Aptim Environmental & Infrastructure, LLC
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Legend for Geotechnical Data

Grain Size Scale for Sediments

Unified Soil Classification System (USCS) (ASTM D2487/2488)		APTIM Standard Sieve Stack		
		Sieve Number	Size (phi)	Size (mm)
Gravel	Coarse Gravel	3/4	-4.25	19.03
	Fine Gravel	5/8	-4.00	16.00
		7/16	-3.50	11.20
		5/16	-3.00	8.00
		3 ½	-2.50	5.60
		4	-2.25	4.75
Sand	Coarse Sand	5	-2.00	4.00
		7	-1.50	2.80
		10	-1.00	2.00
	Medium Sand	14	-0.50	1.40
		18	0.00	1.00
		25	0.50	0.71
		35	1.00	0.50
	Fine Sand	45	1.50	0.36
		60	2.00	0.25
		80	2.50	0.18
		120	3.00	0.13
		170	3.50	0.09
		200	3.75	0.08
Fines	Silt/Clay	230	4.00	0.06

Proportional Definition of Descriptive Terms

Descriptive Term	Range of Proportions
Sandy, gravelly, etc.	35 % to 50 %
Some	20 % to 35 %
Little	10 % to 20 %
Trace	1 % to 10 %

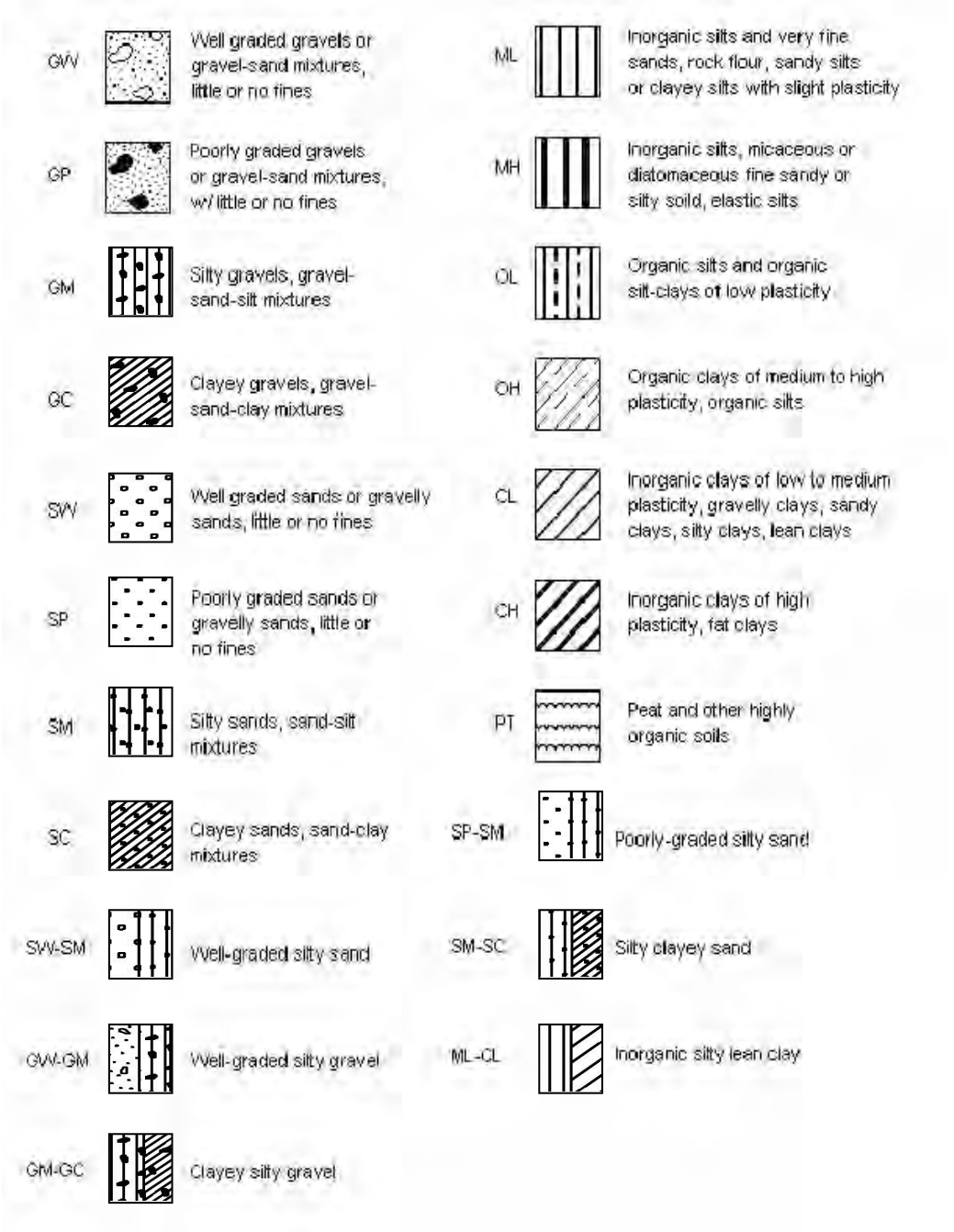
Consistency of Cohesive Soils

Description	Consistency Index	Approximate Undrained Shear Strength (kPa)	Field Identification
Hard		Over 300	Indented with difficulty by thumbnail, brittle.
Very Stiff	>1	150-300	Readily indented by thumbnail, still very tough.
Stiff	0.75-1	75-150	Readily indented by thumb but penetrated only with difficulty. Cannot be moulded in the fingers.
Firm	0.5-0.75	40-75	Can be penetrated several centimeters by thumb with moderate effort and moulded in fingers by strong pressure.
Soft	< 0.5	20-40	Easily penetrated several centimeters by thumb, easily moulded.
Very Soft		Less than 20	Easily penetrated several centimeters by fist, exudes between fingers when squeezed in fist.

Source: Engineering Properties of Soils and Rocks, Fourth Edition by Fred G. Bell

USCS Classifications

Refers to the Army Corps of Engineers Unified Soils Classification System. Class types are defined primarily by grain size, sorting and percent of material passing the #200 sieve. Classification of materials on the core logs based on visual field examinations are identified on the core logs under the Classification of Materials Description. Classifications based on laboratory sieve analyses are identified on the core logs in the Legend and under Remarks.



Note: Information is after ACOE Atlantic Division Manual # 1110-1-1 titled *Engineering and Design Geotechnical Manual for Surface and Subsurface Investigations*

Boring Designation TXGLO1-VC-23-025

DRILLING LOG

DIVISION

INSTALLATION

SHEET 1 OF 1 SHEETS

1. PROJECT
TX GLO Region 1 Recon Geotechnical Sand Search
Jefferson, Chambers, Galveston and Brazoria Co.

APTIM

9. SIZE AND TYPE OF BIT 3.0 In.

10. COORDINATE SYSTEM/DATUM: Texas State Plane South | HORIZONTAL: NAD 1983 | VERTICAL: NAVD88

2. BORING DESIGNATION: TXGLO1-VC-23-025
LOCATION COORDINATES (ft): X = 3,434,120 Y = 13,752,321

11. MANUFACTURER'S DESIGNATION OF DRILL: APTIM SEAS VC-700 Vibracore
☐ AUTO HAMMER ☐ MANUAL HAMMER

3. DRILLING AGENCY: APTIM
CONTRACTOR FILE NO.:

12. TOTAL SAMPLES | DISTURBED: 0 | UNDISTURBED (UD): 3

4. NAME OF DRILLER: APTIM

13. TOTAL NUMBER CORE BOXES

5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED | DEG. FROM VERTICAL | BEARING

14. ELEVATION GROUND WATER

15. DATE BORING | STARTED: 10-08-23 | COMPLETED: 10-08-23

6. THICKNESS OF OVERBURDEN: 0.0 Ft.

16. ELEVATION TOP OF BORING: -32.9 Ft.

7. DEPTH DRILLED INTO ROCK: 0.0 Ft.

17. TOTAL RECOVERY FOR BORING: 18.3 Ft.

8. TOTAL DEPTH OF BORING: 19.1 Ft.

18. SIGNATURE AND TITLE OF INSPECTOR: SM

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS The USCS classification system defines silt as the percent passing the No.200 (0.075 mm) sieve
-32.9	0.0					
-34.0	1.1		LEAN CLAY, firm, trace silt, silt distributed in laminae, greenish gray (10Y-5/1), (CL).		T1	Sample #T1, Depth = 0.6' Ave. Field Vane (tsf): 0.05
-34.6	1.7		SAND, fine grained, quartz, some clay, trace silt, clay distributed in pockets typically up to 0.5", 1.5" clay pocket @ 1.3', dark greenish gray (10Y-4/1), (SW-SM).			
-36.7	3.8		LEAN CLAY, soft, little sand, fine grained, quartz, trace silt, sand increases with depth in layer, lenticular bedding throughout layer, color is mottled dark greenish gray (10Y-4/1) and dark greenish gray (5GY-4/1), (CL).			
-40.4	7.5		SAND, fine grained, quartz, some clay, trace silt, clay increases with depth in layer, flaser bedding throughout layer, color is mottled greenish gray (5GY-5/1) and gray (2.5Y-5/1), (SP).			
-44.4	11.5		FAT CLAY, firm, some sand, fine grained, quartz, trace shell hash, trace silt, silt distributed in laminae, lenticular bedding throughout layer, shell hash distributed between 8.0' & 10.3', color is mottled gray (2.5Y-5/1) and dark greenish gray (10Y-4/1), (CH).			
-46.6	13.7		SAND, fine grained, quartz, trace clay, trace organics, trace silt, trace wood fragments, clay interbedded throughout layer, 0.5" organic pocket @ 12.7', (1.75" x 2.0") wood fragment @ 13.5', color is mottled dark greenish gray (5GY-4/1) and gray (2.5Y-5/1), (SW-SM).			
-49.2	16.3		FAT CLAY, stiff, little sand, fine grained, quartz, trace silt, lenticular bedding throughout layer, interbedded sand and clay between 15.0' & 15.7', color is mottled gray (2.5Y-5/1) and dark greenish gray (10Y-4/1), (CH).		T2	Sample #T2, Depth = 14.5' Ave. Field Vane (tsf): 0.15
-50.6	17.7		SAND, fine grained, quartz, trace clay, trace silt, clay distributed in pockets up to 0.75", clay increases with depth in layer, gray (2.5Y-5/1), (SW-SM).			
-51.2	18.3		FAT CLAY, very stiff, little sand, fine grained, quartz, trace silt, sand distributed in pockets up to 0.5", Bit sample from 18.0' to 18.3', dark greenish gray (10Y-4/1), (CH).		T3	Sample #T3, Depth = 17.9' Ave. Field Vane (tsf): 0.31
-52.0	19.1		No recovery.			
			End of Boring			

0 5 10 15 20 25

REGION1_RECON_GEOTECH.GPJ 3/25/24

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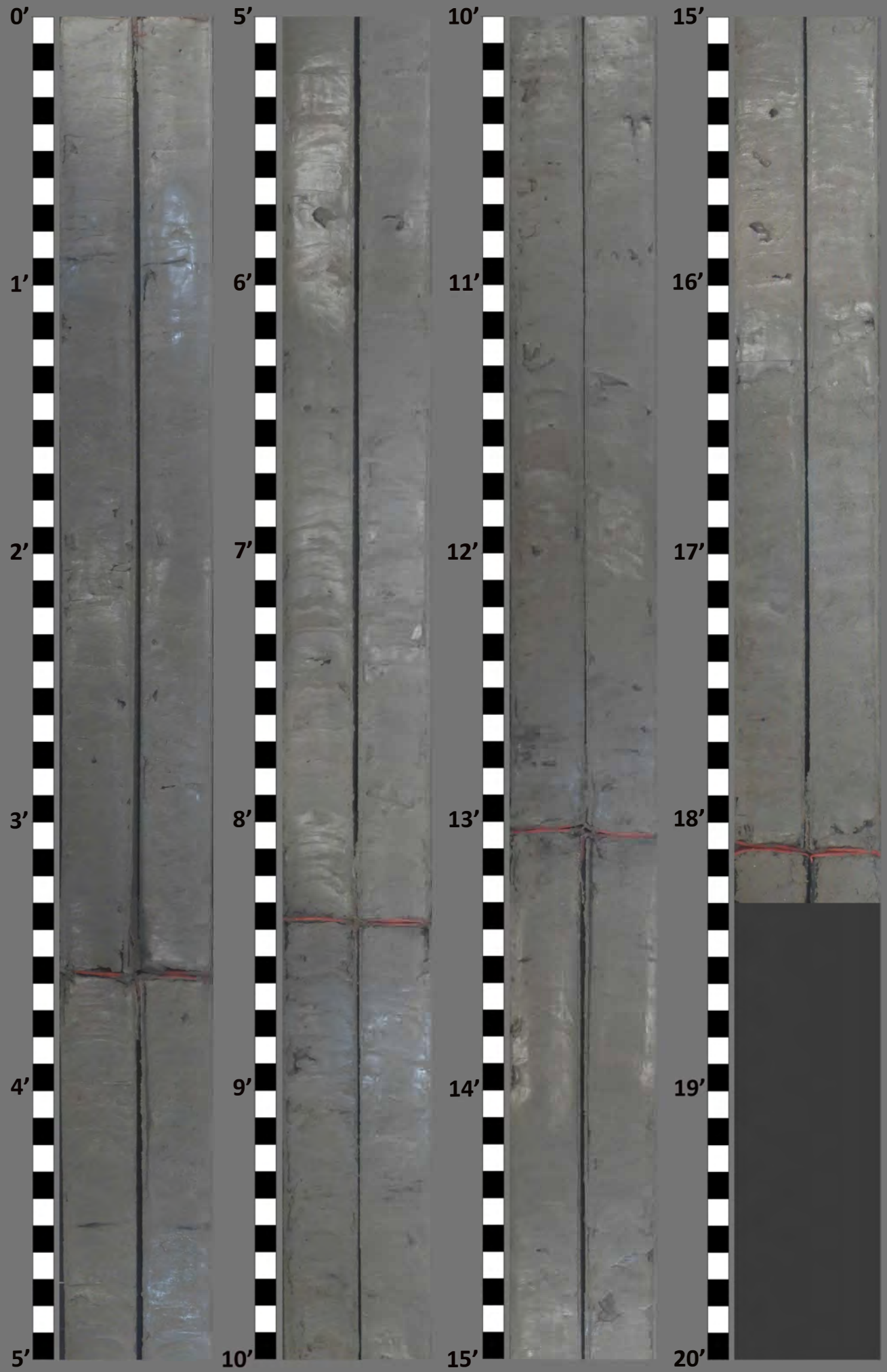

Texas General Land Office

Texas GLO Region 1 Geotechnical Reconnaissance Survey

TXGLO1-VC-23-025

Date Collected: 10/8/23
Top Elev. (ft NAVD88): -32.9
Bottom Elev. (ft NAVD88): -51.2
Core Length (ft): 18.3

APTIM
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Mini Vane Shear Test Results

CORE ID	SAMPLE DEPTH (ft)	TORVANE (kg/cm^2)	TORVANE (tsf)	TORVANE (kpa)	DESCRIPTION[1]
TXGLO1-VC-23-017	2.3	2.5	0.26	245.17	Very Stiff
	4.3	3.5	0.36	343.23	Hard
	7.0	3.0	0.31	294.20	Very Stiff
	10.2	1.5	0.15	147.10	Stiff
TXGLO1-VC-23-018	2.1	5.5	0.56	539.37	Hard
	3.3	5.0	0.51	490.33	Hard
	4.5	6.0	0.61	588.40	Hard
	8.3	9.0	0.92	882.60	Hard
	12.9	7.5	0.77	735.50	Hard
TXGLO1-VC-23-019	3.0	2.0	0.20	196.13	Very Stiff
	6.2	3.0	0.31	294.20	Very Stiff
	13.2	5.5	0.56	539.37	Hard
TXGLO1-VC-23-020	2.8	0.5	0.05	49.03	Firm
TXGLO1-VC-23-021	2.8	2.5	0.26	245.17	Very Stiff
	13.0	3.0	0.31	294.20	Very Stiff
	16.8	2.5	0.26	245.17	Very Stiff
TXGLO1-VC-23-022	2.8	2.5	0.26	245.17	Very Stiff
	9.5	1.0	0.10	98.07	Stiff
TXGLO1-VC-23-023	2.0	7.0	0.72	686.47	Hard
	4.5	7.5	0.77	735.50	Hard
	6.1	5.5	0.56	539.37	Hard
	7.6	7.5	0.77	735.50	Hard
	10.3	8.0	0.82	784.53	Hard
	12.4	8.5	0.87	833.57	Hard
TXGLO1-VC-23-024	6.1	4.0	0.41	392.27	Hard
	9.7	3.5	0.36	343.23	Hard
	15.6	6.5	0.67	637.43	Hard
TXGLO1-VC-23-025	0.6	0.5	0.05	49.03	Firm
	14.5	1.5	0.15	147.10	Stiff
	17.9	3.0	0.31	294.20	Very Stiff
TXGLO1-VC-23-026	0.8	1.5	0.15	147.10	Stiff
	17.9	2.5	0.26	245.17	Very Stiff
TXGLO1-VC-23-027	0.7	3.0	0.31	294.20	Very Stiff
	2.4	2.0	0.20	196.13	Very Stiff
	5.2	2.5	0.26	245.17	Very Stiff
	6.5	3.8	0.38	367.75	Hard
	14.9	3.8	0.38	367.75	Hard
	16.5	4.5	0.46	441.30	Hard
TXGLO1-VC-23-028	No Torvane Conducted				