Aptim Environmental & Infrastructure, LLC
6401 Congress Avenue, Suite 140
Boca Raton, Florida 33487
Phone # 1-561-391-8102

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 %

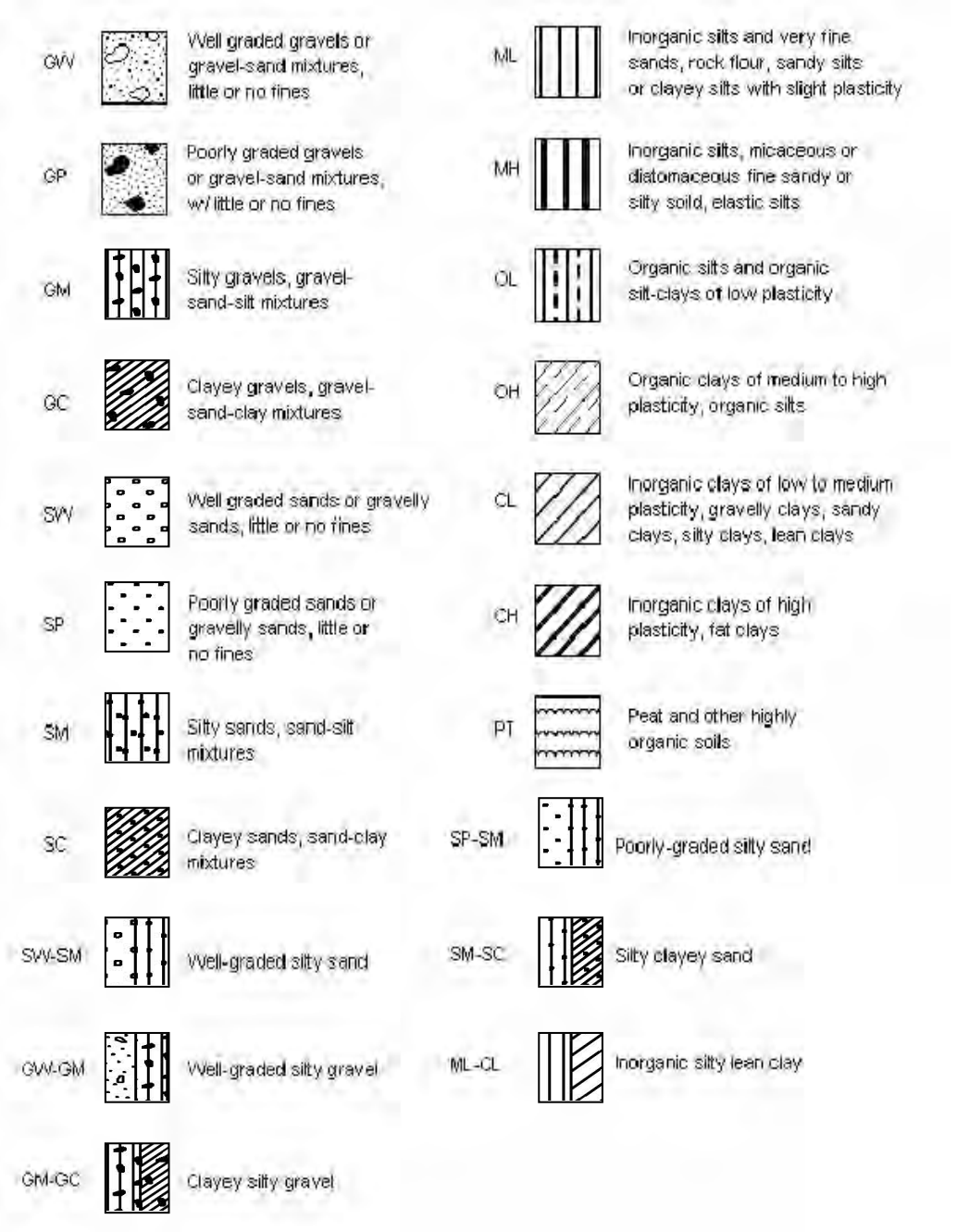
Consistency of Cohesive Soils

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-23-034

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-23-034
LOCATION COORDINATES (ft): X = 3,476,065 Y = 13,755,519

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): 7

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: 10-09-23 | COMPLETED: 10-09-23

6. THICKNESS OF OVERBURDEN 0.0 Ft.

16. ELEVATION TOP OF BORING -40.0 Ft.

7. DEPTH DRILLED INTO ROCK 0.0 Ft.

17. TOTAL RECOVERY FOR BORING 18.9 Ft.

8. TOTAL DEPTH OF BORING 19.2 Ft.

18. SIGNATURE AND TITLE OF INSPECTOR: KS

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
-40.0	0.0					
-43.5	3.5		Silty FAT CLAY, hard, trace rock fragments, rock fragments are fragments of partially lithified clay, dark greenish gray (10Y-4/1), (CH).		T1	Sample #T1, Depth = 2.0' Ave. Field Vane (tsf): 0.46
-45.0	5.0		FAT CLAY, hard, little silt, trace rock fragments, hardness increases with depth in layer, rock fragments are fragments of partially lithified clay, very dark greenish gray (10Y-3/1), (CH).		T2	Sample #T2, Depth = 4.1' Ave. Field Vane (tsf): 0.51
-49.2	9.2		FAT CLAY, hard, little silt, trace rock fragments, silt distributed in laminae, rock fragments are fragments of partially lithified clay, very dark greenish gray (10Y-3/1), (CH).		T3	Sample #T3, Depth = 7.1' Ave. Field Vane (tsf): 0.41
-51.5	11.5		FAT CLAY, hard, some silt, silt increases with depth in layer, rock fragments are fragments of partially lithified clay, interbedded clay and silty clay between 10.7' & 11.5', very dark greenish gray (10Y-3/1), (CH).		T4	Sample #T4, Depth = 10.1' Ave. Field Vane (tsf): 0.38
-54.5	14.5		Clayey SILT, hard, trace rock fragments, clay distributed in laminae, rock fragments are fragments of partially lithified clay, 1.5" rock fragment @ 12.8', very dark greenish gray (10Y-3/1), (ML).		T5	Sample #T5, Depth = 13.4' Ave. Field Vane (tsf): 0.43
-57.9	17.9		Clayey SILT, hard, trace rock fragments, rock fragments are fragments of partially lithified clay, 4.0" clay pocket @ 15.1', 1.5" clay pocket @ 16.5', very dark greenish gray (10Y-3/1), (ML).		T6	Sample #T6, Depth = 15.6' Ave. Field Vane (tsf): 0.46
-58.9	18.9		Silty FAT CLAY, hard, trace rock fragments, rock fragments are fragments of partially lithified clay, silt increases with depth in layer, very dark greenish gray (10Y-3/1), (CH).		T7	Sample #T7, Depth = 18.2' Ave. Field Vane (tsf): 0.41
-59.2	19.2		No recovery.			
			End of Boring			

0 5 10 15 20 25

REGION1_RECON_GEOTECH.GPJ 3/25/24

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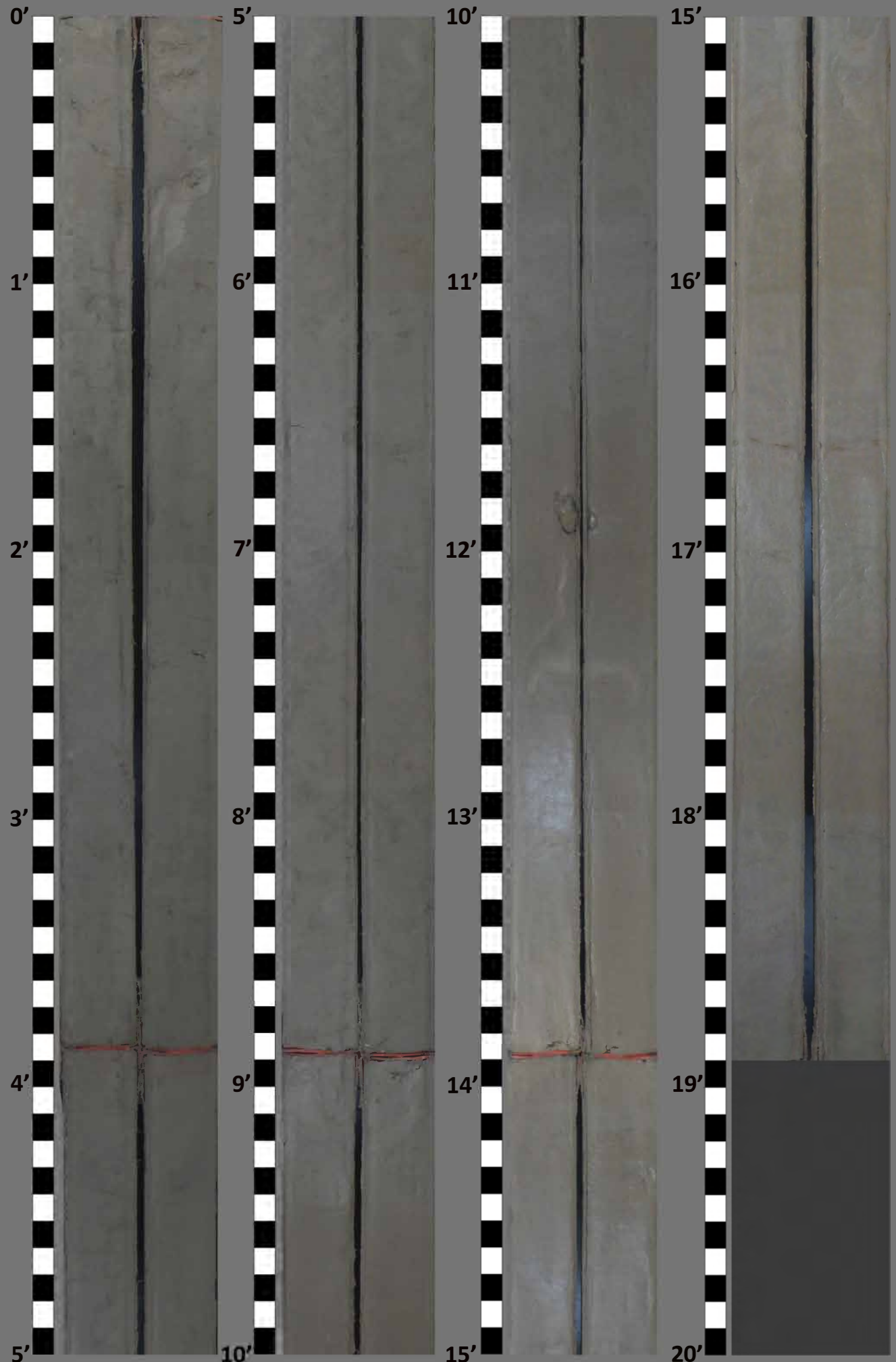

Texas General Land Office

Texas GLO Region 1 Geotechnical Reconnaissance Survey

TXGLO1-VC-23-034

Date Collected: 10/9/23
Top Elev. (ft NAVD88): -40.0
Bottom Elev. (ft NAVD88): -58.9
Core Length (ft): 18.9

APTIM
6401 Congress Avenue, Suite 140
Boca Raton, FL 33487
www.aptim.com
(561)391-8102

Mini Vane Shear Test Results

CORE ID	SAMPLE DEPTH (ft)	TORVANE (kg/cm²)	TORVANE (tsf)	TORVANE (kpa)	DESCRIPTION[1]
TXGLO1-VC-23-029	2.7	1.3	0.13	122.58	Stiff
	5.3	2.0	0.20	196.13	Very Stiff
	11.4	1.5	0.15	147.10	Stiff
	14.0	1.5	0.15	147.10	Stiff
TXGLO1-VC-23-030	No Torvane Conducted				
TXGLO1-VC-23-031	0.5	4.8	0.49	465.82	Hard
	3.4	4.3	0.44	416.78	Hard
	7.1	6.0	0.61	588.40	Hard
	11.9	5.5	0.56	539.37	Hard
	15.8	3.5	0.36	343.23	Hard
TXGLO1-VC-23-032	2.5	3.0	0.31	294.20	Very Stiff
	6.0	5.0	0.51	490.33	Hard
	10.7	2.5	0.26	245.17	Very Stiff
	14.6	6.5	0.67	637.43	Hard
	16.0	5.5	0.56	539.37	Hard
	17.8	8.0	0.82	784.53	Hard
TXGLO1-VC-23-033	0.6	1.0	0.10	98.07	Stiff
	1.2	4.0	0.41	392.27	Hard
	4.1	6.0	0.61	588.40	Hard
	8.2	4.5	0.46	441.30	Hard
	11.7	4.0	0.41	392.27	Hard
TXGLO1-VC-23-034	2.0	4.5	0.46	441.30	Hard
	4.1	5.0	0.51	490.33	Hard
	7.1	4.0	0.41	392.27	Hard
	10.1	3.8	0.38	367.75	Hard
	13.4	4.2	0.43	411.88	Hard
	15.6	4.5	0.46	441.30	Hard
	18.2	4.0	0.41	392.27	Hard
TXGLO1-VC-23-035	2.2	3.0	0.31	294.20	Very Stiff
	5.0	4.0	0.41	392.27	Hard
	7.5	5.0	0.51	490.33	Hard
	18.0	5.5	0.56	539.37	Hard
TXGLO1-VC-23-036	3.0	1.0	0.10	98.07	Stiff
	8.0	0.8	0.08	73.55	Firm
	17.8	4.5	0.46	441.30	Hard
TXGLO1-VC-23-037	1.0	2.8	0.28	269.68	Very Stiff
	5.0	4.0	0.41	392.27	Hard
	7.2	2.5	0.26	245.17	Very Stiff
	11.5	1.5	0.15	147.10	Stiff
	15.5	2.5	0.26	245.17	Very Stiff