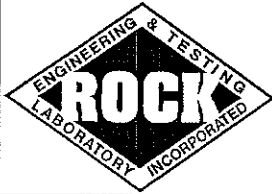


LOG OF BORING AA-33

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

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 (%)	ATTERBERG LIMITS			DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	GROUNDWATER INFORMATION:
						LL LIQUID LIMIT	PL PLASTIC LIMIT	PI PLASTICITY INDEX				
DESCRIPTION OF STRATUM												
	5											
	10											
	15											
	20											
	25											
	30	SS S-1	X	N=0							6	POORLY GRADED SAND , with clay and shell fragments, gray, very loose.
	30	SS S-2	X	N=0							60	SANDY CLAY , with shell fragments, dark gray, very soft.
	35	SS S-3	X	N=WOH							19	SILTY CLAYEY SAND , with shell fragments, dark gray and gray, very loose.
	35	SS S-4	X	N=WOH							28	Same as above.
	40	SS S-5	X	N=WOH							9	POORLY GRADED SAND , with clay and shell fragments, bluish gray, very loose.
	40	SS S-6	X	N=WOH								Same as above.
Boring was extended to an elevation of -40.3-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. 29.35016 W. 94.76809. WOH = Weight of Hammer												

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. 29.35016 W. 94.76809.
WOH = Weight of Hammer

8233 ANCHORAGE BASIN C.G.P.I. ROCK ETL GDT 11/30/09

LOG OF BORING



- Geotechnical Engineering
- Construction Materials Testing

PROJECT NAME: Galveston Anchorage Area C Sand Source Investigation

CLIENT: HDR Engineering, Inc.

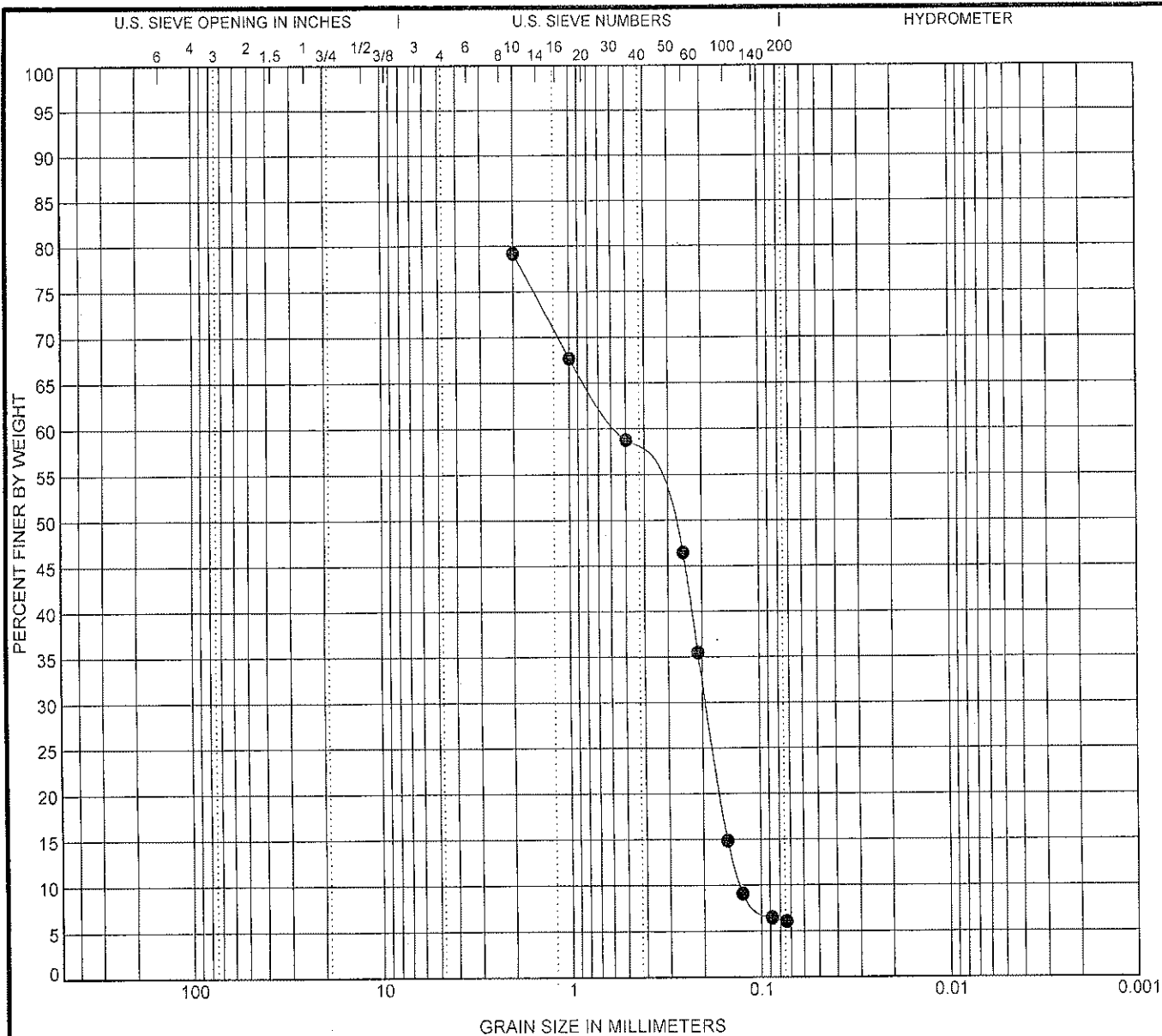
BORING ID.: AA-33

DESCRIPTION: Anchorage Area C Borrow Source Area

PERCENT SHELL BY WEIGHT (BASED ON #10 SIEVE)				
-28.32' to -30.32' NAVD	-30.32' to -32.32' NAVD	-32.32' to -34.32' NAVD	-34.32' to -36.32' NAVD	-36.32' to -38.32' NAVD
20.80	5.90	3.20	0.50	0.40

ASTM MESH	% FINER BY WEIGHT AFTER REMOVING SHELL				
	-28.32' to -30.32' NAVD	-30.32' to -32.32' NAVD	-32.32' to -34.32' NAVD	-34.32' to -36.32' NAVD	-36.32' to -38.32' NAVD
#10	100.00	100.00	100.00	100.00	100.00
#18	67.70	88.90	94.20	99.20	99.50
#35	58.80	84.30	92.10	98.80	99.40
#60	46.50	80.50	90.30	98.50	99.20
#70	35.50	77.20	88.60	98.20	98.40
#100	14.90	70.00	58.70	68.80	53.80
#120	9.10	65.60	39.10	46.80	27.80
#170	6.50	61.40	23.60	32.10	12.70
#200	6.10	60.10	18.90	27.80	8.70
STATISTICS (EXCLUDING SHELL)					
MEDIAN GRAIN SIZE (mm)	0.28	N/A	0.14	0.14	0.14
MEAN GRAIN SIZE (mm)	0.36	N/A	N/A	N/A	0.15
SORTING (σ)	N/A	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	

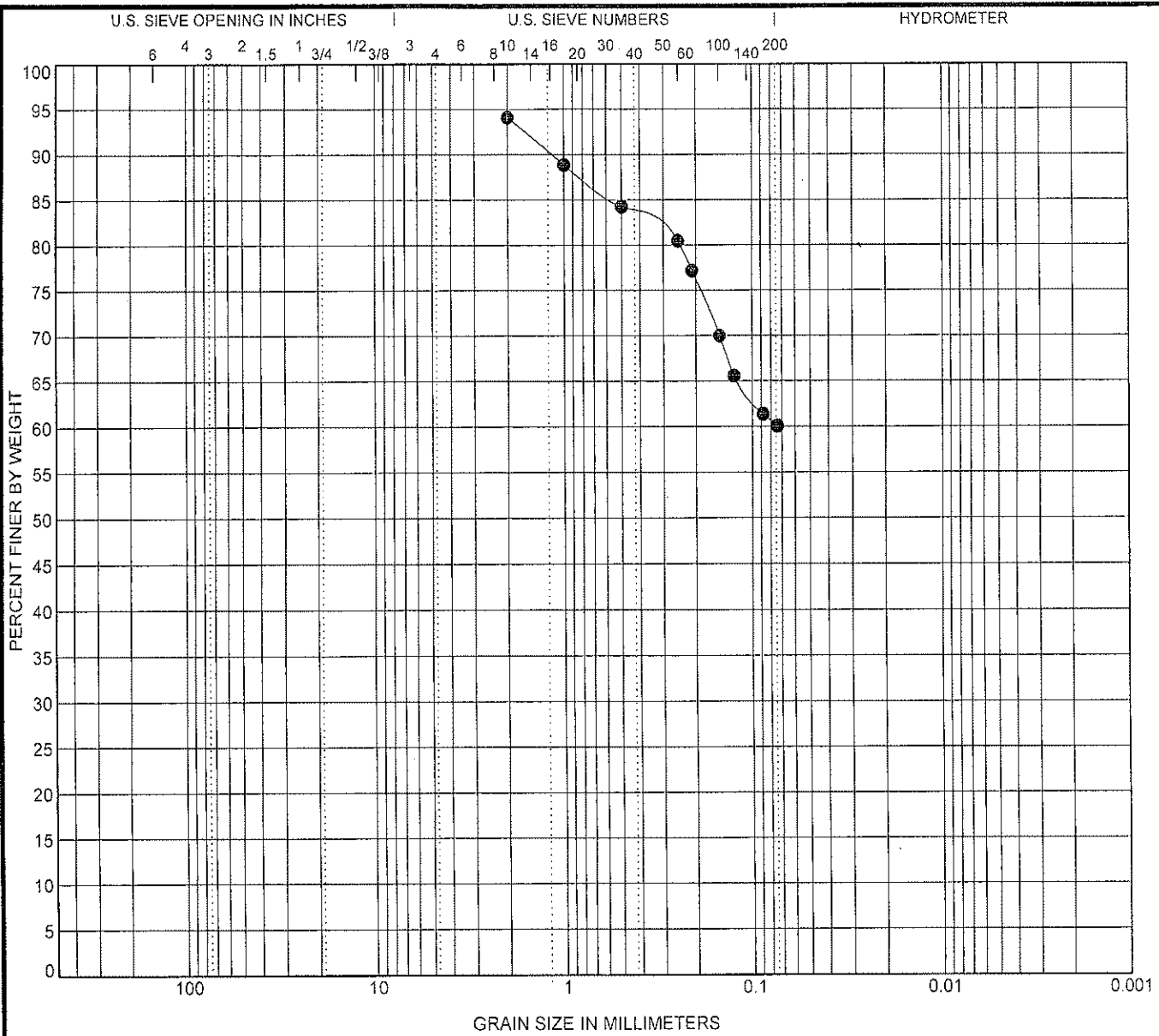
Specimen ID	Depth	Classification				LL	PL	PI	Cc	Cu
● AA-33 (-28.32' to -30.32' NAVD)		AA-33 (-28.32' to -30.32' NAVD)							0.52	4.27
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	
● AA-33 (-28.32' to -30.32' NAVD)		2	0.549	0.192	0.128	0.0				



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

GRAIN SIZE DISTRIBUTION

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



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Depth	Classification				LL	PL	PI	Cc	Cu
● AA-33 (-30.32' to -32.32' NAVD)		AA-33 (-30.32' to -32.32' NAVD)								
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	
● AA-33 (-30.32' to -32.32' NAVD)		2				0.0				

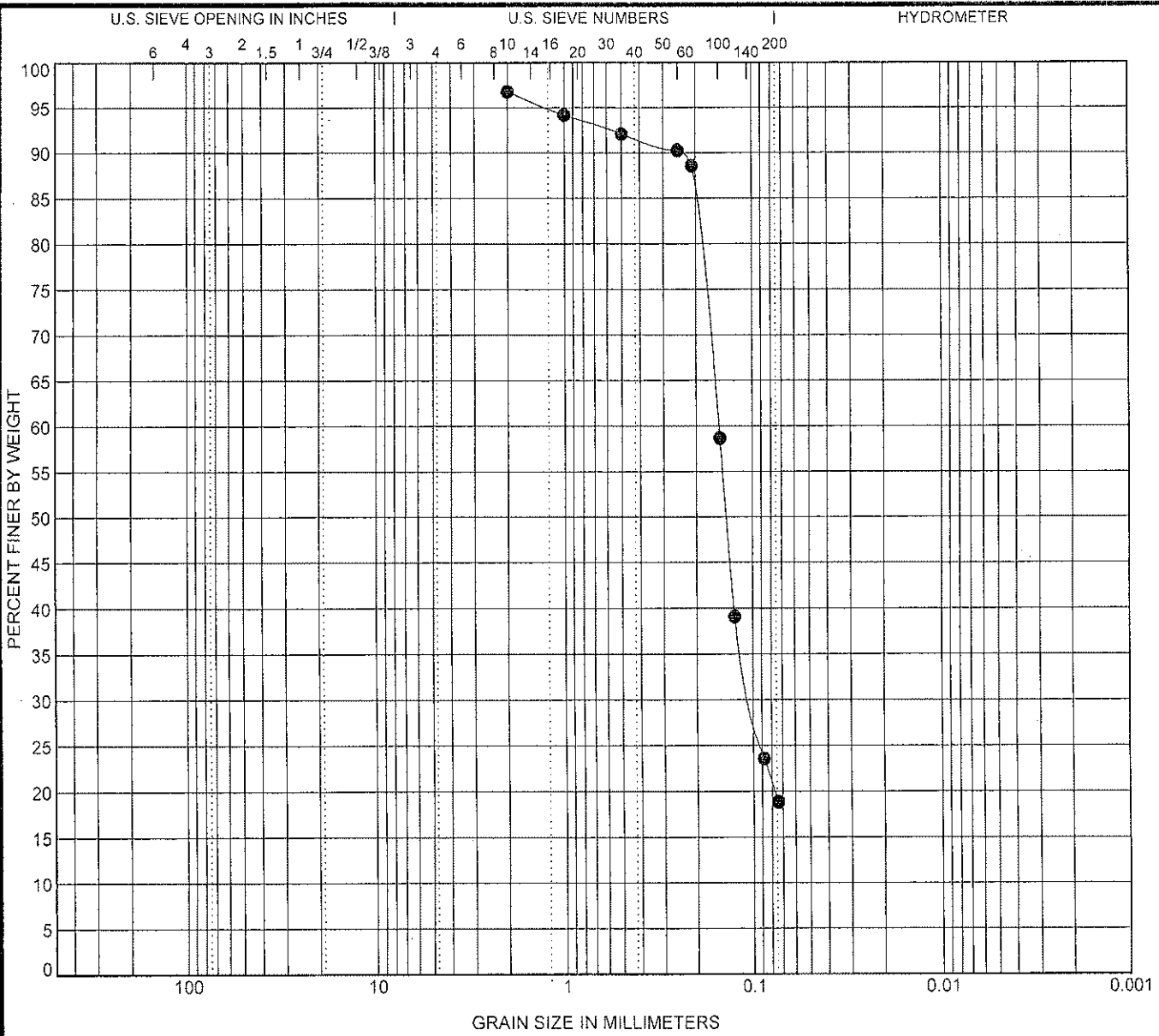


Rock Engineering & Testing Lab., Inc.
 6817 Leopard St.
 Corpus Christi, TX 78409
 Telephone: (361) 883-4555
 Fax: (361) 883-4711

GRAIN SIZE DISTRIBUTION

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

US GRAIN SIZE G109233 ANCHORAGE BASIN C.GPJ US 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-33	(-32.32' to -34.32' NAVD)	AA-33 (-32.32' to -34.32' NAVD)									
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
● AA-33	(-32.32' to -34.32' NAVD)	2	0.151	0.102		0.0					

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

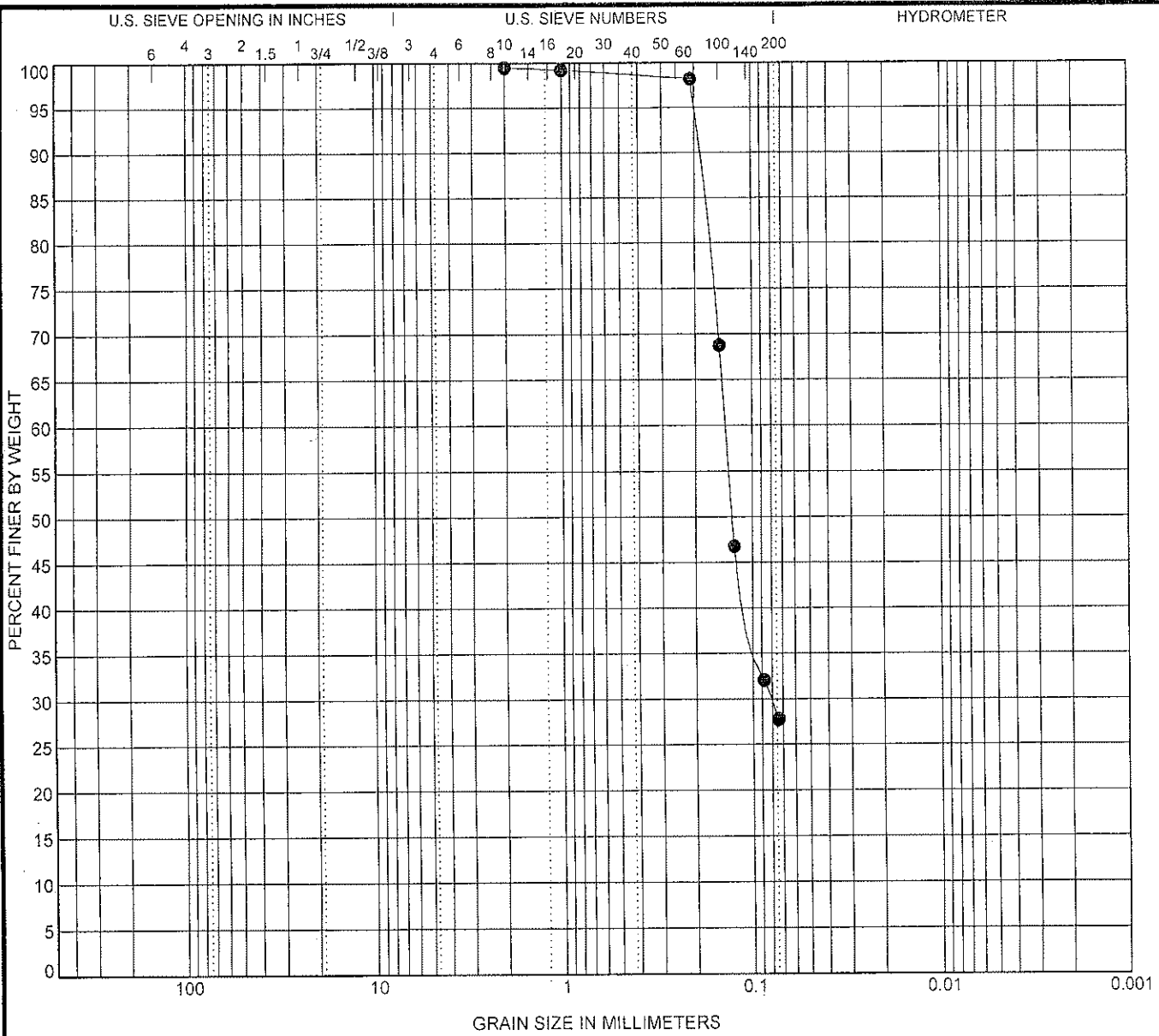
Rock Engineering & Testing Lab., Inc.
 6817 Leopard St.
 Corpus Christi, TX 78409
 Telephone: (361) 883-4555
 Fax: (361) 883-4711

GRAIN SIZE DISTRIBUTION

Project: Galveston Anchorage Area C Sand Source Inv.

Location: Anchorage Area C, Galveston, Texas

Number: G109233



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Depth	Classification	LL	PL	PI	Cc	Cu
● AA-33 (-34.32' to -36.32' NAVD)		AA-33 (-34.32' to -36.32' NAVD)					

Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-33 (-34.32' to -36.32' NAVD)		2	0.139	0.081		0.0			

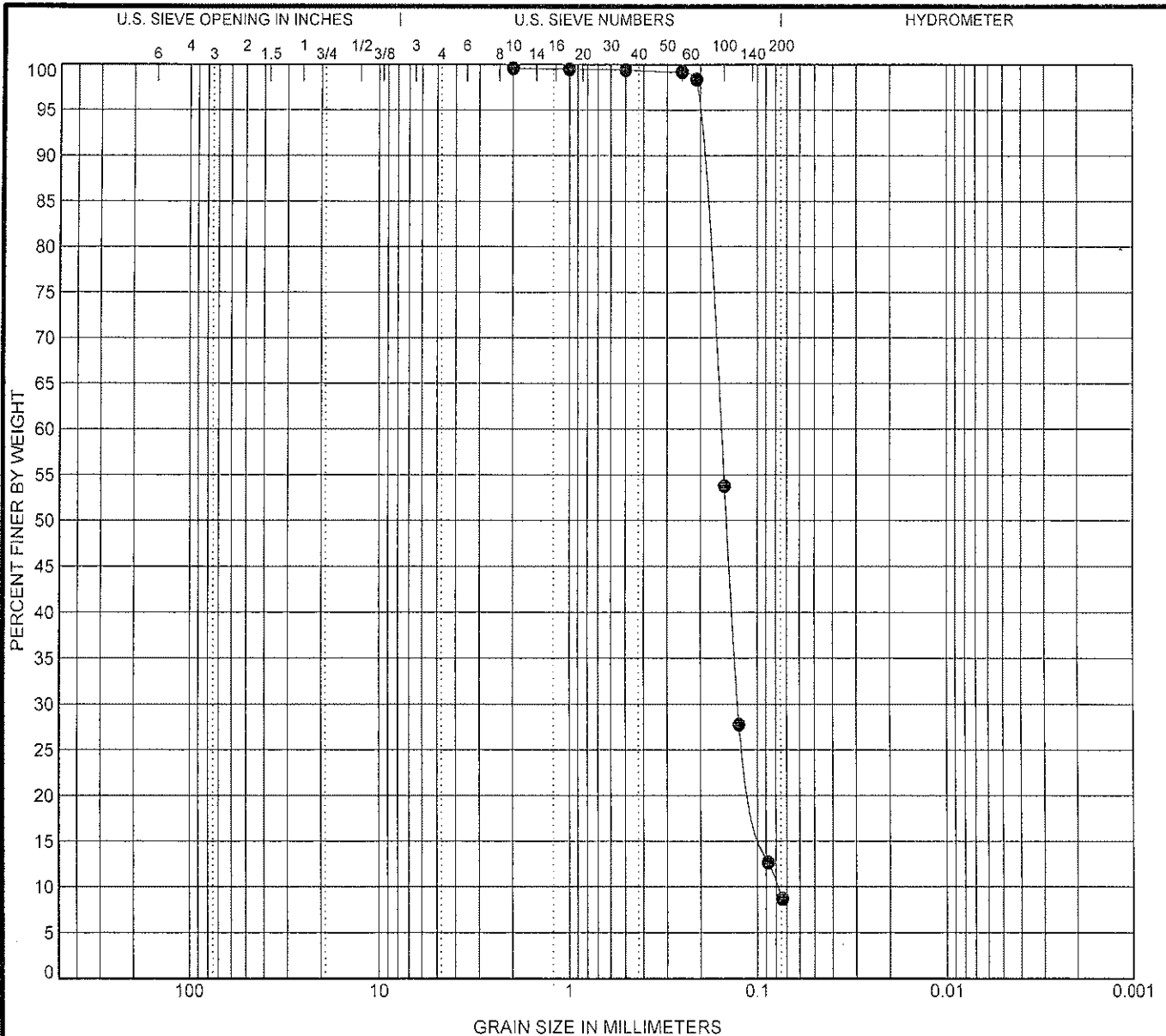


Rock Engineering & Testing Lab., Inc.
 6817 Leopard St.
 Corpus Christi, TX 78409
 Telephone: (361) 883-4555
 Fax: (361) 883-4711

GRAIN SIZE DISTRIBUTION

Project: Galveston Anchorage Area 'C' Sand Source Inv.
 Location: Anchorage Area C, Galveston, Texas
 Number: G109233

US GRAIN SIZE G109233 ANCHORAGE BASIN C.GPJ US 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-33 (-36.32' to -38.32' NAVD)		AA-33 (-36.32' to -38.32' NAVD)								1.32	2.00
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
● AA-33 (-36.32' to -38.32' NAVD)		2	0.156	0.127	0.078	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: Galveston Anchorage Area C Sand Source Inv.

Location: Anchorage Area C, Galveston, Texas

Number: G109233



Figure 15: AA-32; Sample 7



Figure 16: AA-33; Sample 1

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

PROP. GALVESTON ANCHORAGE AREA C SAND SOURCE INVESTIGATION
Anchorage Area C, Galveston, Texas

ROCK ENGINEERING AND TESTING LABORATORY, INC.
6817 LEOPARD STREET
CORPUS CHRISTI, TX 78409
(361) 883-4555



Figure 17: AA-33; Sample 2



Figure 18: AA-33; Sample 3

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

PROP. GALVESTON ANCHORAGE AREA C SAND SOURCE INVESTIGATION
Anchorage Area C, Galveston, Texas

ROCK ENGINEERING AND TESTING LABORATORY, INC.
6817 LEOPARD STREET
CORPUS CHRISTI, TX 78409
(361) 883-4555



Figure 19: AA-33; Sample 4



Figure 20: AA-33; Sample 5

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

PROP. GALVESTON ANCHORAGE AREA C SAND SOURCE INVESTIGATION
Anchorage Area C, Galveston, Texas

ROCK ENGINEERING AND TESTING LABORATORY, INC.
6817 LEOPARD STREET
CORPUS CHRISTI, TX 78409
(361) 883-4555



Figure 21: AA-33; Sample 6

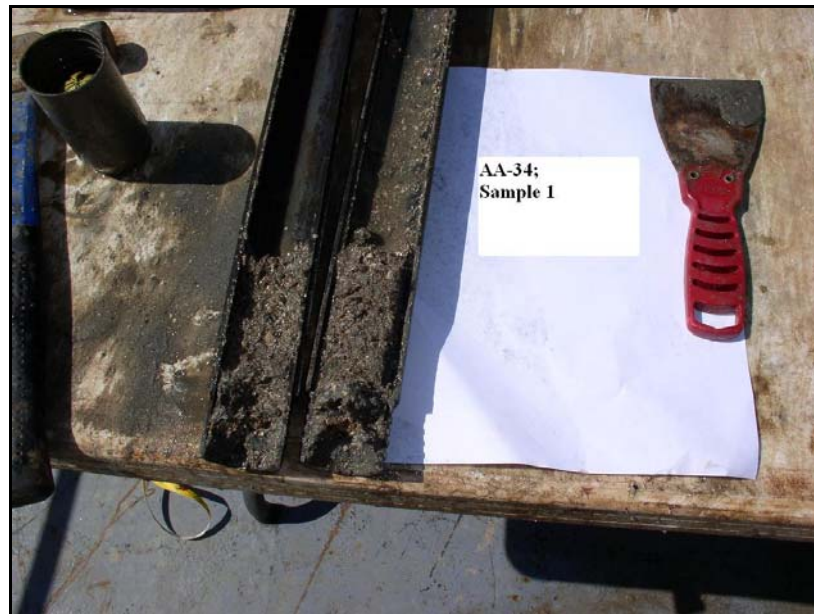


Figure 22: AA-34; Sample 1

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

PROP. GALVESTON ANCHORAGE AREA C SAND SOURCE INVESTIGATION
Anchorage Area C, Galveston, Texas

ROCK ENGINEERING AND TESTING LABORATORY, INC.
6817 LEOPARD STREET
CORPUS CHRISTI, TX 78409
(361) 883-4555