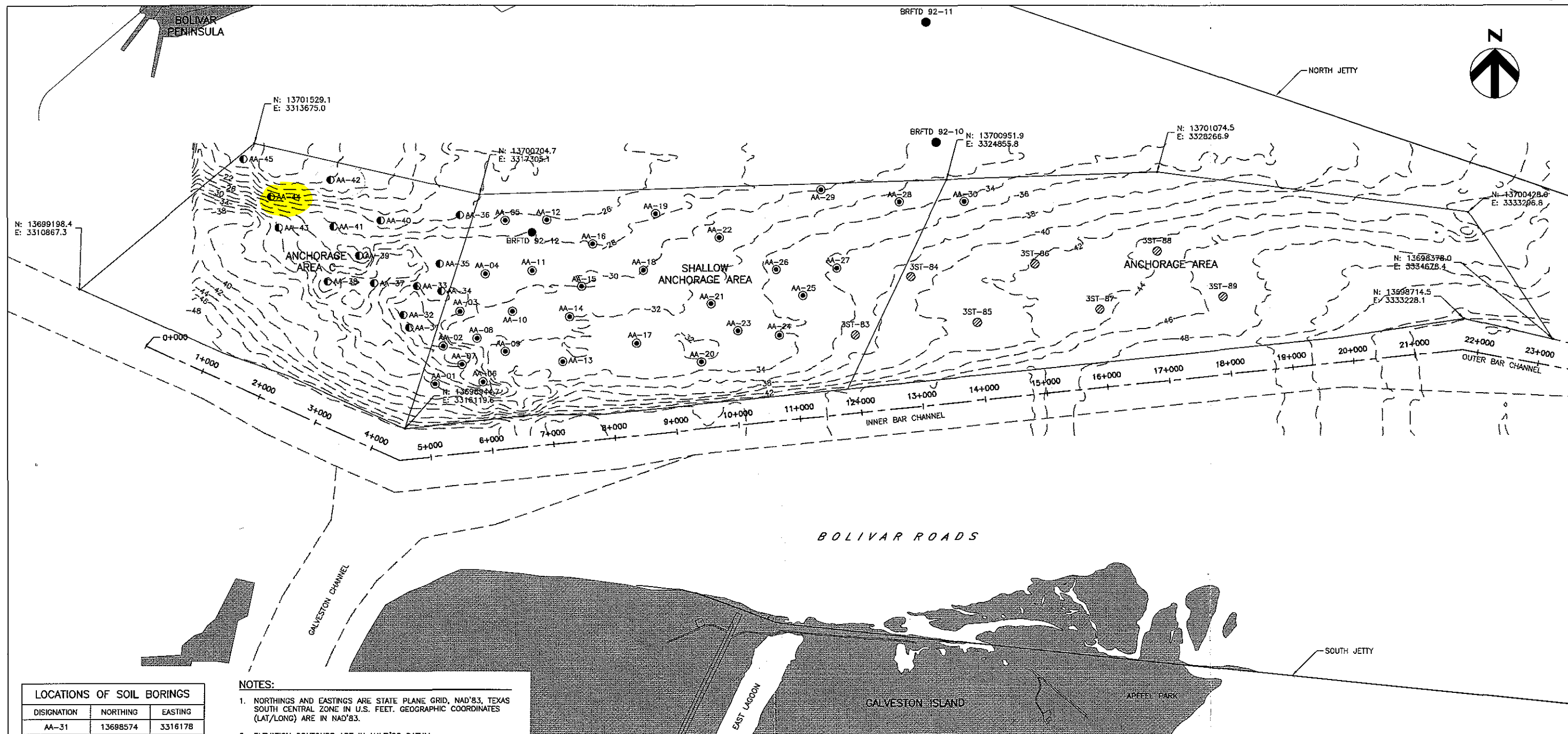


1391 Tech
Downers



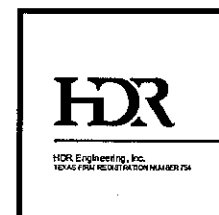
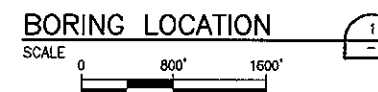
LOCATIONS OF SOIL BORINGS		
DISIGNATION	NORTHING	EASTING
AA-31	13698574	3316178
AA-32	13698778	3316085
AA-33	13699244	3316297
AA-34	13699156	3316692
AA-35	13699595	3316661
AA-36	13700379	3316989
AA-37	13699288	3315613
AA-38	13699316	3314867
AA-39	13699731	3315371
AA-40	13700296	3315711
AA-41	13700196	3314956
AA-42	13700944	3314910
AA-43	13700178	3314070
AA-44	13700672	3313951
AA-45	13701278	3313502

NOTES:

- NORTHINGS AND EASTINGS ARE STATE PLANE GRID, NAD'83, TEXAS SOUTH CENTRAL ZONE IN U.S. FEET. GEOGRAPHIC COORDINATES (LAT/LONG) ARE IN NAD'83.
- ELEVATION CONTOURS ARE IN NAVD'88 DATUM.
- ELEVATION CONTOURS BASED ON INFORMATION PROVIDED BY THE U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT. SURVEY DATE WAS JUNE 2009. ELEVATIONS WERE CONVERTED FROM USACE MLT TO NAVD '88 USING THE FOLLOWING CORRELATION:
0 NAVD '88 = 1.42' MLT.
- VIBRACORES WERE PERFORMED BY ROCK ENGINEERING AND TESTING LABORATORY, INC (RETL) AND OCEAN SURVEYS, INC DURING MARCH 2009.
- SOIL BORINGS WERE PERFORMED BY RETL DURING OCTOBER 2009.

LEGEND:

- HISTORICAL BORING LOCATIONS FROM USACE (1966)
- VIBRACORE LOCATIONS (SEE NOTE 4)
- VIBRACORE LOCATION FROM RICE UNIVERSITY
- BORING LOCATIONS (SEE NOTE 5)



TEXAS GENERAL LAND OFFICE ANCHORAGE AREA C SAND SOURCE INVESTIGATION

BORING LOCATION PLAN - GALVESTON ANCHORAGE AREA

DATE	11/30/09
FIGURE	EX A



- Geotechnical Engineering
- Construction Materials Testing

PROJECT NAME: Galveston Anchorage Area C Sand Source Investigation

CLIENT: HDR Engineering, Inc.

BORING ID.: AA-44

DESCRIPTION: Anchorage Area C Borrow Source Area

PERCENT SHELL BY WEIGHT (BASED ON #10 SIEVE)			
-25.72' to -27.72' NAVD	-27.72' to -29.72' NAVD	-29.72' to -31.72' NAVD	-31.72' to -33.72' NAVD
0.23	0.13	0.26	0.04

ASTM MESH	% FINER BY WEIGHT AFTER REMOVING SHELL			
	-25.72' to -27.72' NAVD	-27.72' to -29.72' NAVD	-29.72' to -31.72' NAVD	-31.72' to -33.72' NAVD
#10	100.00	100.00	100.00	100.00
#18	99.70	99.40	99.56	99.86
#35	99.60	98.90	99.40	99.72
#60	99.20	98.00	98.90	99.18
#70	98.00	95.60	97.36	98.19
#100	32.20	48.00	33.83	81.25
#120	10.30	19.40	10.98	65.99
#170	3.20	9.51	3.83	52.33
#200	2.50	7.20	2.50	42.35
STATISTICS (EXCLUDING SHELL)				
MEDIAN GRAIN SIZE (mm)	0.18	0.17	0.18	0.08
MEAN GRAIN SIZE (mm)	0.17	0.16	0.17	N/A
SORTING (σ)	0.22	N/A	0.23	N/A

*The -#10 material was utilized as the total sample for Grain Size Distribution Curve calculations.



- Geotechnical Engineering
- Construction Materials Testing

PROJECT NAME: Galveston Anchorage Area C Sand Source Investigation

CLIENT: HDR Engineering, Inc.

BORING ID.: AA-44

DESCRIPTION: Anchorage Area C Borrow Source Area

PERCENT SHELL BY WEIGHT (BASED ON #10 SIEVE)		
-33.72' to -35.72' NAVD	-37.72' to -39.72' NAVD	-41.72' to -43.72' NAVD
0.06	1.05	0.79

ASTM MESH	% FINER BY WEIGHT AFTER REMOVING SHELL		
	-33.72' to -35.72' NAVD	-37.72' to -39.72' NAVD	-41.72' to -43.72' NAVD
#10	100.00	100.00	100.00
#18	99.73	97.70	98.76
#35	99.44	96.01	98.14
#60	98.80	91.54	96.95
#70	97.36	82.34	94.97
#100	62.95	34.44	58.54
#120	39.47	20.30	35.83
#170	26.26	13.40	24.17
#200	21.51	11.02	19.82
STATISTICS (EXCLUDING SHELL)			
MEDIAN GRAIN SIZE (mm)	0.14	0.18	0.14
MEAN GRAIN SIZE (mm)	N/A	0.16	N/A
SORTING (σ)	N/A	N/A	N/A

*The #10 material was utilized as the total sample for Grain Size Distribution Curve calculations.

Date: 10-16-09
Project Location:

BORING LOG

San Antonio
Type: HSA

Boring No.: AA-44
Location:

Depth Feet	Symbol	Sample	N-Blows Per Foot	MATERIAL DESCRIPTION	H ₂ O on Rod H ₂ O Upon Comp. Cave Upon Comp.
1.0 23 2.5 29		1	1 1/10	Brown fine Sand	GPS. 29.35432 94.77529
3.5 25 5.0 27		2	1 1/10	lt gr fine sand	DPW 23'
6.0 27 7.5 20		3	5 1/10	Same (no picture)	
8.5 24 10.0 21		4	2 1/10	Same grey silt	30"
11.0 31 12.5 33		5	2 1/10	Same Grey Silty Sand	
13.5 33 15.0 35		6	1 1/10	Same	
16.5 45 20.0 37		7	2 1/10	Grey silty sand w shell frag	
23.5 37 25.0 39		8	1 1/10	Same	
26.5 30 30.0 41		9	2 1/10	Same less silt	
33.5 35.0		10			
38.5 40.0		11			
43.5 45.0		12			
48.5 50.0		13			

LOG OF BORING AA-44

SHEET 1 of 1



Rock Engineering & Testing Lab., Inc.
6817 Leopard St.
Corpus Christi, TX 78409
Telephone: (361) 883-4555
Fax: (361) 883-4711

CLIENT: HDR Engineering, Inc.

PROJECT: Galveston Anchorage Area C Sand Source Inv.

LOCATION: Anchorage Area C, Galveston, Texas

NUMBER: G109233

DATE(S) DRILLED: 10/16/09 - 10/16/09

DRILLING METHOD(S):

Hollow Stem Auger

GROUNDWATER INFORMATION:

SURFACE ELEVATION: -25.72' NAVD

DESCRIPTION OF STRATUM

SOIL SYMBOL	FIELD DATA				LABORATORY DATA							
	Elevation, Ft. [NAVD]	SAMPLE NUMBER	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	ATTERBERG LIMITS			DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ.FT)	MINUS NO. 200 SIEVE (%)	
						LL	PL	PI				
	5											
	10											
	15											
	20											
	25											
SS		S-1	N= 1								3	
SS		S-2	N= 11								7	
SS		S-3	N= 1								3	
SS		S-4	N= 1								42	
SS		S-5	N= 2								22	
SS		S-6	N= 7									
SS		S-7	N= 2								11	
SS		S-8	N= 3									
SS		S-9	N= 1								19	

16' sand
2' fines

POORLY GRADED SAND, with shell fragments, brown and light gray, very loose.

Same as above, with clay, medium.

Same as above, very loose.

CLAYEY SAND, bluish gray and brown, very soft.

SILTY CLAYEY SAND, bluish gray, very loose.

POORLY GRADED SAND, with clay, gray and brown, loose.

Same as above, very loose.

SILTY CLAYEY SAND, gray and brown, very loose.

Same as above.

Boring was extended to an elevation of -43.7-feet NAVD during the drilling operations.

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

REMARKS:

Boring depth and location was determined by HDR Engineering, Inc. Boring operations were performed by RETL at GPS Coord. N. 29.35432 W. 94.77529.

LOG OF BORING G109233 ANCHORAGE BASIN C.G.P.J. ROCK ETL GDT 11/30/09