

LOG OF BORING AA-32

SHEET 1 of 1



Rock Engineering & Testing Lab., Inc.
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CLIENT: HDR Engineering, Inc.
PROJECT: Galveston Anchorage Area C Sand Source Inv. # 1
LOCATION: Anchorage Area C, Galveston, Texas
NUMBER: G109233

DATE(S) DRILLED: 10/15/09 - 10/15/09

DRILLING METHOD(S):
Hollow Stem Auger

GROUNDWATER INFORMATION:

SURFACE ELEVATION: -23.62' NAVD

DESCRIPTION OF STRATUM

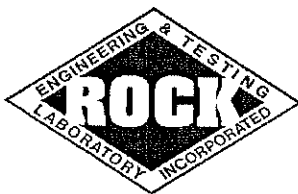
FIELD DATA		LABORATORY DATA								DRILLING METHOD(S): Hollow Stem Auger			
SOIL SYMBOL	Elevation, Ft. [NAVD]	SAMPLE NUMBER	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	ATTEBERG LIMITS			DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	GROUNDWATER INFORMATION:	
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
SURFACE ELEVATION: -23.62' NAVD													
DESCRIPTION OF STRATUM													
	5												
	10												
	15												
	20												
	25	SS S-1	X	N= 2								4	<u>POORLY GRADED SAND</u> , with shell fragments, dark gray, very loose. Same as above, loose.
		SS S-2	X	N= 6									
	30	SS S-3	X	N= 13								17	<u>SILTY CLAYEY SAND</u> , with shell fragments, dark gray, medium. Same as above, very loose.
		SS S-4	X	N= 0									
		SS S-5	X	N= 0								11	<u>POORLY GRADED SAND</u> , with clay and shell fragments, gray, very loose.
	35	SS S-6	X	N= 1								15	<u>SILTY CLAYEY SAND</u> , with shell fragments, gray, very loose.
		SS S-7	X	N= 7								13	Same as above, loose.
													Boring was extended to an elevation of -37.6-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. 29.34890 W. 94.76881.

LOG OF BORING



- Geotechnical Engineering
- Construction Materials Testing

PROJECT NAME: Galveston Anchorage Area C Sand Source Investigation

CLIENT: HDR Engineering, Inc.

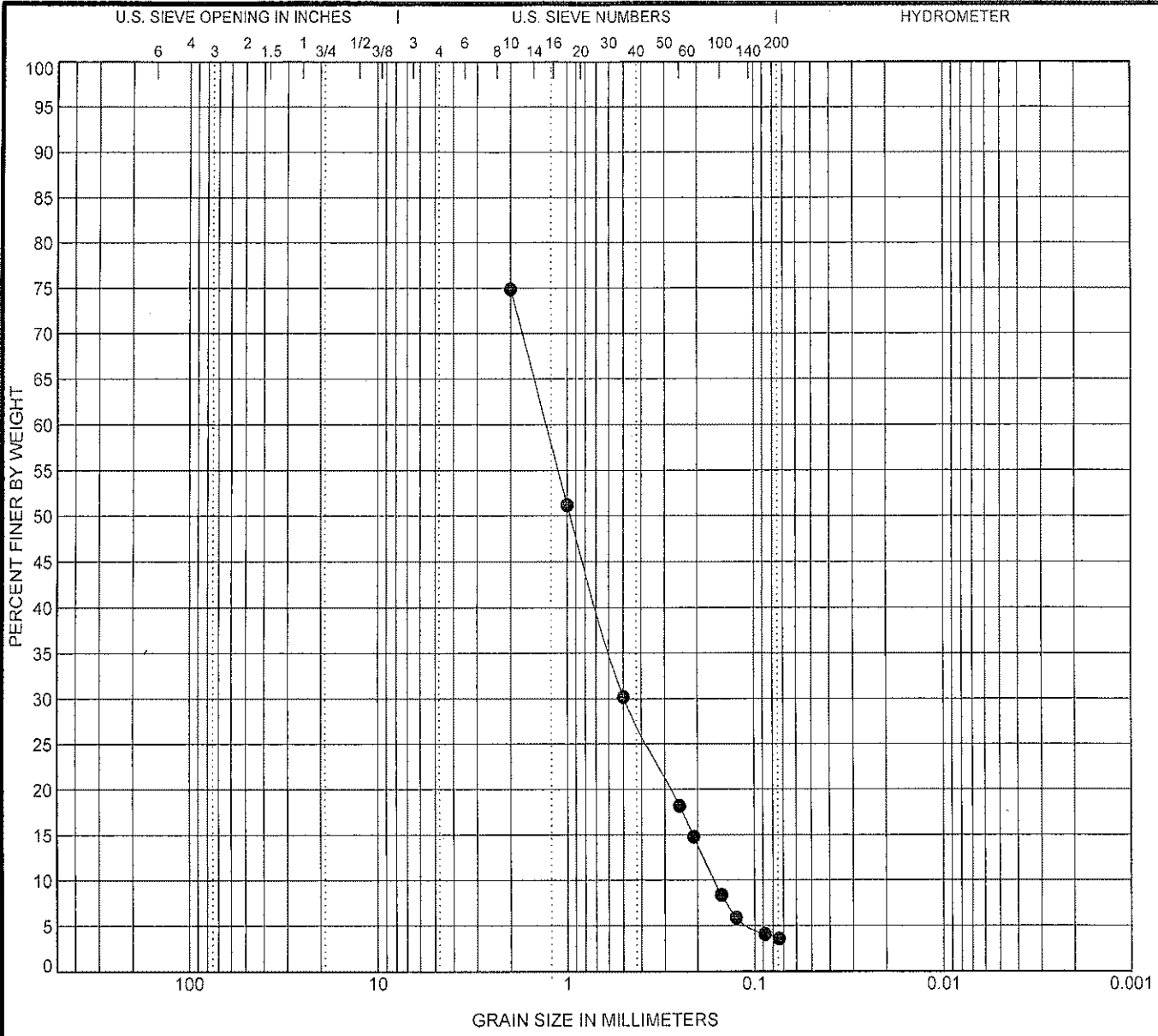
BORING ID.: AA-32

DESCRIPTION: Anchorage Area C Borrow Source Area

PERCENT SHELL BY WEIGHT (BASED ON #10 SIEVE)				
-25.62' to -27.62' NAVD	-29.62' to -31.62' NAVD	-31.62' to -33.62' NAVD	-33.62' to -35.62' NAVD	-35.62' to -37.62' NAVD
25.13	2.10	3.25	3.60	2.50

ASTM MESH	% FINER BY WEIGHT AFTER REMOVING SHELL				
	-25.62' to -27.62' NAVD	-29.62' to -31.62' NAVD	-31.62' to -33.62' NAVD	-33.62' to -35.62' NAVD	-35.62' to -37.62' NAVD
#10	100.00	100.00	100.00	100.00	100.00
#18	51.20	96.20	92.50	91.60	94.80
#35	30.20	94.70	88.20	85.50	91.80
#60	18.20	93.20	84.30	80.10	89.10
#70	14.80	91.40	81.70	77.50	87.10
#100	8.40	55.20	63.30	49.80	47.00
#120	5.90	32.20	35.20	32.40	27.40
#170	4.10	20.80	14.20	18.60	15.60
#200	3.60	17.30	10.90	15.50	12.70
STATISTICS (EXCLUDING SHELL)					
MEDIAN GRAIN SIZE (mm)	0.95	0.15	0.15	0.16	0.16
MEAN GRAIN SIZE (mm)	0.59	N/A	0.15	0.18	0.14
SORTING (σ)	1.01	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-32	(-25.62' to -27.62' NAVD)	AA-32 (-25.62' to -27.62' NAVD)				1.16	7.97

Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-32	(-25.62' to -27.62' NAVD)	2	1.294	0.494	0.162	0.0			

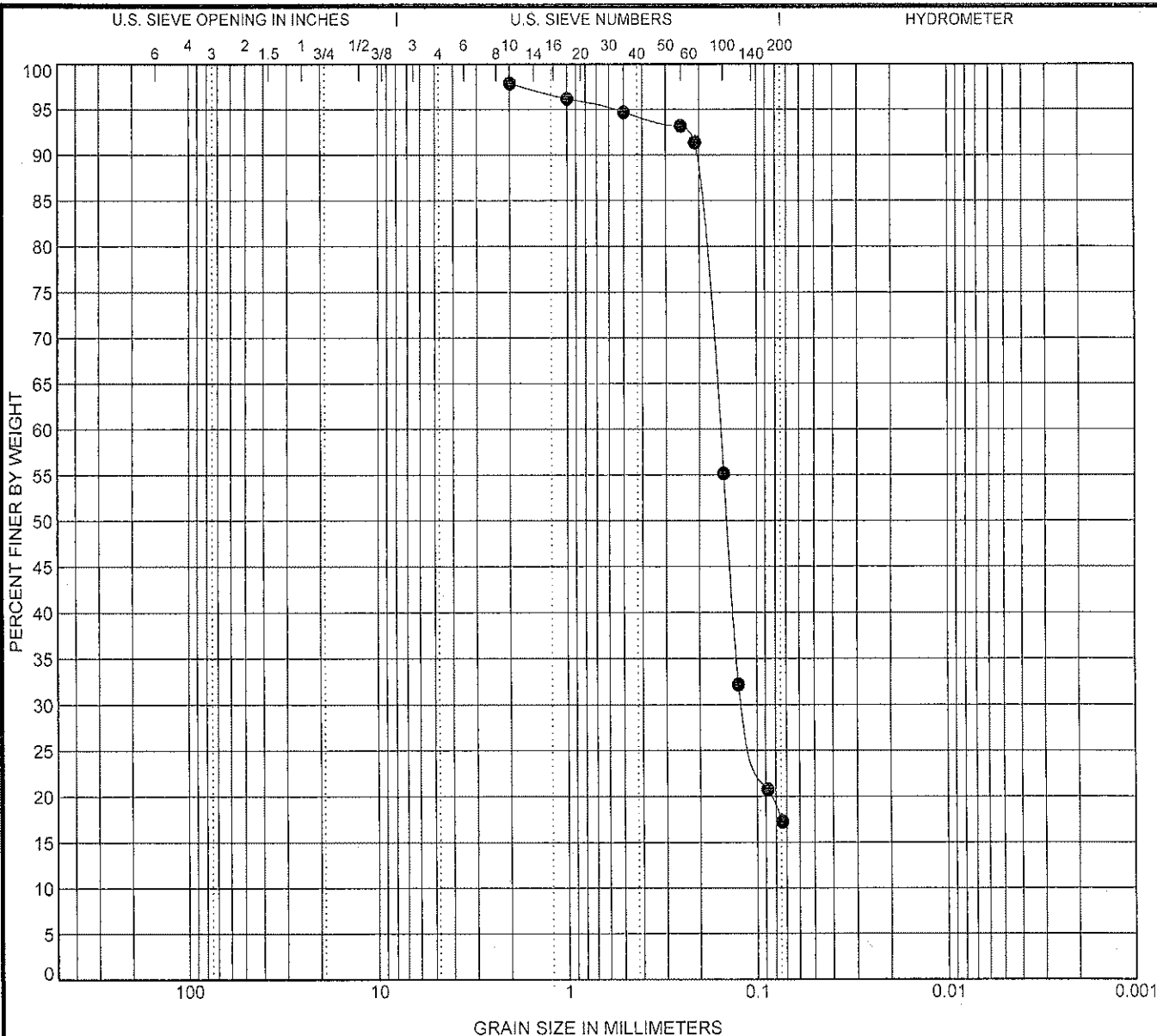


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GRAIN SIZE DISTRIBUTION

Project: Galveston Anchorage Area C Sand Source Inv.
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U.S. GRAIN SIZE G109233 ANCHORAGE BASIN C.GPJ U.S. LAB.GDT 12/1/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID		Depth	Classification					LL	PL	PI	Cc	Cu
●	AA-32 (-29.62' to -31.62' NAVD)		AA-32 (-29.62' to -31.62' NAVD)									
Specimen ID		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	AA-32 (-29.62' to -31.62' NAVD)		2	0.156	0.117		0.0					

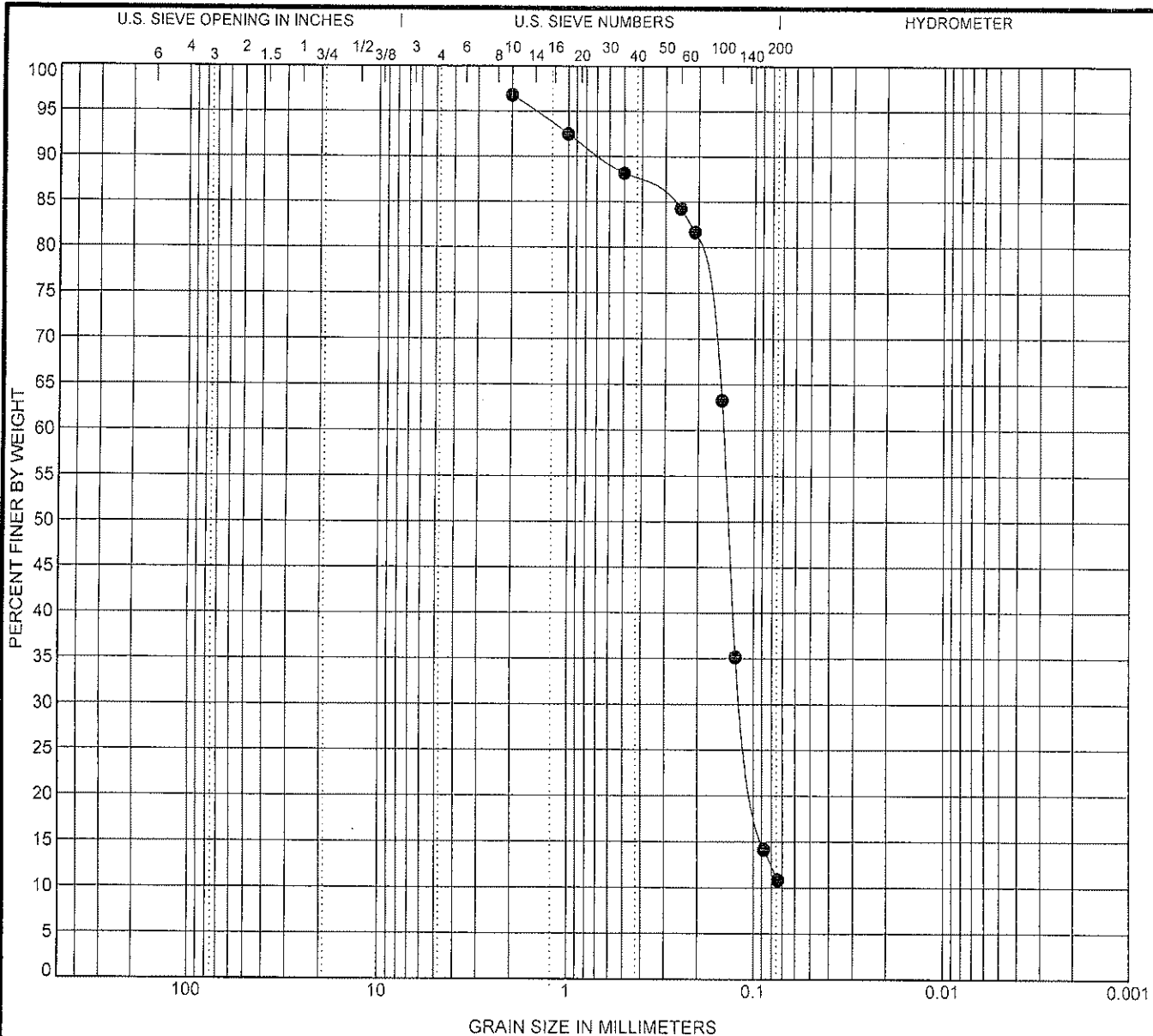


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U.S. GRAIN SIZE G109233 ANCHORAGE BASIN C.G.P.I. US LAB.GDT 12/1/08



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Depth	Classification	LL	PL	PI	Cc	Cu
● AA-32 (-31.62' to -33.62' NAVD)		AA-32 (-31.62' to -33.62' NAVD)				1.27	2.07

Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-32 (-31.62' to -33.62' NAVD)		2	0.146	0.115		0.0			



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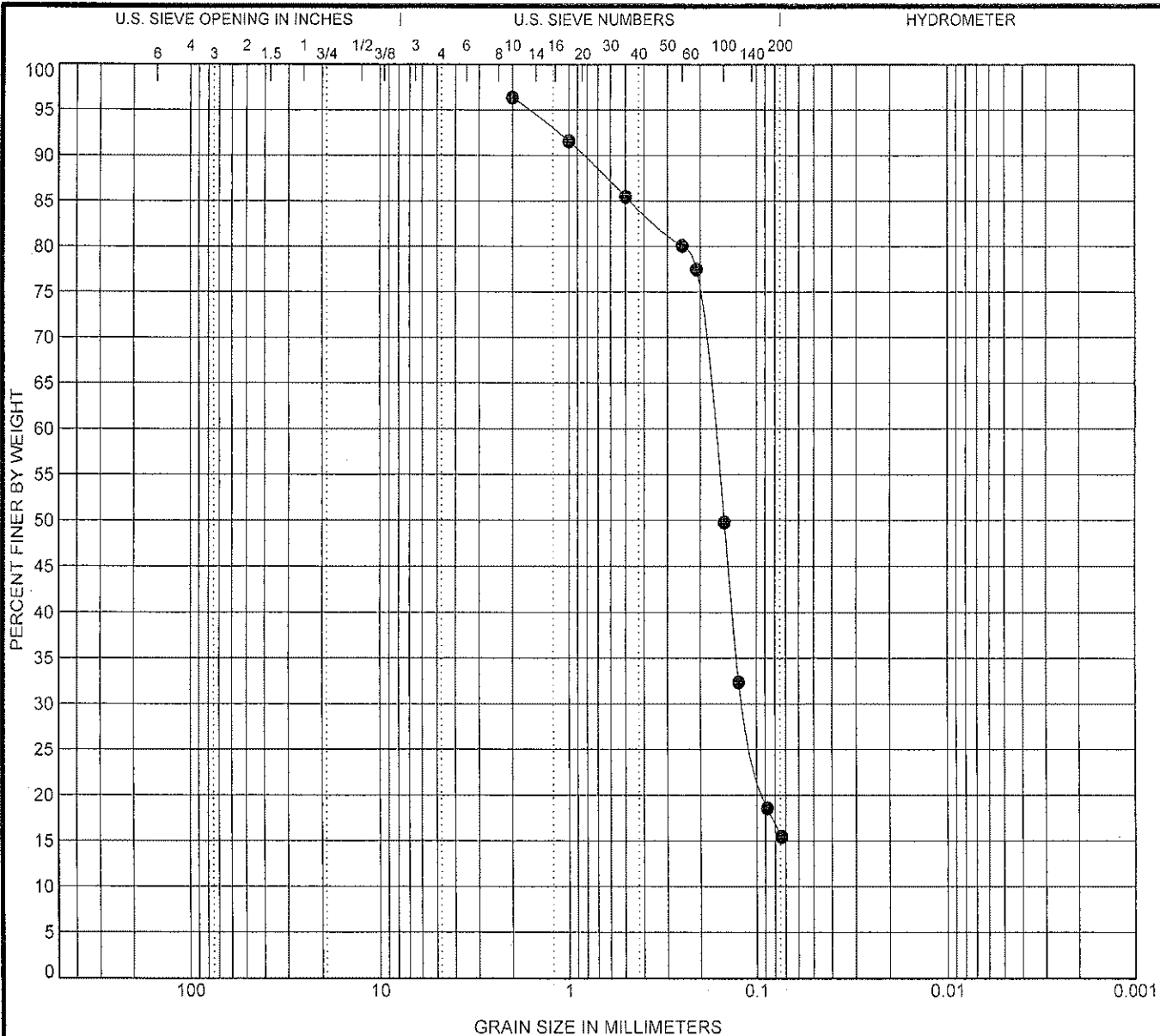
GRAIN SIZE DISTRIBUTION

Project: Galveston Anchorage Area C Sand Source Inv.

Location: Anchorage Area C, Galveston, Texas

Number: G109233

U.S. GRAIN SIZE G109233 ANCHORAGE BASIN C.G.P.J. U.S. LAB.GDT. 12/1/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Depth	Classification	LL	PL	PI	Cc	Cu
● AA-32 (-33.62' to -35.62' NAVD)		AA-32 (-33.62' to -35.62' NAVD)					

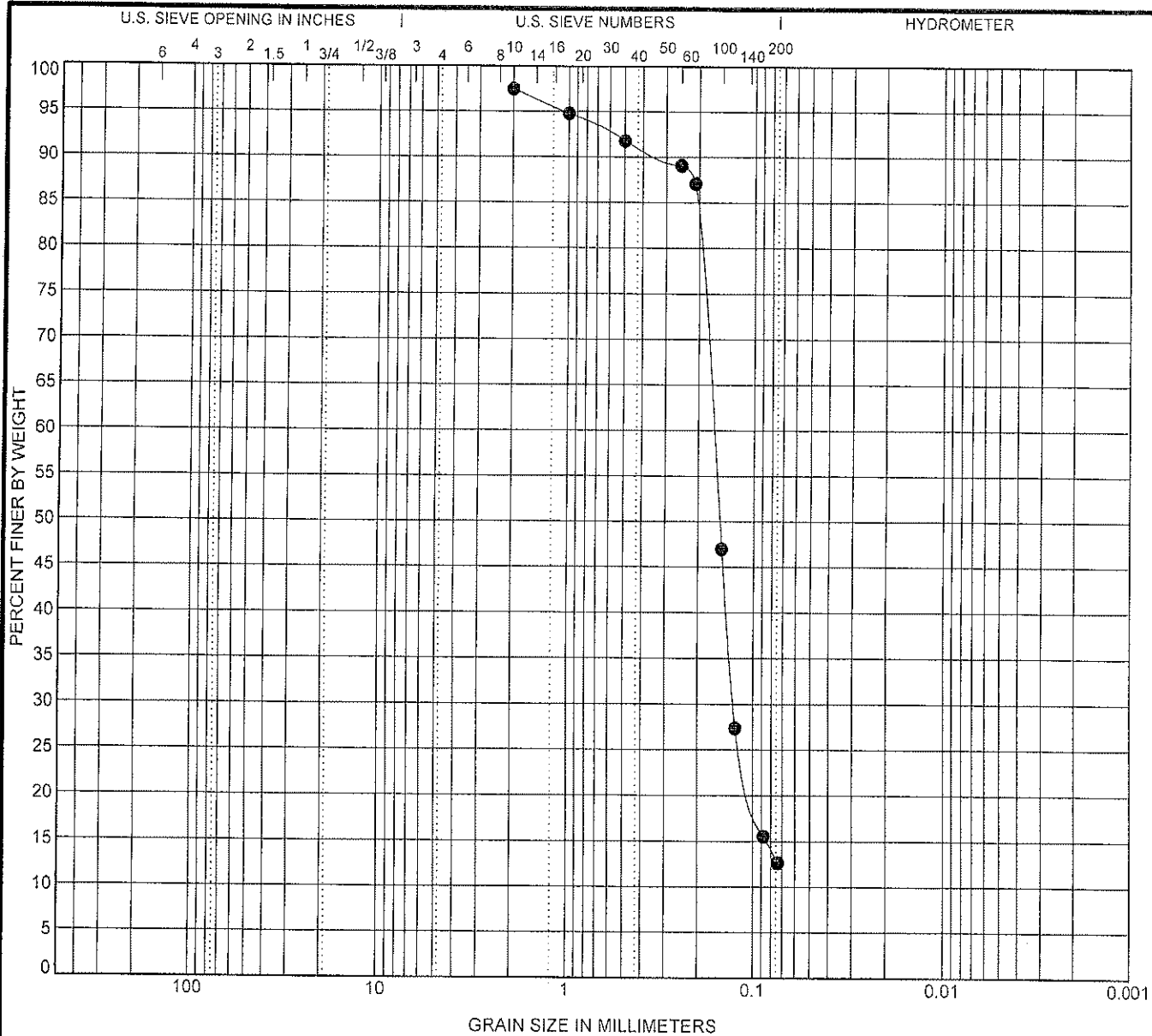
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-32 (-33.62' to -35.62' NAVD)		2	0.169	0.118		0.0			



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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-32	(-35.62' to -37.62' NAVD)	AA-32 (-35.62' to -37.62' NAVD)					

Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-32	(-35.62' to -37.62' NAVD)	2	0.167	0.128		0.0			



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US GRAIN SIZE G109233 ANCHORAGE BASIN C.GPJ US LAB.GDT 12/1/09

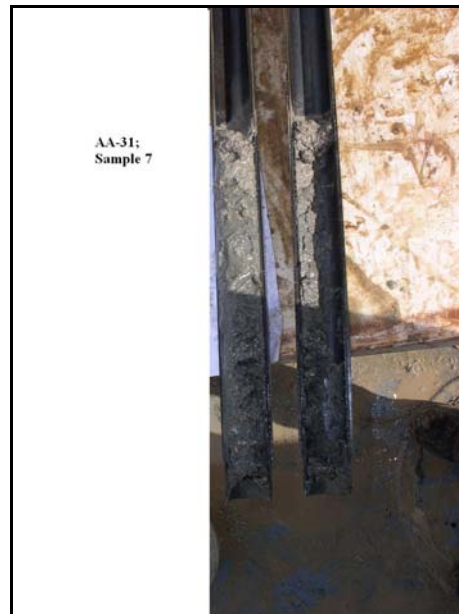


Figure 7: AA-31; Sample 7

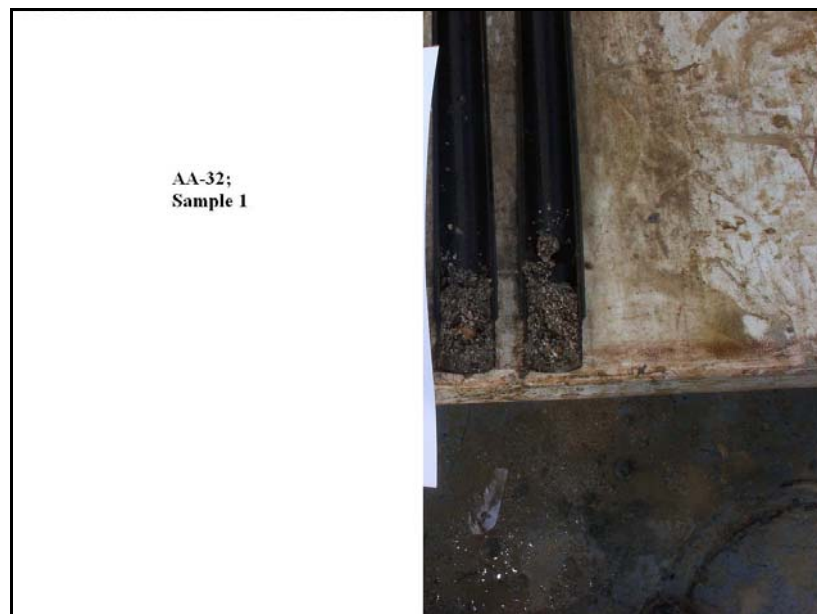


Figure 8: AA-32; Sample 1

December 8, 2009
Attn.: Ms. Lauren Augustin
RETL Job No.: G109233

PROP. GALVESTON ANCHORAGE AREA C SAND SOURCE INVESTIGATION
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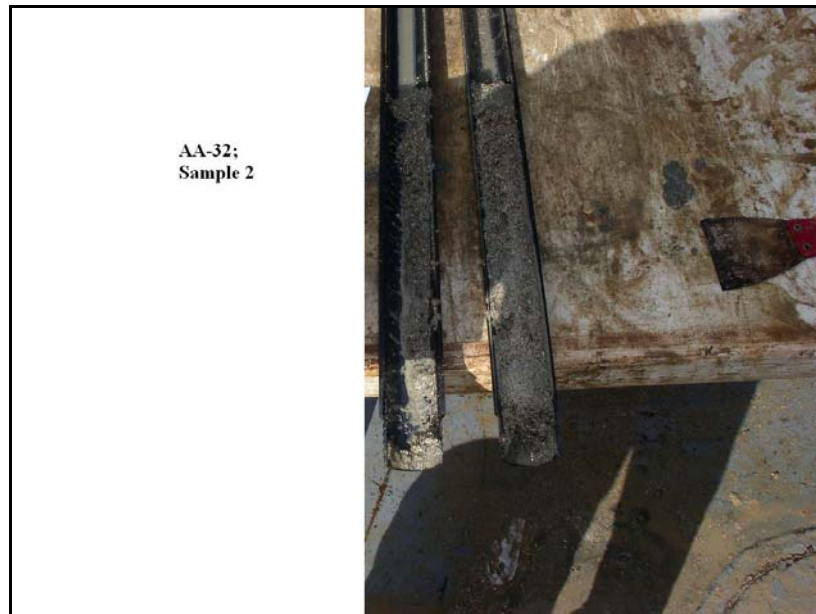


Figure 9: AA-32; Sample 2

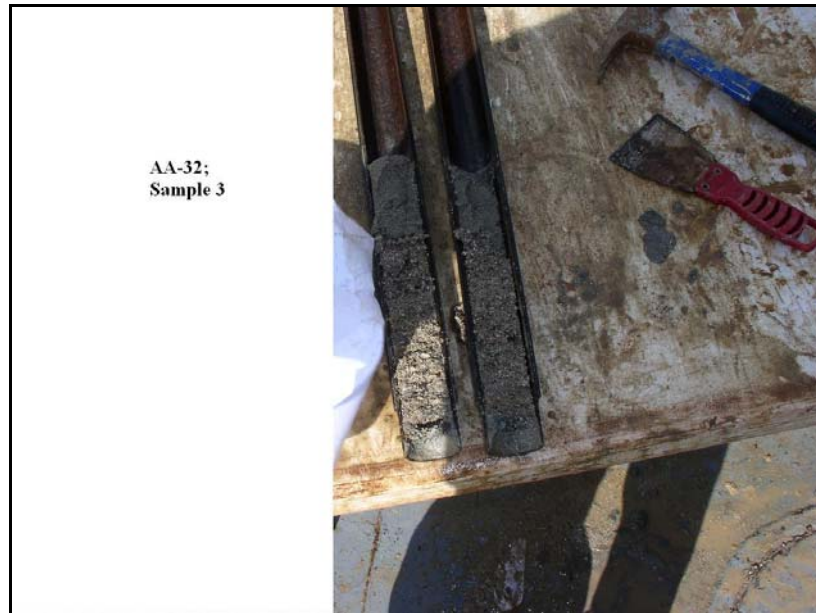


Figure 10: AA-32; Sample 3

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Figure 11: AA-32; Sample 5

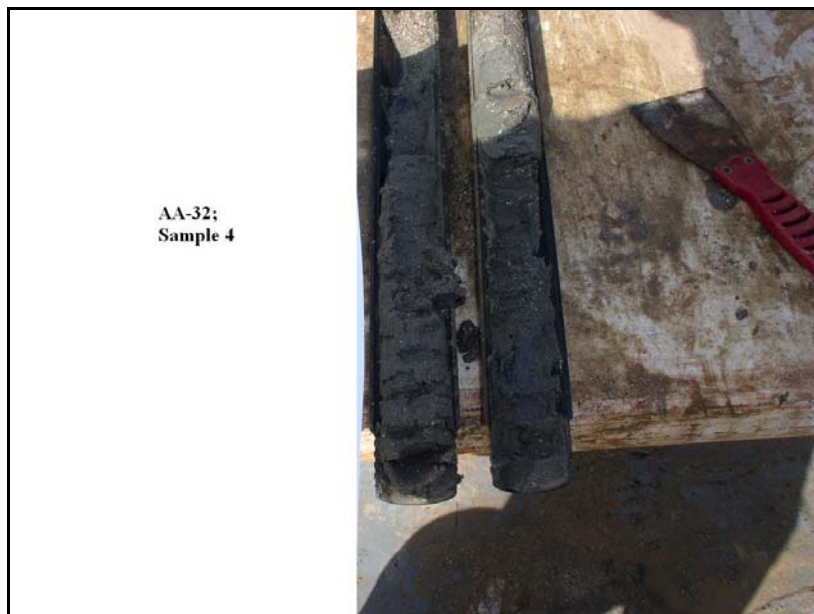


Figure 12: AA-32; Sample 4

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Figure 13: AA-44; Sample 6



Figure 14: AA-32; Sample 6

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Figure 15: AA-32; Sample 7



Figure 16: AA-33; Sample 1

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