for use in site response analysis.

SITE RESPONSE ANALYSIS

General

Geosyntec conducted a site response analysis to evaluate the response of the site to design ground motions. As depth to bedrock cannot be inferred from existing information, a deconvolution of design ground motions was performed first to assess depth to bedrock. Once depth to bedrock was assessed, a conventional site response analysis was performed. The purpose of the conventional site response analysis was to develop input parameters for evaluation of soil liquefaction potential at the site.

Dynamic Response Model

The dynamic response model for both deconvolution of design ground motion and for site response analysis was developed for the geometric center of the site. The average unit weight and average shear wave velocity profiles that form a backbone of this model are shown on Figures 7 and 8. As indicated in Figures 7 and 8, moist unit weight of 116 pounds per cubic foot (pcf) was assigned within top 10.5 feet of the profile, while 128 pcf was assigned within the remainder of the profile, with a constant value of shear wave velocity of 1,300 ft/s applied over the entire profile.

Also indicated in Figures 7 and 8 is the inferred stratification (layering) of the site and associated material characterization. The particular material classification and confining stress calculated from the average unit weight profile served as a basis for selection of nonlinear properties of on-site soils. In particular, Geosyntec selected the stress and

Plasticity Index-dependent Darendeli [2001] modulus reduction and damping curves for development of site response analysis model.

Both the deconvolution of design ground motion and site response analysis were performed in frequency domain using the latest iteration of one-dimensional equivalent-linear site response analysis program SHAKE [Schnabel et al., 1972]. In particular, Geosyntec employed SHAKE2000 [www.GeoMotions.com].

Deconvolution of Design Ground Motions

The principle of the deconvolution of design ground motion is schematically presented on Figure 12. As depicted, the deconvolution analysis starts with propagation of a design ground motion downward, from the free-field ground surface to an assumed elevation of bedrock. The results are monitored in a form of calculated acceleration response spectrum at the assumed bedrock level and are compared to the target bedrock spectrum that was evaluated as a part of seismic hazard analysis. If a reasonable agreement between the calculated acceleration spectrum and the target bedrock spectrum is obtained, the process is repeated with other accelerograms in the suite of design accelerograms. If the agreement is judged not to be satisfactory, depth to bedrock is increased and the process is repeated until the satisfactory agreement is obtained.

The results of deconvolution analysis are shown on Figure 13. These results indicate that: (i) bedrock at this site is at an approximate depth of 200 ft bgs; and (ii) the predominant period of this site, evaluated as (4 x 200 ft)/$V_{s,average}$ = 0.62 seconds.

The acceleration time histories calculated by deconvolution at a depth of 200 ft bgs (see acceleration response spectra of these time histories on Figure 13) can be used for site response analysis at this site.

Site Response Analysis

The purpose of the conventional site response analysis was to develop input parameters for evaluation of soil liquefaction potential at the site, namely to establish a profile of design Earthquake Cyclic Stress Ratio (CSR_{EQ}).

The site response analysis was performed using the 200-foot high one-dimensional site model shown on Figures 7 and 8. The results are presented on Figure 14 in a form of calculated and an average CSR_{EQ} profiles. Figure 14 further indicates that a relatively narrow band of CSR_{EQ} was calculated across the entire profile. Therefore, the average

calculated CSR_{EQ} profile can be used for evaluation of soil liquefaction potential at this site.

ASSESSMENT OF SOIL LIQUEFACTION POTENTIAL

Soil liquefaction potential was evaluated using the Youd et al. [2001] procedure, as coded in the computer program CLiq [GeoLogismiki, 2013]. The analysis was performed for individual CPT soundings. A "design high" groundwater elevation of approximately 20 feet bgs was assumed for soil liquefaction analysis [Geosyntec, 2013].

The CSR_{EQ} profile evaluated as a part of site response analysis was directly input into CLiq. A "thin-layer" correction procedure [Robertson and Wride, 1998] was implemented to account for presence of thin layers of high permeable soils (e.g., sands) that are locally "sandwiched" between relatively thick layers of low permeable soils (e.g., clays).

A summary of the liquefaction evaluation results are shown on Figures 15 and 16; detailed results of the liquefaction analysis are presented in Attachment A to this letter. The results of seismic evaluations documented herein indicate that relatively thin and isolated lenses of saturated sandy soil may liquefy during the design earthquake. These lenses are unevenly distributed within the top 60 feet of the profile. The lens thickness approximately ranges from 1.5 to 5 feet with an average thickness of 2.6 feet.

ASSESSMENT OF SOIL LIQUEFACTION IMPACT

Potential impacts of soil liquefaction at this site include:

- Surface manifestation;
- Lateral spreading;
- Total and differential downdrag settlement of deep foundations; and
- Drag load on deep foundations.

By inspection, we judge that potential for surface manifestation of soil liquefaction is small as the "crust" of non-liquefiable soils is over 30 ft thick. Also by inspection, we further judge that potential for lateral spreading at this site is low as: (i) potentially-liquefiable soil lenses do not appear to be connected; (ii) the site is relatively level; (iii)

a free-face and/or steeply sloped site conditions do not exist in a relative vicinity of the site; and (iv) the depth to the potentially liquefiable soils is relatively high.

The magnitude of soil liquefaction-induced settlement calculated for each CPT sounding is relatively small; the calculated values range from a fraction of an inch to 2.3 inches, with an average value of 0.8 inches. As Building Departments in southern California typically limit allowable (total) settlement to 4 inches and allowable (differential) settlement to 1 inch over a standard 30-foot span, we judge that the impact of soil liquefaction-induced settlement on proposed development is small.

While the average magnitude of liquefaction-induced settlement is relatively small, soil liquefaction may induce drag loads and downdrag on deep foundations. Therefore, design of deep foundations should include additional drag loads in the top 60 feet of the site profile.

PARAMETERS FOR STRUCTURAL DESIGN

Geosyntec evaluated the design spectral response acceleration parameters in accordance with the requirements of the 2010 and 2013 Editions of the CBC. The calculations are in accordance with site classification established above (Site Class C), and include the following:

$$S_{MS} = F_a S_s$$

$$S_{M1} = F_v S_1$$

and

$$S_{DS} = 2/3\ S_{MS}$$

$$S_{D1} = 2/3\ S_{M1}$$

where S_s and S_1 are mapped spectral response accelerations at 0.2 s and 1.0 s periods respectively. F_a and F_v are site coefficients (herein corresponding to Site Class C) at 0.2 s and 1.0 s periods respectively. S_{MS} and S_{M1} are adjusted maximum considered earthquake spectral response accelerations at 0.2 s and 1.0 s periods correspondingly. S_{DS} and S_{D1} are design spectral acceleration parameters at 0.2 s and 1.0 s periods.

We understand that the Structural Engineer will select the edition of building code upon which structural design will be based. Geosyntec offers spectral response acceleration parameters for the two latest editions of CBC, as presented in Tables 1 and 2. Output from the USGS tool utilized to confirm the seismic design parameters is presented in Attachment B to this letter.

Table 1. 2010 CBC Seismic Parameters
Vine Substation
San Diego, California

Parameter [a]	Value
Site Soil Class	C
Mapped Spectral Response Acceleration at 0.2 s Period, S_S	1.60 g
Mapped Spectral Response Acceleration at 1.0 s Period, S_1	0.63 g
Short Period Site Coefficient at 0.2 s Period, F_a	1.00
Long Period Site Coefficient at 1.0 s Period, F_v	1.30
Adjusted Spectral Response Acceleration at 0.2 s Period, S_{MS}	1.60 g
Adjusted Spectral Response Acceleration at 1.0 s Period, S_{M1}	0.81 g
Design Spectral Response Acceleration at 0.2 s Period, S_{DS}	1.06 g
Design Spectral Response Acceleration at 1.0 s Period, S_{D1}	0.54 g

Note:

a. The 2010 CBC parameters are based on the ASCE 7-5 Standard/2009 International Building Code which makes use of the 2002 USGS hazard data.

Table 2. 2013 CBC Seismic Parameters
Vine Substation
San Diego, California

Parameter [b]	Value
Site Soil Class	C
Mapped Spectral Response Acceleration at 0.2 s Period, S_S	1.23 g
Mapped Spectral Response Acceleration at 1.0 s Period, S_1	0.48 g
Short Period Site Coefficient at 0.2 s Period, F_a	1.00
Long Period Site Coefficient at 1.0 s Period, F_v	1.32
Adjusted Spectral Response Acceleration at 0.2 s Period, S_{MS}	1.23 g
Adjusted Spectral Response Acceleration at 1.0 s Period, S_{M1}	0.63 g
Design Spectral Response Acceleration at 0.2 s Period, S_{DS}	0.82 g
Design Spectral Response Acceleration at 1.0 s Period, S_{D1}	0.42 g

Note:

b. The 2013 CBC parameters are based on the ASCE 7-10 Standard/2012 International Building Code which makes use of the 2008 USGS hazard data.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary and Conclusions

This letter report presents the results of the seismic evaluations performed by Geosyntec to support planning, design, and construction of the proposed Vine Substation project in San Diego, California. The ultimate objectives of these evaluations were: (i) assessment of soil liquefaction potential at the site; (ii) evaluation of soil liquefaction impacts, if any; and (iii) development of seismic parameters for structural design.

The results of seismic evaluations documented herein indicate that the design earthquake is an event with 2 percent PE in 50 years (2,475-year return period). The design earthquake magnitude corresponding to this design event is **M**6.64. The design (bedrock) PHGA is 0.56 g. The controlling fault is the RCFZ.

The results of seismic evaluations documented herein further indicate that relatively thin and isolated lenses of saturated sandy soil may liquefy in design earthquake. However, the impact of soil liquefaction on overall site response is relatively small and manifests itself primarily through soil liquefaction-induced settlements that are on the order of 1 inch. While the average magnitude of liquefaction-induced settlement is relatively small, soil liquefaction may induce drag loads and downdrag settlement on deep foundations. Therefore, design of deep foundations should include additional downdrag loads in the top 60 feet of the site profile.

LIMITATIONS

It should be recognized that the data, conclusions, and recommendations contained in this report are partially based on information provided and work conducted by others. Geosyntec is not responsible for circumstances resulting from errors, omissions, and inaccuracies in the information and work performed by others.

Geosyntec is not responsible for the use of the data or conclusions presented in this report for any purposes other than the specific purposes expressed herein. If you have any questions regarding this report or require additional information, please do not hesitate to contact either of the undersigned.

CLOSURE

This letter report was prepared in accordance with general standards of engineering practice existing in southern California at the time of preparation of this report. In

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accordance with the peer review policy of the firm, this letter report was reviewed by Steven Fitzwilliam, P.E., G.E., of Geosyntec.

Sincerely,

Zahra A. Amini, Ph.D.
Senior Staff Engineer

Neven Matasovic, Ph.D., P.E., G.E.
Associate

Attachments

SC0368\KET13-06

REFERENCES

Benton [1974], "Geotechnical Report, Preliminary Soils Investigation, Proposed Site No. 1 of Laurel Substation, South of the Intersection of Vine Street and Kettner Boulevard, San Diego, California," *Technical Report*, Benton Engineering, Inc., San Diego, California. Original Report dated 14 October 1974.

Benton [1977], "Geotechnical Report, Report of Investigation to Determine the Depths for Removal of Unsuitable Soils, Proposed Site No. 1 of Laurel Substation, South of the Intersection of Vine Street and Kettner Boulevard, San Diego, California," *Technical Report*, Benton Engineering, Inc., San Diego, California. Original Report dated 24 February 1977.

Burger, H.R. [1992], "Exploration Geophysics of the Shallow Subsurface," *Prentice Hall*, Englewood Cliffs, New Jersey, 489 p.

Darendeli, M. [2001], "Development of a New Family of Normalized Modulus Reduction and Material Damping Curves," *Ph.D. Dissertation*, Department of Civil Engineering, University of Texas, Austin.

Geologismiki, [2013], CLiq v1.7.4.34, Computer Program for the Evaluation of Liquefaction potential using CPT data and Post-earthquake Vertical Displacements by Geologismiki Geotechnical Software.

Geosyntec [2013], "Preliminary Geotechnical and Geologic Hazards Investigation Report, Kettner Substation Relocation, San Diego, California," Geosyntec Consultants, San Diego, California, draft report dated 12 August.

Robertson, P.K. and Wride, C.E. [1998], "Evaluating Cyclic Liquefaction Potential Using the Cone Penetration Test," *Canadian Geotechnical Journal*, Ottawa, 35(3), 442-459.

Schnabel, P.B., Lysmer, J. and Seed H.B. [1972], "SHAKE: A Computer Program for Earthquake Response Analysis of Horizontally Layered Site," Report no. UCB/EERC-72/12, Earthquake Engineering Research Center, University of California, Berkeley, California, 102 p.

Youd, T.L., Idriss, I.M., Andrus, R.D., Arango, I., Castro, G., Christian, J.T., Dobry, R., Finn, W.D., Harder Jr., L.F., Hynes, M.E., Ishihara, K., Koester, J.P., Liao, S., Marcuson III, W.F., Martin, G.R., Mitchell, J.K., Moriwaki, Y., Power, M.S., Robertson, P.K., Seed, R.B., and Stokoe II., K.H. [2001], "Liquefaction Resistance for Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils," *Journal of Geotechnical and Geoenvironmental Engineering*, 124(10).

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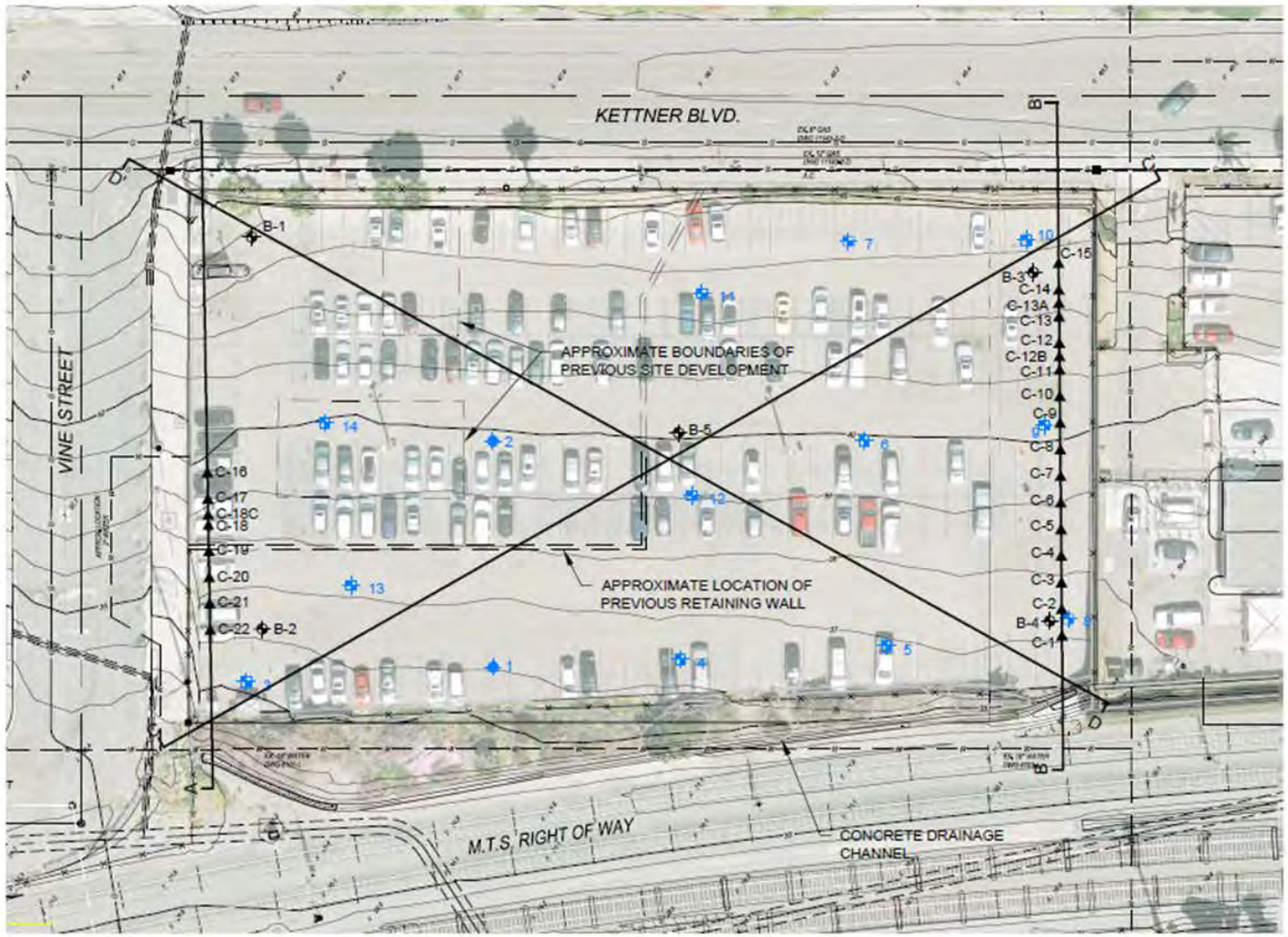
SITE LOCATION MAP
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	**NOVEMBER 2013**	**FILE NO.**	**FIGURE 1.DOC**
PROJECT NO.	**SC0368-30**	**FIGURE NO.**	**1**



LEGEND

- APPROXIMATE LOCATION OF BORING (GEOSYNTEC, 2013)
- APPROXIMATE LOCATION OF CPT (GEOSYNTEC, 2013)
- APPROXIMATE LOCATION OF BORING (BENTON, 1974)
- APPROXIMATE LOCATION OF TEST PIT (BENTON, 1974)
- A — A' APPROXIMATE LOCATION OF GEOLOGIC CROSS SECTION
- 40 EXISTING GROUND CONTOUR MAJOR (FEET)
- EXISTING GROUND CONTOUR MINOR (FEET)
- FENCELINE

0 40' 80'

SCALE IN FEET

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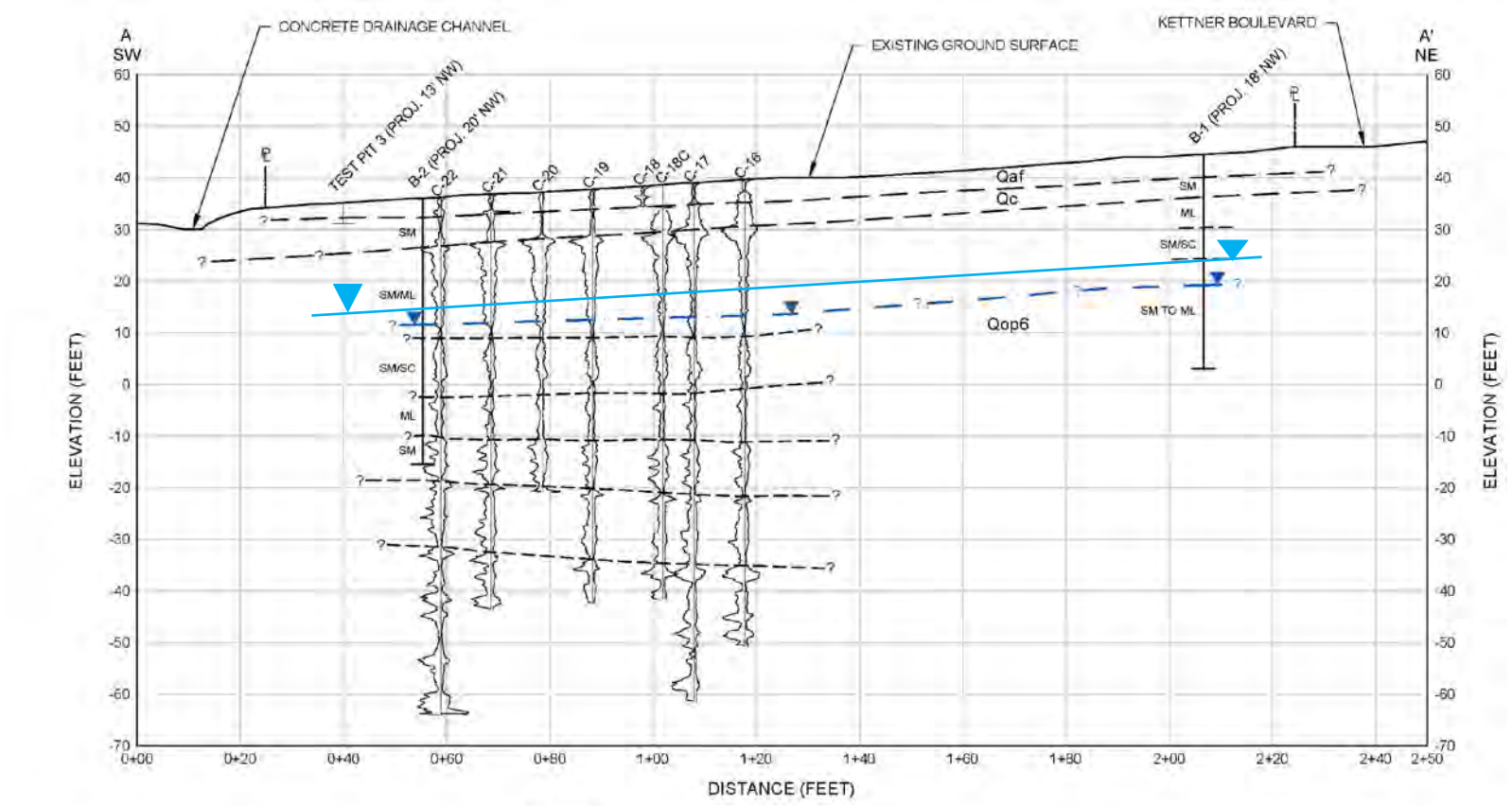
SITE AND EXPLORATION LOCATION PLAN
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 2.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	2



LEGEND

CPT DATA

Friction (tsf) 14 0 800 Tip Resistance (tsf)

- EXISTING GROUND
- GEOLOGIC CONTACT (QUERIED WHERE UNCERTAIN)
- LITHOLOGIC CONTACT (APPROXIMATE)
- INTERPRETED GROUNDWATER BASED ON MEASUREMENTS DURING EXPLORATION PROGRAM
- APPROXIMATE LOCATION OF BORING (GEOSYNTEC, 2013)
- APPROXIMATE LOCATION OF BORING (BENTON, 1974) OR TEST PIT (BENTON, 1977)
- PROPERTY LINE
- GROUNDWATER (DESIGN)

Qaf	ARTIFICIAL FILL
Qc	COLLUVIUM
Qop6	OLD PARALIC DEPOSITS
SP, SM, SC, ML, CL, CH	USCS CLASSIFICATION SEE APPENDIX B

0 20' 40'
SCALE IN FEET

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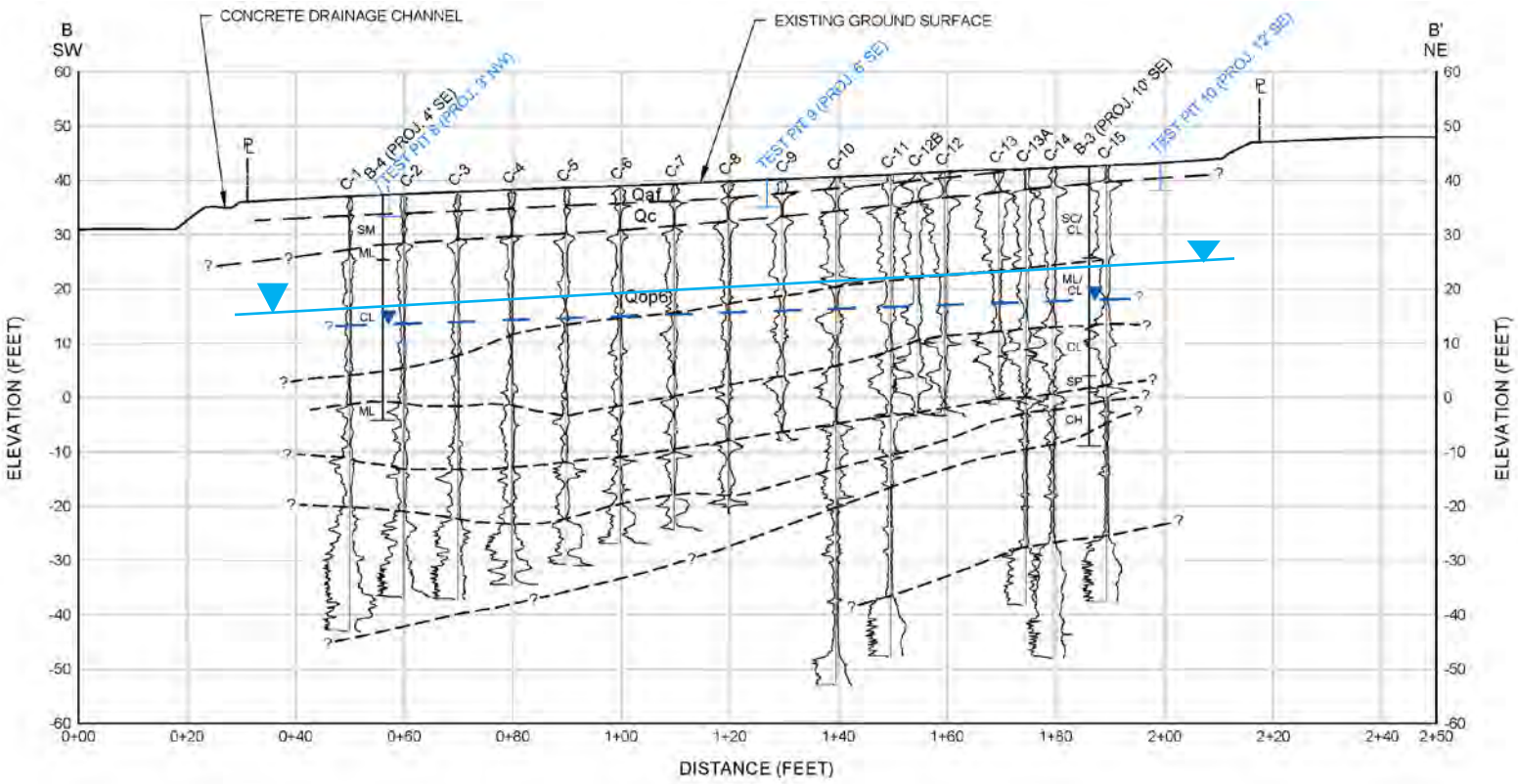
GEOLOGIC CROSS SECTION A-A'
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 3.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	3



LEGEND

CPT DATA

Friction (tsf) 14 0 800 Tip Resistance (tsf)

- EXISTING GROUND
- GEOLOGIC CONTACT (QUERIED WHERE UNCERTAIN)
- LITHOLOGIC CONTACT (APPROXIMATE)
- INTERPRETED GROUNDWATER BASED ON MEASUREMENTS DURING EXPLORATION PROGRAM
- APPROXIMATE LOCATION OF BORING (GEOSYNTEC, 2013)
- APPROXIMATE LOCATION OF BORING (BENTON, 1974) OR TEST PIT (BENTON, 1977)
- PROPERTY LINE
- GROUNDWATER (DESIGN)

Qaf	ARTIFICIAL FILL
Qc	COLLUVIUM
Qop6	OLD PARALIC DEPOSITS
SP, SM, SC, ML, CL, CH	USCS CLASSIFICATION SEE APPENDIX B

0 20' 40'
SCALE IN FEET

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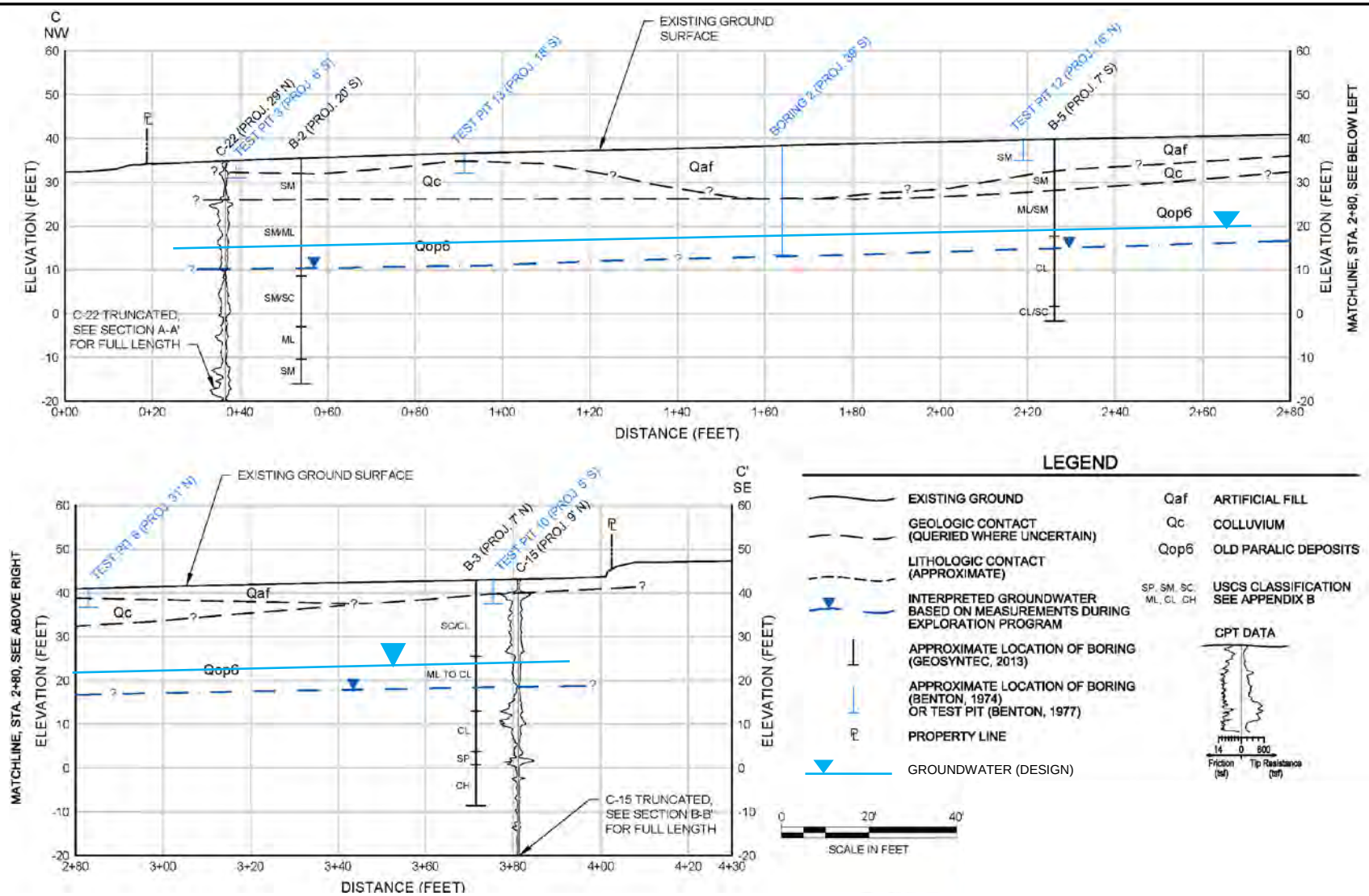
GEOLOGIC CROSS SECTION B-B'
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 4.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	4



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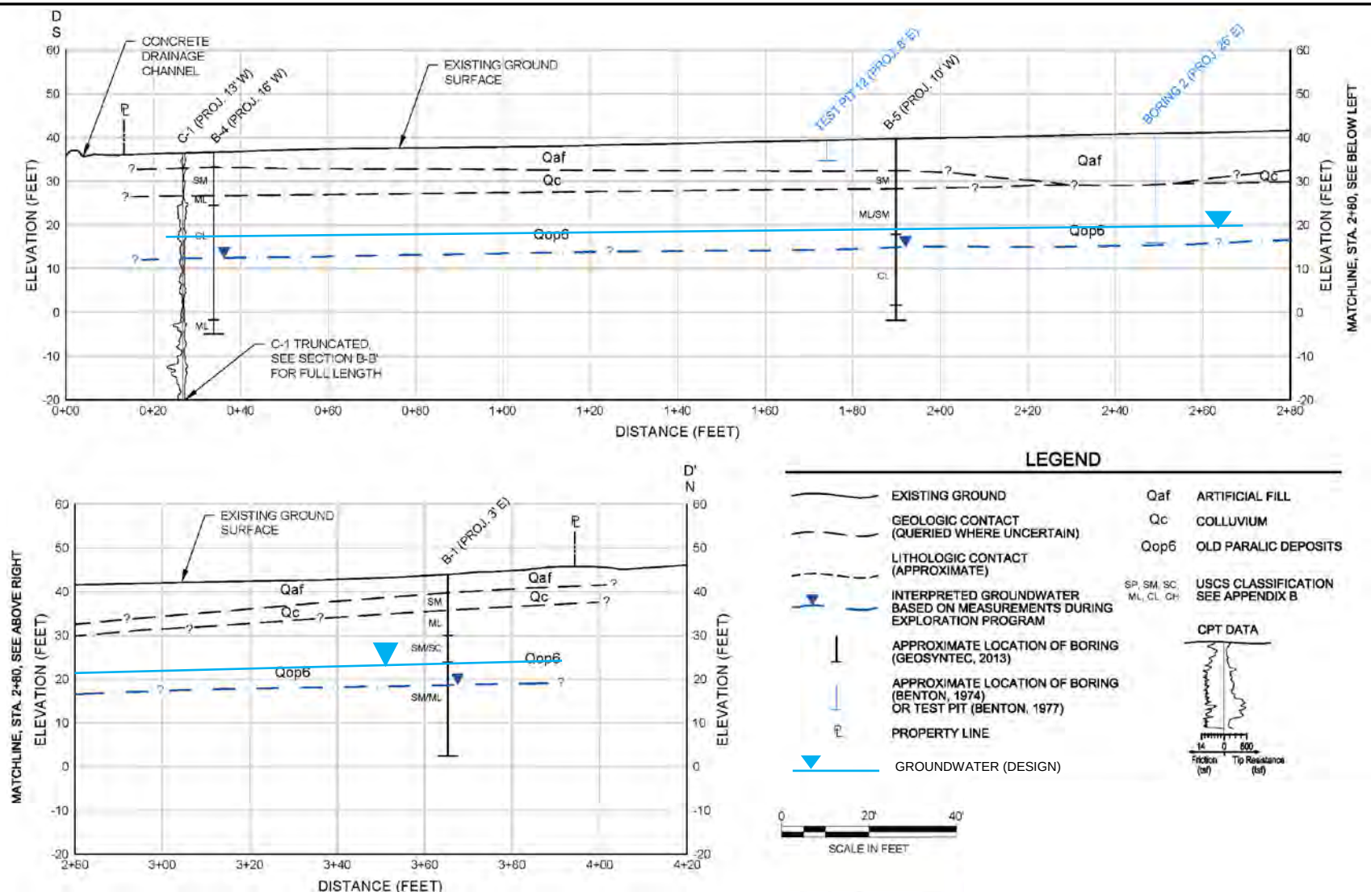
GEOLOGIC CROSS SECTION C-C'
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 5.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	5



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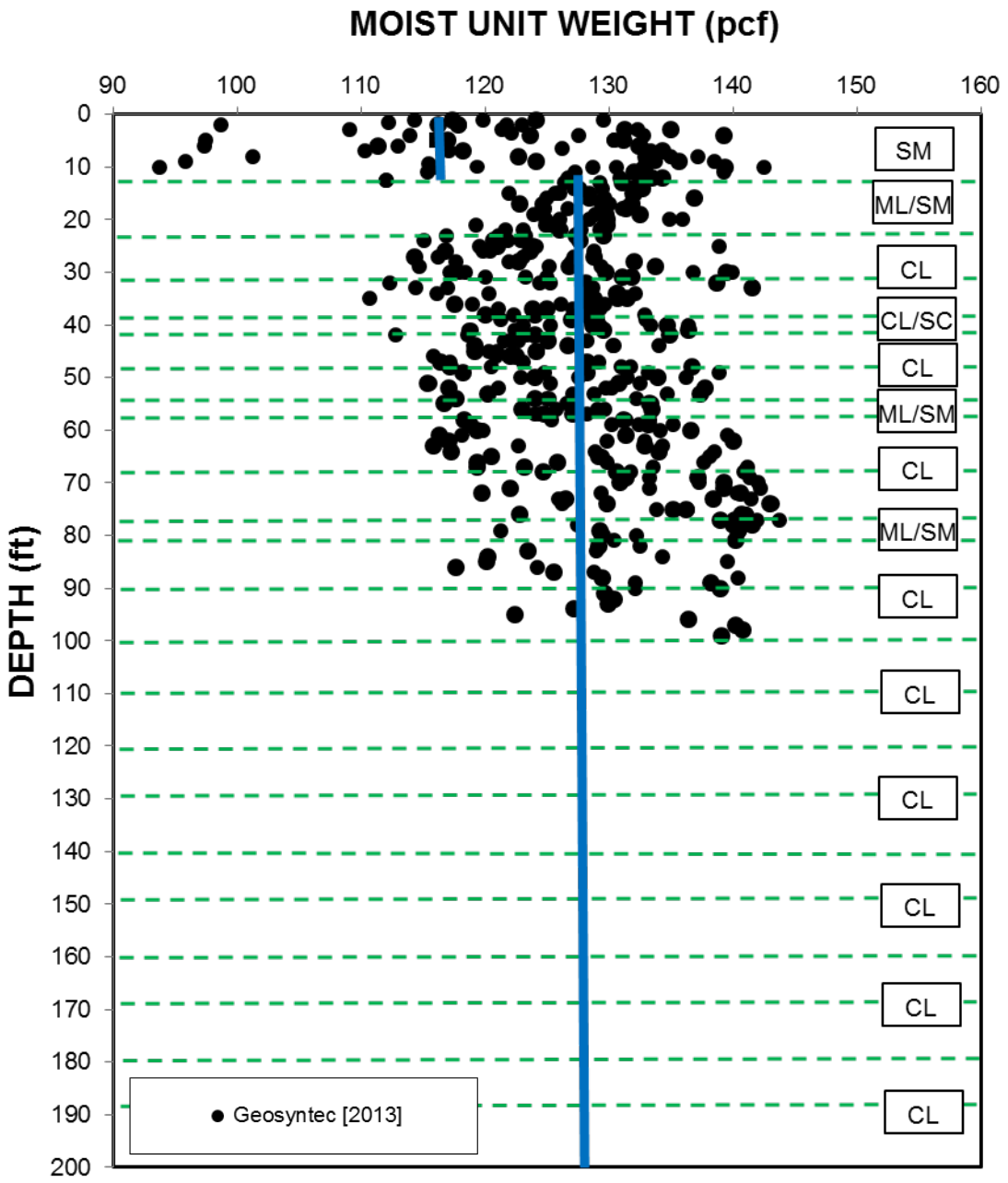
GEOLOGIC CROSS SECTION D-D'
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	**NOVEMBER 2013**	**FILE NO.**	**FIGURE 6.DOC**
PROJECT NO.	**SC0368-30**	**FIGURE NO.**	**6**



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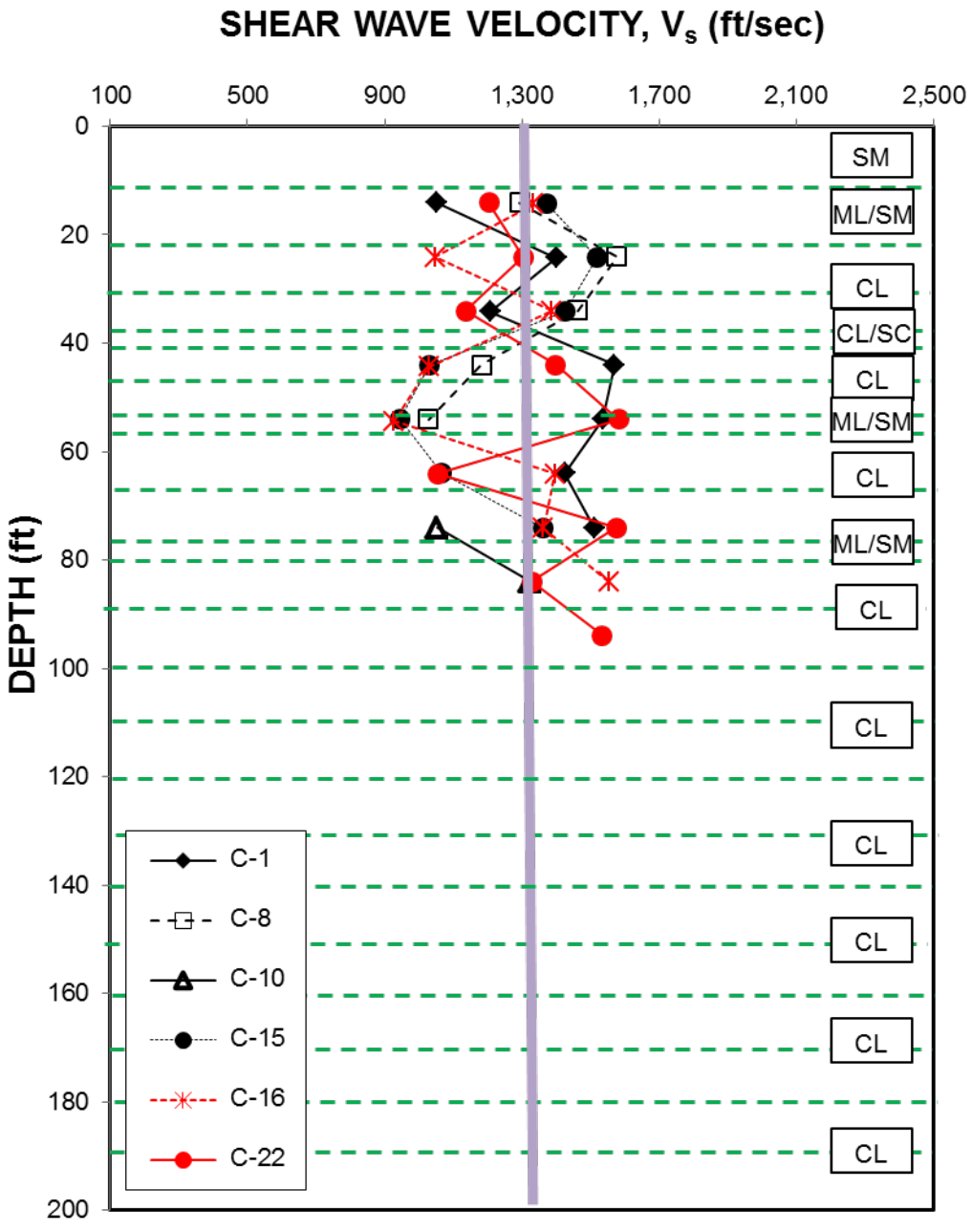
MOIST UNIT WEIGHT PROFILE
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 7.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	7



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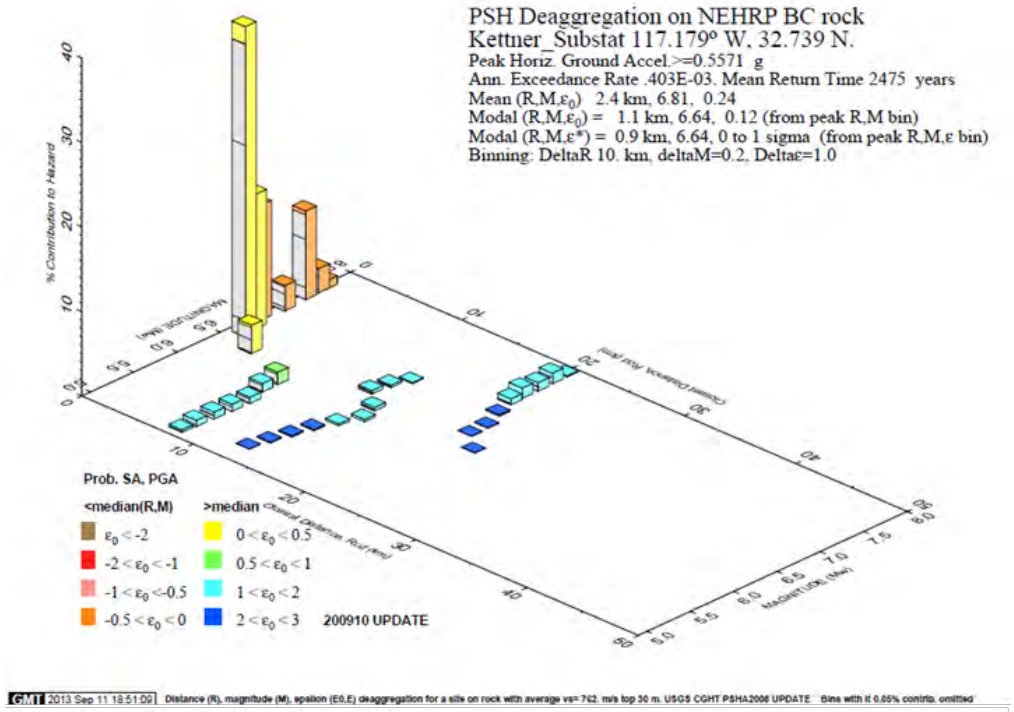
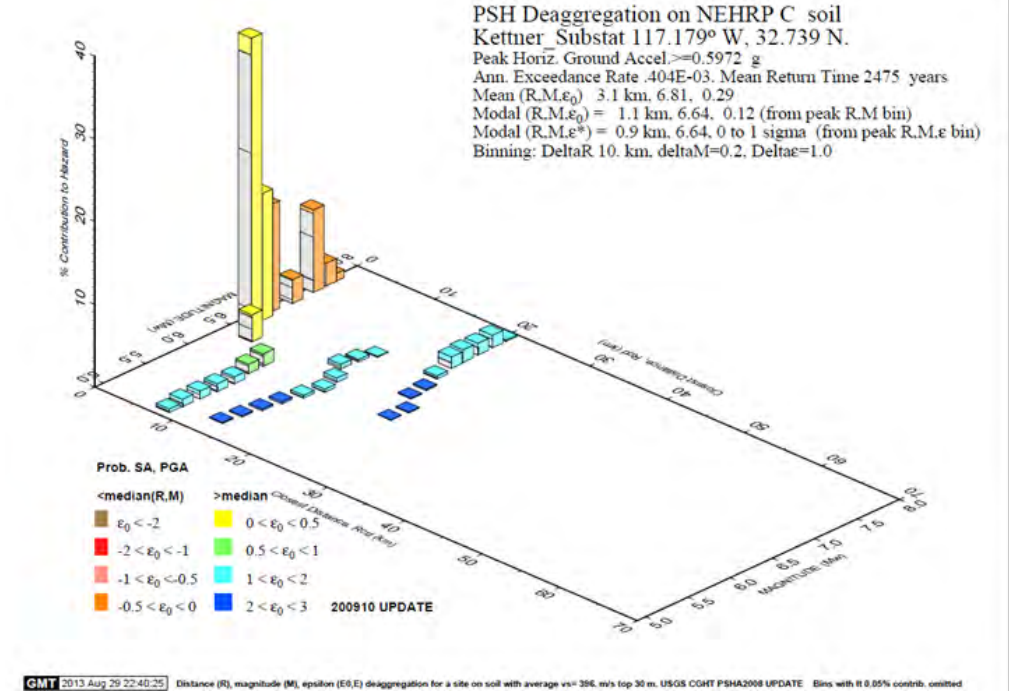
SHEAR WAVE VELOCITY PROFILE
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 8.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	8



GMT 2013 Sep 11 18:51:09 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on rock with average vs= 762. m/s top 30 m. USGS CGHT PSHA2008 UPDATE Bins with lt 0.05% contrib. omitted



GMT 2013 Aug 29 22:40:25 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on soil with average vs= 356. m/s top 30 m. USGS CGHT PSHA2008 UPDATE Bins with lt 0.05% contrib. omitted

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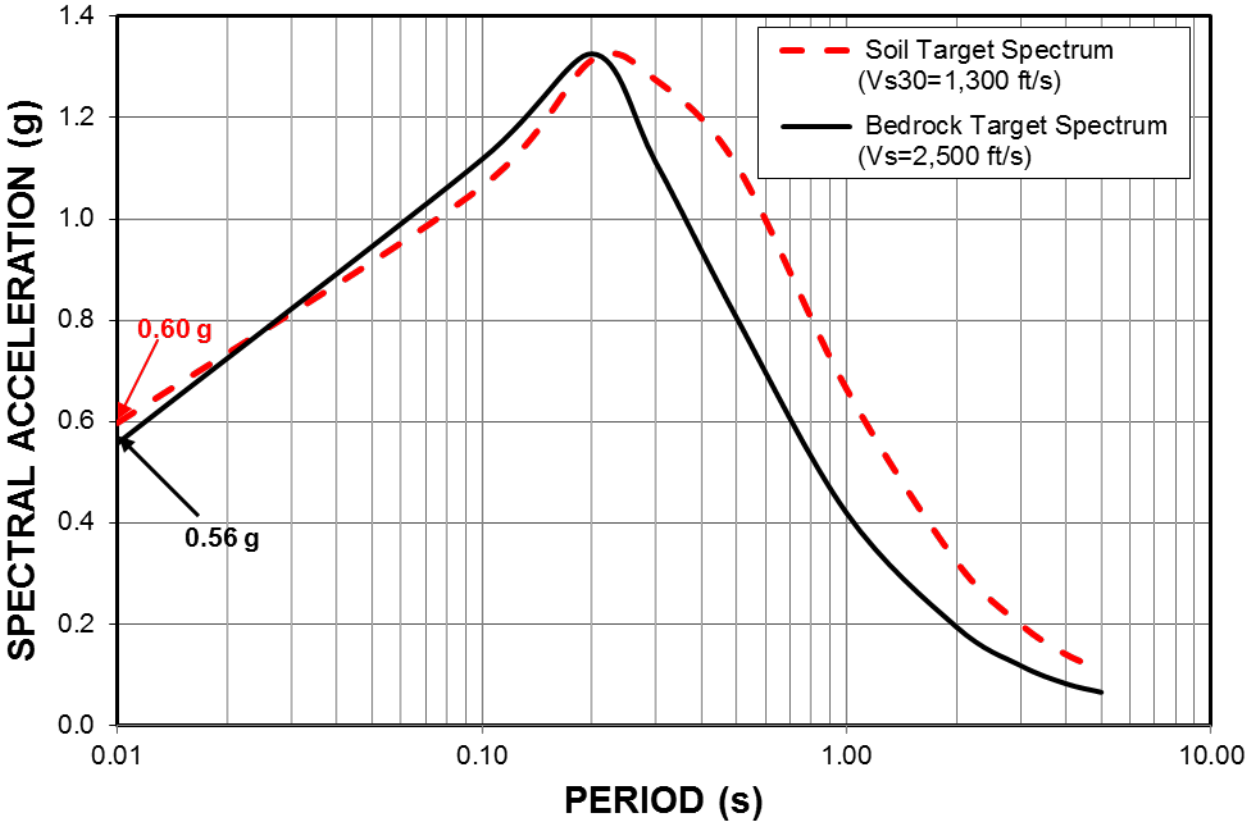
PSHA DEAGGREGATION ON BEDROCK AND SOIL
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	**NOVEMBER 2013**	**FILE NO.**	**FIGURE 9.DOC**
PROJECT NO.	**SC0368-30**	**FIGURE NO.**	**9**



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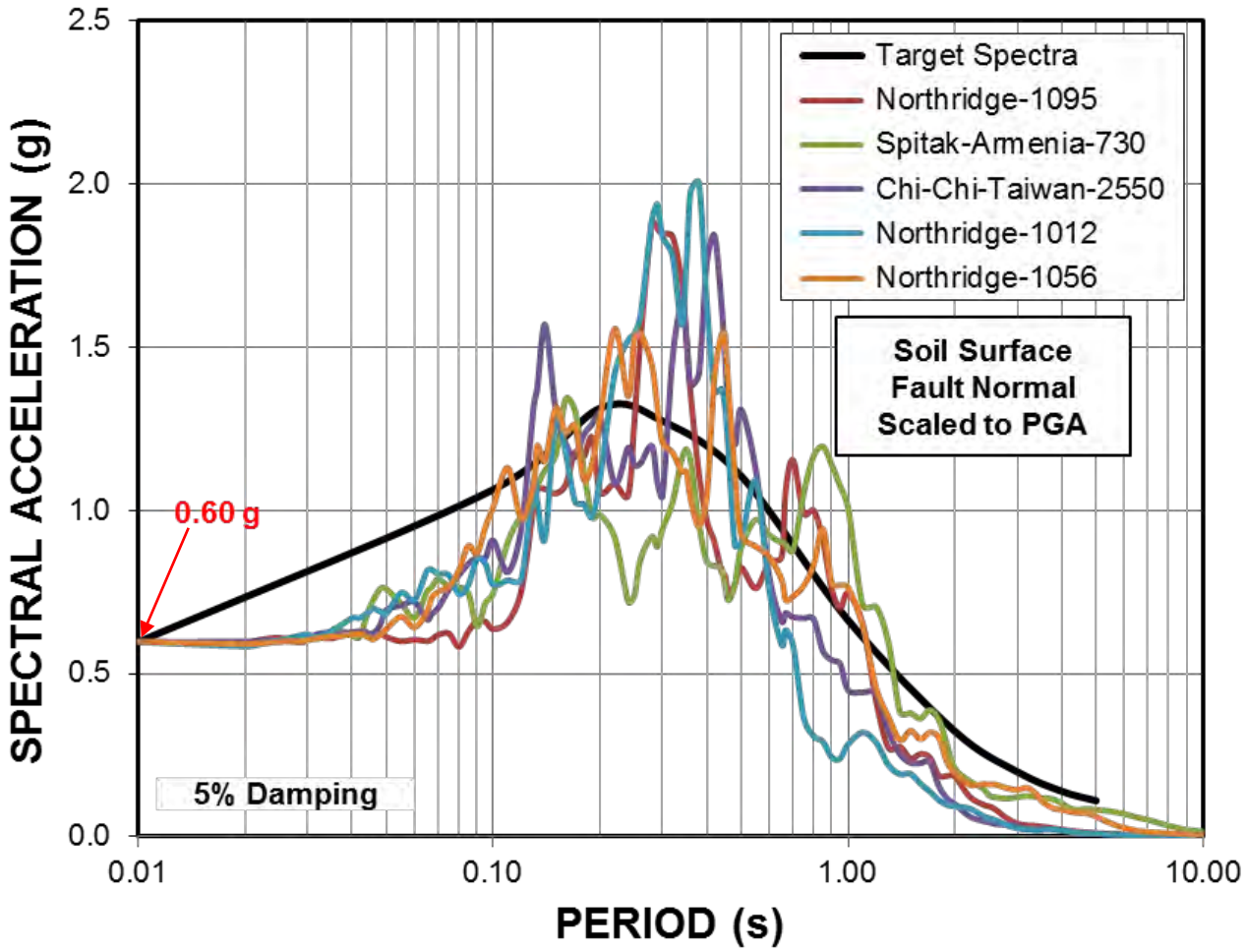
TARGET ACCELERATION RESPONSE SPECTRA
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 10.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	10



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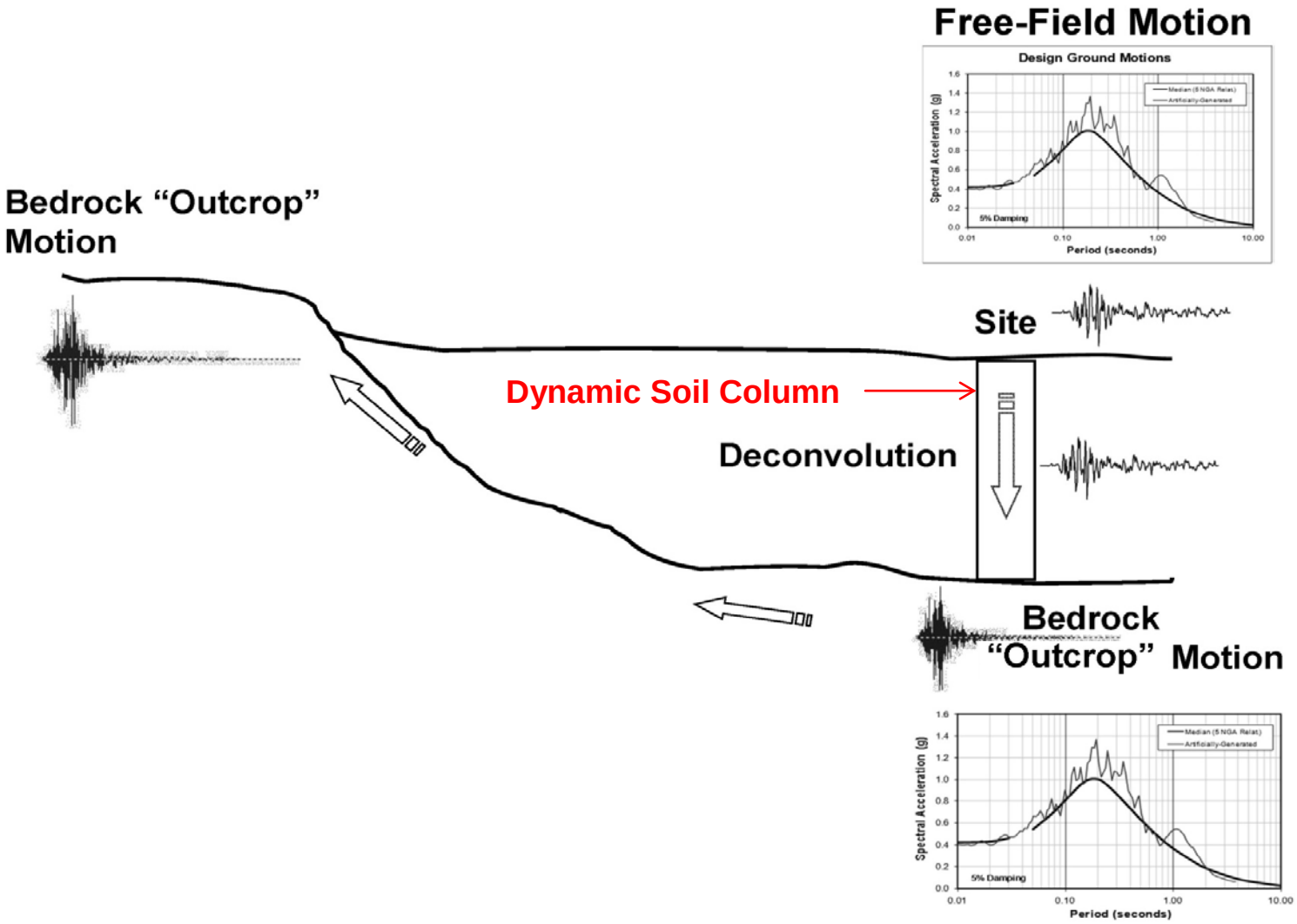
FREE-FIELD ACCELERATION RESPONSE SPECTRA
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 11.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	11



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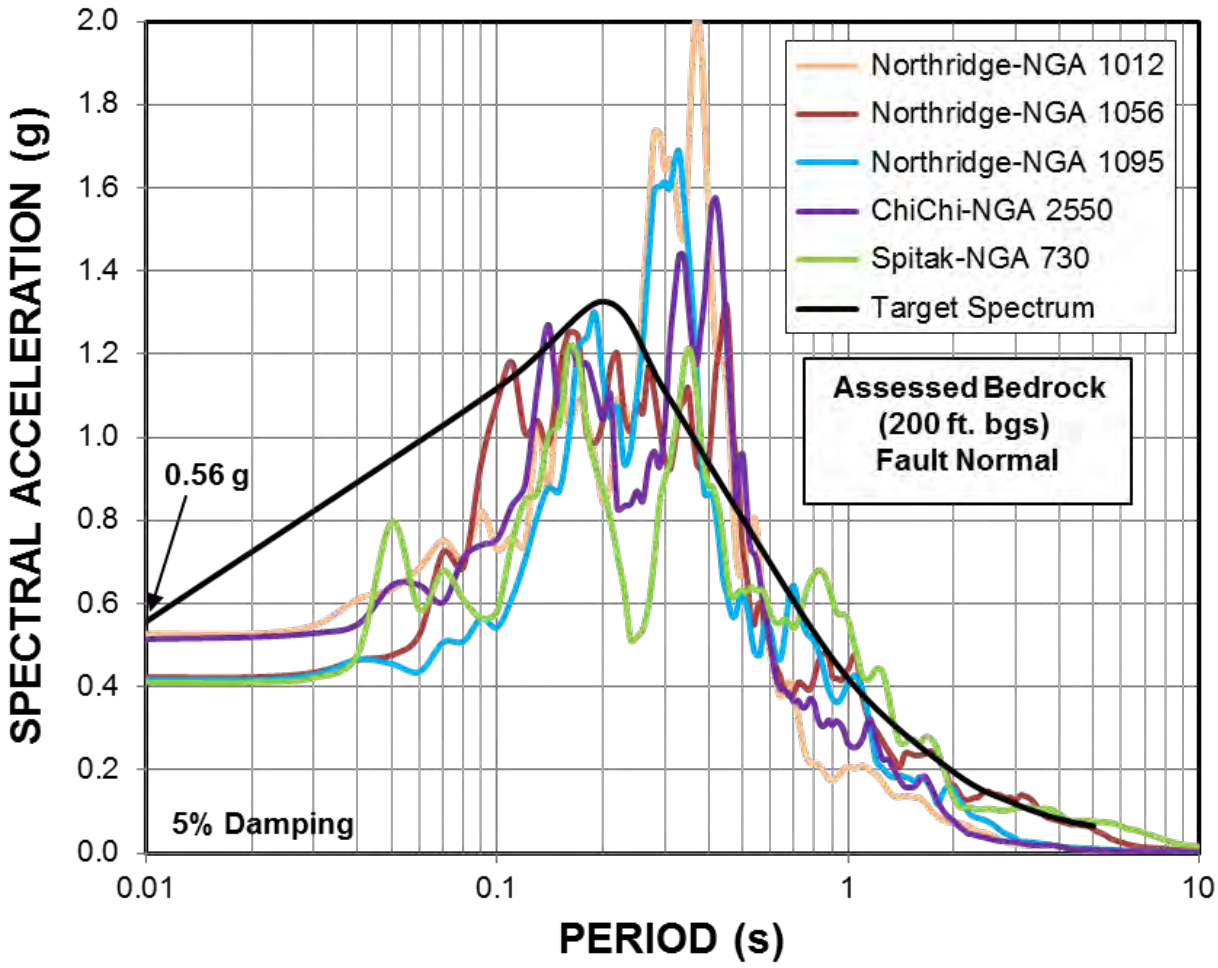
DECONVOLUTION PROCEDURE
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 12.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	12



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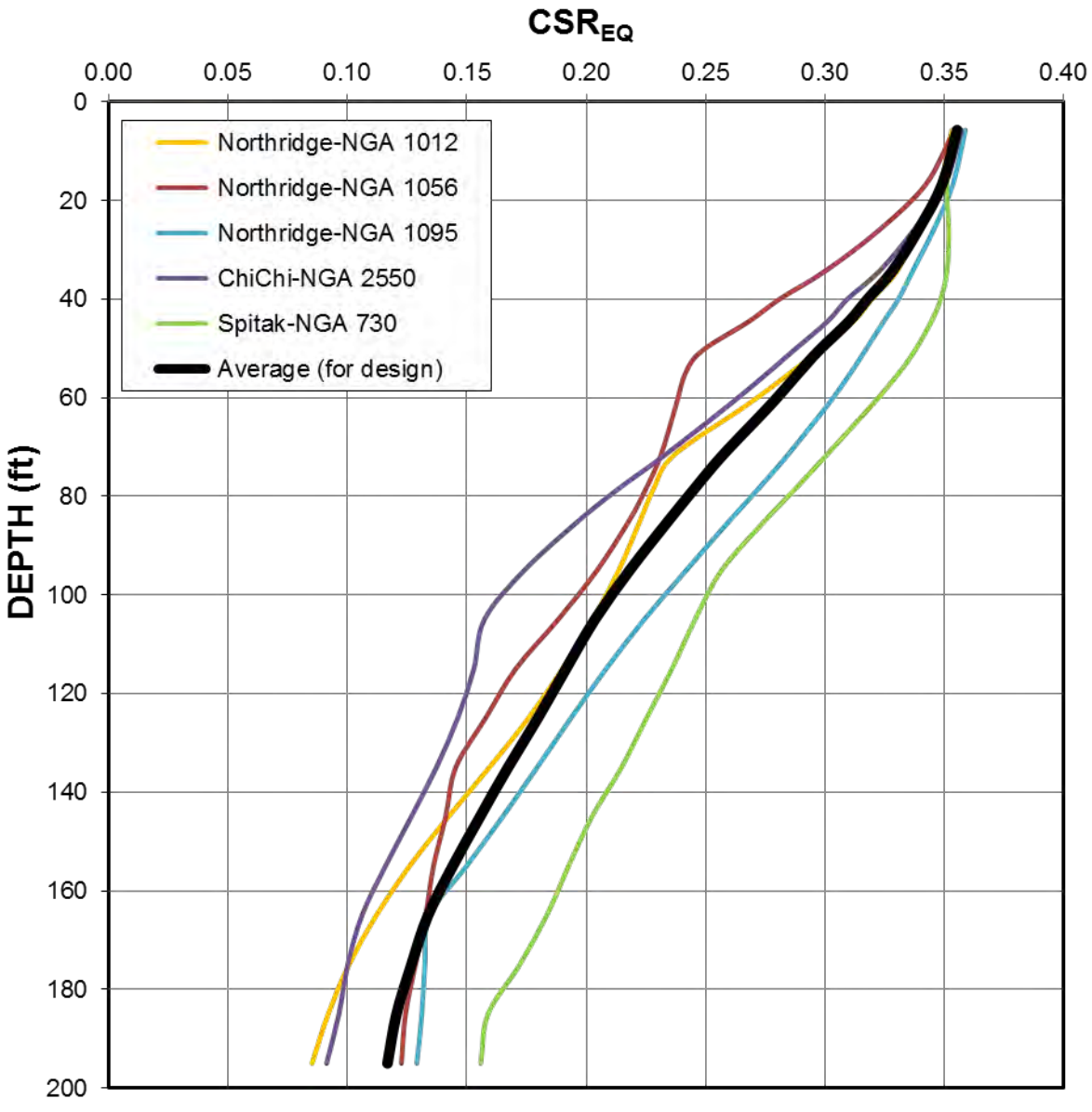
BEDROCK ACCELERATION RESPONSE SPECTRA
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 13.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	13



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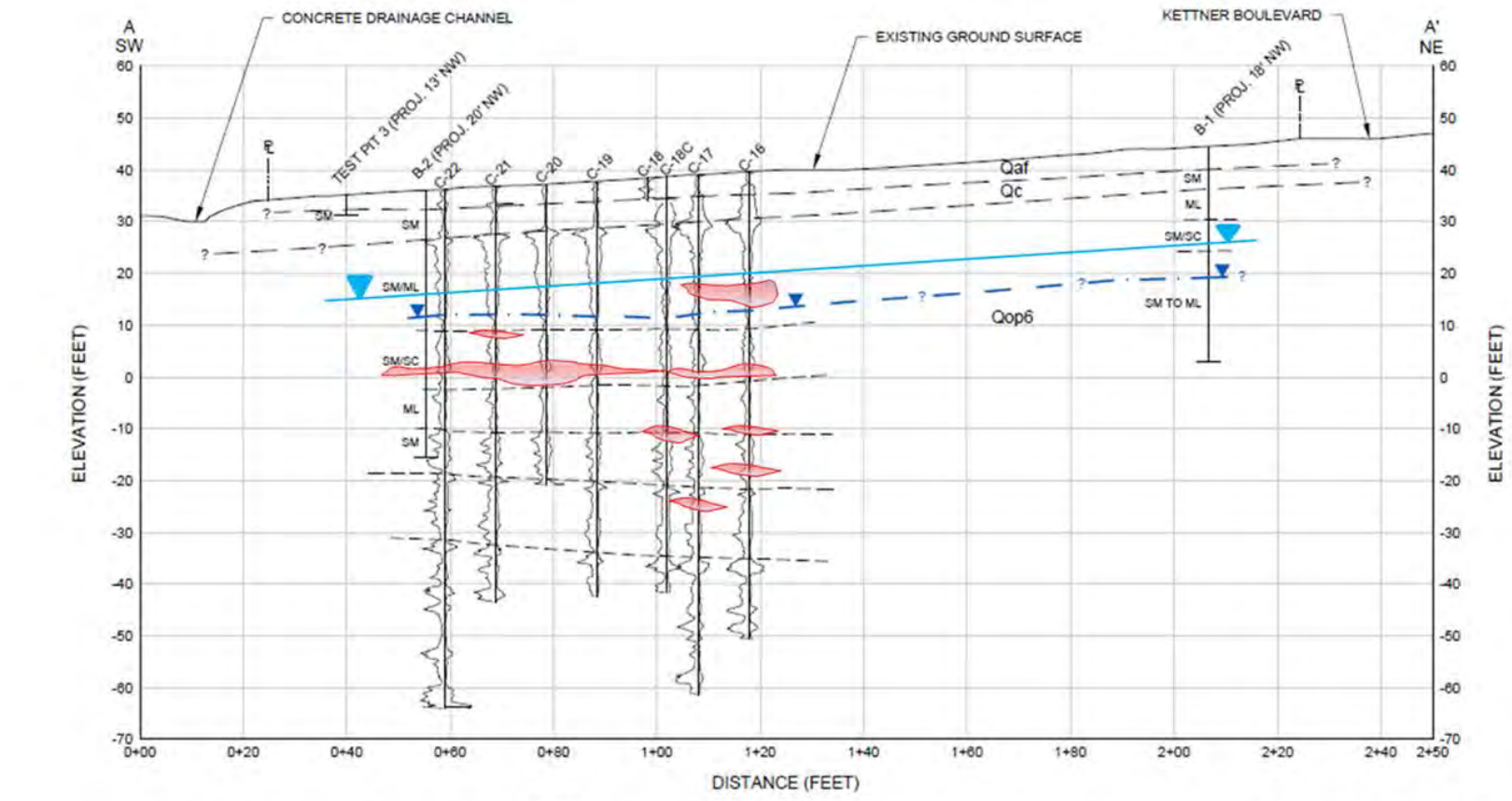
EARTHQUAKE CYCLIC STRESS RATIO PROFILE
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 14.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	14



LEGEND

CPT DATA

EXISTING GROUND

GEOLOGIC CONTACT (QUERIED WHERE UNCERTAIN)

LITHOLOGIC CONTACT (APPROXIMATE)

INTERPRETED GROUNDWATER BASED ON MEASUREMENTS DURING EXPLORATION PROGRAM

APPROXIMATE LOCATION OF BORING (GEOSYNTEC, 2013)

APPROXIMATE LOCATION OF BORING (BENTON, 1974) OR TEST PIT (BENTON, 1977)

℄ PROPERTY LINE

GROUNDWATER (DESIGN)

SUSCEPTIBLE TO LIQUEFACTION

Qaf	ARTIFICIAL FILL
Qc	COLLUVIUM
Qop6	OLD PARALIC DEPOSITS
SP, SM, SC, ML, CL, CH	USCS CLASSIFICATION

0 20' 40'

SCALE IN FEET

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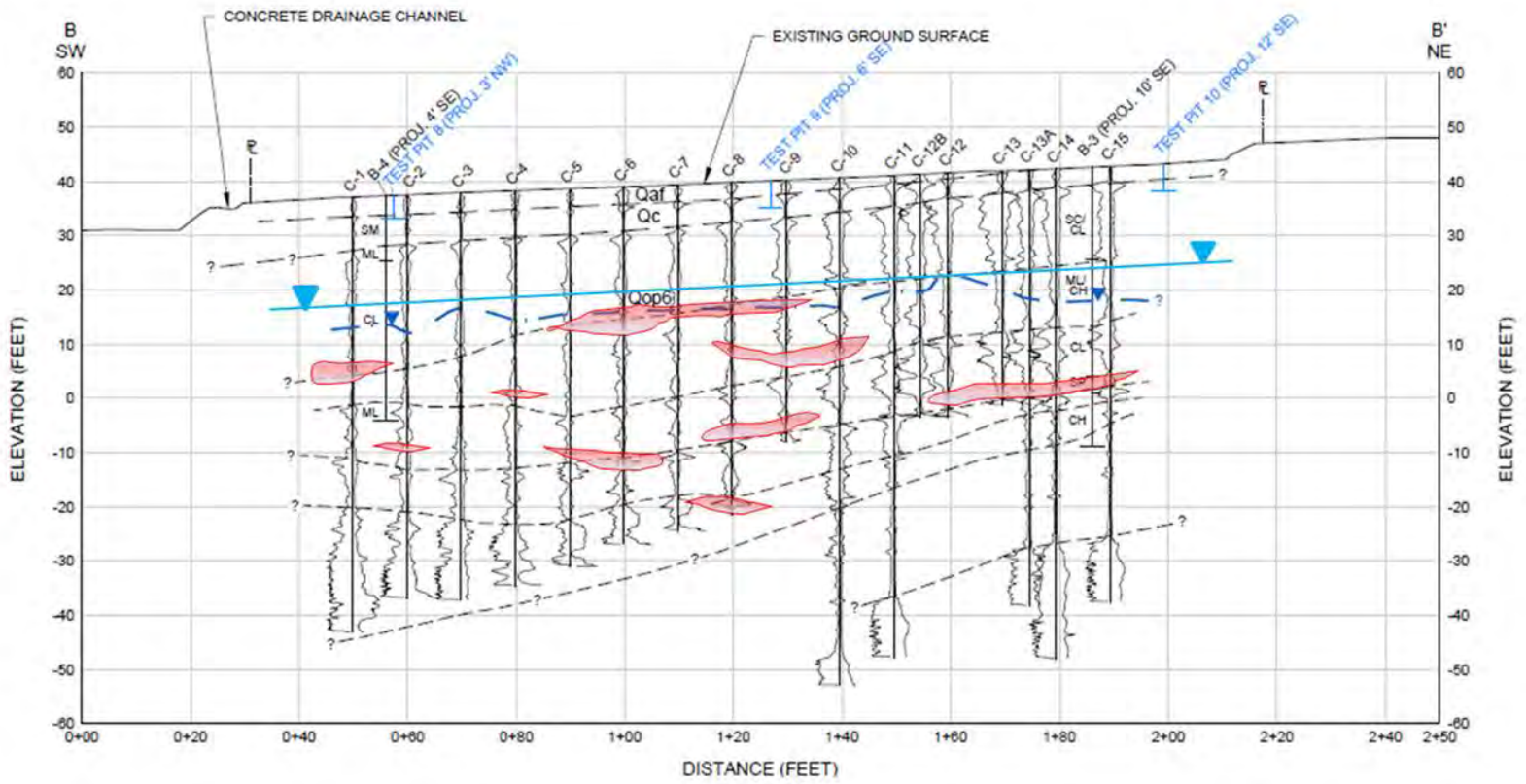
LIQUEFACTION POTENTIAL ALONG CROSS SECTION AA'
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 15.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	15



LEGEND

CPT DATA

Friction (tsf) 14 0 Tip Resistance (tsf) 500

EXISTING GROUND

GEOLOGIC CONTACT (QUERIED WHERE UNCERTAIN)

LITHOLOGIC CONTACT (APPROXIMATE)

INTERPRETED GROUNDWATER BASED ON MEASUREMENTS DURING EXPLORATION PROGRAM

APPROXIMATE LOCATION OF BORING (GEOSYNTEC, 2013)

APPROXIMATE LOCATION OF BORING (BENTON, 1974) OR TEST PIT (BENTON, 1977)

PROPERTY LINE

GROUNDWATER (DESIGN)

SUSCEPTIBLE TO LIQUEFACTION

Qaf	ARTIFICIAL FILL
Qc	COLLUVIUM
Qop6	OLD PARALIC DEPOSITS
SP, SM, SC, ML, CL, CH	USCS CLASSIFICATION

0 20' 40'

SCALE IN FEET

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LIQUEFACTION POTENTIAL ALONG CROSS SECTION BB'
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2013	FILE NO.	FIGURE 16.DOC
PROJECT NO.	SC0368-30	FIGURE NO.	16

APPENDIX A
SEISMIC DESIGN PARAMETERS

USGS WEB TOOL OUTPUT

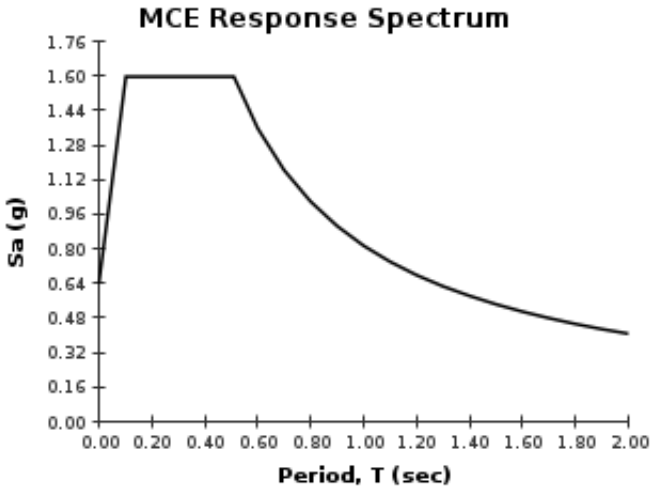
USGS Design Maps Summary Report

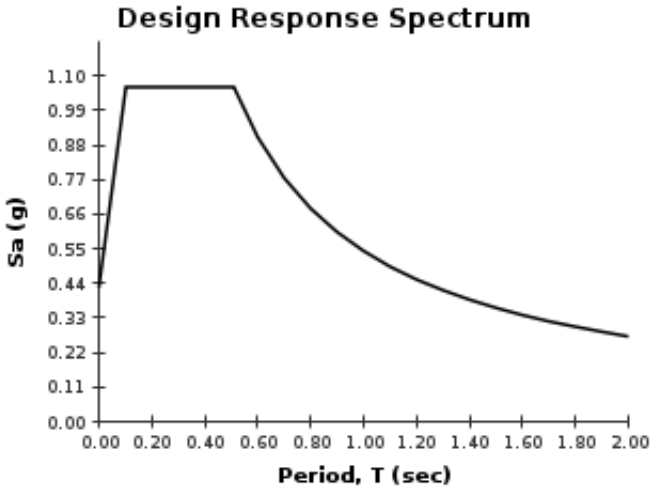
User–Specified Input

Report Title	Kettner Substation Mon September 23, 2013 17:15:19 UTC
Building Code Reference Document	2006/2009 International Building Code (which utilizes USGS hazard data available in 2002)
Site Coordinates	32.739°N, 117.179°W
Site Soil Classification	Site Class C – "Very Dense Soil and Soft Rock"
Occupancy Category	I/II/III

USGS–Provided Output

S_S =	1.596 g	S_{MS} =	1.596 g	S_{DS} =	1.064 g
S_1 =	0.626 g	S_{M1} =	0.814 g	S_{D1} =	0.543 g





USGS Design Maps Summary Report

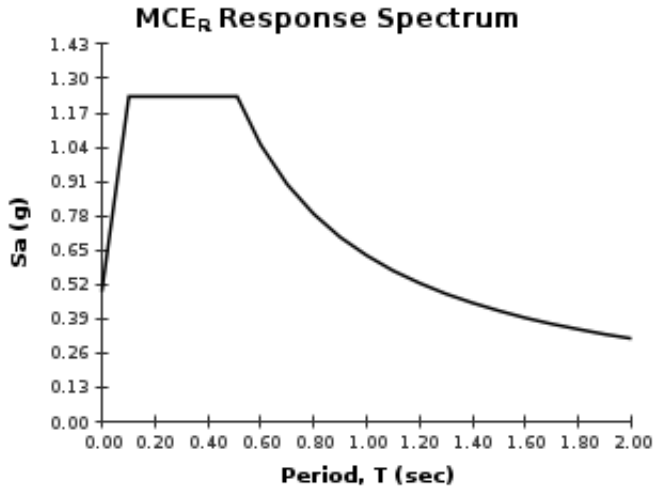
User–Specified Input

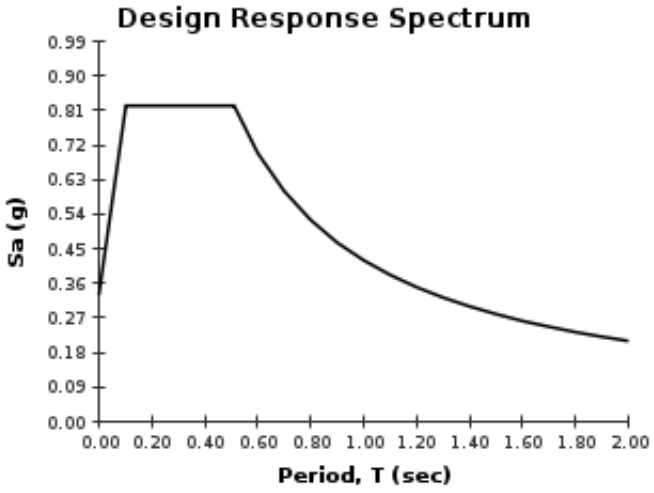
Report Title	Kettner Substation Mon September 23, 2013 17:13:16 UTC
Building Code Reference Document	2012 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	32.739°N, 117.179°W
Site Soil Classification	Site Class C – "Very Dense Soil and Soft Rock"
Risk Category	I/II/III

USGS–Provided Output

S_S =	1.232 g	S_{MS} =	1.232 g	S_{DS} =	0.822 g
S_1 =	0.475 g	S_{M1} =	0.630 g	S_{D1} =	0.420 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





APPENDIX B
SOIL LIQUEFACTION POTENTIAL ASSESSMENT

CLIQ OUTPUT

GeoLogismiki
Geotechnical Engineers
Merarhias 56
http://www.geologismiki.gr

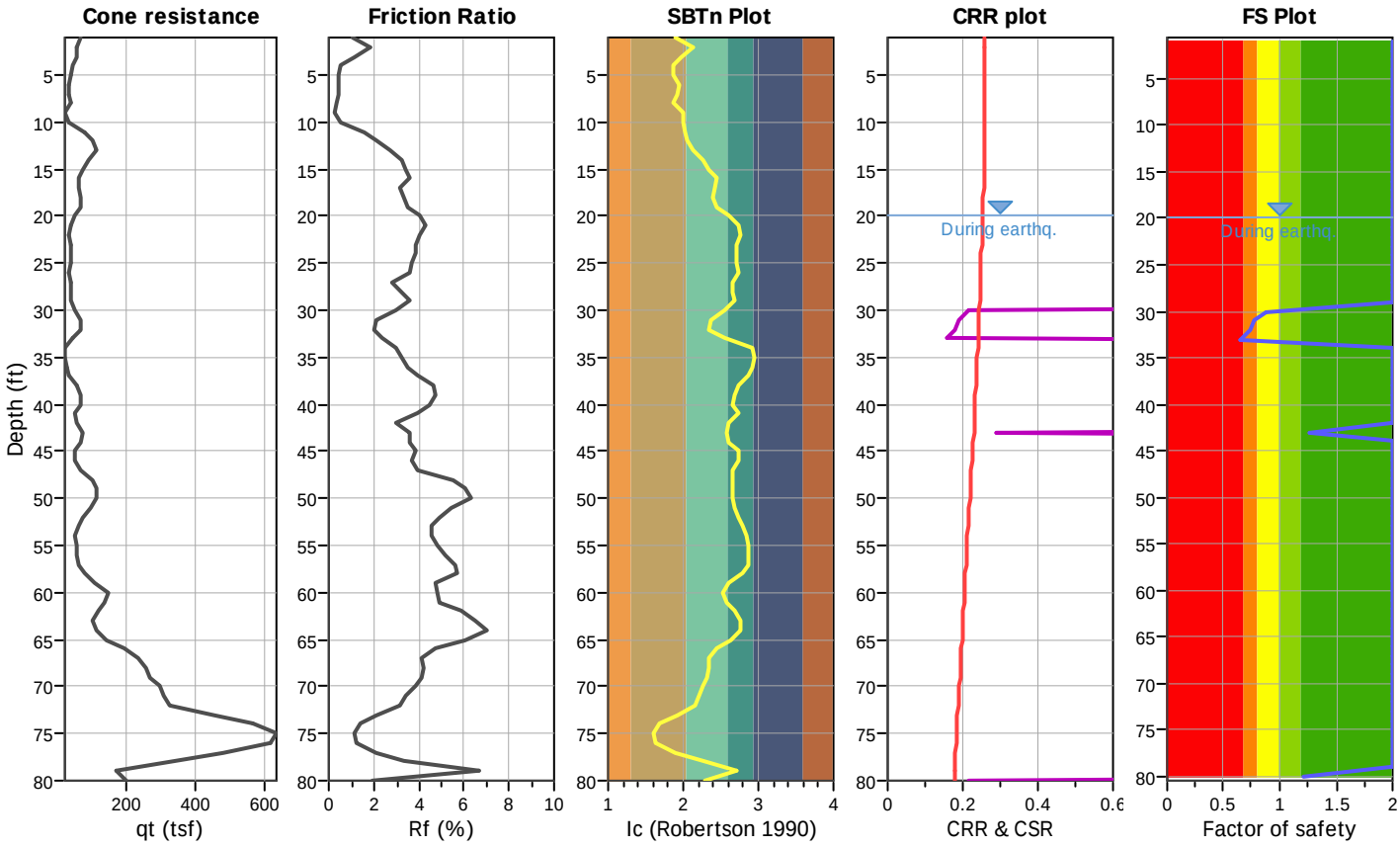
LIQUEFACTION ANALYSIS REPORT

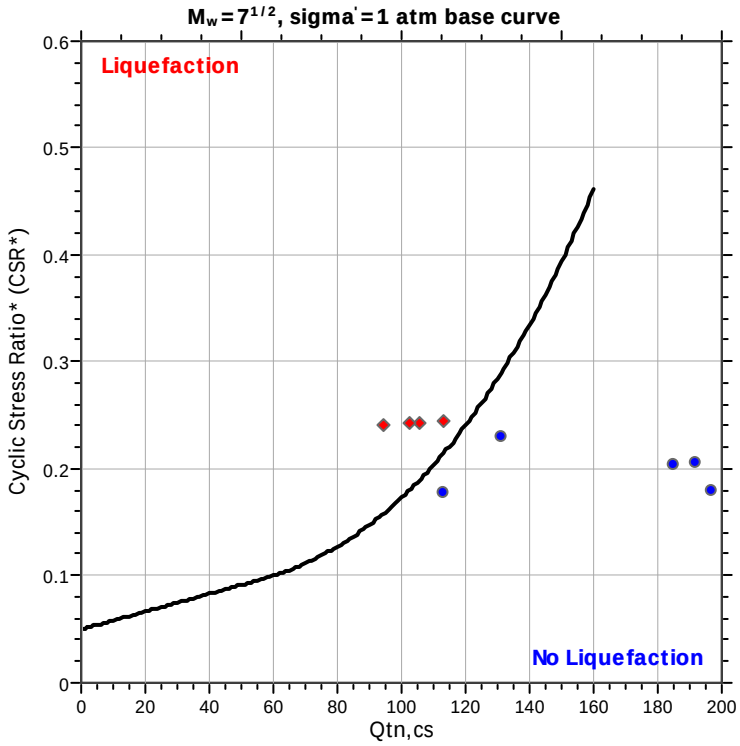
Project title : Kettner Substation **Location : San Diego, CA**

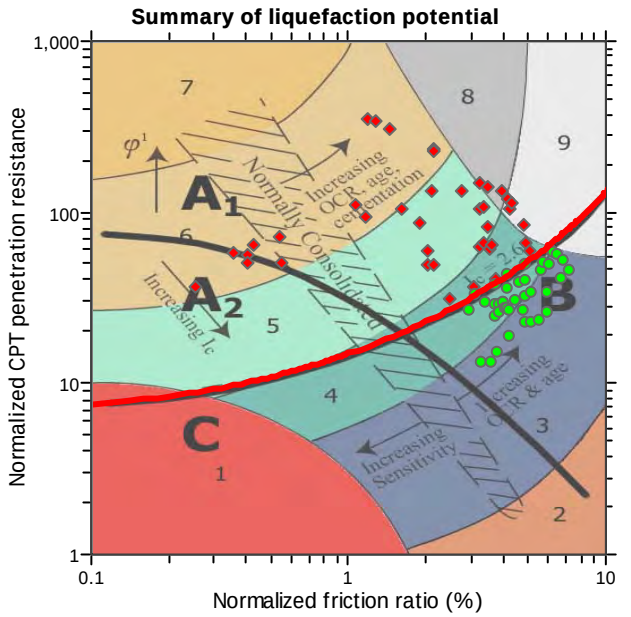
CPT file : CPT-1i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	80.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

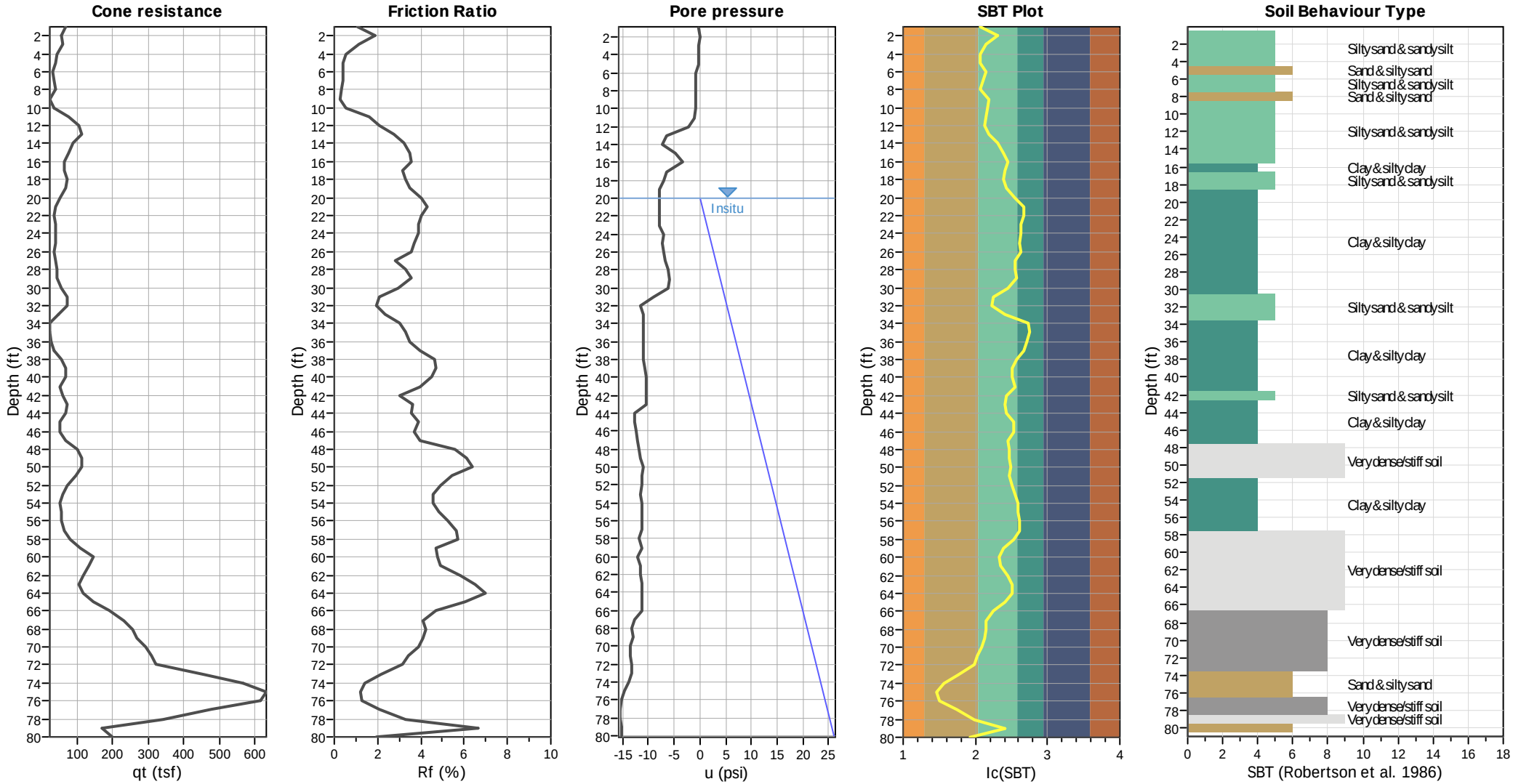






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



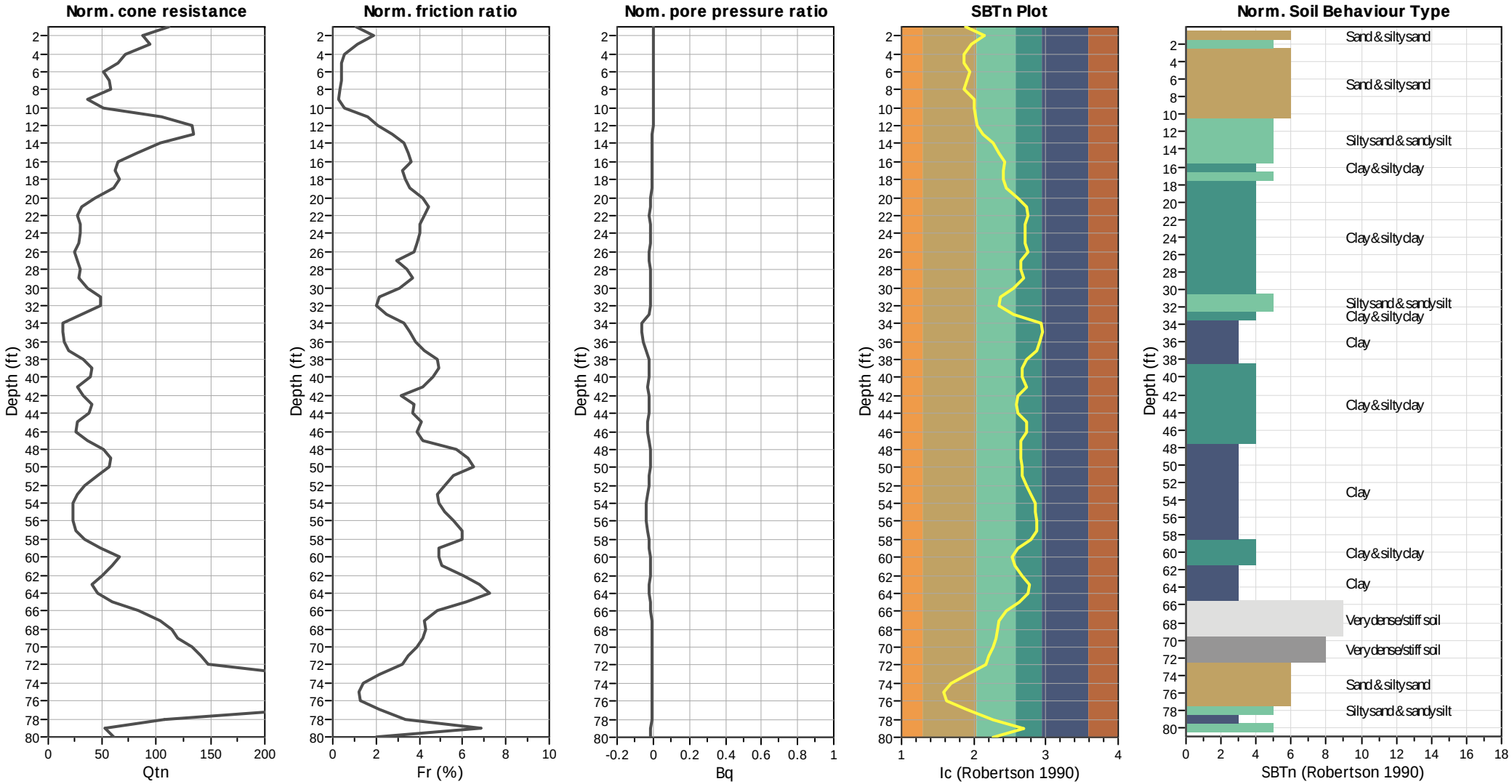
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	80.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



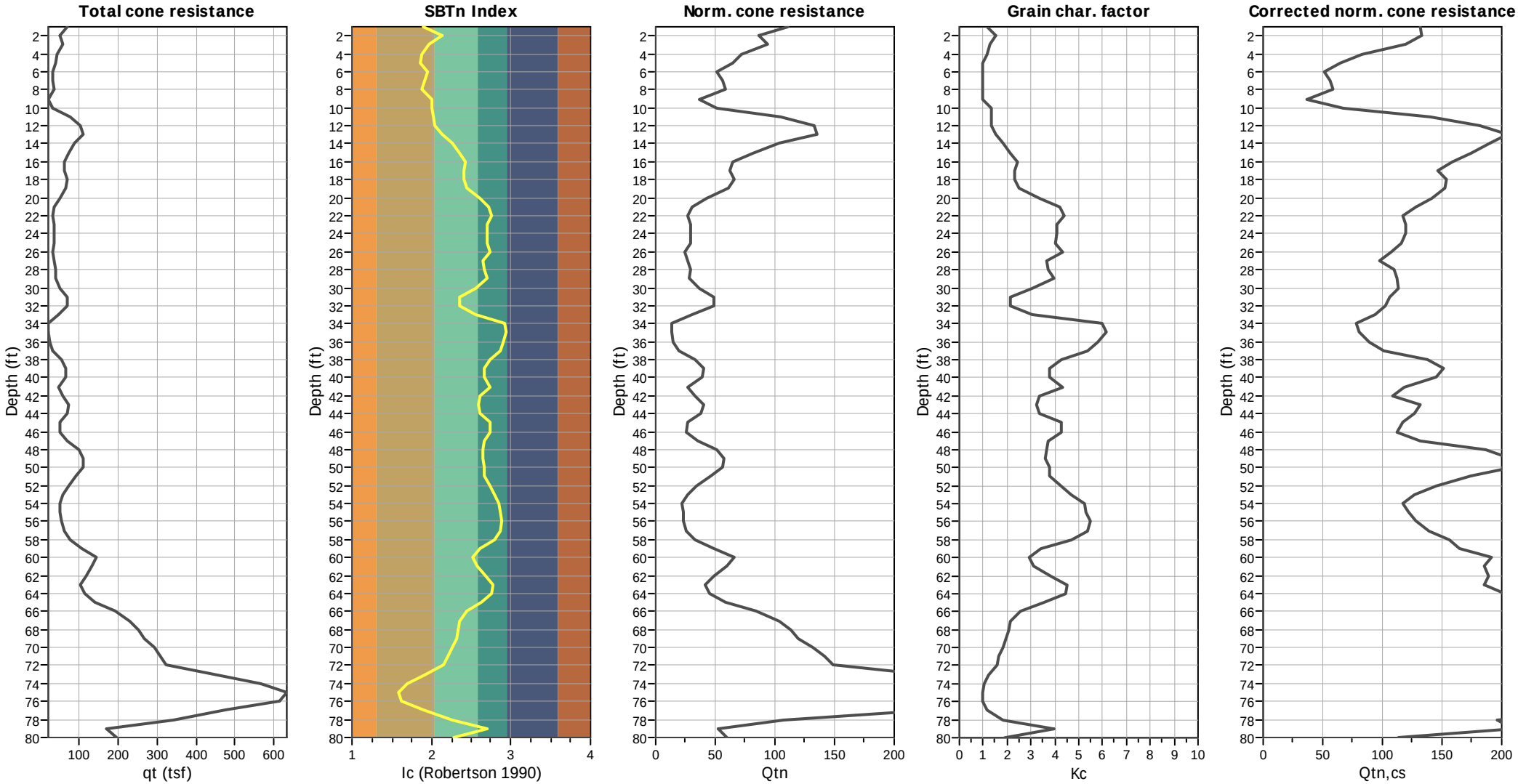
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	80.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

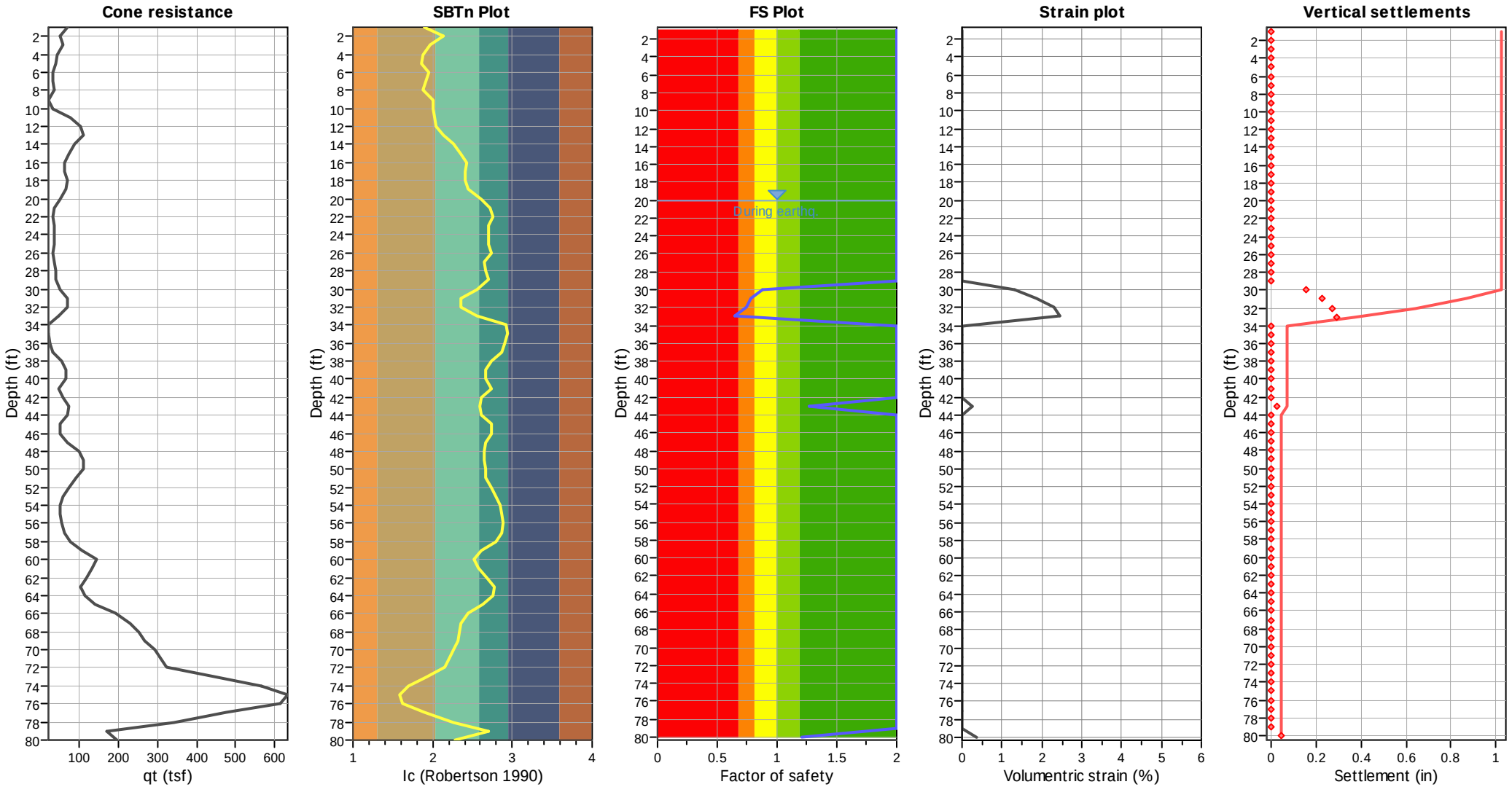
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	80.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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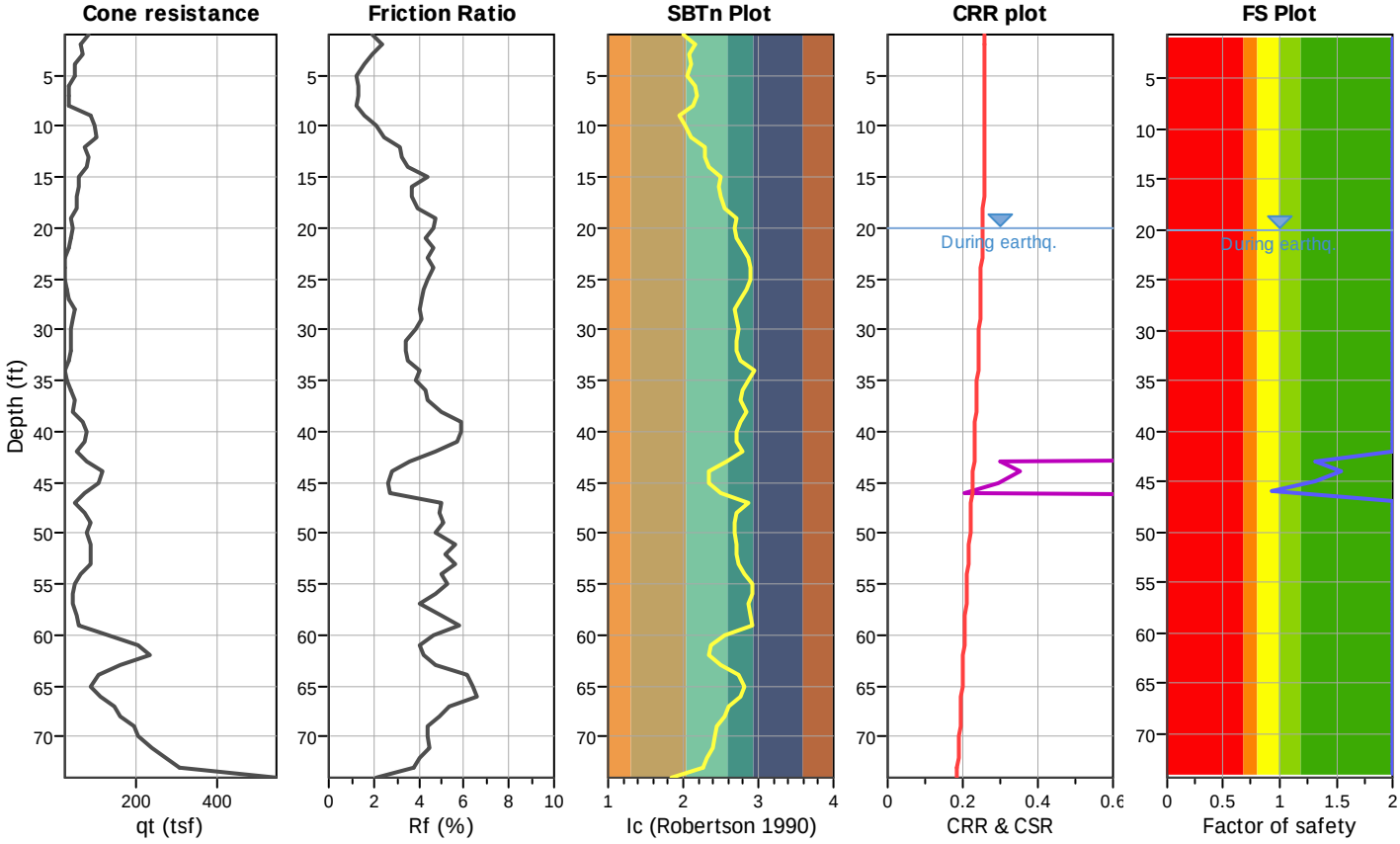
LIQUEFACTION ANALYSIS REPORT

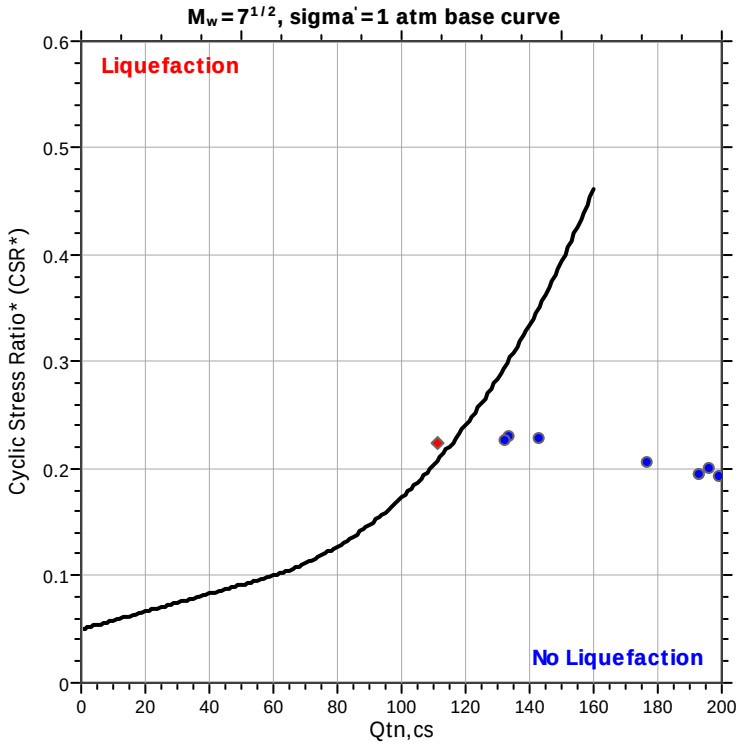
Project title : Kettner Substation **Location : San Diego, CA**

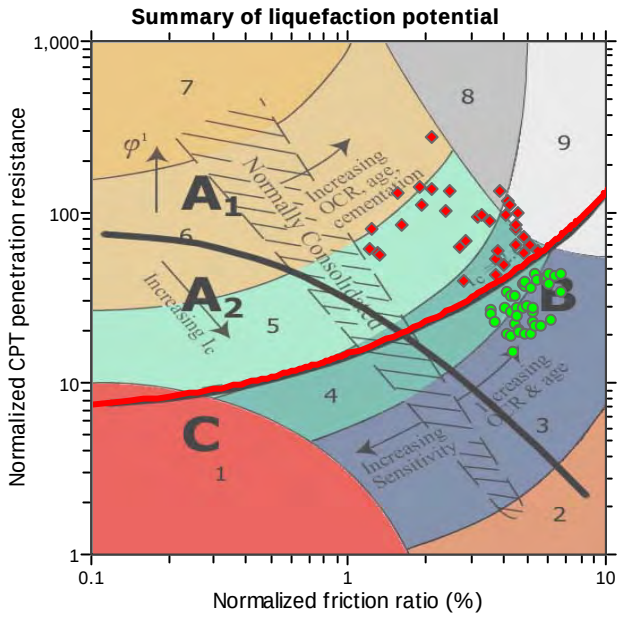
CPT file : CPT-2i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	75.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	No	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

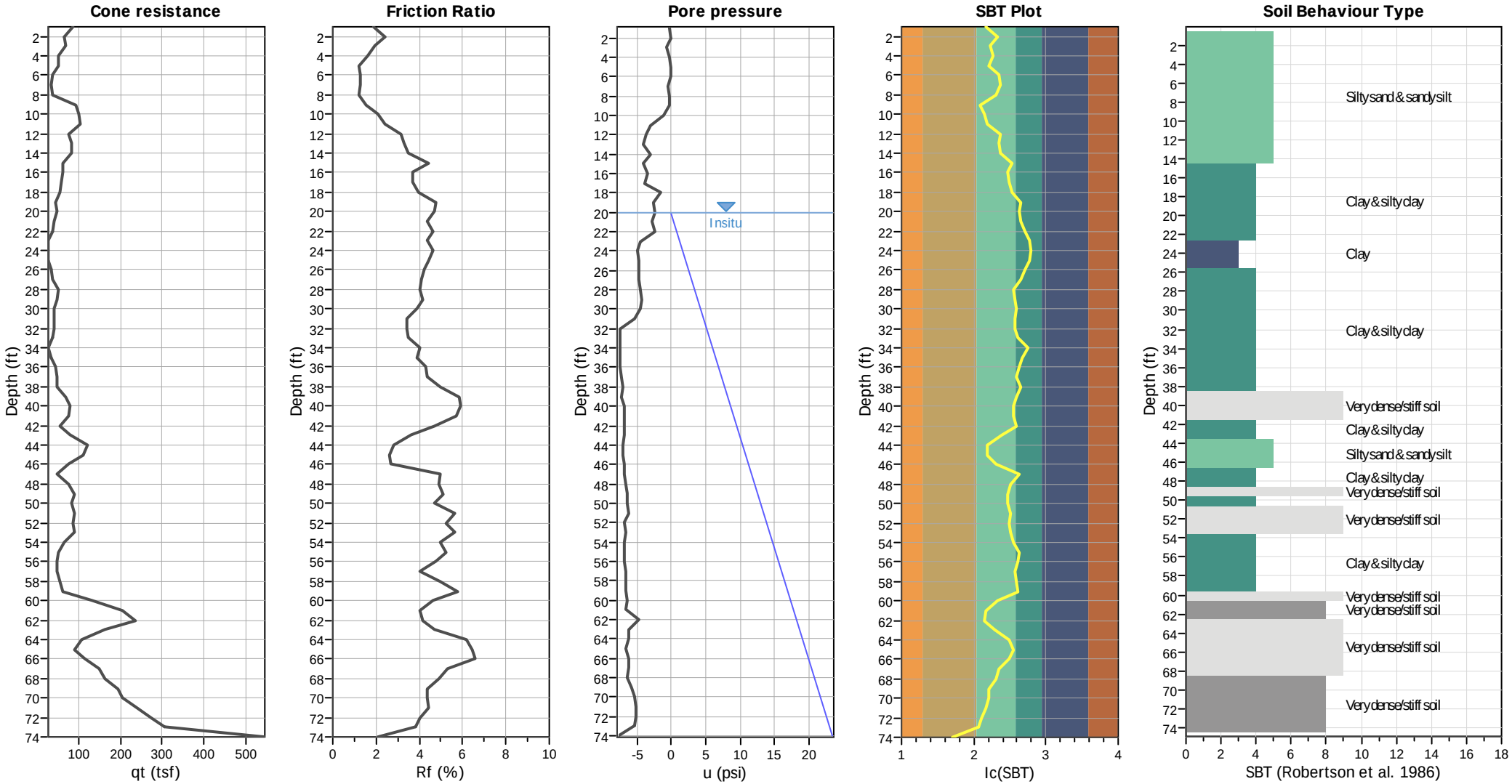






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



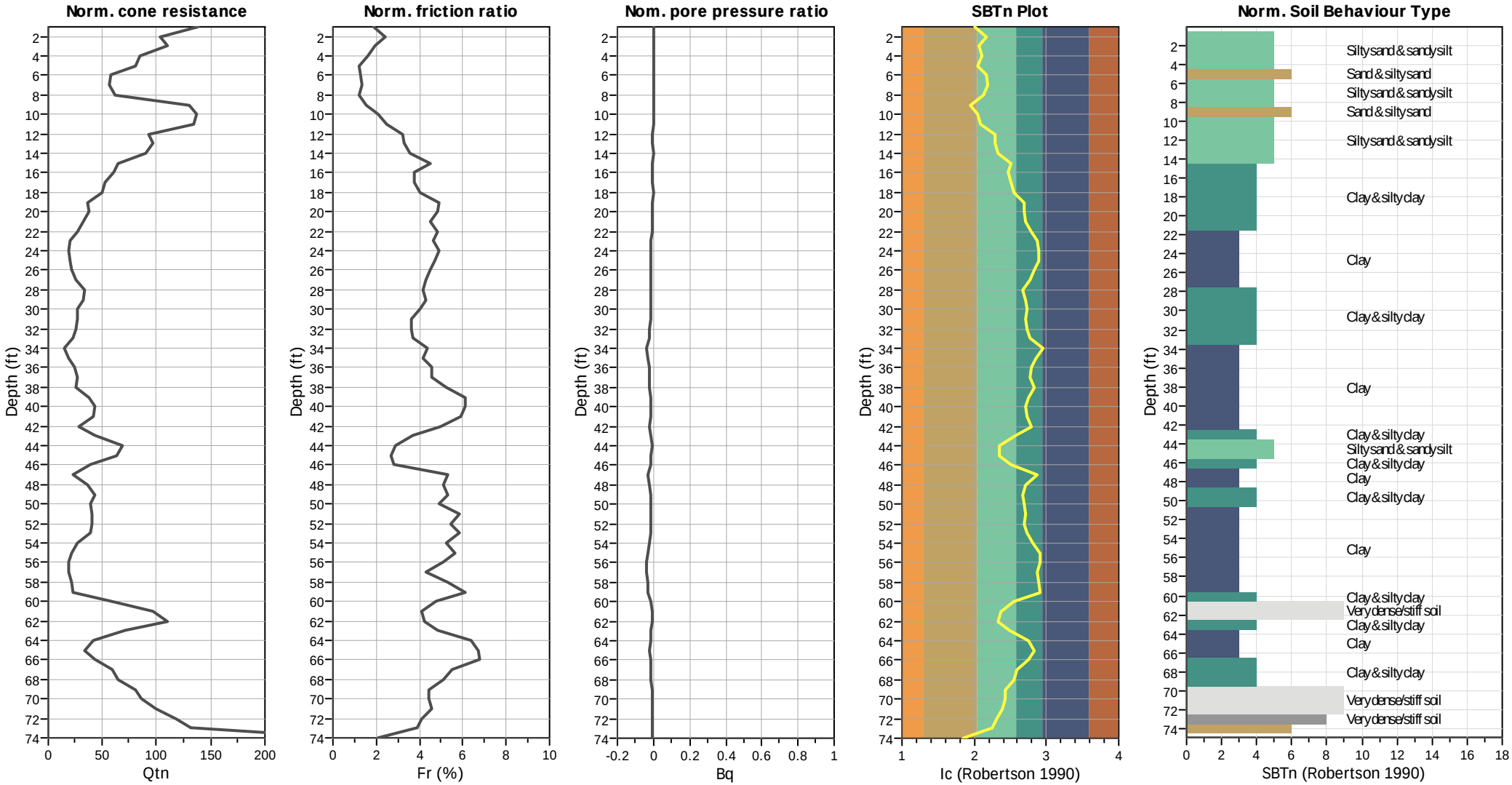
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	75.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



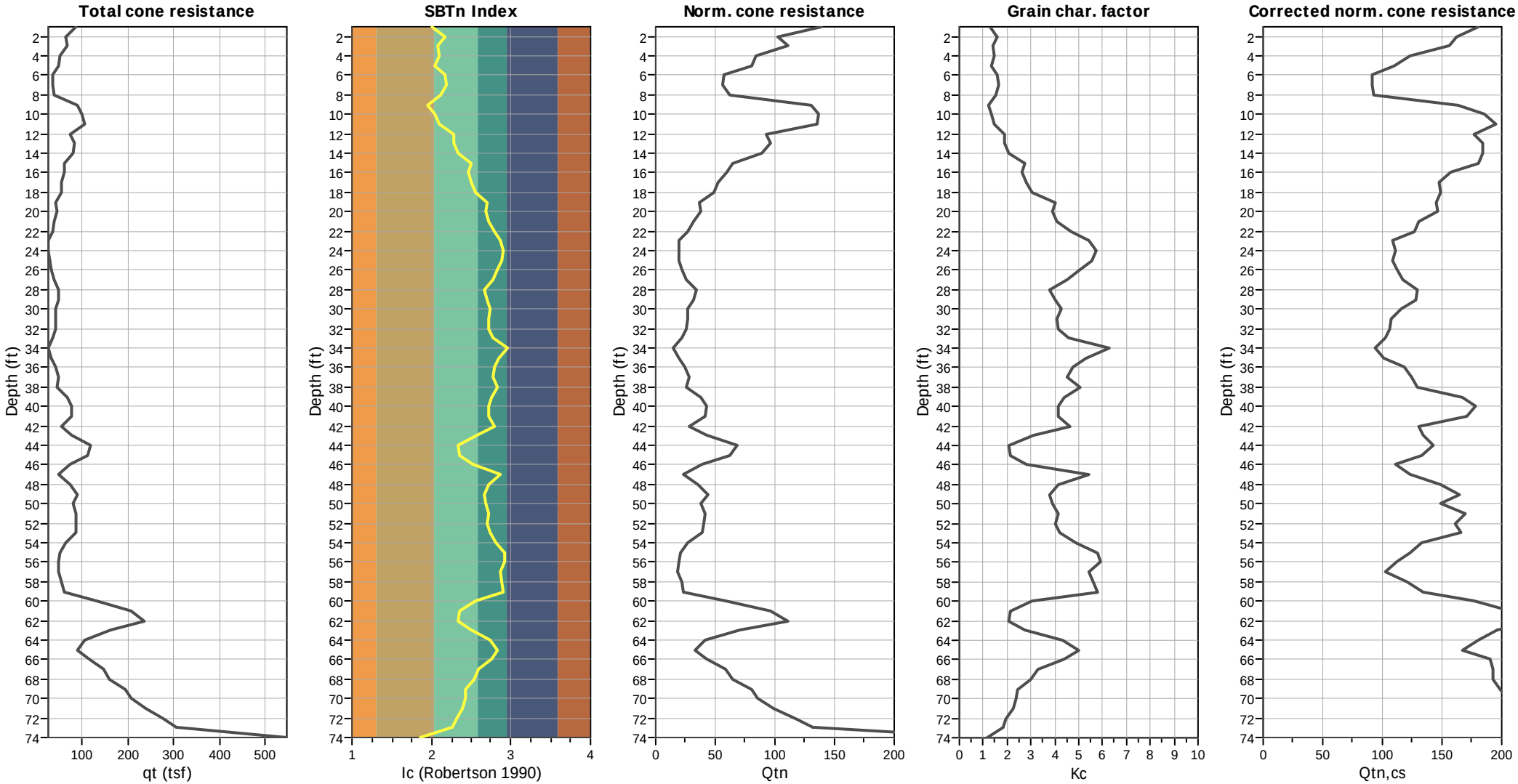
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	75.00 ft

SBTn legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

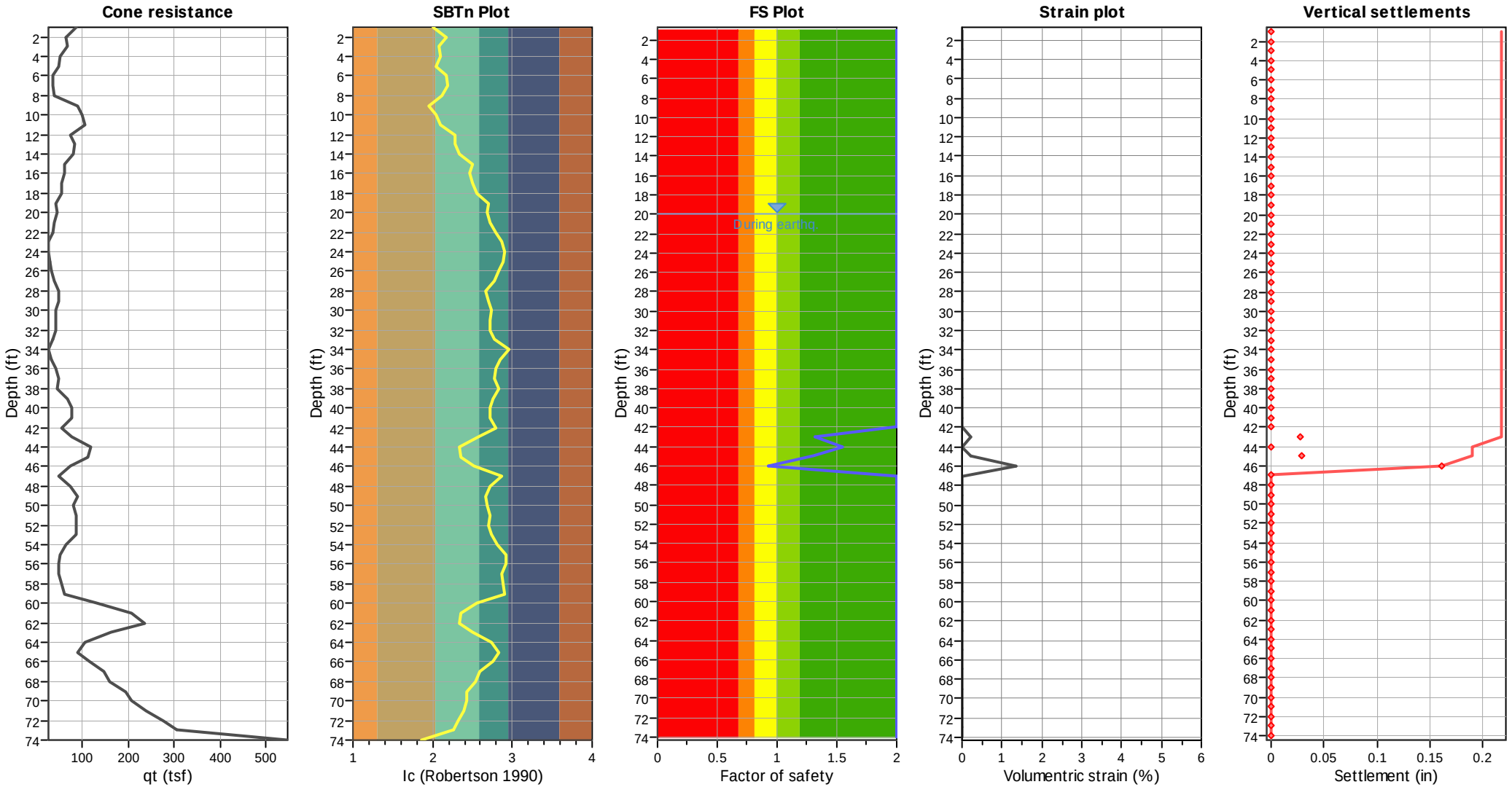
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	75.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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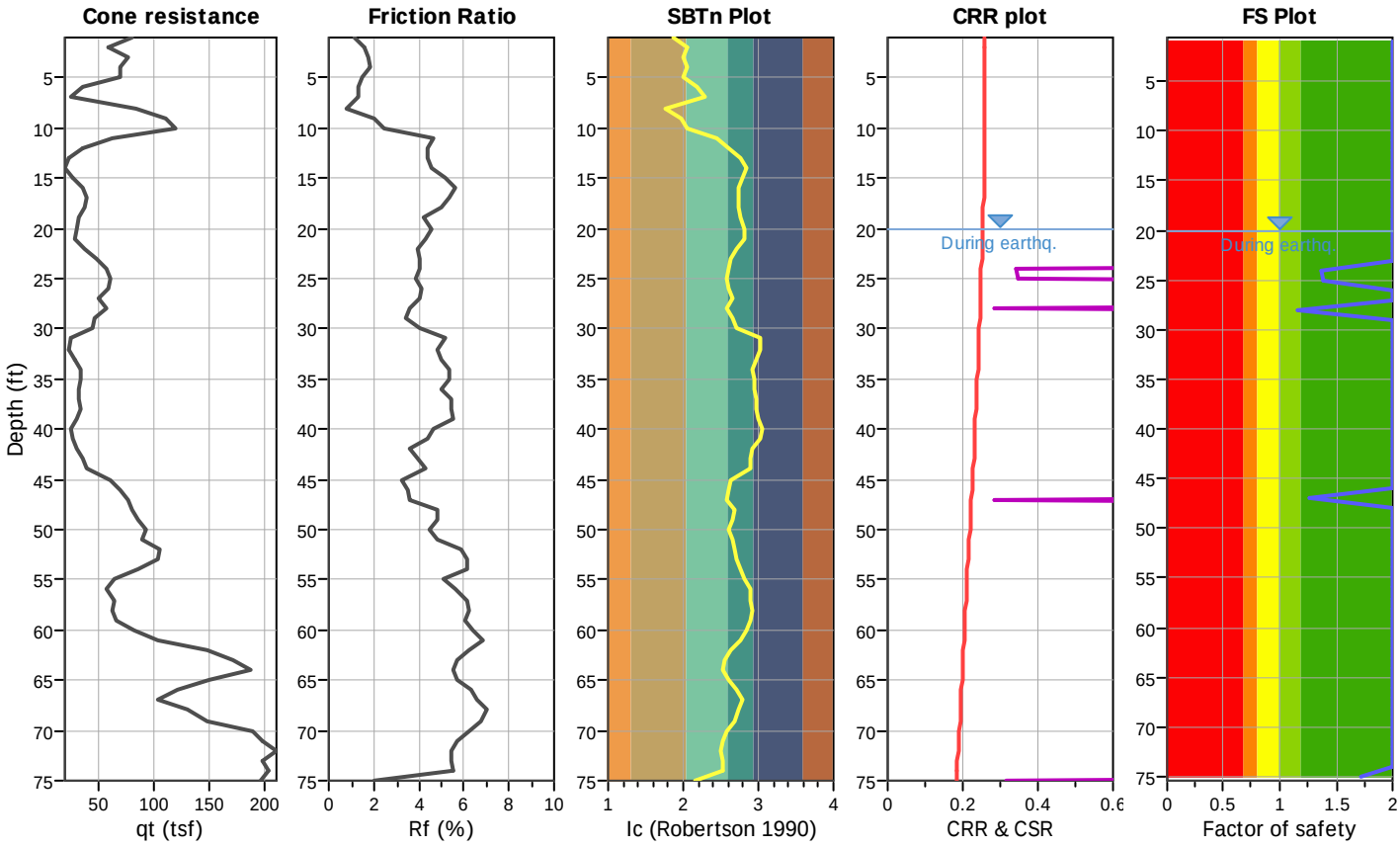
LIQUEFACTION ANALYSIS REPORT

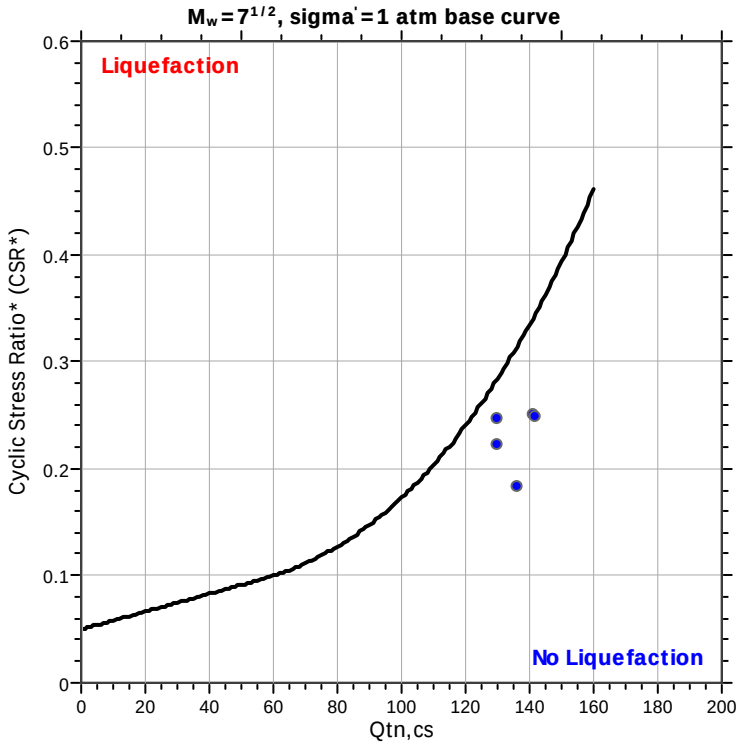
Project title : Kettner Substation **Location : San Diego, CA**

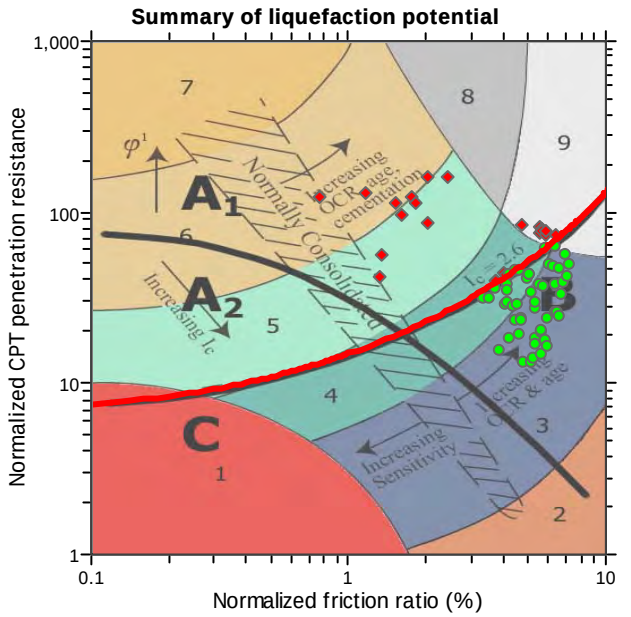
CPT file : CPT-3i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	75.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

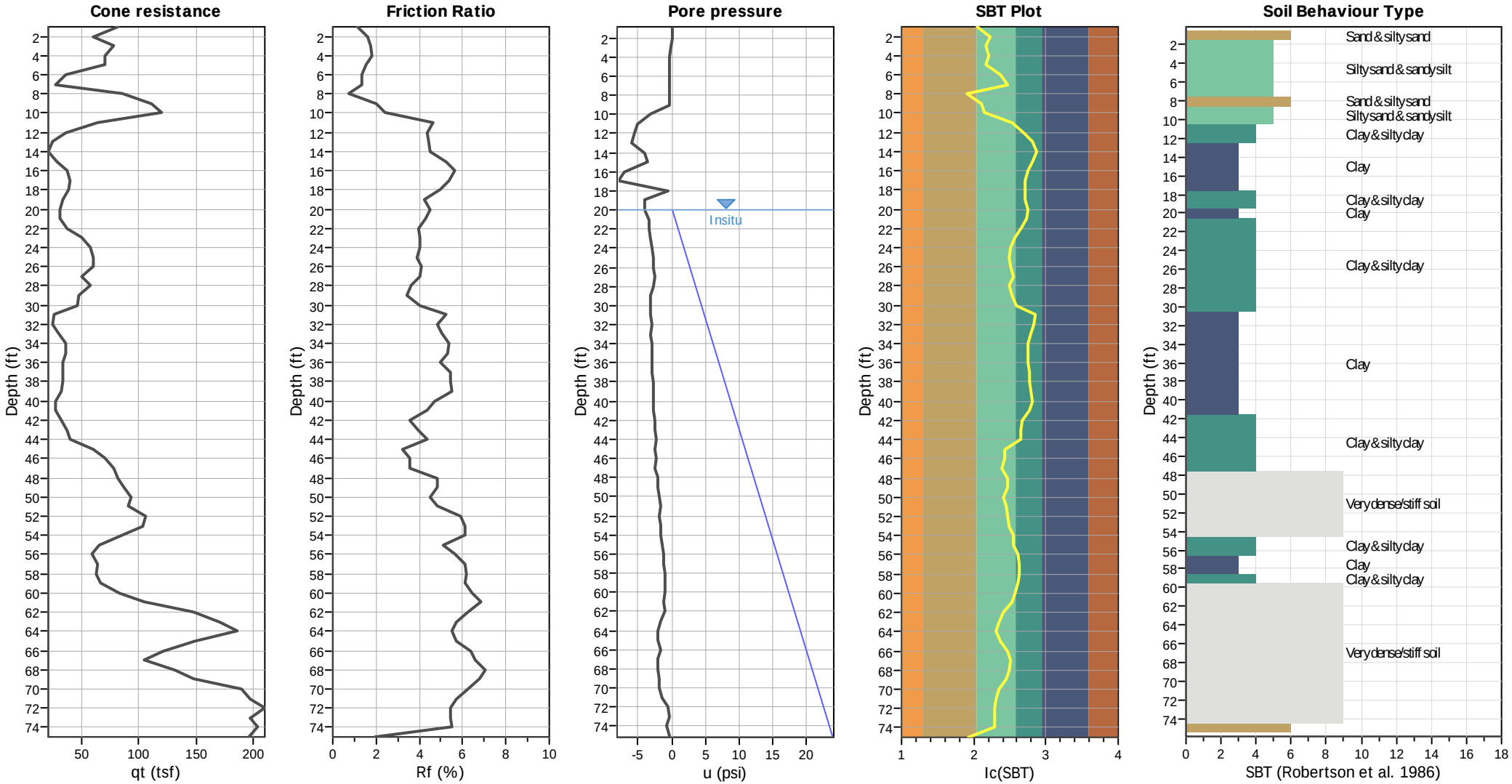






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



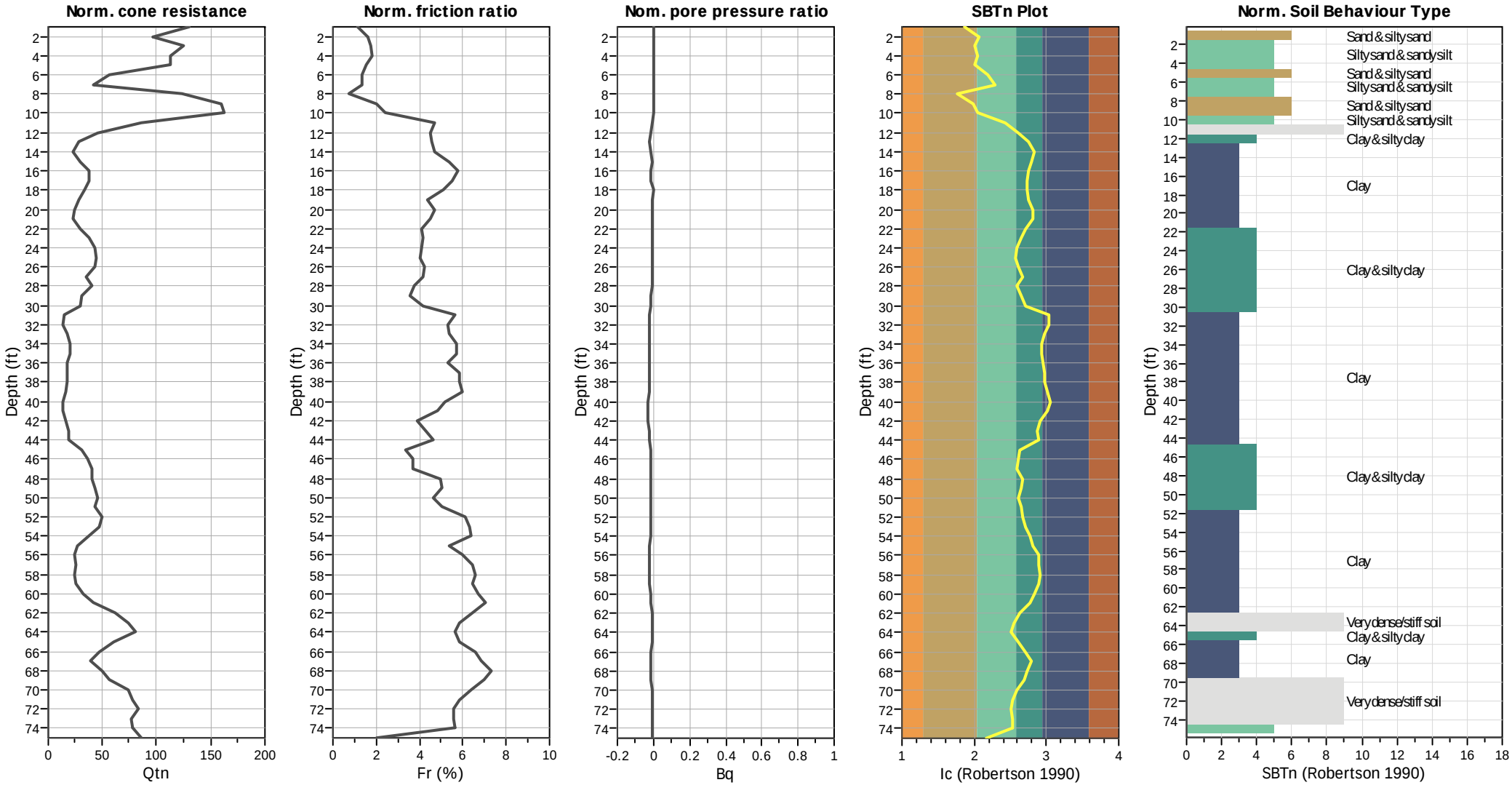
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	75.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



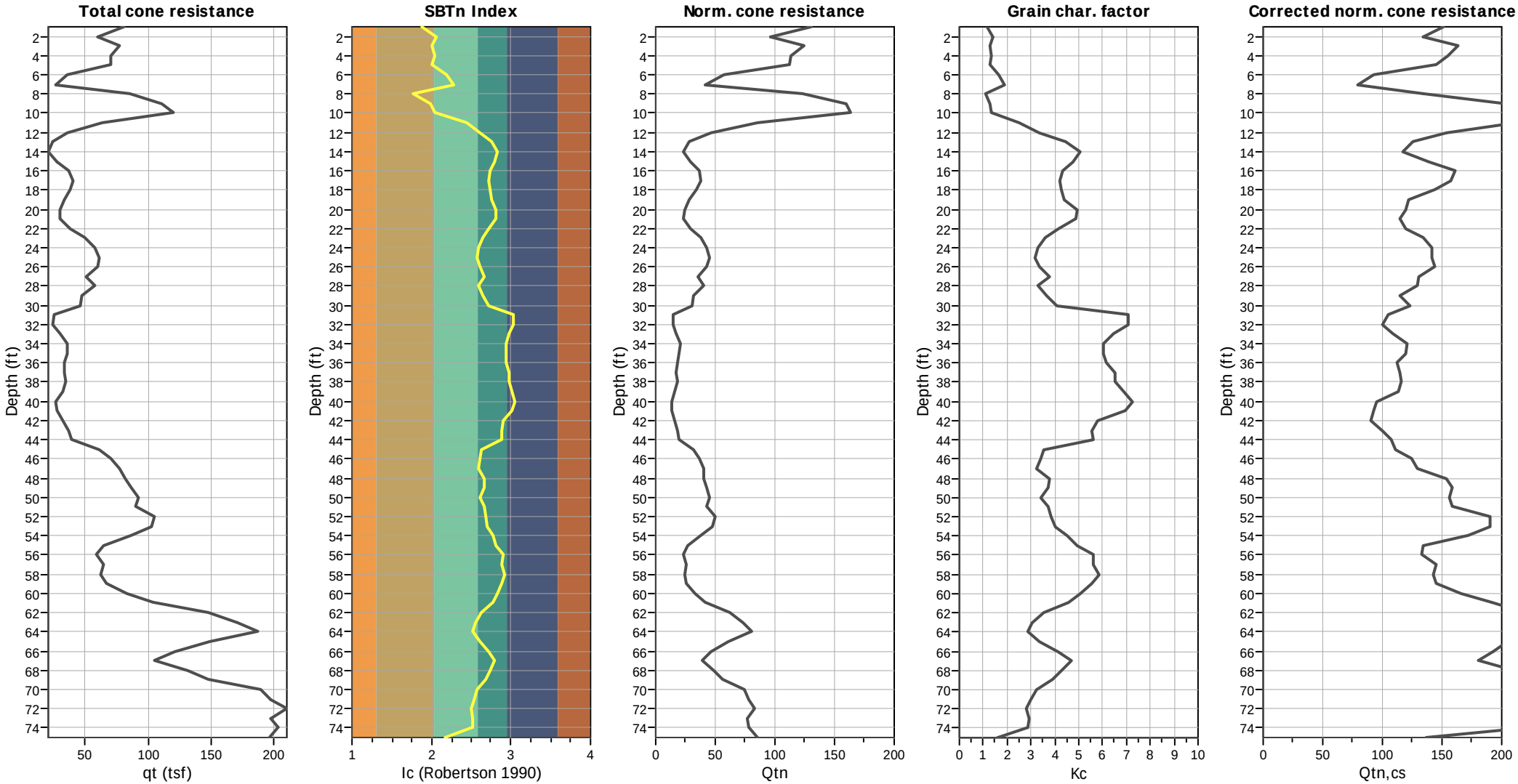
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	75.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

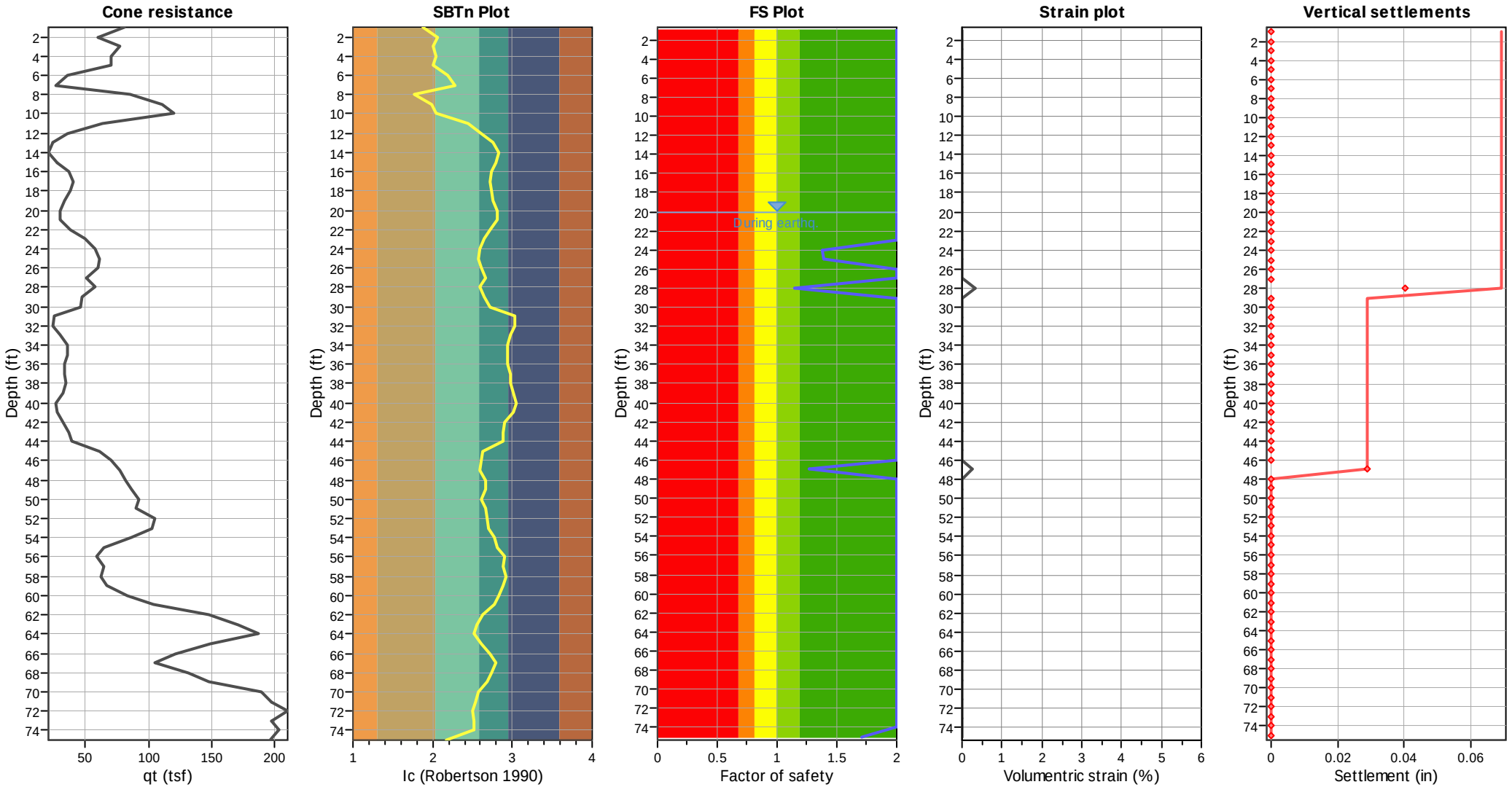
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	75.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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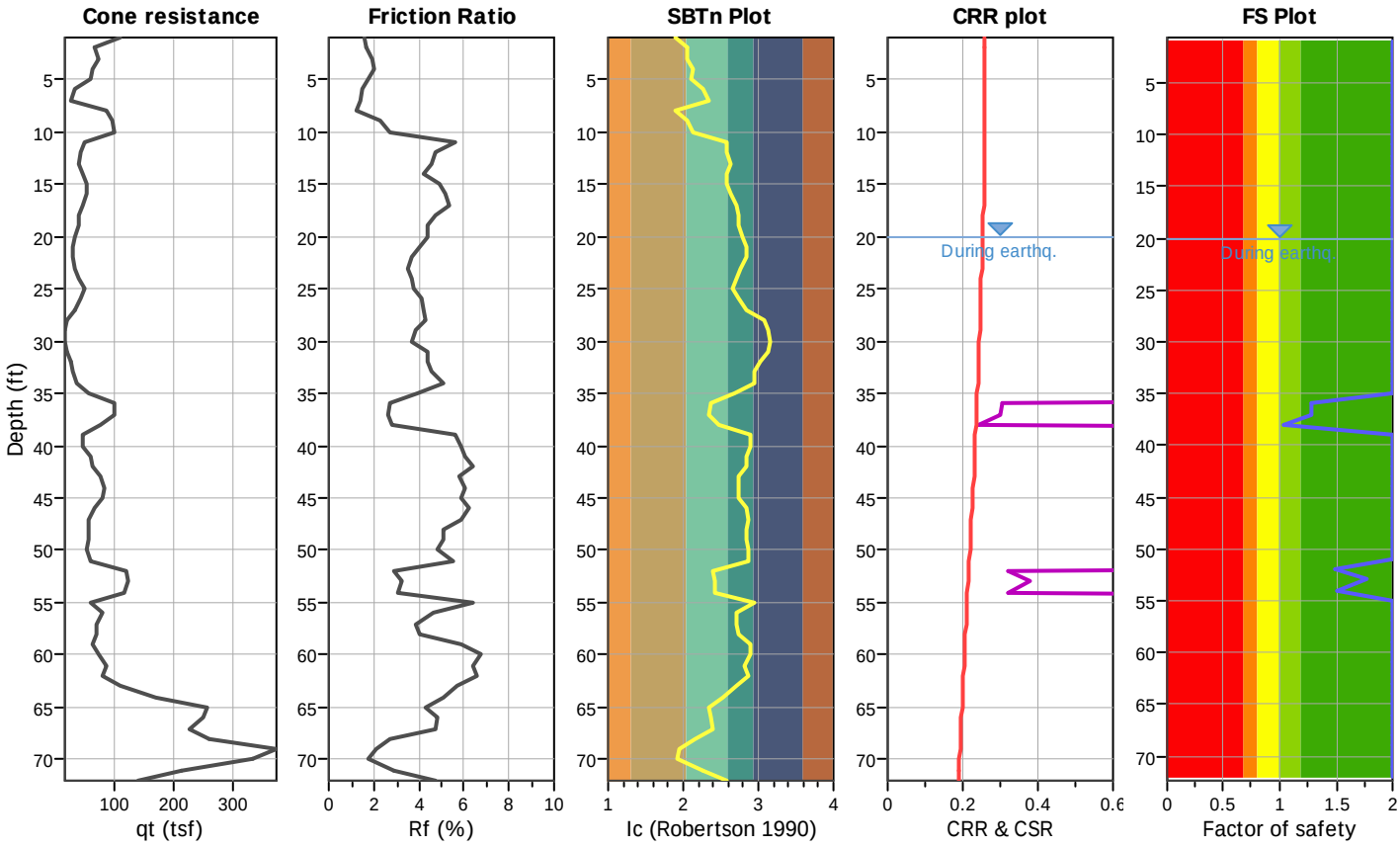
LIQUEFACTION ANALYSIS REPORT

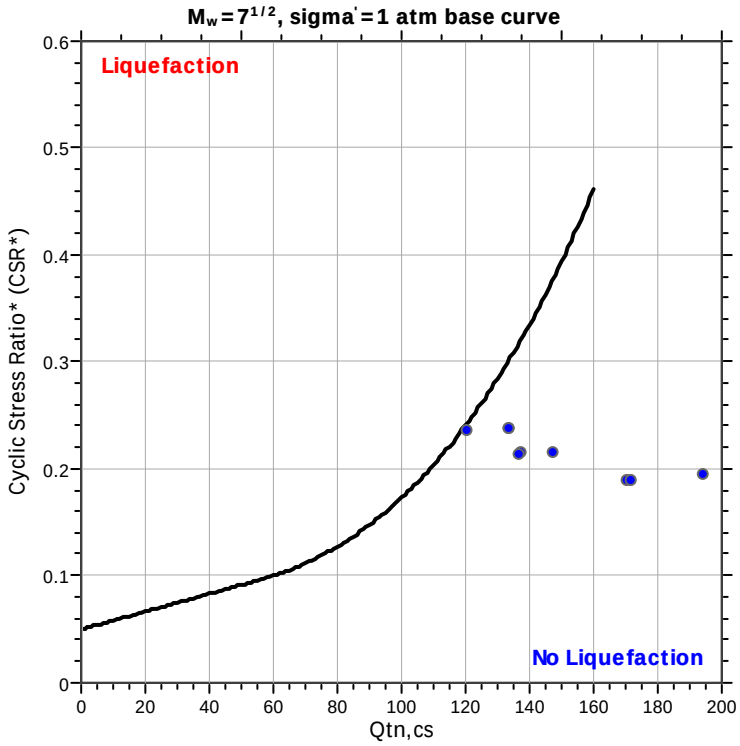
Project title : Kettner Substation **Location : San Diego, CA**

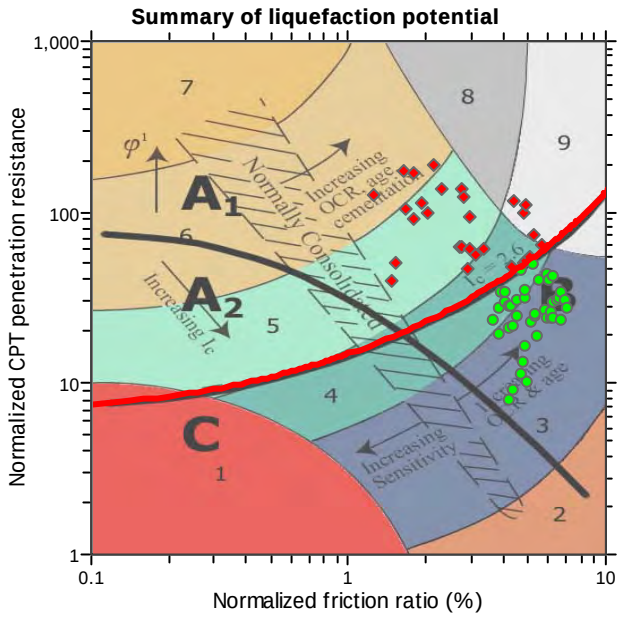
CPT file : CPT-4i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	75.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

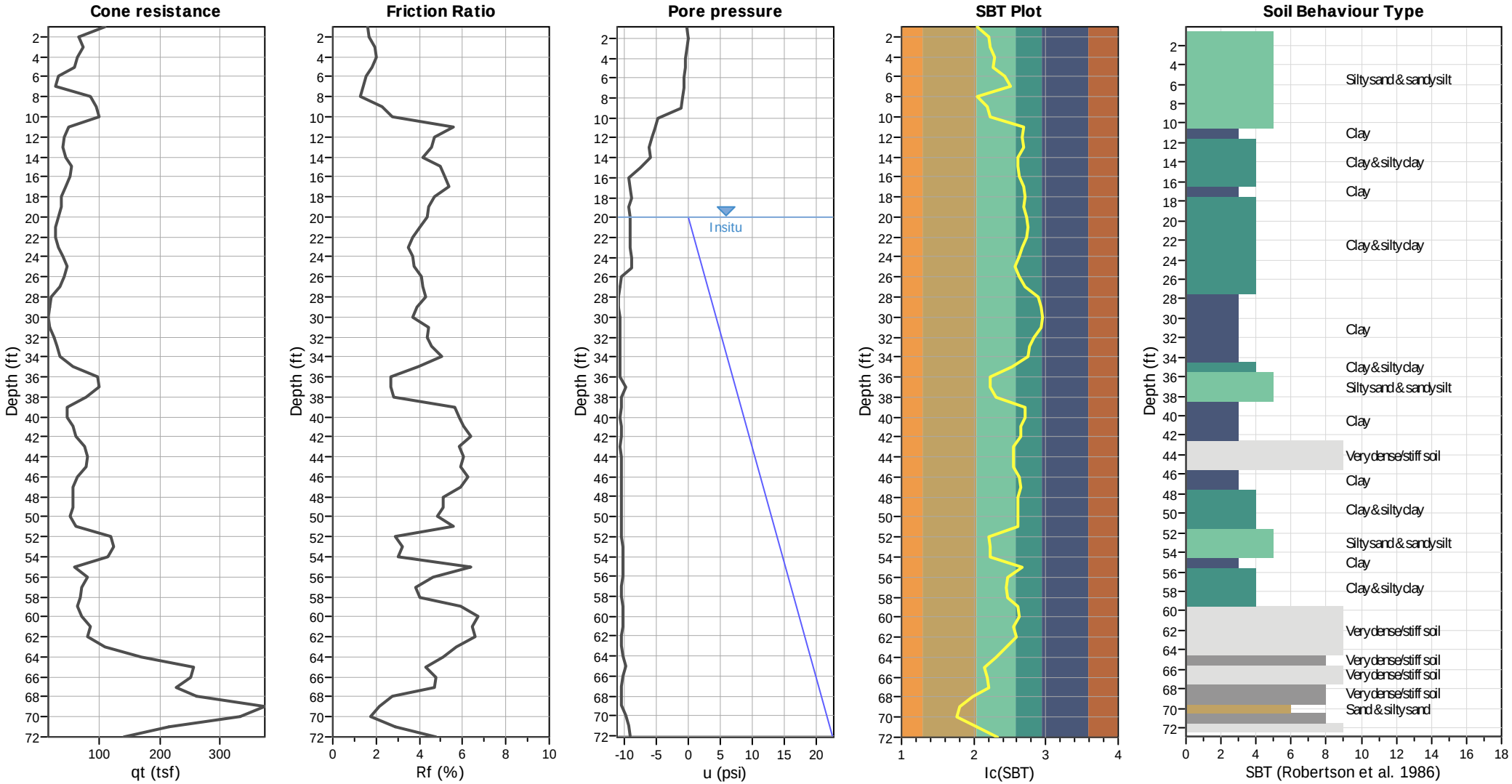






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



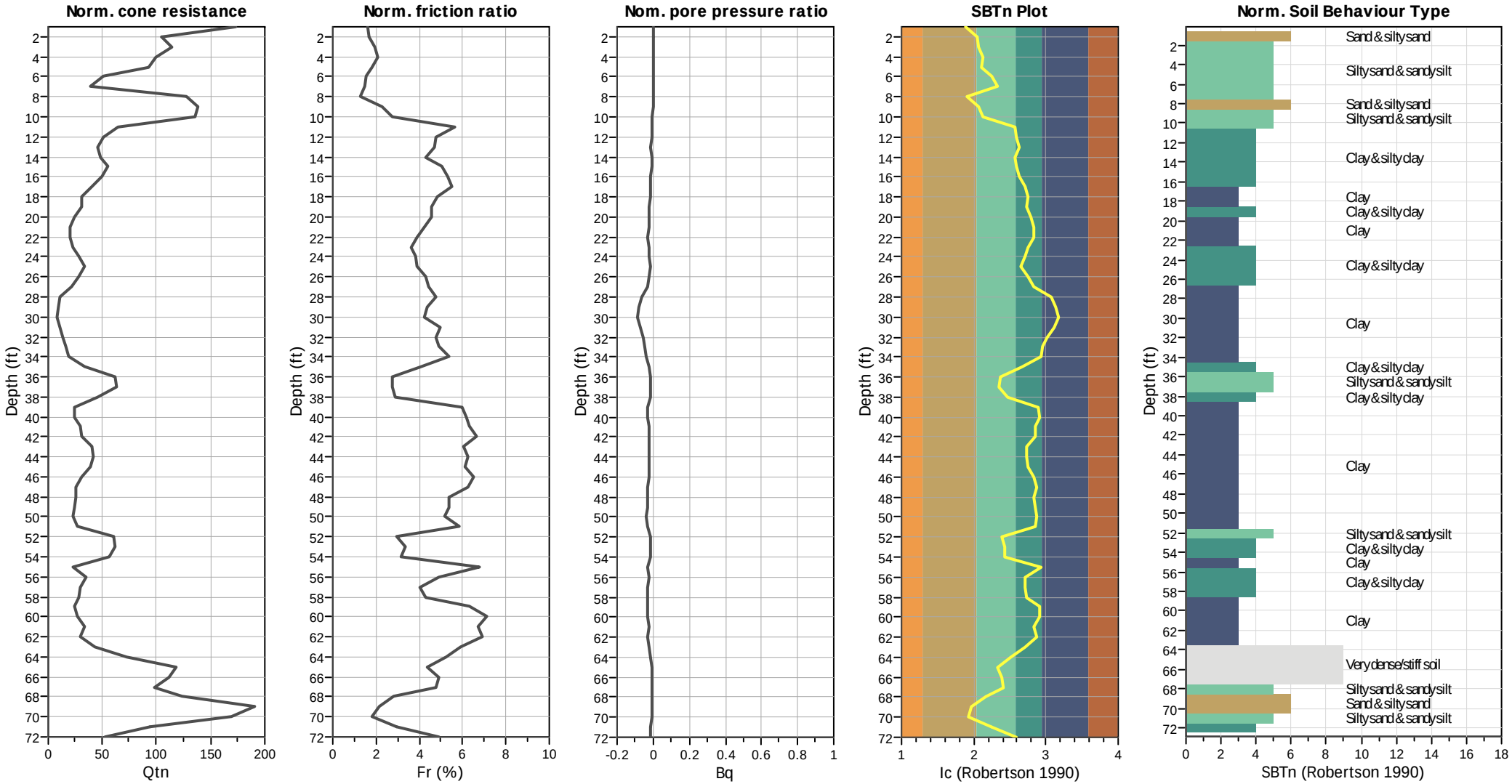
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	75.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



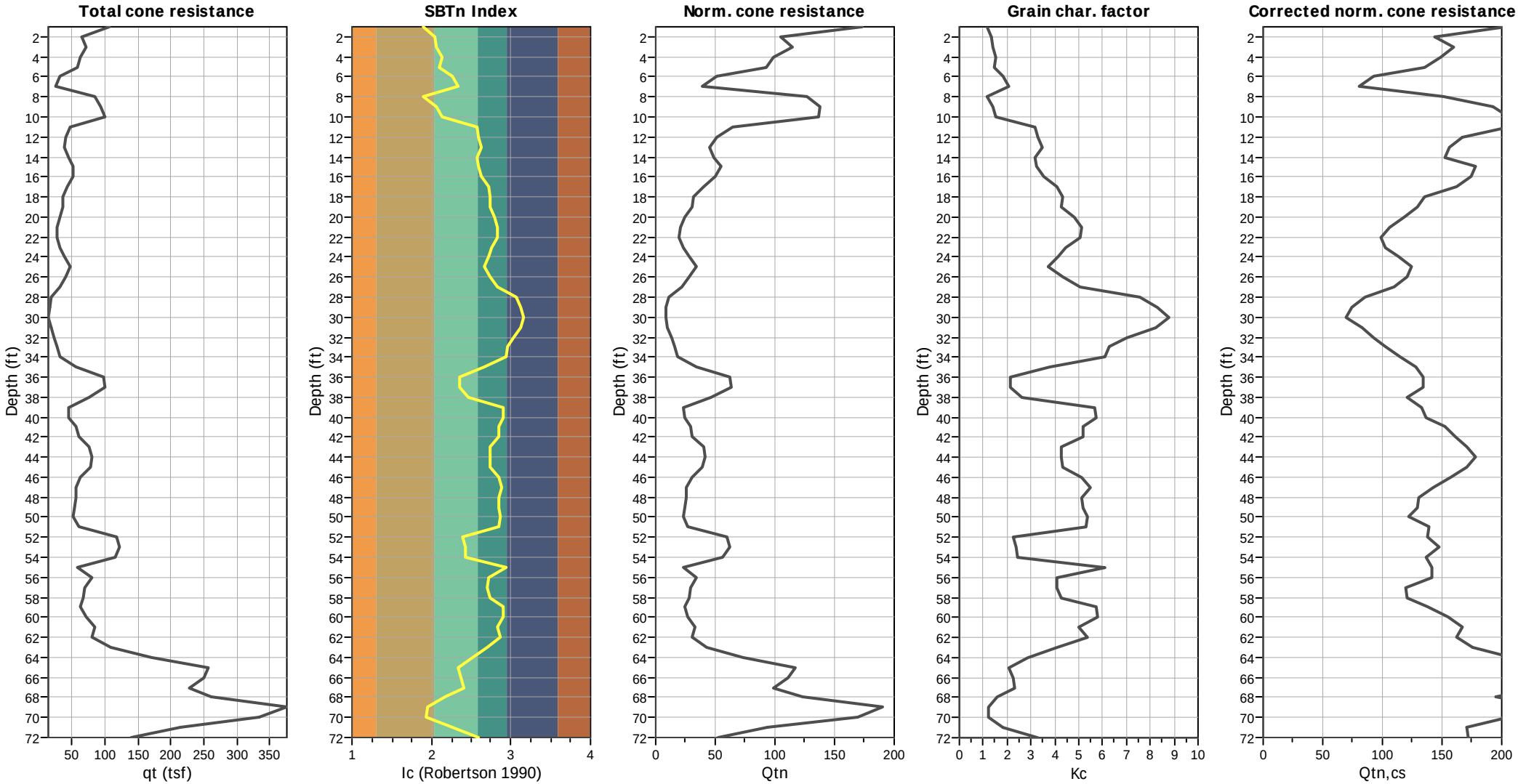
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	75.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

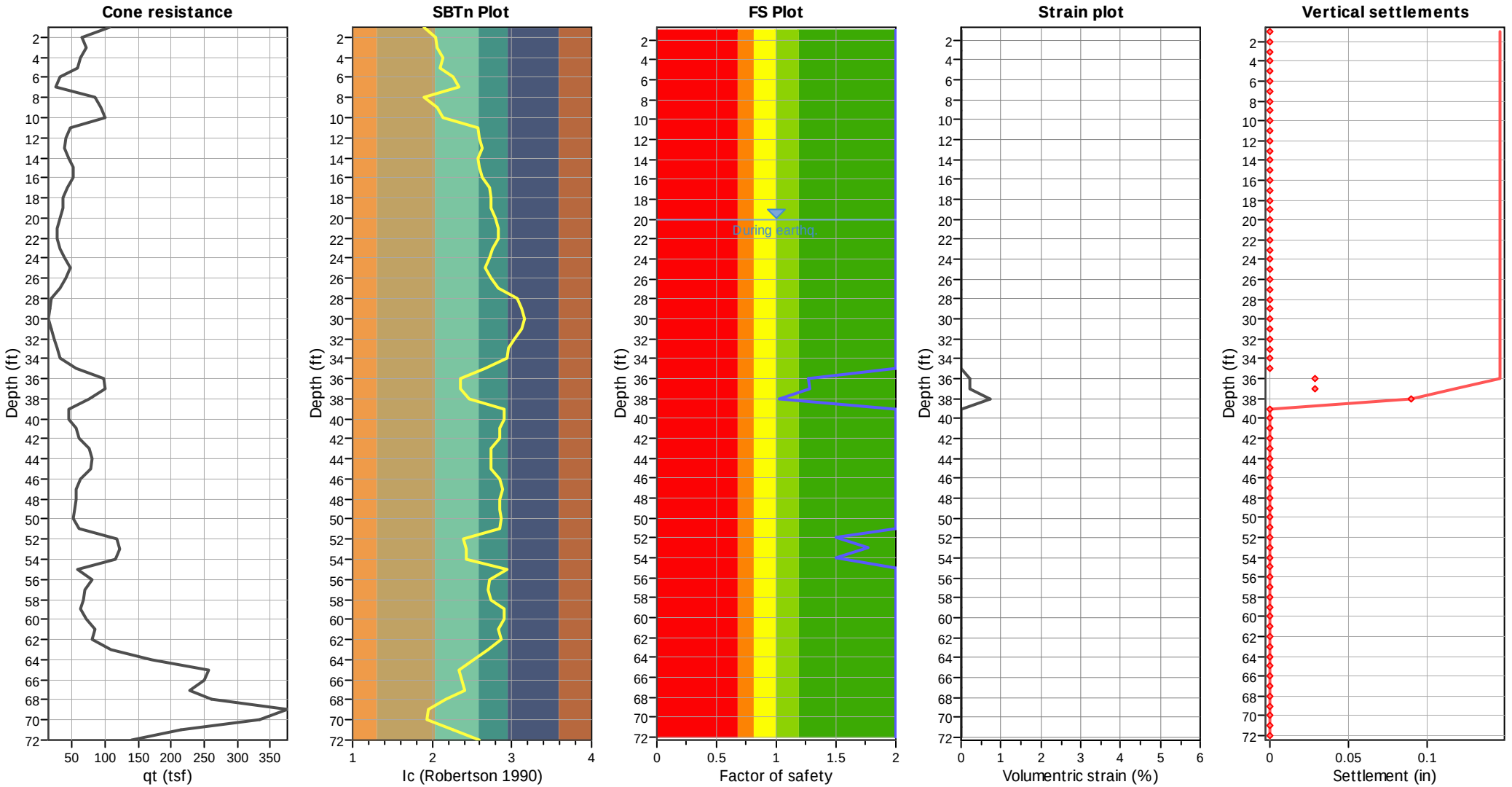
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	75.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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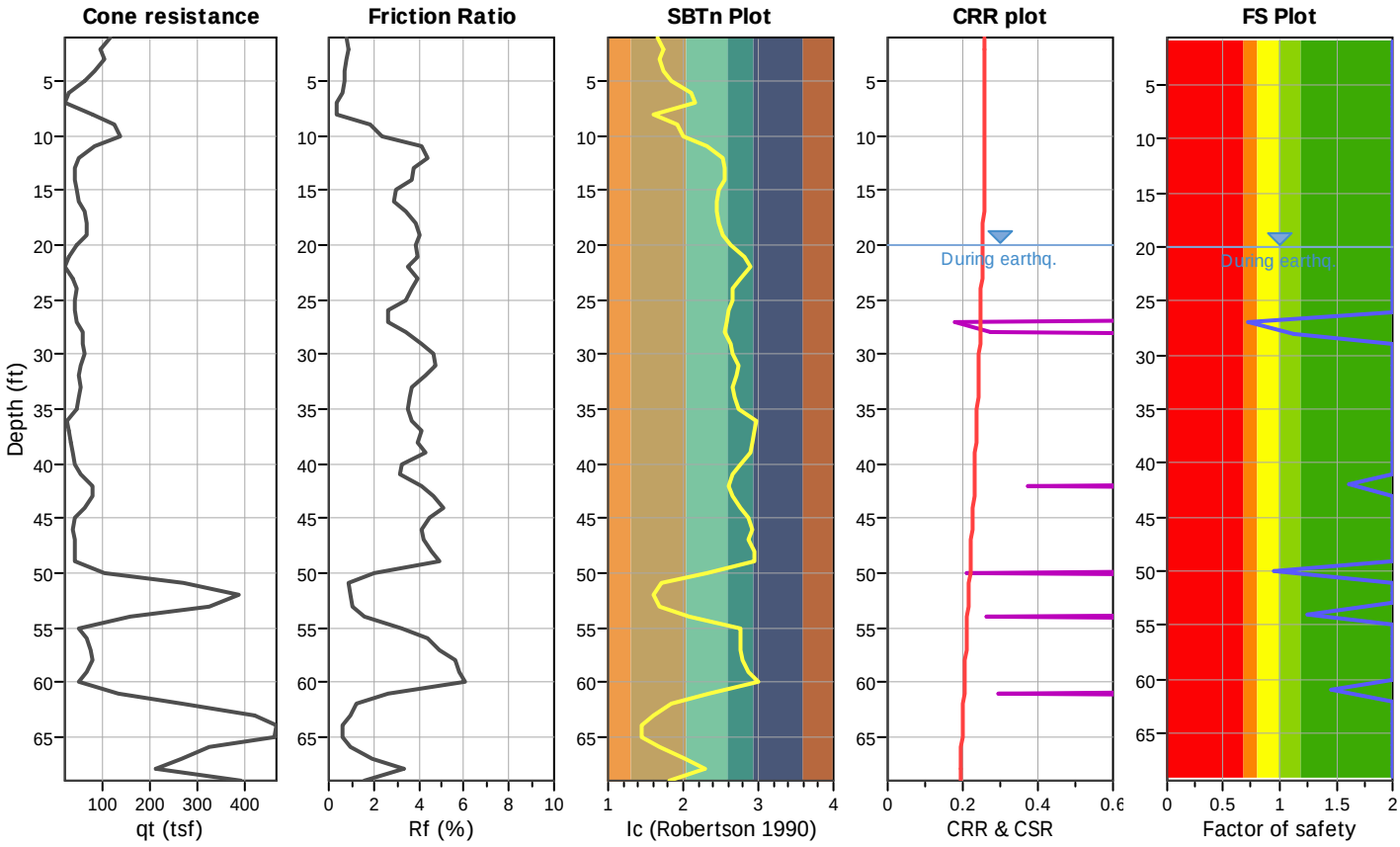
LIQUEFACTION ANALYSIS REPORT

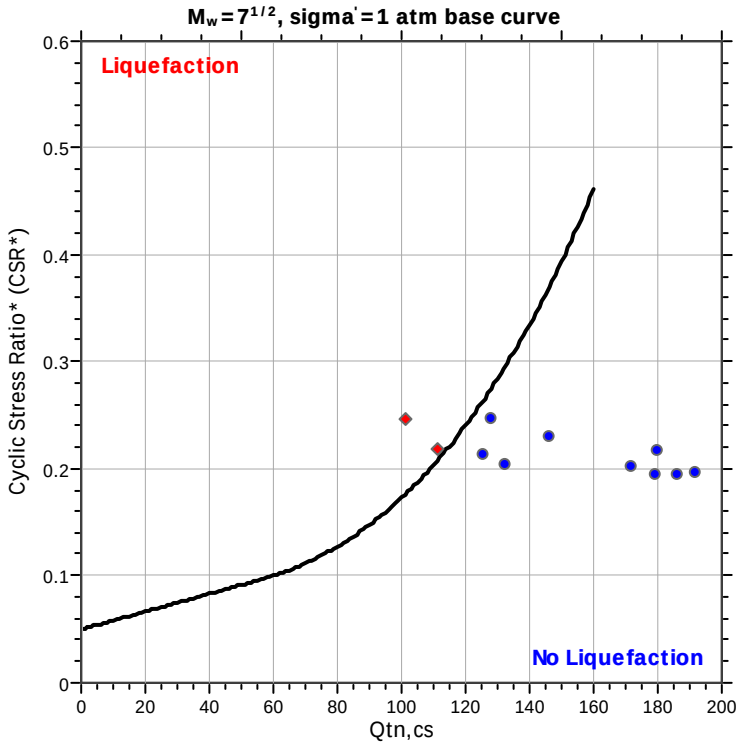
Project title : Kettner Substation **Location : San Diego, CA**

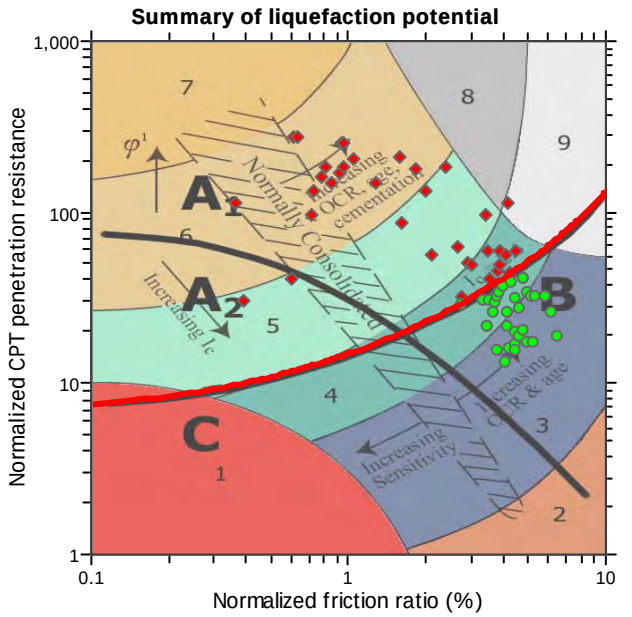
CPT file : CPT-5i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	70.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

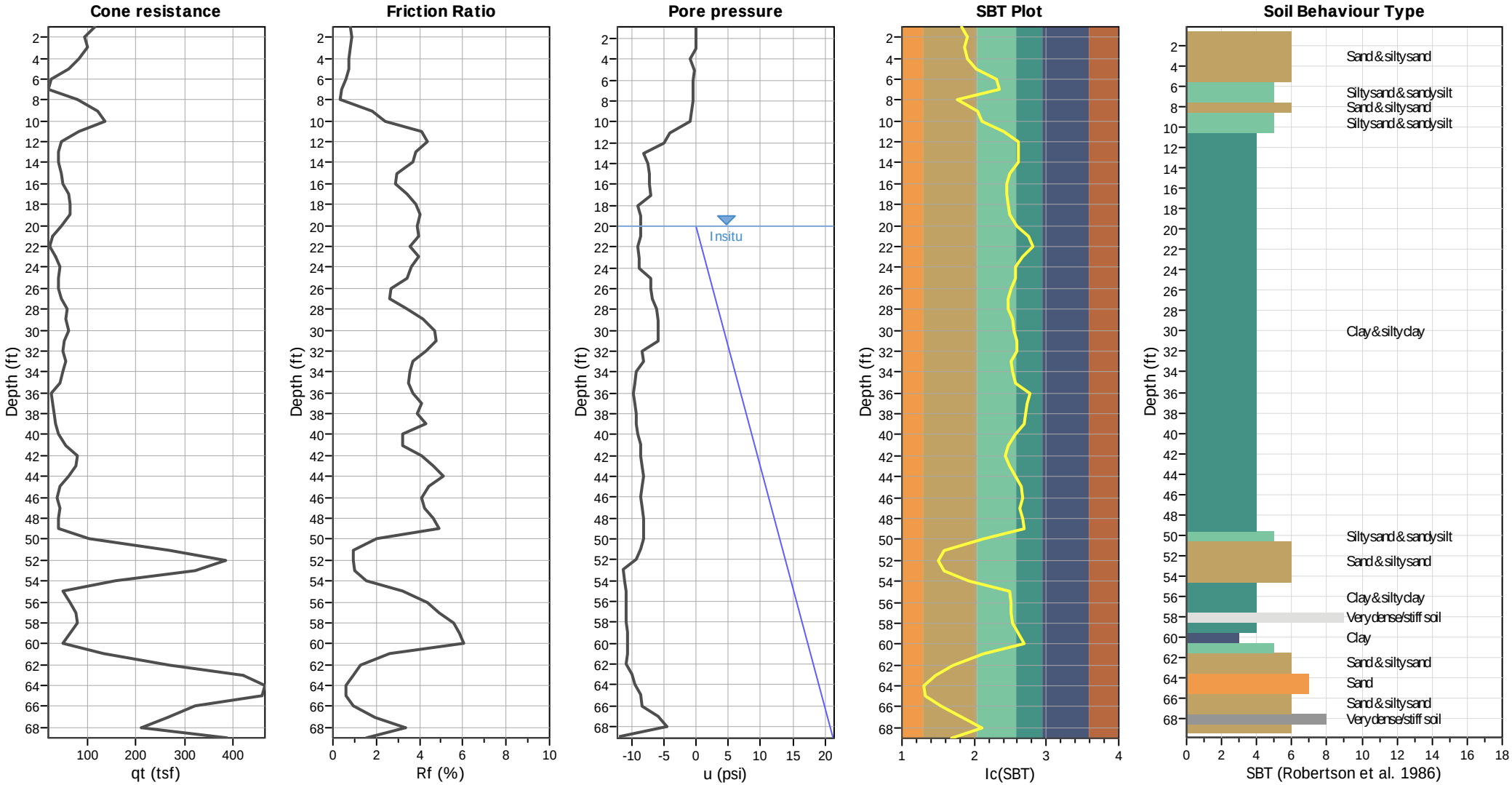






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



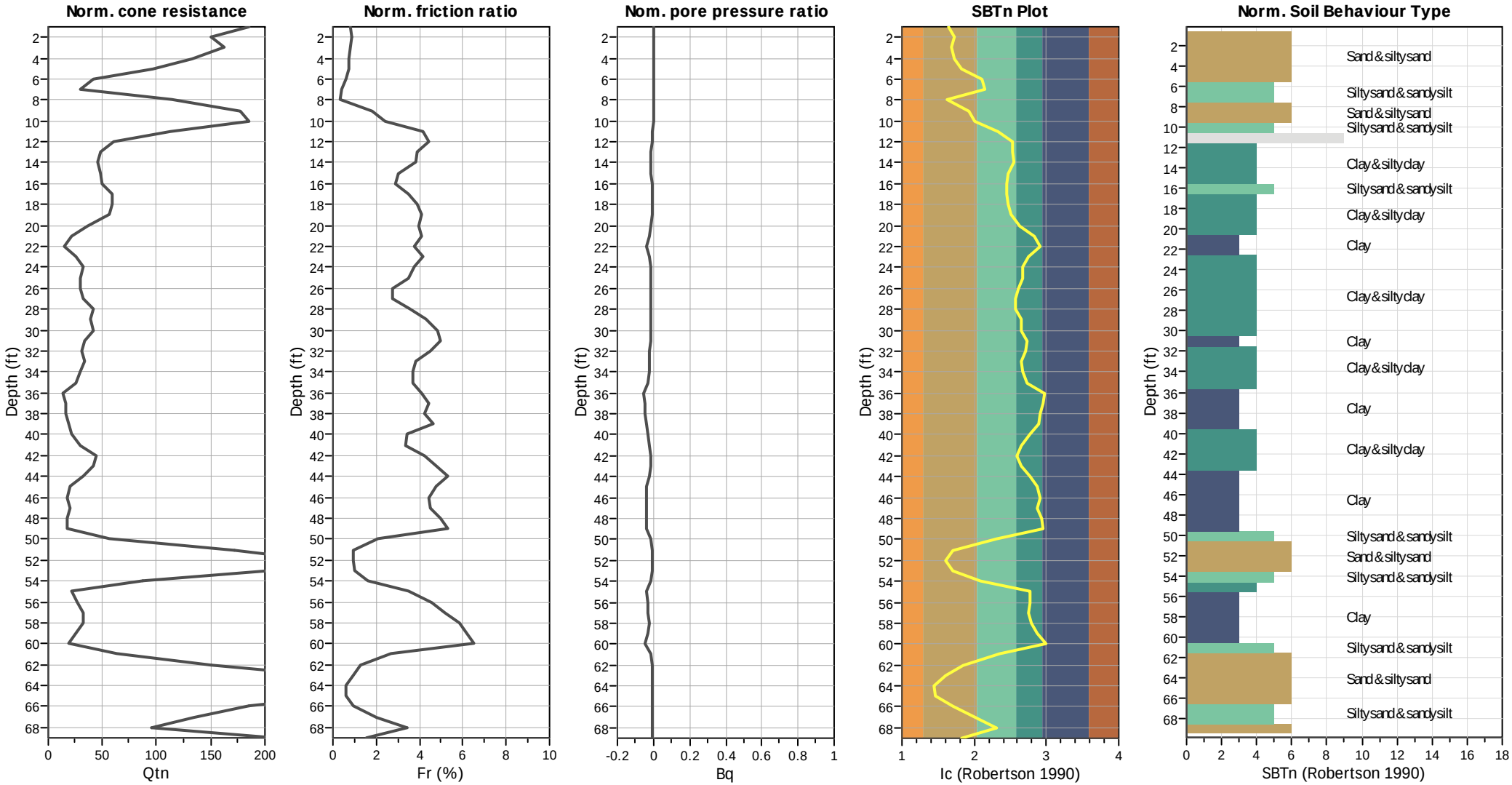
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	70.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



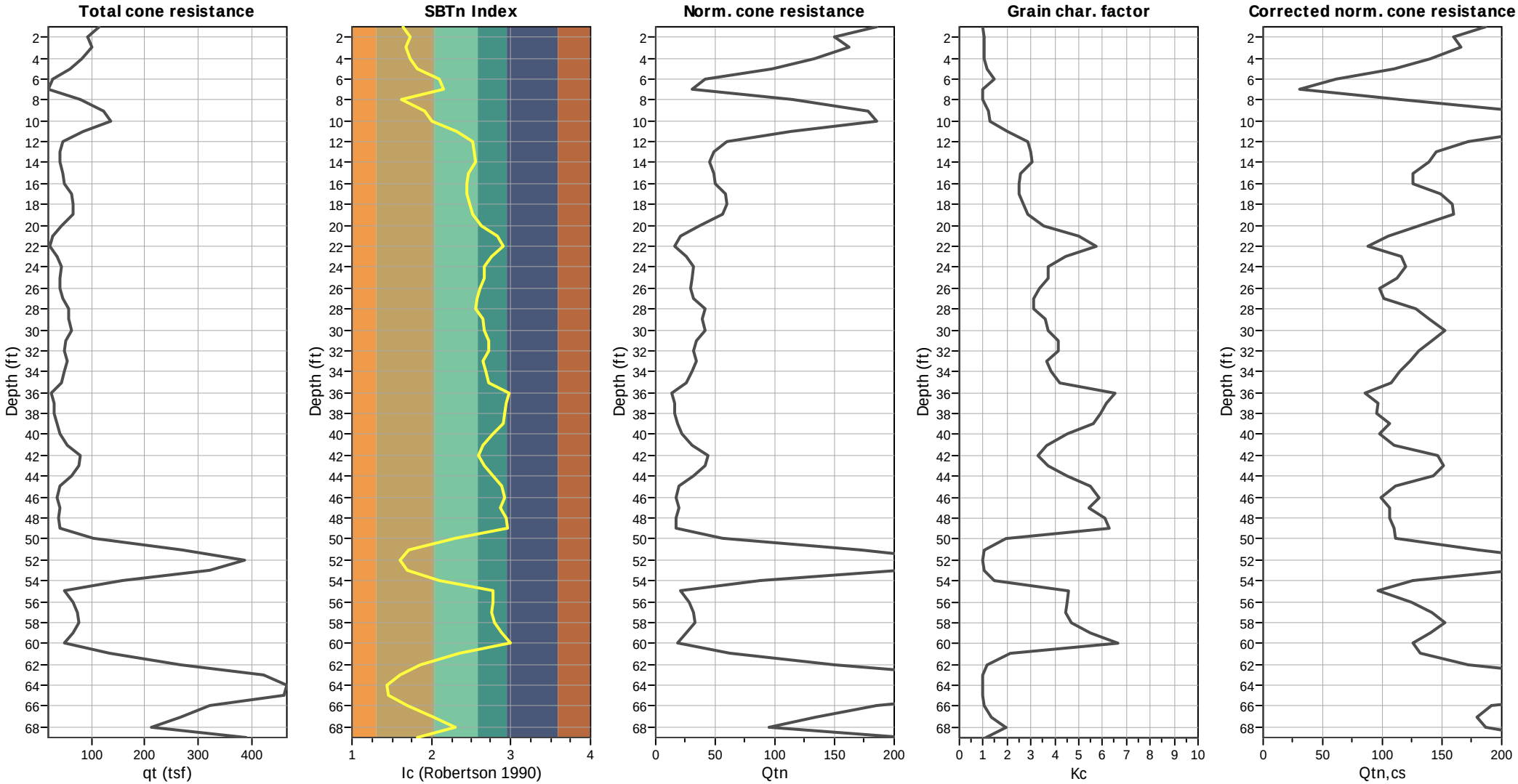
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	70.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

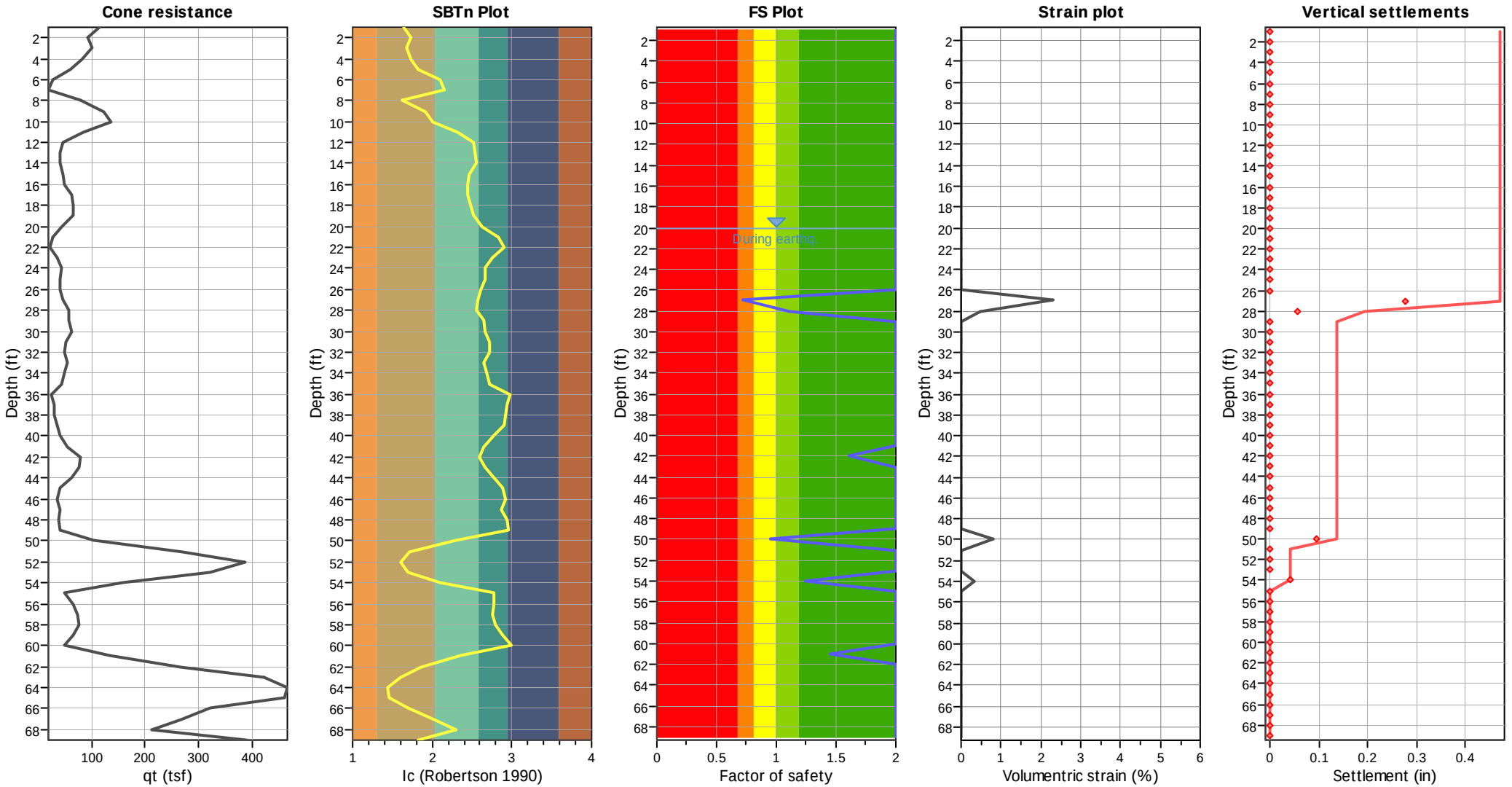
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	70.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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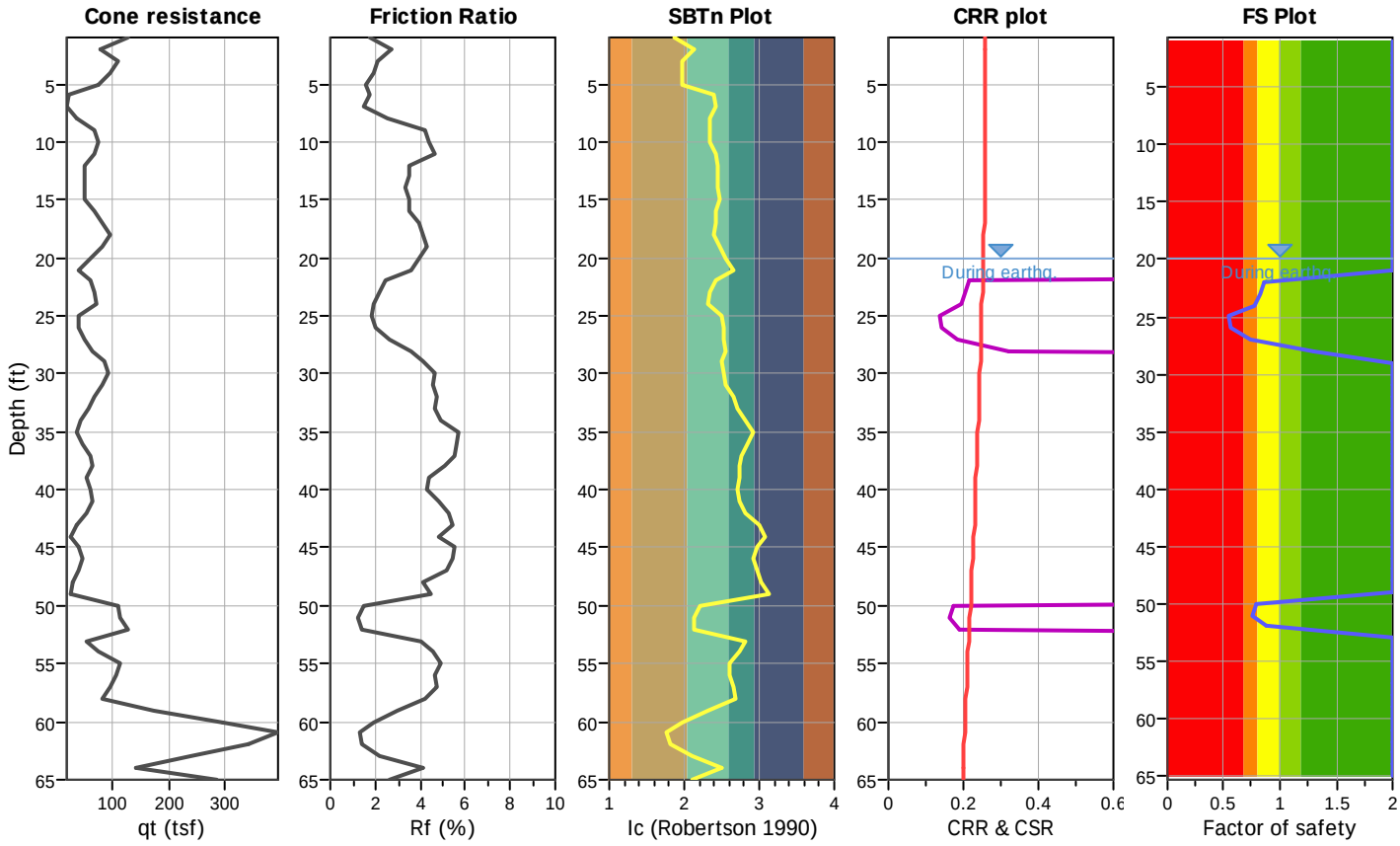
LIQUEFACTION ANALYSIS REPORT

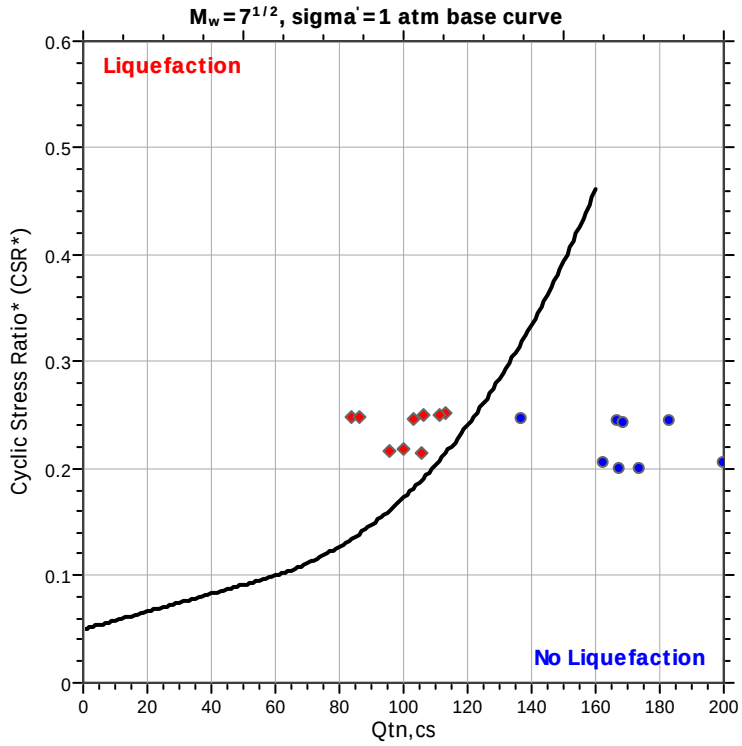
Project title : Kettner Substation **Location : San Diego, CA**

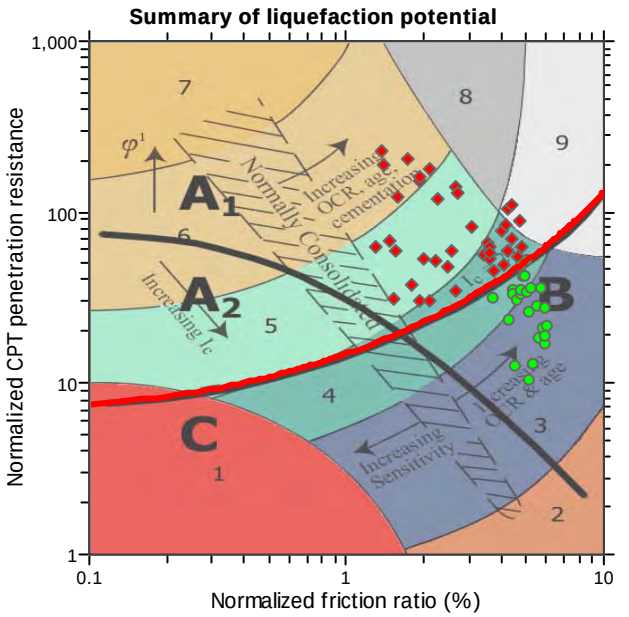
CPT file : CPT-6i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	65.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

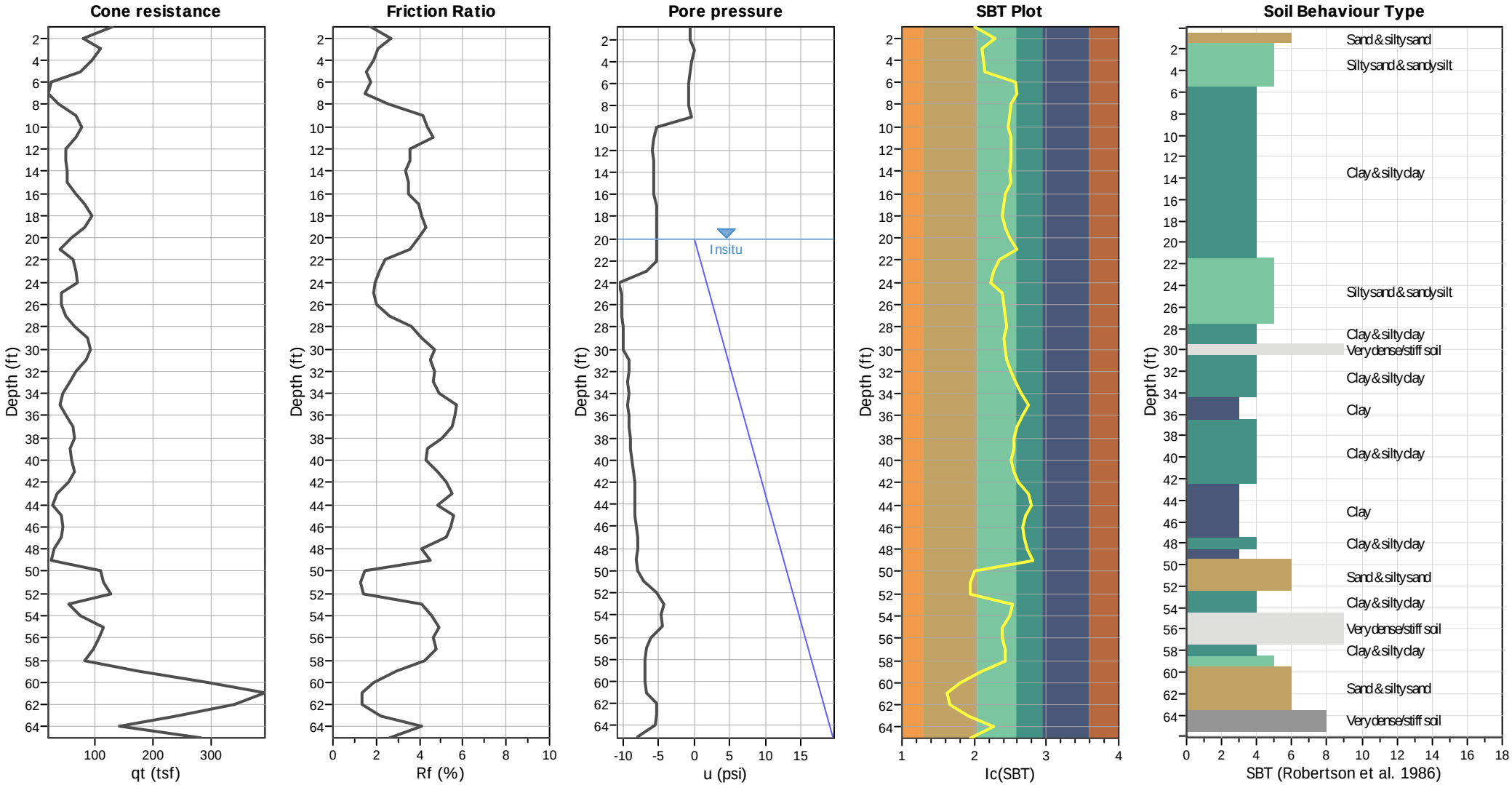






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



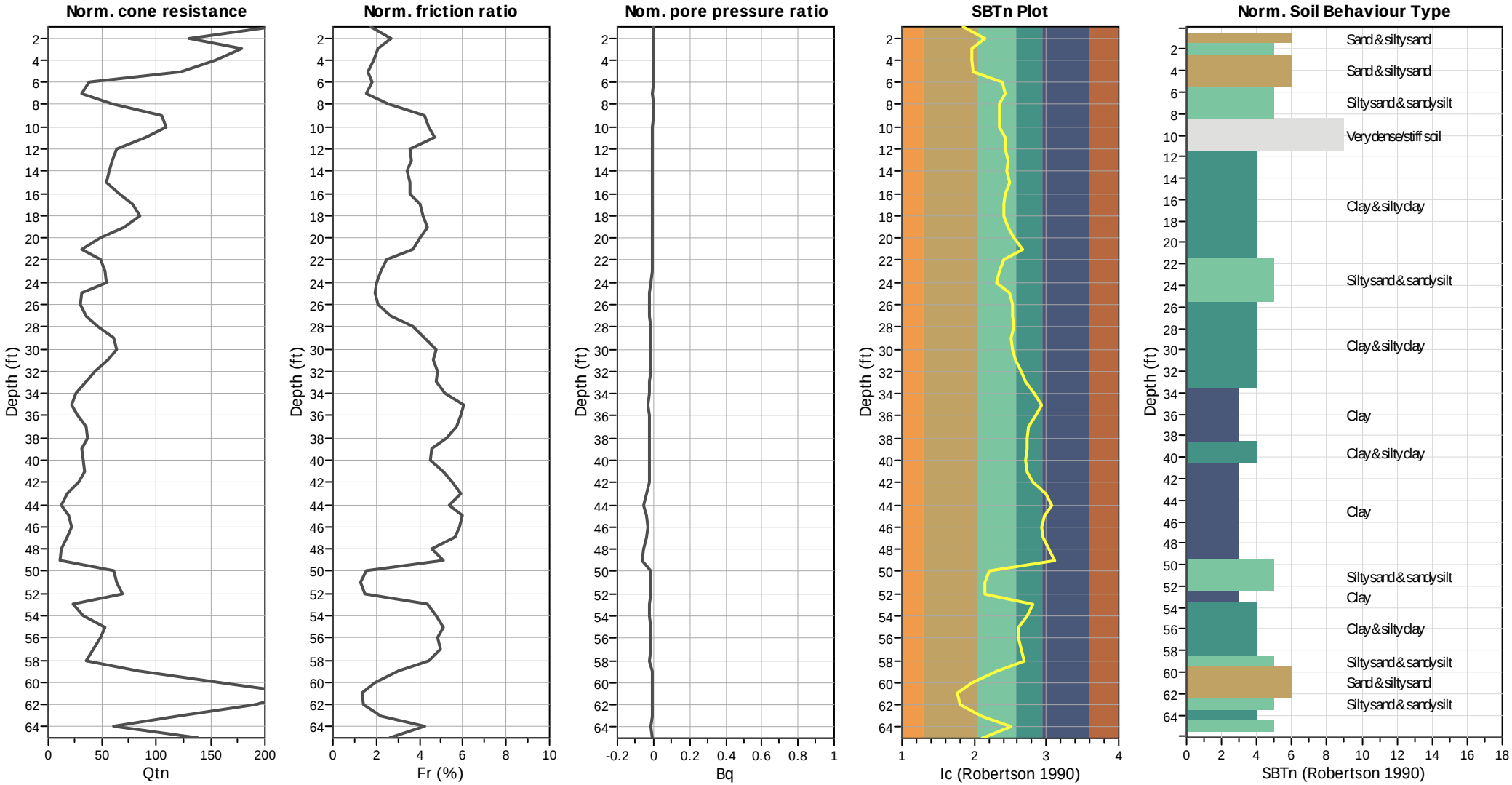
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	65.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



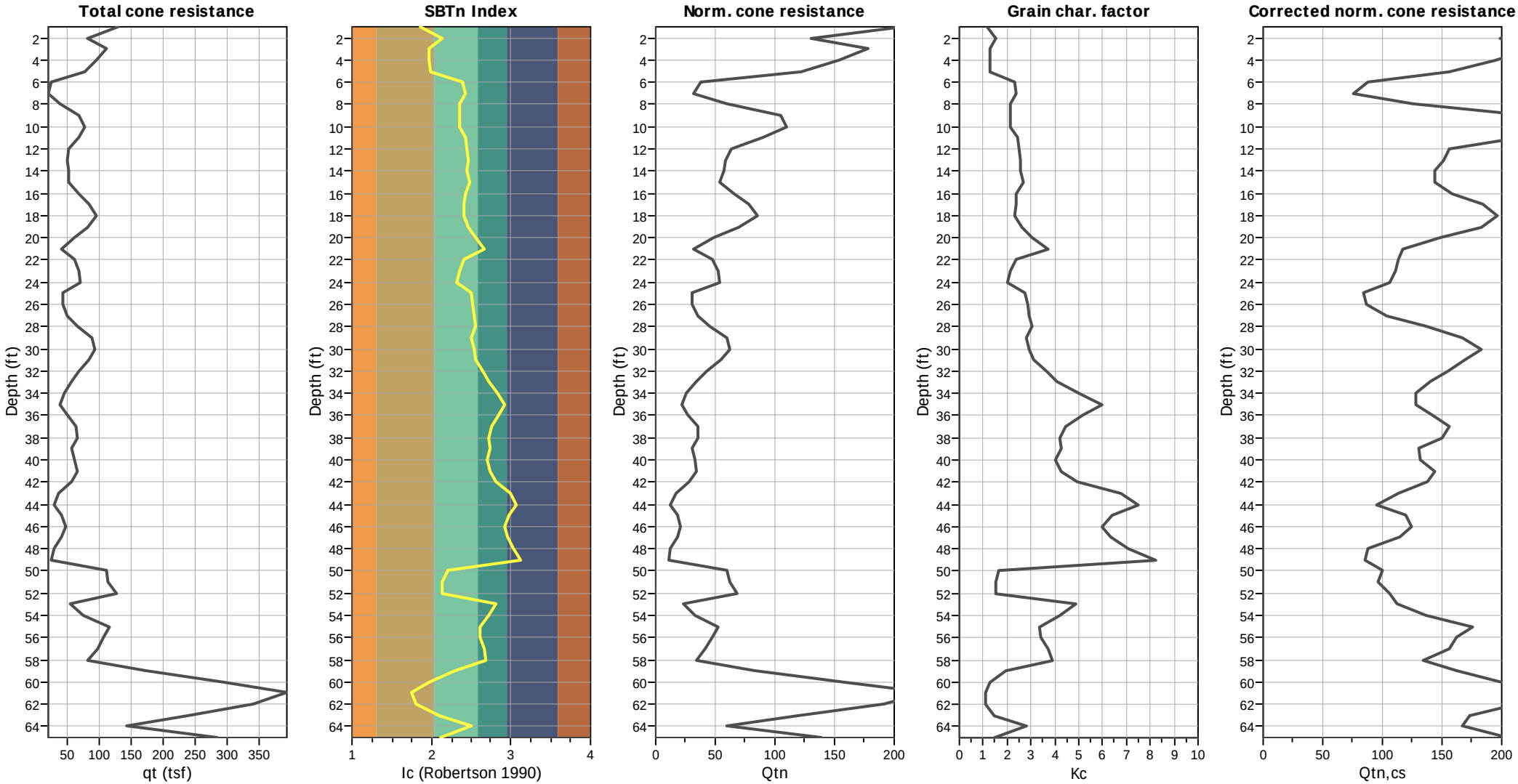
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	65.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

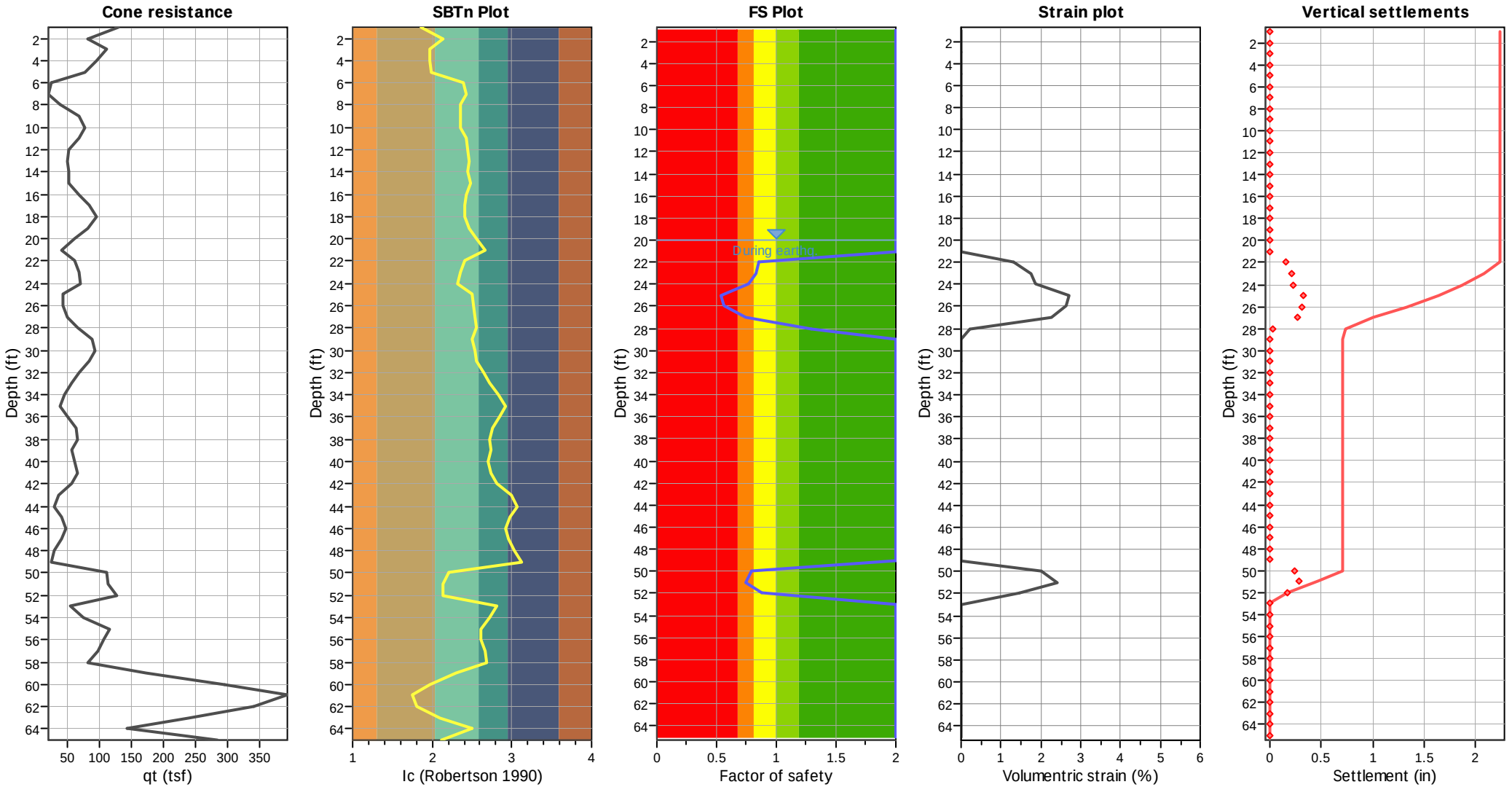
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	65.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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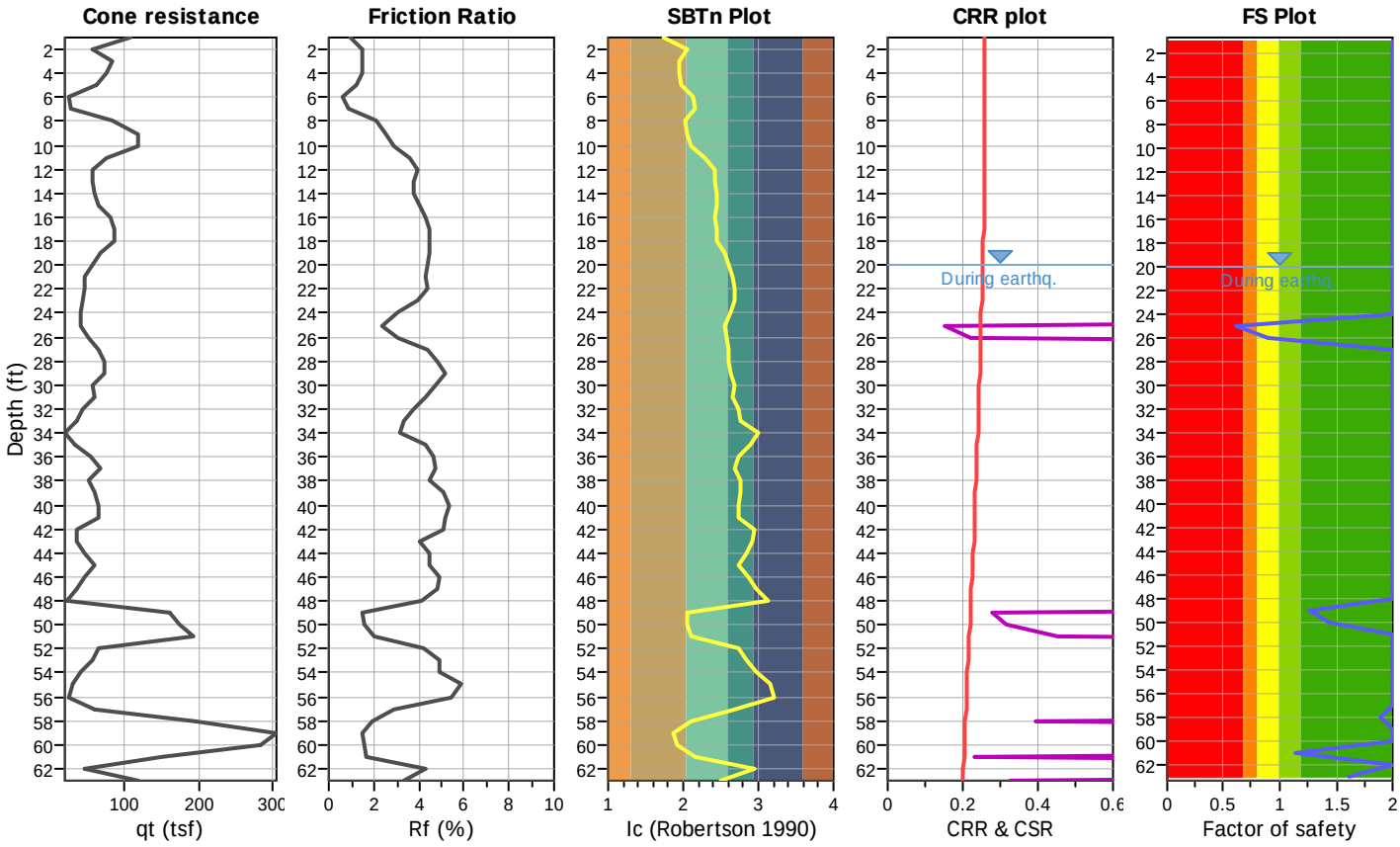
LIQUEFACTION ANALYSIS REPORT

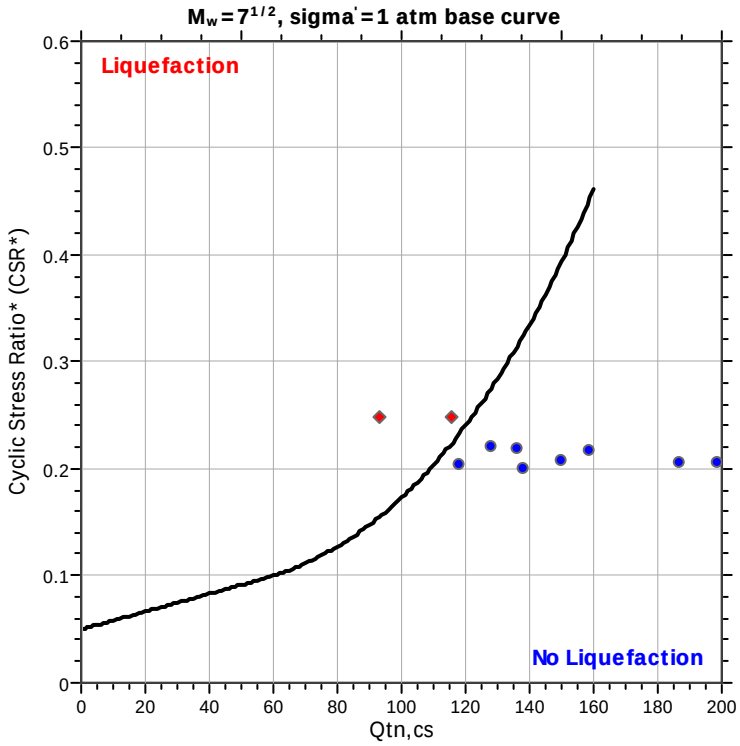
Project title : Kettner Substation **Location : San Diego, CA**

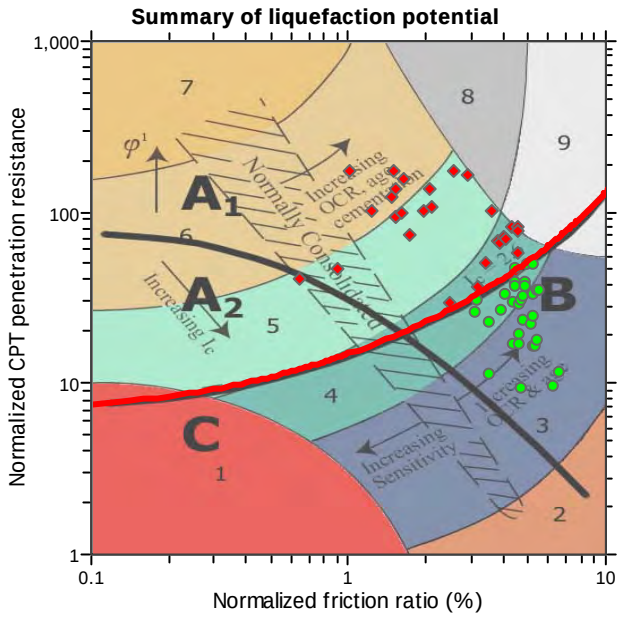
CPT file : CPT-7i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	65.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

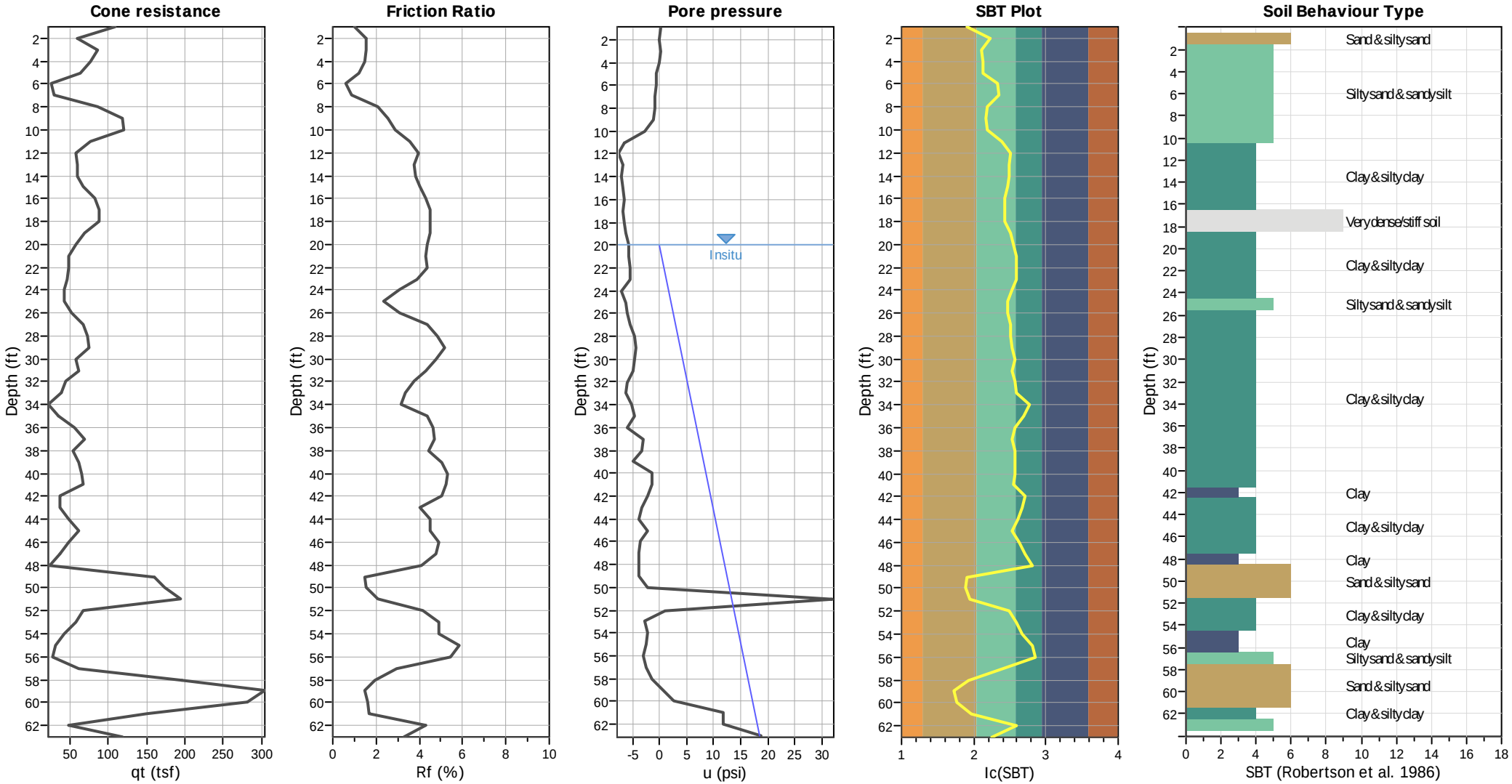






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



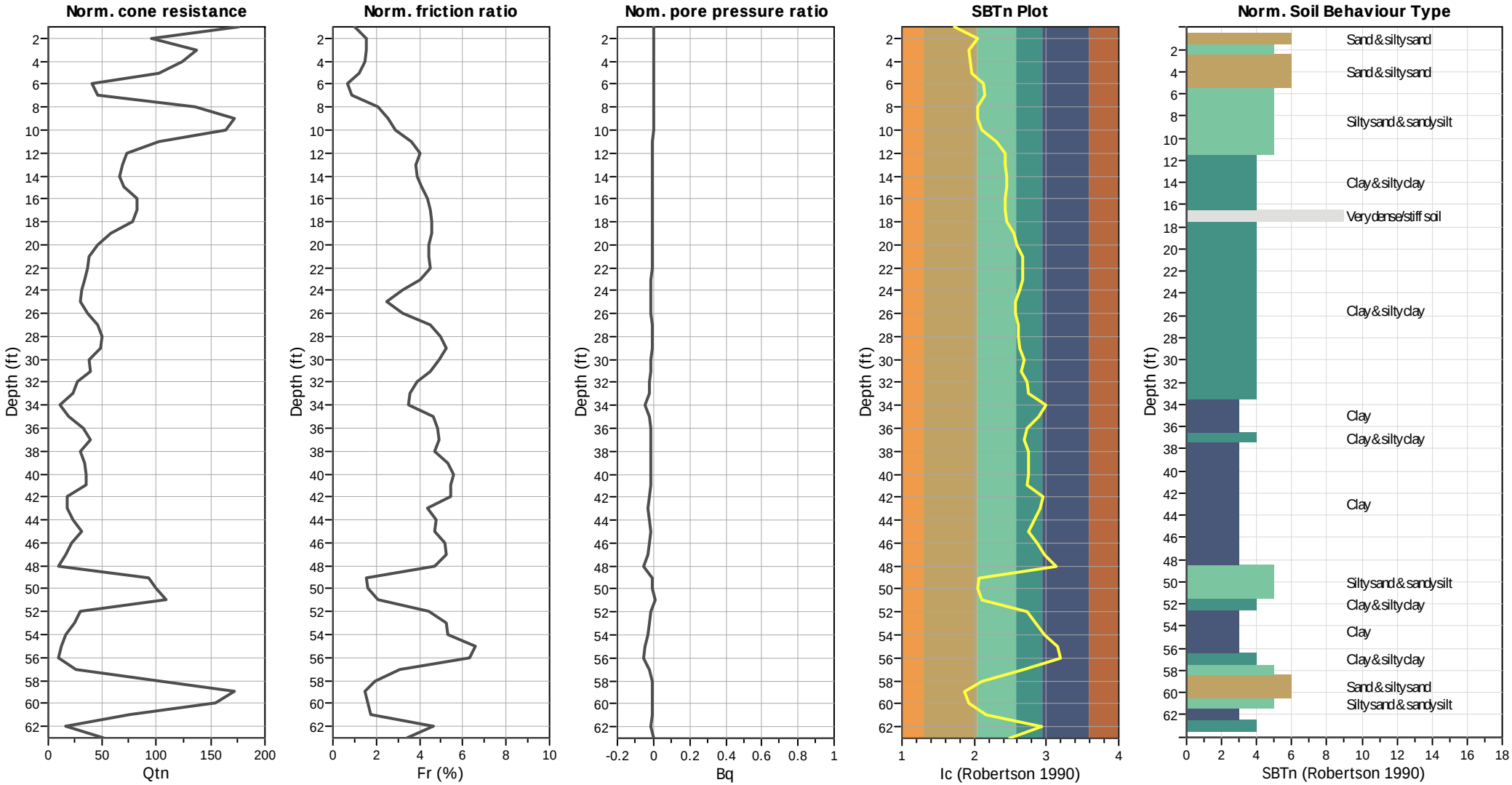
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	65.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



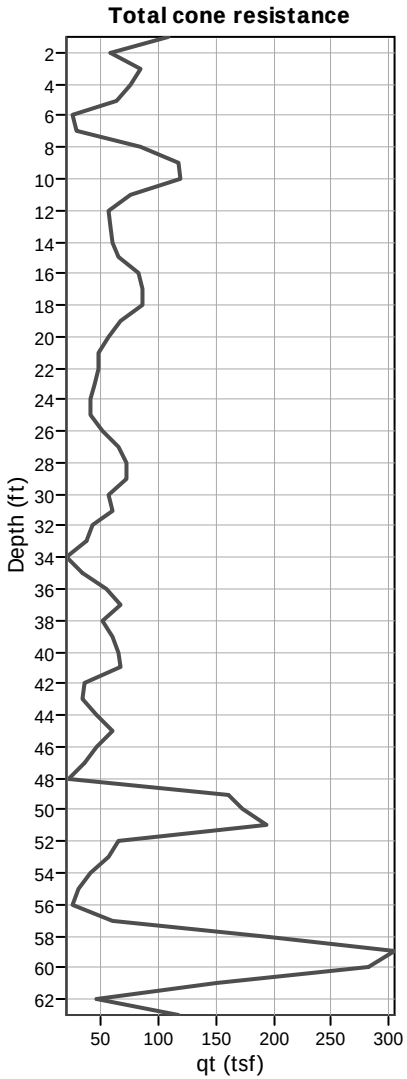
Input parameters and analysis data

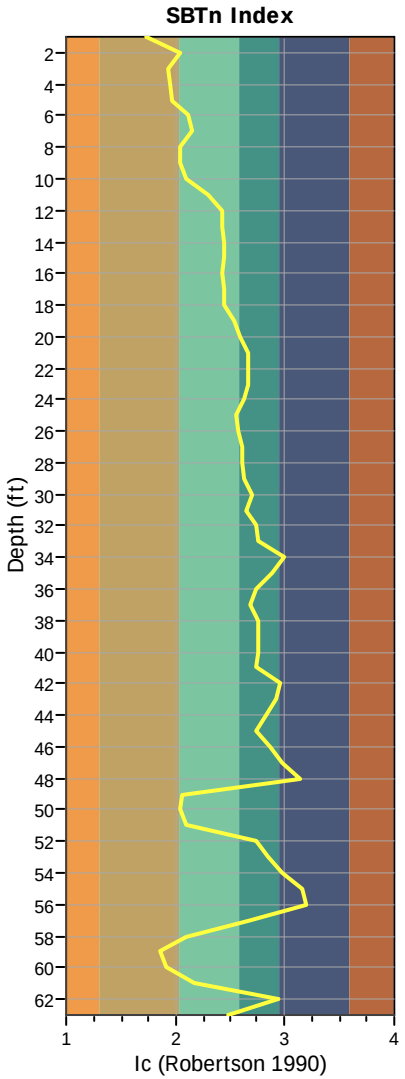
Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	65.00 ft

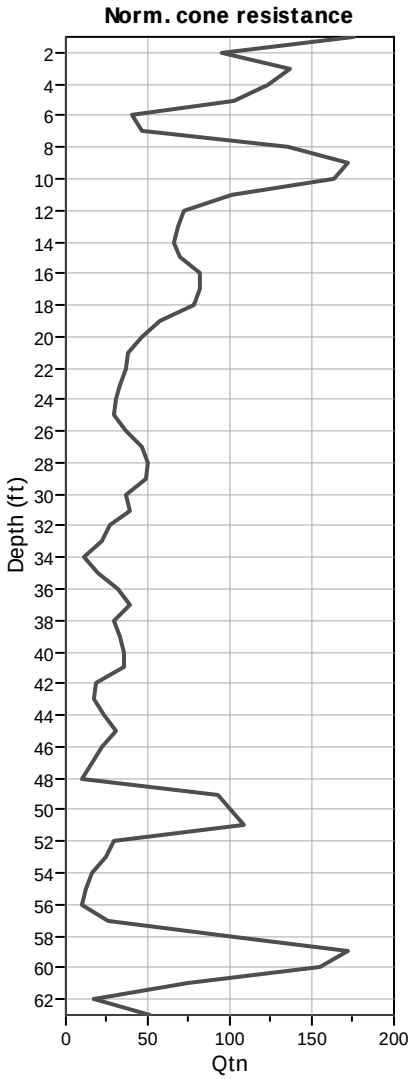
SBTn legend

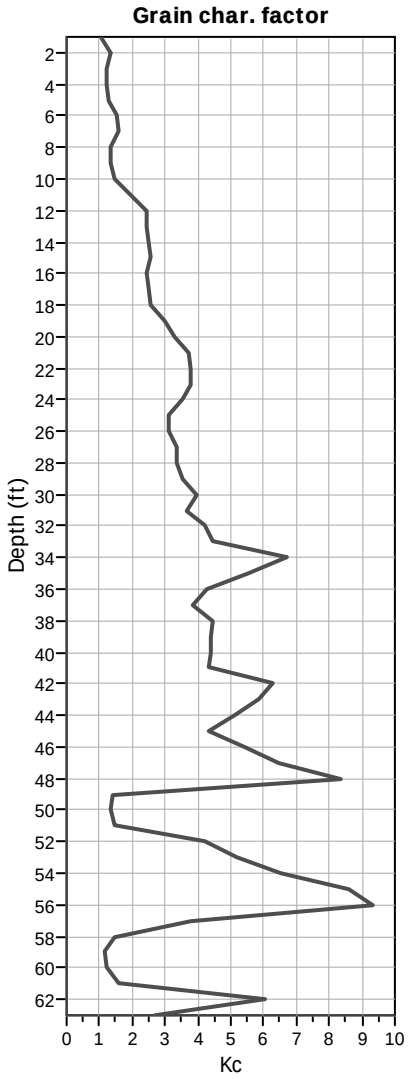
1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

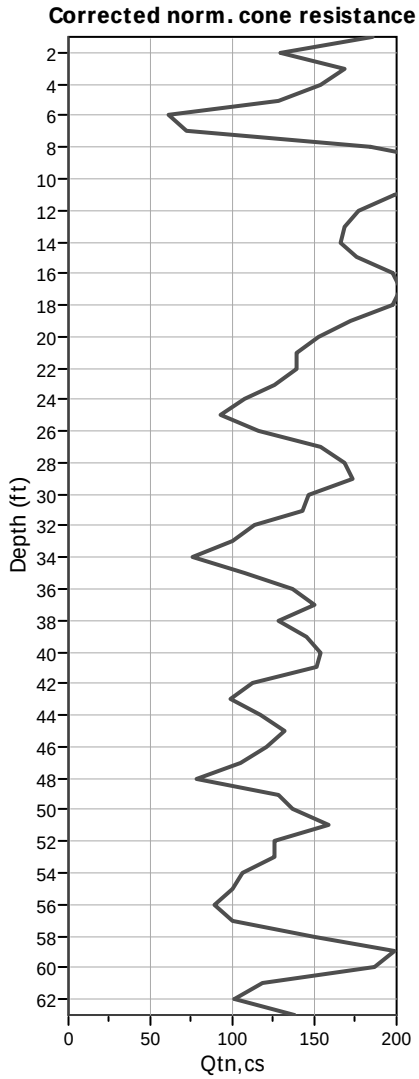
Liquefaction analysis overall plots (intermediate results)







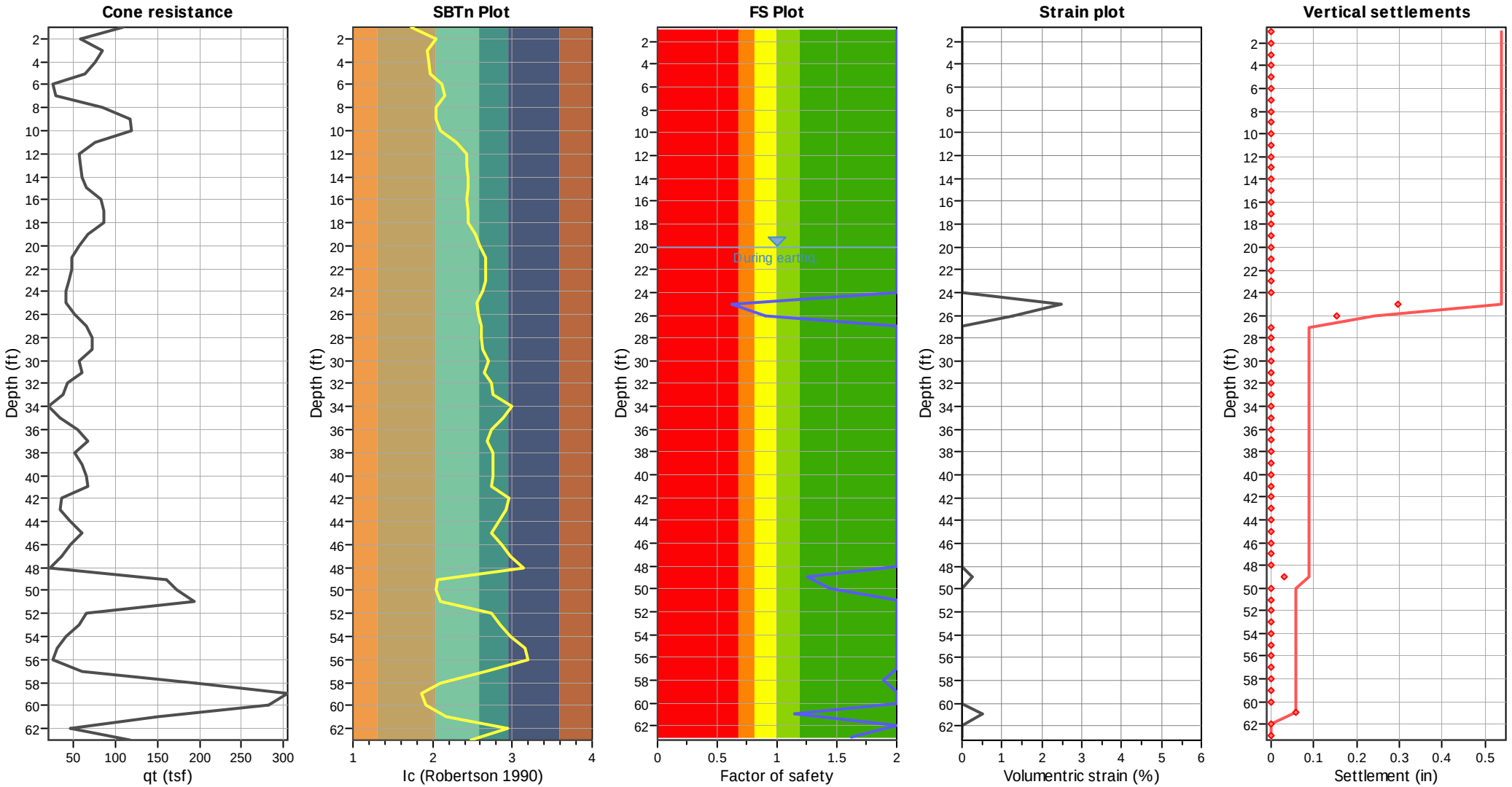




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	65.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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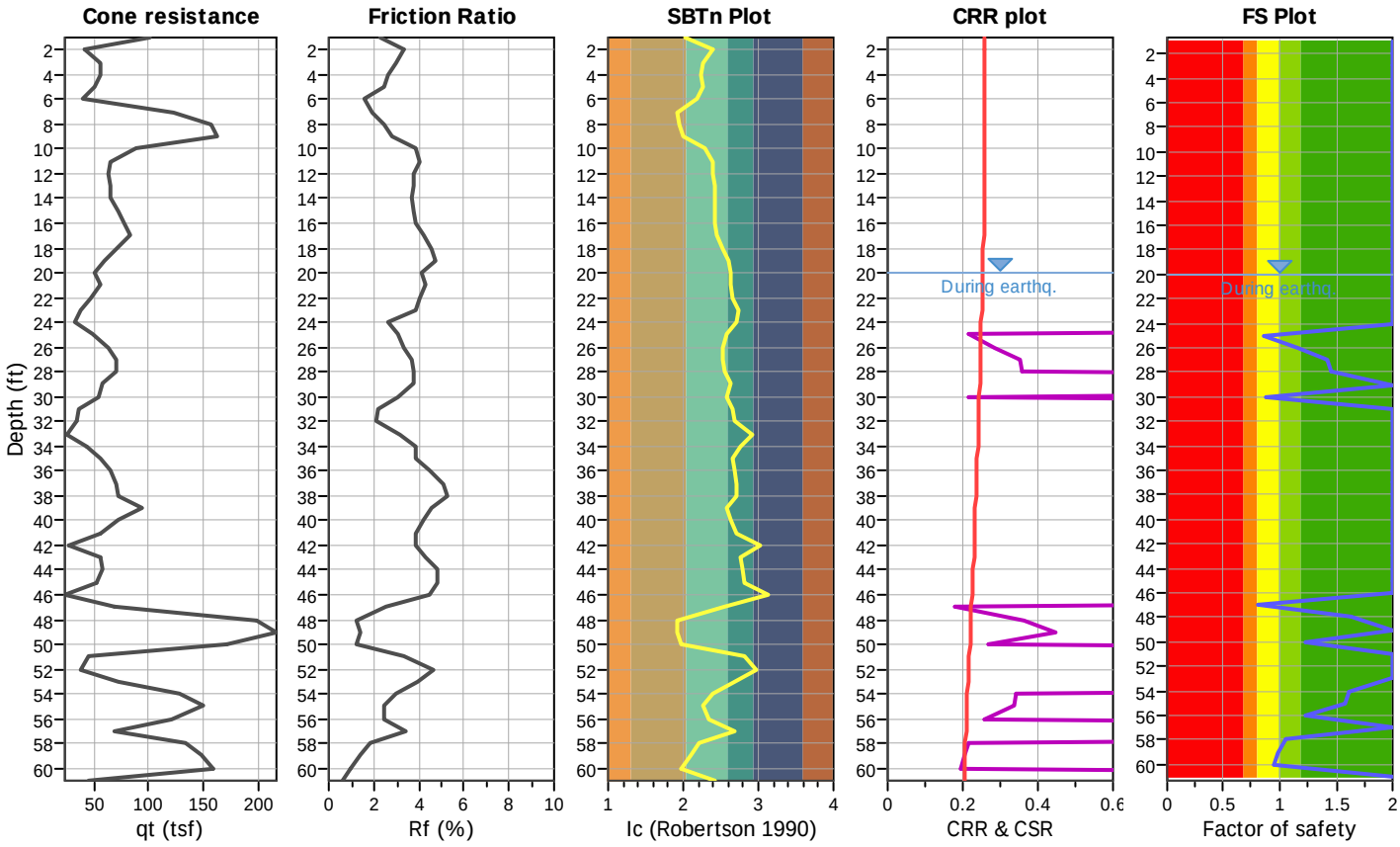
LIQUEFACTION ANALYSIS REPORT

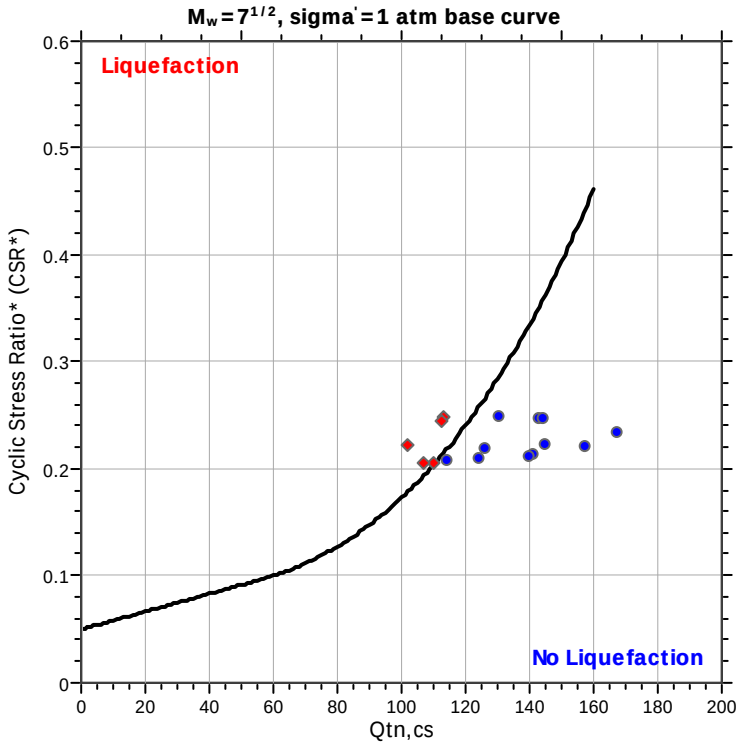
Project title : Kettner Substation **Location : San Diego, CA**

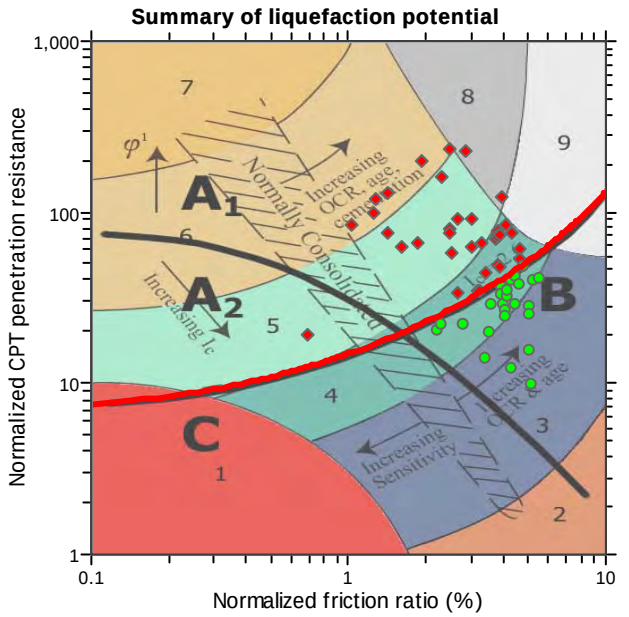
CPT file : CPT-8i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	60.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

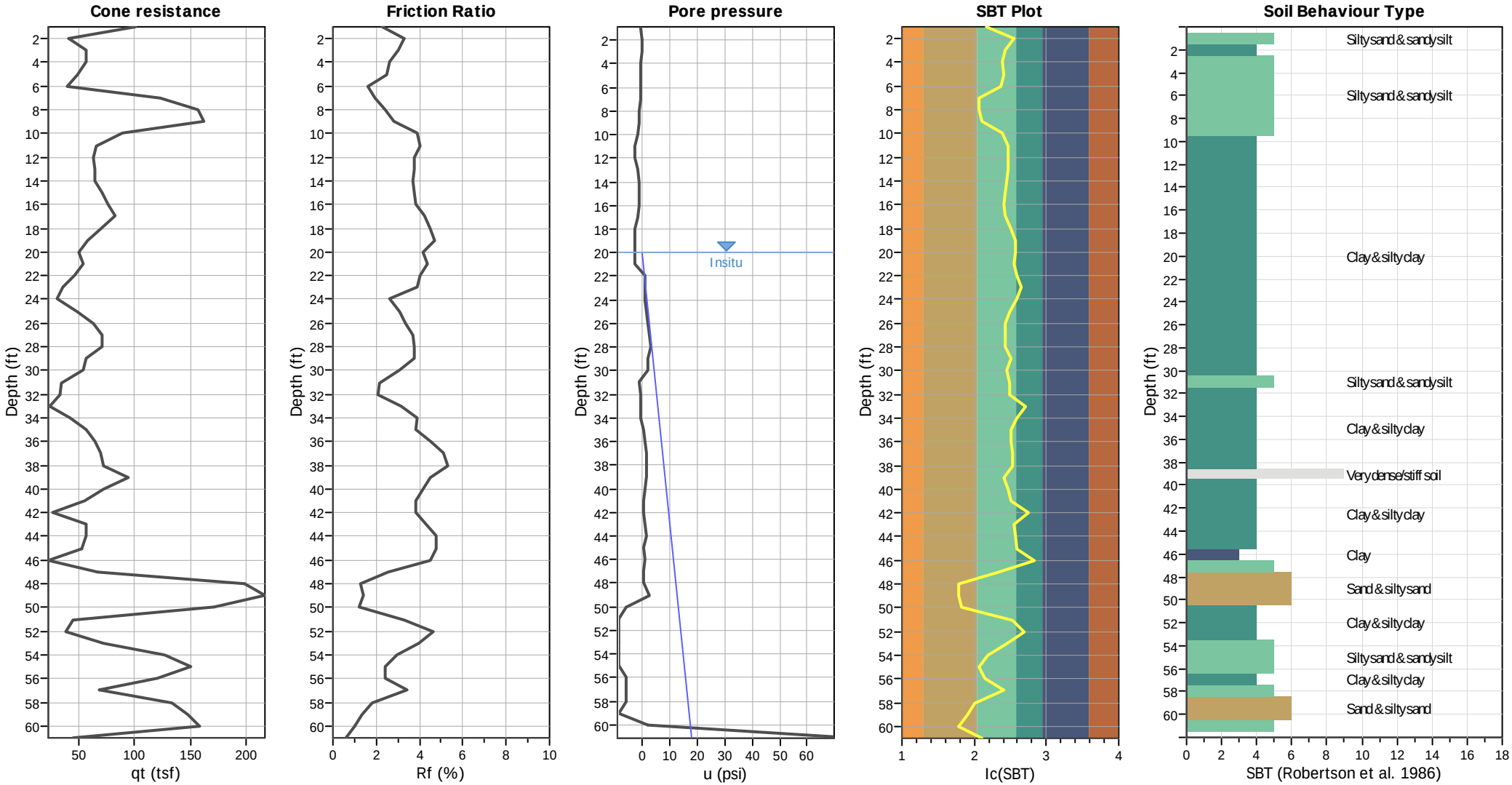






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



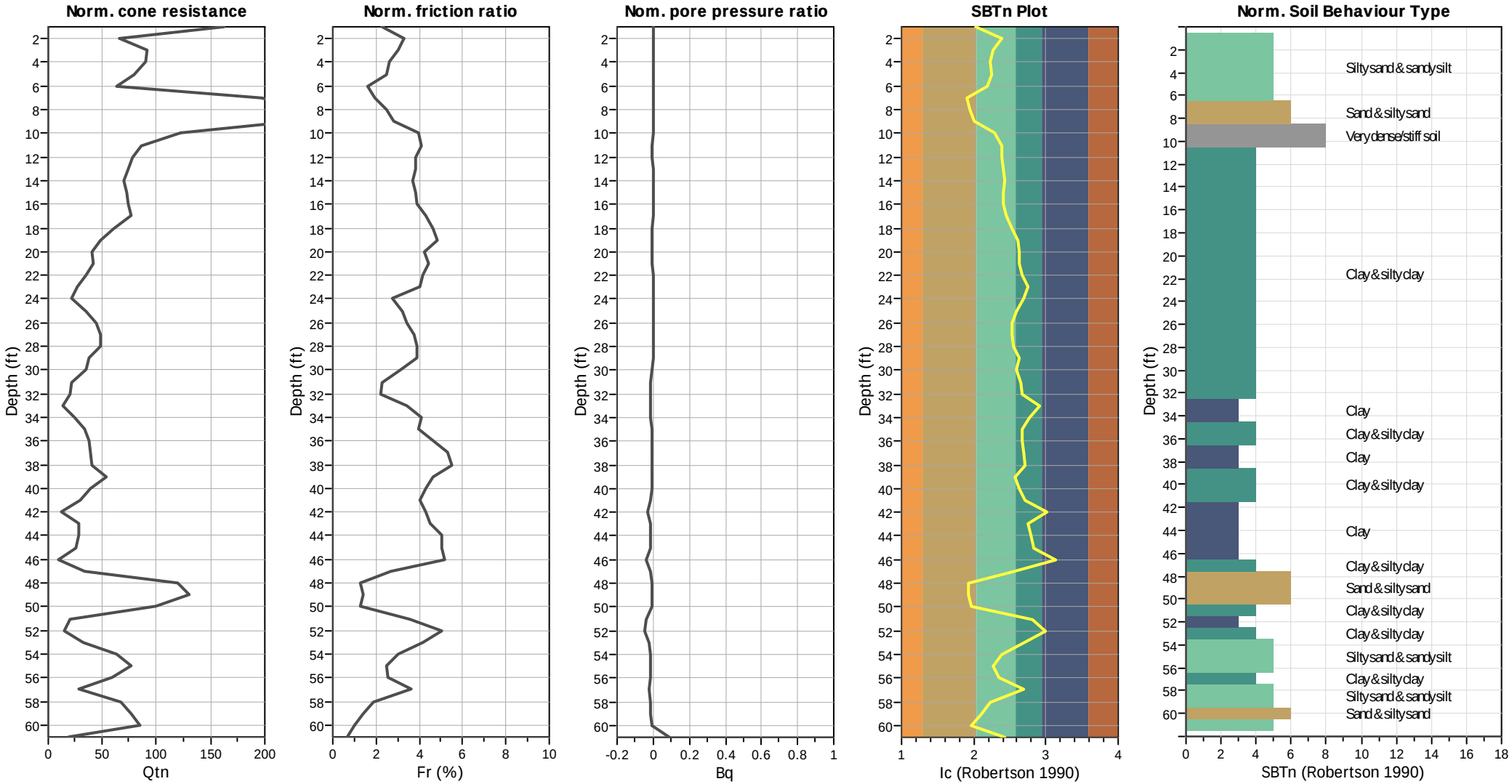
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	60.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



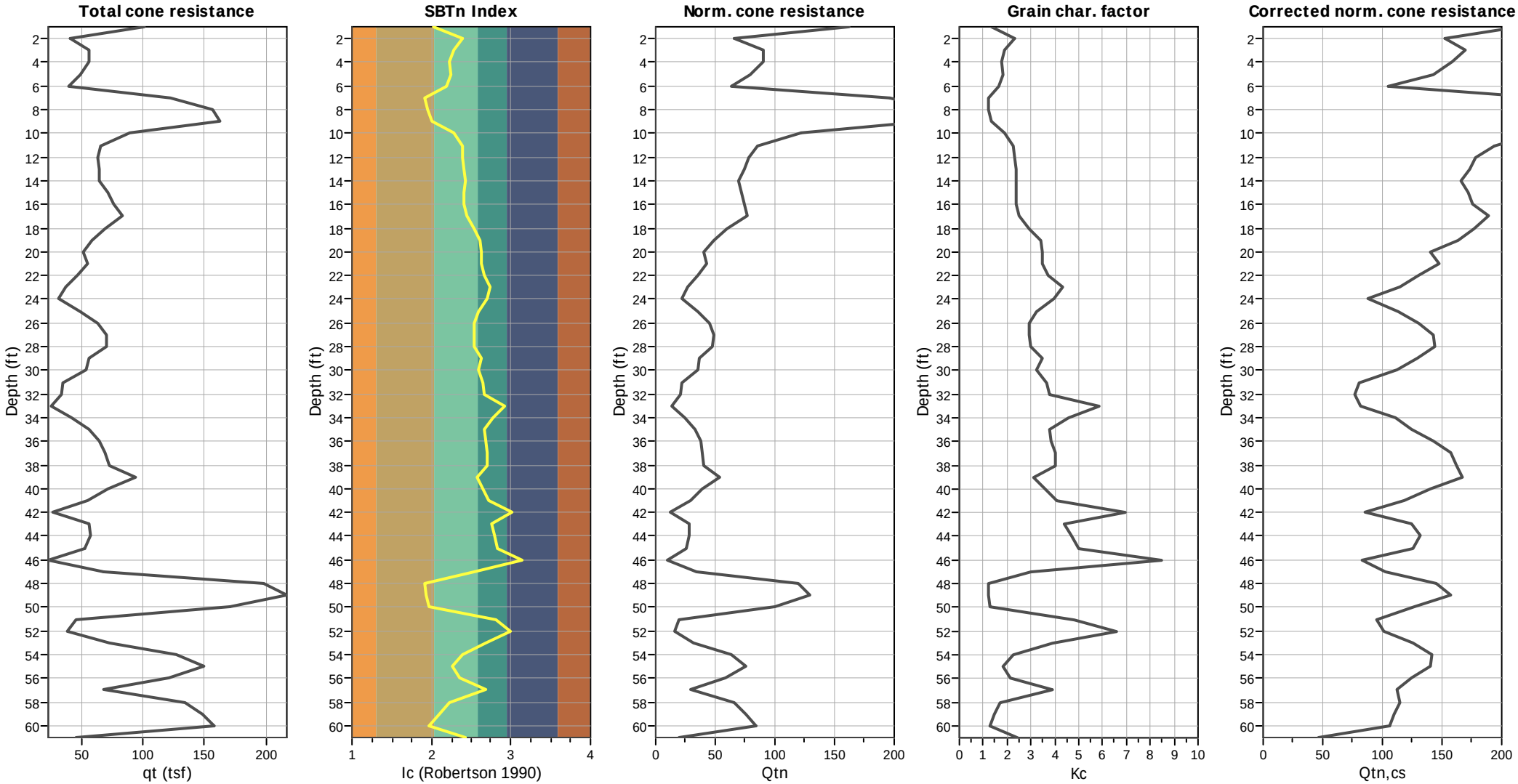
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	60.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

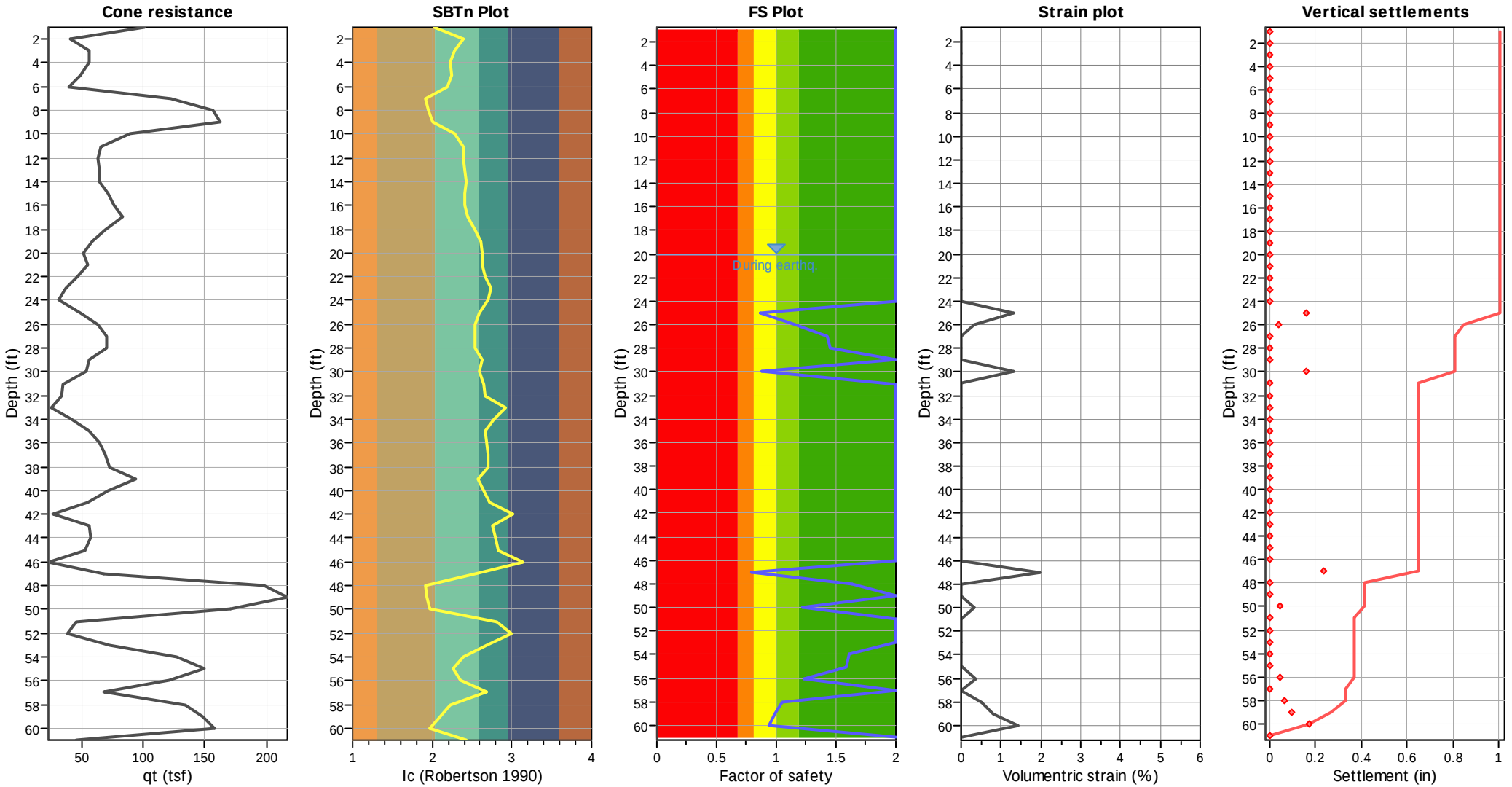
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	60.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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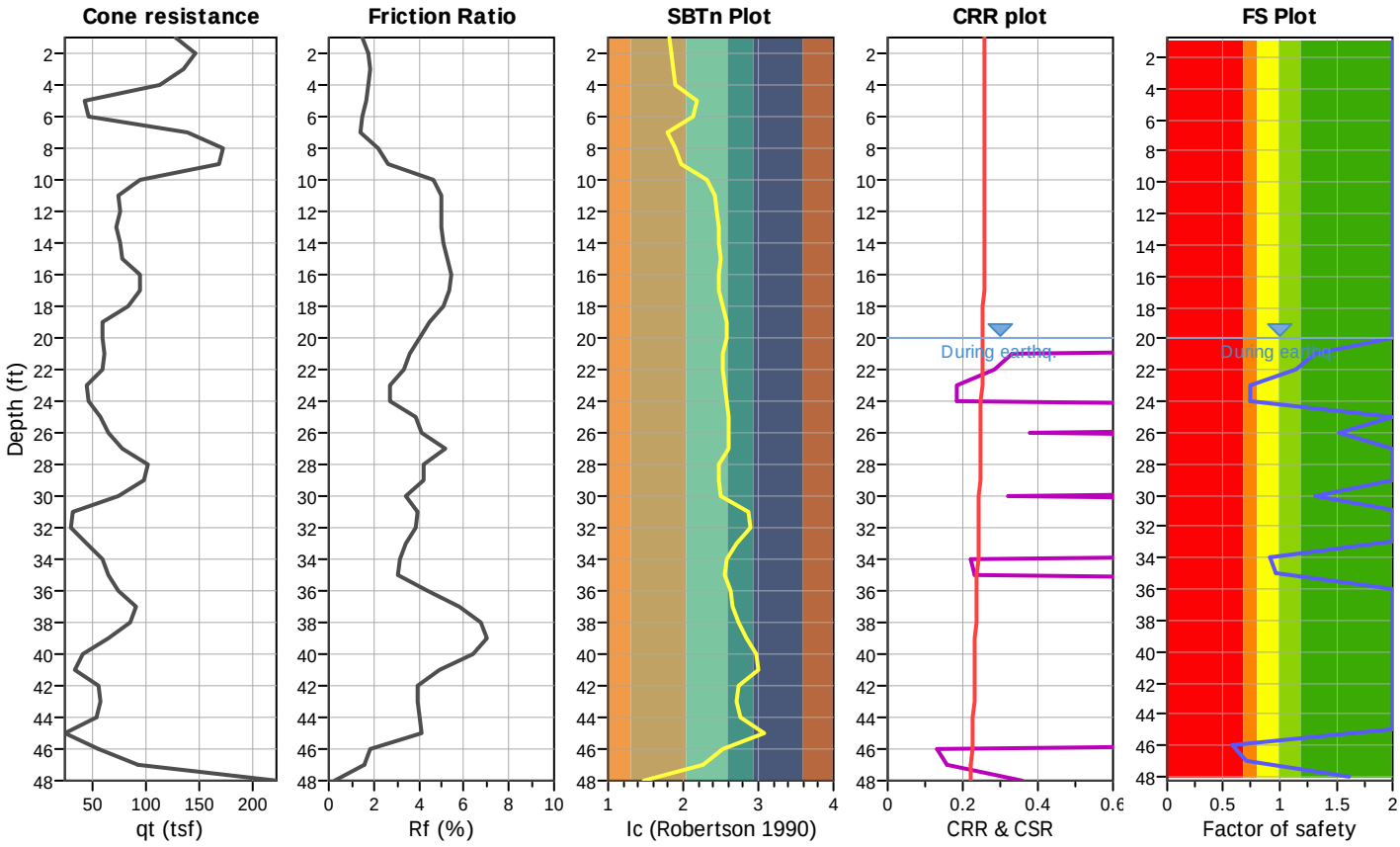
LIQUEFACTION ANALYSIS REPORT

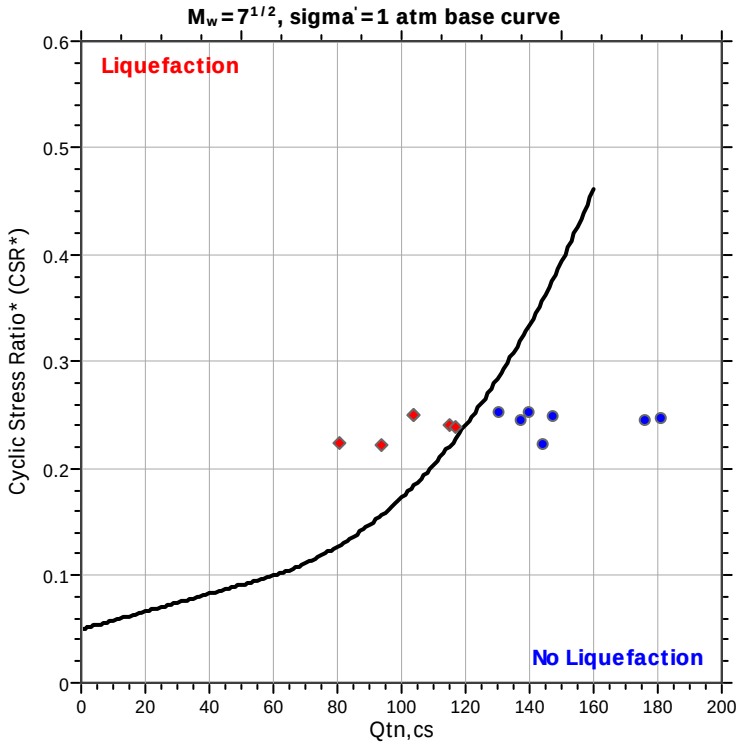
Project title : Kettner Substation **Location : San Diego, CA**

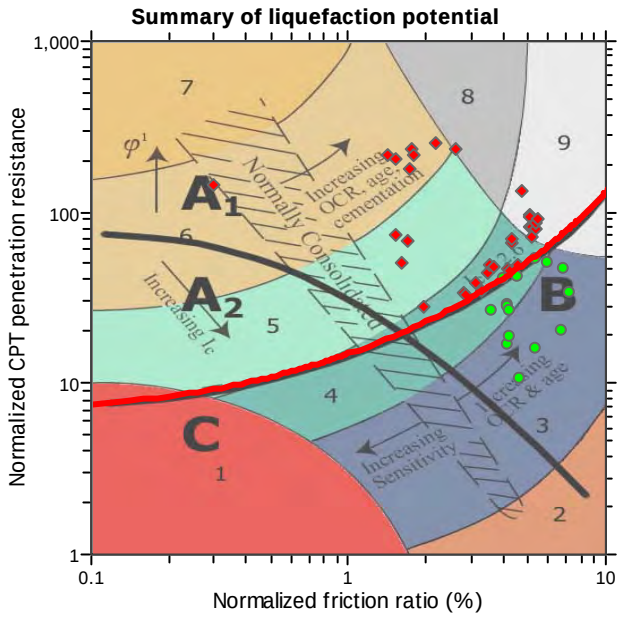
CPT file : CPT-9i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	50.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	No	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

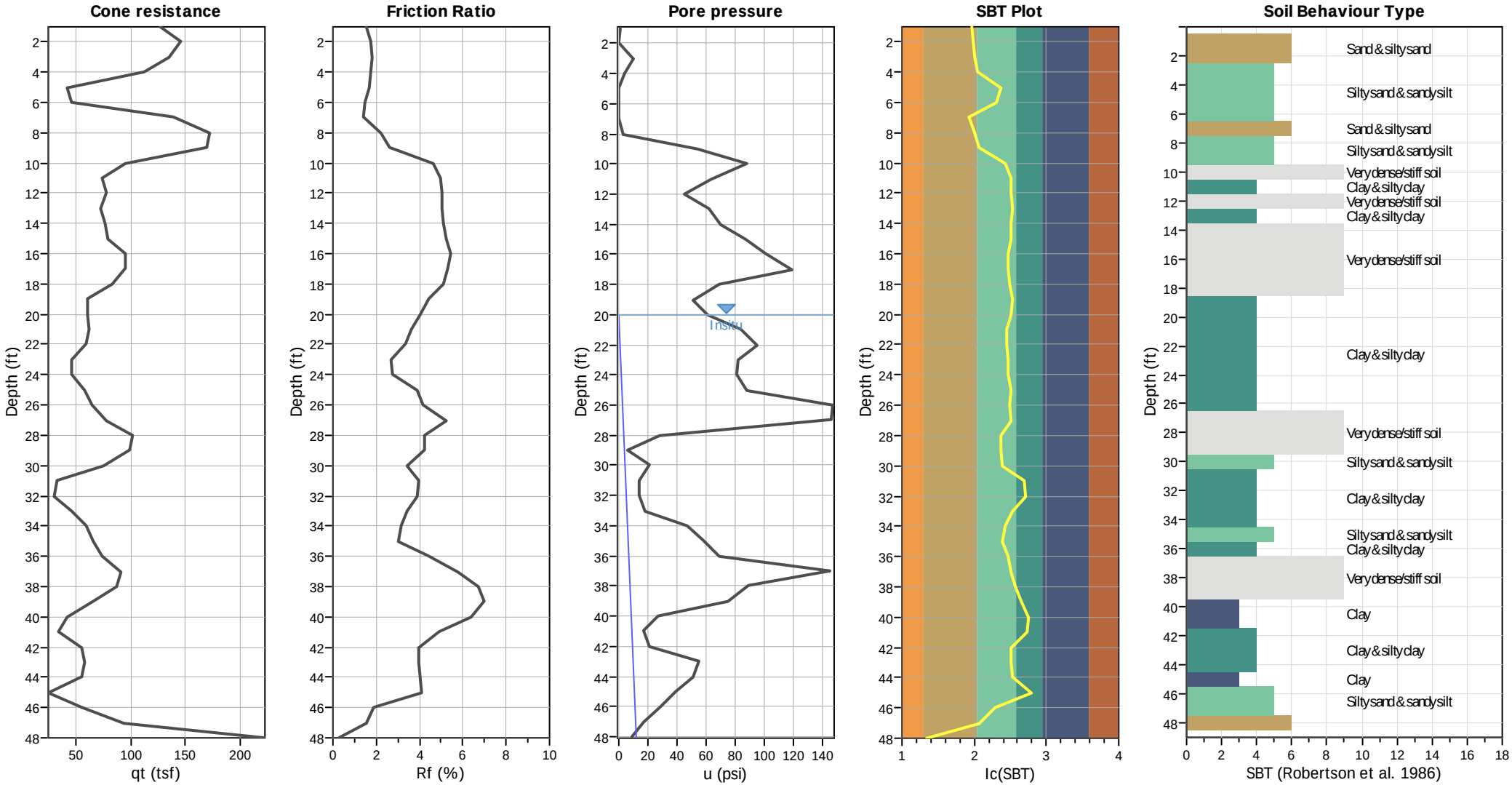






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



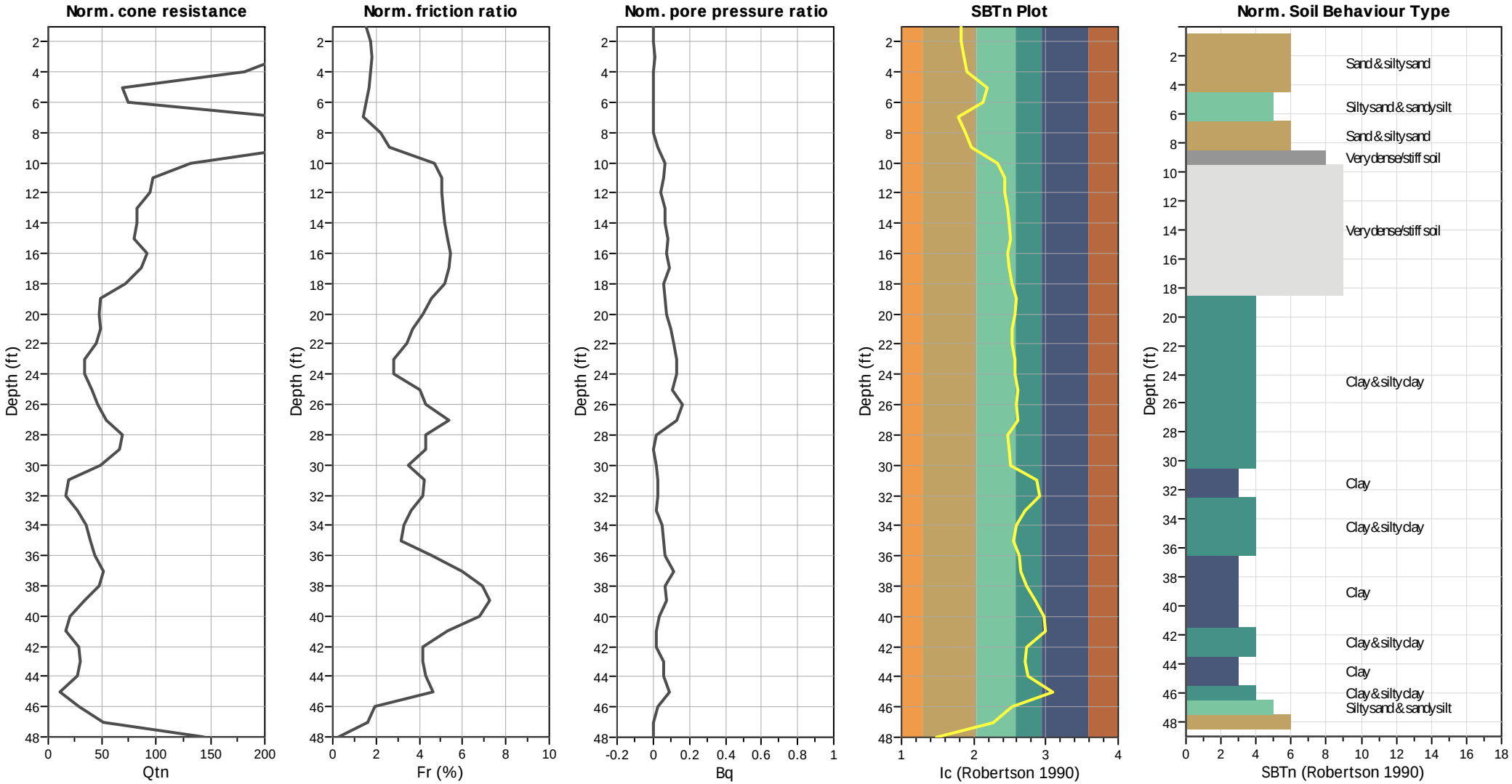
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



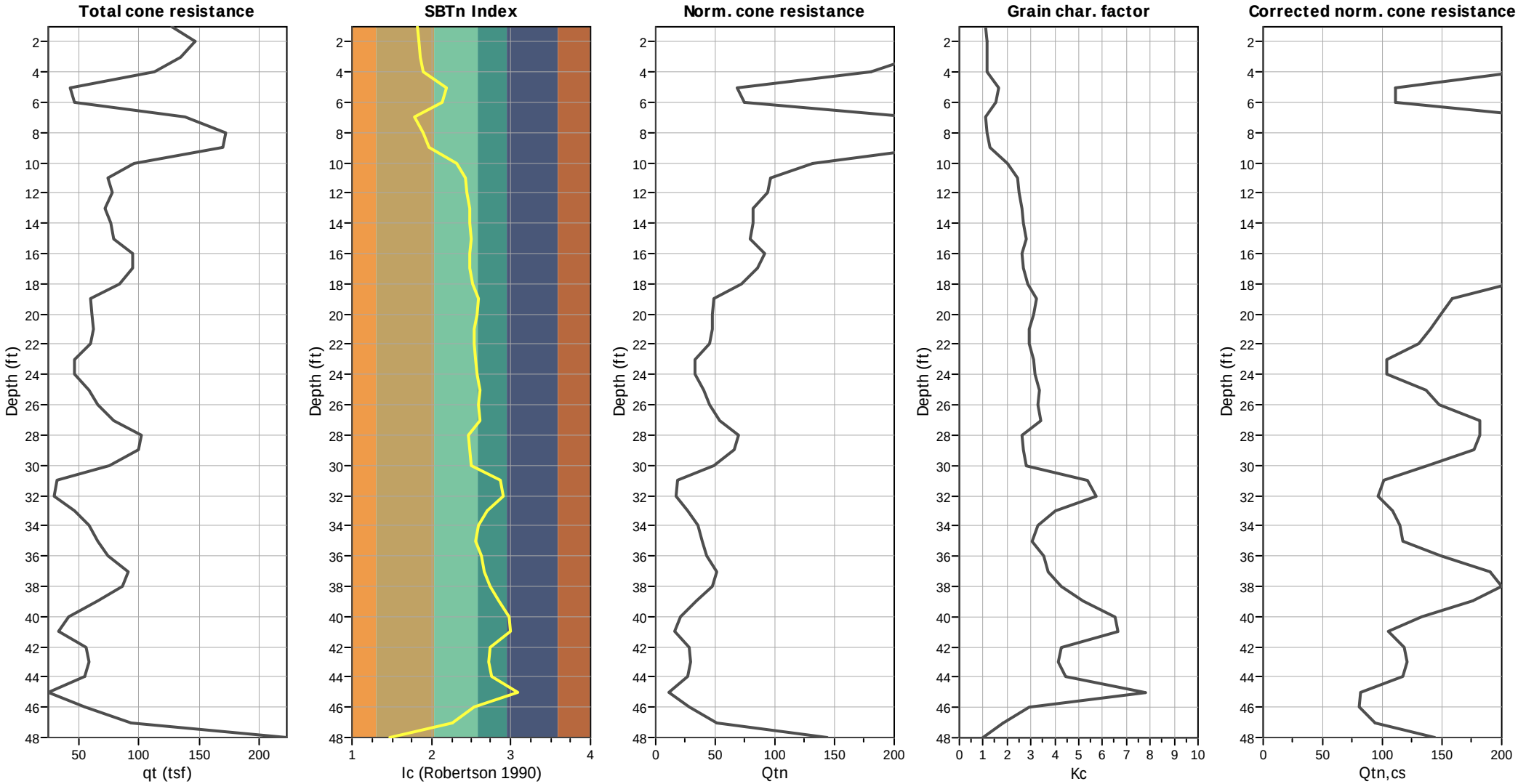
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

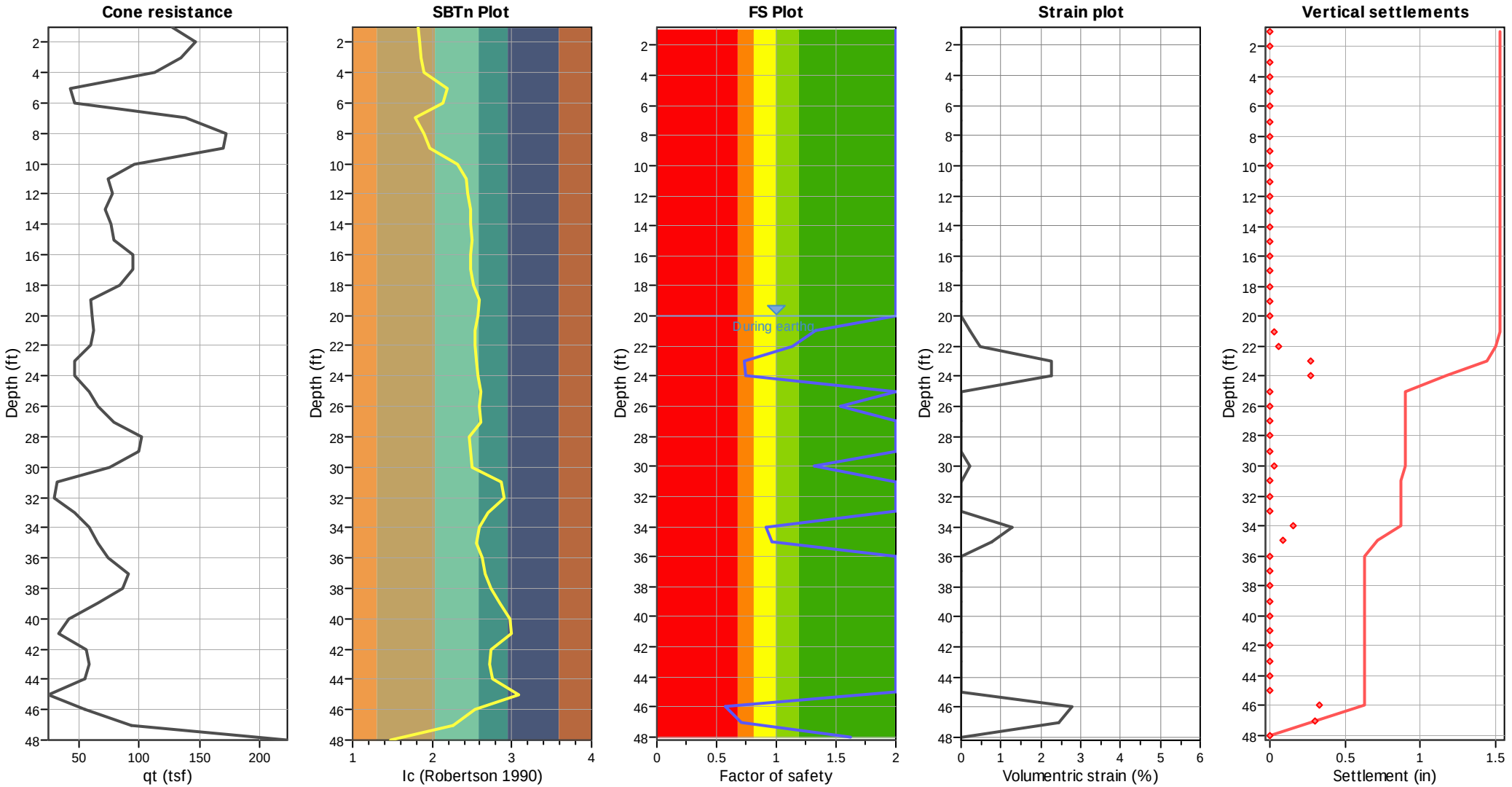
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	50.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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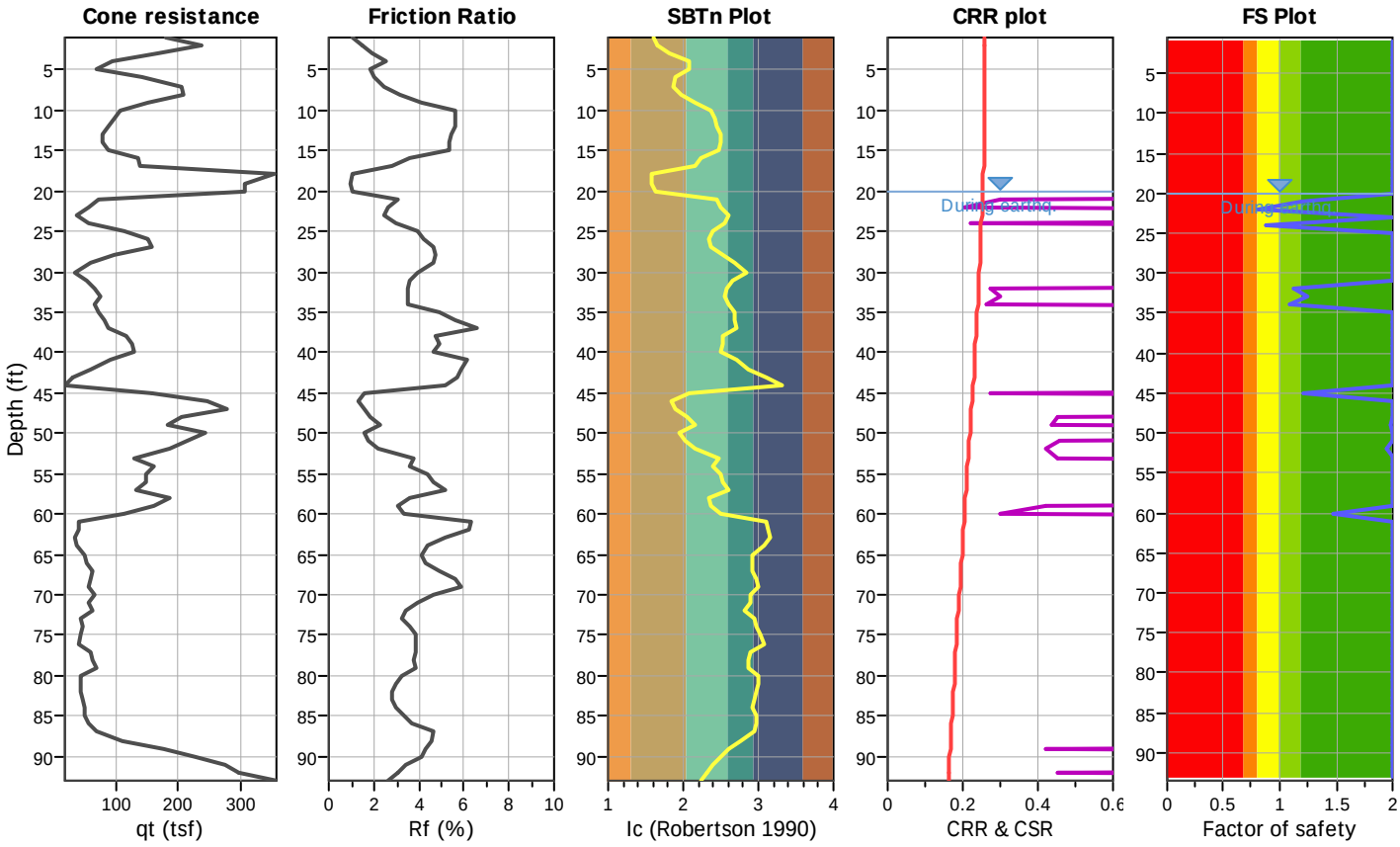
LIQUEFACTION ANALYSIS REPORT

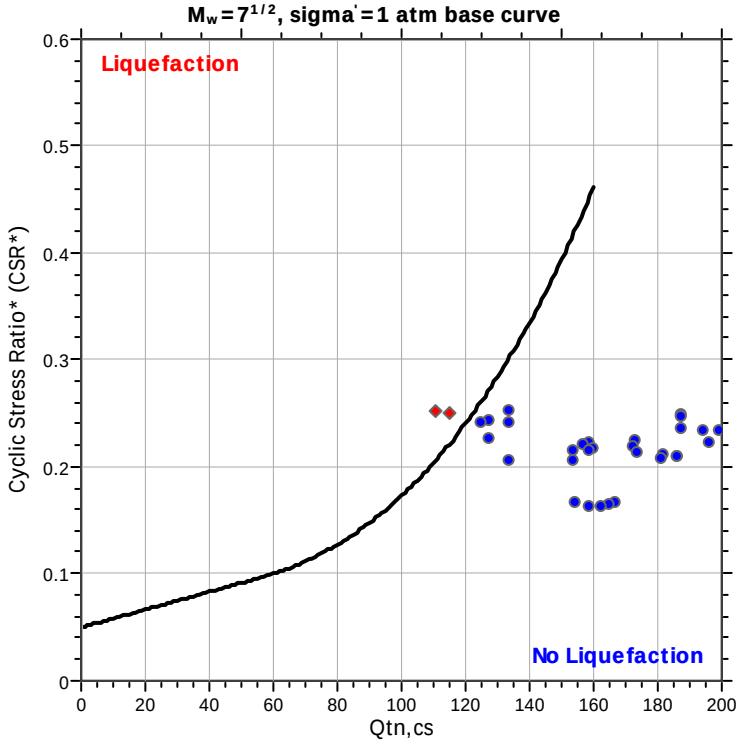
Project title : Kettner Substation **Location : San Diego, CA**

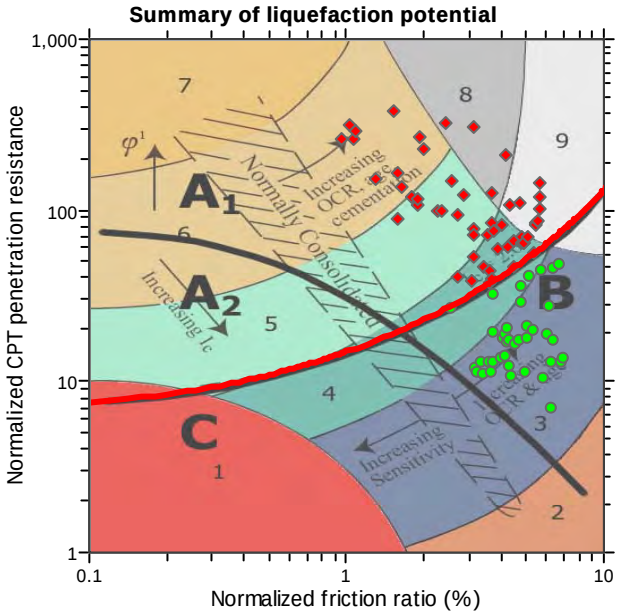
CPT file : CPT-10i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	100.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

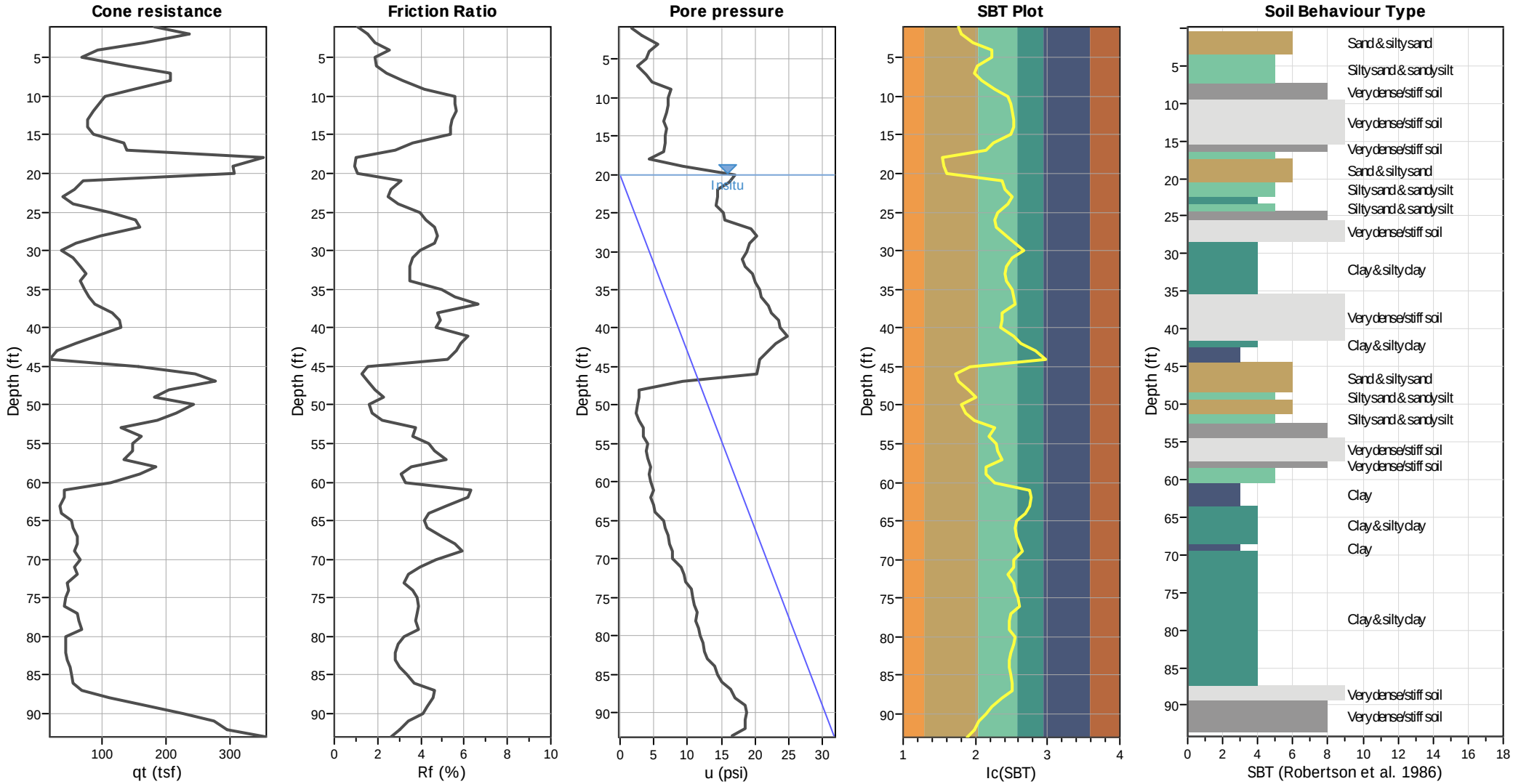






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



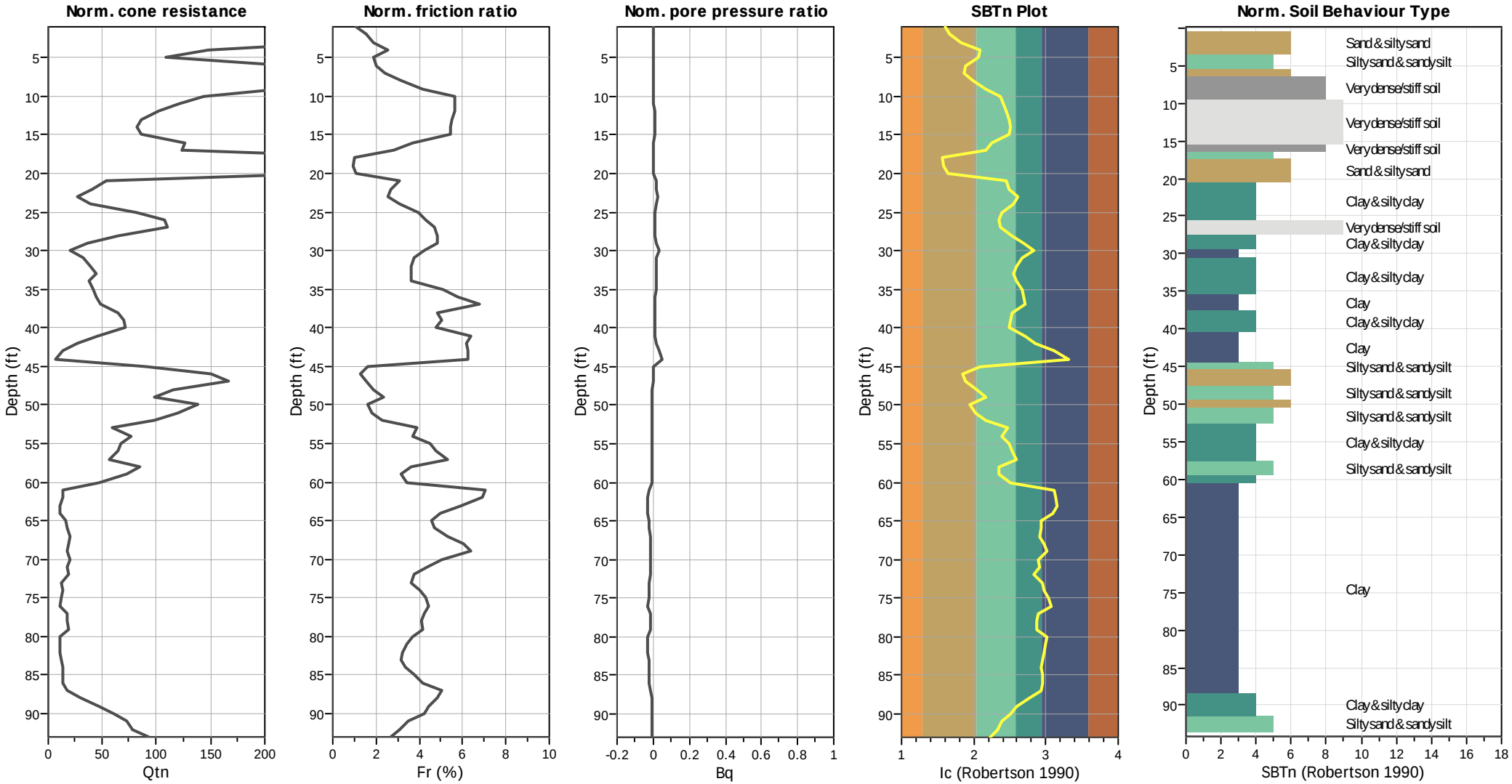
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



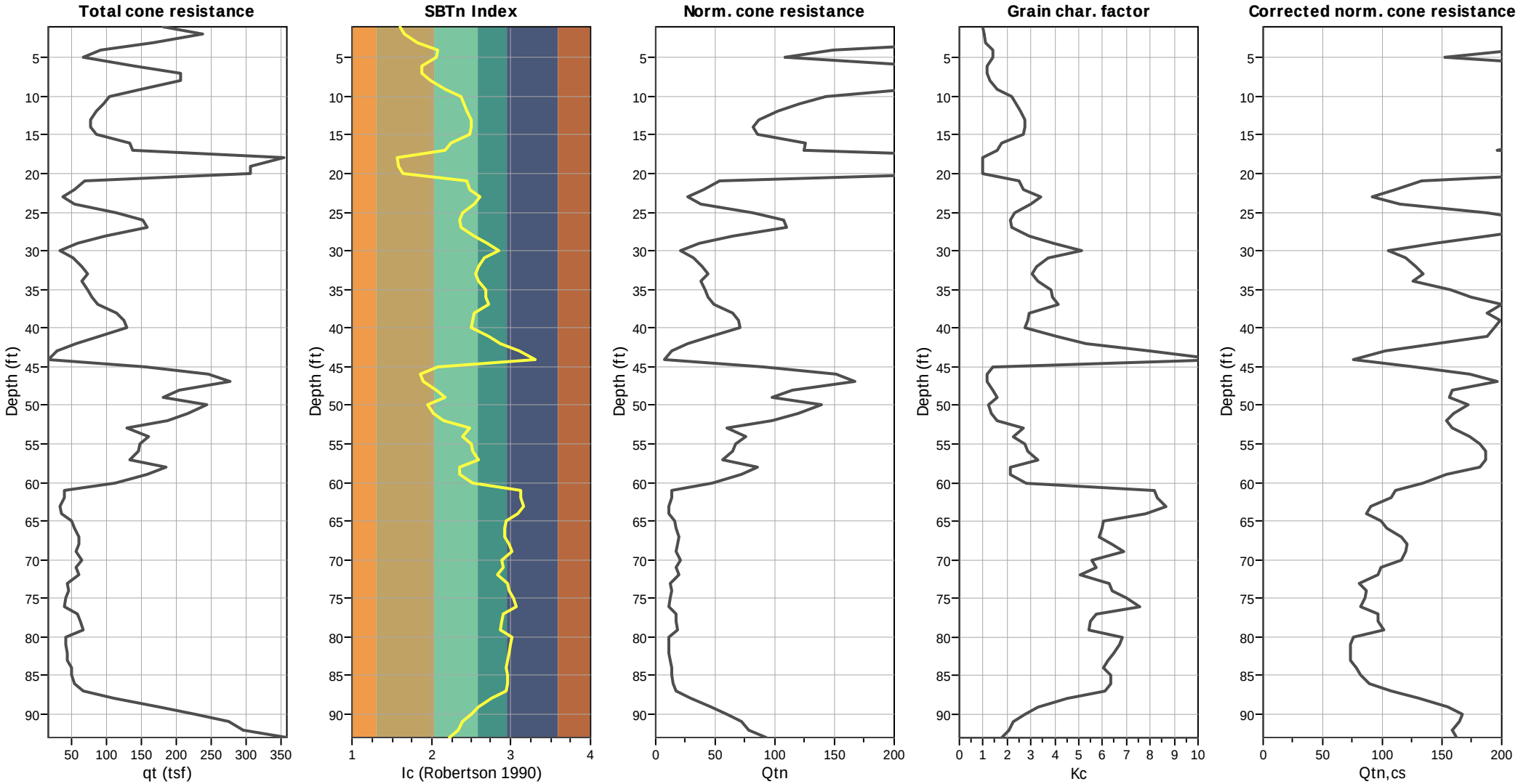
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

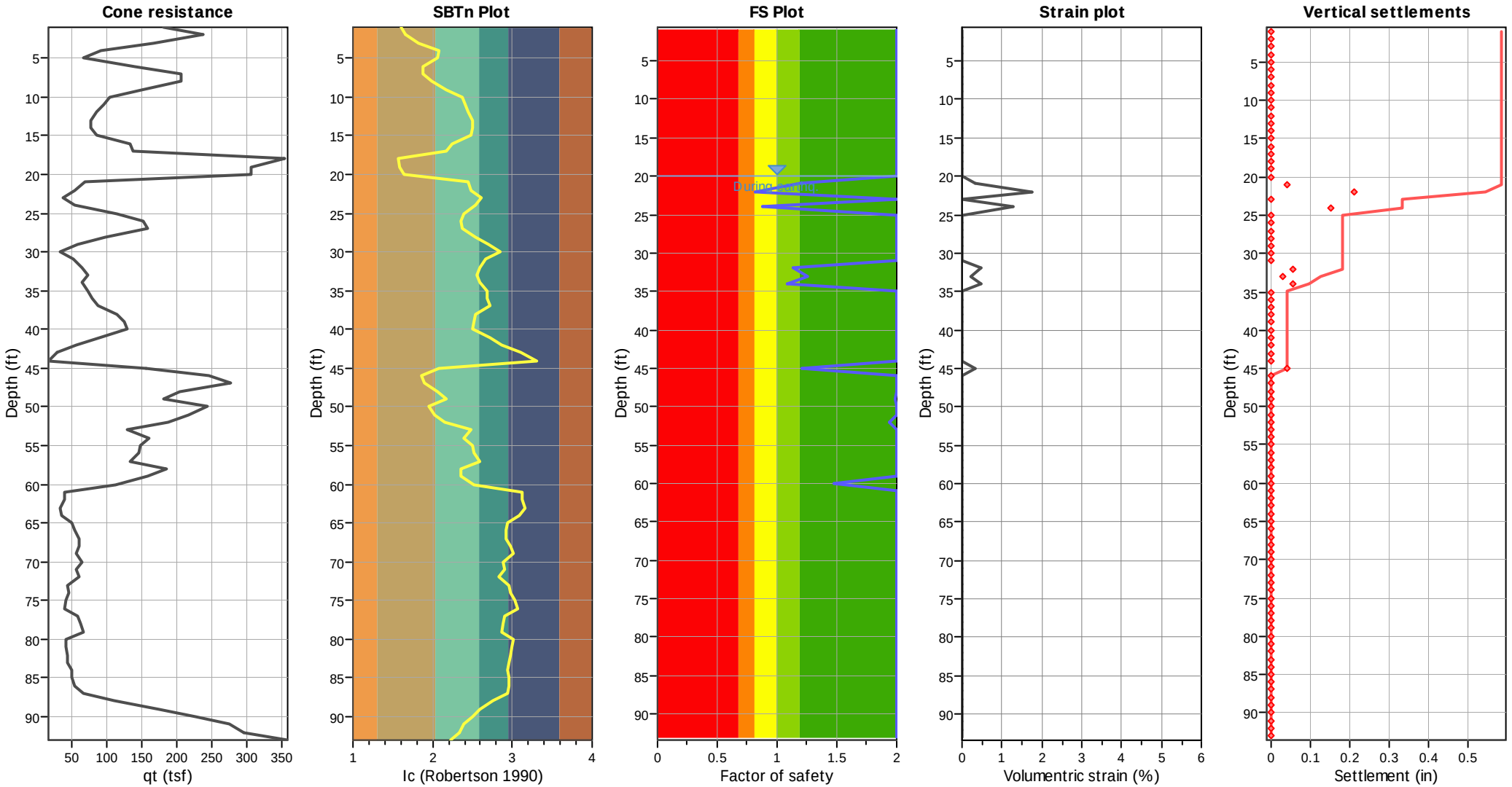
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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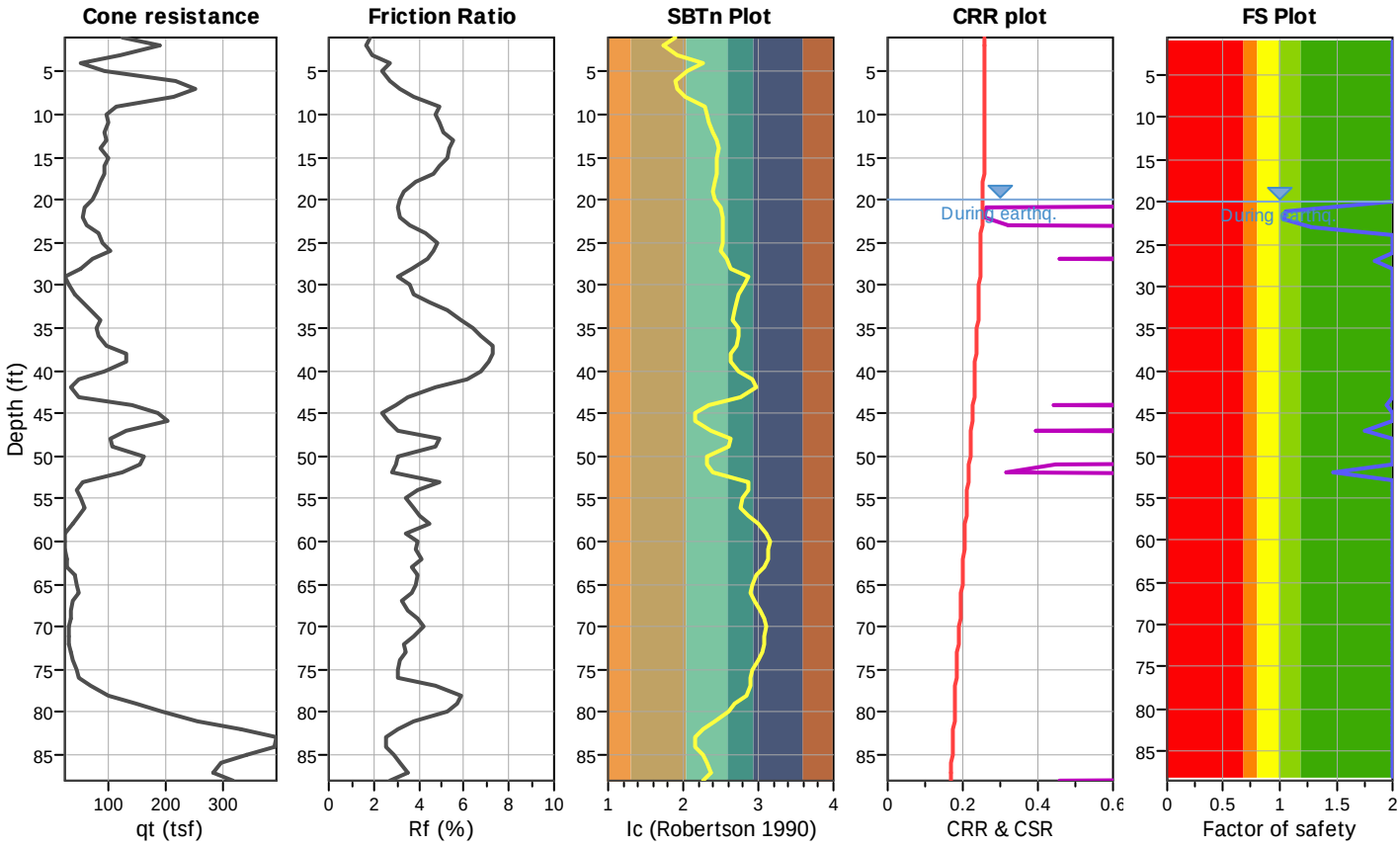
LIQUEFACTION ANALYSIS REPORT

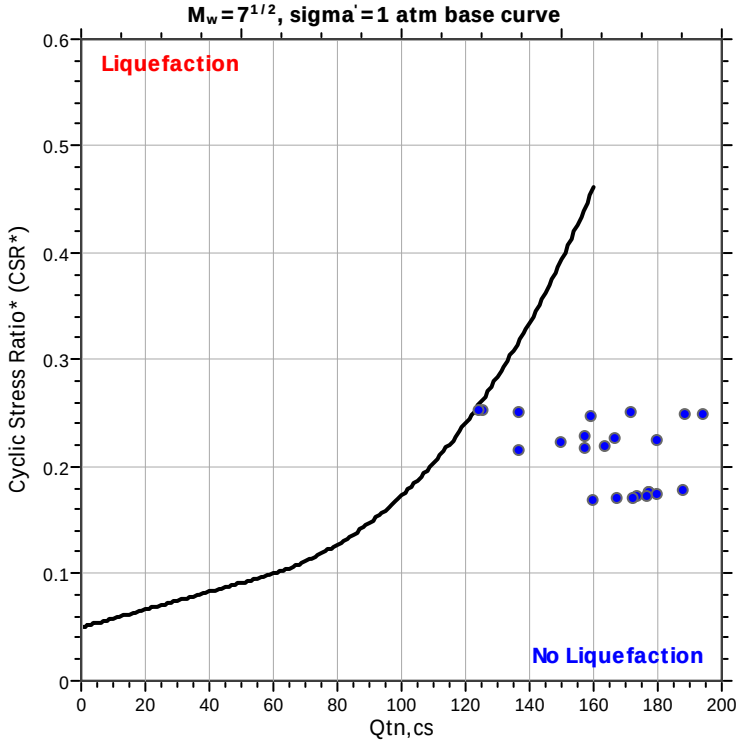
Project title : Kettner Substation **Location : San Diego, CA**

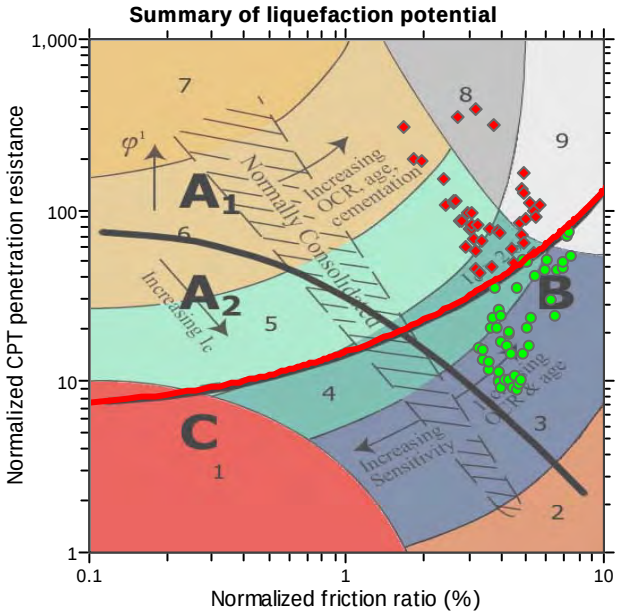
CPT file : CPT-11i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	100.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

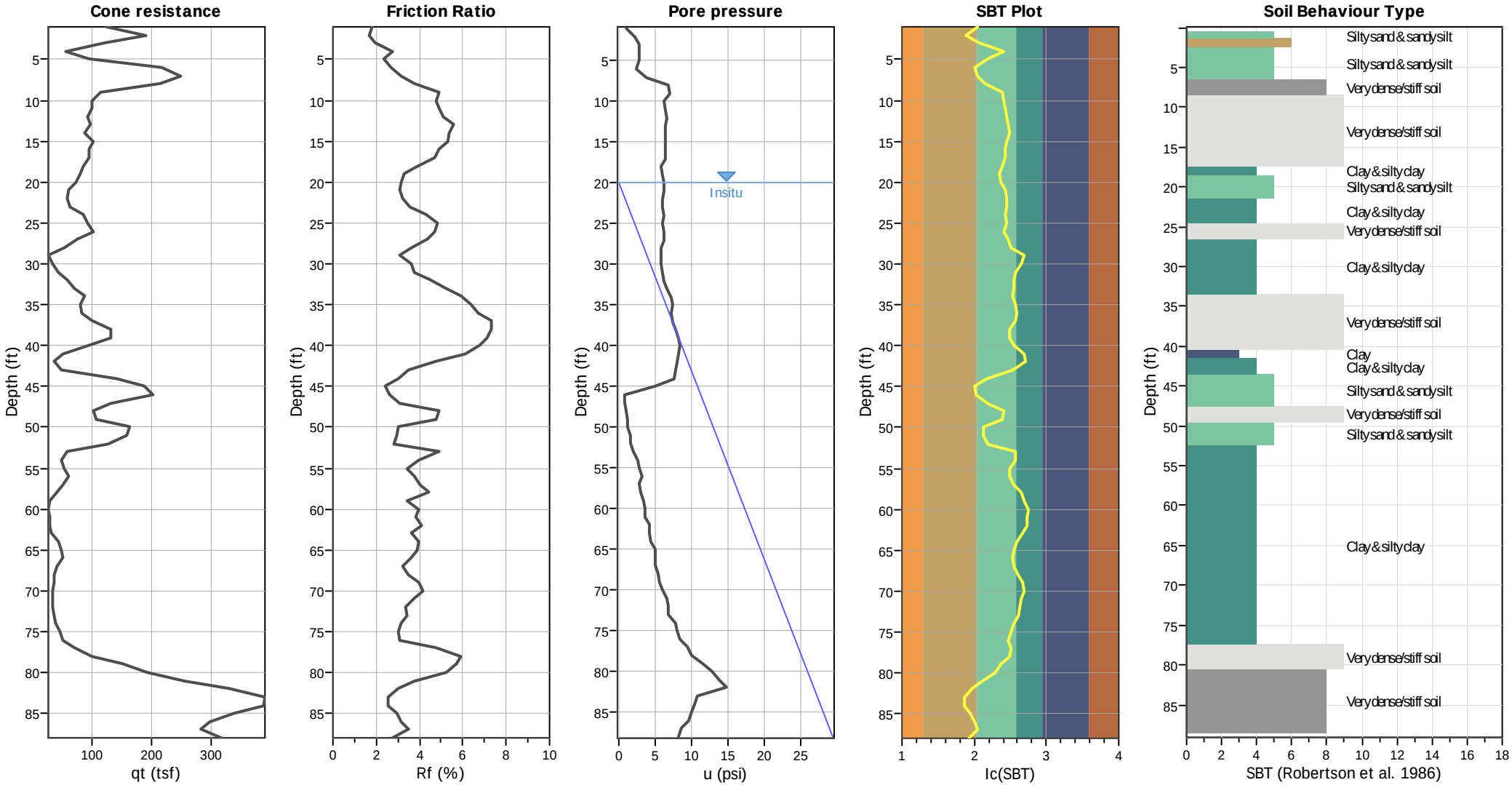






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



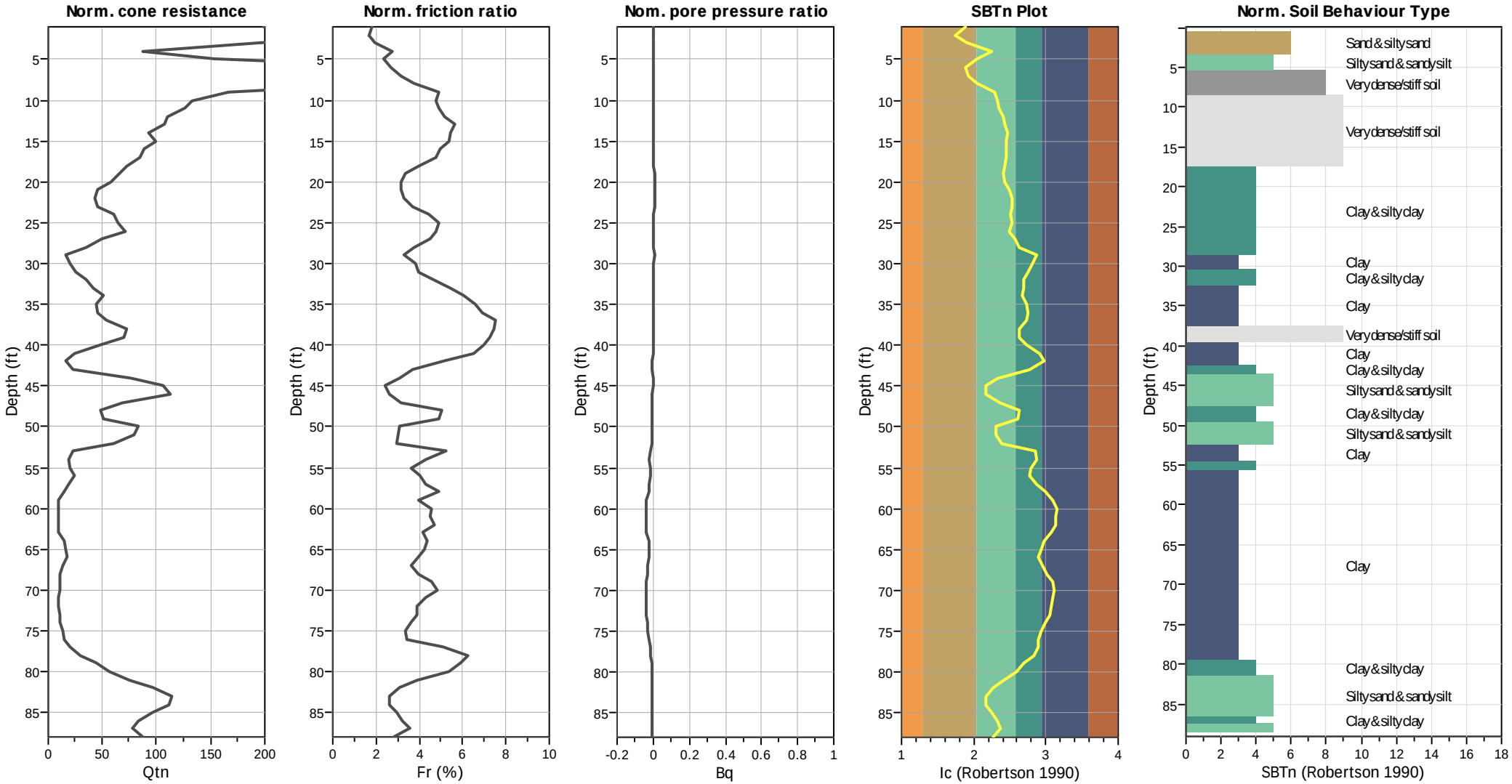
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



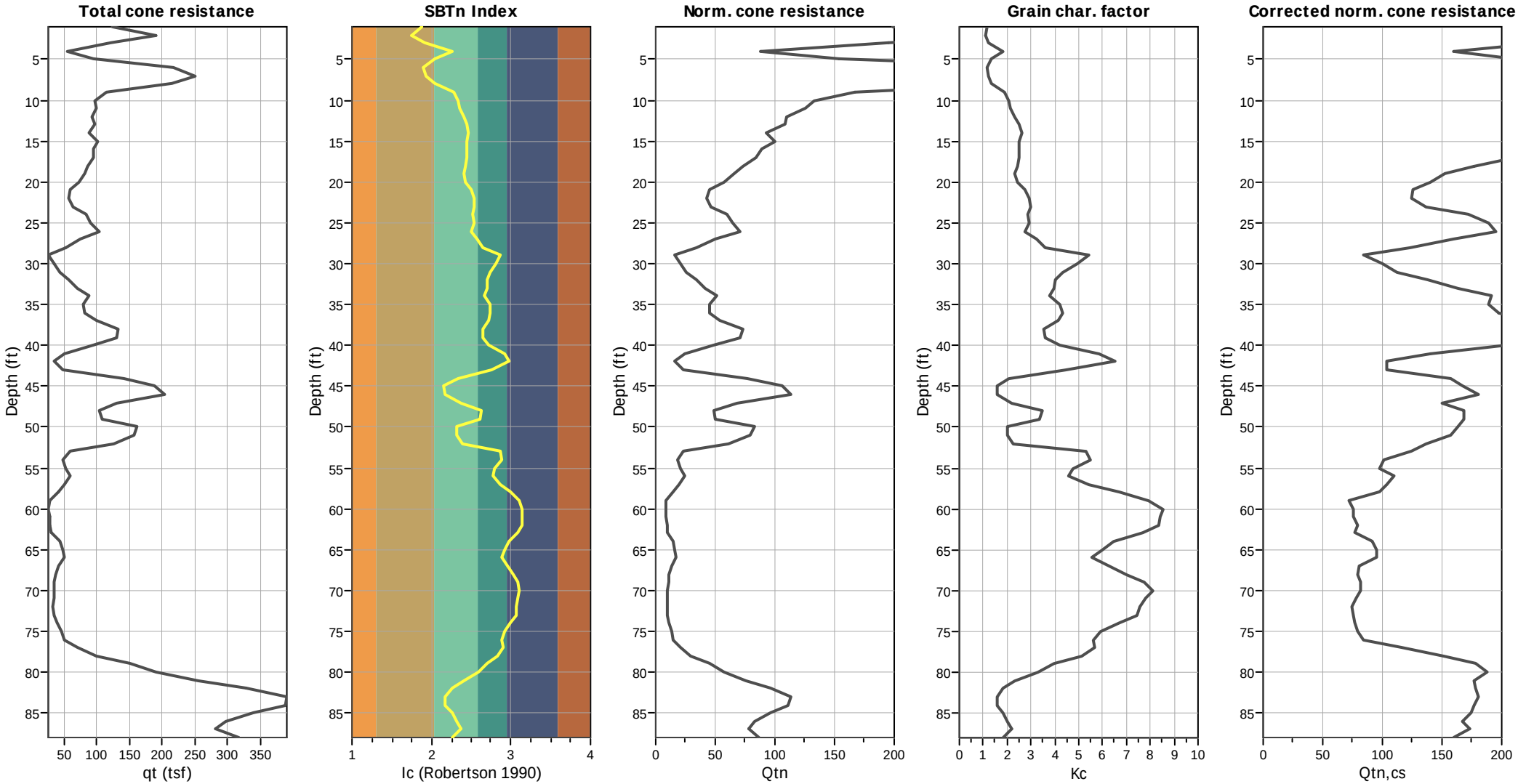
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

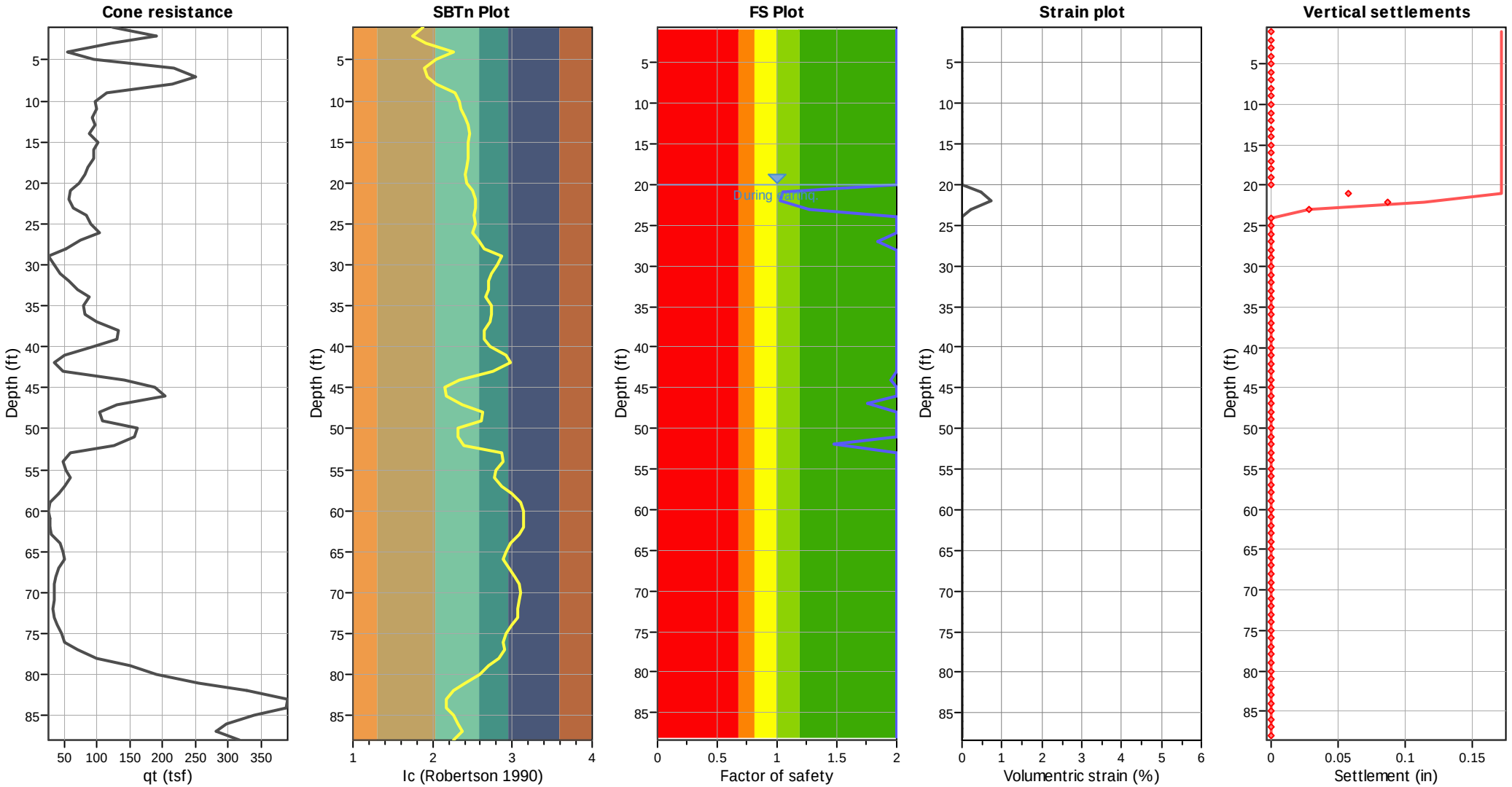
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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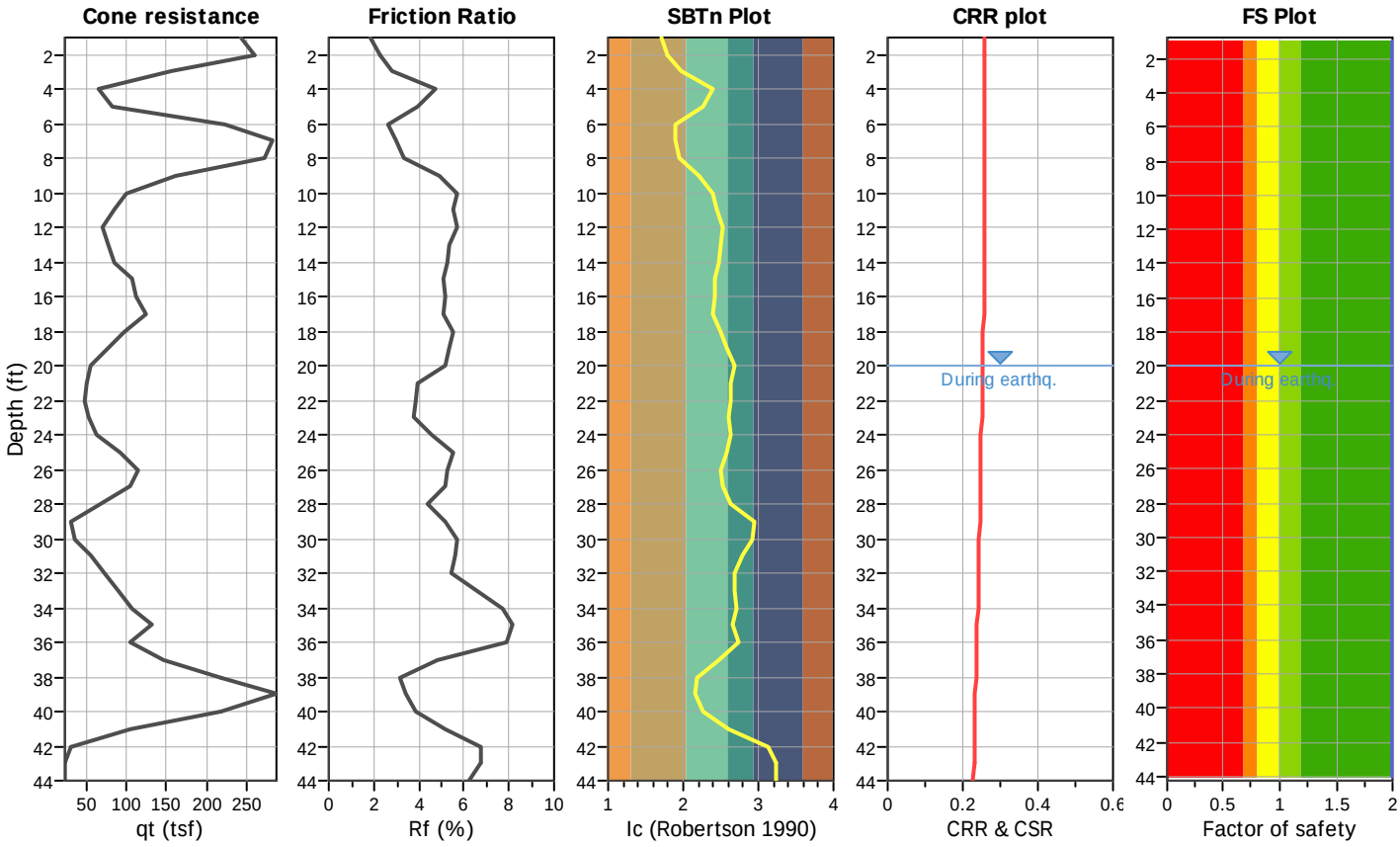
LIQUEFACTION ANALYSIS REPORT

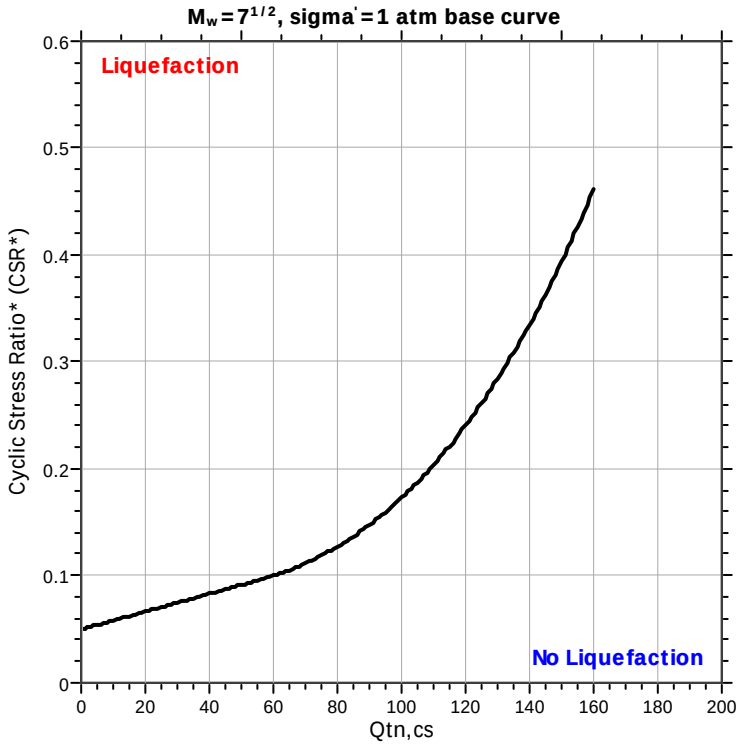
Project title : Kettner Substation **Location : San Diego, CA**

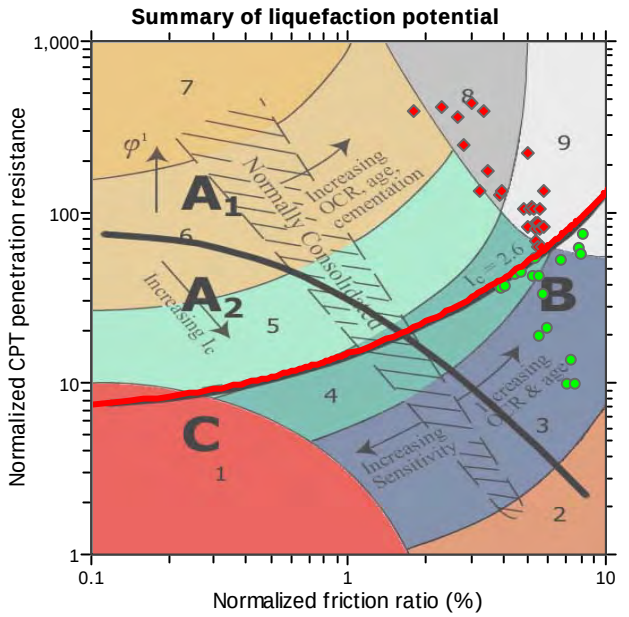
CPT file : CPT-12Bi

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	100.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

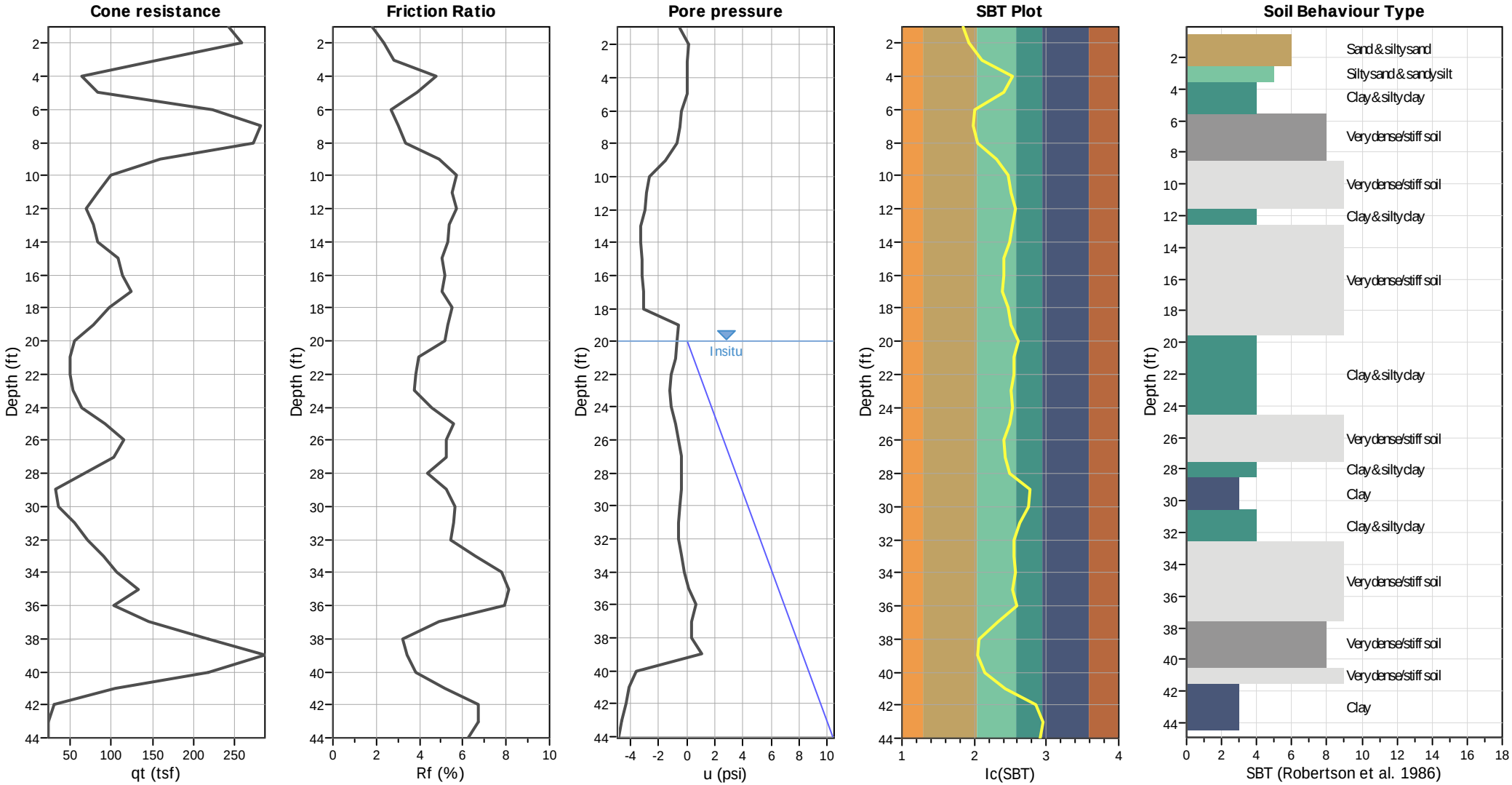






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



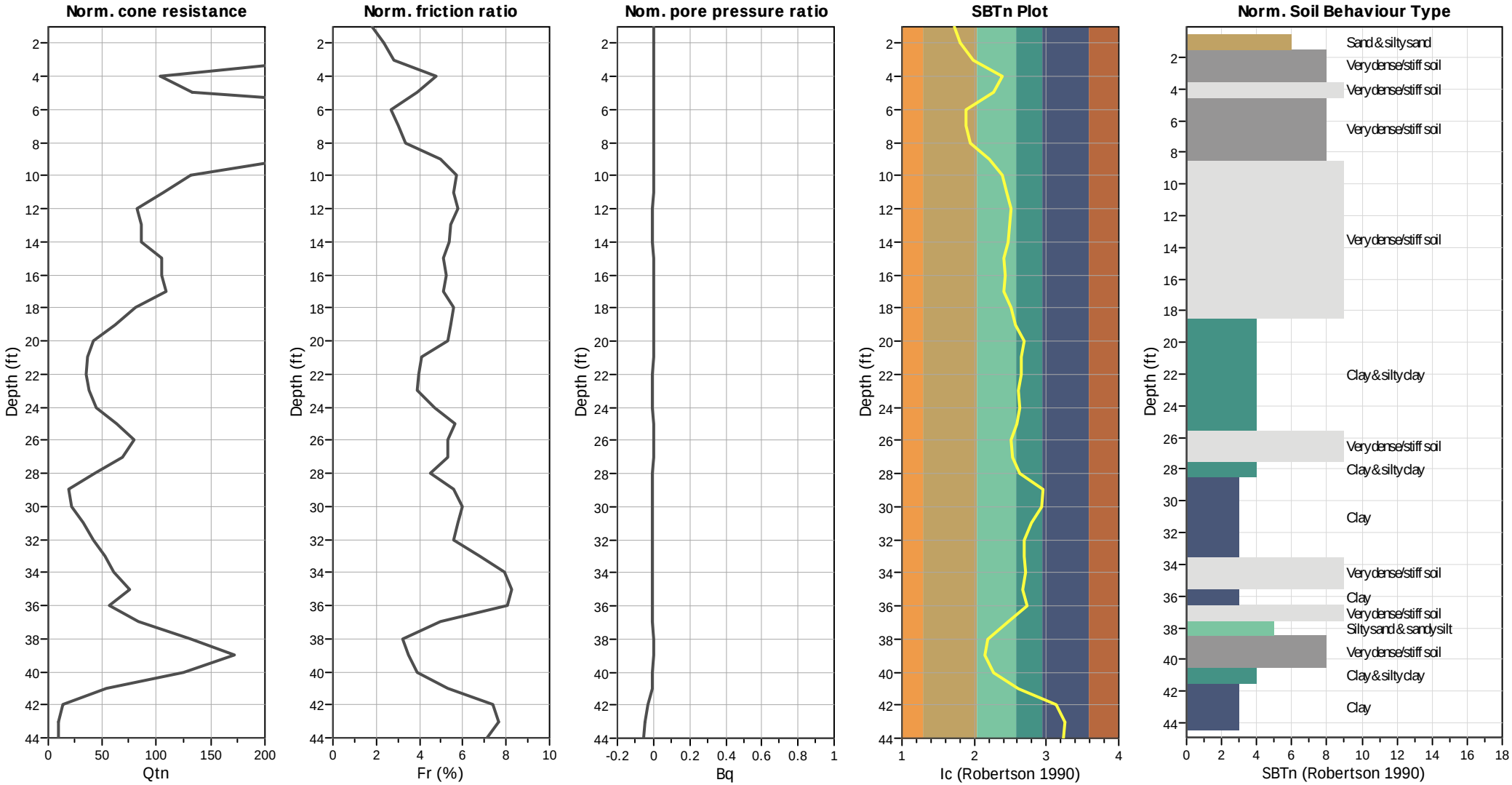
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



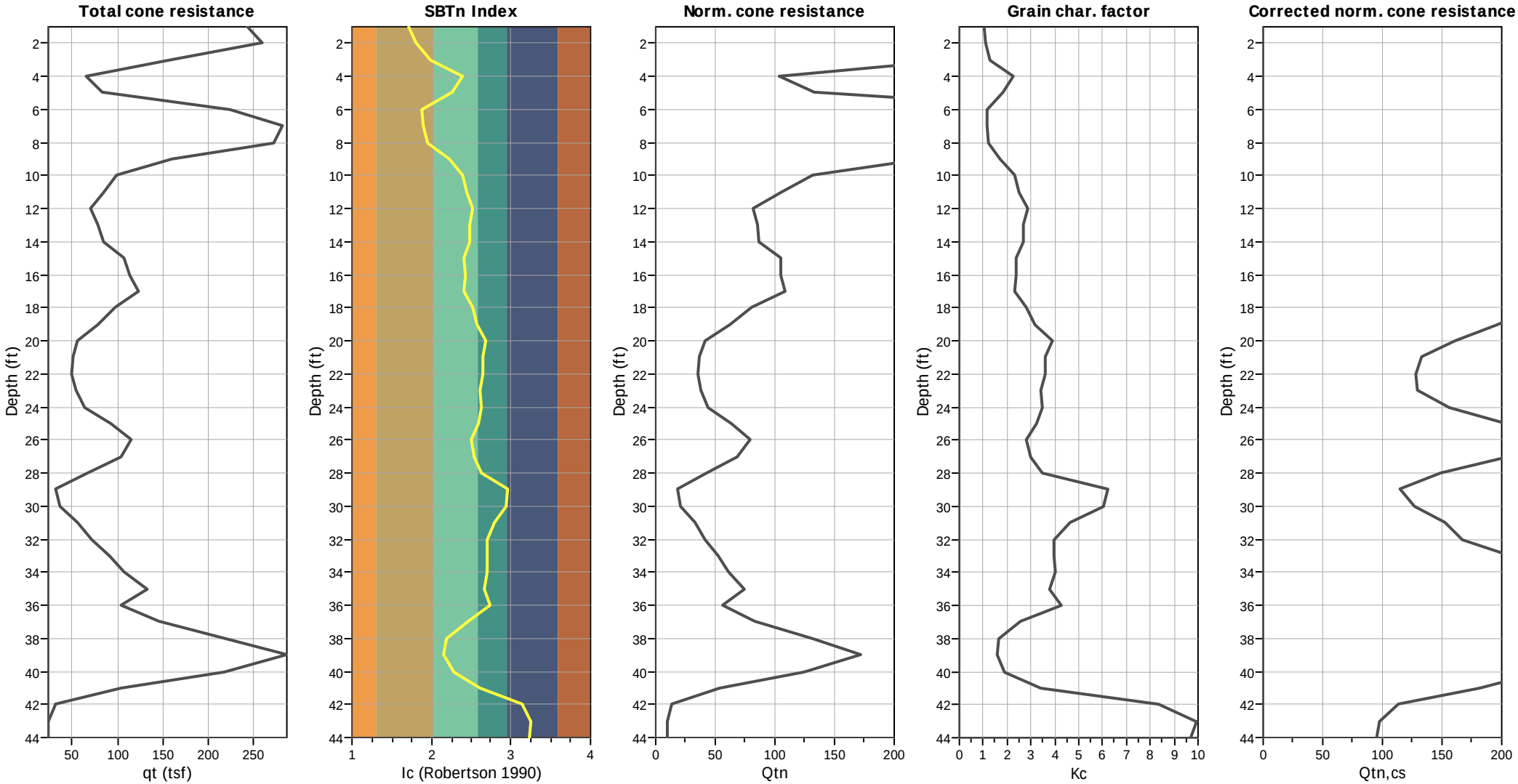
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

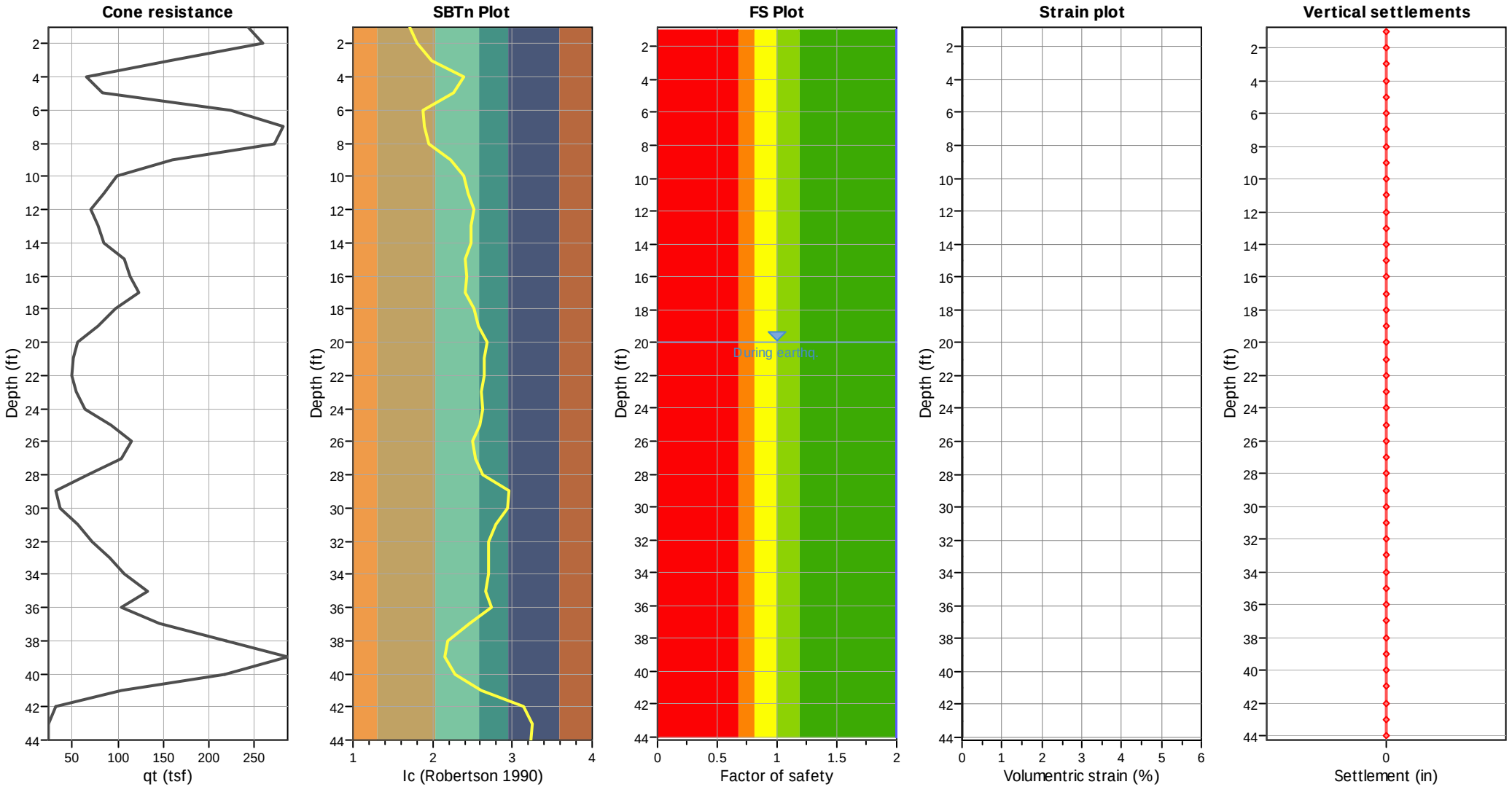
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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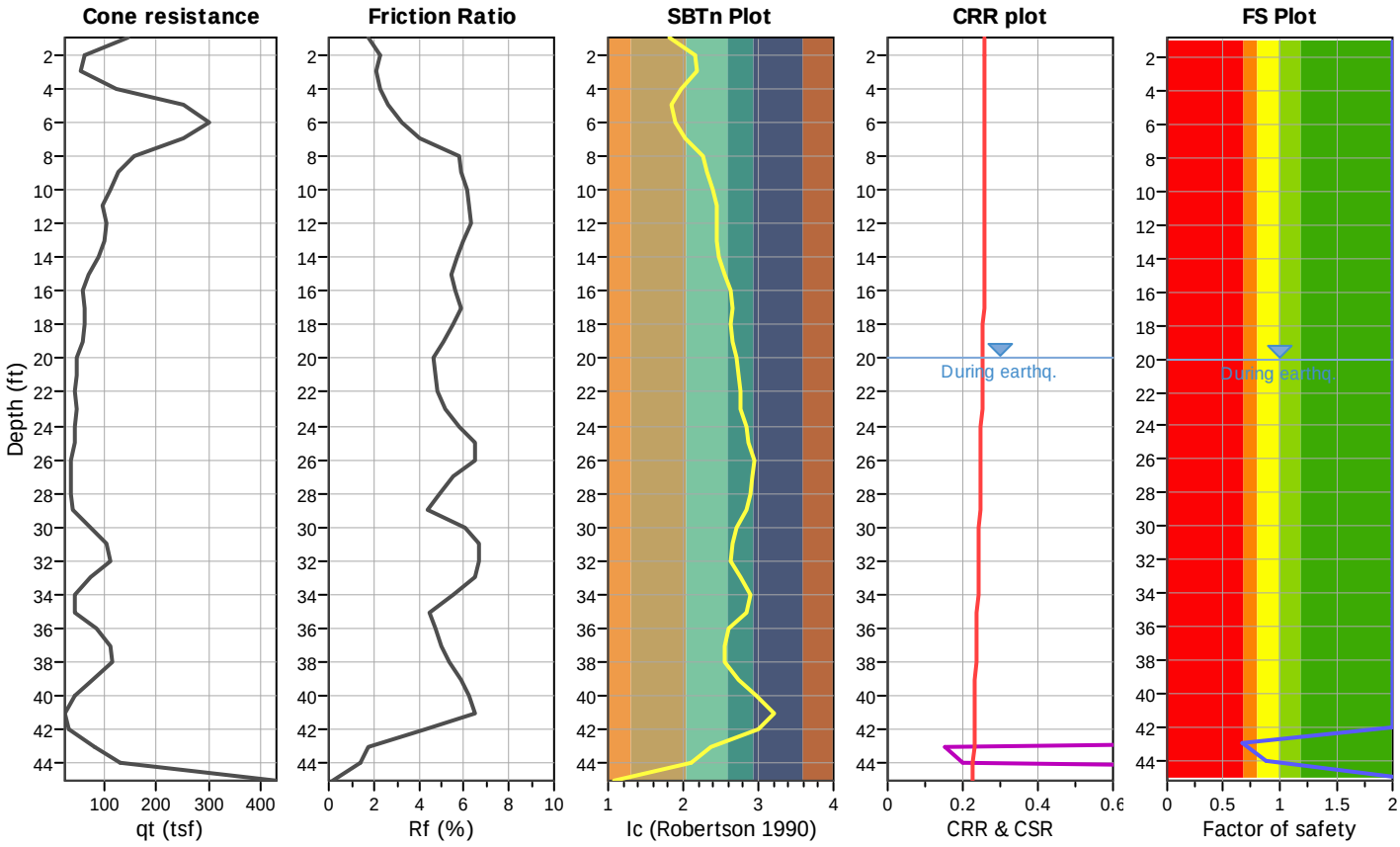
LIQUEFACTION ANALYSIS REPORT

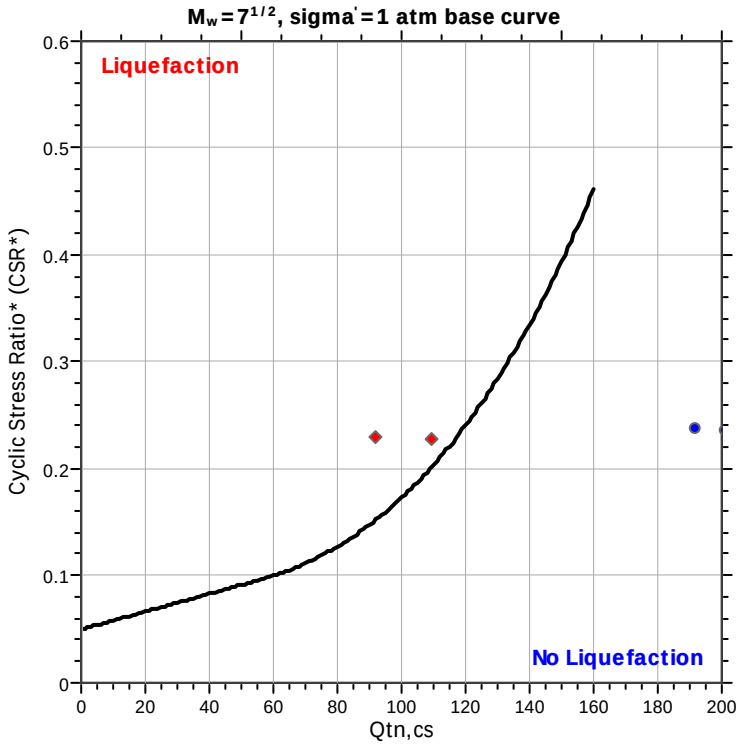
Project title : Kettner Substation **Location : San Diego, CA**

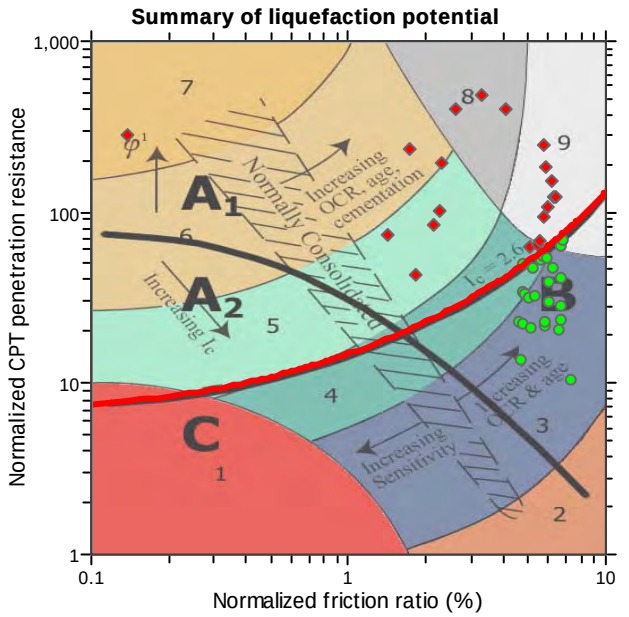
CPT file : CPT-12i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	100.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

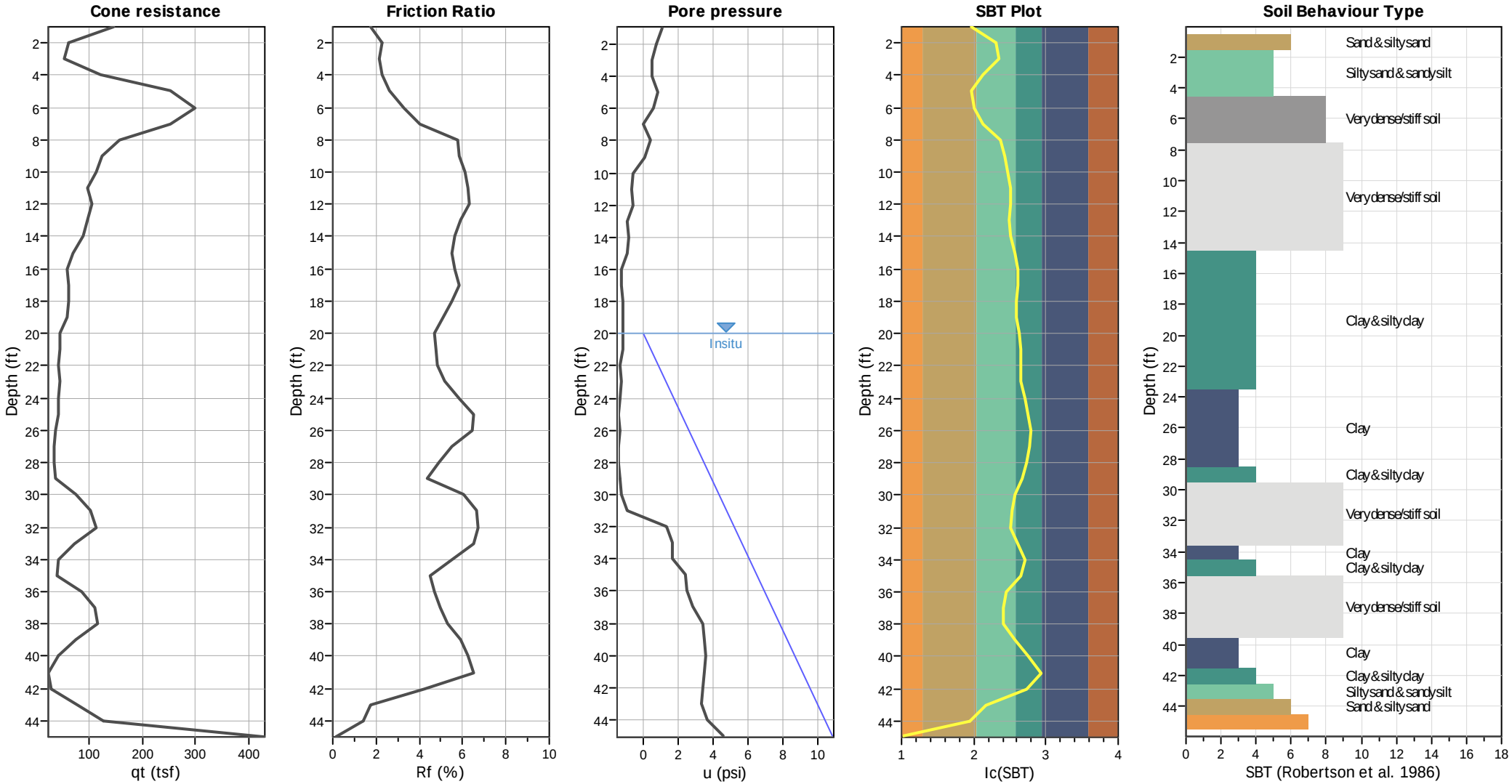






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



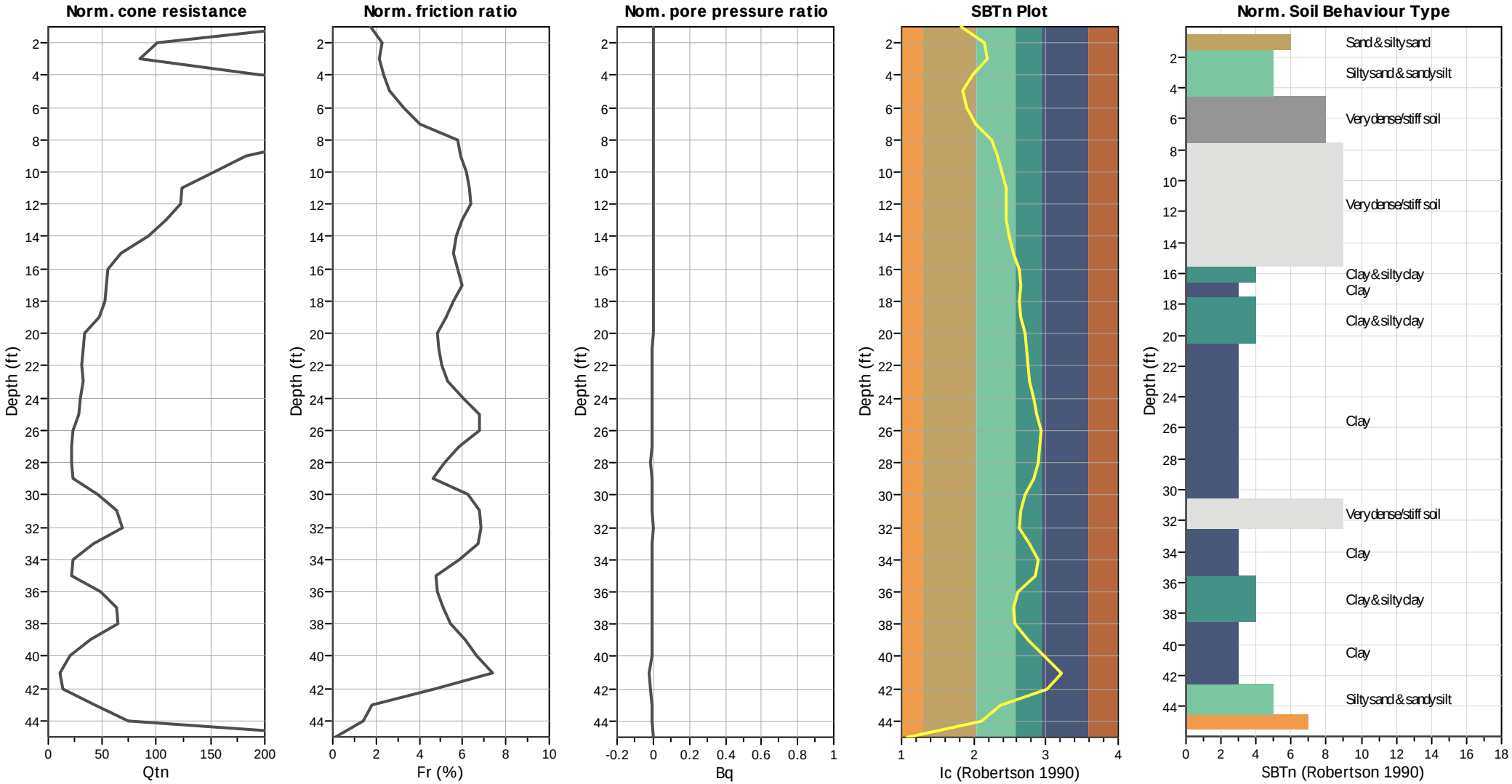
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



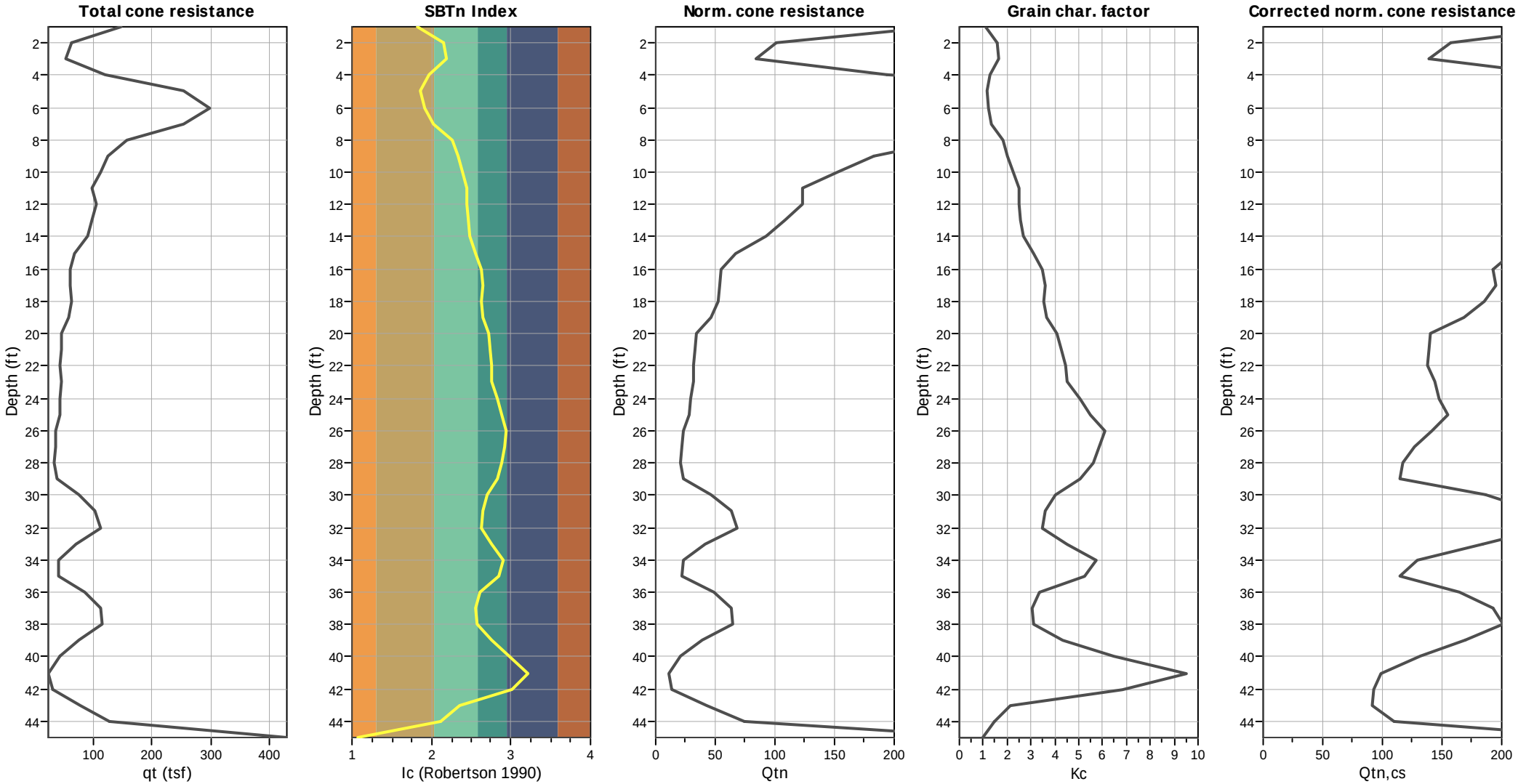
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

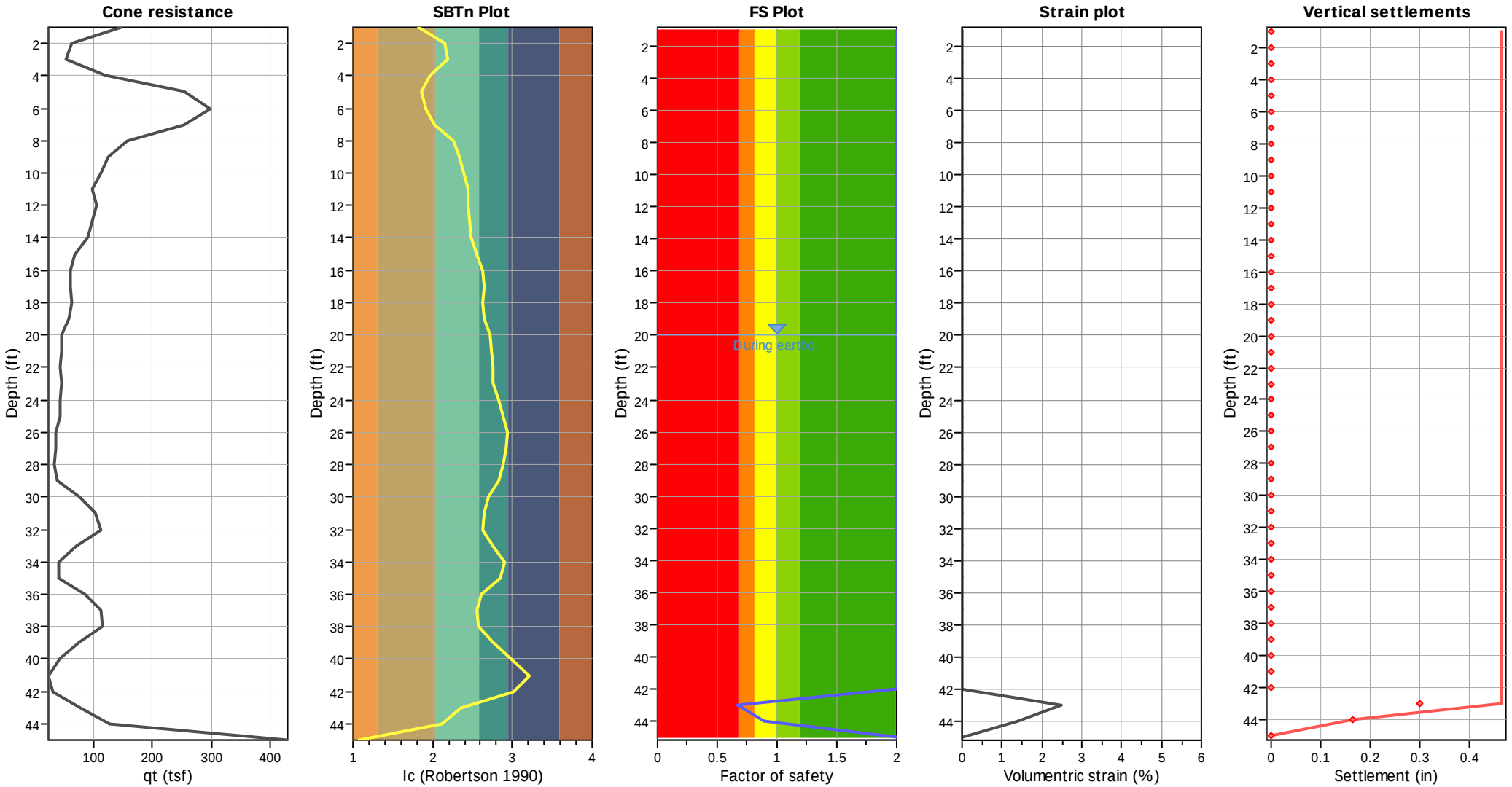
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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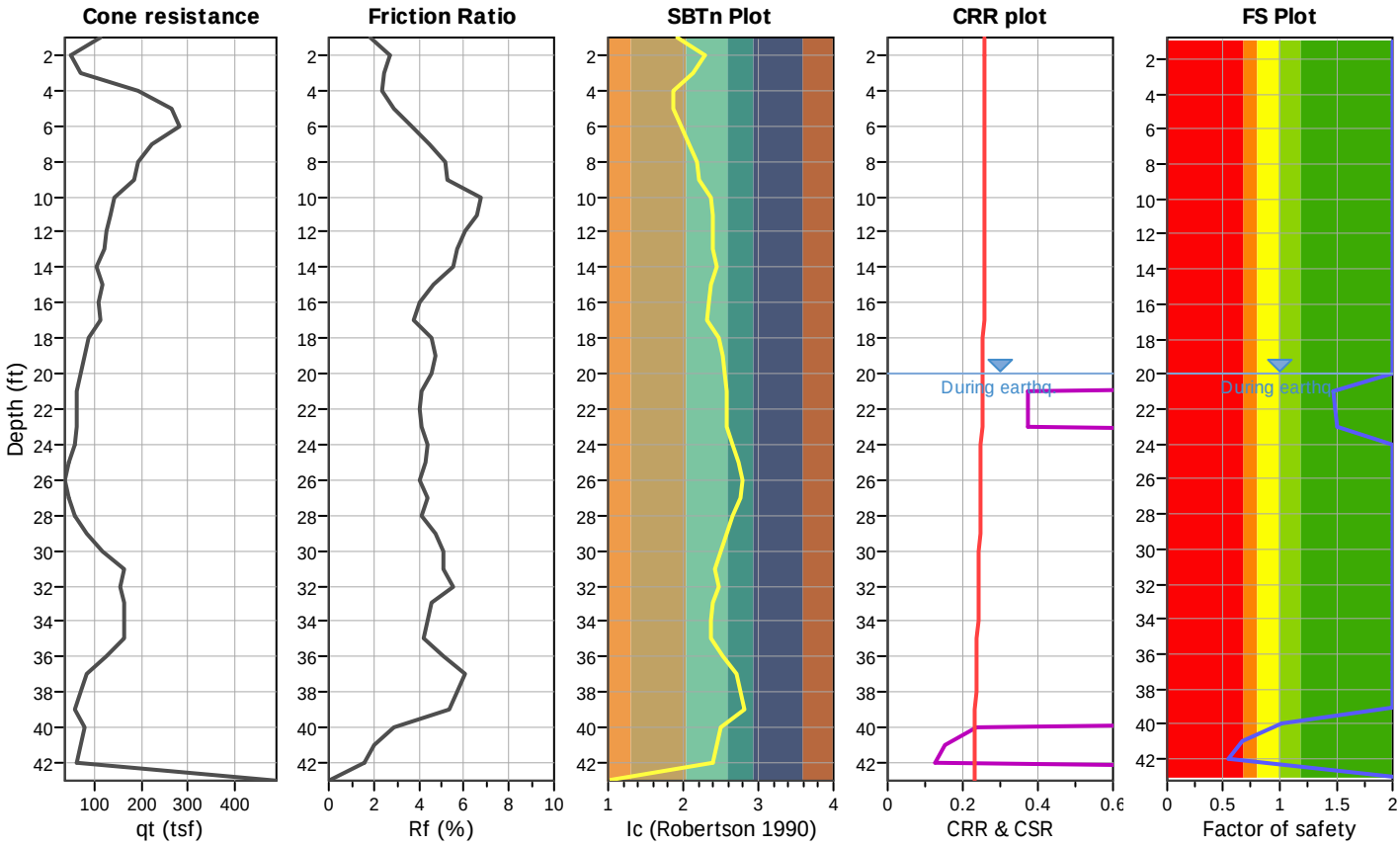
LIQUEFACTION ANALYSIS REPORT

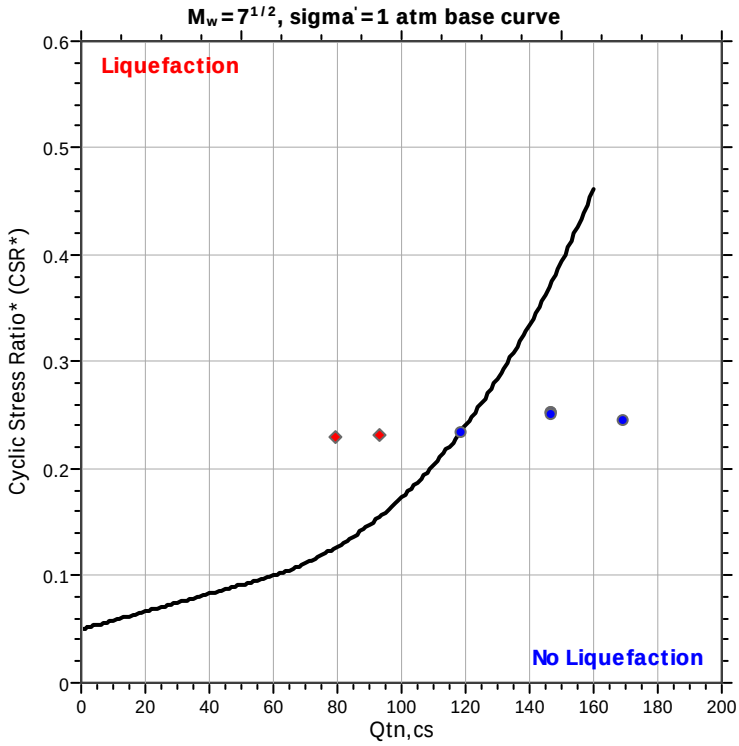
Project title : Kettner Substation **Location : San Diego, CA**

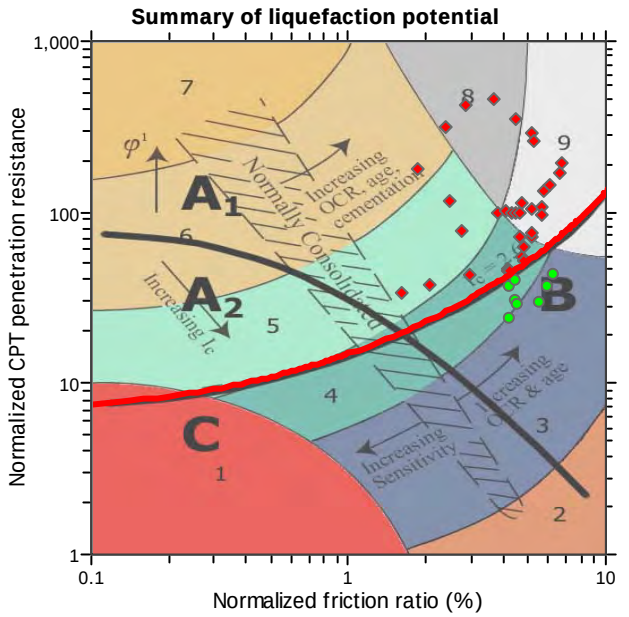
CPT file : CPT-13i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	100.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

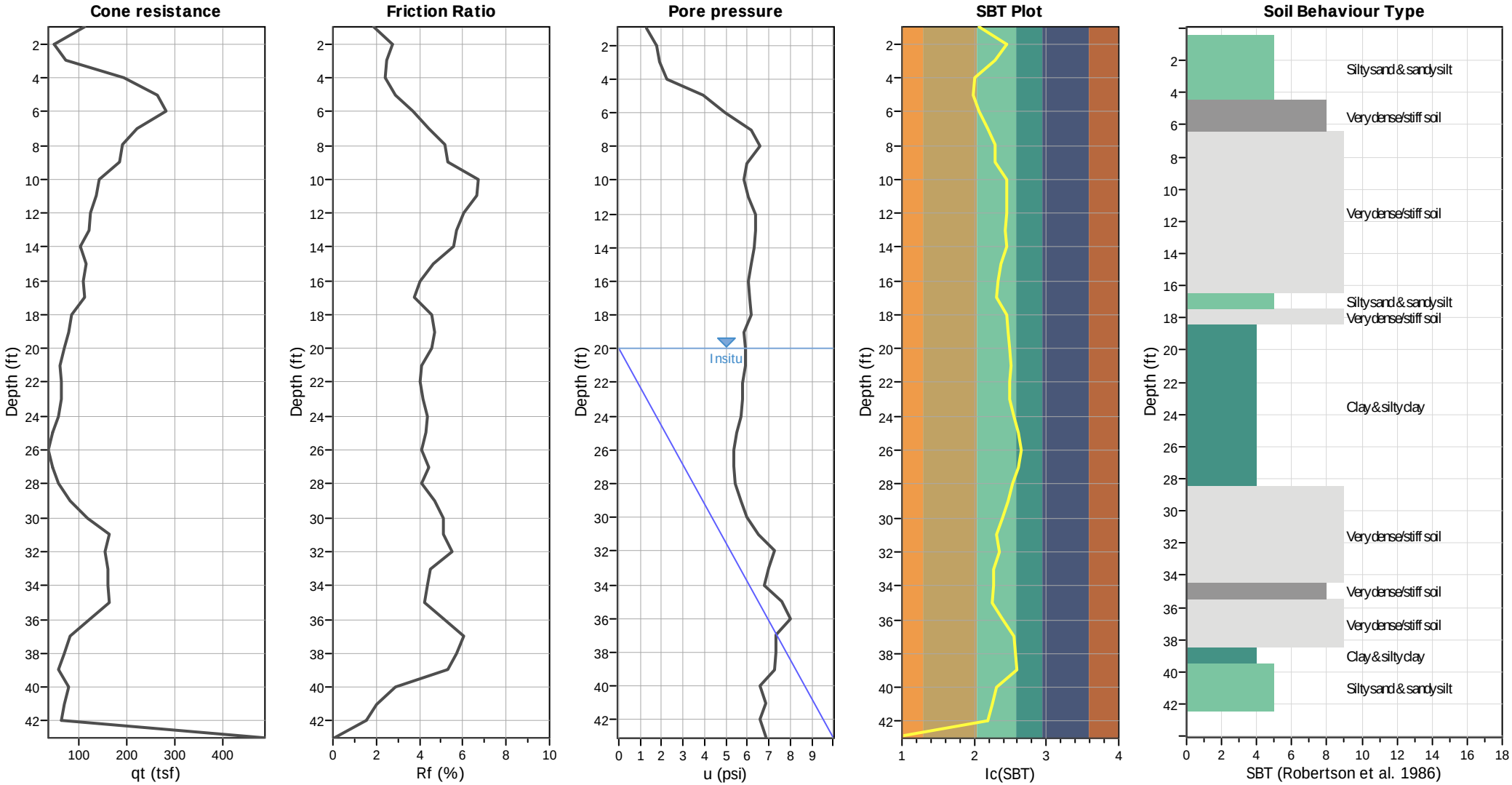






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



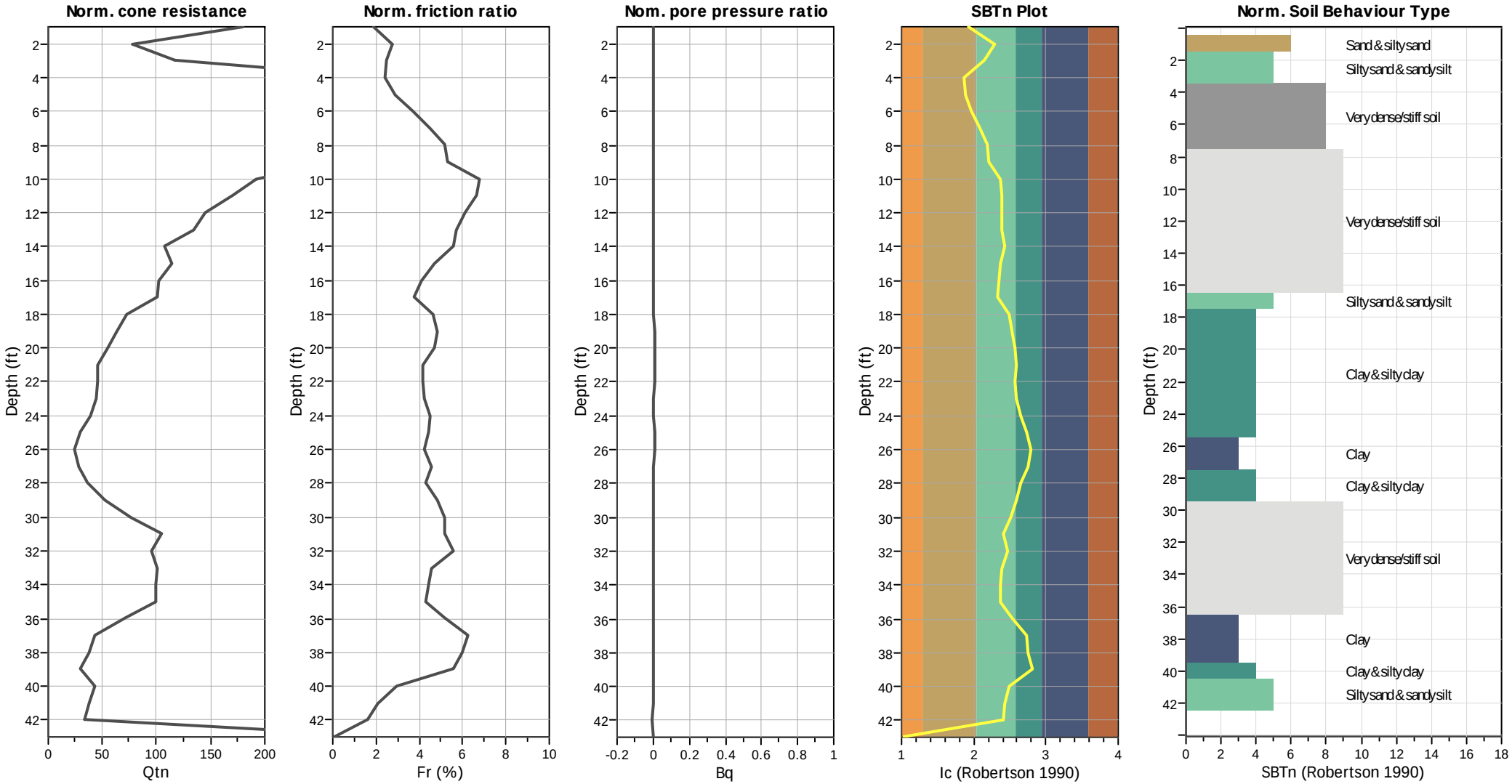
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



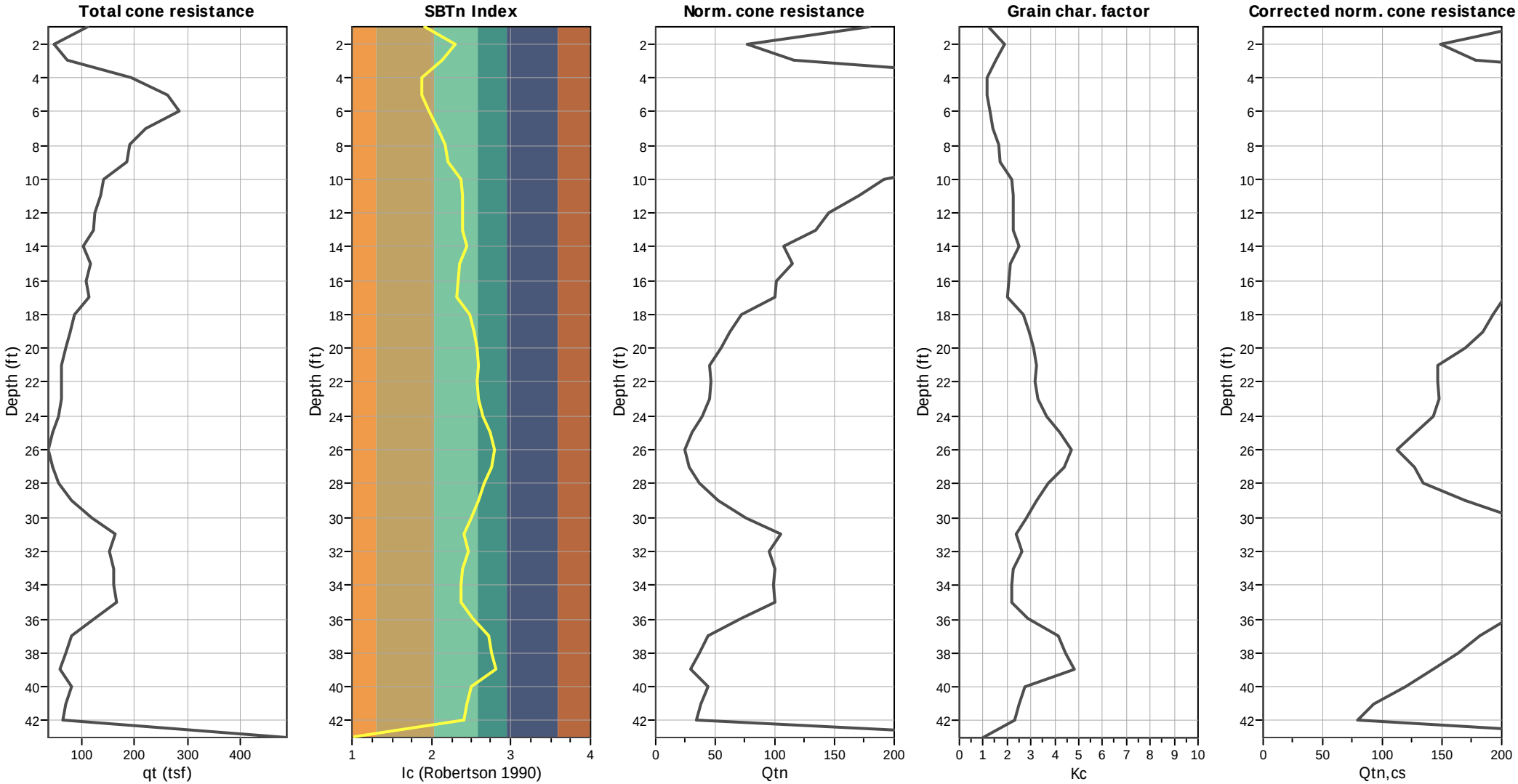
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

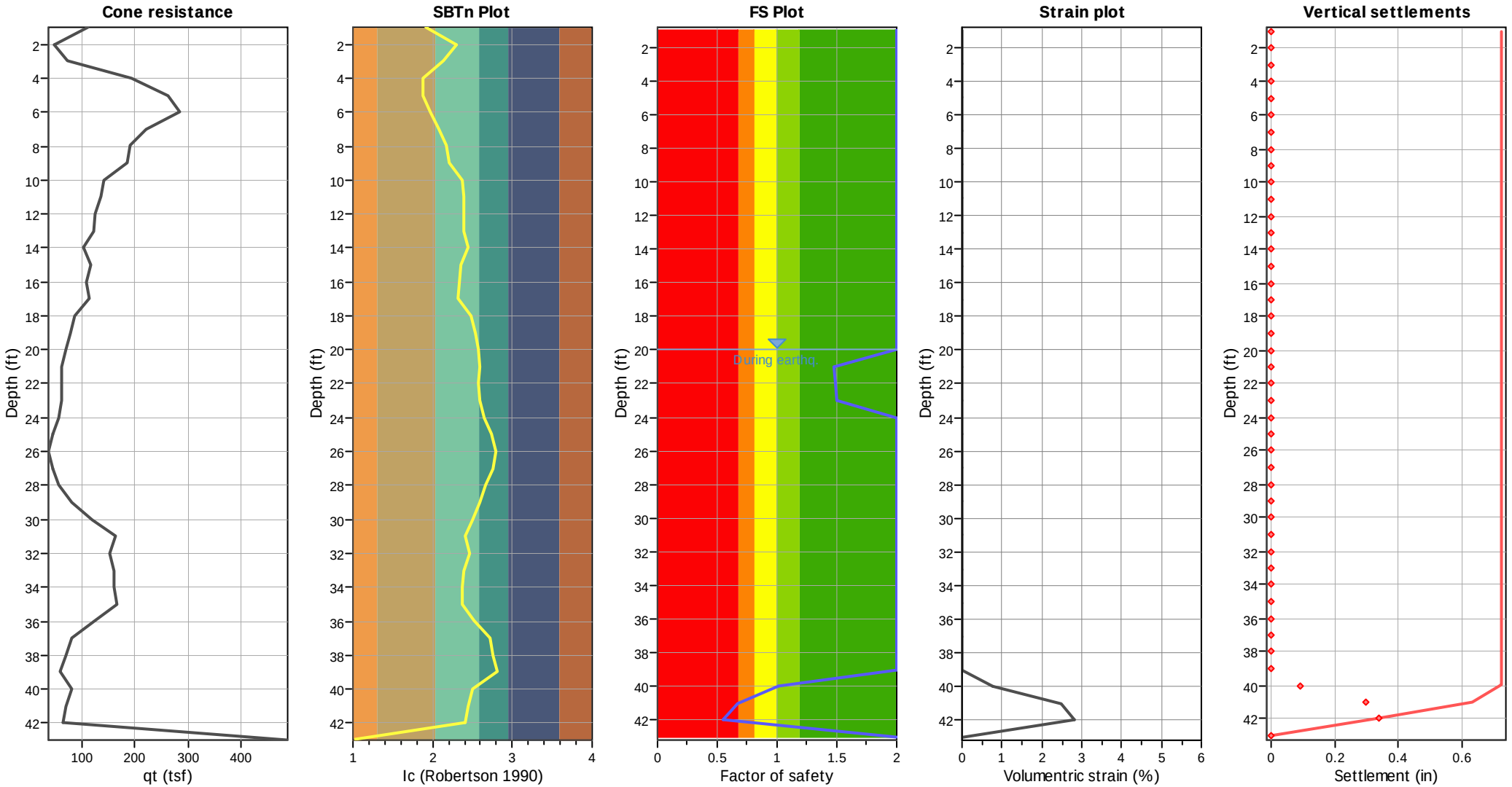
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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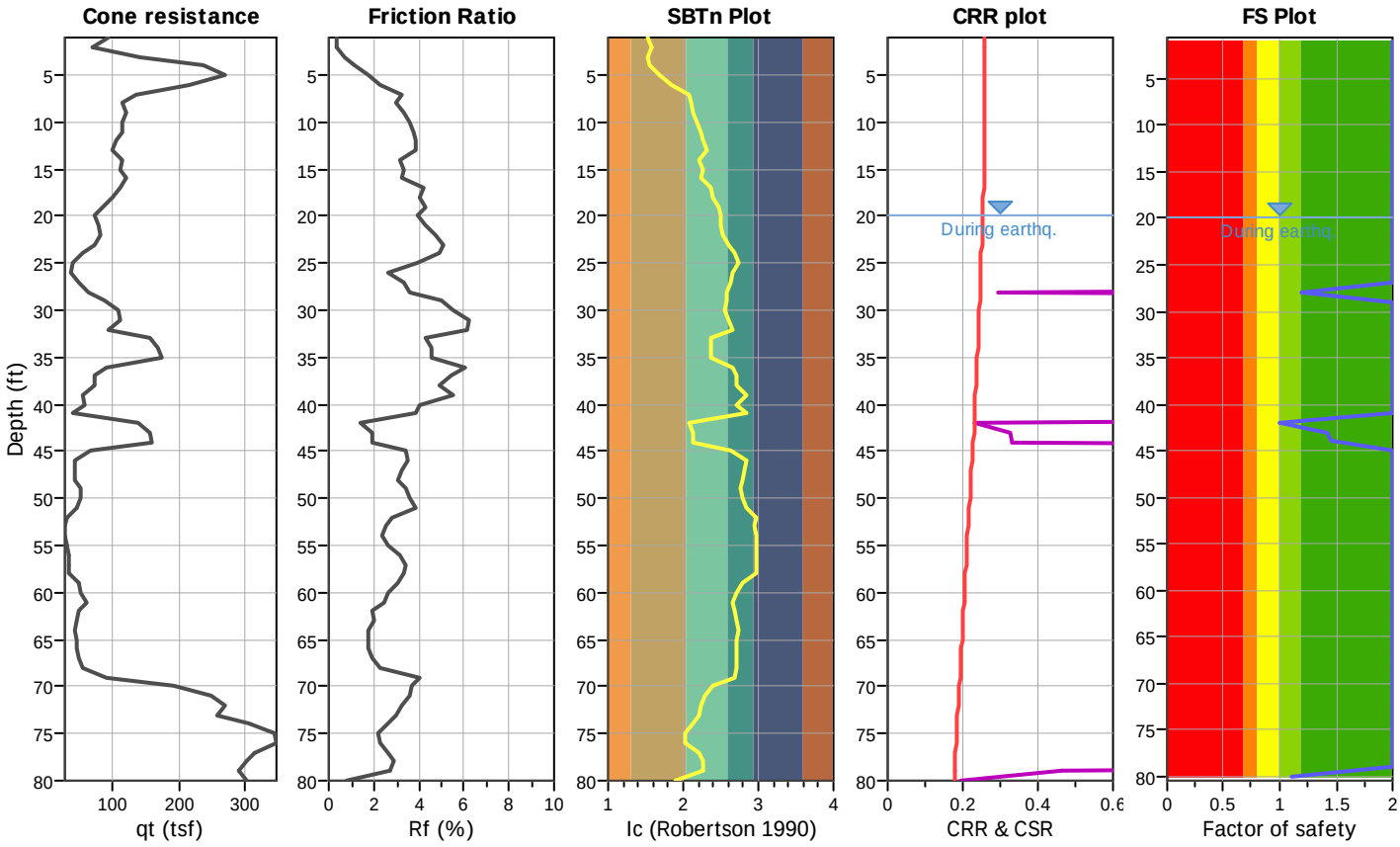
LIQUEFACTION ANALYSIS REPORT

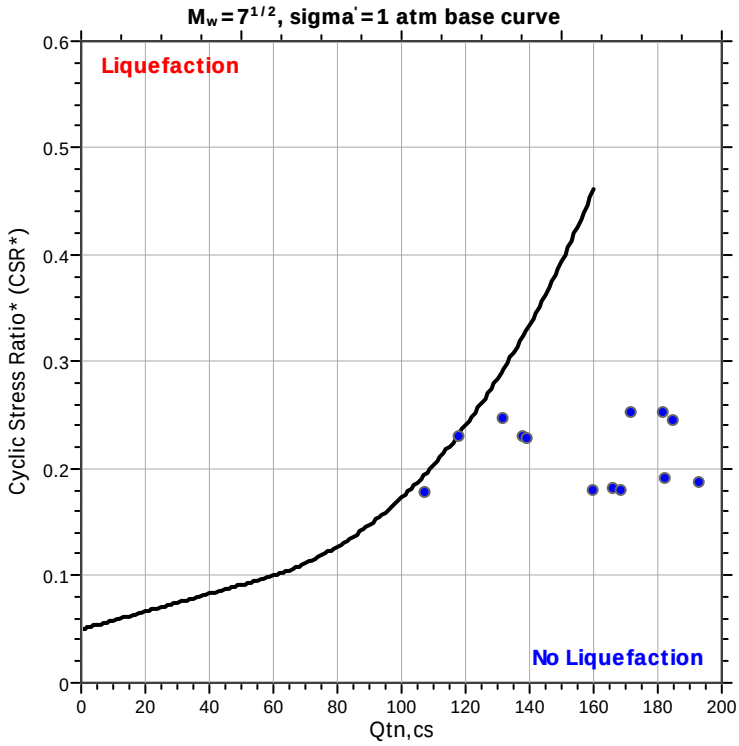
Project title : Kettner Substation **Location : San Diego, CA**

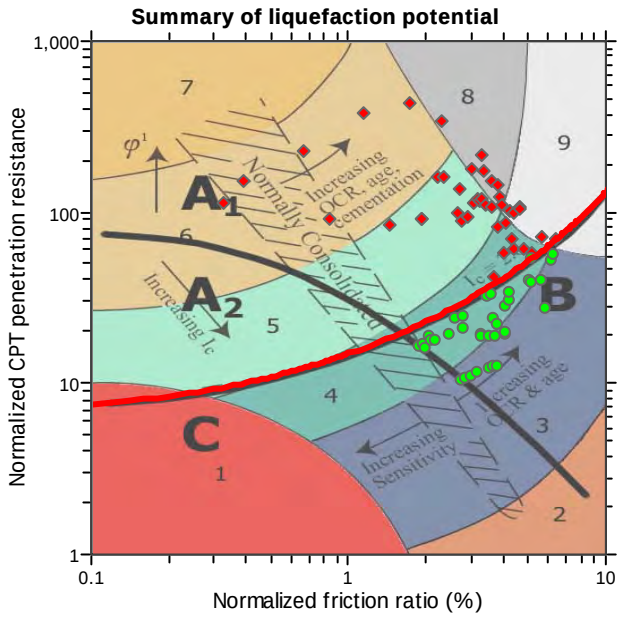
CPT file : CPT-13Ai

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	100.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

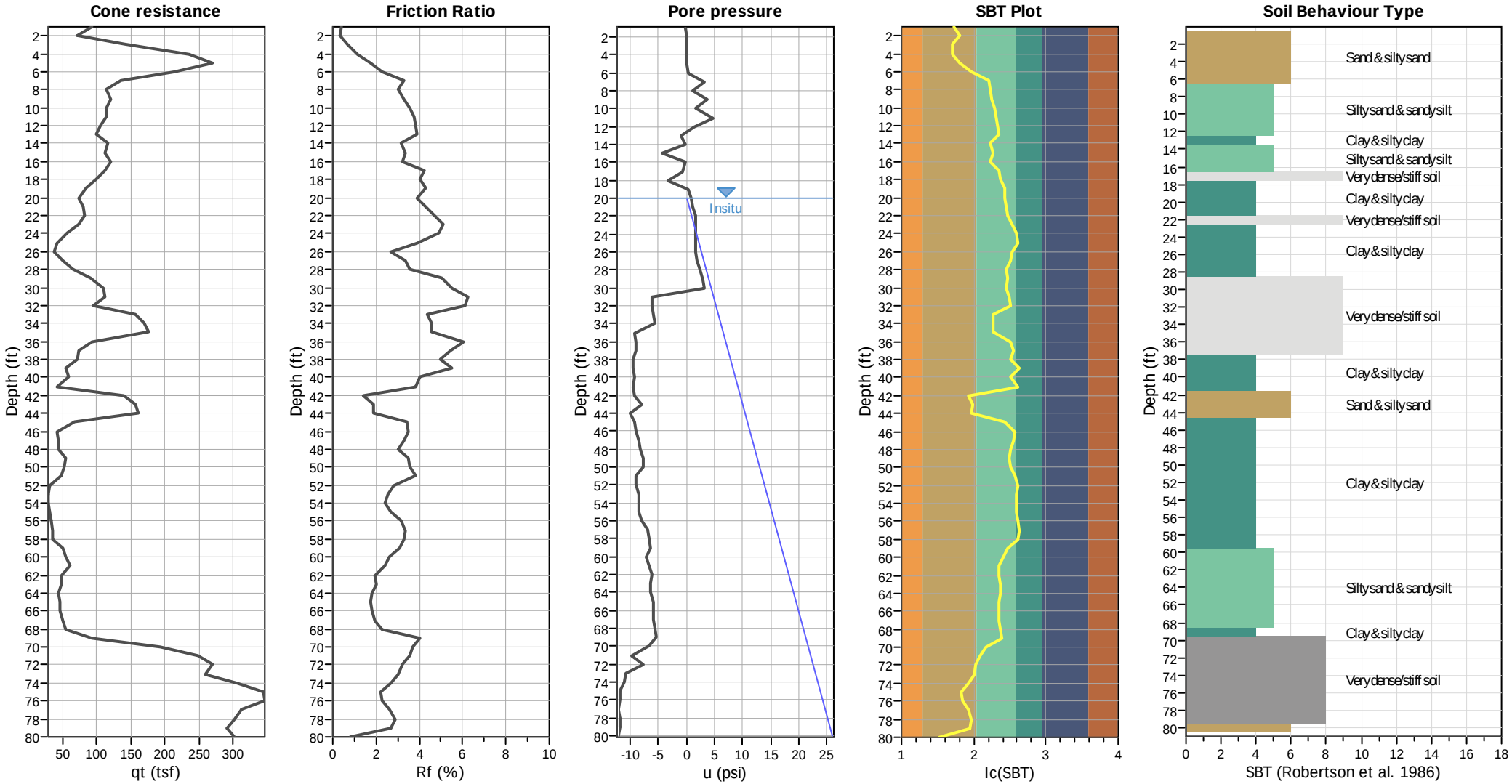






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



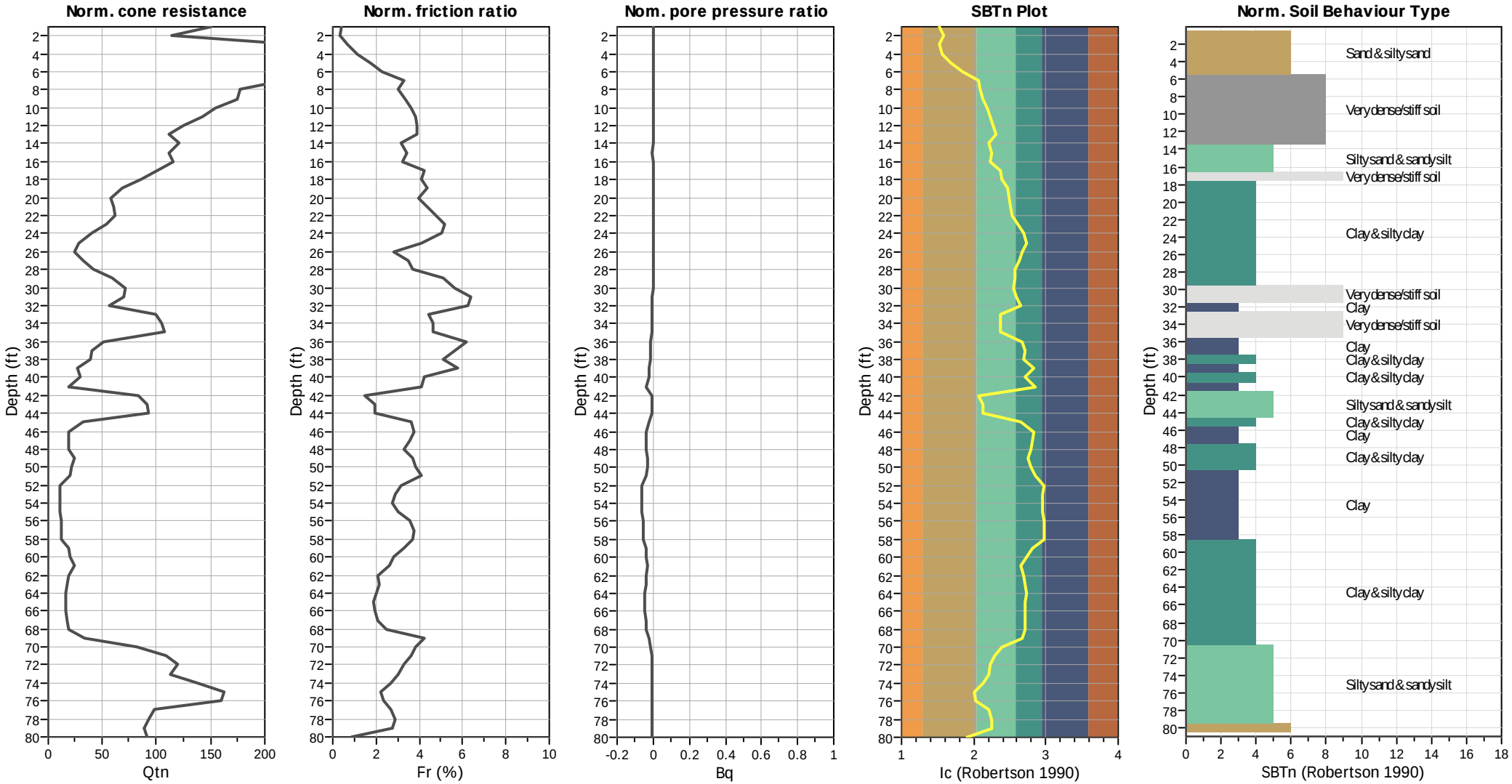
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
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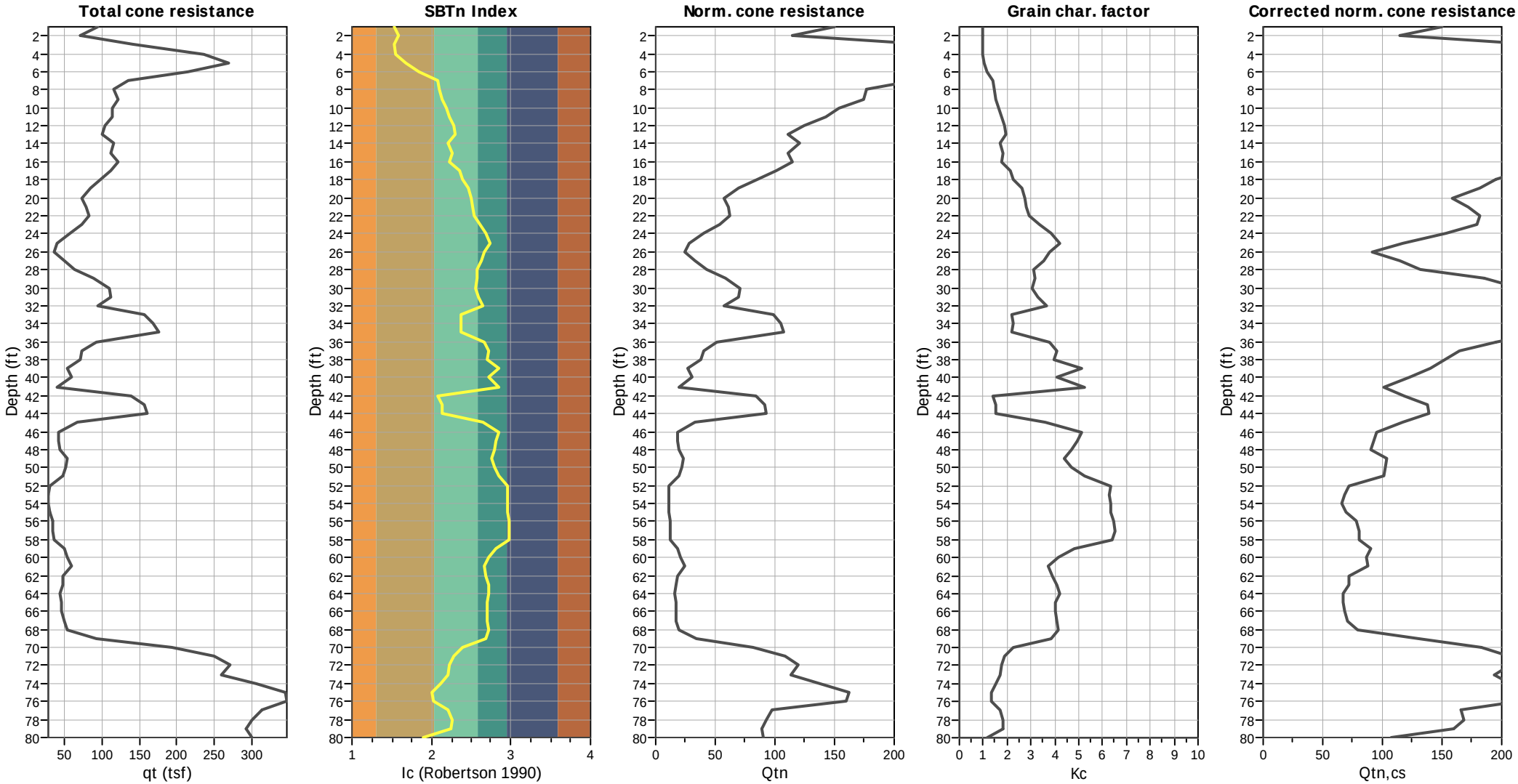
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

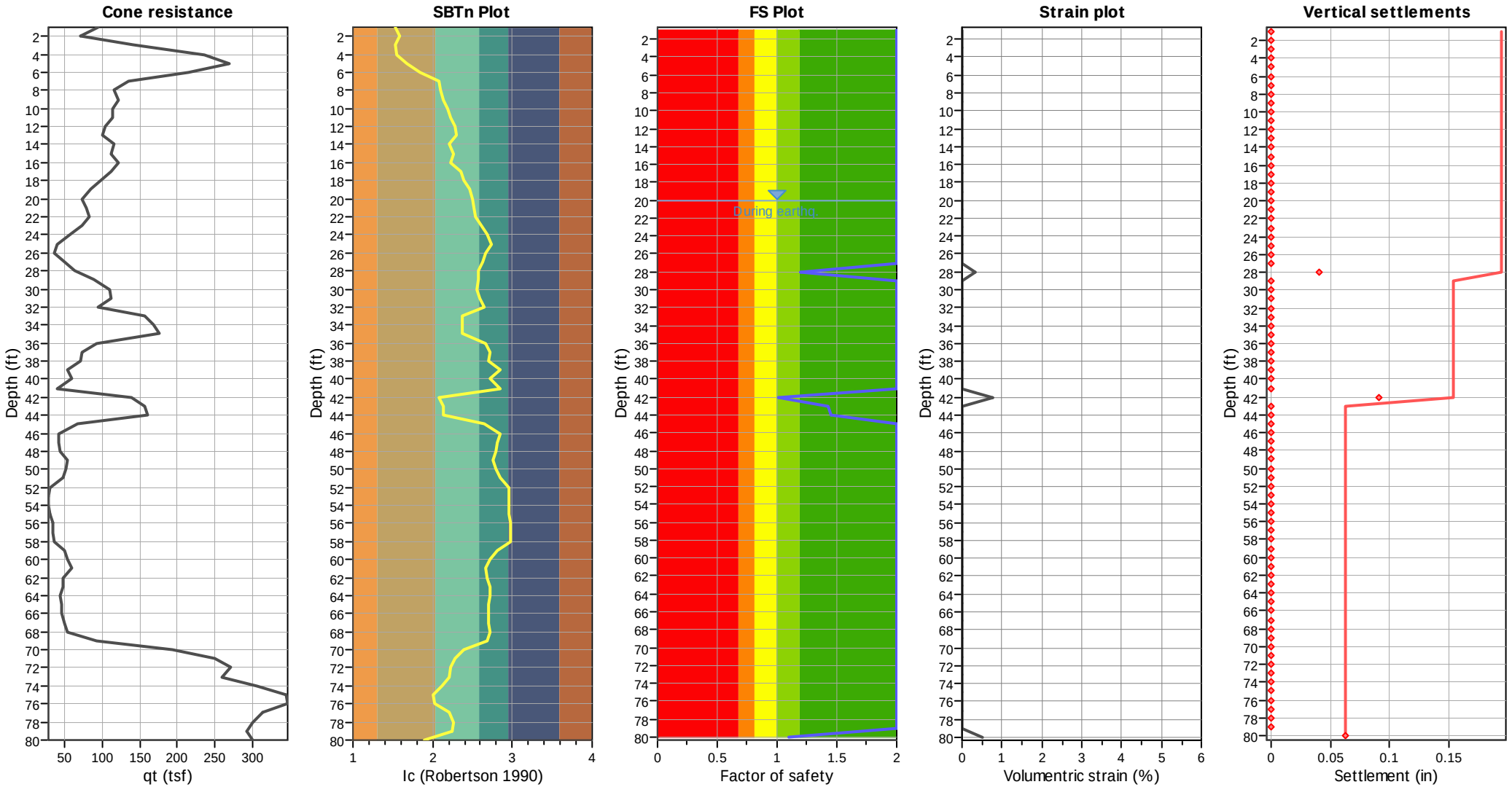
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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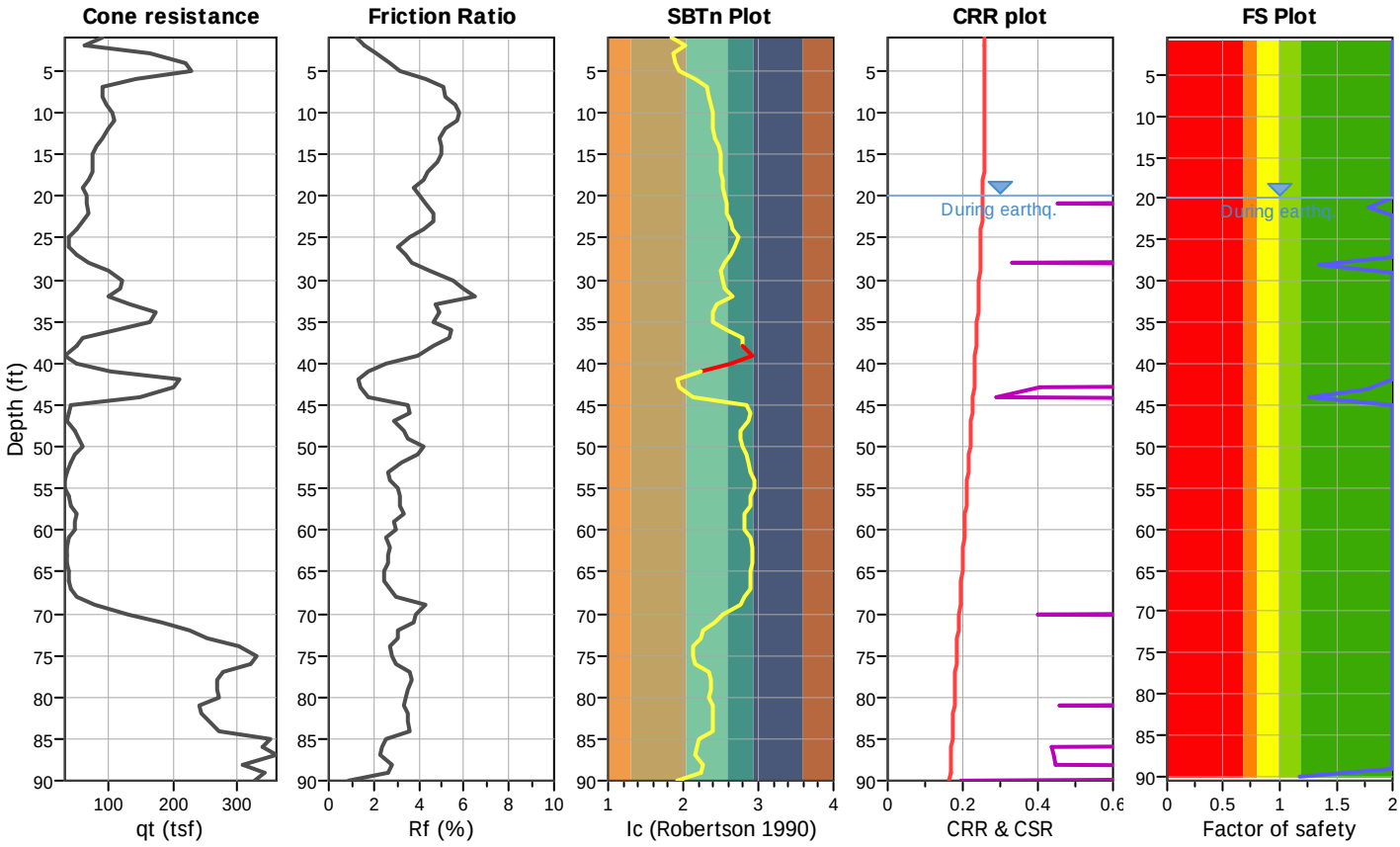
LIQUEFACTION ANALYSIS REPORT

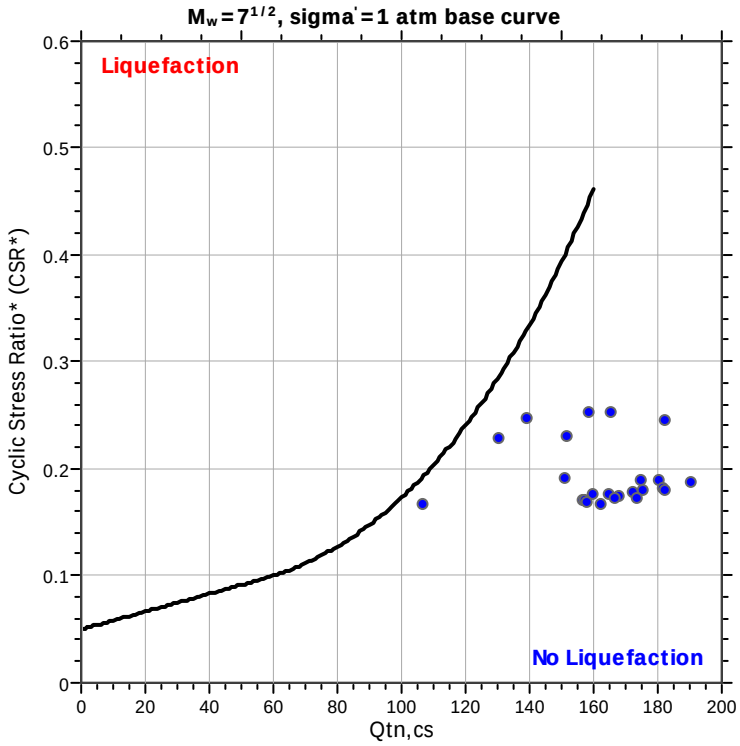
Project title : Kettner Substation **Location : San Diego, CA**

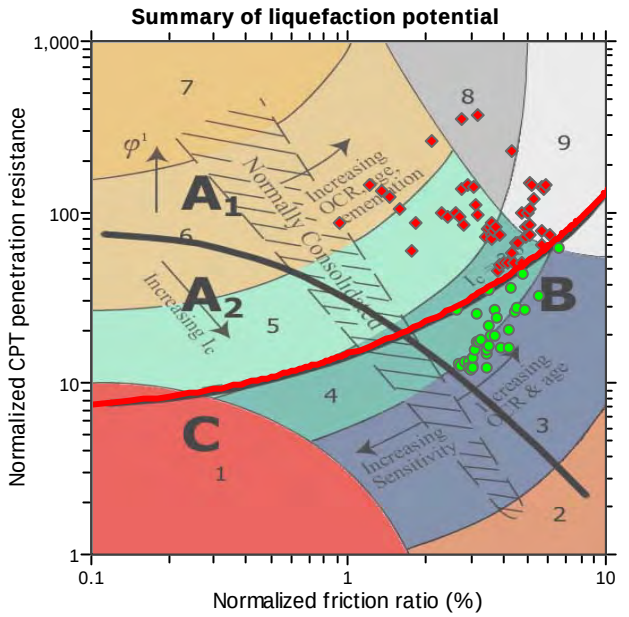
CPT file : CPT-14i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	100.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

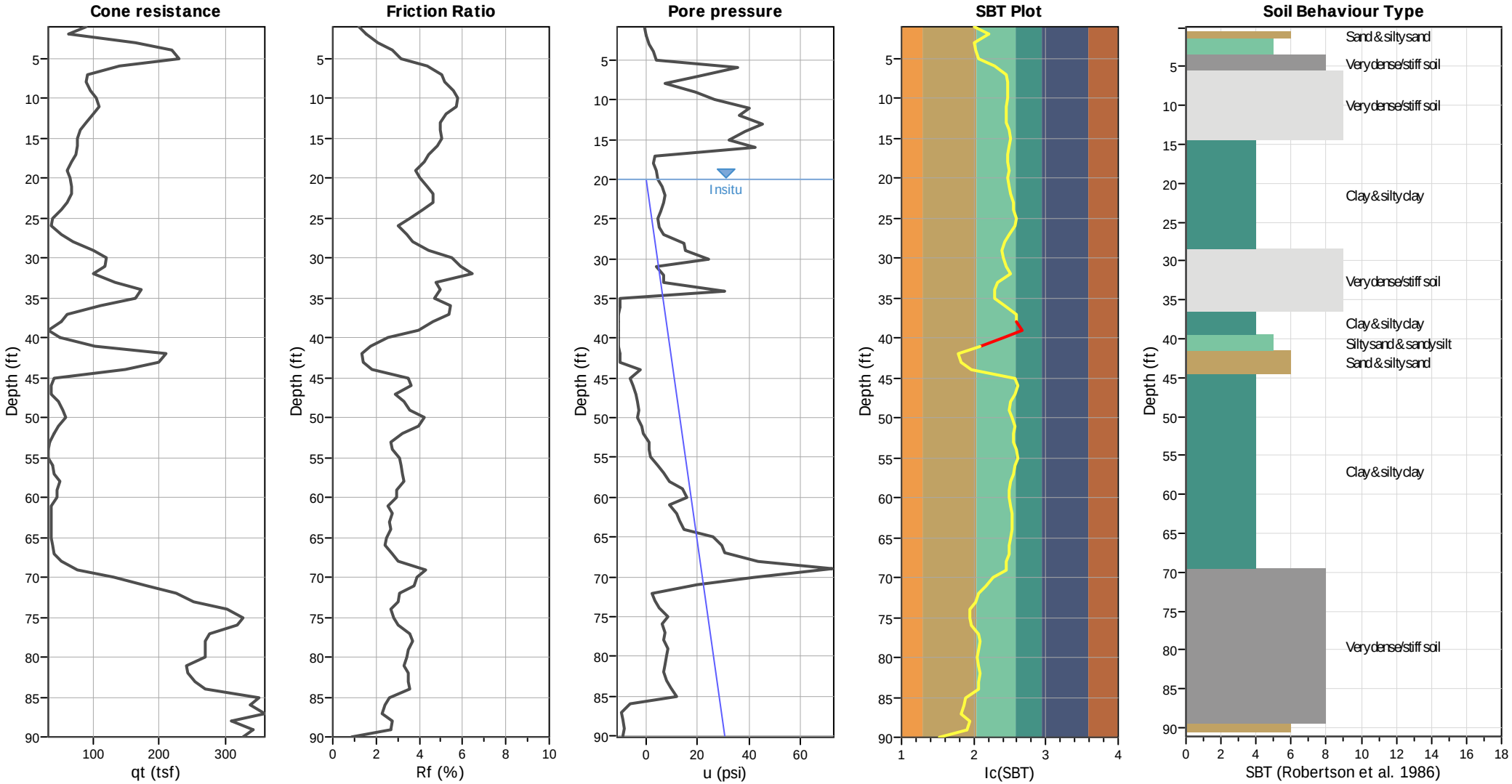






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



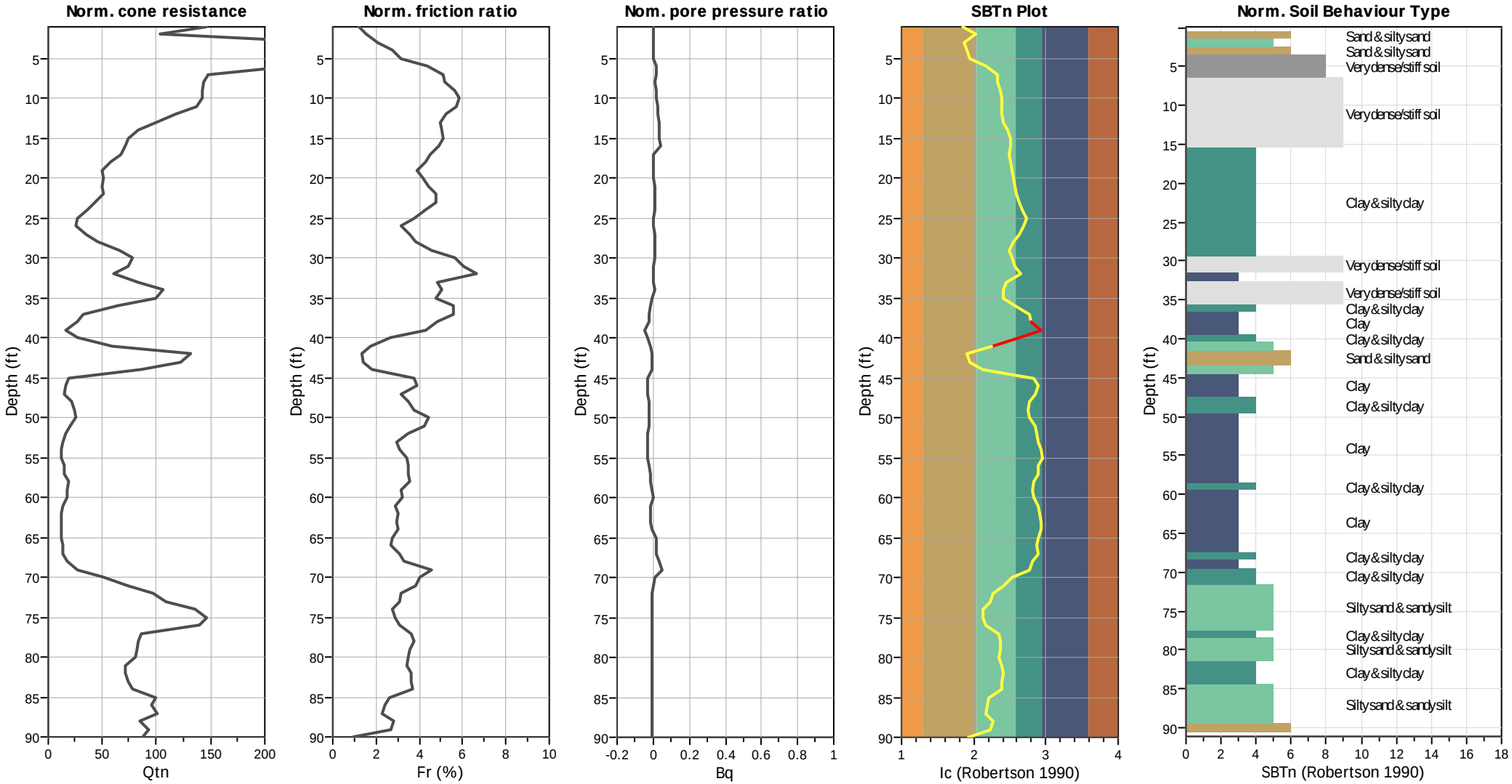
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



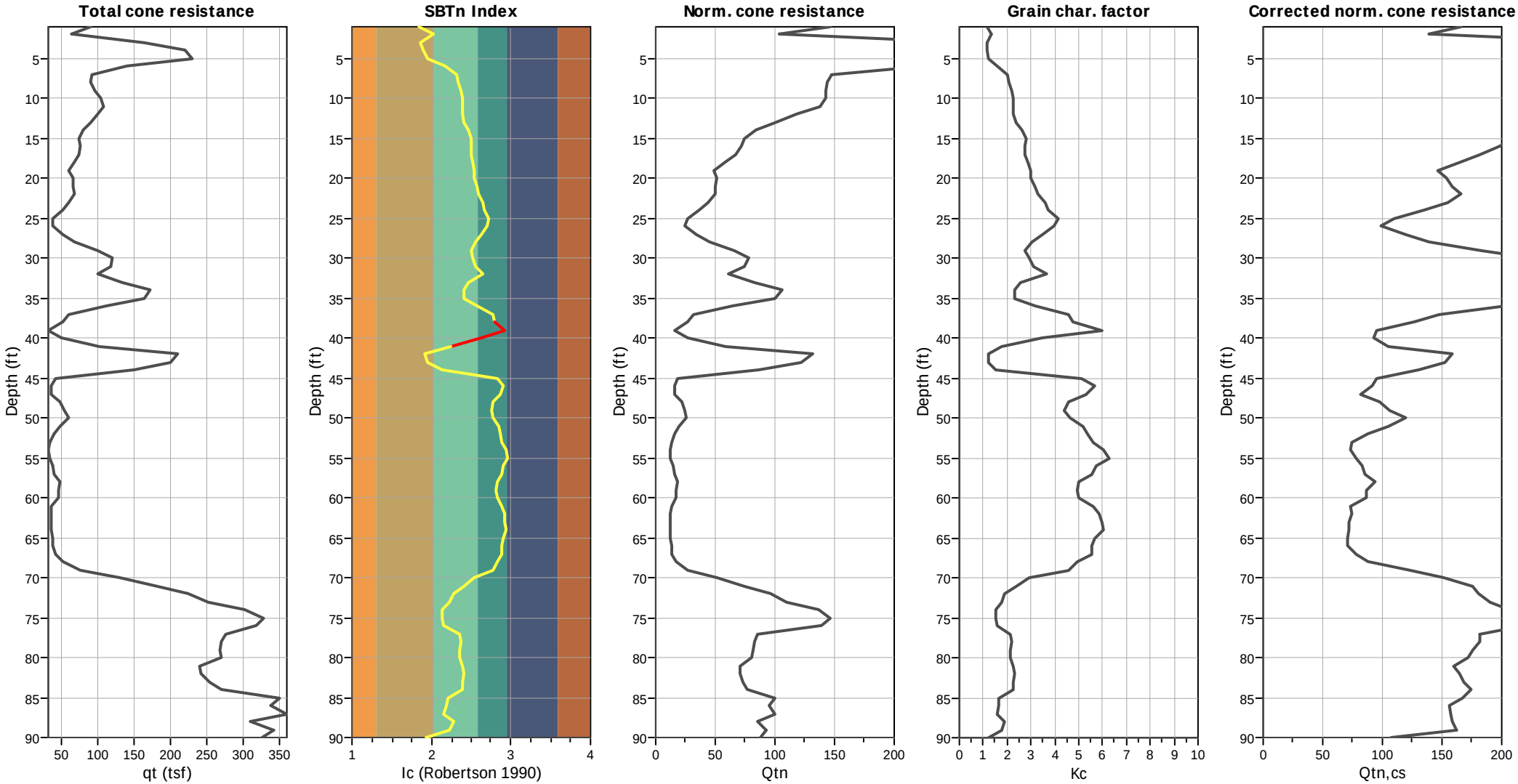
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

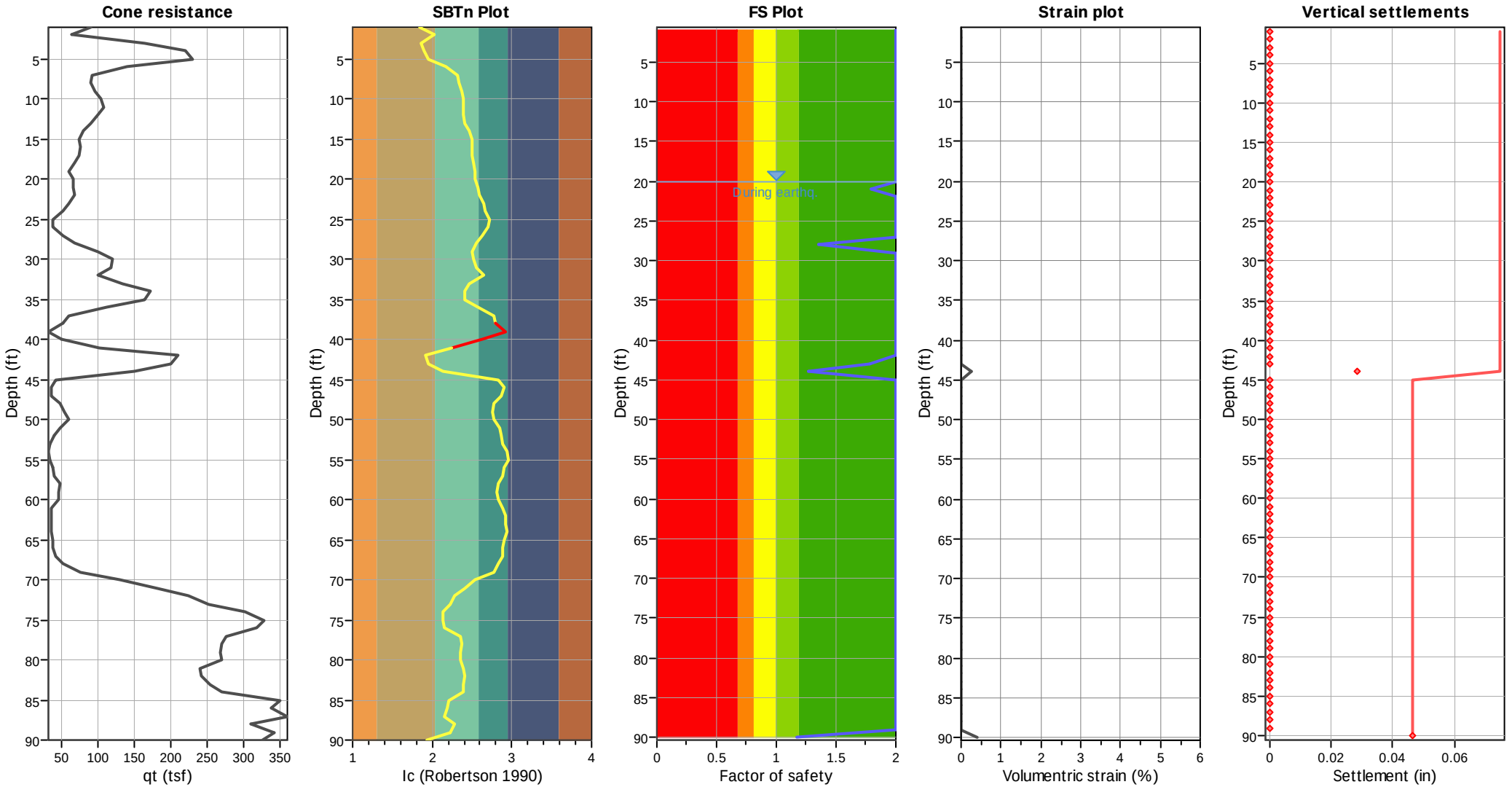
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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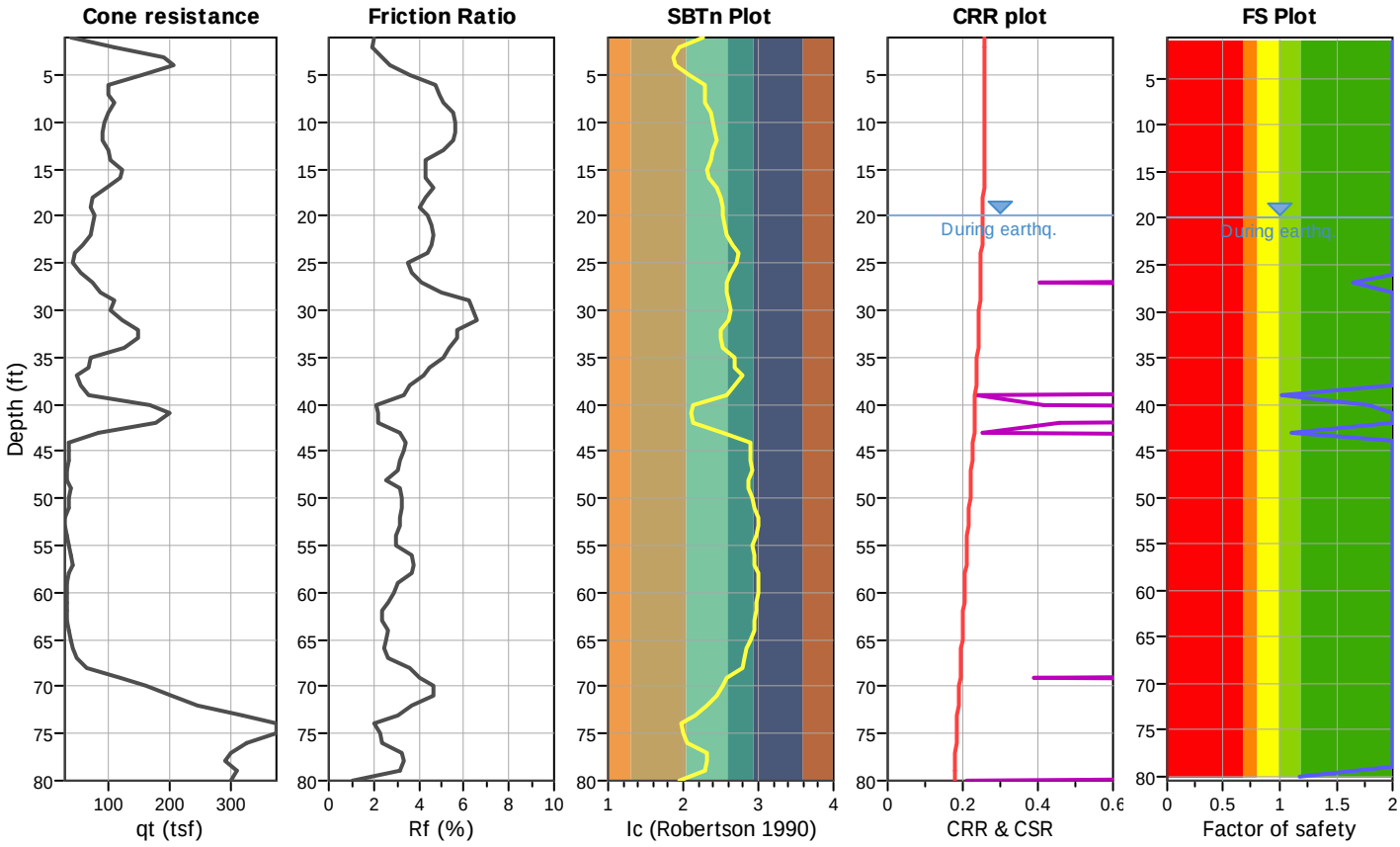
LIQUEFACTION ANALYSIS REPORT

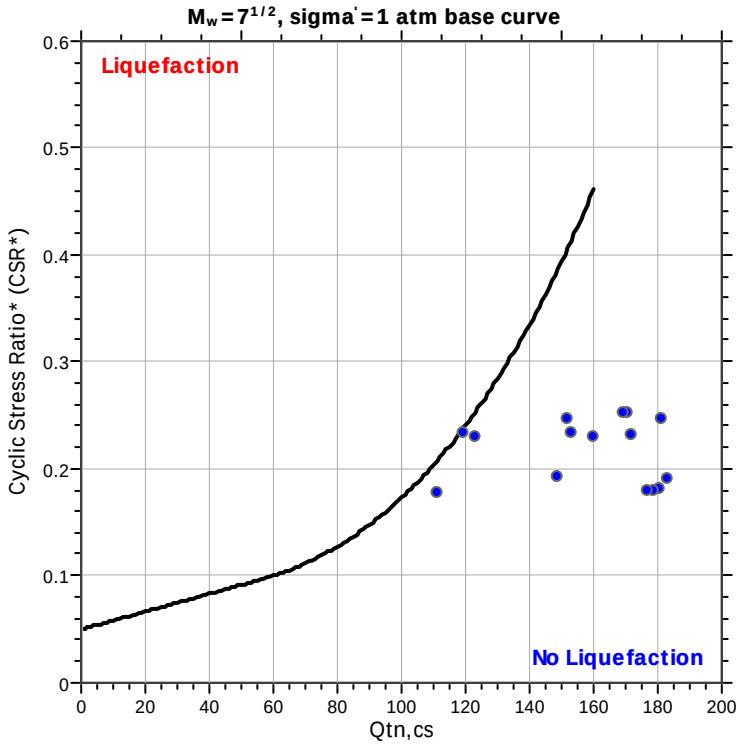
Project title : Kettner Substation **Location : San Diego, CA**

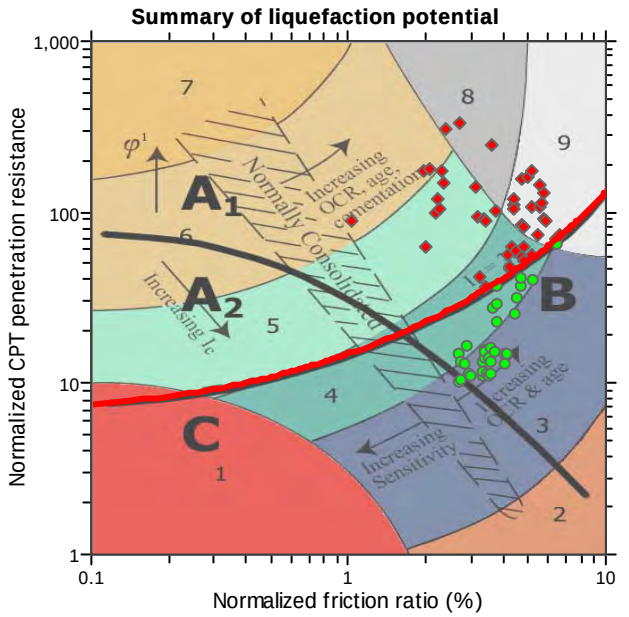
CPT file : CPT-15i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	100.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

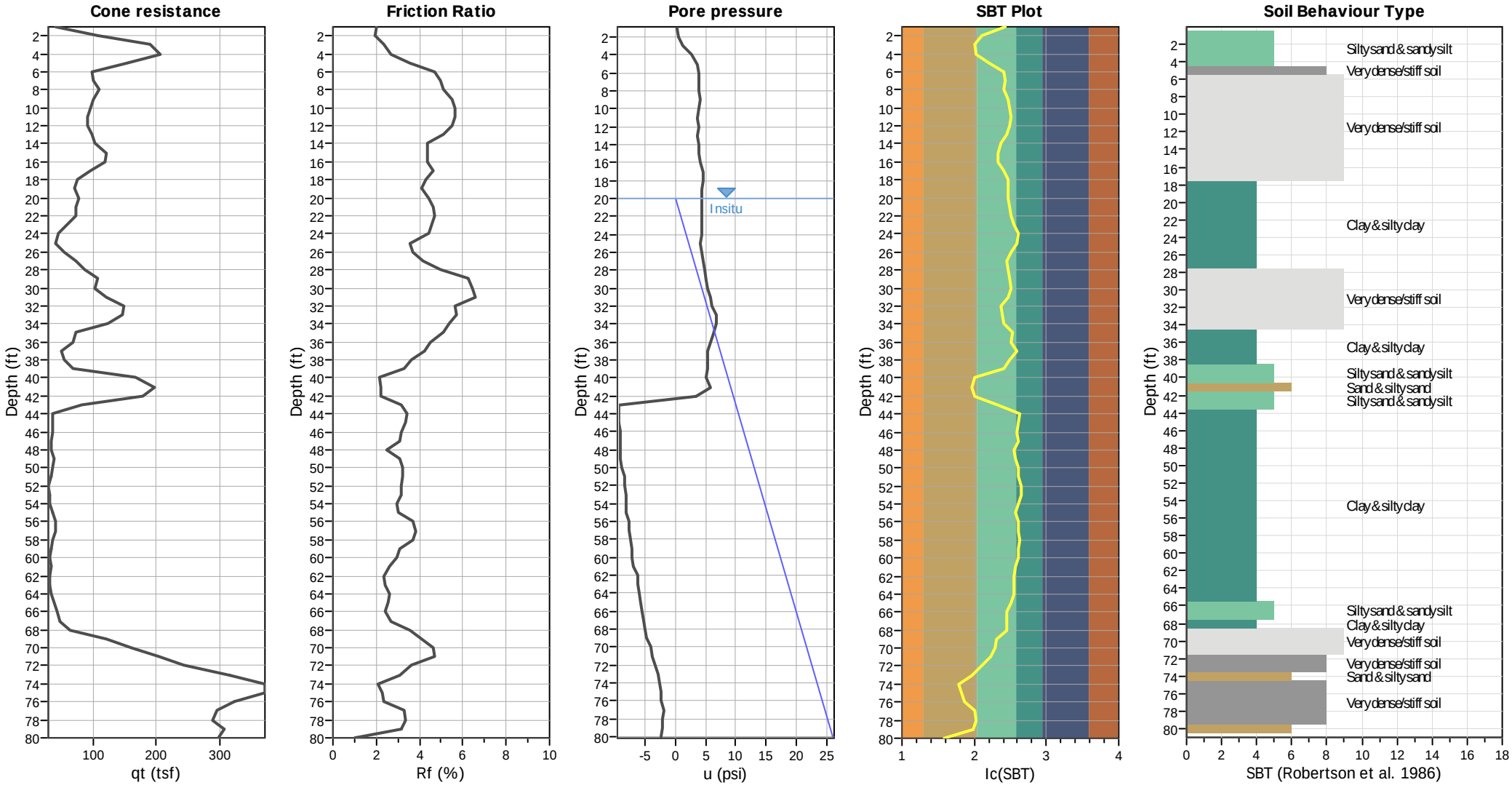






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



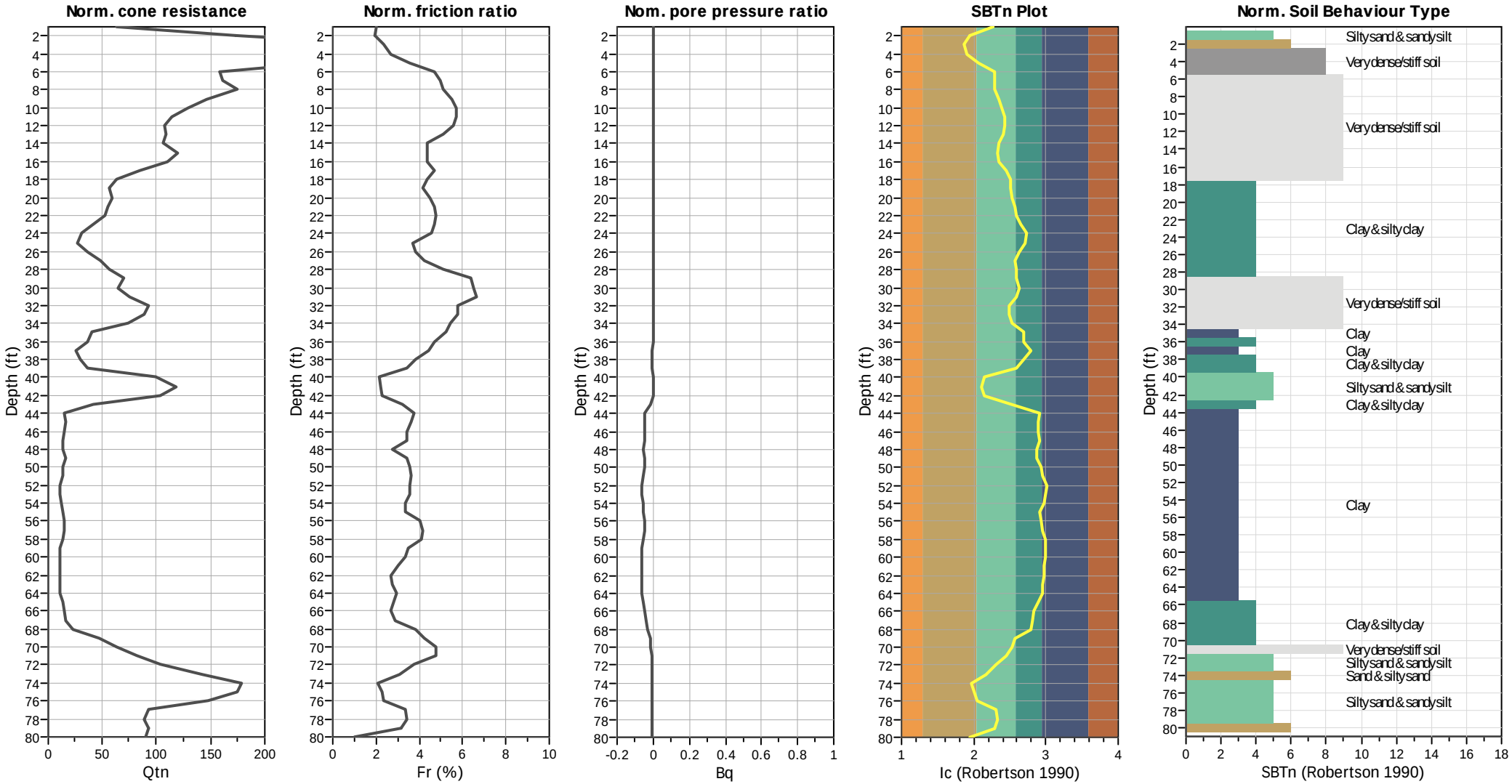
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



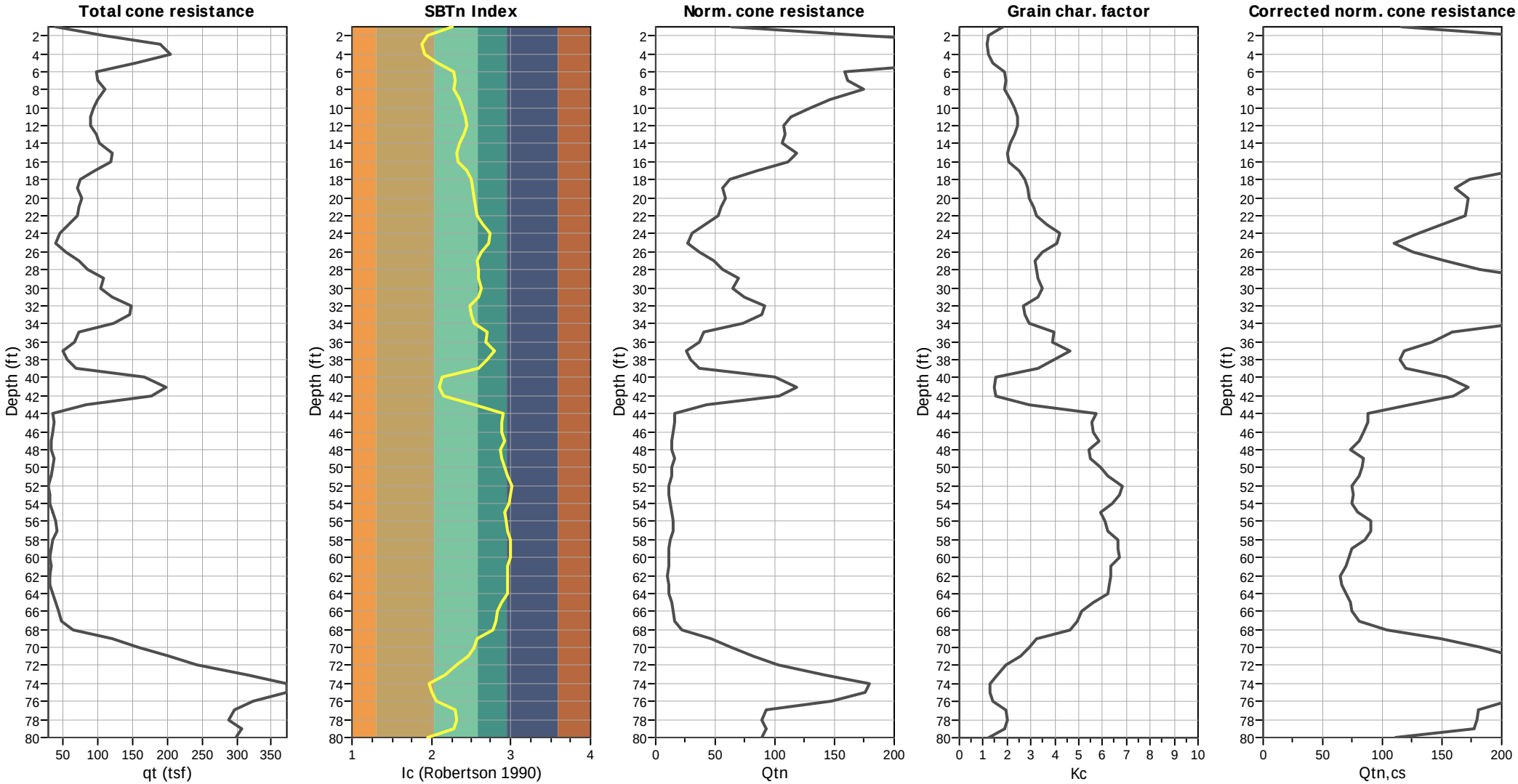
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

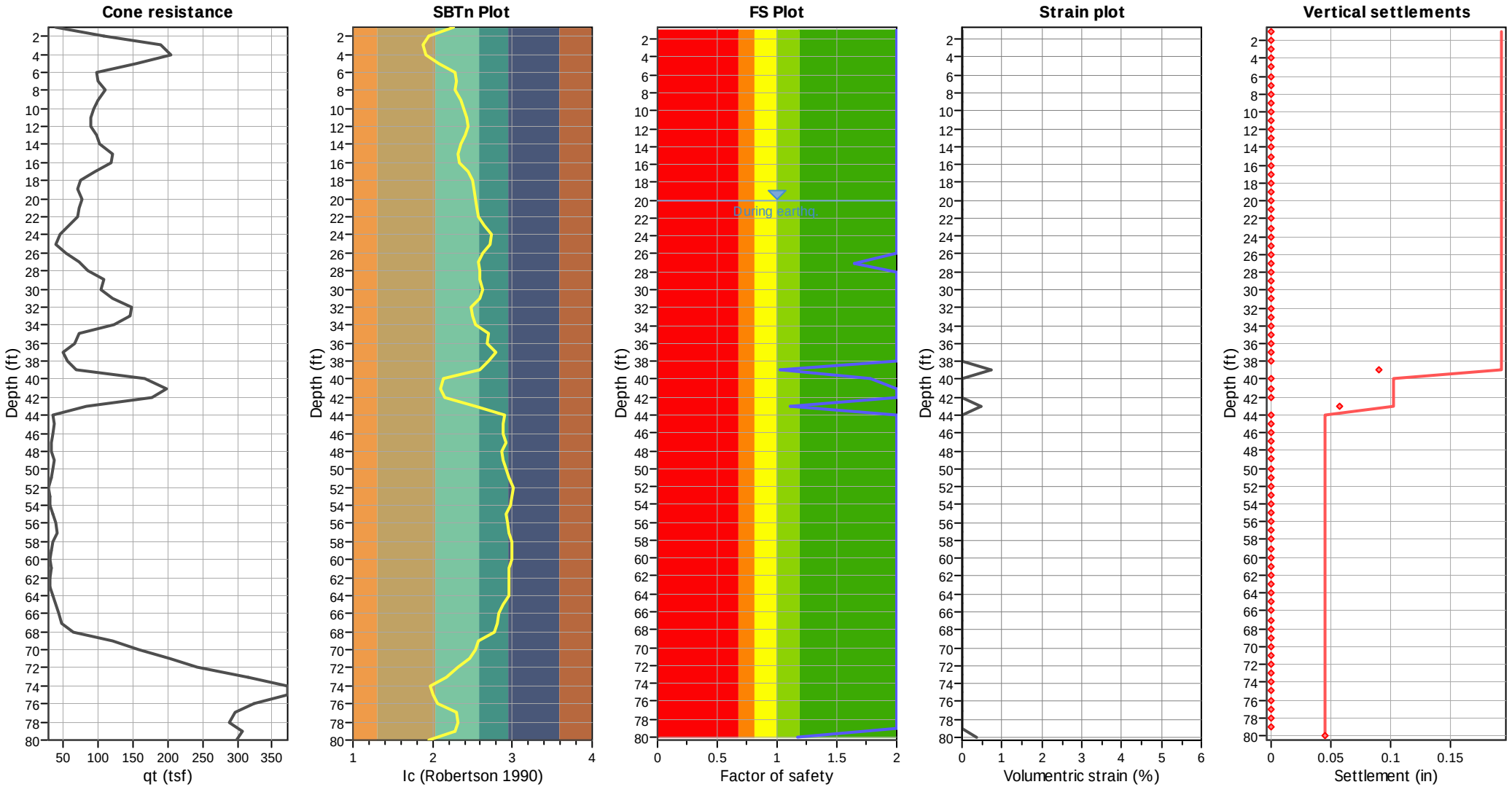
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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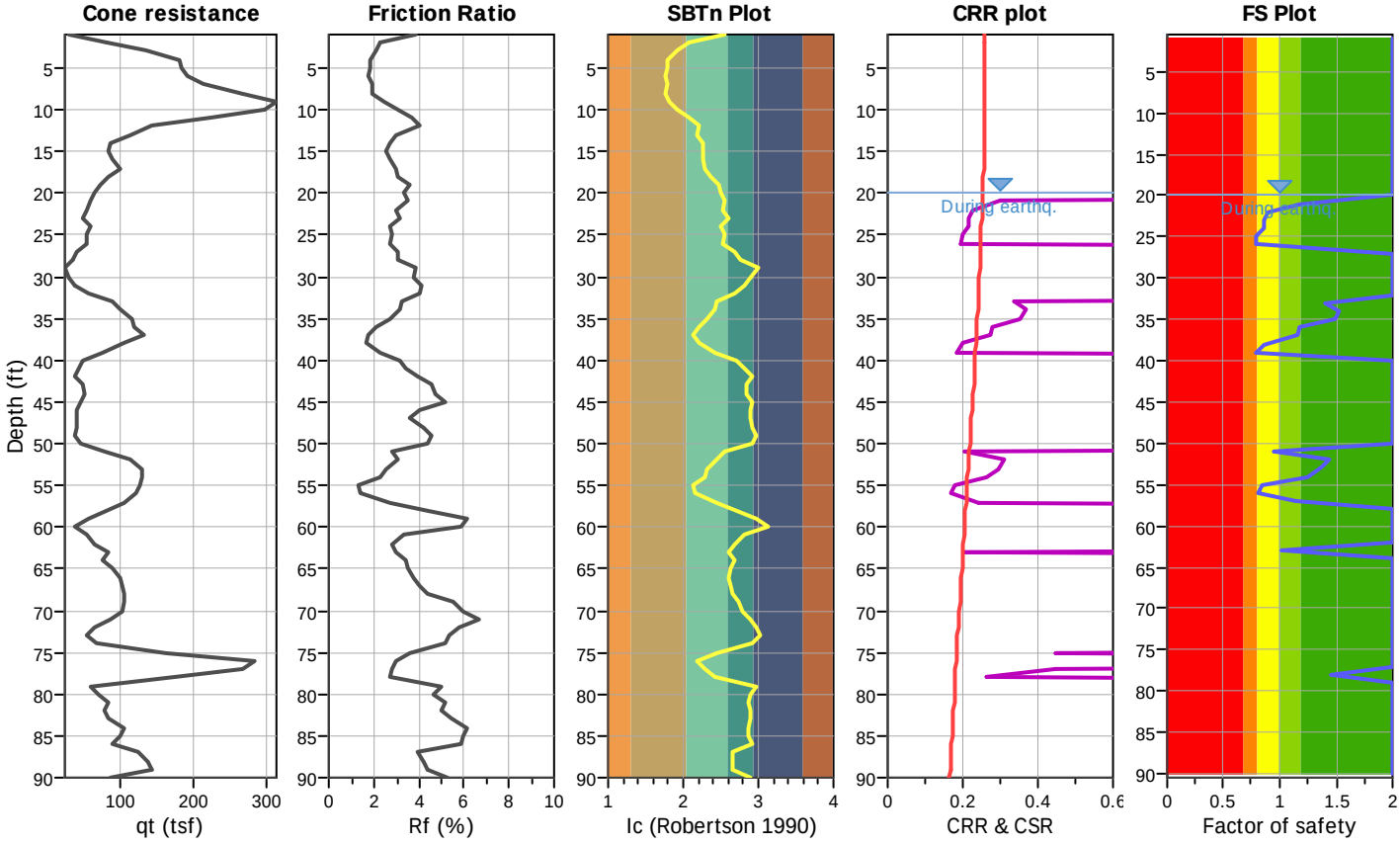
LIQUEFACTION ANALYSIS REPORT

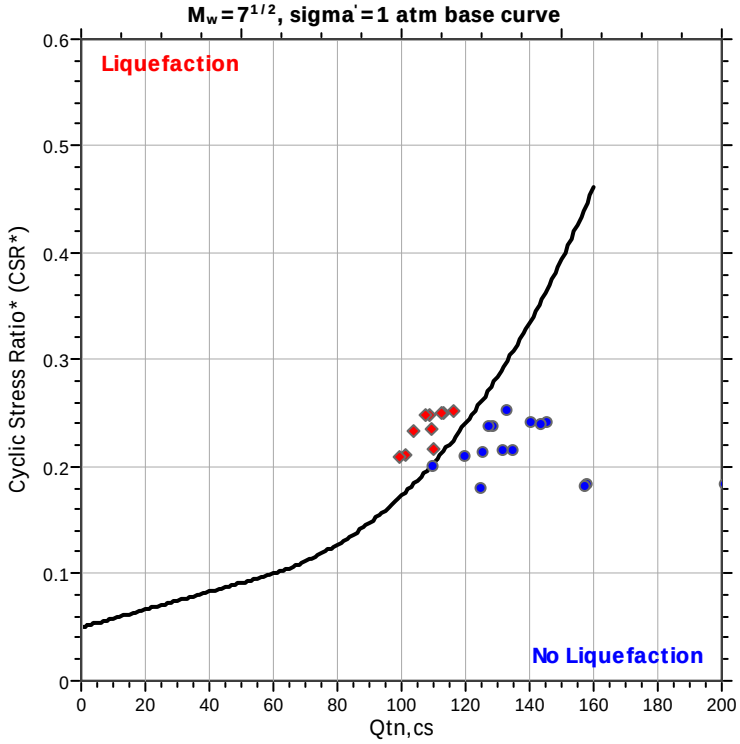
Project title : Kettner Substation **Location : San Diego, CA**

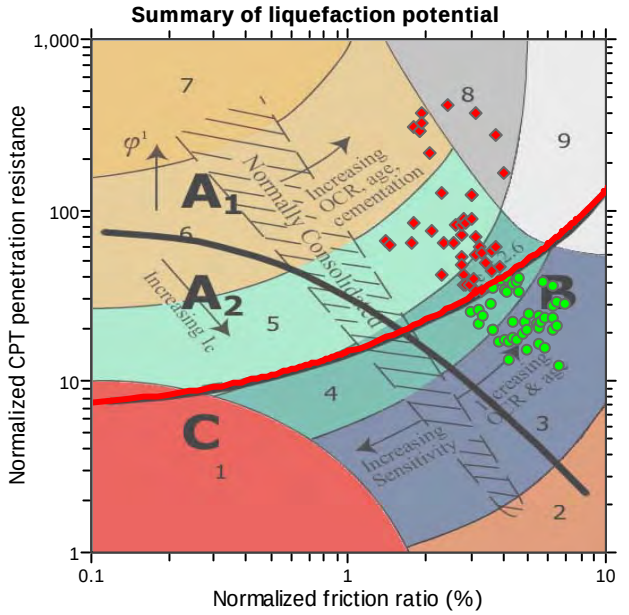
CPT file : CPT-16i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	100.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

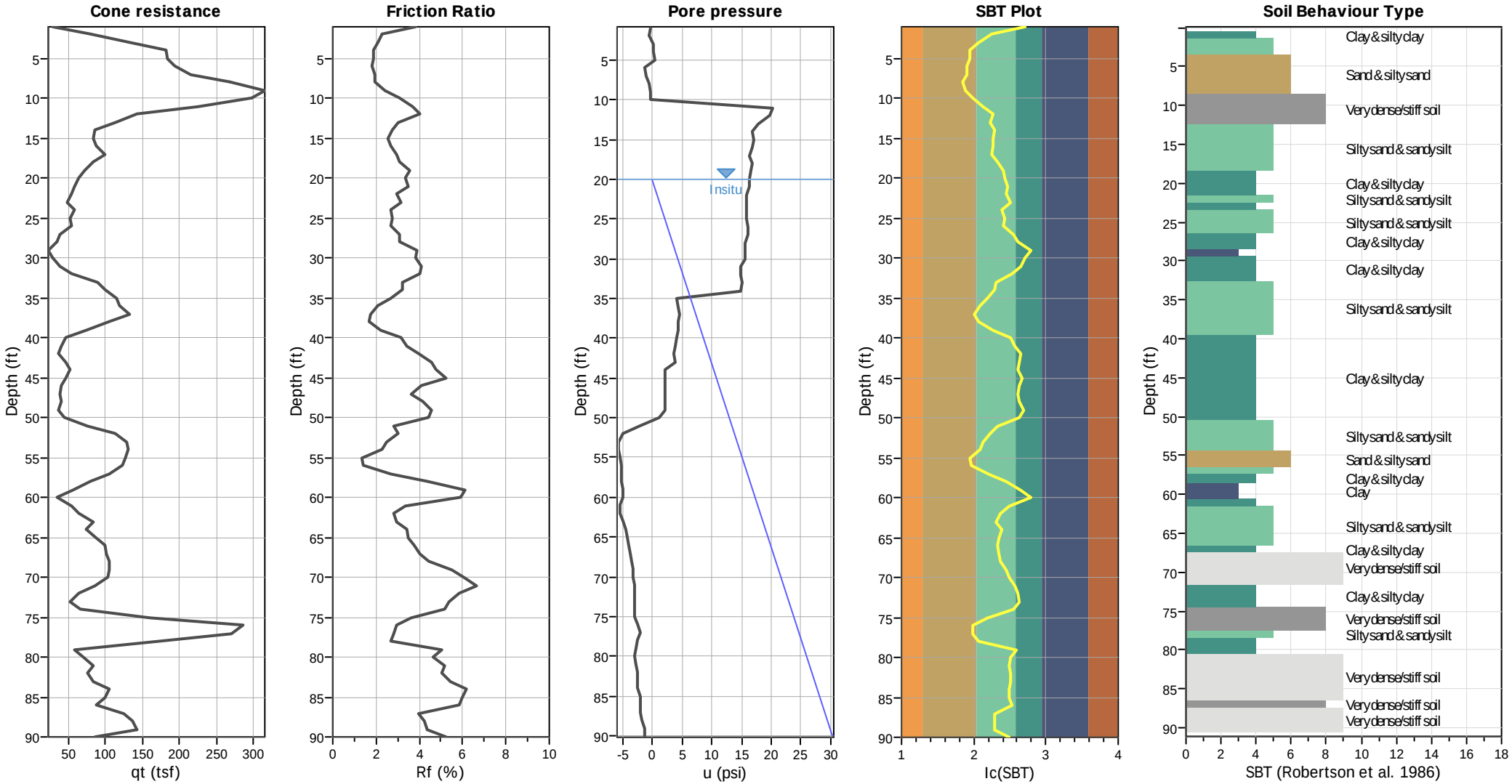






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



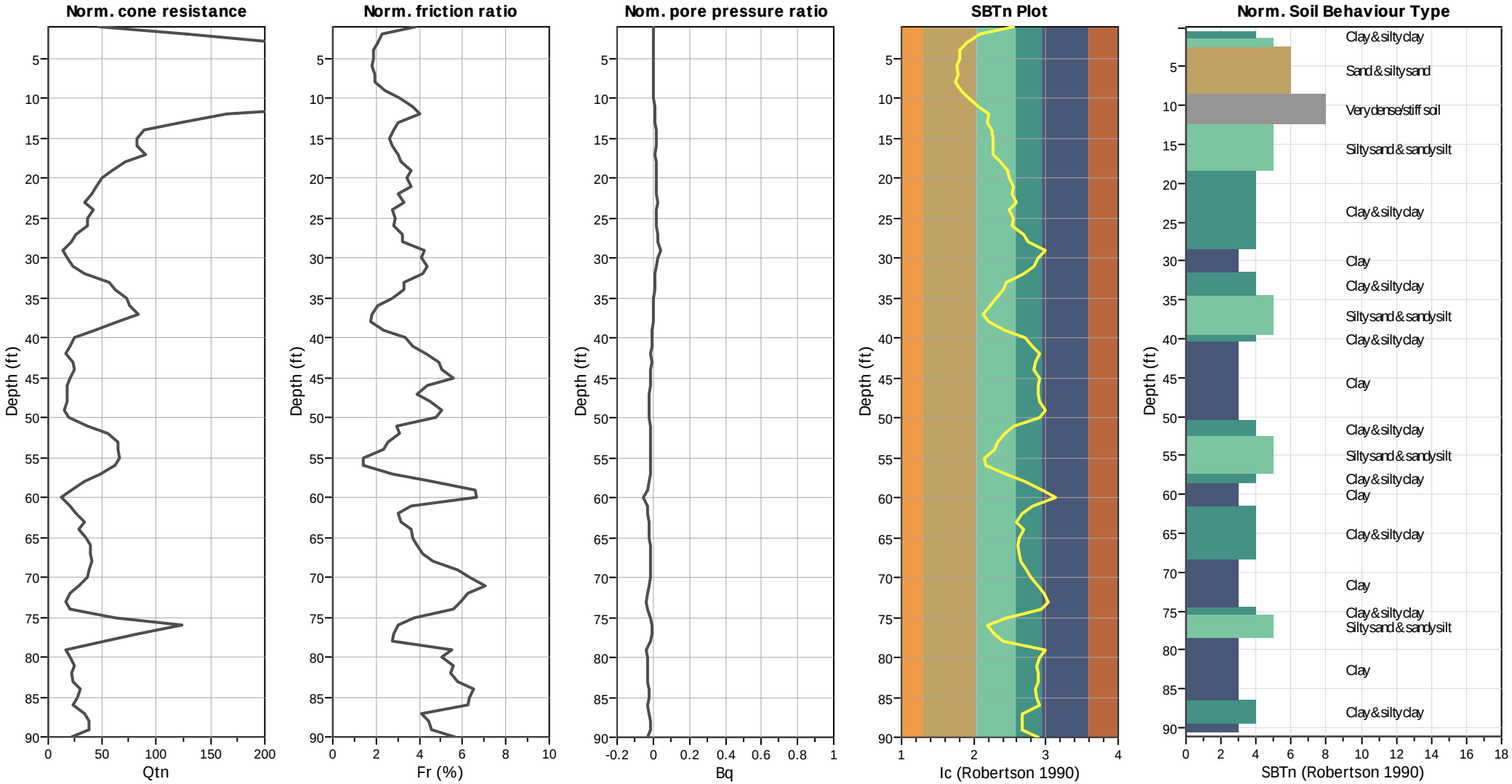
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



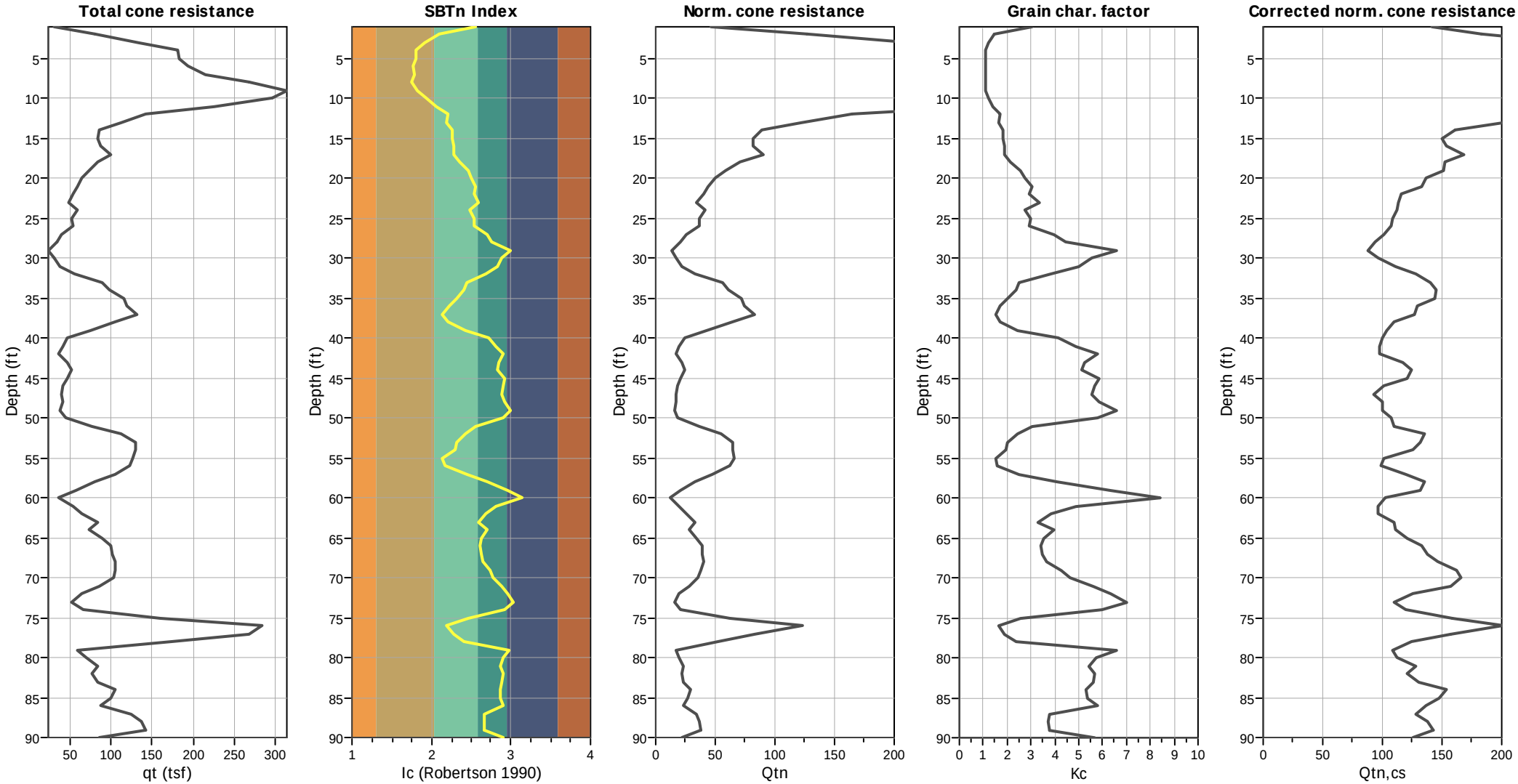
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

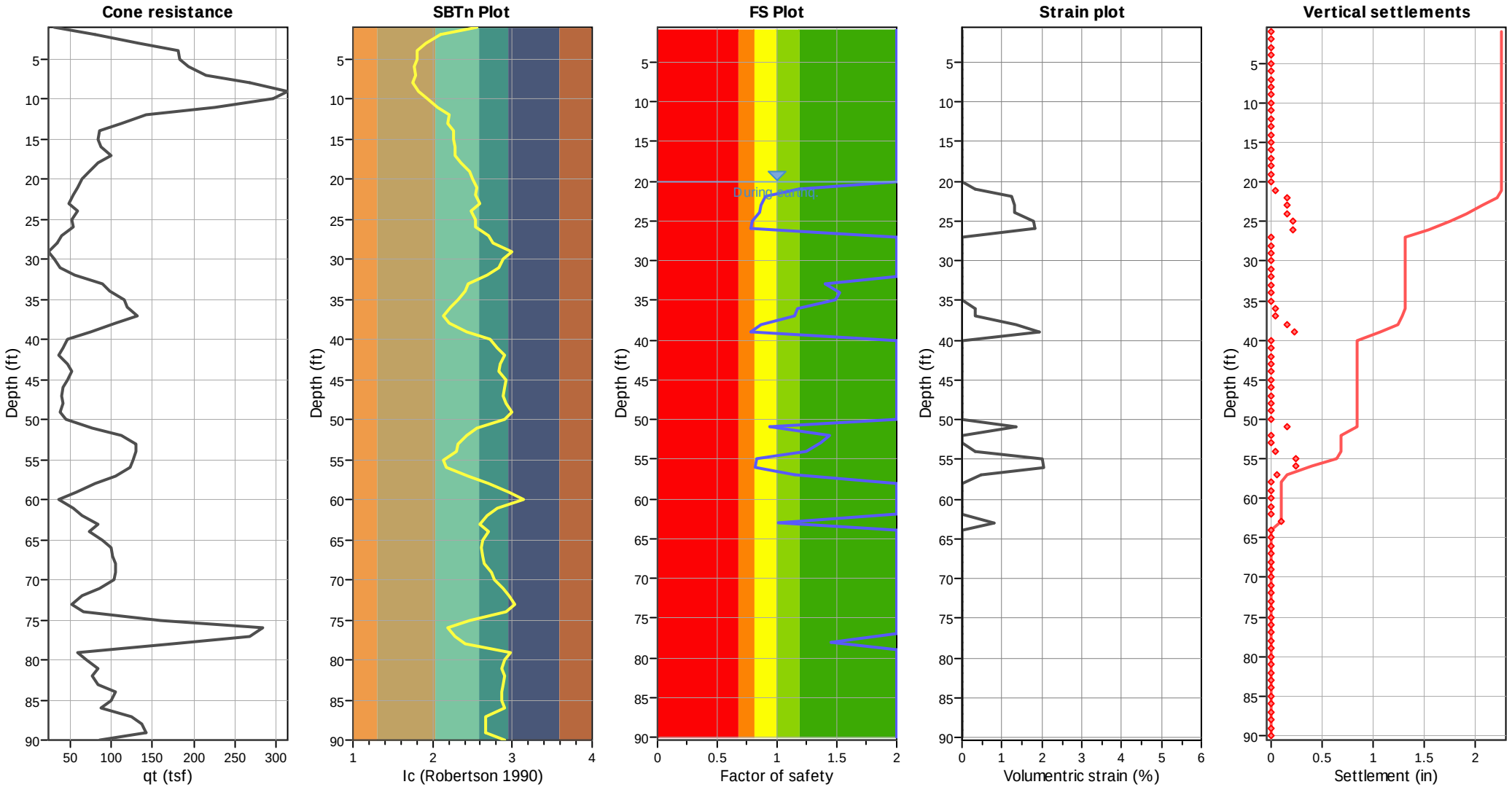
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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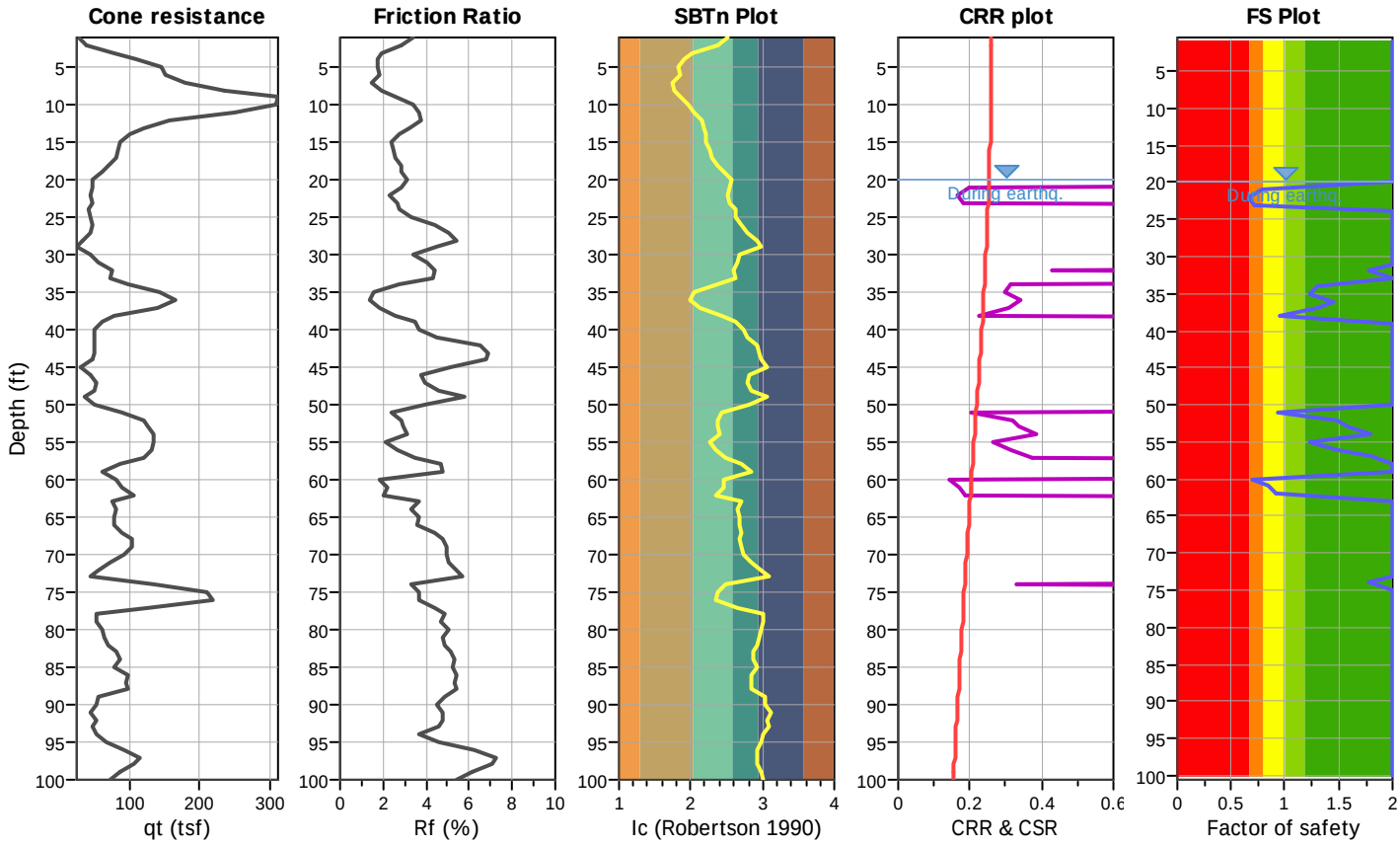
LIQUEFACTION ANALYSIS REPORT

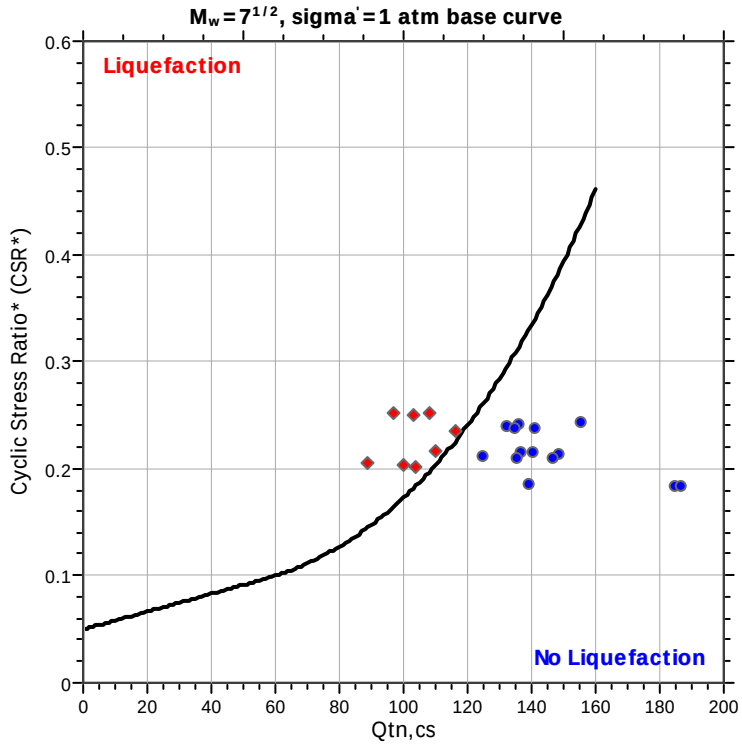
Project title : Kettner Substation **Location : San Diego, CA**

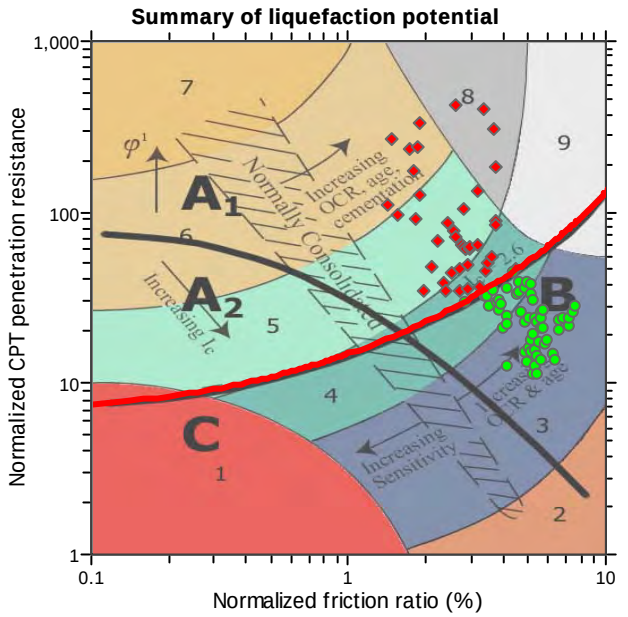
CPT file : CPT-17i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	100.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

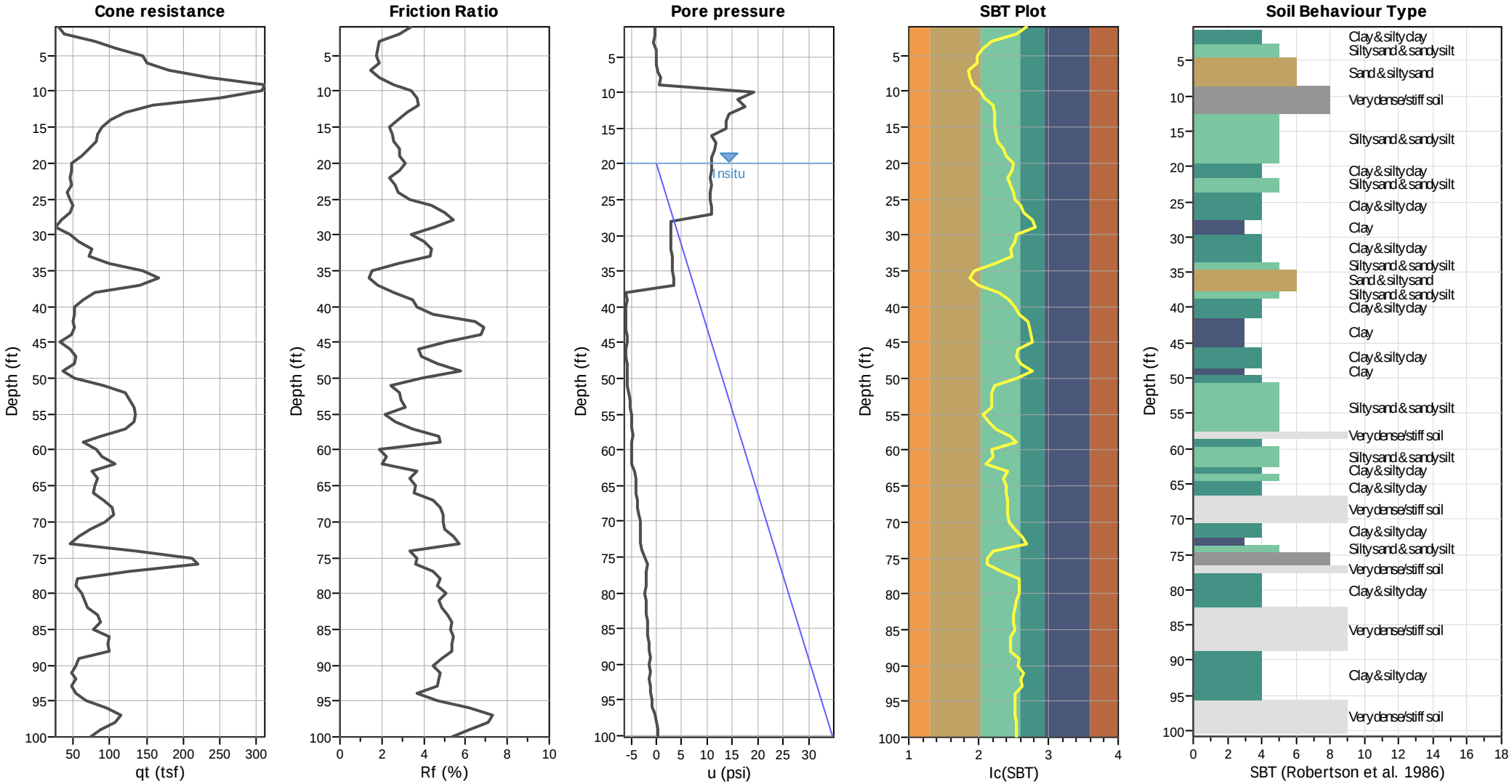






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



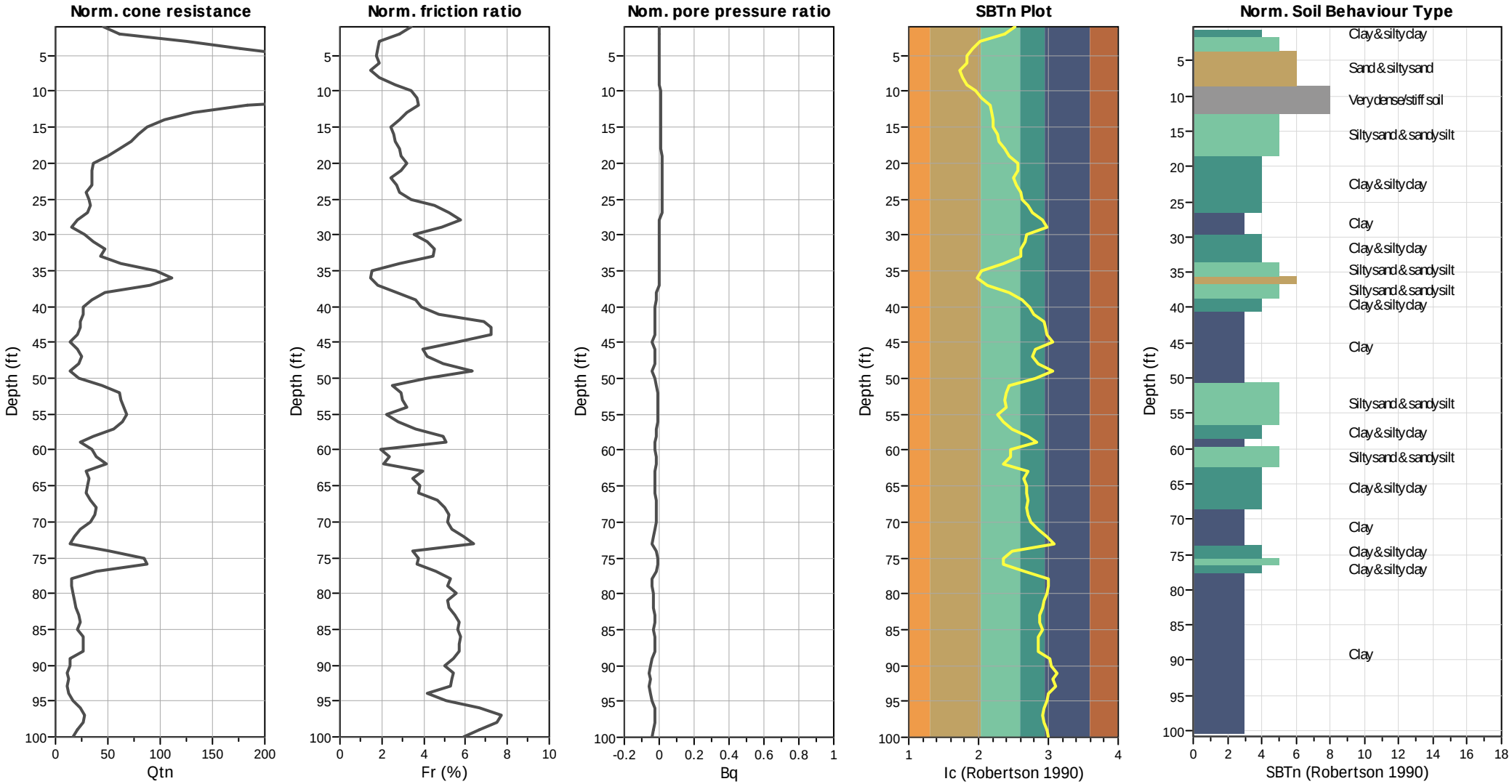
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



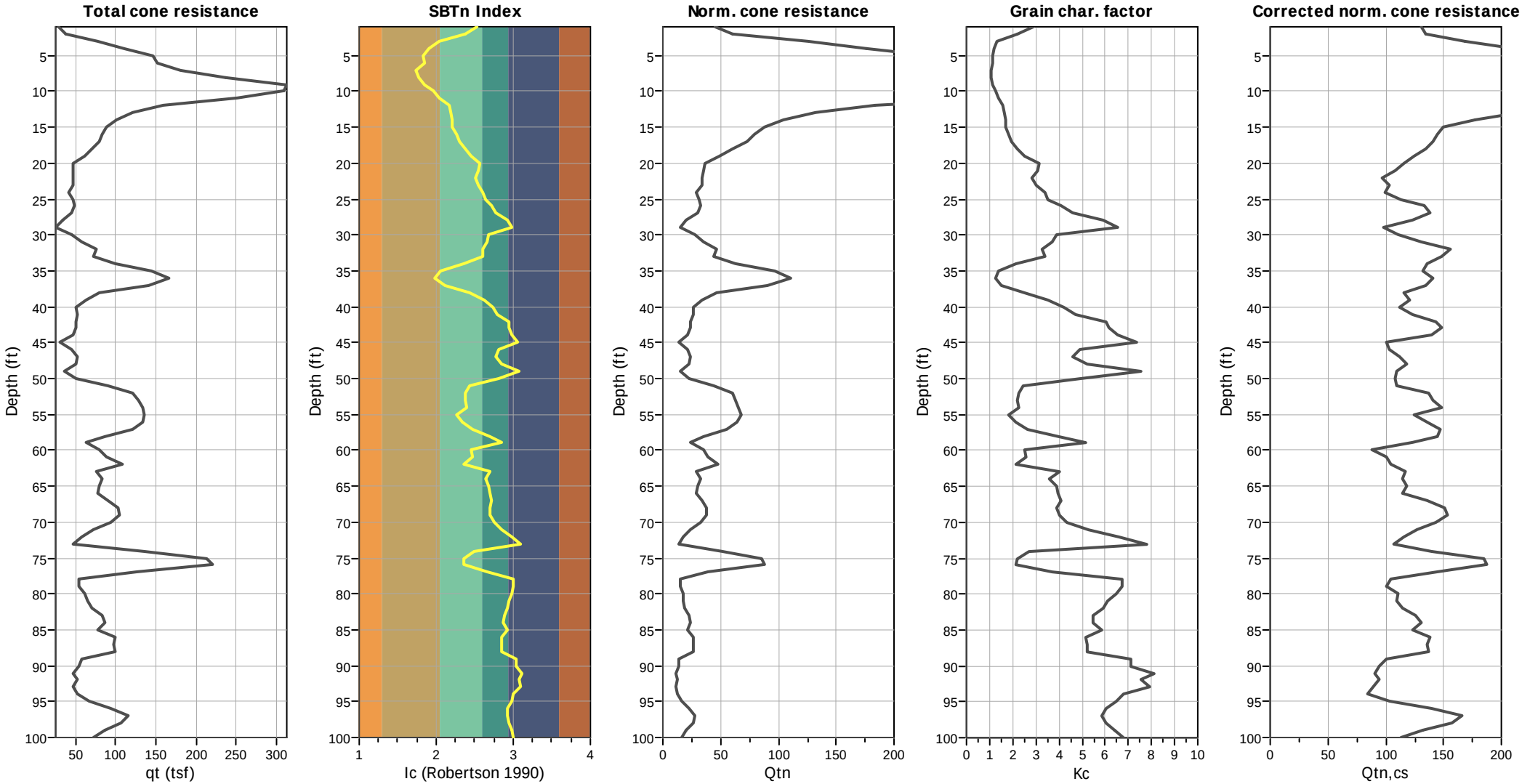
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

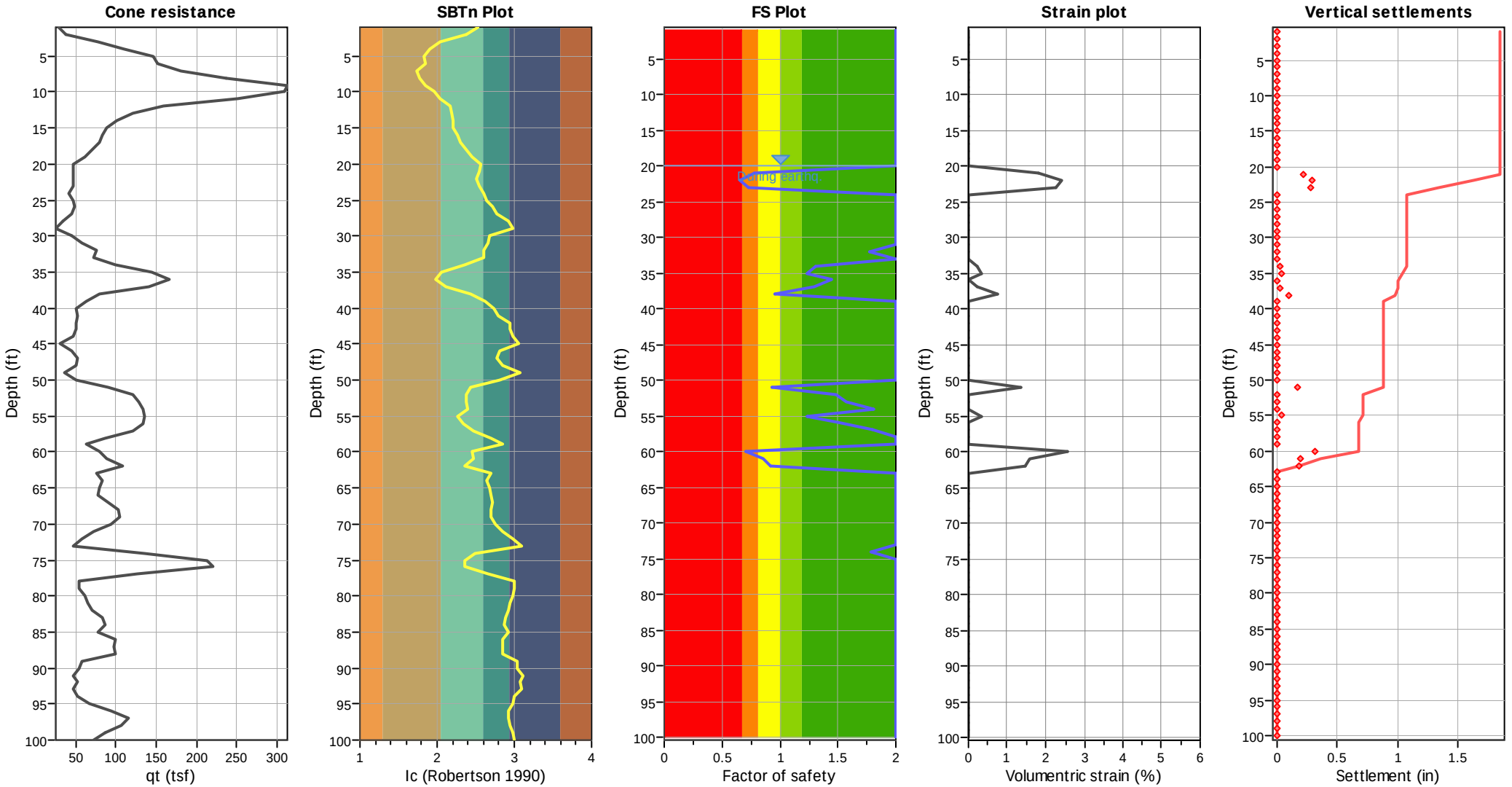
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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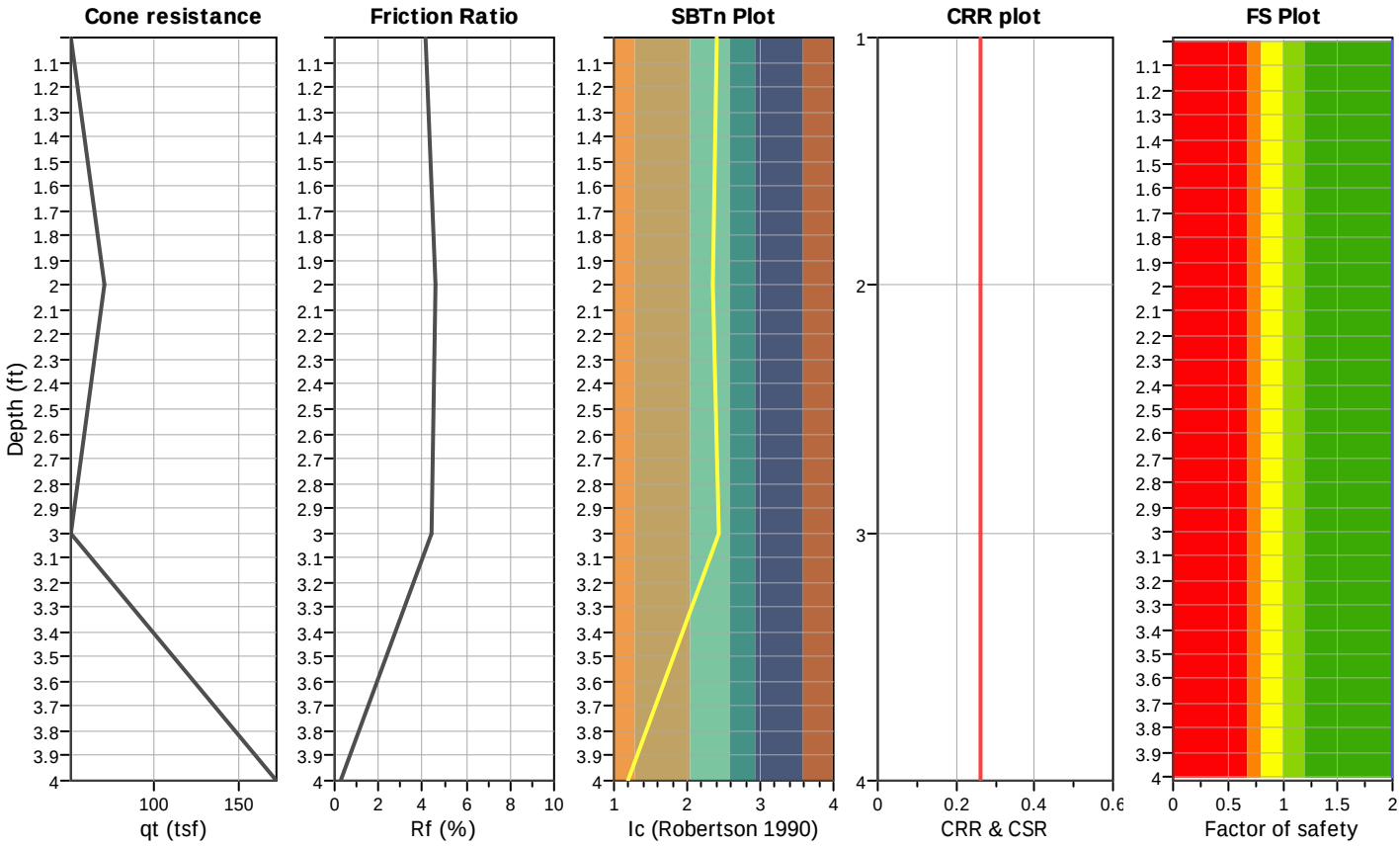
LIQUEFACTION ANALYSIS REPORT

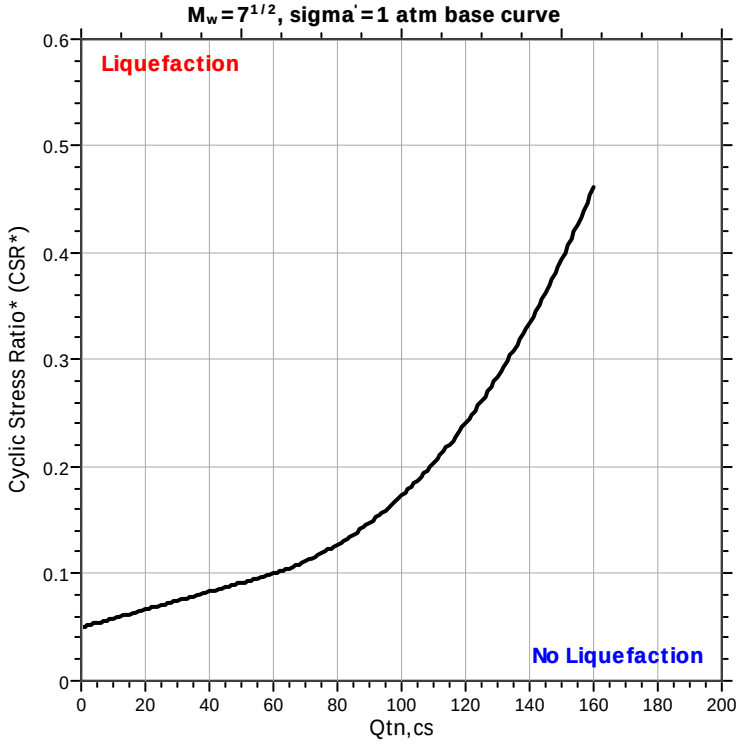
Project title : Kettner Substation **Location : San Diego, CA**

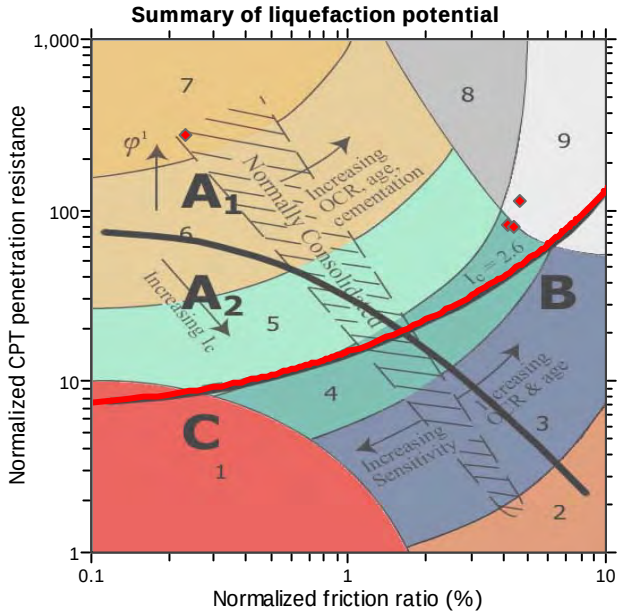
CPT file : CPT-18i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	4.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	No	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

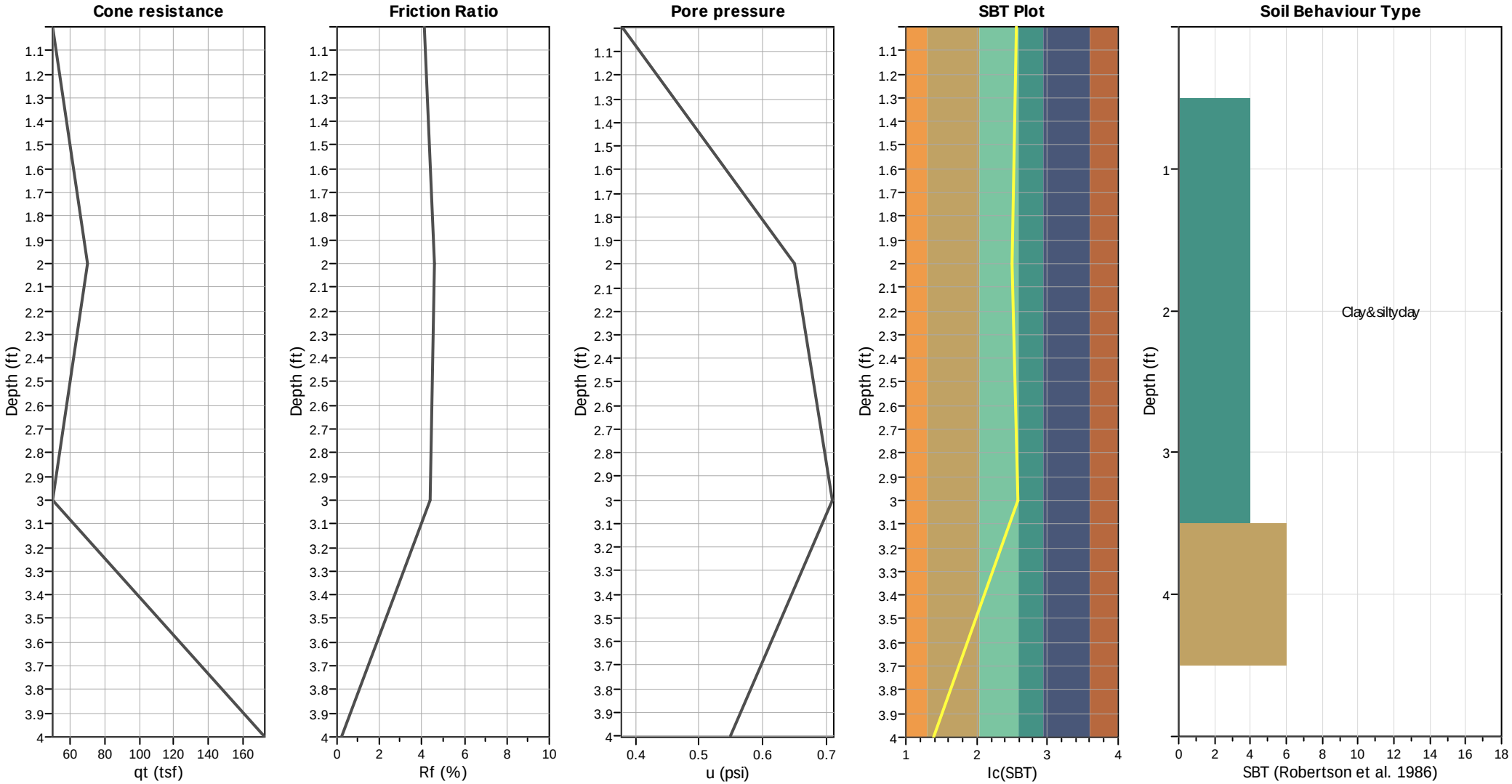






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



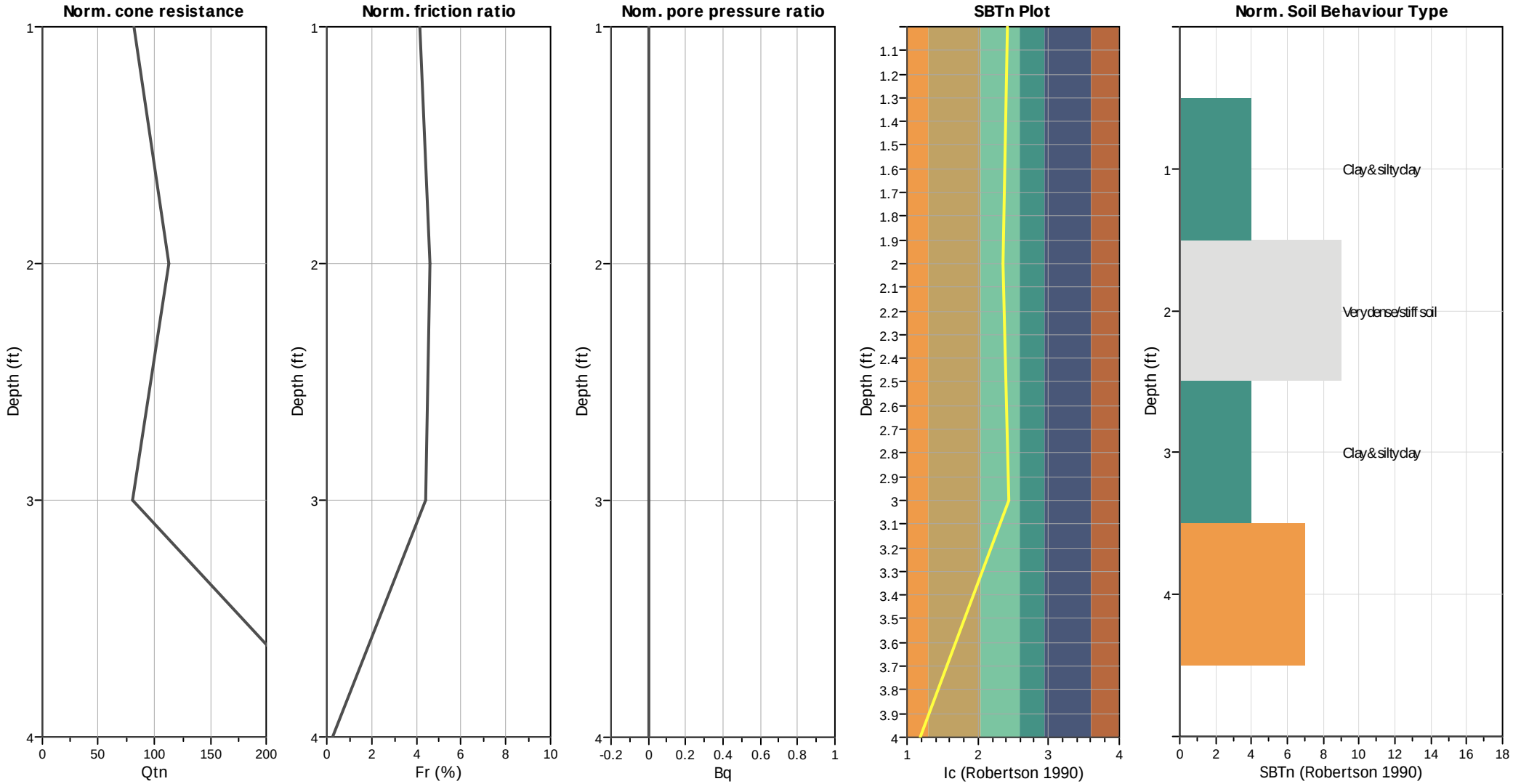
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	4.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



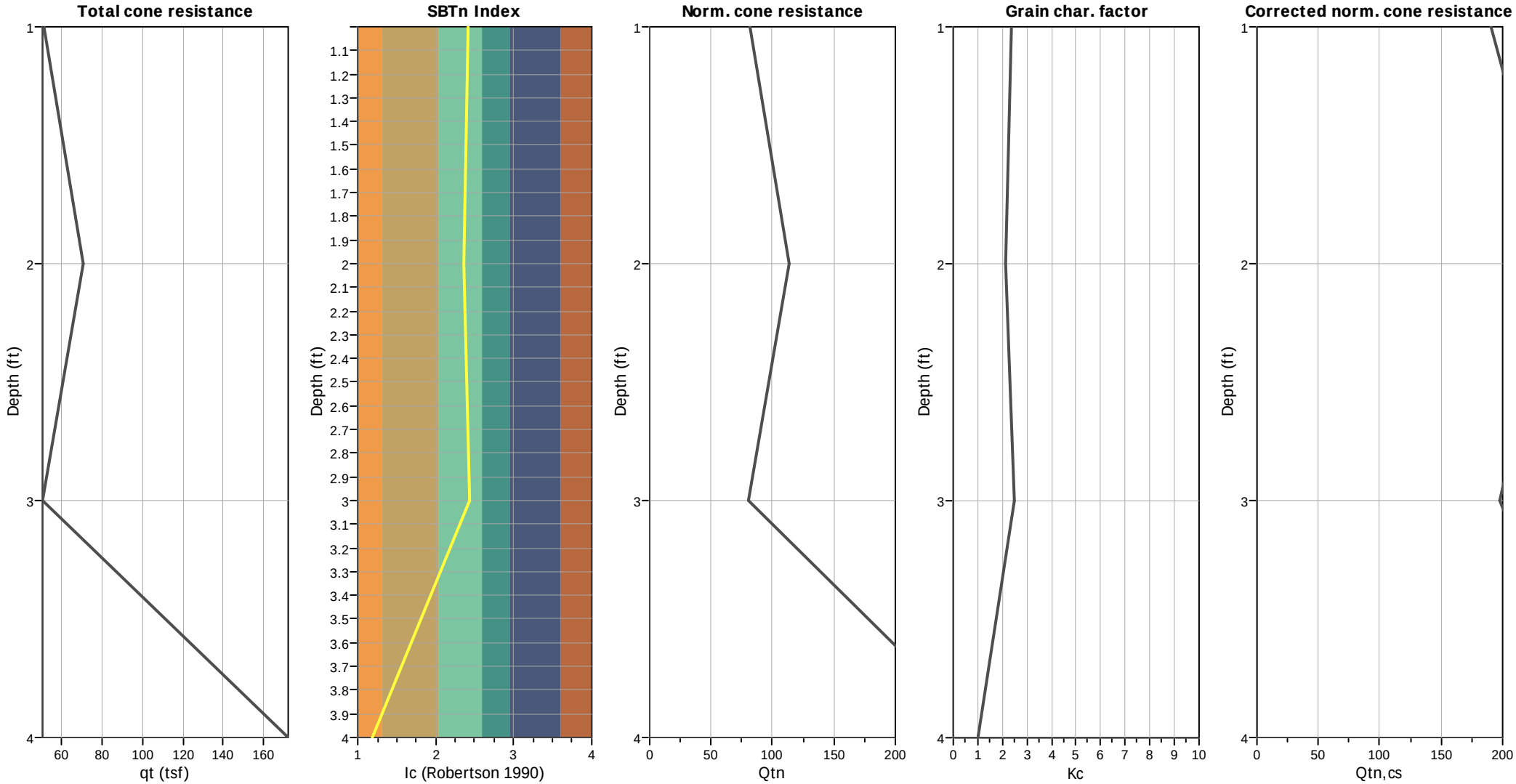
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	4.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

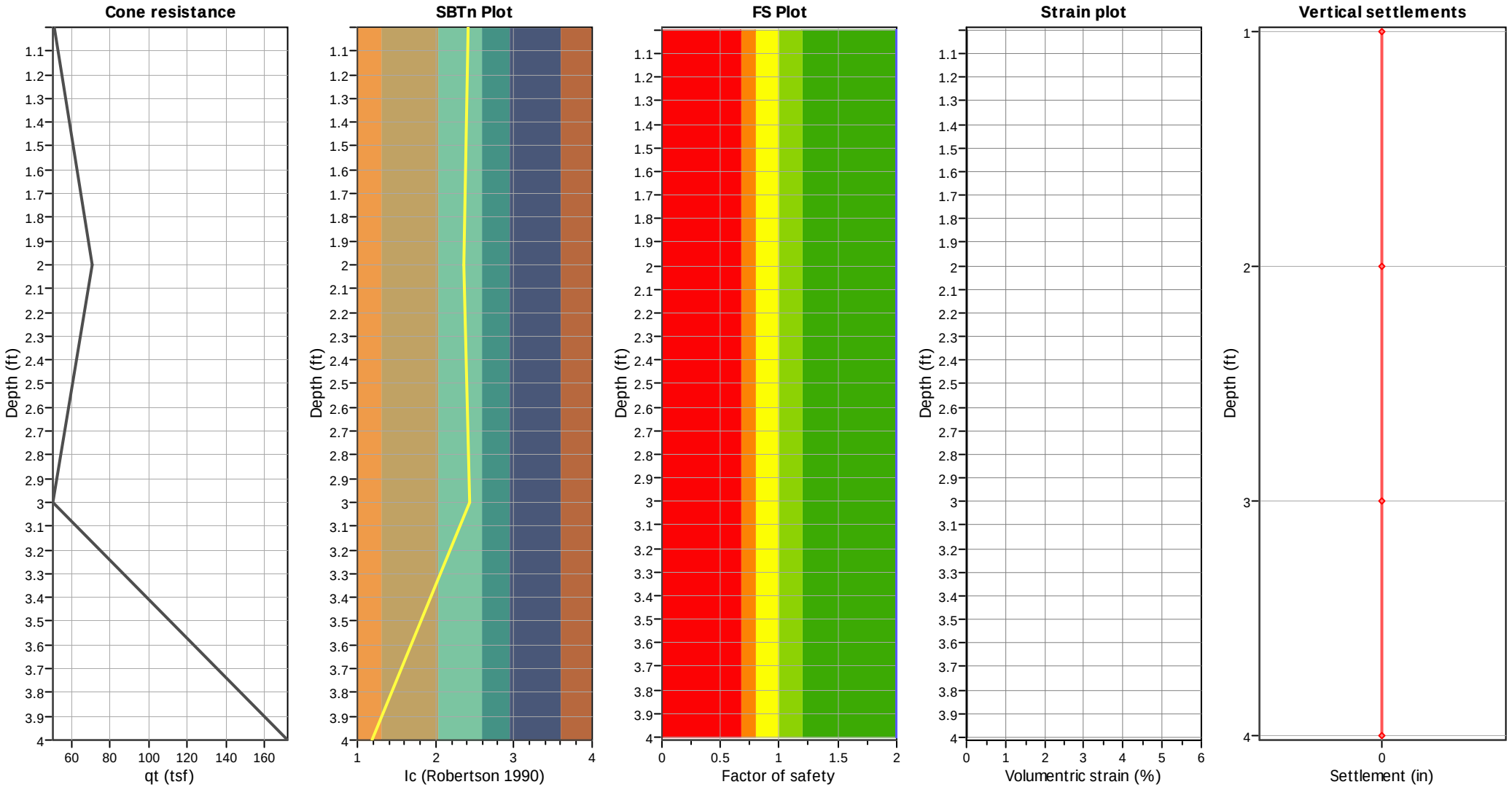
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	4.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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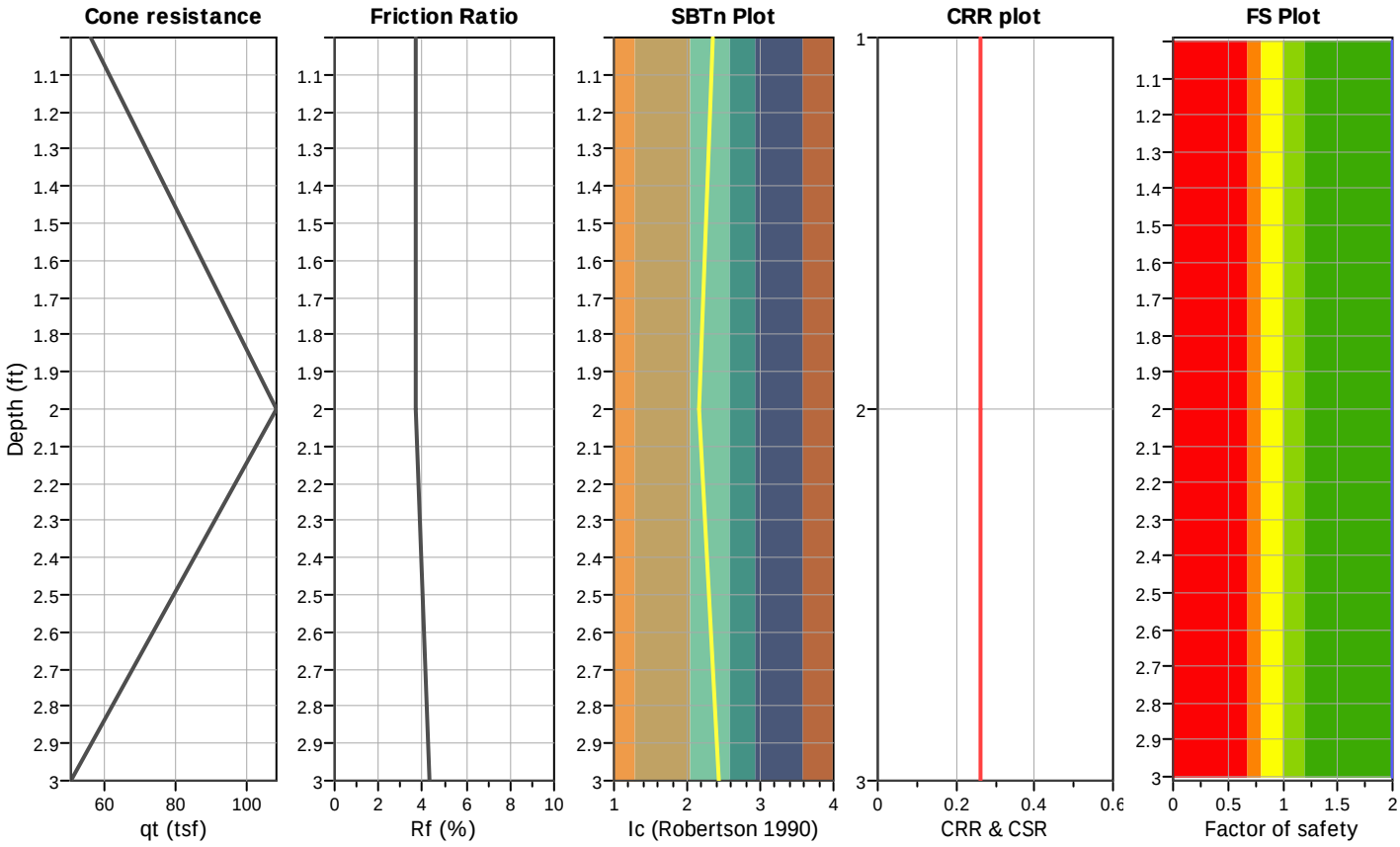
LIQUEFACTION ANALYSIS REPORT

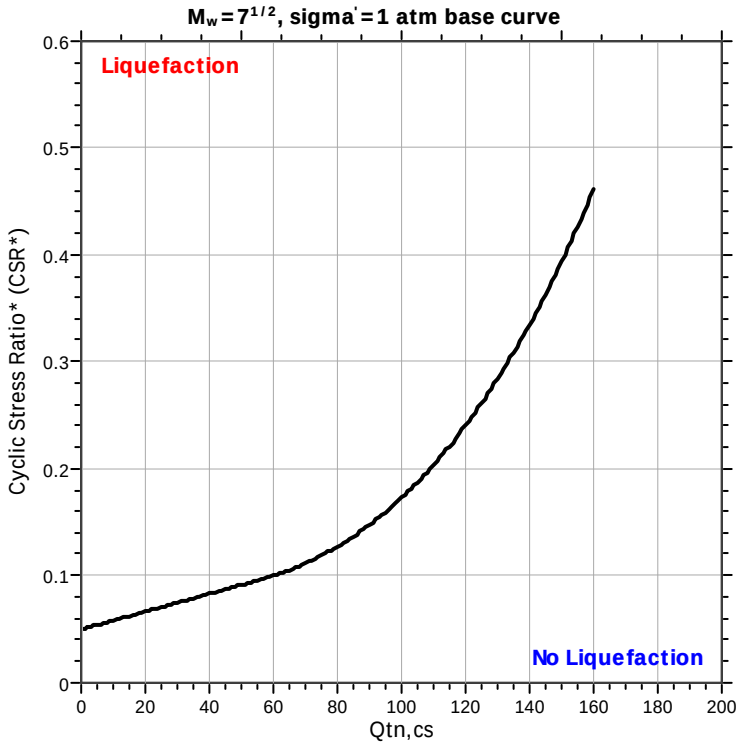
Project title : Kettner Substation **Location : San Diego, CA**

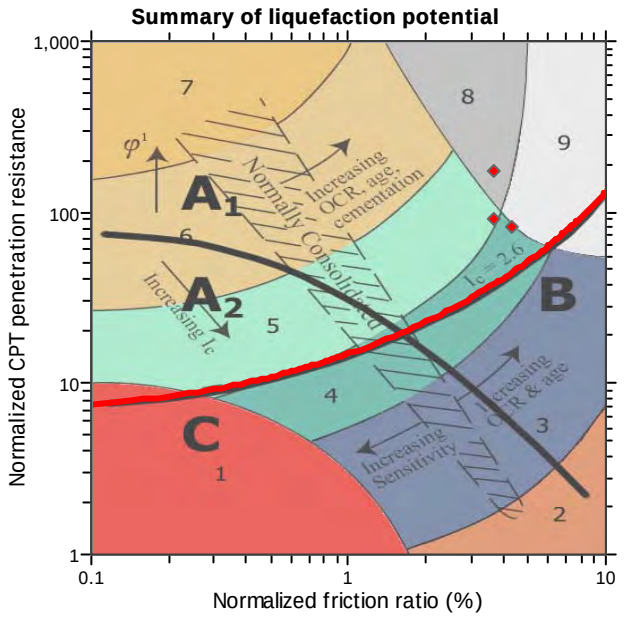
CPT file : CPT-18Ai

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	3.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	No	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

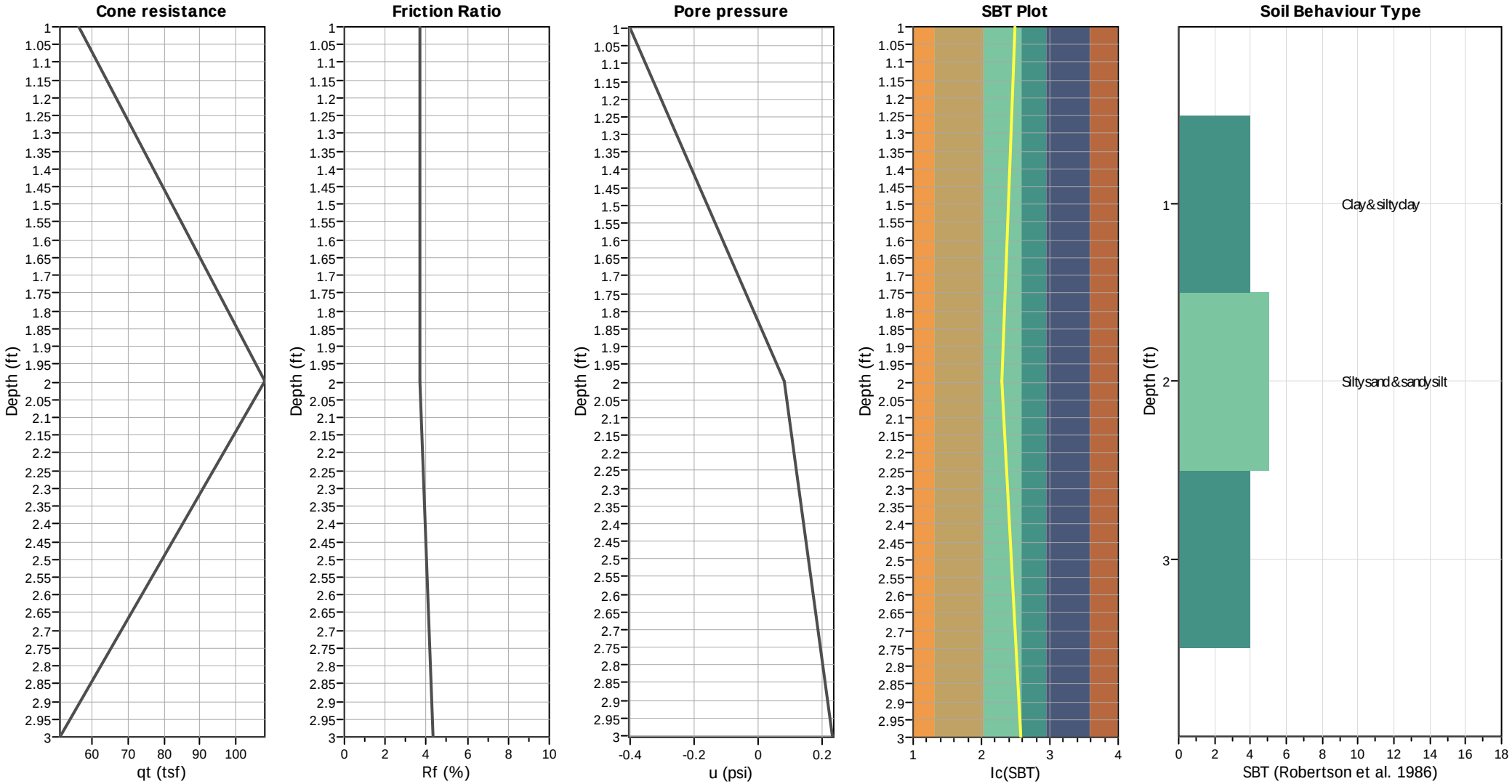






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



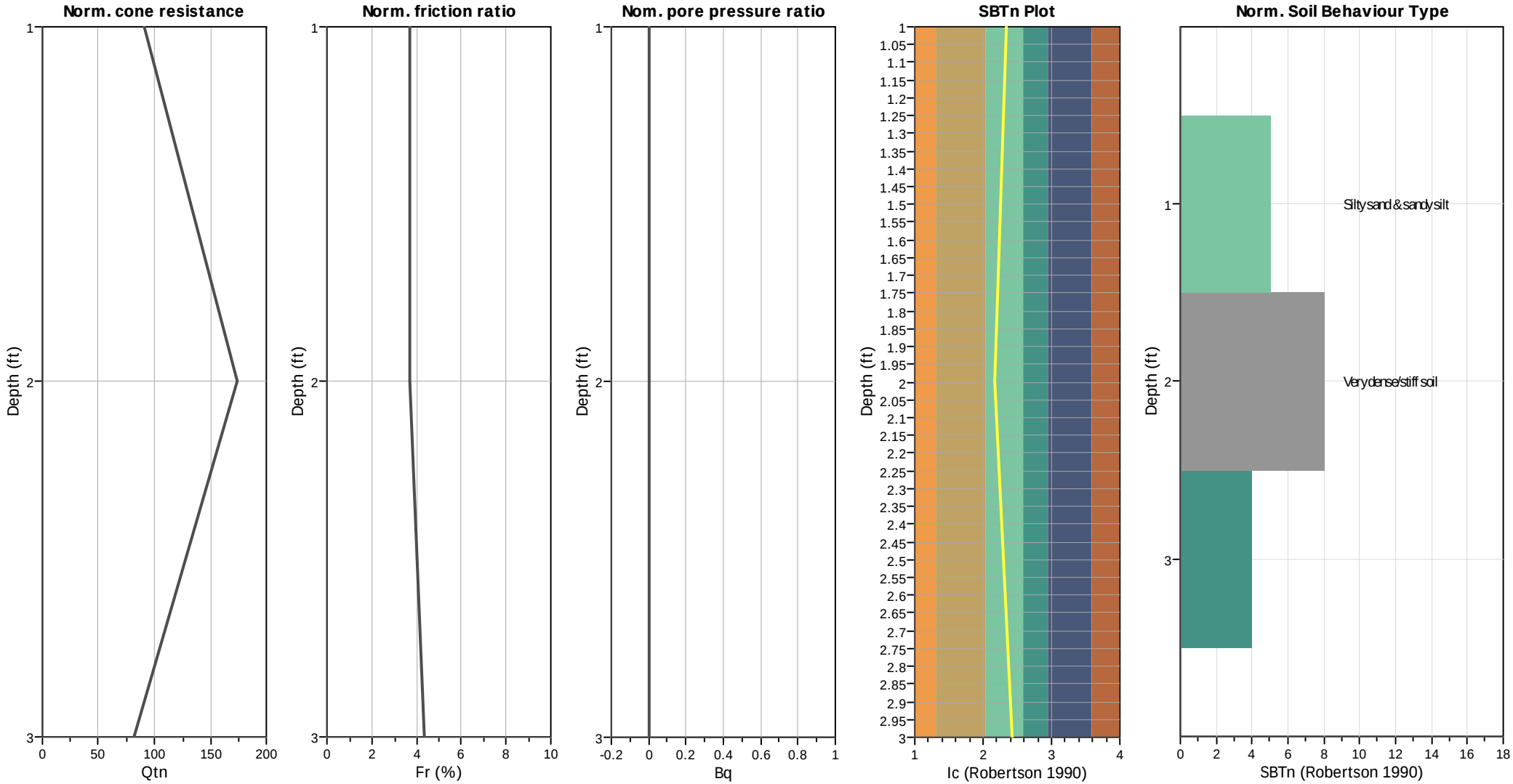
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	3.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



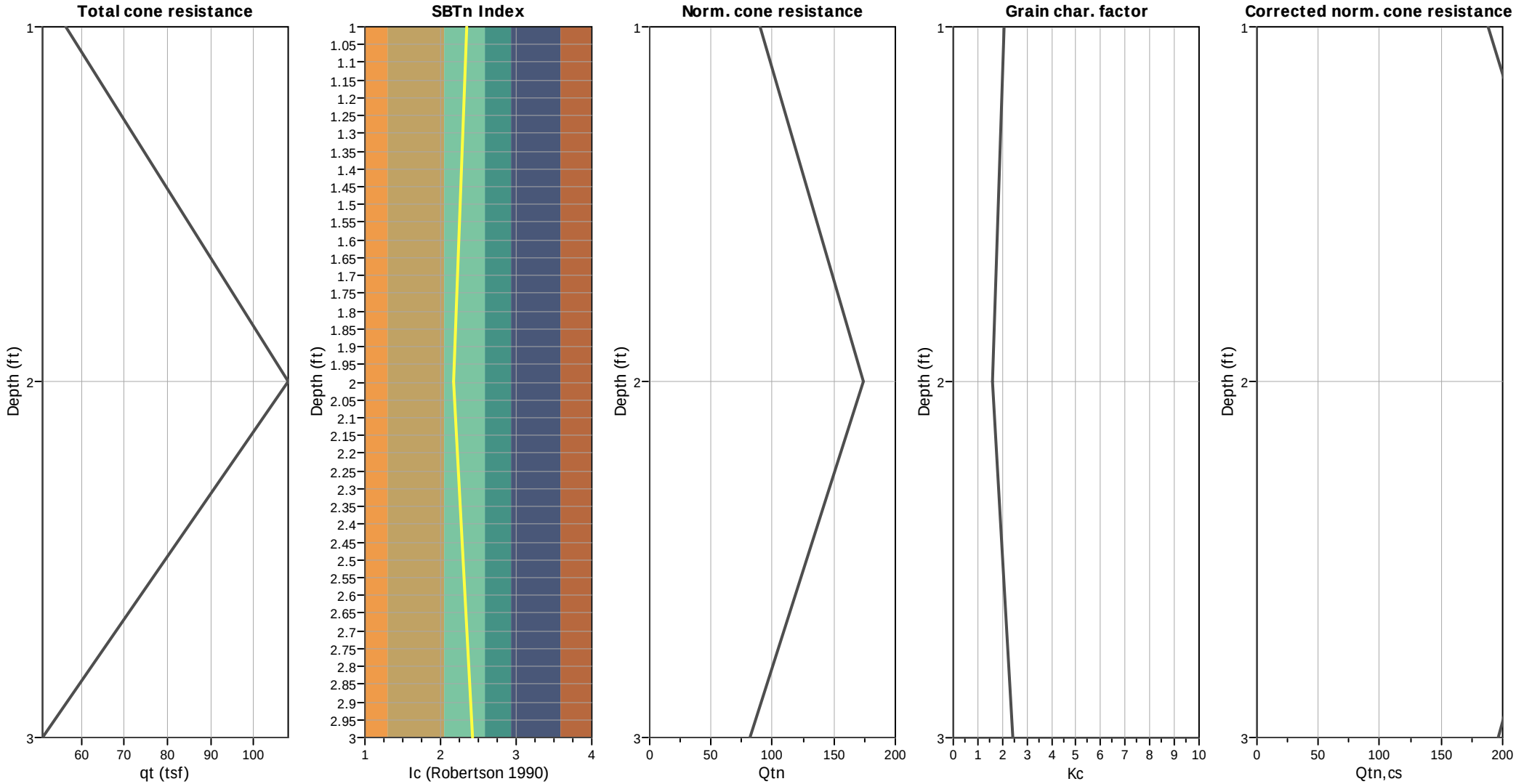
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	3.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

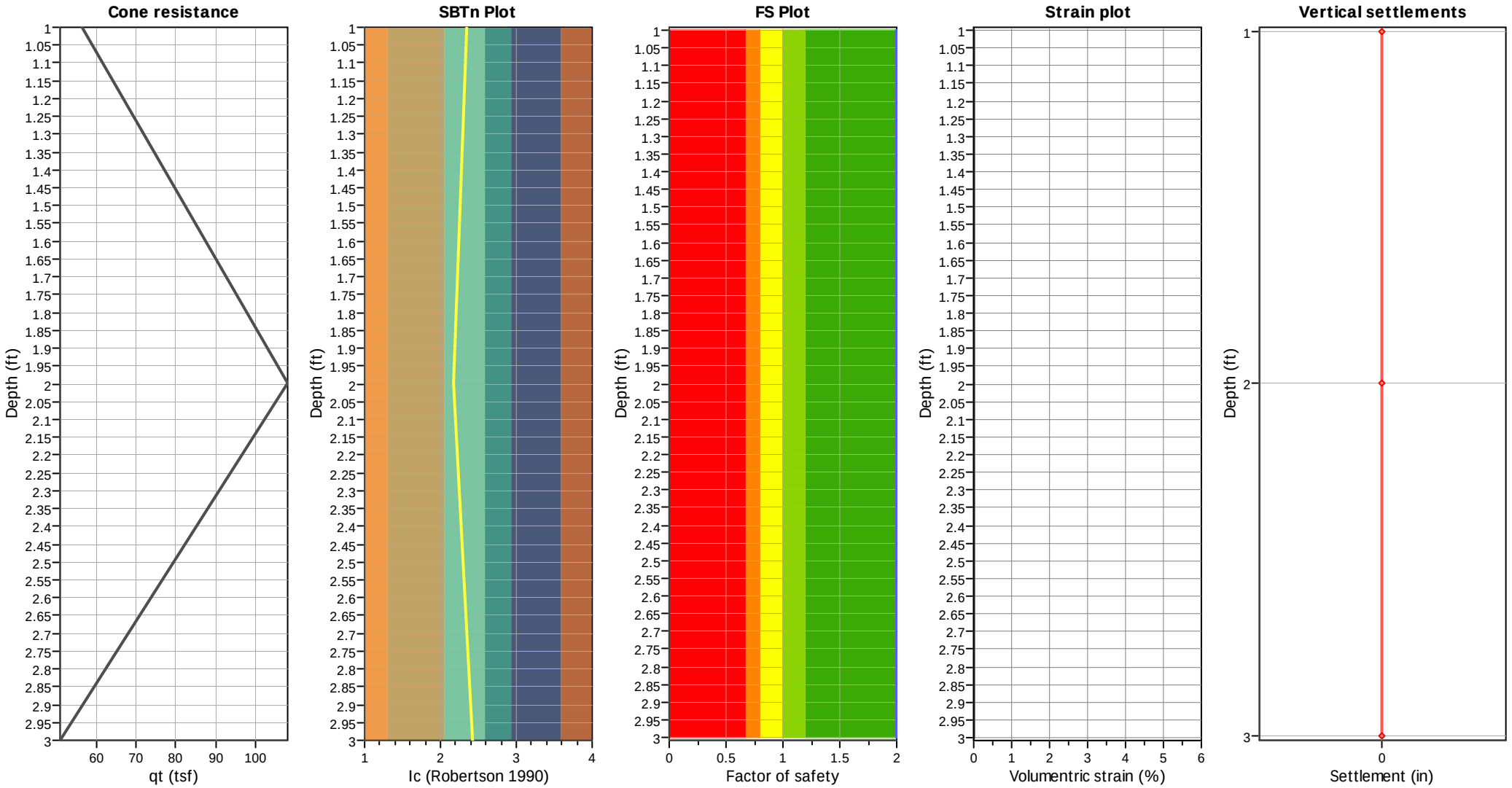
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	3.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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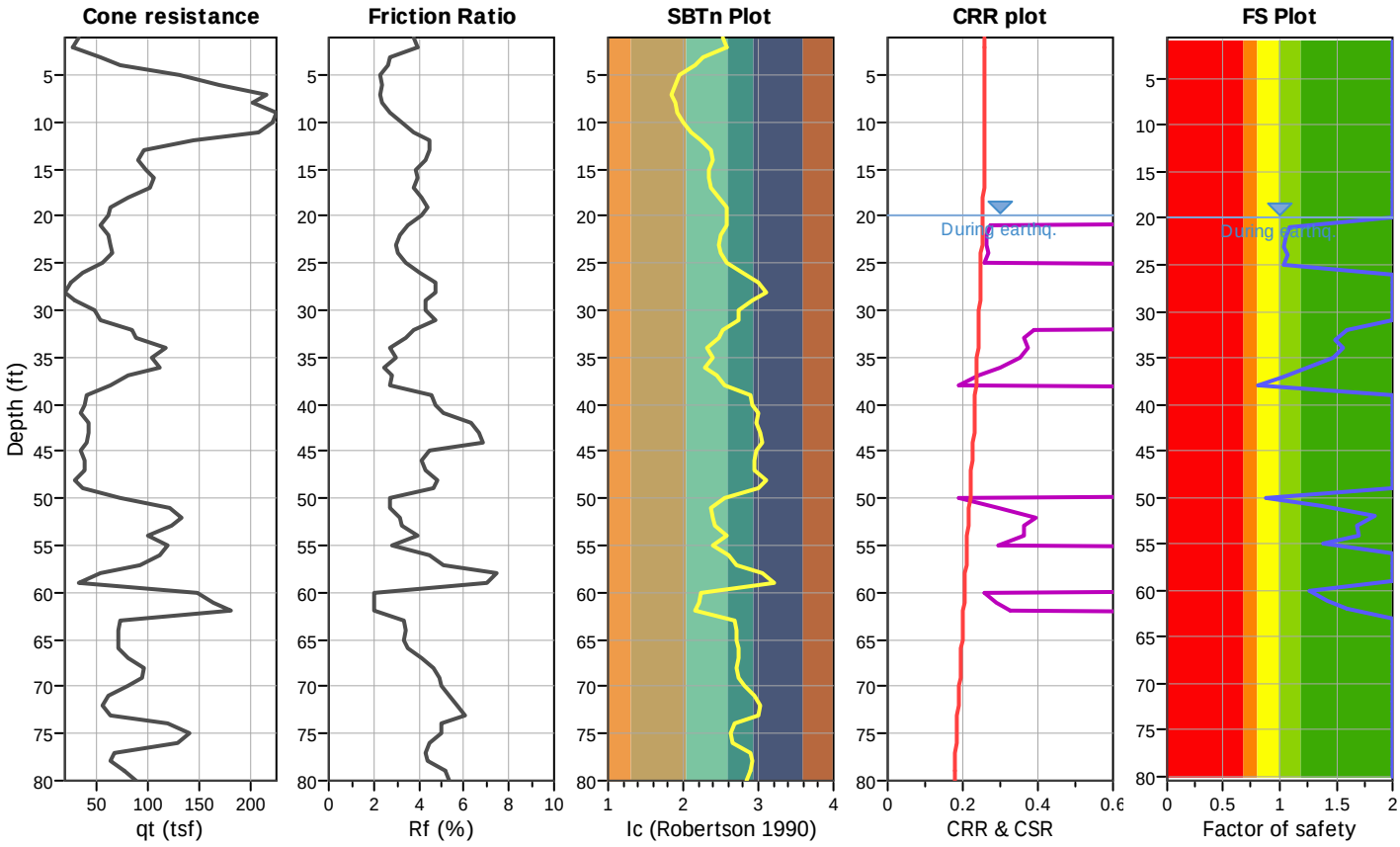
LIQUEFACTION ANALYSIS REPORT

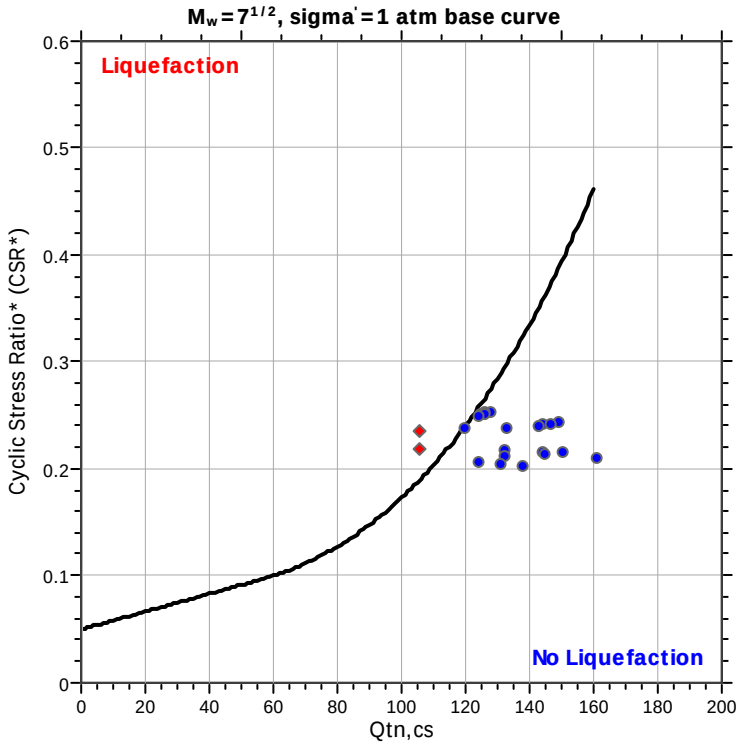
Project title : Kettner Substation **Location : San Diego, CA**

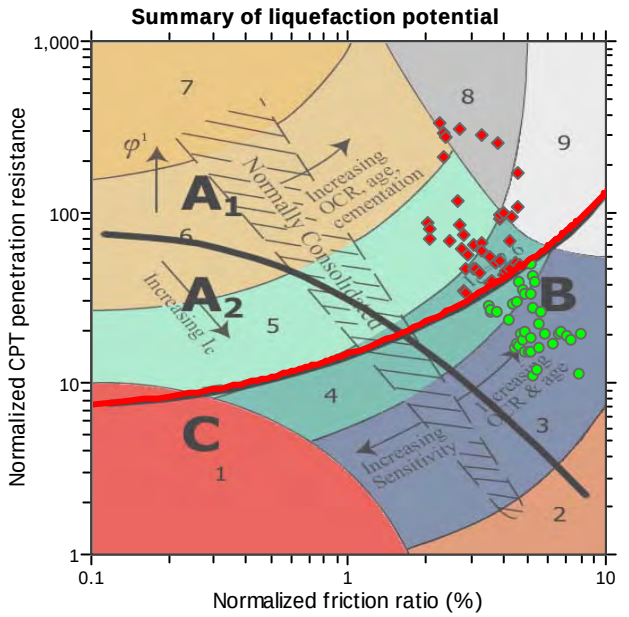
CPT file : CPT-18Ci

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	80.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

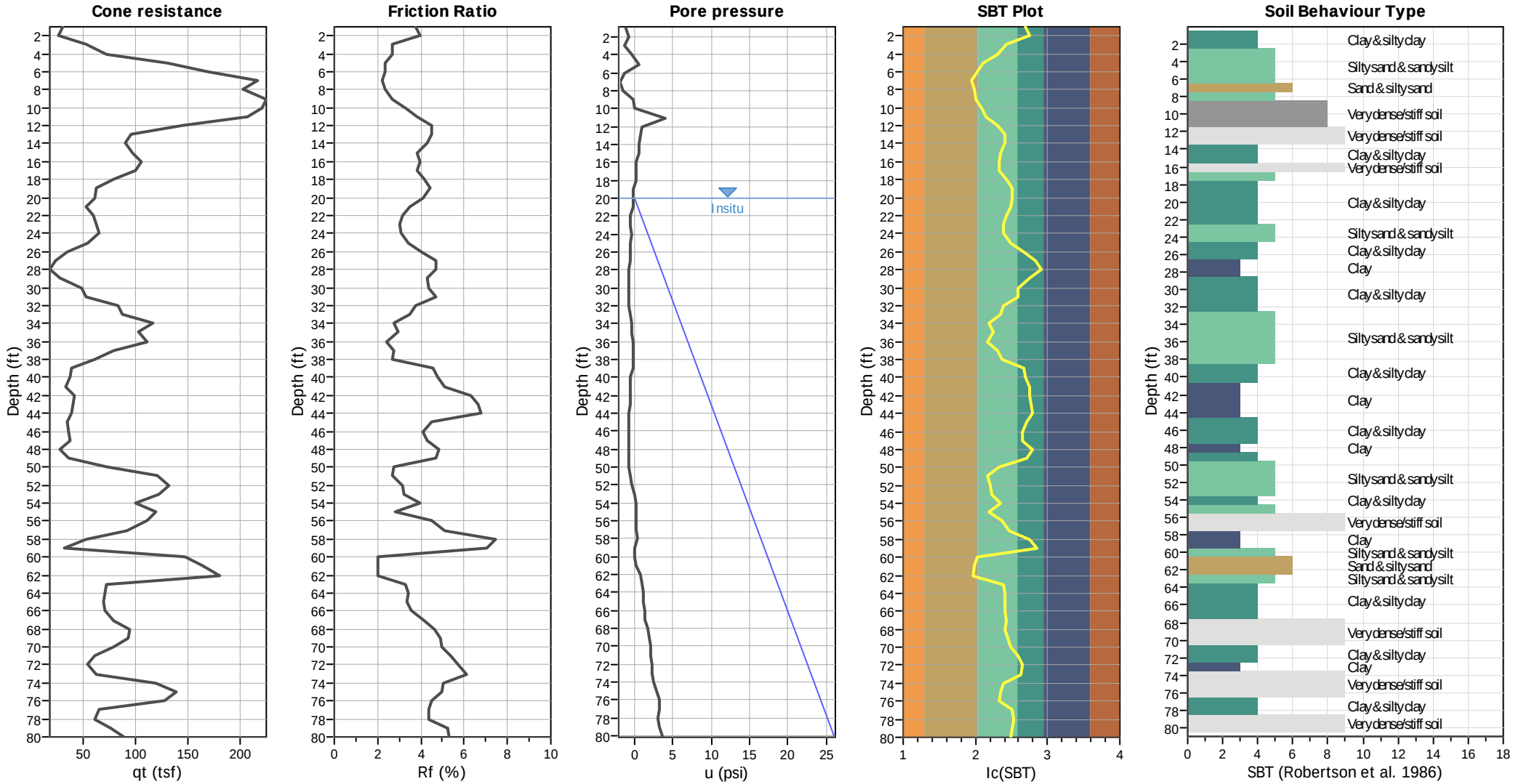






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



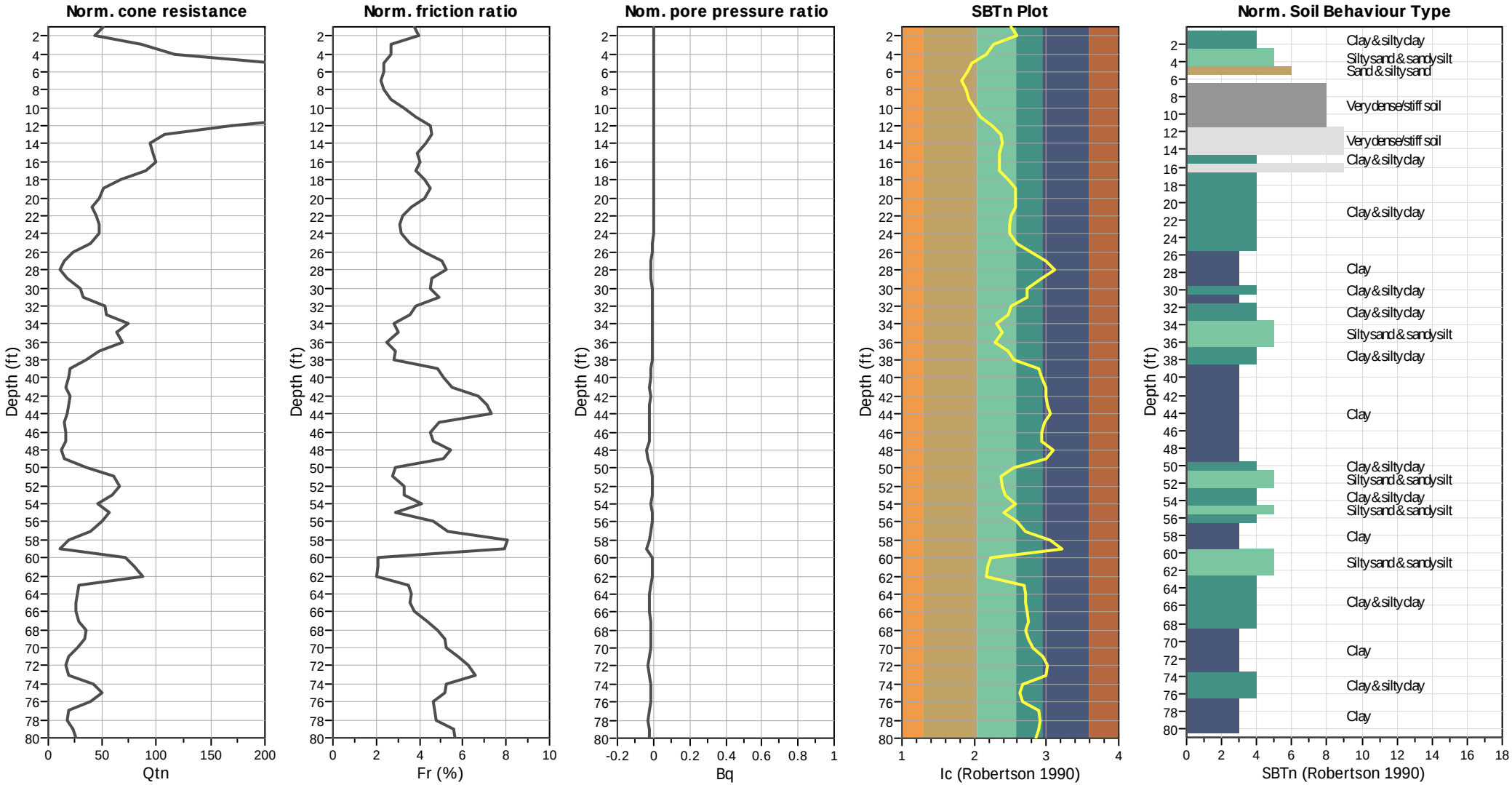
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	80.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



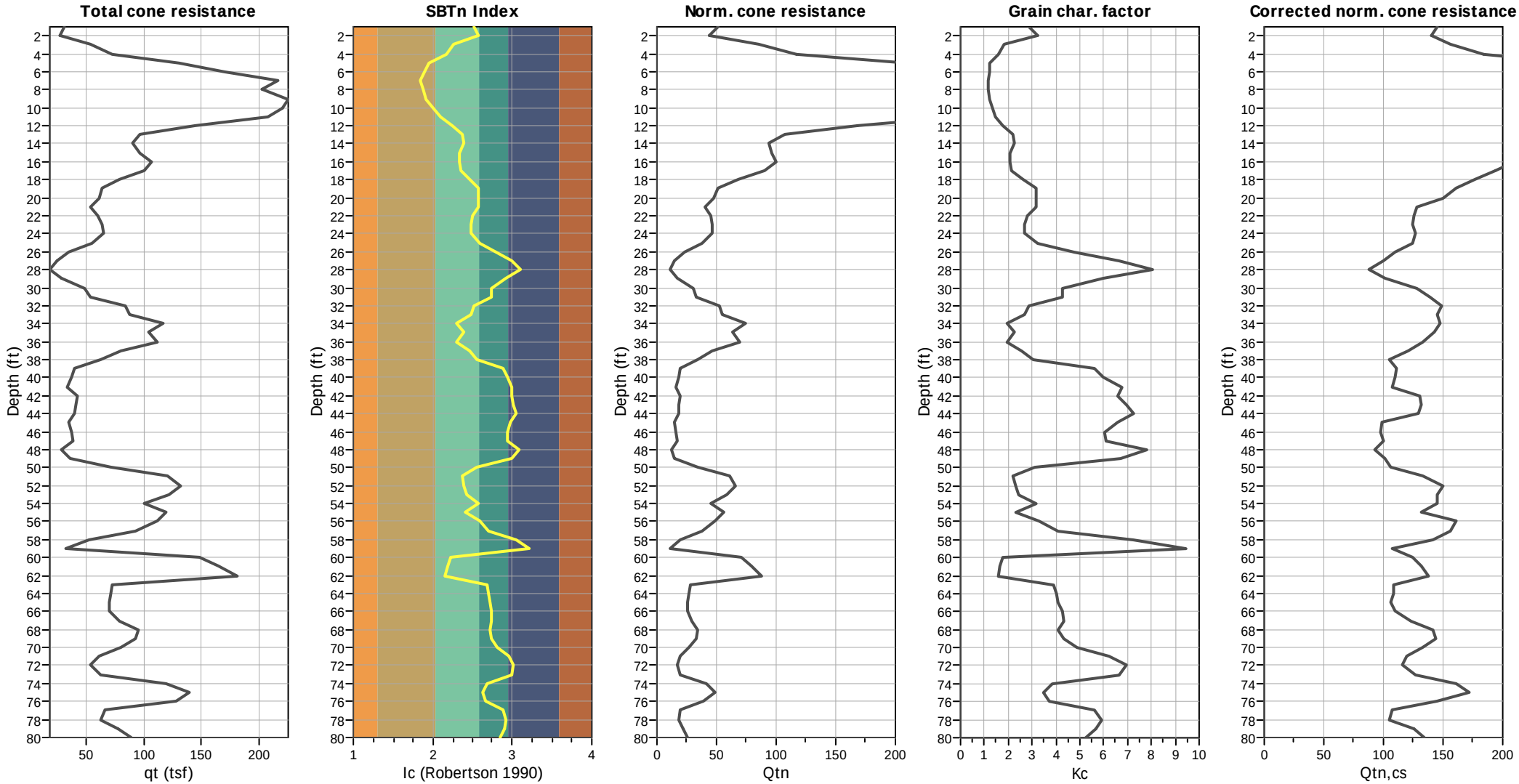
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	80.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

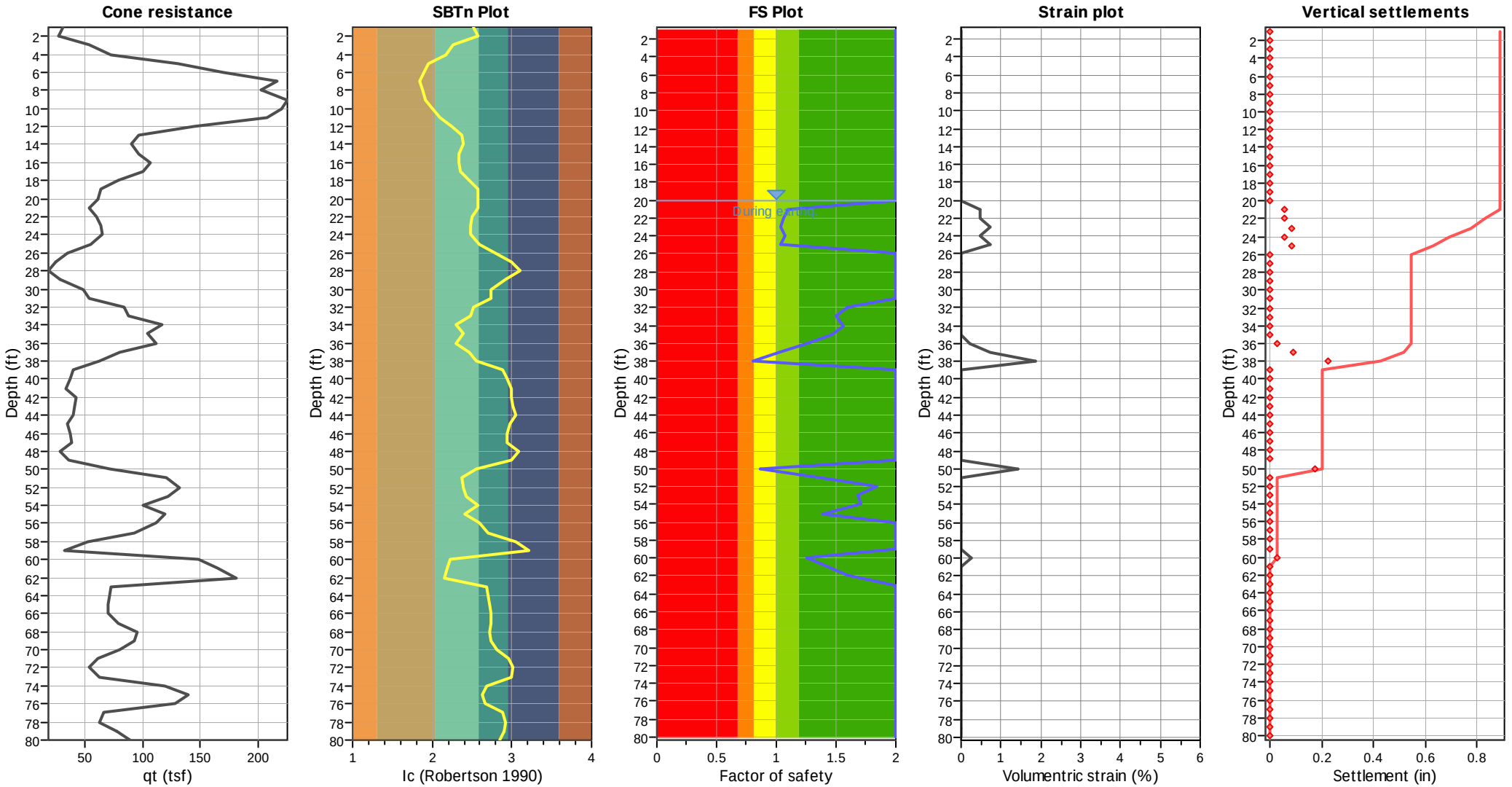
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	80.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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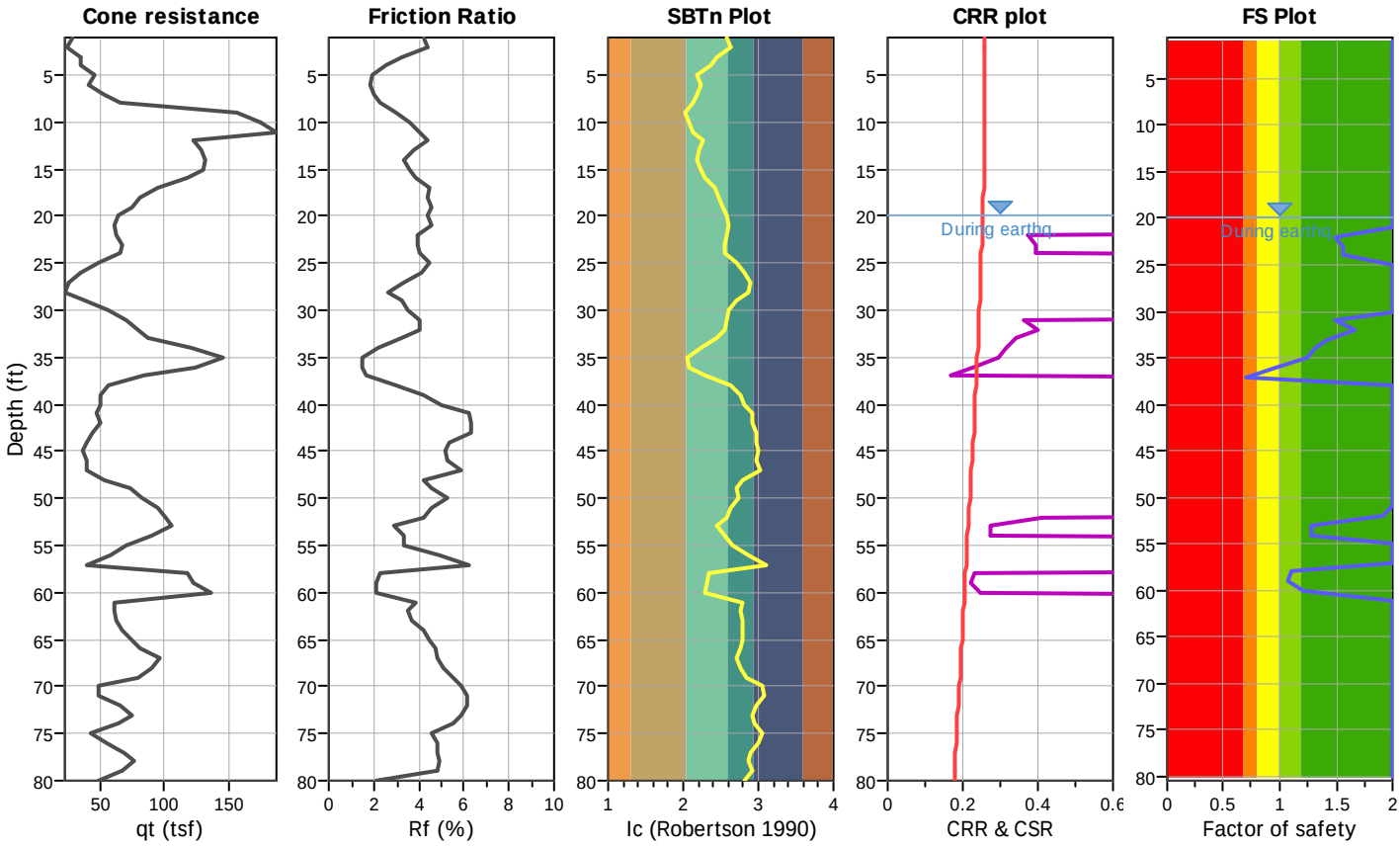
LIQUEFACTION ANALYSIS REPORT

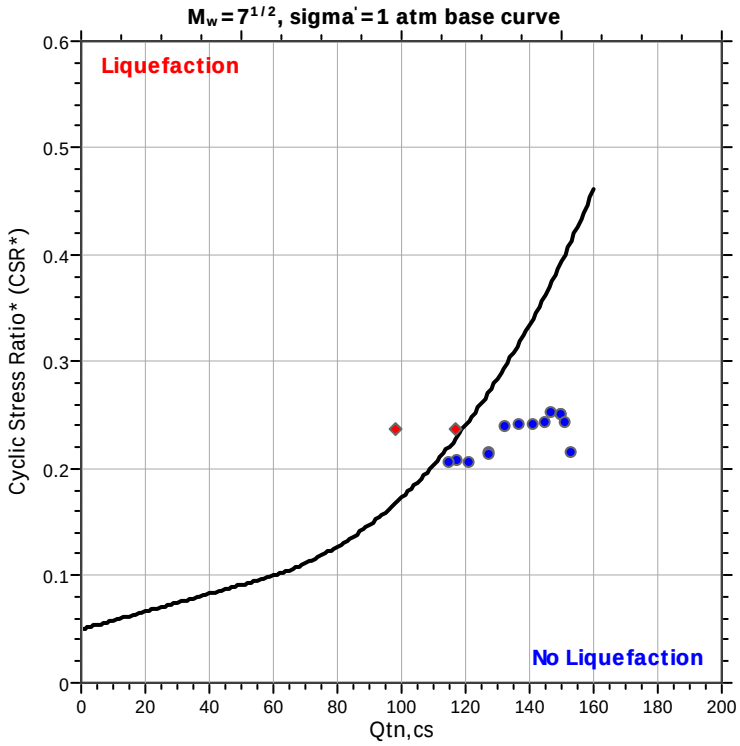
Project title : Kettner Substation **Location : San Diego, CA**

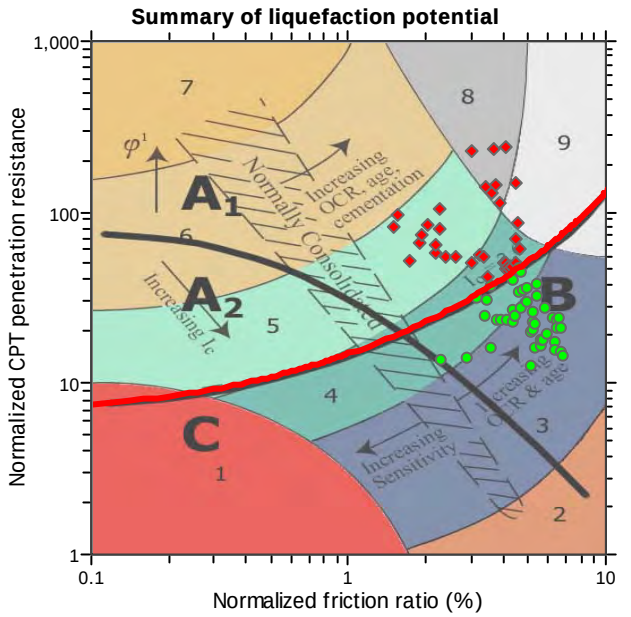
CPT file : CPT-19i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	80.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

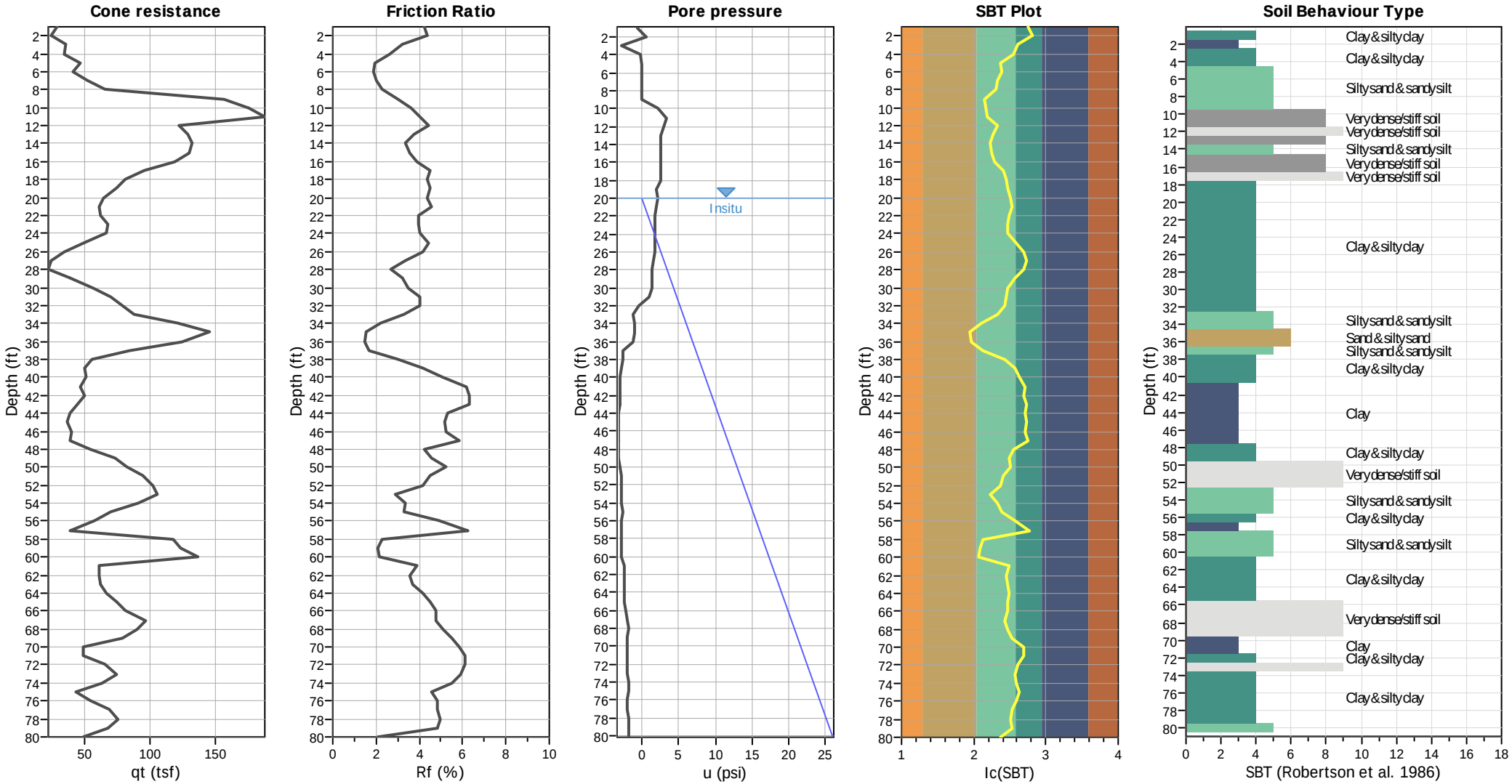






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



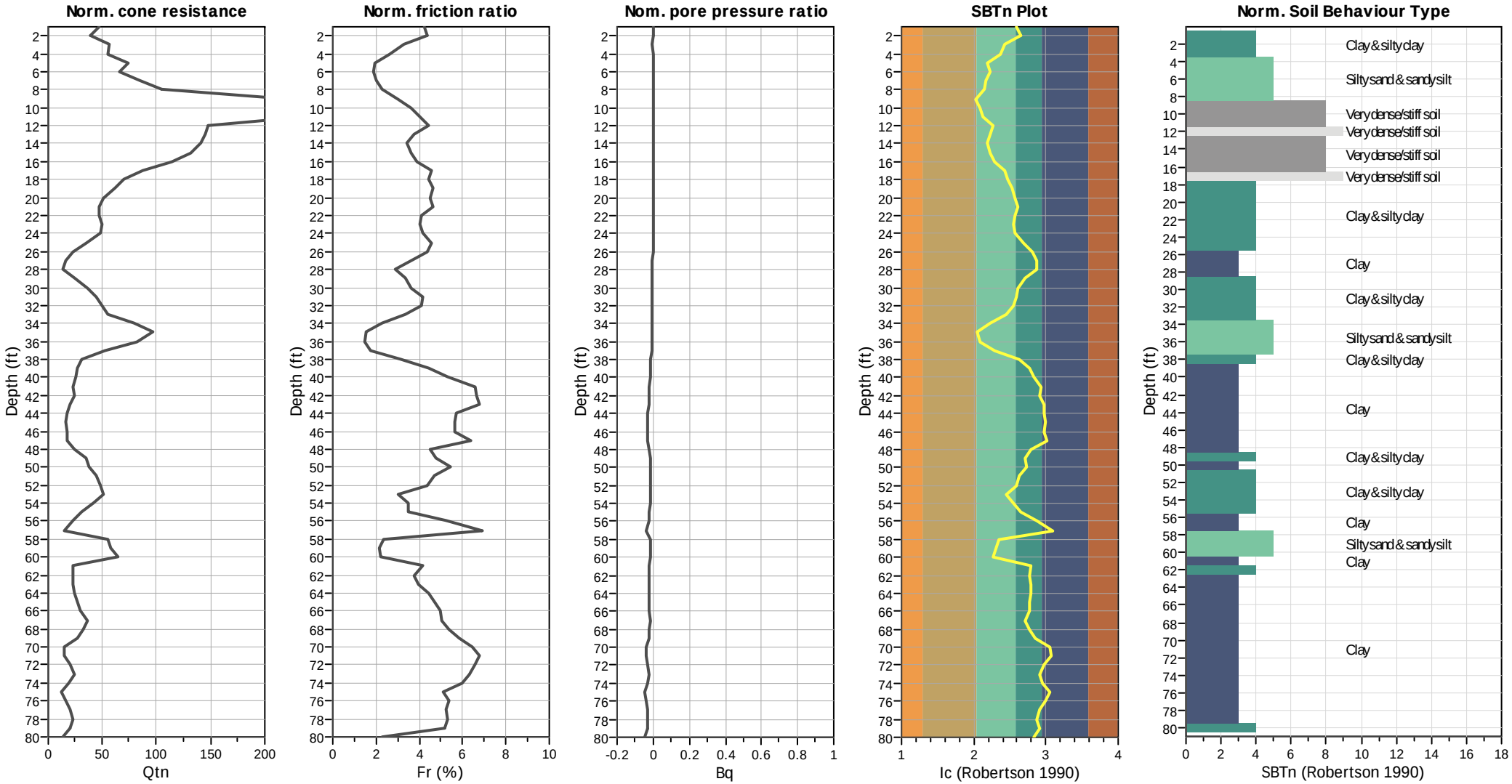
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	80.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



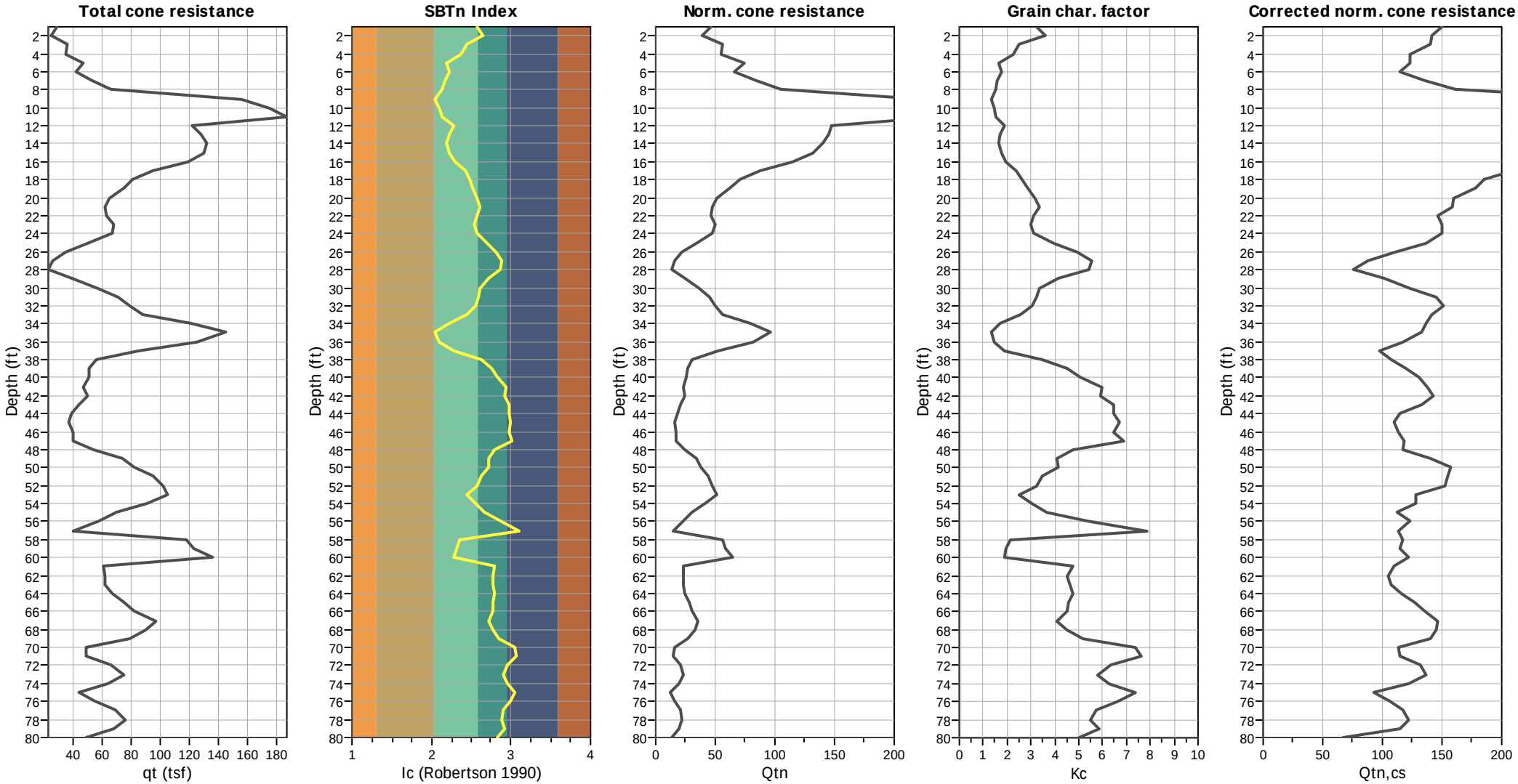
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	80.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

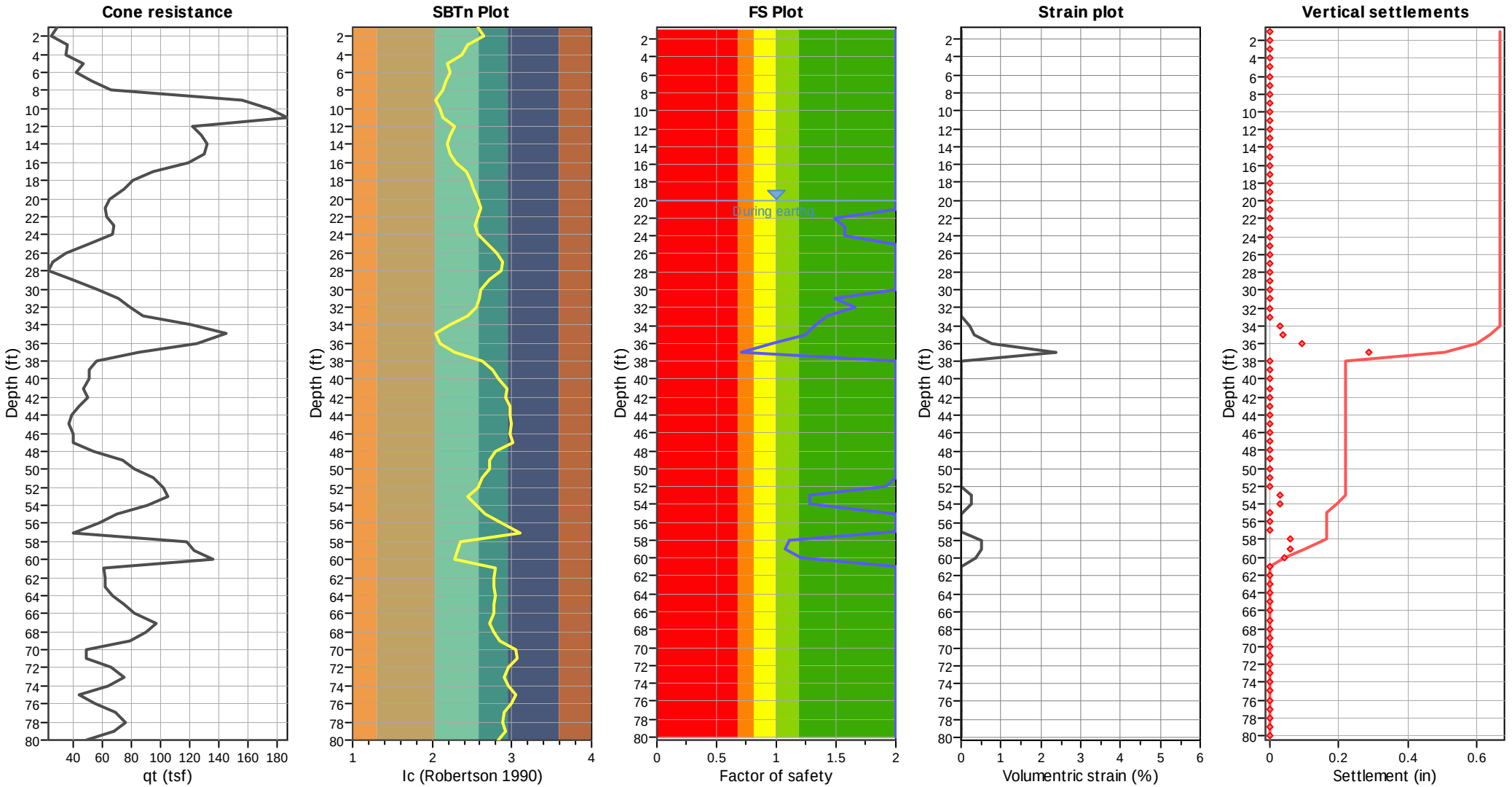
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	80.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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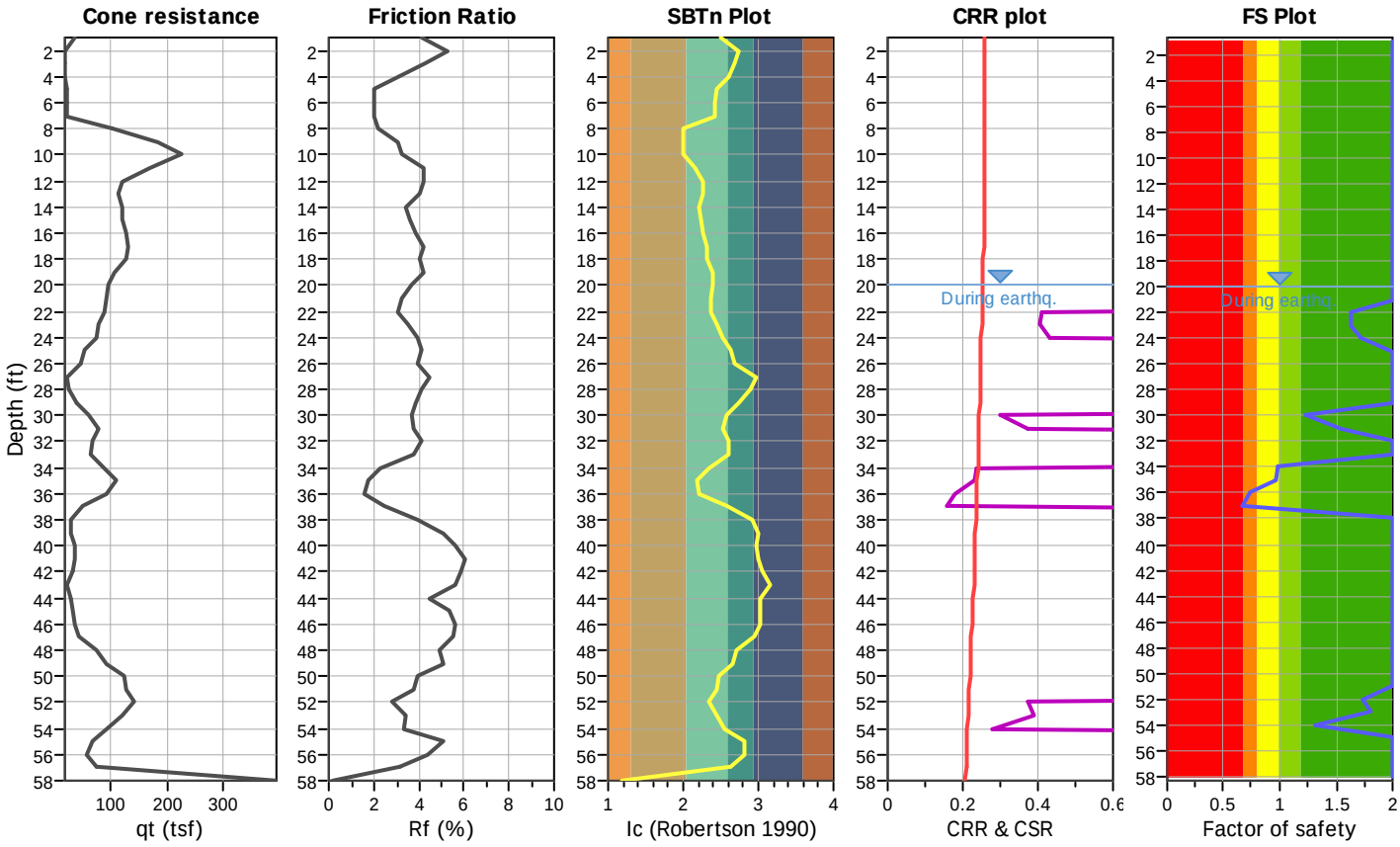
LIQUEFACTION ANALYSIS REPORT

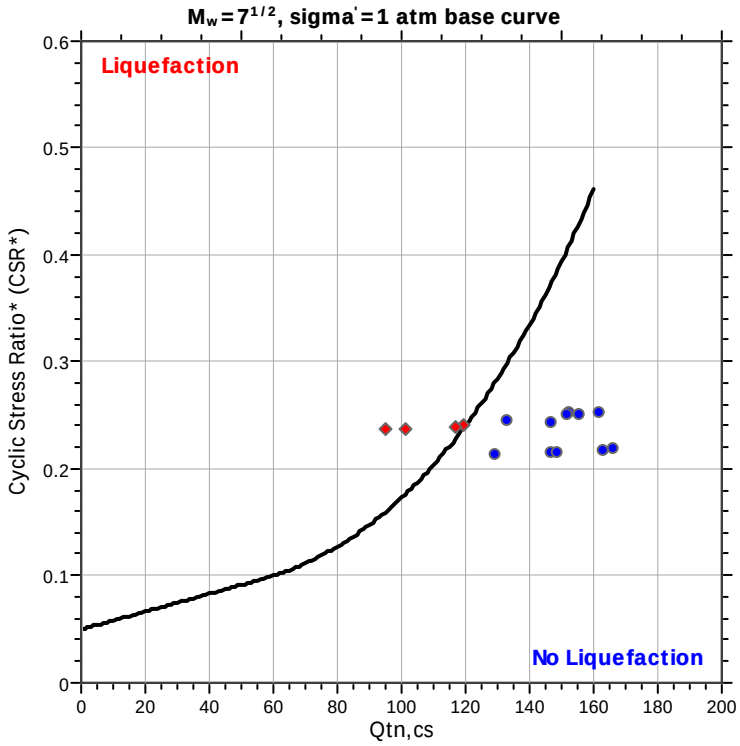
Project title : Kettner Substation **Location : San Diego, CA**

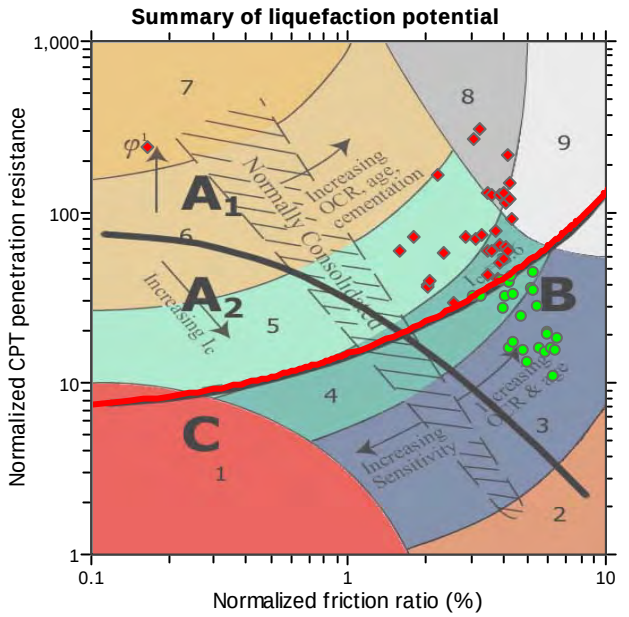
CPT file : CPT-20i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	60.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

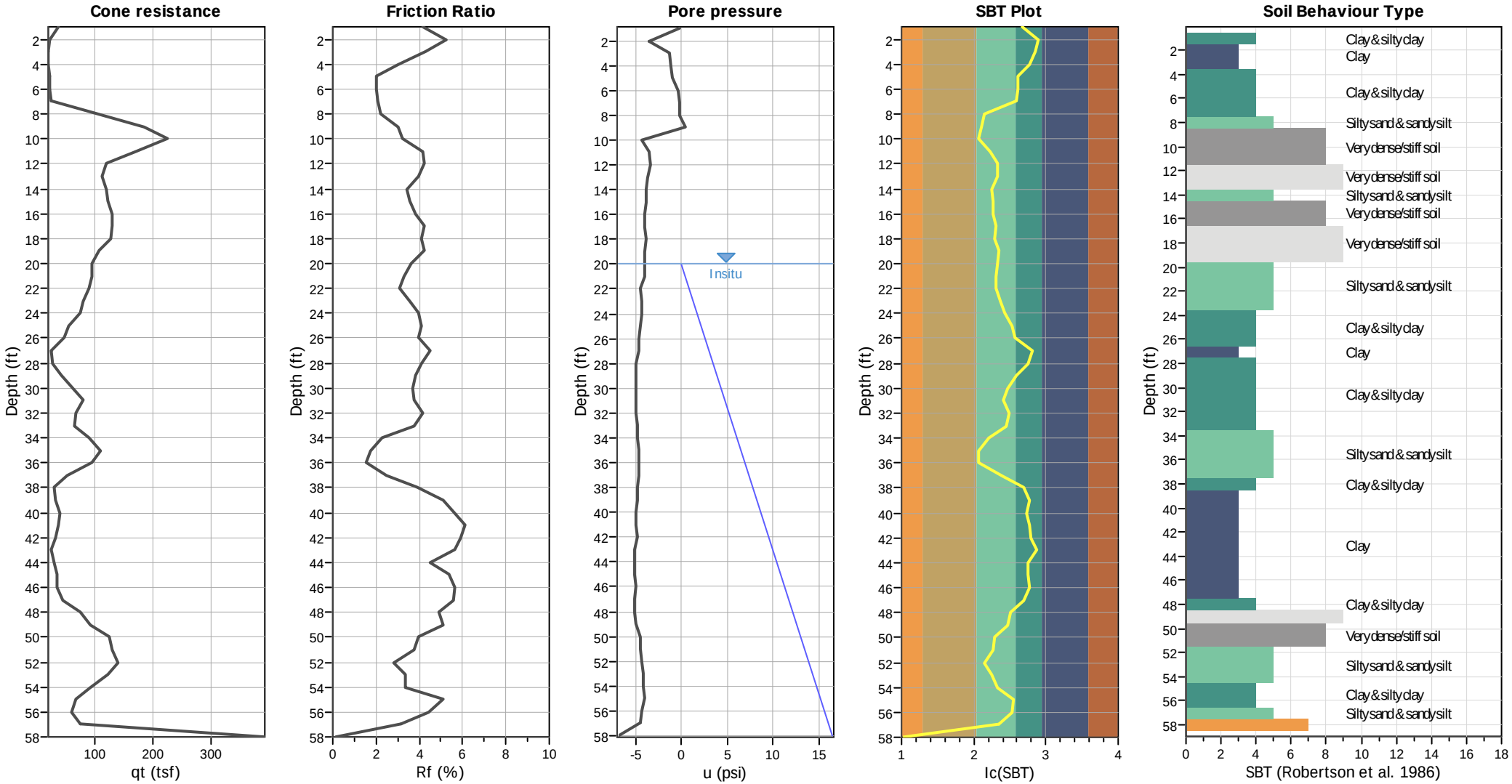






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



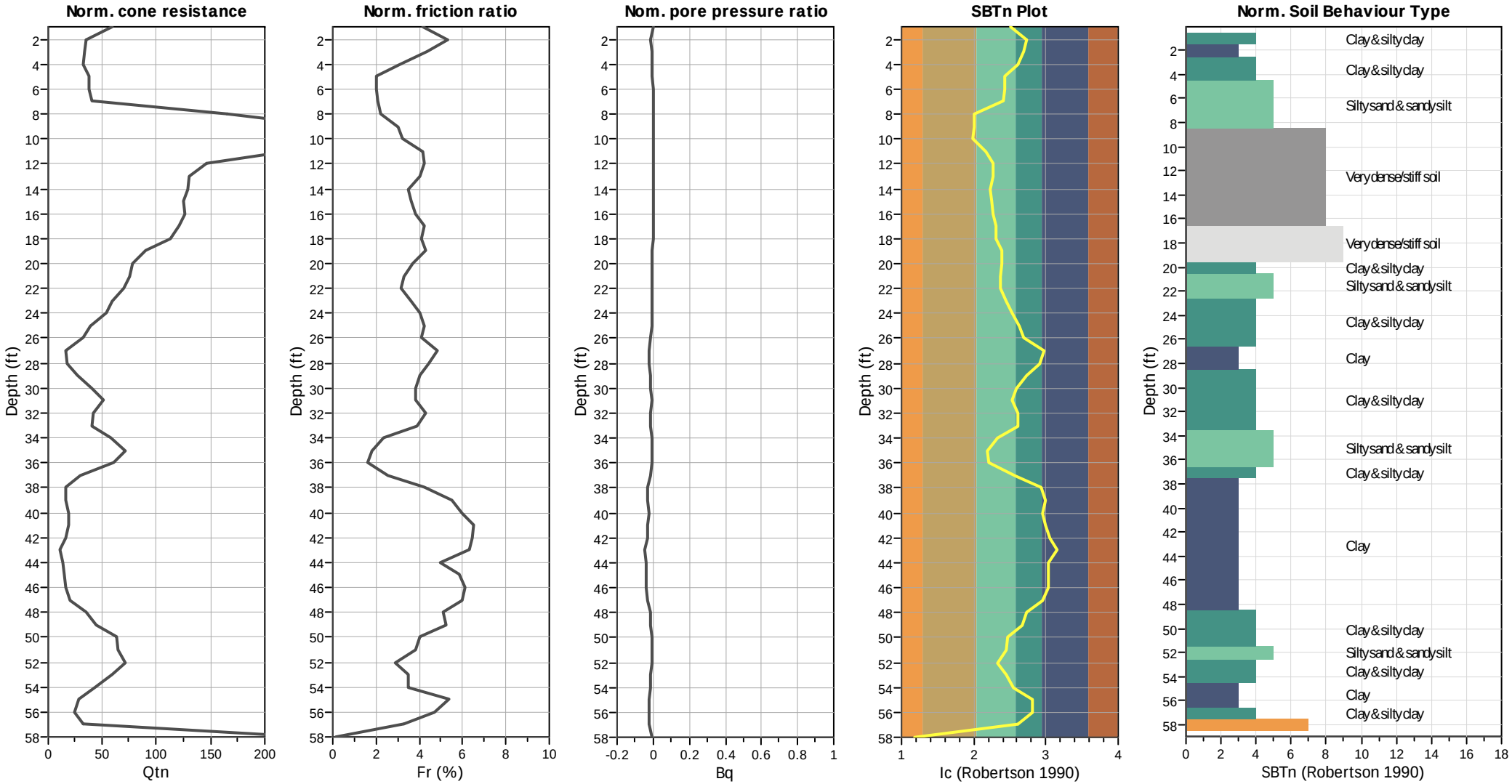
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	60.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



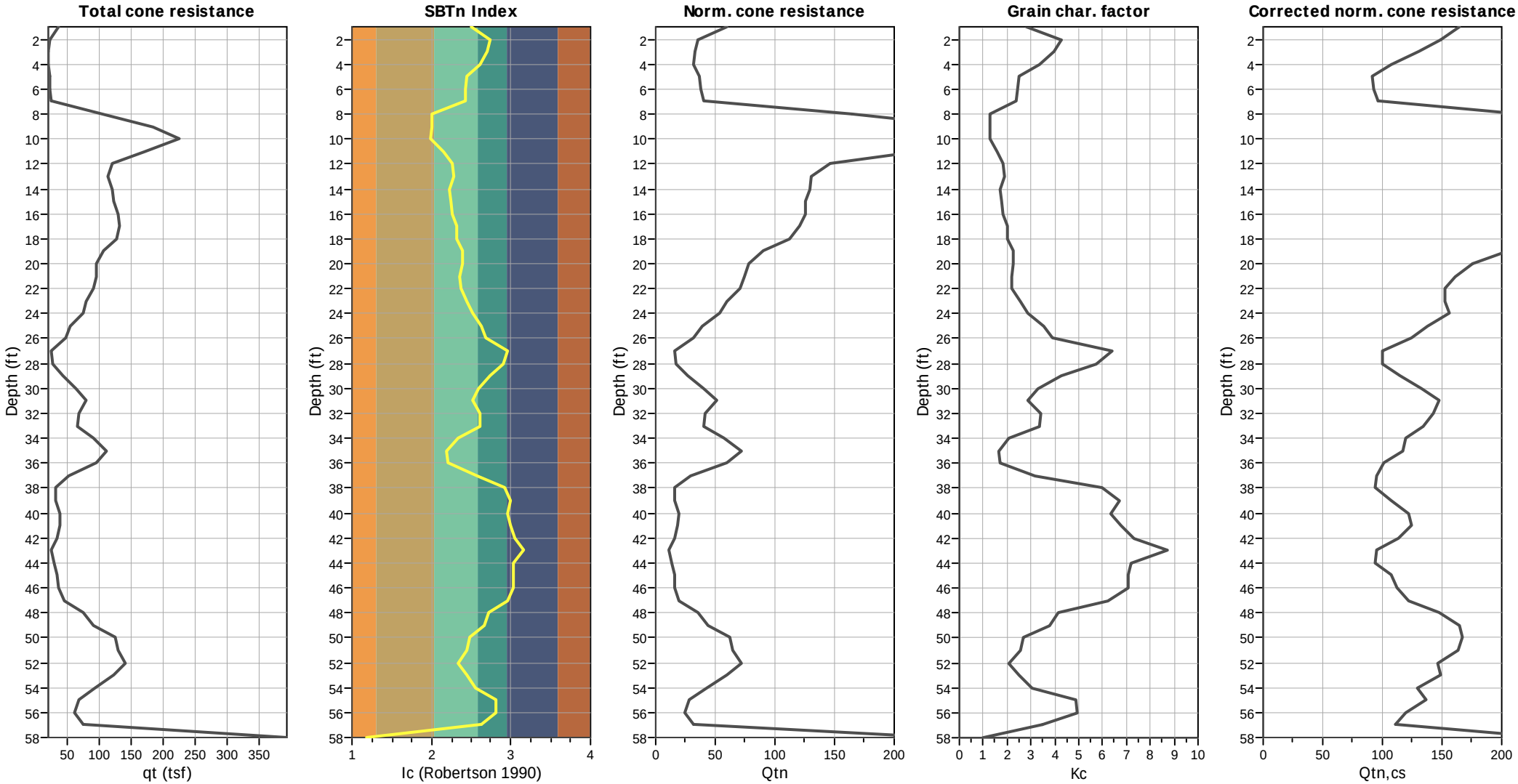
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	60.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

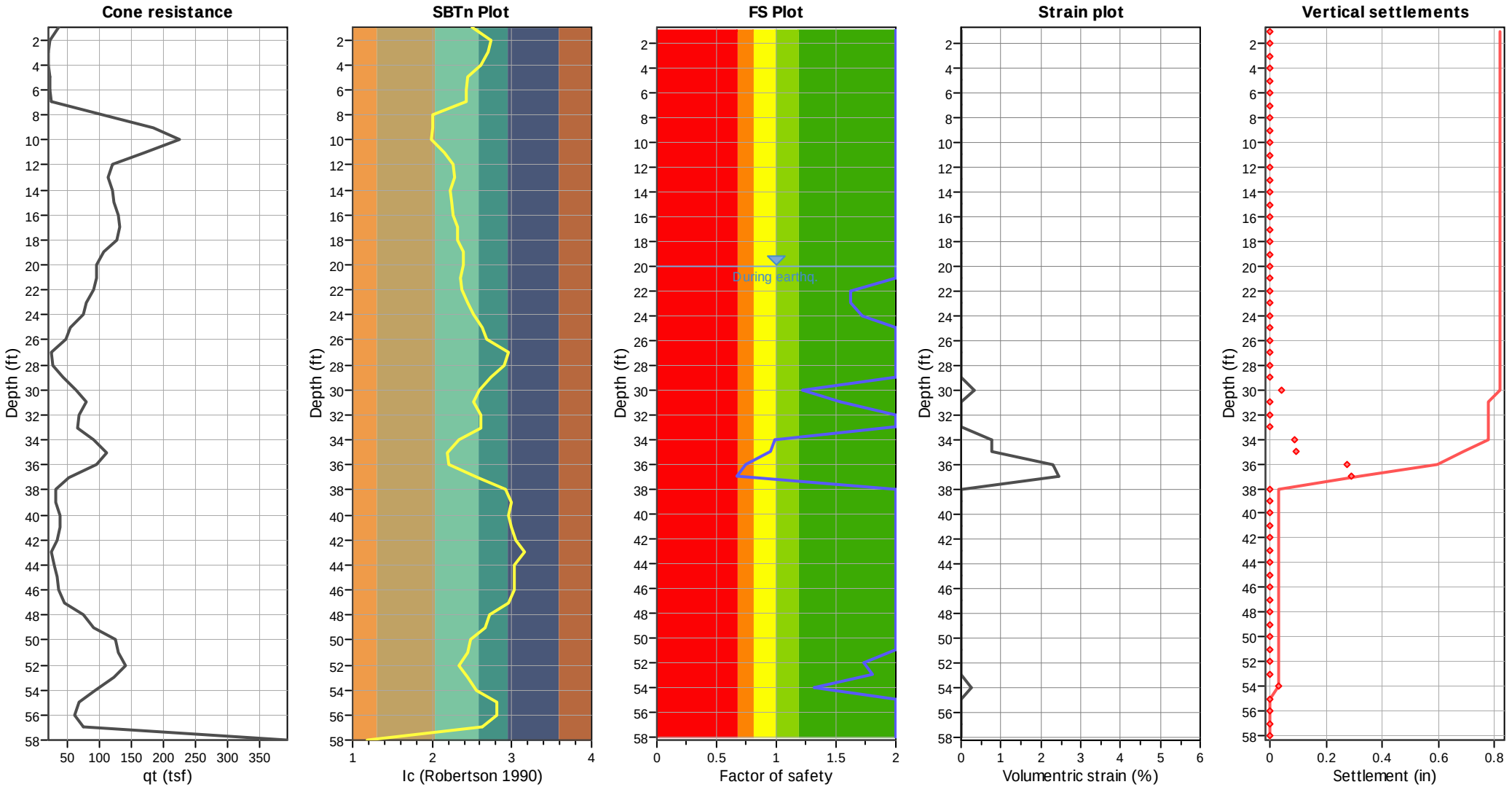
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	60.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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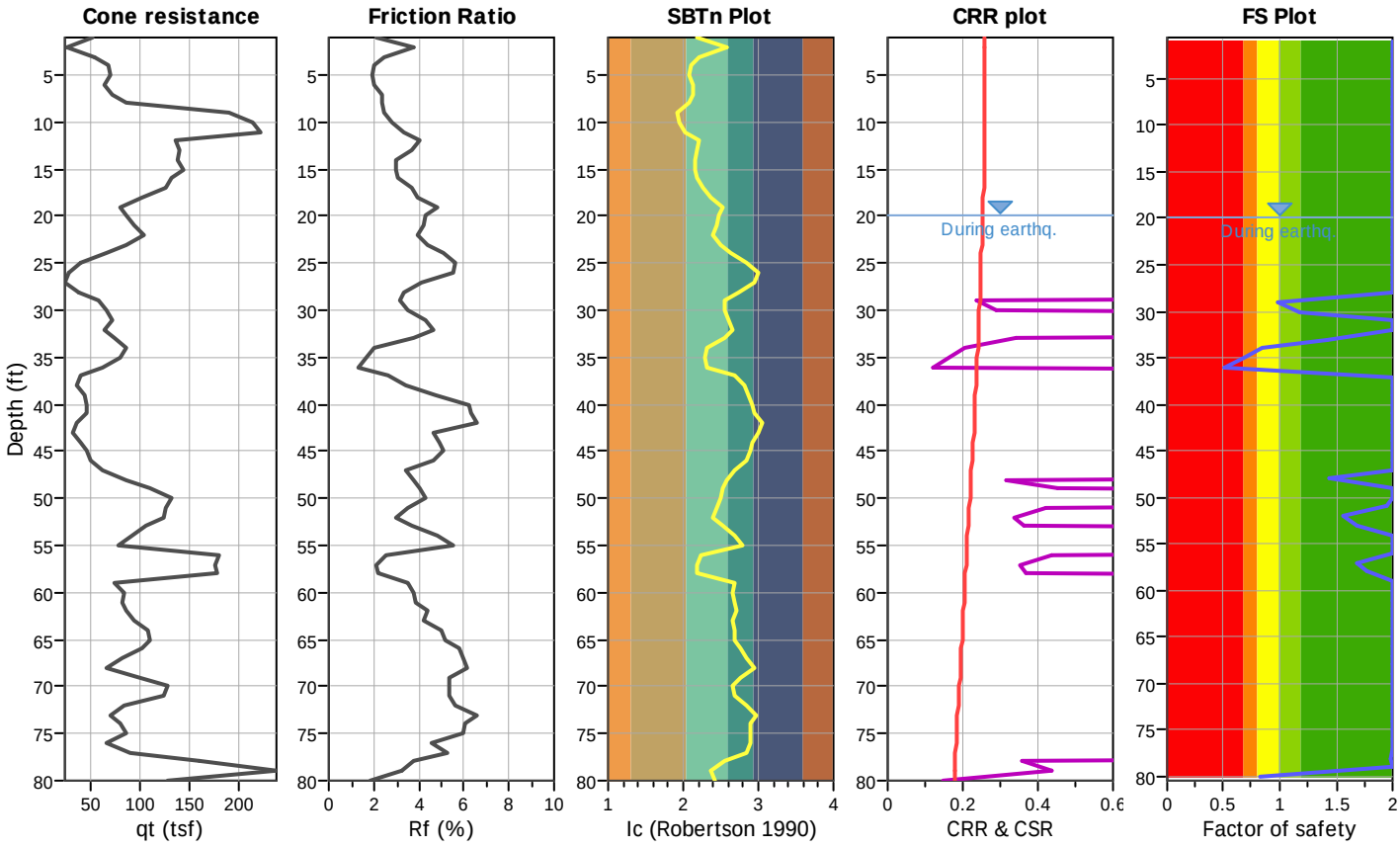
LIQUEFACTION ANALYSIS REPORT

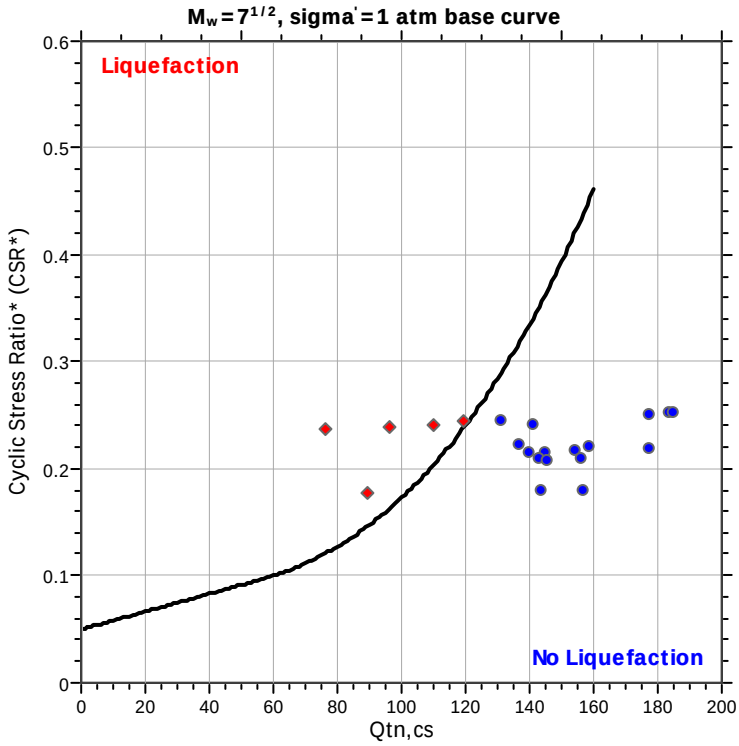
Project title : Kettner Substation **Location : San Diego, CA**

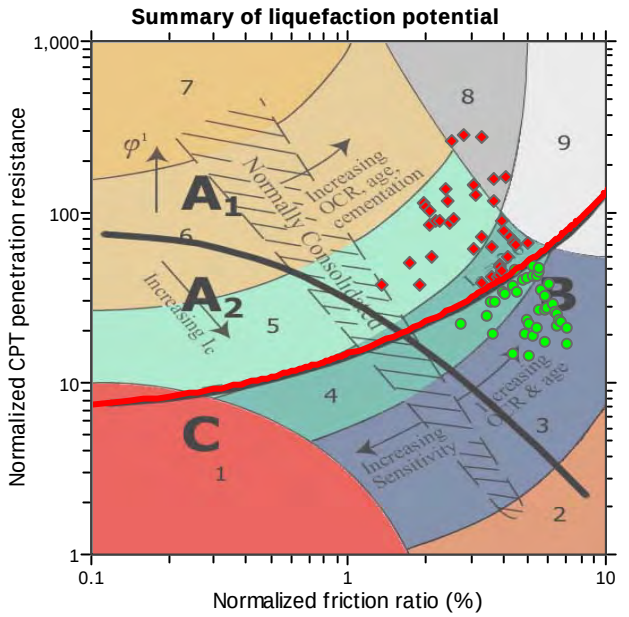
CPT file : CPT-21i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	80.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

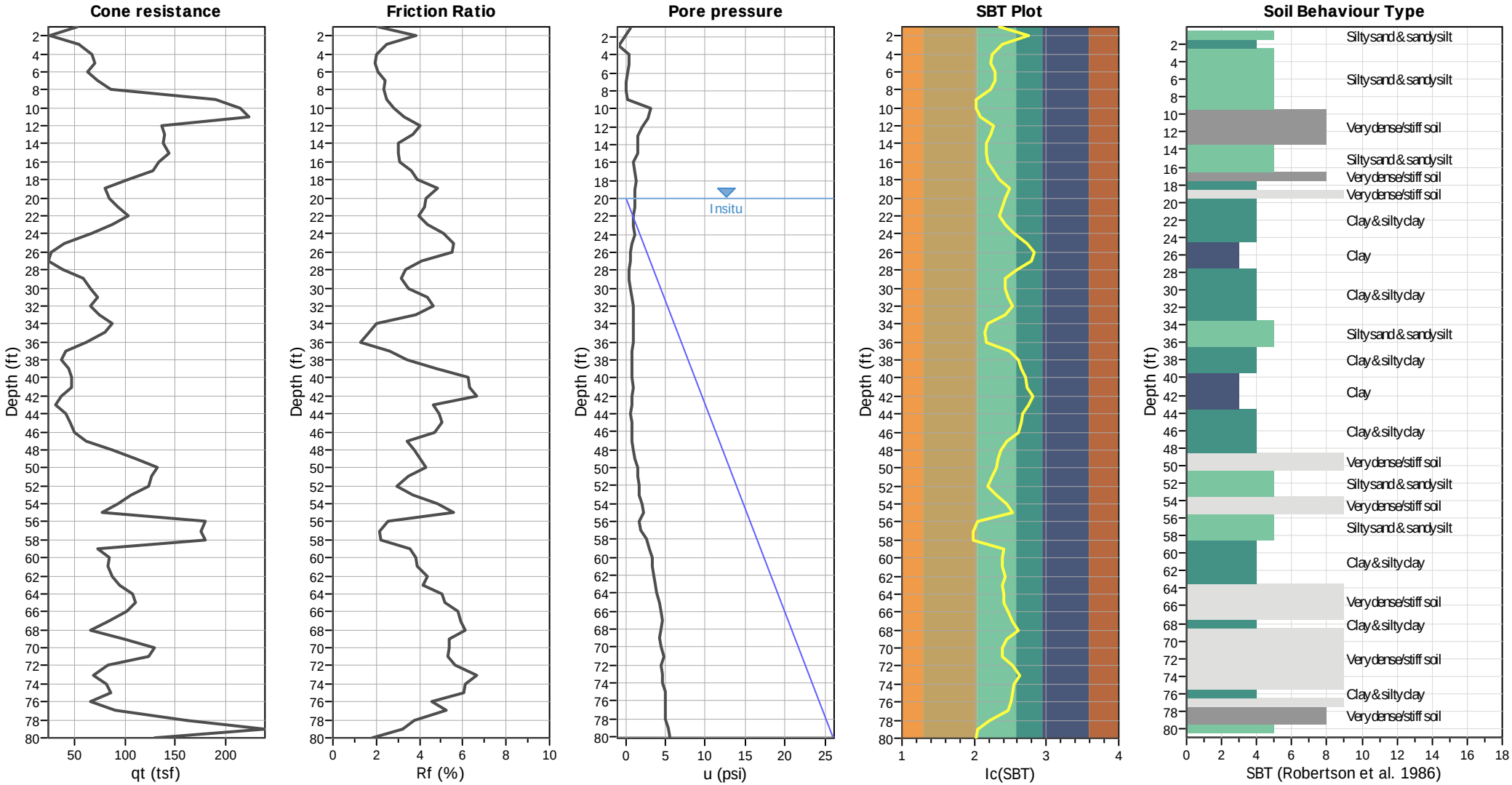






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



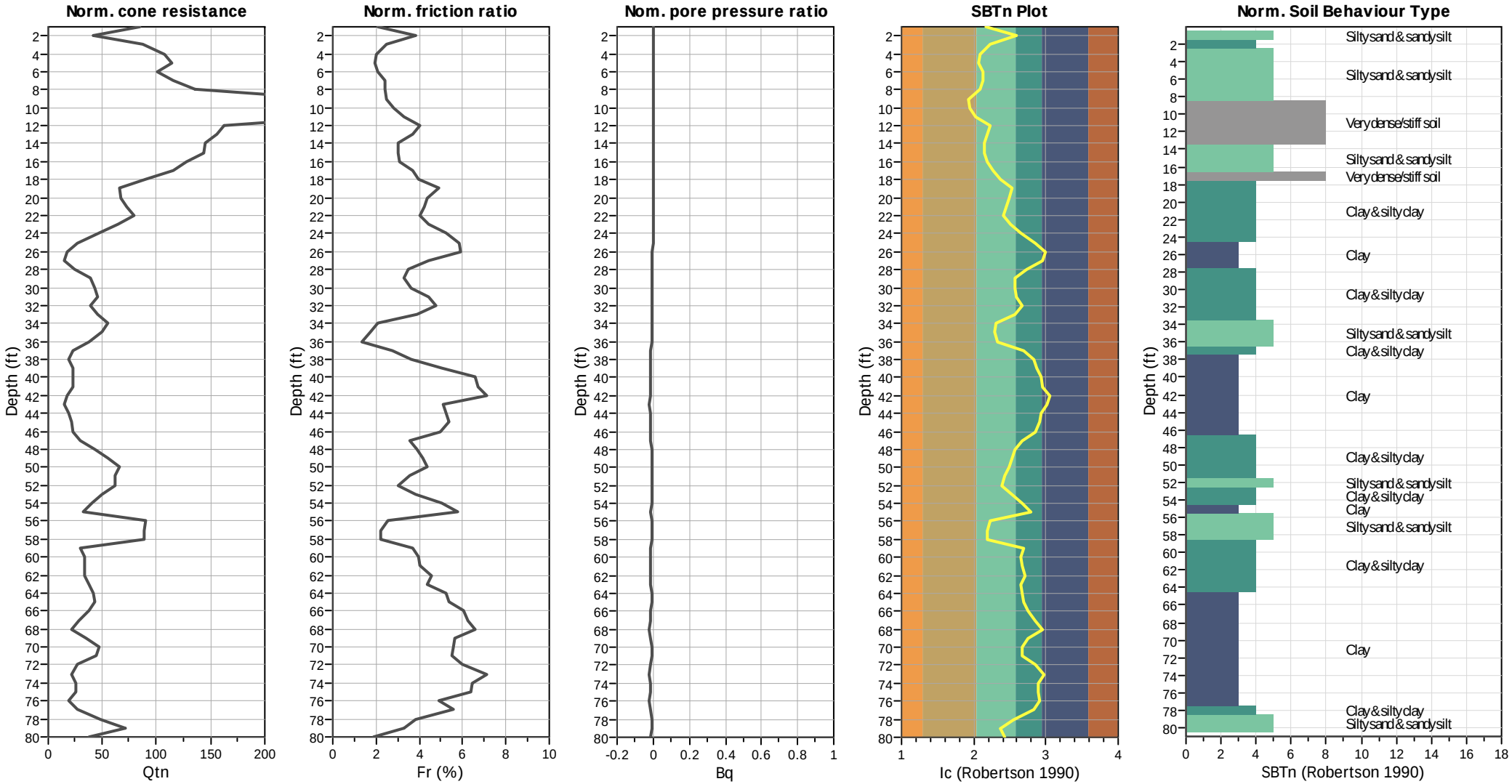
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	80.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



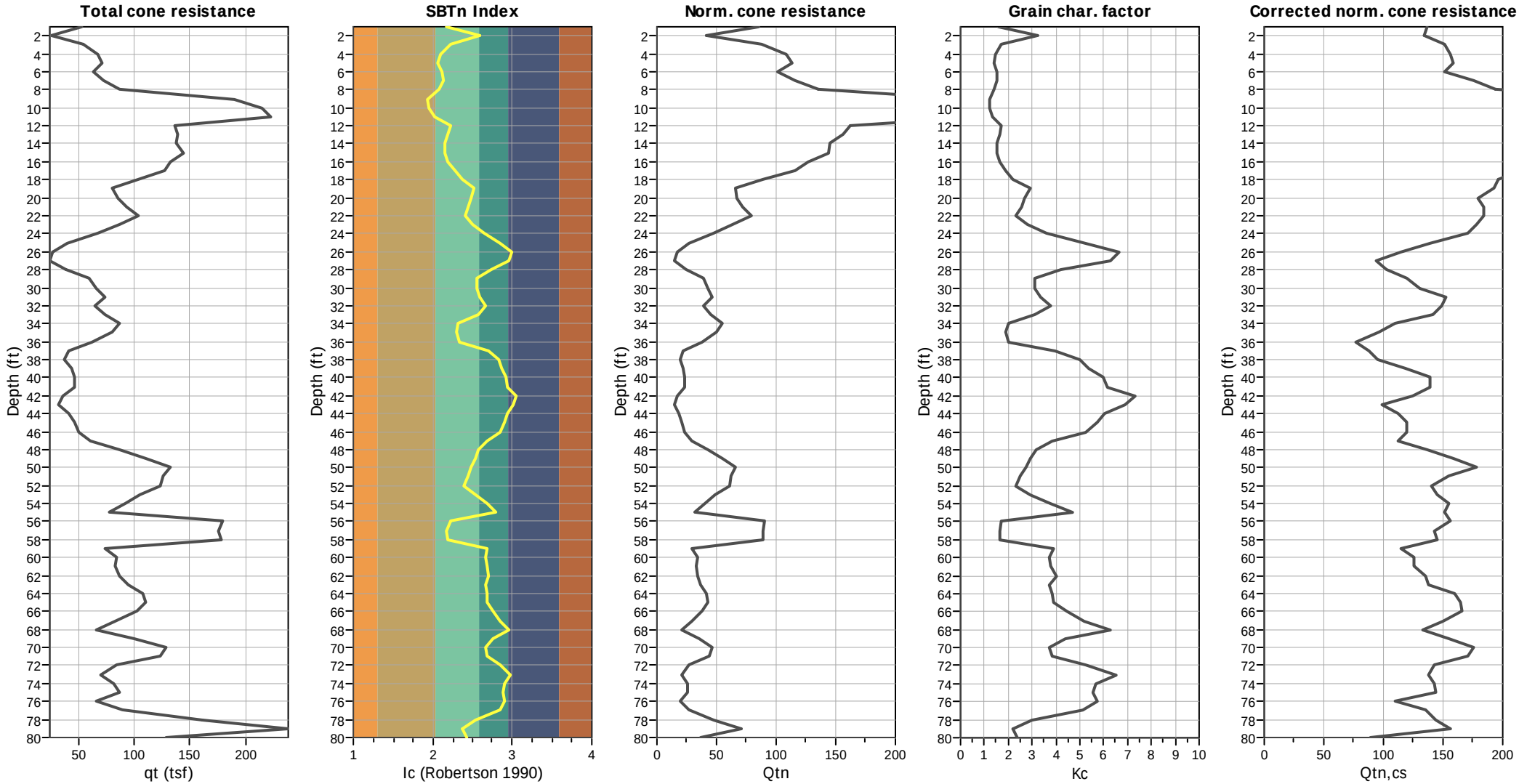
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	80.00 ft

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

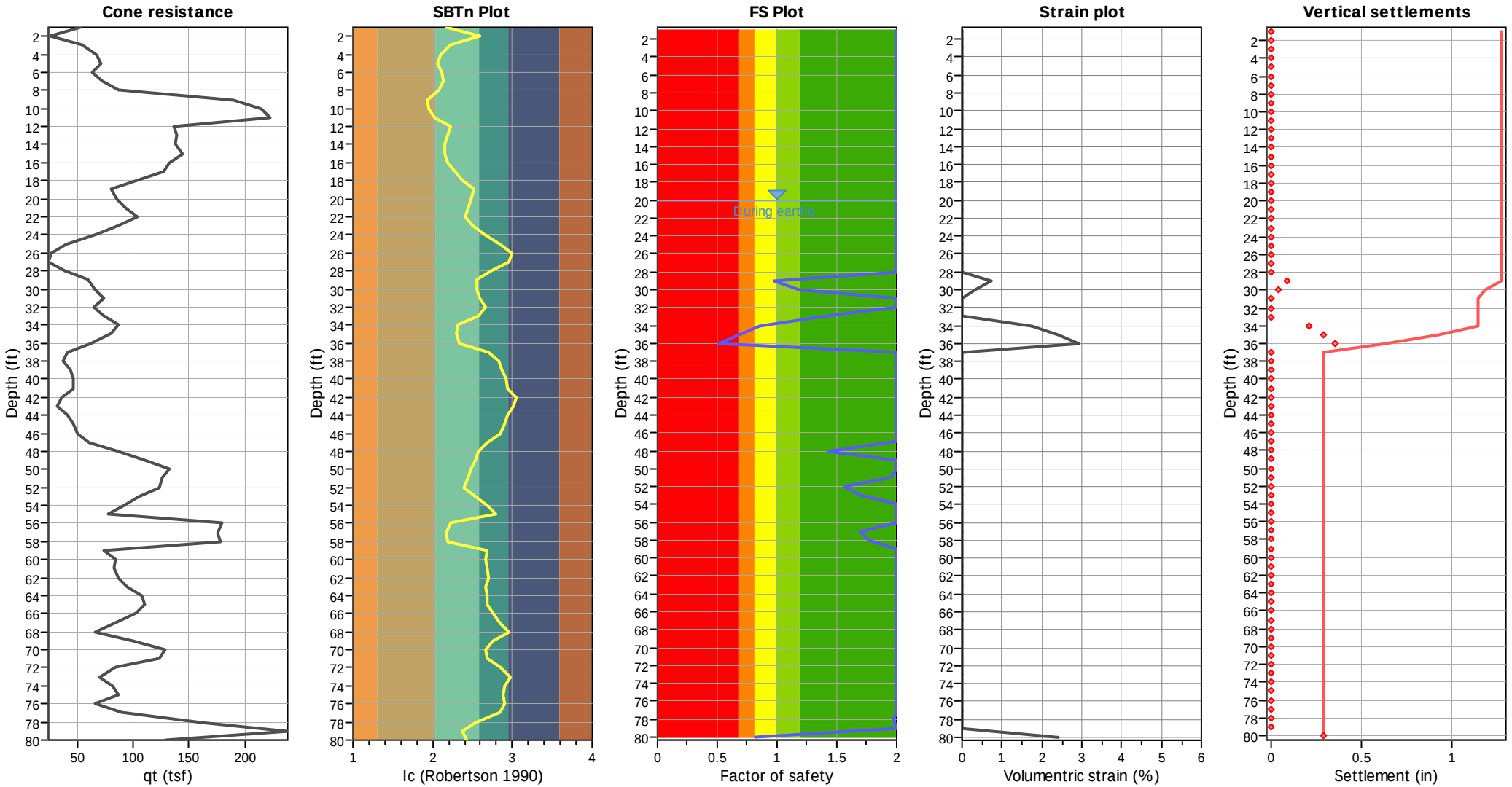
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	80.00 ft

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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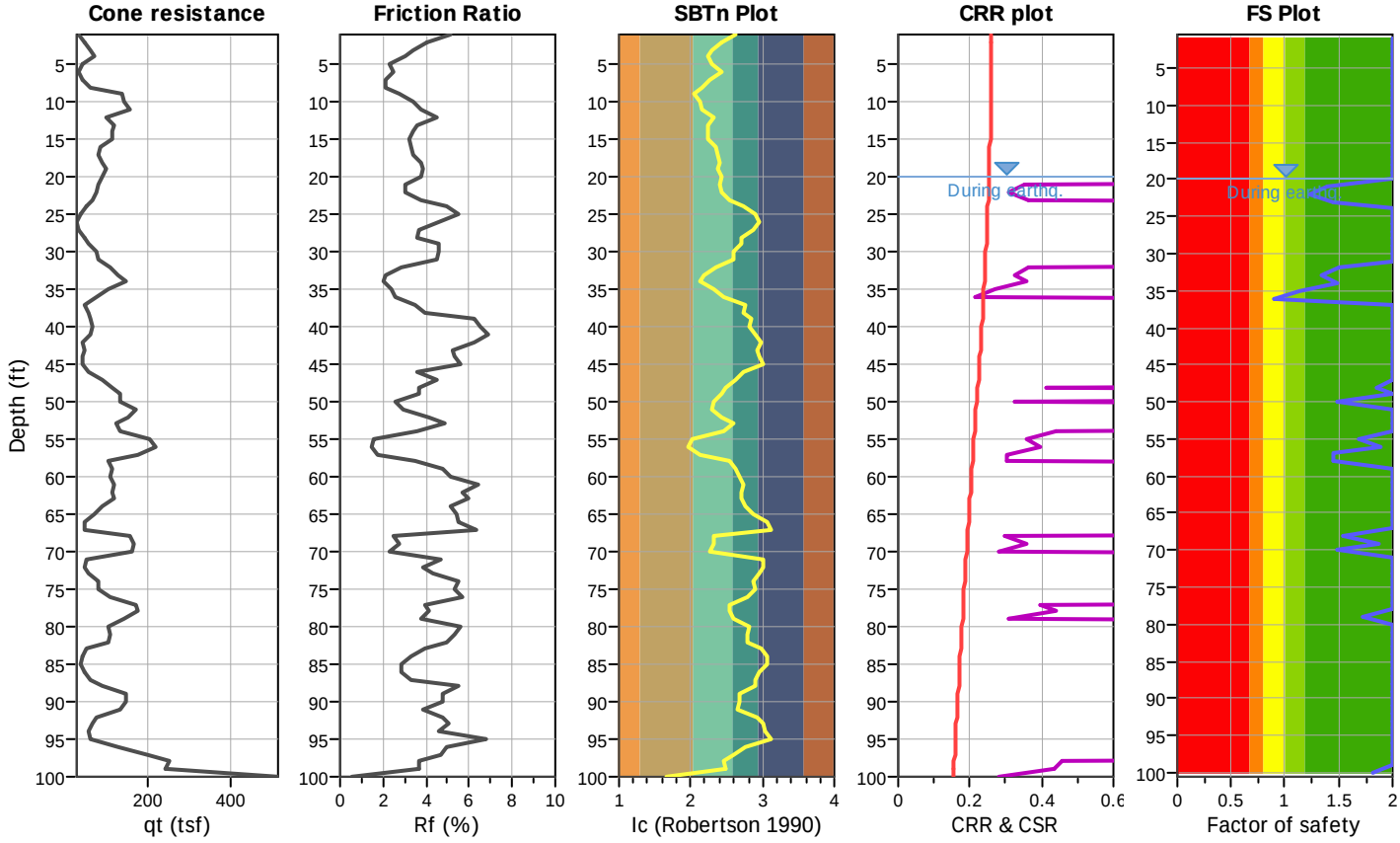
LIQUEFACTION ANALYSIS REPORT

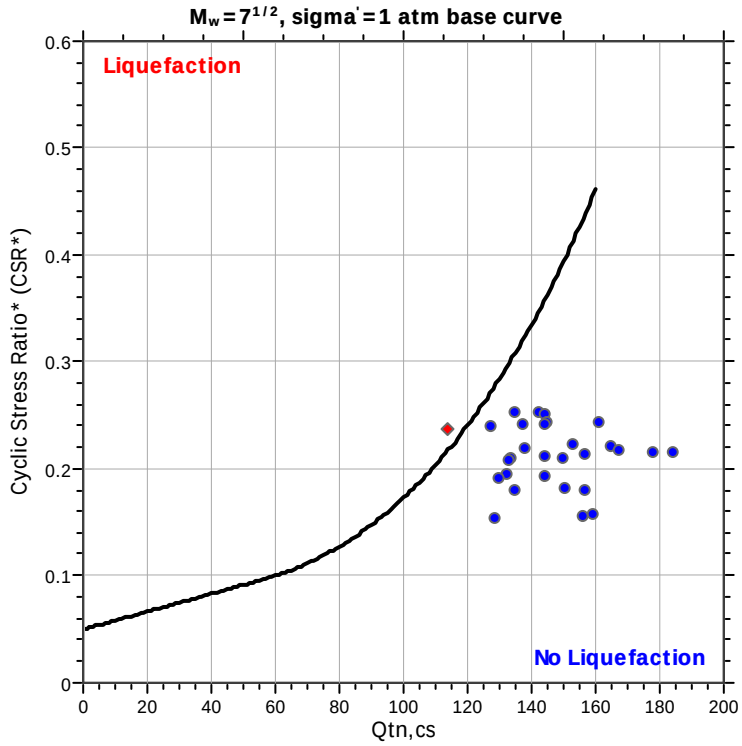
Project title : Kettner Substation **Location : San Diego, CA**

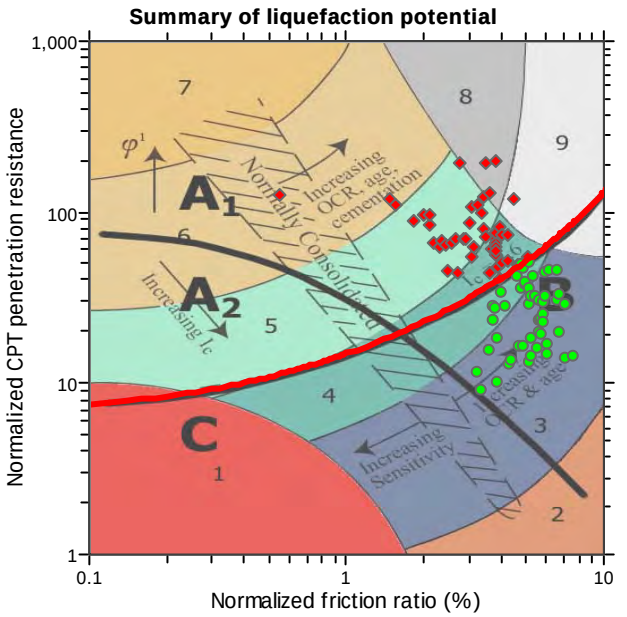
CPT file : CPT-22i

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	20.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	20.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	100.00 ft
Earthquake magnitude M_w:	6.64	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.60	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

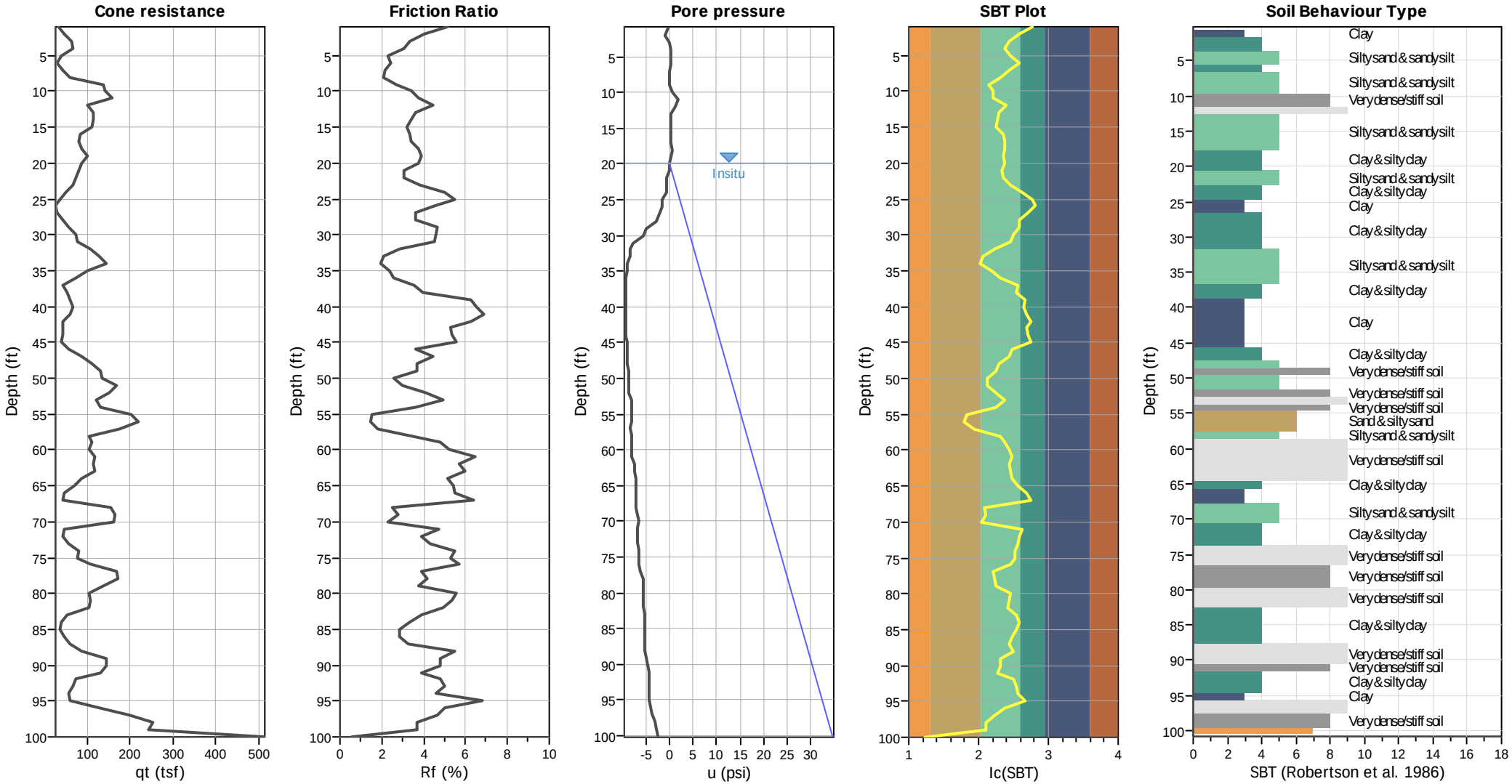






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



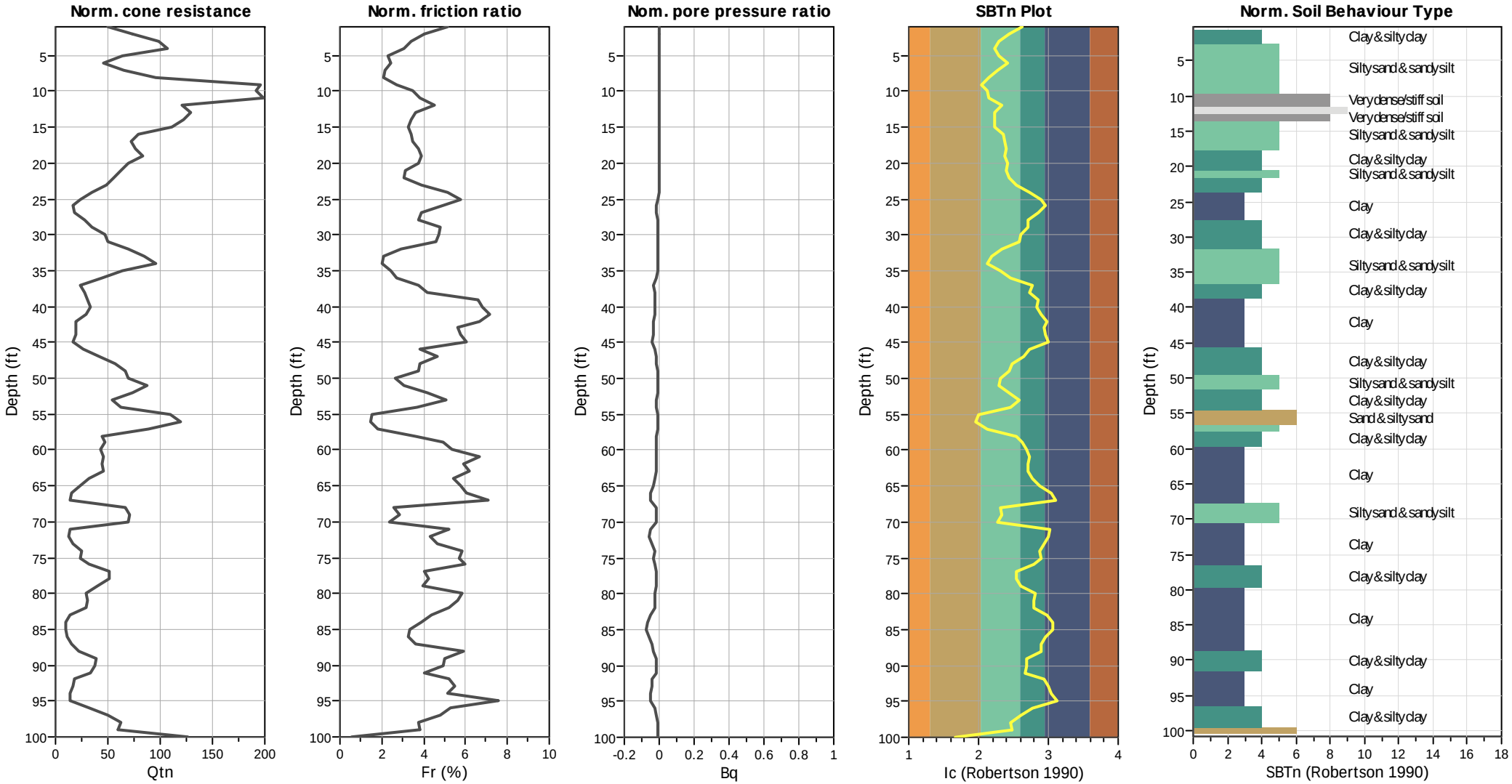
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



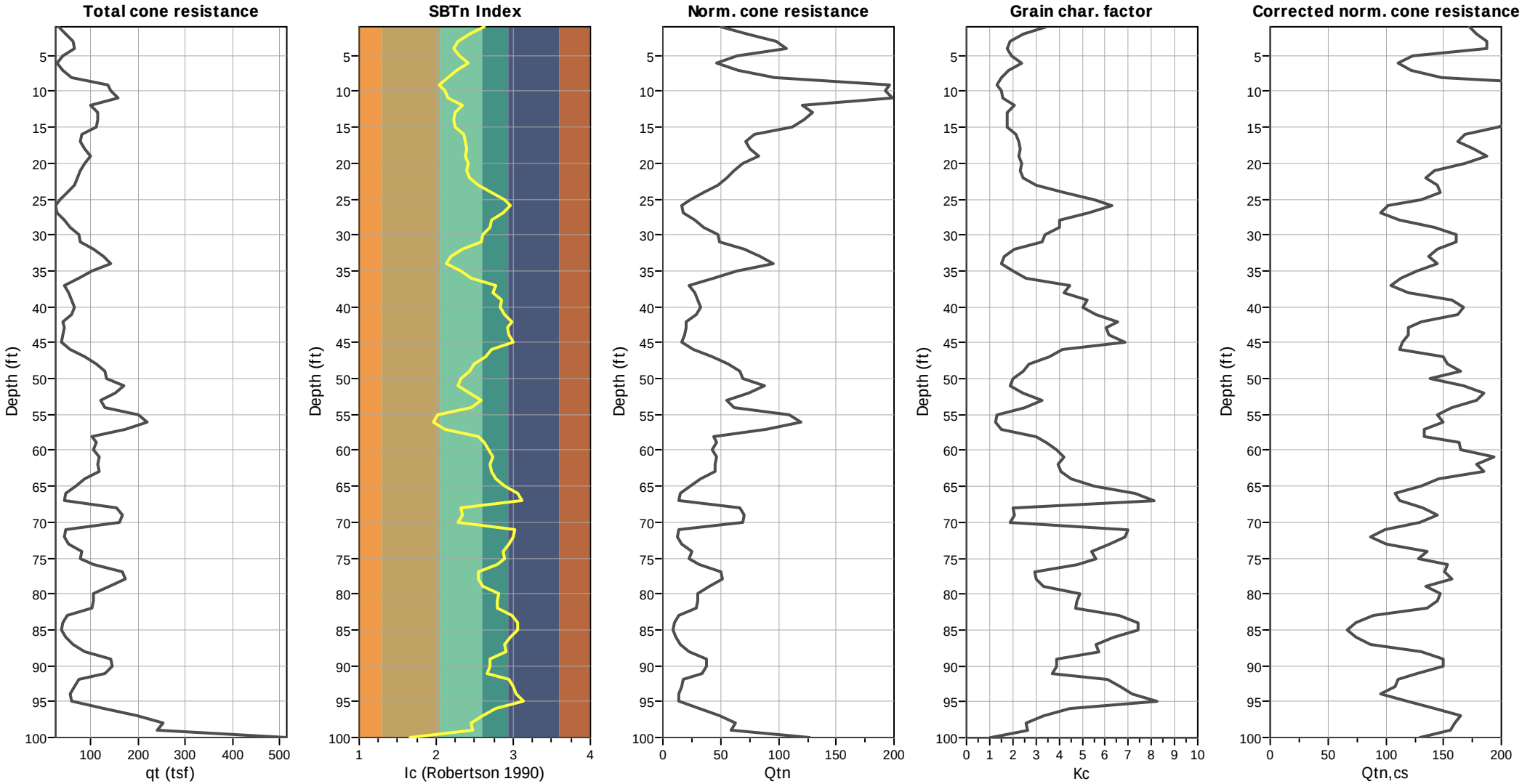
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

SBTn legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

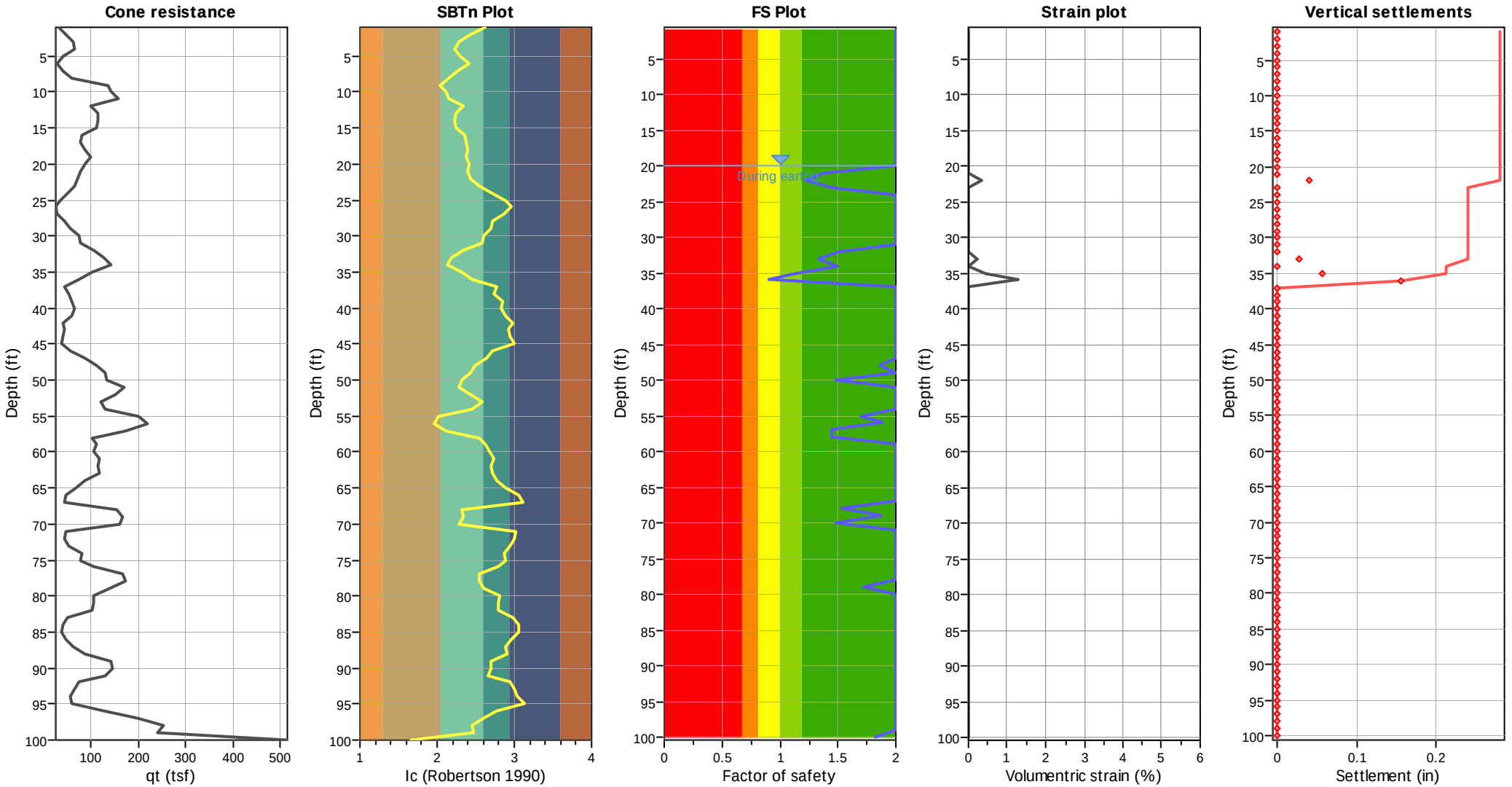
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	20.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.64	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.60	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	100.00 ft

Estimation of post-earthquake settlements



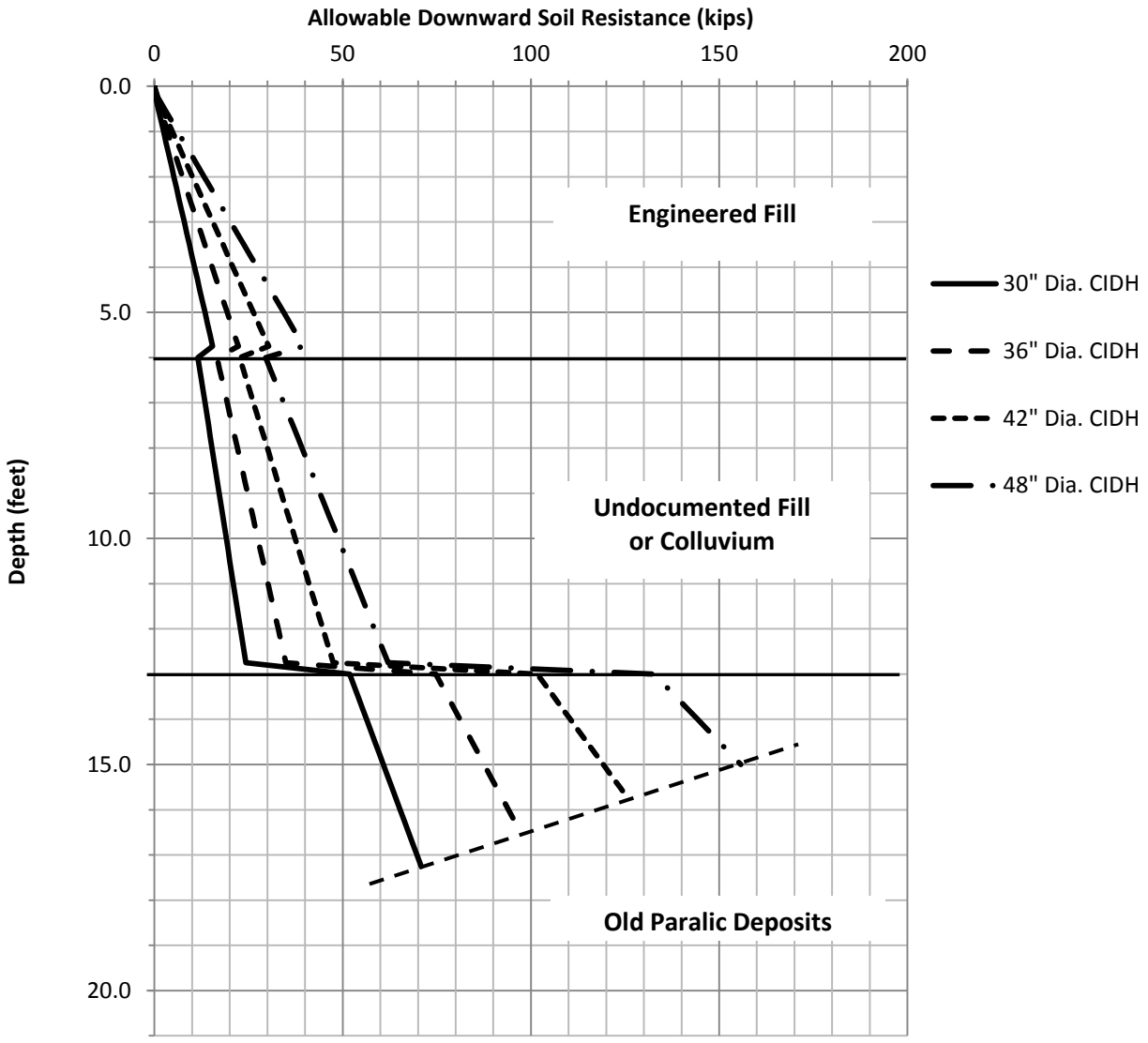
Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

APPENDIX F

Preliminary Deep Foundation Analyses

Axial Resistance and Drag Load



Notes:

a. Simplified stratigraphy assumes 5' of overexcavation and recompaction, 1' of engineered fill placed above existing grade, and top of Old Paralic Deposits 13 feet below finish grade.

b. Resistance values terminated at maximum recommended foundation depth of 1.5*CIDH diameters above design high groundwater (20' + 1' below assumed finished grade).

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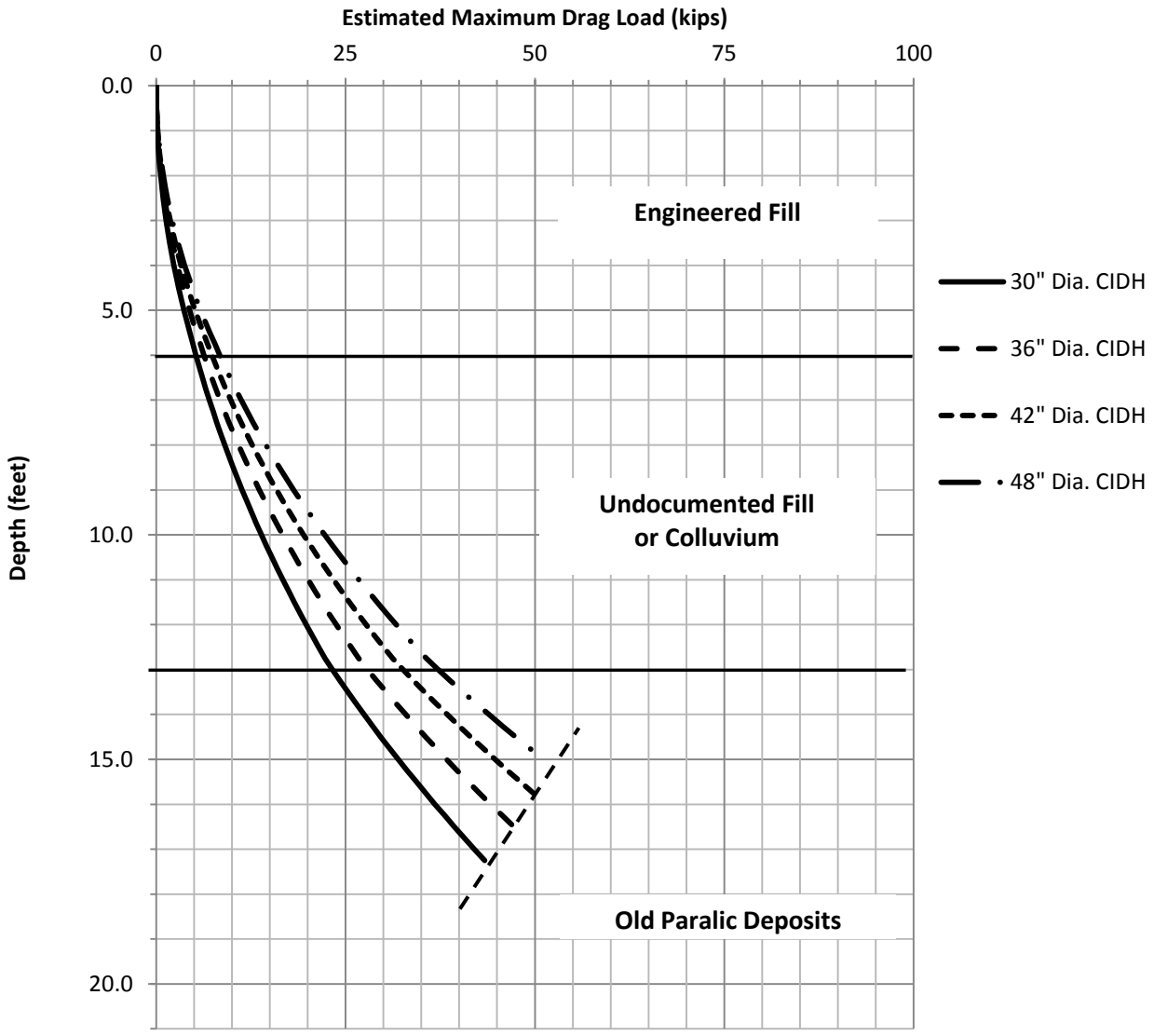
SINGLE PILE DOWNWARD AXIAL SOIL RESISTANCE
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	DECEMBER 2013	FIGURE
PROJECT NO:	SC0368-30	F-1



Notes:

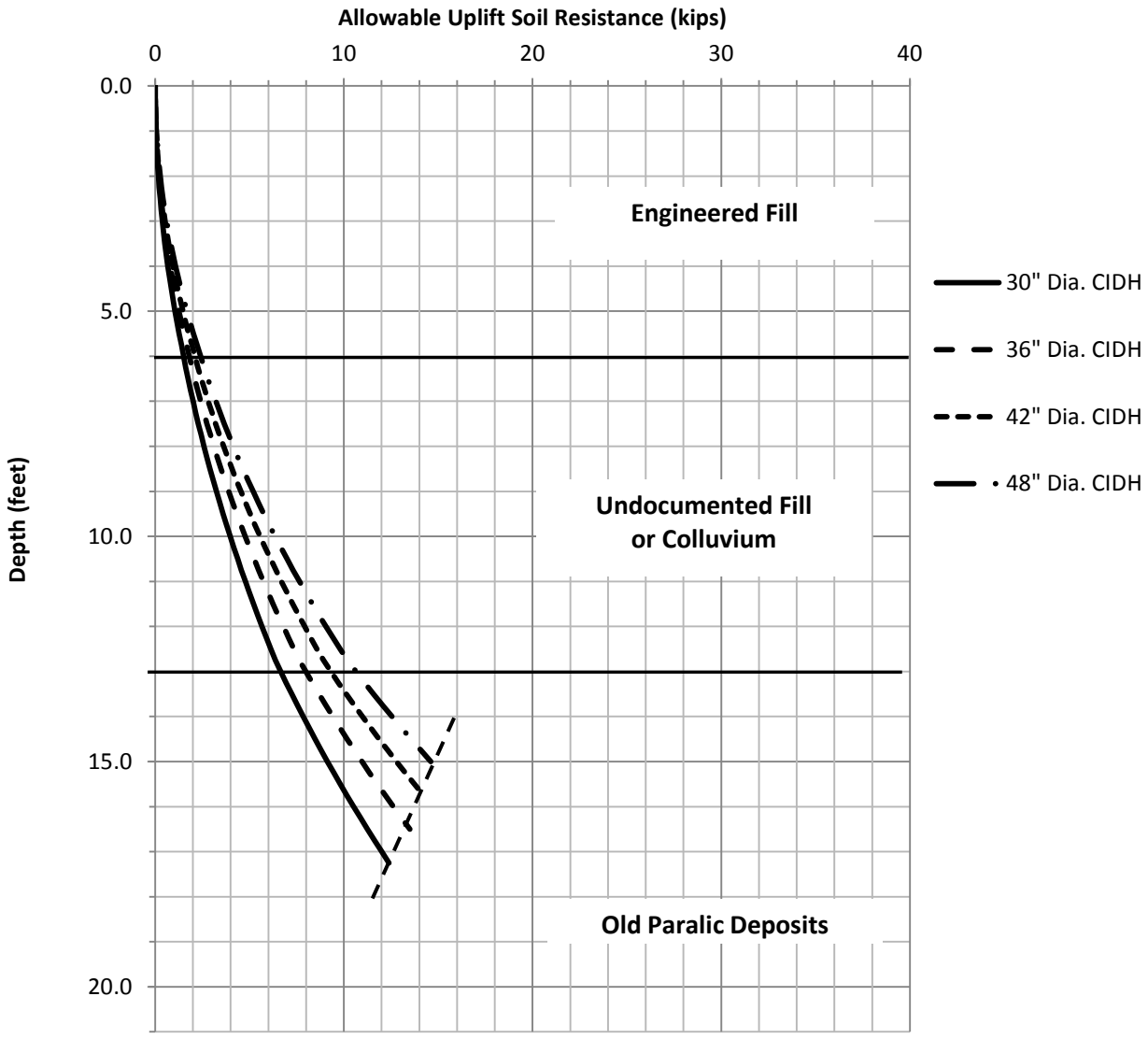
a. Simplified stratigraphy assumes 5' of overexcavation and recompaction, 1' of engineered fill placed above existing grade, and top of Old Paralic Deposits 13 feet below finish grade.

b. Resistance values terminated at maximum recommended foundation depth of 1.5*CIDH diameters above design high groundwater (20' + 1' below assumed finished grade).

Geosyntec consultants

SINGLE PILE DRAG LOAD
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	DECEMBER 2013	FIGURE
PROJECT NO:	SC0368-30	F-2



Notes:

a. Simplified stratigraphy assumes 5' of overexcavation and recompaction, 1' of engineered fill placed above existing grade, and top of Old Paralic Deposits 13 feet below finish grade.

b. Resistance values terminated at maximum recommended foundation depth of 1.5*CIDH diameters above design high groundwater (20' + 1' below assumed finished grade).

c. The CIDH pile weight can also be used for uplift resistance and is not included in this plot.

Geosyntec consultants

SINGLE PILE UPLIFT AXIAL SOIL RESISTANCE
VINE SUBSTATION
SAN DIEGO, CALIFORNIA

DATE:	DECEMBER 2013	FIGURE
PROJECT NO:	SC0368-30	F-3

SwitchRack LPILE Analysis

LPile Plus for Windows, Version 2012-06.037

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

This copy of LPile is licensed to:

Geosyntec
San Diego

Serial Number of Security Device: 154103767
Company Name Stored in Security Device: Geosyntec Consultants

Files Used for Analysis

Path to file locations: \\sandiego-01\Data\PRJ\SDWP\Current Projects\SC0368 SDG&E Geotechnical\30 Vine Substation\05 Calculations\Preliminary LPILE Runs\
Name of input data file: SwitchRack SAND.f.lp6d
Name of output report file: SwitchRack SAND.f.lp6o
Name of plot output file: SwitchRack SAND.f.lp6p
Name of runtime messeage file: SwitchRack SAND.f.lp6r

Date and Time of Analysis

Date: December 11, 2013 Time: 10:03:56

Problem Title

Project Name: Vine Substation

Job Number: SC0368 30

Client: SDG&E

Engineer: JLN

Description: Simplified Sand Profile

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis does not use p-y multipliers (individual pile or shaft only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:
- Number of pile increments = 84
- Maximum number of iterations allowed = 100
- Deflection tolerance for convergence = 1.0000E-05 in
- Maximum allowable deflection = 100.0000 in

Pile Response Output Options:
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1

Pile Structural Properties and Geometry

Total number of pile sections = 1

Total length of pile = 14.00 ft

Depth of ground surface below top of pile = 0.00 ft

Pile diameter values used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	48.0000000
2	14.000000	48.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	= Drilled Shaft (Bored Pile)
Section Length	= 14.00000000 ft
Section Diameter	= 48.00000000 in

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	= 0.0000 ft
Distance from top of pile to bottom of layer	= 1.00000 ft
Effective unit weight at top of layer	= 130.00000 pcf
Effective unit weight at bottom of layer	= 130.00000 pcf
Friction angle at top of layer	= 40.00000 deg.
Friction angle at bottom of layer	= 40.00000 deg.
Subgrade k at top of layer	= 225.00000 pci
Subgrade k at bottom of layer	= 225.00000 pci

Layer 2 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	= 1.00000 ft
Distance from top of pile to bottom of layer	= 6.00000 ft
Effective unit weight at top of layer	= 120.00000 pcf
Effective unit weight at bottom of layer	= 120.00000 pcf
Friction angle at top of layer	= 32.00000 deg.
Friction angle at bottom of layer	= 32.00000 deg.
Subgrade k at top of layer	= 60.00000 pci
Subgrade k at bottom of layer	= 60.00000 pci

Layer 3 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	= 6.00000 ft
Distance from top of pile to bottom of layer	= 13.00000 ft
Effective unit weight at top of layer	= 115.00000 pcf
Effective unit weight at bottom of layer	= 115.00000 pcf
Friction angle at top of layer	= 30.00000 deg.
Friction angle at bottom of layer	= 30.00000 deg.
Subgrade k at top of layer	= 40.00000 pci
Subgrade k at bottom of layer	= 40.00000 pci

Layer 4 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	13.00000 ft
Distance from top of pile to bottom of layer	=	21.00000 ft
Effective unit weight at top of layer	=	130.00000 pcf
Effective unit weight at bottom of layer	=	130.00000 pcf
Friction angle at top of layer	=	34.00000 deg.
Friction angle at bottom of layer	=	34.00000 deg.
Subgrade k at top of layer	=	225.00000 pci
Subgrade k at bottom of layer	=	225.00000 pci

(Depth of lowest soil layer extends 7.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Angle of Friction deg.	kpy pci
1	Sand (Reese, et al.)	0.00	130.000	40.000	225.000
		1.000	130.000	40.000	225.000
2	Sand (Reese, et al.)	1.000	120.000	32.000	60.000
		6.000	120.000	32.000	60.000
3	Sand (Reese, et al.)	6.000	115.000	30.000	40.000
		13.000	115.000	30.000	40.000
4	Sand (Reese, et al.)	13.000	130.000	34.000	225.000
		21.000	130.000	34.000	225.000

Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 2

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	1	V = 18.60000 lbs	M = 0.0000 in-lbs	86.00000000	No
2	1	V = 38.80000 lbs	M = 0.0000 in-lbs	86.00000000	No

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	14.00000000 ft
Shaft Diameter	=	48.00000000 in
Concrete Cover Thickness	=	3.00000000 in
Number of Reinforcing Bars	=	14 bars
Yield Stress of Reinforcing Bars	=	60.00000000 ksi
Modulus of Elasticity of Reinforcing Bars	=	29000. ksi
Gross Area of Shaft	=	1809.55736847 sq. in.
Total Area of Reinforcing Steel	=	17.78000000 sq. in.
Area Ratio of Steel Reinforcement	=	0.98 percent
Edge-to-Edge Bar Spacing	=	7.79327764 in
Maximum Concrete Aggregate Size	=	1.00000000 in
Ratio of Bar Spacing to Aggregate Size	=	7.79
Offset of Rebar Cage Center from Center of Pile	=	0.0000000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As = 5635.832 kips
Tensile Load for Cracking of Concrete = -708.453 kips
Nominal Axial Tensile Capacity = -1066.800 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.27000	1.27000	20.36500	0.00000
2	1.27000	1.27000	18.34823	8.83604
3	1.27000	1.27000	12.69737	15.92200
4	1.27000	1.27000	4.53164	19.85441
5	1.27000	1.27000	-4.53164	19.85441
6	1.27000	1.27000	-12.69737	15.92200
7	1.27000	1.27000	-18.34823	8.83604
8	1.27000	1.27000	-20.36500	0.00000
9	1.27000	1.27000	-18.34823	-8.83604
10	1.27000	1.27000	-12.69737	-15.92200
11	1.27000	1.27000	-4.53164	-19.85441
12	1.27000	1.27000	4.53164	-19.85441
13	1.27000	1.27000	12.69737	-15.92200
14	1.27000	1.27000	18.34823	-8.83604

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 7.79328 inches between Bars 5 and 6

Spacing to aggregate size ratio = 7.79328

Concrete Properties:

Compressive Strength of Concrete = 3.00000000 ksi
Modulus of Elasticity of Concrete = 3122.01857778 ksi
Modulus of Rupture of Concrete = -0.41079191 ksi
Compression Strain at Peak Stress = 0.00163356
Tensile Strain at Fracture of Concrete = -0.00011596
Maximum Coarse Aggregate Size = 1.00000000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	0.086

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318-08 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than than 0.003. See ACI 318-08, Section 10.3.4.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 0.086 kips

Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Max Concrete Stress ksi	Max Steel Stress ksi	Run Msg
0.000000625	654.8613583	1047778173.	24.0195094	0.0000150	-0.0000150	0.0543400	0.4310036	
0.000001250	1306.0481616	1044838529.	24.0098153	0.0000300	-0.0000300	0.1081396	0.8616558	
0.000001875	1953.5604026	1041898881.	24.0065843	0.0000450	-0.0000450	0.1614434	1.2923080	
0.000002500	2597.3980811	1038959232.	24.0049690	0.0000600	-0.0000600	0.2142513	1.7229603	
0.000003125	3237.5611973	1036019583.	24.0040000	0.0000750	-0.0000750	0.2665634	2.1536125	
0.000003750	3874.0497512	1033079934.	24.0033542	0.0000900	-0.0000900	0.3183797	2.5842648	
0.000004375	4506.8637427	1030140284.	24.0028931	0.0001050	-0.0001050	0.3697001	3.0149171	
0.000005000	4506.8637427	901372749.	11.9918763	0.0000600	-0.0001800	0.2119395	-5.1863779	C
0.000005625	4506.8637427	801220221.	11.9955020	0.0000675	-0.0002025	0.2379579	-5.8340837	C
0.000006250	4506.8637427	721098199.	11.9993532	0.0000750	-0.0002250	0.2638753	-6.4816172	C
0.000006875	4506.8637427	655543817.	12.0033720	0.0000825	-0.0002475	0.2896913	-7.1289777	C
0.000007500	4506.8637427	600915166.	12.0075197	0.0000901	-0.0002699	0.3154057	-7.7761644	C
0.000008125	4506.8637427	554690922.	12.0117697	0.0000976	-0.0002924	0.3410184	-8.4231767	C
0.000008750	4506.8637427	515070142.	12.0161029	0.0001051	-0.0003149	0.3665291	-9.0700139	C
0.000009375	4506.8637427	480732133.	12.0205053	0.0001127	-0.0003373	0.3919376	-9.7166751	C

0.0000100	4506.8637427	450686374.	12.0249664	0.0001202	-0.0003598	0.4172437	-10.3631597	C
0.0000106	4506.8637427	424175411.	12.0294784	0.0001278	-0.0003822	0.4424471	-11.0094670	C
0.0000113	4506.8637427	400610110.	12.0340350	0.0001354	-0.0004046	0.4675477	-11.6555961	C
0.0000119	4506.8637427	379525368.	12.0386313	0.0001430	-0.0004270	0.4925453	-12.3015463	C
0.0000125	4506.8637427	360549099.	12.0432636	0.0001505	-0.0004495	0.5174395	-12.9473169	C
0.0000131	4506.8637427	343380095.	12.0479286	0.0001581	-0.0004719	0.5422302	-13.5929072	C
0.0000138	4506.8637427	327771909.	12.0526238	0.0001657	-0.0004943	0.5669172	-14.2383162	C
0.0000144	4506.8637427	313520956.	12.0573471	0.0001733	-0.0005167	0.5915003	-14.8835434	C
0.0000150	4506.8637427	300457583.	12.0620969	0.0001809	-0.0005391	0.6159791	-15.5285878	C
0.0000156	4506.8637427	288439280.	12.0668716	0.0001885	-0.0005615	0.6403535	-16.1734488	C
0.0000163	4506.8637427	277345461.	12.0716701	0.0001962	-0.0005838	0.6646233	-16.8181254	C
0.0000169	4506.8637427	267073407.	12.0764914	0.0002038	-0.0006062	0.6887882	-17.4626170	C
0.0000175	4506.8637427	257535071.	12.0813346	0.0002114	-0.0006286	0.7128479	-18.1069227	C
0.0000181	4506.8637427	248654551.	12.0861990	0.0002191	-0.0006509	0.7368024	-18.7510417	C
0.0000188	4506.8637427	240366066.	12.0910839	0.0002267	-0.0006733	0.7606512	-19.3949731	C
0.0000194	4506.8637427	232612322.	12.0959889	0.0002344	-0.0006956	0.7843942	-20.0387162	C
0.0000200	4506.8637427	225343187.	12.1009135	0.0002420	-0.0007180	0.8080312	-20.6822702	C
0.0000206	4595.9814755	222835465.	12.1058574	0.0002497	-0.0007403	0.8315618	-21.3256341	C
0.0000213	4733.6966179	222762194.	12.1108201	0.0002574	-0.0007626	0.8549859	-21.9688071	C
0.0000219	4871.3180735	222688826.	12.1158014	0.0002650	-0.0007850	0.8783032	-22.6117885	C
0.0000225	5008.8454817	222615355.	12.1208011	0.0002727	-0.0008073	0.9015135	-23.2545773	C
0.0000231	5146.2784794	222541772.	12.1258189	0.0002804	-0.0008296	0.9246166	-23.8971727	C
0.0000238	5283.6167004	222468072.	12.1308548	0.0002881	-0.0008519	0.9476120	-24.5395738	C
0.0000244	5420.8597760	222394247.	12.1359085	0.0002958	-0.0008742	0.9704998	-25.1817797	C
0.0000256	5695.0587702	222246196.	12.1460691	0.0003112	-0.0009188	1.0159508	-26.4656028	C
0.0000269	5968.8728929	222097596.	12.1563000	0.0003267	-0.0009633	1.0609678	-27.7486341	C
0.0000281	6242.2988842	221948405.	12.1666007	0.0003422	-0.0010078	1.1055485	-29.0308668	C
0.0000294	6515.3336444	221798592.	12.1769710	0.0003577	-0.0010523	1.1496910	-30.3122934	C
0.0000306	6787.9740256	221648131.	12.1874109	0.0003732	-0.0010968	1.1933931	-31.5929063	C
0.0000319	7060.2168303	221496999.	12.1979205	0.0003888	-0.0011412	1.2366527	-32.8726979	C
0.0000331	7332.0588108	221345172.	12.2084999	0.0004044	-0.0011856	1.2794675	-34.1516605	C
0.0000344	7603.4966675	221192630.	12.2191496	0.0004200	-0.0012300	1.3218355	-35.4297860	C
0.0000356	7874.5270481	221039356.	12.2298699	0.0004357	-0.0012743	1.3637543	-36.7070666	C
0.0000369	8145.1478102	220885364.	12.2406329	0.0004514	-0.0013186	1.4052190	-37.9835230	C
0.0000381	8415.3623918	220730817.	12.2510289	0.0004671	-0.0013629	1.4461856	-39.2596071	C
0.0000394	8685.1627868	220575563.	12.2614912	0.0004828	-0.0014072	1.4866938	-40.5348596	C
0.0000406	8954.5433670	220419529.	12.2720204	0.0004986	-0.0014514	1.5267413	-41.8092759	C
0.0000419	9223.5014274	220262721.	12.2826170	0.0005143	-0.0014957	1.5663258	-43.0828468	C
0.0000431	9492.0334630	220105124.	12.2932818	0.0005301	-0.0015399	1.6054449	-44.3555643	C
0.0000444	9760.1359123	219946725.	12.3040154	0.0005460	-0.0015840	1.6440963	-45.6274201	C
0.0000456	10028.	219787510.	12.3148185	0.0005619	-0.0016281	1.6822775	-46.8984056	C
0.0000469	10295.	219627467.	12.3256920	0.0005778	-0.0016722	1.7199862	-48.1685123	C
0.0000481	10562.	219466582.	12.3366365	0.0005937	-0.0017163	1.7572198	-49.4377315	C
0.0000494	10828.	219304842.	12.3476530	0.0006097	-0.0017603	1.7939758	-50.7060542	C
0.0000506	11094.	219142233.	12.3587422	0.0006257	-0.0018043	1.8302518	-51.9734715	C
0.0000519	11360.	218978744.	12.3699050	0.0006417	-0.0018483	1.8660450	-53.2399740	C
0.0000531	11625.	218814360.	12.3811424	0.0006577	-0.0018923	1.9013529	-54.5055523	C
0.0000544	11889.	218649070.	12.3924552	0.0006738	-0.0019362	1.9361728	-55.7701970	C
0.0000556	12153.	218482858.	12.4038445	0.0006900	-0.0019800	1.9705020	-57.0338982	C
0.0000569	12417.	218315713.	12.4153111	0.0007061	-0.0020239	2.0043377	-58.2966460	C
0.0000581	12680.	218147620.	12.4268562	0.0007223	-0.0020677	2.0376772	-59.5584304	C
0.0000594	12942.	217978566.	12.4384807	0.0007385	-0.0021115	2.0705176	-60.0000000	CY
0.0000606	13205.	217808537.	12.4501858	0.0007548	-0.0021552	2.1028561	-60.0000000	CY
0.0000619	13466.	217637520.	12.4619724	0.0007711	-0.0021989	2.1346897	-60.0000000	CY
0.0000631	13728.	217465499.	12.4738418	0.0007874	-0.0022426	2.1660155	-60.0000000	CY
0.0000644	13988.	217292461.	12.4857950	0.0008038	-0.0022862	2.1968303	-60.0000000	CY
0.0000656	14237.	216937877.	12.4942055	0.0008199	-0.0023301	2.2266874	-60.0000000	CY
0.0000669	14442.	215950841.	12.4897559	0.0008353	-0.0023747	2.2544434	-60.0000000	CY
0.0000681	14610.	214458844.	12.4747457	0.0008498	-0.0024202	2.2803787	-60.0000000	CY
0.0000694	14778.	213016282.	12.4606410	0.0008645	-0.0024655	2.3058995	-60.0000000	CY
0.0000706	14946.	211620502.	12.4473969	0.0008791	-0.0025109	2.3310038	-60.0000000	CY
0.0000719	15113.	210269032.	12.4349717	0.0008938	-0.0025562	2.3556895	-60.0000000	CY
0.0000731	15280.	208959565.	12.4233266	0.0009085	-0.0026015	2.3799546	-60.0000000	CY
0.0000744	15440.	207598595.	12.4102886	0.0009230	-0.0026470	2.4035366	-60.0000000	CY
0.0000794	15853.	199720504.	12.2970184	0.0009761	-0.0028339	2.4854478	-60.0000000	CY
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0.0000894	16558.	185268209.	12.0803153	0.0010797	-0.0032103	2.6278771	-60.0000000	CY
0.0000944	16907.	179142156.	11.9928331	0.0011318	-0.0033982	2.6908621	-60.0000000	CY
0.0000994	17216.	173241769.	11.9049250	0.0011831	-0.0035869	2.7470342	-60.0000000	CY
0.0001044	17381.	166525746.	11.7801927	0.0012296	-0.0037804	2.7930480	-60.0000000	CY
0.0001094	17526.	160235444.	11.6571578	0.0012750	-0.0039750	2.8335294	-60.0000000	CY
0.0001144	17668.	154477936.	11.5457837	0.0013205	-0.0041695	2.8696885	-60.0000000	CY
0.0001194	17809.	149189441.	11.4457999	0.0013663	-0.0043637	2.9015893	-60.0000000	CY
0.0001244	17949.	144313067.	11.3558804	0.0014124	-0.0045576	2.9291611	-60.0000000	CY
0.0001294	18087.	139799924.	11.2745420	0.0014586	-0.0047514	2.9523089	-60.0000000	CY
0.0001344	18221.	135599692.	11.1962751	0.0015045	-0.0049455	2.9707471	-60.0000000	CY
0.0001394	18354.	131688989.	11.1255857	0.0015506	-0.0051394	2.9847732	-60.0000000	CY
0.0001444	18485.	128037416.	11.0617411	0.0015970	-0.0053330	2.9943057	-60.0000000	CY
0.0001494	18615.	124618631.	11.0041101	0.0016437	-0.0055263	2.9992592	-60.0000000	CY
0.0001544	18738.	121379788.	10.9502230	0.0016904	-0.0057196	2.9966892	-60.0000000	CY
0.0001594	18830.	118148831.	10.8885040	0.0017354	-0.0059146	2.9998114	-60.0000000	CY
0.0001644	18884.	114886235.	10.8161086	0.0017779	-0.0061121	2.9968527	-60.0000000	CY
0.0001694	18923.	111724980.	10.7386115	0.0018189	-0.0063111	2.9996375	-60.0000000	CY
0.0001744	18959.	108728016.	10.6647736	0.0018597	-0.0065103	2.9964977	-60.0000000	CY
0.0001794	18995.	105893565.	10.5962596	0.0019007	-0.0067093	2.9986847	-60.0000000	CY
0.0001844	19029.	103209432.	10.5324533	0.0019419	-0.0069081	2.9999978	-60.0000000	CY
0.0001894	19063.	100662014.	10.4733190	0.0019834	-0.0071066	2.9960568	-60.0000000	CY
0.0001944	19096.	98242854.	10.4180880	0.0020250	-0.0073050	2.9990937	-60.0000000	CY
0.0001994	19128.	95942162.	10.3665006	0.0020668	-0.0075032	2.9994573	-60.0000000	CY
0.0002044	19160.	93749758.	10.3184163	0.0021088	-0.0077012	2.9953545	-60.0000000	CY
0.0002094	19190.	91653705.	10.2688341	0.0021500	-0.0079000	2.9985210	60.0000000	CY

0.0002144	19219.	89653580.	10.2222468	0.0021914	-0.0080986	2.9999260	60.0000000	CY
0.0002194	19248.	87741768.	10.1787313	0.0022330	-0.0082970	2.9957937	60.0000000	CY
0.0002244	19277.	85913317.	10.1378345	0.0022747	-0.0084953	2.9960956	60.0000000	CY
0.0002294	19305.	84163204.	10.0992748	0.0023165	-0.0086935	2.9987988	60.0000000	CY
0.0002344	19333.	82486387.	10.0629126	0.0023585	-0.0088915	2.9999552	60.0000000	CY
0.0002394	19360.	80877303.	10.0288940	0.0024007	-0.0090893	2.9957921	60.0000000	CY
0.0002444	19387.	79332733.	9.9968054	0.0024430	-0.0092870	2.9944378	60.0000000	CY
0.0002494	19414.	77849108.	9.9664432	0.0024854	-0.0094846	2.9976287	60.0000000	CY
0.0002544	19440.	76422815.	9.9377129	0.0025279	-0.0096821	2.9994850	60.0000000	CY
0.0002594	19466.	75050373.	9.9105744	0.0025706	-0.0098794	2.9993256	60.0000000	CY
0.0002644	19492.	73728061.	9.8851525	0.0026134	-0.0100766	2.9941677	60.0000000	CY
0.0002694	19517.	72454132.	9.8610195	0.0026563	-0.0102737	2.9934557	60.0000000	CY
0.0002744	19543.	71225750.	9.8378764	0.0026993	-0.0104707	2.9967531	60.0000000	CY
0.0003044	19686.	64678375.	9.7087711	0.0029551	-0.0116549	2.9950431	60.0000000	CY
0.0003344	19824.	59287942.	9.6132027	0.0032144	-0.0128356	2.9883460	60.0000000	CYT
0.0003644	19929.	54692426.	9.5313059	0.0034730	-0.0140170	2.9993850	60.0000000	CYT
0.0003944	19969.	50634510.	9.4411704	0.0037234	-0.0152066	2.9914620	60.0000000	CYT
0.0004244	19969.	47055046.	9.4129401	0.0039946	-0.0163754	2.9961557	60.0000000	CYT

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	0.086	19710.359	0.00300000

Note note that the values of moment capacity in the table above are not
factored by a strength reduction factor (phi-factor).

In ACI 318-08, the value of the strength reduction factor depends on whether
the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.70).

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to ACI 318-08, Section
9.3.2.2 or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding
bending stiffnesses computed for common resistance factor values used for
reinforced concrete sections.

Axial Load No.	Resistance Factor for Moment	Nominal Moment Capacity in-kip	Ultimate (Factored) Axial Thrust kips	Ultimate (Factored) Moment Capacity in-kip	Bending Stiffness at Ult. Mom. Cap. kip-in^2
1	0.65	19710.359	0.056	12811.733	218062720.509
1	0.70	19710.359	0.060	13797.251	217419207.200
1	0.75	19710.359	0.065	14782.769	212976624.644

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 1

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head = 18.600 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 86.000 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.000169	4.757E-07	18.6000	-1.232E-06	0.000	1.048E+12	0.000	0.000	0.000
0.167	0.000167	37.2002	18.5250	-1.232E-06	0.000	1.048E+12	-0.0750	900.0000	0.000
0.333	0.000164	74.1005	18.3023	-1.232E-06	0.000	1.048E+12	-0.1478	1800.0000	0.000
0.500	0.000162	110.4097	17.9362	-1.232E-06	0.000	1.048E+12	-0.2183	2700.0000	0.000
0.667	0.000159	145.8456	17.4312	-1.231E-06	0.000	1.048E+12	-0.2867	3600.0000	0.000
0.833	0.000157	180.1348	16.7917	-1.231E-06	0.000	1.048E+12	-0.3528	4500.0000	0.000
1.000	0.000154	213.0130	16.3177	-1.231E-06	0.000	1.048E+12	-0.1213	1572.1582	0.000
1.167	0.000152	245.4059	16.0587	-1.230E-06	0.000	1.048E+12	-0.1376	1812.1582	0.000
1.333	0.000149	277.2483	15.7678	-1.230E-06	0.000	1.048E+12	-0.1533	2052.1582	0.000
1.500	0.000147	308.4776	15.4461	-1.229E-06	0.000	1.048E+12	-0.1684	2292.1582	0.000
1.667	0.000144	339.0331	15.0947	-1.229E-06	0.000	1.048E+12	-0.1829	2532.1582	0.000
1.833	0.000142	368.8570	14.7149	-1.228E-06	0.000	1.048E+12	-0.1969	2772.1582	0.000
2.000	0.000140	397.8933	14.3078	-1.227E-06	0.000	1.048E+12	-0.2102	3012.1582	0.000
2.167	0.000137	426.0887	13.8746	-1.227E-06	0.000	1.048E+12	-0.2230	3252.1582	0.000
2.333	0.000135	453.3923	13.4165	-1.226E-06	0.000	1.048E+12	-0.2352	3492.1582	0.000
2.500	0.000132	479.7552	12.9346	-1.225E-06	0.000	1.048E+12	-0.2467	3732.1582	0.000
2.667	0.000130	505.1312	12.4301	-1.224E-06	0.000	1.048E+12	-0.2577	3972.1582	0.000

2.833	0.000127	529.4763	11.9042	-1.223E-06	0.000	1.048E+12	-0.2682	4212.1582	0.000
3.000	0.000125	552.7486	11.3581	-1.222E-06	0.000	1.048E+12	-0.2780	4452.1582	0.000
3.167	0.000122	574.9090	10.7928	-1.221E-06	0.000	1.048E+12	-0.2873	4692.1582	0.000
3.333	0.000120	595.9204	10.2096	-1.220E-06	0.000	1.048E+12	-0.2959	4932.1582	0.000
3.500	0.000118	615.7480	9.6097	-1.218E-06	0.000	1.048E+12	-0.3040	5172.1582	0.000
3.667	0.000115	634.3595	8.9941	-1.217E-06	0.000	1.048E+12	-0.3115	5412.1582	0.000
3.833	0.000113	651.7249	8.3641	-1.216E-06	0.000	1.048E+12	-0.3185	5652.1582	0.000
4.000	0.000110	667.8163	7.7208	-1.215E-06	0.000	1.048E+12	-0.3248	5892.1582	0.000
4.167	0.000108	682.6084	7.0653	-1.213E-06	0.000	1.048E+12	-0.3306	6132.1582	0.000
4.333	0.000105	696.0780	6.3988	-1.212E-06	0.000	1.048E+12	-0.3358	6372.1582	0.000
4.500	0.000103	708.2042	5.7225	-1.211E-06	0.000	1.048E+12	-0.3405	6612.1582	0.000
4.667	0.000101	718.9685	5.0375	-1.209E-06	0.000	1.048E+12	-0.3445	6852.1582	0.000
4.833	9.815E-05	728.3546	4.3449	-1.208E-06	0.000	1.048E+12	-0.3480	7092.1582	0.000
5.000	9.573E-05	736.3486	3.6459	-1.207E-06	0.000	1.048E+12	-0.3510	7332.1582	0.000
5.167	9.332E-05	742.9388	2.9416	-1.205E-06	0.000	1.048E+12	-0.3533	7572.1582	0.000
5.333	9.091E-05	748.1156	2.2332	-1.204E-06	0.000	1.048E+12	-0.3551	7812.1582	0.000
5.500	8.851E-05	751.8720	1.5218	-1.202E-06	0.000	1.048E+12	-0.3563	8052.1582	0.000
5.667	8.610E-05	754.2031	0.8085	-1.201E-06	0.000	1.048E+12	-0.3570	8292.1582	0.000
5.833	8.370E-05	755.1063	0.0944	-1.200E-06	0.000	1.048E+12	-0.3571	8532.1582	0.000
6.000	8.130E-05	754.5812	-0.5104	-1.198E-06	0.000	1.048E+12	-0.2477	6093.7080	0.000
6.167	7.891E-05	753.0652	-1.0048	-1.197E-06	0.000	1.048E+12	-0.2467	6253.7080	0.000
6.333	7.652E-05	750.5622	-1.4970	-1.195E-06	0.000	1.048E+12	-0.2454	6413.7080	0.000
6.500	7.413E-05	747.0778	-1.9860	-1.194E-06	0.000	1.048E+12	-0.2436	6573.7080	0.000
6.667	7.174E-05	742.6187	-2.4712	-1.192E-06	0.000	1.048E+12	-0.2415	6733.7080	0.000
6.833	6.936E-05	737.1935	-2.9518	-1.191E-06	0.000	1.048E+12	-0.2391	6893.7080	0.000
7.000	6.698E-05	730.8120	-3.4271	-1.190E-06	0.000	1.048E+12	-0.2362	7053.7080	0.000
7.167	6.460E-05	723.4856	-3.8963	-1.188E-06	0.000	1.048E+12	-0.2330	7213.7080	0.000
7.333	6.222E-05	715.2272	-4.3587	-1.187E-06	0.000	1.048E+12	-0.2294	7373.7080	0.000
7.500	5.985E-05	706.0512	-4.8136	-1.185E-06	0.000	1.048E+12	-0.2255	7533.7080	0.000
7.667	5.748E-05	695.9733	-5.2602	-1.184E-06	0.000	1.048E+12	-0.2211	7693.7080	0.000
7.833	5.512E-05	685.0109	-5.6977	-1.183E-06	0.000	1.048E+12	-0.2164	7853.7080	0.000
8.000	5.275E-05	673.1828	-6.1255	-1.182E-06	0.000	1.048E+12	-0.2114	8013.7080	0.000
8.167	5.039E-05	660.5092	-6.5428	-1.180E-06	0.000	1.048E+12	-0.2059	8173.7080	0.000
8.333	4.803E-05	647.0118	-6.9489	-1.179E-06	0.000	1.048E+12	-0.2001	8333.7080	0.000
8.500	4.567E-05	632.7139	-7.3430	-1.178E-06	0.000	1.048E+12	-0.1940	8493.7080	0.000
8.667	4.332E-05	617.6401	-7.7244	-1.177E-06	0.000	1.048E+12	-0.1874	8653.7080	0.000
8.833	4.097E-05	601.8166	-8.0924	-1.175E-06	0.000	1.048E+12	-0.1805	8813.7080	0.000
9.000	3.862E-05	585.2709	-8.4462	-1.174E-06	0.000	1.048E+12	-0.1733	8973.7080	0.000
9.167	3.627E-05	568.0320	-8.7852	-1.173E-06	0.000	1.048E+12	-0.1656	9133.7080	0.000
9.333	3.393E-05	550.1307	-9.1084	-1.172E-06	0.000	1.048E+12	-0.1576	9293.7080	0.000
9.500	3.158E-05	531.5987	-9.4154	-1.171E-06	0.000	1.048E+12	-0.1493	9453.7080	0.000
9.667	2.924E-05	512.4696	-9.7052	-1.170E-06	0.000	1.048E+12	-0.1406	9613.7080	0.000
9.833	2.690E-05	492.7782	-9.9772	-1.169E-06	0.000	1.048E+12	-0.1315	9773.7080	0.000
10.000	2.456E-05	472.5610	-10.2307	-1.168E-06	0.000	1.048E+12	-0.1220	9933.7080	0.000
10.167	2.223E-05	451.8557	-10.4649	-1.167E-06	0.000	1.048E+12	-0.1122	10094.	0.000
10.333	1.990E-05	430.7017	-10.6791	-1.166E-06	0.000	1.048E+12	-0.1020	10254.	0.000
10.500	1.756E-05	409.1396	-10.8726	-1.166E-06	0.000	1.048E+12	-0.0915	10414.	0.000
10.667	1.523E-05	387.2118	-11.0446	-1.165E-06	0.000	1.048E+12	-0.0805	10574.	0.000
10.833	1.290E-05	364.9618	-11.1943	-1.164E-06	0.000	1.048E+12	-0.0693	10734.	0.000
11.000	1.058E-05	342.4348	-11.3212	-1.164E-06	0.000	1.048E+12	-0.0576	10894.	0.000
11.167	8.250E-06	319.6774	-11.4244	-1.163E-06	0.000	1.048E+12	-0.0456	11054.	0.000
11.333	5.925E-06	296.7375	-11.5032	-1.162E-06	0.000	1.048E+12	-0.0332	11214.	0.000
11.500	3.601E-06	273.6649	-11.5569	-1.162E-06	0.000	1.048E+12	-0.0205	11374.	0.000
11.667	1.278E-06	250.5103	-11.5848	-1.161E-06	0.000	1.048E+12	-0.007369	11534.	0.000
11.833	-1.044E-06	227.3262	-11.5860	-1.161E-06	0.000	1.048E+12	0.006105	11694.	0.000
12.000	-3.365E-06	204.1665	-11.5600	-1.160E-06	0.000	1.048E+12	0.0199	11854.	0.000
12.167	-5.686E-06	181.0867	-11.5059	-1.160E-06	0.000	1.048E+12	0.0342	12014.	0.000
12.333	-8.005E-06	158.1434	-11.4230	-1.160E-06	0.000	1.048E+12	0.0487	12174.	0.000
12.500	-1.032E-05	135.3950	-11.3106	-1.159E-06	0.000	1.048E+12	0.0637	12334.	0.000
12.667	-1.264E-05	112.9014	-11.1680	-1.159E-06	0.000	1.048E+12	0.0790	12494.	0.000
12.833	-1.496E-05	90.7236	-10.9943	-1.159E-06	0.000	1.048E+12	0.0947	12654.	0.000
13.000	-1.728E-05	68.9245	-10.3125	-1.159E-06	0.000	1.048E+12	0.5871	67960.	0.000
13.167	-1.960E-05	49.4739	-9.0507	-1.159E-06	0.000	1.048E+12	0.6747	68860.	0.000
13.333	-2.191E-05	32.7222	-7.6116	-1.159E-06	0.000	1.048E+12	0.7644	69760.	0.000
13.500	-2.423E-05	19.0278	-5.9912	-1.159E-06	0.000	1.048E+12	0.8561	70660.	0.000
13.667	-2.655E-05	8.7578	-4.1852	-1.159E-06	0.000	1.048E+12	0.9499	71560.	0.000
13.833	-2.887E-05	2.2873	-2.1895	-1.159E-06	0.000	1.048E+12	1.0458	72460.	0.000
14.000	-3.118E-05	0.000	0.000	-1.159E-06	0.000	1.048E+12	1.1438	36680.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
  The above values of total stress are computed for combined axial and bending stress in elastic
  sections and do not equal actual stresses in concrete and steel in the range of nonlinear bending.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =      0.0001691 inches
Computed slope at pile head      =   -0.000001232 radians
Maximum bending moment           =    755.1063185 inch-lbs
Maximum shear force              =     18.6000000 lbs
Depth of maximum bending moment  =     70.0000000 inches below pile head
Depth of maximum shear force     =       0.000000 inches below pile head
Number of iterations             =              6
Number of zero deflection points =              1
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head = 38.800 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 86.000 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.000353	3.408E-07	38.8000	-2.570E-06	0.000	1.048E+12	0.000	0.000	0.000
0.167	0.000348	77.6004	38.6436	-2.570E-06	0.000	1.048E+12	-0.1564	900.0000	0.000
0.333	0.000342	154.5752	38.1789	-2.570E-06	0.000	1.048E+12	-0.3082	1800.0000	0.000
0.500	0.000337	230.3169	37.4152	-2.569E-06	0.000	1.048E+12	-0.4554	2700.0000	0.000
0.667	0.000332	304.2370	36.3618	-2.569E-06	0.000	1.048E+12	-0.5980	3600.0000	0.000
0.833	0.000327	375.7652	35.0279	-2.568E-06	0.000	1.048E+12	-0.7359	4500.0000	0.000
1.000	0.000322	444.3497	34.0390	-2.567E-06	0.000	1.048E+12	-0.2531	1572.1582	0.000
1.167	0.000317	511.9219	33.4989	-2.567E-06	0.000	1.048E+12	-0.2870	1812.1582	0.000
1.333	0.000312	578.3460	32.8920	-2.566E-06	0.000	1.048E+12	-0.3198	2052.1582	0.000
1.500	0.000307	643.4908	32.2209	-2.564E-06	0.000	1.048E+12	-0.3513	2292.1582	0.000
1.667	0.000301	707.2304	31.4880	-2.563E-06	0.000	1.048E+12	-0.3816	2532.1582	0.000
1.833	0.000296	769.4435	30.6957	-2.562E-06	0.000	1.048E+12	-0.4107	2772.1582	0.000
2.000	0.000291	830.0139	29.8465	-2.560E-06	0.000	1.048E+12	-0.4385	3012.1582	0.000
2.167	0.000286	888.8303	28.9428	-2.559E-06	0.000	1.048E+12	-0.4651	3252.1582	0.000
2.333	0.000281	945.7861	27.9871	-2.557E-06	0.000	1.048E+12	-0.4905	3492.1582	0.000
2.500	0.000276	1000.7798	26.9819	-2.555E-06	0.000	1.048E+12	-0.5147	3732.1582	0.000
2.667	0.000271	1053.7146	25.9296	-2.553E-06	0.000	1.048E+12	-0.5377	3972.1582	0.000
2.833	0.000266	1104.4989	24.8325	-2.551E-06	0.000	1.048E+12	-0.5594	4212.1582	0.000
3.000	0.000261	1153.0455	23.6932	-2.549E-06	0.000	1.048E+12	-0.5799	4452.1582	0.000
3.167	0.000255	1199.2725	22.5141	-2.546E-06	0.000	1.048E+12	-0.5992	4692.1582	0.000
3.333	0.000250	1243.1027	21.2975	-2.544E-06	0.000	1.048E+12	-0.6173	4932.1582	0.000
3.500	0.000245	1284.4635	20.0460	-2.542E-06	0.000	1.048E+12	-0.6342	5172.1582	0.000
3.667	0.000240	1323.2876	18.7619	-2.539E-06	0.000	1.048E+12	-0.6499	5412.1582	0.000
3.833	0.000235	1359.5121	17.4477	-2.537E-06	0.000	1.048E+12	-0.6644	5652.1582	0.000
4.000	0.000230	1393.0792	16.1057	-2.534E-06	0.000	1.048E+12	-0.6776	5892.1582	0.000
4.167	0.000225	1423.9358	14.7384	-2.531E-06	0.000	1.048E+12	-0.6897	6132.1582	0.000
4.333	0.000220	1452.0336	13.3481	-2.529E-06	0.000	1.048E+12	-0.7006	6372.1582	0.000
4.500	0.000215	1477.3292	11.9373	-2.526E-06	0.000	1.048E+12	-0.7102	6612.1582	0.000
4.667	0.000210	1499.7838	10.5083	-2.523E-06	0.000	1.048E+12	-0.7187	6852.1582	0.000
4.833	0.000205	1519.3635	9.0636	-2.520E-06	0.000	1.048E+12	-0.7260	7092.1582	0.000
5.000	0.000200	1536.0391	7.6055	-2.517E-06	0.000	1.048E+12	-0.7321	7332.1582	0.000
5.167	0.000195	1549.7862	6.1363	-2.514E-06	0.000	1.048E+12	-0.7370	7572.1582	0.000
5.333	0.000190	1560.5853	4.6585	-2.511E-06	0.000	1.048E+12	-0.7408	7812.1582	0.000
5.500	0.000185	1568.4212	3.1745	-2.508E-06	0.000	1.048E+12	-0.7433	8052.1582	0.000
5.667	0.000180	1573.2840	1.6865	-2.505E-06	0.000	1.048E+12	-0.7447	8292.1582	0.000
5.833	0.000175	1575.1680	0.1969	-2.502E-06	0.000	1.048E+12	-0.7449	8532.1582	0.000
6.000	0.000170	1574.0726	-1.0647	-2.499E-06	0.000	1.048E+12	-0.5167	6093.7080	0.000
6.167	0.000165	1570.9102	-2.0961	-2.496E-06	0.000	1.048E+12	-0.5147	6253.7080	0.000
6.333	0.000160	1565.6889	-3.1227	-2.493E-06	0.000	1.048E+12	-0.5119	6413.7080	0.000
6.500	0.000155	1558.4203	-4.1428	-2.490E-06	0.000	1.048E+12	-0.5083	6573.7080	0.000
6.667	0.000150	1549.1186	-5.1549	-2.487E-06	0.000	1.048E+12	-0.5039	6733.7080	0.000
6.833	0.000145	1537.8014	-6.1575	-2.484E-06	0.000	1.048E+12	-0.4987	6893.7080	0.000
7.000	0.000140	1524.4895	-7.1489	-2.481E-06	0.000	1.048E+12	-0.4928	7053.7080	0.000
7.167	0.000135	1509.2065	-8.1278	-2.479E-06	0.000	1.048E+12	-0.4860	7213.7080	0.000
7.333	0.000130	1491.9793	-9.0924	-2.476E-06	0.000	1.048E+12	-0.4786	7373.7080	0.000
7.500	0.000125	1472.8379	-10.0412	-2.473E-06	0.000	1.048E+12	-0.4703	7533.7080	0.000
7.667	0.000120	1451.8152	-10.9728	-2.470E-06	0.000	1.048E+12	-0.4613	7693.7080	0.000
7.833	0.000115	1428.9474	-11.8856	-2.467E-06	0.000	1.048E+12	-0.4515	7853.7080	0.000
8.000	0.000110	1404.2737	-12.7780	-2.465E-06	0.000	1.048E+12	-0.4409	8013.7080	0.000
8.167	0.000105	1377.8363	-13.6485	-2.462E-06	0.000	1.048E+12	-0.4296	8173.7080	0.000
8.333	0.000100	1349.6806	-14.4956	-2.459E-06	0.000	1.048E+12	-0.4175	8333.7080	0.000
8.500	9.528E-05	1319.8548	-15.3177	-2.457E-06	0.000	1.048E+12	-0.4046	8493.7080	0.000
8.667	9.037E-05	1288.4106	-16.1133	-2.454E-06	0.000	1.048E+12	-0.3910	8653.7080	0.000
8.833	8.546E-05	1255.4023	-16.8810	-2.452E-06	0.000	1.048E+12	-0.3766	8813.7080	0.000
9.000	8.056E-05	1220.8876	-17.6190	-2.450E-06	0.000	1.048E+12	-0.3615	8973.7080	0.000
9.167	7.566E-05	1184.9271	-18.3260	-2.447E-06	0.000	1.048E+12	-0.3455	9133.7080	0.000
9.333	7.077E-05	1147.5844	-19.0004	-2.445E-06	0.000	1.048E+12	-0.3289	9293.7080	0.000
9.500	6.588E-05	1108.9263	-19.6407	-2.443E-06	0.000	1.048E+12	-0.3114	9453.7080	0.000
9.667	6.100E-05	1069.0225	-20.2453	-2.441E-06	0.000	1.048E+12	-0.2932	9613.7080	0.000
9.833	5.612E-05	1027.9459	-20.8128	-2.439E-06	0.000	1.048E+12	-0.2742	9773.7080	0.000
10.000	5.124E-05	985.7723	-21.3415	-2.437E-06	0.000	1.048E+12	-0.2545	9933.7080	0.000
10.167	4.637E-05	942.5807	-21.8301	-2.435E-06	0.000	1.048E+12	-0.2340	10094.	0.000
10.333	4.150E-05	898.4529	-22.2769	-2.433E-06	0.000	1.048E+12	-0.2128	10254.	0.000
10.500	3.664E-05	853.4740	-22.6804	-2.432E-06	0.000	1.048E+12	-0.1908	10414.	0.000
10.667	3.178E-05	807.7321	-23.0392	-2.430E-06	0.000	1.048E+12	-0.1680	10574.	0.000
10.833	2.692E-05	761.3181	-23.3516	-2.429E-06	0.000	1.048E+12	-0.1445	10734.	0.000
11.000	2.206E-05	714.3263	-23.6163	-2.427E-06	0.000	1.048E+12	-0.1202	10894.	0.000
11.167	1.721E-05	666.8539	-23.8316	-2.426E-06	0.000	1.048E+12	-0.0951	11054.	0.000
11.333	1.236E-05	619.0009	-23.9960	-2.425E-06	0.000	1.048E+12	-0.0693	11214.	0.000
11.500	7.511E-06	570.8708	-24.1080	-2.423E-06	0.000	1.048E+12	-0.0427	11374.	0.000
11.667	2.666E-06	522.5698	-24.1661	-2.422E-06	0.000	1.048E+12	-0.0154	11534.	0.000
11.833	-2.178E-06	474.2073	-24.1687	-2.421E-06	0.000	1.048E+12	0.0127	11694.	0.000
12.000	-7.020E-06	425.8958	-24.1144	-2.421E-06	0.000	1.048E+12	0.0416	11854.	0.000
12.167	-1.186E-05	377.7506	-24.0015	-2.420E-06	0.000	1.048E+12	0.0712	12014.	0.000
12.333	-1.670E-05	329.8905	-23.8286	-2.419E-06	0.000	1.048E+12	0.1016	12174.	0.000
12.500	-2.154E-05	282.4370	-23.5942	-2.419E-06	0.000	1.048E+12	0.1328	12334.	0.000
12.667	-2.637E-05	235.5147	-23.2966	-2.418E-06	0.000	1.048E+12	0.1648	12494.	0.000
12.833	-3.121E-05	189.2514	-22.9344	-2.418E-06	0.000	1.048E+12	0.1975	12654.	0.000
13.000	-3.604E-05	143.7780	-21.5121	-2.417E-06	0.000	1.048E+12	1.2248	67960.	0.000
13.167	-4.088E-05	103.2037	-18.8799	-2.417E-06	0.000	1.048E+12	1.4074	68860.	0.000

13.333	-4.571E-05	68.2592	-15.8780	-2.417E-06	0.000	1.048E+12	1.5945	69760.	0.000
13.500	-5.055E-05	39.6925	-12.4978	-2.417E-06	0.000	1.048E+12	1.7858	70660.	0.000
13.667	-5.538E-05	18.2690	-8.7305	-2.417E-06	0.000	1.048E+12	1.9815	71560.	0.000
13.833	-6.021E-05	4.7714	-4.5674	-2.417E-06	0.000	1.048E+12	2.1815	72460.	0.000
14.000	-6.505E-05	0.000	0.000	-2.417E-06	0.000	1.048E+12	2.3859	36680.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
  The above values of total stress are computed for combined axial and bending stress in elastic
  sections and do not equal actual stresses in concrete and steel in the range of nonlinear bending.

Output Summary for Load Case No. 2:

Pile-head deflection = 0.0003528 inches
Computed slope at pile head = -0.000002570 radians
Maximum bending moment = 1575.1680193 inch-lbs
Maximum shear force = 38.8000000 lbs
Depth of maximum bending moment = 70.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 6
Number of zero deflection points = 1

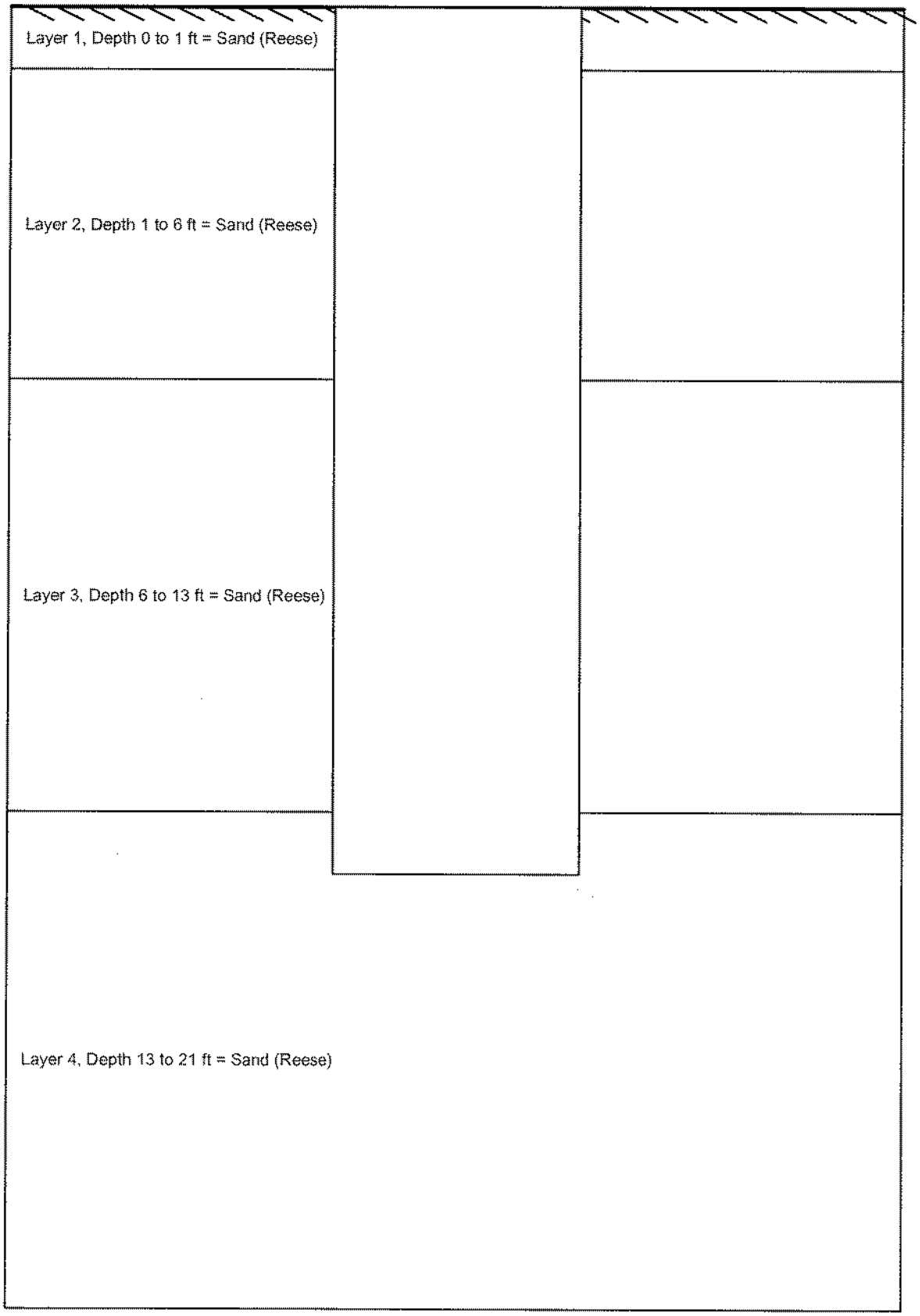
Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

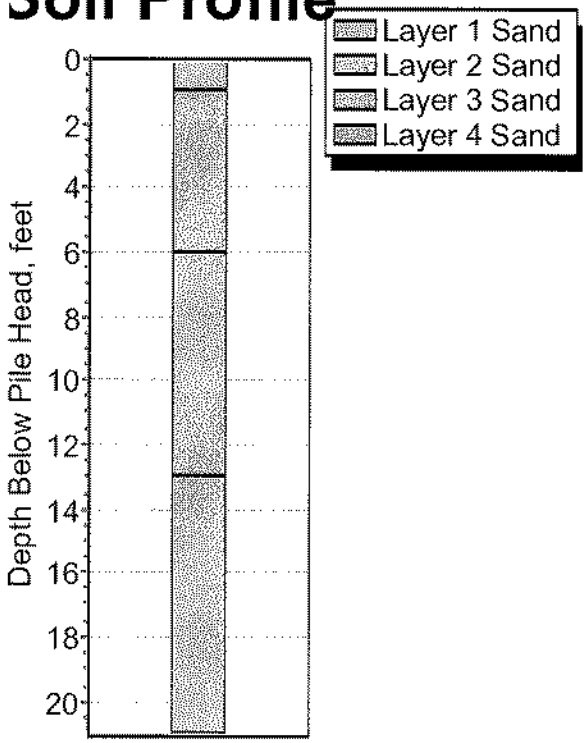
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

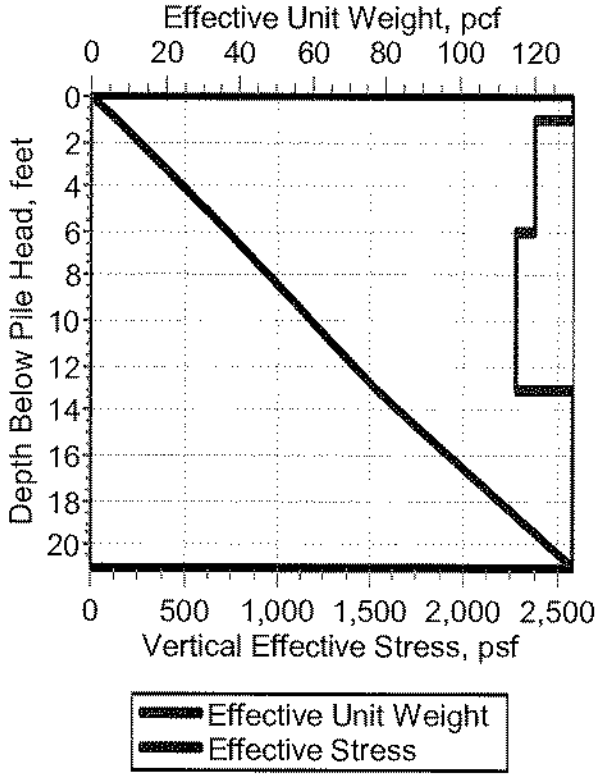
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)		Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in Pile in-lbs	Maximum Shear in Pile lbs	Pile-head Rotation radians
1	1	V = 18.6000	M =	0.000	86.00000000	0.00016911	755.10631852	18.6000	-0.00000123
2	1	V = 38.8000	M =	0.000	86.00000000	0.00035277	1575.16801929	38.8000	-0.00000257

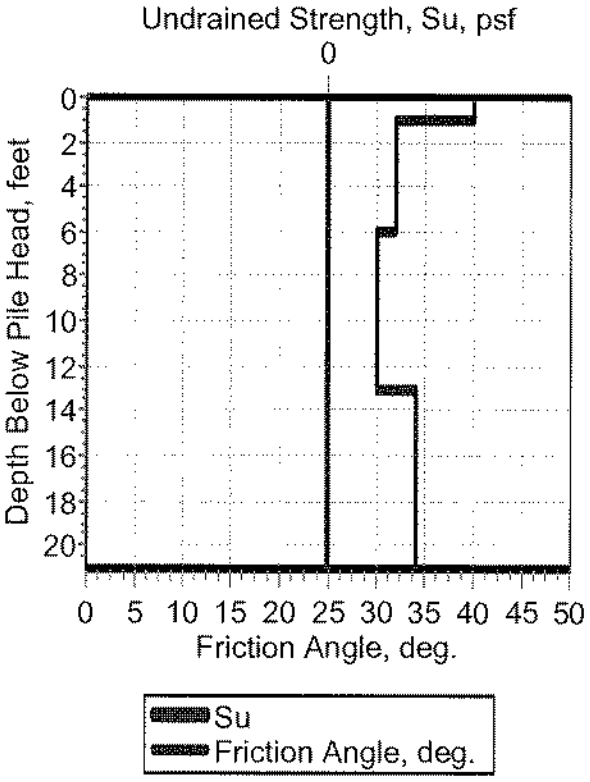
The analysis ended normally.

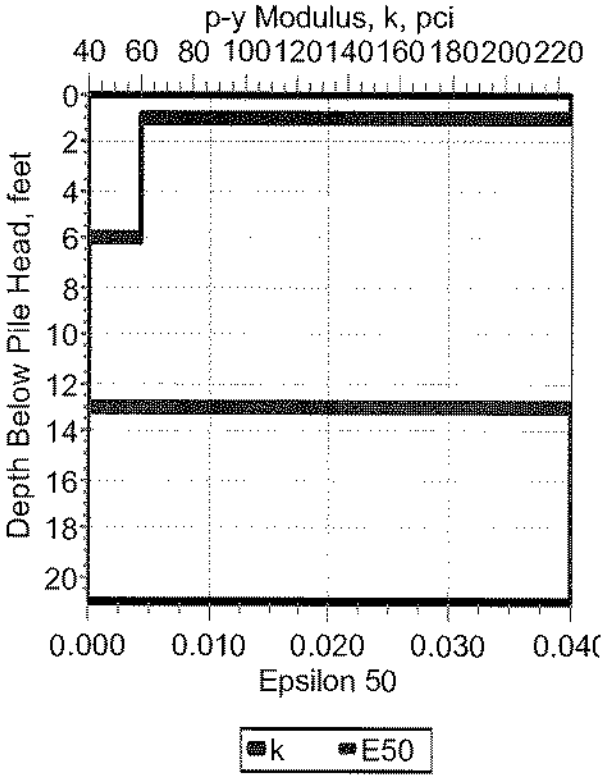


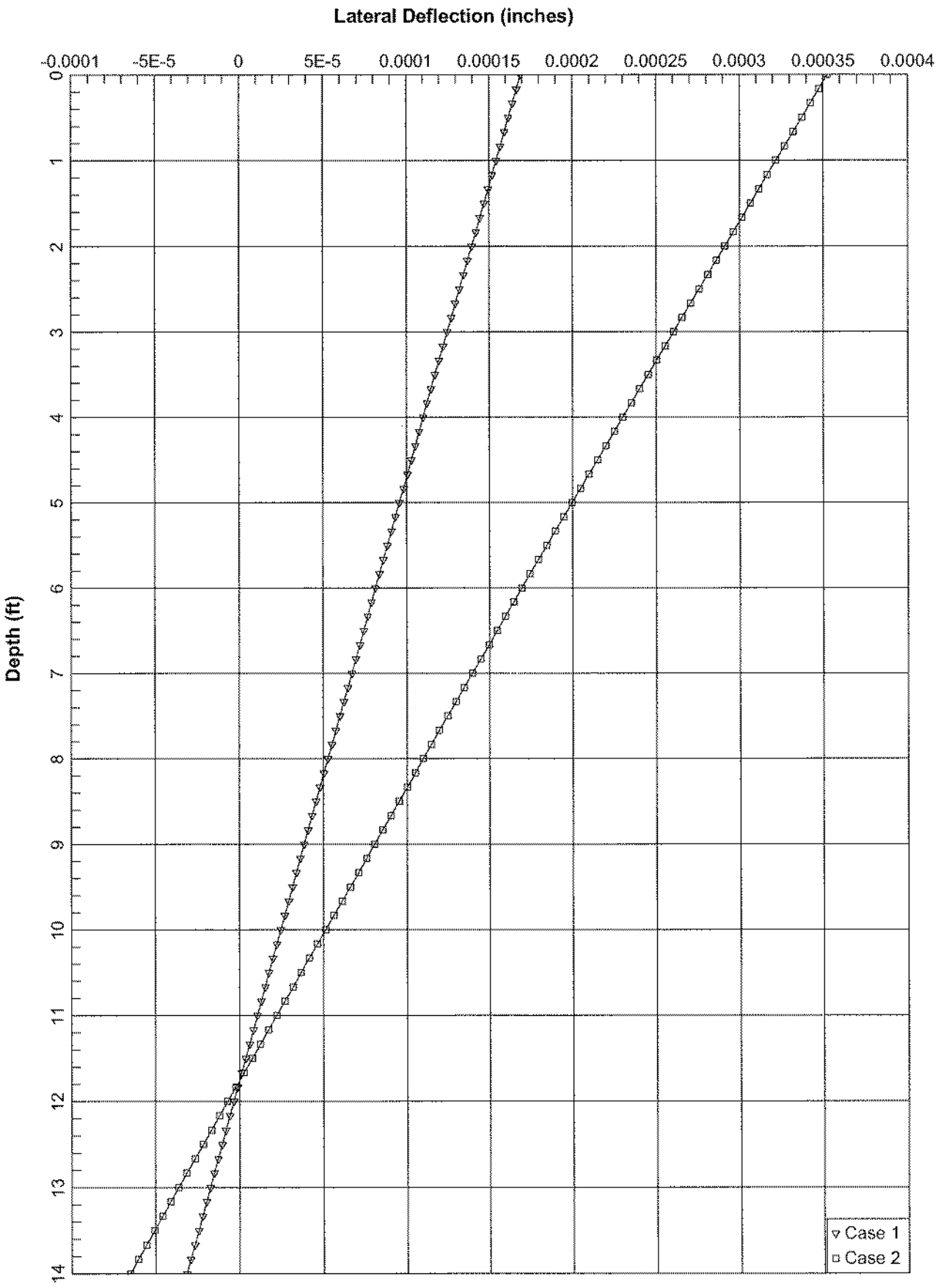
Soil Profile

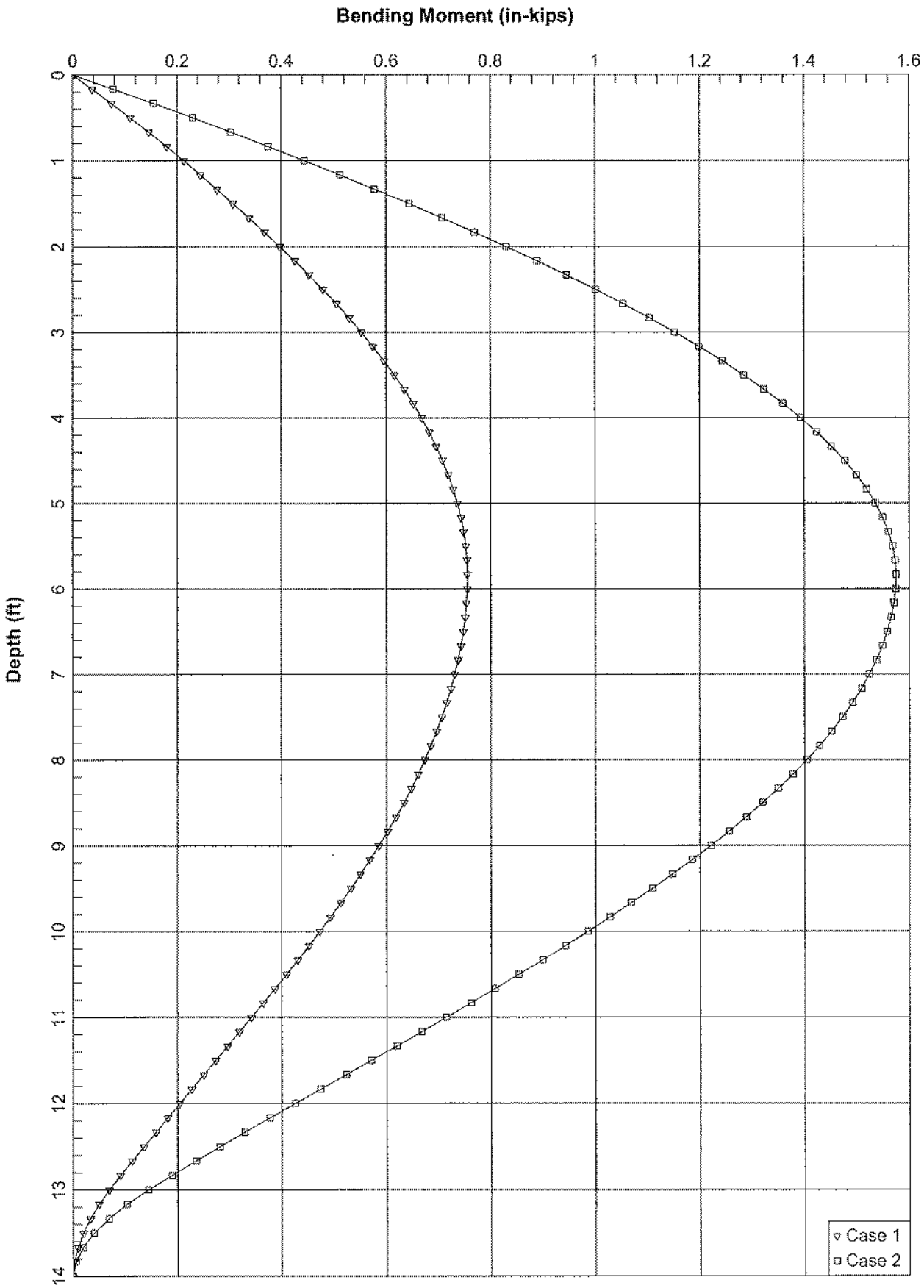


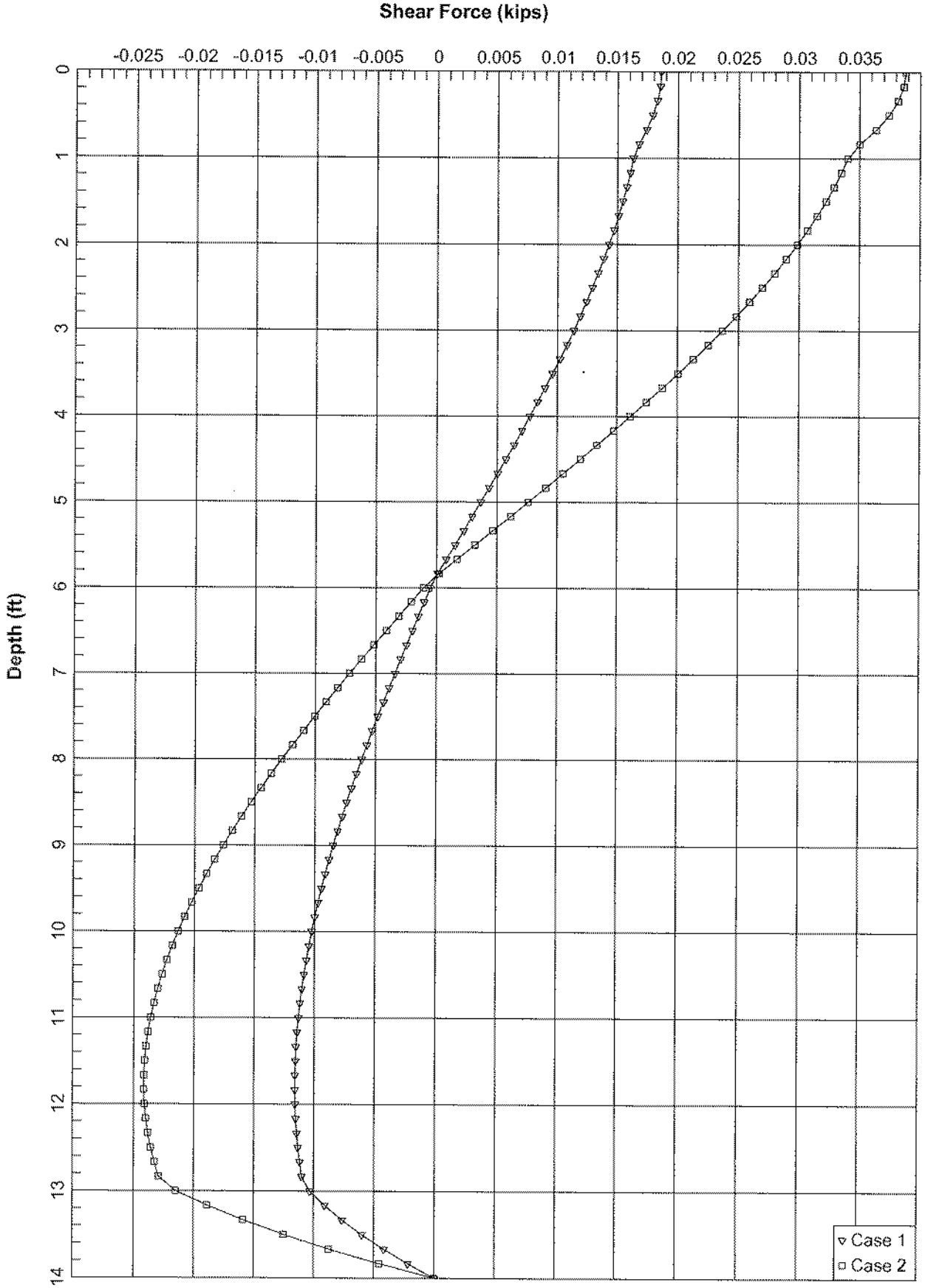







Lateral Deflection (inches)
-0.0001
-5E-5
0
5E-5
0.0001
0.00015
0.0002
0.00025
0.0003
0.00035
0.0004
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Case 1
Case 2


Bending Moment (in-kips)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Case 1
Case 2


Shear Force (kips)
-0.025
-0.02
-0.015
-0.01
-0.005
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Case 1
Case 2

Terminal Arrestor LPILE Analysis

LPile Plus for Windows, Version 2012-06.037

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

This copy of LPile is licensed to:

Geosyntec
San Diego

Serial Number of Security Device: 154103767
Company Name Stored in Security Device: Geosyntec Consultants

Files Used for Analysis

Path to file locations: \\sandiego-01\Data\PRJ\SDWP\Current Projects\SC0368 SDG&E Geotechnical\30 Vine Substation\05 Calculations\Preliminary LPILE Runs\
Name of input data file: Terminal Arrestor SAND.f.lp6d
Name of output report file: Terminal Arrestor SAND.f.lp6o
Name of plot output file: Terminal Arrestor SAND.f.lp6p
Name of runtime messeage file: Terminal Arrestor SAND.f.lp6r

Date and Time of Analysis

Date: December 11, 2013 Time: 10:20:43

Problem Title

Project Name: Vine Substation

Job Number: SC0368 30

Client: SDG&E

Engineer: JLN

Description: Simplified Sand Profile

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis does not use p-y multipliers (individual pile or shaft only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:
- Number of pile increments = 100
- Maximum number of iterations allowed = 100
- Deflection tolerance for convergence = 1.0000E-05 in
- Maximum allowable deflection = 100.0000 in

Pile Response Output Options:
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1

Pile Structural Properties and Geometry

Total number of pile sections = 1

Total length of pile = 13.00 ft

Depth of ground surface below top of pile = 0.00 ft

Pile diameter values used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	30.0000000
2	13.000000	30.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	= Drilled Shaft (Bored Pile)
Section Length	= 13.00000000 ft
Section Diameter	= 30.00000000 in

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	= 0.0000 ft
Distance from top of pile to bottom of layer	= 1.00000 ft
Effective unit weight at top of layer	= 130.00000 pcf
Effective unit weight at bottom of layer	= 130.00000 pcf
Friction angle at top of layer	= 40.00000 deg.
Friction angle at bottom of layer	= 40.00000 deg.
Subgrade k at top of layer	= 225.00000 pci
Subgrade k at bottom of layer	= 225.00000 pci

Layer 2 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	= 1.00000 ft
Distance from top of pile to bottom of layer	= 6.00000 ft
Effective unit weight at top of layer	= 120.00000 pcf
Effective unit weight at bottom of layer	= 120.00000 pcf
Friction angle at top of layer	= 32.00000 deg.
Friction angle at bottom of layer	= 32.00000 deg.
Subgrade k at top of layer	= 60.00000 pci
Subgrade k at bottom of layer	= 60.00000 pci

Layer 3 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	= 6.00000 ft
Distance from top of pile to bottom of layer	= 13.00000 ft
Effective unit weight at top of layer	= 115.00000 pcf
Effective unit weight at bottom of layer	= 115.00000 pcf
Friction angle at top of layer	= 30.00000 deg.
Friction angle at bottom of layer	= 30.00000 deg.
Subgrade k at top of layer	= 40.00000 pci
Subgrade k at bottom of layer	= 40.00000 pci

Layer 4 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	13.00000 ft
Distance from top of pile to bottom of layer	=	21.00000 ft
Effective unit weight at top of layer	=	130.00000 pcf
Effective unit weight at bottom of layer	=	130.00000 pcf
Friction angle at top of layer	=	34.00000 deg.
Friction angle at bottom of layer	=	34.00000 deg.
Subgrade k at top of layer	=	225.00000 pci
Subgrade k at bottom of layer	=	225.00000 pci

(Depth of lowest soil layer extends 8.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Layer Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Angle of Friction deg.	kpy pci
1	Sand (Reese, et al.)	0.00	130.000	40.000	225.000
		1.000	130.000	40.000	225.000
2	Sand (Reese, et al.)	1.000	120.000	32.000	60.000
		6.000	120.000	32.000	60.000
3	Sand (Reese, et al.)	6.000	115.000	30.000	40.000
		13.000	115.000	30.000	40.000
4	Sand (Reese, et al.)	13.000	130.000	34.000	225.000
		21.000	130.000	34.000	225.000

Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	1	V = 2.50000 lbs	M =	0.0000 in-lbs	0.0000000	No

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	13.00000000 ft
Shaft Diameter	=	30.00000000 in
Concrete Cover Thickness	=	3.00000000 in
Number of Reinforcing Bars	=	9 bars
Yield Stress of Reinforcing Bars	=	60.00000000 ksi
Modulus of Elasticity of Reinforcing Bars	=	29000. ksi
Gross Area of Shaft	=	706.85834706 sq. in.
Total Area of Reinforcing Steel	=	3.96000000 sq. in.
Area Ratio of Steel Reinforcement	=	0.56 percent
Edge-to-Edge Bar Spacing	=	7.20196833 in
Maximum Concrete Aggregate Size	=	1.00000000 in
Ratio of Bar Spacing to Aggregate Size	=	7.20
Offset of Rebar Cage Center from Center of Pile	=	0.0000000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As = 2029.991 kips
Tensile Load for Cracking of Concrete = -267.781 kips
Nominal Axial Tensile Capacity = -237.600 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	0.75000	0.44000	11.62500	0.00000
2	0.75000	0.44000	8.90527	7.47241
3	0.75000	0.44000	2.01866	11.44839
4	0.75000	0.44000	-5.81250	10.06755
5	0.75000	0.44000	-10.92393	3.97598
6	0.75000	0.44000	-10.92393	-3.97598
7	0.75000	0.44000	-5.81250	-10.06755
8	0.75000	0.44000	2.01866	-11.44839
9	0.75000	0.44000	8.90527	-7.47241

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 7.20197 inches between Bars 5 and 6

Spacing to aggregate size ratio = 7.20197

Concrete Properties:

Compressive Strength of Concrete = 3.00000000 ksi
Modulus of Elasticity of Concrete = 3122.01857778 ksi
Modulus of Rupture of Concrete = -0.41079191 ksi
Compression Strain at Peak Stress = 0.00163356
Tensile Strain at Fracture of Concrete = -0.00011596
Maximum Coarse Aggregate Size = 1.00000000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	0.000

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318-08 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than than 0.003. See ACI 318-08, Section 10.3.4.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 0.000 kips

Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Max Concrete Stress ksi	Max Steel Stress ksi	Run Msg
0.000001250	190.3436562	152274925.	14.9999711	0.0000187	-0.0000188	0.0677919	-0.5383135	
0.000002500	379.2734532	151709381.	14.9999710	0.0000375	-0.0000375	0.1348090	-1.0766271	
0.000003750	566.7893910	151143838.	14.9999708	0.0000562	-0.0000563	0.2010514	-1.6149406	
0.000005000	752.8914695	150578294.	14.9999706	0.0000750	-0.0000750	0.2665191	-2.1532542	
0.000006250	937.5796888	150012750.	14.9999705	0.0000937	-0.0000938	0.3312120	-2.6915678	
0.000007500	1120.8540489	149447207.	14.9999703	0.0001125	-0.0001125	0.3951302	-3.2298814	
0.000008750	1120.8540489	128097606.	6.2913864	0.0000550	-0.0002075	0.1941281	-5.9779982	C
0.0000100	1120.8540489	112085405.	6.2941921	0.0000629	-0.0002371	0.2214298	-6.8311843	C
0.0000113	1120.8540489	99631471.	6.2970065	0.0000708	-0.0002667	0.2486231	-7.6841641	C
0.0000125	1120.8540489	89668324.	6.2998297	0.0000787	-0.0002963	0.2757077	-8.5369367	C
0.0000138	1120.8540489	81516658.	6.3026617	0.0000867	-0.0003258	0.3026833	-9.3895011	C
0.0000150	1120.8540489	74723603.	6.3055025	0.0000946	-0.0003554	0.3295497	-10.2418564	C
0.0000163	1120.8540489	68975634.	6.3083523	0.0001025	-0.0003850	0.3563066	-11.0940014	C
0.0000175	1120.8540489	64048803.	6.3112111	0.0001104	-0.0004146	0.3829537	-11.9459354	C
0.0000188	1120.8540489	59778883.	6.3140789	0.0001184	-0.0004441	0.4094909	-12.7976571	C
0.0000200	1120.8540489	56042702.	6.3169558	0.0001263	-0.0004737	0.4359177	-13.6491656	C
0.0000213	1120.8540489	52746073.	6.3198418	0.0001343	-0.0005032	0.4622341	-14.5004599	C
0.0000225	1120.8540489	49815736.	6.3227371	0.0001423	-0.0005327	0.4884396	-15.3515390	C
0.0000238	1120.8540489	47193855.	6.3256416	0.0001502	-0.0005623	0.5145341	-16.2024018	C
0.0000250	1120.8540489	44834162.	6.3285555	0.0001582	-0.0005918	0.5405172	-17.0530472	C
0.0000263	1120.8540489	42699202.	6.3314788	0.0001662	-0.0006213	0.5663888	-17.9034742	C

0.0000275	1120.8540489	40758329.	6.3344116	0.0001742	-0.0006508	0.5921484	-18.7536817	C
0.0000288	1120.8540489	38986228.	6.3373539	0.0001822	-0.0006803	0.6177959	-19.6036687	C
0.0000300	1120.8540489	37361802.	6.3403057	0.0001902	-0.0007098	0.6433309	-20.4534340	C
0.0000313	1120.8540489	35867330.	6.3432672	0.0001982	-0.0007393	0.6687532	-21.3029765	C
0.0000325	1120.8540489	34487817.	6.3462385	0.0002063	-0.0007687	0.6940625	-22.1522952	C
0.0000338	1120.8540489	33210490.	6.3492195	0.0002143	-0.0007982	0.7192585	-23.0013889	C
0.0000350	1120.8540489	32024401.	6.3522103	0.0002223	-0.0008277	0.7443409	-23.8502565	C
0.0000363	1120.8540489	30920112.	6.3552111	0.0002304	-0.0008571	0.7693094	-24.6988968	C
0.0000375	1120.8540489	29889441.	6.3582218	0.0002384	-0.0008866	0.7941638	-25.5473087	C
0.0000388	1120.8540489	28925266.	6.3612426	0.0002465	-0.0009160	0.8189038	-26.3954911	C
0.0000400	1120.8540489	28021351.	6.3642735	0.0002546	-0.0009454	0.8435290	-27.2434427	C
0.0000413	1120.8540489	27172219.	6.3673146	0.0002627	-0.0009748	0.8680392	-28.0911624	C
0.0000425	1120.8540489	26373036.	6.3703660	0.0002707	-0.0010043	0.8924340	-28.9386490	C
0.0000438	1120.8540489	25619521.	6.3734276	0.0002788	-0.0010337	0.9167132	-29.7859012	C
0.0000450	1120.8540489	24907868.	6.3764997	0.0002869	-0.0010631	0.9408764	-30.6329179	C
0.0000463	1120.8540489	24234682.	6.3795822	0.0002951	-0.0010924	0.9649234	-31.4796979	C
0.0000475	1120.8540489	23596927.	6.3826753	0.0003032	-0.0011218	0.9888539	-32.3262398	C
0.0000488	1120.8540489	22991878.	6.3857790	0.0003113	-0.0011512	1.0126674	-33.1725425	C
0.0000513	1120.8540489	21870323.	6.3920185	0.0003276	-0.0012099	1.0599426	-34.8644256	C
0.0000538	1120.8540489	20853099.	6.3983014	0.0003439	-0.0012686	1.1067466	-36.5553359	C
0.0000563	1120.8540489	19926294.	6.4046282	0.0003603	-0.0013272	1.1530768	-38.2452635	C
0.0000588	1166.7382984	19859375.	6.4109996	0.0003766	-0.0013859	1.1989306	-39.9341978	C
0.0000613	1215.5627102	19845922.	6.4174163	0.0003931	-0.0014444	1.2443052	-41.6221277	C
0.0000638	1264.3145820	19832386.	6.4238789	0.0004095	-0.0015030	1.2891981	-43.3090425	C
0.0000663	1312.9932186	19818766.	6.4303881	0.0004260	-0.0015615	1.3336065	-44.9949306	C
0.0000688	1361.5979120	19805061.	6.4369445	0.0004425	-0.0016200	1.3775276	-46.6797808	C
0.0000713	1410.1279409	19791269.	6.4435489	0.0004591	-0.0016784	1.4209585	-48.3635811	C
0.0000738	1458.5828889	19777395.	6.4501907	0.0004757	-0.0017368	1.4638945	-50.0463420	C
0.0000763	1506.9639262	19763461.	6.4565178	0.0004923	-0.0017952	1.5062623	-51.7288391	C
0.0000788	1555.2688927	19749446.	6.4628896	0.0005090	-0.0018535	1.5481275	-53.4103151	C
0.0000813	1603.4968314	19735346.	6.4693068	0.0005256	-0.0019119	1.5894872	-55.0907602	C
0.0000838	1651.6470031	19721158.	6.4757700	0.0005423	-0.0019702	1.6303385	-56.7701631	C
0.0000863	1699.7186544	19706883.	6.4822800	0.0005591	-0.0020284	1.6706783	-58.4485119	C
0.0000888	1747.7113784	19692523.	6.4888374	0.0005759	-0.0020866	1.7105039	-60.0000000	CY
0.0000913	1795.6236975	19678068.	6.4954429	0.0005927	-0.0021448	1.7498118	-60.0000000	CY
0.0000938	1843.4551505	19663522.	6.5020974	0.0006096	-0.0022029	1.7885991	-60.0000000	CY
0.0000963	1891.2049249	19648882.	6.5088014	0.0006265	-0.0022610	1.8268625	-60.0000000	CY
0.0000988	1938.8721920	19634149.	6.5155559	0.0006434	-0.0023191	1.8645989	-60.0000000	CY
0.0001013	1986.4561067	19619320.	6.5223615	0.0006604	-0.0023771	1.9018050	-60.0000000	CY
0.0001038	2031.8785038	19584371.	6.5270542	0.0006772	-0.0024353	1.9379864	-60.0000000	CY
0.0001063	2069.1573248	19474422.	6.5235400	0.0006931	-0.0024944	1.9717382	-60.0000000	CY
0.0001088	2103.8894561	19346110.	6.5179394	0.0007088	-0.0025537	2.0044276	-60.0000000	CY
0.0001113	2136.7306683	19206568.	6.5109405	0.0007243	-0.0026132	2.0362072	-60.0000000	CY
0.0001138	2162.7500727	19013187.	6.4974206	0.0007391	-0.0026734	2.0658798	-60.0000000	CY
0.0001163	2185.7517070	18802165.	6.4816017	0.0007535	-0.0027340	2.0944128	-60.0000000	CY
0.0001188	2208.7129764	18599688.	6.4666531	0.0007679	-0.0027946	2.1225514	-60.0000000	CY
0.0001213	2231.6335735	18405225.	6.4525226	0.0007824	-0.0028551	2.1502937	-60.0000000	CY
0.0001238	2254.4877333	18218083.	6.4384290	0.0007968	-0.0029157	2.1774634	-60.0000000	CY
0.0001263	2277.1999241	18037227.	6.4248236	0.0008111	-0.0029764	2.2041748	-60.0000000	CY
0.0001288	2297.7068336	17846267.	6.4094544	0.0008252	-0.0030373	2.2298962	-60.0000000	CY
0.0001313	2313.6849657	17628076.	6.3897078	0.0008386	-0.0030989	2.2540026	-60.0000000	CY
0.0001338	2327.4466333	17401470.	6.3683631	0.0008518	-0.0031607	2.2771623	-60.0000000	CY
0.0001363	2340.9421034	17181226.	6.3476751	0.0008649	-0.0032226	2.2999263	-60.0000000	CY
0.0001388	2354.4112175	16968729.	6.3278761	0.0008780	-0.0032845	2.3223608	-60.0000000	CY
0.0001413	2367.8537920	16763567.	6.3089200	0.0008911	-0.0033464	2.3444644	-60.0000000	CY
0.0001438	2381.2696411	16565354.	6.2907637	0.0009043	-0.0034082	2.3662356	-60.0000000	CY
0.0001463	2394.6585766	16373734.	6.2733673	0.0009175	-0.0034700	2.3876729	-60.0000000	CY
0.0001488	2408.0204082	16188372.	6.2566935	0.0009307	-0.0035318	2.4087748	-60.0000000	CY
0.0001588	2460.7035378	15500495.	6.1959751	0.0009836	-0.0037789	2.4896569	-60.0000000	CY
0.0001688	2496.2072629	14792339.	6.1231473	0.0010333	-0.0040292	2.5600216	-60.0000000	CY
0.0001788	2523.5797654	14117929.	6.0477722	0.0010810	-0.0042815	2.6226829	-60.0000000	CY
0.0001888	2550.6727801	13513498.	5.9818423	0.0011291	-0.0045334	2.6808627	-60.0000000	CY
0.0001988	2577.4787333	12968446.	5.9239682	0.0011774	-0.0047851	2.7344827	-60.0000000	CY
0.0002088	2603.9896194	12474202.	5.8730287	0.0012260	-0.0050365	2.7834610	-60.0000000	CY
0.0002188	2629.8179228	12022025.	5.8257754	0.0012744	-0.0052881	2.8272629	-60.0000000	CY
0.0002288	2649.8676565	11584121.	5.7742834	0.0013209	-0.0055416	2.8646307	-60.0000000	CY
0.0002388	2661.9594774	11149568.	5.7170955	0.0013650	-0.0057975	2.8958205	-60.0000000	CY
0.0002488	2673.4437063	10747512.	5.6649268	0.0014092	-0.0060533	2.9229935	-60.0000000	CY
0.0002588	2684.7316369	10375774.	5.6177914	0.0014536	-0.0063089	2.9461956	-60.0000000	CY
0.0002688	2695.8176744	10030949.	5.5751518	0.0014983	-0.0065642	2.9653544	-60.0000000	CY
0.0002788	2706.5851710	9709723.	5.5351067	0.0015429	-0.0068196	2.9802748	-60.0000000	CY
0.0002888	2716.9569822	9409375.	5.4963275	0.0015871	-0.0070754	2.9909329	-60.0000000	CY
0.0002988	2727.1307050	9128471.	5.4611096	0.0016315	-0.0073310	2.9975309	-60.0000000	CY
0.0003088	2737.1003919	8865102.	5.4291359	0.0016762	-0.0075863	2.9999852	-60.0000000	CY
0.0003188	2746.8256371	8617492.	5.4002374	0.0017213	-0.0078412	2.9965158	-60.0000000	CY
0.0003288	2756.3516129	8384340.	5.3740081	0.0017667	-0.0080958	2.9997541	-60.0000000	CY
0.0003388	2765.6337627	8164233.	5.3503633	0.0018124	-0.0083501	2.9945081	-60.0000000	CY
0.0003488	2774.7116635	7956162.	5.3289692	0.0018585	-0.0086040	2.9984905	-60.0000000	CY
0.0003588	2781.6254236	7753660.	5.3057723	0.0019034	-0.0088591	2.9998287	-60.0000000	CY
0.0003688	2787.3634244	7558952.	5.2829118	0.0019481	-0.0091144	2.9940627	-60.0000000	CY
0.0003788	2791.1877390	7369473.	5.2583591	0.0019916	-0.0093709	2.9982333	-60.0000000	CY
0.0003888	2794.3347616	7187999.	5.2326517	0.0020342	-0.0096283	2.9999359	-60.0000000	CY
0.0003988	2796.9468113	7014287.	5.2071808	0.0020764	-0.0098861	2.9949905	-60.0000000	CY
0.0004088	2799.4752904	6848869.	5.1834725	0.0021187	-0.0101438	2.9950095	-60.0000000	CY
0.0004188	2801.9360465	6691191.	5.1613377	0.0021613	-0.0104012	2.9984139	60.0000000	CY
0.0004288	2804.3272671	6540705.	5.1406775	0.0022041	-0.0106584	2.9999224	60.0000000	CY
0.0004388	2806.6040620	6396818.	5.1215991	0.0022471	-0.0109154	2.9955901	60.0000000	CY
0.0004488	2808.8084268	6259183.	5.1038126	0.0022903	-0.0111722	2.9921316	60.0000000	CY
0.0004588	2810.9589063	6127431.	5.0871552	0.0023337	-0.0114288	2.9963776	60.0000000	CY
0.0004688	2813.0541587	6001182.	5.0715630	0.0023773	-0.0116852	2.9990083	60.0000000	CY
0.0004788	2815.0927861	5880089.	5.0569779	0.0024210	-0.0119415	2.9999932	60.0000000	CY

0.0004888	2817.0225933	5763729.	5.0435812	0.0024651	-0.0121974	2.9947959	60.0000000	CY
0.0004988	2818.9054130	5651941.	5.0310250	0.0025092	-0.0124533	2.9894446	60.0000000	CY
0.0005088	2820.7461628	5544464.	5.0192400	0.0025535	-0.0127090	2.9941586	60.0000000	CY
0.0005188	2822.5438714	5441048.	5.0081877	0.0025980	-0.0129645	2.9975035	60.0000000	CY
0.0005288	2824.2975296	5341461.	4.9978332	0.0026426	-0.0132199	2.9994551	60.0000000	CY
0.0005388	2825.9986088	5245473.	4.9881796	0.0026874	-0.0134751	2.9993227	60.0000000	CY
0.0005488	2827.6113406	5152822.	4.9793577	0.0027324	-0.0137301	2.9940175	60.0000000	CY
0.0006088	2836.5202333	4659581.	4.9341875	0.0030037	-0.0152588	2.9999085	60.0000000	CYT
0.0006688	2844.0089891	4252724.	4.9010583	0.0032776	-0.0167849	2.9957771	60.0000000	CYT
0.0007288	2850.0113188	3910822.	4.8777613	0.0035547	-0.0183078	2.9869561	60.0000000	CYT
0.0007888	2852.8162665	3616883.	4.8529451	0.0038278	-0.0198347	2.9967538	60.0000000	CYT

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	0.000	2836.399	0.00300000

Note note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318-08, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.70).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318-08, Section 9.3.2.2 or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resistance Factor for Moment	Nominal Moment Capacity in-kip	Ultimate (Factored) Axial Thrust kips	Ultimate (Factored) Moment Capacity in-kip	Bending Stiffness at Ult. Mom. Cap. kip-in^2
1	0.65	2836.399	0.000	1843.659	19663458.991
1	0.70	2836.399	0.000	1985.479	19619623.964
1	0.75	2836.399	0.000	2127.299	19246641.352

Computed Values of Pile Loading and Deflection for Lateral Loading for Load Case Number 1

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head = 2.500 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 0.000 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	2.953E-05	3.816E-09	2.5000	-2.818E-07	0.000	1.523E+11	0.000	0.000	0.000
0.130	2.909E-05	3.9000	2.4920	-2.817E-07	0.000	1.523E+11	-0.0102	547.5600	0.000
0.260	2.865E-05	7.7751	2.4684	-2.817E-07	0.000	1.523E+11	-0.0201	1095.1200	0.000
0.390	2.821E-05	11.6013	2.4295	-2.816E-07	0.000	1.523E+11	-0.0297	1642.6800	0.000
0.520	2.778E-05	15.3552	2.3759	-2.814E-07	0.000	1.523E+11	-0.0390	2190.2400	0.000
0.650	2.734E-05	19.0142	2.3081	-2.813E-07	0.000	1.523E+11	-0.0480	2737.8000	0.000
0.780	2.690E-05	22.5565	2.2265	-2.811E-07	0.000	1.523E+11	-0.0566	3285.3600	0.000
0.910	2.646E-05	25.9609	2.1316	-2.808E-07	0.000	1.523E+11	-0.0650	3832.9200	0.000
1.040	2.602E-05	29.2070	2.0622	-2.805E-07	0.000	1.523E+11	-0.0239	1435.4203	0.000
1.170	2.558E-05	32.3949	2.0233	-2.802E-07	0.000	1.523E+11	-0.0259	1581.4363	0.000
1.300	2.515E-05	35.5197	1.9813	-2.799E-07	0.000	1.523E+11	-0.0278	1727.4523	0.000
1.430	2.471E-05	38.5767	1.9365	-2.795E-07	0.000	1.523E+11	-0.0297	1873.4683	0.000
1.560	2.428E-05	41.5615	1.8888	-2.791E-07	0.000	1.523E+11	-0.0314	2019.4843	0.000
1.690	2.384E-05	44.4698	1.8385	-2.786E-07	0.000	1.523E+11	-0.0331	2165.5003	0.000
1.820	2.341E-05	47.2976	1.7856	-2.782E-07	0.000	1.523E+11	-0.0347	2311.5163	0.000
1.950	2.297E-05	50.0410	1.7303	-2.777E-07	0.000	1.523E+11	-0.0362	2457.5323	0.000
2.080	2.254E-05	52.6963	1.6728	-2.771E-07	0.000	1.523E+11	-0.0376	2603.5483	0.000
2.210	2.211E-05	55.2601	1.6130	-2.766E-07	0.000	1.523E+11	-0.0390	2749.5643	0.000
2.340	2.168E-05	57.7290	1.5513	-2.760E-07	0.000	1.523E+11	-0.0402	2895.5803	0.000
2.470	2.125E-05	60.1000	1.4876	-2.754E-07	0.000	1.523E+11	-0.0414	3041.5963	0.000
2.600	2.082E-05	62.3702	1.4221	-2.748E-07	0.000	1.523E+11	-0.0425	3187.6123	0.000
2.730	2.039E-05	64.5369	1.3549	-2.741E-07	0.000	1.523E+11	-0.0436	3333.6283	0.000
2.860	1.996E-05	66.5976	1.2862	-2.735E-07	0.000	1.523E+11	-0.0445	3479.6443	0.000
2.990	1.954E-05	68.5498	1.2160	-2.728E-07	0.000	1.523E+11	-0.0454	3625.6603	0.000

3.120	1.911E-05	70.3916	1.1446	-2.720E-07	0.000	1.523E+11	-0.0462	3771.6763	0.000
3.250	1.869E-05	72.1210	1.0719	-2.713E-07	0.000	1.523E+11	-0.0469	3917.6923	0.000
3.380	1.826E-05	73.7361	0.9982	-2.706E-07	0.000	1.523E+11	-0.0476	4063.7083	0.000
3.510	1.784E-05	75.2354	0.9236	-2.698E-07	0.000	1.523E+11	-0.0482	4209.7243	0.000
3.640	1.742E-05	76.6176	0.8481	-2.690E-07	0.000	1.523E+11	-0.0486	4355.7403	0.000
3.770	1.700E-05	77.8814	0.7718	-2.682E-07	0.000	1.523E+11	-0.0491	4501.7563	0.000
3.900	1.659E-05	79.0257	0.6950	-2.674E-07	0.000	1.523E+11	-0.0494	4647.7723	0.000
4.030	1.617E-05	80.0498	0.6177	-2.666E-07	0.000	1.523E+11	-0.0497	4793.7883	0.000
4.160	1.575E-05	80.9530	0.5400	-2.658E-07	0.000	1.523E+11	-0.0499	4939.8043	0.000
4.290	1.534E-05	81.7348	0.4621	-2.650E-07	0.000	1.523E+11	-0.0500	5085.8203	0.000
4.420	1.493E-05	82.3948	0.3841	-2.641E-07	0.000	1.523E+11	-0.0501	5231.8363	0.000
4.550	1.452E-05	82.9330	0.3060	-2.633E-07	0.000	1.523E+11	-0.0500	5377.8523	0.000
4.680	1.411E-05	83.3495	0.2280	-2.624E-07	0.000	1.523E+11	-0.0499	5523.8683	0.000
4.810	1.370E-05	83.6444	0.1502	-2.616E-07	0.000	1.523E+11	-0.0498	5669.8843	0.000
4.940	1.329E-05	83.8181	0.0727	-2.607E-07	0.000	1.523E+11	-0.0495	5815.9003	0.000
5.070	1.288E-05	83.8712	-0.004337	-2.598E-07	0.000	1.523E+11	-0.0492	5961.9163	0.000
5.200	1.248E-05	83.8046	-0.0809	-2.590E-07	0.000	1.523E+11	-0.0489	6107.9323	0.000
5.330	1.208E-05	83.6190	-0.1567	-2.581E-07	0.000	1.523E+11	-0.0484	6253.9483	0.000
5.460	1.167E-05	83.3156	-0.2318	-2.573E-07	0.000	1.523E+11	-0.0479	6399.9643	0.000
5.590	1.127E-05	82.8956	-0.3061	-2.564E-07	0.000	1.523E+11	-0.0473	6545.9803	0.000
5.720	1.087E-05	82.3605	-0.3794	-2.556E-07	0.000	1.523E+11	-0.0466	6691.9963	0.000
5.850	1.048E-05	81.7119	-0.4516	-2.547E-07	0.000	1.523E+11	-0.0459	6838.0123	0.000
5.980	1.008E-05	80.9516	-0.5226	-2.539E-07	0.000	1.523E+11	-0.0451	6984.0283	0.000
6.110	9.684E-06	80.0814	-0.5827	-2.531E-07	0.000	1.523E+11	-0.0319	5136.1539	0.000
6.240	9.290E-06	79.1337	-0.6318	-2.523E-07	0.000	1.523E+11	-0.0312	5233.4979	0.000
6.370	8.897E-06	78.1101	-0.6799	-2.515E-07	0.000	1.523E+11	-0.0304	5330.8419	0.000
6.500	8.505E-06	77.0125	-0.7267	-2.507E-07	0.000	1.523E+11	-0.0296	5428.1859	0.000
6.630	8.115E-06	75.8429	-0.7722	-2.499E-07	0.000	1.523E+11	-0.0287	5525.5299	0.000
6.760	7.725E-06	74.6033	-0.8163	-2.491E-07	0.000	1.523E+11	-0.0278	5622.8739	0.000
6.890	7.337E-06	73.2960	-0.8590	-2.484E-07	0.000	1.523E+11	-0.0269	5720.2179	0.000
7.020	6.951E-06	71.9232	-0.9002	-2.476E-07	0.000	1.523E+11	-0.0259	5817.5619	0.000
7.150	6.565E-06	70.4873	-0.9398	-2.469E-07	0.000	1.523E+11	-0.0249	5914.9059	0.000
7.280	6.180E-06	68.9909	-0.9778	-2.462E-07	0.000	1.523E+11	-0.0238	6012.2499	0.000
7.410	5.797E-06	67.4364	-1.0141	-2.455E-07	0.000	1.523E+11	-0.0227	6109.5939	0.000
7.540	5.414E-06	65.8268	-1.0486	-2.448E-07	0.000	1.523E+11	-0.0215	6206.9379	0.000
7.670	5.033E-06	64.1647	-1.0813	-2.441E-07	0.000	1.523E+11	-0.0203	6304.2819	0.000
7.800	4.653E-06	62.4531	-1.1121	-2.435E-07	0.000	1.523E+11	-0.0191	6401.6259	0.000
7.930	4.274E-06	60.6950	-1.1408	-2.428E-07	0.000	1.523E+11	-0.0178	6498.9699	0.000
8.060	3.895E-06	58.8936	-1.1676	-2.422E-07	0.000	1.523E+11	-0.0165	6596.3139	0.000
8.190	3.518E-06	57.0522	-1.1922	-2.416E-07	0.000	1.523E+11	-0.0151	6693.6579	0.000
8.320	3.141E-06	55.1740	-1.2146	-2.411E-07	0.000	1.523E+11	-0.0137	6791.0019	0.000
8.450	2.766E-06	53.2625	-1.2348	-2.405E-07	0.000	1.523E+11	-0.0122	6888.3459	0.000
8.580	2.391E-06	51.3213	-1.2527	-2.400E-07	0.000	1.523E+11	-0.0107	6985.6899	0.000
8.710	2.017E-06	49.3540	-1.2682	-2.395E-07	0.000	1.523E+11	-0.009158	7083.0339	0.000
8.840	1.644E-06	47.3645	-1.2812	-2.390E-07	0.000	1.523E+11	-0.007566	7180.3779	0.000
8.970	1.271E-06	45.3565	-1.2918	-2.385E-07	0.000	1.523E+11	-0.005931	7277.7219	0.000
9.100	8.998E-07	43.3341	-1.2997	-2.380E-07	0.000	1.523E+11	-0.004254	7375.0659	0.000
9.230	5.288E-07	41.3014	-1.3050	-2.376E-07	0.000	1.523E+11	-0.002533	7472.4099	0.000
9.360	1.585E-07	39.2625	-1.3076	-2.372E-07	0.000	1.523E+11	-0.000769	7569.7539	0.000
9.490	-2.112E-07	37.2217	-1.3074	-2.368E-07	0.000	1.523E+11	0.001038	7667.0979	0.000
9.620	-5.803E-07	35.1835	-1.3043	-2.364E-07	0.000	1.523E+11	0.002888	7764.4419	0.000
9.750	-9.488E-07	33.1522	-1.2983	-2.361E-07	0.000	1.523E+11	0.004782	7861.7859	0.000
9.880	-1.317E-06	31.1326	-1.2894	-2.357E-07	0.000	1.523E+11	0.006719	7959.1299	0.000
10.010	-1.684E-06	29.1294	-1.2773	-2.354E-07	0.000	1.523E+11	0.008699	8056.4739	0.000
10.140	-2.051E-06	27.1473	-1.2622	-2.351E-07	0.000	1.523E+11	0.0107	8153.8179	0.000
10.270	-2.418E-06	25.1914	-1.2439	-2.349E-07	0.000	1.523E+11	0.0128	8251.1619	0.000
10.400	-2.784E-06	23.2665	-1.2223	-2.346E-07	0.000	1.523E+11	0.0149	8348.5059	0.000
10.530	-3.150E-06	21.3779	-1.1973	-2.344E-07	0.000	1.523E+11	0.0171	8445.8499	0.000
10.660	-3.516E-06	19.5309	-1.1690	-2.342E-07	0.000	1.523E+11	0.0193	8543.1939	0.000
10.790	-3.881E-06	17.7306	-1.1372	-2.340E-07	0.000	1.523E+11	0.0215	8640.5379	0.000
10.920	-4.246E-06	15.9827	-1.1019	-2.338E-07	0.000	1.523E+11	0.0238	8737.8819	0.000
11.050	-4.610E-06	14.2926	-1.0630	-2.337E-07	0.000	1.523E+11	0.0261	8835.2259	0.000
11.180	-4.975E-06	12.6661	-1.0204	-2.335E-07	0.000	1.523E+11	0.0285	8932.5699	0.000
11.310	-5.339E-06	11.1089	-0.9741	-2.334E-07	0.000	1.523E+11	0.0309	9029.9139	0.000
11.440	-5.703E-06	9.6270	-0.9240	-2.333E-07	0.000	1.523E+11	0.0334	9127.2579	0.000
11.570	-6.067E-06	8.2262	-0.8700	-2.332E-07	0.000	1.523E+11	0.0359	9224.6019	0.000
11.700	-6.430E-06	6.9127	-0.8120	-2.331E-07	0.000	1.523E+11	0.0384	9321.9459	0.000
11.830	-6.794E-06	5.6927	-0.7500	-2.331E-07	0.000	1.523E+11	0.0410	9419.2899	0.000
11.960	-7.158E-06	4.5726	-0.6840	-2.330E-07	0.000	1.523E+11	0.0437	9516.6339	0.000
12.090	-7.521E-06	3.5587	-0.6138	-2.330E-07	0.000	1.523E+11	0.0464	9613.9779	0.000
12.220	-7.885E-06	2.6577	-0.5393	-2.329E-07	0.000	1.523E+11	0.0491	9711.3219	0.000
12.350	-8.248E-06	1.8760	-0.4606	-2.329E-07	0.000	1.523E+11	0.0519	9808.6659	0.000
12.480	-8.611E-06	1.2206	-0.3775	-2.329E-07	0.000	1.523E+11	0.0547	9906.0099	0.000
12.610	-8.975E-06	0.6983	-0.2899	-2.329E-07	0.000	1.523E+11	0.0575	10003.	0.000
12.740	-9.338E-06	0.3160	-0.1979	-2.329E-07	0.000	1.523E+11	0.0605	10101.	0.000
12.870	-9.701E-06	0.0808	-0.1013	-2.329E-07	0.000	1.523E+11	0.0634	10198.	0.000
13.000	-1.006E-05	0.000	0.000	-2.329E-07	0.000	1.523E+11	0.0664	5147.6930	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
  The above values of total stress are computed for combined axial and bending stress in elastic
  sections and do not equal actual stresses in concrete and steel in the range of nonlinear bending.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.0000295 inches
Computed slope at pile head = -0.000000282 radians
Maximum bending moment = 83.8712488 inch-lbs
Maximum shear force = 2.5000000 lbs
Depth of maximum bending moment = 60.8400000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head

Number of iterations = 6
Number of zero deflection points = 1

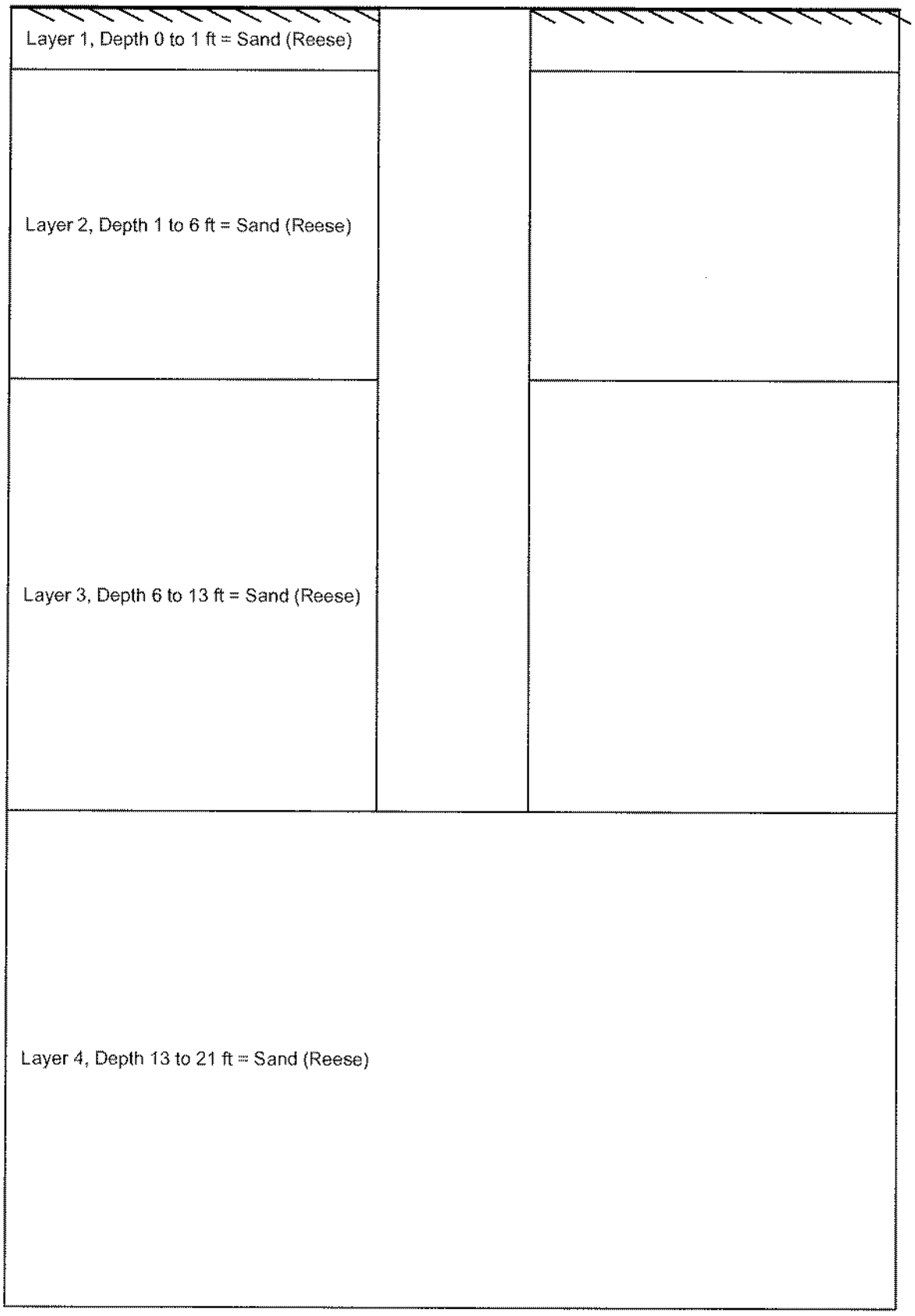
Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

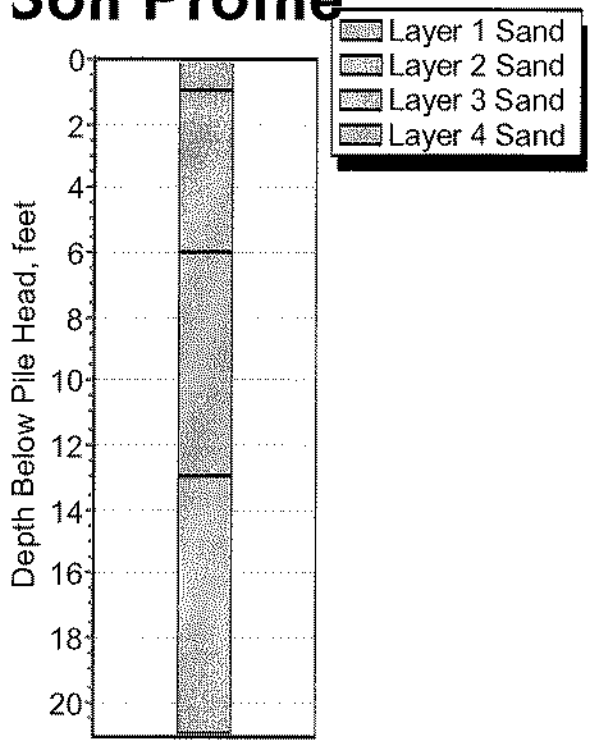
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

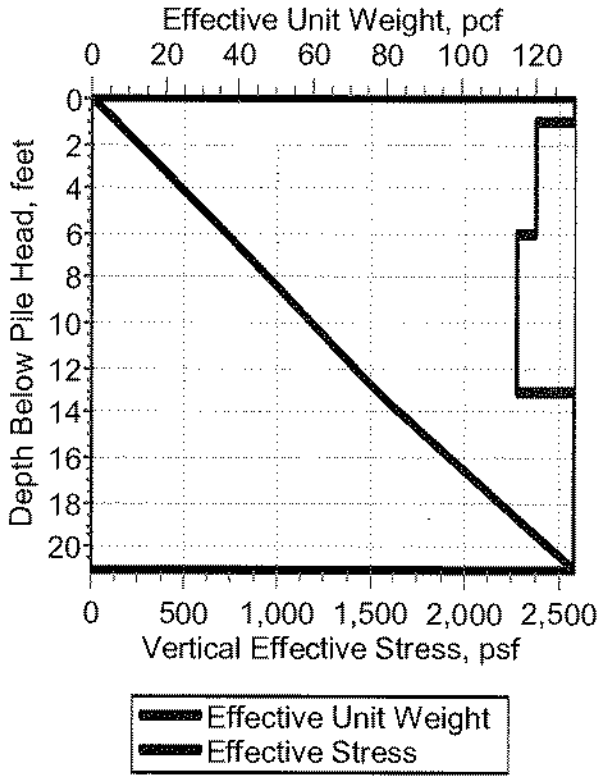
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in Pile in-lbs	Maximum Shear in Pile lbs	Pile-head Rotation radians
1	1	V = 2.5000	M = 0.000	0.0000000	0.00002953	83.87124884	2.5000	-0.00000028

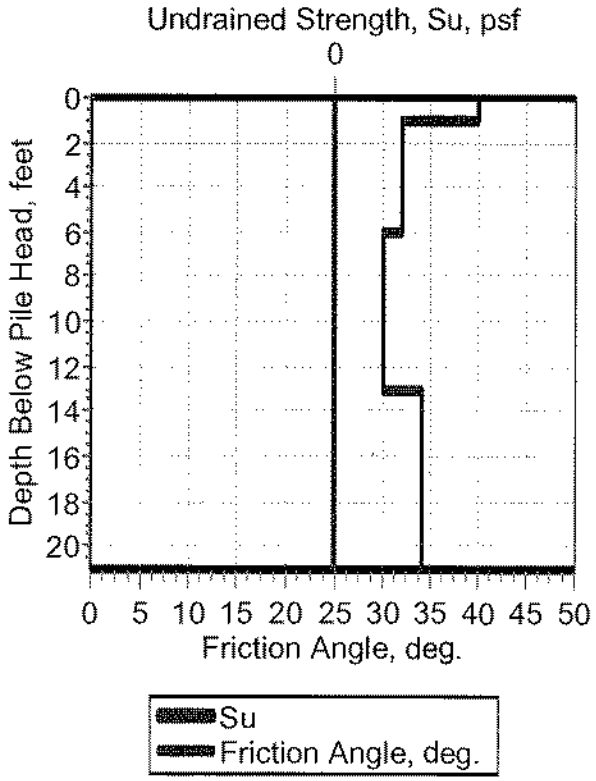
The analysis ended normally.

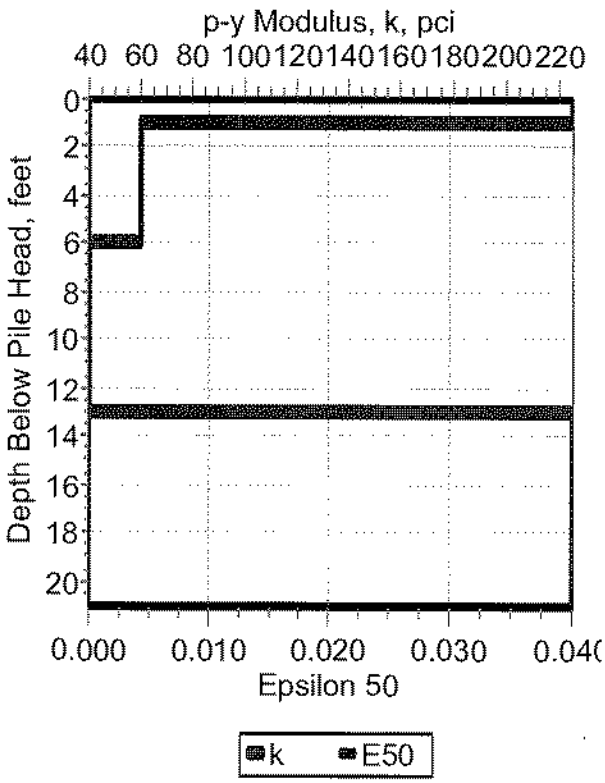


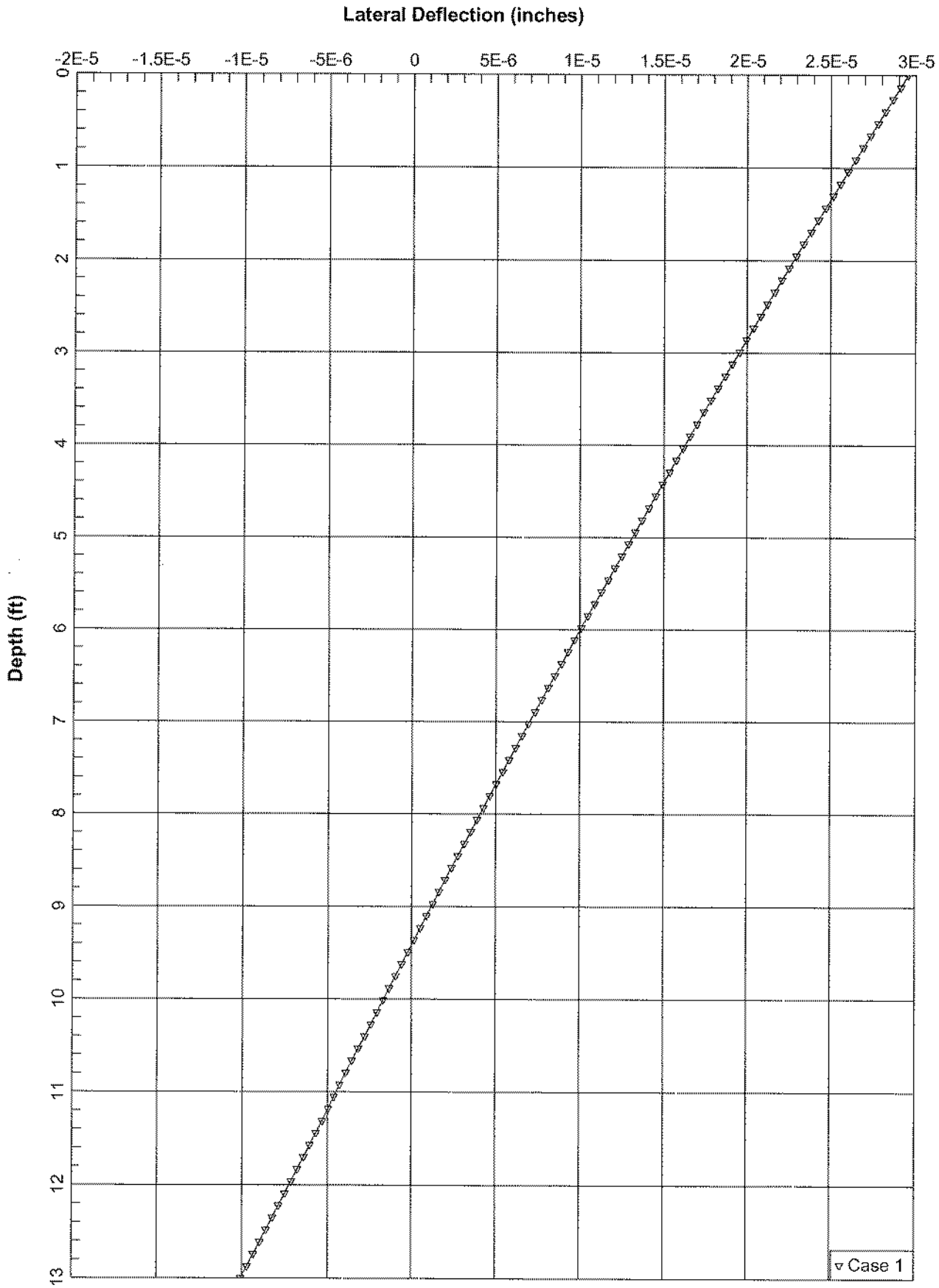
Soil Profile

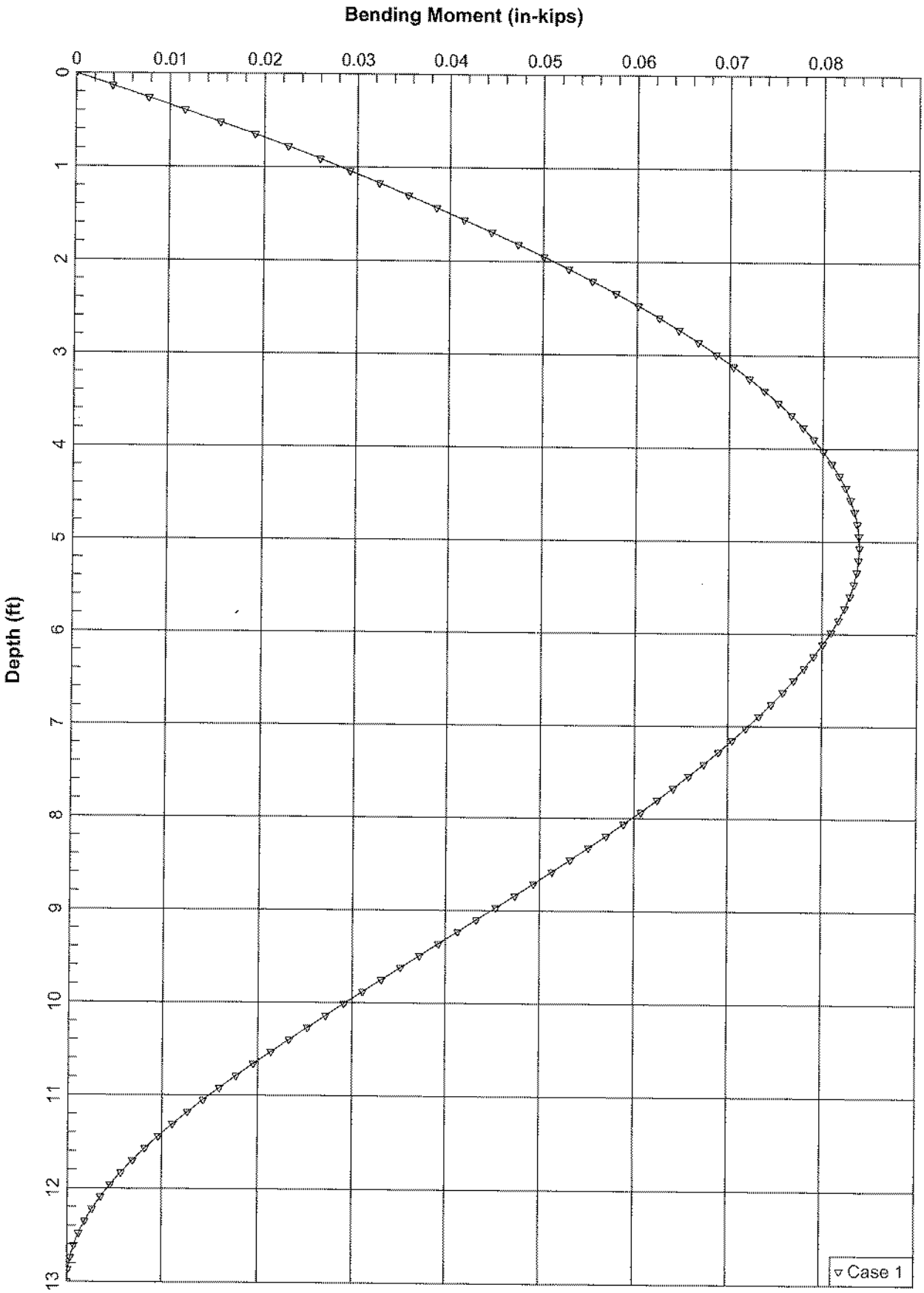


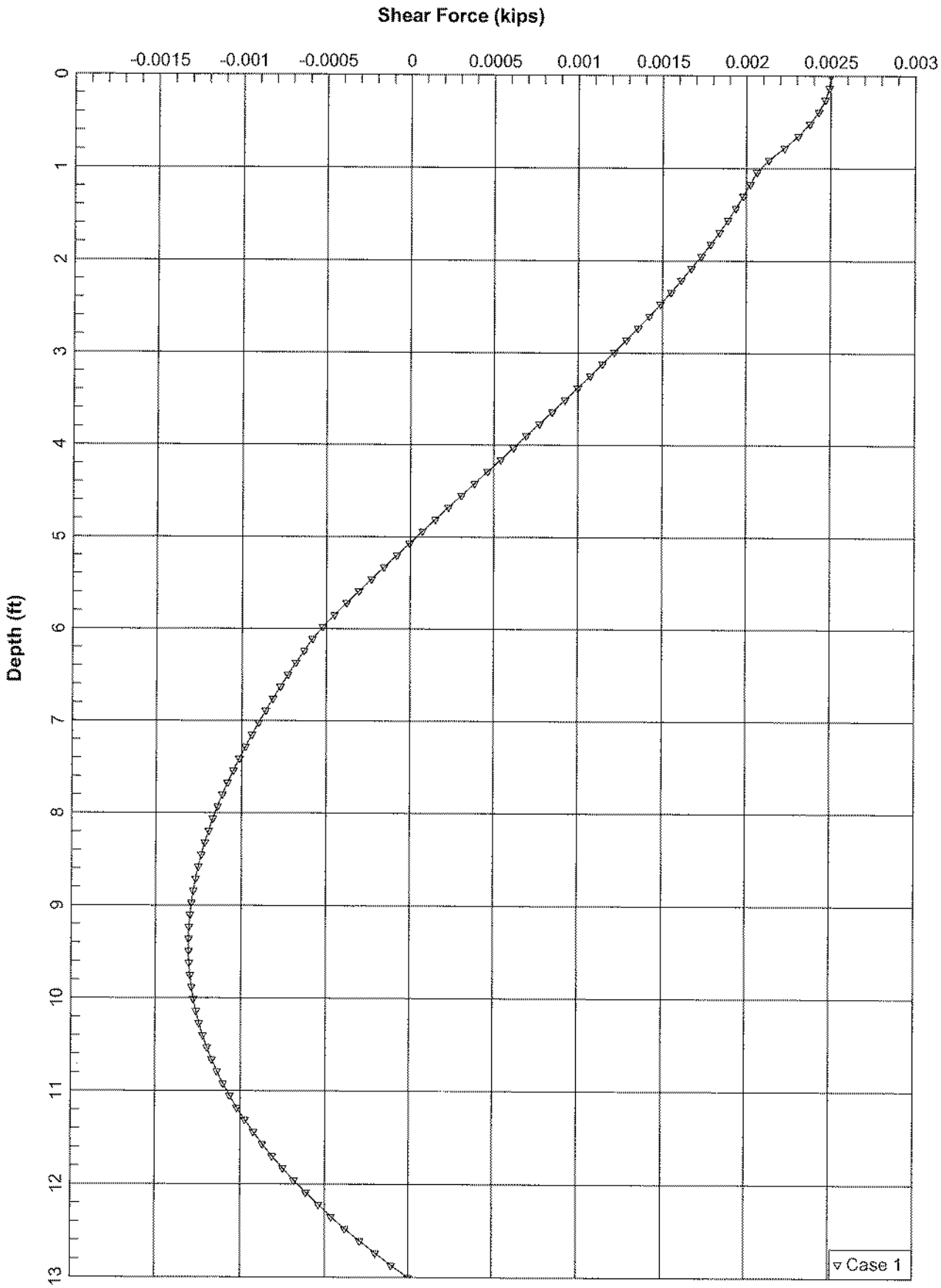







Lateral Deflection (inches)
-2E-5
-1.5E-5
-1E-5
-5E-6
0
5E-6
1E-5
1.5E-5
2E-5
2.5E-5
3E-5
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Case 1


Bending Moment (in-kips)
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Case 1


Shear Force (kips)
-0.0015
-0.001
-0.0005
0
0.0005
0.001
0.0015
0.002
0.0025
0.003
Depth (ft)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Case 1

ATTACHMENT 4.8-A: PHASE I ENVIRONMENTAL SITE ASSESSMENT

Prepared for

San Diego Gas & Electric
8315 Century Park Court
San Diego, California 92123

Phase I Environmental Site Assessment

Proposed Vine Substation
3550 Kettner Boulevard
San Diego, California 92101

Prepared by

Geosyntec consultants

engineers | scientists | innovators

10875 Rancho Bernardo Road
San Diego, California 92127

Geosyntec Project Number SC0368-34

18 April 2014

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1 INTRODUCTION

This report documents the results of the Phase I Environmental Site Assessment (ESA) performed by Geosyntec Consultants (Geosyntec) for the Proposed Vine Substation Property located at 3550 Kettner Boulevard, San Diego, California (Figure 1; the Site). The Site includes one parcel of land identified by the San Diego County Assessor's Office as Parcel Number 451-690-1800 comprising approximately 1.5 acres (Figure 2). This Phase I ESA was prepared in accordance with the scope of work, terms and conditions described in Geosyntec's proposal dated 21 March 2014. This report incorporates, by reference, the American Society of Testing and Materials (ASTM) Standard E 1527-13, "Standard Practice for Environmental Assessments: Phase I Environmental Site Assessment Process." Exceptions and limitations are provided in Section 1.5 of this report. Geosyntec performed the Phase I ESA for the sole use of its client, San Diego Gas & Electric (SDG&E).

1.1 Purpose

The purpose of this Phase I ESA was to identify, to the extent feasible, "Recognized Environmental Conditions[1]" (RECs) at the Site as the "REC" term is defined by ASTM E 1527-13. This REC definition eliminates from consideration several conditions that could fall under the general definition of "environmental issues" and focuses on known or potential releases of hazardous substances and petroleum products. In addition to this general limitation, specific conditions that were not considered to be within the scope of this Phase I ESA are identified in Section 1.5 of this report. Geosyntec understands this Phase I ESA was prepared to help identify potential environmental liabilities associated with the Site prior to redevelopment as an electrical substation.

1.2 Site Description

The Site is approximately rectangular in shape, comprising approximately 1.5 acres, located on the corner southwest of Kettner Boulevard and southeast of Vine Street (Figure 2). The Site can be accessed by a gate along Vine Street.

1.2.1 Site Characteristics

The Site is currently occupied by a Park 'N Fly Airport Parking lot. The Site is surrounded by a chain link fence, and paved with asphalt. The Site includes approximately 220 parking stalls, a guard shack, and a wooden storage shed (Figure 3).

[1] As defined by ASTM E 1527-13, a Recognized Environmental Condition is: "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions."

1.2.2 Surrounding Land Uses

Northwest of the Site across Vine Street is a commercial property occupied by Rush Press, and across California Street is a parking lot partially used for rental car parking (Honeywell property); northeast of the Site across Kettner Boulevard, Interstate-5 Freeway corridor, and India Street are a gasoline service station, commercial properties, and a residence; southeast of the Site is a vacant rental car facility including a car wash, fueling area, and parking lot; and southwest of the Site across a railroad corridor and Pacific Highway are parking lots (Figure 2).

1.3 Geologic and Hydrogeologic Summary

The Site lies at an approximate elevation of 40 feet above mean sea level. Based on a review of available geologic maps, the Site is located on the seaward edge of a Pleistocene marine terrace; however, just west of the Site boundary is a man-made plain comprised of hydraulic fill [Kennedy and Tan, 2005]. The Site is located within the Newport-Inglewood-Rose Canyon Fault Zone, which consists of right-lateral strike-slip faults, some segments of which have been active in Recent time [Lindvall and Rockwell, 1995].

Soil borings advanced at the Site by Geosyntec during a previous geotechnical evaluation indicated Site soil consists of interbedded silty sand, sand, silt, and clay to the maximum depth explored of 100 feet below ground surface (bgs) [Geosyntec, 2013]. Groundwater was encountered at approximately 25 feet bgs. During drilling activities, soil was screened with a photoionization detector (PID) for the presence of volatile constituents; however, no measurable concentrations were detected.

The Site is located within the Lindbergh Hydrologic Subarea of the San Diego Mesa Hydrologic Area of the Pueblo San Diego Hydrologic Unit (908.21). Beneficial use designations do not apply for groundwater in the San Diego Mesa Hydrologic Area west of the Interstate Highway 5 [RWQCB, 2007]. Therefore, no existing or potential beneficial uses are designated for groundwater beneath the Site.

Based on a groundwater monitoring report for a former Honeywell property located approximately 350 feet northwest of the Site, shallow groundwater in the Site vicinity is encountered at depths of approximately 20 feet bgs and generally flows to the south-southwest at an average hydraulic gradient of 0.005 ft/ft [CH2MHILL, 2008]. Groundwater is likely brackish to saline due to salt water intrusion from San Diego Bay.

1.4 Scope of Services

Geosyntec was authorized on 21 March 2014 by Ms. Barbara Montgomery of SDG&E to complete a Phase I ESA of the Site. The scope of services included the following:

- Searching standard local, state, and federal environmental record sources within recommended ASTM search distances;

- Reviewing available physiographic information including topographic, geologic, and hydrogeologic information;
- Reviewing historical aerial photographs;
- Reviewing historical fire insurance maps;
- Performing a Site reconnaissance;
- Conducting an interview with the Site manager; and
- Documenting the procedures, findings, opinions, and conclusions of the Phase I ESA in this report.

This work was completed in general accordance with ASTM Practice E 1527-13 with the limitations and exceptions described in Section 1.5 of this report. For the purposes of this Phase I ESA report, SDG&E represents the "user," defined as "the party seeking to use Practice E 1527-13 to complete an *environmental site assessment* of the *property*…"

This ESA report was prepared by Mr. Douglas Baumwirt, PG and reviewed by Mr. Veryl Wittig, PG ("environmental professionals", as defined under the ASTM Practice E 1527-13) of Geosyntec, in accordance with the peer review policy of the firm. Mr. Baumwirt's professional qualifications are presented in Appendix A.

1.5 Limitations and Exceptions

This Phase I ESA was performed according to the agreed upon scope of work with SDG&E. This Phase I ESA is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with the Site, and recognizes reasonable limits of time and cost. Not every property warrants the same level of assessment. Consistent with good commercial or customary practice, the appropriate level of assessment was guided by the type of property subject to assessment and the information developed in the course of the inquiry.

Additional services considered optional by ASTM E 1527-13, such as asbestos-containing building materials, radon, lead-based paint, lead in drinking water, wetlands, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, biological agents, mold, and high voltage power lines, were not included in the scope of work.

The findings and conclusions presented in this Phase I ESA are the result of professional interpretation of the information collected at the time of this study. This Phase I ESA was not an exhaustive search of all available records, nor does it include detailed assessment of all Phase I ESA findings. Geosyntec cannot "certify" or guarantee that any property is free of environmental impairment; no warranties regarding the environmental quality of the property are expressed or implied.

This Phase I ESA did not include the sampling of rock, soil, groundwater, surface water, soil vapor, air, or on-Site substances or materials. Therefore, it is not possible to confirm the presence or absence of hazardous substances or petroleum products in the environments associated with the property.

The findings of this report, to the best of our knowledge, are valid as of the date of this work. However, changes in the conditions of a property can occur with the passage of time, whether due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate regulations and standards may occur, whether they result from legislation, from the broadening of knowledge, or from other reasons. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control.

Specified information contained in this report has been obtained from publicly available sources and other secondary sources of information. Although care has been taken in compiling this information, Geosyntec disclaims any and all liability for any errors, omissions, or inaccuracies of the third parties in such information and data.

The work was performed using the degree of care and skill ordinarily exercised under similar circumstances by environmental consultants practicing in this or similar localities. No other warranty or guarantee, expressed or implied, is made as to the findings, opinions, conclusions, and recommendations included in this report.

1.6 User Reliance

This Phase I ESA report has been prepared solely for the benefit of SDG&E. Geosyntec has issued the Phase I ESA report to its client and grants SDG&E the right to rely on the report contents. Except as specifically set forth in Geosyntec's proposal to SDG&E to perform this work, no third party shall have the right to rely on Geosyntec's opinions rendered in connection with the Services without SDG&E's approval and Geosyntec's written consent which may be conditioned on the third party's agreement to be bound to acceptable conditions and limitations similar to this Agreement.

2 USER PROVIDED INFORMATION

In accordance with ASTM E 1527-13, Geosyntec requested that the user of the Phase I ESA provide information that would assist in identifying the possibility of RECs in connection with the subject property, including but not limited to:

- Reviewing title and judicial records for environmental liens or activity and use limitations recorded against the subject property;
- Communicating specialized knowledge or experience that is material to RECs in connection with the subject property;
- Providing information about previous ownership or uses of the property;
- Providing information on a significantly lower purchase price, if applicable; and
- Designating personnel who are the most knowledgeable at the Site that will be interviewed by Geosyntec personnel.

2.1 Title Records

The user did not provide title records for the Site.

2.2 Environmental Liens

The user did not report any environmental liens against the property.

2.3 Specialized Knowledge

The user did not provide specialized knowledge regarding the Site pertinent to recognized environmental conditions. However, SDG&E provided a summary of prior database findings for the Site vicinity (Appendix B).

2.4 Commonly Known or Reasonably Ascertainable Information

The user did not provide any commonly known or reasonably ascertainable information material to RECs in connection with the property.

2.5 Valuation Reduction for Environmental Issues

The user did not report property valuation information for the Site; however, Geosyntec understands that SDG&E has owned the Site since at least 1980.

2.6 Owner, Property Manager, and Occupant Information

Geosyntec interviewed Ms. Patty Glass, the SDG&E Corporate Real Estate Agent for the Site (Section 4.1).

2.7 Reason for Performing Phase I ESA

Geosyntec understands that SDG&E has requested this Phase I ESA as part of pending redevelopment of the Site as an electrical substation.

3 RECORDS REVIEW

3.1 General

The following sections present the results of the environmental database search, review of reasonably ascertainable historical aerial photographs, topographic maps, fire insurance maps, and city directories.

3.2 Database Search Report

The database search report was obtained from Environmental Data Resources, Inc. (EDR) (Appendix C). The report documents findings of various federal, state, and local regulatory database searches regarding properties with known or suspected releases of hazardous materials or petroleum hydrocarbons. The searches were performed according to ASTM standards for Phase I ESA database searches. A list and description of the databases searched are included within the EDR report.

3.2.1 Site

The Site was identified with in the EDR US Historical Auto Stations database as a gasoline and oil service station in 1927, 1930, 1933, and 1943. Additionally, the Site may also be listed with the address of 3526 Kettner Boulevard as a historical gasoline station in 1970.

3.2.2 Adjoining Properties

Numerous properties adjoining the Site were identified in the databases searched by EDR. Several historical auto stations were formerly located along Pacific Highway southwest of the Site and along India Street northeast of the Site, including a Chevron located at 3535 India Street (approximately 350 feet northeast of the Site across Kettner Blvd., Interstate-5, and India Street) which has had a documented release of gasoline from an underground storage tank (UST) to groundwater upgradient of the Site. The rental car facility southeast of the Site formerly contained several gasoline, diesel fuel, and waste oil USTs; and several small quantity generators of hazardous wastes were located northwest of the Site. However, the most notable adjoining property is the former Baron-Blakeslee facility (currently referred to as Honeywell, Inc., the existing responsible party) which adjoins the Site to the northwest across Vine and California Streets (approximately 250 feet northwest). The Honeywell facility is listed as a former transportation, storage, and disposal facility that included aboveground storage tanks (ASTs) and USTs that resulted in the release of chlorinated solvents and other hazardous substances to soil and groundwater. Remediation is ongoing with regulatory oversight from the California Department of Toxic Substances Control (DTSC).

Based on the regulatory database listings identified by EDR, and the nature of activities associated with former and current occupants of properties adjoining the Site, it is likely that soil, groundwater, and/or soil vapor at the Site have been impacted by hazardous substances or petroleum products.

3.2.3 Properties within ½-Mile of the Site

Numerous properties within ½ mile of the Site were identified with releases of hazardous substances or petroleum products. Topographic and hydraulically upgradient or cross-gradient properties include several gasoline service stations, automotive repair facilities, rental car facilities, and drycleaners. Notable downgradient facilities include various aerospace manufacturing facilities and airport fueling facilities. Based on the regulatory database listings identified by EDR, the nature of activities associated with these facilities, and the number of facilities identified within ½ mile of the Site, it is likely that some of these properties have adversely impacted soil, groundwater, and/or soil vapor at the Site with hazardous substances or petroleum products.

3.2.4 Properties within One Mile of the Site

Five properties within one mile of the Site were identified in RCRA CORRACTS or CERCLIS databases. The most notable listing is the Honeywell, Inc. (Baron-Blakeslee) facility which adjoins the Site to the northwest which is reportedly responsible for releases of chlorinated solvents and other hazardous substances to soil and groundwater in the Site vicinity. No other notable properties within one mile of the Site were identified by EDR in the Federal NPL site list, Federal RCRA CORRACTS facilities list, Department of Defense (DOD) Facilities list, or the state or tribal-equivalent NPL list.

3.2.5 Summary of Database Review

Based on a review of the database search report provided by EDR, the Site was previously occupied by at least one gasoline service station. Records indicate a gasoline service station was located at the Site during two separate intervals, from 1927 to 1943, and in 1970. No indications of a release from fuel tanks at the Site were noted.

The Site vicinity has been used extensively for industrial purposes since the early 1900s. Adjoining properties have been identified for releases of hazardous substances and petroleum products to soil and groundwater upgradient and cross-gradient from the Site. Based on the nature, proximity, and quantity of the facilities identified in the Site vicinity, it is possible that soil, groundwater, and/or soil vapor at the Site have been impacted by hazardous substances or petroleum products.

A review of the list of "orphan sites" identified by EDR in their database search suggests insufficient information is available to accurately plot the properties, or that based on the available information presented, the properties do not appear to be located near the Site.

3.3 Historical Aerial Photographs, Topographic Maps, and Sanborn Maps

Historical aerial photographs (aerials) from 1953 to 2012, USGS topographic (topos) maps for years 1904 to 1991, and Sanborn Maps (Sanborns) from 1921 to 1970 were received from EDR and are provided in Appendices D, E, and F, respectively. Geosyntec also reviewed aerials dated: 1953, 1964, 1972, 1980, 1981, 1989, 1990, 2003, and 2005 online at

www.historicaerials.com; from 1994, 1996, 1998, and 2000 through 2013 online with GoogleEarth; and viewed aerials from 1928 at the San Diego County, Department of Cartographic Services [HistoricAerials, 2014; GoogleEarth, 2014]. A summary of the aerials, Sanborns, and topos reviewed is included below.

- The oldest available topo indicates that a railroad corridor was present by 1904 near the existing railroad corridor which adjoins the Site to the southwest.

- The oldest available Sanborn from 1921 indicates the Site was vacant land with Kettner Boulevard, Vine Street, and the railroad corridor established along the Site boundaries. Additionally, Upas Street was present along the southeastern Site boundary. Sporadic dwellings are plotted on adjoining properties. The 1928 aerial indicated the Site was vacant land.

- The Sanborn from 1950 depicts a chemical warehouse on an adjoining property northwest of the Site across Vine/California Streets. By 1953, the Site was developed as a paved parking lot. Additionally, Upas Street no longer defined the southeastern Site boundary and terminated at Kettner Boulevard, and the new adjoining property to the southeast appeared to be used for residential dwellings. Southwest of the Site, Pacific Highway (Hwy 101) was present and significant hydraulic filling had occurred in the northeast portion of San Diego Bay for Lindbergh Field Municipal Airport and industrial structures. By 1956, the first of several adjoining printing facilities was present north of the Site.

- By 1966 construction of the Interstate-5 Freeway was in progress adjoining northeast of the Site, and by 1967, a gas and oil service station was plotted northeast of the Site, northeast of the intersection of Vine Street and India Street, and a used building materials facility was present adjoining the Site to the southeast.

- By 1969 a gasoline filling station was present on the northern portion of the Site.

- By 1970 the gasoline filling station was present northeast of the Site along India Street (350 feet northeast).

- By 1975, the Site was vacant. The northern portion of the Site formerly occupied by the gas station appeared to be unpaved, and the remaining portion of the Site appeared paved.

- By 1980 the Site was used as a parking lot similar to its current configuration.

- By 2009, the adjoining chemical warehouse facility (Honeywell/Baron-Blakeslee) located approximately 250 feet northwest of the Site had been redeveloped as a parking lot, and by 2010 was used as a rental car facility similar to present.

3.4 City Directories

City Directories were searched by EDR for selected years from 1903 to 2013 to assess occupancy at the Site and adjoining properties (Appendix G). The Site address (3550 Kettner) was identified in the city directory listings from 1927 through 1945 as gasoline service station, and from 1980 through 2013 as the Park 'N Ride. The Site appears to also formerly have been associated with the address 3526 Kettner Boulevard which included a Shell Service Station in 1970.

Notable adjoining properties included the following:

- Battery manufacturing facility (San Diego Lead Products and T. Frank Battery Manufacturing) northwest of the Site across Vine Street (3449 California St.) from 1933 through 1952;

- Chemical manufacturing/recycling facility (Bateman Chemical and Baron-Blakeslee, now Honeywell, Inc.) 250 feet northwest of the Site (3596 California St.) from 1952 to 2008;

- Car rental facility (Hertz) southeast of the Site (3420 Kettner Blvd.) from 1991-2013; previously occupied by a lumber and supply company beginning in 1955;

- Gasoline service station (Chevron) northeast of the Site across Kettner Blvd., Interstate-5, and India St. (3535 India St.) from 1975 through 2013; and

- Auto repair facility (Jeff's Garage) northeast of the Site (3515 Kettner Blvd.) in 1961.

3.5 Local Regulatory Agencies

Geosyntec contacted the following federal, state, and local agencies and accessed associated online databases to identify information pertaining to the Site and applicable adjoining properties. Documents received from the agencies are provided in Appendix B:

- United States Environmental Protection Agency (USEPA) and MyPropertyInfo Database;
- DTSC and EnviroStor Database;
- California Department of Oil, Gas, and Geothermal Resources (DOGGR) Database;
- San Diego Regional Water Quality Control Board (RWQCB);
- State Water Resource Control Board (SWRCB) GeoTracker Database;
- San Diego Air Pollution Control District (APCD);
- San Diego Department of Environmental Health;
- San Diego Building Department;
- San Diego Fire Department; and

- San Diego Industrial Wastewater Control Program.

No evidence of RECs at the Site was identified in files and correspondence received from the above-referenced agencies. However, review of documents reviewed in above-referenced publically-accessible online databases did identify facilities in the Site vicinity that have been documented with releases of hazardous substances and petroleum products to the subsurface that may have impacted the Site. Pertinent documents relating to the adjoining facilities are provided in Appendix B.

The most notable facility identified is the Honeywell International, Inc. (former Baron-Blakeslee facility) which adjoins the Site to the northwest across Vine and California Streets (Figure 2). Based on review of files obtained from the SWRCB's GeoTracker database and DTSC's EnviroStor database, the former Baron-Blakeslee facility was initially operated as a chemical manufacturing facility (1952-1969) and was later converted to a hazardous chemical recycling/disposal facility (1969-1993), including chlorinated and fluorinated solvents. Following cease of operations at the facility in 1993, several investigations were performed at the facility under regulation of the DTSC which identified significant concentrations of chlorinated hydrocarbons in soil, groundwater, and soil vapor at that property, including concentrations indicative of dense non-aqueous phase liquid. Based on reported soil vapor concentrations, a land use covenant was established to restrict the Honeywell property from use as a residence, hospital, school, or other sensitive land uses.

Based on the Site's designation with non-beneficial groundwater uses, many cases listed nearby the Site have been closed with residual impacts in place. Three closed leaking UST facilities (3625, 3585, and 3535 India Street) are located upgradient of the Site within ¼ mile.

As of the date of this report, responses have not been received from the Fire Department or APCD. If files are received after finalization of this report which change the conclusions herein, an addendum will be prepared.

3.6 Previous Site Assessment Reports

No previous environmental site assessment reports were identified for the Site; however, a prior preliminary geotechnical and geologic hazards report prepared for the Site by Geosyntec in 2013 was reviewed for indications of environmental impacts at the Site [Geosyntec, 2013]. The previous geotechnical evaluation at the Site included five soil borings and referenced prior test pits advanced at the Site (including two soil borings and one test pit located within the footprint of the former gasoline station at the Site). The report indicated that a former gasoline station may have been present at the Site; therefore, soil was screened in the field with a PID during advancement of soil borings to evaluate organic vapors in the soil; however, no soil samples were retained for environmental laboratory analysis. The report indicated that no measurable concentrations of organic vapors were detected in soil screened at the Site. In addition to the soil screening, the report noted no obvious indications of impacts at the Site.

4 INTERVIEWS

4.1 Interview of Property Owner

On 4 April 2014 Geosyntec interviewed Ms. Patty Glass, SDG&E Corporate Real Estate Agent. During the interview, questions were asked regarding Site use and conditions, typical of a Phase I ESA interview in accordance with ASTM E 1527-13.

Ms. Glass indicated that she has been affiliated with the Site since August 2013, but that SDG&E purchased the Site in 1976 with the intent to build a substation at the Site in the future. Based on her knowledge, the Site was vacant land at the time of purchase and has been leased to various parking lot operators since then. Ms. Glass indicated that the existing lease with Park 'N Ride for the Site will be terminated on 1 March 2015.

When asked about the presence of hazardous substances or petroleum products, tanks, drums, wells, or drains at the property, Ms. Glass indicated that the she is not aware of any, and that the list specifically prohibits the storage or use of hazardous materials at the Site.

Ms. Glass reported that she had no knowledge of spills, leaks, or environmental incidents associated with the property.

4.2 Interview of State and/or Local Officials

No case managers were identified at any of the regulatory agencies which may have had files related to the Site; therefore, interview of regulatory personnel was not performed.

5 SUMMARY OF SITE RECONNAISSANCE

5.1 Methodology

The following section summarizes observations made during the Site reconnaissance performed by Mr. Douglas Baumwirt, PG of Geosyntec, on 28 March 2014. The Site reconnaissance included a walking survey of the Site. The adjoining properties were inspected by driving on public roads. Figure 2 depicts the Site vicinity and features as identified during the Site reconnaissance. Photographs taken during the Site reconnaissance are included in Appendix H.

5.2 Reconnaissance Observations

A summary of the reconnaissance observations is provided in Table 1.

6 SUMMARY OF FINDINGS

Geosyntec performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-13 of the proposed Vine Substation property located at 3550 Kettner Boulevard, San Diego, California. This assessment revealed the following:

6.1 Site Conditions and Use

The Site is approximately rectangular in shape, comprises approximately 1.5 acres, and is located on the corner southwest of Kettner Boulevard and southeast of Vine Street (Figures 1 and 2). The Site can be accessed by a gate along Vine Street. The Site is currently occupied by a Park 'N Fly Airport Parking lot. The Site is surrounded by a chain link fence and paved with asphalt. The Site includes approximately 220 parking stalls, a guard shack, and a wooden storage shed (Figure 3).

6.2 Offsite Conditions and Use

Northwest of the Site across Vine Street is a commercial property occupied by Rush Press (formerly occupied by a battery manufacturing facility) and a vacant lot formerly occupied by Honeywell (formerly Baron-Blakeslee hazardous waste recycling/disposal facility); northeast of the Site across Kettner Boulevard, Interstate-5 Freeway corridor, and India Street are a gasoline service station, commercial properties, and a residence; southeast of the Site is a vacant rental car facility including a car wash, fueling area, and parking lot; and southwest of the Site across a railroad corridor and Pacific Highway are parking lots (Figure 2).

The Site is located in an area used extensively for industrial purposes since the early 1900s, including aerospace manufacturing facilities, airport support facilities, chemical manufacturing, automotive fueling and service stations, drycleaners, and other commercial and residential properties.

6.3 Data Gaps

Based upon the available information, it is believed that data gaps exist but have not affected the identification of RECs at the Site. Following a thorough investigation, it appears that "data gaps" as defined by ASTM, exist for the Site as follows:

- Responses to file review requests for the Site have not been received from each agency.
- A discrepancy exists between data sources regarding the earliest use of the Site as a gasoline service station. Historic city directories indicate the Site included a service station as early as 1927; but physiographic sources do not confirm the existence of a service station at the Site during that time period. However, sources agree that a service station was present at the Site beginning in 1969. Therefore, this discrepancy does not represent data failure and has not precluded the identification of RECs at the Site for the former presence of a service station.

- Pertinent regulatory agencies (RWQCB and DEH) reported that documents pertaining to the onsite service station(s) and the nature and removal of fuel tanks at the Site do not exist. However, based on the time period the former service station(s) at the Site has been classified as a REC. Therefore, the lack of documentation regarding fuel tanks at the Site has not precluded the identification of RECs at the Site.

6.4 Recognized Environmental Conditions

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-13 of the Site which encompasses approximately 1.5 acres located at 3550 Kettner Boulevard, San Diego, California. Any exceptions to, or deletions from, this practice are described in Section 6.3 Data Gaps of this report. This assessment has revealed no evidence of Recognized Environmental Conditions, Controlled Recognized Environmental Conditions, or Historical Recognized Conditions in connection with the property, with the following exceptions:

Recognized Environmental Conditions

- The Site was formerly used as a gasoline service station and automotive repair facility. Although documentation regarding removal of fuel tanks from the Site has not been identified, based on the time period of operation of the former service station and repair facility at the Site, the possibility exists for a release of petroleum products to have occurred at the Site. However, geotechnical soil borings advanced at the Site did not identify obvious impacts or the presence of existing USTs at the Site. Therefore, the magnitude of the possible release is likely insignificant.
- An adjoining parcel located approximately 250 feet northwest of the Site across Vine and California Streets formerly contained a chemical manufacturing facility and hazardous waste disposal/recycling facility (Honeywell/formerly Baron-Blakeslee). Chlorinated hydrocarbons and other hazardous substances have been released to soil and groundwater from the former facility. Based on available groundwater analytical data, the potential exists for the release to have impacted groundwater or soil vapor at the Site with diluted concentrations of volatile organic compounds. This case remains open with the DTSC, but a land use restriction covenant for the Honeywell facility indicates the property, as remediated to date, is acceptable for use as a non-occupied property with restricted uses. Therefore, this adjoining facility does not appear to present a significant risk to the proposed future Site use as an electrical substation.
- Based on the Site vicinity history and presence of several additional facilities in the Site vicinity (including a battery manufacturing facility, aerospace manufacturing facilities, drycleaners, paint shops, and other facilities documented to handle hazardous materials and petroleum products), it is possible that releases from these facilities have migrated in groundwater or soil vapor to the Site.

Historical Recognized Environmental Conditions

- Several documented releases of petroleum products from upgradient gasoline service stations may have impacted soil, groundwater, and/or soil vapor at the Site. However,

due to the non-beneficial groundwater use designation for the Site vicinity, these cases have been closed and do not appear to present a significant risk to the proposed future Site use as an electrical substation.

6.5 De Minimis Conditions

De minimis conditions are environmental conditions which generally do not present a threat to human health or the environment and that generally would not be the subject of enforcement action if brought to the attention of the appropriate governmental agencies. Conditions determined to be *de minimis* are not RECs. *De minimis* conditions at the Site include:

- The existing railroad corridor present along the southwestern Site boundary has been present prior to 1904. Railroads are commonly associated with shallow soil impacts relating to heavy metals and wood preservatives. However, the railroad corridor is topographically downgradient from the Site, and no evidence of impacts to soil or groundwater from the railroad tracks near the Site was identified.

7 CERTIFICATION

This environmental site assessment (ESA) was prepared in accordance with the scope of work, terms and conditions described in Geosyntec's proposal dated 21 March 2014. This proposal incorporated by reference the ASTM Standard E 1527-13, *Standard Practice for Environmental Assessments: Phase I Environmental Site Assessment Process*.

"I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40CFR 312 and I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR part 312."

_____ 18 April 2014

Douglas Baumwirt Date
California Professional Geologist No. 8745

8 REFERENCES

ASTM Standard E 1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, 2013.

CH2MHILL, 2008. Groundwater Monitoring Well Installation Work Plan, Former Baron Blakeslee Terminal, San Diego, California. Prepared for Honeywell International, Inc. 7 May.

EDR, 2014. The EDR-Aerial Photo Decade Package, Inquiry No. 3889802.8 Environmental Data Resources, Inc., 25 March 2014.

EDR, 2014. The EDR-City Directory Abstract, Inquiry No. 3889802.5 Environmental Data Resources, Inc., 27 March 2014.

EDR, 2014. The EDR-Certified Sanborn Map Report, Inquiry No. 3889802.3. Environmental Data Resources, Inc., 24 March 2014.

EDR, 2014. The EDR-Historical Topographic Map Report, Inquiry No. 3889802.4. Environmental Data Resources, Inc., 24 March 2014.

EDR, 2014. The EDR Radius Map Report with GeoCheck, Inquiry No. 3889802.2s. Environmental Data Resources, Inc., 24 March 2014.

Geosyntec Consultants, 2013. Preliminary Geotechnical and Geologic Hazards Investigation, Vine Substation, San Diego, California. Prepared for SDG&E. December 2013.

GoogleEarth, 2014. GoogleEarthPro, 3550 Kettner Boulevard, San Diego, CA. Accessed 25 March 2014.

HistoricAerials, 2014. 3550 Kettner Boulevard, San Diego, CA. www.historicaerials.com Accessed 25 March 2014.

Kennedy, M.P. and S.S., Tan, 2005. Geologic Map of the San Diego 30' x 60' Quadrangle, California. California Geological Survey Regional Geologic Map No. 3, scale 1:100,000.

Lindvall, S.C., and Rockwell, T.K., 1995. Holocene Activity of the Rose Canyon Fault Zone in San Diego, California. Journal of Geophysical Research, volume 100, No. B12, pp. 24, 121-124, 132. 10 December.

RWQCB, San Diego Region, 2007. *Water Quality Control Plan for the San Diego Basin (9)*, Dated 8 September 1994, with amendments adopted through 25 April 2007.

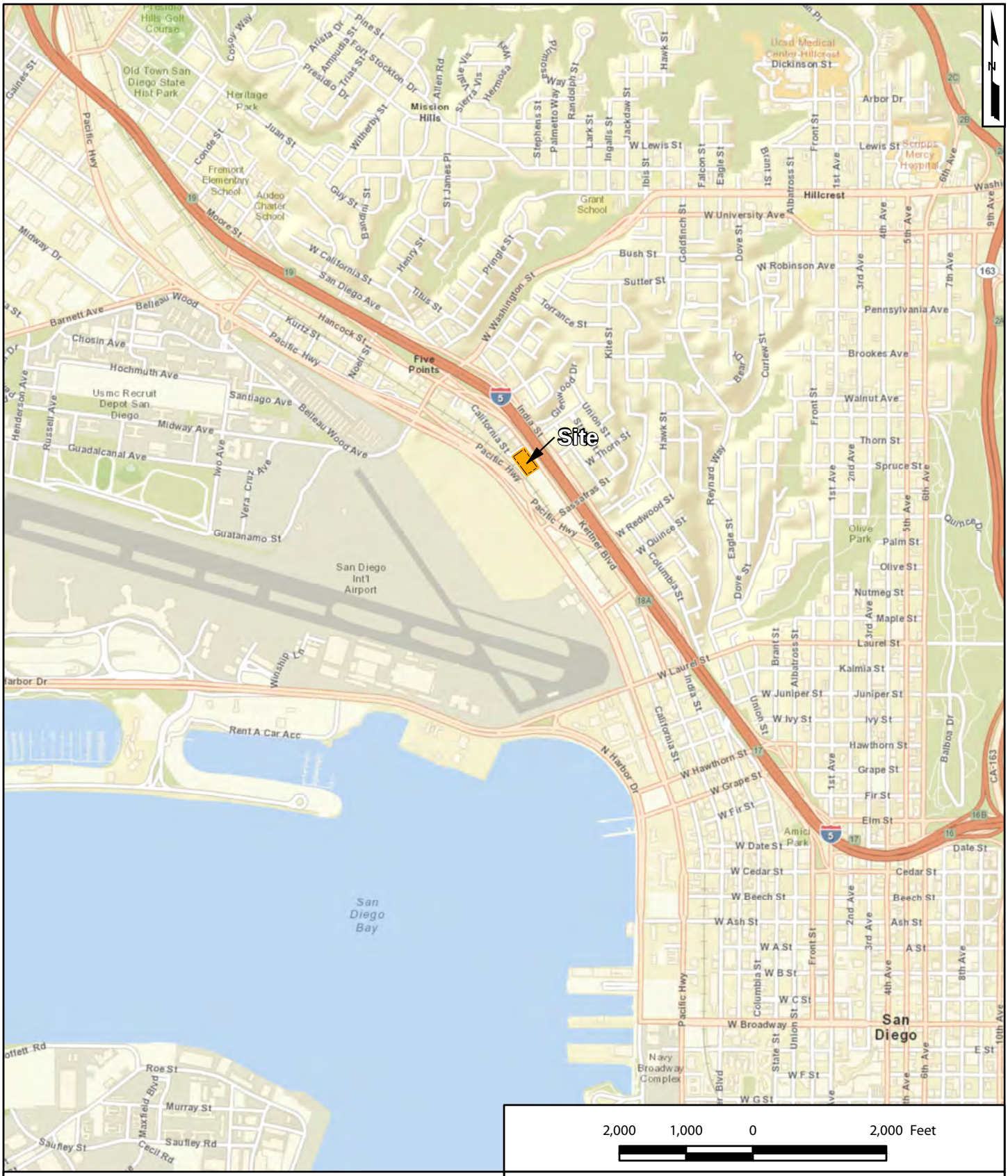
TABLES

Table 1
Summary of Site Reconnaissance
Proposed Street Substation
San Diego, California

Geosyntec consultants

ASTM Section	Feature or Condition	Description
General Site Setting		
9.4.1.1 & 9.4.1.2	Current and Former Property Usage	The Site is currently used as a parking lot, including a guard shack. Previous Site usage included a gasoline service station.
9.4.1.3 & 9.4.1.4	Current and Former Adjoining Property Usage	The adjoining property to the south is vacant, but was formerly used as a rental car facility, and currently include the car wash and gasoline AST. Adjoining property to the west is a railroad corridor followed by commercial properties including a termite and pest control facility, Pacific Highway, and parking lots. Adjoining property to the north across Vine Street is a commercial building occupied by Rush Press. A former solvent recycling facility (Barron-Blakeslee) formerly occupied a vacant area across Vine Street northwest of the Site. East of the Site across Kettner Blvd is the Interstate-5 Freeway corridor followed by India Street and a gasoline service station.
9.4.1.5	Current and Former Use of Surrounding Area	The Site vicinity is currently used for a mix of commercial, and industrial activities. The area formerly including various additional industrial facilities and residential properties.
9.4.1.6	Geology, Hydrogeology, Hydrology, Topography of Site and Adjoining Properties	The Site is located on fill, colluvium, and old paralic deposits of silts, sands, and cobbles. The Site slopes gently toward the southwest toward the railroad corridor. Groundwater is approximately 25 feet below the ground surface, and flows toward the south.
9.4.1.7	Onsite Structures	Two structures were observed onsite, a guard shack at the entrance, and a wooden shed in the northwest corner of the Site.
9.4.1.8	Roads and Parking Areas	The Site is a parking lot, paved with asphalt.
9.4.1.9	Potable Water supply	A water source was not observed onsite.
9.4.1.10 & 9.4.4.7	Sewage Disposal or Septic Systems	Sewage or septic systems were not observed onsite.
Interior and Exterior Observations		
9.4.2.3 & 9.4.2.8	Hazardous Substances or Petroleum Products	No evidence of hazardous substances or petroleum products was observed onsite, except for small quantities contained within the cars parked onsite.
9.4.2.4	Underground Storage Tanks	No known USTs are currently present at the Site.
9.4.2.4	Above-ground Storage Tanks	No known ASTs are currently present at the Site; however, a gasoline AST was observed on the property adjoining southeast of the Site, approximately 25 feet from the Site boundary.
9.4.2.5	Odors	No suspicious odors were noted.
9.4.2.6	Pools of Liquids	No pools of liquid were observed onsite.
9.4.2.7	Drums and Containers > 5 Gallons	No drums or containers were observed onsite.
9.4.2.9	Unidentified Substances/Containers	No unidentified substances were observed onsite.
9.4.2.10	PCB Items	Evidence of PCB-containing items was not observed onsite.
Interior Observations		
9.4.3.1	Heating and Cooling Systems	No evidence of heating or cooling systems was observed onsite.
9.4.3.2	Stains/Corrosion	No interior staining was observed.
9.4.3.3	Drains and Sumps	No drains were observed onsite.
Exterior Observations		
9.4.4.1	Pits, Ponds, or Lagoons (Onsite and Adjoining)	No pits, ponds, or lagoons observed onsite.
9.4.4.2	Stained Soil or Pavement	Minor staining was observed on pavement in parking stalls at the Site, but none indicative of a significant release to the subsurface.
9.4.4.3	Stressed Vegetation	No stressed vegetation was observed at the Site.
9.4.4.4	Solid Waste	No evidence of solid waste disposal was observed onsite.
9.4.4.5	Wastewater or Stormwater Discharge	Surface water appears to flow southwesterly across the Site to a concrete swale along the Site boundary which conveys surface water to a storm drain.
9.4.4.6	Wells	No wells were observed at the Site.

FIGURES



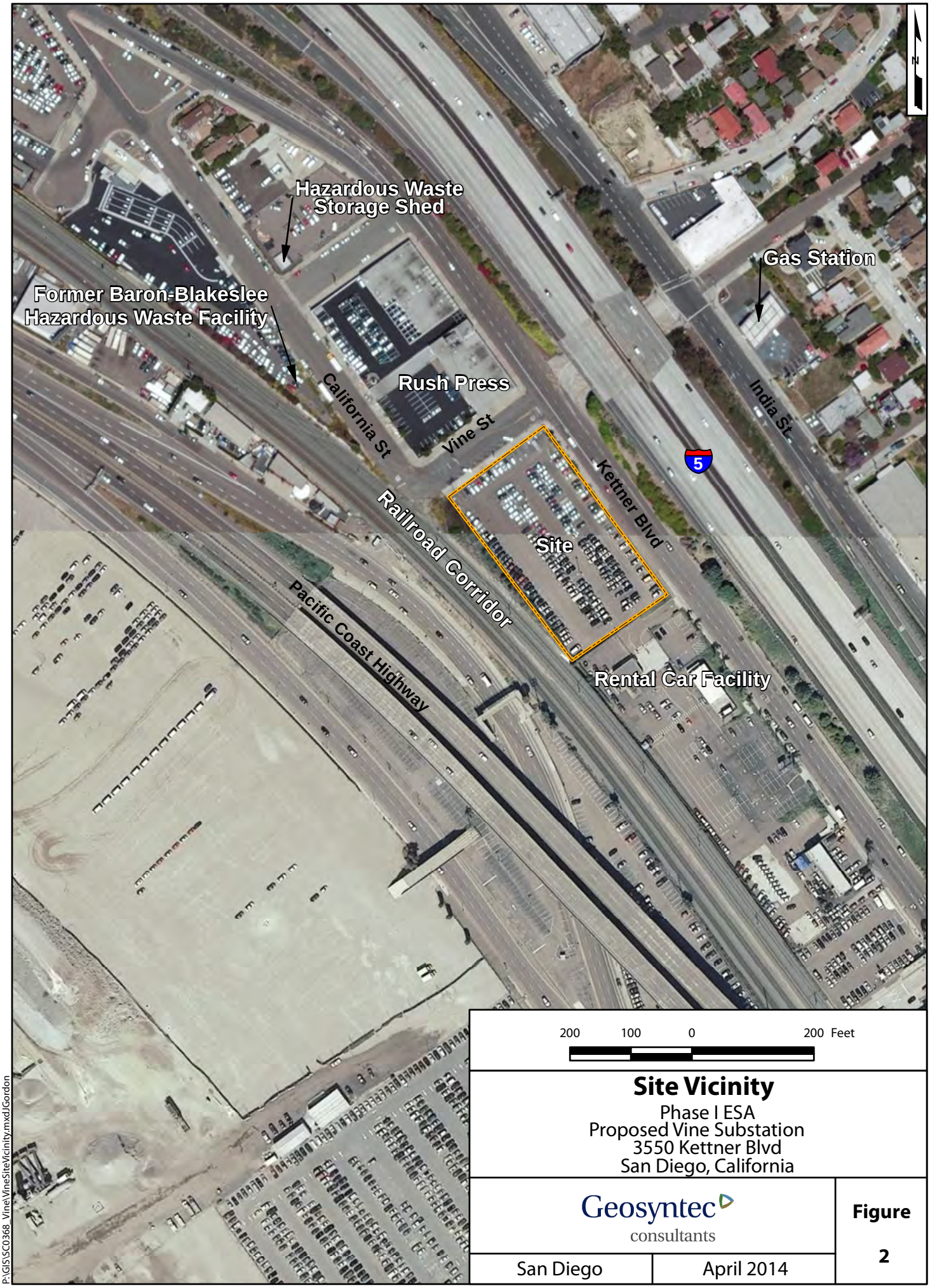
Site Location

Phase I ESA
Proposed Vine Substation
3550 Kettner Blvd
San Diego, California

Geosyntec consultants

San Diego	April 2014	Figure 1

P:\GIS\SC0638_SDGE\SC0638_30_Kettner\VineSiteLocation.mxdJGordon



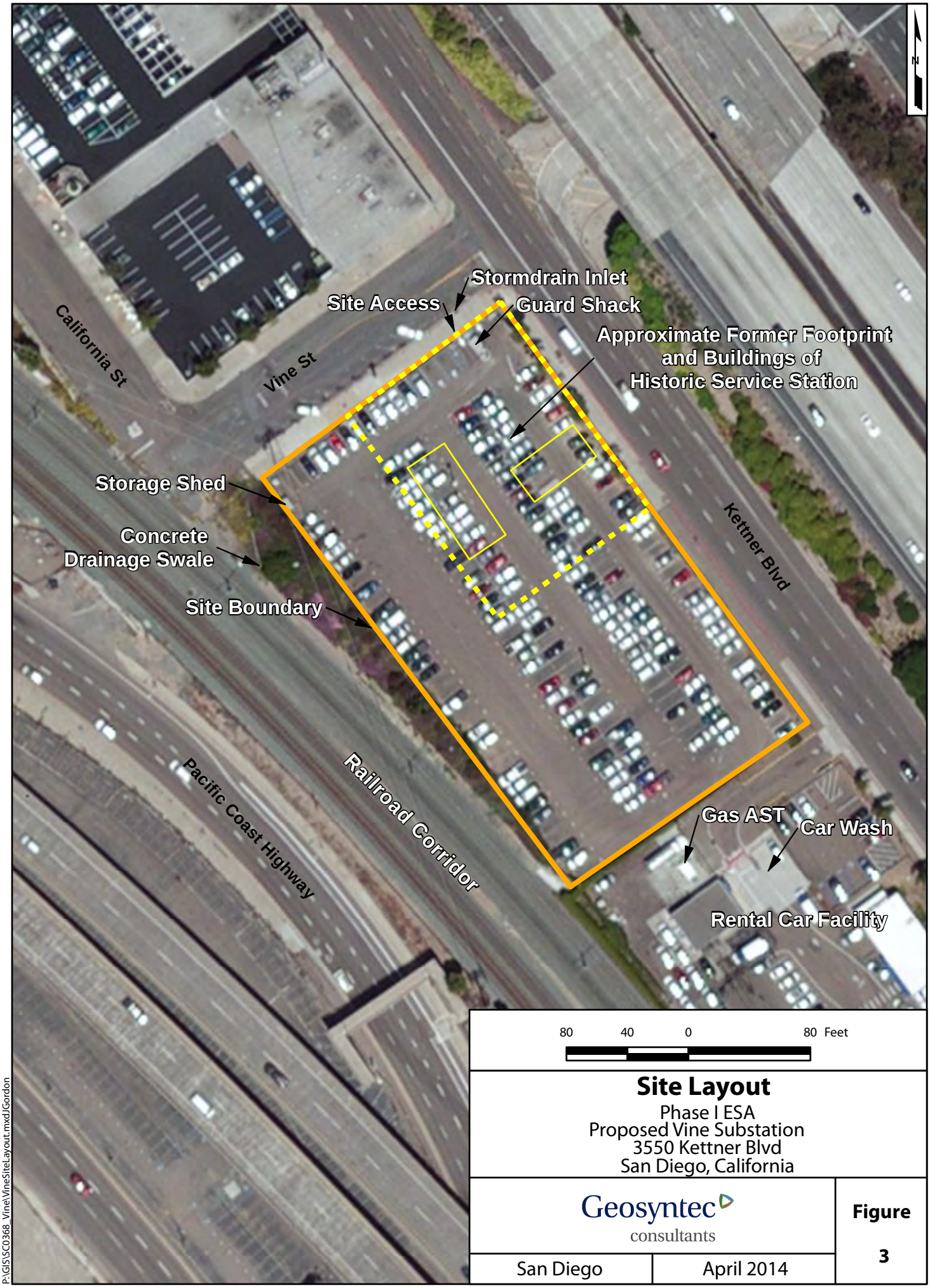
Site Vicinity

Phase I ESA
Proposed Vine Substation
3550 Kettner Blvd
San Diego, California

Geosyntec consultants

San Diego	April 2014	Figure 2

P:\GIS\SC0368_Vine\VineSiteVicinity.mxd JGordon



Site Layout

Phase I ESA
Proposed Vine Substation
3550 Kettner Blvd
San Diego, California

Geosyntec consultants

San Diego	April 2014	Figure 3

P:\GIS\SC0368_Vine\VineSiteLayout.mxd JGordon

APPENDIX A
Qualifications of the Environmental Professional

Geosyntec consultants

DOUGLAS J. BAUMWIRT, PG
Senior Geologist

Phase I Environmental Site Assessments
Phase II Site Characterization
Environmental Liability Valuation
Contaminated Site Mitigation/Remediation
Mineral Remoteness Evaluations
Hazardous Materials Management
Litigation Support
Project Management

CAREER SUMMARY

Mr. Baumwirt joined Geosyntec Consultants in 2005 after working in the legal and geotechnical consulting fields. Representative experience includes the performance of Phase I Environmental Site Assessments (ESAs); extensive work plan preparation and implementation; coordination and mobilization of diverse field activities; sample collection; statistical analyses; preparation of groundwater monitoring, phase II environmental site assessment, site conceptual model, and many other reports; and project management for a wide variety of projects and budgets. Mr. Baumwirt's diverse background and multidisciplinary professional experience enables him to provide innovative and valuable services to a broad range of project types.

Environmental Assessment and Due Diligence Services

Mr. Baumwirt has performed more than 100 Phase I ESAs throughout the United States in accordance with ASTM standards to evaluate the presence of Recognized Environmental Conditions (RECs) associated with the subject properties. The Phase I ESAs have involved a variety of property types and proposed usages, including:

- Large remote rural properties
- Petroleum distribution facilities/pipelines
- Large-scale linear projects (mixed uses)
- Pesticide manufacturing/distribution
- Concrete and asphalt production/distribution
- Large and small agricultural properties
- Commercial wholesale and retail facilities
- Biosolids processing and composting
- Electricity generating/transmission facilities
- Residential properties
- Industrial manufacturing facilities
- Aviation/aerospace manufacturing
- Rail and transit facilities
- Mines
- Schools
- Salvage yards
- Dry cleaners
- Service stations
- Landfills and burn dumps
- Former military installations

Based on the results of Phase I ESAs, additional due diligence services have included numerous Phase II site characterizations to assess potential impacts resulting from historical activities. Activities conducted include surface geophysical surveys; asbestos and lead-based surveys and abatement; soil, soil vapor, groundwater and surface water assessments; human health risk

assessments; feasibility studies; developing estimated site cleanup costs and liability valuation; developing cleanup goals based on the current and/or future intended site usage; regulatory support and coordination; and litigation support.

Examples of the range of due diligence services provided by Mr. Baumwirt include:

Phase I Environmental Site Assessment and Phase II Site Characterization, Four Corners Generating Station, Southern California Edison

The Four Corners Generating Station (FCGS) is a coal-burning power plant located in northwestern New Mexico on land leased by the Navajo Nation. Since initiation of the plant in 1959, coal-combustion residuals have been disposed onsite and on adjoining properties. Geosyntec was contracted to perform a suite of due diligence services for the site to evaluate the potential environmental liabilities associated with the possible sale of the client's interest in the FCGS. Mr. Baumwirt managed and performed a large-scale Phase I ESA for the site in accordance with ASTM Standard E 1527-05. Due to the complex site history, large facility size, and client's planned end use of the study, the Phase I ESA report was prepared using a unique table and figure-based report format that tabulated and visualized the findings for the Site. Subsequently, Mr. Baumwirt managed and performed a comprehensive Site Characterization which included advancement of more than 70 soil borings and collection of groundwater, sediment, and surface water samples. The phase II report included a comprehensive summary of findings for the due diligence investigation and a site conceptual model based on site specific findings and historical records.

Phase I Environmental Site Assessment, 120-Mile Sunrise Powerlink, San Diego Gas & Electric

Mr. Baumwirt served as project manager and primary author of a Phase I Environmental Site Assessment to identify potential presence of contamination within the right-of-way which may affect construction, mobilize contaminants, and/or expose workers or the public for the construction of the approximately 120-mile transmission corridor. Due to the urgent nature of the project and investigation per the request of the client, Geosyntec was able to perform the site assessment and provide a draft executive summary to the client within 10 days of the site reconnaissance, and a draft Phase I ESA report within 30 days of authorization to proceed. The entire 60-square mile site assessment and final reporting was completed on schedule within 45 days. Subsequently, as additional properties were considered for purchase for the project, 42 addenda to the initial Phase I ESA were prepared on expedited schedules.

Phase II Environmental Site Assessments, 120-Mile Sunrise Powerlink, San Diego Gas & Electric

Geosyntec has performed seven expedited Phase II Environmental Site Characterizations for properties throughout the planned Sunrise Powerlink project alignment in the backcountry of San Diego County to characterize the nature and extent of existing contamination, and provide remedial cost estimates to demolish constructed features, remove contaminated materials, and restore impacted properties to their pre-developed conditions. Sites assessed have included several properties adjoining agricultural chemical manufacturing sites, former agricultural facilities, industrial facilities, and rural residences. At the request of the client, in some cases, soil

and groundwater site characterization investigations were scoped, implemented, and reported within two weeks. Additionally, due to SDG&Es observation of our outstanding project management and work product, SDG&E tasked Mr. Baumwirt to manage three other SDG&E subcontractors to coordinate the presentation of findings to the California Public Utilities Commission.

Phase II Environmental Site Assessment of Former Agricultural Lands, 120-Mile Sunrise Powerlink, San Diego Gas & Electric

During the performance of a large-scale Phase I ESA for an approximately 120-mile corridor, 24 former and current agricultural sites were identified in the subject area spanning the remote areas of San Diego and Imperial Counties. To address mitigation measures enforced by the California Public Utilities Commission (CPUC), Mr. Baumwirt managed the assessment of shallow soil at each site to evaluate the presence of organophosphate and organochlorine pesticides as a result of former agricultural site use. As required by the CPUC, Mr. Baumwirt worked with the local Agricultural Commission to prepare a Workplan to address the concerns of agency and to adequate assess the sites. To reduce costs to the client and to construct statistically valid data sets for the sites of variable sizes ranging from less than one acre to more than 100 acres, Geosyntec utilized statistical methods to determine the minimum amount of sample points necessary to be considered representative. Field sampling and reporting was completed in less than three weeks, and the project was completed ahead of schedule and under budget.

Mineral Remoteness Evaluations, Mitigation Properties, San Diego Gas & Electric

To address requirements related to environmental permits for major capital improvement projects, SDG&E acquired a number of rural open space properties for donation to various conservation agencies. To establish conservation easements on these properties, Geosyntec performed mineral remoteness evaluations for five rural properties to address potential conflicts related to severed estates, where mineral rights and surface estates for a given property are reserved separately on the property's title. The purpose of the mineral remoteness evaluations was to determine if the probability of future implementation of mining activities at the surface of the site is so remote as to be considered negligible. The five evaluations were performed on time and under budget.

Phase I and Phase II Environmental Site Assessments, Confidential Home Improvement Retailer, Various Locations

Mr. Baumwirt has assisted in conducting and reviewing over fifty Phase I ESAs for various proposed and operating home improvement retail store locations throughout the United States. Historical property uses at these sites include agricultural, rural, commercial, and industrial uses. Each Phase I ESA report was prepared in accordance with current ASTM E 1527 Standard Practice for ESAs. Mr. Baumwirt has prepared and implemented workplan's for over ten Phase II ESAs for various proposed development locations throughout California from San Diego to Crescent City. Phase II ESA investigations included soil, soil vapor, and/or groundwater sampling for recognized environmental conditions identified in previous reports and in many instances performed coordination and oversight of asbestos and lead-based paint abatement contractors. At the client's request, special coordination was often implemented to preserve the confidential nature of the investigation and/or difficult access issues.

Site Closure Assessment, Former SoilServe Facility, Wilbur-Ellis Company, Brawley, California

A retail agricultural chemical distribution facility leased an approximately 2.5-acre property for approximately 5 years. Geosyntec was contracted by WECO to perform a site closure assessment of the site after operations had ceased, to assess and document the conditions at the site prior to termination of the site lease. Mr. Baumwirt managed and performed the assessment on an expedited basis which included an initial site reconnaissance to observe site conditions and interview facility personnel, and a second phase to collect and analyze soil samples. The suite of analytical testing was specifically developed to include only chemicals of concern which were handled at the site by the client, including certain metals, chlorinated herbicides, organophosphorus compounds, fertilizer compounds, and petroleum hydrocarbons. Geosyntec delivered a concise report which clearly documented site conditions at the time the client's lease was terminated for the site.

Soil Management Planning and Monitoring, San Diego Gas & Electric.

Geosyntec previously performed a Phase I ESA for a linear project which identified several areas with likely existing soil and groundwater contamination along the proposed project's underground construction alignment. To prevent improper handling of contaminated soil and water, Mr. Baumwirt prepared a site-specific Soil Management Plan and managed the implementation of soil monitoring throughout construction in the vicinity of the previously identified areas of concern. Implementation included coordination with numerous construction contractors, identifying and screening impacted soil in the field, ensuring proper waste characterization, documenting field activities, and providing safety instruction to crews.

EDUCATION

San Diego State University, B.S., Geological Sciences, 2004

PROFESSIONAL HISTORY

Geosyntec Consultants, San Diego, California, 2005-Present
Geocon Consultants, Inc., San Diego, California, 2005
Eastwood-Stein Litigation Support, San Diego, CA 2001-2005

PROFESSIONAL CERTIFICATIONS AND TRAINING

California Professional Geologist No. 8745
Geosyntec Environmental Professional
Hazardous Waste Operations and Emergency Response (29 CFR 1910.120)

APPENDIX B
Pertinent Site Documents

Environmental Support Services
Environmental Research & Due Diligence Compliance
30251 Golden Lantern, #E-305, Laguna Niguel, CA 92677
Tel) 949-429-3564 • Fax) 949-429-3563
www.EnvironmentalSupportServices.com • Info@EnvironmentalSupportServices.com

April 4, 2014

Project Name: San Diego

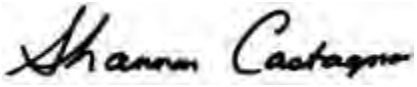
Geosyntec Consultants
10875 Rancho Bernardo Road, Suite 200
San Diego, CA 92127

Attention: Doug Baumwirt

Dear Mr. Baumwirt

Attached is the Environmental (Hazardous/Toxic Waste) Records Search Summary of the Southwest Corner of Vine Street & Kettner Blvd., 3548 & 3550 Kettner Blvd., APN 451-690-18-00 ("San Diego") site located in San Diego, California. Environmental Support Services ("**ESS**") received the request on March 24, 2014 (See Appendix A). Should you have any questions regarding the summary, please call.

Sincerely,
Environmental Support Services



Shannon Castagno
Project Manager
Shannon@EnvironmentalSupportServices.com

Records Search Summary

Company:	Geosyntec Consultants
Project Name:	San Diego
Attention:	Doug Baumwirt
Street Address of Property:	Southwest Corner of Vine Street & Kettner Blvd. 3548 & 3550 Kettner Blvd. San Diego, CA APN 451-690-18-00

San Diego County Hazardous Materials Management Division

E-mailed request: 3-24-14 & 3-28-14, Contact: Joyce Ellman

ESS submitted a request for a records search concerning the San Diego site to Ms. Ellman, with the San Diego County Hazardous Materials Management Division (See Appendix B). **ESS** requested information concerning the utilization, manufacture, storage and/or discharge of hazardous materials/waste, and any information concerning previous or on-going site investigations/remediations pertaining to hazardous materials/waste. She informed **ESS** March 27, 2014 that her department did have records for APN 451-690-18-00, San Diego, CA (See Appendix B). As of April 4, 2014 Ms. Ellman had not completed **ESS'** request for 3548 & 3550 Kettner Blvd., San Diego, CA. Should any information concerning the site surface, **ESS** will immediately forward it to Mr. Baumwirt at the Geosyntec Consultants office.

United States Environmental Protection Agency – Region IX

On-line request: 3-24-14 & 3-28-14, Contact: Ivry Johnson

ESS requested that Ms. Johnson, with the United States Environmental Protection Agency – Region IX, check her records for any files/information (such as treatment, storage and disposal of hazardous waste) concerning Southwest Corner of Vine Street & Kettner Blvd., 3548 & 3550 Kettner Blvd., San Diego, CA and APN 451-690-18-00. She informed **ESS** on March 25, 2014 & March 28, 2014 that her department received **ESS'** Freedom of Information request and will respond within (20) working days (See Appendix C). Should any information concerning the site surface, **ESS** will immediately forward it to Mr. Baumwirt at the Geosyntec Consultants' office.

Department of Toxic Substances Control (DTSC) – Cypress Office

Faxed request: 3-24-14 & 3-28-14, Contact: Julie Johnson/Jone Barrio

Previous contacts with the DTSC have disclosed that this office only collects and stores information (such as treatment, storage and disposal of hazardous waste) concerning sites which have existing businesses, industries, etc. present. **ESS** requested that Ms. Johnson/Ms. Barrio, with the DTSC, check the file room records for any files/information the concerning Southwest Corner of Vine Street & Kettner Blvd., 3548 & 3550 Kettner Blvd., San Diego, CA and APN 451-690-18-00 (See Appendix D). She informed **ESS** on March 25, 2014 & April 1, 2014 that her department had no files/information concerning that site (See Appendix D).

Department of Toxic Substances Control (DTSC) – San Diego Office

E-mailed request: 3-24-14 & 3-28-14, Contact: Cleo Munoz

Previous contacts with the DTSC have disclosed that this office only collects and stores information (such as treatment, storage and disposal of hazardous waste) concerning sites which have existing businesses, industries, etc. present. **ESS** requested that the Records Section, with the DTSC, check the file room records for any files/information concerning the Southwest Corner of Vine Street & Kettner Blvd., 3548 & 3550 Kettner Blvd., San Diego, CA and APN 451-690-18-00 (See Appendix E). He informed **ESS** April 1, 2014 that his department had no files/information concerning that site (See Appendix E).

San Diego Fire Department – Fire Prevention

Mailed request: 3-24-14 & 3-28-14, Contact: Beth Carroll

ESS requested that Ms. Carroll, with the San Diego Fire Department, check her records concerning the storage of hazardous materials/waste and underground storage tanks with regards to the following: 3548 & 3550 Kettner Blvd., San Diego, CA (See Appendix F). As of April 4, 2014 Ms. Carroll had not completed **ESS'** request. Should any information concerning the site surface, **ESS** will immediately forward it to Mr. Baumwirt at the Geosyntec Consultants office.

City of San Diego – Industrial Waste Program

Faxed request: 3-24-14 & 3-28-14, Contact: Public Records Unit

ESS requested that the Public Records Unit, with the City of San Diego – Industrial Waste Program, check their records for any information concerning industrial waste discharge permits or violations for Southwest Corner of Vine Street & Kettner Blvd., 3548 & 3550 Kettner Blvd., San Diego, CA and APN 451-690-18-00 (See Appendix G). Brian Taylor, with that department informed **ESS** March 25, 2014 that his department had no records for APN 451-690-18-00, San Diego, CA (See Appendix G). As of April 4, 2014 Mr. Taylor had not completed **ESS'** request for 3548 & 3550 Kettner Blvd., San Diego, CA. Should any information concerning the site surface, **ESS** will immediately forward it to Mr. Baumwirt at the Geosyntec Consultants office.

San Diego Building Department

Visited: 3-25-14 & 4-4-14, Contact: Stacey Harris & Lorena Grijalva

ESS requested that Ms. Harris and Ms. Grijalva, with the San Diego Building Department, provide the building records (all building permits and certificates of occupancy) 3548 & 3550 Kettner Blvd., San Diego, CA and APN 451-690-18-00. Ms. Harris informed **ESS** that her department had no records for APN 451-690-18-00, San Diego, CA. Ms. Grijalva, with that department informed **ESS** that her department only had records for 3550 Kettner Blvd., San Diego, CA (See Appendix H for copies). No further information concerning the site was obtained from the building department at the time of the investigation.

San Diego Air Pollution Control District (SDAPCD)

E-mailed request: 3-24-14 & 3-28-14, Contact: Teresa Cain

ESS submitted a search request concerning active, inactive and sold files for Southwest Corner of Vine Street & Kettner Blvd., 3548 & 3550 Kettner Blvd., San Diego, CA and APN 451-690-18-00 to Ms. Cain at the SDAPCD (See Appendix I). She informed **ESS** April 4, 2014 that her department had no records for 3548 & 3550 Kettner Blvd., San Diego, CA.

Regional Water Quality Control Board (RWQCB) – San Diego Region

E-mailed request: 3-24-14 & 3-28-14, Contact: Public Records Unit

ESS requested that the Public Records Unit, with the RWQCB, provide the files for Southwest Corner of Vine Street & Kettner Blvd., 3548 & 3550 Kettner Blvd., San Diego, CA (See Appendix J). Rachel O'Donovan, with that department informed **ESS** April 1, 2014 that their department had no records for 3548 & 3550 Kettner Blvd., San Diego, CA (See Appendix J).

Records Search completed by:

Shannon Castagno
Project Manager
Environmental Support Services

The information provided in this report was obtained by a comprehensive examination of public records, public information and public servant communications. The degree of care performed by **ESS** is equivalent to that exercised by environmental companies performing similar records searches.

Appendix A

Environmental (Hazardous/Toxic Waste) Records Search
Order Form

From: Douglas Baumwirt [DBaumwirt@Geosyntec.com]
Sent: Friday, March 28, 2014 12:06 PM
To: Shannon Castagno (Shannon@EnvironmentalSupportServices.com)
Subject: RE: File Review Requests - Vine Street, San Diego, Ca

Hi Shannon,
We got our EDR report for the above-referenced site that has a former gas station listed at the site with an address of 3550 Kettner Blvd. Hopefully that helps with the file requests, since I know that some agencies cant search without an address.
Happy Friday!!!!
-doug

From: Doug Baumwirt
Sent: Monday, March 24, 2014 6:08 PM
To: Shannon Castagno (Shannon@EnvironmentalSupportServices.com)
Subject: RE: File Review Requests - Vine Street, San Diego, Ca

Here's a map showing the site location. REDI says the address is "Kettner," not sure if that helps.

From: Doug Baumwirt
Sent: Monday, March 24, 2014 2:38 PM
To: Shannon Castagno (Shannon@EnvironmentalSupportServices.com<mailto:Shannon@EnvironmentalSupportServices.com>)
Cc: Daniel Pelikan
Subject: File Review Requests - Vine Street, San Diego, Ca

Hi Shannon,
Please initiate a file review for a Phase I ESA for the property located on the southwest corner of the intersection Vine Street and Kettner Bouelvard in San Diego, CA. There is no known formal address (currently a parking lot), but the SD County APN is 451-690-1800.
Please contact the following agencies:

* USEPA

* DTSC

* RWQCB

* SD APCD

* SD DEH (SAM and HMMD)

* SD Fire Dept

* SD Industrial Wastewater Control Program

* SD Building Dept

Please submit your report with whatever responses you have on Wednesday April 2nd.
Please let me know if you have any questions, or concerns, and please confirm that you can take this on.
Thank you!
-Doug

Douglas Baumwirt, PG 8745
Senior Geologist

10875 Rancho Bernardo Road
Suite 200
San Diego, CA 92127
Direct Phone: 858.716.2922
Office: 858.674.6559
Fax: 858.674.6586
Mobile: 619.992.7743
www.geosyntec.com<http://www.geosyntec.com/>

[Geosyntec_logoV10_USE-THIS]

[cid:image001.png@01CD84FB.13443FB0]

From: Douglas Baumwirt [DBaumwirt@Geosyntec.com]
Sent: Monday, March 24, 2014 2:38 PM
To: Shannon Castagno (Shannon@EnvironmentalSupportServices.com)
Cc: Daniel Pelikan
Subject: File Review Requests - Vine Street, San Diego, Ca

Hi Shannon,
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Please contact the following agencies:

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* DTSC

* RWQCB

* SD APCD

* SD DEH (SAM and HMMD)

* SD Fire Dept

* SD Industrial Wastewater Control Program

* SD Building Dept

Please submit your report with whatever responses you have on Wednesday April 2nd.
Please let me know if you have any questions, or concerns, and please confirm that you can take this on.
Thank you!
-Doug

Douglas Baumwirt, PG 8745
Senior Geologist

10875 Rancho Bernardo Road
Suite 200
San Diego, CA 92127

Direct Phone: 858.716.2922
Office: 858.674.6559
Fax: 858.674.6586
Mobile: 619.992.7743
www.geosyntec.com<http://www.geosyntec.com/>

[Geosyntec_logoV10_USE-THIS]

[cid:image001.png@01CD84FB.13443FB0]

REDI - Regional Economic Development Information System

SANDAG

Mapping | Locate | Reports

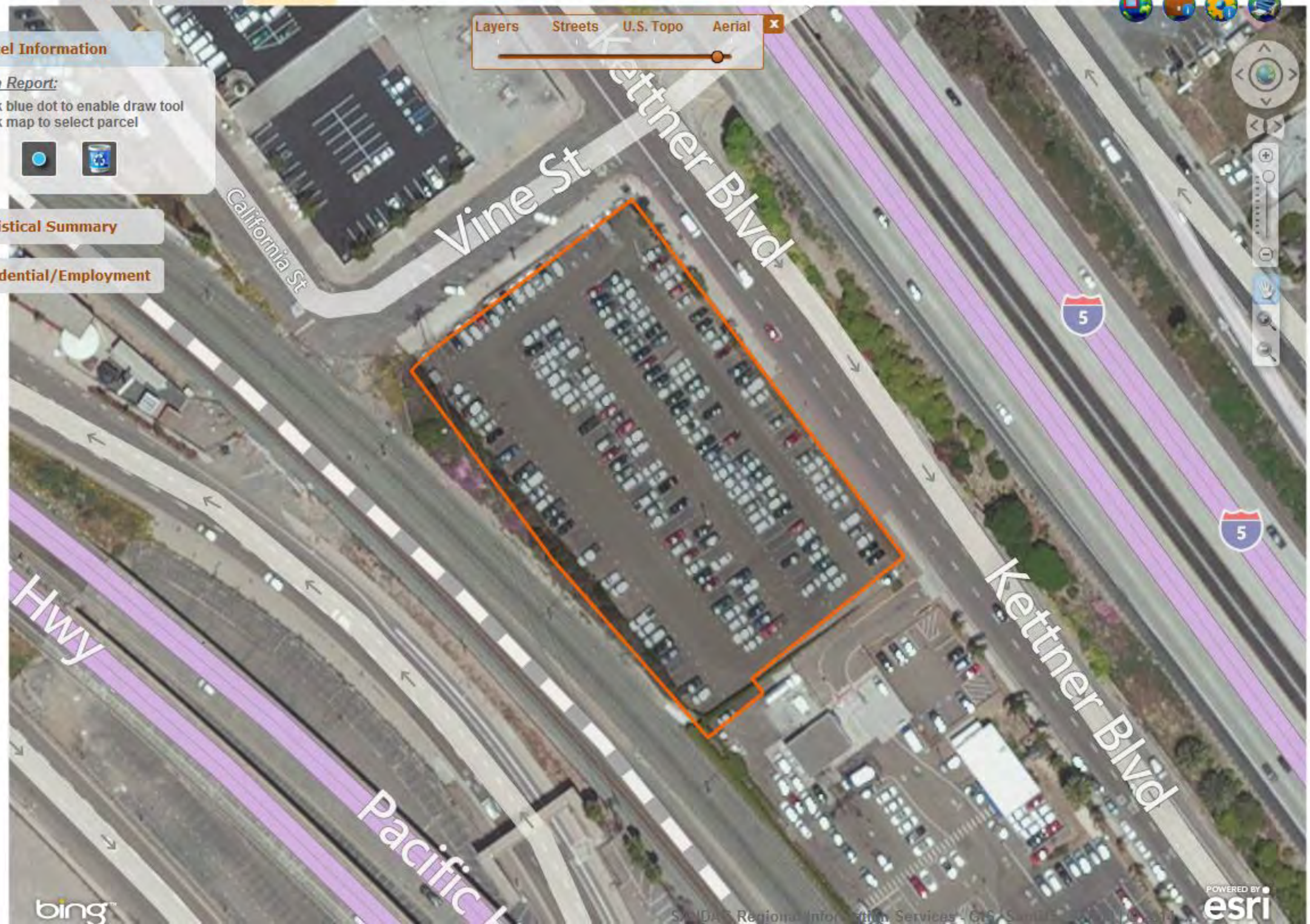
Parcel Information

To Run Report:

1 - Click blue dot to enable draw tool
2- Click map to select parcel

Statistical Summary

Residential/Employment



Appendix B

Request for Records Search to the
San Diego County HMMD and
Photocopies Obtained from that Agency

OFFICE USE ONLY

Request # ____________

County of San Diego

JACK MILLER
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
P.O. BOX 129261, SAN DIEGO, CA 92112-9261
(858) 505-6700 FAX (858) 505-6848
www.sdcdeh.org

ELIZABETH POZZEBON
ASSISTANT DIRECTOR

PUBLIC RECORDS REQUEST FOR THE SITE ASSESSMENT AND MITIGATION (SAM) PROGRAM AND HAZARDOUS MATERIALS DIVISION (HMD)

Requestor Name: Environmental Support Services
Phone: ( )
Company Name: Shannon Castagno
Mailing Address: 30251 Golden Lantern, Suite #E-305
Laguna Niguel, CA 92677
Tel: 949-429-3564 - Fax: 949-429-3563
Shannon@EnvironmentalSupportServices.com

...ness card if preferred) 3/24/14

Additional informatio... ite, www.sdcdeh.org. Fax or email your completed form to the Public Records Program at (858) 505-6848 or deh.publicrecords@sdcounty.ca.gov. The following information is required. Separate forms are needed for each address or parcel number.

Southwest Corner of Vine St & Kettner Blud. San Diego, CA 92101 or 451-690-1800
Exact Address (Street, City and Zip Code) — Assessor's Parcel Number

Optional information (establishment permit number, business name, etc.): (See attached Map)

Please indicate the purpose of your search by checking all that apply:

- ☐ Contaminated Property Investigation(s) (SAM Cases)
- ☑ SAM Closure Letter/Report
- ☑ Hazardous Materials Permit & Underground Storage Tank Files (HMD/UST)
- ☐ Other: ____________ (specify)

☐ Monitoring Well Files (select conditions that apply)
- Government agency request
- Consultant with related case
- Written authorization from owner (attach letter)

OFFICE USE ONLY BELOW THIS LINE

Files reviewed by: ____________ of ____________ Date: / /

Files copied for: ____________ of ____________ Date: / /

Request cancelled by: ____________ Date: / /

Photocopies ______ Cost ______ Picked up/mailed on ______ By ______

A search for DEH records checked above has been conducted and the following apply:

☐ SAM files for the permit number(s) listed below are available.
______ # ______ # ______ # ______ # ______

☐ HMD/UST files for the permit number(s) listed below are available.
______ # ______ # ______ # ______ # ______

☐ Original records were purged. Database-only records are available (at: http://sdcounty.ca.gov/deh/doing_business/hazmat_search.html) for the following permit number(s):
______ # ______ # ______ # ______ # ______

☐ No SAM/HMD/UST records were found for the address/APN you requested.

____________________ Signature - DEH Representative

/ / Date

DEH complies fully with the California Public Records Act and the Federal Freedom of Information Act. Please be advised that photocopy and/or scanned file fees may apply.

REDI - Regional Economic Development Information System

SANDAG

Mapping | Locate | Reports

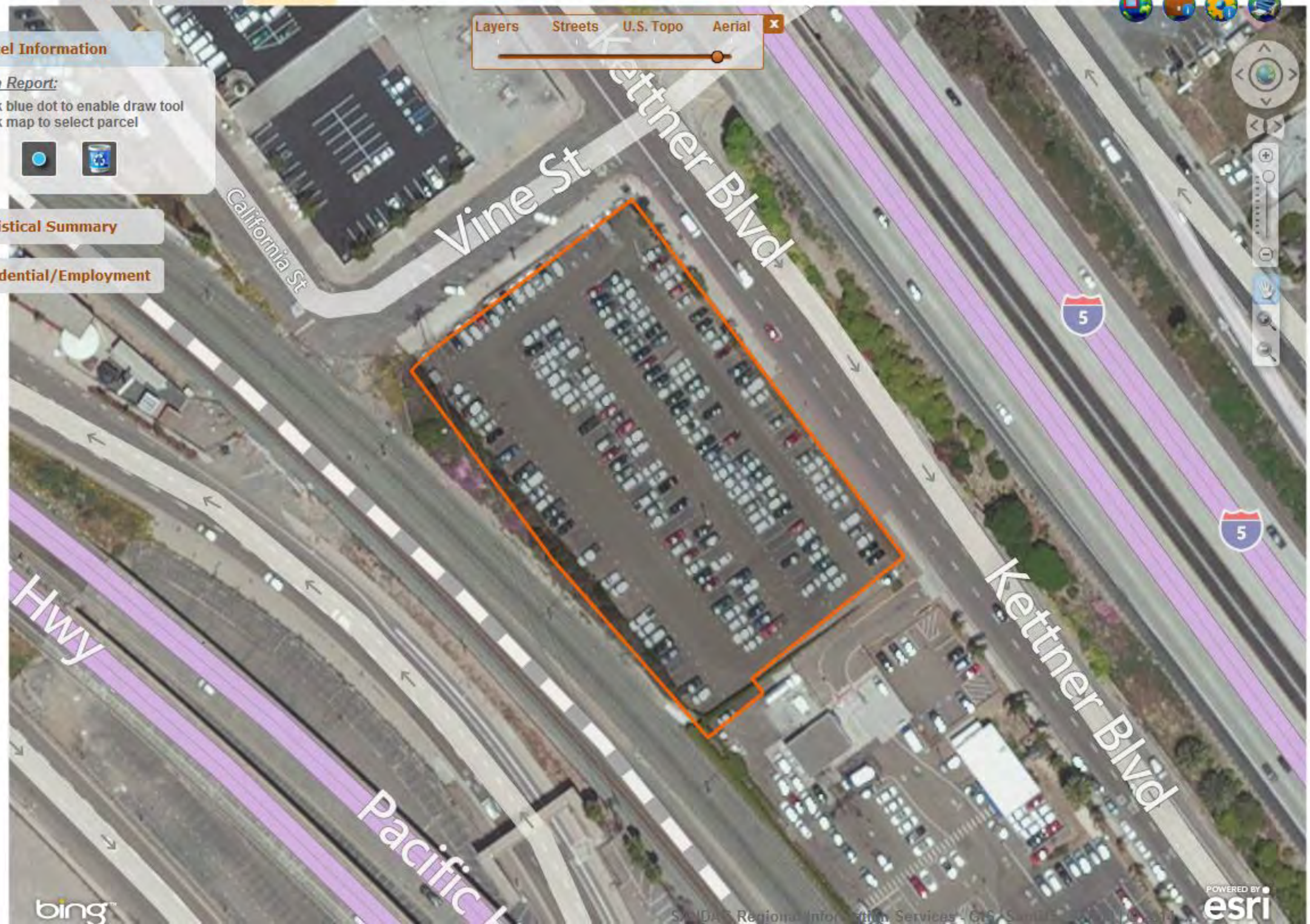
Parcel Information

To Run Report:

1 - Click blue dot to enable draw tool
2- Click map to select parcel

Statistical Summary

Residential/Employment



OFFICE USE ONLY
Request # _____

County of San Diego

JACK MILLER
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
P.O. BOX 129261, SAN DIEGO, CA 92112-9261
(858) 505-6700 FAX (858) 505-6848
www.sdcdeh.org

ELIZABETH POZZEBON
ASSISTANT DIRECTOR

PUBLIC RECORDS REQUEST FOR THE SITE ASSESSMENT AND MITIGATION (SAM) PROGRAM AND HAZARDOUS MATERIALS DIVISION (HMD)

Requestor Name: _____

Phone: (_____) _____

Company Name: _____

Mailing Address: _____ 3/28/14

ness card if preferred)

Environmental Support Services

Shannon Castagno
30251 Golden Lantern, Suite #E-305
Laguna Niguel, CA 92677
Tel: 949-429-3564 - Fax: 949-429-3563
Shannon@EnvironmentalSupportServices.com

Additional informatio ite, www.sdcdeh.org. **Fax or email your completed form to the Public Records Program at (858) 505-6848 or deh.publicrecords@sdcounty.ca.gov. The following information is required. Separate forms are needed for each address or parcel number.**

3548 & 3550 Kettner Bl., San Diego 92101 or _____
Exact Address (Street, City and Zip Code) Assessor's Parcel Number

Optional information (establishment permit number, business name, etc.): _____

Please indicate the purpose of your search by checking all that apply:

- ☑ Contaminated Property Investigation(s) (SAM Cases)
- ☑ SAM Closure Letter/Report
- ☑ Hazardous Materials Permit & Underground Storage Tank Files (HMD/UST)
- ☐ Other: _____ (specify)

☐ Monitoring Well Files (select conditions that apply)
- Government agency request
- Consultant with related case
- Written authorization from owner (attach letter)

OFFICE USE ONLY BELOW THIS LINE

Files reviewed by: _____ of _____ Date: / /

Files copied for: _____ of _____ Date: / /

Request cancelled by: _____ Date: / /

Photocopies _____ Cost _____ Picked up/mailed on _____ By _____

A search for OEH records checked above has been conducted and the following apply:

☐ SAM files for the permit number(s) listed below are available.
_____ # _____ # _____ # _____ # _____

☐ HMD/UST files for the permit number(s) listed below are available.
_____ # _____ # _____ # _____ # _____

☐ Original records were purged. Database-only records are available (at: http://sdcounty.ca.gov/deh/doing_business/hazmat_search.html) for the following permit number(s):
_____ # _____ # _____ # _____ # _____

☐ No SAM/HMD/UST records were found for the address/APN you requested.

_____ / /
Signature - DEH Representative Date

DEH complies fully with the California Public Records Act and the Federal Freedom of Information Act. Please be advised that photocopy and/or scanned file fees may apply.

PERMIT #LMWP-000518
A.P.N. #451-690-18
EST #NONE

COUNTY OF SAN DIEGO
DEPARTMENT OF ENVIRONMENTAL HEALTH
LAND AND WATER QUALITY DIVISION
MONITORING WELL PROGRAM
GEOTECHNICAL BORING CONSTRUCTION PERMIT

SITE NAME: SAN DIEGO GAS AND ELECTRIC PROPERTY

SITE ADDRESS: SW OF KETTNER BLVD AND VINE ST., SAN DIEGO CA 92101

PERMIT FOR: **FIVE GEOTECHNICAL BORINGS**

PERMIT APPROVAL DATE: JULY 3, 2013

PERMIT EXPIRES ON: OCTOBER 31, 2013

RESPONSIBLE PARTY: SAN DIEGO GAS & ELECTRIC

PERMIT CONDITIONS:

1. All borings must be sealed from the bottom of the boring to the ground surface with an approved sealing material as specified in California Well Standards Bulletin 74-90, Part III, Section 19.D. **Drill cuttings are not an acceptable fill material.**

2. All borings must be properly destroyed within 24 hours of drilling.

3. Placement of any sealing material at a depth greater than 30 feet must be done using the tremie method.

4. This work is not connected to any known unauthorized release of hazardous substances. Any contamination found in the course of drilling and sampling must be reported to DEH. All water and soil resulting from the activities covered by this permit must be managed, stored and disposed of as specified in the SAM Manual in Section 5, II, E- 4. (**http://www.sdcounty.ca.gov/deh/lwq/sam/manual_guidelines.html**). In addition, drill cuttings must be properly handled and disposed in compliance with the Stormwater Best Management Practices of the local jurisdiction.

5. Within 60 days of completing work, submit a well/boring construction report, including all well and/or boring logs and laboratory data to the Well Permit Desk. This report must include all items required by the SAM Manual, Section 5, Pages 6 & 7.

6. **This office must be given 48-hour notice of any drilling activity on this site and advanced notification of drilling cancellation. Please contact the Well Permit Desk at (858) 505-6688.**

APPROVED BY: Amelia Ceseña Digitally signed by Amelia Ceseña DN: cn=Amelia Ceseña, o=DEH, ou=MWP, email=amelia.cesena@sdcounty.ca.gov, c=US Date: 2013.07.03 07:40:02 -07'00' DATE: 7.3.2013

AMELIA CESEÑA

PERMIT APPLICATION
GROUNDWATER
AND VADOSE MONITORING WELLS
AND EXPLORATORY OR TEST BORINGS

OFFICE USE ONLY
PERMIT LMWP# 000518
SAM CASE Y/N # NONE
DATE RECEIVED: 7.2.2013
FEE PAID:
CHECK #

A. RESPONSIBLE PARTY San Diego Gas & Electric E-mail EReese@semprautilities.com
(The person, persons, or company responsible for the construction, maintenance, and destruction of the proposed borings and/or wells.)
Mailing Address 8316 Century Park Court, CP-52G City San Diego State CA Zip 92123
Contact Person Edwin Reese Phone (858) 650-4123 Ext.

B. SITE ASSESSMENT PROJECT NUMBER – IF APPLICABLE #

C. CONSULTING FIRM Geosyntec Consultants
Mailing Address 10875 Rancho Bernardo Road, Suite 200 City San Diego State CA Zip 92127
Registered Professional Jennifer Nevius Phone 858-705-5273 Registration #64932(RCE)
E-mail jnevius@geosyntec.com
Contact Person Jennifer Nevius Phone 858-716-2932 Ext Email
jnevius@geosyntec.com

D. DRILLING COMPANY Tri-County Drilling C57#547737
Contact Name Dave Maske E-mail Dave Maske <dmaske@tcdrilling.com>
Mailing Address 9631 Candida Street City San Diego State CA Zip 92126
Phone 858-271-0099 Ext.

E. CONSTRUCTION INFORMATION

TYPE OF WELLS/ BORINGS TO BE CONSTRUCTEO

	#
☐ Groundwater	
☐ Vadose	
☒ Boring	5
☐ Other	

NUMBER OF WELLS TO BE DESTROYED

☐ Destruction

MATERIALS TO BE USED

CASING
Not Applicable
Type
Gauge
Diameter
Well Screen Size
Filter Pack

SEAL/BORING BACKFILL
☐ Neat Cement
☐ Cement & Bentonite
☐ Sand-Cement
☒ Bentonite
☐ Other
Borehole diameter 8"

Drilling Method
☒ Auger
☐ Direct Push
☐ Other
☐ Air Rotary
☐ Sonic
☐ Percussion

PROPOSED CONSTRUCTION
Estimated Groundwater Depth: 35 ft.
Estimated Depth of Boring: 40 ft.
Concrete Seal: 0 to 8
Annular Seal: to
Filter Pack: to
Perforation: to

NOTE: Attach a well construction diagram

I agree to comply with the requirements of the current Site Assessment and Mitigation Manual, and with all ordinances and laws of the County of San Diego and the State of California pertaining to well/boring construction and destruction.

DRILLER'S SIGNATURE Dave Maske DATE 6/27/2013

Within 60 days of completion, I will furnish the Monitoring Well Permit Desk with a complete and accurate well/boring log. I will certify the design and construction or destruction of the well/borings in accordance with the permit application.

PG/RCE/CEG SIGNATURE Jennifer T. Weiss DATE 7/1/13

F. SITE INFORMATION - A Property Owner Consent agreement is required for all applications, except for onsite, open LOP/SAM site assessment cases, Caltrans properties and military properties. Submit a separate sheet for additional parcels.

1. **ASSESSOR'S PARCEL NUMBER** 4516901800

Site Name Southwest of Intersection of Kettner Blvd. and Vine Street

Site Address SW of Kettner Blvd. and Vine Street City San Diego Zip 92101

PROPERTY OWNER San Diego Gas & Electric.

Phone 858-637-3714 - Jim Seifert, Mgr - Real Estate Land Svc Fac Ext. _____ Fax _____

Mailing Address 8335 Century Park Court, CP 1-1D City San Diego State CA Zip92123

NUMBER OF WELLS 5 **TYPE OF WELLS** Geotechnical Boring

2. **ASSESSOR'S PARCEL NUMBER** _____

Site Address _____ City _____ Zip _____

PROPERTY OWNER _____

Phone _____ Ext. _____ Fax _____

Mailing Address _____ City _____ State _____ Zip _____

NUMBER OF WELLS _____ **TYPE OF WELLS** _____

G. QUESTIONNAIRE: Please answer all applicable questions completely *and submit any required supportive documentation.*

1. What is the purpose of the well/boring investigation?

☐ a. Part of an ongoing site assessment case in which a government regulator is the lead agency. If yes, indicate which government regulator is the lead agency and the case number.

DEH RWQCB DTSC

☐ b. Part of a Phase I investigation for property ownership transfer.

☒ c. Geotechnical investigation for proposed construction or land stabilization.

☐ d. Other: _____

2. If wells are to be destroyed, provide a description of method of destruction _____

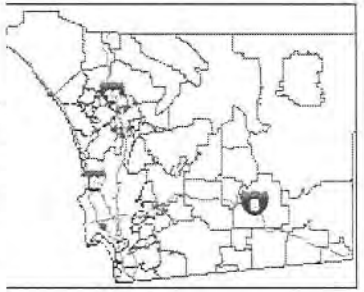
3. Are you proposing a variation from current SAM Manual Requirements for the construction or destruction of borings, Vadose and/or Groundwater Monitoring Wells? If yes, specify these variations and include a well construction diagram and all required supporting documentation. Refer to the SAM Manual Appendix B for monitoring well guidelines (www.sdcdeh.org). Yes ☐ No ☒

H. FEES (in effect beginning July 1, 2012, through June 30, 2013)

ACTIVITY	FEE SCHEDULE	AMOUNT	
Permit for Well Installations Only (Groundwater Monitoring Wells, Vadose, Vapor Extraction Wells)	$200.00 for the first monitoring well		**$200.00**
Each Additional New Well	$161.00 for each additional well installation	_____ x **$161.00**	
New Well Inspection	$99.00 for first new well inspection		**$99.00**
	$30.00 for each additional new well inspection	_____ x **$ 30.00**	
Permit for Borings Only *(CPT's, Hydropunch, Geoprobes, Temporary Well Points, etc.)*	$200.00 for the first boring	1 x **$200.00**	**200.00**
	$49.00 for each additional boring	4 x **$ 49.00**	**196.00**
Permit for Well Destructions Only	$200.00 for the first destruction	_____ x **$200.00**	_____
	$123.00 for each additional destruction	_____ x **$123.00**	_____
Permit for any Combination of Well Installations, Borings, & Destructions ***(Except Enhanced Leak Detection)***	$200.00 for the first activity	_____ x **$200.00**	_____
	$161.00 for each additional well	_____ x **$161.00**	_____
	$99.00 for first well maintenance inspection	_____ x **$ 99.00**	_____
	$ 30.00 for each additional well maintenance inspection	_____ x **$ 30.00**	_____
	$123.00 for each well destruction	_____ x **$123.00**	_____
	$ 49.00 for each additional boring	_____ x **$ 49.00**	_____
Permit for Enhanced Leak Detection	**$320.00 (Flat Fee)**		$_____
	TOTAL COST OF PERMIT		**$ 396.00**

LUEG GIS

APN - Kettner and Vine



Legend

— Assessor Parcels

Notes

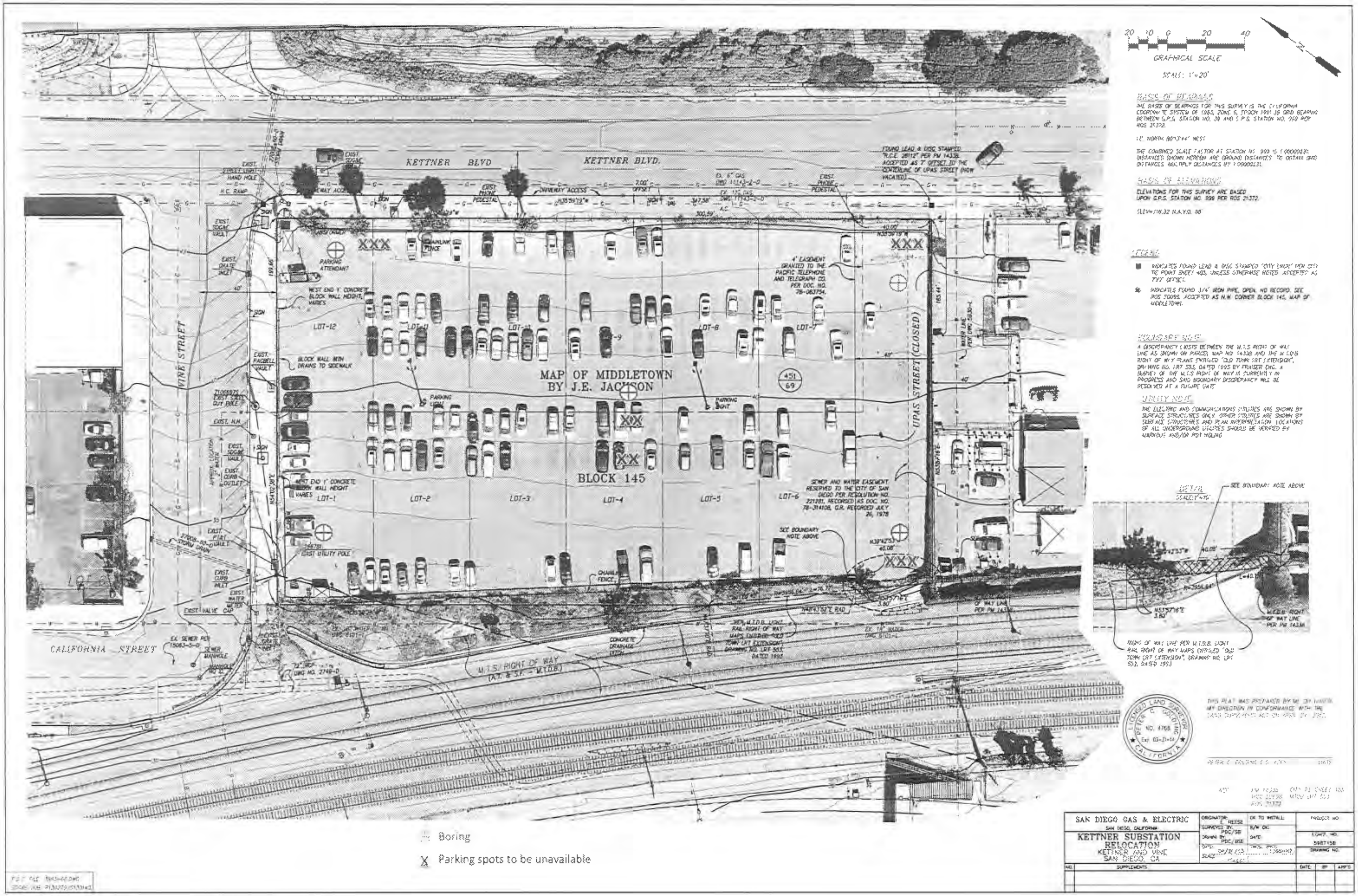
0.1 0 0.07 0.1 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere
Planning and Development Services

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION

APN Information

Kettner and Vine



Boring

X Parking spots to be unavailable

County of San Diego

JACK MILLER
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
LAND AND WATER QUALITY DIVISION
MONITORING WELL PROGRAM
P.O. BOX 129261, SAN DIEGO, CA 92112-9261
858-505-6700/1-800-253-9933 FAX: 858-505-6891
www.sdcdeh.org

ELIZABETH POZZEBON
ASSISTANT DIRECTOR

PROPERTY OWNER CONSENT

Proposed locations for subsurface work:

Property Address:	**Assessor's Parcel Number (APN):**
Southwest of the Intersection of Kettner Blvd. and Vine Street	4516901800
_____	_____

I, San Diego Gas & Electric Company, owner of the property/properties listed above, give my permission to Geosyntec Consultants (consulting company, contractor) to conduct the following work at the locations stated above.

☐ Install _____ monitoring wells ☐ Destroy _____ monitoring wells ☒ Drill 5 soil borings

I understand that Jennifer Nevius (registered professional) of Geosyntec Consultants (consulting company) and an authorized signer for Tri-County Drilling (drilling company) have submitted a signed application to the Department of Environmental Health in which they have agreed to complete the above-stated work according the requirements of the current SAM Manual, all ordinances and laws of the County of San Diego and the State of California pertaining to well/boring construction and destruction. I have arranged with the Responsible Party, the person who causes to have monitoring wells/borings installed or existing wells destroyed on this property, to ensure proper closure of the monitoring wells/borings.

Property Owner Signature: _____ Date: 6/28/13

Print Name: Jim Selfert Title: Manager of Corporate Real Estate, Land Services & Facilities

Company: San Diego Gas & Electric Company

Mailing Address: 8335 Century Park Court, CP 1-1D, San Diego, CA 92123

PERMIT #LMWP-000548
A.P.N. #451-690-18
EST #NONE

COUNTY OF SAN DIEGO
DEPARTMENT OF ENVIRONMENTAL HEALTH
LAND AND WATER QUALITY DIVISION
MONITORING WELL PROGRAM
GEOTECHNICAL BORING CONSTRUCTION PERMIT

SITE NAME: KETTNER SUBSTATION RELOCATION

SITE ADDRESS: SW OF INTERSECTION OF KETTNER BLVD., AND VINE ST.,

SAN DIEGO CA 92101

PERMIT FOR: **29 GEOTECHNICAL BORINGS**

PERMIT APPROVAL DATE: JULY 25, 2013

PERMIT EXPIRES ON: NOVEMBER 21, 2013

RESPONSIBLE PARTY: SAN DIEGO GAS & ELECTRIC

PERMIT CONDITIONS:

1. All borings must be sealed from the bottom of the boring to the ground surface with an approved sealing material as specified in California Well Standards Bulletin 74-90, Part III, Section 19.D. **Drill cuttings are not an acceptable fill material.**

2. All borings must be properly destroyed within 24 hours of drilling.

3. Placement of any sealing material at a depth greater than 30 feet must be done using the tremie method.

4. This work is not connected to any known unauthorized release of hazardous substances. Any contamination found in the course of drilling and sampling must be reported to DEH. All water and soil resulting from the activities covered by this permit must be managed, stored and disposed of as specified in the SAM Manual in Section 5, II, E- 4. (**http://www.sdcounty.ca.gov/deh/lwq/sam/manual_guidelines.html**). In addition, drill cuttings must be properly handled and disposed in compliance with the Stormwater Best Management Practices of the local jurisdiction.

5. Within 60 days of completing work, submit a well/boring construction report, including all well and/or boring logs and laboratory data to the Well Permit Desk. This report must include all items required by the SAM Manual, Section 5, Pages 6 & 7.

6. **This office must be given 48-hour notice of any drilling activity on this site and advanced notification of drilling cancellation. Please contact the Well Permit Desk at (858) 505-6688.**

APPROVED BY: Amelia Ceseña Digitally signed by Amelia Ceseña DN: cn=Amelia Ceseña, o=DEH, ou=MWP, email=amelia.cesena@sdcounty.ca.gov, c=US Date: 2013.07.25 07:45:53 -07'00' DATE: 7.25.2013

AMELIA CESENA

PERMIT APPLICATION GROUNDWATER AND VADOSE MONITORING WELLS AND EXPLORATORY OR TEST BORINGS

OFFICE USE ONLY
PERMIT LMWP# 000548
SAM CASE Y/N # none
DATE RECEIVED: 7.23.2013
FEE PAID:
CHECK #

A. RESPONSIBLE PARTY San Diego Gas & Electric E-mail EReese@sempratilities.com
(The person, persons, or company responsible for the construction, maintenance, and destruction of the proposed borings and/or wells.)
Mailing Address 8316 Century Park Court, CP-52G City San Diego State CA Zip 92123
Contact Person Edwin Reese Phone (858) 650-4123 Ext.

B. SITE ASSESSMENT PROJECT NUMBER – IF APPLICABLE #

C. CONSULTING FIRM Geosyntec Consultants
Mailing Address 10875 Rancho Bernardo Road, Suite 200 City San Diego State CA Zip 92127
Registered Professional Jennifer Nevius Phone 858-705-5273 Registration #64932 (RCE)
E-mail jnevius@geosyntec.com
Contact Person Jennifer Nevius Phone 858-716-2932 Ext. Email jnevius@geosyntec.com

D. DRILLING COMPANY Kehoe Testing and Engineering, Inc. C57#786163
Contact Name Rich Koester E-mail (714) 901-7270 rich@kehoetesting.com
Mailing Address 5415 Industrial Drive City Huntington Beach State CA Zip 92649-1518
Phone [redacted] Ext.

E. CONSTRUCTION INFORMATION

TYPE OF WELLS/ BORINGS TO BE CONSTRUCTED

	#
☐ Groundwater	
☐ Vadose	
☐ Boring	
☒ Other	29

NUMBER OF WELLS TO BE DESTROYED

☐ Destruction

MATERIALS TO BE USED

CASING
Not Applicable
Type
Gauge
Diameter
Well Screen Size
Filter Pack

SEAL/BORING BACKFILL
☐ Neat Cement
☑ Cement & Bentonite
☐ Sand-Cement
☐ Bentonite
☐ Other
Borehole diameter 3"

Drilling Method
☐ Auger ☐ Air Rotary
☐ Direct Push ☐ Sonic
☒ Other CPT Sounding ☐ Percussion

PROPOSED CONSTRUCTION
Estimated Groundwater Depth 25ft.
Estimated Depth of Boring: 70ft /100 Ft.
Concrete Seal: 0 to [redacted]
Annular Seal: to
Filter Pack: to
Perforation: to

NOTE: Attach a well construction diagram

I agree to comply with the requirements of the current Site Assessment and Mitigation Manual, and with all ordinances and laws of the County of San Diego and the State of California pertaining to well/boring construction and destruction.

DRILLER'S SIGNATURE [signature] DATE 7/14/13

Within 60 days of completion, I will furnish the Monitoring Well Permit Desk with a complete and accurate well/boring log. I will certify the design and construction or destruction of the well/borings in accordance with the permit application.

PG/RCE/CEG SIGNATURE Jennifer L. Nevius DATE 7/22/13

Within 60 days of completion, I will furnish the Monitoring Well Permit Desk with a complete and accurate well/boring log. I will certify the design and construction or destruction of the well/borings in accordance with the permit application.

PG/RCE/CEG SIGNATURE _____ DATE _____

F. SITE INFORMATION - A Property Owner Consent agreement is required for all applications, except for onsite, open LOP/SAM site assessment cases, Caltrans properties and military properties. Submit a separate sheet for additional parcels.

1. **ASSESSOR'S PARCEL NUMBER** 4516901800

Site Name Southwest of Intersection of Kettner Blvd. and Vine Street

Site Address SW of Kettner Blvd. and Vine St City San Diego Zip 92101

PROPERTY OWNER San Diego Gas & Electric.

Phone 858-637-3714 - Jim Seifert, Mgr - Real Estate Land Svc Fac Ext. _____ Fax _____

Mailing Address 8335 Century Park Court, CP 1-1D City San Diego State CA Zip92123

NUMBER OF WELLS 29 **TYPE OF WELLS** Geotechnical CPT Sounding

2. **ASSESSOR'S PARCEL NUMBER** _____

Site Address _____ City _____ Zip _____

PROPERTY OWNER _____

Phone _____ Ext. _____ Fax _____

Mailing Address _____ City _____ State _____ Zip _____

NUMBER OF WELLS _____ **TYPE OF WELLS** _____

G. QUESTIONNAIRE: Please answer all applicable questions completely *and submit any required supportive documentation.*

1. What is the purpose of the well/boring investigation?

☐ a. Part of an ongoing site assessment case in which a government regulator is the lead agency. If yes, indicate which government regulator is the lead agency and the case number.

DEH RWQCB DTSC

☐ b. Part of a Phase I investigation for property ownership transfer.

☒ c. Geotechnical investigation for proposed construction or land stabilization.

☐ d. Other: _____

2. If wells are to be destroyed, provide a description of method of destruction _____

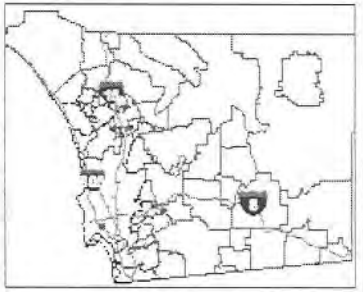
3. Are you proposing a variation from current SAM Manual Requirements for the construction or destruction of borings, Vadose and/or Groundwater Monitoring Wells? If yes, specify these variations and include a well construction diagram and all required supporting documentation. Refer to the SAM Manual Appendix B for monitoring well guidelines (www.sdcdeh.org). Yes ☐ No ☒

H. FEES (in effect beginning July 1, 2012, through June 30, 2013)

ACTIVITY	FEE SCHEDULE	AMOUNT	
Permit for Well Installations Only (Groundwater Monitoring Wells, Vadose, Vapor Extraction Wells)	$200.00 for the first monitoring well		**$200.00**
Each Additional New Well	$161.00 for each additional well installation	____x **$161.00**	
New Well Inspection	$99.00 for first new well inspection		**$99.00**
	$30.00 for each additional new well inspection	____x **$ 30.00**	
Permit for Borings Only *(CPT's, Hydropunch, Geoprobes, Temporary Well Points, etc.)*	$200.00 for the first boring	1 x **$200.00**	200.00
	$49.00 for each additional boring	28 x **$ 49.00**	1,372.00
Permit for Well Destructions Only	$200.00 for the first destruction	____x **$200.00**	____
	$123.00 for each additional destruction	____x **$123.00**	____
Permit for any Combination of Well Installations, Borings, & Destructions ***(Except Enhanced Leak Detection)***	$200.00 for the first activity	____x **$200.00**	____
	$161.00 for each additional well	____x **$161.00**	____
	$99.00 for first well maintenance inspection	____x **$ 99.00**	____
	$ 30.00 for each additional well maintenance inspection	____x **$ 30.00**	____
	$123.00 for each well destruction	____x **$123.00**	____
	$ 49.00 for each additional boring	____x **$ 49.00**	____
Permit for Enhanced Leak Detection	**$320.00 (Flat Fee)**		$____
	TOTAL COST OF PERMIT		**$ 1,572.00**

LUEG GIS

APN - Kettner and Vine



Legend

- Assessor Parcels

Notes

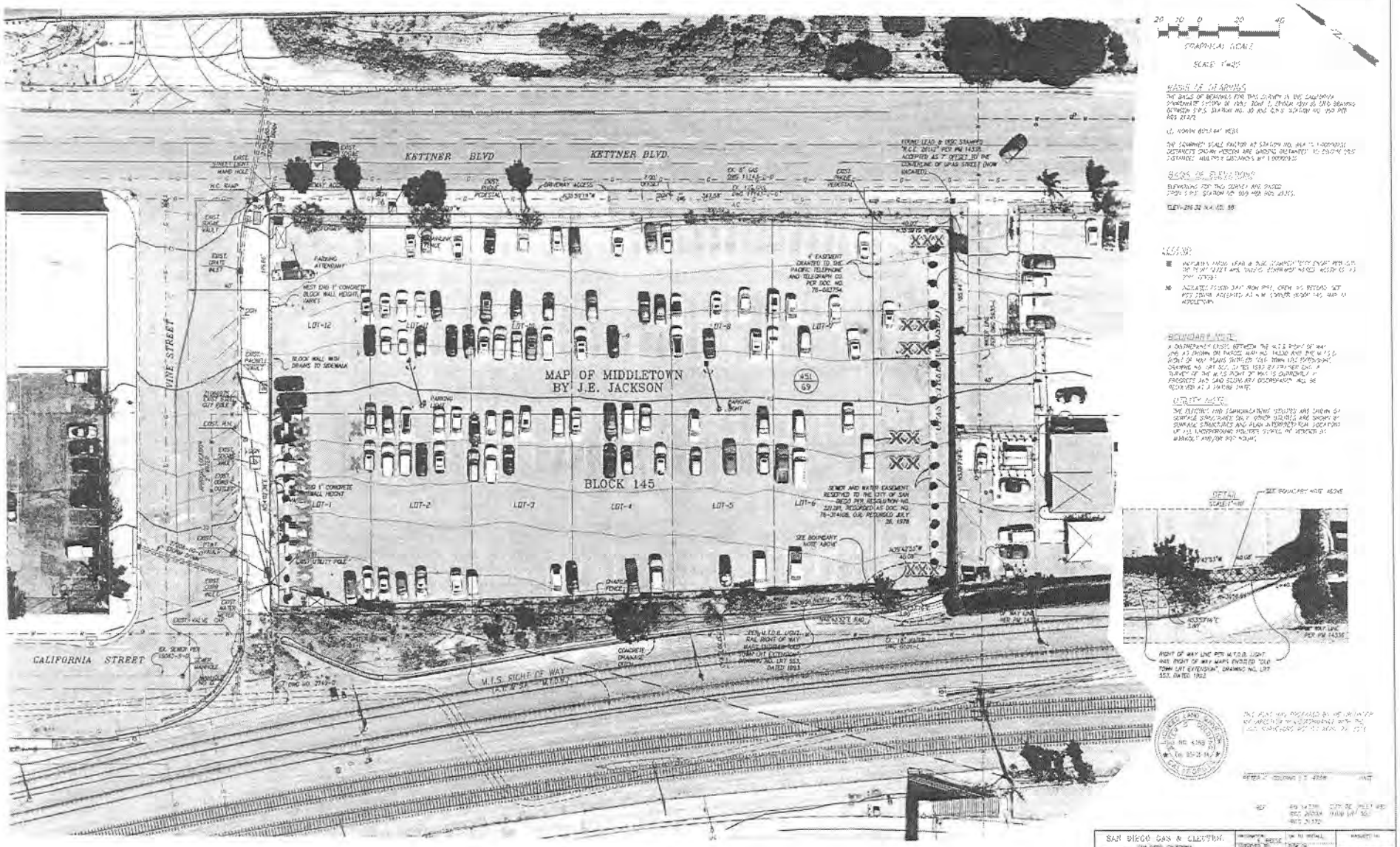
0.1 0 0.07 0.1 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere
Planning and Development Services

APN Information

Kettner and Vine

Thu Apr 18 2013 08:24:46 AM



Trench

K Parking spots to be unavailable

• CPT sounding (~10-ft spacing)

SAN DIEGO GAS & ELECTRIC
SAN DIEGO, CALIFORNIA
KETTNER SUBSTATION RELOCATION
KETTNER AND VINE
SAN DIEGO, CA

County of San Diego

JACK MILLER
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
LAND AND WATER QUALITY DIVISION
MONITORING WELL PROGRAM
P.O. BOX 129261, SAN DIEGO, CA 92112-9261
858-505-6700/1-800-253-9933 FAX: 858-505-6891
www.sdcdeh.org

ELIZABETH POZZEBON
ASSISTANT DIRECTOR

PROPERTY OWNER CONSENT

Proposed locations for subsurface work:

Property Address:	**Assessor's Parcel Number (APN):**
Southwest of the Intersection of Kettner Blvd. and Vine Street	4516901800
_____	_____

I, San Diego Gas & Electric Company, owner of the property/properties listed above, give my permission to Geosyntec Consultants (consulting company, contractor) to conduct the following work at the locations stated above.

☐ Install _____ monitoring wells ☐ Destroy _____ monitoring wells ☒ Drill 29 CPT Soundings/ soil borings

I understand that Jennifer Nevius (registered professional) of Geosyntec Consultants (consulting company) and an authorized signer for Kehoe Testing and Engineering, Inc. (drilling company) have submitted a signed application to the Department of Environmental Health in which they have agreed to complete the above-stated work according the requirements of the current SAM Manual, all ordinances and laws of the County of San Diego and the State of California pertaining to well/boring construction and destruction. I have arranged with the Responsible Party, the person who causes to have monitoring wells/borings installed or existing wells destroyed on this property, to ensure proper closure of the monitoring wells/borings.

Property Owner Signature: _____ Date: 7/22/13

Print Name: Jim Seifert Title: Manager of Corporate Real Estate, Land Services & Facilities

Company: San Diego Gas & Electric Company

Mailing Address: 8335 Century Park Court, CP1-1D, San Diego, CA 92123

Appendix C

Notice of receipt of Freedom of Information ACT
from the United States Environmental Protection Agency – Region IX

From: r9foia@epa.gov
Sent: Tuesday, March 25, 2014 1:10 PM
To: Shannon@EnvironmentalSupportServices.com
Subject: FOIA Request EPA-R9-2014-004985 Submitted

This message is to confirm your request submission to the FOIAonline application: View Request. Request information is as follows:

- Tracking Number: EPA-R9-2014-004985
- Requester Name: Shannon Castagno
- Date Submitted: Tue Mar 25 16:10:23 EDT 2014
- Request Status: Submitted
- Description: Site: Southwest corner of Vine Street and Kettner Blvd.
  San Diego, CA 92101
  APN 451-690-1800

  1. utilization, manufacture, storage, or discharge of hazardous materials/waste.
  2. previous or on-going site investigations/remediations pertaining to hazardous materials/ waste.
  3. hazardous materials disclosures concerning the site.
  4. information regarding underground and aboveground storage tank present or previously found at the site.

From: r9foia@epa.gov
Sent: Friday, March 28, 2014 5:45 PM
To: Shannon@EnvironmentalSupportServices.com
Subject: FOIA Request EPA-R9-2014-005124 Submitted

This message is to confirm your request submission to the FOIAonline application: View Request. Request information is as follows:

- Tracking Number: EPA-R9-2014-005124
- Requester Name: Shannon Castagno
- Date Submitted: Fri Mar 28 20:45:12 EDT 2014
- Request Status: Submitted
- Description: Site: 3548 & 3550 Kettner Blvd.
  San Diego, CA 92101
  1. utilization, manufacture, storage, or discharge of hazardous materials/waste.
  2. previous or on-going site investigations/remediations pertaining to hazardous materials/ waste.
  3. hazardous materials disclosures concerning the site.
  4. information regarding underground and aboveground storage tank present or previously found at the site.

Appendix D

Request for Records Search to the
Department of Toxic Substances Control – Cypress Office and
Response from that Agency

Environmental Support Services
Environmental Research & Due Diligence Compliance
30251 Golden Lantern, #E-305, Laguna Niguel, CA 92677
Tel) 949-429-3564 • Fax) 949-429-3563
www.EnvironmentalSupportServices.com • Info@EnvironmentalSupportServices.com

March 24, 2014

Dept of Toxic Substances Control
Cypress Office
5796 Corporate Avenue
Cypress, CA 90630

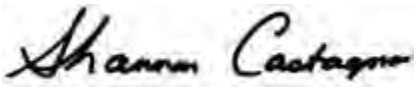
Attention: Julie Johnson/Jone Barrio

Dear Julie/Jone,

Please check for any files/information on the following site:

Site: Southwest corner of Vine Street and Kettner Blvd.
San Diego, CA 92101
APN 451-690-1800
(see attached map)

Sincerely,
Environmental Support Services



Shannon Castagno
Project Manager
Shannon@EnvironmentalSupportServices.com

REDI - Regional Economic Development Information System

SANDAG

Mapping | Locate | Reports

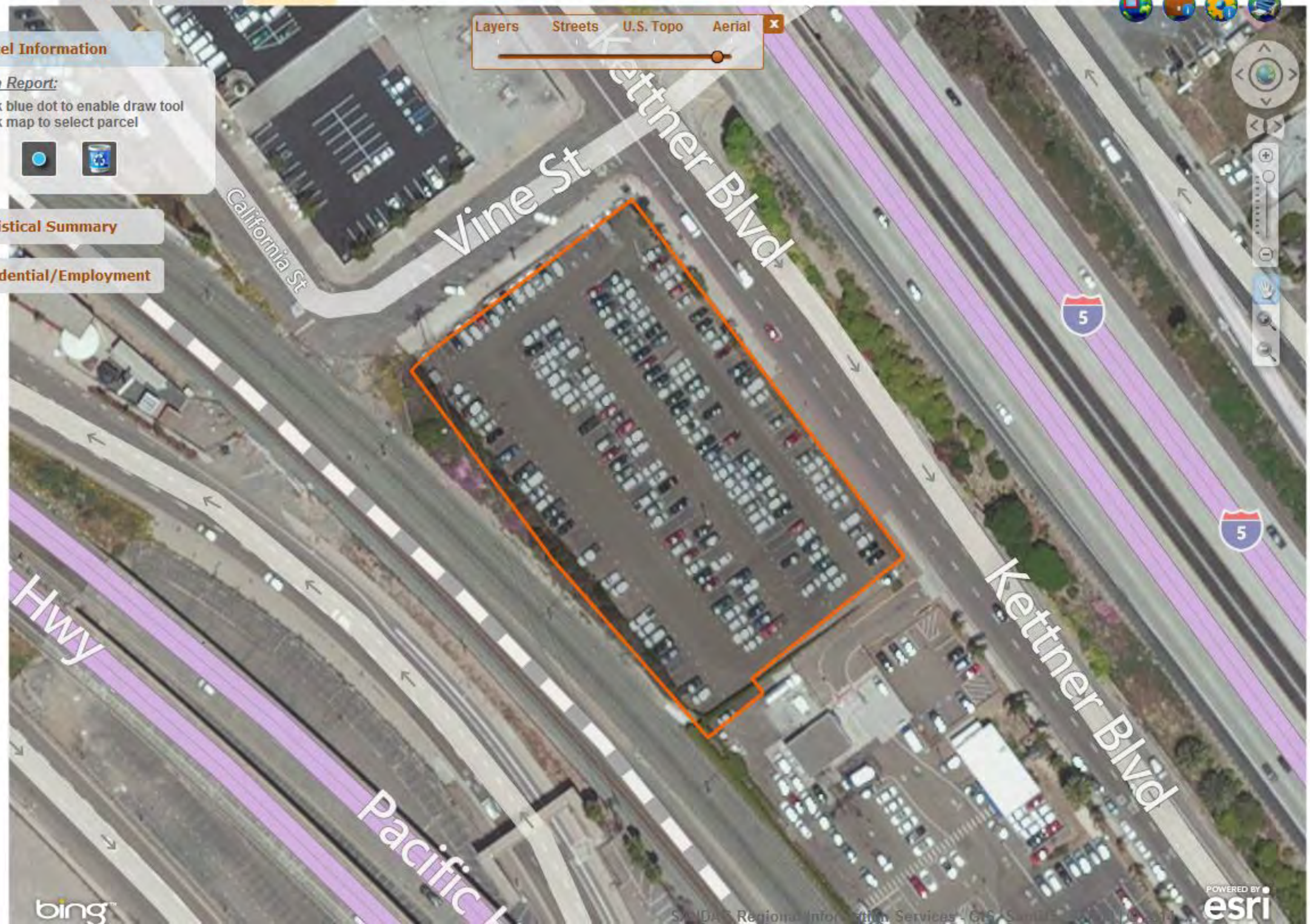
Parcel Information

To Run Report:

1 - Click blue dot to enable draw tool
2- Click map to select parcel

Statistical Summary

Residential/Employment



Environmental Support Services
Environmental Research & Due Diligence Compliance
30251 Golden Lantern, #E-305, Laguna Niguel, CA 92677
Tel) 949-429-3564 • Fax) 949-429-3563
www.EnvironmentalSupportServices.com • Info@EnvironmentalSupportServices.com

March 28, 2014

Dept of Toxic Substances Control
Cypress Office
5796 Corporate Avenue
Cypress, CA 90630

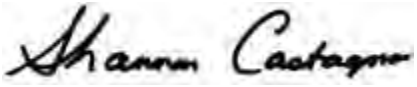
Attention: Julie Johnson/Jone Barrio

Dear Julie/Jone,

Please check for any files/information on the following site:

Site: 3548 & 3550 Kettner Blvd.
San Diego, CA 92101

Sincerely,
Environmental Support Services



Shannon Castagno
Project Manager
Shannon@EnvironmentalSupportServices.com

Department of Toxic Substances Control

Deborah O. Raphael, Director
5796 Corporate Avenue
Cypress, California 90630

Matthew Rodriquez
Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor

March 25, 2014

Shannon Castagno
ENVIRONMENTAL SUPPORT SERVICES
30251 Golden Lantern, #E-305
Laguna Niguel, CA 92677

SW CORNER OF VINE STREET AND KETTNER BLVD, SAN DIEGO, CA 92101
PR#40325141

Dear Ms. Castagno:

The Department of Toxic Substances Control has received your letter to review records under the Public Records Act.

After a thorough review of our files we have found that no such records exist at this office pertaining to the site/facility referenced above.

We would like to inform you about EnviroStor, a database that provides information and documents on over 5,000 DTSC cleanup sites. EnviroStor can be accesses at: http://www.envirostor.dtsc.ca.gov/public. Also, a computer is available at each DTSC Regional File Room Office for use by community members to view EnviroStor.

If you have any questions or would like further information regarding your request, please contact me at (714) 484-5337.

Sincerely,

Julie Johnson
Regional Records Coordinator

Department of Toxic Substances Control

Deborah O. Raphael, Director
5796 Corporate Avenue
Cypress, California 90630

Matthew Rodriquez
Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor

April 1, 2014

Shannon Castagno
ENVIRONMENTAL SUPPORT SERVICES
30251 Golden Lantern, E-305
Laguna Niguel, CA 92677

3548/3550 KETTNER BLVD, SAN DIEGO, CA
PR#40328147

Dear Ms. Castagno:

The Department of Toxic Substances Control has received your letter to review records under the Public Records Act.

After a thorough review of our files we have found that no such records exist at this office pertaining to the sites/facilities referenced above.

We would like to inform you about EnviroStor, a database that provides information and documents on over 5,000 DTSC cleanup sites. EnviroStor can be accesses at: http://www.envirostor.dtsc.ca.gov/public. Also, a computer is available at each DTSC Regional File Room Office for use by community members to view EnviroStor.

If you have any questions or would like further information regarding your request, please contact me at (714) 484-5337.

Sincerely,

Julie Johnson
Regional Records Coordinator

Appendix E

Request for Records Search to the
Department of Toxic Substances Control – San Diego Office and
Response from that Agency

Environmental Support Services
Environmental Research & Due Diligence Compliance
30251 Golden Lantern, #E-305, Laguna Niguel, CA 92677
Tel) 949-429-3564 • Fax) 949-429-3563
www.EnvironmentalSupportServices.com • Info@EnvironmentalSupportServices.com

March 24, 2014

Dept of Toxic Substances Control
San Diego Office
9174 Sky Park Court, Suite 150
San Diego, CA

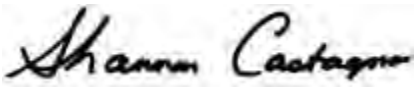
Attention: Cleo Munoz/Records/File Room

Dear Cleo Munoz,

Please check for any files/information on the following site:

Site: Southwest corner of Vine Street and Kettner Blvd.
San Diego, CA 92101
APN 451-690-1800
(see attached map)

Sincerely,
Environmental Support Services



Shannon Castagno
Project Manager
Shannon@EnvironmentalSupportServices.com

REDI - Regional Economic Development Information System

SANDAG

Mapping | Locate | Reports

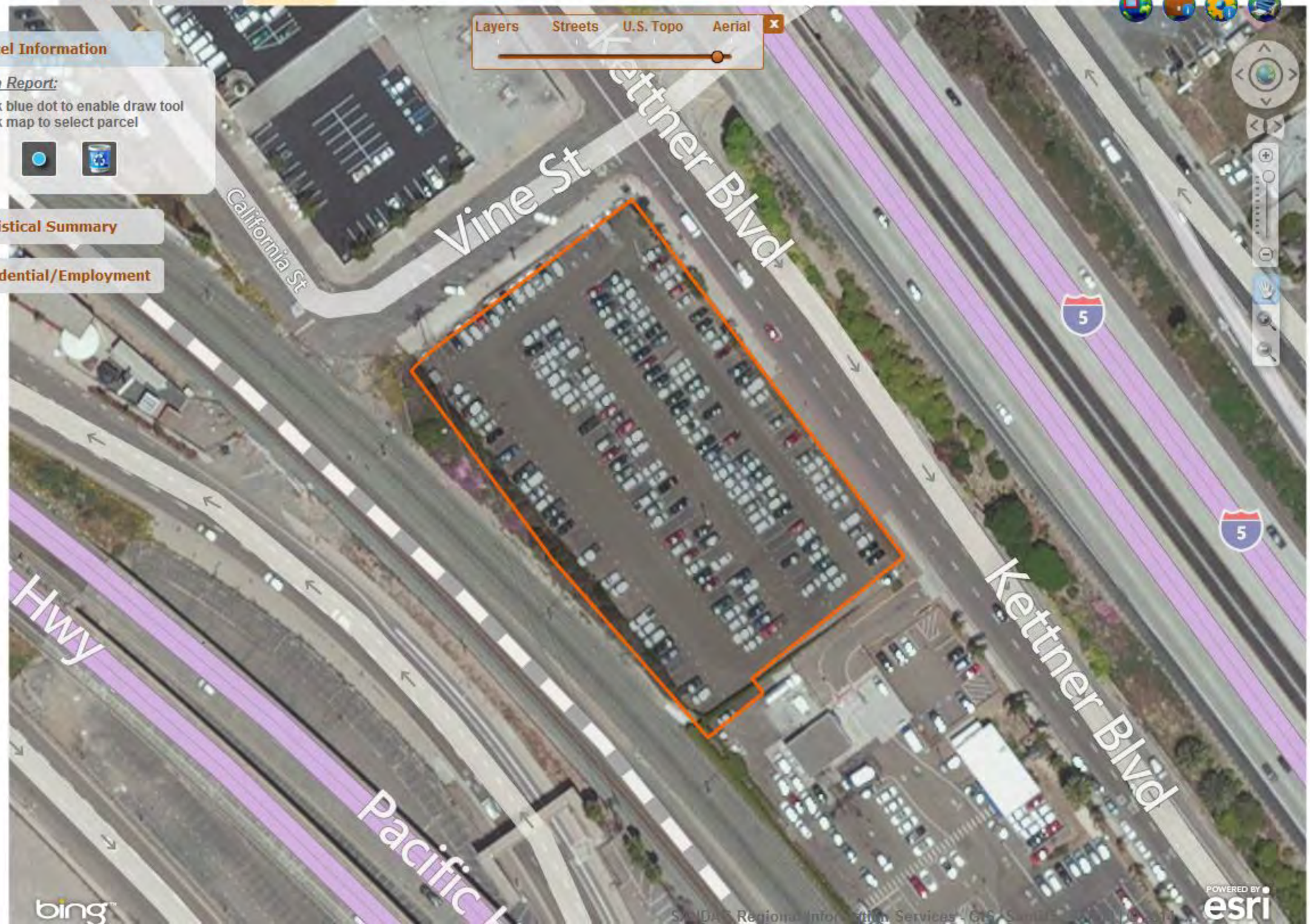
Parcel Information

To Run Report:

1 - Click blue dot to enable draw tool
2- Click map to select parcel

Statistical Summary

Residential/Employment



Environmental Support Services
Environmental Research & Due Diligence Compliance
30251 Golden Lantern, #E-305, Laguna Niguel, CA 92677
Tel) 949-429-3564 • Fax) 949-429-3563
www.EnvironmentalSupportServices.com • Info@EnvironmentalSupportServices.com

March 28, 2014

Dept of Toxic Substances Control
San Diego Office
9174 Sky Park Court, Suite 150
San Diego, CA

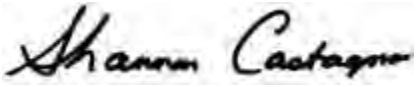
Attention: Cleo Munoz/Records/File Room

Dear Cleo Munoz,

Please check for any files/information on the following site:

Site: 3548 & 3550 Kettner Blvd.
San Diego, CA 92101

Sincerely,
Environmental Support Services



Shannon Castagno
Project Manager
Shannon@EnvironmentalSupportServices.com

Department of Toxic Substances Control

Matthew Rodriquez
Secretary for
Environmental Protection

Deborah O. Raphael, Director
2375 Northside Dr., Suite 100
San Diego, California 92108

Edmund G. Brown Jr.
Governor

April 1, 2014

Shannon Castagno
Project Manager
Environmental Support Services
30251 Golden Lantern, #E-305
Laguna Niguel, CA 92677
Shannon@EnvironmentalSupportServices.com

Subject: Southwest corner of Vine Street and Kettner Blvd. San Diego, CA
PRS# 40401141

Dear Ms., Castagno:

We have received your Public Records Act Request for records from the Department of Toxic Substances Control.

After a thorough review of our files we have found that no such records exist at this office pertaining to the site/facility referenced above.

We would like to inform you about Envirostor, a database that provides information and documents on over 5,000 DTSC cleanup sites. EnviroStor can be accessed at: http://www.envirostor.dtsc.ca.gov/public. Also, a computer is available in the Central Files of each DTSC Regional Office for use by community members to view EnviroStor.

If you have any questions, would like further information regarding your request or would like an appointment to visit San Diego's Central Files, please contact me at (858) 637-5531.

Sincerely,

Cleo Muñoz
Regional Records Coordinator

Department of Toxic Substances Control

Matthew Rodriquez
Secretary for
Environmental Protection

Deborah O. Raphael, Director
2375 Northside Dr., Suite 100
San Diego, California 92108

Edmund G. Brown Jr.
Governor

April 1, 2014

Shannon Castagno
Project Manager
Environmental Support Services
30251 Golden Lantern, #E-305
Laguna Niguel, CA 92677
Shannon@EnvironmentalSupportServices.com

Subject: 3548 & 3550 Kettner Blvd. San Diego, CA 92101
PRS# 40401148

Dear Ms., Castagno:

We have received your Public Records Act Request for records from the Department of Toxic Substances Control.

After a thorough review of our files we have found that no such records exist at this office pertaining to the sites/facilities referenced above.

We would like to inform you about Envirostor, a database that provides information and documents on over 5,000 DTSC cleanup sites. EnviroStor can be accessed at: http://www.envirostor.dtsc.ca.gov/public. Also, a computer is available in the Central Files of each DTSC Regional Office for use by community members to view EnviroStor.

If you have any questions, would like further information regarding your request or would like an appointment to visit San Diego's Central Files, please contact me at (858) 637-5531.

Sincerely,

Cleo Muñoz
Regional Records Coordinator

Appendix F

Request for Records Search to the
City of San Diego Fire Department

THE CITY OF SAN DIEGO

ENVIRONMENTAL ASSESSMENT RECORDS INFORMATION

Environmental Assessment Records Information requests, with payment, will be processed within five (5) working days of receipt of the request, if possible. Faxed requests are not accepted. Requests cannot be processed on the same day they are received. The EXACT STREET ADDRESS of each site must be provided. The current fee is $5 per street address (not per parcel). Make all checks payable to the CITY TREASURER. Record searches are done in the order requests are received, and you will receive a response by letter when the search is completed. Please mail requests, or related correspondence, to the Records Management Clerk.

Business Name: _____

Address: _____

City: _____

Date of Request: 3/24/14 Telephone: _____

Environmental Support Services
Environmental Research & Due Diligence Compliance

Shannon Castagno
Project Manager

Tel} 949-429-3564 Fax} 949-429-3563
30251 Golden Lantern, #E-305, Laguna Niguel, CA 92677
Shannon@EnvironmentalSupportServices.com · www.EnvironmentalSupportServices.com

REQUEST INFORMATION

Address: Southwest corner of Vine Street & Kettner Blvd.
San Diego, CA 92101
APN 451-690-1800
(See attached Map)

Address: _____

Address: _____

Address: _____

Address: _____

Site Inspection and Environmental Assessment Information forms are available at www.sannet.gov/fireandems/inspections

07/16/02

THE CITY OF SAN DIEGO

ENVIRONMENTAL ASSESSMENT RECORDS INFORMATION

Environmental Assessment Records Information requests, with payment, will be processed within five (5) working days of receipt of the request, if possible. Faxed requests are not accepted. Requests cannot be processed on the same day they are received. The EXACT STREET ADDRESS of each site must be provided. The current fee is $5 per street address (not per parcel). Make all checks payable to the CITY TREASURER. Record searches are done in the order requests are received, and you will receive a response by letter when the search is completed. Please mail requests, or related correspondence, to the Records Management Clerk.

Business Name: _____

Address: _____

City: _____

Date of Request: 3/28/14 Telephone: _____

Environmental Support Services
Environmental Research & Due Diligence Compliance

Shannon Castagno
Project Manager

Tel) 949-429-3564 Fax) 949-429-3563
30251 Golden Lantern, #E-305, Laguna Niguel, CA 92677
Shannon@EnvironmentalSupportServices.com · www.EnvironmentalSupportServices.com

REQUEST INFORMATION

Address: 3548 & 3550 Kettner Blvd., San Diego, CA 92101

Address: _____

Address: _____

Address: _____

Address: _____

Address: _____

Address: _____

Address: _____

Site Inspection and Environmental Assessment Information forms are available at www.sannet.gov/fireandems/inspections

07/16/02

Appendix G

Request for Records Search to the
City of San Diego – Industrial Waste Program and
Response from that Agency

INDUSTRIAL WASTEWATER CONTROL PROGRAM INFORMATION REQUEST

Complete top portion and return to:

Industrial Wastewater Control Program
9192 Topaz Wy, MS 901D
San Diego, CA 92123-1119

Phone: (858) 654-4100
Fax: (858) 654-4110

Requester Information:

Name _____

Company _____

Address _____

_____

Phone _____

Environmental Support Services
Environmental Research & Due Diligence Compliance

Shannon Castagno
Project Manager

Tel) 949-429-3564 Fax) 949-429-3563
30251 Golden Lantern, #E-305, Laguna Niguel, CA 92677
Shannon@EnvironmentalSupportServices.com · www.EnvironmentalSupportServices.com

3/24/14

Site Information:

Address Southwest corner of Vine Street & Kettner Blvd.
San Diego, CA 92101 APN 451-690-1800
(See attached map)

For IWCP Use Only

A search of our records was conducted and the following information about the above site was found:

Permit # _____ Issued ____/____/____

Permittee Name _____

Category _____ Permitted flow _____

Description of permitted wastestream: _____

Violations: _____

Other Information: _____

_____ The above permit was inactivated on ____/____/____ due to ownership change, facility closure, or other significant changes in operations.

_____ No permit on file.

Inspector _____ Date _____

The above information is meant only to provide an overview of permitted industrial discharges to the sewer system. For additional information about environmental permits held by this facility, you may wish to contact the Hazardous Materials Management Division at (619) 338-2284 or the Air Pollution Control District at (858) 586-2650.

REDI - Regional Economic Development Information System

SANDAG

Mapping | Locate | Reports

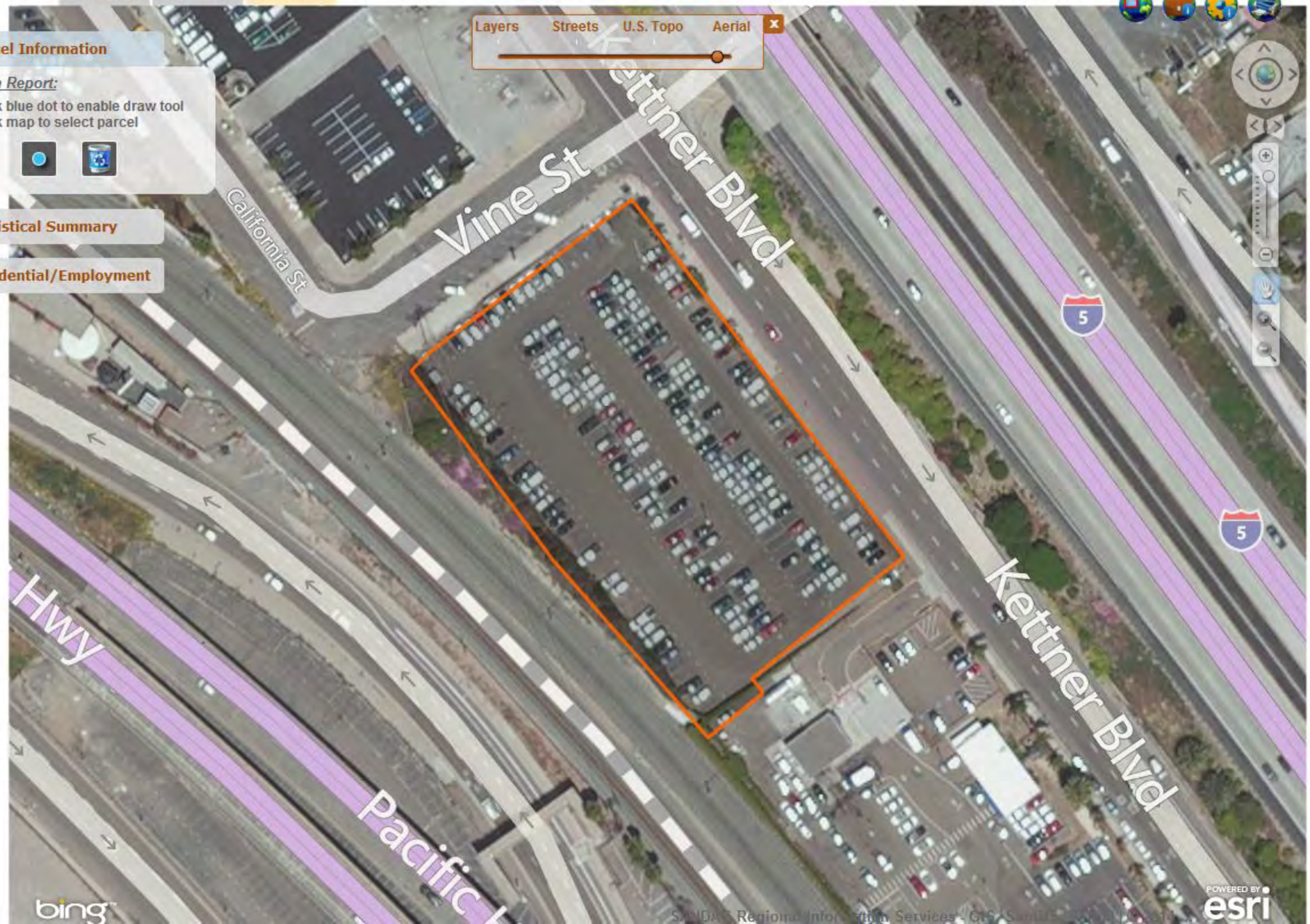
Parcel Information

To Run Report:

1 - Click blue dot to enable draw tool
2- Click map to select parcel

Statistical Summary

Residential/Employment



INDUSTRIAL WASTEWATER CONTROL PROGRAM INFORMATION REQUEST

Complete top portion and return to:

Industrial Wastewater Control Program
9192 Topaz Wy, MS 901D
San Diego, CA 92123-1119

Phone: (858) 654-4100
Fax: (858) 654-4110

Requester Information:

Name _____

Company _____

Address _____

_____

Phone _____

Environmental Support Services
Environmental Research & Due Diligence Compliance

Shannon Castagno
Project Manager

Tel) 949-429-3564 Fax) 949-429-3563
30251 Golden Lantern, #E-305, Laguna Niguel, CA 92677
Shannon@EnvironmentalSupportServices.com · www.EnvironmentalSupportServices.com

3/28/14

Site Information:

Address 3548 & 3550 Kettner Blvd.
San Diego, CA 92101

For IWCP Use Only

A search of our records was conducted and the following information about the above site was found:

Permit # _____ Issued ____/____/____

Permittee Name _____

Category _____ Permitted flow _____

Description of permitted wastestream: _____

_____

Violations: _____

_____

Other Information: _____

_____

_____ The above permit was inactivated on ____/____/____ due to ownership change, facility closure, or other significant changes in operations.

_____ No permit on file.

Inspector _____ Date _____

The above information is meant only to provide an overview of permitted industrial discharges to the sewer system. For additional information about environmental permits held by this facility, you may wish to contact the Hazardous Materials Management Division at (619) 338-2284 or the Air Pollution Control District at (858) 586-2650.

From: Taylor, Brian [BTaylor@sandiego.gov]
Sent: Tuesday, March 25, 2014 2:49 PM
To: Shannon@EnvironmentalSupportServices.com
Subject: Information request for SW corner of Vine St & Kettner Blvd.

Hi Shannon,
Our Industrial User Discharge permits are recorded under the permitted facility's address. Please resubmit your information request with a street number or facility name. Thanks.

Brian Taylor
Pretreatment Inspector
Industrial Wastewater Control Program
9192 Topaz Way San Diego, CA 92123
858-654-4124
Fax 858-654-4110
BTaylor@sandiego.gov

Appendix H

Photocopies Obtained from the
City of San Diego Building Department

63 MP 67 120044

JOB ADDRESS

HOUSE NO.: 3550 | STREET: Kettner

PLAN FILE NO.

NO PLAN FILE NO.

APPLICATION FOR BUILDING PERMIT

BUILDING INSPECTION DEPARTMENT - CITY OF SAN DIEGO

APPLICANT: PRINT WITHIN HEAVY LINES ONLY

COMPLETE LEGAL DESCRIPTION OF PROPERTY

LOT	BLOCK	ADDITION OR SUBDIVISION
7	156	MIDDLETOWN

TYPE OF BUILDING TO BE CONSTRUCTED

DWELLING ☐
GARAGE ☐
OTHER: SIGN POSTER PANEL

NUMBER OF FAMILIES

IS THERE AN EXISTING BUILDING NOW ON THIS SITE? YES ☐ NO ☒

NUMBER OF STORIES

IF "YES" IS IT RESIDENTIAL ☐ COMMERCIAL ☐ OTHER ☐

CLASS OF WORK

NEW ☒ REPAIR ☐
ADDITION ☐ MOVE ☐
ALTERATION ☐ DEMOLISH ☐

FLOOR SPACE IN SQ. FT.

VALUATION OF JOB

OWNER — NAME AND MAILING ADDRESS: Cont'l

TEL. NO.

CONTRACTOR — NAME AND ADDRESS: [illegible]

STATE LICENSE NO.

TEL. NO.

I HEREBY CERTIFY THAT THE ABOVE APPLICATION IS CORRECT, THAT CONSTRUCTION WILL COMPLY WITH ALL LAWS, AND I WILL NOT EMPLOY ANY PERSON IN VIOLATION OF THE STATE OF CALIFORNIA LABOR CODE RELATING TO WORKMAN'S COMPENSATION INSURANCE.

SIGNATURE OF APPLICANT: John [illegible]

DATE: [illegible]

FOR PLANNING COMMISSION USE ONLY

BL CODE	CENSUS TRACT	USE ZONE	BY	DATE
36	M61	R C M P / 1 2 4 / a b c	[illegible]	9/4/67

FOR BUILDING INSPECTION DEPARTMENT USE ONLY

TYPE OF CONSTRUCTION: I II III IV V

VALUATION OF JOB: $200.00

FIRE RESISTANCE: 1 HR N

OCCUPANCY GROUP: A B C D E F G H I J

DIVISION 1 2 3 4

FIRE ZONE	DATE	BY
1 2 3	9/4/67	R.L.B.

FORM 11 5-54

05 23 2005

100844

JOB ADDRESS		PLAN FILE NO.
HOUSE NO. 3550	STREET Kettner	NO PLAN FILE NO. ☐

ROUTE SHEET

FOR BUILDING PERMIT APPLICATION

RESPONSIBILITY	ITEMS	DATE / INITIALS
APPLICANT	SIZE OF WATER METER: 5/8" ☐ 3/4" ☐ 1" ☐ OTHER LOCATION OF WATER METER: EXISTING, IF AVAILABLE ☐ / NEW: CENTER LINE OF PROPERTY ☐ / OTHER	
PLANNING COMMISSION	REMARKS Posto Pone(?) ___ BATH(S) ___ SINK(S)	9/4
WATER	ROUTE APPLICANT TO DEPARTMENT ☐ PLAT BOOK / PAGE APPLICATION CLEARED: NO CHARGE ☑ SERVICE ORDER NO. $ ______ WATER MAIN NO. $ ______ SPECIAL FEES NO. $	9/4/57
CITY ENGINEER	ROUTE APPLICANT TO DEPARTMENT ☐ APPLICATION CLEARED. GRADE ELEVATIONS ARE ATTACHED ☐ UNNECESSARY ☐	
SEWER DIVISION	ROUTE APPLICANT TO DEPARTMENT ☐ PLAT BOOK / PAGE APPLICATION CLEARED: NO CHARGE ☐ TYPE OF CONNECTION $ ______ SPECIAL FEES $	
BUILDING INSPECTION	STATEMENT ATTACHED NO. $2.50 TOTAL $	9/4/57
CASHIER	APPLICATION CLEARED	
BLDG INSP	PERMIT ISSUED	

CITY OF SAN DIEGO FORM 11-A 5-54

05 23 2003

ELECTRICAL Permit Application

SEPARATE APPLICATION REQUIRED FOR EACH BUILDING

JOB ADDRESS: 3550 Kettner Bl

CENSUS TRACT NUMBER: 6500

PERMIT NUMBER: 2786

OWNER

NAME (OR NAME OF BUSINESS): Jenny Tower

MAILING ADDRESS (NUMBER) (STREET): 4324 Antaresc

(CITY) ZIP TELEPHONE NUMBER: San Diego 92108 284-5153

CONTRACTOR

NAME: So Bay Elect

ADDRESS (NUMBER) (STREET): 224 West Playa

(CITY) ZIP TELEPHONE NUMBER: National City 92050

STATE LICENSE NO.: 260181 CLASS NO.: C-10 CITY LICENSE NUMBER

BUILDING

JOB ADDRESS: 3550 Kettner

Check appropriate block

A — USE FEE SCHEDULE "A" FOR NEW RESIDENTIAL CONSTRUCTION ONLY — Res. ☐ Apt. ☐

B — USE FEE SCHEDULE "B" FOR REMODELS OR NEW COMM/IND ONLY — NEW COMM/IND ■ — REMODEL Apt. ☐ Res. ☐ COM. ☐ IND. ☐

Description Of Work To Be Done: install 2 Flood lights & 9 Fluorescent

I hereby acknowledge that I have read this application, that the information given is correct; and that I am the owner, or the duly authorized agent of the owner. I agree to comply with city and state laws regulating construction; and in doing the work authorized thereby, no person will be employed in violation of the Labor Code of the State of California relating to Workmen's Compensation Insurance.

SIGNATURE (OWNER OR AGENT): [signature] DATE SIGNED

AGENT FOR: So Bay Elect

ADDRESS: 224 W. Playa

NOTE: CONTRACTORS ARE AUTHORIZED TO CONSTRUCT ONLY WORK RECOGNIZED BY THE STATE CONTRACTORS LICENSE BOARD AS BEING WITHIN THEIR CLASSIFICATION.

CALL 236-6256 FOR INSPECTION

Fee Schedule A

For New Residential Construction Only		No. Amps	Fees
For each ampere of service fuse or breaker size	1Ø	x $.25	
	3Ø	x $.45	

Enter the number of circuits, feeders, and/or services to be installed, in the left-hand column by the correct size. CIRCLE THE FEE IN THE APPROPRIATE COLUMN.

Fee Schedule B — For all electrical installations other than new residential construction.

NO. OF CIRCUITS	Circuit Size Amperes	115/230V 120/208V	Voltage 277/480	Over 600 V	Fees
	0 – 20A 1 to 100 incl.	$ 1.50	$ 3.00	$ 6.00	7.55
	0 – 20A More than 100	.75	1.50	6.00	
	25 – 35A	2.00	4.00	8.00	
	40 – 45A	3.00	6.00	12.00	
	50 – 99A	4.00	8.00	16.00	5.00
1	100 – 199A	5.00	10.00	20.00	
	200 – 399A	6.00	12.00	24.00	
	400 – 599A	7.00	14.00	28.00	
	600 – 799A	8.00	16.00	32.00	
	800 – 999A	9.00	18.00	36.00	
	1000A & Larger	10.00	20.00	40.00	
	TEMPORARY SERVICE			5.00	
	TEMPORARY POLE CONST.			5.00	

Do Not Write In This Space

Min. Fee $5.00 NOT REFUNDABLE

SUB-TOTAL (SINGLE UNIT)

NO. OF UNITS	SINGLE UNIT FEE	TOTAL FEE DUE
		12.55

FUND 100 REVENUE ACCT 7344

ATTENTION THIS PERMIT AUTHORIZES ONLY THE WORK NOTED. BUILDING INSPECTION DEPARTMENT

CITY OF SAN DIEGO

APPLICATION APPROVAL

THIS PERMIT DOES NOT BECOME VALID UNTIL SIGNED BY THE DIRECTOR OF BUILDING INSPECTION, OR HIS DEPUTY; AND FEES ARE PAID, AND RECEIPT IS ACKNOWLEDGED IN SPACE PROVIDED.

SIGNATURE OF BLDG. INSP. DEPUTY: [signature]

DATE

METER SHEET NO.	Unit Numbers				
PERMANENT METER					
LT.	RANGE	A.C.	POWER	RESET	PERM. METER
TEMPORARY METER					
LT.	RANGE	A.C.	POWER	CONST. METER	CONST. POLE

BID-259 (REV. 7-75)

05 23 2003

JOB 3450 ~~3460~~ KETTNER BLVD.

Building Permit Application

APPLICANT FILL INSIDE HEAVY LINES

CENSUS TRACT NUMBER 65.00

PERMIT NUMBER L 33842

OWNER

NAME (OR NAME OF BUSINESS): GALE TRAVER

MAILING ADDRESS (NUMBER) (STREET): 4324 PINTORESCO

CITY: San Diego ZIP: 92108 TELEPHONE NUMBER: 284-5153

DESIGNER

NAME:

ADDRESS (NUMBER) (STREET):

CITY: ZIP: TELEPHONE NUMBER:

BUILDER

NAME: AMERICAN FENCE CO

ADDRESS (NUMBER) (STREET): 1075 GRAND AVE

CITY: SAN MARCOS ZIP: 92069 TELEPHONE NUMBER: 744-4024

STATE LICENSE NUMBER: 170984 CLASS. NO.: C-13 CITY LICENSE NUMBER: 11847

JOB LOCATION

LOT: 1G12 BLOCK: 145 SUBDIVISION: MIDDLETON UNIT:

JOB ADDRESS: 3450 KETTNER BLVD

CONDITION OF SOIL AT JOB SITE: ☐ ORIGINAL ☒ COMPACTED FILL ☐ LOOSE FILL

NO. OF EXISTING BUILDINGS ON LOT AND USE: NONE

PROPOSED WORK

DESCRIBE WORK TO BE DONE: 6' HIGH CHAIN LINK FENCE 898 FEET

EXISTING USE OF BUILDING OR PROPERTY: VACANT

PROPOSED USE OF BUILDING OR PROPERTY: PARKING LOT

I hereby acknowledge that I have read this application, that the information given is correct, and that I am the owner, or the duly authorized agent of the owner. I agree to comply with city and state laws regulating construction, and in doing the work authorized thereby, no person will be employed in violation of the Labor Code of the State of California relating to Workmen's Compensation Insurance.

SIGNATURE (OWNER OR AGENT): [signature] DATE SIGNED: 3/18/77

AGENT FOR:

ADDRESS

WATER			
METER SIZE	SERVICE SIZE	CREDIT	CHECKED BY
REMARKS			

SEWER		
NO. ADDITIONAL CONNECTIONS REQ'D	TYPE CONN	CHECKED BY
REMARKS		

IN-253 (REV. 9-75)

USE ZONE: M1 COORD. INDEX: 209-1714 PLAN FILE NO.: E50236

SETBACK FRONT YARD: REAR YD: SIDE YD: (INT) (STR) NAME OF STREET:

ALLOWABLE COVERAGE: % FLOOR AREA RATIO ALLOWED: MAX. ALLOWABLE HEIGHT (FT.): VARIANCE NO.:

LOT SPLIT DATE: AGREEMENT NO.: NO. OF BAR SINKS: CURB TO P.L. F. S.

DATE PLANS SUBMITTED:

PLAN CHK. RECP'T NO.

PLAN CHK RECP'T. AMT $

WORK TO BE DONE: ☐ SIGN ☐ MOVE ☐ ALTER ☐ DEMOLISH ☐ REPAIR ☒ NON-RESID ☐ NEW ☐ RESIDENTIAL ☒ ADD

B.C. CODE: 200 DWELL UNITS: BEDROOMS: S 1 2 3 4 5+

FUND & ACCT.		NO. UNITS	PER UNIT	TOTAL
	VALUATION OF WORK			3250 —
100 73421	PLAN CHECK FEE			13 —
	SUPPLEMENTAL PLAN CHK. FEE			
100 73422	BUILDING PERMIT FEE			26 —
320 9660	STATE FEE			60
506 79750	SEWER FEE			
500 79080	WATER FEE			
73423	PARK FEE			

SPECIAL INSPECTION REQUIRED FOR: ☐ CONCRETE ☐ MASONRY ☐ WELDING, H.S. BOLTS ☐ PILE DRIVING ☐ OTHER (IDENTIFY)

TOTAL FEES DUE: 39.50

FIRE ZONE: 3 TYPE OF CONST: VN OCCUP. GRP.: J

BLDG. AREA: — NO. STORIES: TOT. FLR. AREA:

SPRINKLERS REQ'D FOR: HGT. IN FT.:

ATTENTION THIS PERMIT AUTHORIZES ONLY THE WORK NOTED

BUILDING INSPECTION DEPARTMENT

CITY OF SAN DIEGO

PLANS CHECKED: BID DATE:

PLANS APPRO'VED: [signature] DATE: 3/20

PLOT PLAN CHK'D & APPR'D: ZONING DATE:

APPLICATION APPROVAL

THIS PERMIT DOES NOT BECOME VALID UNTIL SIGNED BY THE DIRECTOR OF BUILDING INSPECTION, OR HIS DEPUTY; AND FEES ARE PAID, AND RECEIPT IS ACKNOWLEDGED IN SPACE PROVIDED.

SIGNATURE OF BUILD. INSP. DEPT. DEPUTY: [signature]

DATE: 3/20/77 FILE

05 23 2003

ELECTRICAL PERMIT APPLICATION

APPLICANT NAME: San Diego Gas & Electric Co

ADDRESS: 3550 Kettner ZIP CODE:

JOB ADDRESS: 3550 Kettner

LEGAL DESCR: Change Elect - Overhead to Underground

LOT: BLOCK: SUBDIVISION:

OWNER NAME: San Diego Gas & Electric Co

ADDRESS: 3550 Kettner

CITY: San Diego ZIP CODE:

CONTRACTOR NAME: Commercial Electric Co STATE LIC NO: 201405

ADDRESS: P.O. Box 13667 CLASS: C-10

CITY: San Diego CA ZIP: 92113

CITY LIC NUMBER: 00075 PHONE: 233-5135

DESIGNER NAME:

ADDRESS:

CITY:

3550 Kettner

CENSUS TRACT NUMBER: 65.00

PERMIT NO: 24061

METER SHEET NO:

UNIT NUMBERS:

A

NEW RESET TEMP METER TEMP POLE PERM

RES

COM

THIS PERMIT DOES NOT BECOME VALID UNTIL SIGNED BY THE DIRECTOR OF BUILDING INSPECTION OR HIS DEPUTY AND FEES ARE PAID AND RECEIPT IS ACKNOWLEDGED IN THE SPACE PROVIDED

LICENSED CONTRACTORS DECLARATION: I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Contractor: Commercial Electric Co Teresa Jackson

OWNER-BUILDER DECLARATION: [illegible]

☐ I, as owner of the property, [illegible]

☐ I, as owner of the property, [illegible]

☐ I am exempt under Sec. [illegible]

Owner:

WORKER'S COMPENSATION DECLARATION [illegible]

Policy: AA9212648 Commercial Union Assurance Co

Applicant: Teresa Jackson 7-11-80

CERTIFICATE OF EXEMPTION FROM WORKERS' COMPENSATION INSURANCE [illegible]

Applicant: Teresa Jackson

CONSTRUCTION LENDING AGENCY [illegible]

Lender's Name:

Lender's Address:

[illegible]

APPLICANT'S SIGNATURE: Teresa Jackson

☐ OWNER
☐ AGENT

7-11-80

TYPE OF STRUCTURE: ONE OR TWO FAMILY ☐ OTHER ☐

USE APPROPRIATE FEE SCHEDULE

A. NEW RESIDENTIAL CONSTRUCTION ONLY — NEW SINGLE-FAMILY ☐ NEW MULTI-FAMILY ☐

ENTER TYPE OF CONSTRUCTION AND AMPERE RATING OF SERVICE TO BE INSTALLED

B. ALL OTHER WIRING INSTALLATIONS

ENTER TYPE OF CONSTRUCTION AND NUMBER OF CIRCUITS, INCLUDING FEEDERS AND/OR SERVICES, IN THE APPROPRIATE COLUMN FOR THEIR SIZE AND VOLTAGE

NEW / REMODEL

COMMERCIAL ☐ COMMERCIAL ☐ SINGLE FAMILY ☐

INDUSTRIAL ☐ INDUSTRIAL ☐ MULTI-FAMILY ☐

1

2.00

C. TEMPORARY SERVICE ☐ ☐

TEMPORARY POLE CONST. ☐ OVER 200 ☐

ATTENTION

THIS PERMIT AUTHORIZES ONLY THE WORK NOTED

ISSUING FEE NOT REFUNDABLE 7.50

SUB-TOTAL (SINGLE UNIT)

9.50

NO. OF UNITS / SINGLE UNIT FEE / TOTAL FEE DUE

DATE

APPLICATION APPROVAL

BUILDING PERMIT — SIGN

APPLICANT FILL INSIDE HEAVY LINES

SIGN OWNER

NAME OR NAME OF BUSINESS: Park + Ride Co.

MAILING ADDRESS (NUMBER) (STREET): 4324 Pintoresco

CITY: San Diego ZIP: 92108 TEL. NUMBER: 284-5153

SIGN USER

NAME: Park + Ride Co.

ADDRESS (NUMBER) (STREET): 3550 Kettner

CITY: San Diego ZIP: 92101 TEL. NUMBER: 295-2832

SIGN INSTALLER

NAME: Park + Ride Co.

ADDRESS (NUMBER) (STREET)

CITY ZIP TEL. NUMBER

STATE LICENSE NO. CLASS NO. CITY LICENSE NO.

SITE

LOTS: 1 to 12 BLOCK: 175 SUBDIVISION: Middletown UNIT

JOB ADDRESS: 3550 Kettner Blvd.

LIST EACH EXISTING SIGN GIVING TYPE AND AREA

SIGN TYPE	AREA
GROUND	36 sq FT

WORDING OF SIGN COPY: AIRPORT VALET SERVICE PARK + RIDE 2.75 PER 24 HOURS OR PART THEREOF INCLUDES TRANSPORTATION TO AND FROM AIRPORT

EXISTING SIGN BEING REPLACED: NO

I hereby acknowledge that I have read this application, that the information given is correct; and that I am the building or property owner, or the duly authorized agent of the building or property owner. I agree to comply with city and state laws regulating construction. In doing the work authorized thereby, no person will be employed in violation of the Labor Code of the State of California relating to Workmen's Compensation Insurance.

SIGNATURE (OWNER OR AGENT) [signature] DATE SIGNED

AGENT FOR

ADDRESS

(N-15 (2-76))

PLAN FILE NO.: 89717-D PLAN APPROVED DATE

LOCATION: 3550 Kettner Blvd.

SERIES TRACT NUMBER

BUILDING PERMIT NUMBER: 03474

TYPE OF NEW SIGN

- ☐ OFF-PREMISE
- ☒ GROUND
- ☐ WALL
- ☐ PROJECTING
- ☐ ROOF
- ☐ FRWY. OR.
- ☐ BLINKING
- ☐ ELECTRIC
- ☐ TURNING
- ☐ NOT VIS. R.W.

MAIN CERT. EXP. DATE: 7-30-79 MAIN CERT. NO.: 00099

VAR. NO. EXP. DATE

C.U.P. NO. EXP. DATE

SPECIAL DIST/C.S.P. EXP. DATE

PLANNING

SIGN AREA: 36 SIGN HGT.: 5' ZONE: M-1

COMM. CODE LAND USE PROJ. OVER RT. OF WAY MAX. HT. ALLOW.: 30 MAX. AREA ALLOW.: 100'

COORD. INDEX: 208-1713 R/W WIDTH: 60 SPEED ZONE: 35-40 FRONTAGE: 300'

FRNT. YARD / SET BACK: REQ. / ACT REAR YD. SIDE YARD (INT.) (STR.) CURB TO P.L.

PLANNING DEPT. APP. BY: B Bennett DATE: 6-15-77

INSPECTION

SIGN TYPE	49 S.F. OR LESS	50 - 99 SQ. FT.	100 S.F. OR MORE	FEE
WALL, NON-ELEC.	$28.65	$31.65	$34.65	
WALL, ELECTRIC	$34.65	$37.65	$40.65	
GRD. ROOF. PROJ.	$52.65	$55.65	$58.65	52.65
SPECIAL INSP. REQ.	EST. HRS.	$10.00 PER HR.		
OTHER				

ATTENTION: THIS PERMIT AUTHORIZES ONLY THE WORK NOTED ... INSPECTION DEPARTMENT

CITY OF SAN DIEGO

FUND & ACCT		
100-73602	SUB TOTAL	52.65
320 9660	STATE FEE	.50
	TOTAL	53.15

APPROVAL

This permit does not become valid until signed by the Director of Building Inspection or his Deputy, fees paid, and receipt is acknowledged in space provided.

SIGNATURE OF BLDG. INSP. DEPT. DEPUTY: [signature]

DATE: 6-15-77

FILE

05 23 2003

BUILDING PERMIT – SIGN

APPLICANT: INSERT HEAVY LINES

SIGN OWNER
NAME OR NAME OF BUSINESS: PARK + RIDE CO
MAILING ADDRESS (NUMBER) (STREET): 4324 PINTORESCO
CITY: SAN DIEGO ZIP: 92108 TEL. NUMBER: 284-5153

SIGN USER
NAME: PARK & RIDE CO.
ADDRESS (NUMBER) (STREET): [redacted] 3550 KETTNER
CITY: SAN DIEGO ZIP: 92101 TEL. NUMBER: 295-2832

SIGN INSTALLER
NAME: PARK + RIDE CO
ADDRESS (NUMBER) (STREET):
CITY: ZIP: TEL. NUMBER:
STATE LICENSE NO: CLASS: CITY LICENSE NO:

SITE
LOT(S): 1 & 12 BLOCK: 145 SUBDIVISION: MIDDLETOWN UNIT:
JOB ADDRESS: 3550 KETTNER BLVD

LIST EACH EXISTING SIGN GIVING TYPE AND AREA

SIGN TYPE	AREA
GROUND	18 sq ft

WORDING OF SIGN COPY:
AIRPORT
VALET SERVICE
PARK+RIDE

IS AN EXISTING SIGN BEING REPLACED? NO

I hereby acknowledge that I have read this application, that the information given is correct, and that I am the building or property owner, or the duly authorized agent of the building or property owner. I agree to comply with city and state laws regulating construction in doing the work authorized thereby, no person will be employed in violation of the Labor Code of the State of California relating to Workmen's Compensation Insurance.

SIGNATURE (OWNER OR AGENT): [signature] DATE SIGNED:
AGENT FOR:
ADDRESS:

IN-13 (2-76)

PLAN FILE NO. 89716-D PLAN APPROVED DATE

3550 Kettner Blvd

CENSUS TRACT NUMBER: [illegible] 15

TYPE OF NEW SIGN
- ☐ OFF-PREMISE
- ☒ GROUND
- ☐ WALL
- ☐ PROJECTING
- ☐ ROOF
- ☐ FRWY. OR
- ☐ BLINKING
- ☐ ELECTRIC
- ☐ TURNING
- ☐ NOT VIS. R/W

MAIN GRD. EXP. DATE: 9-30-79 MAINT. CONT. NO.: 00092

VAR. NO.: EXP. DATE:
C.U.P. NO.: EXP. DATE:
SPECIAL DIST./C.S.P.: EXP. DATE:

SIGN AREA: 184 SIGN HGT.: [redacted] ZONE: M-1

COMM. CODE: LAND USE: PROJ. OVER RT. OF WAY: MAX. HT. ALLOW.: 30' MAX. AREA ALLOW.: 100 SF

COORD. INDEX: 228-173 R/W WIDTH: 60' SPEED ZONE: 25-30 FRONTAGE: 200'

FRNT. YARD SET-BACK: REQ. / ACT. REAR YD. SIDE YD. (INT.) (STR.) CURB TO P.L.

PLANNING DEPT. APP. BY: [signature] DATE: 6-15-77

SIGN TYPE	49 S.F. OR LESS	50 - 99 SQ. FT.	100 S.F. OR MORE	FEE
WALL, NON-ELEC.	$28.65	$31.65	$34.65	
WALL, ELECTRIC	$34.65	$37.65	$40.65	
GRD. ROOF, PROJ.	$52.65	$55.65	$58.65	52 65
SPECIAL INSP. REQ.	EST. HRS.	$10.00 PER HR.		
OTHER				

ATTENTION
BUILDING INSPECTION DEPARTMENT
CITY OF SAN DIEGO

FUND & ACCT	SUB TOTAL	52 65
320 S660	STATE FEE	.50
	TOTAL	53 15

APPROVAL
This permit does not become valid until signed by the Director of Building Inspection, or his Deputy; fees paid, and receipt is acknowledged in space provided

SIGNATURE OF BLDG. INSP. DEPT. DEPUTY: [signature]
DATE: 6/15/77

INSPECTION

FILE

Appendix I

Request for Records Search to the
San Diego Air Pollution Control District

SAN DIEGO AIR POLLUTION CONTROL DISTRICT

REQUEST FOR PUBLIC RECORDS

Date: 3/24/14

Name: Shannon Castagno Shannon@EnvironmentalSupportServices.com

Agency: Environmental Support Services

Address: 30251 Golden Lantern #E-305

City: Laguna Niguel State: CA Zip: 92677

Phone: (949) 429-3564 Fax: (949) 429-3563

I request to inspect the following Public Records (please be specific):

I would like copies of any permits to operate, equipment lists, notice of violations and notice to comply for:

Southwest Corner of Vine St & Kettner Blvd.
San Diego, CA 92101
APN 451-690-1800
(See Attached Map)

INSPECTION OF PUBLIC RECORDS

The district shall make a determination if the records requested are available with the exception of those records specifically exempted from disclosure by state law and those records labeled as "TRADE SECRET" which are not emission data, within ten (10) days of the date of the receipt of the request. If, for good cause, the determination cannot be made within the ten (10) working days, the District will notify the requesting person the reasons for the delay and when the determination is expected to be made within an additional 14 days, as prescribed by law. Those records labeled as "TRADE SECRETS" shall be governed by the procedure set forth in District Rule 177 Section (g).

If you have any questions, please contact Public Records at (858) 586-2618.

Mail or fax completed form to:

San Diego APCD
Public Records
10124 Old Grove Road
San Diego, CA 92131 Phone: (858) 586-2600 Fax No.: (858) 586-2601

01/06

REDI - Regional Economic Development Information System

SANDAG

Mapping | Locate | Reports

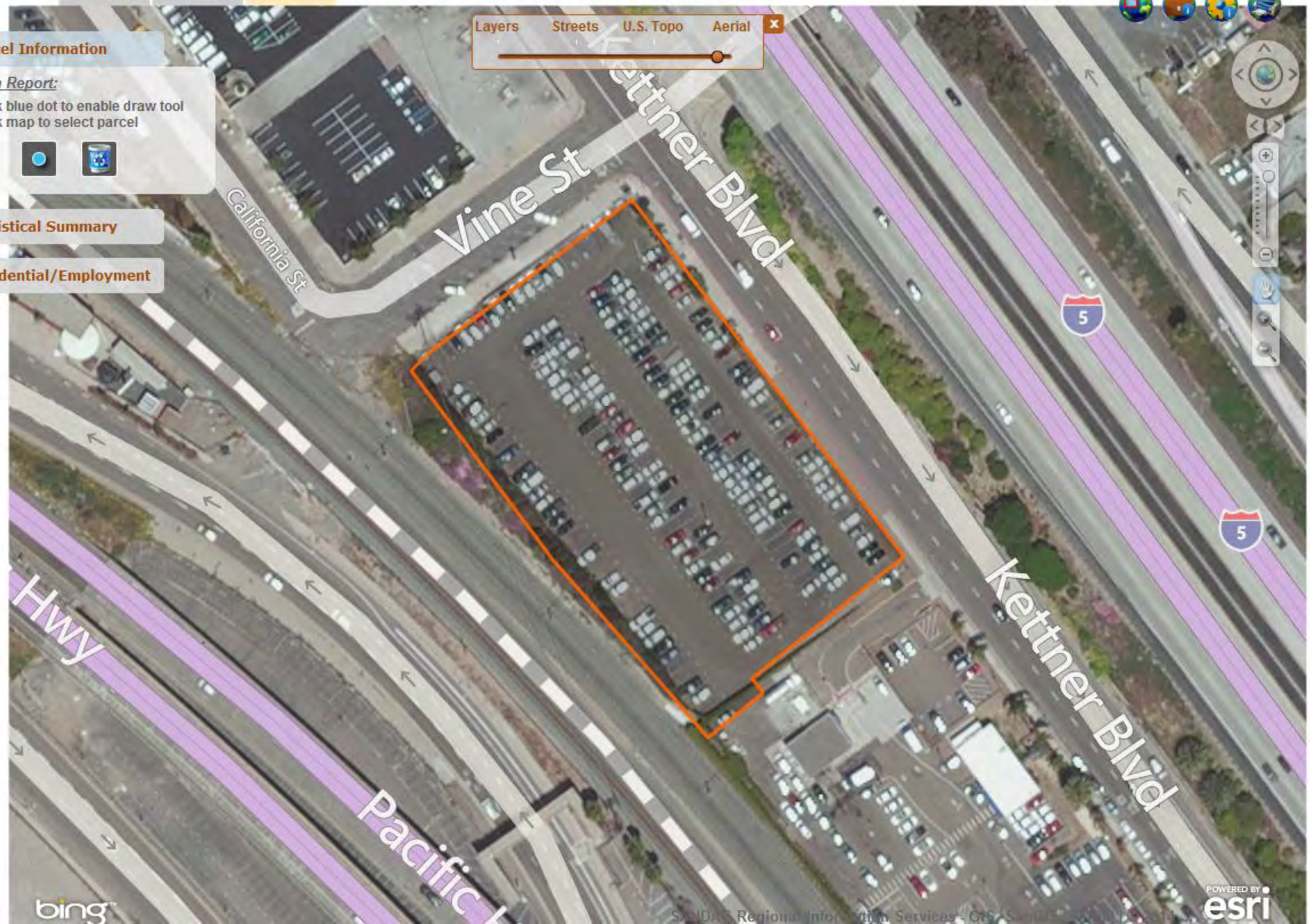
Parcel Information

To Run Report:

1 - Click blue dot to enable draw tool
2- Click map to select parcel

Statistical Summary

Residential/Employment



SAN DIEGO AIR POLLUTION CONTROL DISTRICT

REQUEST FOR PUBLIC RECORDS

Date: 3/28/14

Name: Shannon Castagno

Agency: Environmental Support Services

Address: 30251 Golden Lantern, # E305

City: Laguna Niguel State: CA Zip: 92677

Phone: (949) 429-3564 Fax: (949) 429-3563

I request to inspect the following Public Records (please be specific):

I would like copies of any permits to operate, equipment lists, notice of violations and notice to comply for : 3548 & 3550 Kettner Blvd San Diego, CA 92101

INSPECTION OF PUBLIC RECORDS

The district shall make a determination if the records requested are available with the exception of those records specifically exempted from disclosure by state law and those records labeled as "TRADE SECRET" which are not emission data, within ten (10) days of the date of the receipt of the request. If, for good cause, the determination cannot be made within the ten (10) working days, the District will notify the requesting person the reasons for the delay and when the determination is expected to be made within an additional 14 days, as prescribed by law. Those records labeled as "TRADE SECRETS" shall be governed by the procedure set forth in District Rule 177 Section (g).

If you have any questions, please contact Public Records at (858) 586-2618.

Mail or fax completed form to:

San Diego APCD
Public Records
10124 Old Grove Road
San Diego, CA 92131 Phone: (858) 586-2600 Fax No.: (858) 586-2601

01/06

Appendix J

Request for Records Search to the
Regional Water Quality Control Board – San Diego Region and
Response from that Agency

Environmental Support Services
Environmental Research & Due Diligence Compliance
30251 Golden Lantern, #E-305, Laguna Niguel, CA 92677
Tel) 949-429-3564 • Fax) 949-429-3563
www.EnvironmentalSupportServices.com • Info@EnvironmentalSupportServices.com

March 24, 2014

Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Ste 100
San Diego, CA 92123

Attention: LUST/WIP/SLIC/Site Mitigation Divisions

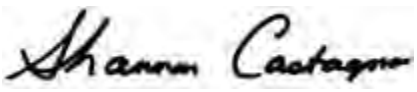
Dear Public Records Request,

Please check for any files/information on the following sites:

Site: Southwest corner of Vine Street and Kettner Blvd.
San Diego, CA 92101
APN 451-690-1800
(see attached map)

I would like to set up an appointment to review this file **as soon as possible**. Anything you can do to expedite this request would be greatly appreciated. Please call me at (949) 429-3564. Thanks!

Sincerely,
Environmental Support Services



Shannon Castagno
Project Manager
Shannon@EnvironmentalSupportServices.com

REDI - Regional Economic Development Information System

SANDAG

Mapping | Locate | Reports

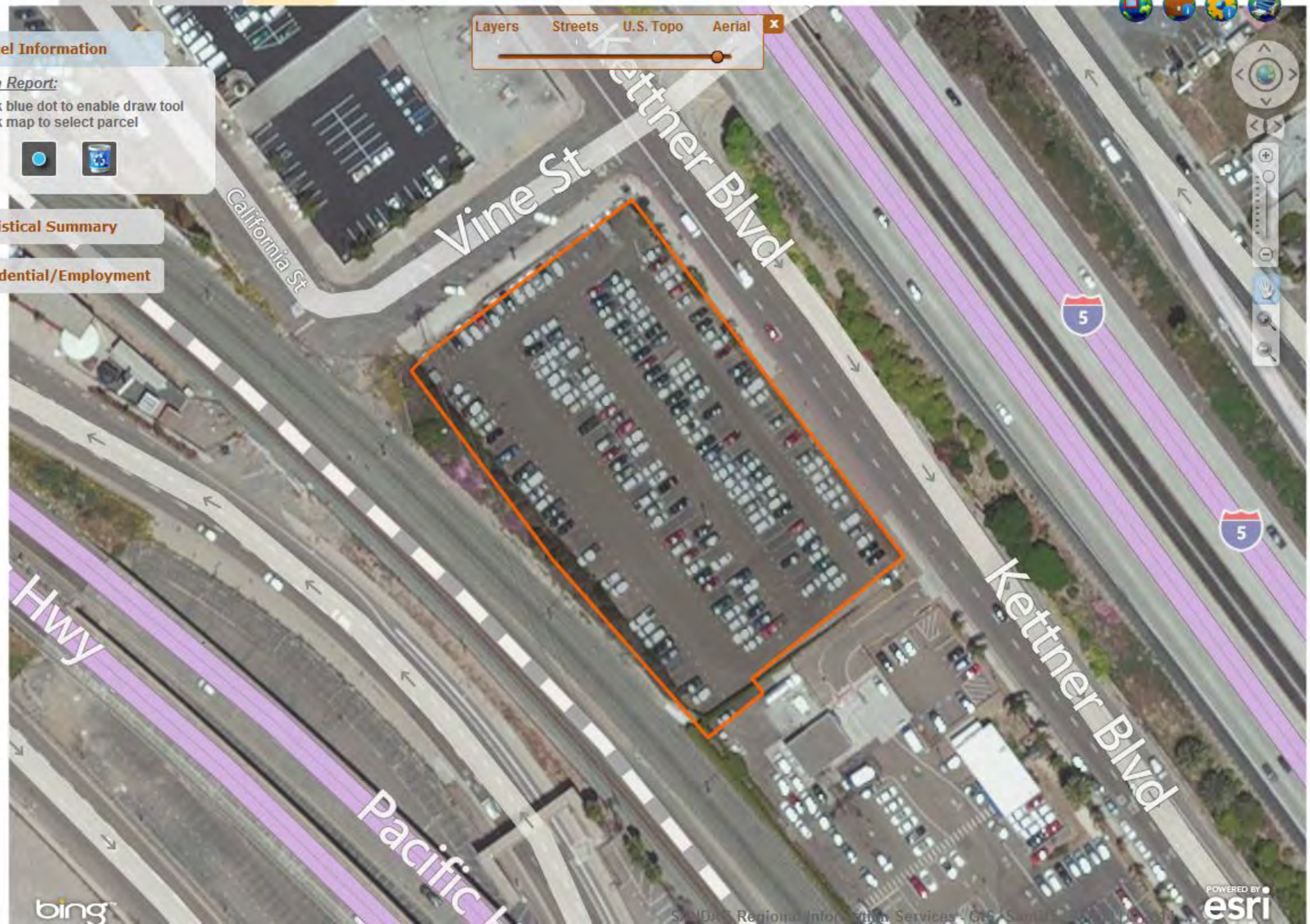
Parcel Information

To Run Report:

1 - Click blue dot to enable draw tool
2- Click map to select parcel

Statistical Summary

Residential/Employment



Environmental Support Services
Environmental Research & Due Diligence Compliance
30251 Golden Lantern, #E-305, Laguna Niguel, CA 92677
Tel) 949-429-3564 • Fax) 949-429-3563
www.EnvironmentalSupportServices.com • Info@EnvironmentalSupportServices.com

March 28, 2014

Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Ste 100
San Diego, CA 92123

Attention: LUST/WIP/SLIC/Site Mitigation Divisions

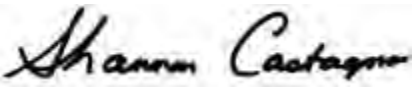
Dear Public Records Request,

Please check for any files/information on the following sites:

Site: 3548 & 3550 Kettner Blvd.
San Diego, CA 92101

I would like to set up an appointment to review this file **as soon as possible**. Anything you can do to expedite this request would be greatly appreciated. Please call me at (949) 429-3564. Thanks!

Sincerely,
Environmental Support Services



Shannon Castagno
Project Manager
Shannon@EnvironmentalSupportServices.com

From: ODonovan, Rachel@Waterboards [rachel.odonovan@waterboards.ca.gov] on behalf of RB9_Records, WB@Waterboards [WB.RB9_Records@waterboards.ca.gov]
Sent: Tuesday, April 01, 2014 10:45 AM
To: Shannon Castagno
Subject: RE: Public Records Request

Hi Shannon!

No records found for either address.....

Have a great day!!!!

Rachel O'Donovan
San Diego Regional Water Quality Control Board
Region 9
2375 Northside Drive, Suite 100
San Diego, CA 92108
619-521-3380

From: Shannon Castagno [mailto:Shannon@EnvironmentalSupportServices.com]
Sent: Friday, March 28, 2014 3:45 PM
To: RB9_Records, WB@Waterboards
Subject: RE: Public Records Request

Hi Rachel,

I just found two old addresses for the APN 451-690-1800, they are 3548 & 3550 Kettner Blvd., San Diego, CA 92101. I found them in the records I received from The San Diego County HMMD. I hope this helps and please let me know if you have any questions. Have a wonderful weekend J

Shannon Castagno
Project Manager
Environmental Support Services
Shannon@EnvironmentalSupportServices.com
(949) 429-3564

From: ODonovan, Rachel@Waterboards [mailto:rachel.odonovan@waterboards.ca.gov] **On Behalf Of** RB9_Records, WB@Waterboards
Sent: Tuesday, March 25, 2014 1:29 PM
To: Shannon Castagno

Subject: RE: Public Records Request

Okay, I will try to dig deeper or do google maps to see what other addresses are around. Please let me know if you come up with an address.

Thanks J

Rachel O'Donovan
San Diego Regional Water Quality Control Board
Region 9
2375 Northside Drive, Suite 100
San Diego, CA 92108
619-521-3380

From: Shannon Castagno [mailto:Shannon@EnvironmentalSupportServices.com]
Sent: Tuesday, March 25, 2014 12:03 PM
To: RB9_Records, WB@Waterboards
Subject: RE: Public Records Request

Hi Rachel,

We don't have a physical address for the site. It is currently a parking lot and was previously a gas station in the 1970's. If I come up with an address, I will get back with you. Thanks J

Shannon Castagno
Project Manager
Environmental Support Services
Shannon@EnvironmentalSupportServices.com
(949) 429-3564

From: ODonovan, Rachel@Waterboards [mailto:rachel.odonovan@waterboards.ca.gov] **On Behalf Of** RB9_Records, WB@Waterboards
Sent: Tuesday, March 25, 2014 7:40 AM
To: Shannon Castagno
Subject: RE: Public Records Request

Hi.
I need a physical address or I will have to pull everything up on the streets. May I have that?

Rachel O'Donovan
San Diego Regional Water Quality Control Board
Region 9

2375 Northside Drive, Suite 100
San Diego, CA 92108
619-521-3380

From: Shannon Castagno [mailto:Shannon@EnvironmentalSupportServices.com]
Sent: Monday, March 24, 2014 8:07 PM
To: RB9_Records, WB@Waterboards
Subject: Public Records Request

Please see attached public records request. Thanks and have a wonderful day.

Shannon Castagno
Project Manager
Environmental Support Services
Shannon@EnvironmentalSupportServices.com
(949) 429-3564

From: r9foia@epa.gov
Sent: Friday, March 28, 2014 5:45 PM
To: Shannon@EnvironmentalSupportServices.com
Subject: FOIA Request EPA-R9-2014-005124 Submitted

This message is to confirm your request submission to the FOIAonline application: View Request. Request information is as follows:

- Tracking Number: EPA-R9-2014-005124
- Requester Name: Shannon Castagno
- Date Submitted: Fri Mar 28 20:45:12 EDT 2014
- Request Status: Submitted
- Description: Site: 3548 & 3550 Kettner Blvd.
  San Diego, CA 92101
  1. utilization, manufacture, storage, or discharge of hazardous materials/waste.
  2. previous or on-going site investigations/remediations pertaining to hazardous materials/ waste.
  3. hazardous materials disclosures concerning the site.
  4. information regarding underground and aboveground storage tank present or previously found at the site.

From: r9foia@epa.gov
Sent: Thursday, April 17, 2014 3:27 PM
To: Shannon@EnvironmentalSupportServices.com
Subject: Final Disposition, Request EPA-R9-2014-005124

Request EPA-R9-2014-005124 has been processed with the following final disposition: No records

RECORDING REQUESTED BY:
Linda Ann Weir, Successor Co-Trustee
5715 Baltimore Drive, No. 141
La Mesa, California 91942

THE ORIGINAL OF THIS DOCUMENT
WAS RECORDED ON DEC 21, 2011
DOCUMENT NUMBER 2011-0688933
Ernest J. Dronenburg, Jr., COUNTY RECORDER
SAN DIEGO COUNTY RECORDER'S OFFICE
TIME: 4:59 PM

WHEN RECORDED, MAIL TO:
Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, California 90630
Attention: Christine P. Brown, Engineering and Special Projects Office

---

COVENANT TO RESTRICT USE OF PROPERTY
ENVIRONMENTAL RESTRICTION

Former Baron Blakeslee Facility South Parcel
3598 California Street
San Diego, CA 92101
San Diego County Assessor's Parcel No. 451-690-57
Department of Toxic Substances Control Site Code: 400208

This Covenant and Agreement ("Covenant") is made by and between Linda Ann Weir, Verna Gail Riley and Leslie Jo Bauman, Successor Co-Trustees of the Thomas O. Bateman and Ivarene Cornelius Bateman Trust dated July 10, 1968 (the "Covenantor"), and the California Department of Toxic Substances Control (the "Department"). Covenantor is the current owner of certain real property situated at 3596 California Street, San Diego, County of San Diego, State of California, described in Exhibit A, Legal Description of property, which is attached hereto and incorporated by this reference (the "Property"). Pursuant to Civil Code section 1471, the Department has determined that this Covenant is reasonably necessary to protect present or future human health or safety or the environment as a result of the presence on the Property of hazardous materials as defined in Health and Safety Code section 25260. The Covenantor and the Department, collectively referred to as the "Parties",

hereby agree that the use of the Property be restricted as set forth in this Covenant and the Parties further agree that the Covenant shall conform to the requirements of Civil Code section 1471, Health and Safety Code section 25202.5, and California Code of Regulations, title 22, section 67391.1.

ARTICLE I

STATEMENT OF FACTS

1.1. The Property is a roughly triangular parcel of land, covering approximately 0.592 acres, and is more particularly described and depicted in Exhibit "B" – Property Plot Plan. The Property is also identified as San Diego County Assessor Parcel Number 451-690-57. The Property consists of a limited part of the area generally bounded by California Street to the northeast, Bean Street to the northwest and land owned by the San Diego Metropolitan Transit System to the southwest. The Property is zoned for industrial use and is surrounded primarily by commercial and light industrial operations. The Property was formerly improved with an office and warehouse that were demolished in July 2008. Covenantor acquired ownership of the Property in 2003. Covenantor and prior owners leased the Property to the facility operators identified below.

1.2. The Property was the location of a virgin chemical sale business operated by T. O. Bateman Chemical Sales Corporation ("Bateman Chemical"). In 1969, Purex Corporation, Ltd. ("Purex") purchased Bateman Chemical and Bateman Chemical subsequently merged into Purex. In 1982, Purex transferred operation of the facility to an affiliate, Baron-Blakeslee, Inc.("BBI"). In 1985, Allied Signal, Inc. ("Allied") purchased BBI and BBI subsequently merged into Allied.

1.3. From December 1969 through 1993, the Property operated as an industrial waste management facility that stored, treated, and recycled waste solvents for refining by distillation or disposal. The facility acted as a distribution facility for the sale of virgin and re-refined chlorinated and fluorinated solvents stored in containers and bulk tanks. Solvents were blended, packaged, and delivered offsite by truck. In addition, spent chemical solvents generated offsite were accepted, stored, and recycled onsite for resale using a distillation unit. These wastes were stored in 55-gallon drums or portable tote tanks. From 1972 to 1988, facility operations also included the handling of acids.

1.4. Purex/BBI operated a hazardous waste facility pursuant to a grant of Interim Status on April 6, 1981 issued by the California Department of Health Services, the Department's predecessor agency. The Department issued a Hazardous Waste Facility Permit to BBI in September 1992.

1.5. In 1993, Allied /BBI ceased its operations and implemented the Closure Plan in the 1992 Hazardous Waste Facility Permit. Allied/BBI submitted a Closure Certification Report to the Department on July 1, 1994. The Department acknowledged the Closure Certification for the Distillation Unit Area and the Storm/Wash Water Tank Area on October 31, 1994. In 1999, Allied/BBI merged into Honeywell International, Inc. ("Honeywell").

1.8. From 1993 through 2005, Allied /BBI and Honeywell conducted a Corrective Action RCRA Facility Investigation ("RFI") of the Property. The RFI confirmed that contaminated soil at three locations exceeded the human-health-risk-based cleanup levels. In 1995, Allied /BBI excavated the soil that was above the cleanup levels as part of the Department-approved Interim Measures. Soil vapor sampling conducted in 2004 and 2005 and an indoor air risk evaluation conducted in

2008 revealed concentrations of tetrachloroethylene and trichloroethylene in soil vapor in excess of human-health-risk-based standards for indoor air in portions of the surface soil and subsurface soil within 10 feet of the surface of the Property.

1.7. There are no enclosed structures currently located on the Property. Based on the risk assessment conducted for the Property and the corrective measures undertaken to date, the Department has concluded that use of the Property as a residence, hospital, school for persons under the age of 21 or day care center would entail an unacceptable human health risk. The Department has further concluded that the Property, as remediated, and subject to the restrictions of this Covenant, does not present an unacceptable threat to human health or safety or the environment.

ARTICLE II

DEFINITIONS

2.1. Department. "Department" shall mean the California Department of Toxic Substances Control and shall include its successor agencies, if any.

2.2. Environmental Restrictions. "Environmental Restrictions" means all protective provisions, covenants, restrictions, prohibitions, and terms and conditions as set forth in any section of this Covenant.

2.3. Improvements. "Improvements" includes, but is not limited to: buildings, structures, roads, driveways, improved parking areas, wells, pipelines, or other utilities.

2.4. Lease. "Lease" means lease, rental agreement, or any other document that creates a right to use or occupy any portion of the Property.

2.5. Owner. "Owner" shall mean the Covenantor, its successors in interest, and their successors in interest, including heirs and assigns, who at any time hold fee title to all or any portion of the Property.

2.6. Occupant. "Occupant" shall mean Owners and any person or entity entitled by ownership, leasehold, or other legal relationship to the right to occupy any portion of the Property.

ARTICLE III

GENERAL PROVISIONS

3.1. Runs with the Land. This Covenant sets forth Environmental Restrictions that apply to and encumber the Property and every portion thereof no matter how it is improved, held, used, occupied, leased, sold, hypothecated, encumbered, or conveyed. This Covenant: (a) runs with the land pursuant to Health and Safety Code section 25202.5, Civil Code section 1471 and California Code of Regulations, title 22, section 67391.1; (b) inures to the benefit of and passes with each and every portion of the Property; (c) is for the benefit of, and is enforceable by the Department; and (d) is imposed upon the entire Property unless expressly stated as applicable only to a specific portion thereof.

3.2. Binding upon Owners/Occupants. Pursuant to Health and Safety Code section 25202.5, Civil Code section 1471 and California Code of Regulations, title 22, section 67391.1, this Covenant binds all owners of the Property, their heirs, successors, and assignees, and the agents, employees, and lessees of the owners, heirs, successors, and assignees. Pursuant to Civil Code section 1471, all successive owners of the Property are expressly bound hereby for the benefit of the Department. It is intended that this Covenant binds all Owners and Occupants, and their respective successors and assigns, only during and with respect to their respective successive periods of ownership or occupancy such that an Owner's or Occupant's rights and obligations under this Covenant shall terminate upon transfer, expiration, or termination

of the Owner's or Occupant's interest in the Property, except that such Owner's or Occupant's liability for any violations of the requirements or restrictions of this Covenant or any acts or omissions during such ownership or occupancy shall survive any transfer, expiration or termination of the Owner's or Occupant's interest in the Property.

3.3. Incorporation into Deeds and Leases. This Covenant shall be incorporated by reference in each and every deed and Lease for any portion of the Property.

3.4. Conveyance of Property. The Owner shall provide written notice to the Department not later than thirty (30) days after any conveyance of any ownership interest in the Property (excluding Leases, and mortgages, liens, and other non-possessory encumbrances). The written notice shall include the name and mailing address of the new owner of the Property and shall reference the site name and site code as listed on page one of this Covenant. The notice shall also include the Assessor's Parcel Number (APN) noted on page one. If the new owner's property has been assigned a different APN, each such APN that covers the Property must be provided. The Department shall not, by reason of this Covenant, have authority to approve, disapprove, or otherwise affect the proposed conveyance, except as otherwise provided by law or by administrative order.

3.5. Costs of Administering and Enforcing the Covenant.

The Department will incur costs associated with the implementation, administration and enforcement of this Covenant. Therefore, the Covenantor hereby covenants for the Covenantor and for all subsequent Owners that, pursuant to California Code of Regulations, title 22, section 67391.1(h), the Owner agrees to pay the Department's costs in implementing, administering and enforcing the Covenant except for costs that

Honeywell agrees to pay under the Land Use Covenant Implementation and Enforcement Agreement entered into between DTSC and Honeywell, a copy of which is attached hereto as Exhibit C. In the event that Honeywell fails to comply with the terms of the Land Use Covenant Implementation and Enforcement Agreement, the Owner shall pay the Department's costs incurred in implementing, administering and enforcing this Covenant pursuant to California Code of Regulations, title 22, section 67391.1(h).

ARTICLE IV

RESTRICTIONS AND REQUIREMENTS

4.1. Prohibited Uses. The use of the Property shall be restricted for commercial and industrial purposes only. The Property shall not be used for any of the following purposes:

(a) A residence, including any mobile home or factory-built housing, constructed or installed for use as residential human habitation.

(b) A hospital for humans.

(c) A public or private school for persons under 21 years of age.

(d) A day care center for children.

4.2. Soil Management

(a) Activities that will disturb the soil, such as excavation, grading, removal, trenching, filling, earth movement or mining, shall only be permitted on the Property pursuant to a Soil Management Plan and a Health and Safety Plan as approved by the Department.

(b) Any contaminated soil brought to the surface by grading, excavation, trenching, or backfilling shall be managed in accordance with all applicable

provisions of state and federal laws.

4.3. Future Buildings.

No new buildings may be allowed on the Property unless there are Department-approved engineering controls, such as increased ventilation, thicker foundations and/or vapor barrier linings, to prevent potential indoor exposure to volatile organic compounds. For the purpose of this Section 4.3, the term "building" does not include roofed structures without walls, and Section 4.3 shall not apply to the construction of such structures.

4.4. Prohibited Activities. The following activities shall not be conducted at the Property:

(a) Raising of cattle, food crops or agricultural products.

(b) Drilling for drinking water, oil, or gas.

(c) Extraction of ground water for purposes other than the Department-approved groundwater monitoring or site remediation activities.

(d) Any activity that may interfere with the performance of any site investigation or remediation activities.

4.5. Access for Department. The Covenantor agrees that the Department shall have reasonable right of entry and access to the Property for inspection, monitoring, and other activities consistent with the purposes of this Covenant as deemed necessary by the Department in order to protect public health and safety or the environment.

4.6. Access for Implementing Operation and Maintenance Activities.

The Covenantor agrees that the entity or person responsible for implementing any operation and maintenance activities shall have reasonable right of entry and access to the Property for the purpose of implementing such operation and

maintenance activities until such time as the Department determines that no further operation and maintenance activities are required.

4.7. Inspection and Reporting Requirements.

The Owner shall conduct an annual inspection of the Property verifying compliance with this Covenant, and shall submit an annual report to the Department by January 15 of each calendar year. The annual report must include the dates, times, and names of those who conducted and reviewed the annual inspection. It also shall describe how the observations were performed and the basis for the statements and conclusions in the annual report (e.g., drive-by, walk-in, etc.). If violations of this Covenant are noted by the observer, the annual report must detail the steps taken to return to compliance. If the Owner identifies any violations of this Covenant during the annual inspections or at any other time, the Owner must within 10 days of identifying the violation, determine the identity of the party in violation, send a letter advising the party of the violation of this Covenant and demand that the violation cease immediately. Additionally, copies of any correspondence related to the enforcement of the Covenant shall be sent to the Department within 10 days of its original transmission.

ARTICLE V

ENFORCEMENT

5.1. Enforcement. Failure of the Owner or Occupant to comply with this Covenant shall be grounds for the Department to require modification or removal of any Improvements constructed or placed upon any portion of the Property in violation of this Covenant. Violation of this Covenant, including but not limited to, failure to submit, or the submission of any false statement, record or report to the Department, shall be grounds for the Department to pursue administrative, civil, or criminal actions, as

provided by law.

ARTICLE VI

VARIANCE, TERMINATION, AND TERM

6.1. Variance. The Owner, or any other aggrieved person, may apply to the Department for a written variance from the provisions of this Covenant. Such application and any response thereto by the Department shall be made in accordance with Health and Safety Code sections 25202.6 and/or 25233.

6.2. Termination or Partial Termination. The Owner, or any other aggrieved person, may apply to the Department for a termination or partial termination of one or more terms of this Covenant as they apply to all or any portion of the Property. Such application and any response thereto by the Department shall be made in accordance with Health and Safety Code sections 25202.6 and/or 25234.

6.3. Term. Unless ended in accordance with paragraph 6.2 above, by law, or by the Department in the exercise of its discretion, this Covenant shall continue in effect in perpetuity.

ARTICLE VII

MISCELLANEOUS

7.1. No Taking or Dedication Intended. Nothing set forth in this Covenant shall be construed to be a gift or dedication, or offer of a gift or dedication, of the Property, or any portion thereof to the general public or anyone else for any purpose whatsoever. Further, nothing set forth in this Covenant shall be construed to effect a taking under federal or state law.

7.2. Recordation. The Covenantor shall record this Covenant, with all referenced Exhibits, in San Diego County within ten (10) days of the Covenantor's

receipt of a fully executed original.

7.3. Notices. Whenever any person gives or serves any notice ("Notice" as used herein includes any demand or other communication with respect to this Covenant), each such Notice shall be in writing and shall be deemed effective: (a) when delivered, if personally delivered to the person being served or to an officer of a corporate party being served, or (b) three business days after deposit in the mail, if mailed by United States mail, postage paid, certified, return receipt requested:

To Owner:

Covenantor: Linda Ann Weir, Successor Co-Trustee
5715 Baltimore Drive, No. 141
La Mesa, California 91942

With a Required Copy to:

R. Gordon Huckins, Esq.
Fox Johns Lazar Pekin & Wexler
525 B Street, Suite 1500
San Diego CA 92101

Or: (Name and address of any new owner as identified to the Department pursuant to Section 3.4 of this Covenant)

To Department: Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, California 90630
Attention: Project Manager

The Owner shall immediately forward any notice to the Occupant(s) if the Occupant(s) are affected by such notice. Any party may change its address or the individual to whose attention a notice is to be sent by giving written notice in compliance with this paragraph.

7.4. Partial Invalidity. If any portion of the Environmental Restrictions or other terms set forth herein is determined by a court of competent jurisdiction to be invalid for any reason, the surviving portions of this Covenant shall remain in full force and effect

as if such portion found invalid had not been included herein.

7.5. Statutory References. All statutory references include successor provisions.

7.6. Incorporation of Attachments. All attachments and exhibits to this Covenant are incorporated herein by reference.

IN WITNESS WHEREOF, the Parties execute this Covenant.

"Covenantor"

Date: 11.14.2011 By: Linda Ann Weir, II E
Linda Ann Weir, Successor Co-Trustee of the Thomas O. Bateman and Ivarene Cornelius Bateman Trust dated July 10, 1968

Date: _____ By: _____
Verna Gail Riley, Successor Co-Trustee of the Thomas O. Bateman and Ivarene Cornelius Bateman Trust dated July 10, 1968

Date: _____ By: _____
Leslie Jo Bauman, Successor Co-Trustee of the Thomas O. Bateman and Ivarene Cornelius Bateman Trust dated July 10, 1968

"Department"

Date: _____ By: _____
Representing Department of Toxic Substances Control

_____
Print Name and Title

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Date: 11/14/11 By: _____
Verna Gail Riley, Successor Co-Trustee of the Thomas O. Bateman and Ivarene Cornelius Bateman Trust dated July 10, 1968

Date: _____ By: _____
Leslie Jo Bauman, Successor Co-Trustee of the Thomas O. Bateman and Ivarene Cornelius Bateman Trust dated July 10, 1968

"Department"

Date: _____ By: _____
Representing Department of Toxic Substances Control

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Representing Department of Toxic Substances Control

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Date: _____ By: _____
Verna Gail Riley, Successor Co-Trustee of the Thomas O. Bateman and Ivarene Comelius Bateman Trust dated July 10, 1968

Date: _____ By: _____
Leslie Jo Bauman, Successor Co-Trustee of the Thomas O. Bateman and Ivarene Comelius Bateman Trust dated July 10, 1968

"Department"

Date: 12/2/2011 By: _____
Representing Department of Toxic Substances Control

Jie-Tsong Liu, Supervising Hazardous Substances Engineer I
Print Name and Titla

State of California

County of SAN DIEGO

On NOVEMBER 14, 2011 before me, MARIETTE A. PASCASIO, Notary Public, personally appeared LINDA ANN WEIR who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that ~~he~~/she/~~they~~ executed the same in ~~his~~/her/~~their~~ authorized capacity(i~~es~~), and that by ~~his~~/her/~~their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

MARIETTE A. PASCASIO
Commission # 1898441
Notary Public - California
San Diego County
My Comm. Expires Aug 6, 2014

Signature Mariette A. Pascasio (Seal)

ACKNOWLEDGMENT CERTIFICATE

State of California,
County of San Luis Obispo } ss.

On November 16th, 2011, before me, Inigo F. Garate, Notary Public for said State, personally appeared Verna Gail Riley,
who proved to me on the basis of satisfactory evidence to be the person~~(s)~~ whose name~~(s)~~ is~~/are~~ subscribed to the within instrument and acknowledged to me that ~~he~~/she~~/they~~ executed the same in ~~his~~/her/~~their~~ authorized capacity~~(ies)~~, and that by ~~his~~/her/~~their~~ signature~~(s)~~ on the instrument the person~~(s)~~, or the entity upon behalf of which the person~~(s)~~ acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

INIGO F. GARATE
Commission # 1923462
Notary Public - California
San Luis Obispo County
My Comm. Expires Feb 20, 2015

Inigo F. Garate
Signature of Notary

Place Notary Seal Above

NOTORIAL ACKNOWLEDGEMENT

Type/Title of Document: COVENANT TO RESTRICT USE OF PROPERTY_

ENVIRONMENTAL RESTRICTION_____

Description of Document: _____

_____

_____

Signed by: _LESLIE JO BAUMAN_____

_____

Document Date: ___Signed 11/14/2011_____

Number of pages attached: ____15_____

****

State of ARIZONA

County of Pima

On this 14 day of November, 20 11, before me personally appeared Leslie Jo Bauman, whose identity was proven to me on the basis of satisfactory evidence to be the person who he or she claims to be, and acknowledged that he or she signed the ~~above~~/attached document.

(Seal) OFFICIAL SEAL
DAVID Y. FLOREZ
NOTARY PUBLIC-ARIZONA
PIMA COUNTY
My Comm. Exp. May 25, 2014

Notary Public Signature

My commission expires on May 25, 2014

Notary: 7/26/2011

State of Califomia

County of Orange

On December 2nd 2011 before me, Randy DeTarr,

Notary Public, personally appaared Jytseng Liu who proved to ma on the basis of satisfactory avidence to be tha person(s) whose nama(s) is/~~are~~ subscribed to tha within instrumant and acknowledged to ma that ha/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(s) on tha instrument the parson(s), or the antity upon behalf of which the person(s) acted, executed tha instrumant.

I certify undar PENALTY OF PERJURY undar tha laws of the State of California that tha foregoing paragraph is trua and correct.

WITNESS my hand and official seal.

Signature _____ (Seal)

RANDY DETARR
COMM. #1851185
NOTARY PUBLIC -CALIFORNIA
ORANGE COUNTY
My Comm. Expires May 29, 2013

EXHIBIT A

LEGAL DESCRIPTION OF PROPERTY

THAT PORTION OF PARCEL 1 OF PARCEL MAP NO. 2761, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, JUNE 14, 1974 AS FILE NO. 74-159652 OF OFFICIAL RECORDS, LYING SOUTHWESTERLY OF THE FORMER CENTER LINE OF THAT PORTION OF KURTZ STREET VACATED AND CLOSED TO PUBLIC USE BY DOCUMENT NO. 74-157788 OF OFFICIAL RECORDS FILED JUNE 13,1974, DEPICTED AS ASSESSOR PARCEL NO. 451-690-57 ON SAN DIEGO COUNTY ASSESSOR MAP NO. 451-69 AS OF 2007, COMMONLY KNOWN AS 3596 CALIFORNIA STREET

EXHIBIT B

PROPERTY PLOT PLAN

EXHIBIT C

In the matter of: Former Baron Blakeslee Facility- South Parcel 3596 California Street San Diego, CA 92101 County of San Diego APN 451-690-57	LAND USE COVENANT IMPLEMENTATION AND ENFORCEMENT AGREEMENT Civil Code section 1471; Health and Safety Code section 25202.5; California Code of Regulations, title 22, section 67391.1

The California Department of Toxic Substances Control ("Department") and Honeywell International, Inc. ("Honeywell") enter into this Land Use Covenant Implementation and Enforcement Agreement ("Agreement") and agree as follows:

1. Land Use Covenant. The Department and Linda Ann Weir, Vema Gail Riley and Leslie Jo Bauman, Successor Co-Trustees of the Thomas O. Bateman and Ivarene Cornelius Bateman Trust dated July 10, 1968 ("Successor Co-Trustees") entered into a Covenant to Restrict Use of Property (also known as Land Use Covenant or "LUC") for the Former Baron Blakeslee Facility – South Parcel, located at 3596 California Street, San Diego, CA 92101 (the "Property") as part of the Corrective Measures Remedy approved by the Department for the Property. The Property is currently owned by Successor Co-Trustees. The Property is generally described as County of San Diego Assessor Parcel Number 451-690-57.

2. Reimbursement of Department's Costs. The Department may incur costs associated with the implementation, enforcement and administration of the LUC such as costs to be incurred in reviewing the Soil Management Plans or Health and Safety Plans required by Paragraph 4.2 of the LUC, or the annual inspection reports required by Paragraph 4.7 of the LUC. Pursuant to California Code of Regulations, title 22, section 67391.1(h), Honeywell agrees to reimburse the Department for its costs incurred in implementing, enforcing and administering the Land Use Covenant except that Honeywell will not pay for the Department's costs incurred solely for taking enforcement actions to address any violations of the LUC for which Honeywell or its employees or agents are not responsible. Honeywell agrees to make the payment within 30 days of

receipt of the Department's billing by check payable to the "Department of Toxic Substances Control", and beering on its face the Site Code "400208".. Payments shall be sent to: Department of Toxic Substances Control, Accounting Office, P. O. Box 806, Sacramento, California 95812-0806. A photocopy of the check shall be sent concurrently to the Department's Project Manager. The Department shall retain all cost records associated with the work conducted under this Agreement as may be required by state law. The Department will make all documents that support the Department's cost determination available for inspection upon request in accordance with the Public Records Act, Government Code section 6250 et seq. Nothing in this paragraph bars Honeywell from seeking a remedy in any court of competent jurisdiction against any third party who may have caused or contributed to a violation of the LUC, including, but not limited to, an action to recover costs which Honeywell has paid to the Department pursuant to this paragraph.

3. Financial Assurance. Honeywell must assure that sufficient funds are available to implement all the requirements of this Agreement and to pay DTSC's costs as specified in Paregraph 2 of this Agreement. Honeywell has established an Irrevocable Standby Letter of Credit (No. 004657202) issued by Mizuho Corporate Bank (USA) for the amount of $30,000 as the financial assurance mechanism that meets DTSC's requirements.

4. Project Managers. For the purposes of implementing this Agreement, Mr. Tao Wu will serve as Honeywell's Project Manager and Ms. Christine Brown will serve as the Department's Project Manager. The Department and Honeywell shall promptly notify each other of any change in the identity of the Project Manager. Notices, submittals and other communications between the Department and Honeywell shall be sent to:

To: Department of Toxic Substances Control
Department of Toxic Substances Control
5796 Cypress Avenue
Cypress, CA 90630
Attention: Project Manager

To: Honeywell International, Inc.
Attention: Mr. Tao Wu
Health, Safety and Environmental Engines, Systems & Services

P.O. Box 52181
Phoenix, AZ 85072

5. Parties Bound. This Agreement epplies to and is binding upon Honeywell and its officers, directors, agents, employees, contractors, consultants, receivers, trustees, successors and assignees, including but not limited to individuals, partners, and subsidiary and parent corporations, and upon the Depertment and eny successor agency of the State of Califomia that may have responsibility for and jurisdiction over the subject matter of this Agreement.

8. Effective Date. The effective date of this Agreement is the date of signature by the Department's euthorized representative.

7. Representetive Authority. Each undersigned representative of the parties to this Agreement certifies that she or he is fully authorized to enter into the terms and conditions of this Agreement end to execute and legally bind the parties to this Agreement.

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

_____ Date: November 16, 2011

Name: Ju-Tsong Liu

Title: Supervising Hazardous Substances Engineer I.

HONEYWELL INTERNATIONAL, INC.

_____ Dete: November 7, 2011

Name: TAO WU

Title: Remediation Manager

Work Plan

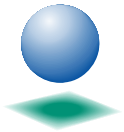
Groundwater Monitoring Well Installation Work Plan

Former Baron Blakeslee Facility, Inc.
San Diego, California

Prepared for

Honeywell International Inc.

Submitted by



CH2MHILL

May 2008

EXPLANATION

MW-9S 10.87 Groundwater Elevation (feet msl)

Shallow Groundwater Monitoring Well

Piezometer

11.80 Line of approximate equal groundwater elevation in feet relative to mean sea level (msl) Contour Interval = 0.10 feet (Inferred where dashed)

Approximate Site Boundary

0 60 120 240

Feet

FIGURE 2-5
SHALLOW WELL GROUNDWATER CONTOUR MAP – OCTOBER 2007
FORMER BARON BLAKESLEE FACILITY
SAN DIEGO, CALIFORNIA

EXPLANATION

MW-9D 11.87 Groundwater Elevation (feet msl)

Deep Groundwater Monitoring Well

Piezometer

12.10 Line of Approximate Equal Groundwater Elevation in Feet Relative to Mean Sea level (MSL) Contour Interval = 0.20 feet (Inferred where dashed)

Approximate Site Boundary

Note:
PZ3B and MW-5D were not used for contouring the deep water zone, because these wells are not screened in the same lithologic unit.

0 60 120 240
Feet

FIGURE 2-6
DEEP WELL GROUNDWATER CONTOUR MAP – OCTOBER 2007
FORMER BARON BLAKESLEE FACILITY
SAN DIEGO, CALIFORNIA

CH2MHILL

APPENDIX C
EDR Radius Map

Vine Street Substation
3550 Kettner Blvd
San Diego, CA 92101

Inquiry Number: 3889802.2s
March 24, 2014

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

3550 KETTNER BLVD
SAN DIEGO, CA 92101

COORDINATES

Latitude (North):	32.7389000 - 32 44' 20.04''
Longitude (West):	117.1790000 - 117 10' 44.40''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	483229.1
UTM Y (Meters):	3622166.0
Elevation:	68 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	32117-F2 POINT LOMA, CA
Most Recent Revision:	1994
North Map:	32117-G2 LA JOLLA, CA
Most Recent Revision:	1996

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2012
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 8 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
SOLOMON JACOB 3550 KETTNER BLVD SAN DIEGO, CA	EDR US Hist Auto Stat	N/A

EXECUTIVE SUMMARY

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
LUCIS ---------- Land Use Control Information System

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

CA RESPONSE ---------- State Response Sites

State and tribal landfill and/or solid waste disposal site lists

CA SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

INDIAN UST ---------- Underground Storage Tanks on Indian Land
FEMA UST ---------- Underground Storage Tank Listing

State and tribal voluntary cleanup sites

CA VCP ---------- Voluntary Cleanup Program Properties
INDIAN VCP ---------- Voluntary Cleanup Priority Listing

EXECUTIVE SUMMARY

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI ..... Open Dump Inventory
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
CA SWRCY ..... Recycler Database
CA HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ..... Clandestine Drug Labs
CA HIST Cal-Sites ..... Historical Calsites Database
CA SCH ..... School Property Evaluation Program
CA CDL ..... Clandestine Drug Labs
US HIST CDL ..... National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST ..... Facility Inventory Database

Local Land Records

LIENS 2 ..... CERCLA Lien Information
CA LIENS ..... Environmental Liens Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
CA LDS ..... Land Disposal Sites Listing
CA MCS ..... Military Cleanup Sites Listing
CA SPILLS 90 ..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

DOT OPS ..... Incident and Accident Data
DOD ..... Department of Defense Sites
FUDS ..... Formerly Used Defense Sites
CONSENT ..... Superfund (CERCLA) Consent Decrees
ROD ..... Records Of Decision
UMTRA ..... Uranium Mill Tailings Sites
US MINES ..... Mines Master Index File
TSCA ..... Toxic Substances Control Act
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS ..... FIFRA/TSCA Tracking System Administrative Case Listing
SSTS ..... Section 7 Tracking Systems
ICIS ..... Integrated Compliance Information System

PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database
RAATS RCRA Administrative Action Tracking System
RMP Risk Management Plans
CA BOND EXP. PLAN Bond Expenditure Plan
CA UIC UIC Listing
CA Cortese "Cortese" Hazardous Waste & Substances Sites List
CA CUPA Listings CUPA Resources List
INDIAN RESERV Indian Reservations
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
CA PROC Certified Processors Database
CA HWT Registered Hazardous Waste Transporter Database
CA WDS Waste Discharge System
CA MWMP Medical Waste Management Program Listing
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
PRP Potentially Responsible Parties
COAL ASH DOE Steam-Electric Plant Operation Data
2020 COR ACTION 2020 Corrective Action Program List
LEAD SMELTERS Lead Smelter Sites
EPA WATCH LIST EPA WATCH LIST

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP EDR Proprietary Manufactured Gas Plants

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

CA RGA LF Recovered Government Archive Solid Waste Facilities List
CA RGA LUST Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

Federal CERCLIS NFRAP site List

CERC-NFRAP: Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

A review of the CERC-NFRAP list, as provided by EDR, and dated 10/25/2013 has revealed that there are 3 CERC-NFRAP sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HONEYWELL INC	***3596 CALIFORNIA ST***	***NW 0 - 1/8 (0.080 mi.)***	***F30***	***60***
GENERAL DYNAMICS CONVAIR DIVIS	***3302 PACIFIC HWY***	***S 1/8 - 1/4 (0.155 mi.)***	***H47***	***135***
AMERICAN AGAR & CHEM CO	1751 HANCOCK ST	NW 1/4 - 1/2 (0.308 mi.)	P84	186

Federal RCRA CORRACTS facilities list

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 09/10/2013 has revealed that there are 3 CORRACTS sites within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HONEYWELL INC	***3596 CALIFORNIA ST***	***NW 0 - 1/8 (0.080 mi.)***	***F30***	***60***
UOP INC FLUID SYSTEMS DIV	***2980 N HARBOR DRIVE***	***SSW 1/2 - 1 (0.758 mi.)***	***Z117***	***292***
SOLAR TURBINES INC	***2200 PACIFIC HWY***	***SSE 1/2 - 1 (0.888 mi.)***	***AA126***	***379***

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-TSDF list, as provided by EDR, and dated 09/10/2013 has revealed that there is 1 RCRA-TSDF site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HONEYWELL INC	***3596 CALIFORNIA ST***	***NW 0 - 1/8 (0.080 mi.)***	***F30***	***60***

EXECUTIVE SUMMARY

Federal RCRA generators list

RCRA-LQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

A review of the RCRA-LQG list, as provided by EDR, and dated 09/10/2013 has revealed that there is 1 RCRA-LQG site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HONEYWELL INC	***3596 CALIFORNIA ST***	***NW 0 - 1/8 (0.080 mi.)***	***F30***	***60***

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 09/10/2013 has revealed that there are 5 RCRA-SQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ADVANCED COATINGS TECHNOLOGIES	***3554 KETTNER BLVD***	***N 0 - 1/8 (0.012 mi.)***	***A4***	***9***
ARTS AND CRAFTS PRESS	***3590 KETTNER BLVD***	***NNW 0 - 1/8 (0.037 mi.)***	***C8***	***13***
CHEVRON STATION 93509	***3535 INDIA ST***	***NE 0 - 1/8 (0.062 mi.)***	***E15***	***29***
A T S	***3617 INDIA ST***	***N 0 - 1/8 (0.105 mi.)***	***G35***	***93***
Lower Elevation	**Address**	**Direction / Distance**	**Map ID**	**Page**
SAN DIEGO UNIFIED PORT DISTRIC	***3165 PACIFIC HIGHWAY***	***SSE 1/8 - 1/4 (0.247 mi.)***	***N76***	***158***

State- and tribal - equivalent CERCLIS

CA ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the CA ENVIROSTOR list, as provided by EDR, and dated 02/03/2014 has revealed that there are 20 CA ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RYAN AIRCRAFT CO Status: Inactive - Needs Evaluation		SE 1/4 - 1/2 (0.474 mi.)	T106	236

EXECUTIVE SUMMARY

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NEYENESCH PRINTERS INC Status: No Further Action	***2750 KETTNER BL***	***SE 1/2 - 1 (0.517 mi.)***	***109***	***244***

Lower Elevation	Address	Direction / Distance	Map ID	Page
HONEYWELL INC Status: Refer: RCRA Status: Active	***3596 CALIFORNIA ST***	***NW 0 - 1/8 (0.080 mi.)***	***F30***	***60***
CONSOLIDATED AIRCRAFT MAIN PLT Status: Inactive - Needs Evaluation		SW 0 - 1/8 (0.108 mi.)	36	94
GENERAL DYNAMICS- CONVAIR DIV Status: Refer: 1248 Local Agency	***3302 PACIFIC HY***	***S 1/8 - 1/4 (0.155 mi.)***	***H44***	***103***
AMERICAN AGAR AND CHEMICAL CO Status: Refer: Other Agency	***1751 HANCOCK ST***	***NW 1/4 - 1/2 (0.308 mi.)***	***P85***	***186***
SAN DIEGO MUNICIPAL AIRPORT Status: Inactive - Needs Evaluation		SW 1/4 - 1/2 (0.423 mi.)	S96	205
CAMP CONSAIR Status: Inactive - Needs Evaluation		SSW 1/4 - 1/2 (0.427 mi.)	S100	224
SAN DIEGO GUN TOWER #1 Status: Inactive - Needs Evaluation		WNW 1/2 - 1 (0.669 mi.)	112	247
PACIFIC SERVICES COMPANY Status: Refer: RWQCB	***4085 PACIFIC HIGHWAY***	***WNW 1/2 - 1 (0.744 mi.)***	***Y115***	***286***
U.O.P. INC - FLUID SYSTEMS DIV Status: Inactive - Needs Evaluation	***2980 N HARBOR DRIVE***	***SSW 1/2 - 1 (0.758 mi.)***	***Z118***	***296***
OLD TOWN TROLLEY Status: Refer: RWQCB	2105-2115 KURTZ ST	WNW 1/2 - 1 (0.763 mi.)	Y119	299
SOLAR AIRCRAFT CORP Status: Inactive - Needs Evaluation		SSE 1/2 - 1 (0.781 mi.)	120	300
HANCOCK ST. SELF-STORAGE DEVEL Status: Refer: 1248 Local Agency	2150-2182 HANCOCK STREE	WNW 1/2 - 1 (0.824 mi.)	121	301
POWAY INVESTMENT PROPERTIES Status: Refer: 1248 Local Agency	829 W. JUNIPER STREET	SE 1/2 - 1 (0.839 mi.)	123	302
COAST GUARD AIR BASE Status: Inactive - Needs Evaluation		SSW 1/2 - 1 (0.856 mi.)	124	303
SOLAR TURBINES, INCORPORATED Status: Refer: RCRA Status: Active	***2200 PACIFIC HWY***	***SSE 1/2 - 1 (0.888 mi.)***	***AA125***	***304***
VIETNAM VETERANS OF SD Status: No Further Action	***4141 PACIFIC HY***	***WNW 1/2 - 1 (0.890 mi.)***	***127***	***409***
SAN DIEGO BARRACKS Status: Inactive - Needs Evaluation		SSE 1/2 - 1 (0.918 mi.)	AA128	412
MFG PLANT ANX DPC, SAN DIEGO Status: Inactive - Needs Evaluation		WNW 1/2 - 1 (0.941 mi.)	129	413

EXECUTIVE SUMMARY

State and tribal leaking storage tank lists

CA LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the State Water Resources Control Board Leaking Underground Storage Tank Information System.

A review of the CA LUST list, as provided by EDR, and dated 12/16/2013 has revealed that there are 27 CA LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
INDIA CHEVRON	***3535 INDIA ST***	***NE 0 - 1/8 (0.062 mi.)***	***E14***	***25***
Status: Completed - Case Closed				
CHEVRON	***3535 INDIA ST***	***NE 0 - 1/8 (0.062 mi.)***	***E16***	***30***
UNOCAL SERV STATION #5738	***3585 INDIA ST***	***NNE 0 - 1/8 (0.077 mi.)***	***C27***	***53***
Status: Completed - Case Closed				
J M A N AT THE CHARMER LLC	3625 INDIA ST	N 0 - 1/8 (0.122 mi.)	G38	95
Status: Completed - Case Closed				
WILLIAM W. NEWKIRK (MOBIL OIL)	***1809 W WASHINGTON ST***	***NNW 1/4 - 1/2 (0.296 mi.)***	***O80***	***177***
Status: Completed - Case Closed				
MOBILE STATION 18-GDR	***1809 WASHINGTON ST W***	***NNW 1/4 - 1/2 (0.298 mi.)***	***O81***	***183***
G&M STATION #106	***1832 W WASHINGTON ST***	***NNW 1/4 - 1/2 (0.303 mi.)***	***O82***	***184***
Status: Completed - Case Closed				
ALAMO RENT A CAR	2942(3066) KETTNER BLVD	SE 1/4 - 1/2 (0.376 mi.)	Q88	192
ALAMO RENT-A-CAR	***2942 KETTNER BLVD***	***SE 1/4 - 1/2 (0.402 mi.)***	***Q93***	***196***
ALAMO RENT A CAR	***2942 KETTNER BL***	***SE 1/4 - 1/2 (0.402 mi.)***	***Q94***	***200***
Status: Completed - Case Closed				
7-ELEVEN FOOD STORE #19974	***3070 REYNARD WY***	***ESE 1/4 - 1/2 (0.496 mi.)***	***V108***	***240***
Status: Completed - Case Closed				

Lower Elevation	Address	Direction / Distance	Map ID	Page
LINDBERGH FIELD	***3698 PACIFIC HWY***	***SW 0 - 1/8 (0.075 mi.)***	***B22***	***41***
LINDBERGH FIELD	***3698 PACIFIC***	***SW 0 - 1/8 (0.075 mi.)***	***B23***	***50***
Status: Completed - Case Closed				
GENERAL DYNAMICS- CONVAIR DIV	***3302 PACIFIC HY***	***S 1/8 - 1/4 (0.155 mi.)***	***H44***	***103***
Status: Completed - Case Closed				
Status: Open - Site Assessment				
GENERAL DYNAMICS- CONVAIR DIV	***3302 PACIFIC HWY***	***S 1/8 - 1/4 (0.155 mi.)***	***H45***	***116***
GENERAL DYNAMICS CONVAIR DIVIS	***3302 PACIFIC HWY***	***S 1/8 - 1/4 (0.155 mi.)***	***H47***	***135***
GENERAL DYNAMICS, LIND. FIELD	3302 PACIFIC HWY NO BLD	S 1/8 - 1/4 (0.155 mi.)	H48	142
GENERAL DYNAMICS CONVAIR DIV.	***3302 PACIFIC HWY***	***S 1/8 - 1/4 (0.155 mi.)***	***H50***	***145***
AMERICAN AGAR AND CHEMICAL CO	***1751 HANCOCK ST***	***NW 1/4 - 1/2 (0.308 mi.)***	***P85***	***186***
Status: Completed - Case Closed				
SOUTHWEST CAR RENTAL	***2975 PACIFIC HY***	***SSE 1/4 - 1/2 (0.382 mi.)***	***R89***	***193***
Status: Completed - Case Closed				
JIMSAIR AVIATION SERVICES INC	***LINDBERGH FIELD***	***SSE 1/4 - 1/2 (0.426 mi.)***	***R98***	***207***
LANDMARK AVIATION	***2904 PACIFIC HWY***	***SSE 1/4 - 1/2 (0.426 mi.)***	***R99***	***215***
Status: Completed - Case Closed				
JONES FAMILY TRUST	***1411 PALM***	***SSE 1/4 - 1/2 (0.434 mi.)***	***T101***	***225***
AMERICAN VETERANS THRIFT STORE	***3441 SUTHERLAND ST***	***WNW 1/4 - 1/2 (0.440 mi.)***	***U102***	***226***
GRAYLINE/SAN DIEGO	***3442 SUTHERLAND ST***	***WNW 1/4 - 1/2 (0.442 mi.)***	***U103***	***230***
ALL COUNTY ENGINE SYSTEMS INC	***3442 SUTHERLAND ST***	***WNW 1/4 - 1/2 (0.442 mi.)***	***U104***	***232***
Status: Completed - Case Closed				

EXECUTIVE SUMMARY

Lower Elevation	Address	Direction / Distance	Map ID	Page
JONES FAMILY TRUST Status: Completed - Case Closed	NONE PALM AV	SE 1/4 - 1/2 (0.442 mi.)	T105	235

CA SLIC: SLIC Region comes from the California Regional Water Quality Control Board.

A review of the CA SLIC list, as provided by EDR, and dated 12/16/2013 has revealed that there are 10 CA SLIC sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HERTZ CORPORATION KETTNER Facility Status: Completed - Case Closed	3420 KETTNER BL	SE 0 - 1/8 (0.045 mi.)	D10	18
INDIA CHEVRON Facility Status: Completed - Case Closed	***3535 INDIA ST***	***NE 0 - 1/8 (0.062 mi.)***	***E14***	***25***
READING FAMILY TRUST/RESIDENCE Facility Status: Completed - Case Closed	***3447 KITE ST***	***NE 1/4 - 1/2 (0.279 mi.)***	***78***	***176***
G&M STATION #106 Facility Status: Completed - Case Closed	***1832 W WASHINGTON ST***	***NNW 1/4 - 1/2 (0.303 mi.)***	***O82***	***184***

Lower Elevation	Address	Direction / Distance	Map ID	Page
GENERAL DYNAMICS- CONVAIR DIV Facility Status: Completed - Case Closed	***3302 PACIFIC HY***	***S 1/8 - 1/4 (0.155 mi.)***	***H44***	***103***
NORTHSIDE SAN DIEGO INTERNATIO Facility Status: Open - Site Assessment	3302 PACIFIC HIGHWAY	S 1/8 - 1/4 (0.155 mi.)	H46	134
MISSION APARTMENTS Facility Status: Completed - Case Closed	1847 HANCOCK STREET	NW 1/4 - 1/2 (0.409 mi.)	95	204
LANDMARK AVIATION Facility Status: Completed - Case Closed	***2904 PACIFIC HWY***	***SSE 1/4 - 1/2 (0.426 mi.)***	***R99***	***215***
JONES FAMILY TRUST Facility Status: Completed - Case Closed	***1411 PALM***	***SSE 1/4 - 1/2 (0.434 mi.)***	***T101***	***225***
AMERICAN VETERANS THRIFT STORE Facility Status: Completed - Case Closed	***3441 SUTHERLAND ST***	***WNW 1/4 - 1/2 (0.440 mi.)***	***U102***	***226***

CA SAN DIEGO CO. SAM: The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

A review of the CA SAN DIEGO CO. SAM list, as provided by EDR, and dated 03/23/2010 has revealed that there are 18 CA SAN DIEGO CO. SAM sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ADVANTAGE RENT-A-CAR	***3420 KETTNER BL***	***SE 0 - 1/8 (0.045 mi.)***	***D9***	***16***
INDIA CHEVRON	***3535 INDIA ST***	***NE 0 - 1/8 (0.062 mi.)***	***E14***	***25***
UNOCAL SERV STATION #5738	***3585 INDIA ST***	***NNE 0 - 1/8 (0.077 mi.)***	***C27***	***53***
READING FAMILY TRUST/RESIDENCE	***3447 KITE ST***	***NE 1/4 - 1/2 (0.279 mi.)***	***78***	***176***
WILLIAM W. NEWKIRK (MOBIL OIL)	1809 W WASHINGTON ST	NNW 1/4 - 1/2 (0.296 mi.)	O79	177
G&M STATION #106	1832 W WASHINGTON ST	NNW 1/4 - 1/2 (0.303 mi.)	O83	185
ALAMO RENT-A-CAR	***2942 KETTNER BLVD***	***SE 1/4 - 1/2 (0.402 mi.)***	***Q93***	***196***

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
7-ELEVEN FOOD STORE #19974	***3070 REYNARD WY***	***ESE 1/4 - 1/2 (0.496 mi.)***	***V107***	***237***

Lower Elevation	Address	Direction / Distance	Map ID	Page
LINDBERGH FIELD	3698 PACIFIC HY	SW 0 - 1/8 (0.075 mi.)	B19	40
HONEYWELL INC	***3596 CALIFORNIA ST***	***NW 0 - 1/8 (0.080 mi.)***	***F30***	***60***
GENERAL DYNAMICS/ELECTRONICS	3302 PACIFIC HY	S 1/8 - 1/4 (0.155 mi.)	H41	98
GENERAL DYNAMICS- CONVAIR DIV	3302 PACIFIC HY	S 1/8 - 1/4 (0.155 mi.)	H43	101
AMERICAN AGAR AND CHEMICAL CO	***1751 HANCOCK ST***	***NW 1/4 - 1/2 (0.308 mi.)***	***P85***	***186***
SOUTHWEST CAR RENTAL	2975 PACIFIC HY	SSE 1/4 - 1/2 (0.382 mi.)	R90	195
EXECAIR MAINTENANCE INC.	2904 PACIFIC HY	SSE 1/4 - 1/2 (0.426 mi.)	R97	206
JONES FAMILY TRUST	***1411 PALM***	***SSE 1/4 - 1/2 (0.434 mi.)***	***T101***	***225***
AMERICAN VETERANS THRIFT STORE	***3441 SUTHERLAND ST***	***WNW 1/4 - 1/2 (0.440 mi.)***	***U102***	***226***
ALL COUNTY ENGINE SYSTEMS INC	***3442 SUTHERLAND ST***	***WNW 1/4 - 1/2 (0.442 mi.)***	***U104***	***232***

State and tribal registered storage tank lists

CA UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the CA UST list, as provided by EDR, and dated 12/16/2013 has revealed that there are 2 CA UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EXOTICAR	***3617 INDIA ST***	***N 0 - 1/8 (0.105 mi.)***	***G33***	***90***

Lower Elevation	Address	Direction / Distance	Map ID	Page
OGDEN AVIATION FUELING COINC	3698 PACIFIC HWY # C	SW 0 - 1/8 (0.075 mi.)	B21	41

CA AST: A listing of aboveground storage tank petroleum storage tank locations.

A review of the CA AST list, as provided by EDR, and dated 08/01/2009 has revealed that there is 1 CA AST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ADVANTAGE RENT-A-CAR	***3443 INDIA ST***	***ESE 0 - 1/8 (0.078 mi.)***	***D28***	***58***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

CA Toxic Pits: The Toxic Pits Cleanup Act Sites database identifies sites suspected of containing hazardous substances where cleanup has not yet been completed. The data come from the State Water Resources Control Board.

A review of the CA Toxic Pits list, as provided by EDR, and dated 07/01/1995 has revealed that there

is 1 CA Toxic Pits site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SAN DIEGO INTERNAT'L AIRPORT Closure Date: 05/25/89	LINDBERGH-FIRE FIGHT.TE	WSW 1/2 - 1 (0.529 mi.)	W110	247

Local Lists of Registered Storage Tanks

CA HIST UST: Historical UST Registered Database.

A review of the CA HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 7 CA HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
93509	3535 INDIA ST	NE 0 - 1/8 (0.062 mi.)	E13	24
AMFAC DRUG SUPPLY COMPANY	3555 INDIA ST	NNE 0 - 1/8 (0.063 mi.)	E18	39
UNION OIL SERVICE STATION #573	3585 INDIA ST	NNE 0 - 1/8 (0.077 mi.)	C25	52
NONE	3645 INDIA ST	NNW 1/8 - 1/4 (0.159 mi.)	J52	148

Lower Elevation	Address	Direction / Distance	Map ID	Page
LINDBERGH FIELD ATCT	3698 PACIFIC HWY	SW 0 - 1/8 (0.075 mi.)	B20	40
RECEIVER TRANSMITTER REMOTE	3698 PACIFIC HWY	SW 0 - 1/8 (0.075 mi.)	B24	51
HONEYWELL INC	***3596 CALIFORNIA ST***	***NW 0 - 1/8 (0.080 mi.)***	***F30***	***60***

CA SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the CA SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there are 8 CA SWEEPS UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HERTZ CORPORATION KETTNER	***3420 KETTNER BLVD***	***SE 0 - 1/8 (0.045 mi.)***	***D11***	***18***
CHEVRON	***3535 INDIA ST***	***NE 0 - 1/8 (0.062 mi.)***	***E16***	***30***
UNOCAL SERV STATION #5738	***3585 INDIA ST***	***NNE 0 - 1/8 (0.077 mi.)***	***C27***	***53***

Lower Elevation	Address	Direction / Distance	Map ID	Page
TURKS INC	***3555 PACIFIC HWY***	***W 0 - 1/8 (0.048 mi.)***	***B12***	***21***
LINDBERGH FIELD	***3698 PACIFIC HWY***	***SW 0 - 1/8 (0.075 mi.)***	***B22***	***41***
HONEYWELL INC	***3596 CALIFORNIA ST***	***NW 0 - 1/8 (0.080 mi.)***	***F30***	***60***
GENERAL DYNAMICS- CONVAIR DIV	***3302 PACIFIC HWY***	***S 1/8 - 1/4 (0.155 mi.)***	***H45***	***116***
SAN DIEGO UNIFIED PORT DIST	***3165 PACIFIC HWY***	***SSE 1/8 - 1/4 (0.247 mi.)***	***N77***	***174***

EXECUTIVE SUMMARY

Local Land Records

CA DEED: The use of recorded land use restrictions is one of the methods the DTSC uses to protect the public from unsafe exposures to hazardous substances and wastes .

A review of the CA DEED list, as provided by EDR, and dated 12/09/2013 has revealed that there is 1 CA DEED site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HONEYWELL INC	***3596 CALIFORNIA ST***	***NW 0 - 1/8 (0.080 mi.)***	***F30***	***60***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 09/10/2013 has revealed that there are 5 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SHOUPE & CELESTE INC	***3615 INDIA ST***	***N 0 - 1/8 (0.102 mi.)***	***G32***	***88***
LANCE DICKSON INDEPENDENT VOLV	***3211 INDIA ST***	***SE 1/8 - 1/4 (0.216 mi.)***	***K67***	***153***

Lower Elevation	Address	Direction / Distance	Map ID	Page
HUGHES MISSILE SYSTEMS CO	***3302 PACIFIC HWY***	***S 1/8 - 1/4 (0.155 mi.)***	***H42***	***99***
GENERAL DYNAMICS CONVAIR DIVIS	***3302 PACIFIC HWY***	***S 1/8 - 1/4 (0.155 mi.)***	***H47***	***135***
HUGHES MISSILE SYSTEMS CO	***3302 PACIFIC HWY***	***S 1/8 - 1/4 (0.155 mi.)***	***H49***	***143***

CA HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the CA HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 16 CA HIST CORTESE sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
INDIA CHEVRON	***3535 INDIA ST***	***NE 0 - 1/8 (0.062 mi.)***	***E14***	***25***
UNOCAL SERV STATION #5738	***3585 INDIA ST***	***NNE 0 - 1/8 (0.077 mi.)***	***C27***	***53***
MOBILE STATION 18-GDR	***1809 WASHINGTON ST W***	***NNW 1/4 - 1/2 (0.298 mi.)***	***O81***	***183***
ALAMO RENT A CAR	2942 3066 KETTNER BLVD	SE 1/4 - 1/2 (0.384 mi.)	Q91	195
ALAMO RENT A CAR	***2942 KETTNER BL***	***SE 1/4 - 1/2 (0.402 mi.)***	***Q94***	***200***
7-ELEVEN FOOD STORE #19974	***3070 REYNARD WY***	***ESE 1/4 - 1/2 (0.496 mi.)***	***V108***	***240***

Lower Elevation	Address	Direction / Distance	Map ID	Page
LINDBERGH FIELD	***3698 PACIFIC***	***SW 0 - 1/8 (0.075 mi.)***	***B23***	***50***
HONEYWELL INC	***3596 CALIFORNIA ST***	***NW 0 - 1/8 (0.080 mi.)***	***F30***	***60***
GENERAL DYNAMICS- CONVAIR DIV	***3302 PACIFIC HY***	***S 1/8 - 1/4 (0.155 mi.)***	***H44***	***103***

EXECUTIVE SUMMARY

Lower Elevation	Address	Direction / Distance	Map ID	Page
GENERAL DYNAMICS, LIND. F	3302 PACIFIC BLDG#	SSW 1/8 - 1/4 (0.225 mi.)	70	156
AMERICAN AGAR AND CHEMICAL CO	***1751 HANCOCK ST***	***NW 1/4 - 1/2 (0.308 mi.)***	***P85***	***186***
SOUTHWEST CAR RENTAL	***2975 PACIFIC HY***	***SSE 1/4 - 1/2 (0.382 mi.)***	***R89***	***193***
LANDMARK AVIATION	***2904 PACIFIC HWY***	***SSE 1/4 - 1/2 (0.426 mi.)***	***R99***	***215***
JONES FAMILY TRUST	***1411 PALM***	***SSE 1/4 - 1/2 (0.434 mi.)***	***T101***	***225***
AMERICAN VETERANS THRIFT STORE	***3441 SUTHERLAND ST***	***WNW 1/4 - 1/2 (0.440 mi.)***	***U102***	***226***
ALL COUNTY ENGINE SYSTEMS INC	***3442 SUTHERLAND ST***	***WNW 1/4 - 1/2 (0.442 mi.)***	***U104***	***232***

CA Notify 65: Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

A review of the CA Notify 65 list, as provided by EDR, and dated 10/21/1993 has revealed that there are 9 CA Notify 65 sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EAST OF WAHINGTON AND INDIA ST		NNW 1/4 - 1/2 (0.319 mi.)	O86	192
3173 GOLDFINCH		E 1/4 - 1/2 (0.363 mi.)	87	192
KETTNER BLVD. AND PALM ST.		SE 1/4 - 1/2 (0.401 mi.)	Q92	195
Not reported	600 BUSH ST	NE 1/2 - 1 (0.825 mi.)	122	302
300 BLK OF BROOKS AVE		ENE 1/2 - 1 (0.965 mi.)	130	414
Not reported	1754 NORTH ARBOR	N 1/2 - 1 (0.990 mi.)	131	414

Lower Elevation	Address	Direction / Distance	Map ID	Page
3200 KETTNER BLVD		SSE 1/8 - 1/4 (0.184 mi.)	H58	151
FIRE FIGHTER TEST AREA	S.D. INTERNATIONAL AIRP	WSW 1/2 - 1 (0.557 mi.)	W111	247
TDY INDUSTRIES, INC.	***2701 NORTH HARBOR DRIVE***	***S 1/2 - 1 (0.737 mi.)***	***X113***	***248***

CA WIP: Well Investigation Program case in the San Gabriel and San Fernando Valley area.

A review of the CA WIP list, as provided by EDR, and dated 07/03/2009 has revealed that there is 1 CA WIP site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ENTERPRISE RENT A CAR Facility Status: Backlog	2201 W MAIN ST	NW 1/8 - 1/4 (0.233 mi.)	M72	157

CA HWP: Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

A review of the CA HWP list, as provided by EDR, and dated 02/24/2014 has revealed that there are 4 CA HWP sites within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HONEYWELL INC	***3596 CALIFORNIA ST***	***NW 0 - 1/8 (0.080 mi.)***	***F30***	***60***
TELEDYNE RYAN AERONAUTICAL	***2701 N HARBOR DR***	***S 1/2 - 1 (0.737 mi.)***	***X114***	***267***
U.O.P. INC - FLUID SYSTEMS DIV	2980 N HARBOR DRIVE	SSW 1/2 - 1 (0.758 mi.)	Z116	292
SOLAR TURBINES INC	***2200 PACIFIC HWY***	***SSE 1/2 - 1 (0.888 mi.)***	***AA126***	***379***

EXECUTIVE SUMMARY

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR US Hist Auto Stat: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR US Hist Auto Stat list, as provided by EDR, has revealed that there are 26 EDR US Hist Auto Stat sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
POWERS RON SHELL SERVICE	3526 KETTNER BLVD	NNE 0 - 1/8 (0.008 mi.)	A2	8
JEFF S GARAGE	3515 KETTNER BLVD	E 0 - 1/8 (0.010 mi.)	A3	8
GUYMON MEL CHEVRON SERVICE	3535 INDIA ST	NE 0 - 1/8 (0.062 mi.)	E17	39
TONYS UNION SEVENTY SIX	3585 INDIA ST	NNE 0 - 1/8 (0.077 mi.)	C26	53
Not reported	3443 INDIA ST	ESE 0 - 1/8 (0.078 mi.)	D29	60
JAMES AUTOMOTIVE SERVICE	3615 INDIA ST	N 0 - 1/8 (0.102 mi.)	G31	88
AUTOMATIC TRANSMISSION SERVICE	3617 INDIA ST	N 0 - 1/8 (0.105 mi.)	G34	92
QUALITY LUBRICATION SERVICE	3663 KETTNER BLVD	NW 1/8 - 1/4 (0.163 mi.)	I53	149
WALLACE W H	3674 KETTNER BLVD	NW 1/8 - 1/4 (0.176 mi.)	I54	149
Not reported	3265 INDIA ST	SE 1/8 - 1/4 (0.180 mi.)	K55	149
PURKEY R W	3661 INDIA	NNW 1/8 - 1/4 (0.181 mi.)	J57	150
LAMADRID SERVICE	3602 STATE ST	NNE 1/8 - 1/4 (0.185 mi.)	59	151
HAL S SIGNAL SERVICE	3657 INDIA ST	NNW 1/8 - 1/4 (0.187 mi.)	J60	151
CAMP INDIA	3661 INDIA ST	NNW 1/8 - 1/4 (0.191 mi.)	J61	151
MAURICE S FOREIGN & DOMESTIC A	3241 INDIA ST	SE 1/8 - 1/4 (0.195 mi.)	K62	152
AUTO IMPORT SERVICES	3231 INDIA ST	SE 1/8 - 1/4 (0.202 mi.)	K66	153
SCOTTY S FOREIGN CAR SERVICE	3211 INDIA ST	SE 1/8 - 1/4 (0.216 mi.)	K68	154
CASE A M	3205 KETTNER BLVD	SE 1/8 - 1/4 (0.222 mi.)	L69	156
BEHN WM	3171 INDIA	SE 1/8 - 1/4 (0.244 mi.)	L73	157
BATEMAN J B	3171 INDIA ST	SE 1/8 - 1/4 (0.245 mi.)	L74	157
WALTER NEAL C	3711 INDIA ST	NNW 1/8 - 1/4 (0.245 mi.)	75	157

Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	3555 PACIFIC HWY	SW 0 - 1/8 (0.028 mi.)	A5	11
Not reported	3565 PACIFIC HWY	WSW 0 - 1/8 (0.032 mi.)	A6	12
PACIFIC COAST AUTOMOTIVE	3569 PACIFIC HWY	WSW 0 - 1/8 (0.034 mi.)	B7	13
PARKER & THORNBURG	3625 PACIFIC HWY	WNW 0 - 1/8 (0.118 mi.)	37	95
RECYCLED TREASURES	3636 CALIFORNIA ST	NW 1/8 - 1/4 (0.131 mi.)	F40	98

EXECUTIVE SUMMARY

EDR US Hist Cleaners: EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR US Hist Cleaners list, as provided by EDR, has revealed that there are 7 EDR US Hist Cleaners sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SERVICEMASTER OF SAN DIEGO INC	3657 KETTNER BLVD	NW 1/8 - 1/4 (0.157 mi.)	I51	148
DUDNEY R W	3265 INDIA ST	SE 1/8 - 1/4 (0.180 mi.)	K56	150
MEAD SEAMAN	3672 INDIA ST	NNW 1/8 - 1/4 (0.198 mi.)	J63	152
MONTGOMERY R M	3232 INDIA ST	SE 1/8 - 1/4 (0.200 mi.)	K64	152
AMERICAN CLEANERS	3232 INDIA	SE 1/8 - 1/4 (0.201 mi.)	K65	152
BENOIT EASTON	1658 HANCOCK ST	NW 1/8 - 1/4 (0.230 mi.)	M71	156

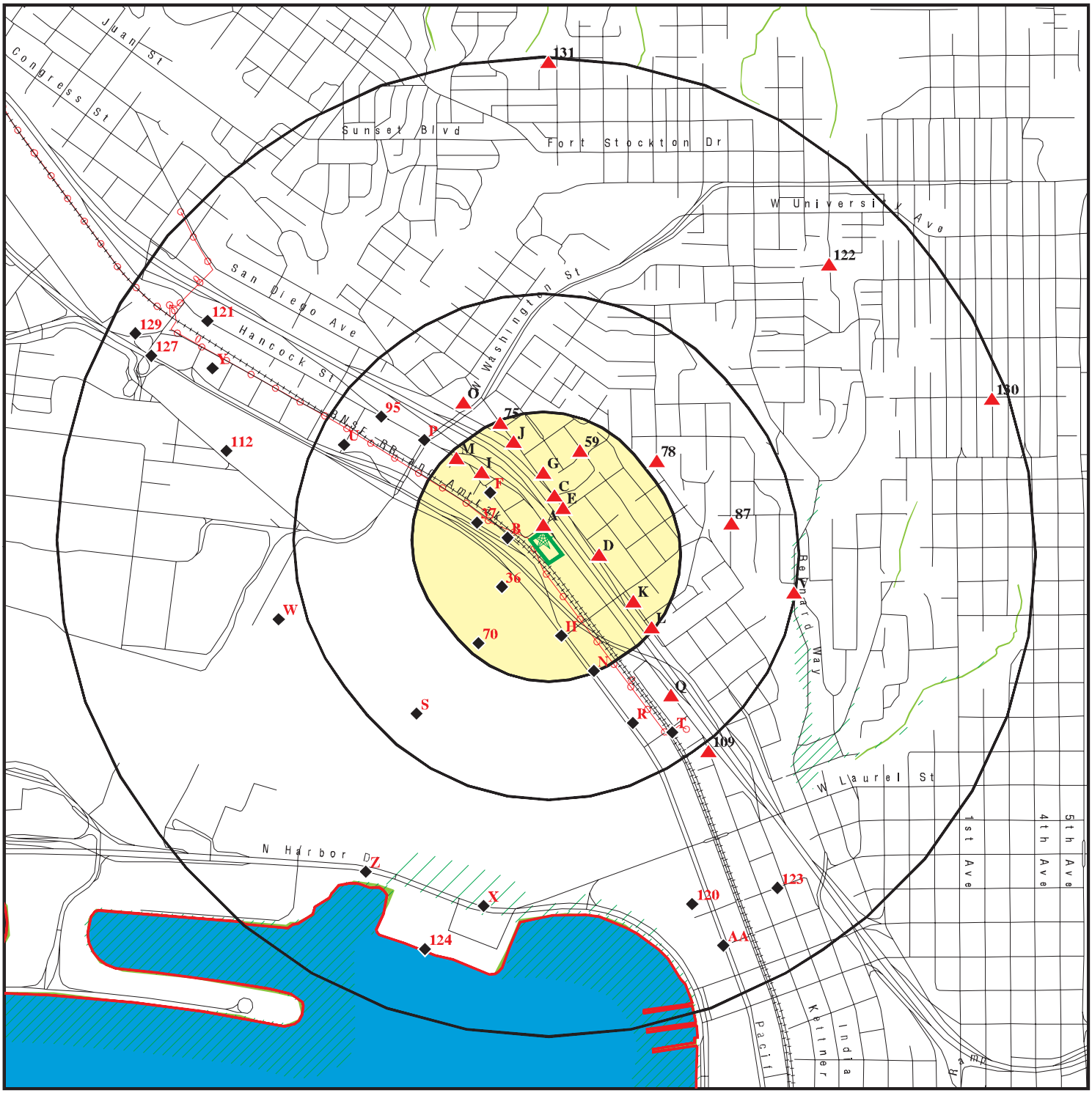
Lower Elevation	Address	Direction / Distance	Map ID	Page
IDEAL LAUNDRY	3630 CALIFORNIA ST	NW 0 - 1/8 (0.123 mi.)	F39	98

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 20 records.

Site Name	Database(s)
CROW VENTURES MGMT	CA HIST CORTESE
CAMP ELLIOT, TIERRASANTA	CA HIST CORTESE
SAN DIEGO CO, MSW	CA HIST CORTESE
MARINE CORPS RECRUIT DEPOT	CA LUST, CA Notify 65
NORTH MIRAMAR	CA WMUDS/SWAT
INDIA STREET PROJECT	CA HAZNET
SHELL SERVICE STATION - 135897	RCRA-SQG
26TH STREET LANDFILL	FINDS
38TH AND QUINCE STREET	FINDS
QUINCE STREET BURN SITE	FINDS
SDG&E - CHICARITA SUBSTATION	FINDS
KELLY STREET BURNSITE	FINDS
SDG&E - ARTESIAN SUBSTATION	FINDS
NAVY BASE SAN DIEGO 28TH STREET NA	FINDS
SDG&E - RANCHO BERNARDO SUBSTATION	FINDS
ARIZONA STREET SLF	FINDS
NAVISTAR INTERNATIONAL TRANS. CORP	CA SLIC
CITY WALK CONDOS	CA ENVIROSTOR
JACKSON & BLANC FACILITY	CA ENVIROSTOR
W-HOTEL SAN DIEGO	CA SAN DIEGO CO. SAM

OVERVIEW MAP - 3889802.2s



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

Indian Reservations BIA

County Boundary

Power transmission lines

Oil & Gas pipelines from USGS

100-year flood zone

500-year flood zone

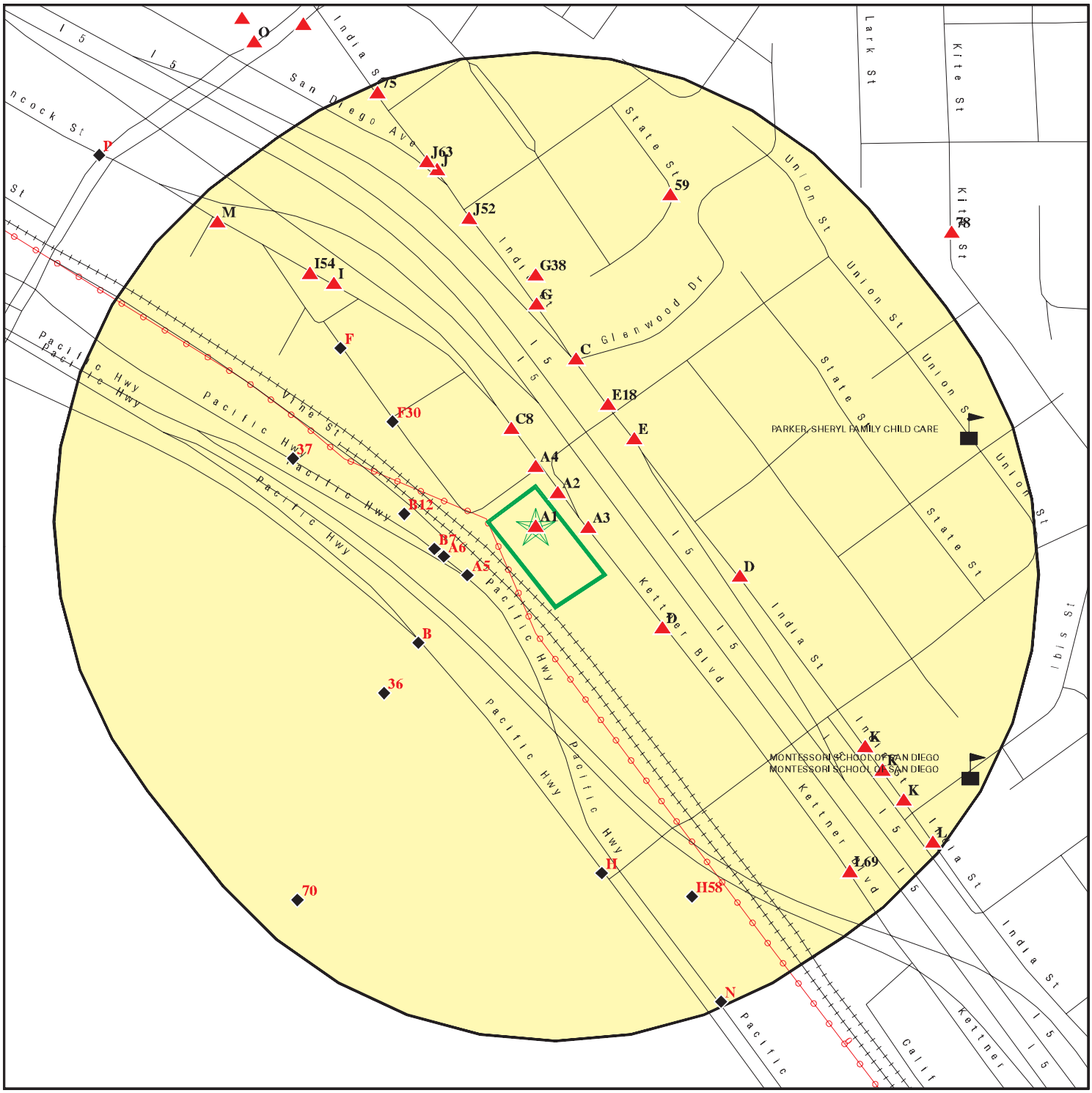
National Wetland Inventory

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Vine Street Substation ADDRESS: 3550 Kettner Blvd San Diego CA 92101 LAT/LONG: 32.7389 / 117.179	CLIENT: GeoSyntec Consultants CONTACT: Doug Baumwirt INQUIRY #: 3889802.2s DATE: March 24, 2014 8:47 pm

DETAIL MAP - 3889802.2s



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

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ADDRESS: 3550 Kettner Blvd San Diego CA 92101	CONTACT: Doug Baumwirt
LAT/LONG: 32.7389 / 117.179	INQUIRY #: 3889802.2s DATE: March 24, 2014 8:48 pm