LOG OF BORING C-11

Rock Engineering & Testing Lab., Inc.
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Telephone: (361) 883-4555
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CLIENT: HDR, Inc.
PROJECT: Prop. Large Scale Beach Nourishment Project
LOCATION: S. Jetty Borrow Source Area; Galveston, TX
NUMBER: G108558
DATE(S) DRILLED: 07/31/08 - 07/31/08

DRILLING METHOD(S):
Hollow Stem Auger

GROUNDWATER INFORMATION:

SURFACE ELEVATION: -14.0' NAVD

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: LIQUID LIMIT LL	ATTERBERG LIMITS: PLASTIC LIMIT PL	ATTERBERG LIMITS: PLASTICITY INDEX PI	DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	DESCRIPTION OF STRATUM
	5											
	10											
	15	SS S-1		N= 4	28						8	**POORLY GRADED SAND**, with clay and shell, gray, moist, loose.
		SS S-2		N= 13								**SILTY CLAYEY SAND**, with shell, gray, moist, medium.
		SS S-3		N= 23	26						19	Same as above.
	20	SS S-4		N= 6								Same as above, loose.
		SS S-5		N= 2	25						16	**SILTY CLAYEY SAND**, with shell, gray, moist, very loose.
	25	SS S-6		N= 4	27						19	Same as above, loose.
		SS S-7		N= 2	35						32	**CLAYEY SAND**, with shell, gray, very moist, soft.
		SS S-8		N= WOH								Same as above, very soft.
	30	SS S-9		N= 1								Same as above.
		SS S-10		N= WOH	56						78	**SANDY CLAY**, with shell, gray, very moist, very soft.

Boring was extended to an elevation of -34-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, Inc. Boring operations were performed by RETL.
GPS Coord. N. 29.33475 W. 94.71779

· Geotechnical Engineering
· Construction Materials Testing

PROJECT NAME: West Galveston Island Large Scale Beach Nourishment Project
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PERCENT SHELL BY WEIGHT (BASED ON #10 SIEVE)			
-14' TO -16' NAVD	-18' TO -20' NAVD	-22' TO -24' NAVD	-24' TO -26' NAVD
1.28	2.44	2.92	0.84

ASTM MESH	% FINER BY WEIGHT AFTER REMOVING SHELL			
	-14' TO -16' NAVD	-18' TO -20' NAVD	-22' TO -24' NAVD	-24' TO -26' NAVD
#10	100.00	100.00	100.00	100.00
#18	99.70	97.90	98.70	99.30
#35	99.40	96.60	97.90	97.10
#60	98.70	95.70	95.60	94.20
#120	33.40	79.30	30.60	38.60
#170	11.80	39.20	20.50	23.00
#200	8.30	18.64	16.30	18.60
STATISTICS (EXCLUDING SHELL)				
MEDIAN GRAIN SIZE (mm)	0.16	0.10	0.18	0.16
MEAN GRAIN SIZE (mm)	0.15	N/A	0.15	N/A
SORTING (σ)	N/A	N/A	N/A	N/A

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

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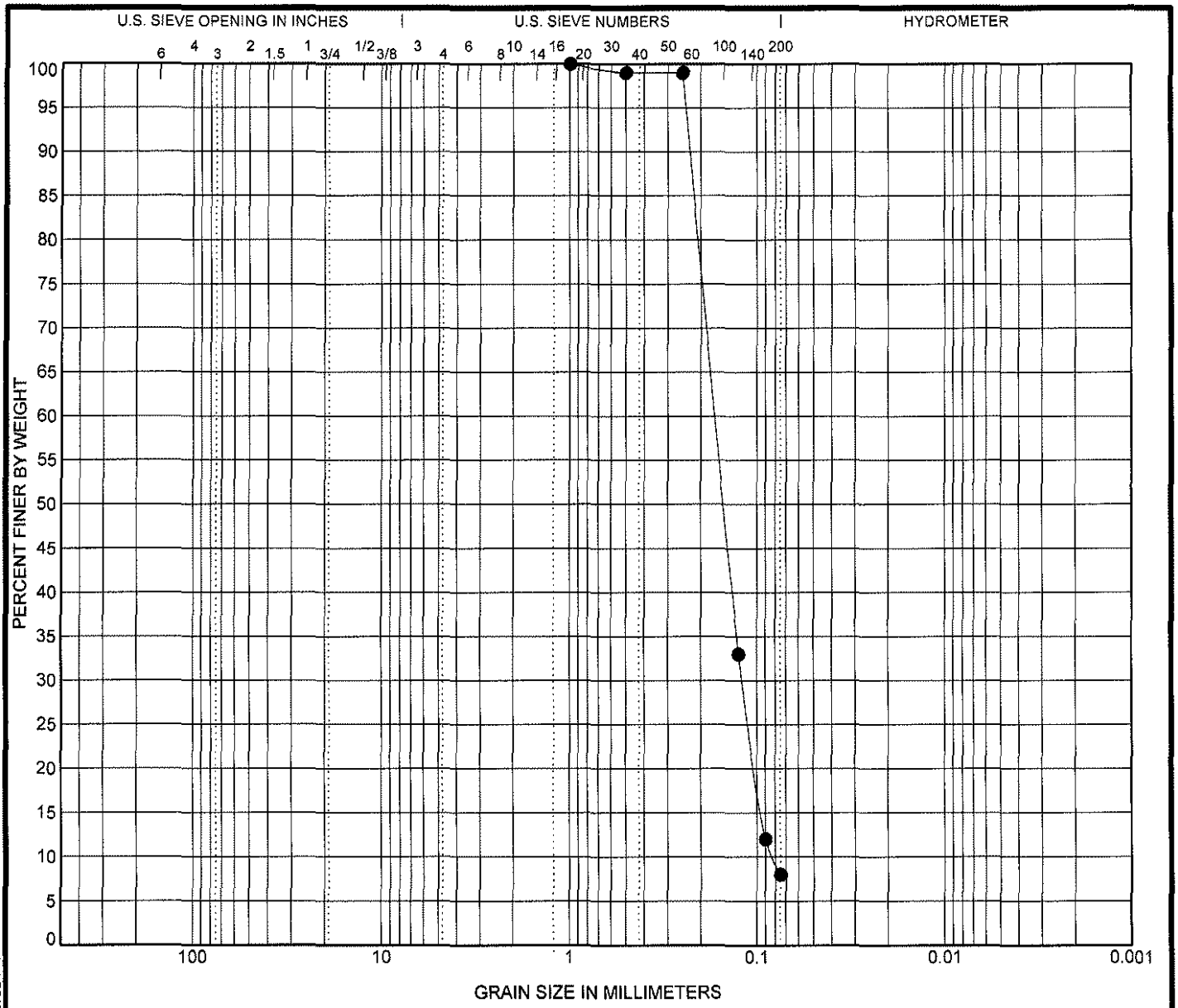
PERCENT SHELL BY WEIGHT (BASED ON #10 SIEVE)	
-26' TO -28' NAVD	-32' TO -34' NAVD
N/A	N/A

ASTM MESH	% FINER BY WEIGHT AFTER REMOVING SHELL	
	-26' TO -28' NAVD	-32' TO -34' NAVD
#10	N/A	N/A
#18	N/A	N/A
#35	N/A	N/A
#60	N/A	N/A
#120	N/A	N/A
#170	N/A	N/A
#200	31.80	77.50
STATISTICS (EXCLUDING SHELL)		
MEDIAN GRAIN SIZE (mm)	N/A	N/A
MEAN GRAIN SIZE (mm)	N/A	N/A
SORTING (σ)	N/A	N/A

*C-11; -26' to -28' NAVD and C-11; -32' to -34' NAVD were only passed through the -#200 sieve.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen ID	Depth	Classification	LL	PL	PI	Cc	Cu
●	C-11	(-14' to -16' NAVD)	**Borrow Area (-14' to -16' NAVD)**				**1.04**	**2.02**

	Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	C-11	(-14' to -16' NAVD)	**1**	**0.166**	**0.119**	**0.082**	**0.0**	**92.0**	**8.0**	

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GRAIN SIZE DISTRIBUTION

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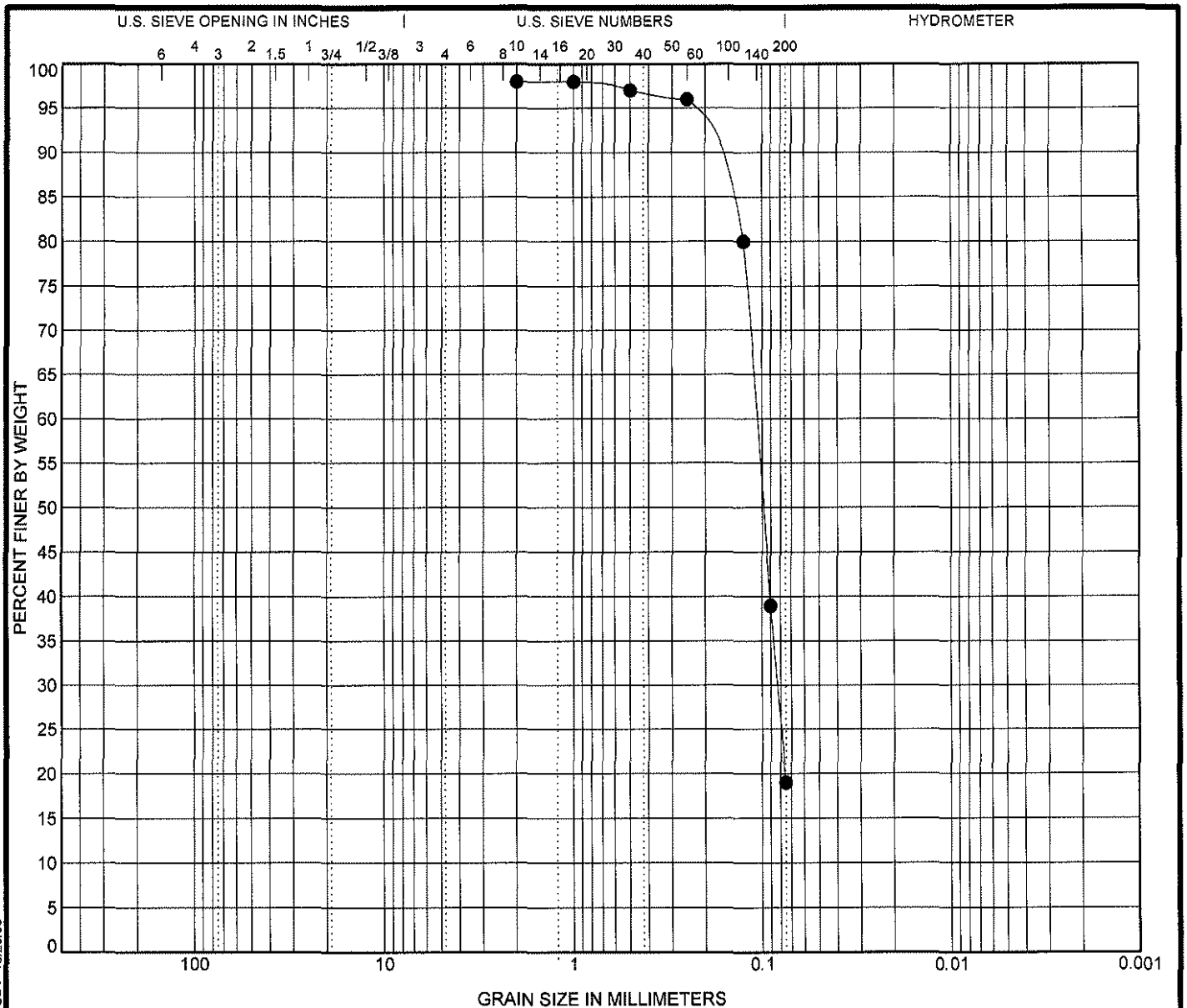
Number: G108558

US_GRAIN_SIZE_G108558B PROP. LARGE SCALE BEACH NOURISHMENT PROJECT.GPJ US_LAB.GDT 10/20/08



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen ID	Depth	Classification	LL	PL	PI	Cc	Cu
●	**C-11**	(-18' to -20' NAVD)	**Borrow Area (-18' to -20' NAVD)**					

	Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**C-11**	(-18' to -20' NAVD)	**2**	**0.106**	**0.083**		**0.0**	**79.0**	**19.0**	

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