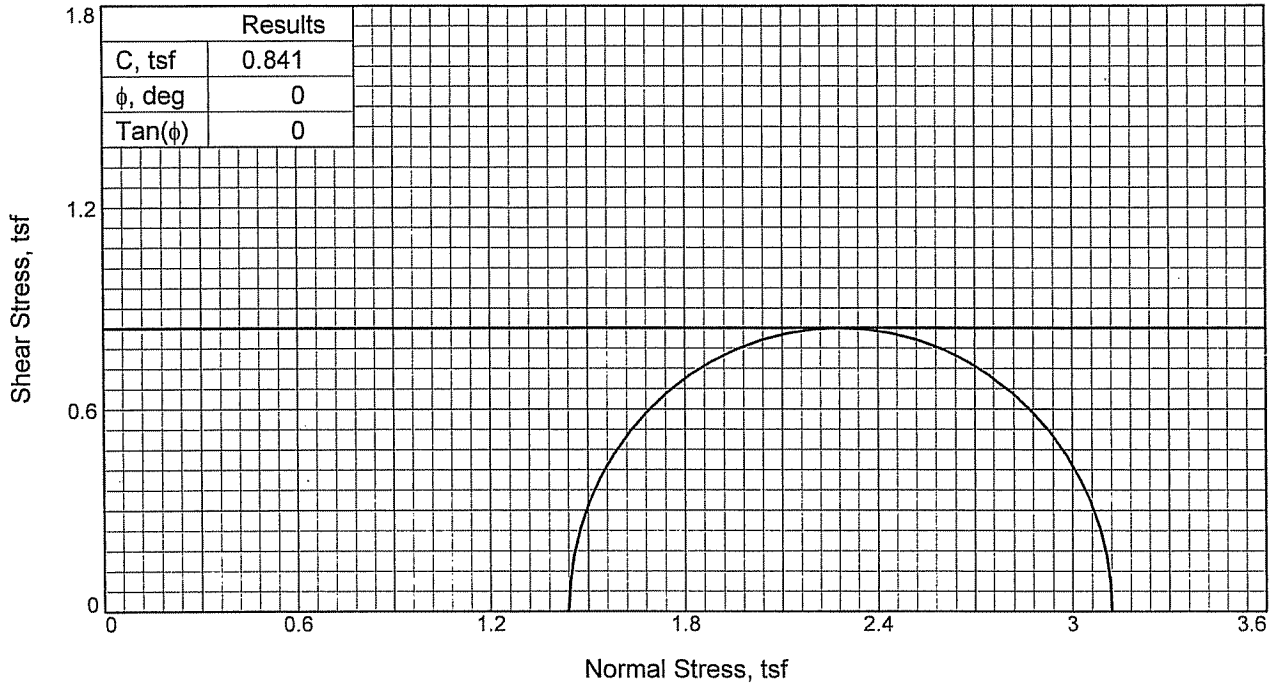
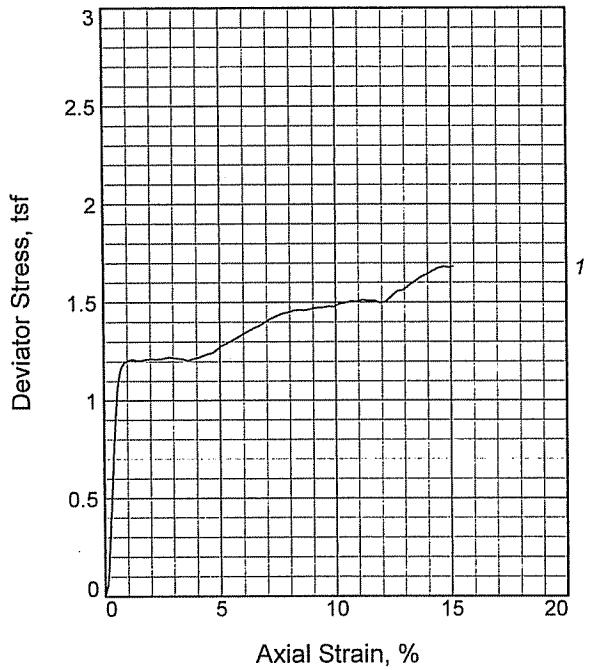
	1	0-2	Gray and tan SANDY LEAN CLAY	CL	16.5	102.7								
	2	2-4	Tan and gray SANDY LEAN CLAY	CL	22.1	101.4								
	3	4-6	Tan and gray FAT CLAY with SAND	CH	22.3	100.8								
	4	6-8	Reddish-brown and gray LEAN CLAY	CL	23.5	104.2	34	16	18	93.5	1.18	14.2	8	Bulge
	5	8-10	Reddish-brown and gray FAT CLAY; part silty clay with sand	CH	28.1	97.1					1.16	10.1		Vertical shear
	6	10-12	Reddish-brown and gray FAT CLAY	CH	31.1	90.4								
	7	12-14	Reddish-brown and gray FAT CLAY	CH	30.8	90.2								
	8	14-16	Reddish-brown and gray FAT CLAY	CH	24.1	101.2								
	9	16-18	Reddish-brown and gray FAT CLAY	CH	27.8	95.6								
	10	18-20	Reddish-brown and gray FAT CLAY	CH	25.3	99.3								
08-100			**El. 19.50, E=3183395 N=13646859**											
	2	2-4	Reddish-brown and gray FAT CLAY	CH	30.6	86.6								
	3	4-6	Reddish-brown and gray FAT CLAY	CH	36.6	81.7								
	4	6-8	Gray and tan FAT CLAY	CH	29.4	94.1								
	5	8-10	Gray and tan FAT CLAY	CH	27.7	93.7								
	6	10-12	Tan and gray FAT CLAY	CH	29.2	91.8								
	7	12-14	Gray FAT CLAY	CH	35.8	83.2								
	8	14-16	Tan and gray FAT CLAY; calcareous nodules	CH	28.2	94.1								
	9	16-18	Tan and gray FAT CLAY; calcareous nodules	CH	20.2	103.1								
	10	18-20	Tan and gray FAT CLAY; calcareous nodules	CH	18.6	110.1								
	11	20-22	Reddish-brown and gray FAT CLAY	CH	21.9	106.4	64	21	43	97.8	1.93	11.2	18	Slickensided
	12	22-24	Reddish-brown and gray FAT CLAY	CH	26.8	97.4								
	13	24-26	Reddish-brown and gray FAT CLAY	CH	26.0	97.3								
	14	26-28	Reddish-brown and gray FAT CLAY	CH	28.5	93.7								
	15	28-30	Reddish-brown and gray FAT CLAY	CH	26.0	96.3								
	16	30-32	Reddish-brown and gray FAT CLAY	CH	25.7	99.1								
	17	32-34	Reddish-brown and gray FAT CLAY	CH	29.1	93.8								
	18	34-36	Reddish-brown and gray FAT CLAY	CH	24.9	97.8	72	22	50	99.9	2.07	3.1		Slickensided
	19	36-38	Reddish-brown and gray FAT CLAY	CH	29.1	93.9								
	20	38-40	Reddish-brown and gray FAT CLAY	CH	29.0	92.4								
08-101			**El. 17.0, E=3183228 N=13647757**											
	1	0-2	Gray and tan FAT CLAY	CH	26.2	84.8								
	2	2-4	Gray and tan FAT CLAY with SAND	CH	29.9	86.3								
	3	4-6	Gray and tan FAT CLAY	CH	27.1	89.1								
	4	6-8	Gray FAT CLAY	CH	24.0	98.1								
	5	8-10	Gray FAT CLAY	CH	31.2	87.4								
	6	10-12	Tan and gray FAT CLAY	CH	22.1	101.5								
	7	12-14	Tan and gray FAT CLAY; calcareous nodules	CH	17.6	113.9								
	8	14-16	Reddish-brown and tan FAT CLAY; calcareous nodules	CH	20.7	112.2								
	9	16-18	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	21.0	109.7								
	10	18-20	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	26.0	99.3								
	11	20-22	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	27.1	100.2								
	12	22-24	Reddish-brown and gray FAT CLAY	CH	24.8	100.9	65	21	44	99.1	1.68	14.7	20	Slickensided
	13	24-26	Reddish-brown and gray FAT CLAY	CH	25.1	98.4								
	14	26-28	Reddish-brown and gray FAT CLAY	CH	24.1	99.8								
	15	28-30	Reddish-brown SILTY CLAY with SAND	CL-ML	25.4	97.8								
	16	30-32	Reddish-brown and gray FAT CLAY	CH	24.7	99.1								
	17	32-34	Reddish-brown and gray FAT CLAY	CH	25.0	95.4	67	21	46	97.7	2.30	9.2		60 degree
	18	34-36	Reddish-brown and gray FAT CLAY	CH	23.5	100.3								
	19	36-38	Reddish-brown and gray FAT CLAY	CH	24.4	98.7								
	20	38-40	Reddish-brown and gray FAT CLAY	CH	32.8	90.3								





Sample No.		1
Initial	Water Content, %	24.8
	Dry Density, pcf	100.9
	Saturation, %	99.9
	Void Ratio	0.6708
	Diameter, in.	2.85
	Height, in.	6.00
At Test	Water Content, %	24.4
	Dry Density, pcf	100.9
	Saturation, %	98.3
	Void Ratio	0.6708
	Diameter, in.	2.85
	Height, in.	6.00
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		1.44
Fail. Stress, tsf		1.68
Ult. Stress, tsf		
σ_1 Failure, tsf		3.12
σ_3 Failure, tsf		1.44

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Reddish-brown and gray FAT CLAY

LL= 65 **PL=** 21 **PI=** 44

Assumed Specific Gravity= 2.70

Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 3.00
Failure type: Slickensided

Client: United States Army Corps of Engineers

Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079

Source of Sample: 08-101 **Depth:** 22-24

Sample Number: 12

Proj. No.: 08.18.921 **Date Sampled:** 8/16/08

TRIAXIAL SHEAR TEST REPORT

Tolunay-Wong Engineers, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

8/19/2008
2:17 PM

Date: 8/16/08
Client: United States Army Corps of Engineers
Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079
Project No.: 08.18.921
Location: 08-101
Depth: 22-24 **Sample Number:** 12
Description: Reddish-brown and gray FAT CLAY
Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 3.00
Failure type: Slickensided
Type of Sample: Undisturbed
Assumed Specific Gravity=2.70 **LL=**65 **PL=**21 **PI=**44
Test Method: ASTM D 2850

Parameters for Specimen No. 1

Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	152.870	115.180
Moisture content: Dry soil+tare, gms.	128.660	98.830
Moisture content: Tare, gms.	31.100	31.860
Moisture, %	24.8	24.4
Moist specimen weight, gms.	1265.2	
Diameter, in.	2.85	
Area, in.^{2}	6.38	
Height, in.	6.00	
Wet Density, pcf	125.9	
Dry density, pcf	100.9	
Void ratio	0.6708	
Saturation, %	99.9	

Test Readings for Specimen No. 1

Membrane modulus = .130 kN/cm^2
Membrane thickness = .031 cm
Cell pressure = 20.00 psi (1.440 tsf)
Back pressure = 0.00 psi (0.000 tsf)
Strain rate, %/min. = 1.00
Fail. Stress = 1.682 tsf **at reading no.** 83

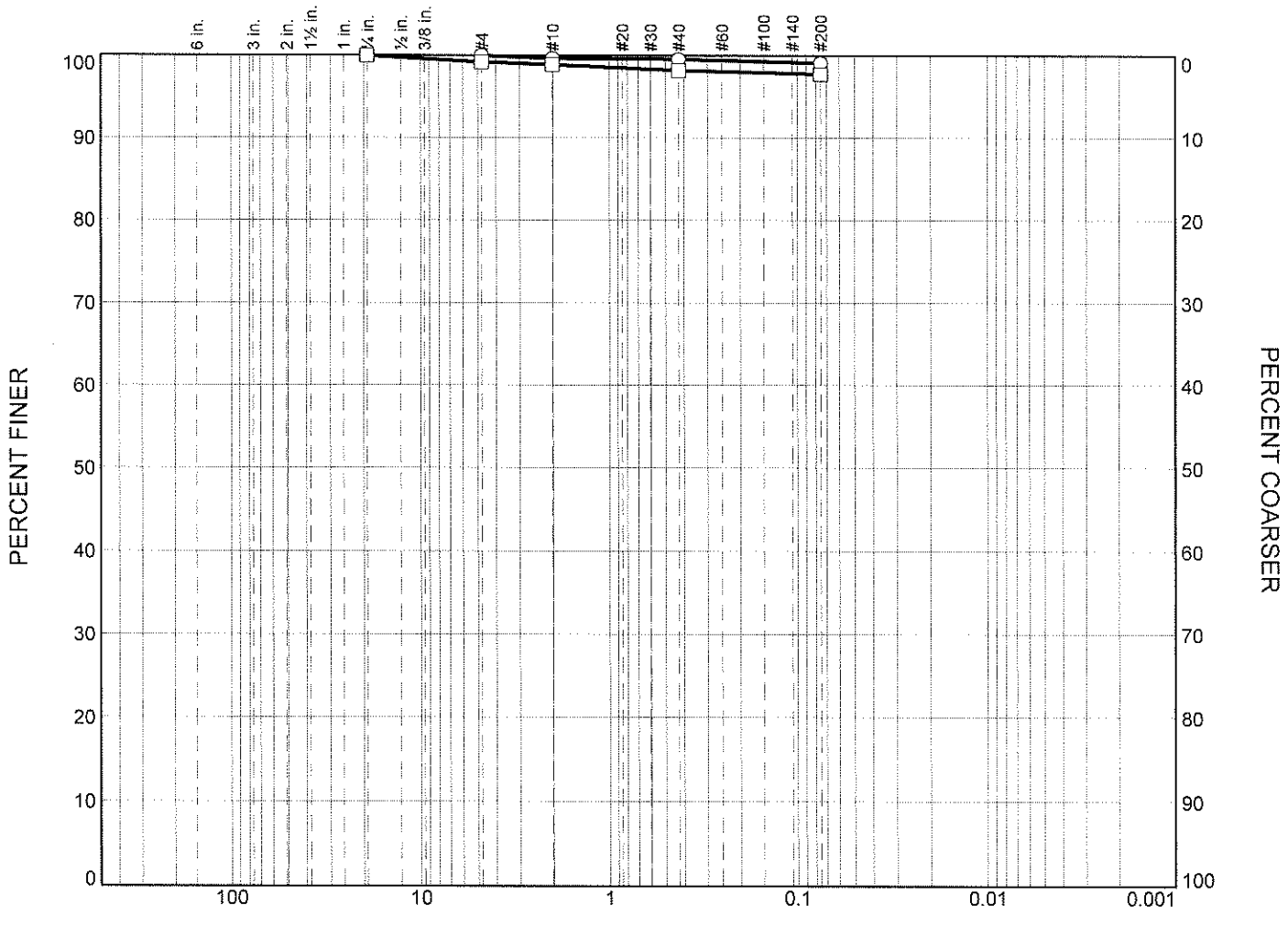
Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
0	0.0397	0.000	0.0	0.0	0.000	1.440	1.440	1.00	1.440	0.000
1	0.0465	4.738	4.7	0.1	0.053	1.440	1.493	1.04	1.467	0.027
2	0.0476	7.665	7.7	0.1	0.086	1.440	1.526	1.06	1.483	0.043
3	0.0497	11.832	11.8	0.2	0.133	1.440	1.573	1.09	1.507	0.067
4	0.0510	16.246	16.2	0.2	0.183	1.440	1.623	1.13	1.532	0.092
5	0.0522	21.804	21.8	0.2	0.246	1.440	1.686	1.17	1.563	0.123
6	0.0543	28.157	28.2	0.2	0.317	1.440	1.757	1.22	1.599	0.159
7	0.0556	33.623	33.6	0.3	0.378	1.440	1.818	1.26	1.629	0.189
8	0.0575	39.418	39.4	0.3	0.444	1.440	1.884	1.31	1.662	0.222
9	0.0588	44.726	44.7	0.3	0.503	1.440	1.943	1.35	1.692	0.252
10	0.0601	49.991	50.0	0.3	0.562	1.440	2.002	1.39	1.721	0.281
11	0.0621	55.934	55.9	0.4	0.629	1.440	2.069	1.44	1.754	0.314
12	0.0633	62.172	62.2	0.4	0.699	1.440	2.139	1.49	1.789	0.349
13	0.0646	67.850	67.9	0.4	0.763	1.440	2.203	1.53	1.821	0.381
14	0.0667	72.403	72.4	0.4	0.813	1.440	2.253	1.56	1.847	0.407
15	0.0679	76.966	77.0	0.5	0.865	1.440	2.305	1.60	1.872	0.432
16	0.0692	81.397	81.4	0.5	0.914	1.440	2.354	1.63	1.897	0.457
17	0.0713	85.836	85.8	0.5	0.964	1.440	2.404	1.67	1.922	0.482
18	0.0726	89.899	89.9	0.5	1.009	1.440	2.449	1.70	1.945	0.505
19	0.0739	93.207	93.2	0.6	1.046	1.440	2.486	1.73	1.963	0.523
20	0.0759	96.172	96.2	0.6	1.079	1.440	2.519	1.75	1.979	0.539
21	0.0784	99.436	99.4	0.6	1.115	1.440	2.555	1.77	1.998	0.558
22	0.0817	102.498	102.5	0.7	1.149	1.440	2.589	1.80	2.014	0.574
23	0.0851	104.511	104.5	0.8	1.171	1.440	2.611	1.81	2.025	0.585
24	0.0922	106.696	106.7	0.9	1.194	1.440	2.634	1.83	2.037	0.597
25	0.1035	107.867	107.9	1.1	1.204	1.440	2.644	1.84	2.042	0.602
26	0.1139	108.473	108.5	1.2	1.209	1.440	2.649	1.84	2.045	0.605
27	0.1262	108.280	108.3	1.4	1.204	1.440	2.644	1.84	2.042	0.602
28	0.1377	108.517	108.5	1.6	1.205	1.440	2.645	1.84	2.042	0.602
29	0.1500	109.197	109.2	1.8	1.210	1.440	2.650	1.84	2.045	0.605
30	0.1622	109.736	109.7	2.0	1.213	1.440	2.653	1.84	2.047	0.607
31	0.1744	109.566	109.6	2.2	1.209	1.440	2.649	1.84	2.044	0.604
32	0.1867	110.044	110.0	2.4	1.212	1.440	2.652	1.84	2.046	0.606
33	0.1989	110.681	110.7	2.7	1.216	1.440	2.656	1.84	2.048	0.608
34	0.2111	111.367	111.4	2.9	1.221	1.440	2.661	1.85	2.051	0.611
35	0.2232	111.310	111.3	3.1	1.218	1.440	2.658	1.85	2.049	0.609
36	0.2347	111.163	111.2	3.3	1.214	1.440	2.654	1.84	2.047	0.607
37	0.2471	111.132	111.1	3.5	1.211	1.440	2.651	1.84	2.045	0.605
38	0.2594	110.596	110.6	3.7	1.203	1.440	2.643	1.84	2.041	0.601
39	0.2716	111.760	111.8	3.9	1.213	1.440	2.653	1.84	2.046	0.606
40	0.2838	112.518	112.5	4.1	1.218	1.440	2.658	1.85	2.049	0.609
41	0.2953	113.664	113.7	4.3	1.228	1.440	2.668	1.85	2.054	0.614
42	0.3076	114.774	114.8	4.5	1.238	1.440	2.678	1.86	2.059	0.619
43	0.3200	115.404	115.4	4.7	1.242	1.440	2.682	1.86	2.061	0.621
44	0.3322	117.199	117.2	4.9	1.258	1.440	2.698	1.87	2.069	0.629
45	0.3444	119.297	119.3	5.1	1.278	1.440	2.718	1.89	2.079	0.639
46	0.3649	121.613	121.6	5.4	1.298	1.440	2.738	1.90	2.089	0.649

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
47	0.3804	123.664	123.7	5.7	1.316	1.440	2.756	1.91	2.098	0.658
48	0.3952	125.719	125.7	5.9	1.335	1.440	2.775	1.93	2.107	0.667
49	0.4106	127.596	127.6	6.2	1.351	1.440	2.791	1.94	2.116	0.676
50	0.4253	129.404	129.4	6.4	1.367	1.440	2.807	1.95	2.123	0.683
51	0.4407	131.048	131.0	6.7	1.380	1.440	2.820	1.96	2.130	0.690
52	0.4555	133.211	133.2	6.9	1.399	1.440	2.839	1.97	2.140	0.700
53	0.4703	135.155	135.2	7.2	1.416	1.440	2.856	1.98	2.148	0.708
54	0.4858	136.782	136.8	7.4	1.429	1.440	2.869	1.99	2.154	0.714
55	0.5005	138.511	138.5	7.7	1.443	1.440	2.883	2.00	2.162	0.722
56	0.5159	139.279	139.3	7.9	1.447	1.440	2.887	2.00	2.164	0.724
57	0.5307	140.705	140.7	8.2	1.458	1.440	2.898	2.01	2.169	0.729
58	0.5455	141.393	141.4	8.4	1.461	1.440	2.901	2.01	2.171	0.731
59	0.5610	141.612	141.6	8.7	1.459	1.440	2.899	2.01	2.170	0.730
60	0.5758	142.598	142.6	8.9	1.466	1.440	2.906	2.02	2.173	0.733
61	0.5912	143.657	143.7	9.2	1.472	1.440	2.912	2.02	2.176	0.736
62	0.6059	144.118	144.1	9.4	1.473	1.440	2.913	2.02	2.177	0.737
63	0.6213	145.048	145.0	9.7	1.478	1.440	2.918	2.03	2.179	0.739
64	0.6361	145.284	145.3	9.9	1.477	1.440	2.917	2.03	2.178	0.738
65	0.6509	147.268	147.3	10.2	1.493	1.440	2.933	2.04	2.186	0.746
66	0.6664	148.084	148.1	10.4	1.497	1.440	2.937	2.04	2.188	0.748
67	0.6811	149.263	149.3	10.7	1.505	1.440	2.945	2.04	2.192	0.752
68	0.6965	149.680	149.7	10.9	1.504	1.440	2.944	2.04	2.192	0.752
69	0.7112	150.790	150.8	11.2	1.511	1.440	2.951	2.05	2.196	0.756
70	0.7266	151.010	151.0	11.4	1.509	1.440	2.949	2.05	2.195	0.755
71	0.7414	151.448	151.4	11.7	1.509	1.440	2.949	2.05	2.195	0.755
72	0.7567	150.711	150.7	12.0	1.498	1.440	2.938	2.04	2.189	0.749
73	0.7715	151.809	151.8	12.2	1.504	1.440	2.944	2.04	2.192	0.752
74	0.7869	155.212	155.2	12.5	1.534	1.440	2.974	2.07	2.207	0.767
75	0.8016	158.008	158.0	12.7	1.557	1.440	2.997	2.08	2.218	0.778
76	0.8170	158.836	158.8	13.0	1.560	1.440	3.000	2.08	2.220	0.780
77	0.8317	161.899	161.9	13.2	1.586	1.440	3.026	2.10	2.233	0.793
78	0.8465	164.280	164.3	13.4	1.605	1.440	3.045	2.11	2.242	0.802
79	0.8620	167.074	167.1	13.7	1.627	1.440	3.067	2.13	2.254	0.814
80	0.8768	168.922	168.9	14.0	1.641	1.440	3.081	2.14	2.260	0.820
81	0.8922	171.190	171.2	14.2	1.658	1.440	3.098	2.15	2.269	0.829
82	0.9069	173.273	173.3	14.5	1.673	1.440	3.113	2.16	2.276	0.836
83	0.9223	174.681	174.7	14.7	1.682	1.440	3.122	2.17	2.281	0.841
84	0.9370	174.624	174.6	15.0	1.676	1.440	3.116	2.16	2.278	0.838
85	0.9466	175.498	175.5	15.1	1.681	1.440	3.121	2.17	2.281	0.841

Particle Size Analysis - ASTM D 422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.3	0.1	0.5	99.1	
□	0.0	0.0	0.8	0.3	0.7	0.5	97.7	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	08-101	12	22-24	Reddish-brown and gray FAT CLAY	CH
□	08-101	17	32-34	Reddish-brown and gray FAT CLAY	CH

Tolunay-Wong Engineers, Inc.
Houston, Texas

Client: United States Army Corps of Engineers
Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079
Project No.: 08.18.921