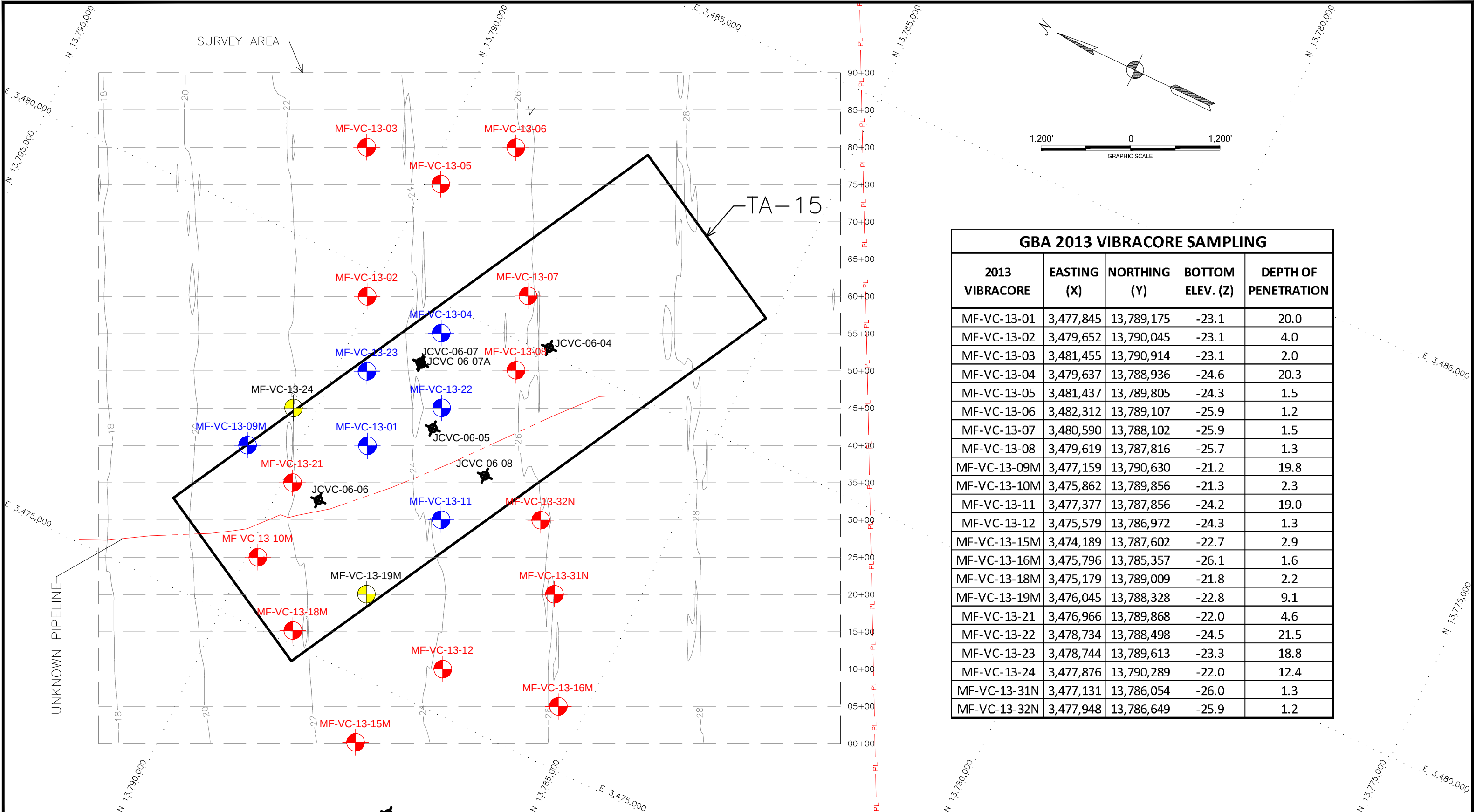




GBA 2013 VIBRACORE SAMPLING				
2013 VIBRACORE	EASTING (X)	NORTHING (Y)	BOTTOM ELEV. (Z)	DEPTH OF PENETRATION
MF-VC-13-01	3,477,845	13,789,175	-23.1	20.0
MF-VC-13-02	3,479,652	13,790,045	-23.1	4.0
MF-VC-13-03	3,481,455	13,790,914	-23.1	2.0
MF-VC-13-04	3,479,637	13,788,936	-24.6	20.3
MF-VC-13-05	3,481,437	13,789,805	-24.3	1.5
MF-VC-13-06	3,482,312	13,789,107	-25.9	1.2
MF-VC-13-07	3,480,590	13,788,102	-25.9	1.5
MF-VC-13-08	3,479,619	13,787,816	-25.7	1.3
MF-VC-13-09M	3,477,159	13,790,630	-21.2	19.8
MF-VC-13-10M	3,475,862	13,789,856	-21.3	2.3
MF-VC-13-11	3,477,377	13,787,856	-24.2	19.0
MF-VC-13-12	3,475,579	13,786,972	-24.3	1.3
MF-VC-13-15M	3,474,189	13,787,602	-22.7	2.9
MF-VC-13-16M	3,475,796	13,785,357	-26.1	1.6
MF-VC-13-18M	3,475,179	13,789,009	-21.8	2.2
MF-VC-13-19M	3,476,045	13,788,328	-22.8	9.1
MF-VC-13-21	3,476,966	13,789,868	-22.0	4.6
MF-VC-13-22	3,478,734	13,788,498	-24.5	21.5
MF-VC-13-23	3,478,744	13,789,613	-23.3	18.8
MF-VC-13-24	3,477,876	13,790,289	-22.0	12.4
MF-VC-13-31N	3,477,131	13,786,054	-26.0	1.3
MF-VC-13-32N	3,477,948	13,786,649	-25.9	1.2

NOTES:

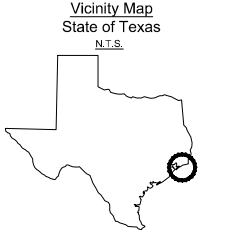
1. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES SHOWN AND CAN ONLY BE CONSIDERED INDICATIVE OF THE GENERAL CONDITION EXISTING AT THAT TIME.

2. HORIZONTAL COORDINATES ARE REFERENCED TO NAD 83 TEXAS SOUTH CENTRAL ZONE 4204.

3. TARGET AREA 15 LOCATION APPROXIMATED FROM DATA PROVIDED BY THE TEXAS GENERAL LAND OFFICE (2006 OFFSHORE GEOTECHNICAL INVESTIGATIONS TO IDENTIFY SAND SOURCES-CPE).
4. BATHYMETRY, SUB BOTTOM, SIDESCAN, AND MAGNETOMETER DATA USED TO MAP THE REFINED POTENTIAL SAND SOURCE LOCATION AS SHOWN ON THE PLAN.

5. LOCATIONS OF SHOWN UTILITIES ARE APPROXIMATE. NOT ALL EXISTING UTILITIES WITHIN THE WORK AREA MAY BE SHOWN. PIPELINE SAFETY IS THE RESPONSIBILITY OF ALL PARTIES.

-  2013 GBA FULL CORE OBTAINED
-  2013 GBA FULL CORE NOT OBTAINED
-  2013 GBA PARTIAL CORE OBTAINED
-  2006 CPE VIBRACORE



GBA
ENGINEERS ★ SURVEYORS

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TX REGISTERED ENGINEERING FIRM
F-408

SAND SOURCE INVESTIGATION FOR THE
McFADDIN NATIONAL WILDLIFE REFUGE BEACH NOURISHMENT
McFaddin National Wildlife Refuge, Jefferson County, Texas

VIBRACORE LOCATIONS

DWG DATE:	DECEMBER 19, 2013	DWG NAME:	McFaddinNWR_PROJECTDRAWINGS.dwg
DRAWN:	CH	CHECKED:	JB/KK
SCALE:	AS SHOWN	SHEET:	3.7
		ENGR:	CH
		REV:	0

Mr. Chester Hedderman, PE, PLS
 HVJ Report No. HG1315380
 December 19, 2013

Cohesionless Samples from Vibrocore Borings- Lab Tests Summary							
Boring	Depth (Feet)	Munsell Color	% Ret #4	% Pass #200	% Pass #230	D ₅₀ (mm)	Classification
MF-VC-13-04	5-10 Top	5/2 (2.5Y)	0.0	3.7	2.6	0.22	Grayish Brown Poorly Graded Sand (SP)
MF-VC-13-04	5-10 Bottom	5/2 (2.5Y)	0.0	5.0	3.6	0.21	Grayish Brown Poorly Graded Sand (SP)
MF-VC-13-04	12-15	4/1 (2.5Y)	0.0	23.2	12.9	0.14	Dark Gray Silty Sand (SM)
MF-VC-13-11	1-3.4	6/4 (7.5YR)	0.0	32.5	20.3	0.10	Light Brown Silty Sand (SM)
MF-VC-13-11	6.4-7.25	6/4 (7.5YR)	0.0	48.5	30.4	0.08	Light Brown Silty Sand (SM)
MF-VC-13-11	12-12.8	5/1 (2.5Y)	0.0	23.5	10.5	0.12	Gray Silty Sand (SM)
MF-VC-13-22	2-4	5/1 (2.5Y)	0.0	36.4	21.6	0.89	Gray Silty Sand (SM)
MF-VC-13-23	4-5	6/2 (2.5Y)	0.0	31.7	20.5	0.12	Light Brownish Gray Silty Sand (SM)
MF-VC-13-23	6.2-10 Top	6/2 (2.5Y)	0.0	5.5	3.9	0.18	Light Brownish Gray Poorly Graded Sand (SP)
MF-VC-13-23	6.2-10 Bottom	6/2 (2.5Y)	0.0	5.0	3.7	0.18	Light Brownish Gray Poorly Graded Sand (SP)
MF-VC-13-23	13.6-15	5/1 (2.5Y)	0.0	7.0	4.8	0.20	Gray Poorly Graded Sand (SP)
MF-VC-13-23	15-18.9	5/1 (2.5Y)	0.0	3.3	2.5	0.25	Gray Poorly Graded Sand (SP)

Cohesive Soils From Vibrocore Borings: Two (2) cohesive soil samples obtained from the vibrocore borings were delivered to HVJ for classification and testing. Sieve analysis with hydrometer test results are presented in Plates 69 and 70. The results are presented below:

Cohesive Samples from Vibrocore Borings- Lab Tests Summary							
Boring	Depth (Feet)	Munsell Color	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (PI)	Hand Penetrometer (tsf)	Classification
MF-VC-13-02	0-4	5/4 (2.5Y)	21.3	33	12	0.25	Soft, Light Olive Brown Sandy Lean Clay (CL)
MF-VC-13-07	0-1.6	6/4 (2.5Y)	24	48	28	1.25	Very Stiff, Light Yellowish Brown Lean Clay (CL)

LOG OF BORING

Project: McFaddin NWR Sand Source Investigation

Boring No.: MF-VC-13-07

Groundwater during drilling: ---

Groundwater after 24hrs: ---

Date: 11/1/2013

Northing: 13,788,102.0

Easting: 3,480,590.0

Project No.: HG1315380

Elevation: -25.9 feet

Station: --

Offset: --

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	D50, MM	SHEAR STRENGTH, TSF ● ■ ▲ ✱ 0.5 1.0 1.5 2.0 MOISTURE CONTENT, % ○ PLASTIC LIMIT LIQUID LIMIT 10 20 30 40 50 60 70 80 90
0		Light Yellowish Brown, Very Stiff Lean Clay (Munsell 6/4 2.5Y)	98.6		○ ●
-30					
-5					
-35					
-10					
-40					
-15					
-45					
-20					
-50					
-25					
-55					
-30					
-60					
-35					

Shear Types:

● = Hand Penet.

■ = Torvane

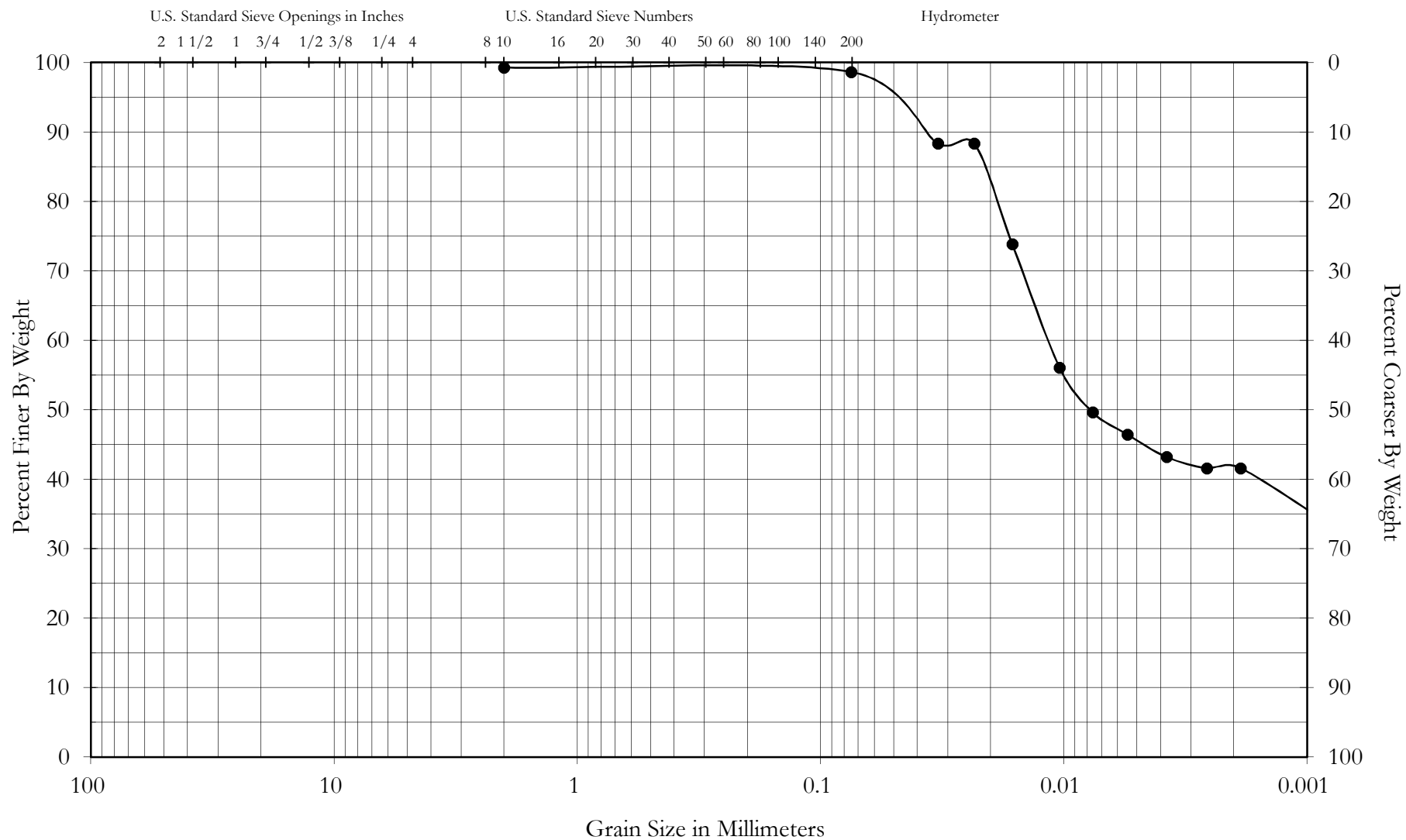
▲ = Unconf. Comp.

✱ = UU Triaxial

LOG OF SOIL BORING HG-13-15380.GPJ HVJ.GDT 12/19/13



PLATE 7



Sample Location

MF-VC-13-07
0-4'

C_u & C_c

C_u = NA
C_c = NA
D₅₀ = 0.007

Classification

Light Yellowish brown Lean Clay (CL)

HVJ ASSOCIATES, INC.

**GRAIN SIZE ANALYSIS CURVE
ASTM D6913**

PROJECT NO:
HG1315380

PLATE 70