LOG OF BORING AND TEST RESULTS

EUSTIS ENGINEERING SINCE 1946

Ducks Unlimited, Inc.
Pierce Marsh Beneficial Use
Marsh Creation
Phase 1
North of West Bay Near Galveston Island
Galveston County, Texas

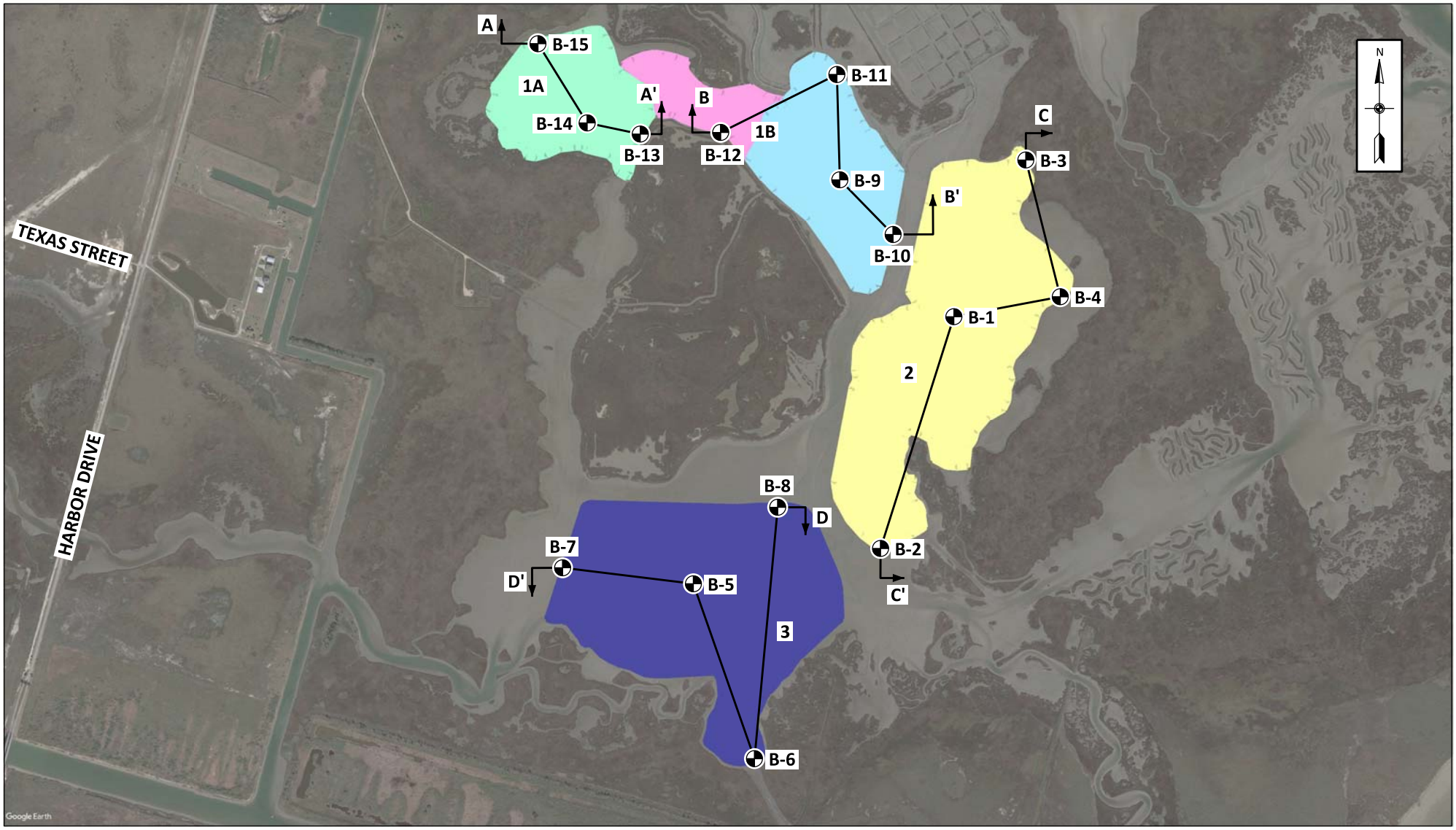
Boring: B-14

Project No: H0048
Date: 07/12/2022
Latitude: 29.31915°
Longitude: -94.97110°

Water Depth: See Text
Total Depth: 40.0 ft

Scale in Feet	PP	SPT	S P L R	Symbol	Visual Classification	USC	Sample Number	Depth in Feet	Water Content %	Density Dry pcf	Density Wet pcf	Shear Tests Type	Shear Tests ϕ	Shear Tests C psf	Atterberg Limits LL	Atterberg Limits PL	Atterberg Limits PI		Other Tests
0					Moist, soft gray LEAN CLAY	CL	1A	0	42										
	1.00				Moist, medium stiff to stiff gray & tan FAT CLAY w/trace of concretions	CH	1B	1	38										
	1.00						2A	2	37	85	116	OB	0	532					
							2B	3											
5					Moist, very stiff gray & tan LEAN CLAY w/organic matter	CL	3A	4	27										
	1.00					CH	3B	5	26										
					Moist, stiff gray & tan FAT CLAY w/trace of organic matter		4A	6	33										
	1.00					CL	4B	7	22						60	18	42		
					Moist, stiff gray & tan LEAN CLAY	CH	5A	8	27										
	2.00				Moist, stiff gray & tan FAT CLAY w/trace of concretions	CL	5B	9	31	92	120	OB	0	1264					
10						CH	6A	10	38										
	1.00				Moist, stiff reddish-brown LEAN CLAY		6B	11											
					Moist, stiff reddish-brown & gray FAT CLAY w/trace of concretions	CL	7A	12	33										
	1.00					CH	7B	13	30										
					Wet, very soft reddish-brown LEAN CLAY		8A	14	30										
15	1.00				Moist, very stiff to extremely stiff red & brown FAT CLAY w/trace of concretions	CH	8B	15	27	97	124	OB	0	1688					
							9A	16	32						70	20	50		
	1.00				Moist, stiff to very stiff red & brown FAT CLAY w/trace of concretions		9B	17	28										
							10A	18	24										
20	1.00						10B	19	28										
							11A	23	30										
	1.00				Moist, soft to medium stiff tan & gray LEAN CLAY w/trace of organic matter	CL	11B	24	26	99	125	OB	0	752					
25																			
							12A	28	32										
	0.50				Moist, compact tan & gray SILT w/few clay pockets & trace of clay lenses	ML	12B	29	28										
30					Moist, soft brown & tan LEAN CLAY w/organic matter	CL													
							13A	33	32										
	0.50						13B	34	31	91	119	OB	0	462					
35																			
							14A	38	31										
	0.50				Moist, medium stiff gray & tan LEAN CLAY w/trace of silt pockets & lenses, & trace of concretions	CL	14B	39	30	90	117	OB	0	640					
40																			
45																			
50																			

NOTES: Boring 14 was drilled in 1 ft. of water.



SATELLITE IMAGERY DATED: JANUARY 2022

NOT TO SCALE

◓ DENOTES APPROXIMATE LOCATIONS OF SOIL BORINGS DRILLED BETWEEN 11 AND 18 JULY 2022

BORING LOCATION PLAN

PHASE 1
DUCKS UNLIMITED, INC.
PIERCE MARSH BENEFICIAL USE MARSH CREATION
NORTH OF WEST BAY NEAR GALVESTON ISLAND
GALVESTON COUNTY, TEXAS
DU CONTRACT NO. TX-0-2
DU PROJECT NO. TX-194-4
DU TASK ORDER NO. 1

EUSTIS ENGINEERING L.L.C. SINCE 1946

DRAWN BY: S.T.S.	JOB NO.: H0048
CHECKED BY: H.C.W.	DATE: 15 AUG 2022
CADD FILE: LOCATION PLAN.DGN	FIGURE 2

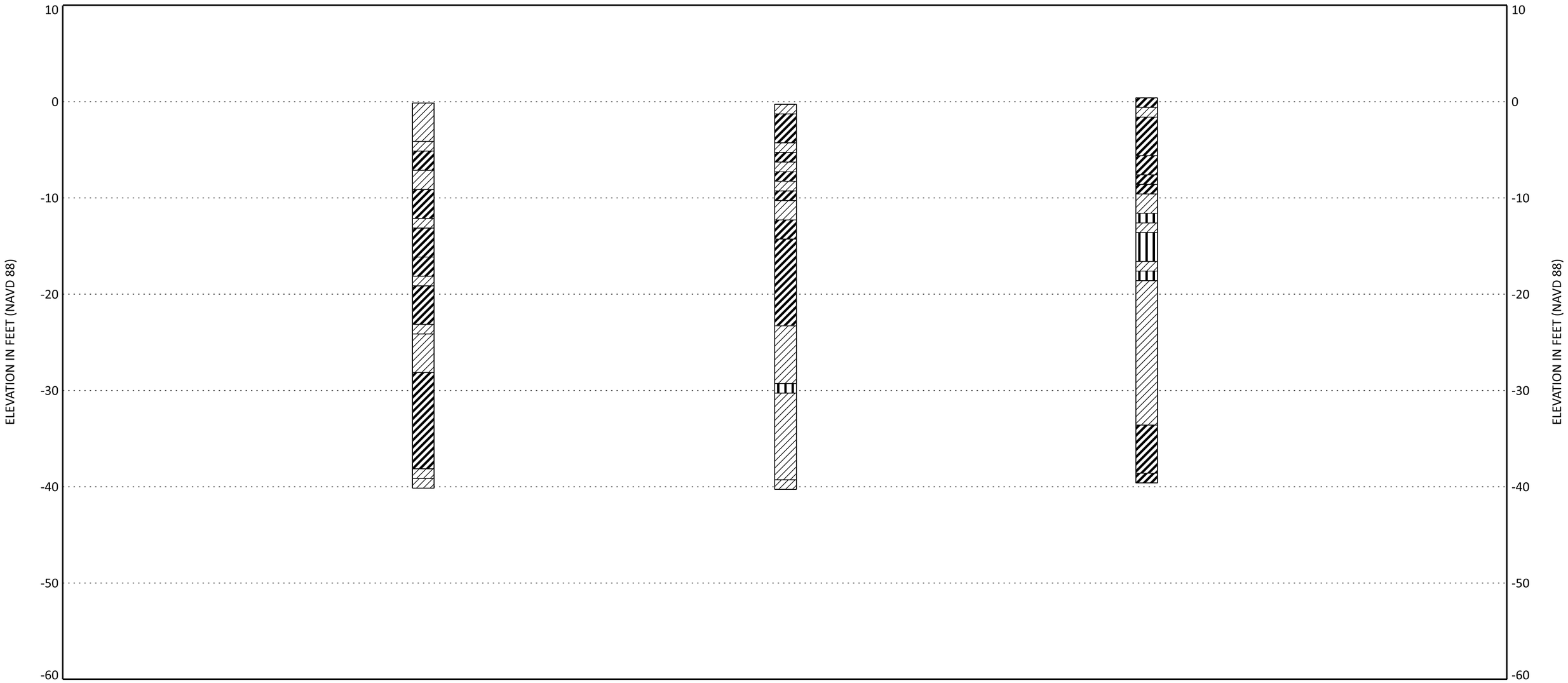
A

B-15
G.S.E. -0.14
11-12 JUL 2022

B-14
G.S.E. -0.28
12 JUL 2022

B-13
G.S.E. 0.40
12 JUL 2022

A'



BORING MATERIAL GRAPHICS

- FAT CLAY
- SILT
- LEAN CLAY

NOTE:

1. G.S.E. = GROUND SURFACE ELEVATION

SUBSURFACE SOIL PROFILE
MCA-1A

PHASE 1
DUCKS UNLIMITED, INC.
PIERCE MARSH BENEFICIAL USE MARSH CREATION
NORTH OF WEST BAY NEAR GALVESTON ISLAND
GALVESTON COUNTY, TEXAS
DU CONTRACT NO. TX-0-2
DU PROJECT NO. TX-194-4
DU TASK ORDER NO. 1

EUSTIS ENGINEERING L.L.C. SINCE 1946

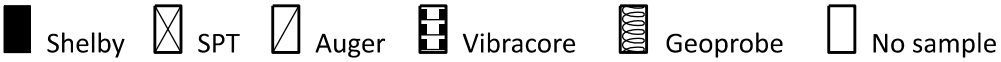
DRAWN BY: S.T.S.	JOB NO.: H0048
CHECKED BY: H.C.W.	DATE: 23 AUG 2022
CADD FILE: PROFILE.DGN	FIGURE 3 (SHEET 1 OF 4)

EUSTIS ENGINEERING SINCE 1946

LEGEND AND NOTES FOR LOG OF BORING AND TEST RESULTS

PP Pocket penetrometer: Resistance in tons per square foot

SPT Standard Penetration Test: Number of blows of a 140-lb hammer dropped 30 inches required to drive 2-in. O.D., 1.4-in. I.D. sampler a distance of 1 foot into the soil after first seating it 6 inches. Values shown have not been corrected.

SPLR Type of Sampling  Shelby, SPT, Auger, Vibracore, Geoprobe, No sample

SYMBOL Clay, Silt, Sand, Peat/Humus, Shells, Stone/Gravel

Predominant type shown heavy; modifying type shown light

USC Unified Soil Classification

DENSITY Unit weight in pounds per cubic foot

SHEAR TESTS

TYPE

- UC Unconfined compression shear
- OB Unconsolidated undrained triaxial compression shear on one specimen confined at the approximate overburden pressure
- UU Unconsolidated undrained triaxial compression shear
- ϕ Angle of internal friction in degrees
- c Cohesion in pounds per square foot

ATTERBERG LIMITS

- LL Liquid Limit
- PL Plastic Limit
- PI Plasticity Index

OTHER TESTS

- CON Consolidation
- -#200 Percent passing a U.S. No. 200 sieve
- SV Particle size distribution (sieve only)
- PD Particle size distribution (sieve and hydrometer)
- k Coefficient of permeability in centimeters per second
- SP Swelling pressure in pounds per square foot

Other laboratory test results reported on separate figures

GENERAL NOTES

(1) If a ground water depth is shown on the boring log, these observations were made at the time of drilling and were measured below the existing ground surface. These observations are shown on the boring logs. However, ground water levels may vary due to seasonal fluctuations and other factors. If important to construction, the depth to ground water should be determined by those persons responsible for construction immediately prior to beginning work.

(2) While the individual logs of borings are considered to be representative of subsurface conditions at their respective locations on the dates shown, it is not warranted that they are representative of subsurface conditions at other locations and times.