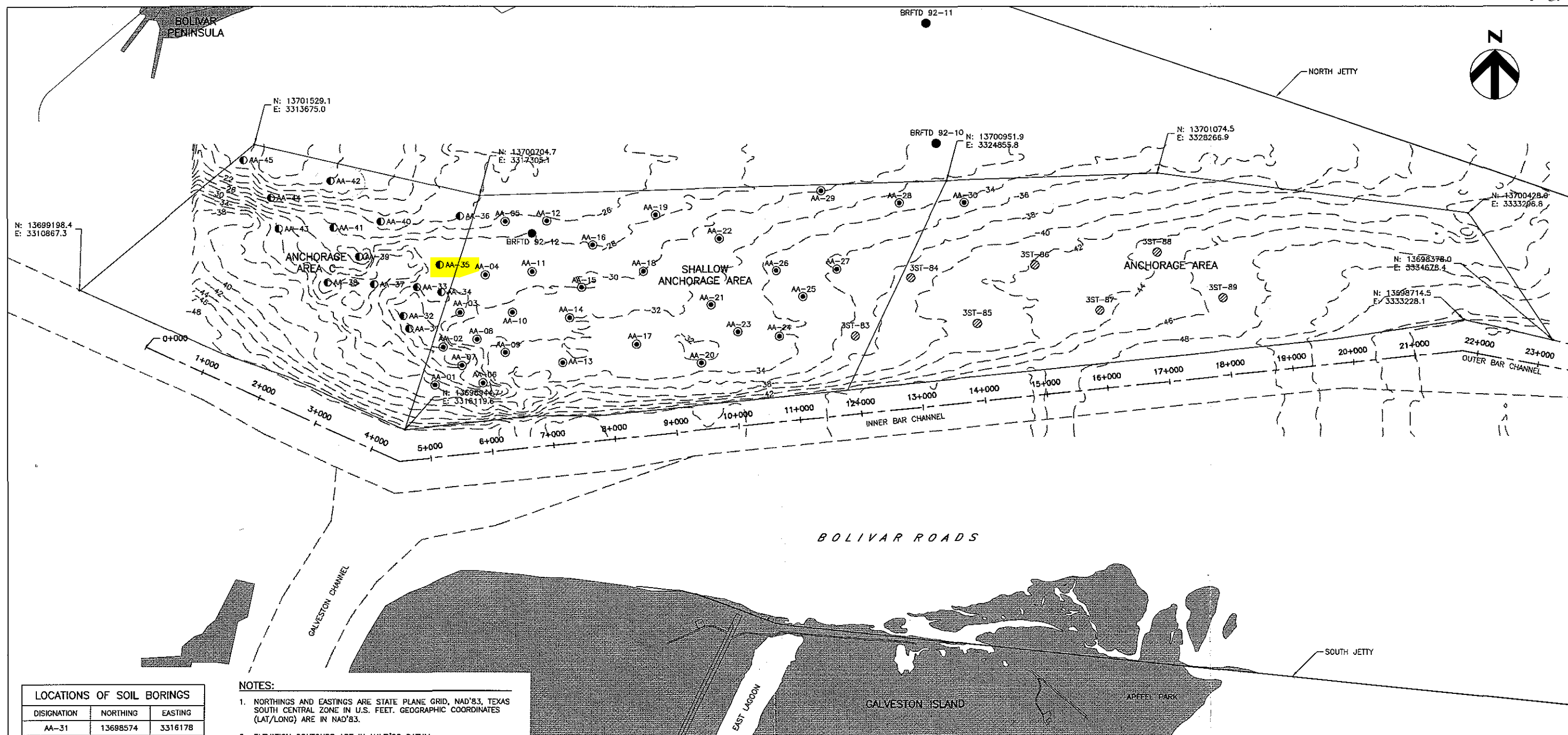


1391 Tech
Downers



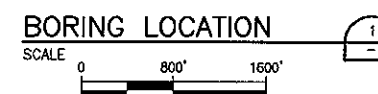
LOCATIONS OF SOIL BORINGS		
DISIGNATION	NORTHING	EASTING
AA-31	13698574	3316178
AA-32	13698778	3316085
AA-33	13699244	3316297
AA-34	13699156	3316692
AA-35	13699595	3316661
AA-36	13700379	3316989
AA-37	13699288	3315613
AA-38	13699316	3314867
AA-39	13699731	3315371
AA-40	13700296	3315711
AA-41	13700196	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.

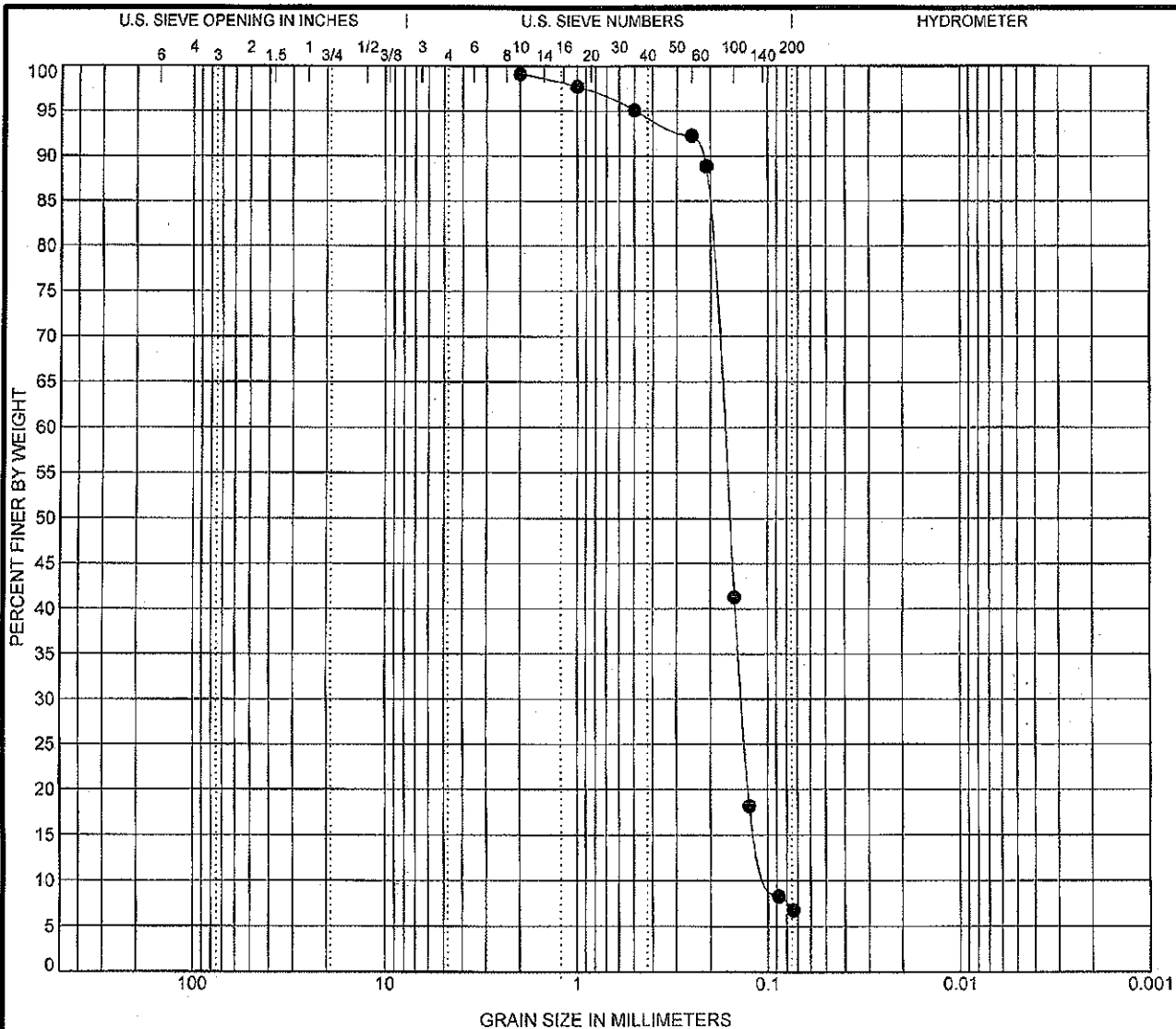
BORING ID.: AA-35

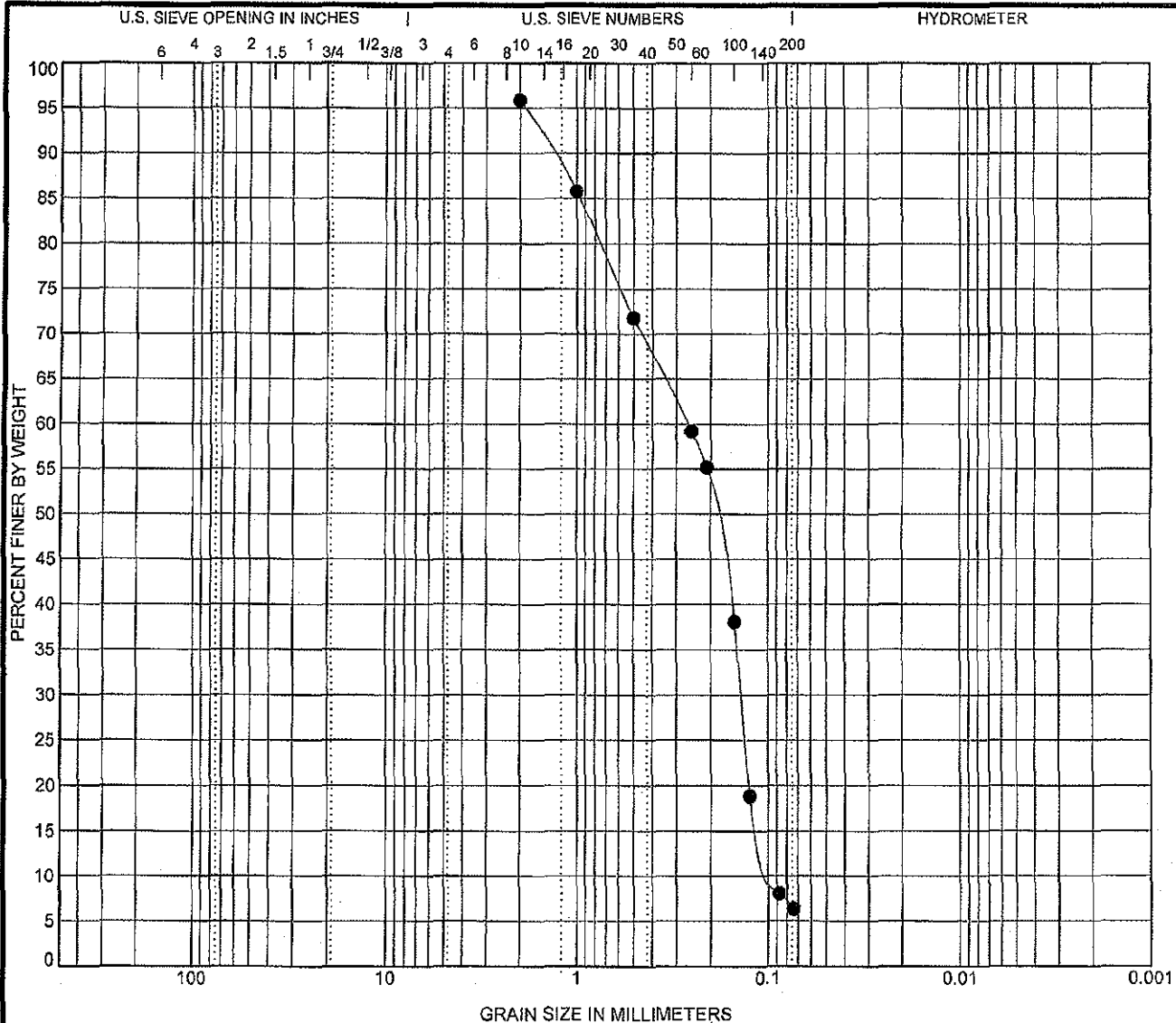
DESCRIPTION: Anchorage Area C Borrow Source Area

PERCENT SHELL BY WEIGHT (BASED ON #10 SIEVE)				
-26.22' to -28.22' NAVD	-28.22' to -30.22' NAVD	-30.22' to -32.22' NAVD	-32.22' to -34.22' NAVD	-34.22' to -36.22' NAVD
8.10	4.10	25.00	0.90	0.70

ASTM MESH	% FINER BY WEIGHT AFTER REMOVING SHELL				
	-26.22' to -28.22' NAVD	-28.22' to -30.22' NAVD	-30.22' to -32.22' NAVD	-32.22' to -34.22' NAVD	-34.22' to -36.22' NAVD
#10	100.00	100.00	100.00	100.00	100.00
#18	73.70	85.80	55.30	97.70	97.00
#35	48.00	71.80	33.80	95.10	92.80
#60	28.10	59.20	23.10	92.30	88.30
#70	22.20	55.20	19.60	88.90	85.70
#100	11.30	38.10	12.20	41.30	44.80
#120	7.40	18.90	9.50	18.20	21.90
#170	5.30	8.10	7.20	8.30	10.80
#200	4.70	6.40	6.50	6.80	7.70
STATISTICS (EXCLUDING SHELL)					
MEDIAN GRAIN SIZE (mm)	0.55	0.17	0.85	0.17	0.16
MEAN GRAIN SIZE (mm)	0.53	0.15	0.53	0.17	0.15
SORTING (σ)	1.36	N/A	N/A	N/A	N/A

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





COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

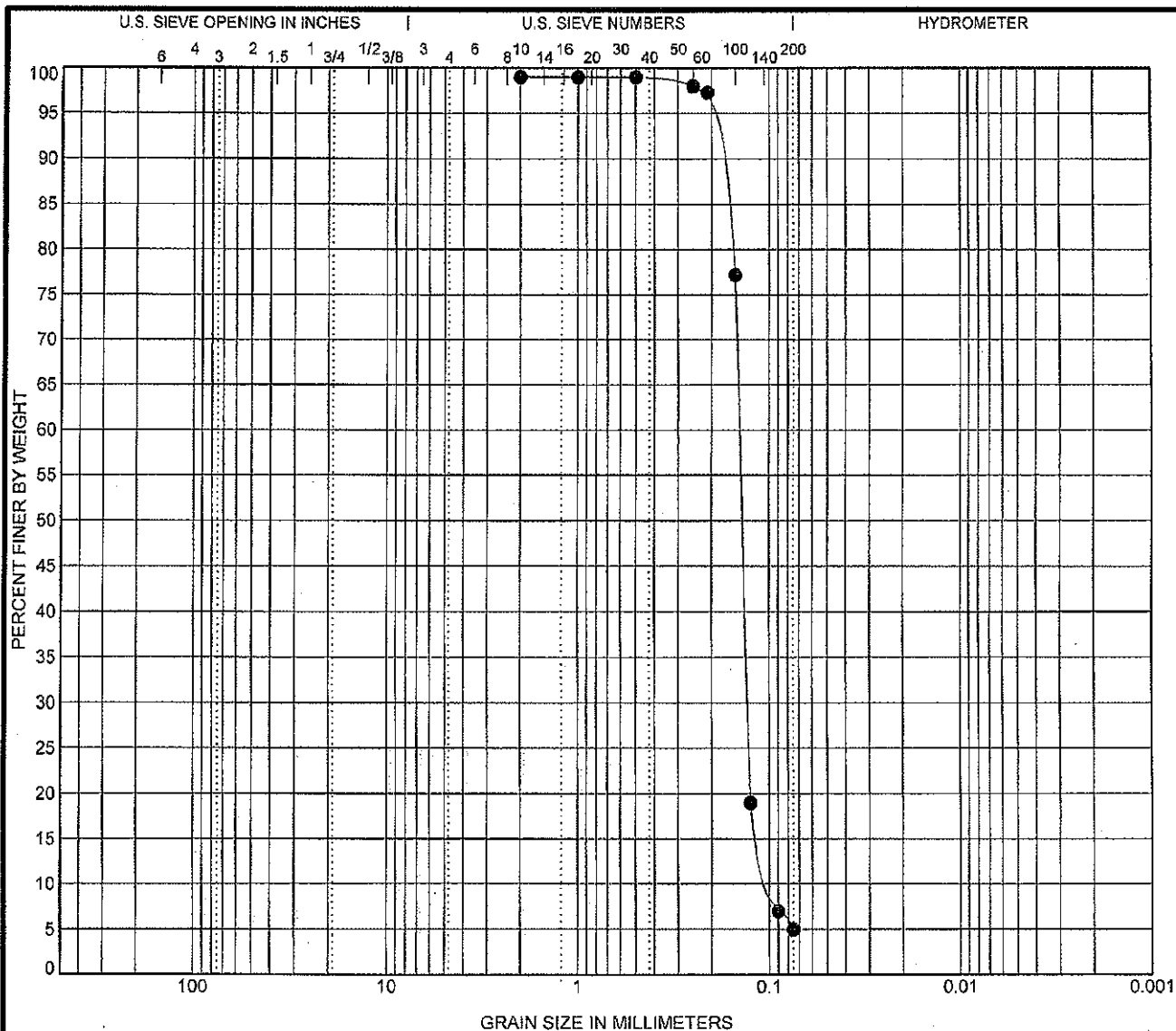
Specimen ID		Depth	Classification					LL	PL	PI	Cc	Cu
●	AA-35	28.2'	AA-35 (-28.2' to -30.2' NAVD)								0.78	2.79
Specimen ID		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	AA-35	28.2'	2	0.261	0.138	0.094	0.0					



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

GRAIN SIZE DISTRIBUTION

Project: Prop. Anchorage Area "C" Sand Source Inv.
Location: Galveston Island, Texas
Number: G109233



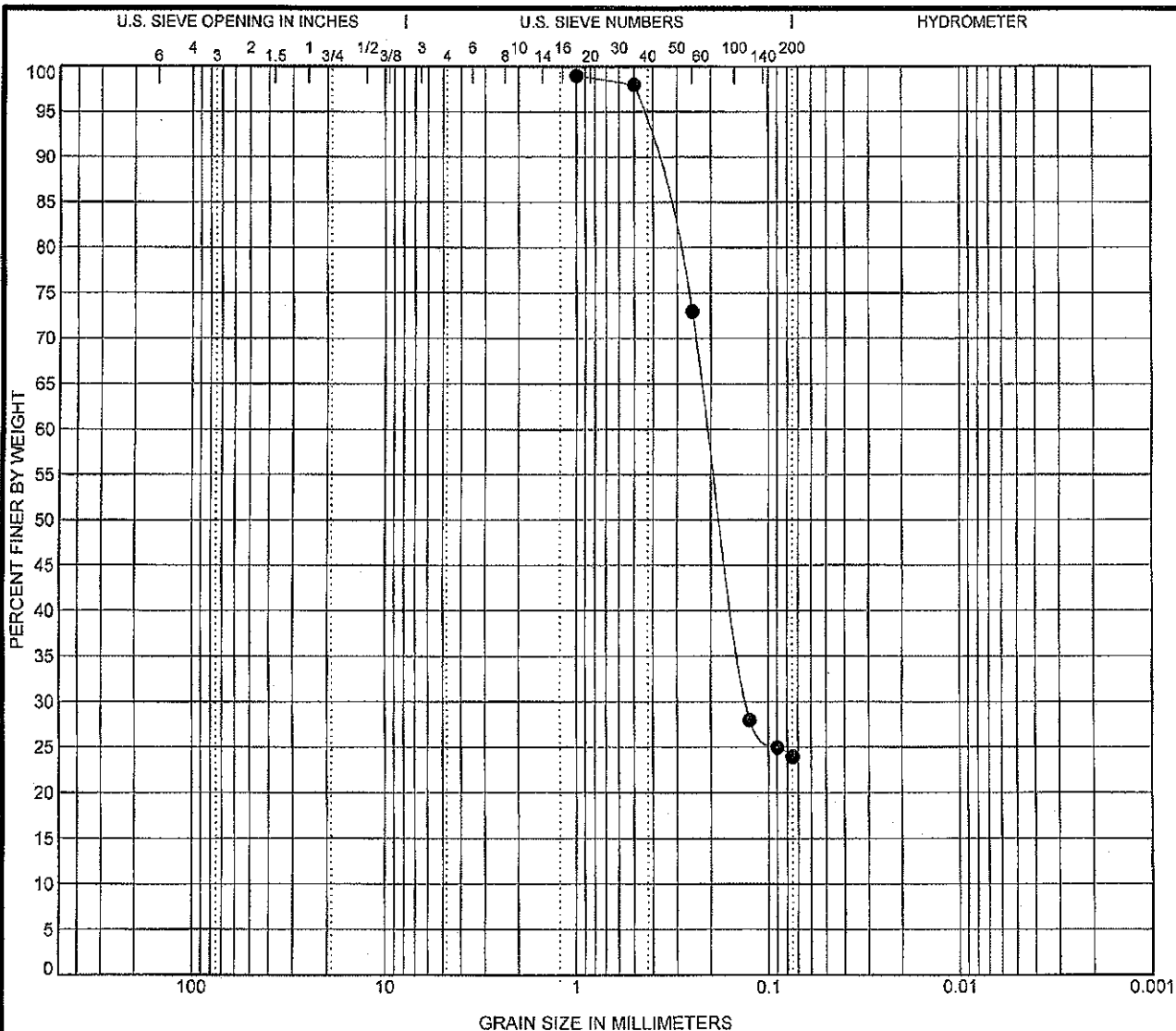
COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

[illegible]

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Location: Galveston Island, Texas
Number: G109233



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Depth	Classification	LL	PL	PI	Cc	Cu
● AA-35	32.2'	AA-35 (-32.2' to -34.2' NAVD)					

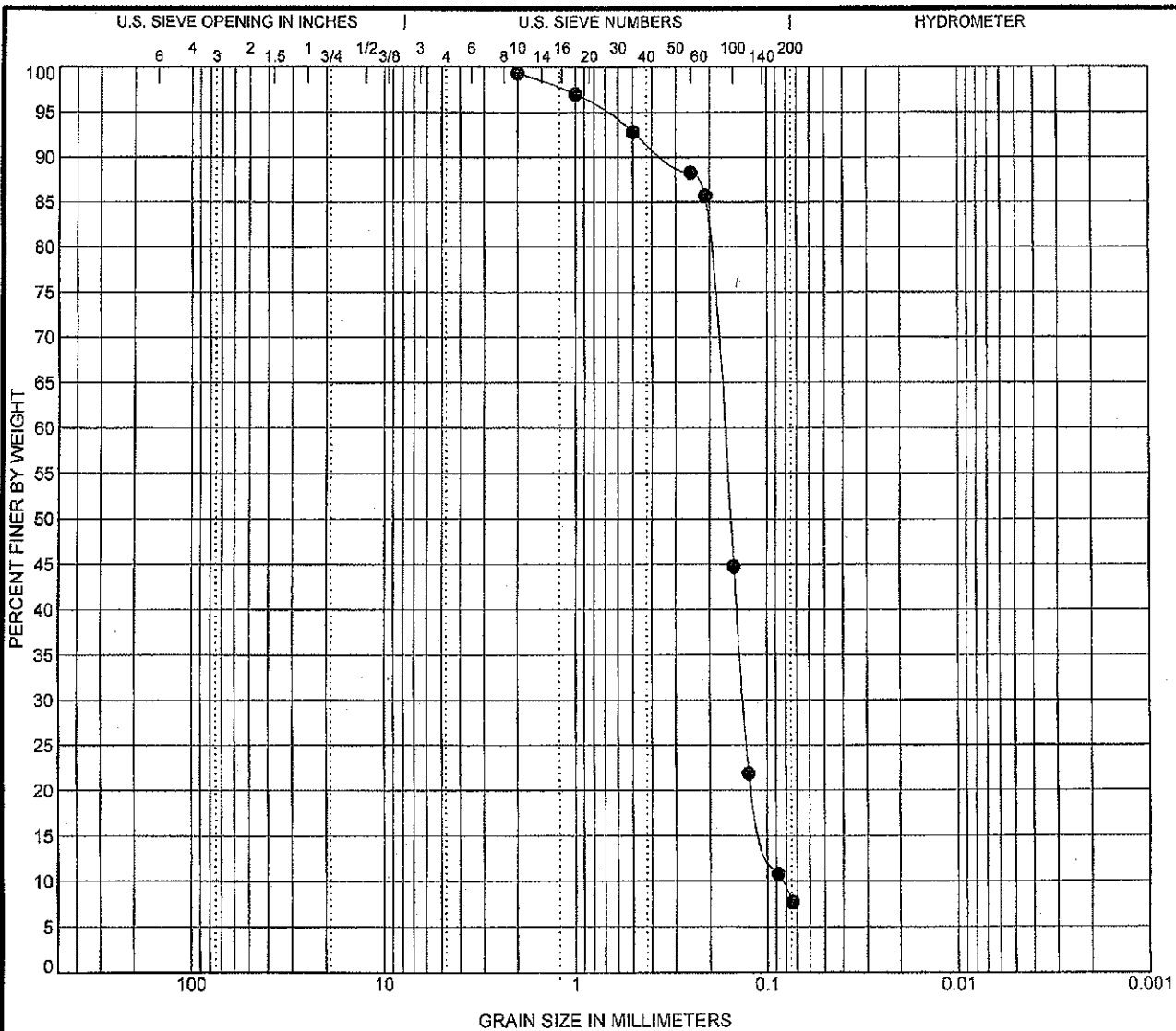
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-35	32.2'	1	0.205	0.129		0.0	75.0	24.0	



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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Depth	Classification					LL	PL	PI	Cc	Cu
● AA-35	34.2'									1.24	2.01

Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-35	34.2'	2	0.169	0.133	0.084	0.0			



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GRAIN SIZE DISTRIBUTION

Project: Prop. Anchorage Area "C" Sand Source Inv.
 Location: Galveston Island, Texas
 Number: G109233

Date: 10-15-09

Project Location:

BORING LOG

CALVESTON

Type: HSA

Boring No.: AA-35

Location:

H₂O on RedH₂O Upon Comp.

Cave Upon Comp.

Depth Feet	Symbol	Sample	N-Blows Per Foot	MATERIAL DESCRIPTION	
1.0 20		1	1 1/2	Shell fragments	G.P.S. 29.35109
2.5 32			1 1/2		94.76691
3.5 32		2	2 1/2	Same	
5.0 34			1 1/2	Same	00w. 30'
6.0 34		3	1 1/2	grey silty sand	
7.5 36			1 1/2		
8.5 38		4	2 1/2	Same	
10.0 38			1 1/2		
11.0 38		5	1 1/2	Same	
12.5 40			1 1/2		
13.5		6			
15.0					
18.5		7			
20.0					
23.5		8			
25.0					
28.5		9			
30.0					
33.5		10			
35.0					
38.5		11			
40.0					
43.5		12			
45.0					
48.5		13			
50.0					

LOG OF BORING AA-35

SHEET 1 of 1



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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: 10/15/09 - 10/15/09

FIELD DATA		LABORATORY DATA								GROUNDWATER INFORMATION:	
SOIL SYMBOL	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	COMPRESSION STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)
						LL	PL	PI			
10' Sand											
	5										
	10										
	15										
	20										
	25										
	28	SS S-1	N=0							5	POORLY GRADED SAND, with clay and shell fragments, dark gray and brown, very loose.
	29	SS S-2	N=3							6	Same as above, dark gray and gray.
	30	SS S-3	N=4							7	Same as above, dark bluish gray, loose.
	31	SS S-4	N=8							7	POORLY GRADED SAND, with clay and shell fragments, gray and light gray, loose.
	32	SS S-5	N=48							8	Same as above, dense.
Boring was extended to an elevation of -36.2-feet NAVD during the drilling operations.											
REMARKS: Boring depth and location was determined by HDR Engineering, Inc. Boring operations were performed by RETL at GPS Coord. N. 29.35109 W. 94.76691.											

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

LOG OF BORING G109233 ANCHORAGE BASIN C.GPJ ROCK ETL GDT 11/30/09