
ANNEX G-1 **GEOLOGICAL INVESTIGATIONS**

- Boring Logs Referenced in Appendix A
- Laboratory Data from Geotechnical Reports Referenced in Appendix A

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Ardaman & Associates, Inc.

Geotechnical, Environmental and
Materials Consultants

AAI File No. 18-1633
March 15, 2018

Tetra Tech Inc.
759 South Federal Highway, Suite 314
Stuart, Florida 34994

Attention: Georgia A Vince

**FIELD EXPLORATION RESULTS
SFWMD EAA A-2 STORAGE RESERVOIR PROJECT
PALM BEACH COUNTY, FLORIDA**

In accordance with your request, we are pleased to submit the results of our recent Standard Penetration Test borings and of our field and laboratory tests for the above referenced project. We performed six (6) Standard Penetration Test (SPT) borings to depths of 40 to 50 feet around the perimeter of the proposed EAA A-2 Reservoir. The SPT borings were performed using a truck-mounted drill rig equipped with an automatic hammer on access roads next to agricultural fields along the proposed perimeter of the reservoir. The SPT borings were sampled continuously and performed in general accordance with the procedures recommended in ASTM D-1586. Following completion of the borings, the boreholes were grouted from the bottom to the top using the tremie method.

Next to some SPT boring locations, borehole permeability tests were conducted in newly drilled boreholes using partially screened PVC pipes or steel casing. Horizontal permeability tests were conducted by drilling to a particular depth (depending on the encountered conditions), sealing the bottom of the borehole with at least 4 inches of bentonite chips, inserting a PVC screen cut to a particular length as needed to test a specific interval of the soil column, filling the annulus of the borehole with coarse 6/20 silica sand to the top of the well screen, and filling the remainder of the borehole to the surface with bentonite chips and then conducting constant head and/or falling head permeability tests. Also performed was a vertical permeability test conducted by seating solid steel casing a few inches into a given soil layer, clearing the inside of the casing of its contents, and then conducting constant head and/or falling head permeability tests. The permeability test boreholes were grouted using the tremie method upon completion of the tests.

Wash 200 testing and other select laboratory tests were performed on representative samples recovered from the SPT borings. All laboratory tests were performed in accordance with applicable ASTM standards.

Subsurface Profile

The attached boring logs presented the results of the Standard Penetration Tests and the nature of the material encountered in the split spoons. Table 1 below presents a generalized soil profile and represents our interpretation of the findings of the soil borings;

Table 1: Generalized Soil Profile – EAA A-2 Storage Reservoir Project

Depth (feet)	Description
1 – 3	Pahokee muck. Slightly sandy to silty organics to silty fibrous organics.
3 – 8	Gray silty limestone (“caprock”) (Lake Flirt formation (?)) – See Photo 1 below). Very hard ($qU > 3$ ksi). Breaks into slabs. May have two hard layers separated by silty sands. This layer is known to easily develop horizontal seeps in the sandy soil between hard limestone lenses when exposed to small head differentials and may be the greatest source of seepage loss under embankments.
8 - 21	Light brown silty limestone; masses of silty (marly) sands with limestone fragments. The uncemented materials are perhaps due to filling of solution cavities, but more likely to irregular cementation of the calcareous sediment; we had no seepage losses while drilling through this material. (Fort Thompson formation). Whereas the hard limestone lenses of the caprock appear to be relatively continuous, this formation may not have laterally extensive hard lenses except near the surface.
21 - 50	Gray slightly silty fine sand. Scattered lenses of limestone. (Caloosahatchee formation).

We did not find any layers of clayey (plastic), low permeability soils extending throughout the site.



Photo 1.- Lake Flirt (?) Limestone (Caprock)

Permeability

Unfortunately, very few permeability tests could be performed due to time constraints and other factors, including the difficulty of drilling through the caprock; which is known to have compressive strengths of 6 kips per square inch (ksi). Travel within the site is confusing/cumbersome because the lack of continuity in some of the internal roads and the lack of signs mapping the same.

Laboratory tests on remolded samples of the deep (Caloosahatchee) slightly silty fine sands (Boring B-4 35'-40') yielded a permeability coefficient of 6×10^{-3} cm/sec. A borehole permeability test in this layer (Boring B-1 29'-34') yielded a coefficient of permeability of 2.86 cm/sec. This sand has relatively similar coefficients of vertical and horizontal permeability, with no signs of layering (varves) of fines in the mass of sand.

A vertical borehole permeability test in the (Fort Thompson) silty sands found at a depth of 17 feet in Borehole B-2 yielded a permeability value of 3×10^{-5} cm/sec.

Horizontal permeability test on the (Fort Thompson) silty sands found at a depth of 17 to 19 feet in Borehole B-2 yielded a coefficient of 5×10^{-3} cm/sec.

A horizontal permeability test on the (Fort Thompson) silty sand found at a depth of 11 to 13 feet in Borehole B-2 yielded a permeability coefficient of 5×10^{-2} cm/sec.

A horizontal permeability test on the (Fort Thompson) silty sand found at a depth of 16 to 21 feet in Borehole B-1 yielded a permeability coefficient of 3×10^{-3} cm/sec.

The determination of the overall vertical permeability of the Fort Thompson formation is made difficult by the variability of the deposit and it may be best to conduct full scale tests using parallel trenches or tests in areas confined by a sheetpile cofferdam. The cofferdam test would be performed after digging the caprock from the test area, installing the cofferdam and then dewatering the excavation.

It is difficult to envision that the deep (30 - 40') Caloosahatchee fine sand has a vertical permeability much different than its horizontal permeability; in any case, this material does not seem to be coarse enough to have a coefficient of permeability (vertical or horizontal) in excess of 1×10^{-2} cm/sec.

Compressibility

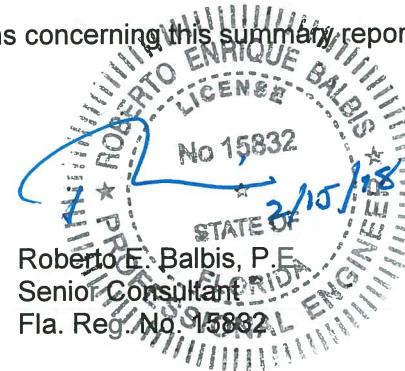
We did not encounter highly plastic or compressible soils other than the surficial muck that would undergo significant, lengthy settlement effects after the application of stress such as by the proposed levee.

Please do not hesitate to contact us if you have any questions concerning this summary report.

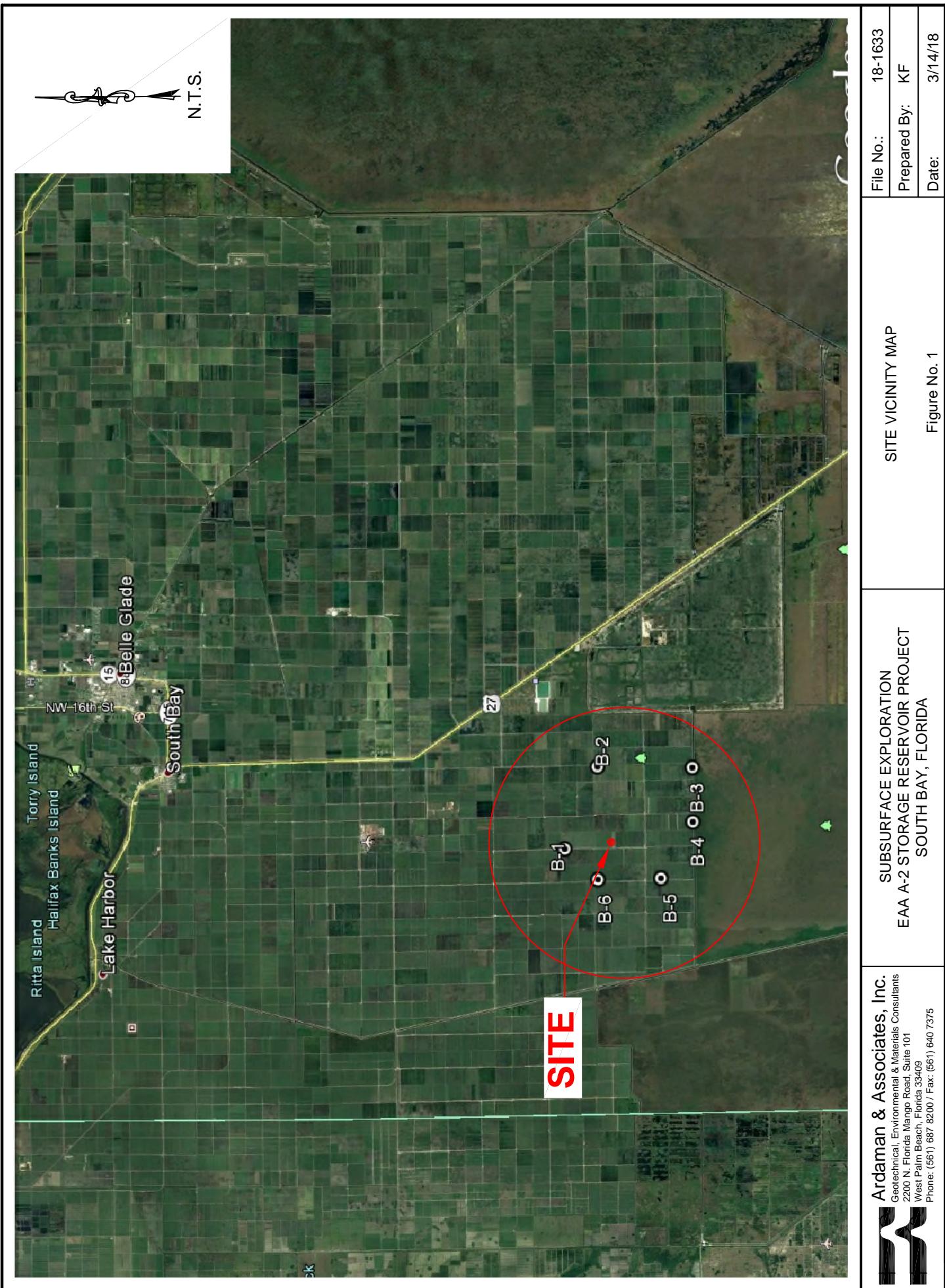
ARDAMAN & ASSOCIATES, INC.
FL. Certificate of Authorization No. 5950

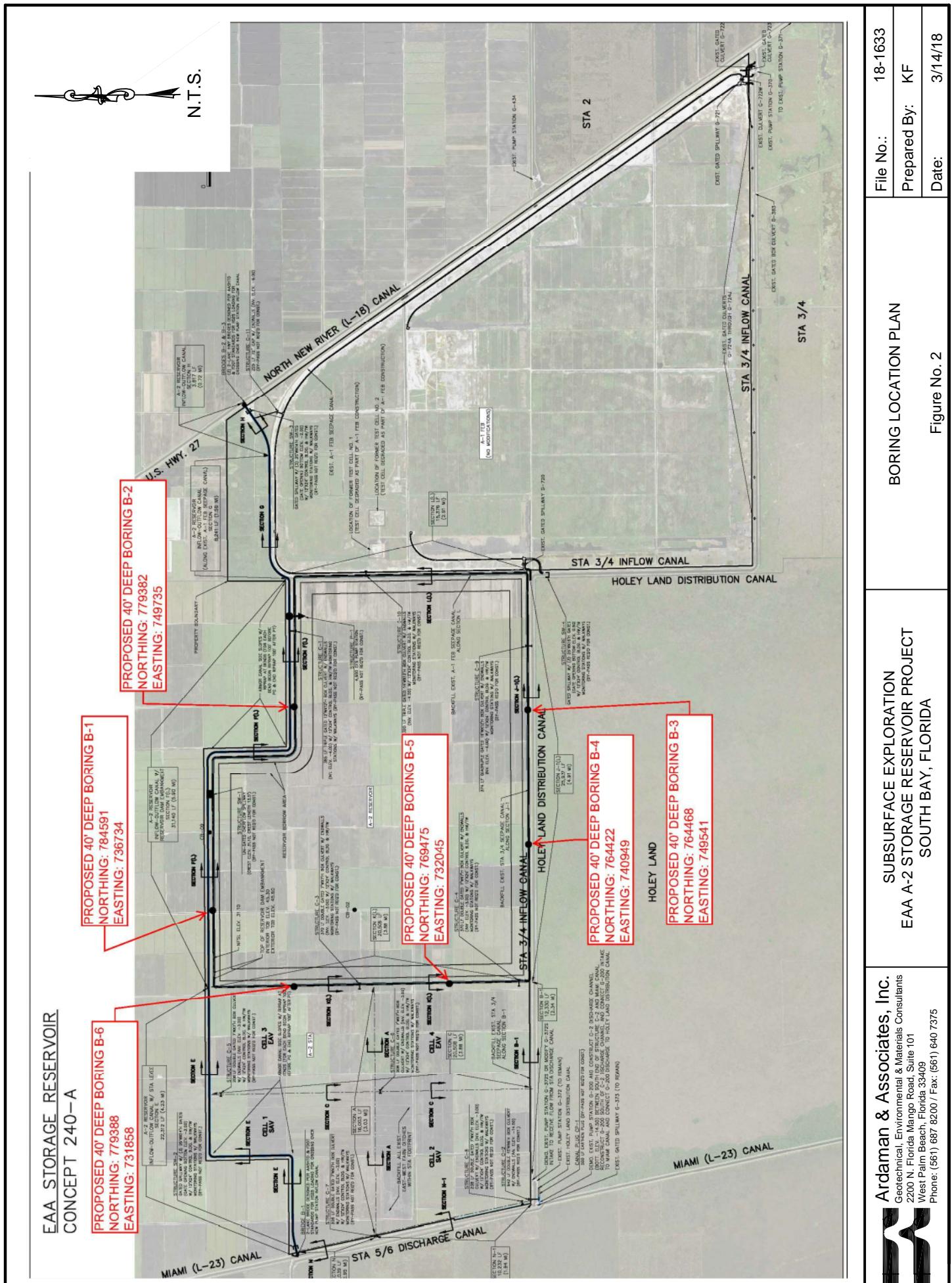
 3-15-18

Kevin Ferguson, P.E.
Geotechnical Engineer
Fla. Reg. No. 60712



Attachments: Site Vicinity Map - Figure 1
Boring Location Plan - Figure 2
Subsurface Exploration Information
SPT Boring Logs (6)







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Materials Consultants

SUBSURFACE EXPLORATION INFORMATION

GENERAL

Our borings describe subsurface conditions only at the locations drilled and at the time drilled. They provide no information about subsurface conditions below the bottom of the boreholes. At locations not explored, surface conditions that differ from those observed in the borings may exist and should be anticipated.

The information reported on our boring logs is based on our drillers' logs and on visual examination in our laboratory of disturbed soil samples recovered from the borings. The distinction shown on the logs between soil types is approximate only. The actual transition from one soil to another may be gradual and indistinct.

The groundwater depth shown on our boring logs is the water level the driller observed in the borehole when it was drilled. These water levels may have been influenced by the drilling procedures, especially in borings made by rotary drilling with bentonitic drilling mud. An accurate determination of groundwater level requires long-term observation of suitable monitoring wells. Fluctuations in groundwater levels throughout the year should be anticipated.

The absence of a groundwater level on certain logs indicates that no groundwater data is available. It does not mean that no groundwater will be encountered at that boring location.

STANDARD PENETRATION TEST BORINGS

The Standard Penetration Test is a widely accepted method of testing foundation soils in place. The N-Value obtained from the test has been correlated empirically with various soil properties. These empirical correlations allow satisfactory estimates to be made of how the soil is likely to behave when subjected to foundation loads. Tests are usually performed in the boreholes at intervals of five feet. In addition, our Firm performs tests continuously in the interval directly below the expected foundation bearing grade where the soil will be most highly stressed.

Boreholes where Standard Penetration Tests will be performed are drilled with a truck-mounted drilling rig. The boreholes are advanced by rotary drilling with a winged bit that makes a hole about three inches in diameter. A bentonitic drilling mud is recirculated in order to remove the cuttings and support the walls of the borehole. The drag bit is specially modified to direct the mud upward and reduce disturbance of the soil ahead of the bit. If access is not available for our truck-mounted drilling equipment, portable tripod drilling equipment can be used instead.

Occasionally, running or squeezing ground is encountered that cannot be stabilized by the drilling mud alone. In addition, drilling mud may be lost into the soil or rock strata that are unusually pervious. In such cases, flush-joint steel casing with an outside diameter of about 3.5 inches is driven as a liner for the borehole.

After the borehole has been advanced to the depth where a Standard Penetration Test will be performed, the soil sampler used to run the test is attached to the end of the drill rods and lowered to the bottom of the borehole. The testing procedure used conforms closely to the methods recommended in ASTM D-1586. The sampler used has a split-barrel 24 inches long and an outside diameter of 2.0 inches. It is driven into the ground below the bottom of the borehole using a hammer that weighs 140 pounds and falls 30 inches. The driller records the number of hammer blows needed to advance the sampler in successive increments of six inches. The total number of blows required to advance the sampler the second and third six-inch increments constitutes the test result; that is, the N-value at the depth. The test is completed after the sampler has been driven not more than 24 inches or when refusal is encountered, whichever occurs first. Refusal occurs when 50 hammer blows advance the sampler less than 6 inches. After the test is completed, the sampler is removed from the borehole and opened.

The driller examines and classifies the soil recovered by the sampler, place representative soil specimens from each test in glass jars or plastic bags and take them to our laboratory. In the laboratory, additional evaluations and tests are performed, if needed. The driller's classifications may be adjusted, if necessary, to conform more closely with the Unified Soil Classification System (USCS). Jar samples are retained in our laboratory for sixty days, then discarded unless our clients request otherwise.

The following tables relate N-values to a qualitative description of the relative soil density.

Cohesionless Soils	Description	SPT N Value
	Very loose	0-4
	Loose	5-9
	Medium dense	10-29
	Dense	30-49
	Very dense	50+

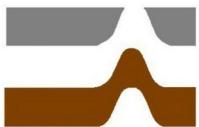
Cohesive Soils	Description	SPT N Value
	Very soft	0-2
	Soft	3-4
	Medium stiff	5-8
	Stiff	9-15
	Very stiff	16-30
	Hard	31+

LEGEND FOR BORING LOGS

The following abbreviations are often used in our boring logs:

- MC: Moisture content (percent of dry weight)
- OC: Organic content (percent of dry weight)
- PL: Moisture content at the plastic limit
- LL: Moisture content at the liquid limit
- PI: Plasticity index (LL-PL)
- Qu: Unconfined compressive strength (tons per square foot, unless otherwise noted)
- 200: Percent passing a No. 200 sieve (200 wash)





Ardaman & Associates, Inc.

BORING ID: B-1

PAGE 1 OF 1

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PROJECT NAME SFWMD EAA A-2 Storage Reservoir Project

PROJECT NUMBER 18-1633

PROJECT LOCATION See Project Location Map

DATE STARTED 2/26/18 **COMPLETED** 2/27/18

TEST LOCATION See Boring Location Plan

DRILLING CONTRACTOR Ardaman & Associates, Inc.

GROUND ELEVATION

GROUNDWATER DEPTH 2.0 ft

DRILLER DG/MC

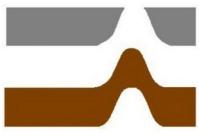
DRILLING METHOD SPT Sampling. Rotary Wash Drilling with Bentonitic Mud

LOGGED BY Kevin Ferguson **CHECKED BY** Kevin Ferguson

DRILLING EQUIPMENT CME45 Truck Mounted Drill Rig

NOTES 140-lb Automatic Hammer

Boring terminated at a depth of 40.0 feet.



Ardaman & Associates, Inc.

BORING ID: B-2

PAGE 1 OF 1

Geotechnical, Environmental and Materials Consultants

CLIENT South Florida Water Management District

PROJECT NAME SFWMD EAA A-2 Storage Reservoir Project

PROJECT NUMBER 18-1633

PROJECT LOCATION See Project Location Map

DATE STARTED 3/5/18 **COMPLETED** 3/5/18

TEST LOCATION See Boring Location Plan

DRILLING CONTRACTOR Ardaman & Associates, Inc.

GROUND ELEVATION

GROUNDWATER DEPTH 1.2 ft

DRILLER DG/MC

DRILLING METHOD SPT Sampling, Rotary Wash Drilling with Bentonitic Mud

LOGGED BY Kevin Ferguson **CHECKED BY** Kevin Ferguson

DRILLING EQUIPMENT CMF45 Truck Mounted Drill Rig

NOTES 140-lb Automatic Hammer

ELEVATION (ft)	DEPTH (ft bgs)	GRAPHIC LOG	U.S.C.S. CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE NO.	SAMPLER / INTERVAL RECOVERY (%)	REMARKS	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲
				MATERIAL DESCRIPTION					20 40 60 80
▽			PT	Dark brown to black silty fibrous organics, trace limerock ("muck") (MC=97.7%, OC=56.1%)	1			1-1-26-9 (27)	
			SM	Brown silty limestone (S/3 - MC=26.1%, -200=18.5%)	2/3			3-3-15-50/1" (18)	>>
			SM	Dark grayish brown slightly organic silty fine sand, some limestone (S/4)	4			2-2-3-2 (5)	
			SM	Gray silty fine sand, some shell and limestone	5			2-3-1-6 (4)	
10				Light gray silty fine sand, some limestone (S/6 - MC=18.0%, -200=19.6%)	6			50-50/2"	
				Gray silty fractured limestone (S/7 - MC=26.0, -200=26.2)	7			25-4-4-5 (8)	
			SM	Gray silty fine sand, some shell (S/8 - MC=27.1%, -200=22.2%)	8			4-2-2-2 (4)	
			SM	Gray silty fine sand, some shell and limestone (S/9 - MC=29.9%, -200=20.3%)	9/10			2-2-2-12 (4)	
				Gray silty fractured limestone (S/11 - MC=24.4%, -200=29.8%)	11			13-15-15-10 (30)	
20			SP-SM	Brown slightly silty fine sand, some shell and limestone	12			10-21-50/5"	>>
				Gray slightly sandy fractured limestone	13			48-21-9-7 (30)	
			SP-SM	Gray slightly silty fine sand, some shell and limestone	14			7-50/5"	
				Gray fractured limestone	15			50/2"	
30			SM	Gray silty fine sand, some shell, trace limestone (S/15 - MC=25.5%, -200=19.8%)	16		Softer drilling noted at about 25 feet	4-4-6-4 (10)	
				Gray slightly silty limestone	17			5-10-13-23 (23)	
					18			10-6-7-8 (13)	
			SP-SM	Dark gray to gray slightly silty fine sand (some silica?), some shell and limestone (S/19 - MC=26.2%, -200=10.2%)	19			5-5-7-8 (12)	
40			SP	Gray fine sand, some limestone	20			6-5-4-4 (9)	
			SP	Gray fine sand, some shell	21			4-5-7-9 (12)	
			SP	Gray fine sand, some shell and limestone (S/23 - MC=27.2%, -200=4.1%)	22			10-16-16-33 (32)	
			SP-SM	Gray slightly silty fine sand, some shell, trace limestone (S/24 - MC=26.0, -200=5.9%)	23			14-12-14-15 (26)	
				Gray slightly silty to sandy limestone (S/25 - MC=22.8%, -200=7.7%), (S/26 - MC=18.6%, -200=6.6%)	24			5-7-6-7 (13)	
50					25			2-3-2-5 (5)	
					26			5-4-3-3 (7)	
								3-4-5-4 (9)	

Boring terminated at a depth of 50.0 feet.



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BORING ID: B-3

PAGE 1 OF 1

Materials Consultants

PROJECT NAME SFWMD EAA A-2 Storage Reservoir Project

PROJECT NUMBER 18-1633

PROJECT LOCATION See Project Location Map

DATE STARTED 3/2/18 **COMPLETED** 3/2/18

TEST LOCATION See Boring Location Plan

DRILLING CONTRACT

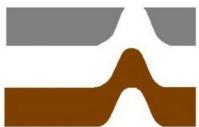
GROUND ELEVATION _____ **GROUNDWATER DEPTH** 2.1 ft

DRILLER DG/MC

DRILLING METHOD SPT Sampling. Rotary Wash Drilling

LOGGED BY Kevin Ferguson

Boring terminated at a depth of 40.0 feet.



Ardaman & Associates, Inc.

BORING ID: B-4

PAGE 1 OF 1

Materials Consultants

PROJECT NAME SFWMD EAA A-2 Storage Reservoir Project

PROJECT NUMBER 18-1633

PROJECT LOCATION See Project Location Map

DATE STARTED 3/1/18 **COMPLETED** 3/1/18

TEST LOCATION See Boring Location Plan

DRILLING CONTRACTOR Ardaman & Associates, Inc.

GROUND ELEVATION

GROUNDWATER DEPTH 2.7 ft

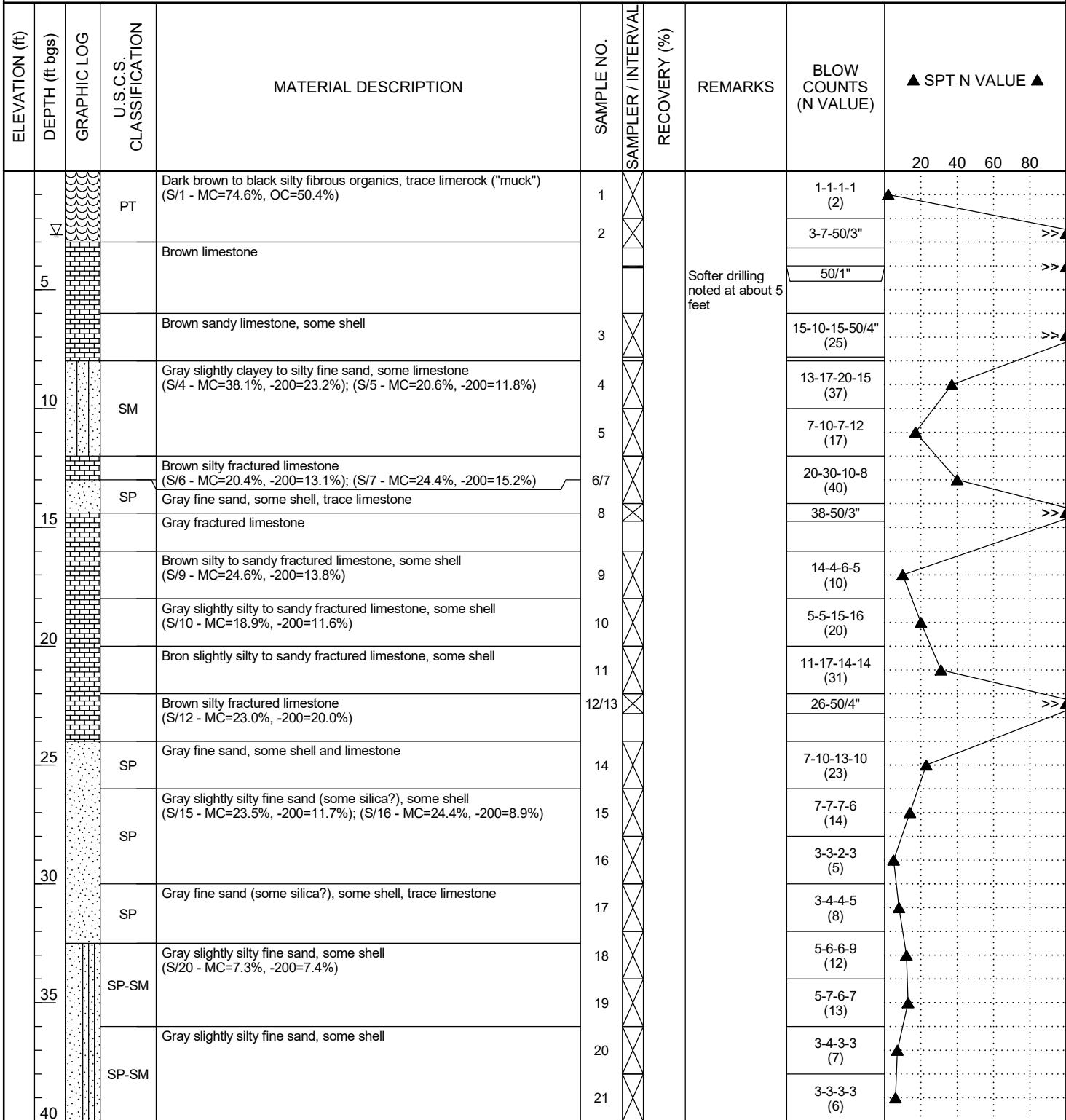
DRILLER DG/MC

DRILLING METHOD SPT Sampling. Rotary Wash Drilling with Bentonitic Mud

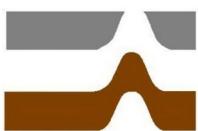
LOGGED BY Kevin Ferguson **CHECKED BY** Kevin Ferguson

DRILLING EQUIPMENT CME45 Truck Mounted Drill Rig

NOTES 140-lb Automatic Hammer



Boring terminated at a depth of 40.0 feet.



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Geotechnical, Environmental and
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BORING ID: B-5

PAGE 1 OF 1

CLIENT South Florida Water Management District

PROJECT NAME SFWMD EAA A-2 Storage Reservoir Project

PROJECT NUMBER 18-1633

PROJECT LOCATION See Project Location Map

DATE STARTED 2/26/18 **COMPLETED** 2/28/18

TEST LOCATION See Boring Location Plan

DRILLING CONTRACTOR Ardaman & Associates, Inc.

GROUND ELEVATION

GROUNDWATER DEPTH 3.3 ft

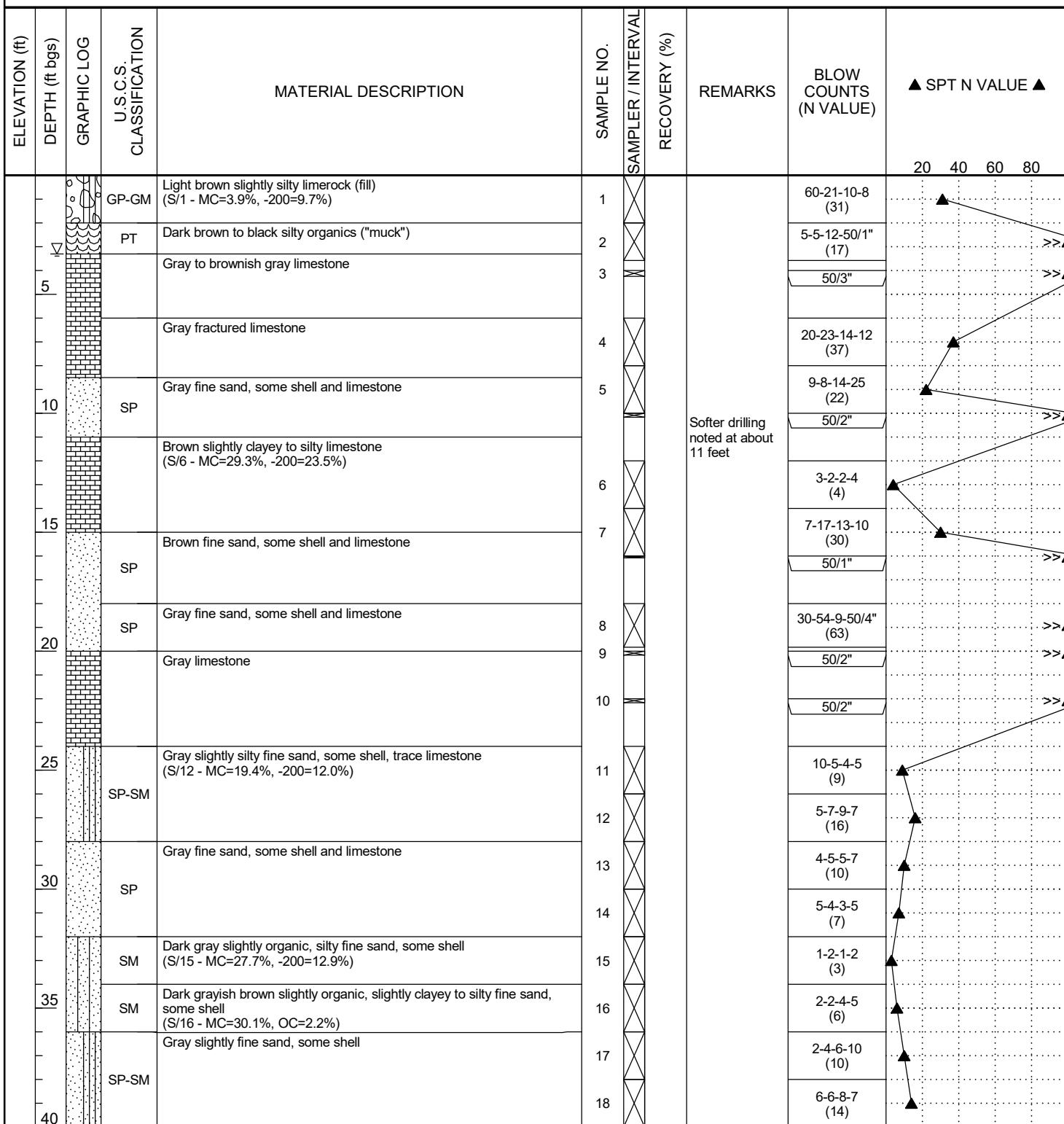
DRILLER DG/MC

DRILLING METHOD SPT Sampling, Rotary Wash Drilling with Bentonitic Mud

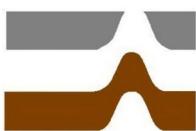
LOGGED BY Kevin Ferguson **CHECKED BY** Kevin Ferguson

DRILLING EQUIPMENT CME45 Truck Mounted Drill Rig

NOTES 140-lb Automatic Hammer



Boring terminated at a depth of 40.0 feet.



Ardaman & Associates, Inc.

Geotechnical, Environmental and
Materials Consultants

BORING ID: B-6

PAGE 1 OF 1

CLIENT South Florida Water Management District

PROJECT NAME SFWMD EAA A-2 Storage Reservoir Project

PROJECT NUMBER 18-1633

PROJECT LOCATION See Project Location Map

DATE STARTED 2/26/18 **COMPLETED** 2/28/18

TEST LOCATION See Boring Location Plan

DRILLING CONTRACTOR Ardaman & Associates, Inc.

GROUND ELEVATION

GROUNDWATER DEPTH 1.5 ft

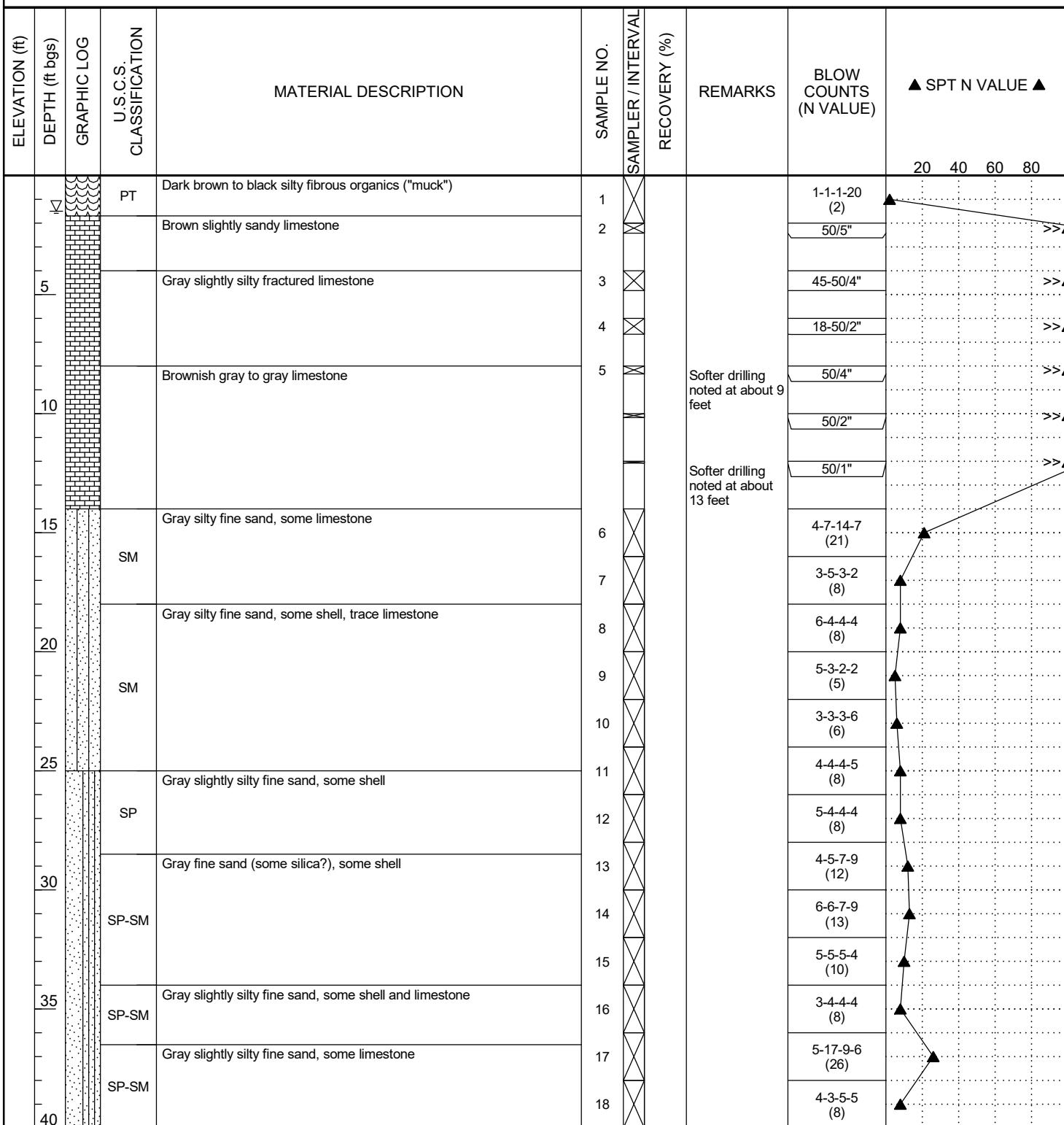
DRILLER DG/MC

DRILLING METHOD SPT Sampling, Rotary Wash Drilling with Bentonitic Mud

LOGGED BY Kevin Ferguson **CHECKED BY** Kevin Ferguson

DRILLING EQUIPMENT CME45 Truck Mounted Drill Rig

NOTES 140-lb Automatic Hammer



Boring terminated at a depth of 40.0 feet.

**BORING LOGS USED TO PREPARE SOIL PROFILE ACROSS THE A-1 AND A-2 SITES PERFORMED
FOR CONCEPTUAL REPORT OF GEOTECHNICAL EXPLORATION COMPREHENSIVE EVERGLADES
RESTORATION PLAN EVERGLADES AGRICULTURAL AREA RESERVOIRS, ARDAMAN &
ASSOCIATES, INC. (2003) AND EAA RESERVOIR A-1 GEOTECHNICAL EXPLORATION,
BLACK & VEATCH (2004)**

DRILLING LOG			DIVISION South Atlantic		INSTALLATION Jacksonville District				SHEET 1 OF 10 SHEETS			
1. PROJECT CERP Everglades Agricultural Area Reservoirs Phase 1, Effort 1, Compartment A			9. SIZE AND TYPE OF BIT See Remarks									
2. BORING DESIGNATION CP02-EAARS-CB-0002			LOCATION COORDINATES X = 736,775 Y = 775,528		10. COORDINATE SYSTEM/DATUM State Plane, FLE				HORIZONTAL NAD83	VERTICAL NAVD88		
3. DRILLING AGENCY Ardaman & Associates, Inc.			CONTRACTOR FILE NO. 02-042		11. MANUFACTURER'S DESIGNATION OF DRILL CME-55				<input type="checkbox"/> AUTO HAMMER	<input checked="" type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER M. Gulick			12. TOTAL SAMPLES 118				DISTURBED 118	UNDISTURBED (UD) 0				
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 5							
6. THICKNESS OF OVERBURDEN			5.5 Ft.		14. ELEVATION GROUND WATER							
7. DEPTH DRILLED INTO ROCK			13.4 Ft.		15. DATE BORING 08-13-02				STARTED 08-13-02	COMPLETED 09-03-02		
8. TOTAL DEPTH OF BORING			180.0 Ft.		16. ELEVATION TOP OF BORING 12.0 Ft.							
			17. TOTAL RECOVERY FOR BORING 80 %				18. SIGNATURE AND TITLE OF INSPECTOR H. Snyder, Civil Engineer					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS			BLOWS/ 0.5 FT.	N-VALUE
12.0	0.0							12.0				0
			FILL, gravelly, mixture of fine gravel size limestone, fine to coarse grained limestone sand, and silt, dry, light gray		13	1		SPT Sampler 32 32 8				40
9.0	3.0				40	2		SPT Sampler 4 6				12
8.8	3.2		SAND, silty, mostly fine-grained, some silt, dry, organic, dark brown (SM) Limestone, hard, slightly weathered, medium-grained, porous to pitted, light grey-green		47	3		SPT Sampler 1 2 4				6
			At El. 5.0 Ft., moderately hard		90	4		SPT Sampler 16 50/5				5
		Slightly Weathered			51	6 BOX 1	RQD 29	4 x 5-1/2" Diamond Impregnated Bit DT = 80 mins HP = 100 psi				10
					100	7	RQD 0	4 x 5-1/2" Diamond Impregnated Bit 9 mins, 100 psi				
					80	8		SPT Sampler 4 4 29				33
					40	9		SPT Sampler -1.0 50/3				
					47	10	RQD 40	4 x 5-1/2" Diamond Impregnated Bit DT = 23 mins HP = 100 psi				

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE		HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528			ELEVATION TOP OF BORING 12.0 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UB	REMARKS
-4.0	16.0	At El. -3.0 Ft., vuggy			47	10	RQD 40	4 x 5-1/2" Diamond Impregnated Bit DT = 23 mins HP = 100 psi SPT Sampler
		Limestone, hard, unweathered, fine-grained, vuggy, trace of shell, grey			81	11	BOX RQD 48	4 x 5-1/2" Diamond Impregnated Bit DT = 15 mins HP = 100 psi
		Unweathered			70	12	BOX RQD 40	-8.0 4 x 5-1/2" Diamond Impregnated Bit -9.0 8 mins, 100 psi
		At El. -9.0 Ft., little shell			33	14		SPT Sampler
		At El. -10.6 Ft., trace silt			47	15		-10.6 SPT Sampler
-12.0	24.0							-12.0 SPT Sampler
		SAND, poorly-graded with silt, some angular fine-grained quartz, some fine-grained limestone, little angular shell, trace phosphate, light brown (SP-SM)			47	16		6 7 8 SPT Sampler
					47	17		9 10 11 SPT Sampler
-15.0	27.0							12 13 14 SPT Sampler
		SAND, silty, mostly fine-grained quartz, trace angular fine-grained shell, trace clay, trace phosphate, light grey (SM)			73	18		15 16 17 SPT Sampler
		At El. -17.0 Ft., little clay			87	19		18 19 20 SPT Sampler
					87	20		21 22 23 SPT Sampler
-19.6	31.5				73	21		24 25 26 SPT Sampler
		SAND, poorly-graded with silt, mostly fine-grained quartz, little shell, few silt, light brown (SP-SM)			73	22		27 28 29 SPT Sampler
-22.6	34.5				75	23		30 31 32 SPT Sampler
		SAND, poorly-graded, mostly fine to						

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District					SHEET 3 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528			ELEVATION TOP OF BORING 12.0 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
									BLOWS/ 0.5 FT. N-VALUE
			medium-grained quartz, some angular fine to medium-grained shell, few phosphate, trace silt, light brown to light grey (SP) At El. -24.0 Ft., lens of shell			75	23		SPT Sampler
						93	24		11
						87	25		11
						67	26		6
						73	27		7
						60	28		8
						93	29		3
						80	30		5
						93	31		5
						93	32		5
-36.6	48.5		Limestone, hard, fine-grained, trace of silt, few fine grained sand, trace of clay, grey			53	33		6
						80	34		6
						73	35		7
						87	36		8
									10
									11
									12
									13
									13
									13
-39.0	51.0		SAND, poorly-graded, mostly fine-grained shell, trace coarse gravel-sized phosphate, trace clay, grey (SP) From El. -40.6 to -45.0 Ft., mostly medium to coarse-grained shell, trace fine gravel-sized shell, trace clay, light brown						14
									14
									15
									15
									16
									16
									17
									17
									20
									20

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District					SHEET 4 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528			ELEVATION TOP OF BORING 12.0 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
									BLOWS/ 0.5 FT. N-VALUE
-45.0	57.0		SAND, poorly-graded with clay, mostly medium-grained sand, little clay, little angular shell, trace fine gravel-sized shell, grey (SP-SC)			87	36		-43.6 SPT Sampler 19 39
			At El. -47.0 Ft., few shell, trace clay			87	37		15
						100	38		SPT Sampler 19 41
						60	39		22
						93	40		12
-49.6	61.5		SAND, clayey, mostly fine to medium-grained sand, some clay, little fine gravel-sized shell, grey (SC)			87	41		16
			At El. -52.6 Ft., some shell, lens of clay			93	42		29
						73	43		13
						100	44		36
-55.6	67.5		SAND, poorly-graded with clay, mostly shell (SP-SC)			67	45		10
						93	46		19
						53	47		31
						67	48		12
			At El. -61.6 Ft., mostly shell			87	49		65
									33
									22
									28
									70
									26
									28
									11
									12
									16
									15
									14
									12
									12
									16
									18
									14
									19
									6
									12
									15
									27

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 5 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528			ELEVATION TOP OF BORING 12.0 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR CD	REMARKS	BLOWS/0.5 FT. N-VALUE
-63.8	75.7		Limestone, fine-grained, trace of clay, trace of phosphate, grey	93	50		SPT Sampler	20
								18
								18
-66.0	78.0		SAND, poorly-graded, mostly fine to medium-grained quartz, trace sandstone, trace shell, light grey (SP)	53	51		SPT Sampler	14
								16
								17
				67	52		SPT Sampler	10
								40
				67	53			45
								26
				100	54		SPT Sampler	32
								49
				87	55			36
							SPT Sampler	65
				93	56			57
								122
				53	57		SPT Sampler	10
								14
				87	59			20
								14
				87	60		SPT Sampler	28
								29
				73	61			14
							SPT Sampler	17
				93	62			8
								47
				87	63		SPT Sampler	18
								29
				100	63			24
							SPT Sampler	34
				73	64			42
								9
				93	65		SPT Sampler	18
								20
				87	66			4
							SPT Sampler	10
				73	67			6
								5
				93	68		SPT Sampler	7
								12
				87	69			3
								19
								95

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District					SHEET 6 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528			ELEVATION TOP OF BORING 12.0 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
									BLOWS/ 0.5 FT.
-88.6	100.5		At El. -84.0 Ft., lens of sand			100	64		SPT Sampler
						100	65		9
									16
									7
									10
									8
									9
									17
									18
									21
									47
									26
									12
									22
									51
									100
-90.0	102.0		SAND, clayey, mostly fine to coarse-grained sand, some clay, few shell, trace phosphate, grey (SC)			100	68		SPT Sampler
									14
									9
									23
									14
									5
									16
									20
									36
									17
									16
									17
									33
									9
									17
									36
									19
									3
									19
									49
									30
									19
									19
									42
									23
									24
									21
									22
									22
									24
									19
									43
									43
									43
									35
									35
									14
									16
									115

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District					SHEET 7 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528			ELEVATION TOP OF BORING 12.0 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
			87	77		-103.6	SPT Sampler	17	33
			87	78					15
									17
						-105.0			14
			93	79					12
									10
			100	80		-106.6			11
									13
			93	81					17
						-108.0			16
			87	82					12
									14
			93	83		-109.6			18
									17
			73	84					22
						-111.0			17
			93	86					12
									16
			73	87		-112.6			16
									14
			87	85					22
						-114.0			19
			93	88					15
									14
			87	88		-115.6			13
									13
			73	89		-117.0			14
									13
			80	90		-118.6			13
									14
			87	90		-120.0			10
									9
									10
						-121.6			15
									15
									26
						-123.0			16
									23
									24
									18
									42
									135

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District					SHEET 8 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528			ELEVATION TOP OF BORING 12.0 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
									BLOWS/ 0.5 FT.
-131.0	143.0		SAND, poorly-graded, mostly fine to medium-grained quartz, trace phosphate, light grey (SP)			60	91		SPT Sampler
						93	92		9 10 11
						80	93		17 24 19
						73	94		25 28 20
						87	95		14 18 19
						100	96		12 16 39
						100	97		31 37 24
						100	98		17 21 17
						100	99		14 16 20
						100	100		12 25 27
						93	101		12 18 18
						100	102		11 16 18
						67	103		10 15 22
-142.6	154.5		Sandstone, fine-grained, some quartz sand. few			80	104		26 25 18
									51 51 155

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District					SHEET 9 OF 10 SHEETS		
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83		VERTICAL NAVD88		
LOCATION COORDINATES X = 736,775 Y = 775,528			ELEVATION TOP OF BORING 12.0 Ft.							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	
									BLOWS/ 0.5 FT. N-VALUE	
			clay, trace shell, trace phosphate, grey At El. -143.0 Ft., few shell			80	104		SPT Sampler	20
			At El. -145.6 Ft., trace clay			93	105			19
						100	106		SPT Sampler	25
						73	107			22
						80	108		SPT Sampler	24
						80	109			9
						73	110		SPT Sampler	17
						80	111			58
						80	112		SPT Sampler	41
						73	113			16
						100	114		SPT Sampler	20
-159.0	171.0		SAND, poorly-graded, mostly fine to medium-grained quartz, trace fine gravel-sized sandstone, trace phosphate, light grey (SP)			100	115			20
						100	116		SPT Sampler	19
-161.0	173.0		Sandstone, medium-grained, some quartz sand, few clay, few shell, trace of phosphate, grey			87	117			11
									SPT Sampler	24
										24
										175

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District					SHEET 10 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528			ELEVATION TOP OF BORING 12.0 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
									BLOWS/ 0.5 FT.
-168.0	180.0					87	117		-163.6 SPT Sampler 18 42
						67	118		SPT Sampler 16 34
						100	119		-165.0 SPT Sampler 16 37
						100	120		-166.6 SPT Sampler 18 25
									SPT Sampler 26 55
									-168.0 29
			NOTES:						140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).
			1. Soils are field visually classified in accordance with the Unified Soils Classification System.						Abbreviations: DT = Drill Time. HP = Hydraulic Pressure.
			2. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				
			119	177.0/178.5	*				
			*Lab visual classification based on gradation curve. No Atterberg limits.						
			3. Additional Laboratory Testing						185
			119 Moisture Content						
									190
									195

Boring Designation CP02-EAARS-CB-0003

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District				SHEET 1 OF 10 SHEETS			
1. PROJECT CERP Everglades Agricultural Area Reservoirs Phase 1, Effort 1, Compartment A				9. SIZE AND TYPE OF BIT See Remarks							
2. BORING DESIGNATION CP02-EAARS-CB-0003		LOCATION COORDINATES X = 757,932 Y = 774,446		10. COORDINATE SYSTEM/DATUM State Plane, FLE NAD83 NAVD88				HORIZONTAL VERTICAL			
3. DRILLING AGENCY Ardaman & Associates, Inc.		CONTRACTOR FILE NO. 02-042		11. MANUFACTURER'S DESIGNATION OF DRILL CME-55				<input type="checkbox"/> AUTO HAMMER <input checked="" type="checkbox"/> MANUAL HAMMER			
4. NAME OF DRILLER D. Groover				12. TOTAL SAMPLES 118				DISTURBED UNDISTURBED (UD) 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES 5				14. ELEVATION GROUND WATER			
6. THICKNESS OF OVERBURDEN 4.0 Ft.				15. DATE BORING 08-13-02				STARTED COMPLETED 08-22-02			
7. DEPTH DRILLED INTO ROCK 9.9 Ft.				16. ELEVATION TOP OF BORING 10.7 Ft.				17. TOTAL RECOVERY FOR BORING 89 %			
8. TOTAL DEPTH OF BORING 180.0 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR T. Harrison, Geologist							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/0.5 FT.	N-VALUE
10.7	0.0							10.7			0
			FILL, gravelly, mixture of fine gravel size limestone, fine to medium grained limestone sand and silt, dry, light brown		47	1				4	
					60	2				7	13
					80	3				6	
6.7	4.0		Limestone, hard, slightly weathered, fine-grained, pitted, light grey to grey		85	BOX 1				8	
			From El. 4.7 to 0.2 Ft., hard, unweathered, fine-grained, some fine to coarse grained quartz sand, trace silt, trace shell, trace phosphate, grey		40	5				16	45
					60	6				29	
					80	7				19	
			At El. 0.7 Ft., pitted, few shells		1800					29	
					98	BOX 8				10/0/0.0	29
			At El. -2.8 Ft., little shell, trace silt		100	9				5	5
										14	19
4 x 5-1/2" Diamond Impregnated Bit DT = 30 mins HP = 100 psi											
4 x 5-1/2" Diamond Impregnated Bit DT = 35 mins HP = 100 psi											

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 3 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE		HORIZONTAL NAD83	VERTICAL NAVD88		
LOCATION COORDINATES X = 757,932 Y = 774,446			ELEVATION TOP OF BORING 10.7 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC. BOX OR ROD OR UD	REMARKS	BLOWS/ 0.5 FT. N-VALUE	
-24.8	35.5		SAND, silty, mostly fine-grained quartz, trace angular fine-grained shell, trace phosphate, grey (SM)		87 100 87 73 93 80 87 73	22 23 24 25 26 27 28 29	SPT Sampler -25.3 SPT Sampler -26.8 SPT Sampler -28.3 SPT Sampler -29.8 SPT Sampler -31.3 SPT Sampler -32.8 SPT Sampler -34.3 SPT Sampler -35.8 SPT Sampler -37.3 SPT Sampler -38.8 SPT Sampler -40.3 SPT Sampler -41.8 SPT Sampler -43.3 SPT Sampler	9 7 11 11 12 14 4 6 6 5 7 7 11 5 6 8 9 10 12 7 5 5 6 11 11 10 11 7 5 6 11 11 10 10 8 10 7 3 1 0
-35.3	46.0		SAND, poorly-graded with silt, mostly angular fine-grained quartz, some angular shell, trace phosphate (SP-SM)		80 73	30 31		45
-39.8	50.5		SAND, poorly-graded, mostly angular fine to coarse-grained shell, trace medium-grained sand, trace phosphate, light brown (SP)		73 73 73 73 73 73 73 73	32 33 34 35		50

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District					SHEET 4 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 757,932 Y = 774,446			ELEVATION TOP OF BORING 10.7 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
									BLOWS/ 0.5 FT. N-VALUE
-53.3	64.0		At El. -50.3 Ft, some fine gravel-sized shell			73	35		-44.8 SPT Sampler 4 4
-54.3	65.0		SAND, poorly-graded with clay, mostly fine-grained quartz, little coral, trace silt, trace phosphate, grey (SP-SC)			80	36		6 SPT Sampler 6 13
-58.5	69.2		SAND, poorly-graded, mostly angular fine to medium-grained shell, some fine-grained quartz, trace silt, trace phosphate, grey (SP)			87	37		7 SPT Sampler 7 23
-59.0	69.7		SAND, clayey, mostly fine-grained sandstone, some shell (SC) Limestone, fine-grained, some fine to coarse grained limestone sand, grey			113	38		10 SPT Sampler 10 19
-62.3	73.0		SAND, poorly-graded, mostly fine to coarse-grained quartz, some fine to coarse-grained shell, few fine gravel-sized sandstone, trace phosphate, grey (SP)			67	39		11 SPT Sampler 11 19
						53	40		12 SPT Sampler 12 23
						93	41		13 SPT Sampler 13 23
						87	42		14 SPT Sampler 14 28
						67	43		15 SPT Sampler 15 48
						100	44		16 SPT Sampler 16 48
						100	45		17 SPT Sampler 17 65
						100	46		18 SPT Sampler 18 65
						107	47		19 SPT Sampler 19 70
						100	48		20 SPT Sampler 20 70

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 5 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 757,932 Y = 774,446			ELEVATION TOP OF BORING 10.7 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT. N-VALUE
-71.3	82.0		SAND, poorly-graded, mostly shell (SP)	93	49		SPT Sampler	10 8 8
-75.8	86.5		SAND, poorly-graded, mostly fine to medium-grained quartz, little shell, trace phosphate, grey (SP)	87	50		SPT Sampler	9 14 10
-80.4	91.1		SAND, poorly-graded with clay, mostly fine to medium-grained quartz, little clay, little shell, trace phosphate, grey (SP-SC)	80	51		SPT Sampler	12 14 11 10 10
-81.3	92.0		SAND, poorly-graded, mostly fine to coarse-grained quartz, little shell, trace fine gravel-sized sandstone, trace phosphate, grey (SP)	67	52		SPT Sampler	15 17 12 10 12
				100	53		SPT Sampler	17 10 10
				93	54		SPT Sampler	11 20 14
				80	55		SPT Sampler	20 25 14
				93	56		SPT Sampler	14 17 13
				100	57		SPT Sampler	11 12 8
				100	58		SPT Sampler	8 7 6
				100	59		SPT Sampler	4 5 11
				67	60		SPT Sampler	5 11 7
				40	61		SPT Sampler	10 19 4
				67	62		SPT Sampler	5 17 12

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 6 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 757,932 Y = 774,446			ELEVATION TOP OF BORING 10.7 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT. N-VALUE
-88.3	99.0		At El. -87.9 Ft., trace clay	67	62		SPT Sampler	11 12 23
-89.8	100.5		Limestone, fine-grained, some fine to coarse grained sand. little shell, trace phosphate, grey	100	63		SPT Sampler	12 13 26
-92.3	103.0		SAND, poorly-graded, mostly fine to coarse-grained quartz, some shell, trace silt, trace fine gravel-sized sandstone, grey (SP)	93	64		SPT Sampler	13 17 34
-94.3	105.0		SAND, poorly-graded with silt, mostly fine-grained quartz, trace clay, trace sandstone, trace phosphate, grey (SP-SM)	87	65		SPT Sampler	12 10 10 12 22
-100.3	111.0		SAND, clayey, mostly fine-grained sand, some shell, little clay, few fine gravel-sized sandstone, trace phosphate, grey (SC)	100	66		SPT Sampler	10 10 13 23
-101.8	112.5		SAND, poorly-graded with clay, mostly fine-grained quartz, some shell, trace clay, trace phosphate, grey (SP-SC)	67	67		SPT Sampler	11 11 11 11 22
-103.3	114.0		SAND, clayey, mostly fine-grained quartz, little clay, few shell, trace phosphate, grey (SC)	100	68		SPT Sampler	9 14 12 11 26
-100.3	111.0		SAND, clayey, mostly fine-grained sand, some shell, little clay, few fine gravel-sized sandstone, trace phosphate, grey (SC)	100	69		SPT Sampler	12 14 17 31
-101.8	112.5		SAND, poorly-graded with clay, mostly fine-grained quartz, some shell, trace clay, trace phosphate, grey (SP-SC)	100	70		SPT Sampler	11 9 10 19
-103.3	114.0		SAND, clayey, mostly fine-grained quartz, little clay, few shell, trace phosphate, grey (SC)	100	71		SPT Sampler	10 12 22 34
-100.3	111.0		SAND, clayey, mostly fine-grained sand, some shell, little clay, few fine gravel-sized sandstone, trace phosphate, grey (SC)	100	72		SPT Sampler	10 14 27 41 110
-101.8	112.5		SAND, poorly-graded with clay, mostly fine-grained quartz, some shell, trace clay, trace phosphate, grey (SP-SC)	100	73		SPT Sampler	11 9 12 21
-103.3	114.0		SAND, clayey, mostly fine-grained quartz, little clay, few shell, trace phosphate, grey (SC)	100	74		SPT Sampler	17 15 34 49
			SAND, poorly-graded, mostly fine-grained quartz, trace silt, trace shell, grey (SP)	67	75		SPT Sampler	8 27 115

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 7 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE		HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 757,932 Y = 774,446			ELEVATION TOP OF BORING 10.7 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	% BOX OR SAMPLE	RQD OR UD	REMARKS
								BLOWS/0.5 FT. N-VALUE
-107.3	118.0		SAND, poorly-graded with clay, mostly fine-grained quartz, little shell, trace clay, trace sandstone, trace phosphate, grey (SP-SC)		67	75		-104.8 SPT Sampler 39 66
					73	76		18 SPT Sampler 30 68
					100	77		-106.3 38
					100	78		22 SPT Sampler 29 50
					87	79		-107.8 21
					100	80		17 SPT Sampler 18 33
					100	81		-109.3 15
					100	82		13 SPT Sampler 13 22
					100	83		-110.8 9
					100	84		13 SPT Sampler 14 39
-110.3	121.0		SAND, poorly-graded, mostly fine-grained quartz, trace silt, trace shell, trace phosphate, trace sandstone, grey (SP)		100	85		-112.3 25
					100	86		17 SPT Sampler 10 23
					100	87		-113.8 13
					53	88		12 SPT Sampler 16 35
								-115.3 19
								13 SPT Sampler 11 22
								-116.8 11
								5 SPT Sampler 17 41
								-118.3 24
								7 SPT Sampler 15 33
-111.8	122.5		SAND, poorly-graded with clay, mostly fine-grained quartz, little clay, trace shell, trace phosphate, trace sandstone, grey (SP-SC)					-119.8 18
								15 SPT Sampler 19 41
								-121.3 22
								15 SPT Sampler 15 34
								-122.8 19
								17 SPT Sampler 24 49
								-124.3 25
-114.3	125.0		Sandstone, fine-grained, some shell, trace phosphate, trace sand, grey					130
			At El. -118.8 Ft., little clay					

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 8 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 757,932 Y = 774,446			ELEVATION TOP OF BORING 10.7 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	
			At El. -124.3 Ft, some fine sand	100	89		18	135
				93	90		SPT Sampler	32
				93	91		-125.8	15
				80	92		17	
				93	93		SPT Sampler	52
				100	94		-127.3	28
				100	95		24	
				100	96		SPT Sampler	43
				73	97		-128.8	24
				80	98		19	
				93	99		SPT Sampler	40
				93	100		-130.3	3
				100	101		21	
				100	102		SPT Sampler	39
							-131.8	17
							16	
							SPT Sampler	71
							-133.3	33
							38	
							SPT Sampler	145
							-134.8	14
							20	
							SPT Sampler	52
							-136.3	32
							16	
							SPT Sampler	67
							-137.8	7
							35	
							SPT Sampler	
							-139.3	32
							22	
							SPT Sampler	54
							-140.8	26
							28	
							SPT Sampler	35
							-142.3	21
							17	
							SPT Sampler	37
							-143.8	18
							19	
							SPT Sampler	46
							-145.3	17
							24	
							SPT Sampler	49
							-146.8	22
							25	
							SPT Sampler	49
							-148.3	19

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District					SHEET 9 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 757,932 Y = 774,446			ELEVATION TOP OF BORING 10.7 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
									BLOWS/ 0.5 FT. N-VALUE
-156.8	167.5		At El. -145.3 Ft., little brown silt			100	102		SPT Sampler 19 15 34
-157.3	168.0		SAND, clayey, mostly fine-grained quartz, some clay, some shell, trace phosphate, light brown (SC)			100	103		SPT Sampler 18 15 30
-160.3	171.0		SAND, silty, mostly fine-grained quartz, trace fine gravel-sized sandstone, trace phosphate, light brown (SM)			100	104		SPT Sampler 19 15 29
-161.8	172.5		SAND, poorly-graded with clay, mostly fine-grained quartz, trace clay, trace silt, trace phosphate, grey brown (SP-SC)			100	105		SPT Sampler 13 10 34 21 160
-164.3	175.0		SAND, clayey, mostly fine gravel-sized quartz, little clay, trace silt, trace shell, grey (SC)			100	106		SPT Sampler 20 27 24 51
						80	107		SPT Sampler 25 29 54
						100	108		SPT Sampler 14 16 18 19 37 165
						100	109		SPT Sampler 4 15 19 13 31 43 74
						100	110		SPT Sampler 17 15 18 19 13 37
						100	111		SPT Sampler 19 15 18 19 17 22 59 170
						100	112		SPT Sampler 28 43 41 84
						100	113		SPT Sampler 43 41 15 29 43 10 16 72 175
						80	114		SPT Sampler 43 41 15 29 43 10 16 72 175
						100	115		SPT Sampler 10 16 175

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District					SHEET 10 OF 10 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 757,932 Y = 774,446			ELEVATION TOP OF BORING 10.7 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR CD	REMARKS
									BLOWS/ 0.5 FT.
-166.3	177.0		Sandstone, fine-grained, grey			100	115		-164.8 SPT Sampler 20 36
						93	116		10
									SPT Sampler 16
									15
-167.3	178.0		SAND, silty, mostly fine-grained quartz, little silt, few fine gravel-sized sandstone, trace clay, light brown (SM)			100	117		22
									SPT Sampler 37
									48
									26
-169.3	180.0		SAND, clayey, mostly fine-grained quartz, little clay, trace shell, trace phosphate, light grey (SC)			87	118		SPT Sampler 47
									48
									95
									180
			NOTES:						
			1. Soils are field visually classified in accordance with the Unified Soils Classification System.						
			2. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				
			117	177.0/178.5	*				
			*Lab visual classification based on gradation curve. No Atterberg limits.						185
			3. Additional Laboratory Testing						
			117 Moisture Content						
									190
									195

DRILLING LOG			DIVISION South Atlantic		INSTALLATION Jacksonville District				SHEET 1 OF 4 SHEETS		
1. PROJECT CERP Everglades Agricultural Area Reservoirs Phase 1, Effort 1, Compartment A					9. SIZE AND TYPE OF BIT See Remarks						
2. BORING DESIGNATION CP02-EAARS-CB-0009		LOCATION COORDINATES X = 741,707 Y = 784,785			10. COORDINATE SYSTEM/DATUM State Plane, FLE		HORIZONTAL NAD83		VERTICAL NAVD88		
3. DRILLING AGENCY Ardaman & Associates, Inc.		CONTRACTOR FILE NO. 02-042			11. MANUFACTURER'S DESIGNATION OF DRILL CME-55						
4. NAME OF DRILLER J. Reymo					12. TOTAL SAMPLES 35 DISTURBED 0 UNDISTURBED (UD)						
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED					DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES 2				
6. THICKNESS OF OVERBURDEN 5.0 Ft.					14. ELEVATION GROUND WATER						
7. DEPTH DRILLED INTO ROCK 14.0 Ft.					15. DATE BORING 04-04-03 STARTED 04-09-03 COMPLETED						
8. TOTAL DEPTH OF BORING 60.0 Ft.					16. ELEVATION TOP OF BORING 10.7 Ft.						
					17. TOTAL RECOVERY FOR BORING 52 %						
					18. SIGNATURE AND TITLE OF INSPECTOR K. Sandhu, Civil Engineer						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/0.5 FT. N-VALUE
10.7	0.0								10.7		0
			FILL, gravelly, mixture of fine gravel size limestone, coarse grained limestone sand and silt, dry, brown			47	1	RQD 47	SPT Sampler 31 16 11		27
			At El. 8.2 Ft., lens of dark brown fine grained sand			40	2	RQD 40	SPT Sampler 7 6 6		12
			Limestone, soft, slightly weathered, aphanitic, brown			40	3	RQD 40	SPT Sampler 4 11 14		25
			Limestone, hard, slightly weathered, aphanitic, thick, porous, light brown			120	4	RQD 120	SPT Sampler 5.7 28		5
			Sandstone, soft, moderately weathered, medium-grained, thin, porous, little shell, gray			59	5	RQD 14	4 x 5-1/2" Diamond Set Bit DT = 15 mins HP = 100 psi		50/1"0.0"
			Limestone, soft, moderately weathered, medium-grained, thin, porous, some shell, gray			114	6	RQD 0	4 x 5-1/2" Diamond Set Bit 5 mins, 100 psi		10
						44	7	RQD 27	4 x 5-1/2" Diamond Set Bit DT = 24 mins HP = 100 psi		15
									-4.3		

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 4 SHEETS				
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83	VERTICAL NAVD88				
LOCATION COORDINATES X = 741,707 Y = 784,785			ELEVATION TOP OF BORING 10.7 Ft.								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS			
								BLOWS/0.5 FT. N-VALUE			
-5.3	16.0		Sandstone, soft, moderately weathered, medium-grained, some shell, some silt, little sand, gray		60	8	RQD 60	-5.3 SPT Sampler 20 14 50'2"0' 4 x 5-1/2" Diamond Set Bit DT = 44 mins HP = 100 psi -9.3 47 10 RQD 47 SPT Sampler 9 8 9 -10.8 47 11 RQD 47 SPT Sampler 7 6 6 -12.3 27 12 RQD 27 SPT Sampler 8 9 10 -13.8 60 13 RQD 60 SPT Sampler 7 8 10 -15.3 47 14 RQD 47 SPT Sampler 8 9 9 -16.8 60 15 RQD 60 SPT Sampler 7 8 10 -18.3 50 16 RQD 50 SPT Sampler 7 7 8 -20.3 45 17 RQD 45 SPT Sampler 6 7 7 -22.3 27 18 RQD 27 SPT Sampler 7 5 6 -23.8 47 19 SPT Sampler 6			
Moderately Weathered											
At El. -15.3 Ft., trace phosphate											
At El. -18.3 Ft., few phosphate											

DRILLING LOG			DIVISION South Atlantic		INSTALLATION Jacksonville District				SHEET 1 OF 5 SHEETS			
1. PROJECT CERP Everglades Agricultural Area Reservoirs Phase 1, Effort 1, Compartment A					9. SIZE AND TYPE OF BIT See Remarks							
2. BORING DESIGNATION CP02-EAARS-CB-0011		LOCATION COORDINATES X = 758,046 Y = 764,523			10. COORDINATE SYSTEM/DATUM State Plane, FLE		HORIZONTAL NAD83		VERTICAL NAVD88			
3. DRILLING AGENCY Ardaman & Associates, Inc.			CONTRACTOR FILE NO. 02-042		11. MANUFACTURER'S DESIGNATION OF DRILL CME-55		<input type="checkbox"/> AUTO HAMMER		<input checked="" type="checkbox"/> MANUAL HAMMER			
4. NAME OF DRILLER R. Lockley					12. TOTAL SAMPLES DISTURBED 51 UNDISTURBED (UD) 0							
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL			DEG. FROM VERTICAL		13. TOTAL NUMBER CORE BOXES 3							
6. THICKNESS OF OVERBURDEN 13.2 Ft.					14. ELEVATION GROUND WATER							
7. DEPTH DRILLED INTO ROCK 12.8 Ft.					15. DATE BORING STARTED 04-07-03 COMPLETED 04-09-03							
8. TOTAL DEPTH OF BORING 80.0 Ft.					16. ELEVATION TOP OF BORING 10.5 Ft.							
17. TOTAL RECOVERY FOR BORING 74 %						18. SIGNATURE AND TITLE OF INSPECTOR H. Snyder, Civil Engineer						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/0.5 FT.	N-VALUE
10.5	0.0								10.5			0
			FILL, clayey, mostly peat and organic matter, dark brown At El. 9.5 Ft., lens of gravel size limestone			80	1		SPT Sampler 2 7 17			24
8.5	2.0		FILL, gravelly, mixture of fine gravel size limestone and sandstone, trace of silt, shell, phosphate and quartz sand, gray			73	2		SPT Sampler 14 16 11			27
						53	3		SPT Sampler 7 5 2			7
						40	4		SPT Sampler 9 2 3			5
						13	5		SPT Sampler 4 5 5			10
						67	6		SPT Sampler 5 6 9			15
1.5	9.0		Sandstone, moderately hard, unweathered, fine-grained, porous, little shell, trace silt, trace of quartz sand, light brown			60	7		SPT Sampler 18 20 5			25
		Unweathered				20	8		SPT Sampler 5 8 4			12
						72	9		SPT Sampler 1 22			22+
						101	BOX 10 RQD 74		4 x 5-1/2" Diamond Set Bit DT = 15 mins HP = 225 psi			15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 5 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 758,046 Y = 764,523			ELEVATION TOP OF BORING 10.5 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT. N-VALUE
-7.5	18.0	Unweathered Unreinforced	At El. -4.5 Ft., lens of coarse gravel size shell At El. -6.5 Ft., mostly fine sand and coarse shell	101	BOX 10	RQD 74	4 x 5-1/2" Diamond Set Bit DT = 15 mins HP = 225 psi	15
-11.0	21.5	Unweathered Unreinforced	Sandstone, moderately hard, unweathered, fine-grained, trace quartz sand, trace silt, trace phosphate, light brown	100	BOX 211	RQD 60	4 x 5-1/2" Diamond Set Bit DT = 2 mins HP = 225 psi	20
-15.5	26.0	Unweathered	SAND, poorly-graded, mostly angular fine-grained quartz, few shell, trace phosphate, trace silt, gray (SP) Sandstone, soft, unweathered, medium-grained, some fine grained quartz sand, little shell, trace phosphate, trace silt, gray	87	13		SPT Sampler	9
				73	12			19
				87	13			6
				67	14			5
				100	15			8
				7	16			9
				60	17			7
				87	18			9
				47	19			10
				73	20			10
				73	21			18
				80	22			11

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District					SHEET 3 OF 5 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 758,046 Y = 764,523			ELEVATION TOP OF BORING 10.5 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR CD	REMARKS
						80	22		SPT Sampler 12 25
									-25.5 13
						93	23		SPT Sampler 7 18
									-27.0 9
						100	24		SPT Sampler 5 12
									-28.5 5
						60	25		SPT Sampler 7 15
									-30.0 8 40
						80	26		SPT Sampler 7
									-31.5 8 16
						80	27		SPT Sampler 9 20
									-33.0 11
						80	28		SPT Sampler 20 16
									-34.5 7 45
						67	29		SPT Sampler 9
									-36.0 14 29
						93	30		SPT Sampler 15
									-37.5 18 35
						80	31		SPT Sampler 17 35
									-39.0 49 83
						33	32		SPT Sampler 34
									-40.5 81 50
						90	33		SPT Sampler 54 128
									-41.5 74 61
						112	33	RQD 0	4 x 5-1/2" Diamond Set Bit 6 mins, 250 psi
									-42.3 4 x 5-1/2" Diamond Set Bit DT = 30 mins HP = 300 psi
						66	BOX 3	RQD 29	
							34		
							BOX		

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 4 OF 5 SHEETS	
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 758,046 Y = 764,523			ELEVATION TOP OF BORING 10.5 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE #	RQD OR UB	REMARKS	BLOWS/ 0.5 FT. N-VALUE
				66	34	RQD 29	4 x 5-1/2" Diamond Set Bit DT = 30 mins HP = 300 psi -45.8	55
				64	35	RQD 0	4 x 5-1/2" Diamond Set Bit DT = 2 mins HP = 250 psi -48.0	
				93	36		SPT Sampler -49.5	6 7 6 13
				80	37		SPT Sampler -51.0	15 21 16 37
				80	38		SPT Sampler -52.5	17 16 15 31
				73	39		SPT Sampler -54.0	14 13 12 25
				100	40		SPT Sampler -55.5	11 13 10 23
				80	41		SPT Sampler -57.0	12 14 17 31
				80	42		SPT Sampler -58.5	16 20 19 39
				87	43		SPT Sampler -60.0	21 26 24 50
				87	44		SPT Sampler -61.5	23 24 25 49
				80	45		SPT Sampler -63.0	20 22 17 39
				87	46		SPT Sampler -64.5	21 18 16 34

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 5 OF 5 SHEETS							
PROJECT CERP Everglades Agricultural Area Reservoirs			COORDINATE SYSTEM/DATUM State Plane, FLE			HORIZONTAL NAD83	VERTICAL NAVD88							
LOCATION COORDINATES X = 758,046 Y = 764,523			ELEVATION TOP OF BORING 10.5 Ft.											
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT. N-VALUE						
-69.5	80.0	Unweathered		80	47		SPT Sampler	16 19 24 43						
				80	48		SPT Sampler	22 18 17 35						
				73	49		SPT Sampler	19 18 18 36						
				100	50		SPT Sampler	20 80						
NOTES:			140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).											
1. Soils are field visually classified in accordance with the Unified Soils Classification System.			Abbreviations: DT = Drill Time. HP = Hydraulic Pressure.											
2. Laboratory Testing Results														
<table border="1"> <thead> <tr> <th>SAMPLE ID</th><th>SAMPLE DEPTH</th><th>LABORATORY CLASSIFICATION</th></tr> </thead> <tbody> <tr> <td>1</td><td>0.0/1.5</td><td></td></tr> </tbody> </table>			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.0/1.5							
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION												
1	0.0/1.5													
3. Additional Laboratory Testing														
1 Moisture Content														
1 Specific Gravity														

LEGEND

- (1) = Fill—gray to brown crushed limerock with silt, clay, organics and shell
- (2) = Dark brown organic SILT and clay with some limestone (PT)
- (3A) = Gray, brown, and tan LIMESTONE
- (3B) = Gray to tan silty to slightly silty calcareous SAND (SM) and limestone seams and shell
- (3C) = Dark gray and brown silty SAND to sandy calcareous silt and clay with limestone fragments and shell (SM) (ML)(CH)(Marl)
- (4) = Gray, green slightly silty to silty fine SAND with limestone seams and shell (SP-SM)(SM)
- (5) = Gray shelly SAND with limestone (SP)

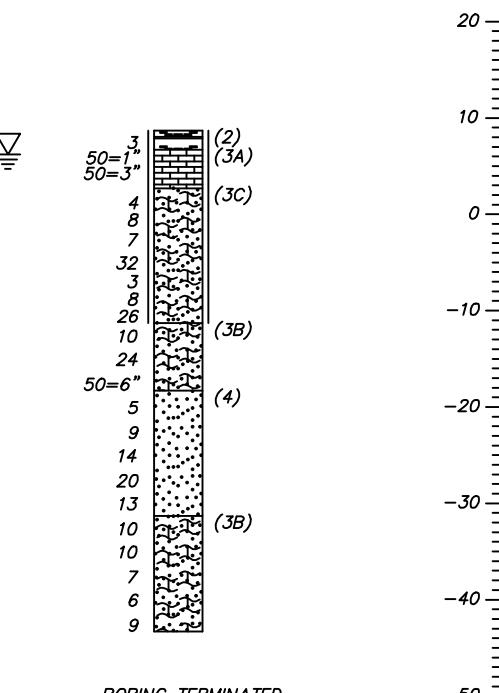
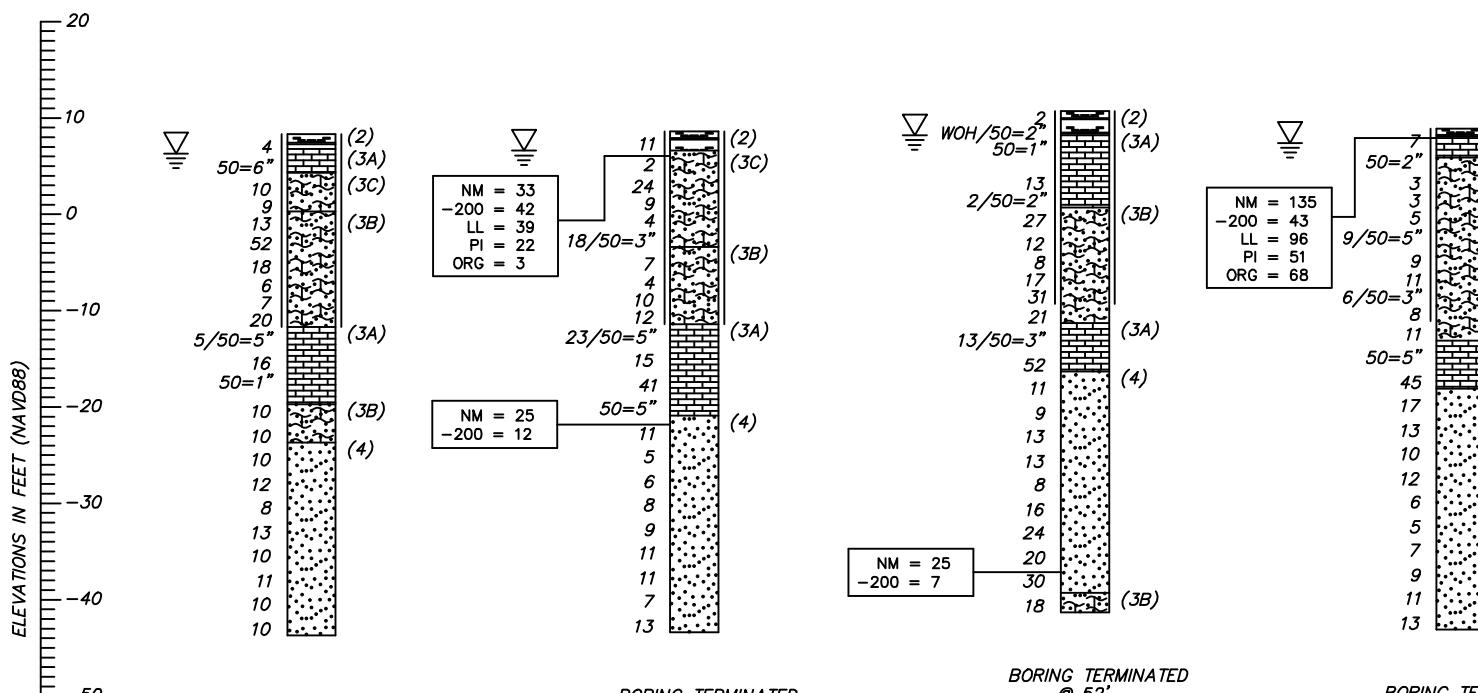
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ELEV 8.3
DATE 4/14/2004

BORING NO. CP04-EAARS-CB0067
N778638.59 E757976.89
ELEV 8.6
DATE 4/13/2004

BORING NO. CP04-EAARS-CB0068
N776630.20 E758016.85
ELEV 10.7
DATE 4/6/2004

BORING NO. CP04-EAARS-CB0069
N773623.87 E758088.04
ELEV 8.9
DATE 4/6/2004

BORING NO. CP04-EAARS-CB0070
N771141.73 E758151.77
ELEV 8.7
DATE 4/5/2004



GENERAL NOTES
DRILL AND PENETRATION TESTING WERE PERFORMED IN ACCORDANCE WITH ASTM D 1586.
NUMBER TO LEFT OF BORING INDICATES BLOWS OF 1 3/8" I.D., 2" O.D. SPLIT-SPOON FOR
12" OF PENETRATION (UNLESS OTHERWISE NOTED) WITH A 140 LB. HAMMER DROPPED 30 INCHES.

THE BORING LOGS SHOWN REPRESENT SUBSURFACE CONDITIONS WITHIN THE BOREHOLE AT THE
TIME OF DRILLING. NO WARRANTY AS TO THE SUBSURFACE CONDITION, STRATA DEPTH OR SOIL
CONSISTENCY BETWEEN OR OUTSIDE BORING LOCATIONS IS EXPRESSED OR IMPLIED BY THIS DRAWING.

REFER TO GEOTECHNICAL REPORT BY WILLIAMS EARTH SCIENCES FOR DETAILED BORING INFORMATION.

CREW CHIEF: DERUBEIS
DRILL RIG TYPE: CME-45
HAMMER TYPE: AUTOMATIC

NOTES
Numbers to the left of borings indicate SPT values for 12" penetration.
(Unless otherwise noted.)

▽ = Water Table

□ = Casing used

NM = % Natural Moisture Content
-200 = % Passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index
ORG = % Organic Content

GRANULAR MATERIALS-

Relative Density	Safety Hammer	Automatic Hammer
	SPT N-Value Blow/Foot	SPT N-Value Blow/Foot
Very Loose	Less than 4	Less than 3
Loose	4 – 10	3 – 7
Medium or Compact	10 – 30	7 – 21
Dense	30 – 50	21 – 35
Very Dense	Greater than 50	Greater than 35

SILTS AND CLAYS-

Consistency	Safety Hammer	Automatic Hammer
	SPT N-Value Blow/Foot	SPT N-Value Blow/Foot
Very Soft	Less than 2	Less than 1
Soft	2 – 4	1 – 3
Firm	4 – 8	3 – 6
Stiff	8 – 15	6 – 11
Very Stiff	15 – 30	11 – 21
Hard	Greater than 30	Greater than 21

F319913F BRDGW1

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD
WILLIAMS EARTH SCIENCES, INC.
DANIEL C. HART II, PE 55438
1900 NW 40th COURT
POMPANO BEACH, FL 33064
EB-0006378

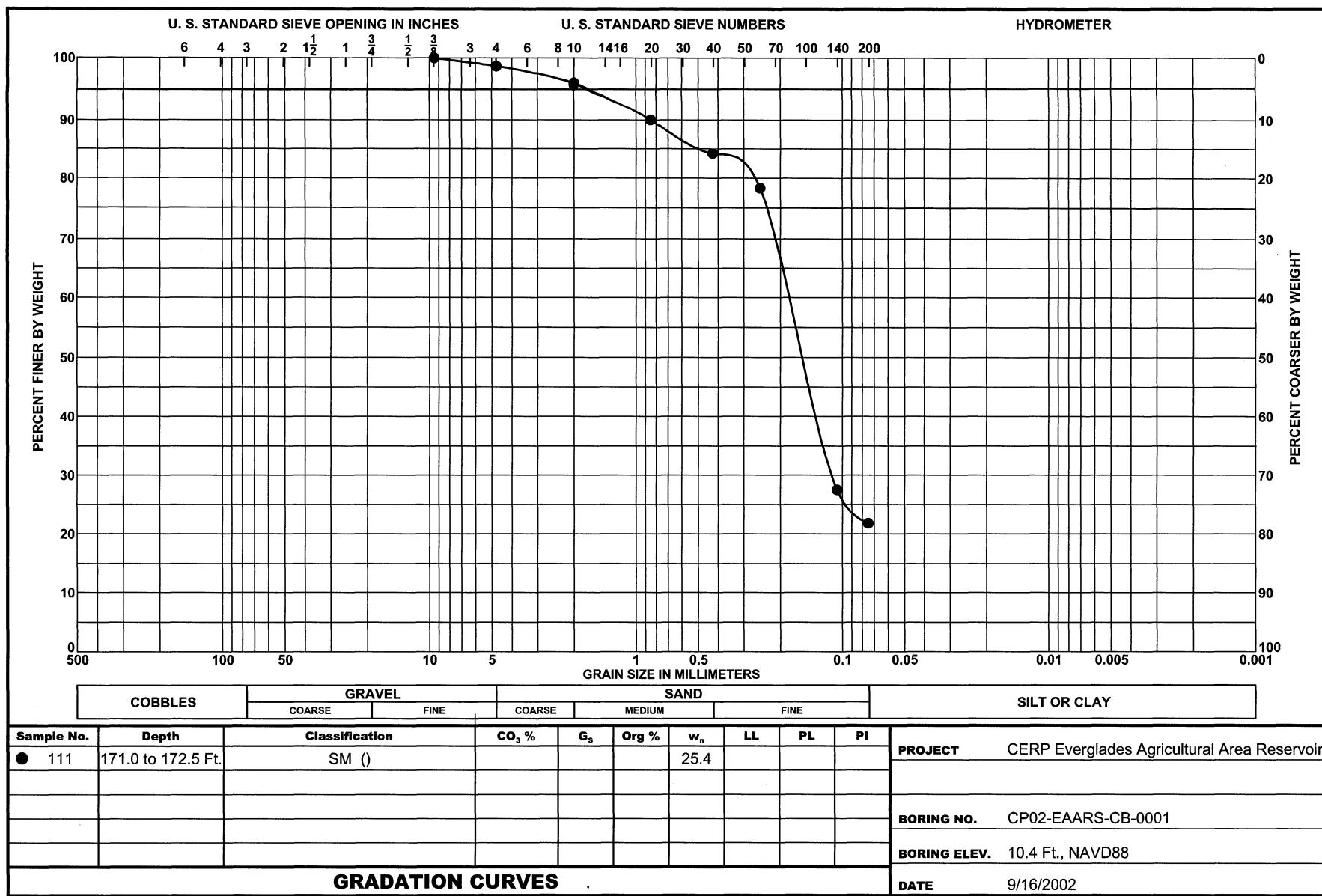
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WATER MANAGEMENT DISTRICT
COUNTY
PALM BEACH

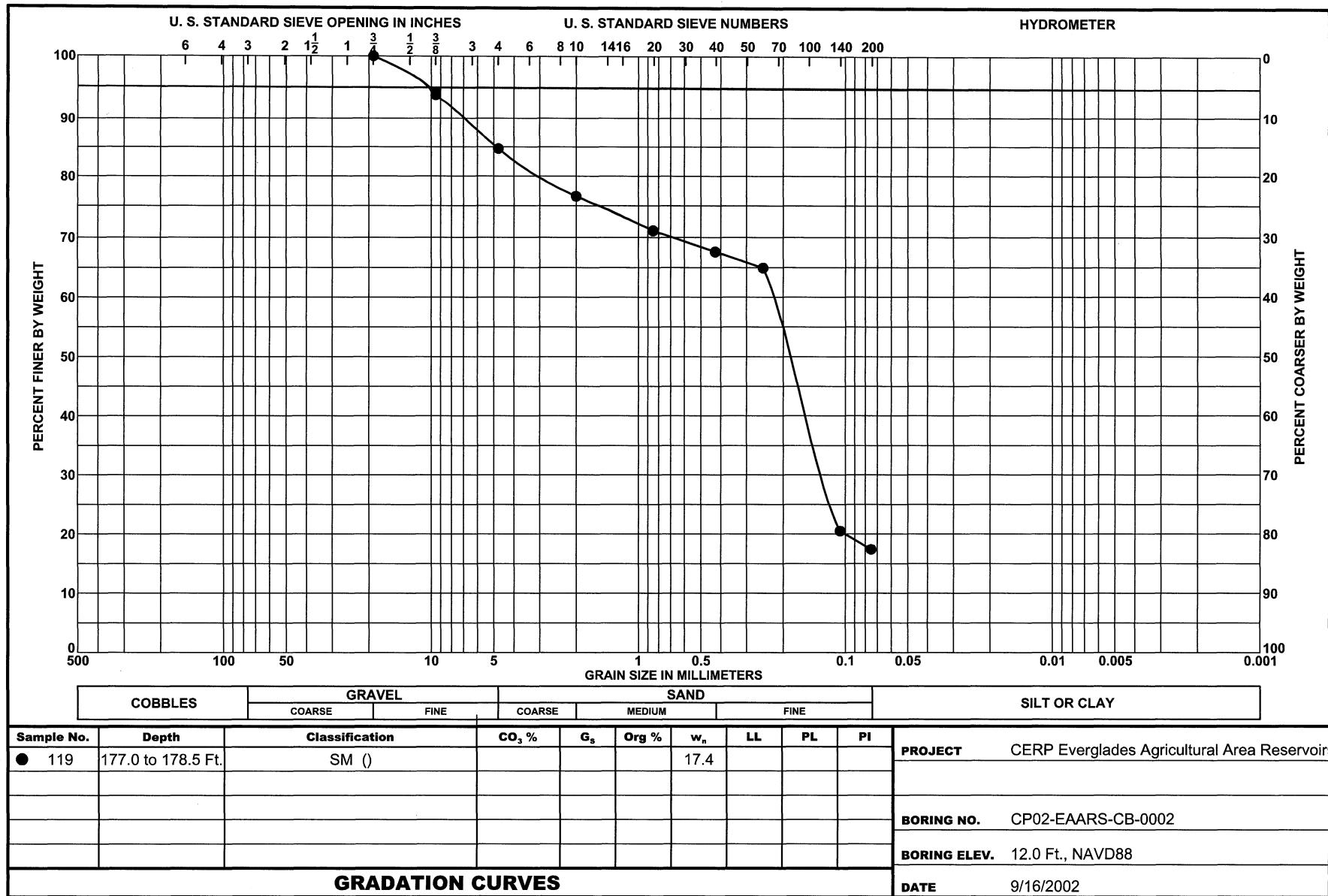
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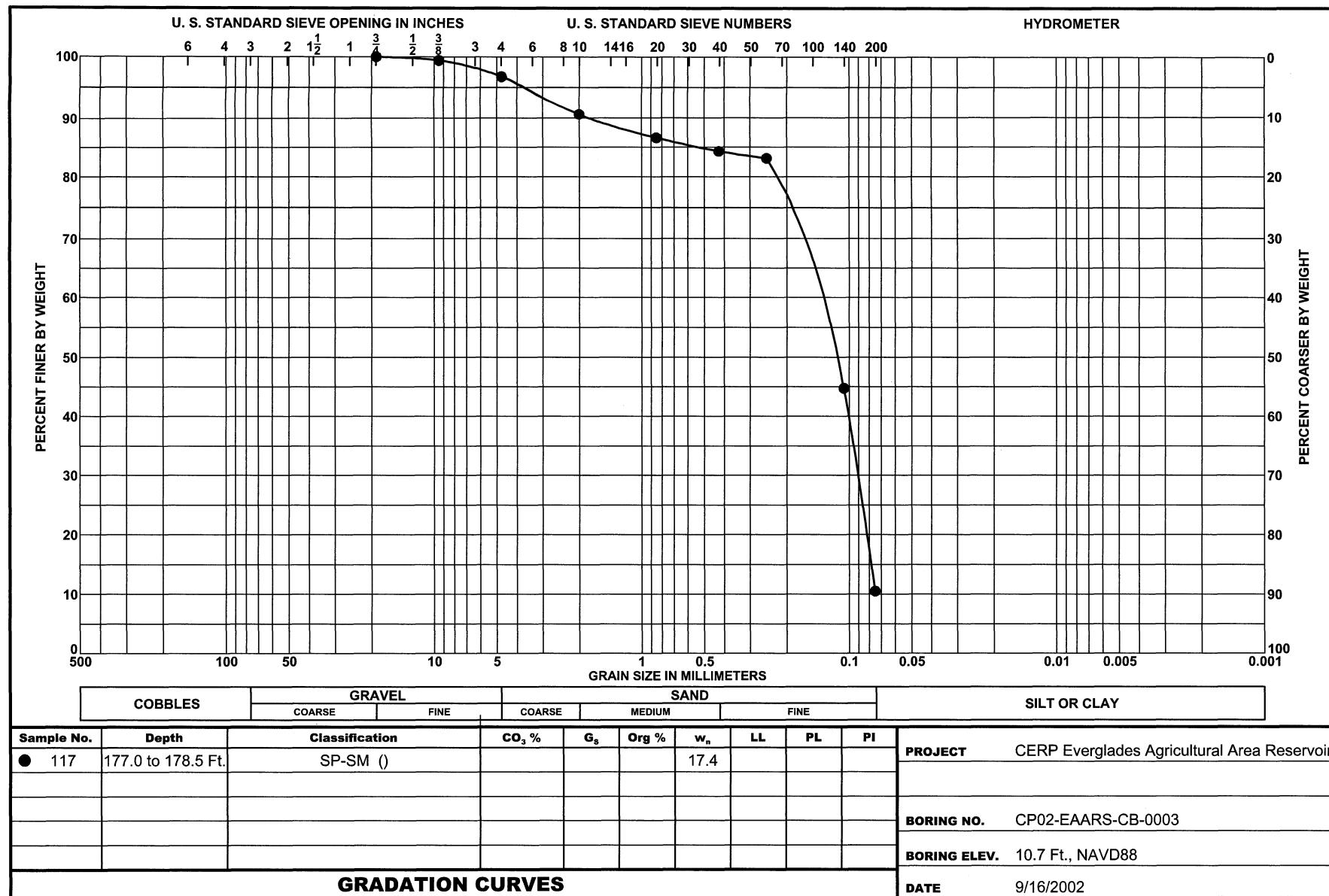
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EAA

SHEET
NO.

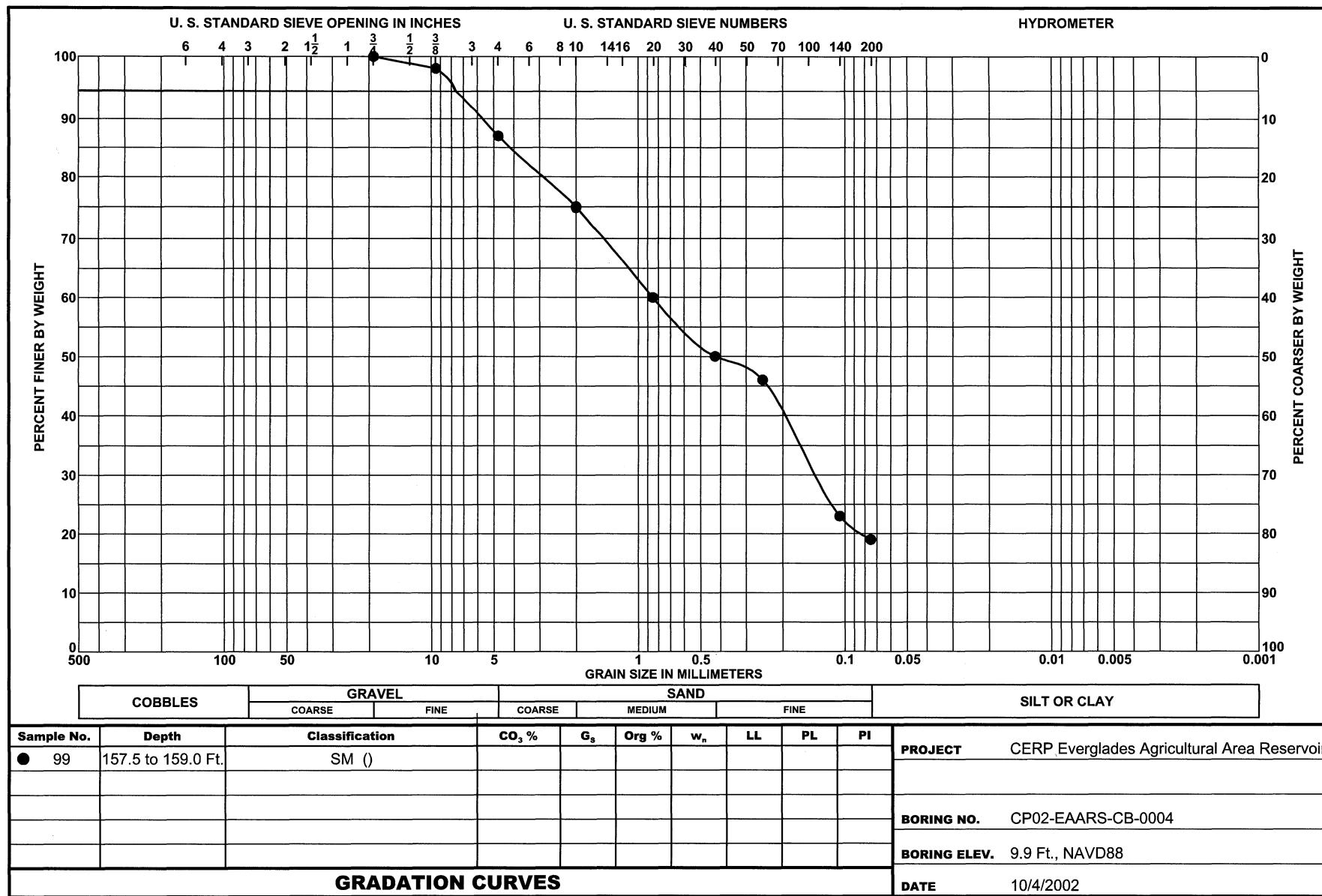
**LABORATORY TESTING PERFORMED FOR THE PREPARATION OF THE CONCEPTUAL REPORT OF
GEOTECHNICAL EXPLORATION COMPREHENSIVE EVERGLADES RESTORATION PLAN
EVERGLADES AGRICULTURAL AREA RESERVOIRS, ARDAMAN & ASSOCIATES, INC. (2003)**

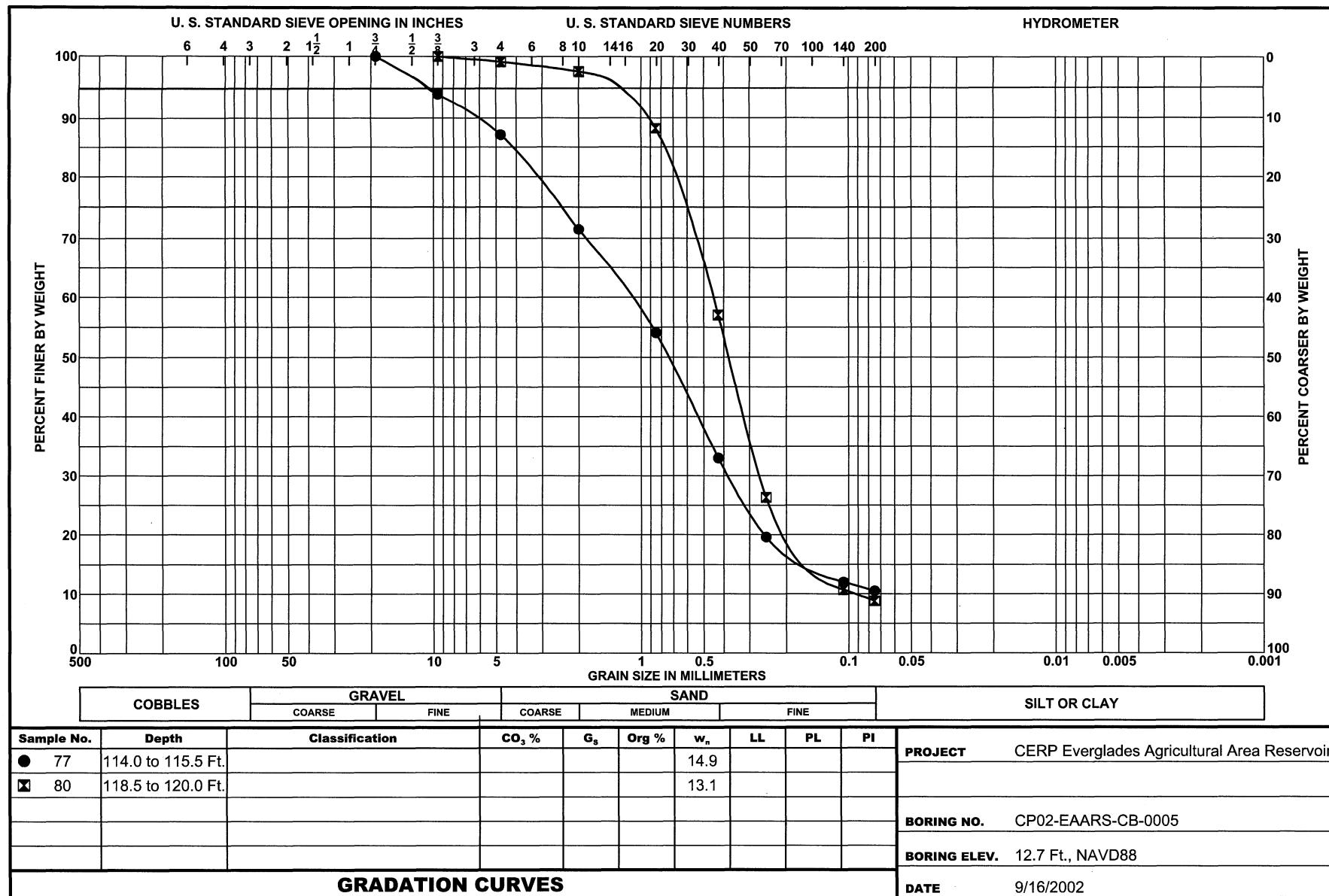




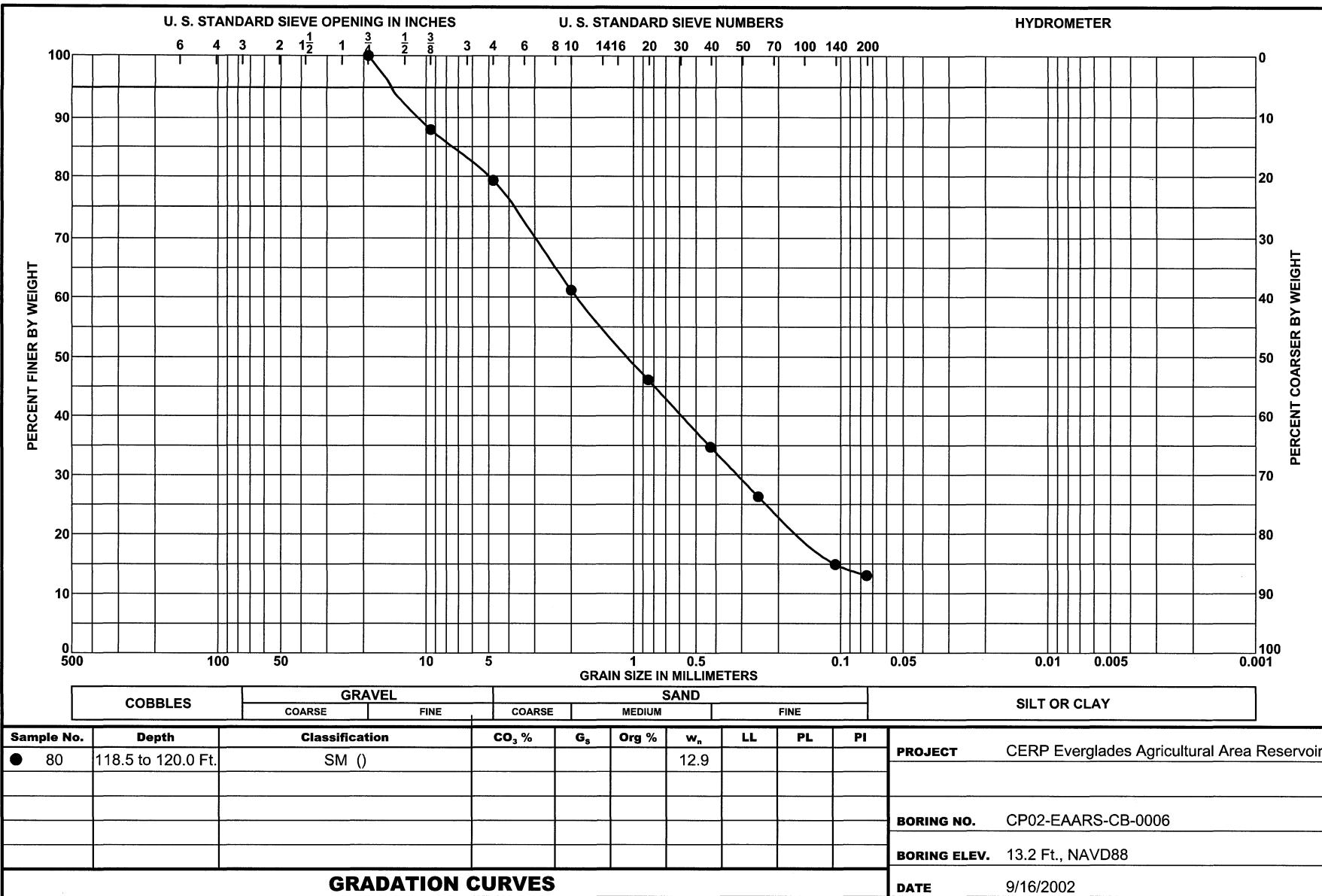


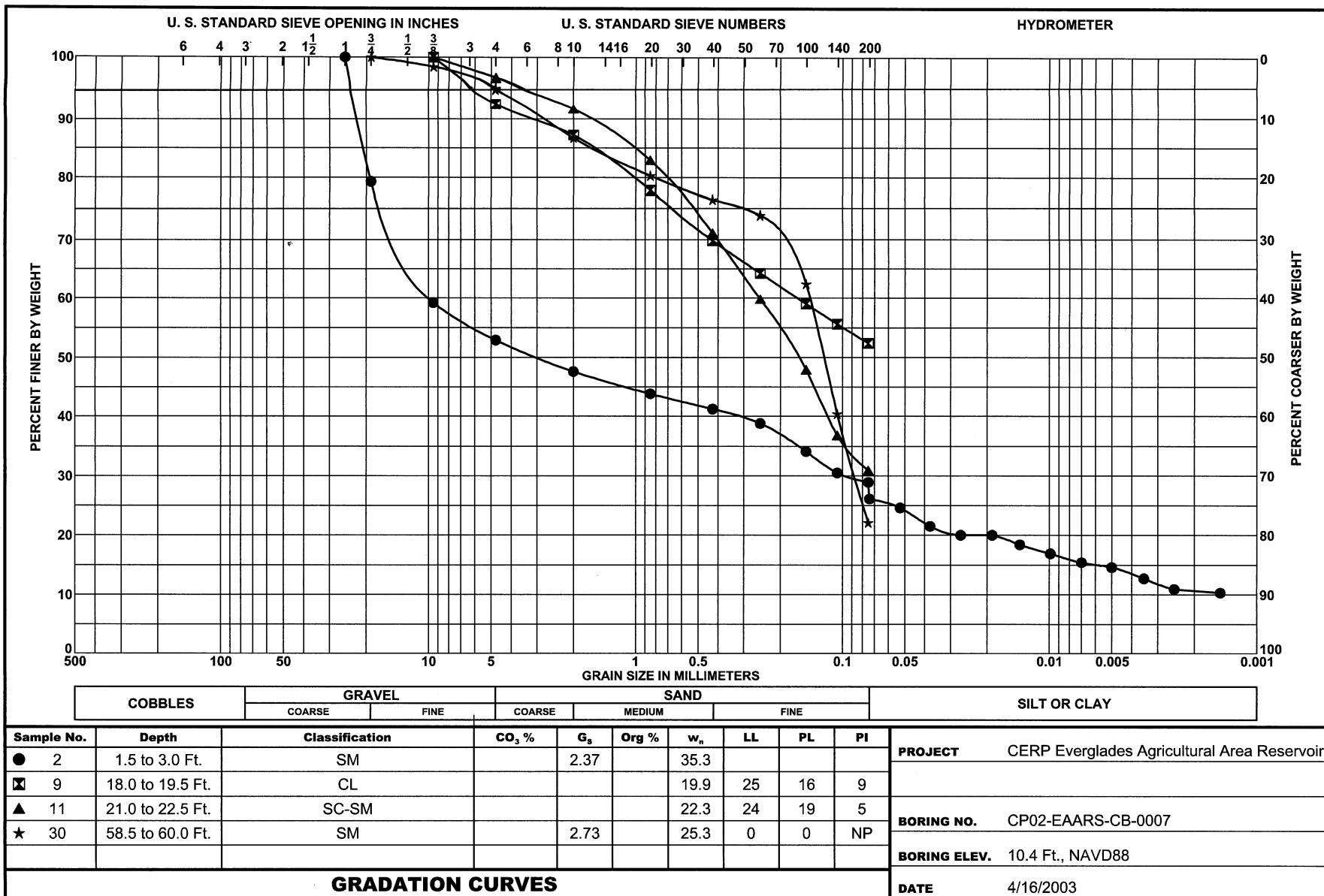
SAJ FORM 2087
JUN 02





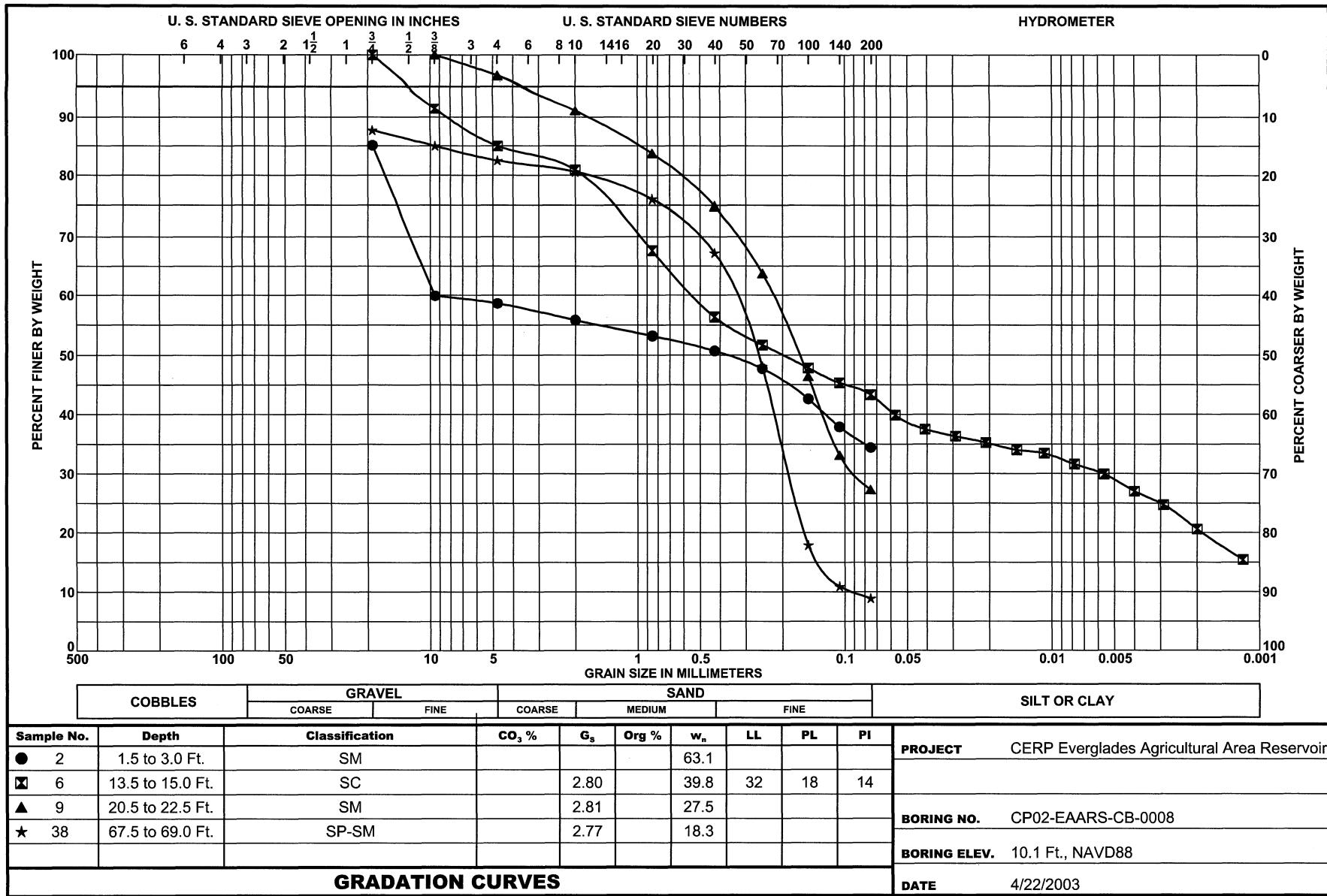
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JUN 02

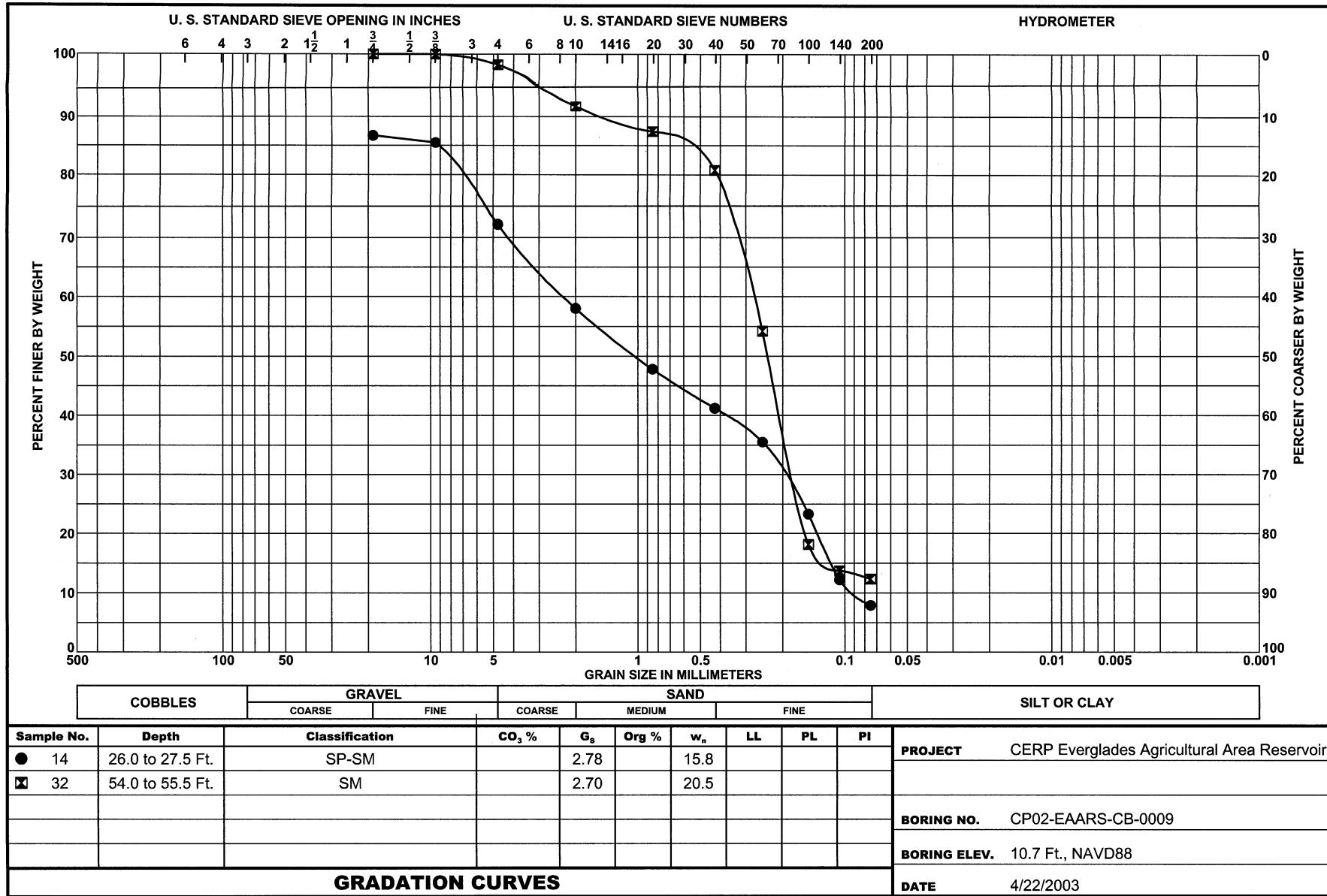




SAJ FORM 2087

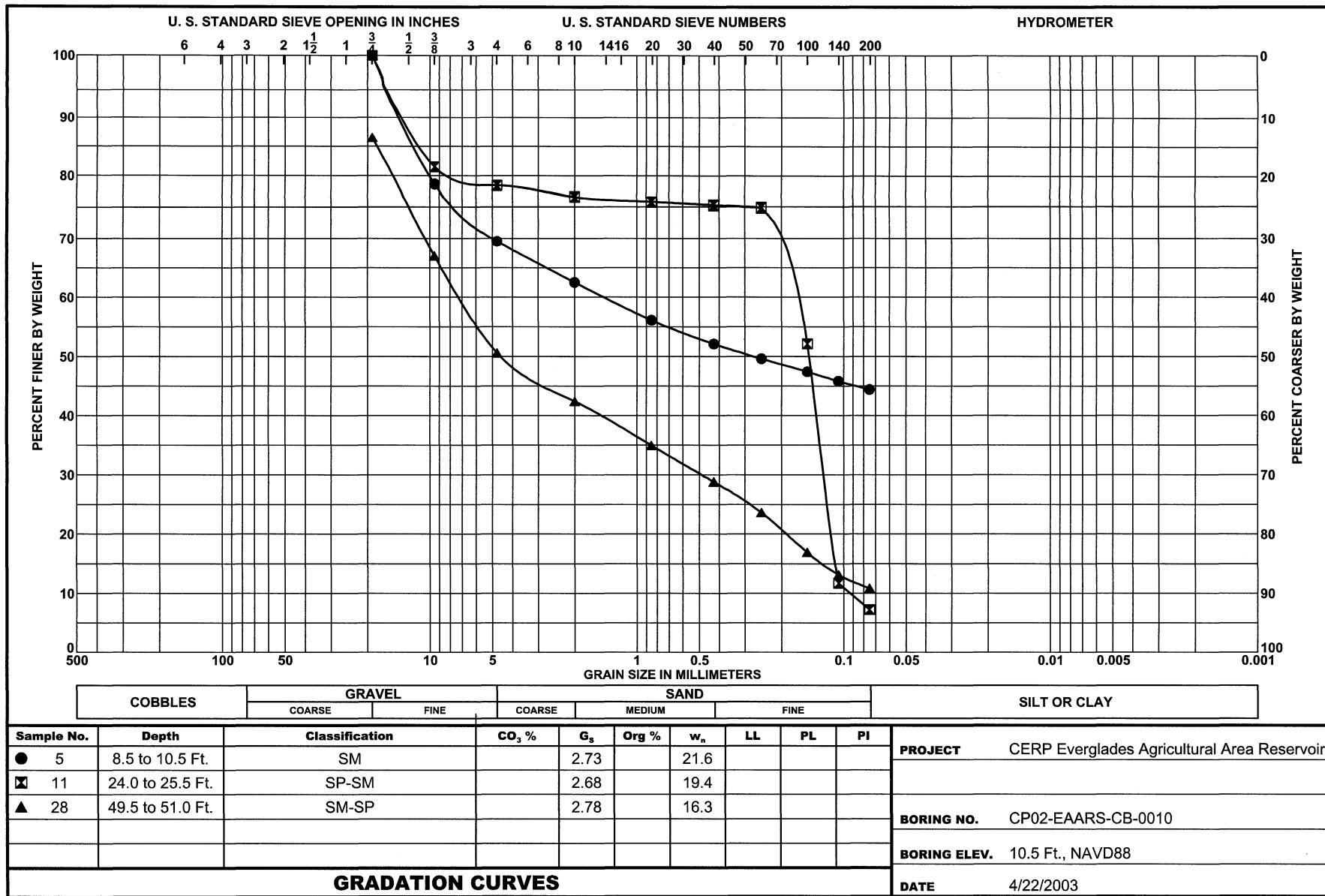
JUN 02

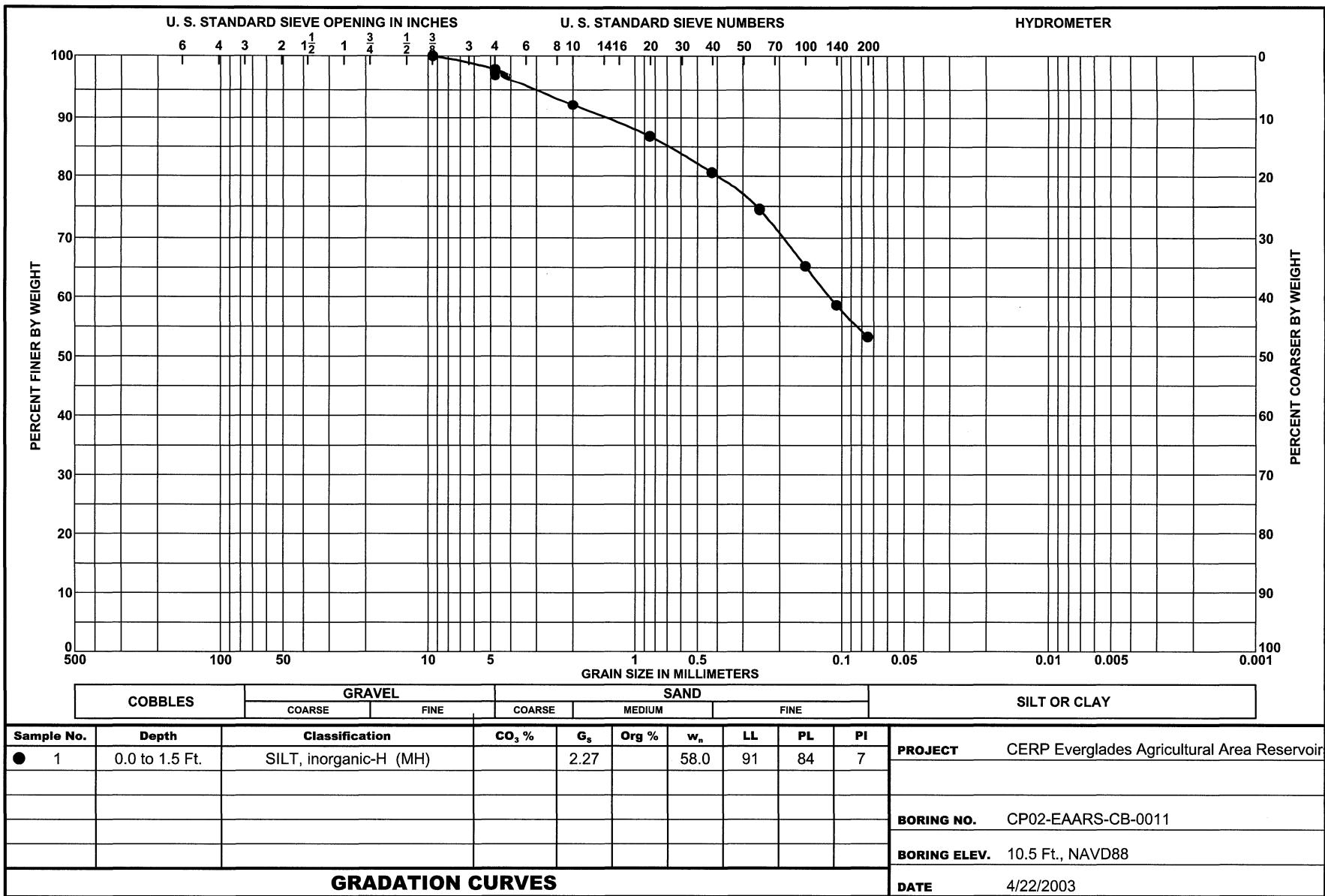


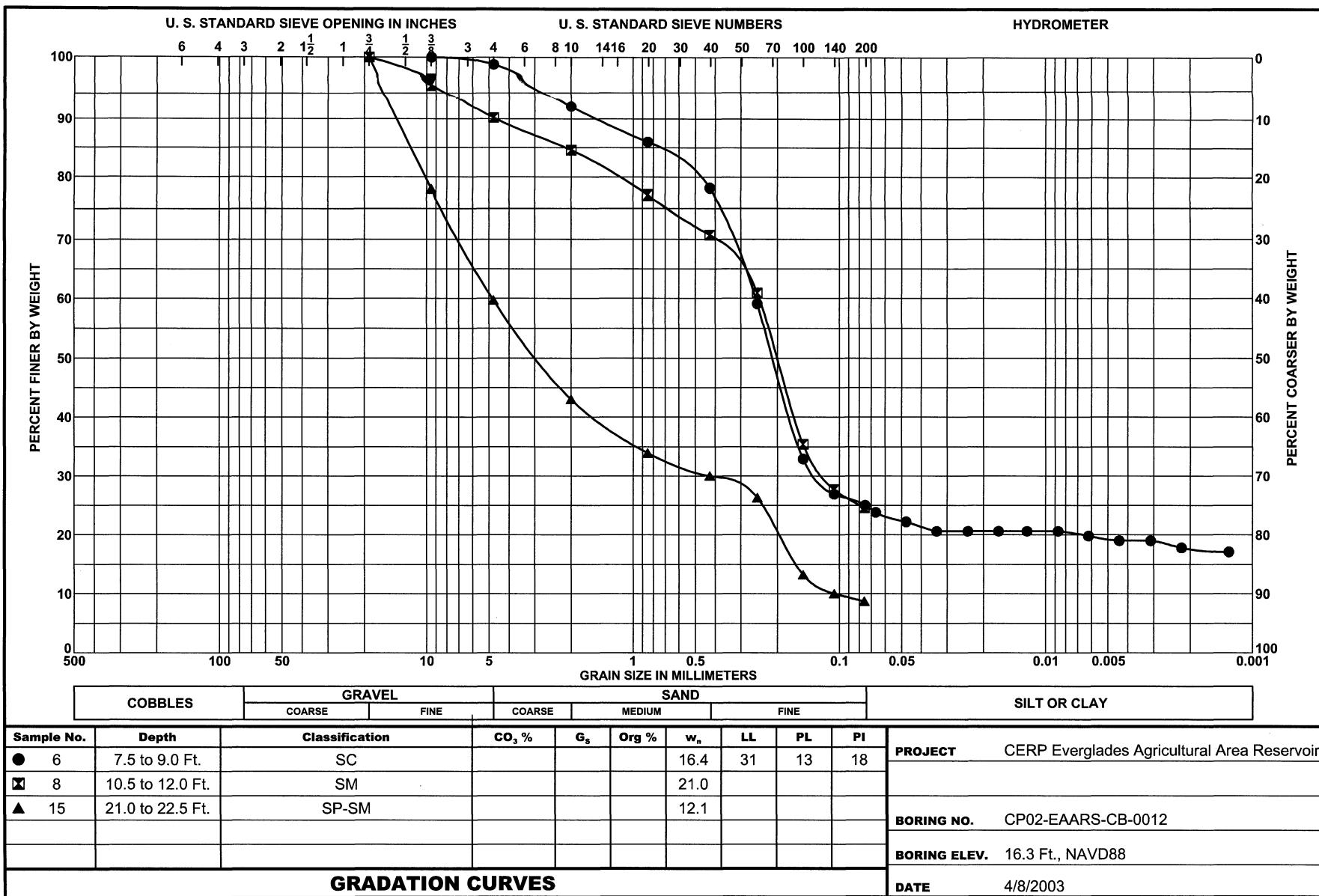


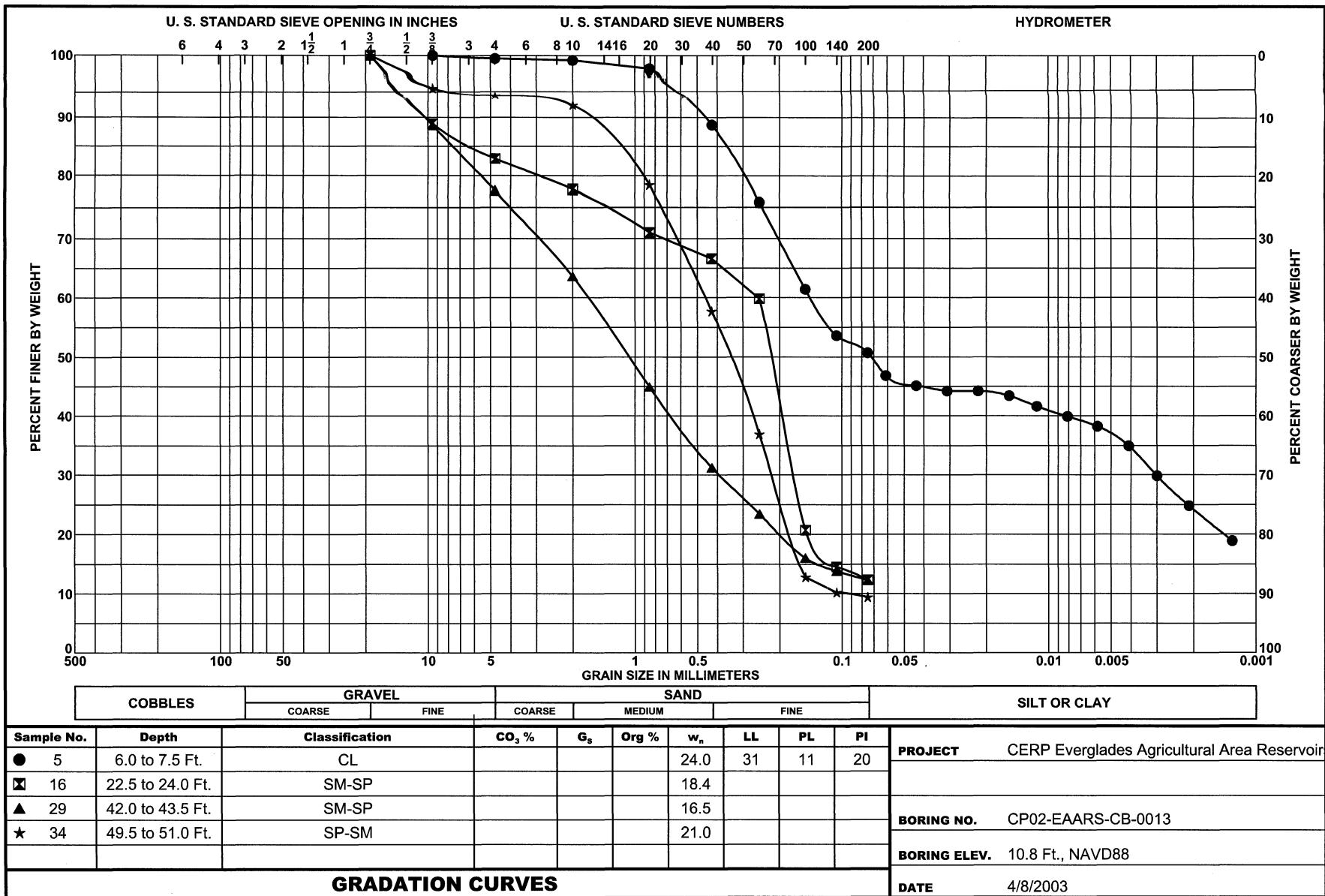
SAJ FORM 2087

JUN 02

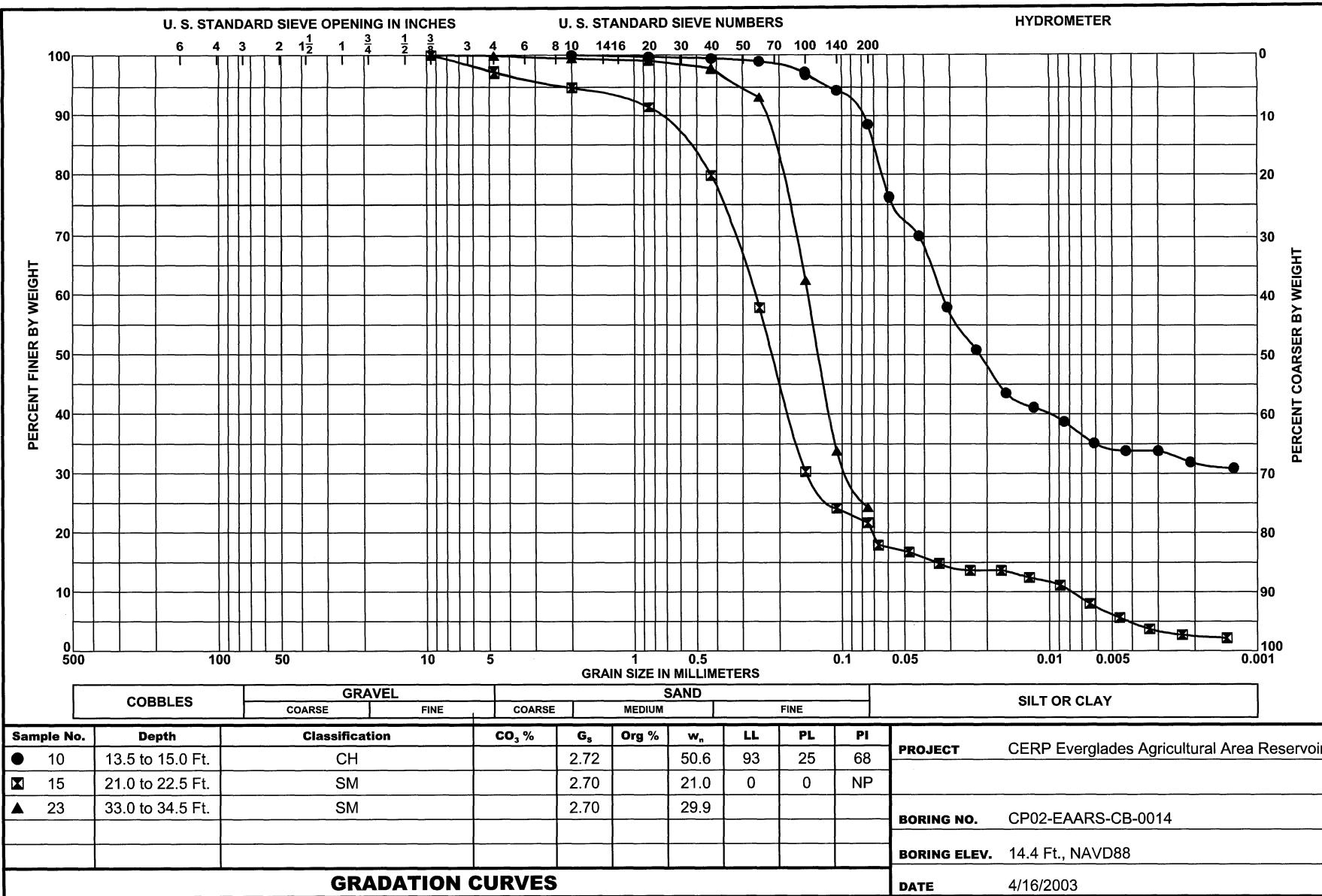




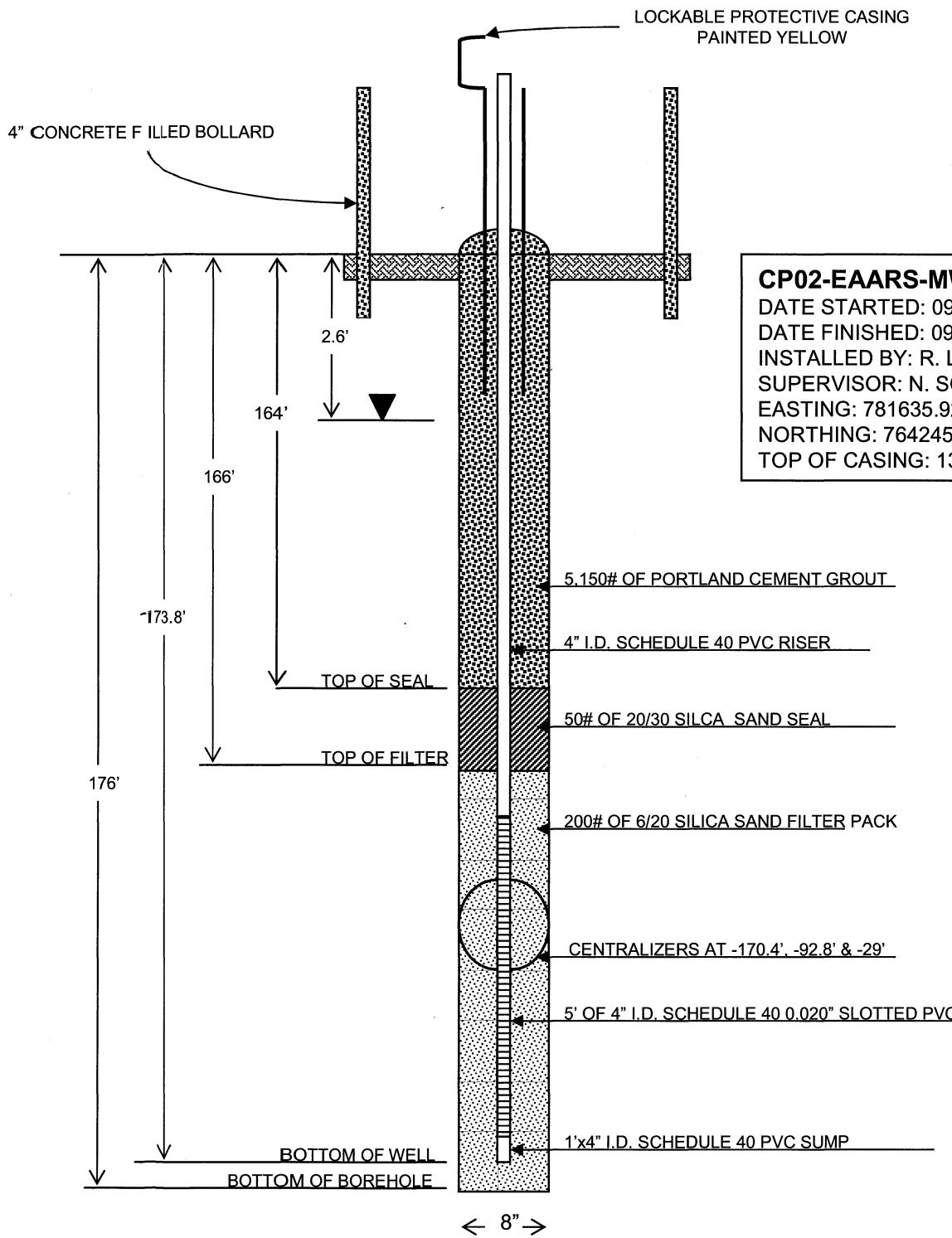




SAJ FORM 2087
JUN 02

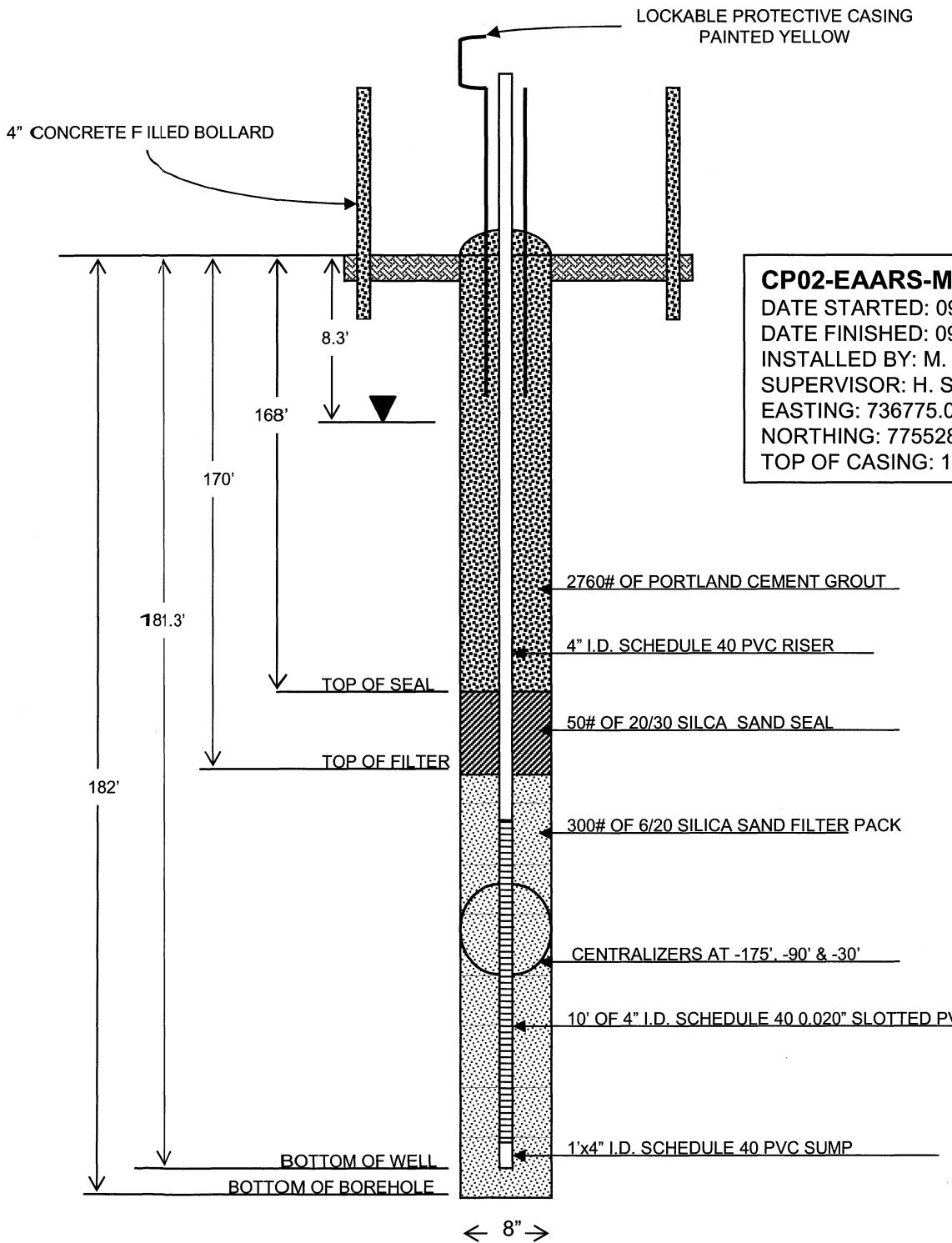


CERP – Everglades Agricultural Area Reservoirs
Monitoring Well



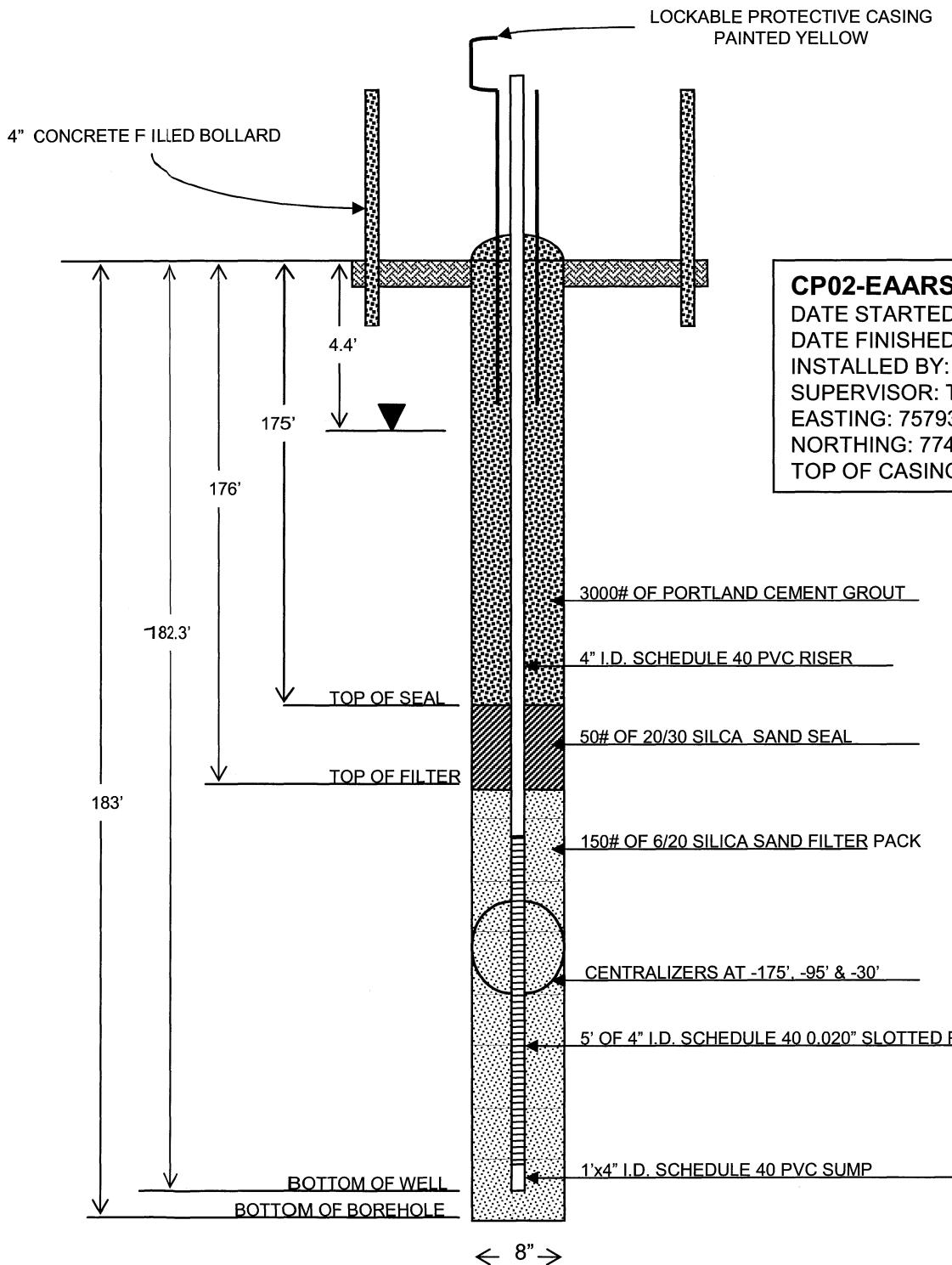
CP02-EAARS-MW-0001
DATE STARTED: 090402
DATE FINISHED: 090502
INSTALLED BY: R. LOCKLEY
SUPERVISOR: N. SCOTT
EASTING: 781635.92
NORTHING: 764245.56
TOP OF CASING: 13.45'

**CERP – Everglades Agricultural Area Reservoirs
Monitoring Well**



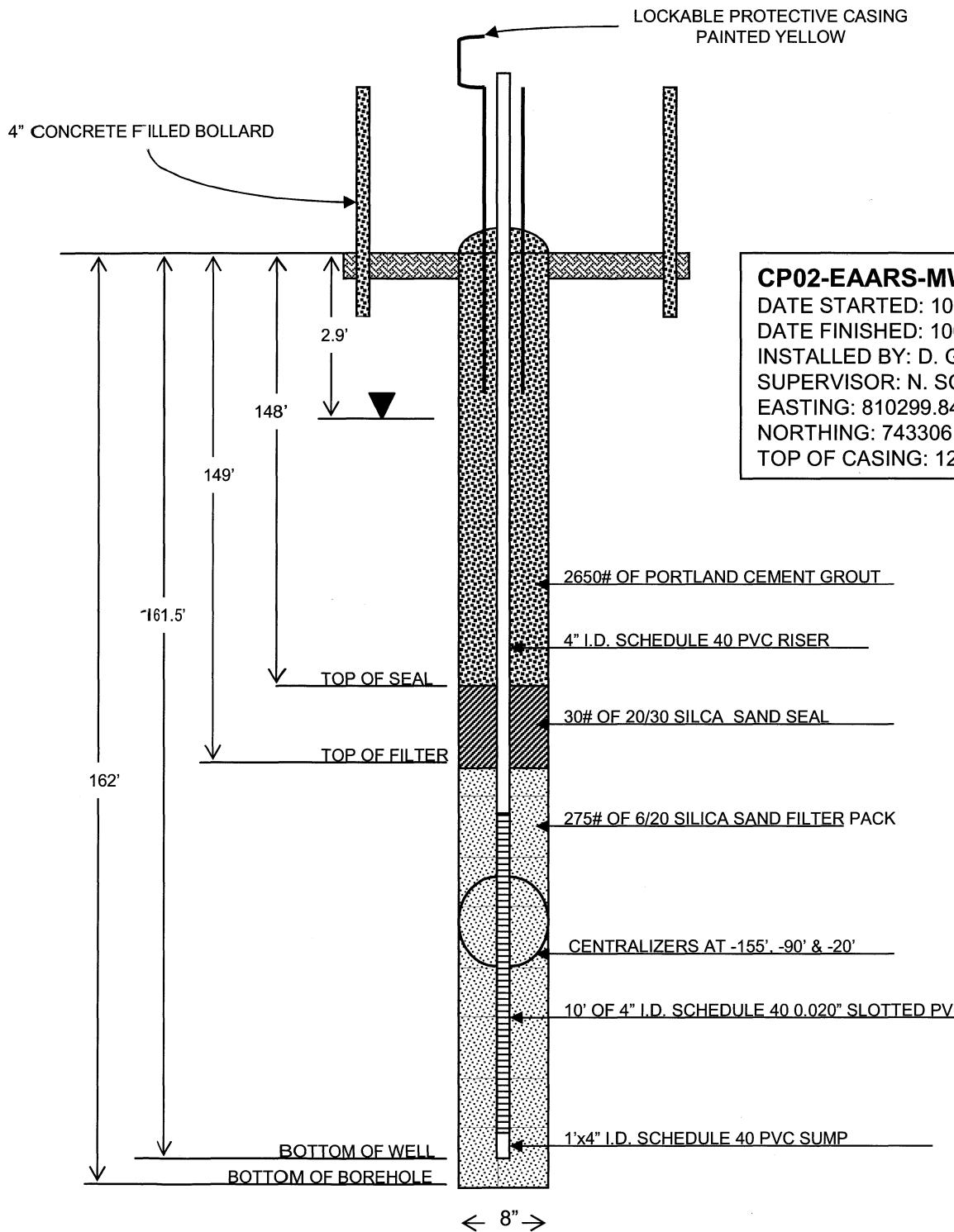
CP02-EAARS-MW-0002
DATE STARTED: 091302
DATE FINISHED: 091702
INSTALLED BY: M. GULICK
SUPERVISOR: H. SYNDER
EASTING: 736775.00
NORTHING: 775528.47
TOP OF CASING: 11.50'

**CERP – Everglades Agricultural Area Reservoirs
Monitoring Well**



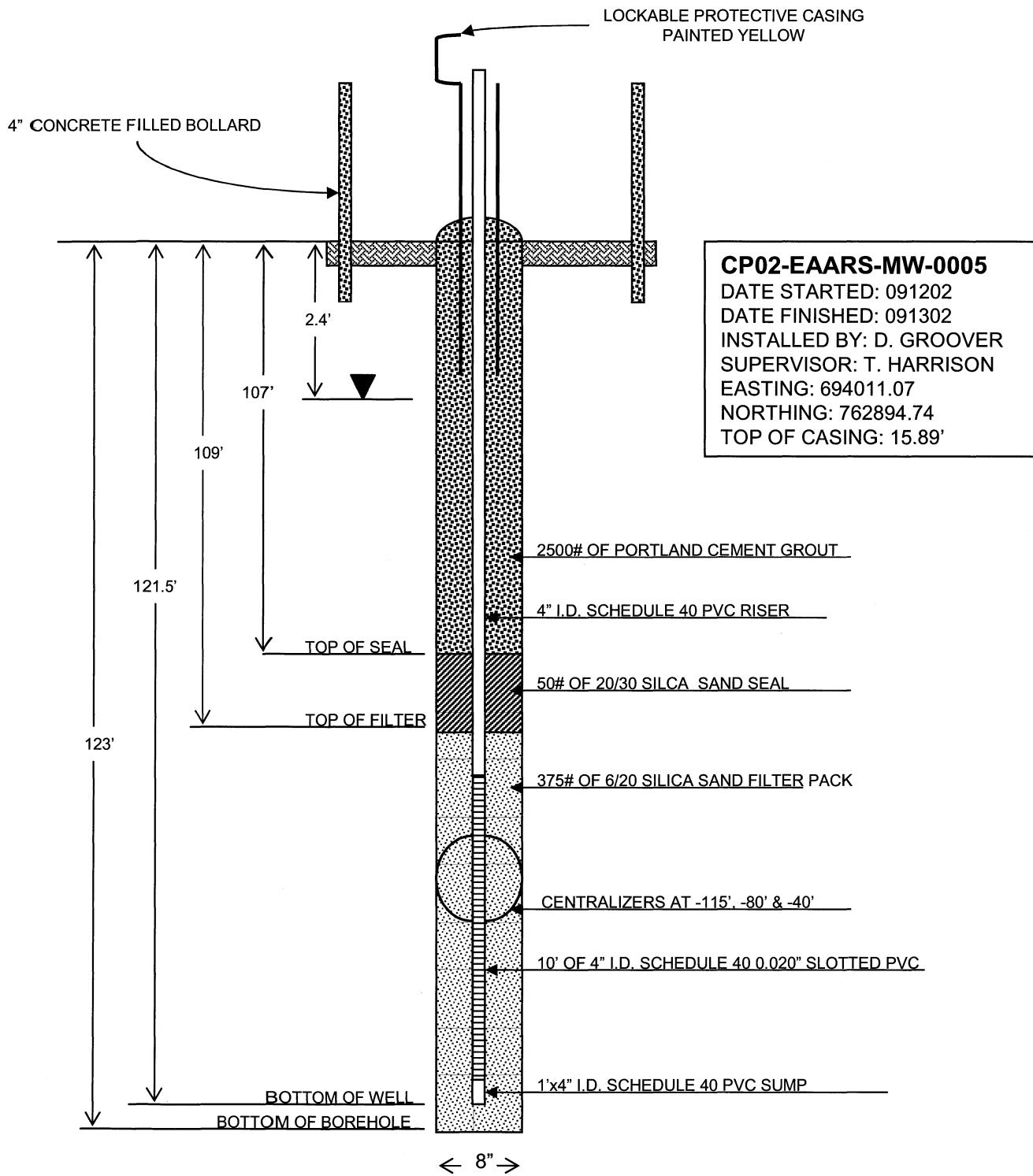
CP02-EAARS-MW-0003
DATE STARTED: 082702
DATE FINISHED: 082802
INSTALLED BY: D. GROOVER
SUPERVISOR: T. HARRISON
EASTING: 757931.67
NORTHING: 774446.35
TOP OF CASING: 10.52'

**CERP – Everglades Agricultural Area Reservoirs
Monitoring Well**

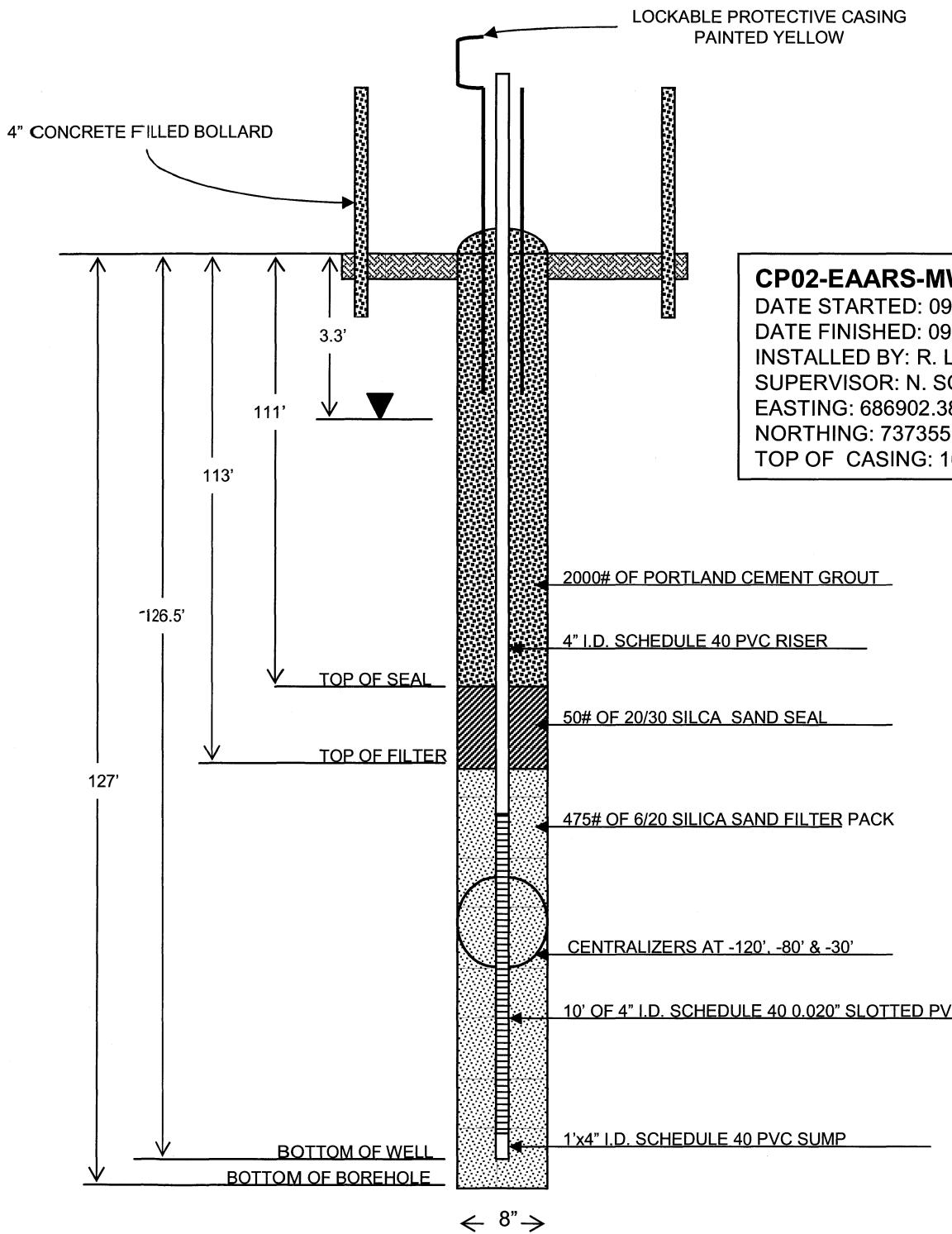


CP02-EAARS-MW-0004
DATE STARTED: 100302
DATE FINISHED: 100402
INSTALLED BY: D. GROOVER
SUPERVISOR: N. SCOTT
EASTING: 810299.84
NORTHING: 743306.33
TOP OF CASING: 12.98'

**CERP – Everglades Agricultural Area Reservoirs
Monitoring Well**

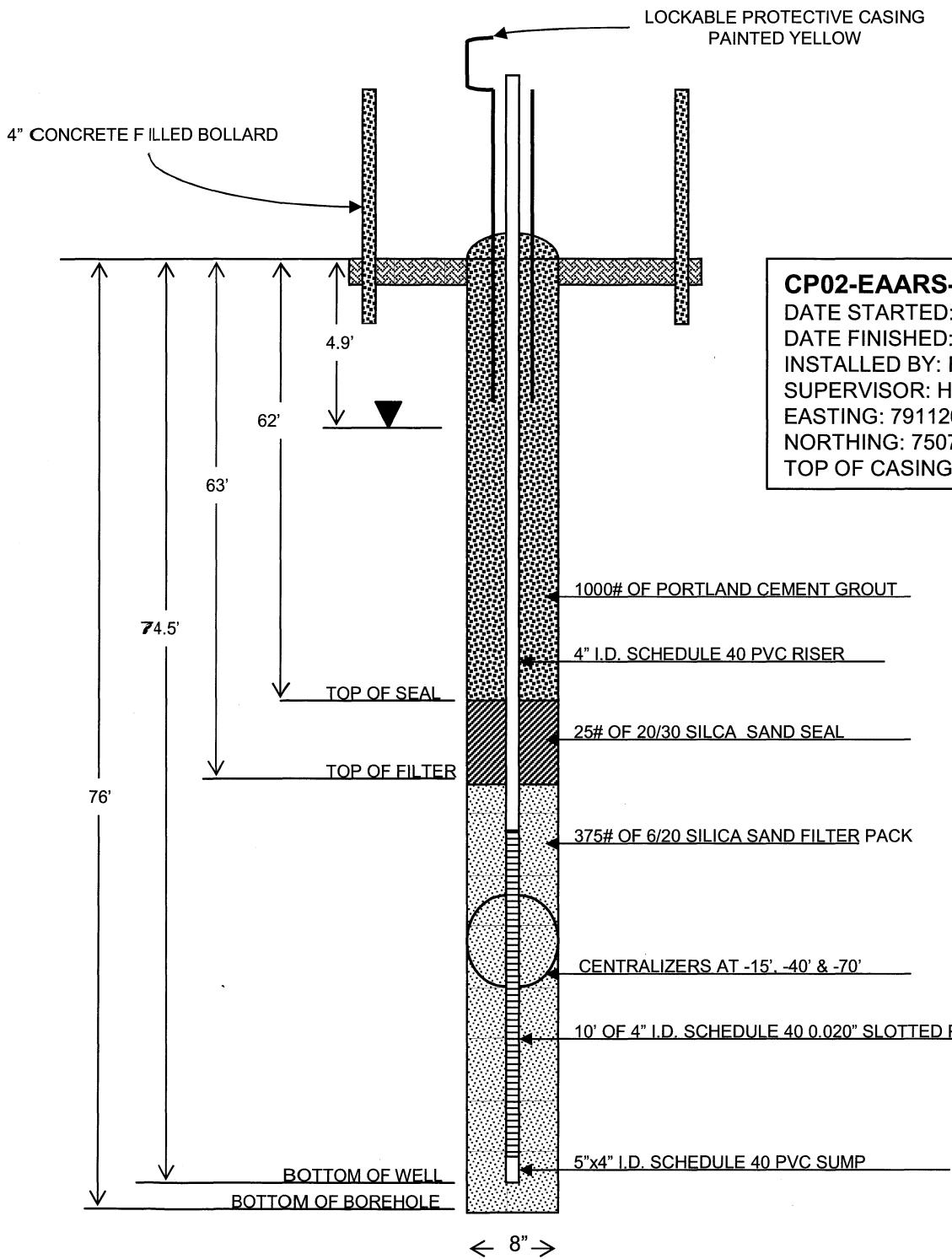


**CERP – Everglades Agricultural Area Reservoirs
Monitoring Well**

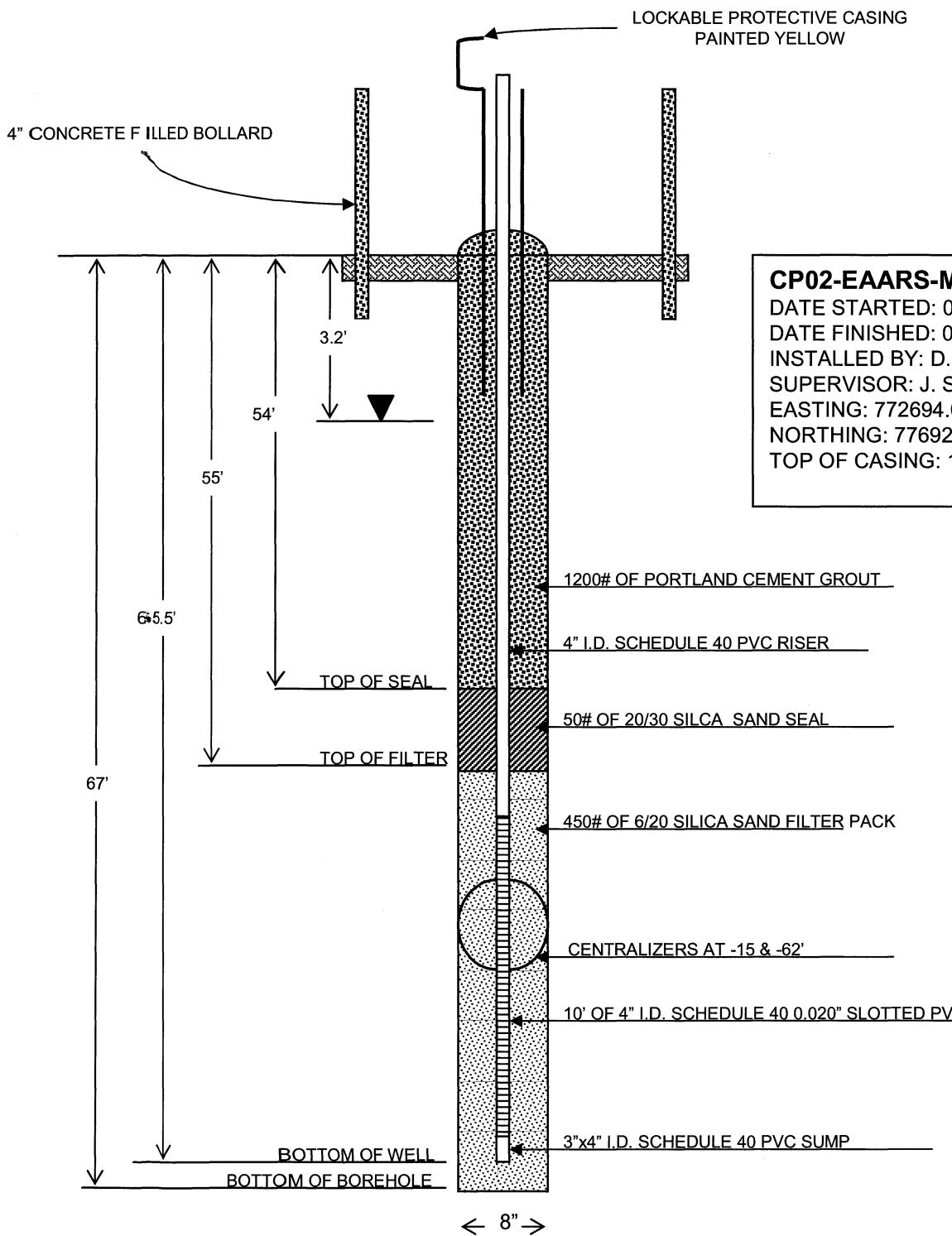


CP02-EAARS-MW-0006
 DATE STARTED: 091302
 DATE FINISHED: 091502
 INSTALLED BY: R. LOCKLEY
 SUPERVISOR: N. SCOTT
 EASTING: 686902.38
 NORTHING: 737355.19
 TOP OF CASING: 16.68'

**CERP – Everglades Agricultural Area Reservoirs
Monitoring Well**

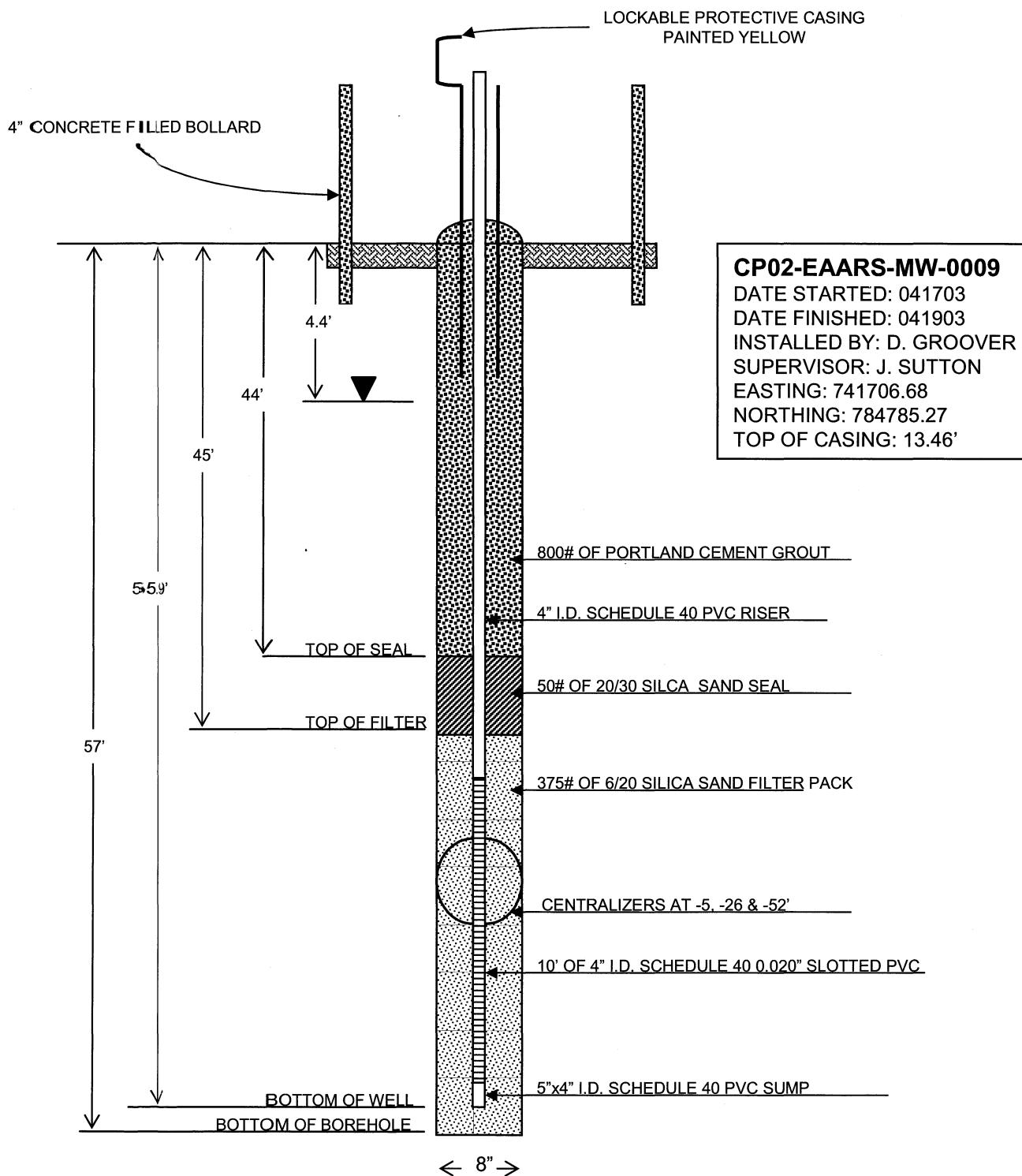


**CERP – Everglades Agricultural Area Reservoirs
Monitoring Well**

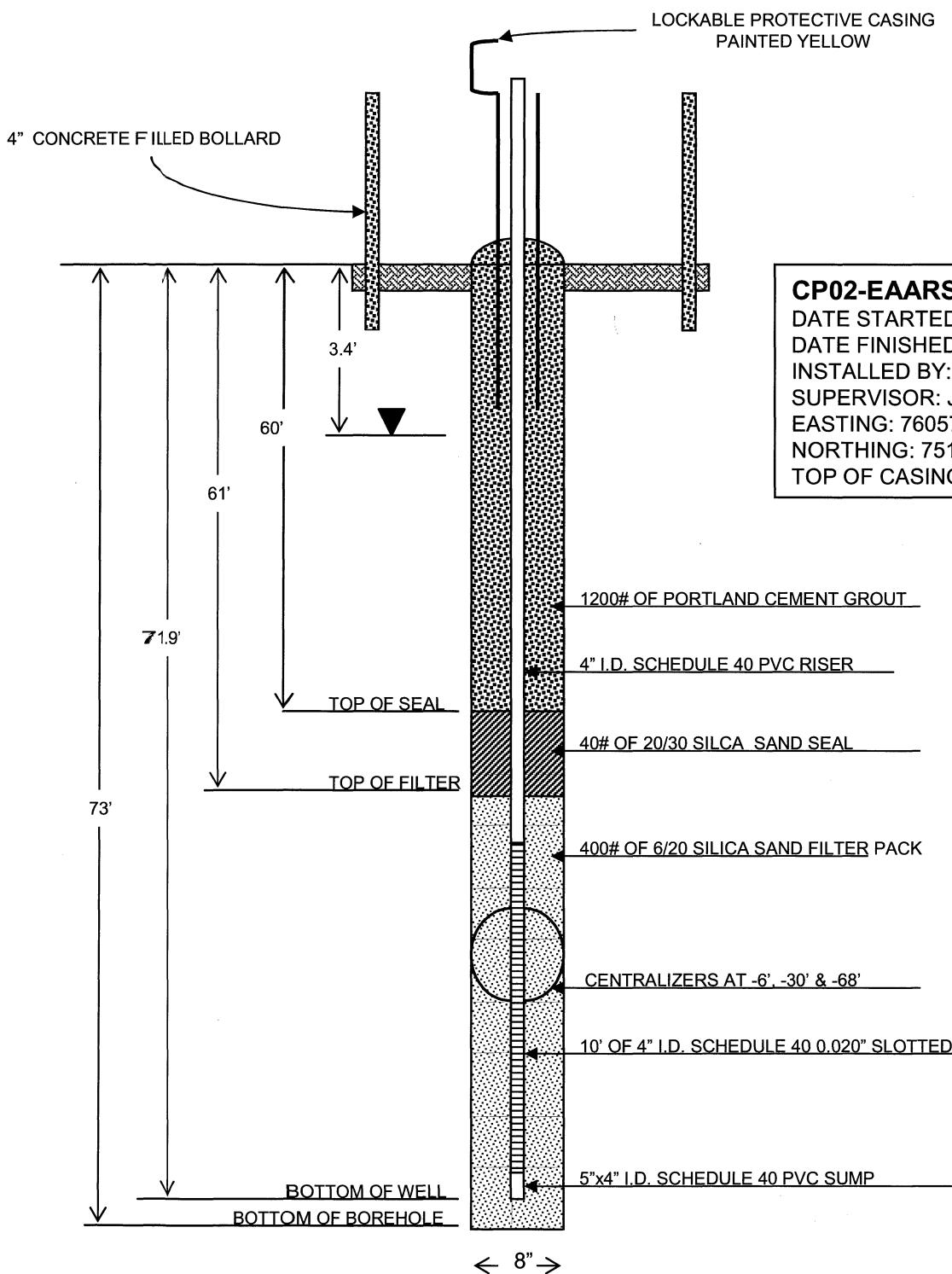


CP02-EAARS-MW-0008
DATE STARTED: 041103
DATE FINISHED: 041503
INSTALLED BY: D. GROOVER
SUPERVISOR: J. SUTTON
EASTING: 772694.00
NORTHING: 776923.56
TOP OF CASING: 12.99'

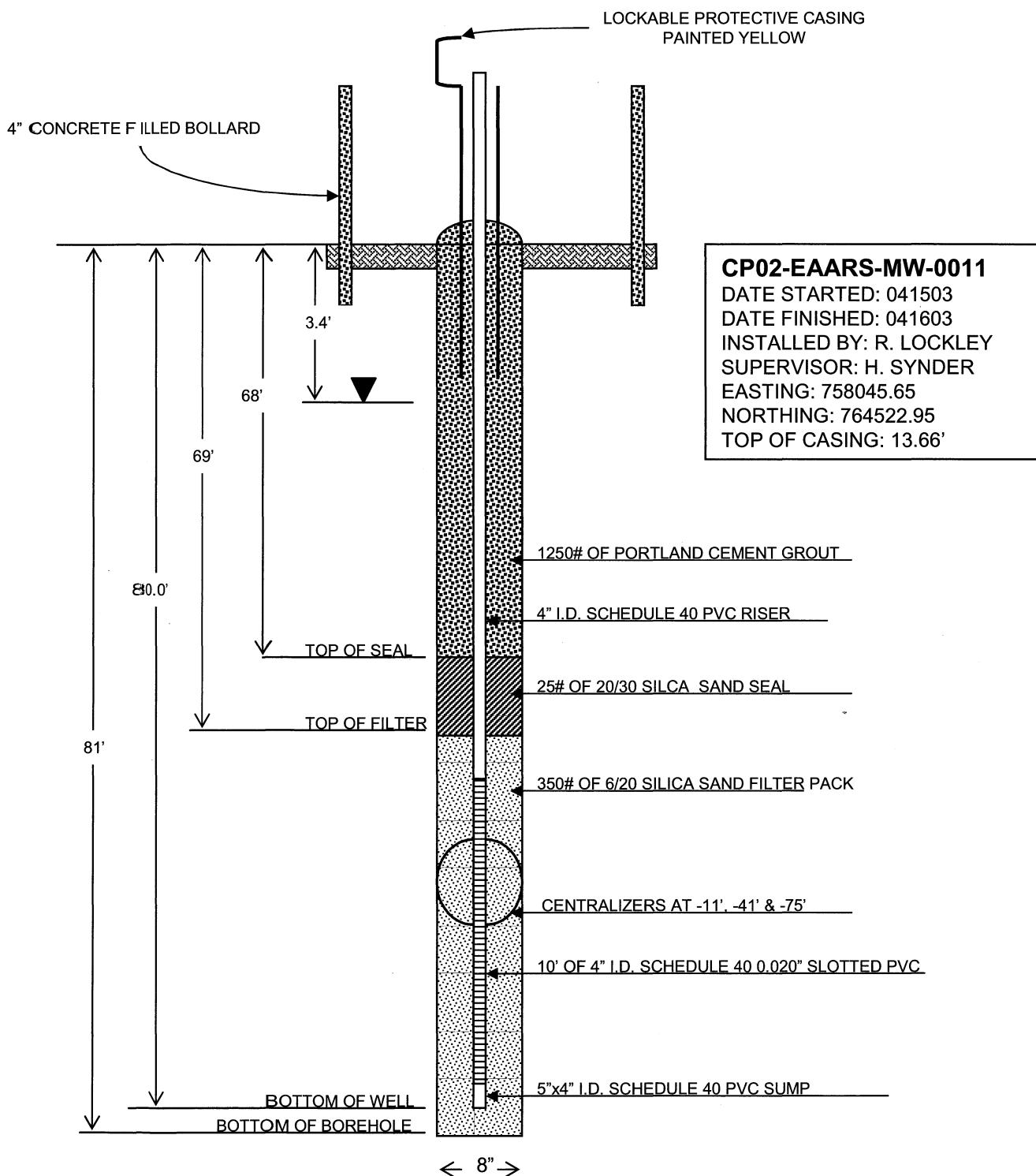
CERP – Everglades Agricultural Area Reservoirs
Monitoring Well



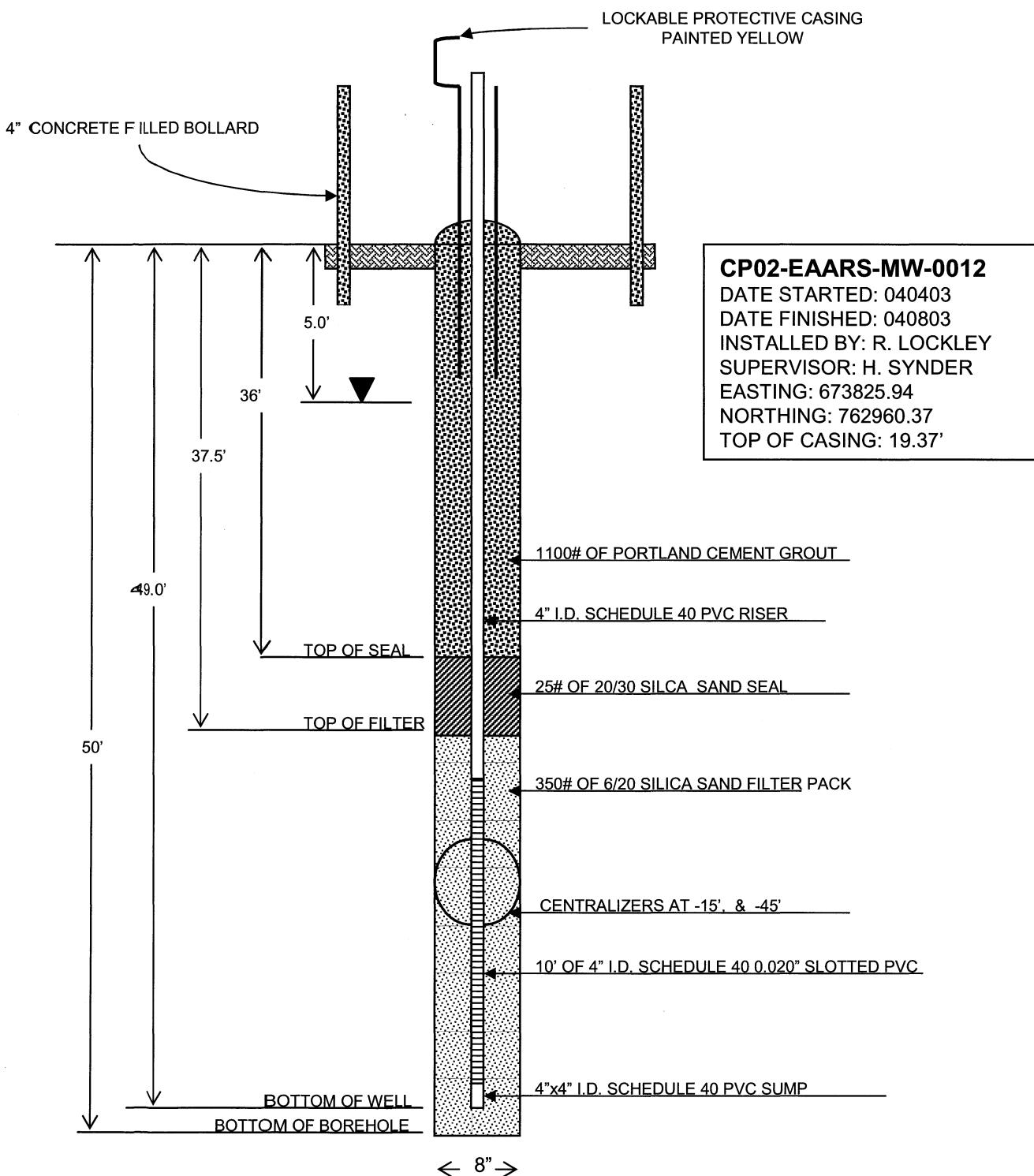
**CERP – Everglades Agricultural Area Reservoirs
Monitoring Well**



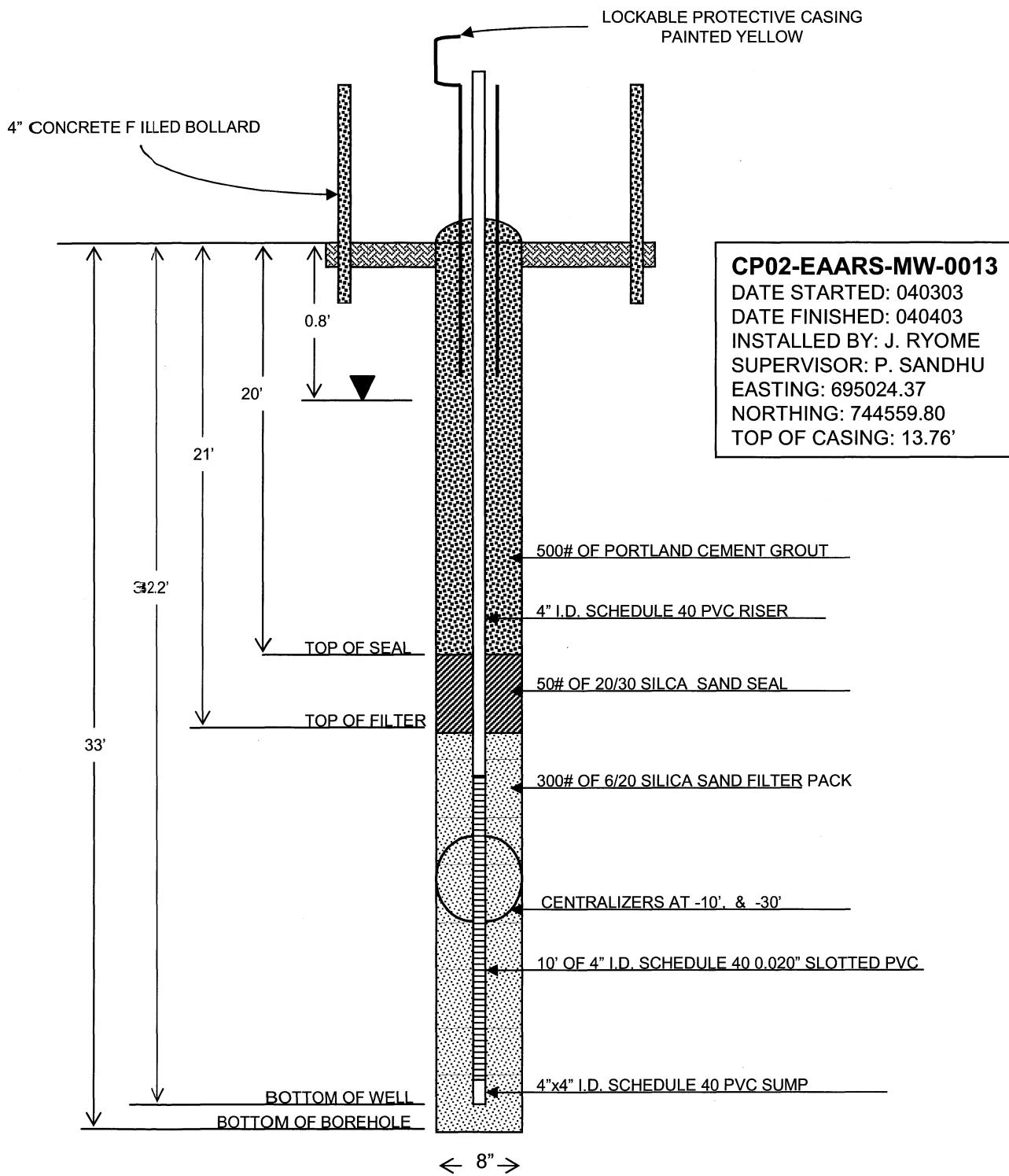
**CERP – Everglades Agricultural Area Reservoirs
Monitoring Well**



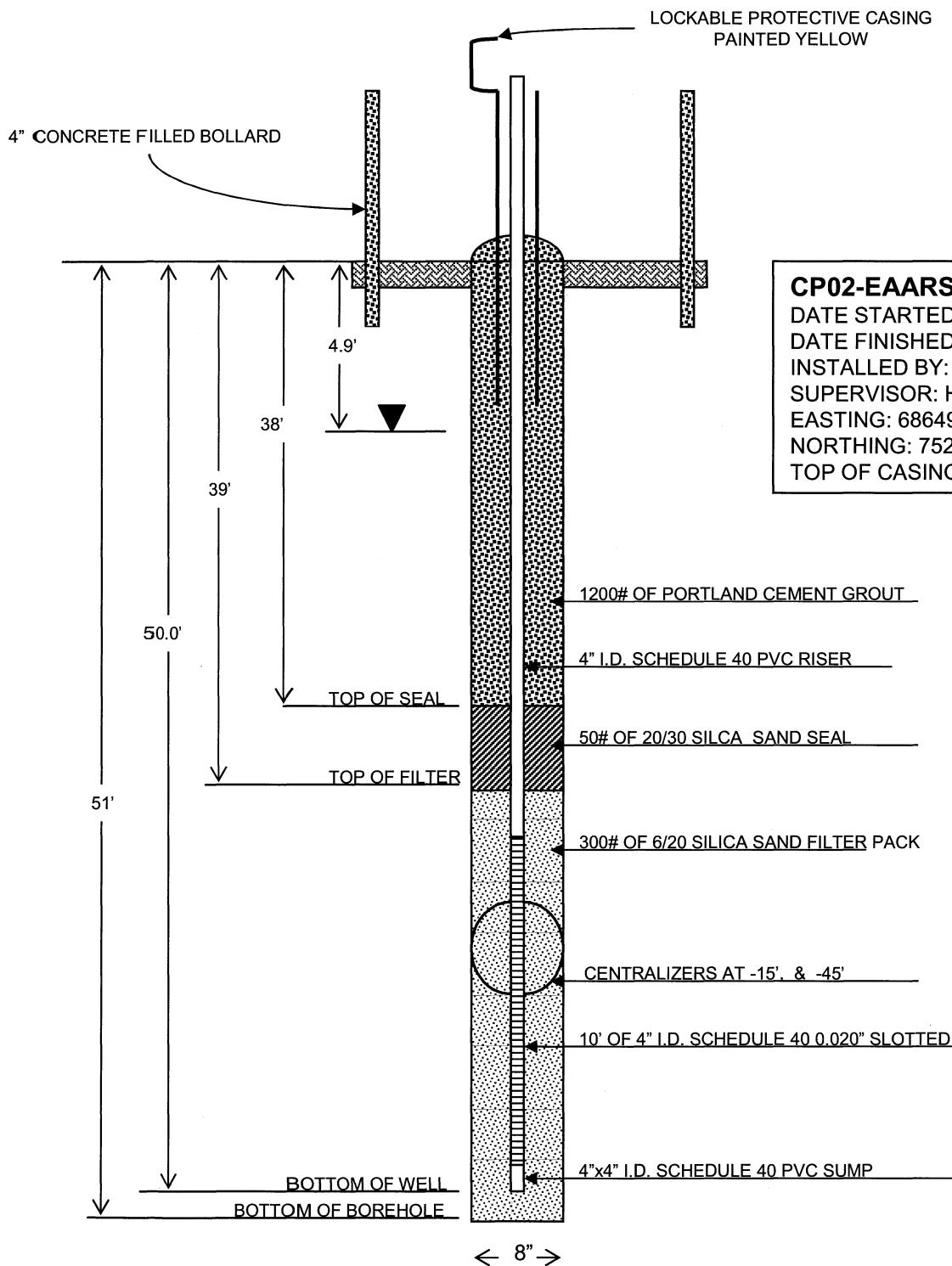
**CERP – Everglades Agricultural Area Reservoirs
Monitoring Well**



**CERP – Everglades Agricultural Area Reservoirs
Monitoring Well**



**CERP – Everglades Agricultural Area Reservoirs
Monitoring Well**

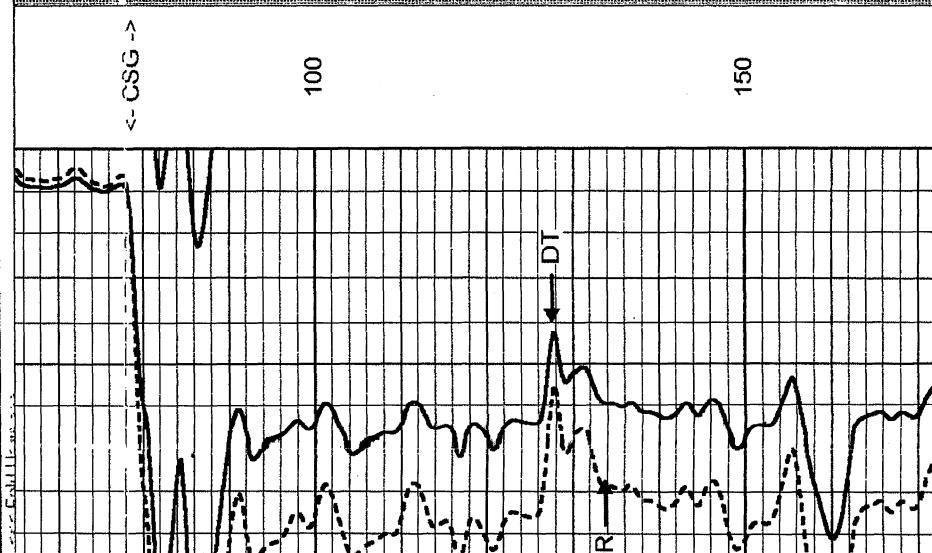
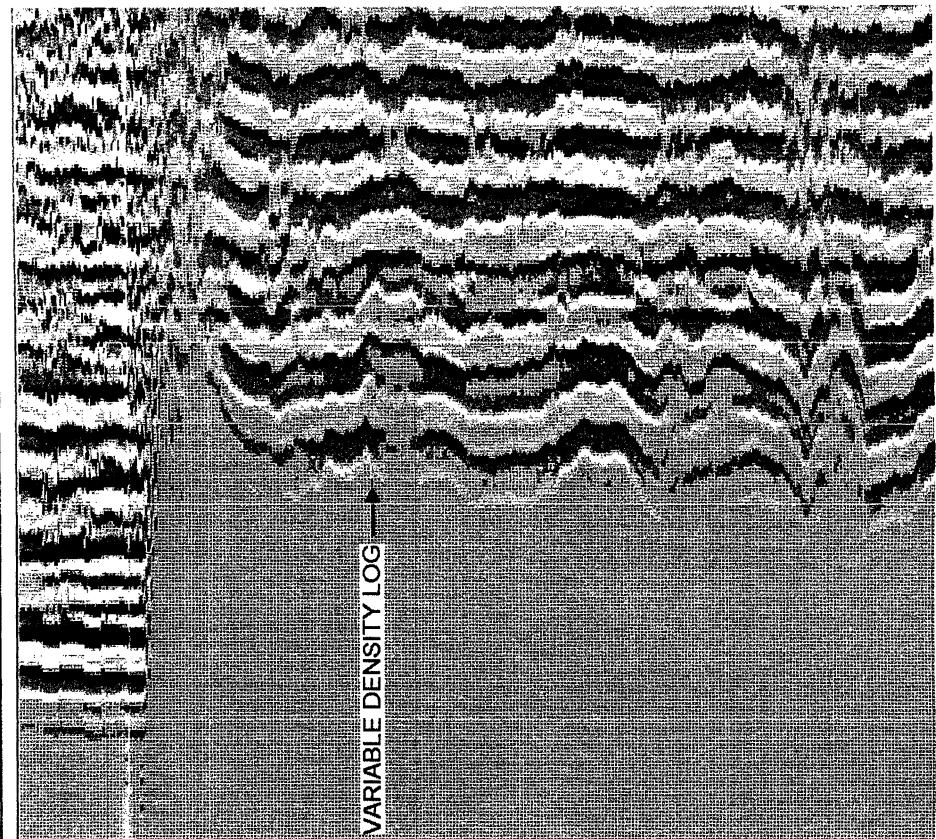


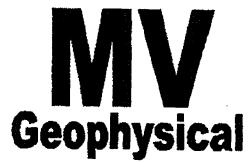
CP02-EAARS-MW-0014
DATE STARTED: 040203
DATE FINISHED: 040303
INSTALLED BY: R. LOCKLEY
SUPERVISOR: H. SYNDER
EASTING: 686492.71
NORTHING: 752500.91
TOP OF CASING: 17.57'



BOREHOLE COMPENSATED
SONIC
w/ VARIABLE DENSITY
LOG

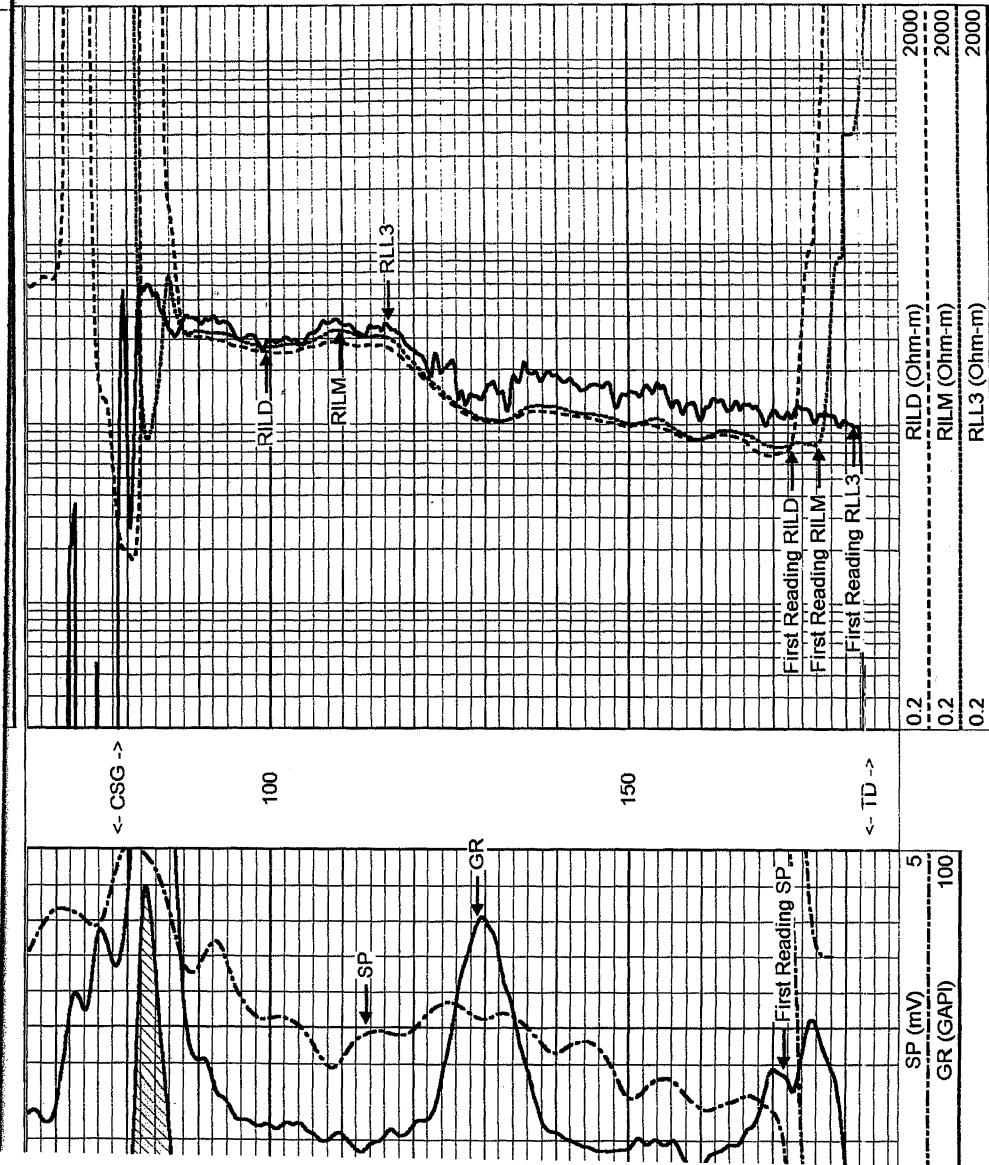
Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0001						
Field	EAA Reservoirs Storage						
County	Palm Beach						
State/Prv	Florida						
Location	CP02-EAARS-GL-0001						
	File No.: 02-042						
Permanent Datum	Ground Level						
Log Measured From	Ground Level						
Drilling Measured From	Ground Level						
Date	22-AUG-2002						
Run Number	ONE						
Depth Driller	183'						
Depth Logger	183'						
Bottom Logged Interval	175'						
Top Log Interval	65'						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	18:30 8/22/02						
Time Logger on Bottom	20:30 8/22/02						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S.Miller						
Witnessed By	R.Burr (P.G.)						
Borehole Record	Tubing Record						
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	79'	183'				
Casing Record	Size	Wgt/Ft	Top	Bottom			
Surface String	6"	Temporary	SURFACE	79'			
Prot. String							
Production String							
Liner							





**DUAL INDUCTION
LL3 / SP
LOG**

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0001						
Field	EAA Reservoirs Storage						
County	Palm Beach						
State/Prv	Florida						
Date	22-AUG-2002						
Run Number	ONE						
Depth Driller	183'						
Depth Logger	183'						
Bottom Logged Interval	181'						
Top Log Interval	79'						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	18:30 8/22/02						
Time Logger on Bottom	19:30 8/22/02						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S. Miller						
Witnessed By	R. Burr (P.G.)						
Borehole Record							
Tubing Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	79'	183'				
old Here >>>							
Casing Record	Size	Wgt/Ft	Top	Bottom			
Surface String	6"	Temporary	SURFACE	79'			
Print String							





X-Y CALIPER GAMMA RAY LOG

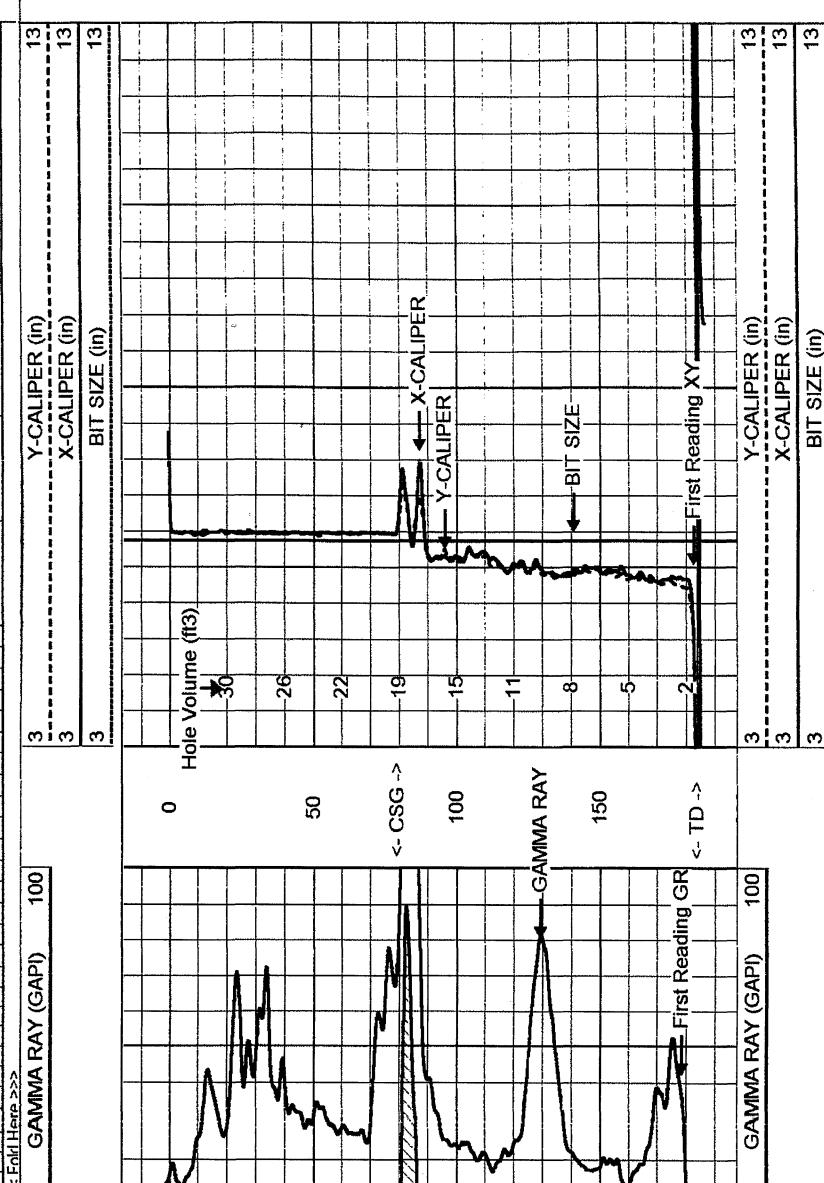
Company	Ardaman & Associates, Inc.		
Well	CP02-EAARS-GL-0001	EAA Reservoirs Storage	
Field	EAA Reservoirs Storage		
County	Palm Beach State/Prov Florida		
Location	CP02-EAARS-GL-0001	Other Services	DIL/SP BHC/VDL
		Elevation	K.B. D.F. G.L.

File No.: 02-042

Date	22-AUG-2002
Run Number	ONE
Depth Driller	183'
Depth Logger	183'
Bottom Logged Interval	182'
Top Log Interval	SURFACE
Open Hole Size	5.875"
Type Fluid	MUD
Density / Viscosity	na/na
Max. Recorded Temp.	na
Estimated Cement Top	na
Time Well Ready	18:30 8/22/02
Time Logger on Bottom	18:30 8/22/02
Equipment Number	MVGS-1
Location	Fl. Myers
Recorded By	S.Miller
Witnessed By	R.Burr (P.G.)

Borehole Record			Tubing Record		
Run Number	Bit	From	To	Size	Weight
ONE	5.875"	79'	183'		

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	6"	Temporary	SURFACE	
Prot. String				79'
Production String				



MAIN PASS

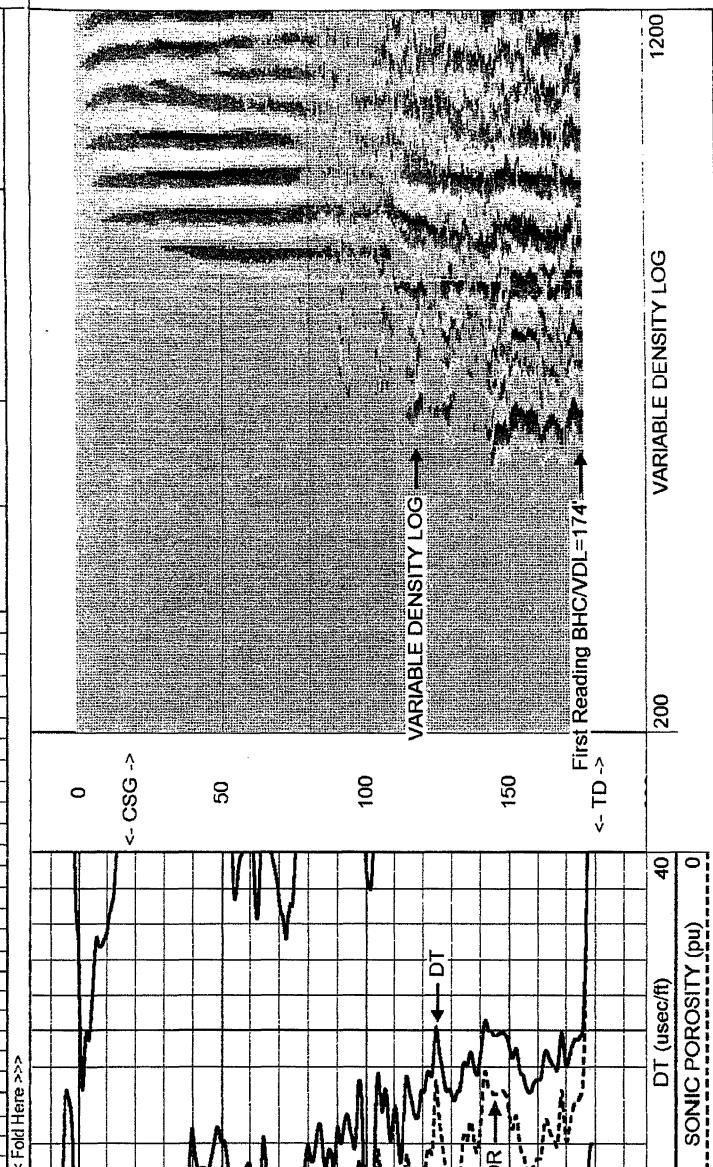
**MV
Geophysical**

Database File: ardaman2.db
Dataset Pathname: MAIN



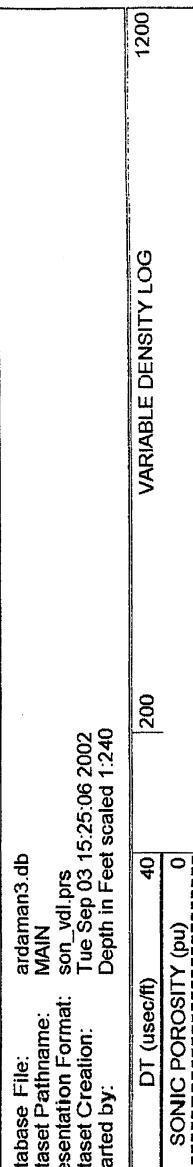
BOREHOLE COMPENSATED SONIC w/ VARIABLE DENSITY LOG

Company	Ardaman & Associates, Inc.				
Well	CP02-EAARS-GL-0002				
Field	EAA Reservoirs Storage				
County	Palm Beach State/Prv Florida				
Location	CP02-EAARS-GL-0002				
File	File No.: 02-042				
Permanent Datum	Ground Level				
Log Measured From	Ground Level				
Drilling Measured From	Ground Level				
Other Services	XY/GR DIL/SP				
Permanent Datum	Elevation				
Log Measured From	K.B. D.F. G.L.				
Drilling Measured From	Elevation				
Date	3-SEPT-2002				
in Number	ONE				
Depth Driller	183'				
Depth Logger	182'				
Bottom Logged Interval	174'				
Top Log Interval	18'				
Open Hole Size	5.875"				
Fluid	MUD				
Consistency / Viscosity	na/na				
Actual Recorded Temp.	na				
Estimated Cement Top	na				
Time Well Ready	14:30 9/3/02				
Time Logger on Bottom	15:45 9/3/02				
Equipment Number	MVGS-1				
Location	Ft. Myers				
Recorded By	S.Miller				
Dressed By	R.Burr (P.G.)				
Borehole Record		Tubing Record			
Run Number	Bit	From	To		
ONE	5.875"	79'	183'		
String Record		Size	Wgt/Ft	Top	Bottom
Surface String	6"	Temporary	SURFACE	18'	
Int. String					
Production String					



MAIN PASS

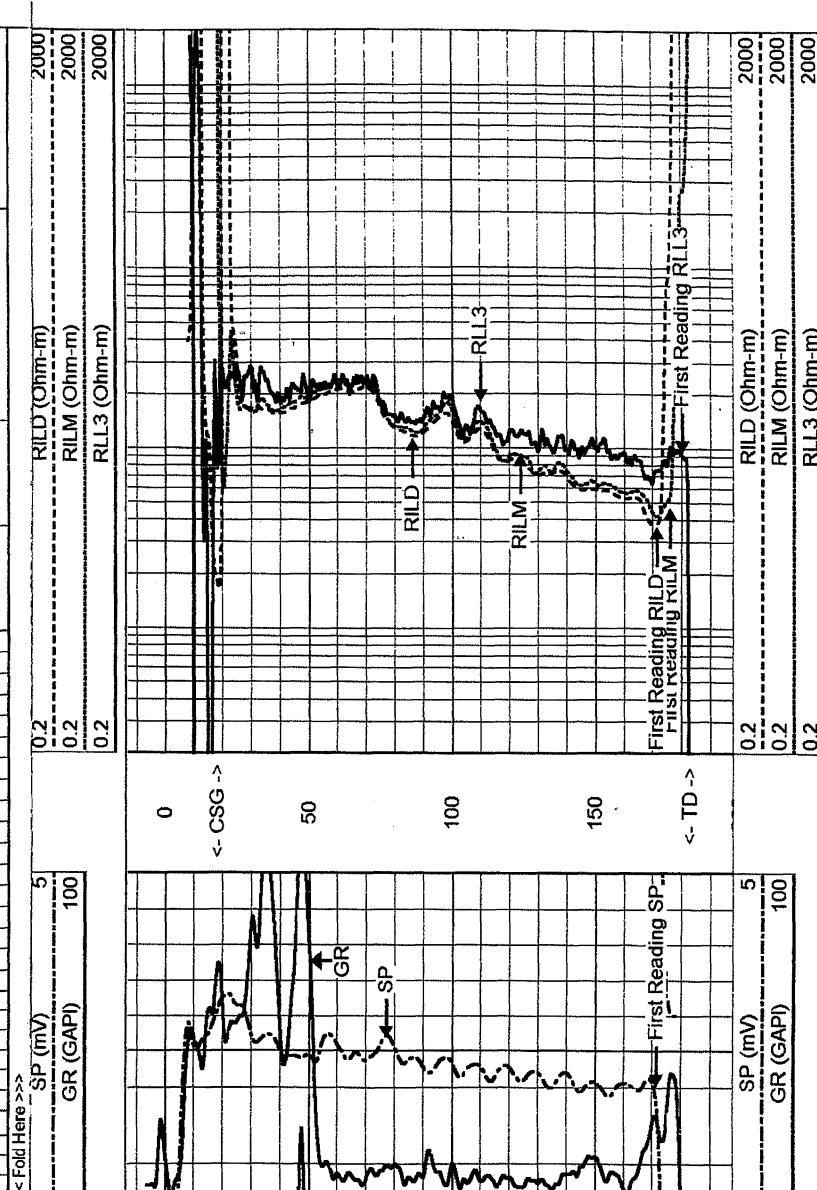
MV
Geophysical





DUAL INDUCTION LL3 / SP LOG

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0002	EAA Reservoirs Storage					
Field	Palm Beach						
County	Palm Beach						
State/Prv	Florida						
Location	CP02-EAARS-GL-0002						
File No.:	02-042						
Permanent Datum	Ground Level	Elevation					
Log Measured From	Ground Level						
Drilling Measured From	Ground Level						
Date	3-SEPT-2002						
Run Number	ONE						
Depth Driller	183'						
Depth Logger	182'						
Bottom Logged Interval	180'						
Top Log Interval	18'						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	14:30 9/3/02						
Time Logger on Bottom	15:15 9/3/02						
Equipment Number	MVGSS-1						
Location	Ft. Myers						
Recorded By	S.Miller						
Witnessed By	R.Burr (P.G.)						
Borehole Record							
Tubing Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	79'	183'				
Casing Record	Size	Wgt/Ft	Top	Bottom			
Surface String	6"	Temporary	SURFACE	18'			
Prot. String							
Production String							



MAIN PASS

MV
Geophysical

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ardaman3.db
ataset Pathname:
MAIN
resentation Format:
dli.prn



X-Y CALIPER
GAMMA RAY
LOG

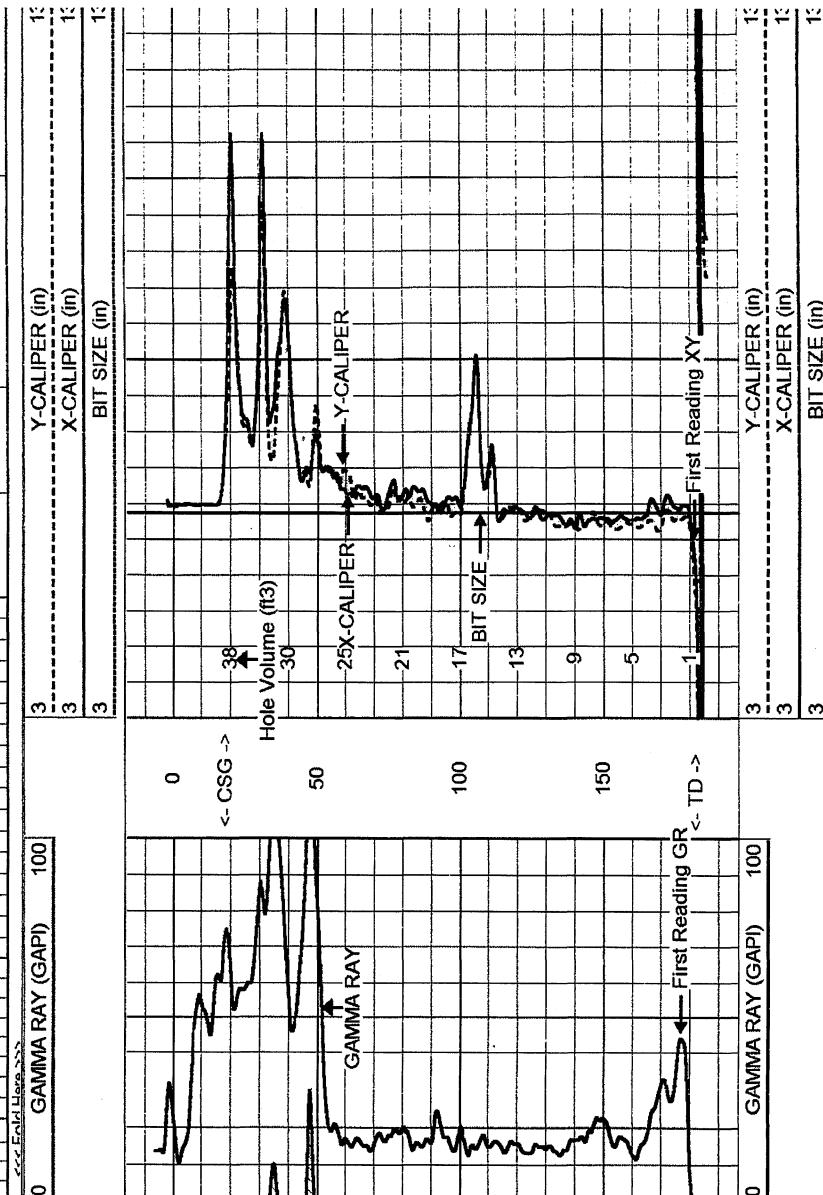
Company	Ardaman & Associates, Inc.		
Well	CP02-EAARS-GL-0002		
Field	EAA Reservoirs Storage		
County	Palm Beach	State/Prv	Florida
Location	CP02-EAARS-GL-0002		

Company Name Field County State/Prv R	File No.: 02-042			Elevation K.B. D.F. G.L.
	Permanent Datum	Ground Level	Elevation	
	Log Measured From	Ground Level		
	Drilling Measured From	Ground Level		
Date	3-SEPT-2002			
Run Number	ONE			
Depth Driller	183'			
Depth Logger	182'			
Bottom Logged Interval	182'			
Top Log Interval	SURFACE			
Open Hole Size	5.875"			
Type Fluid	MUD			
Density / Viscosity	na/na			
Max. Recorded Temp.	na			
Estimated Cement Top	na			
Time Well Ready	14:30 9/3/02			
Time Logger on Bottom	14:30 9/3/02			
Equipment Number	MVGS-1			
Location	Ft. Myers			
Recorded By	S. Miller			
Witnessed By	R.Burr (P.G.)			

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	79'	183'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	6"	Temporary	SURFACE	18'
Prot. String				
Production String				
Liner				
Invoice No.:	2002188		File No. : 02-042	* FIELD PRINT

Invoice No.: 2002188 File No.: 02-042 * FIELD PRINT



MAIN PASS

MV
Geophysical

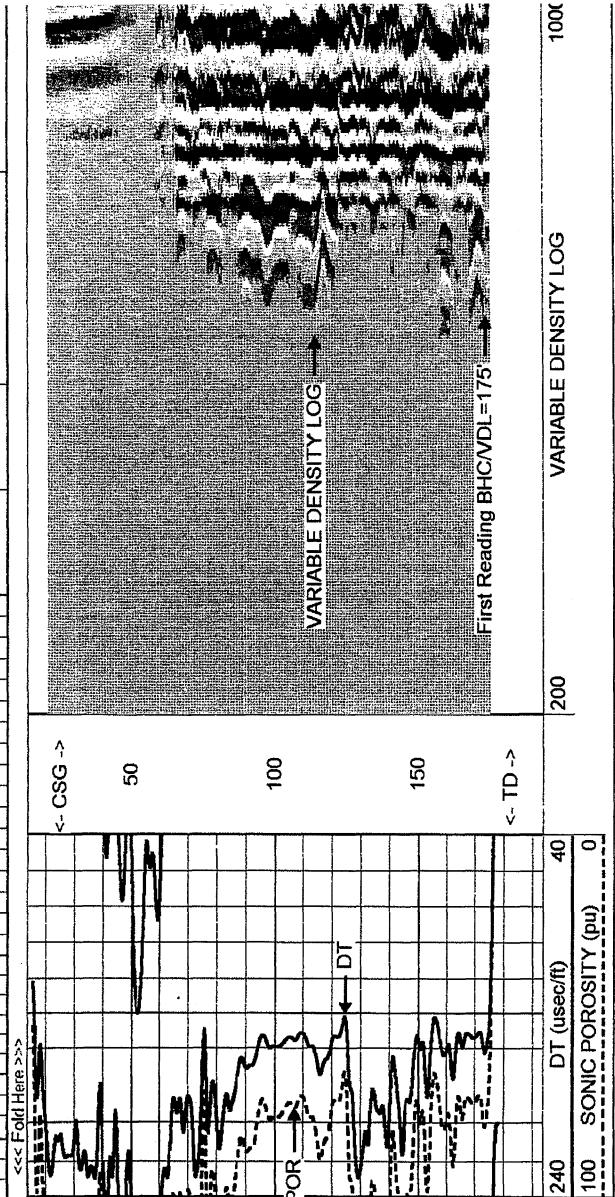
ardaman3.db
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Database File:
Dataset Pathna



BOREHOLE COMPENSATED
SONIC
w/ VARIABLE DENSITY
LOG

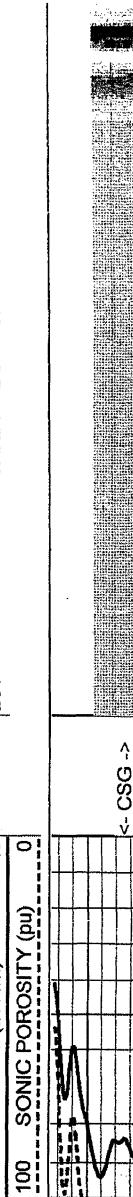
Company	Ardaman & Associates, Inc.		
Well	CP02-EAARS-GL-0003		
Field	EAA Reservoirs Storage		
County	Palm Beach State/Prv Florida		
Location	CP02-EAARS-GL-0003	Other Services	
		XY/GR DIL/SP	
File No.:	02-042	Elevation	
Permanent Datum	Ground Level	Elevation	
Log Measured From	Ground Level	K.B.	
Drilling Measured From	Ground Level	D.F.	
		G.L.	
Date	22-AUG-2002		
Run Number	ONE		
Depth Driller	183'		
Depth Logger	183'		
Bottom Logged Interval	175'		
Top Log Interval	25'		
Open Hole Size	5.875"		
Type Fluid	MUD		
Density / Viscosity	n/a		
Max. Recorded Temp.	na		
Estimated Cement Top	na		
Time Well Ready	14:30 8/22/02		
Time Logger on Bottom	16:30 8/22/02		
Equipment Number	MVGS-1		
Location	Ft. Myers		
Recorded By	S.Miller		
Witnessed By	R.Burr (P.G.)		
Borehole Record			
Tubing Record			
Run Number	Bit	From	To
ONE	5.875"	25'	183'
Casing Record			
Size	Wgt/Ft	Top	Bottom
Surface String	6"	Temporary	SURFACE
Prot. String			25'
Production String			
Iner			
Invoice No.:	2002173	File No.:	02-042 * FIELD PRINT *

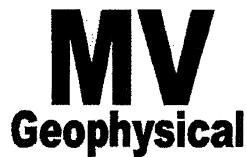


MAIN PASS

MV Geophysical

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Dataset Pathname:
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Presentation Format:
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Dataset Creation:
Thu Aug 22 15:26:06 2002
Charted by:
Depth in Feet scaled 1:240





**DUAL INDUCTION
LL3 / SP
LOG**

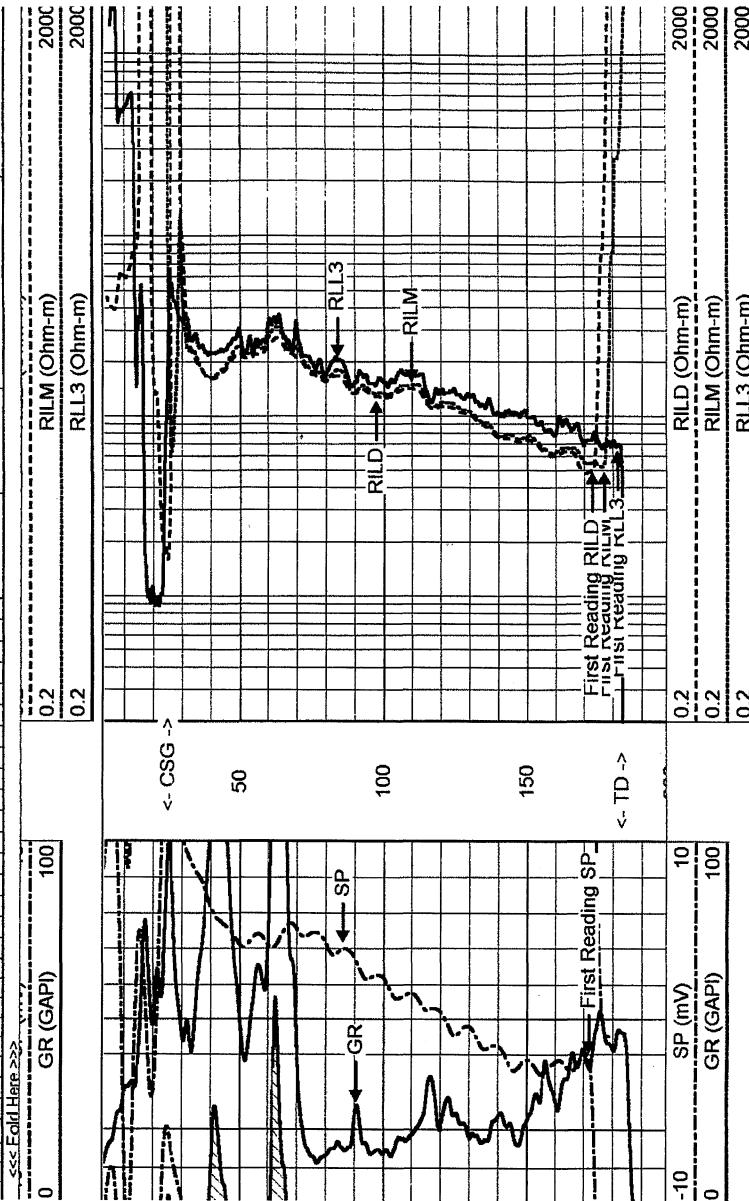
Company Ardaman & Assoc., Inc.
Well CP02-EAARS-GL-0003
Field EAA Reservoirs Storage
County Palm Beach
State/Prv Florida

Company Ardaman & Associates, Inc.
Well CP02-EAARS-GL-0003
Field EAA Reservoirs Storage
County Palm Beach State/Prv Florida

Location	CP02-EAARS-GL-0003	Other Services
		XY/GR BHC/VDL
	File No.: 02-042	Elevation
Permanent Datum	Ground Level	Elevation
Log Measured From	Ground Level	K.B.
Drilling Measured From	Ground Level	D.F.
		G.I.

Date	22-AUG-2002		
Run Number	ONE		
Depth Driller	183'		
Depth Logger	183'		
Bottom Logged Interval	181'		
Top Log Interval	25'		
Open Hole Size	5.875"		
Type Fluid	MUD		
Density / Viscosity	na/na		
Max. Recorded Temp.	na		
Estimated Cement Top	na		
Time Well Ready	14:30 8/22/02		
Time Logger on Bottom	15:30 8/22/02		
Equipment Number	MVGS-1		
Location	Ft. Myers		
Recorded By	S.Miller		
Witnessed By	R.Burn (P.G.)		

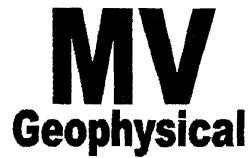
Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	6"	Temporary	SURFACE	25'
Prot. String				
Production String				
Liner				
Invoice No.:	2002173		File No.: 02-042	* FIELD PRINT *



MAIN PASS

MV Geophysical

Database File: ardaman1.db
Dataset Pathname: MAIN
Presentation Format: d1,pis
Dataset Creation: Thu Aug 22 15:26:06 2002
Charted by: Depth in Feet scaled 1:240



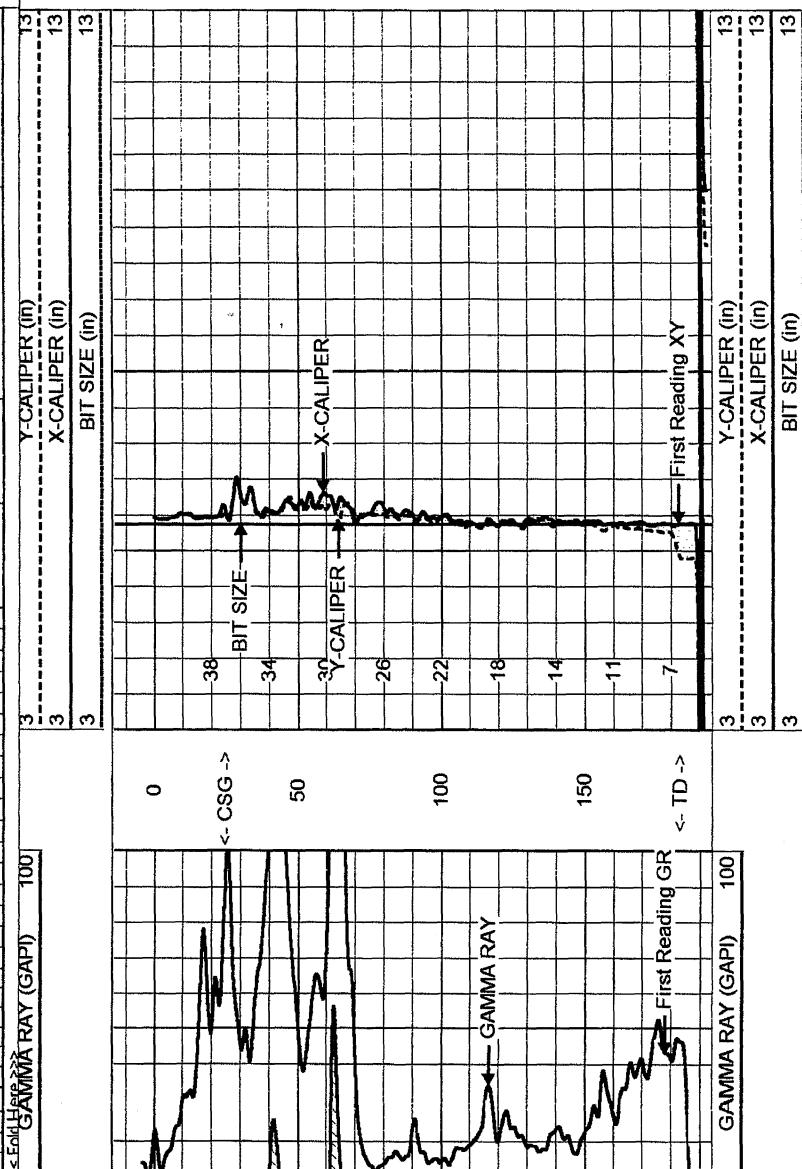
X-Y CALIPER
GAMMA RAY
LOG

Company Ardaman & Assoc., Inc.
CP02-EAARS-GL-0003
EAA Reservoirs Storage
Well Field County Palm Beach
Field State/Prv Florida

Company Ardaman & Associates, Inc.
Well CP02-EAARS-GL-0003
Field EAA Reservoirs Storage
County Palm Beach State/Prv Florida

Location	CP02-EAARS-GL-0003	Other Services
		DIL/SP BHC/VDL
	File No.: 02-042	Elevation
Permanent Datum	Ground Level	Elevation
Log Measured From	Ground Level	K.B. D.F.
Drilling Measured From	Ground Level	G.L.

Date	22-AUG-2002	
Run Number	ONE	
Depth Driller	183'	
Depth Logger	183'	
Bottom Logged Interval	182'	
Top Log Interval	SURFACE	
Open Hole Size	5.875"	
Type Fluid	MUD	
Density / Viscosity	na/na	
Max. Recorded Temp.	na	
Estimated Cement Top	na	
Time Well Ready	14:30 8/22/02	
Time Logger on Bottom	14:30 8/22/02	
Equipment Number	MVGS-1	
Location	Ft. Myers	
Recorded By	S. Miller	
Witnessed By	R. Burr (P.G.)	



Database File: ardaman1.db
Dataset Pathname: MAIN
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BOREHOLE COMPENSATED
SONIC
w/ VARIABLE DENSITY
LOG

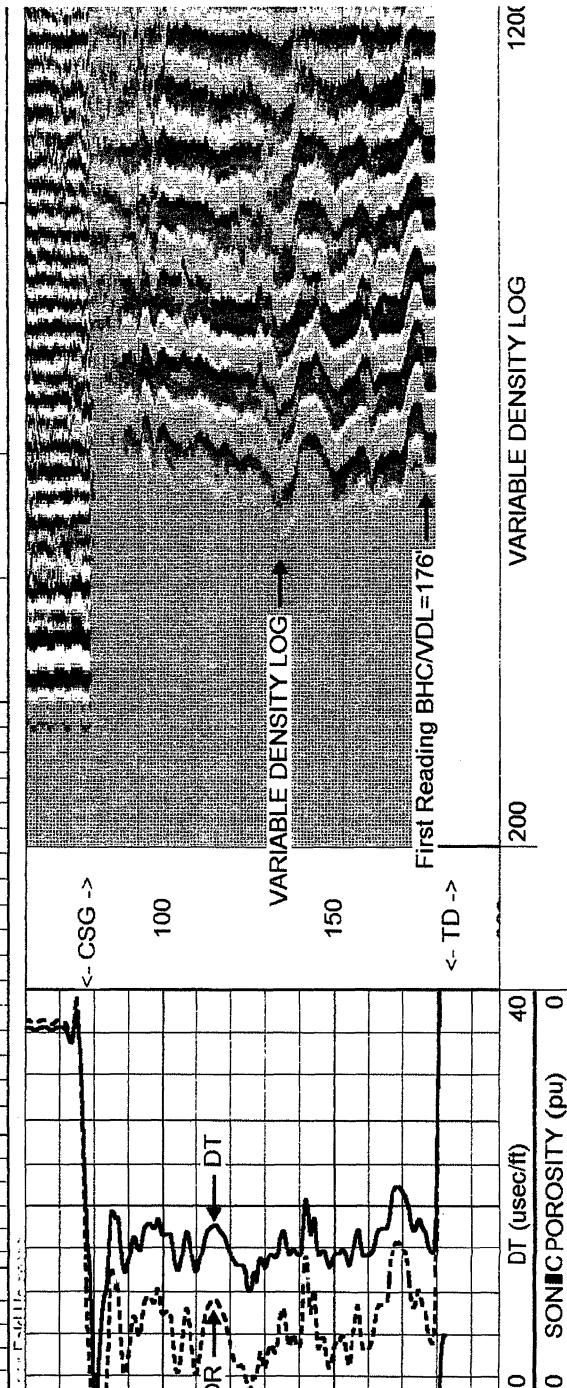
Company	Ardaman & Associates, Inc.		
Well	CP02-EAARS-GL-0004		
Field	EAA Reservoirs Storage		
County	Palm Beach	State/Prv	Florida

Location			
	CP02-EAARS-GL-0004		
	Other Services		
	XY/GR		
	DIL/SP		
File No.:	02-042		
Permanent Datum	Ground Level	Elevation	K.B.
Log Measured From	Ground Level		D.F.
Drilling Measured From	Ground Level		G.L.

Date	1-OCT-2002
Run Number	ONE
Depth Driller	184'
Depth Logger	184.5'
Bottom Logged Interval	176'
Top Log Interval	78'
Open Hole Size	5.875"
Type Fluid	MUD
Density / Viscosity	na/na
Max. Recorded Temp.	na
Estimated Cement Top	na
Time Well Ready	10:00 10/10/02
Time Logger on Bottom	11:30 10/1/02
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S. Miller
Witnessed By	R. Burr (P.G.)

Borehole Record			Tubing Record		
Run Number	Bit	From	To	Size	Weight
ONE	5.875"	78'	183'		

Casing Record		Size	Wgt/Ft	Top	Bottom
Surface String	6.125"	Temporary	SURFACE	78'	
Prot. String					
Production String					
Liner					

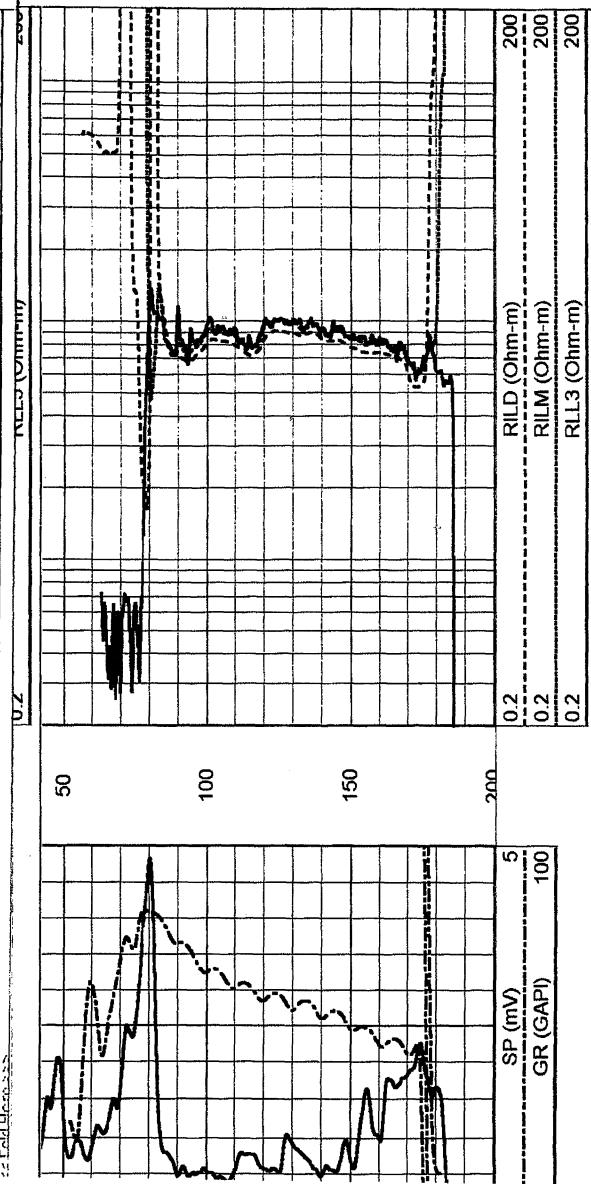


MAIN PASS



DUAL INDUCTION LL3 / SP LOG

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0004						
Field	EAA Reservoirs Storage						
County	Palm Beach						
State/Prv	Florida						
Location	CP02-EAARS-GL-0004						
File No.:	02-042						
Permanent Datum	Ground Level						
Log Measured From	Ground Level						
Drilling Measured From	Ground Level						
Date	1-OCT-2002						
Run Number	ONE						
Depth Driller	184'						
Depth Logger	184.5'						
Bottom Logged Interval	183'						
Top Log Interval	78'						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	10:00 10/1/02						
Time Logger on Bottom	11:00 10/1/02						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S. Miller						
Witnessed By	R. Burr (P.G.)						
Borehole Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	78'	183'				
Casing Record	Size	Wgt/Ft	Top	Bottom			
Surface String	6.125"	Temporary	SURFACE	78'			
Prot. String							
Production String							



MAIN PASS

**MV
Geophysical**

Database File: ardaman6.db

Dataset Pathname: MAIN

Presentation Format: dli-50.prz

Dataset Creation: Tue Oct 01 10:49:02 2002

Charted by: Depth in Feet scaled 1:240

SP (mV) 5 0.2

GR (GAPI) 100 0.2

RIID (Ohm-m) 200 0.2

RIM (Ohm-m) 200 0.2

RL3 (Ohm-m) 200 0.2

200

100

0

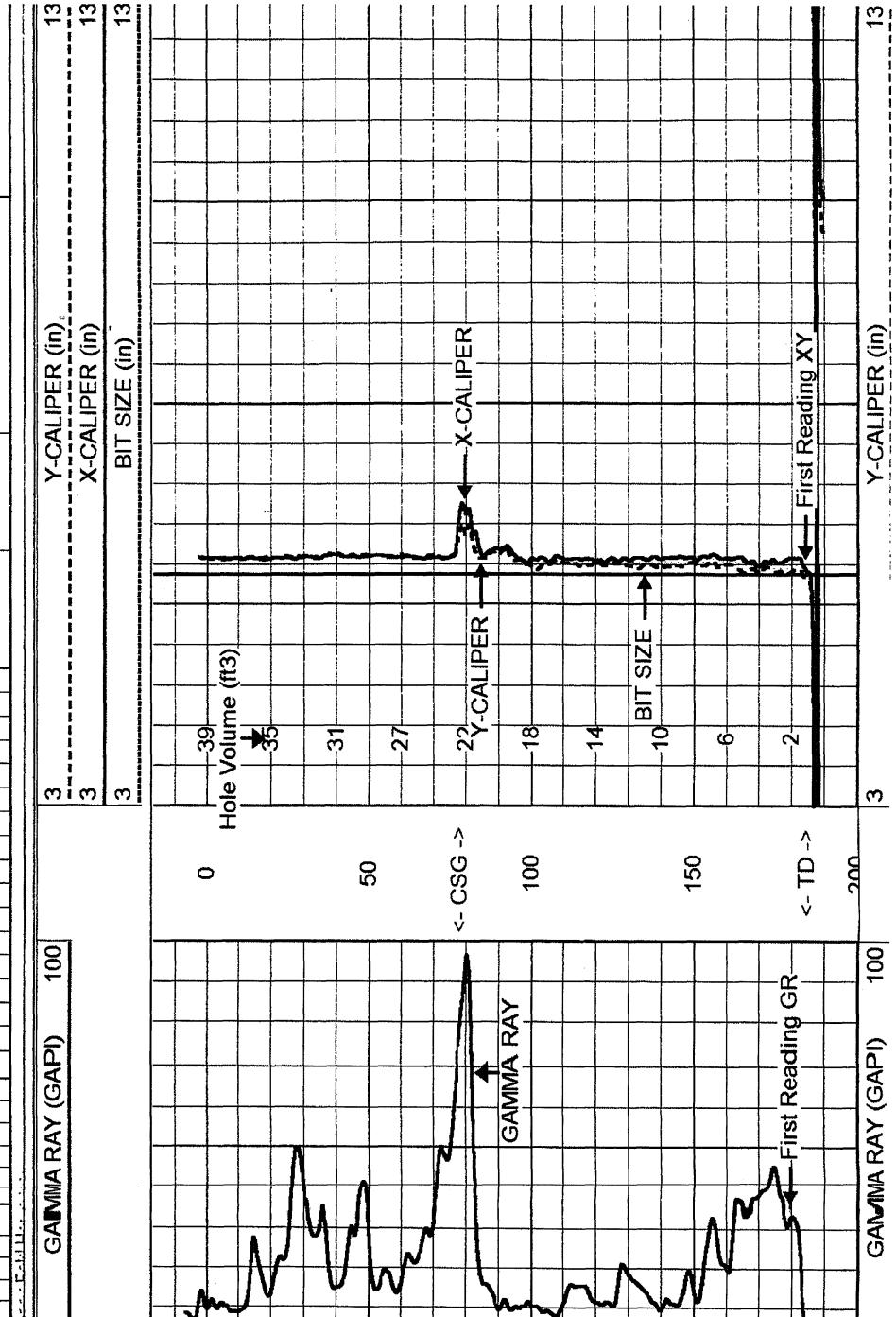
**X-Y CALIPER
GAMMA RAY
LOG**

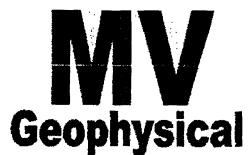
Company	Ardaman & Associates, Inc.
Well	CP02-EAARS-GL-0004
Field	EAA Reservoirs Storage
County	Palm Beach
State/Pv Florida	Palm Beach State/Prv Florida
Location	CP02-EAARS-GL-0004
	File No.: 02-042
Permanent Datum	Ground Level
Log Measured From	Ground Level
Drilling Measured From	Ground Level
	Other Services DIL/SP BHC/VDL
	Elevation K.B. D.F. G.L.

Date	1-OCT-2002
Run Number	ONE
Depth Driller	184'
Depth Logger	184.5'
Bottom Logged Interval	184'
Top Log Interval	SURFACE
Open Hole Size	5.875"
Type Fluid	MUD
Density / Viscosity	na/na
Max. Recorded Temp.	na
Estimated Cement Top	na
Time Well Ready	10:00 10/1/02
Time Logger on Bottom	10:00 10/1/02
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S. Miller
Witnessed By	R. Burr (P.G.)

Run Number	Borehole Record			Tubing Record			
	Bit	From	To	Size	Weight	From	To
ONE	5.875"	78'	183'				

Casing Record	Size	Wgt/ft	Top	Bottom
Surface String	6.125"	Temporary	SURFACE	78'
Prot. String				
Production String				
liner				





BOREHOLE COMPENSATED
SONIC
w/ VARIABLE DENSITY
LOG

Company Ardaman & Assoc., Inc.
Well CP02-EAARS-GL-0005
Field EAA Reservoirs Storage
County Palm Beach
State/Prv Florida

Company Ardaman & Associates, Inc.
Well CP02-EAARS-GL-0005
Field EAA Reservoirs Storage
County Palm Beach State/Prv Florida

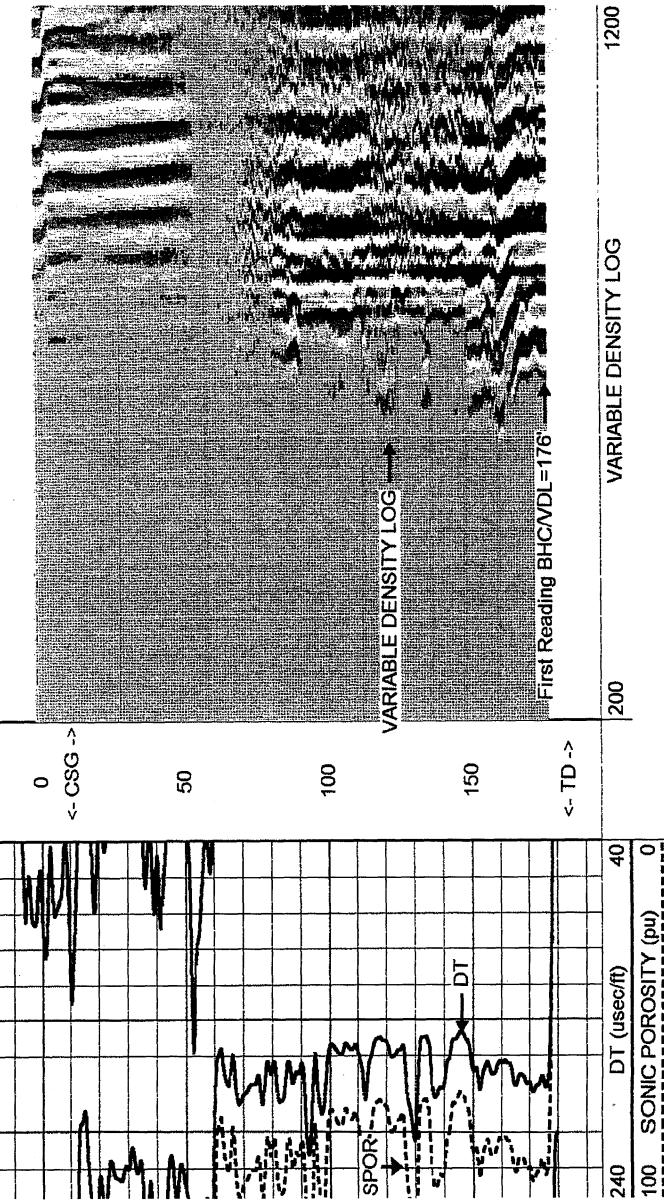
Location	CP02-EAARS-GL-0005	Other Services
		XY/GR DIL/SP
File No.:	02-042	Elevation
Permanent Datum	Ground Level	K.B.
Log Measured From	Ground Level	D.F.
Drilling Measured From	Ground Level	G.L.

Date	11-SEPT-2002		
Run Number	ONE		
Depth Driller	183'		
Depth Logger	184'		
Bottom Logged Interval	176'		
Top Log Interval	10'		
Open Hole Size	5.875"		
Type Fluid	MUD		
Density / Viscosity	na/na		
Max. Recorded Temp.	na		
Estimated Cement Top	na		
Time Well Ready	09:00 9/11/02		
Time Logger on Bottom	10:00 9/11/02		
Equipment Number	MVGS-1		
Location	Ft. Myers		
Recorded By	S.Miller		
Witnessed By	R.Burr (P.G.)	M.Switanek (Corp)	

Borehole Record			Tubing Record		
Run Number	Bit	From	To	Size	Weight
ONE	5.875"	10"	183'		

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	6"	Temporary	SURFACE	10"
Prot. String				
Production String				
Liner				

Invoice No.: 2002193 File No.: 02-042 * FIELD PRINT *



MAIN PASS

MV Geophysical

Database File: ardama4.db
Dataset Pathname: MAIN
Presentation Format: son_vdl.prn
Dataset Creation: Wed Sep 11 09:20:06 2002
Charted by: Depth in Feet scaled 1:240

240 DT (usec/ft) 40
100 SONIC POROSITY (μ) 0
240 DT (usec/ft) 40
100 VARIABLE DENSITY LOG n
240 DT (usec/ft) 40
100 VARIABLE DENSITY LOG 200
1200 VARIABLE DENSITY LOG 1200

DUAL INDUCTION LL3 / SP LOG

Company	Ardaman & Associates, Inc.
Well	CP02-EAARS-GL-0005
Field	EAA Reservoirs Storage
County	Palm Beach
State/Prv	Florida
Location	CP02-EAARS-GL-0005
	File No.: 02-042
Permanent Datum	Ground Level
Log Measured From	Ground Level
Drilling Measured From	Ground Level
Other Services	XY/GR BHC/VDL
Elevation	K.B. D.F. G.L.

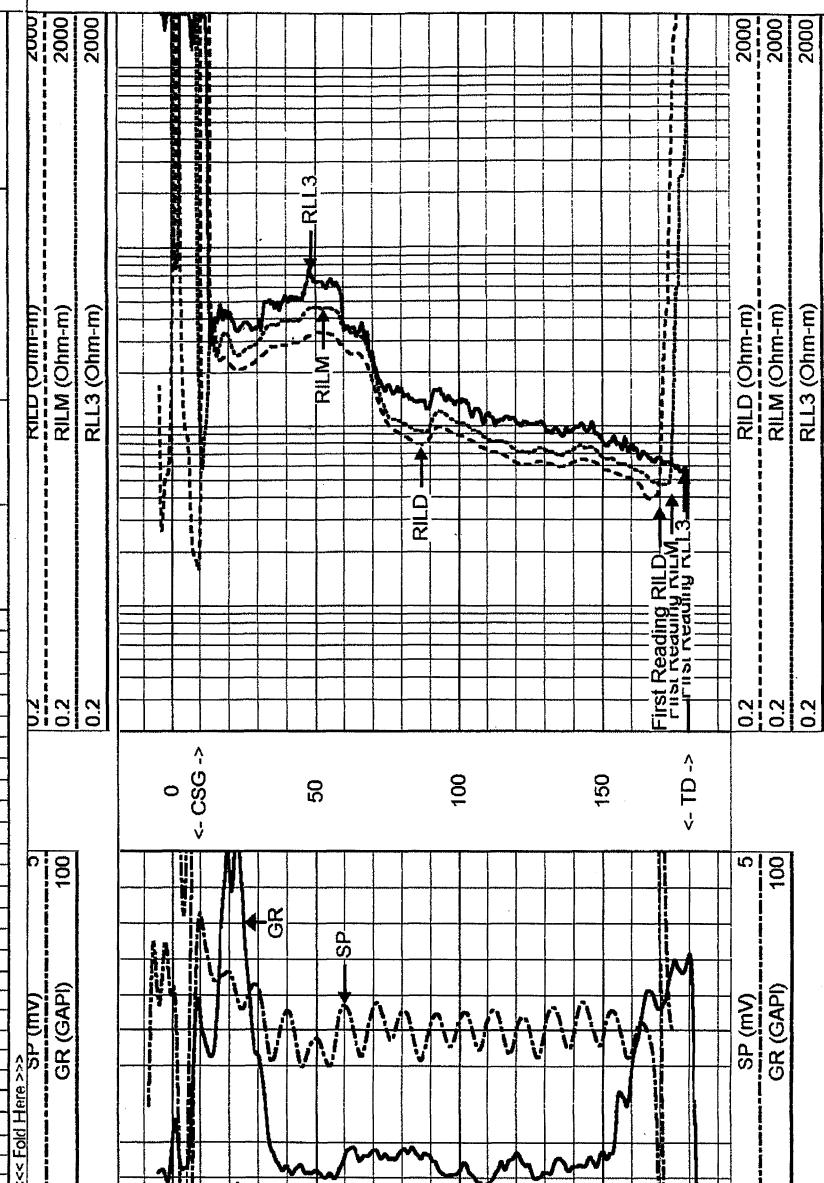
Date	11-SEPT-2002
Run Number	ONE
Depth Driller	183'
Depth Logger	180'
Bottom Logged Interval	178'
Top Log Interval	10'
Open Hole Size	5.875"
Type Fluid	MUD
Density / Viscosity	na/na
Max. Recorded Temp.	na
Estimated Cement Top	na
Time Well Ready	09:00 9/11/02
Time Logger on Bottom	09:30 9/11/02
Equipment Number	MVG-S-1
Location	Ft. Myers
Recorded By	S.Miller
Witnessed By	R.Burr (P.G.) M.Switanek (Corp)

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	10'	183'				

<< Fold Here >>

SP (mV)	5
GR (GAP)	100

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	6"	Temporary	SURFACE	10'
Prot. String				
Production String				
liner				



MAIN PASS

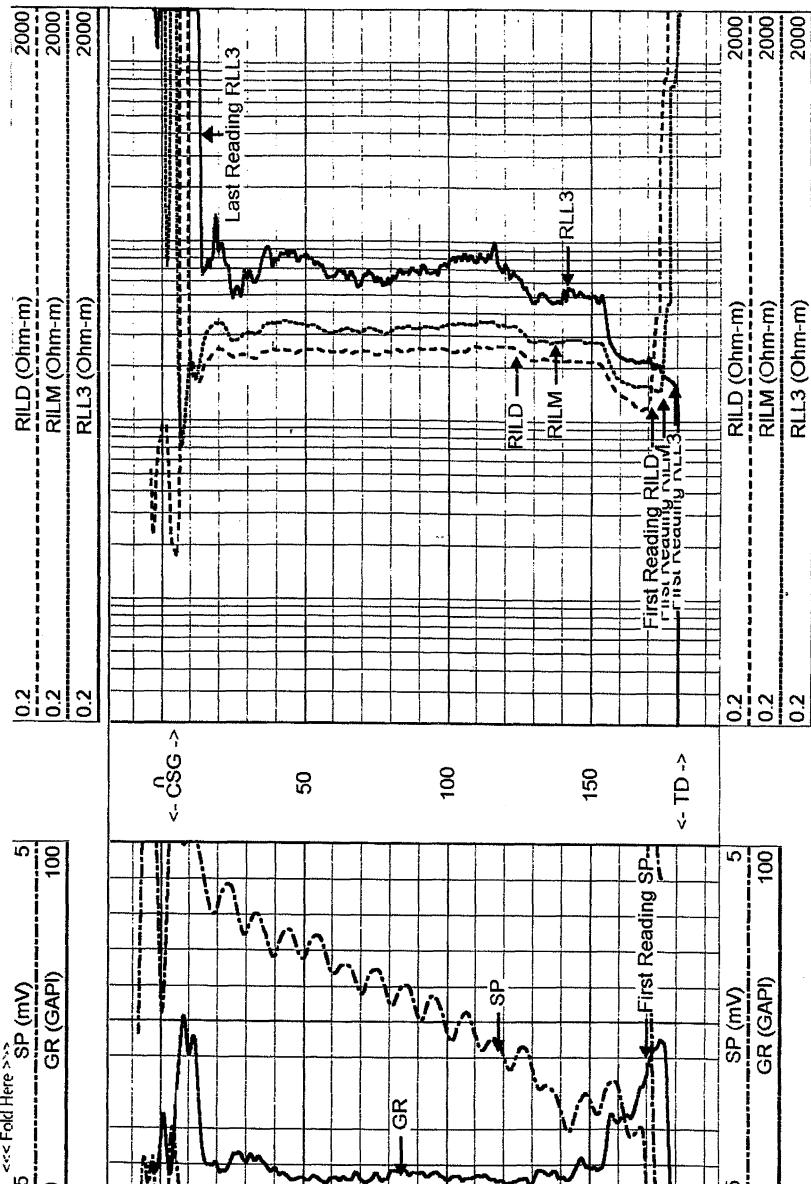
MV

Geophysical

Database File: ardaman4.cdb
Dataset Pathname: MAIN
Presentation Format: dili.xls

DUAL INDUCTION
LL3 / SP
LOG

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0006	EAA Reservoirs Storage					
Field	Palm Beach	EAA Reservoirs Storage					
County	Palm Beach	State/Prv Florida					
Location	CP02-EAARS-GL-0006	Other Services					
		XY/GR BHC/VDL					
Permanent Datum	Ground Level	Elevation					
Log Measured From	Ground Level	K.B.					
Drilling Measured From	Ground Level	D.F. G.L.					
Date	11-SEPT-2002						
Run Number	ONE						
Depth Driller	181'						
Depth Logger	181'						
Bottom Logged Interval	179'						
Top Log Interval	5'						
Open Hole Size	5.5"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	13:45 9/11/02						
Time Logger on Bottom	14:15 9/11/02						
Equipment Number	MVGGS-1						
Location	Fl. Myers						
Recorded By	S. Miller						
Witnessed By	R.Burr (P.G.)						
Borehole Record							
Tubing Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.5"	5'	183'				
Casing Record	Size	Wgt/Ft	Top	Bottom			
Surface String	6"	Temporary	SURFACE	5'			
Prot. String							
Production String							
Liner							
Invoice No.	20002104		File No.	02-042	* FIELD PRINT *		



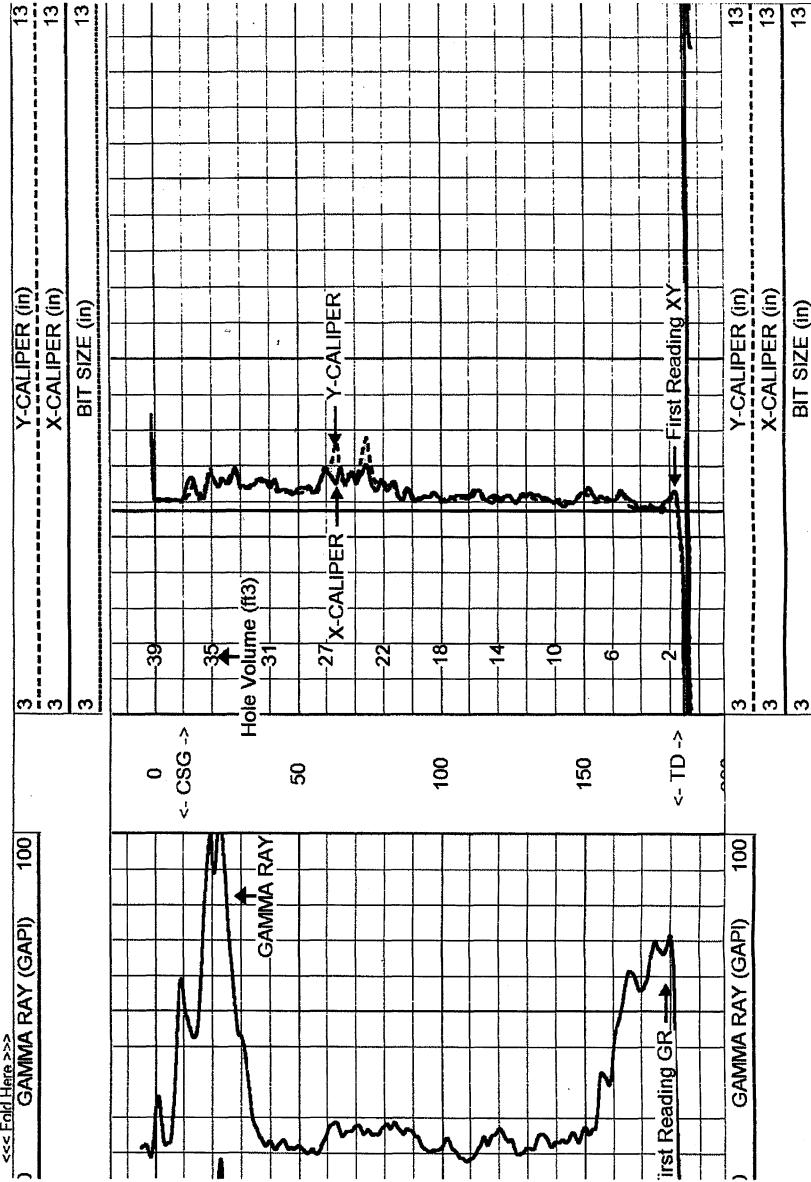
MAIN PASS

MV
Geophysical

Database File: ardaman5.db
Dataset Pathname: MAIN
Presentation Format: dl.brs

**X-Y CALIPER
GAMMA RAY
LOG**

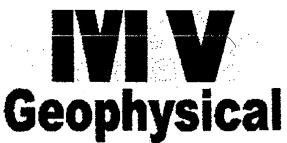
Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0005						
Field	EAA Reservoirs Storage						
County	Palm Beach	State/Prv Florida					
Location	CP02-EAARS-GL-0005						
	File No.: 02-042						
Permanent Datum	Ground Level	Elevation					
Log Measured From	Ground Level	K.B. D.F. G.L.					
Drilling Measured From	Ground Level						
Date	11-SEPT-2002						
Run Number	ONE						
Depth Driller	183'						
Depth Logger	184'						
Bottom Logged Interval	183'						
Top Log Interval	SURFACE						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	09:00 9/11/02						
Time Logger on Bottom	09:00 9/11/02						
Equipment Number	MVG-1						
Location	Ft. Myers						
Recorded By	S. Miller						
Witnessed By	R. Burr (P.G.)	M. Switanek (Corp)					
Borehole Record							
Tubing Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	10'	183'				
Casing Record			Size	Wgt/Ft	Top	Bottom	
Surface String	6"	Temporary	SURFACE		10'		
Prot. String							
Production String							
Liner							
Invoice No.	2000103		File No. 02-042		* FILE IN PRINT *		



MAIN PASS

MV
Geophysical

Database File: ardamain4.db
Dataset Pathname: MAIN
Printed Date: 2012-5-24



SONIC
w/ VARIABLE DENSITY
LOG

Company Ardaman & Assoc., Inc.
Well CP02-EAARS-GL-0006
Field EAA Reservoirs Storage
County Palm Beach
State/Prv Florida

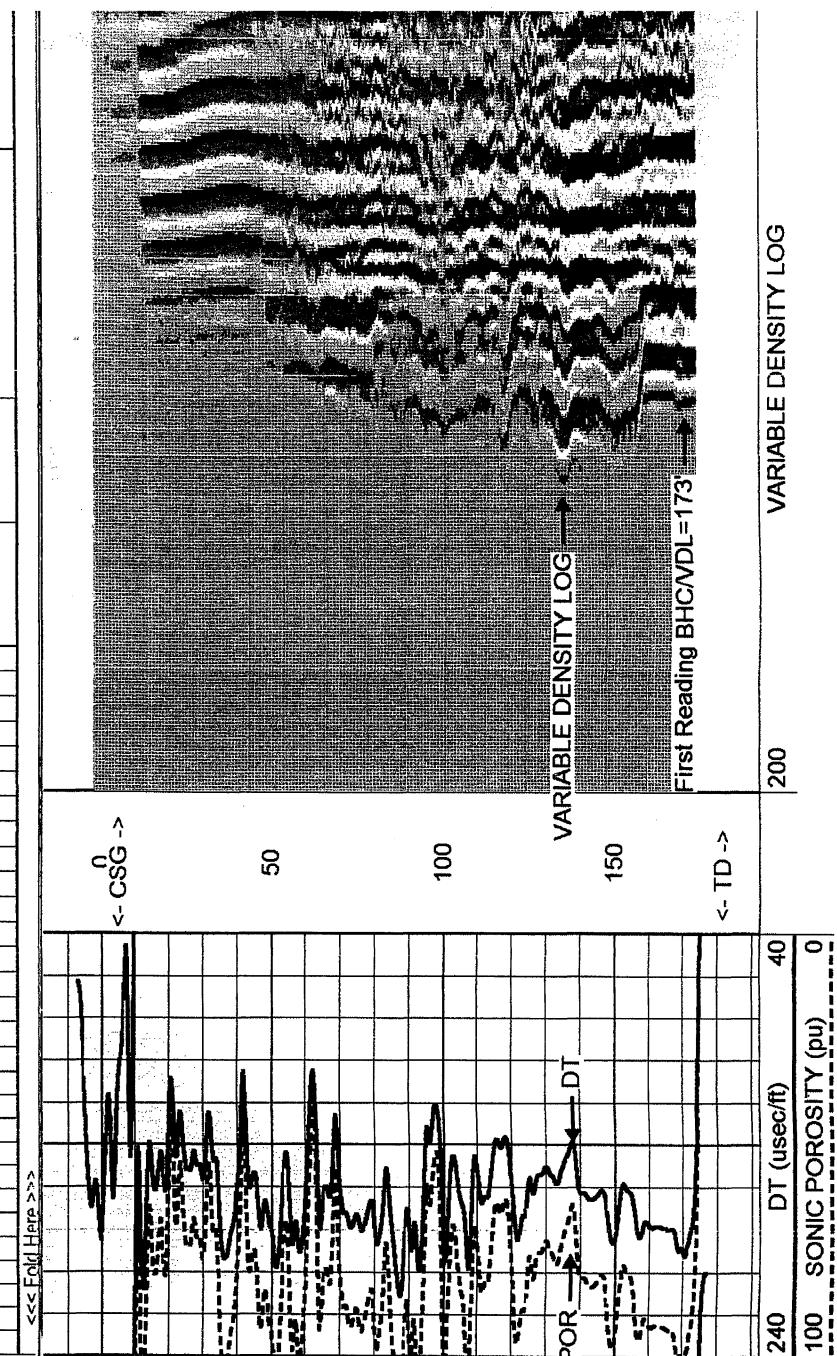
Company Ardaman & Associates, Inc.
Well CP02-EAARS-GL-0006
Field EAA Reservoirs Storage
County Palm Beach State/Prv Florida

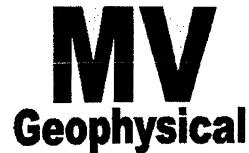
Location CP02-EAARS-GL-0006 Other Services
File No.: 02-042 XY/GR
Drillers DIL/LL3
Permanent Datum Ground Level Elevation
Log Measured From Ground Level K.B.
Drilling Measured From Ground Level D.F.
G.L.

Date 11-SEPT-2002
Run Number ONE
Depth Driller 181'
Depth Logger 181'
Bottom Logged Interval 179'
Top Log Interval 5'
Open Hole Size 5.5"
Type Fluid MUD
Density / Viscosity na/na
Max. Recorded Temp. na
Estimated Cement Top na
Time Well Ready 13:45 9/11/02
Time Logger on Bottom 15:00 9/11/02
Equipment Number MVGS-1
Location Ft. Myers
Recorded By S. Miller
Witnessed By R. Burr (P.G.)

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.5"	5'	183'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	6"	Temporary	SURFACE	5'
Prot. String				
Production String				
Liner				
Invoice No.:	2002194		File No.: 02-042	* FIELD PRINT *





**X-Y CALIPER
GAMMA RAY
LOG**

Company Ardaman & Assoc., Inc.
CP02-EAARS-GL-0006
EAA Reservoirs Storage
Well Field
County Palm Beach
State/Prv Florida

Company Ardaman & Associates, Inc.
Well CP02-EAARS-GL-0006
Field EAA Reservoirs Storage
County Palm Beach State/Prv Florida

Location	CP02-EAARS-GL-0006	Other Services
	File No.: 02-042	DIL/SP BHC/VDL
Permanent Datum	Ground Level	Elevation

Date	11-SEPT-2002		
Run Number	ONE		
Depth Driller	181'		
Depth Logger	181'		
Bottom Logged Interval	180'		
Top Log Interval	SURFACE		
Open Hole Size	5.5"		
Type Fluid	MUD		
Density / Viscosity	na/na		
Max. Recorded Temp.	na		
Estimated Cement Top	na		
Time Well Ready	13:45 9/11/02		
Time Logger on Bottom	13:45 9/11/02		
Equipment Number	MVGS-1		
Location	Ft. Myers		
Recorded By	S. Miller		
Witnessed By	R. Burr (P.G.)		

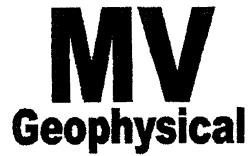
Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.5"	5'	183'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	6"	Temporary	SURFACE	5'
Prot. String				
Production String				
inner				
Service No.	0000164		F1 - N - 00-043	FIELD PRINT

MAIN PASS

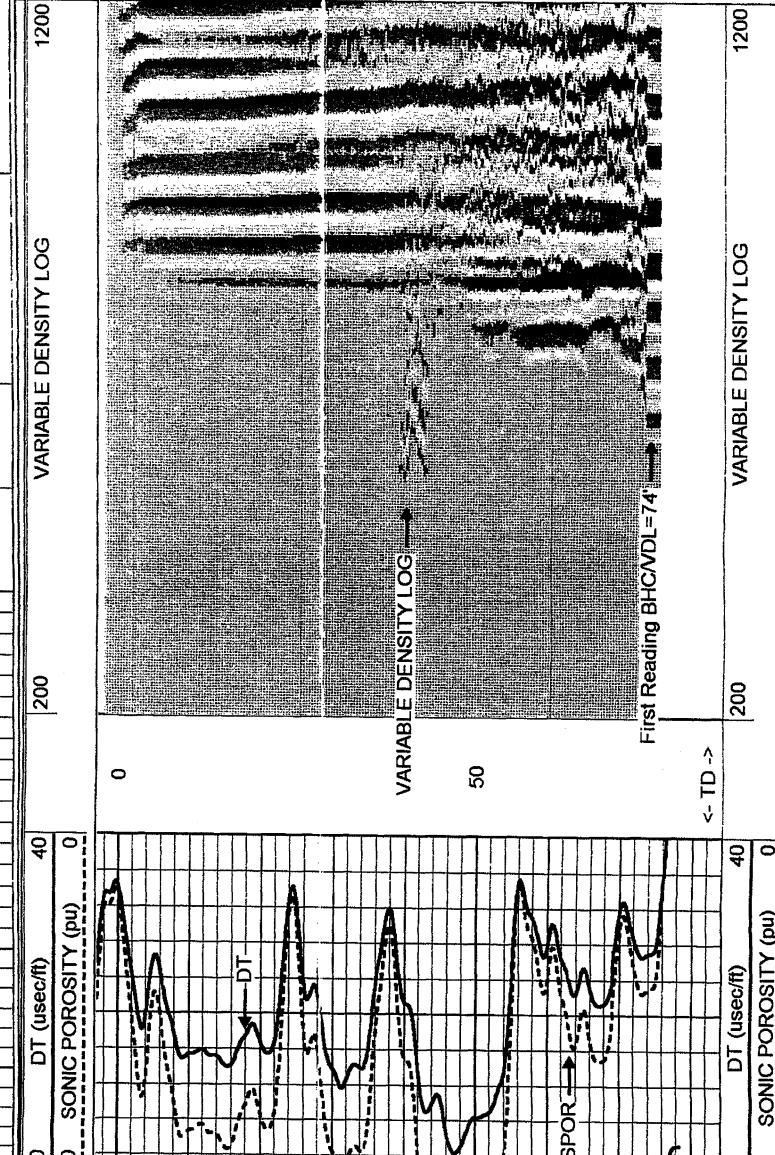
MV
Geophysical

Database File: ardaman5.db
Dataset Pathname: MAIN



**BOREHOLE COMPENSATED
SONIC
w/ VARIABLE DENSITY
LOG**

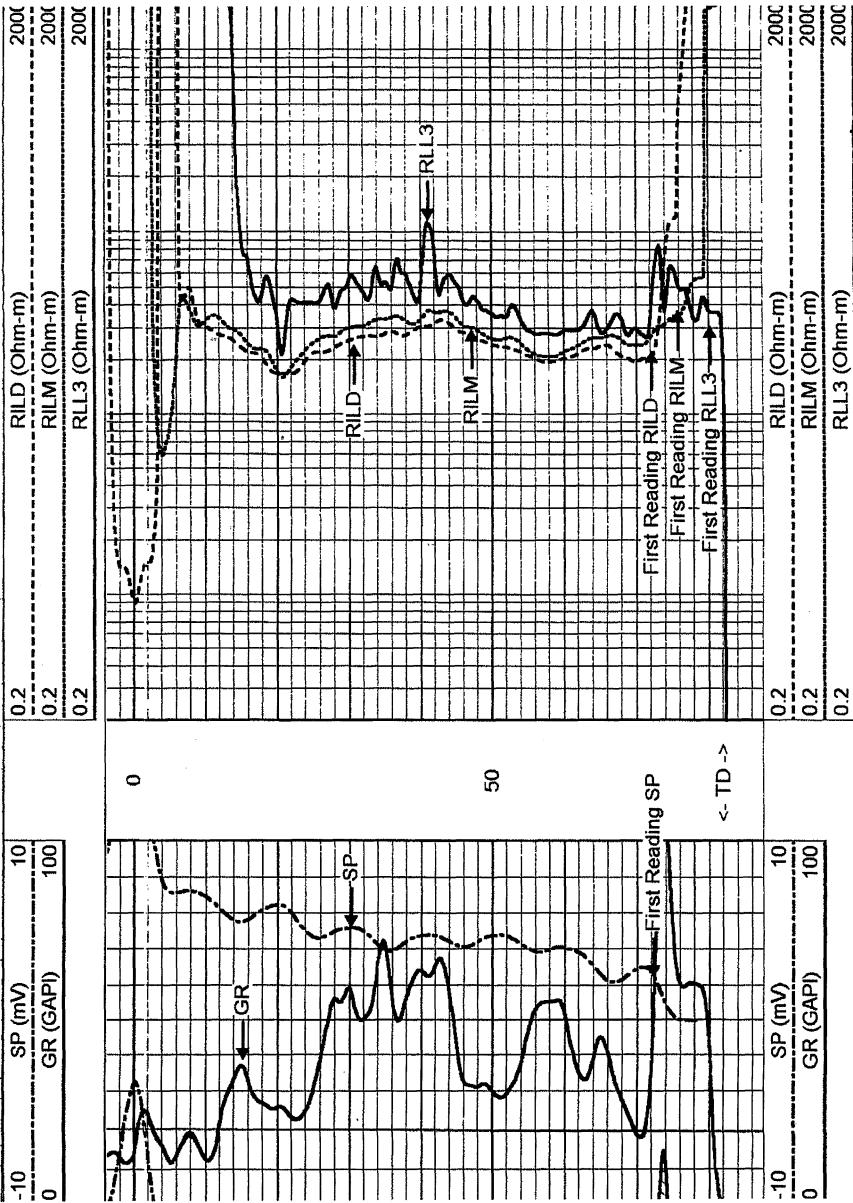
Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0007						
Field	EAA Reservoirs Storage						
County	Palm Beach			State/Prv Florida			
Location	CP02-EAARS-GL-0007						
	File No.: 02-042						
Permanent Datum	Ground Level			Elevation			
Log Measured From	Ground Level						
Drilling Measured From	Ground Level						
Date	10-APR-2003						
Run Number	ONE						
Depth Driller	82'						
Depth Logger	82'						
Bottom Logged Interval	74'						
Top Log Interval	SURFACE						
Open Hole Size	5.5"						
Drill Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Line Well Ready	ROA 4/10/03						
Line Logger on Bottom	13:30 4/10/03						
Equipment Number	MVGS-1						
Cation	Ft. Myers						
Recorded By	S. Miller						
Dressed By	R.Burr (P.G.)						
Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.5"	SURFACE	82'				
Sing Record	Size		Wgt/lft		Top		Bottom
Face String	NA						
Int. String							
Induction String							
er							



atabase File: ardama13.db
taset Pathname: MAN
esentation Format: son_vdl.prs
taset Creation: Thu Apr 10 14:35:37 2003
reated by: Depth in Feet scaled 1:120

DUAL INDUCTION LL3 / SP LOG

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0007						
Field	EAA Reservoirs Storage						
County	Palm Beach	State/Prv Florida					
Location	CP02-EAARS-GL-0007						
	Other Services	BHC/VDL XY/GR					
File No.: 02-042							
Permanent Datum	Ground Level	Elevation					
Log Measured From	Ground Level	K.B. D.F.					
Drilling Measured From	Ground Level	G.L.					
Date	10-APR-2003						
Run Number	ONE						
Depth Driller	82'						
Depth Logger	82'						
Bottom Logged Interval	80'						
Top Log Interval	SURFACE						
Open Hole Size	5.5"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	ROA 4/10/03						
Time Logger on Bottom	14:00 4/10/03						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S.Miller						
Witnessed By	R.Burr (P.G.)						
Borehole Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.5"	SURFACE	82'				
Tubing Record							
Run Number	SP (mV)	GR (GAP)					
ONE	-10	0					
Casing Record	Size	Wgt/Ft	Top	Bottom			
Surface String	NA						
Prot. String							
Production String							
Liner							
Invoice No.:	2003086		File No.: 02-042	* FIELD PRINT *			



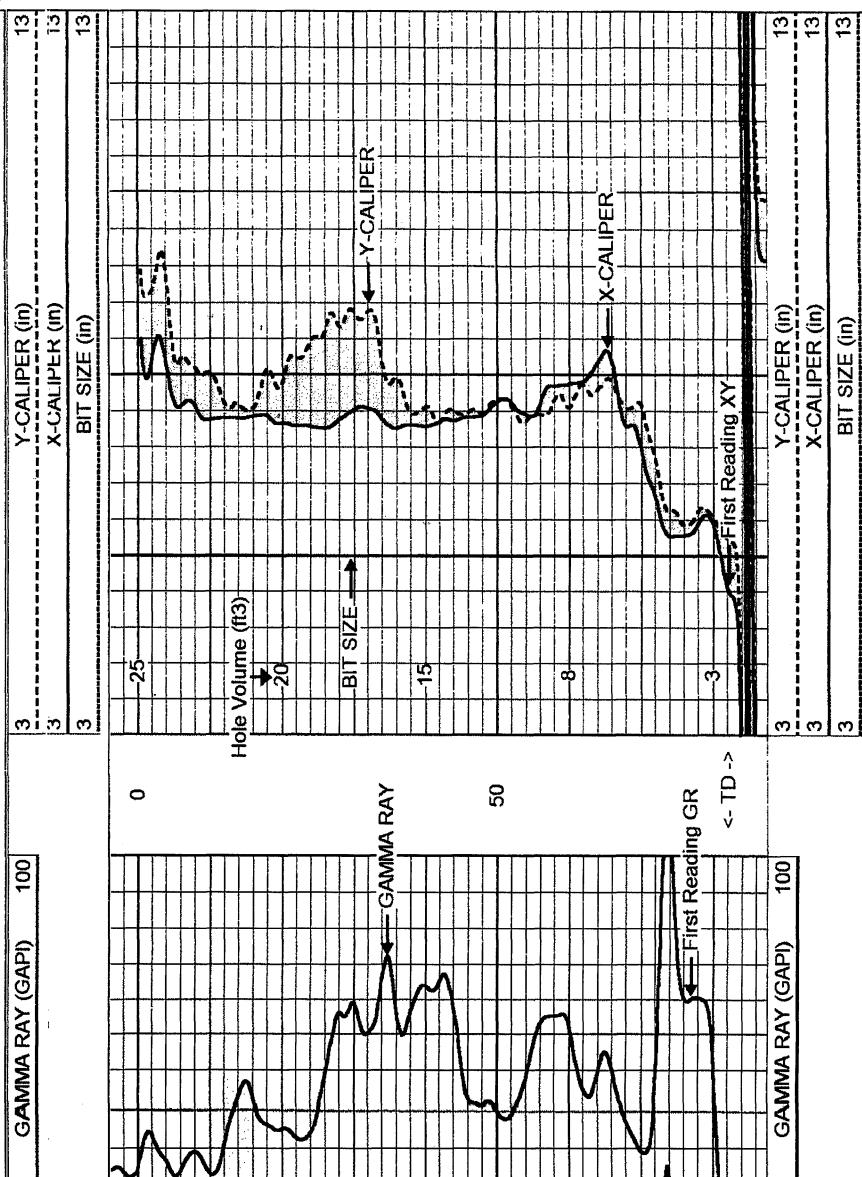
MAIN PASS

MV



X-Y CALIPER GAMMA RAY LOG

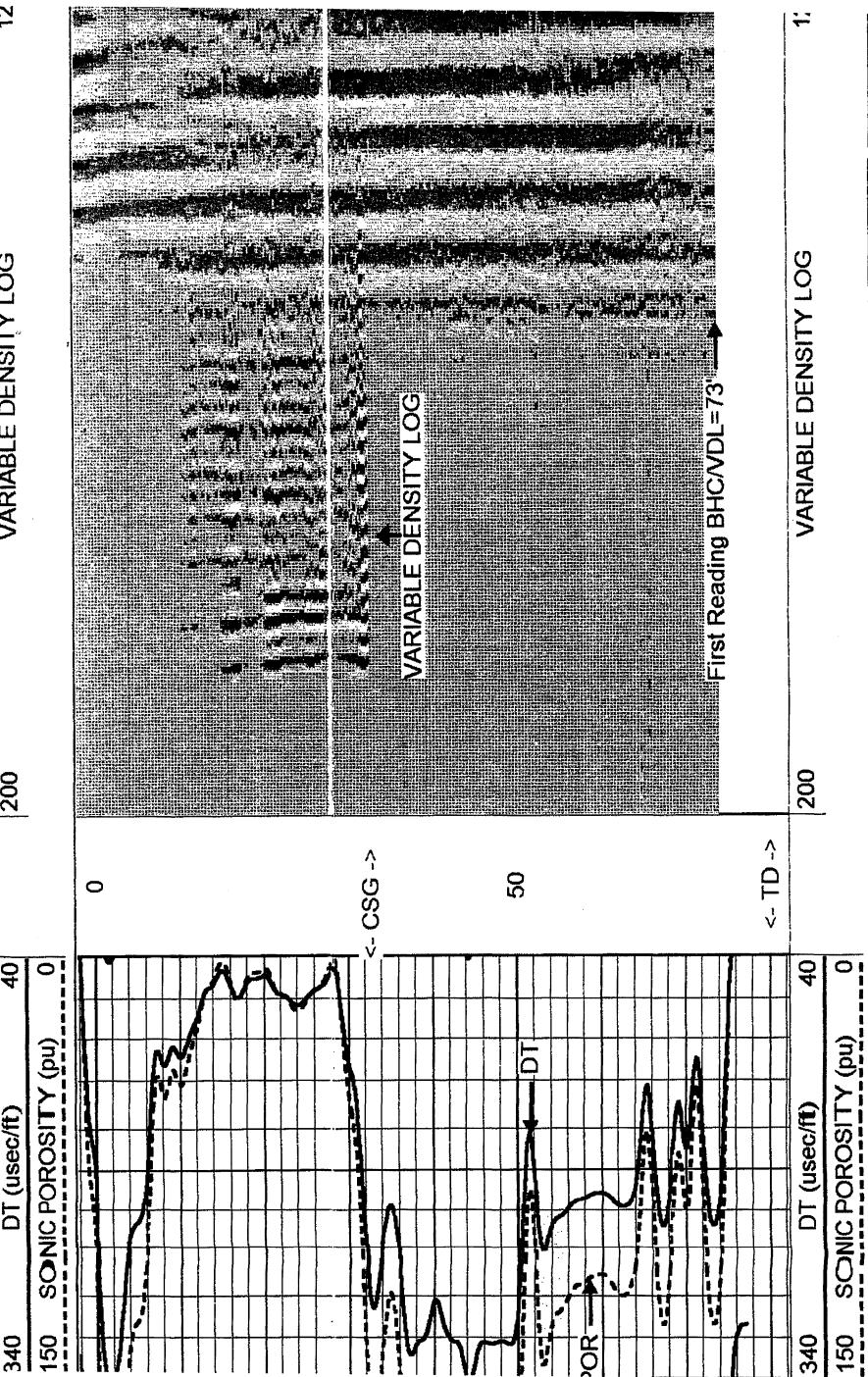
Company	Ardaman & Associates, Inc.		
Well	CP02-EAARS-GL-0007		
Field	EAA Reservoirs Storage		
County	Palm Beach		
State/Prv	Florida		
Location	CP02-EAARS-GL-0007		
File No.: 02-042			
Permanent Datum		Ground Level	Elevation
Log Measured From		Ground Level	
Drilling Measured From		Ground Level	
Date	10-APR-2003		
Run Number	ONE		
Depth Driller	82'		
Depth Logger	82'		
Bottom Logged Interval	82'		
Top Log Interval	SURFACE		
Open Hole Size	5.5"		
Type Fluid	MUD		
Density / Viscosity	na/na		
Max. Recorded Temp.	na		
Estimated Cement Top	na		
Time Well Ready	ROA 4/10/03		
Time Logger on Bottom	14:30 4/10/03		
Equipment Number	MVGS-1		
Location	Pt. Myers		
Recorded By	S. Miller		
Witnessed By	R. Burr (P.G.)		
Borehole Record			
Tubing Record			
Run Number	Bit	From	To
ONE	5.5"	SURFACE	82'
Casing Record			
Size		Wgt/Ft	Top
Surface String		NA	
Prot. String			
Production String			



MV
Geophysical

**DURENOL COMPENSATED
SONIC
w/ VARIABLE DENSITY
LOG**

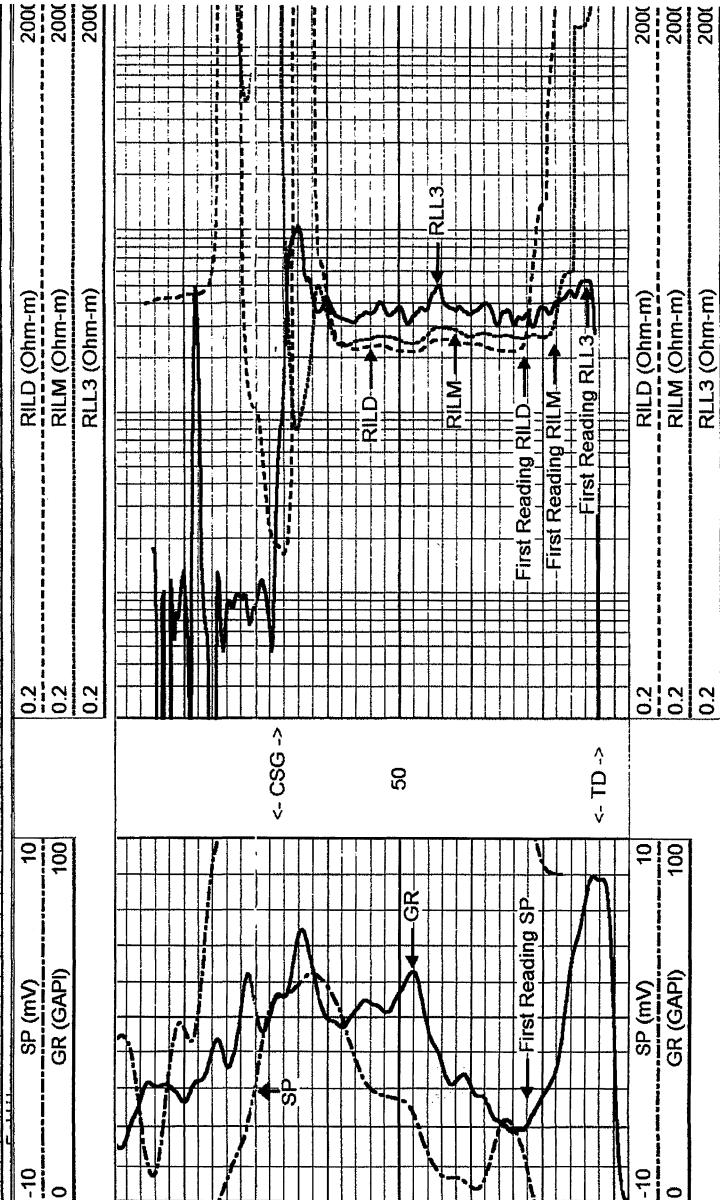
Company Well Field County State/Prv	Ardaaman & Associates, Inc.						
	CP02-EAARS-GL-0008	Well	CP02-EAARS-GL-0008				
	EA Reservoirs Storage	Field	EAA Reservoirs Storage				
	Palm Beach	County	Palm Beach	State/Prv	Florida		
Location				Other Services			
CP02-EAARS-GL-0008				XY/GR DIL/SP			
File No.: 02-042				Elevation			
Permanent Datum	Ground Level	Elevation		K.B.			
Log Measured From	Ground Level			D.F.			
Drilling Measured From	Ground Level			G.L.			
Date	10-APR-2003						
Run Number	ONE						
Depth Driller	82'						
Depth Logger	82'						
Bottom Logged Interval	74'						
Top Log Interval	SURFACE						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	11:15 4/10/03						
Time Logger on Bottom	11:15 4/10/03						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S.Miller						
Witnessed By	R.Burr (P.G.)						
Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	33'	82'				
Casing Record		Size	Wgt/Ft	Top	Bottom		
Surface String		6.125"	Temporary	SURFACE	33'		
Prot. String							
Production String							
Liner							





**DUAL INDUCTION
LL3 / SP
LOG**

Company	Ardaman & Associates, Inc.		
Well	CP02-EAARS-GL-0008		
Field	EAA Reservoirs Storage		
County	Palm Beach	State/Prv	Florida
Location	CP02-EAARS-GL-0008		Other Services BHC/VDL XY/GR
		File No.: 02-042	Elevation K.B. D.F. G.L.
Permanent Datum	Ground Level	Elevation	
Log Measured From	Ground Level		
Drilling Measured From	Ground Level		
Date	10-APR-2003		
Run Number	ONE		
Depth Driller	82'		
Depth Logger	78'		
Bottom Logged Interval	76'		
Top Log Interval	33'		
Open Hole Size	5.875"		
Type Fluid	MUD		
Density / Viscosity	na/na		
Max. Recorded Temp.	na		
Estimated Cement Top	na		
Time Well Ready	11:15 4/10/03		
Time Logger on Bottom	11:45 4/10/03		
Equipment Number	MVGS-1		
Location	Ft. Myers		
Recorded By	S.Miller		
Witnessed By	R.Burn (P.G.)		
Borehole Record			
Tubing Record			
Run Number	Bit	From	To
ONE	5.875"	33'	82'
Casing Record	Size	Wgt/Ft	Top
Surface String	6.125"	Temporary	SURFACE
Prot. String			33'
Production String			
Liner			
Invoice No.:	2003085		
File No.: 02-042 * FIELD PRINT *			



**MV
Geophysical**

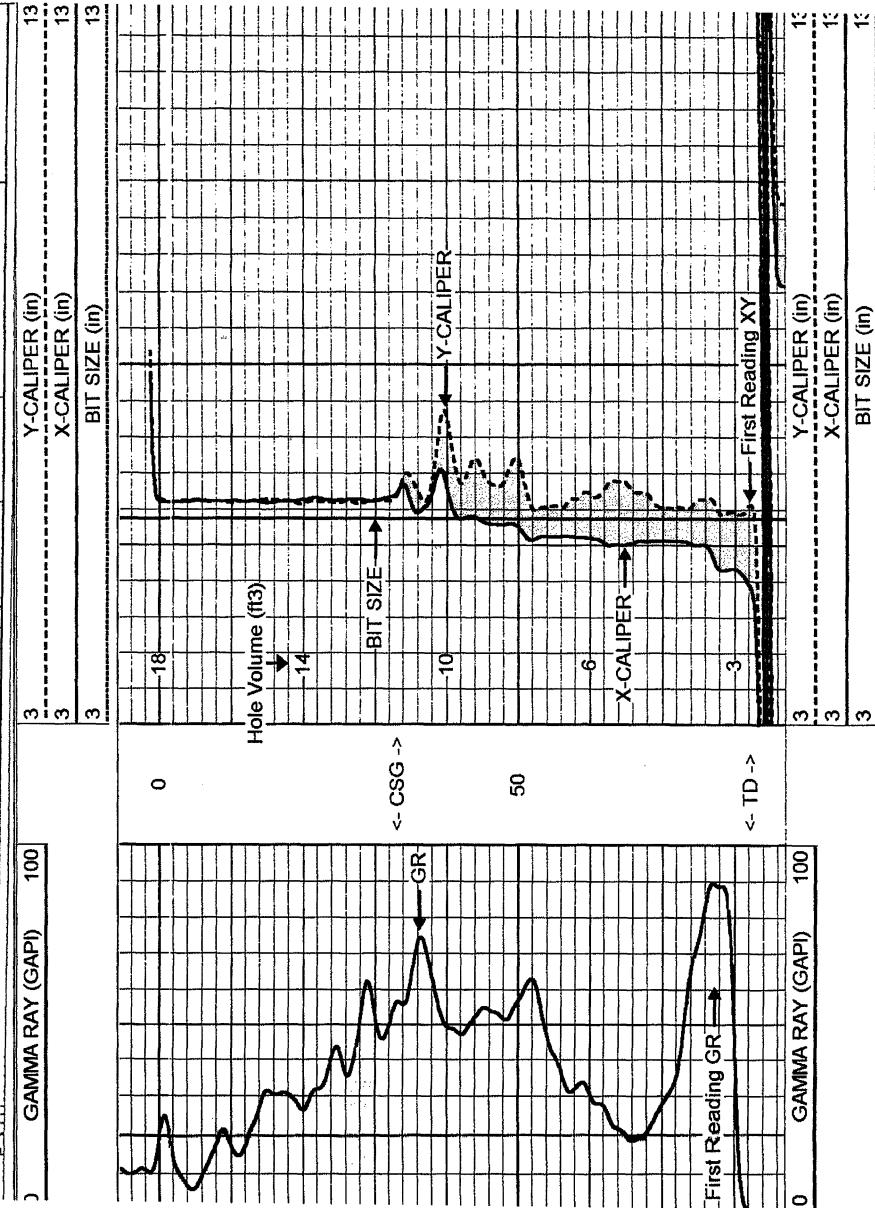
Database File: ardama12.db
Dataset Pathname: MAIN
Presentation Format: dil.prs
Dataset Creation: Thu Apr 10 12:40:21 2003
Charted by: Depth in Feet scaled 1:120

MAIN PASS

-10 SP (mV) 10 0.2
0 GR (GAPI) 100 0.2
-10 RILD (Ohm-m) 200k 200k
0 RLIM (Ohm-m) 200k 200k
0.2 RLL3 (Ohm-m) 200k 200k

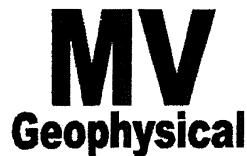
**X-Y CALIPER
GAMMA RAY
LOG**

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0008						
Field	EAA Reservoirs Storage						
County	Palm Beach	State/Prv	Florida				
Location	CP02-EAARS-GL-0008						
			Other Services BHC/VDL DIL/SP				
			Elevation K.B. D.F. G.L.				
Date	10-APR-2003						
Run Number	ONE						
Depth Driller	82'						
Depth Logger	82'						
Bottom Logged Interval	74'						
Top Log Interval	SURFACE						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	11:15 4/10/03						
Time Logger on Bottom	11:15 4/10/03						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S. Miller						
Witnessed By	R. Burr (P.G.)						
Borehole Record							
Tubing Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	33'	82'				
Casing Record	Size	Wgt/Ft	Top	Bottom			
Surface String	6.125"	Temporary	SURFACE	33'			
Prot. String							
Production String							
Liner							



MAIN PASS

MV



**BOREHOLE COMPENSATED
SONIC
w/ VARIABLE DENSITY
LOG**

Company Ardaman & Assoc., Inc.
Well CP02-EAARS-GL-0009
Field EAA Reservoirs Storage
County Palm Beach
State/Prv Florida

Company Ardaman & Associates, Inc.
Well CP02-EAARS-GL-0009
Field EAA Reservoirs Storage
County Palm Beach State/Prv Florida

Location	CP02-EAARS-GL-0009	Other Services
		XY/GR DIL/SP
		Elevation
		K.B. D.F. G.L.

File No.: 02-042

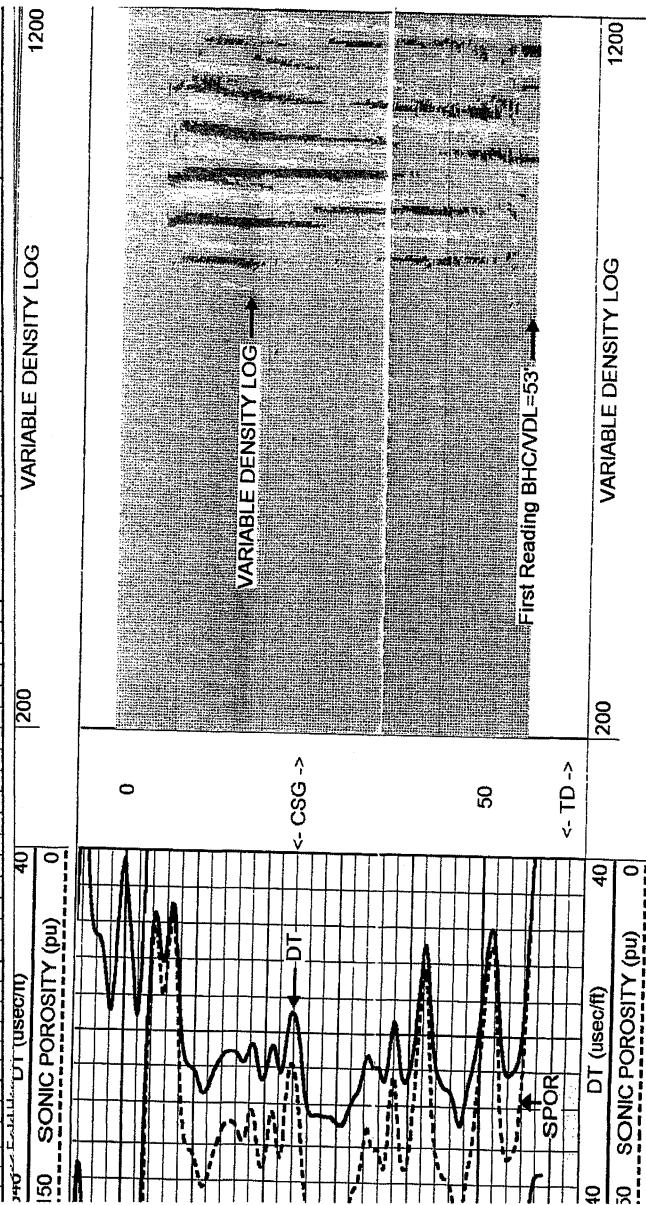
Permanent Datum	Ground Level	Elevation
Log Measured From	Ground Level	
Drilling Measured From	Ground Level	

Date	9-APR-2003
Run Number	ONE
Depth Driller	61'
Depth Logger	61'
Bottom Logged Interval	53'
Top Log Interval	SURFACE
Open Hole Size	5.875"
Type Fluid	MUD
Density / Viscosity	na/na
Max. Recorded Temp.	na
Estimated Cement Top	na
Time Well Ready	14:00 4/9/03
Time Logger on Bottom	15:00 4/9/03
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S. Miller
Witnessed By	R. Burr (P.G.)

Borehole Record			Tubing Record		
Run Number	Bit	From	To	Size	Weight
ONE	5.875"	24'	62"		

Casing Record		Size	Wgt/Ft	Top	Bottom
Surface String	6.125"	Temporary	SURFACE	24"	
Prot. String					
Production String					
Liner					

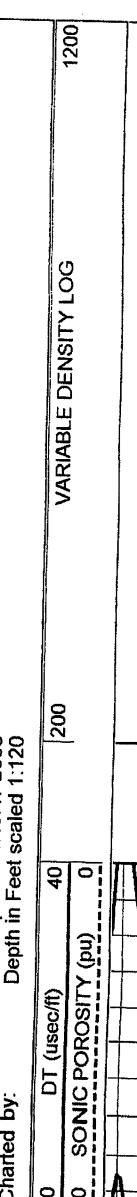
Invoice No.: 2003082 File No.: 02-042 * FIELD PRINT *



MAIN PASS

MV Geophysical

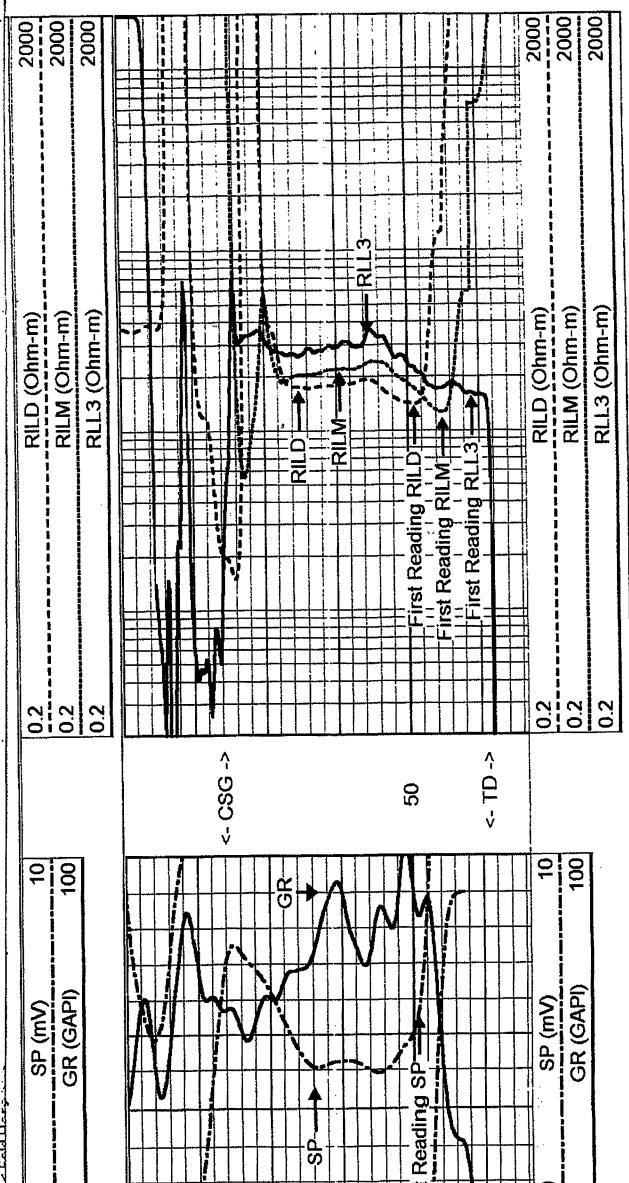
Database File: ardama10.db
Dataset Pathname: MAIN
Presentation Format: son_vdl.prn
Dataset Creation: Wed Apr 09 14:40:47 2003
Charted by: Depth in Feet scaled 1:120





DUAL INDUCTION LL3 / SP LOG

Company	Ardaman & Associates, Inc.		
Well	CP02-EAARS-GL-0009		
Field	EAA Reservoirs Storage		
County	Palm Beach	State/Prv	Florida
Location	CP02-EAARS-GL-0009		
File No.: 02-042			
Permanent Datum	Ground Level	Elevation	Other Services BHC/VDL XY/GR Elevation K.B. D.F. G.L.
Log Measured From	Ground Level		
Drilling Measured From	Ground Level		
Date	9-APR-2003		
Run Number	ONE		
Depth Driller	62'		
Depth Logger	61'		
Bottom Logged Interval	59'		
Top Log Interval	24'		
Open Hole Size	5.875"		
Type Fluid	MUD		
Density / Viscosity	na/na		
Max. Recorded Temp.	na		
Estimated Cement Top	na		
Time Well Ready	14:00 4/9/03		
Time Logger on Bottom	14:30 4/9/03		
Equipment Number	MVGS-1		
Location	Ft. Myers		
Recorded By	S.Miller		
Witnessed By	R.Burr (P.G.)		
Borehole Record			
Tubing Record			
Run Number	Bit	From	To
ONE	5.875"	SURFACE	62'
Casing Record			
Size		Wgt/Ft	Top
Surface String		Temporary	SURFACE
			24'
Prot. String			
Production String			



MAIN PASS



ardama10.db

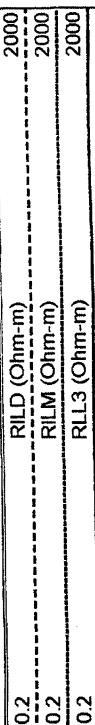
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Dataset Pathname:

Presentation Format:

Dataset Creation:

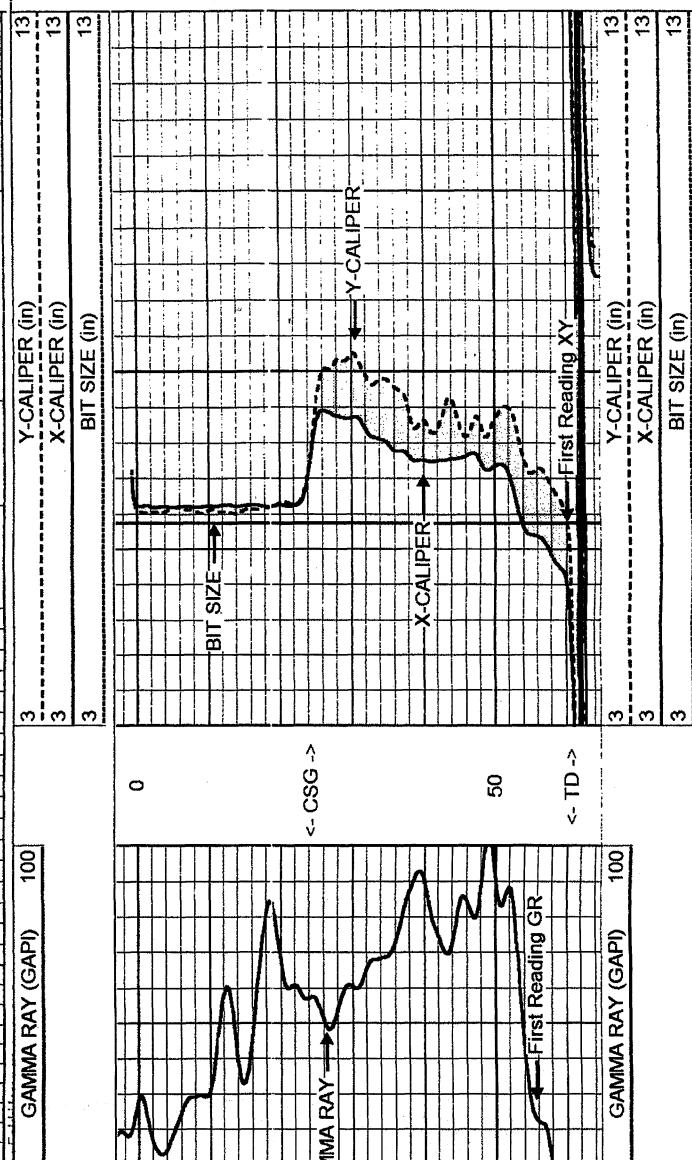
Chartered by:





X-Y CALIPER GAMMA RAY LOG

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0009						
Field	EAA Reservoirs Storage						
County	Palm Beach						
State/Prv	Florida						
Location	CP02-EAARS-GL-0009						
	File No.: 02-042						
Permanent Datum	Ground Level						
Log Measured From	Ground Level						
Drilling Measured From	Ground Level						
	Elevation						
	K.B. D.F. G.L.						
Date	9-APR-2003						
Run Number	ONE						
Depth Driller	61'						
Depth Logger	61'						
Bottom Logged Interval	61'						
Top Log Interval	SURFACE						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	14:00 4/9/03						
Time Logger on Bottom	14:00 4/9/03						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S.Miller						
Witnessed By	R.Burr (P.G.)						
Borehole Record		Tubing Record					
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	24'	62'				
Casing Record		Size	Wgt/Ft	Top	Bottom		
Surface String	6.125"	Temporary	SURFACE	24'			
Rot. String							
Production String							



MAIN PASS



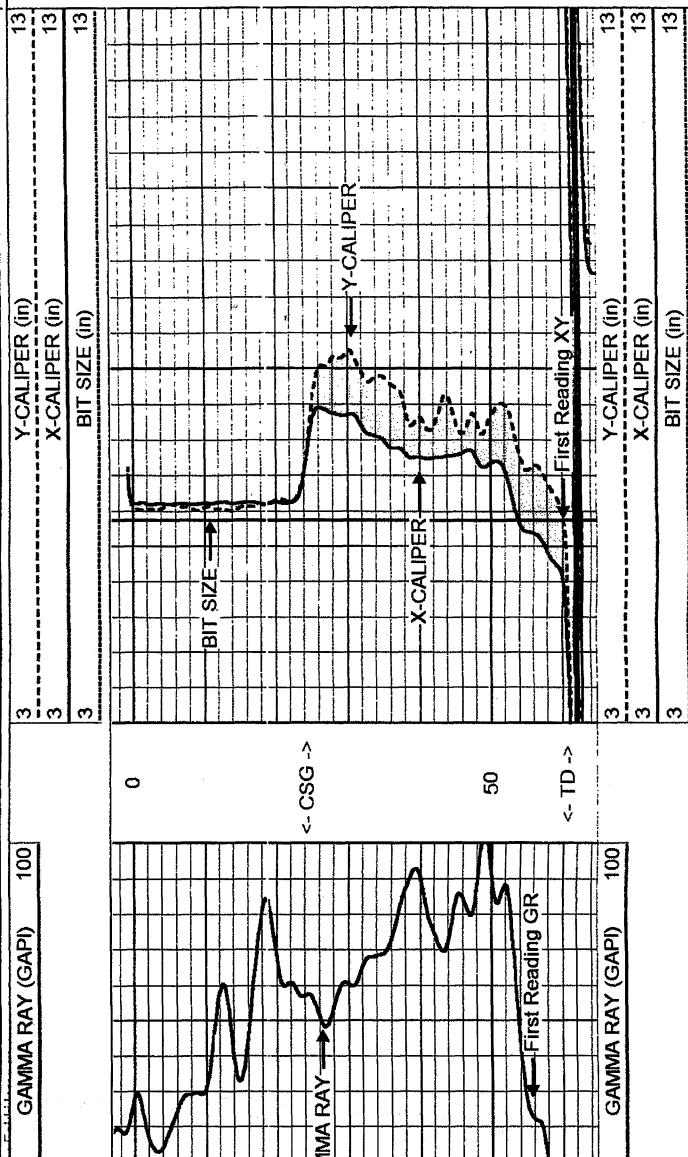
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 Dataset Pathname: MAIN
 Presentation Format: x313-5.prs
 Dataset Creation: Wed Apr 09 14:40:47 2003
 Started by: Depth in Feet scaled 1:120

Y-CALIPER (in)	3
X-CALIPER (in)	3
BIT SIZE (in)	3
Y-CALIPER (in)	3
X-CALIPER (in)	3
BIT SIZE (in)	3



X-Y CALIPER GAMMA RAY LOG

Company	Ardaman & Associates, Inc.		
Well	CP02-EAARS-GL-0009		
Field	EAA Reservoirs Storage		
County	Palm Beach	State/Prv	Florida
Location	CP02-EAARS-GL-0009		
			Other Services BHC/VDL DIL/SP
	File No.: 02-042		
Permanent Datum	Ground Level	Elevation	K.B. D.F. G.L.
Log Measured From	Ground Level		
Drilling Measured From	Ground Level		
Date	9-APR-2003		
Run Number	ONE		
Depth Driller	61'		
Depth Logger	61'		
Bottom Logged Interval	61'		
Top Log Interval	SURFACE		
Open Hole Size	5.875"		
Type Fluid	MUD		
Density / Viscosity	na/na		
Max. Recorded Temp.	na		
Estimated Cement Top	na		
Time Well Ready	14:00 4/9/03		
Time Logger on Bottom	14:00 4/9/03		
Equipment Number	MVGS-1		
Location	Fl. Myers		
Recorded By	S. Miller		
Witnessed By	R. Burr (P.G.)		
Borehole Record			
Tubing Record			
Run Number	Bit	From	To
ONE	5.875"	24'	62'
Casing Record			
Surface String	Size	Wgt/Ft	Top
Rot. String			SURFACE
Production String			Bottom
			24'



MAIN PASS

MV
Geophysical

Database File: ardamain0.db
Dataset Pathname: MAIN
Presentation Format: x313-5.prs
Dataset Creation: Wed Apr 09 14:40:47 2003
Started by: Depth in Feet scaled 1:120

GAMMA RAY (GAPI)	100	3
Y-CALIPER (in)		
X-CALIPER (in)		



**BOREHOLE COMPENSATED
SONIC
w/ VARIABLE DENSITY
LOG**

Company Ardaman & Assoc., Inc.
Well CP02-EAARS-GL-0010
Field EAA Reservoirs Storage
County Palm Beach
State/Prv Florida

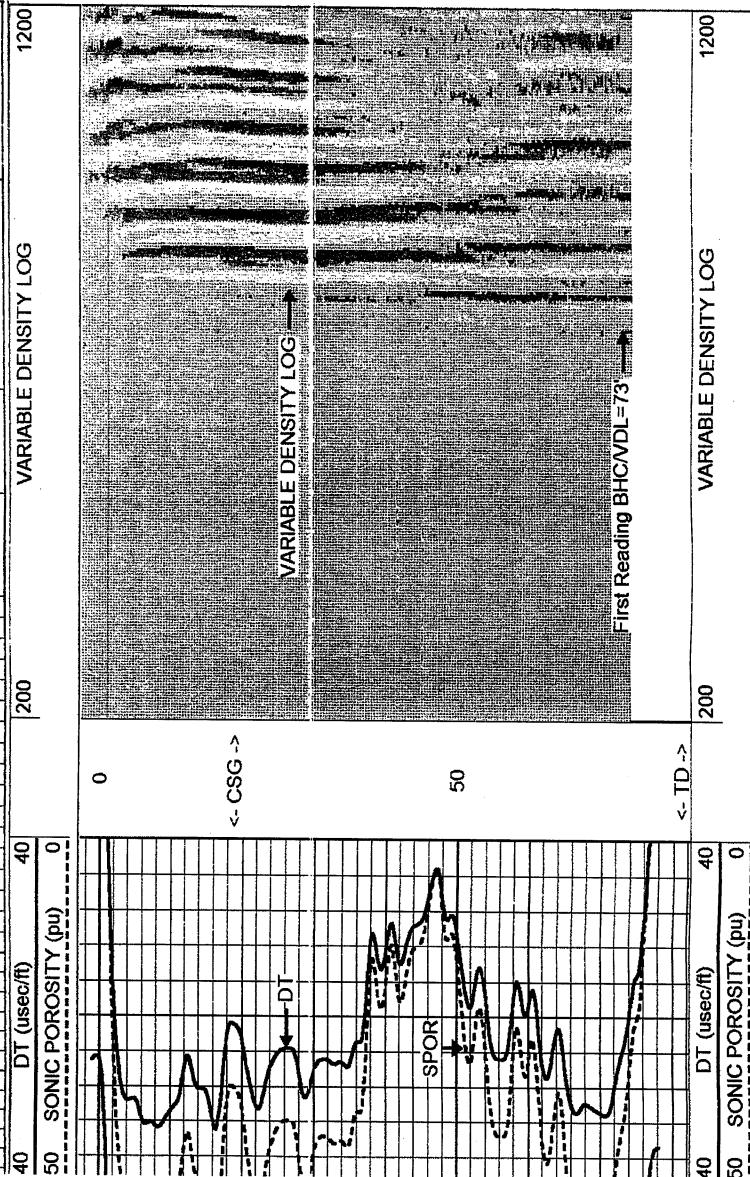
Company Ardaman & Associates, Inc.
Well CP02-EAARS-GL-0010
Field EAA Reservoirs Storage
County Palm Beach State/Prv Florida

Location CP02-EAARS-GL-0010
Other Services XY/GR
DIL/SP
Elevation
File No.: 02-042

Permanent Datum	Ground Level	Elevation	Elevation K.B. D.F. G.L.
Log Measured From	Ground Level		
Drilling Measured From	Ground Level		
Date	10-APR-2003		
Run Number	ONE		
Depth Driller	81.5'		
Depth Logger	81'		
Bottom Logged Interval	73'		
Top Log Interval	SURFACE		
Open Hole Size	5.875"		
Type Fluid	MUD		
Density / Viscosity	na/na		
Max. Recorded Temp.	na		
Estimated Cement Top	na		
Time Well Ready	ROA 4/10/03		
Time Logger on Bottom	16:15 4/10/03		
Equipment Number	MVGS-1		
Location	Ft. Myers		
Recorded By	S.Miller		
Witnessed By	R.Burr (P.G.)		

Borehole Record			Tubing Record				
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	19'	81.5'				

Casing Record		Size	Wgt/Ft	Top	Bottom
Surface String		6.125"	Temporary	SURFACE	19'
Prot. String					
Production String					
Liner					



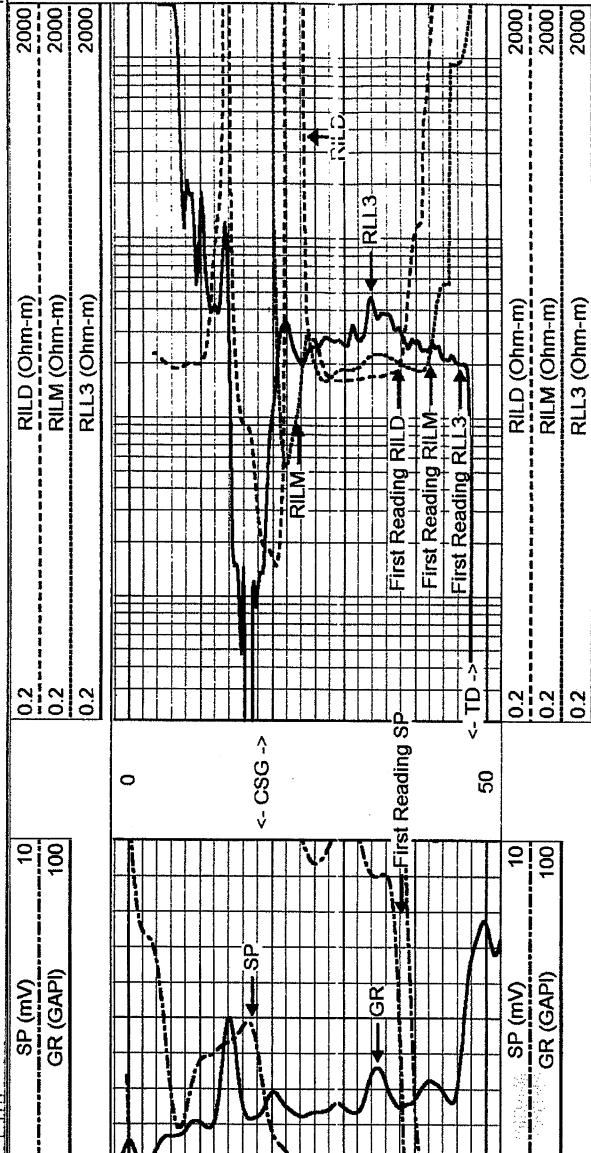
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Dataset Pathname: MAIN
Presentation Format: son_vdl.prj
Dataset Creation: Thu Apr 10 16:58:32 2003
Charged by:

MAIN PASS



DUAL INDUCTION LL3 / SP LOG

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0010						
Field	EAA Reservoirs Storage						
County	Palm Beach						
State/Prv	Florida						
Date	10-APR-2003						
Run Number	ONE						
Depth Driller	81.5'						
Depth Logger	81'						
Bottom Logged Interval	79'						
Top Log Interval	SURFACE						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	ROA 4/10/03						
Time Logger on Bottom	17:15 4/10/03						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S.Miller						
Witnessed By	R.Burr (P.G.)						
Borehole Record							
Tubing Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	19'	81.5'				
Casing Record	Size	Wgt/Ft	Top	Bottom			
Surface String	6.125"	Temporary	SURFACE	19'			
Prot. String							
Production String							



MAIN PASS

MV
Geophysical

ardama14.db

atabase File:

ardama14.db

atabase Pathname:

ardama14.db

resentation Format:

dil.prs

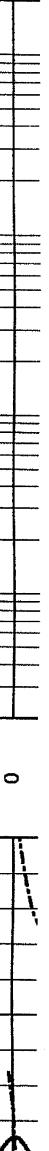
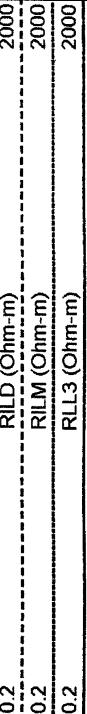
atabase Creation:

Thu Apr 10 16:58:32 2003

Depth in Feet scaled 1:120

Started by:

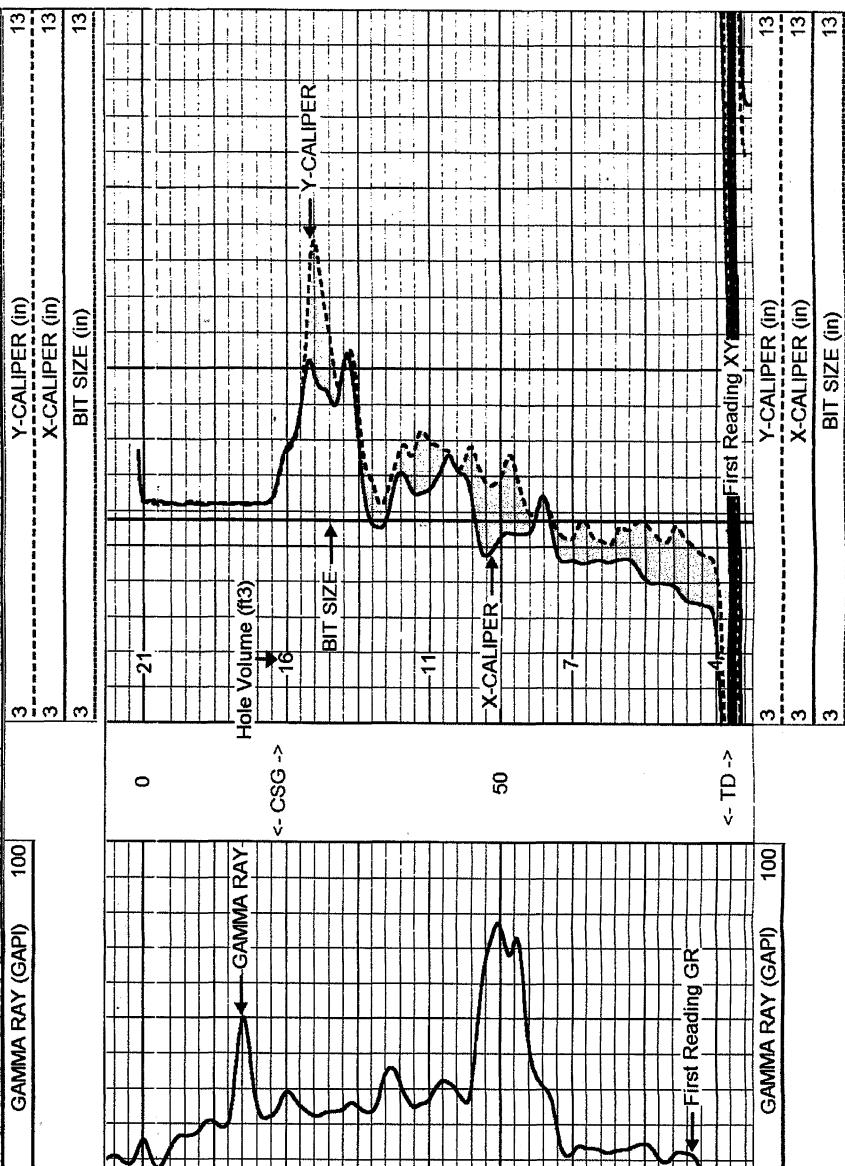
ardama14.db





X-Y CALIPER GAMMA RAY LOG

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0010						
Field	EAA Reservoirs Storage						
County	Palm Beach State/Prv Florida						
Location	CP02-EAARS-GL-0010						
	File No.: 02-042						
Permanent Datum	Ground Level						
Log Measured From	Ground Level						
Drilling Measured From	Ground Level						
Date	10-APR-2003						
Run Number	ONE						
Depth Driller	81.5'						
Depth Logger	81'						
Bottom Logged Interval	81'						
Top Log Interval	SURFACE						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	ROA 4/10/03						
Time Logger on Bottom	18:15 4/10/03						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S.Miller						
Witnessed By	R.Burr (P.G.)						
Borehole Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	19'		81.5'			
Tubing Record							
Casing Record	Size	Wgt/FI		Top		Bottom	
Surface String	6.125"	Temporary		SURFACE		19'	
Prot. String							
Production String							
Liner							



MAIN PASS

MV
Geophysical



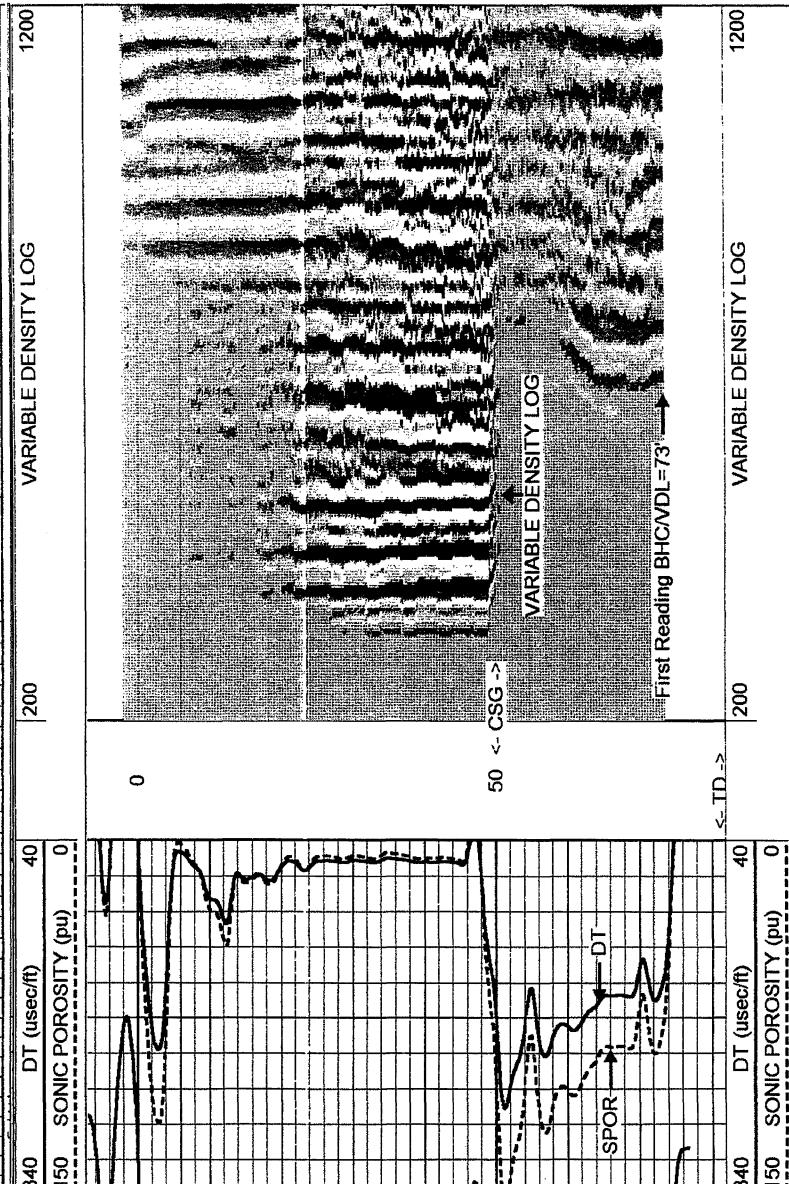
**BOREHOLE COMPENSATED
SONIC
w/ VARIABLE DENSITY
LOG**

Company	Ardaman & Associates, Inc.
Well	CP02-EAARS-GL-0011
Field	EAA Reservoirs Storage
County	Palm Beach
State/Prv	Florida
Location	CP02-EAARS-GL-0011
Other Services	XY/GR DIL/SP
File No.:	02-042
Permanent Datum	Ground Level
Log Measured From	Ground Level
Drilling Measured From	Ground Level
Elevation	K.B. D.F. G.L.

Date	9-APR-2003
Run Number	ONE
Depth Driller	81.5'
Depth Logger	81'
Bottom Logged Interval	73'
Top Log Interval	SURFACE
Open Hole Size	5.5"
Type Fluid	MUD
Density / Viscosity	na/na
Max. Recorded Temp.	na
Estimated Cement Top	na
Time Well Ready	ROA 4/9/03
Time Logger on Bottom	16:00 4/9/03
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S.Miller
Witnessed By	R.Burr (P.G.)

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.5"	50'	81.5'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	6.125"	Temporary	SURFACE	50'
Prot. String				
Production String				
Liner				



MAIN PASS

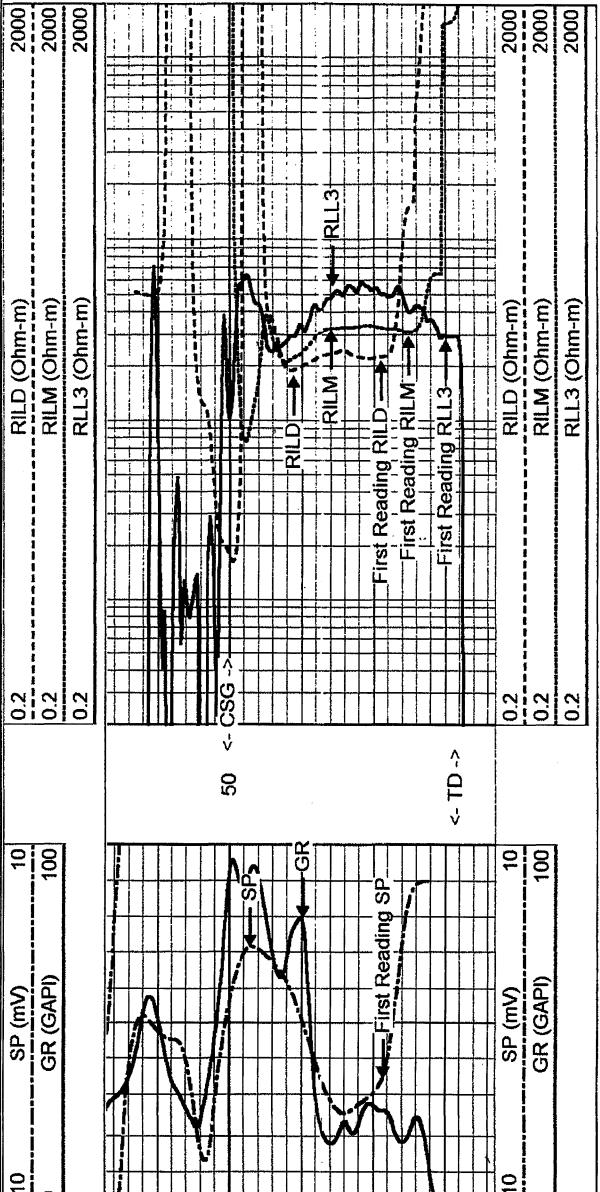
**MV
Geophysical**

Database File: ardama11.db
Dataset Pathname: MAIN
Presentation Format: son_vdl.prj
Dataset Creation: Wed Apr 09 17:14:27 2003



DUAL INDUCTION LL3 / SP LOG

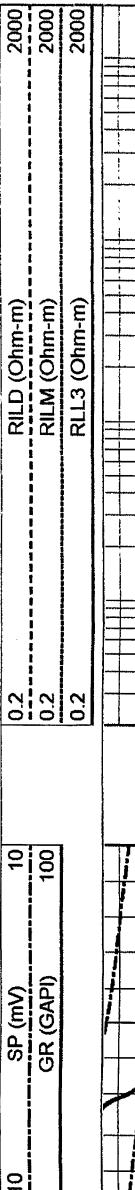
Company	Ardaman & Associates, Inc.				
Well	CP02-EAARS-GL-0011				
Field	EAA Reservoirs Storage				
County	Palm Beach	State/Prv	Florida		
Location	CP02-EAARS-GL-0011				
File No.: 02-042					
Permanent Datum	Ground Level	Elevation	Other Services BHC/VDL XY/GR Elevation K.B. D.F. G.L.		
Log Measured From	Ground Level				
Drilling Measured From	Ground Level				
Date	9-APR-2003				
Run Number	ONE				
Depth Driller	81.5'				
Depth Logger	81'				
Bottom Logged Interval	79'				
Top Log Interval	50'				
Open Hole Size	5.5"				
Type Fluid	MUD				
Density / Viscosity	na/na				
Max. Recorded Temp.	na				
Estimated Cement Top	na				
Time Well Ready	ROA 4/9/03				
Time Logger on Bottom	16:30 4/9/03				
Equipment Number	MVGS-1				
Location	Ft. Myers				
Recorded By	S.Miller				
Witnessed By	R.Burr (P.G.)				
Borehole Record					
Run Number	Bit	From	To		
ONE	5.5"	50'	81.5'		
Tubing Record					
Run Number	Bit	Size	Weight	From	To
ONE	5.5"	10	GR (GAP)	100	
Casing Record				Top	Bottom
Surface String	Size	Wgt/Ft		SURFACE	50'
Prot. String					
Production String					
Liner					



MAIN PASS



Database File:
ardama11.db
Dataset Pathname:
MAIN
Presentation Format:
dil.prs
Dataset Creation:
Wed Apr 09 17:14:27 2003
Depth in Feet scaled 1:120
Channed by:



X-Y CALIPER GAMMA RAY LOG

Company Ardaman & Associates, Inc.
 Well CP02-EAARS-GL-0011
 Field EAA Reservoirs Storage
 County Palm Beach State/Prv Florida
 Location CP02-EAARS-GL-0011
 File No.: 02-042

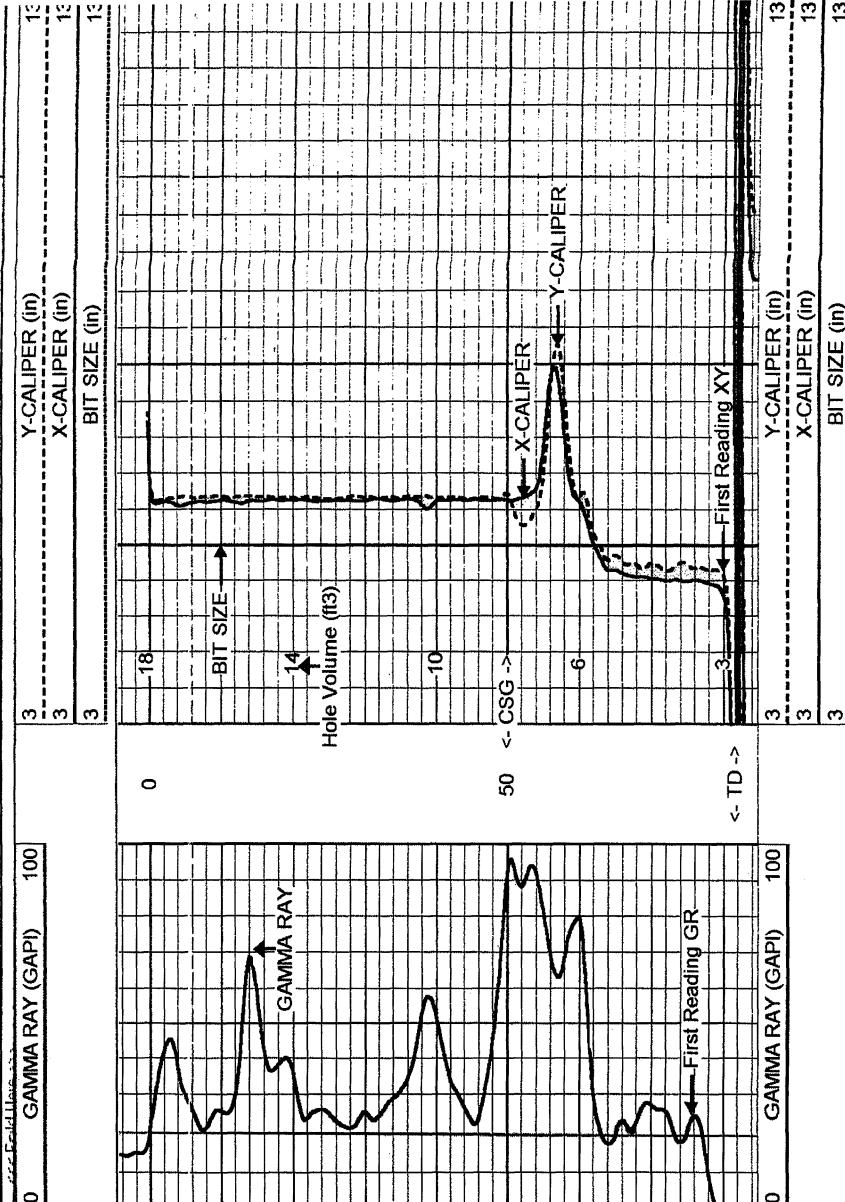
Permanent Datum	Ground Level	Elevation
Log Measured From	Ground Level	K.B.
Drilling Measured From	Ground Level	D.F.
		G.L.

Date	9-APR-2003
Run Number	ONE
Depth Driller	81.5'
Depth Logger	81'
Bottom Logged Interval	80'
Top Log Interval	SURFACE
Open Hole Size	5.5"
Type Fluid	MUD
Density / Viscosity	na/na
Max. Recorded Temp.	na
Estimated Cement Top	na
Time Well Ready	ROA 4/9/03
Time Logger on Bottom	16:45 4/9/03
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S.Miller
Witnessed By	R.Burr (P.G.)

Borehole Record			Tubing Record				
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.5"	50'	81.5'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	6.125"	Temporary	SURFACE	50'
Prot. String				
Production String				
Liner				

Invoice No. 2003082 File No. 02-042 * FIFI D PRINT *



MAIN PASS



DUAL INDUCTION LL3 / SP LOG

Company Ardaman & Associates, Inc.
Well CP02-EAARS-GL-0011
Field EAA Reservoirs Storage
County Palm Beach State/Prv Florida

Location

CP02-EAARS-GL-0011

Other Services

BHC/VDL
XY/GR

Permanent Datum	Ground Level	Elevation	K.B. D.F. G.L.
Log Measured From	Ground Level		
Drilling Measured From	Ground Level		

File No.: 02-042

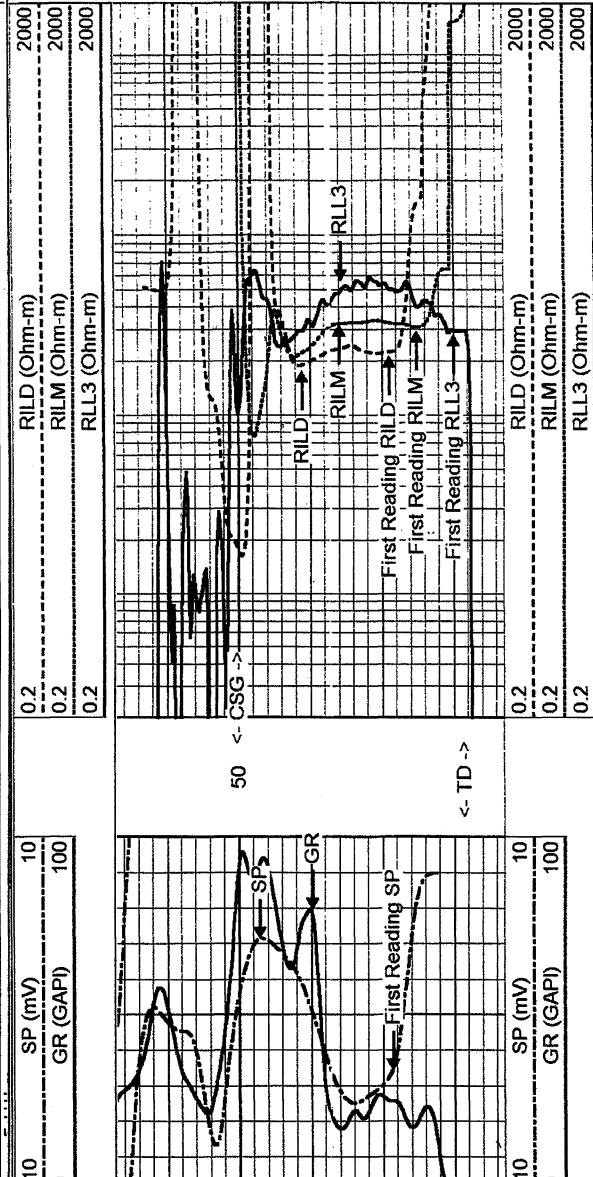
Date	9-APR-2003
Run Number	ONE
Depth Driller	81.5'
Depth Logger	81'
Bottom Logged Interval	79'
Top Log Interval	50'
Open Hole Size	5.5"
Type Fluid	MUD
Density / Viscosity	na/na
Max. Recorded Temp.	na
Estimated Cement Top	na
Time Well Ready	ROA 4/9/03
Time Logger on Bottom	16:30 4/9/03
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S. Miller
Witnessed By	R. Burr (P.G.)

Borehole Record

Tubing Record

Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.5"	50'	81.5'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	6.125"	Temporary	SURFACE	50'
Prot. String				
Production String				
Liner				



MAIN PASS



Database File:

ardama11.db

Dataset Pathname:

MAIN

dil.pr.s

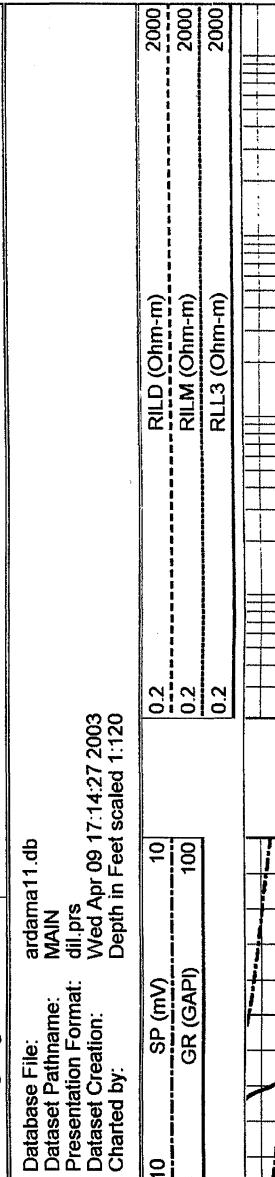
Presentation Format:

Wed Apr 09 17:14:27 2003

Depth in Feet scaled 1:120

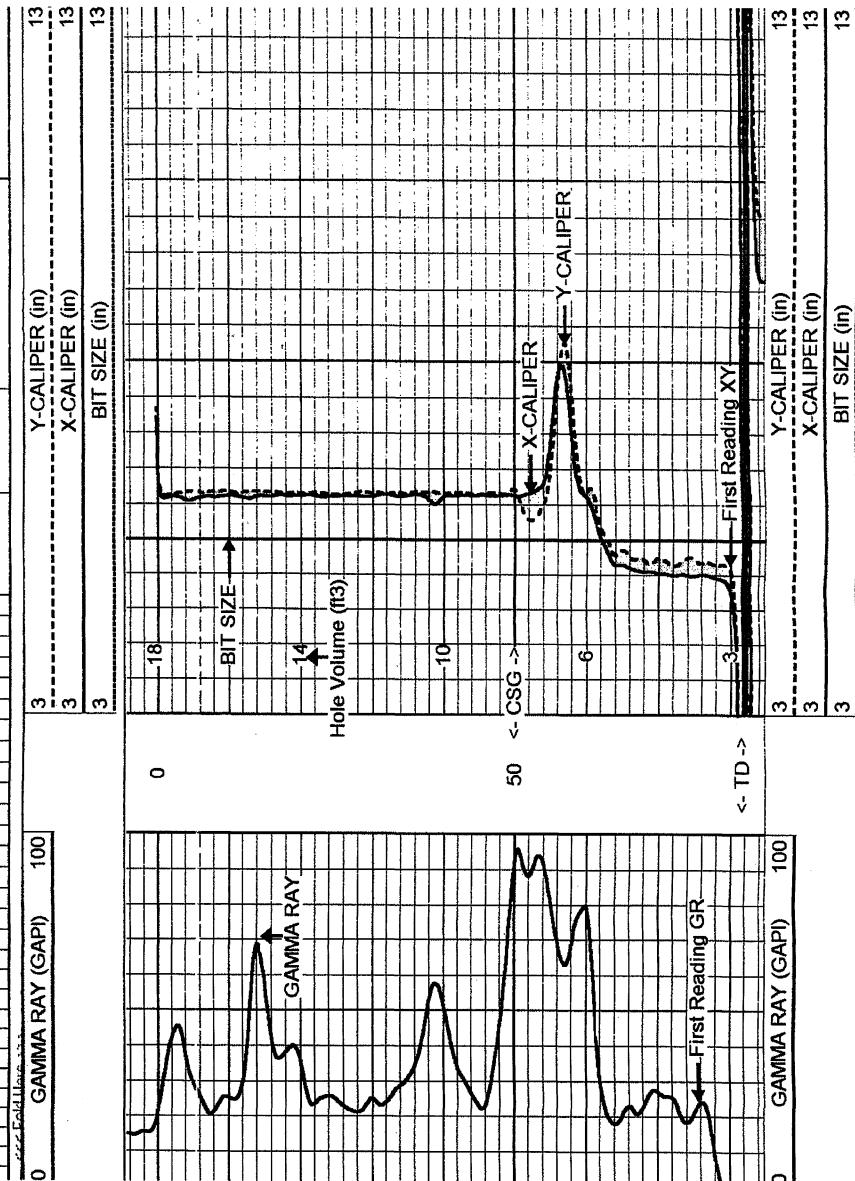
Dataset Creation:

Charred by:



**X-Y CALIPER
GAMMA RAY
LOG**

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0011						
Field	EAA Reservoirs Storage						
County	Palm Beach	State/Prv	Florida				
Location	CP02-EAARS-GL-0011						
			Other Services				
			BHC/VDL DIL/SP				
			Elevation				
	K.B. D.F. G.L.						
File No.:	02-042						
Permanent Datum	Ground Level	Elevation					
Log Measured From	Ground Level						
Drilling Measured From	Ground Level						
Date	9-APR-2003						
Run Number	ONE						
Depth Driller	81.5'						
Depth Logger	81'						
Bottom Logged Interval	80'						
Top Log Interval	SURFACE						
Open Hole Size	5.5"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	ROA 4/9/03						
Time Logger on Bottom	16:45 4/9/03						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S. Miller						
Witnessed By	R. Burn (P.G.)						
Borehole Record							
Tubing Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.5"	50'	81.5'				
Casing Record	Size	Wgt/Ft	Top	Bottom			
Surface String	6.125"	Temporary	SURFACE	50'			
Prot. String							
Production String							
Liner							
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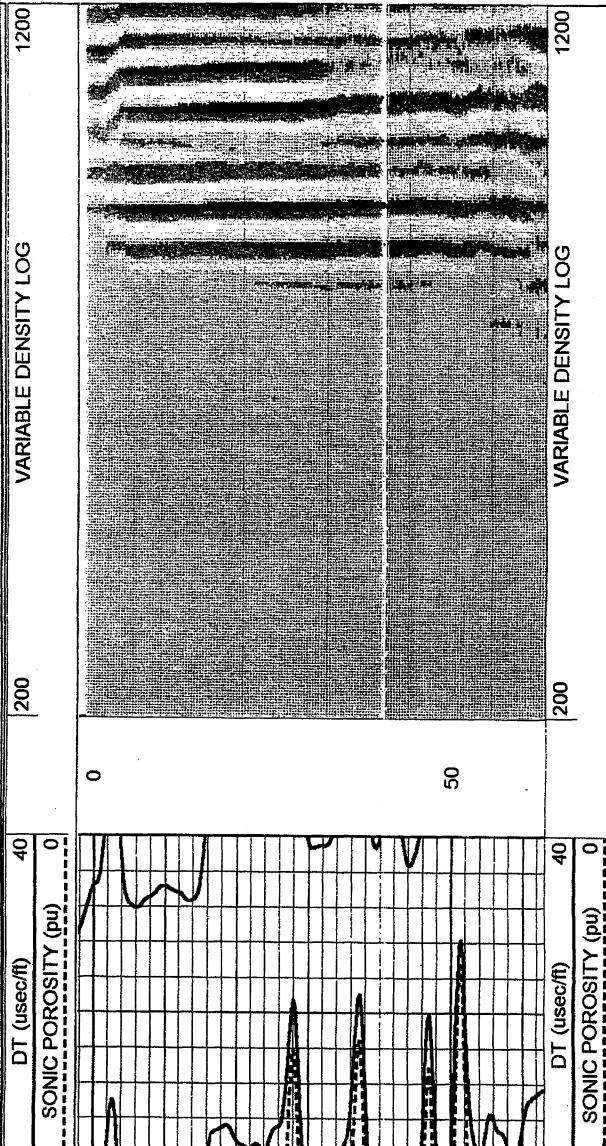


MAIN PASS



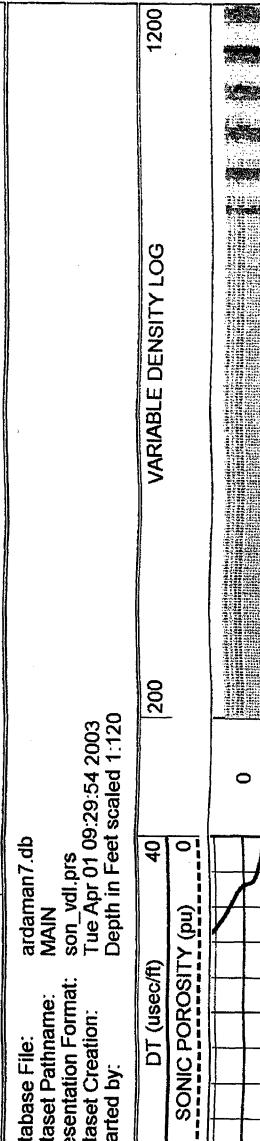
BOREHOLE COMPENSATED SONIC w/ VARIABLE DENSITY LOG

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0012						
Field	EAA Reservoirs Storage						
County	Palm Beach	State/Prv	Florida				
Location	CP02-EAARS-GL-0012						
Permanent Datum	Ground Level	Elevation	Other Services XY/GR DIL/SP Elevation K.B. D.F. G.L.				
Log Measured From	Ground Level						
Drilling Measured From	Ground Level						
Date	1-APR-2003						
Run Number	ONE						
Depth Driller	62'						
Depth Logger	62'						
Bottom Logged Interval	54'						
Top Log Interval	SURFACE						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	09:00 4/1/03						
Time Logger on Bottom	13:15 4/1/03						
Equipment Number	MVGS-1						
Location	Fl. Myers						
Recorded By	S. Miller						
Witnessed By	R. Burr (P.G.)						
Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	15'	62'				
Casing Record				Size	Wgt/Ft	Top	Bottom
Surface String	6.125"	Temporary	SURFACE			2'	
Prot. String							
Production String							



MAIN PASS

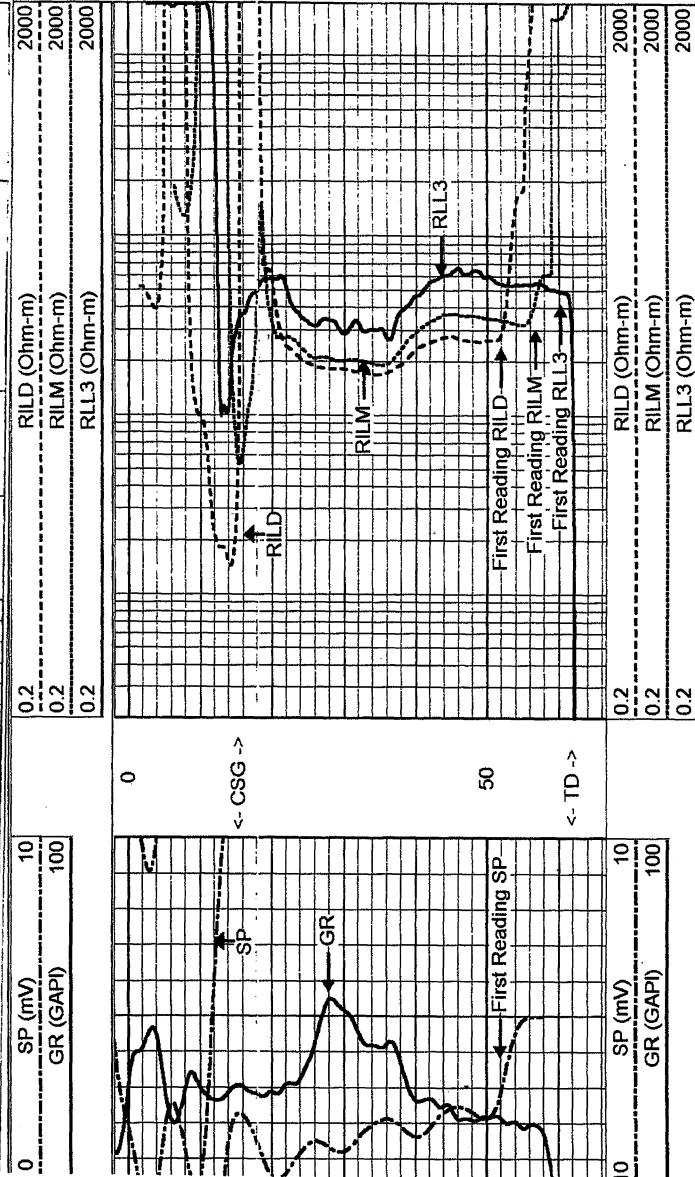
MV Geophysical





DUAL INDUCTION LL3 / SP LOG

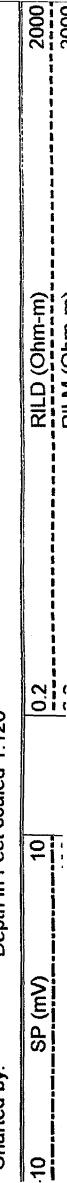
Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0012						
Field	EAA Reservoirs Storage						
County	Palm Beach State/Prv Florida						
Location	CP02-EAARS-GL-0012						
File No.:	02-042						
Permanent Datum	Ground Level	Elevation					
Log Measured From	Ground Level		K.B. D.F. G.L.				
Drilling Measured From	Ground Level						
Date	1-APR-2003						
Run Number	ONE						
Depth Driller	62'						
Depth Logger	62'						
Bottom Logged Interval	62'						
Top Log Interval	SURFACE						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	09:00 4/1/03						
Time Logger on Bottom	09:15 4/1/03						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S. Miller						
Witnessed By	R. Burr (P.G.)						
Borehole Record							
Tubing Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	15'	62'				
Casing Record	Size	Wgt/Ft		Top		Bottom	
Surface String	6.125"	Temporary		SURFACE		2'	
Prot. String							
Production String							
Liner							



MAIN PASS

MV
Geophysical

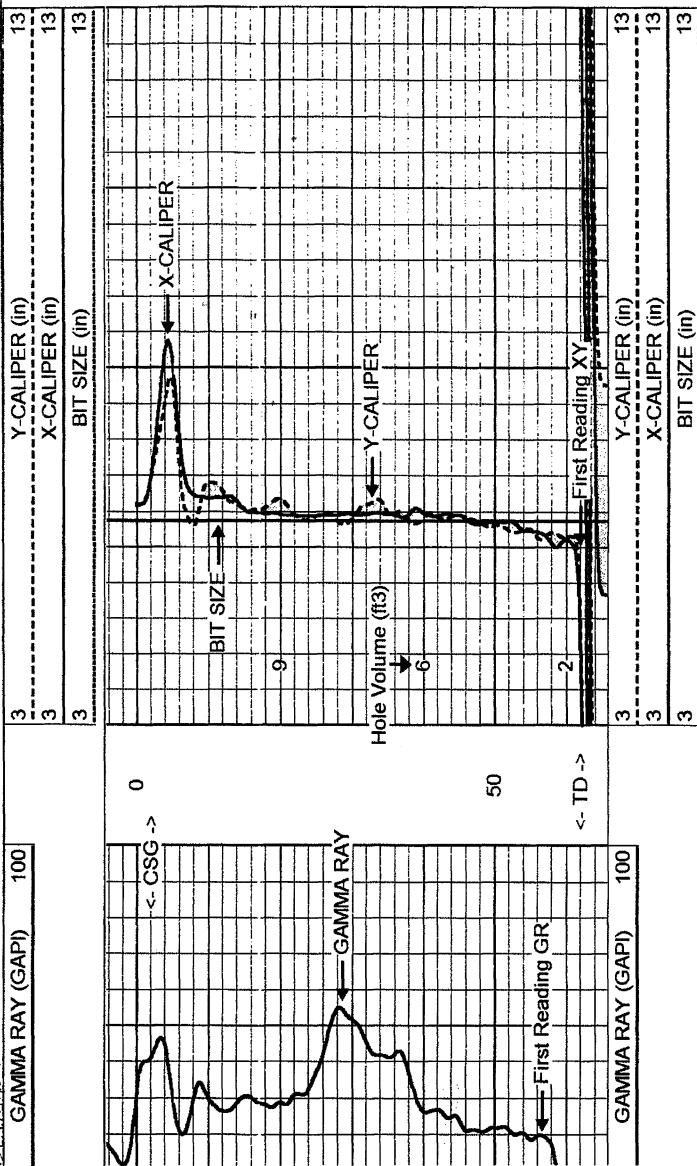
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Chartered by:





X-Y CALIPER GAMMA RAY LOG

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0012						
Field	EAA Reservoirs Storage						
County	Palm Beach	State/Prv	Florida				
Location							
	CP02-EAARS-GL-0012						
	File No.: 02-042						
Permanent Datum	Ground Level	Elevation	Other Services DIL/SP BHC/VDL K.B. D.F. G.L.				
Log Measured From	Ground Level						
Drilling Measured From	Ground Level						
Date	1-APR-2003						
Run Number	ONE						
Depth Driller	62'						
Depth Logger	62'						
Bottom Logged Interval	62'						
Top Log Interval	SURFACE						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	09:00 4/1/03						
Time Logger on Bottom	09:15 4/1/03						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S. Miller						
Witnessed By	R. Burr (P.G.)						
Borehole Record							
Tubing Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	78'	183'				
Casing Record	Size	Wgt/Ft		Top		Bottom	
Surface String	6.125"	Temporary		SURFACE		2'	
Prot. String							
Production String							

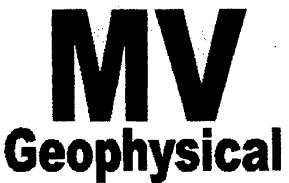


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MV
Geophysical

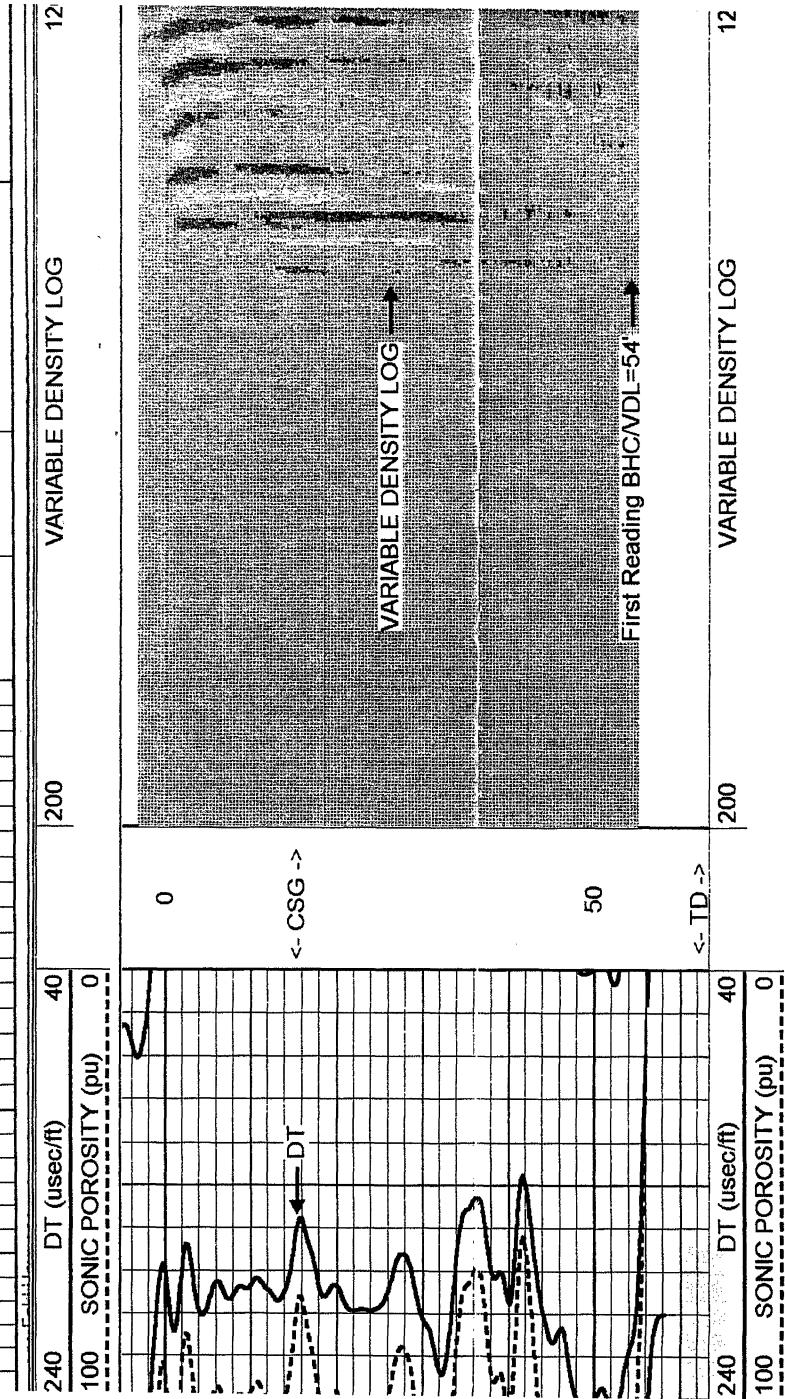
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arated by:

GAMMA RAY (GAPI) 100 3
Y-CALIPER (in) 13



**BOREHOLE COMPENSATED
SONIC
w/ VARIABLE DENSITY
LOG**

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0013						
Field	EAA Reservoirs Storage						
County	Palm Beach						
State/Prv	Florida						
Location	CP02-EAARS-GL-0013	Other Services DIL/SP XY/GR					
File No.: 02-042		Elevation					
Permanent Datum	Ground Level	K.B.					
Log Measured From	Ground Level	D.F.					
Drilling Measured From	Ground Level	G.L.					
Date	1-APR-2003						
Run Number	ONE						
Depth Driller	62'						
Depth Logger	62'						
Bottom Logged Interval	54'						
Top Log Interval	SURFACE						
Open Hole Size	5.875"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	18:30 4/1/03						
Time Logger on Bottom	19:30 4/1/03						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S.Miller						
Witnessed By	R.Burr (P.G.)						
Borehole Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	SURFACE	62'				
Tubing Record							
Casing Record	Size	Wgt/Ft	Top	Bottom			
Surface String	6.125"	Temporary	SURFACE	15'			
Prot. String							
Production String							
Liner							
			File No. 02-042	* FIELD PRINT *			





**DUAL INDUCTION
LL3 / SP
LOG**

Company	Ardaman & Associates, Inc.
Well	CP02-EAARS-GL-0013
Field	EAA Reservoirs Storage
County	Palm Beach
State/Prv	Florida

Location CP02-EAARS-GL-0013
File No.: 02-042

Permanent Datum
Log Measured From Ground Level
Drilling Measured From Ground Level

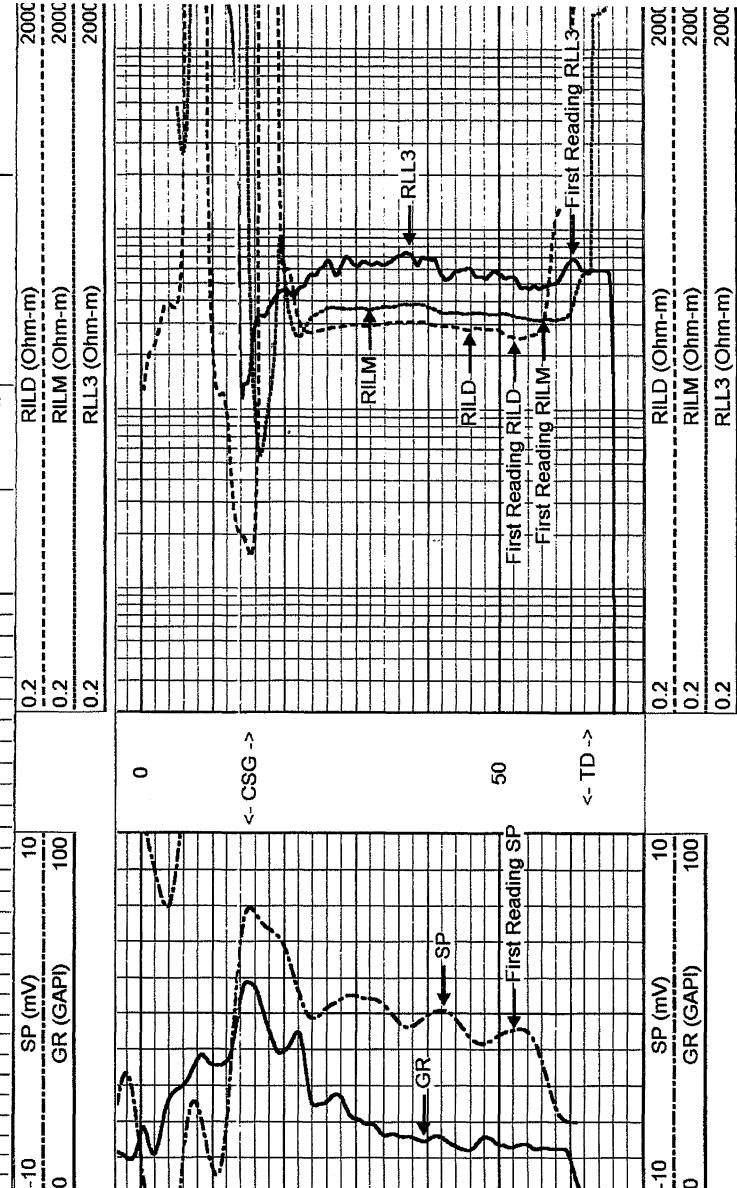
Other Services
BHC/VDL
XY/GR
Elevation
K.B.
D.F.
G.L.

Date	1-APR-2003
Run Number	ONE
Depth Driller	62'
Depth Logger	62'
Bottom Logged Interval	60'
Top Log Interval	15'
Open Hole Size	5.875"
Type Fluid	MUD
Density / Viscosity	na/na
Max Recorded Temp.	na
Estimated Cement Top	na
Time Well Ready	18:30 4/1/03
Time Logger on Bottom	19:00 4/1/03
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S.Miller
Witnessed By	R.Burr (P.G.)

Borehole Record			Tubing Record				
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.875"	SURFACE	62'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	6.125"	Temporary	SURFACE	15'
Prot. String				
Production String				
Liner				

Invoice No.: 2003070 File No.: 02-042 * FIELD PRINT *



MAIN PASS

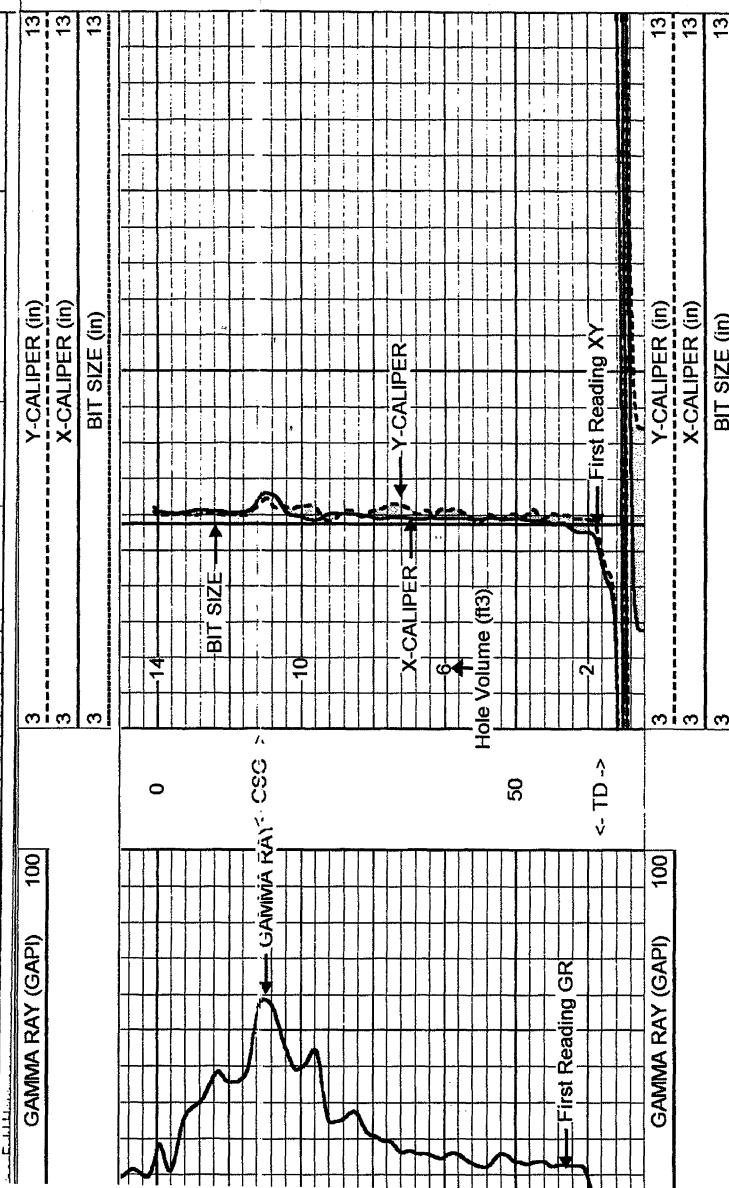
**MV
Geophysical**

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Charted by: Depth in Feet scaled 1:120



X-Y CALIPER GAMMA RAY LOG

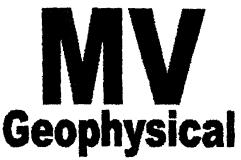
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Well	CP02-EAARS-GL-0013		
Field	EAA Reservoirs Storage		
County	Palm Beach	State/Prv	Florida
Location	CP02-EAARS-GL-0013		
File No.: 02-042			
Permanent Datum	Ground Level	Elevation	Other Services BHC/DL DIL/SP Elevation K.B. D.F. G.L.
Log Measured From	Ground Level		
Drilling Measured From	Ground Level		
Date	1-APR-2003		
Run Number	ONE		
Depth Driller	62'		
Depth Logger	62'		
Bottom Logged Interval	62'		
Top Log Interval	SURFACE		
Open Hole Size	5.875"		
Type Fluid	MUD		
Density / Viscosity	na/na		
Max. Recorded Temp.	na		
Estimated Cement Top	na		
Time Well Ready	18:30 4/1/03		
Time Logger on Bottom	18:30 4/1/03		
Equipment Number	MVGS-1		
Location	Ft. Myers		
Recorded By	S.Miller		
Witnessed By	R.Burr (P.G.)		
Borehole Record			
Run Number	Bit	From	To
ONE	5.875"	SURFACE	62'
Tubing Record			
Casing Record	Size	Wgt/Ft	Top
Surface String	6.125"	Temporary	SURFACE
Prot. String			15'
Production String			
liner			



MAIN PASS

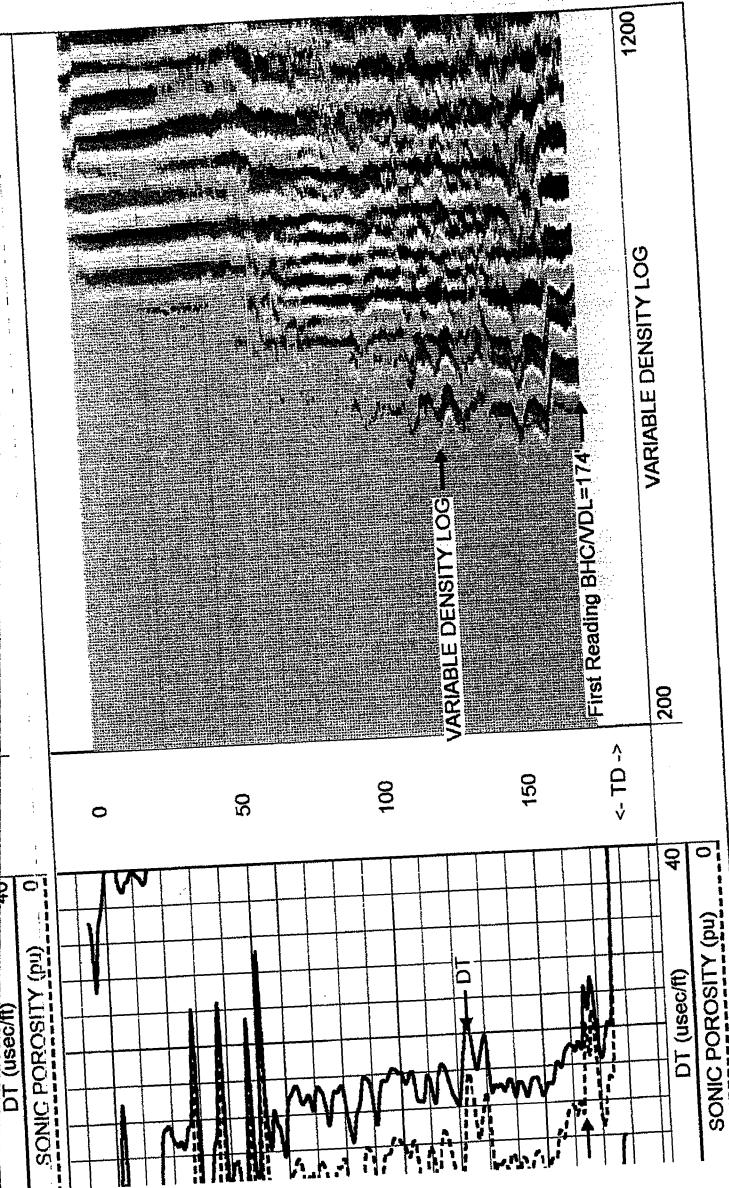
MV
Geophysical

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Dataset Pathname: MAIN
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Charted by: Depth in Feet scaled 1:120



**BOREHOLE COMPENSATED
SONIC
w/ VARIABLE DENSITY
LOG**

Company	Ardaman & Associates, Inc.						
Well	CP02-EAARS-GL-0014						
Field	EAA Reservoirs Storage						
County	Palm Beach						
State/Prv	Florida						
Location	CP02-EAARS-GL-0014	Other Services XY/GR DIL/SP					
File No.: 02-042		Elevation K.B. D.F. G.L.					
Permanent Datum	Ground Level	Elevation					
Log Measured From	Ground Level						
Drilling Measured From	Ground Level						
Date	1-APR-2003						
Run Number	ONE						
Depth Driller	182'						
Depth Logger	182'						
Bottom Logged Interval	174'						
Top Log Interval	SURFACE						
Open Hole Size	5.5"						
Type Fluid	MUD						
Density / Viscosity	na/na						
Max. Recorded Temp.	na						
Estimated Cement Top	na						
Time Well Ready	14:00 4/1/03						
Time Logger on Bottom	14:00 4/1/03						
Equipment Number	MVGS-1						
Location	Ft. Myers						
Recorded By	S. Miller						
Witnessed By	R. Burr (P.G.)						
Borehole Record							
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.5"	78'	183'				
Tubing Record							
Casing Record	Size	Wgt/Ft	Top	Bottom			
Surface String	NA						
Prot. String							



MAIN PASS

**MV
Geophysical**

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DT (usec/ft)

NT (usec/ft)

VARIABLE DENSITY LOG

1200



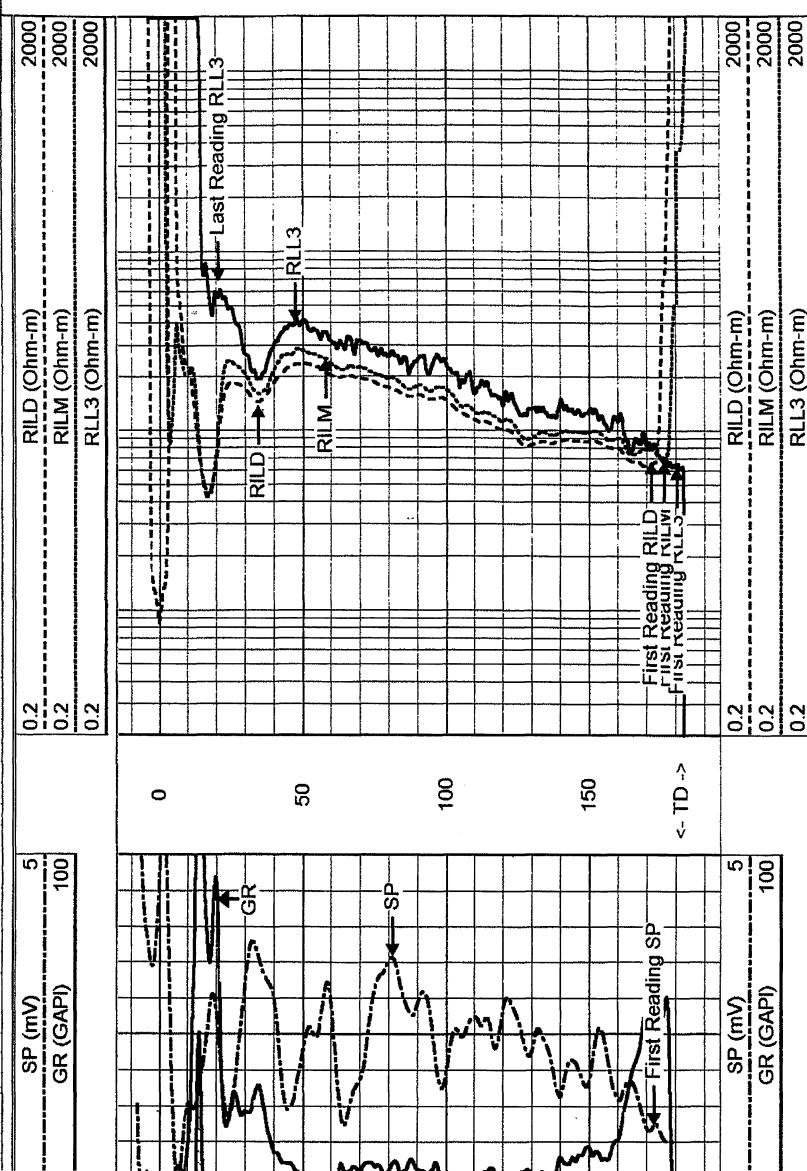
DUAL INDUCTION LL3 / SP LOG

Company Ardaman & Associates, Inc.
Well CP02-EAARS-GL-0014
Field EAA Reservoirs Storage
County Palm Beach State/Prv Florida

Location	CP02-EAARS-GL-0014	Other Services XY/GR BHC/VDL
File No.:	02-042	Elevation
Permanent Datum	Ground Level	K.B.
Log Measured From	Ground Level	D.F.
Drilling Measured From	Ground Level	G.L.

Date	1-APR-2003
Run Number	ONE
Depth Driller	182'
Depth Logger	182'
Bottom Logged Interval	180'
Top Log Interval	SURFACE
Open Hole Size	5.75"
Type Fluid	MUD
Density / Viscosity	na/na
Max. Recorded Temp.	na
Estimated Cement Top	na
Time Well Ready	14:00 4/1/03
Time Logger on Bottom	14:00 4/1/03
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S. Miller
Witnessed By	R. Burr (P.G.)

Run Number	Borehole Record			Tubing Record			
	Bit	From	To	Size	Weight	From	To
ONE	5.75"	SURFACE	182'				
Casing Record	Size	Wgt/Ft	Top	Bottom			
Surface String	NA						
Prot. String							
Production String							



MAIN PASS

MV
Geophysical

Database File: ardaman8.db
Dataset Pathname: MAIN



X-Y CALIPER GAMMA RAY LOG

Company Ardaman & Associates, Inc.
 Well CP02-EAARS-GL-0014
 Field EAA Reservoirs Storage
 County Palm Beach State/Prv Florida

Location	CP02-EAARS-GL-0014	Other Services
		XY/GR DIL/SP
Permanent Datum	Ground Level	Elevation
Log Measured From	Ground Level	K.B. D.F. G.L.
Drilling Measured From	Ground Level	

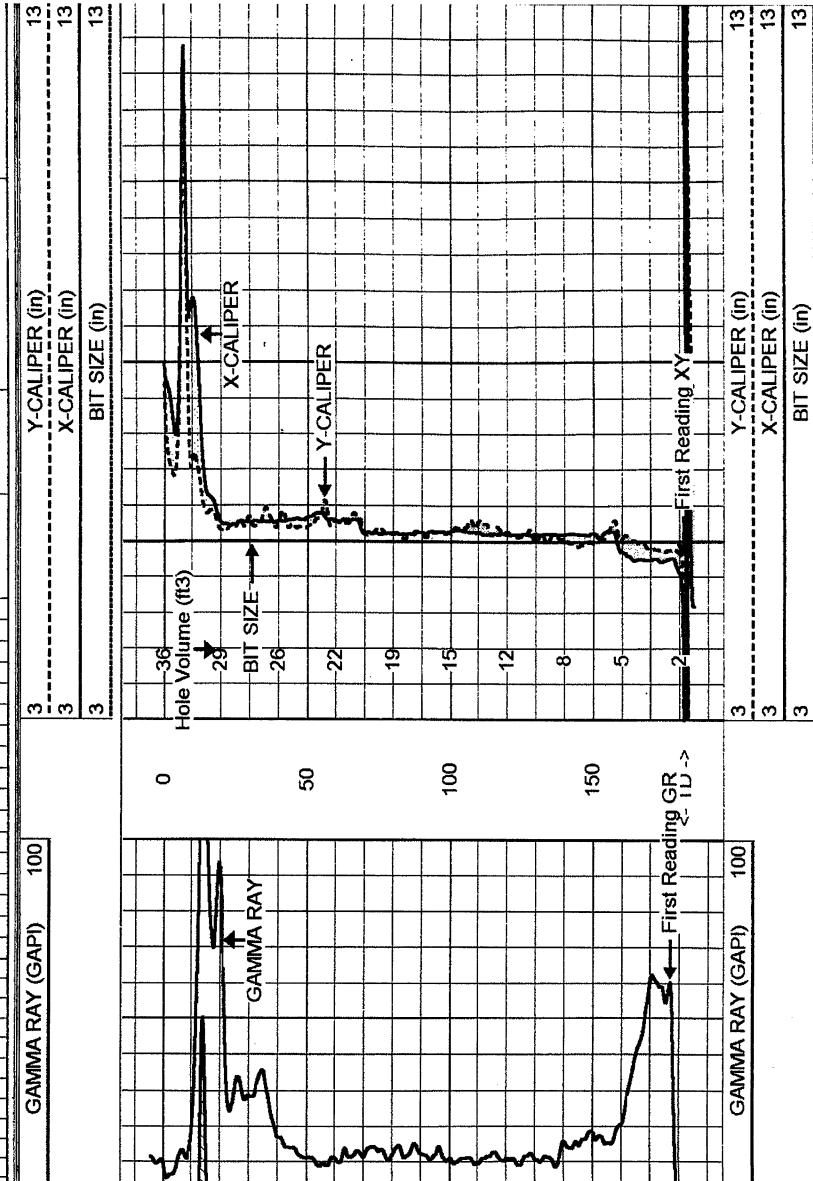
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Date	1-APR-2003
Run Number	ONE
Depth Driller	182'
Depth Logger	182'
Bottom Logged Interval	180'
Top Log Interval	SURFACE
Open Hole Size	5.5"
Type Fluid	MUD
Density / Viscosity	na/na
Max. Recorded Temp.	na
Estimated Cement Top	na
Time Well Ready	14:00 4/1/03
Time Logger on Bottom	15:30 4/1/03
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S. Miller
Witnessed By	R. Burr (P.G.)

Borehole Record			Tubing Record				
Run Number	Bit	From	To	Size	Weight	From	To
ONE	5.5"	SURFACE	182'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	NA			
Prot. String				
Production String				
Liner				

Inv No.: 2003060 File No.: 02-042 * FIELD PRINT *



MAIN PASS

MV Geophysical

Database File: ardaman8.db
 Dataset Pathname: MAIN
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**LABORATORY TESTING PERFORMED DURING THE TEST CELL CONSTRUCTION WITHIN THE
A-1 RESERVOIR SITE
TEST CELL PROGRAM – TECHNICAL MEMORANDUM,
BLACK & VEATCH (2006)**

Test Cell Construction and Testing – Technical Memorandum 1

TABLES

Table 1 December 2004 Boring Rock Testing Results

Boring	% Recovery	% RQD	UCS
TC-01	54	46	3970
TC-01			4740
TC-02	42	21	
TC-03	34	0	
TC-04	48	28	4370
TC-04			6060
TC-05	72	40	8160
TC-05			7310
TC-06	19	10	
TC-07	25	20	
TC-08	44	26	7310
TC-08			5700
TC-09	56	50	6650
7C-09			4080
TC-10	16	14	
BA-01	50	22	10460
BA-02	48	42	3110
BA-02			8590
BA-03	50	28	5970
BA-04	53	31	
BA-05	56	42	
BA-06	35	22	3450
BA-06			3170
BA-07	32	6	
BA-08	66	52	10350
BA-08			3310
BA-09	70	52	
BA-10	48	30	7110
BA-10			10350

Test Cell Construction and Testing – Technical Memorandum 1

Table 2 December 2004 Boring Soil Testing Results

Boring	Depth	Moisture Content %	Carbonate Content %	Gradation: Percent Passing Sieve											Hydrometer	
				3/4--inch	3/8-inch	#4	#10	#20	#40	#60	#100	#140	#200	Silt	Clay	
BA-01	5.5 - 7		87.4													
BA-01	28.5 - 30		29.1													
BA-01	43.5 - 45		10.9													
BA-01	48.5 - 50			100	97.9	97.6	97.4	95.5	89.4	80.6	58.1	17.5	7.5			
BA-02	18.5 - 20			81.3	65.6	55.4	47.1	37.3	28.7	20.9	15.7	12.9	11.4			
BA-03	8.5 - 10		82.6													
BA-03	13.5 - 15			98.6	97.2	93.1	85.6	74.3	58.3	45.2	36.9	31	28.1			
BA-03	29 - 30.5		40.5													
BA-03	43.5 - 45		37.3													
BA-03	48.5 - 50			100	100	99.3	96.5		88.9	86.1	73.7		21.9	18.3	3.6	
BA-04	6 - 7.5		87.7													
BA-04	13.5 - 15			70.5	63.6	60.6	55.4		43.4		30	20.1	20.2	14.4	5.8	
BA-04	18.5 - 20		82.7													
BA-04	33.5 - 35		31.4													
BA-04	48.5 - 50			100	100	99.3	97.7	94.5	91.3	88.3	50.1	14.5	6.4			
BA-05	8.5 - 10		86.2													
BA-05	28.5 - 30		36.8	100	93.4	79.2	63.5	54.6	50.2	45.7	31.1	17.2	11.4			
BA-05	38.5 - 40		31.4													
BA-06	6 - 7.5		84.7													
BA-06	13.5 - 15			100	100	99.1	95.4	87.9	77.6	65.7	54.4	45.5	39.5			
BA-06	28.5 - 30		27.6													
BA-06	48.5 - 50		34.6													
BA-07	6 - 7.5		83													
BA-07	18.5 - 20		84.8													
BA-07	38.5 - 40		28.5													

Test Cell Construction and Testing – Technical Memorandum 1

				Gradation: Percent Passing Sieve											Hydrometer	
Boring	Depth	Moisture Content %	Carbonate Content %	3/4--inch	3/8-inch	#4	#10	#20	#40	#60	#100	#140	#200	Silt	Clay	
BA-07	43.5 -45			100	98.5	89.6	78.9	70.8	66.7	62.4	36.3	13.8	8.4			
BA-08	8.5 - 10		85.9													
BA-08	13.5 - 15		83.7													
BA-08	38.5 - 40		32													
BA-08	28.5 - 30			93.9	83	77	70.1	63.6	59.1	53.2	32.9	16.9	12.2			
BA-09	13.5 - 15			100	96.7	91.3	84.9	76.9	67.6	54.8	43.1	34.1	29			
BA-09	23.5 - 25		78.5													
BA-09	38.5 - 40		25.3													
BA-09	43.5 - 45			100	97.8	95	88.5		82.6	81	72.6		39.8	33.2	6.6	
BA-10	13.5 - 15		83.5													
BA-10	33.5 - 35		26.7													
TC-01	38.5 - 40	24.5												10.3		
TC-01	48.5 - 50			91.1	97	81.9	72		56.1	48.1	34.1		10.4	8.5	1.9	
TC-02	8.3 - 9.8			100	93.6	88.7	82	66.4	46.5	32.8	26.7	24	22.1			
TC-03	13.5 - 15			100	98.2	95.2	90.8	84.1	74	60.6	45.1	32.6	26.6			
TC-04	6.5 - 9			100	88.4	7302	58.6		38.9	32.6	27.2		22.1	13.3	8.8	
TC-04	48.5 - 50	26.8												6.7		
TC-05	48.5 - 50			87.4	86.8	84.3	79.9	73.4	69.3	66.3	53.7	22.3	13.2			
TC-06	8 - 9.5	17.2												11.5		
TC-06	18.5 - 20			100	97.8	91.8	79.8	61.2	45.4	31.5	25.4	17.4	13.1			
TC-06	28.5 - 30			100	93.2	85.9	78.1		68.7	64.2	39.9		9.2	7.8	1.4	
TC-07	28.5 - 30			100	75.5	65	56.2	51.5	49	46.5	35.8	16.6	9.5			
TC-08	43.5 - 45			100	100	98.2	96	95.4	95.2	94.7	85.8	45.4	28			
TC-09	23.5 - 25	26.2											23.3			
TC-10	18.5 - 20			100	100	97	93.4	86	79.2	72.3	65.8	49.6	44.9			

Test Cell Construction and Testing – Technical Memorandum 1

Table 3 **Construction Boring Soil Testing Results**

Boring	Depth	Moisture Content %	Carbonate Content %	Gradation: Percent Passing Sieve											
				2-inch	1-inch	3/4-inch	3/8-inch	#4	#10	#20	#40	#60	#100	#140	#200
TC1-N	5.5 - 7	15				100	94.9	83.2	70.8	56.8	44.4	34.3	27.7	23.9	21.5
TC1-N	8.5 - 10		79												
TC1-N	33.5 - 35	26				100	98.3	98.1	95.6	90.5	85	72.5	30.9	9	5.6
TC1-N	53.5 - 55	15		100	75	71.2	67.8	61.6	53.2	43.1	34.8	27.2	19.9	15.4	12.8
TC1-N	58.5 - 60		63.2												
TC1-N	68.5 - 70	18			100	95.2	82	71.2	55.1	39.1	28.9	22.2	15.7	13	11.4
TC1-N	73.5 - 75	24			100	94.8	88	79.7	62.6	44	29.7	19.6	11.4	9.1	8
TC1-N	78.5 - 80		45.9												
TC1-N	88.5 - 80	25				100	95.1	86.5	75.6	61.7	50.2	37	20.9	17.7	16.8
TC1-E	9 - 10.5		82.3												
TC1-E	13.5 - 15	21				100	83.1	74.7	68.5	62.1	53.1	43.8	35.3	28	24.8
TC1-E	28.5 - 30		14.5												
TC1-E	53.5 - 55	17			100	95.7	77	63.9	49.7	36.5	28.1	22.3	17.7	15.1	13.6
TC1-E	58.5 - 60	25			100	90.3	88	85.3	78.5	64.4	43	30	20	17	15.3
TC1-E	63.5 - 65		41.6												
TC1-E	73.5 - 75		69.1												
TC1-E	83.5 - 85	22				100	83.5	72.8	59.8	45.4	34.1	22.8	13.3	11.2	10
TC1-E	88.5 - 90	21				100	96.8	89.9	82.4	66.7	48.7	28.9	14.1	12.4	11.7
TC1-E	98.5 - 100	15				100	96.5	89.5	72.9	47.8	34.5	24.8	15.7	13.2	12
TC1-W	13.5 - 15	26				100	85	76.3	68.8	62.2	55.1	46.3	36.4	27.1	22.5
TC1-W	18.5 - 20		91.9												
TC1-W	33.5 - 35		56.5												
TC1-W	48.5 - 50	26				100	94	92.1	88.2	82.8	78.6	75.2	53.1	22.8	15
TC1-W	68.5 - 70	19			100	96	86.2	72.5	56.1	40	29.3	22.3	14.8	12.7	11.5

Test Cell Construction and Testing – Technical Memorandum 1

		Gradation: Percent Passing Sieve															
Boring	Depth	Moisture Content %	Carbonate Content %	2-inch	1-inch	3/4-inch	3/8-inch	#4	#10	#20	#40	#60	#100	#140	#200		
TC1-W	73.5 - 75		65														
TC1-W	78.5 - 80	22			100	91.7	90.8	84.3	69.2	50.6	37	24.6	15.1	12.7	11.5		
TC1-W	93.5 - 95	22				100	99	96.1	83.9	59.5	39.3	23.3	17	14.9	13.7		
TC1-W	98.5 - 100		67.7														
TC1-S	13.3 - 15	21				100	96.3	90.5	83.8	76.2	68.2	56.6	42.9	30	24.9		
TC1-S	18.5 - 20		87.1														
TC1-S	33.5 - 35	20		100	88	87.5	87.5	86.4	81.8	68.4	53	33.7	19.2	8.9	6.1		
TC1-S	38.5 - 40		40.7														
TC1-S	43.5 - 45		25.3														
TC1-S	48.5 - 50					100	100	96.4	89.9	84.3	80	77	64	33.1	21.2		
TC1-S	68.5 - 70	20				100	94.2	79.8	62.9	45.2	33.2	25.1	16.5	14.1	12.8		
TC1-S	73.5 - 75		68.9														
TC1-S	78.5 - 85		67.8														
TC1-S	93.5 - 95	23				100	98	92.2	81.6	58.8	38.5	21.6	14.4	13.6	12.3		
TC2-E	18.5 - 20		80.6														
TC2-E	28.5 - 30					100	86.4	77.2	69.5	64.1	60.4	56.5	35.5	15.4	10		
TC2-E	48.5 - 50						72.1	63.4	52.6	44.8	37.2	32.7	29.1	21.3	11	7.9	
TC2-E	78.5 - 80						95	85.7	76.6	62.1	43.7	30.6	21	13.2	10.8	9.6	
TC2-N	5.5 - 7						66.1	61.6	53.9	45.6	28.5	14.7	7.2	4.5	3.6	3.2	
TC2-N	8.5 - 10						78.7	64.4	34.4	26.6	21.2	18.2	16.4	15	14.2	13.6	
TC2-N	11 - 12.5						81.6	47.2	31.3	17.6	11.6	9	7.5	6.4	5.9	5.5	
TC2-N	13.5 - 15						77.5	68.2	53.6	41.6	32.6	25	19.2	14.9	12.4	10.8	
TC2-N	28.5 - 30						68.6	59	48.6	35.9	29.3	26.2	23.9	18.8	11.9	7.3	
TC2-N	33.5 - 35								100	98.9	97.5	96.2	94.3	64	12.2	4.3	
TC2-N	38.5 - 40								84.1	80.5	79.4	77.7	76.2	75.1	73.6	58.8	18.6
TC2-N	58.5 - 60								93.5	83.8	75	64.7	53.4	4104	32	23.3	19
TC2-N	63.5 - 65								93.6	86.8	76.3	62	46.6	33.6	23.2	14.3	12.2
																	10.8

Test Cell Construction and Testing – Technical Memorandum 1

Boring	Depth	Moisture Content %	Carbonate Content %	Gradation: Percent Passing Sieve												
				2-inch	1-inch	3/4-inch	3/8-inch	#4	#10	#20	#40	#60	#100	#140	#200	
TC2-N	68.5 - 70					81.1	46.5	33.5	23.9	18.5	15	12.2	9.1	7.3	6.4	
TC2-S	8.5 - 10					100	99.2	87.9	79.2	68.8	61.2	55.5	50.3	46.4	43	
TC2-S	11 - 12.5		89.5													
TC2-S	43.5 - 45					100	93.4	89.3	84.2	82.7	81.5	80.3	67.7	28.5	16.3	
TC2-S	53.5 - 55					100	96.6	86	66.3	43.2	31.3	12.7	16.7	11.8	9.6	
TC2-S	78.5 - 80					100	91.2	80.1	65.1	47.9	35.4	24	13	10.7	9.3	
TC2-S	83.5 - 85					92.1	74.8	60.4	45.8	33.3	25.5	19.2	12.5	10.8	9.7	
TC2-W	11 - 12.5		78.6													
TC2-W	33.5 - 35		23.3					100	98.7	94.3	88.5	84.7	79.6	61.2	22.6	14.4
TC2-W	53.5 - 55					97	83.5	60.1	40.4	27.9	22.4	18.3	13.6	10.4	8.9	
TC2-W	73.5 - 75					90.1	81.8	70.8	57.8	42.4	30.5	21	12.6	10.2	8.9	
TC2-W	83.5 - 85					100	83.3	66.3	52.6	40.5	32.7	26	19	17.3	16.2	

Test Cell Construction and Testing – Technical Memorandum 1

Table 4 Test Cell 2 Soil-Bentonite Cutoff Wall Backfill Slurry Testing Results

Sample Station	Specific Gravity	Gradation (Percent Passing)										Hyd. Cond. cm/sec
		3/4-inch	3/8-inch	No. 4	No. 10	No. 20	No. 40	No. 60	No. 100	No. 140	No. 200	
0+70	2.7	100	100	90.1	76.5	63.3	52.7	44.2	38.1	33.4	29.2	7.9E-08
2+70	2.7	100	100	86.1	72.8	60.5	50.8	43.4	37.4	33.2	29.1	1.9E-08
4+80	2.7	100	100	83.5	66.5	54	43.2	39.1	34.1	30.8	27.6	2.4E-08
6+40	2.7	100	100	92	80	68.1	58	49.9	44.4	39.5	36.5	4.0E-09
8+40	2.7	100	100	90.7	77.4	65.2	55.1	47.2	41.8	37.7	33.7	1.4E-08
10+40	2.7	100	99.6	89.4	76.6	64.2	54	46.4	41.2	37	33.3	2.3E-08
12+40	2.7	100	100	89.5	76.1	63.1	52.6	44.9	39.1	35.2	31.7	6.8E-08
14+40	2.7	100	100	89.5	75.6	61.9	51.1	43.2	37.3	33.3	29.5	8.9E-08
16+30	2.7	100	100	89	75.4	62.7	52.3	44	38.2	33.9	29.9	4.0E-08
13+30	2.7	100	100	88.7	74.9	62.4	52.4	44.3	38.5	34	29.7	6.0E-08

Test Cell Construction and Testing – Technical Memorandum 1

Table 10 Moisture and Density Testing at Time of Breaching

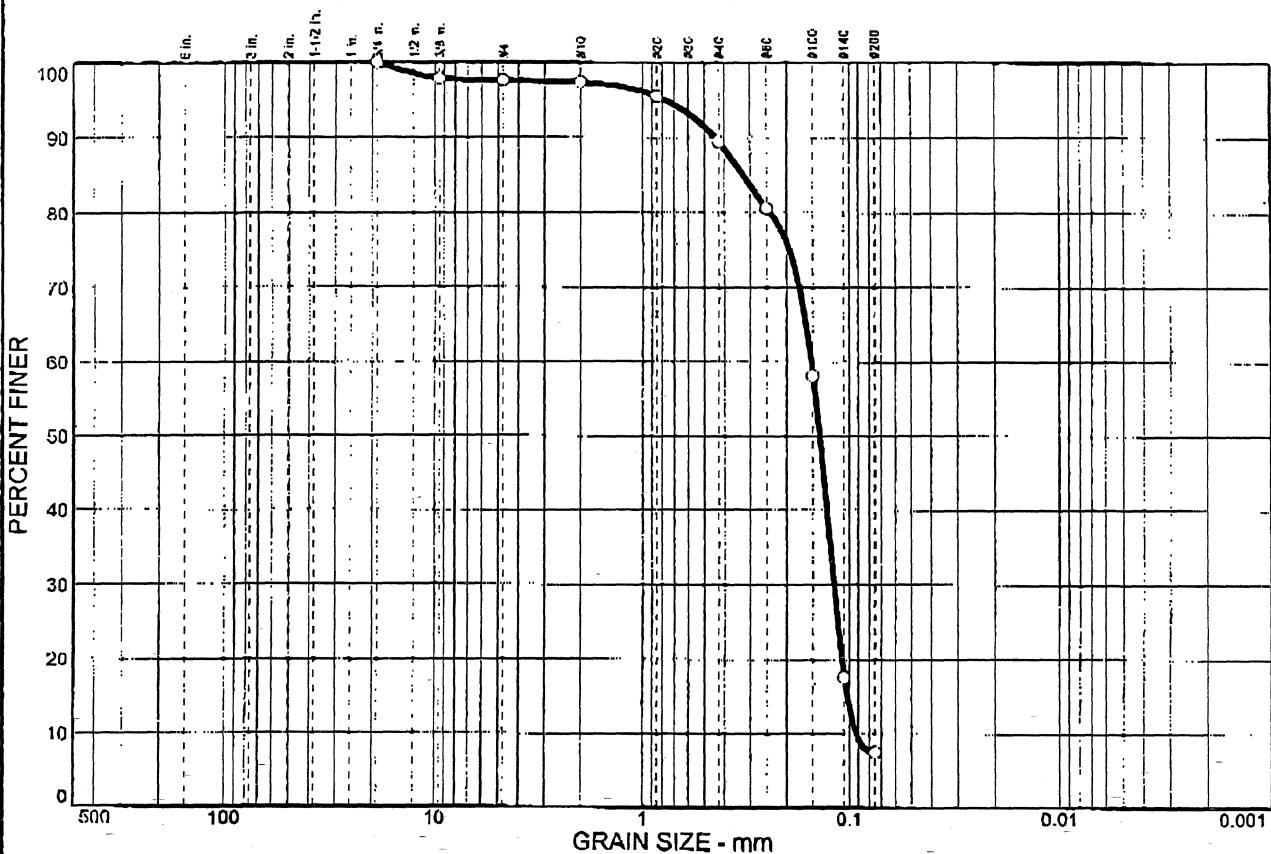
Test cell	Approximate elevation in embankment (ft)	Approximate depth (ft)	Method	Wet density (pcf)	Dry density (pcf)	Moisture content (%)
1	10	12	Nuclear	139.4	120.9	15.3
	10	12	Nuclear	136.4	116.9	16.7
	14	8	Nuclear	133.5	113.4	17.7
	14	8	Nuclear	141.4	119.2	18.6
	18	4	Nuclear	131.1	110.5	18.7
	10	12	Sand cone	132.8	115.2	15.3
	14	8	Sand cone	137.2	116.5	17.8
	18	4	Sand cone	133.3	112.8	18.2
	2	10	Nuclear	134.1	117.8	13.8
	10	12	Nuclear	134.1	114.3	17.3
2	14	8	Nuclear	133.5	115.9	15.1
	14	8	Nuclear	130.6	112.4	16.2
	18	4	Nuclear	136.8	117.4	16.5
	18	4	Nuclear	135.1	114.1	18.5
	20	2	Nuclear	128.7	109.9	17.1
	20	2	Nuclear	133.8	113.6	17.8
	10	12	Sand cone	136.1	118.1	15.3
	14	8	Sand cone	133.9	117.6	13.9
	18	4	Sand cone	137.6	117.1	17.5
	20	2	Sand cone	132.5	112.6	17.7

**LABORATORY TESTING PERFORMED FOR THE PREPARATION OF THE
EVERGLADES AGRICULTURAL AREA RESERVOIR A-1
GEOTECHNICAL DATA REPORT, BLACK & VEATCH (2006)**

Note: The borings at the Test Cell Site and the supplemental borings were assigned temporary identification numbers prior to drilling. These temporary boring numbers are referred to as old boring numbers in the report text. After completion of the test cell and supplemental borings, a block of new boring numbers was received from the USACE Jacksonville District office. Software used for the test results from the summer 2005 borings did not permit the old boring number to be altered. Therefore, the test results for the supplemental borings contain both the old boring number and its corresponding new number. The new boring number was inserted in the remarks column of the test results for the supplemental borings. The laboratory test results for the Test Cell borings contain only the old boring numbers. For ease of reference, the table below shows the old boring numbers for the Test Cell boring and the corresponding new boring number.

Test Cell Borings	
Old Boring Number	New Boring Number
BA-01	CP05-EAARS-CB-0168
BA-02	CP05-EAARS-CB-0169
BA-03	CP05-EAARS-CB-0170
BA-04	CP05-EAARS-CB-0171
BA-05	CP05-EAARS-CB-0172
BA-06	CP05-EAARS-CB-0173
BA-07	CP05-EAARS-CB-0174
BA-08	CP05-EAARS-CB-0175
BA-09	CP05-EAARS-CB-0176
BA-10	CP05-EAARS-CB-0177
TC-01	CP05-EAARS-CB-0178
TC-02	CP05-EAARS-CB-0179
TC-03	CP05-EAARS-CB-0180
TC-04	CP05-EAARS-CB-0181
TC-05	CP05-EAARS-CB-0182
TC-06	CP05-EAARS-CB-0183
TC-07	CP05-EAARS-CB-0184
TC-08	CP05-EAARS-CB-0185
TC-09	CP05-EAARS-CB-0186
TC-10	CP05-EAARS-CB-0187
TC1-E	CP05-EAARS-CB-0188
TC1-N	CP05-EAARS-CB-0189
TC1-W	CP05-EAARS-CB-0190
TC1-S	CP05-EAARS-CB-0191
TC2-E	CP05-EAARS-CB-0192
TC2-N	CP05-EAARS-CB-0193
TC2-W	CP05-EAARS-CB-0194
TC2-S	CP05-EAARS-CB-0195

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
0.0	0.0	2.4	0.2	8.0	81.9	7.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	97.9		
#4	97.6		
#10	97.4		
#20	95.5		
#40	89.4		
#60	80.6		
#100	58.1		
#140	17.5		
#200	7.5		

(no specification provided)

Soil Description

PL =

Atterberg Limits

LL =

PI =

CoefficientsD₈₅ = 0.324D₆₀ = 0.153D₅₀ = 0.140D₃₀ = 0.119D₁₅ = 0.103D₁₀ = 0.0926C_u = 1.65C_c = 1.01**Classification**

USCS = AASHTO =

RemarksSample No.: B234
Location: BA-01

Source of Sample:

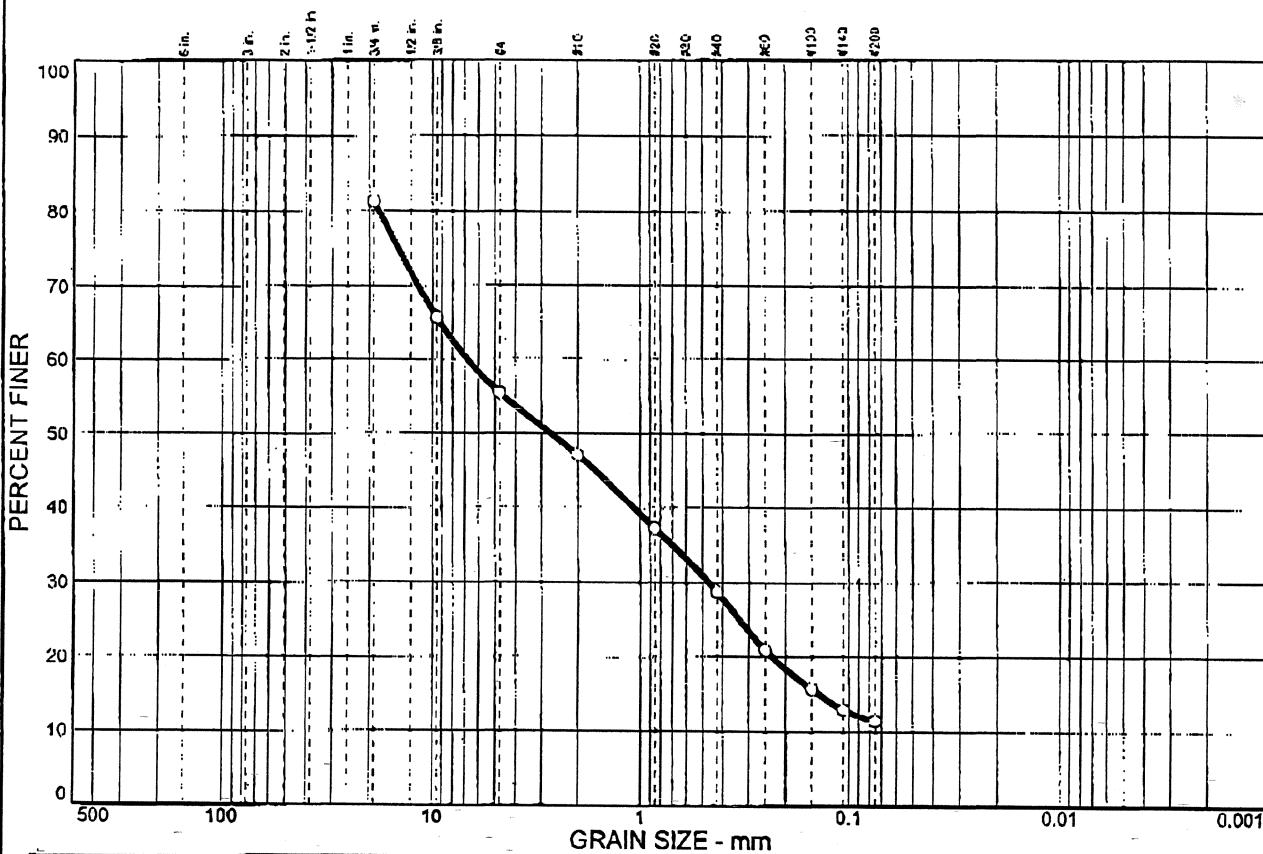
Date:
Elev./Depth: 48.5-50.0'Client:
Project: EAA

Project No: W04-G-487

Plate

NODARSE & ASSOCIATES, INC.

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
		25.9		8.3	18.4	17.3
						11.4

SIEVE SIZE	PERCENT FINER	SPEC* PERCENT	PASS? (X=NO)
3/4 in.	81.3		
3/8 in.	65.6		
#4	55.4		
#10	47.1		
#20	37.3		
#40	28.7		
#60	20.9		
#100	15.7		
#140	12.9		
#200	11.4		

* (no specification provided)

<u>Soil Description</u>		
PL=	<u>Atterberg Limits</u>	PI=
LL=		
D ₈₅ =	<u>Coefficients</u>	D ₅₀ = 2.72
D ₃₀ = 0.466	D ₆₀ = 6.82	D ₁₀ =
C _u =	D ₁₅ = 0.139	C _c =
USCS=	AASHTO=	
<u>Classification</u>		
<u>Remarks</u>		

Sample No.: B301
Location: BA-02

Source of Sample:

Date:
Elev./Depth: 18.5-20.0'

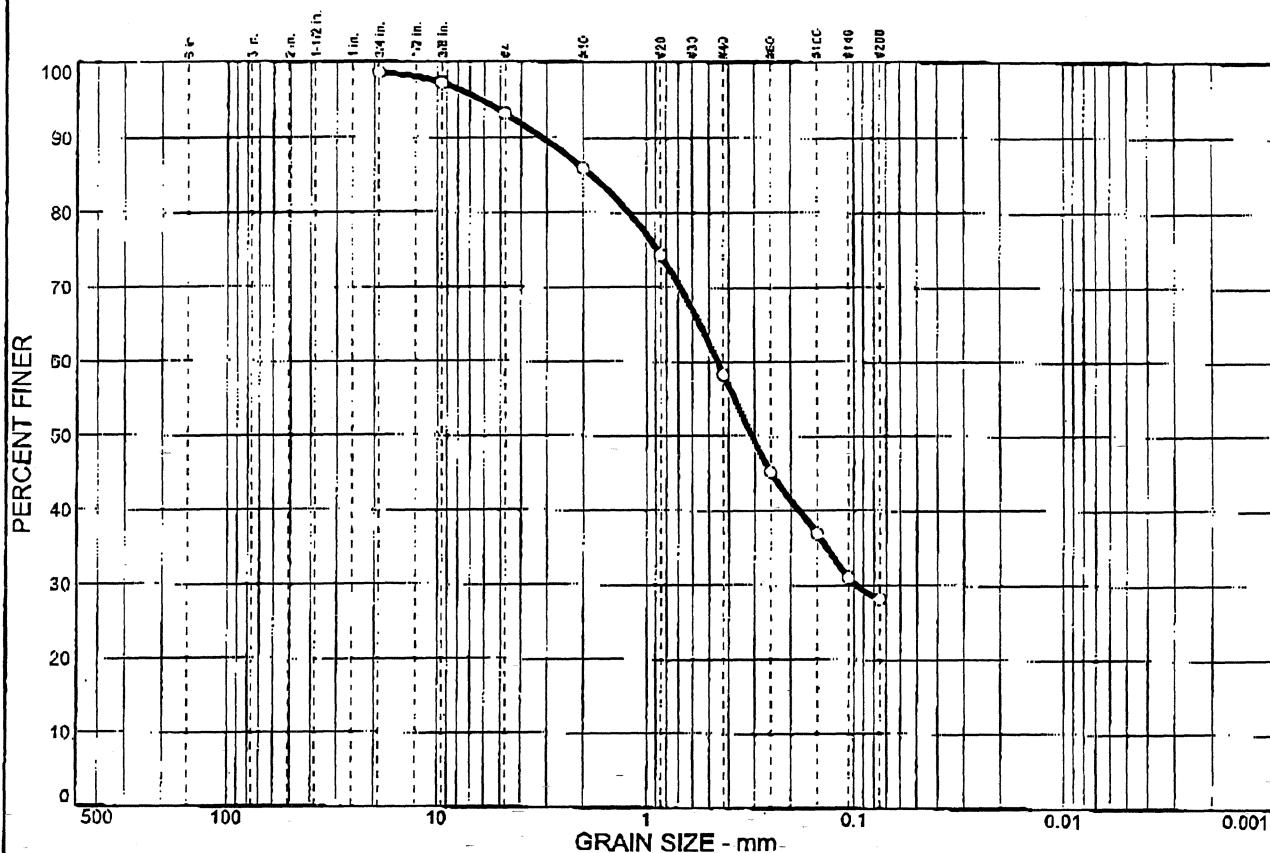
NODARSE & ASSOCIATES, INC.

Client:
Project: EAA

Project No: W04-G-487

Plate

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
		5.5	7.2	27.6	30.2		28.1

SIEVE SIZE	PERCENT FINER	SPEC. PERCENT	PASS? (X=NO)
3/4 in.	98.6		
3/8 in.	97.2		
#4	93.1		
#10	85.9		
#20	74.3		
#40	58.3		
#60	45.2		
#100	36.9		
#140	31.0		
#200	28.1		

(no specification provided)

Soil Description

PL=

Atterberg Limits

PI=

 $D_{85} = 1.83$
 $D_{30} = 0.0972$
 $C_u =$
LL= $D_{50} = 0.309$ D₁₀= $D_{15} =$ C_c=

USCS=

Coefficients $D_{60} = 0.454$ $D_{15} =$ $C_c =$ Classification

AASHTO=

Remarks

Sample No.: I3280
 Location: BA-03

Source of Sample:

Date:
 Elev./Depth: 13.5-15.0'

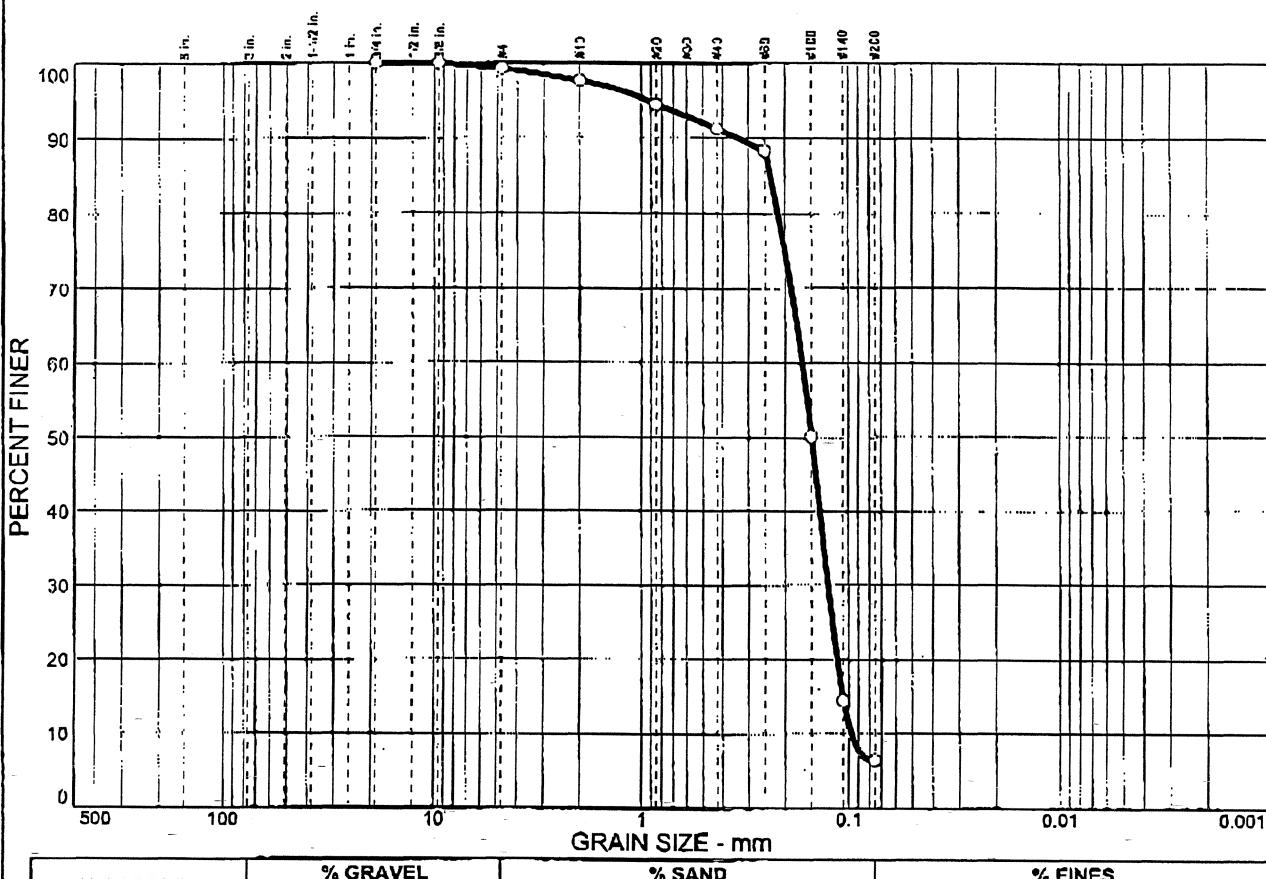
Client:
 Project: EAA

Project No: W04-G-487

Plate

NODARSE & ASSOCIATES, INC.

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
0.0	0.0	0.7	1.6	6.4	84.9	6.4

SIEVE SIZE	PERCENT FINER	SPEC* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	100.0		
#4	99.3		
#10	97.7		
#20	94.5		
#40	91.3		
#60	88.3		
#100	50.1		
#140	14.5		
#200	6.4		

* (no specification provided)

Soil Description

PL =

Atterberg Limits

LL =

PI =

Coefficients

D₈₅ = 0.237

D₆₀ = 0.166

D₅₀ = 0.150

D₃₀ = 0.125

D₁₀ = 0.0973

C_U = 1.71

C_c = 0.97

Classification

AASHTO =

Remarks

Sample No.: B262
Location: BA-04

Source of Sample:

Date:
Elev./Depth: 48.5-50.0'

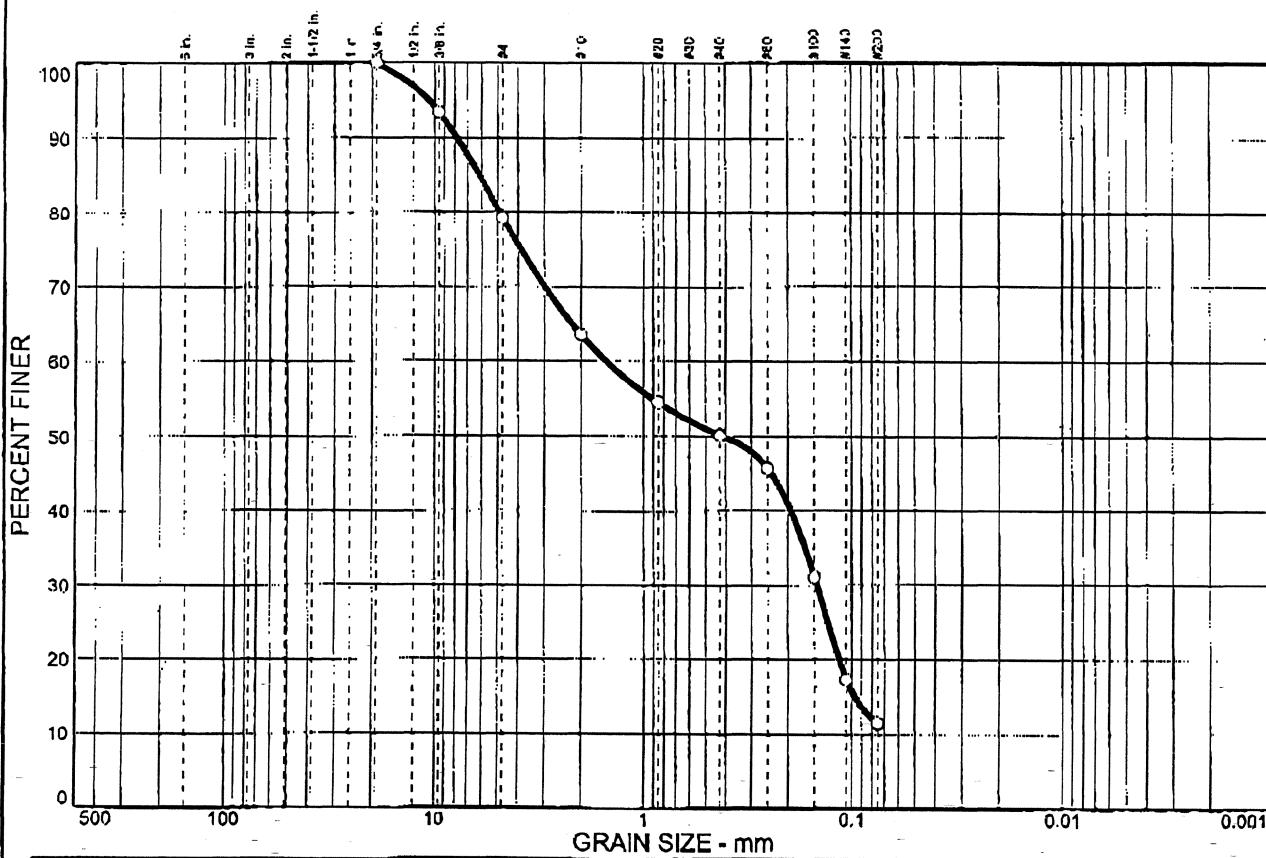
Client:
Project: EAA

Project No: W04-C-487

Plate

NODARSE & ASSOCIATES, INC.

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
0.0	0.0	20.8	15.7	13.3	38.8	11.4

SIEVE SIZE	PERCENT FINER	SPEC. PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	93.4		
#4	79.2		
#10	63.5		
#20	54.6		
#40	50.2		
#60	45.7		
#100	31.1		
#140	17.2		
#200	11.4		

(no specification provided)

<u>Soil Description</u>		
PL=	<u>Atterberg Limits</u>	PI=
LL=		
D ₈₅ = 6.18	Coefficients	D ₅₀ = 0.408
D ₃₀ = 0.146	D ₆₀ = 1.52	D ₁₀ =
C _U =	D ₁₅ = 0.0972	C _c =
USCS=	<u>Classification</u>	AASHTO=
	<u>Remarks</u>	

Sample No.: BCBR
Location: BA-05

Source of Sample:

Date:
Elev./Depth: 28.5-30.0'

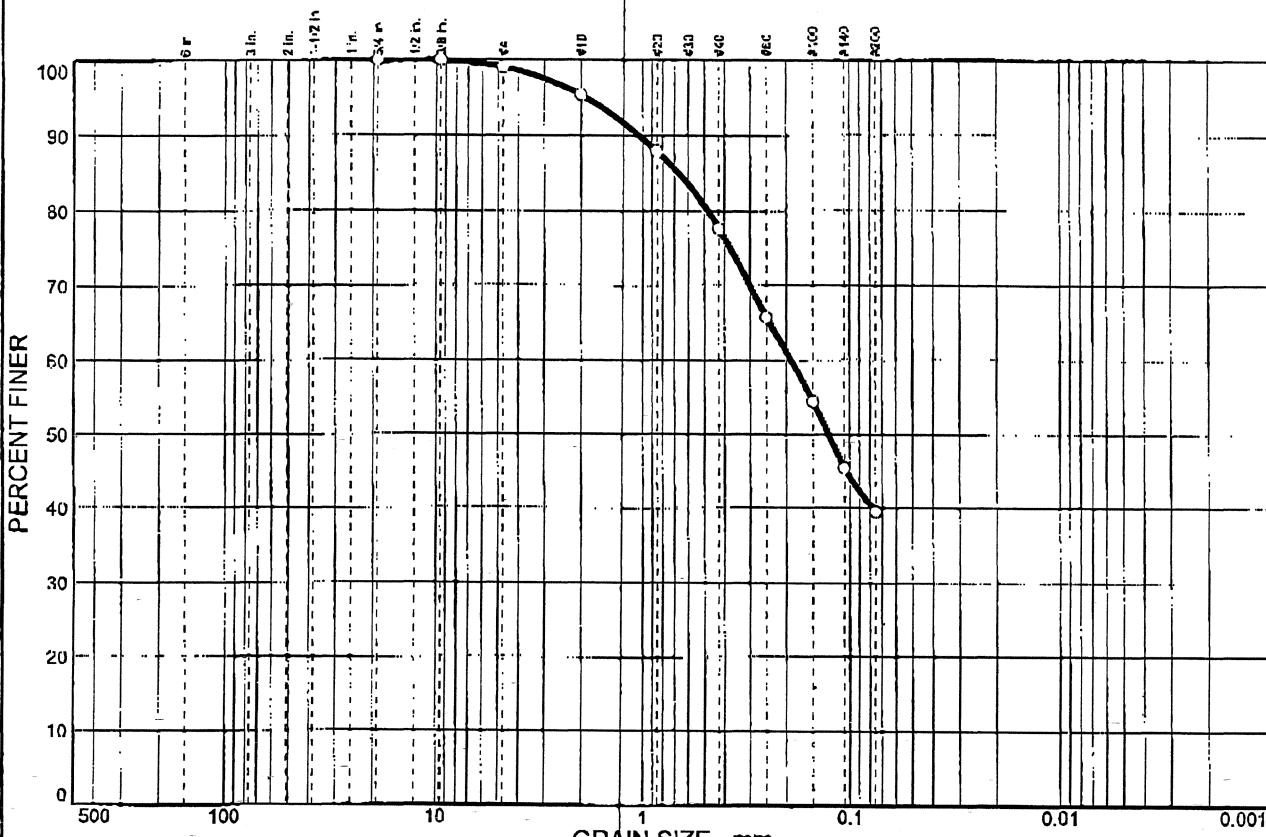
NODARSE & ASSOCIATES, INC.

Client:
Project: EAA

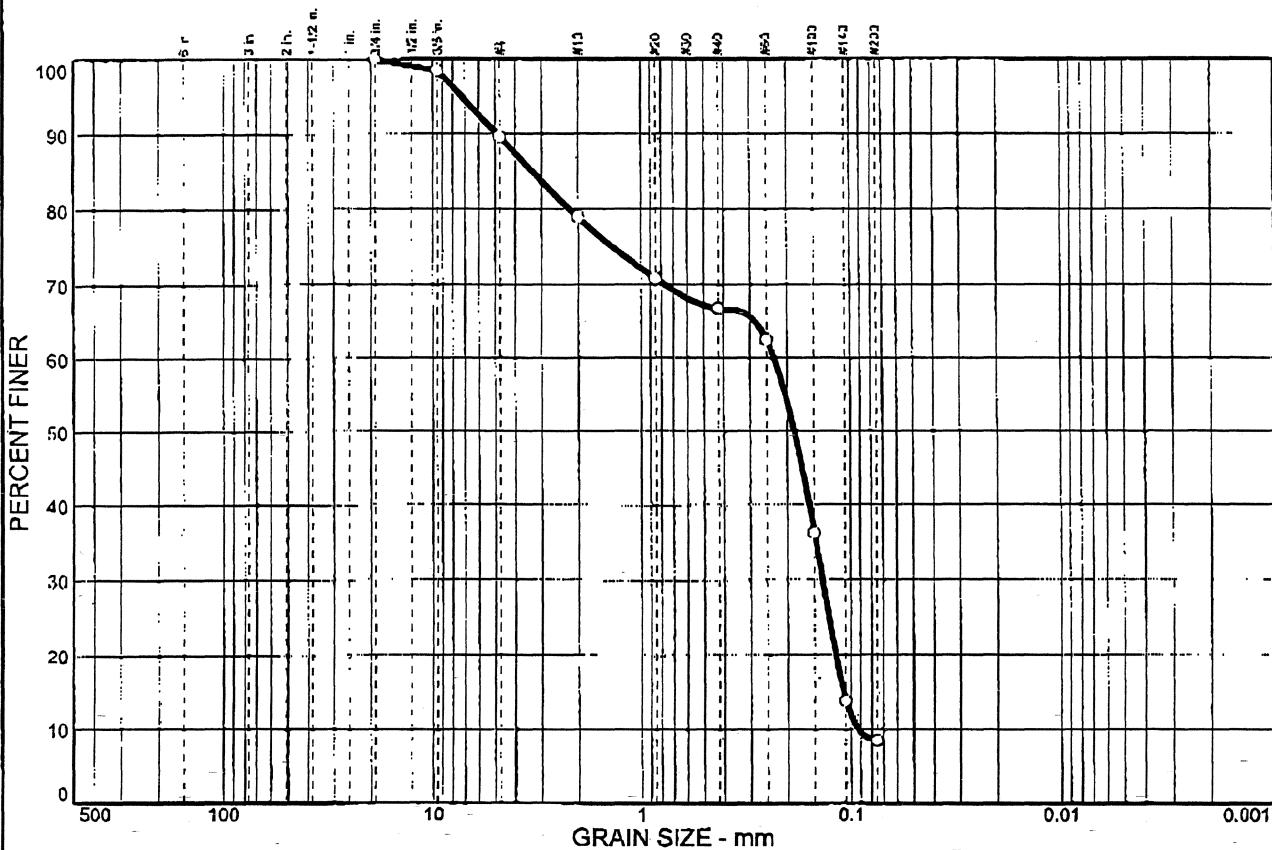
Project No: W04-G-487

Plate

Particle Size Distribution Report



Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES		
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	10.4	10.7	12.2	58.3	8.4	

SIEVE SIZE	PERCENT FINER	SPEC. PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	98.5		
#4	89.6		
#10	78.9		
#20	70.8		
#40	66.7		
#60	62.4		
#100	36.3		
#140	13.8		
#200	8.4		

(no specification provided)

<u>Soil Description</u>		
PL=	<u>Atterberg Limits</u>	PI=
LL=	D ₆₀ = 0.231	D ₅₀ = 0.186
D ₈₅ = 3.32	D ₁₅ = 0.109	D ₁₀ = 0.0929
D ₃₀ = 0.138	C _C = 0.88	
C _U = 2.49		
<u>Coefficients</u>		
USCS=	AASHTO=	
<u>Classification</u>		
<u>Remarks</u>		

Sample No.: B259
Location: BA-07

Source of Sample:

Date:
Elev./Depth: 43.5-45.0'

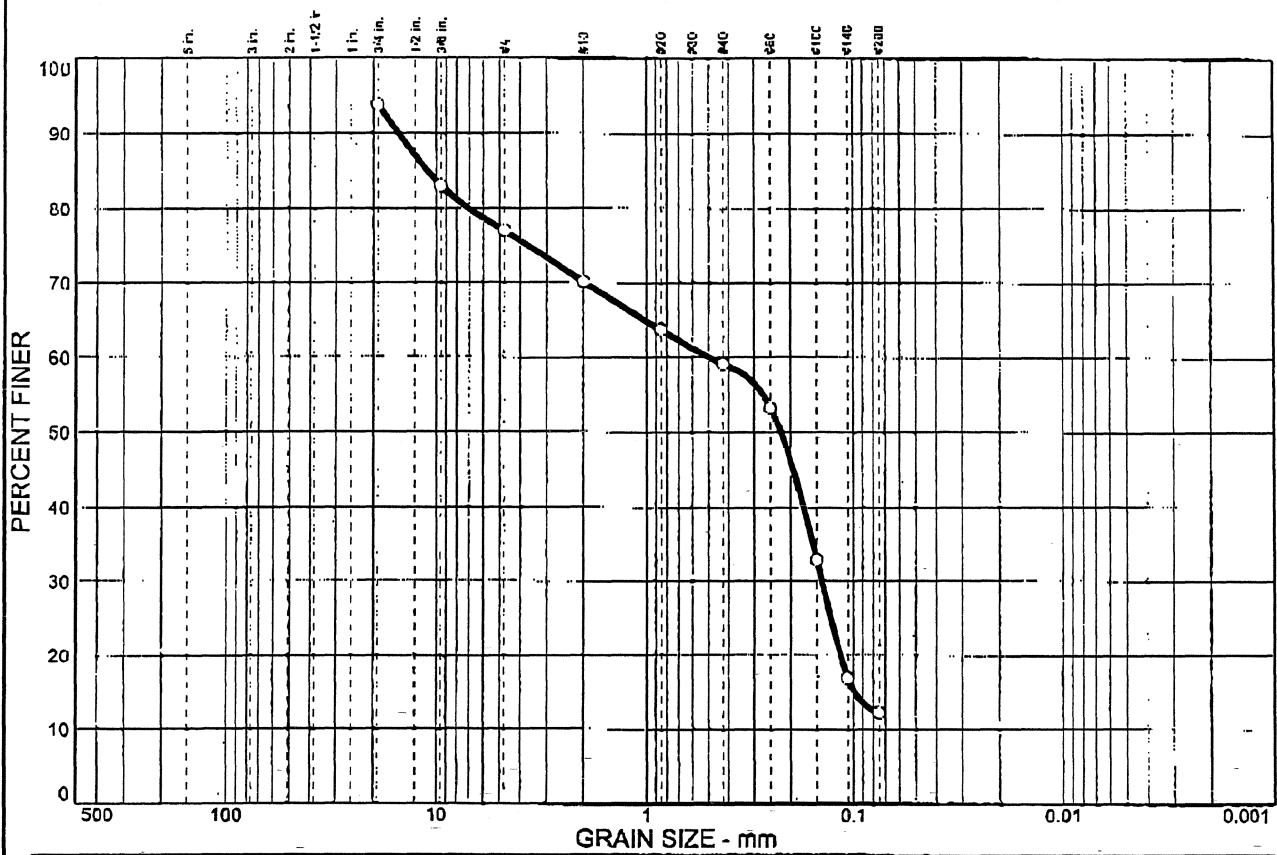
NODARSE & ASSOCIATES, INC.

Client:
Project: EAA

Project No: W04-G-487

Plate

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINE	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
		16.9	6.9	11.0	46.9	12.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	93.9		
3/8 in.	83.0		
#4	77.0		
#10	70.1		
#20	63.6		
#40	59.1		
#60	53.2		
#100	32.9		
#140	16.9		
#200	12.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients
 $D_{85}=11.1$ $D_{60}=0.499$ $D_{50}=0.223$
 $D_{30}=0.142$ $D_{15}=0.0984$ $D_{10}=$
 $C_u=$

Classification
USCS= AASHTO=

Remarks

Sample No.: B300
Location: BA-08

Source of Sample:

Date:
Elev./Depth: 28.5-30.0'

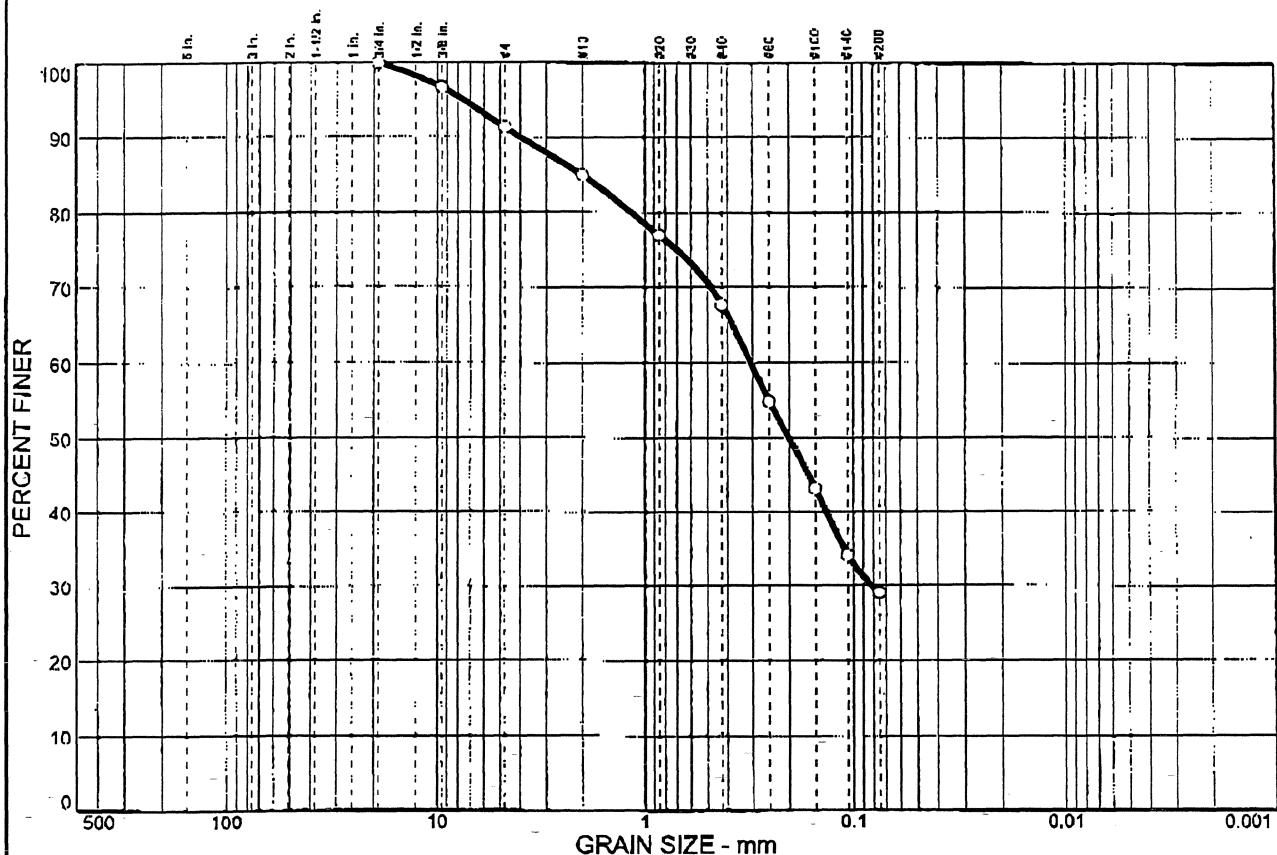
Client:
Project: EAA

Project No: W04-G-487

Plate

NODARSE & ASSOCIATES, INC.

Particle Size Distribution Report



SIEVE SIZE	PERCENT FINER	SPEC. PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	96.7		
#4	91.3		
#10	84.9		
#20	76.9		
#40	67.6		
#60	54.8		
#100	43.1		
#140	34.1		
#200	29.0		

(no specification provided)

<u>Soil Description</u>		
PL=	<u>Atterberg Limits</u>	PI=
	LL=	
	<u>Coefficients</u>	
D ₈₅ = 2.02	D ₆₀ = 0.308	D ₅₀ = 0.202
D ₃₀ = 0.0817	D ₁₅ =	D ₁₀ =
C _u =	C _c =	
USCS=	<u>Classification</u>	AASHTO=
	<u>Remarks</u>	

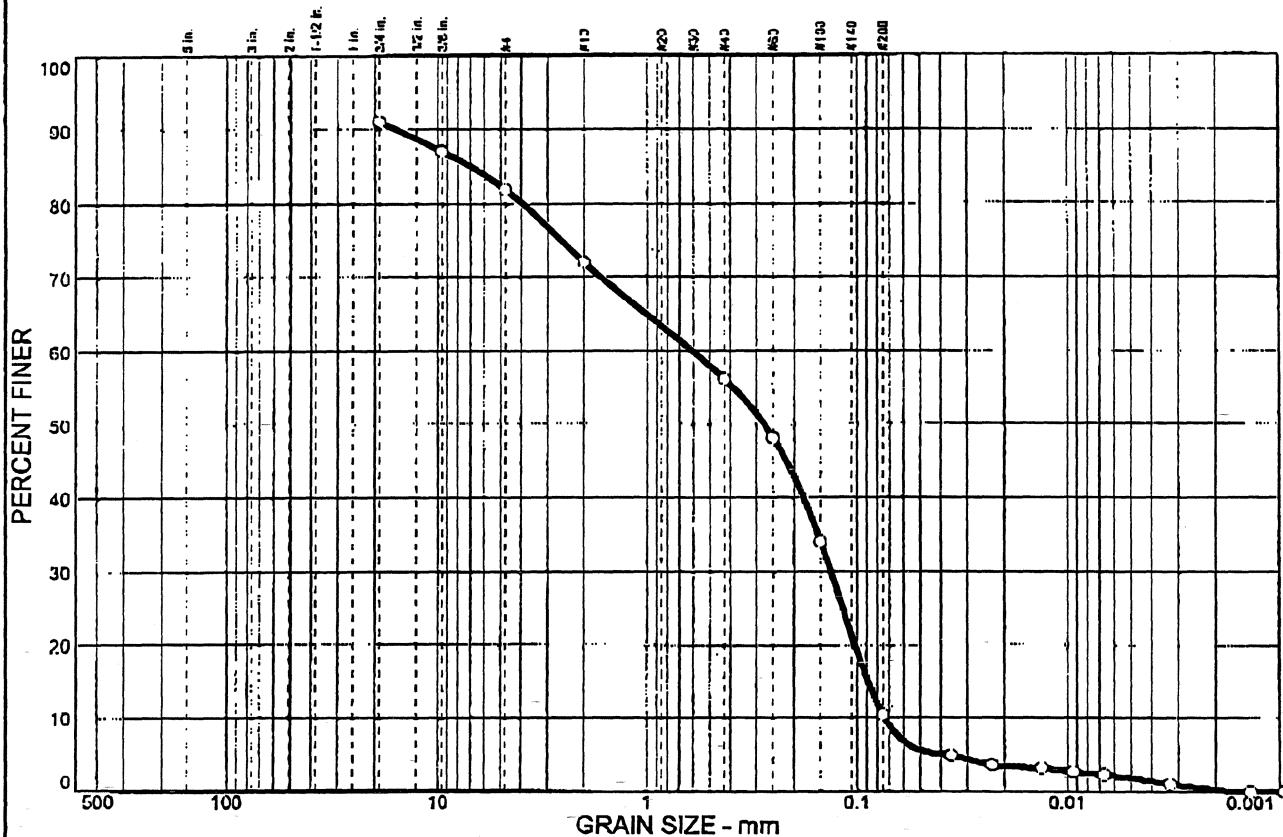
Sample No.: B305
Location: BA-09

Source of Sample:

Date:
Elev./Depth: 13.5-15.0'

NODARSE & ASSOCIATES, INC.	Client: Project: EAA	Plate
	Project No: W04-G-487	

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
		9.2		9.9	15.9	45.7
						8.5
						1.9

SIEVE SIZE	PERCENT FINER	SPEC. ^a PERCENT	PASS? (X=NO)
3/4 in.	91.1		
3/8 in.	87.0		
#4	81.9		
#10	72.0		
#40	56.1		
#60	48.1		
#100	34.1		
#200	10.4		

^a (no specification provided)

Soil Description

PL =

Atterberg Limits

LL =

PI =

Coefficients

D₆₀ = 0.607 D₅₀ = 0.276

D₁₅ = 0.0888 D₁₀ = 0.0736

D₈₅ = 6.97
D₃₀ = 0.134
C_U = 8.24

C_C = 0.40

USCS =

Classification

AASHTO =

Remarks

Sample No.: T
Location: TC-1-11

Source of Sample:

Date:
Elev./Depth: 48.5'

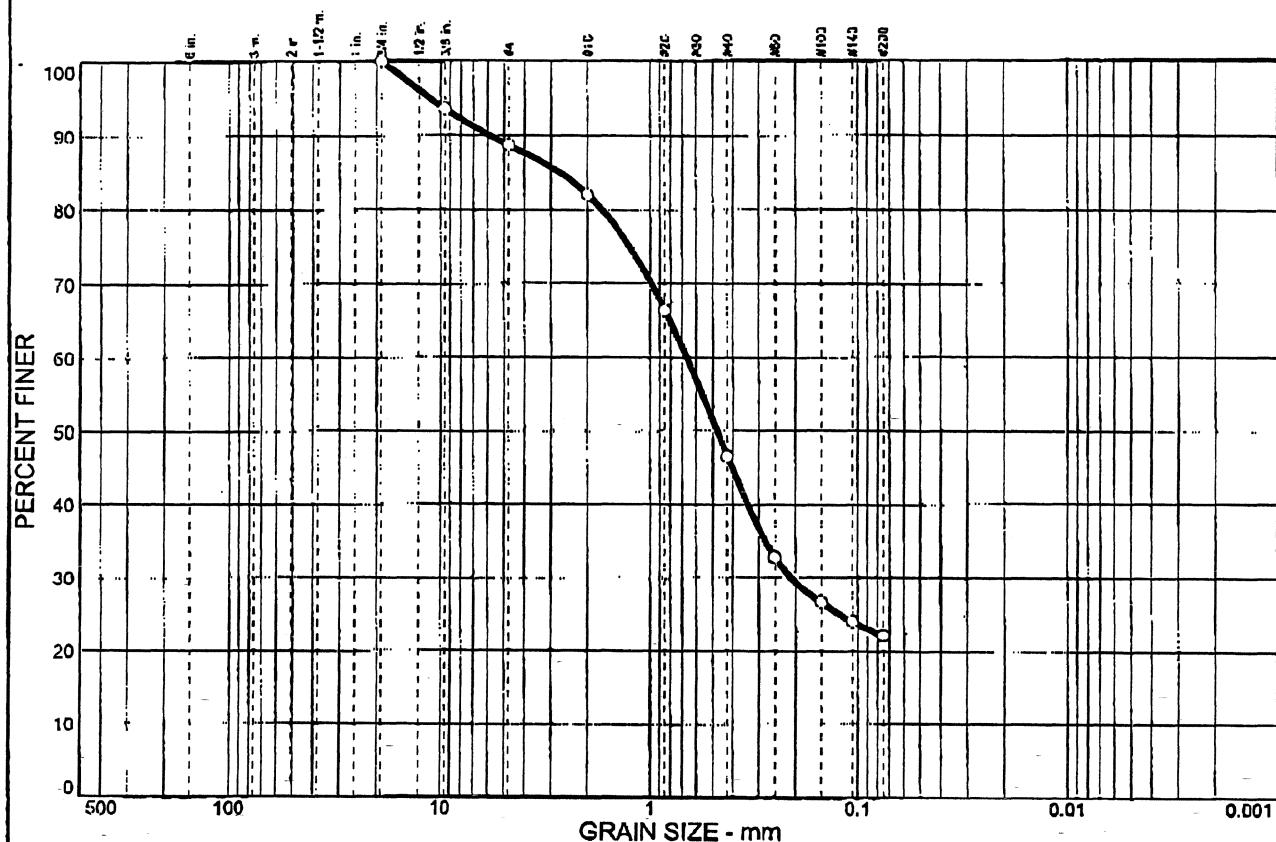
NODARSE & ASSOCIATES, INC.

Client:
Project: EAA

Project No: W04-G-487

Plate

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
0.0	0.0	11.3	6.7	35.5	24.4	22.1
						CLAY

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	93.6		
#4	88.7		
#10	82.0		
#20	66.4		
#40	46.5		
#60	32.8		
#100	26.7		
#140	24.0		
#200	22.1		

(no specification provided)

Soil DescriptionAtterberg Limits

PL=

LL=

PI=

CoefficientsD₈₅= 2.72D₆₀= 0.670D₅₀= 0.478D₃₀= 0.209D₁₅=D₁₀=C_u=C_c=Classification

USCS=

AASHTO=

Remarks

Sample No.: 999
Location: TC-2-2

Source of Sample:

Date:
Elev./Depth: 8.3'

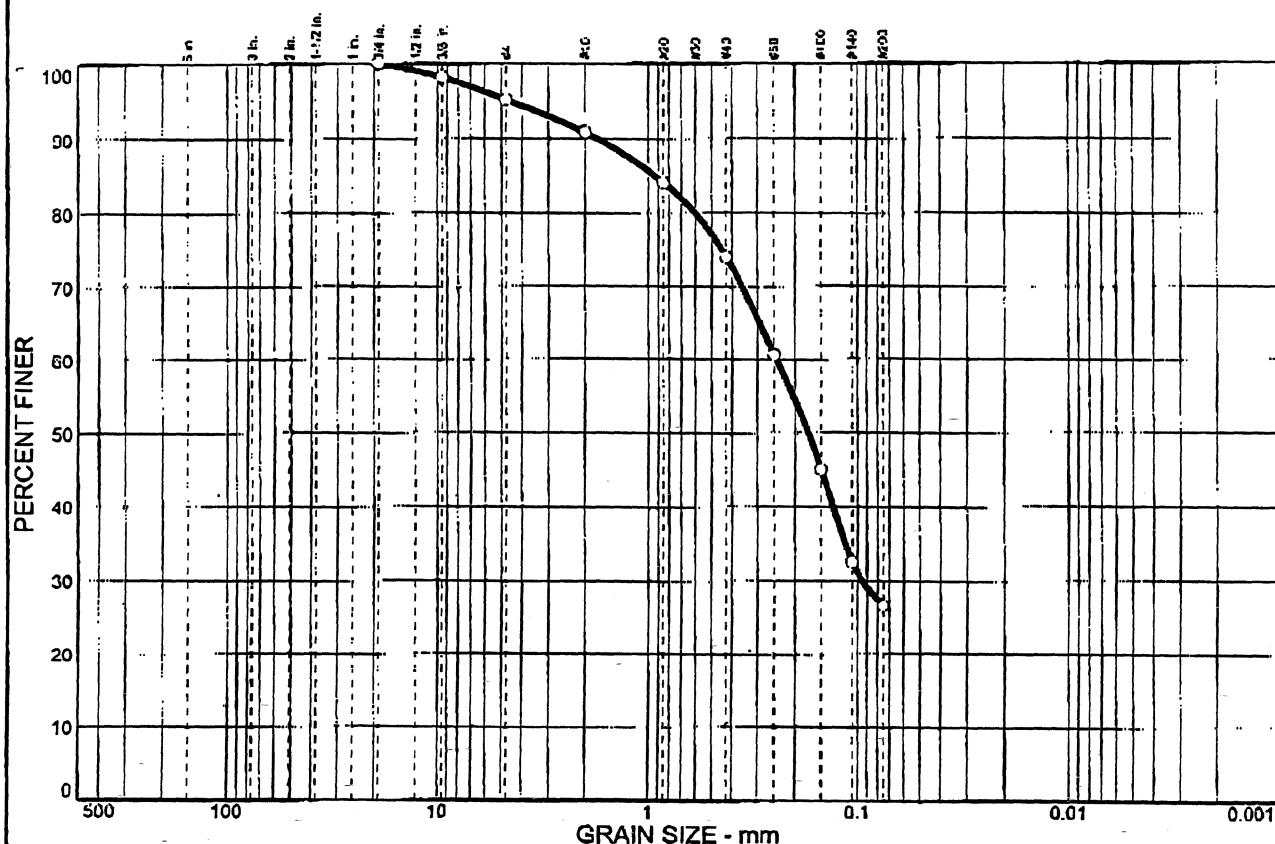
Client:
Project: EAA

NODARSE & ASSOCIATES, INC.

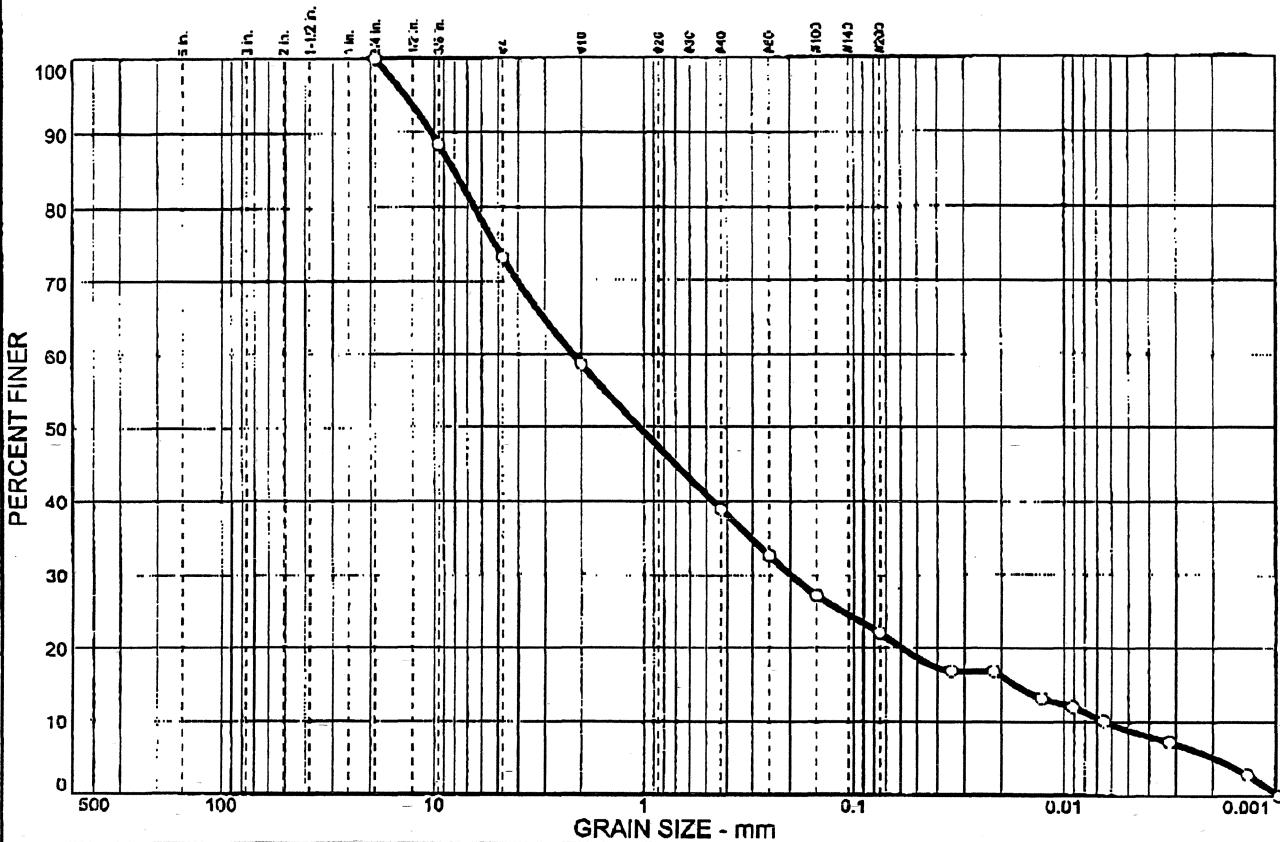
Project No: W04-G-487

Plate

Particle Size Distribution Report



Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
0.0	0.0	26.8	14.6	19.7	16.8	13.3
						8.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	88.4		
#4	73.2		
#10	58.6		
#40	38.9		
#60	32.6		
#100	27.2		
#200	22.1		

(no specification provided)

<u>Soil Description</u>		
PL=	<u>Atterberg Limits</u>	PI=
LL=		
D ₈₅ = 8.10	Coefficients	D ₅₀ = 1.05
D ₃₀ = 0.199	D ₆₀ = 2.20	D ₁₀ = 0.0064
C _U = 346.52	D ₁₅ = 0.0171	C _C = 2.82
USCS=		
	<u>Classification</u>	AASHTO=
	<u>Remarks</u>	

Sample No.: A
Location: TC-4-2

Source of Sample:

Date:
Elev./Depth: 7.4'

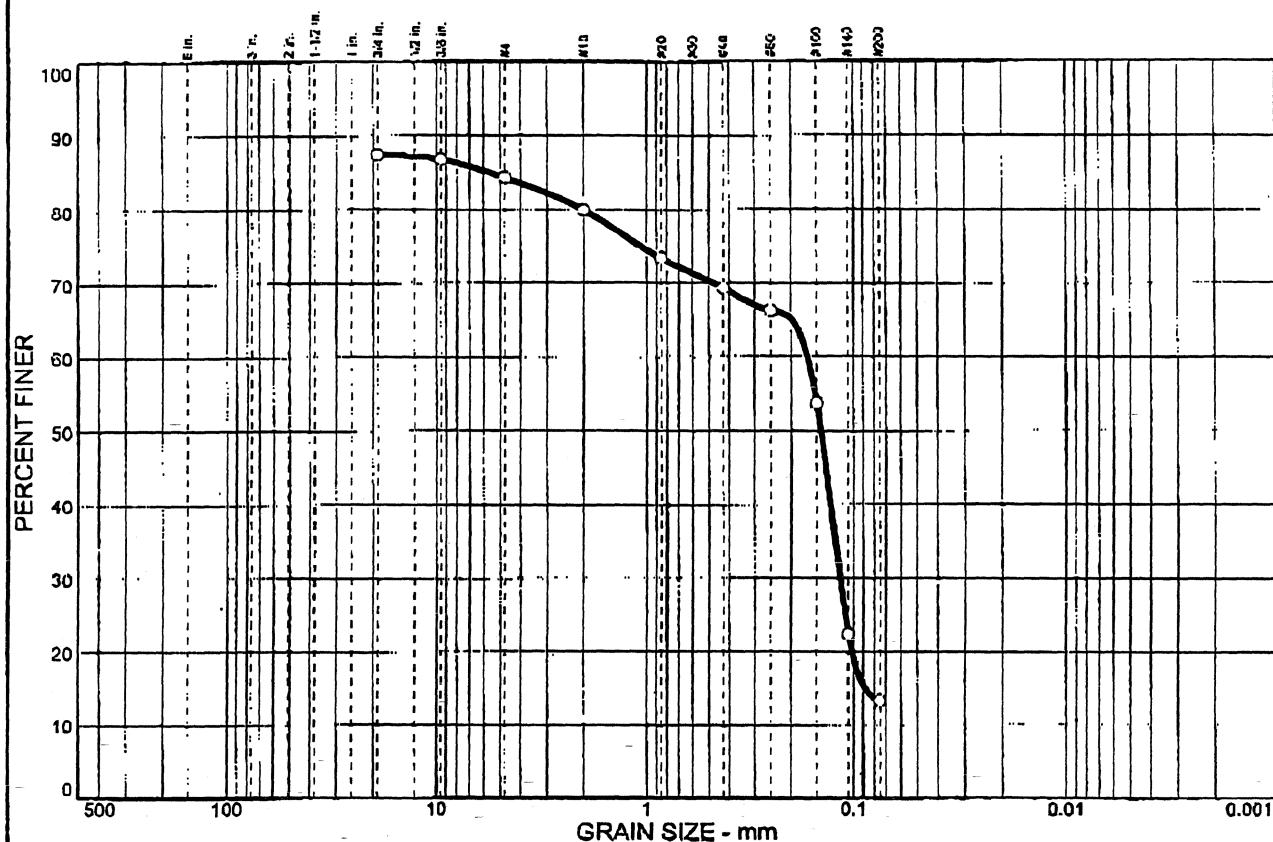
NODARSE & ASSOCIATES, INC.

Client:
Project: EAA

Project No: W04-G-487

Plate

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
		3.1		4.4	10.6	56.1	13.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	87.4		
3/8 in.	86.8		
#4	84.3		
#10	79.9		
#20	73.4		
#40	69.3		
#60	66.3		
#100	53.7		
#140	22.3		
#200	13.2		

* (no specification provided)

Soil Description

PL=

Atterberg Limits

LL=

PI=

D₆₀= 5.61
D₃₀= 0.117
C_u=

Coefficients
D₆₀= 0.167
D₁₅= 0.0888
C_c=

D₅₀= 0.143
D₁₀=

USCS=

Classification
AASHTO=

Remarks

Sample No.: 269
Location: TC-5-10

Source of Sample:

Date:
Elev./Depth: 48.5'

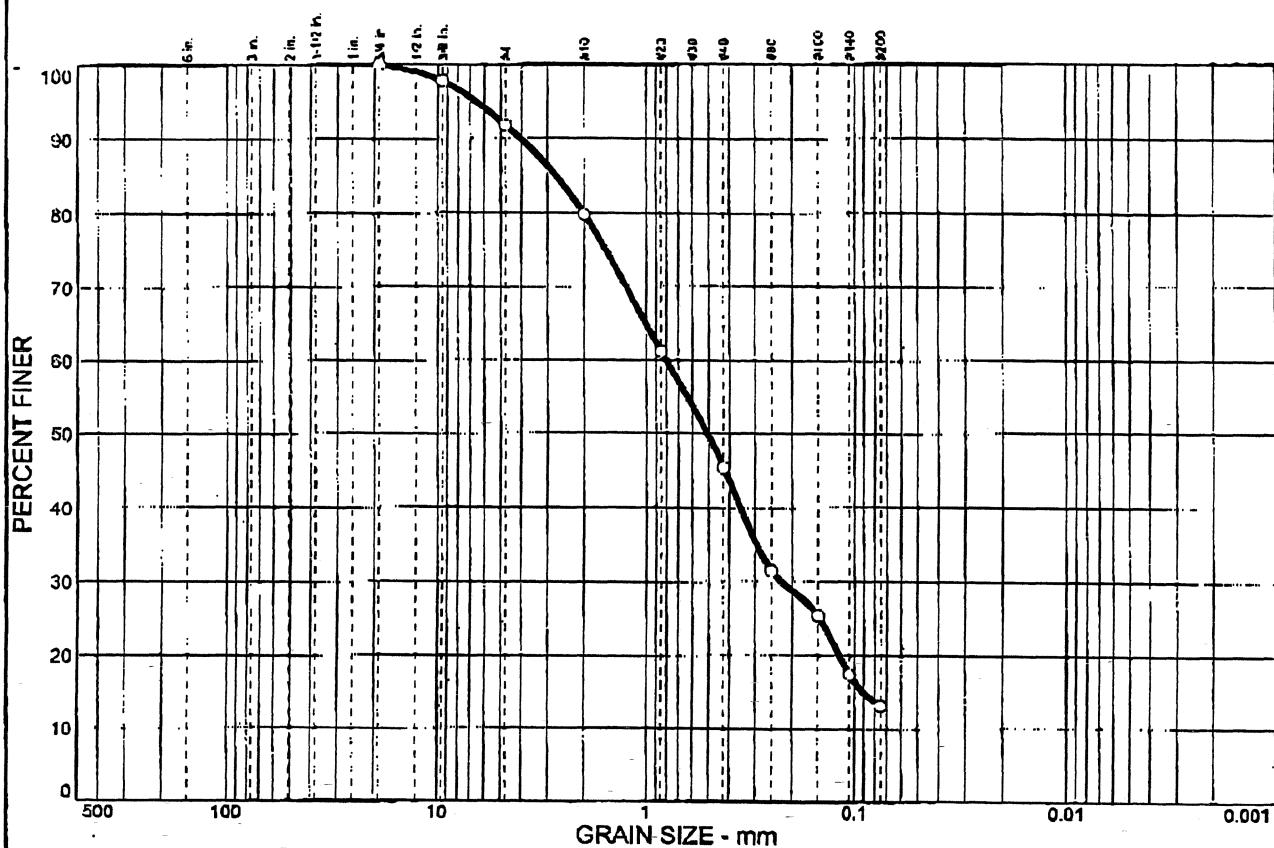
Client:
Project: EAA

Project No: W04-G-487

Plate

NODARSE & ASSOCIATES, INC.

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
0.0	0.0	8.2	12.0	34.4	32.3	13.1

SIEVE SIZE	PERCENT FINER	SPEC. PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	97.8		
#4	91.8		
#10	79.8		
#20	61.2		
#40	45.4		
#60	31.5		
#100	25.4		
#140	17.4		
#200	13.1		

(No specification provided)

Sample No.: 307
Location: TC-6-4

Source of Sample:

Date:
Elev./Depth: 18.5'

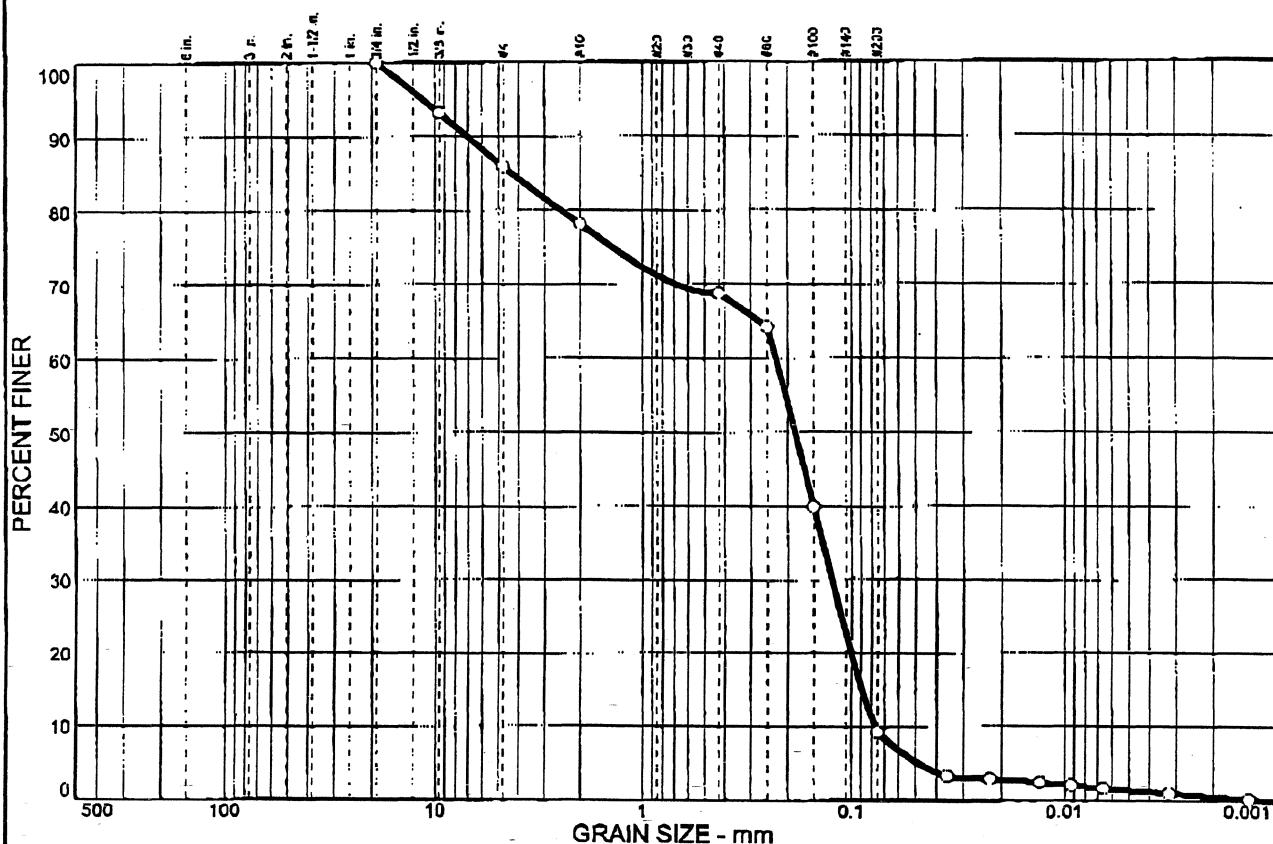
Client:
Project: E&A

Project No: W04-G-487

Plate

NODARSE & ASSOCIATES, INC.

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINE	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	14.1	7.8	9.4	59.5	7.8	1.4

SIEVE SIZE	PERCENT FINER	SPEC. PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	93.2		
#4	85.9		
#10	78.1		
#40	68.7		
#60	64.2		
#100	39.9		
#200	9.2		

(no specification provided)

Soil Description**Atterberg Limits**

PL =

LL =

PI =

CoefficientsD₈₅ = 4.33D₅₀ = 0.184D₃₀ = 0.123D₁₀ = 0.0772C_u = 2.96C_c = 0.87**Classification**

USCS = AASHTO =

Remarks

Sample No.: AS
Location: TC-6-6

Source of Sample:

Date:
Elev./Depth: 28.5'

Client:

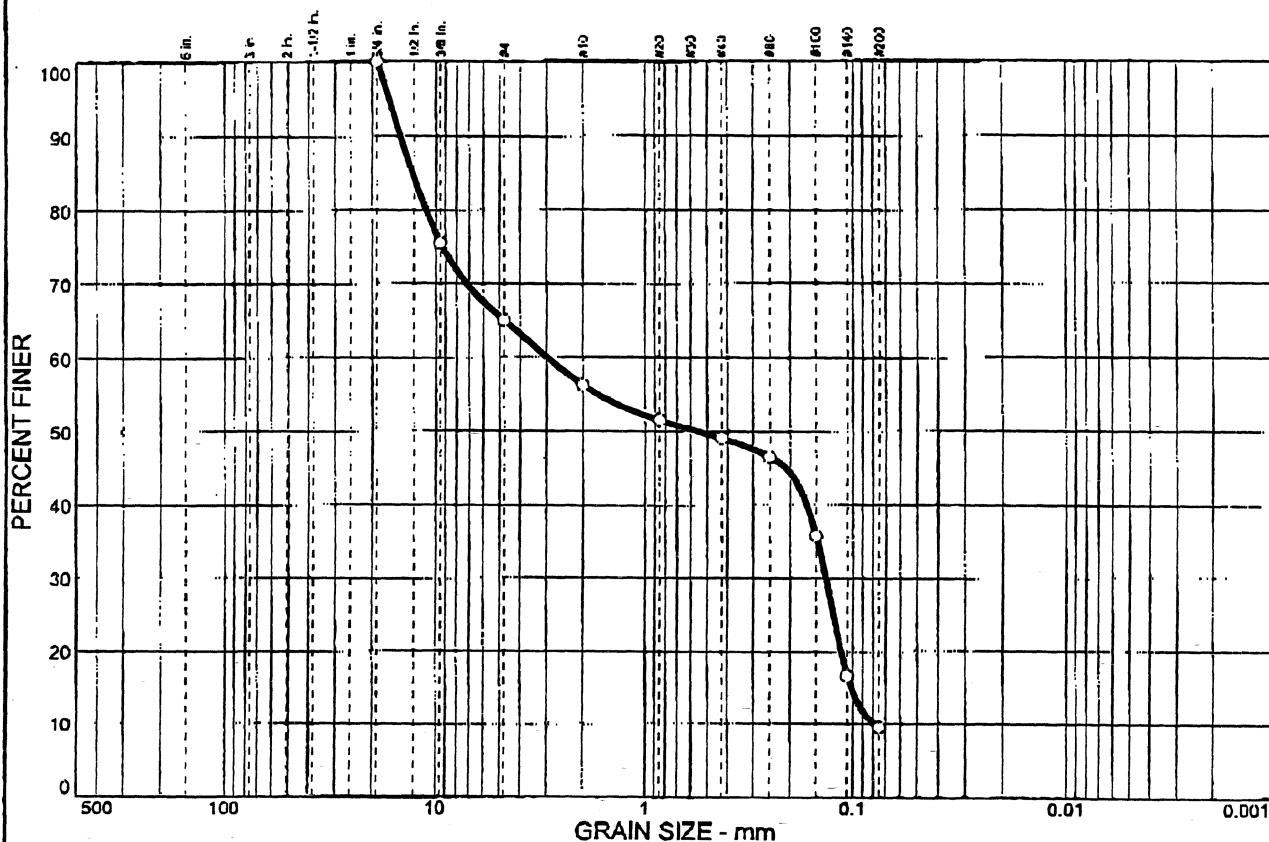
Project: FAA

NODARSE & ASSOCIATES, INC.

Project No: W04-G-487

Plate

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINE	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
0.0	0.0	35.0	8.8	7.2	39.5	9.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	75.5		
#4	65.0		
#10	56.2		
#20	51.5		
#40	49.0		
#60	46.5		
#100	35.8		
#140	16.6		
#200	9.5		

* (no specification provided)

Soil Description

PL =

Atterberg Limits

PI =

Coefficients

D₈₅ = 13.0
D₃₀ = 0.135
C_u = 37.83

D₅₀ = 0.561
D₁₀ = 0.0789

Classification

AASHTO =

Remarks

Sample No.: 254
Location: TC-7-6

Source of Sample:

Date:
Elev./Depth: 28.5'

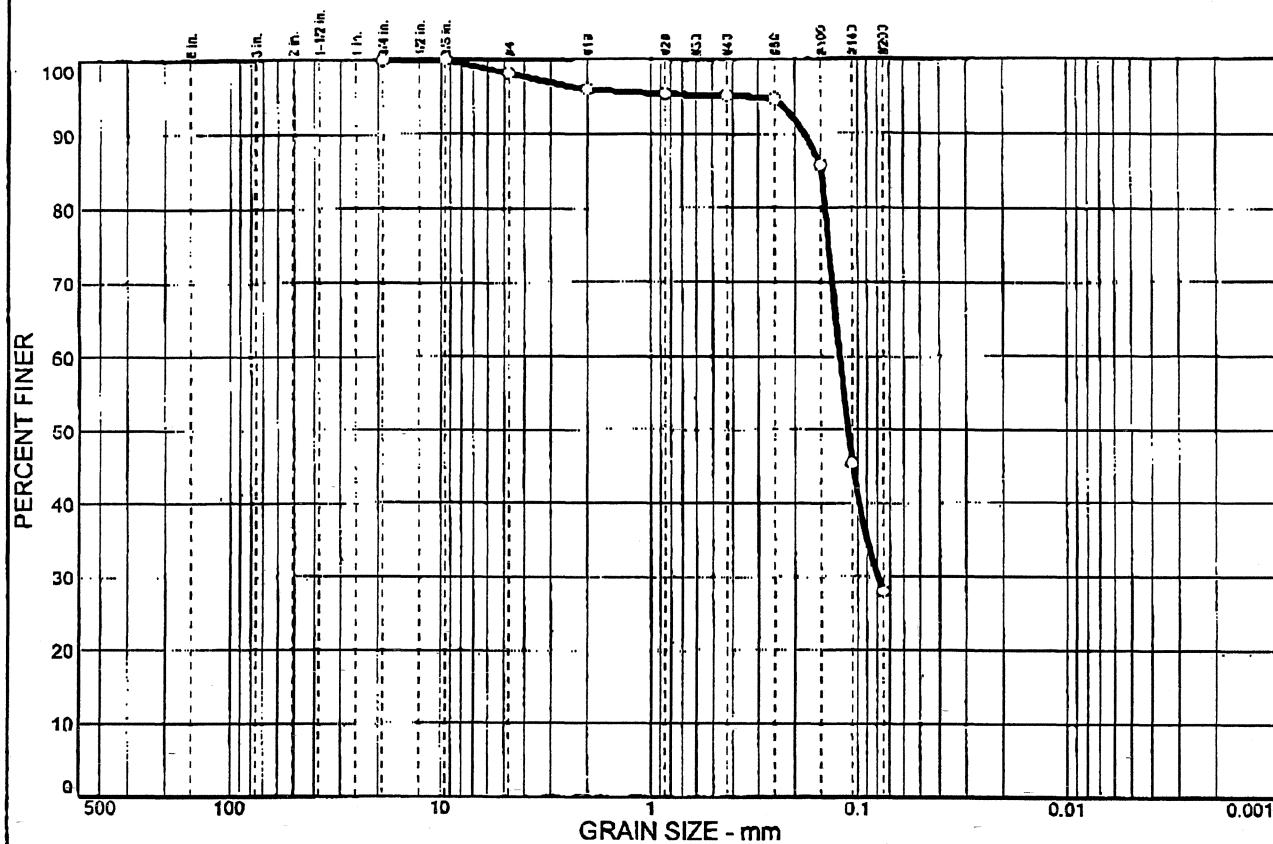
NODARSE & ASSOCIATES, INC.

Client:
Project: EAA

Project No: W04-G-487

Plate

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
0.0	0.0	1.8	2.2	0.8	67.2	28.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	100.0		
#4	98.2		
#10	96.0		
#20	95.4		
#40	95.2		
#60	94.7		
#100	85.8		
#140	45.4		
#200	28.0		

(no specification provided)

<u>Soil Description</u>	
PL=	<u>Atterberg Limits</u>
LL=	PI=
D ₈₅ = 0.149	<u>Coefficients</u>
D ₆₀ = 0.122	D ₅₀ = 0.111
D ₃₀ = 0.0796	D ₁₅ =
C _U =	C _C =
USCS=	<u>Classification</u>
	AASHTO=
<u>Remarks</u>	

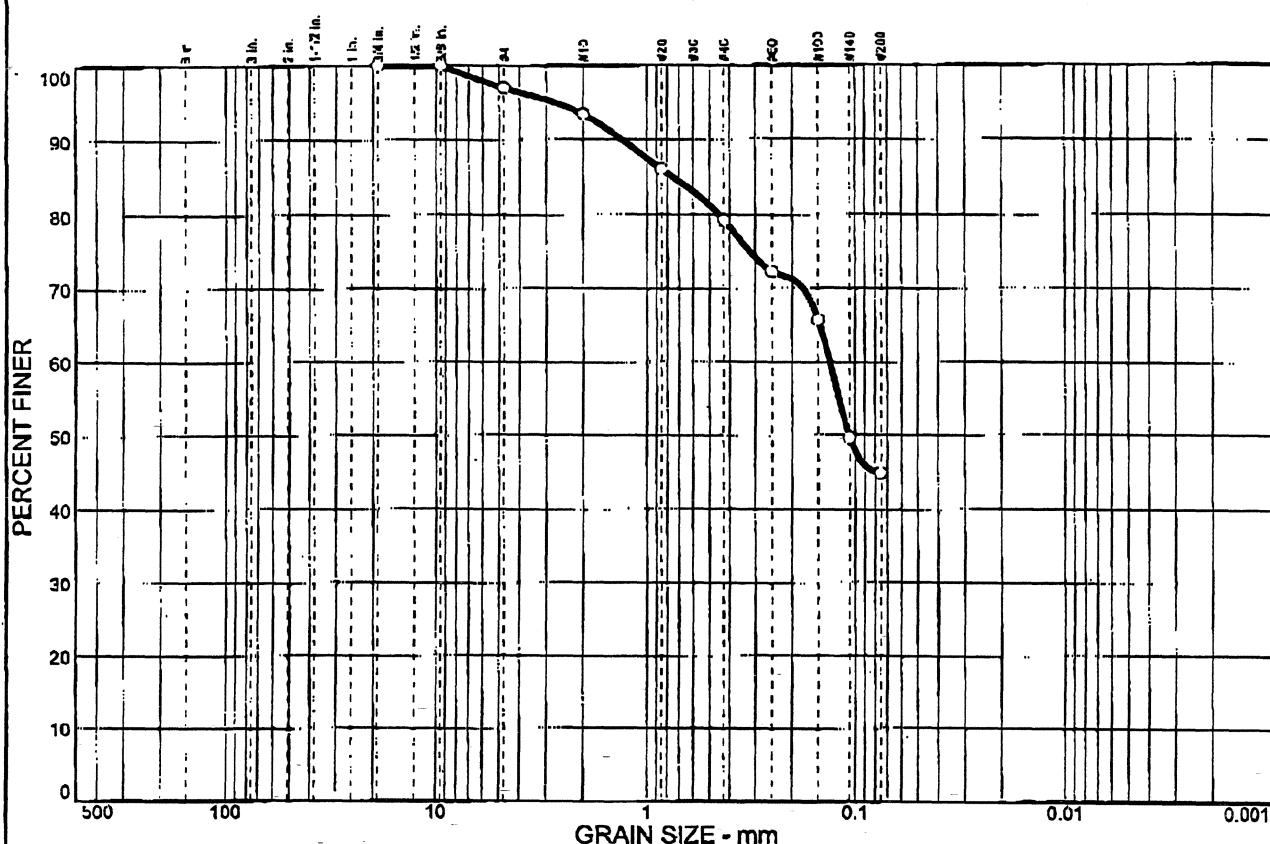
Sample No.: 203
 Location: TC-8-9

Source of Sample:

Date:
 Elev./Depth: 43.5-45.0'

NODARSE & ASSOCIATES, INC.	Client: Project: EAA Project No: W04-G-487	Plate
----------------------------	------------------------------------------------------	-------

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINE	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
0.0	0.0	3.0	3.6	14.2	34.3	44.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	100.0		
#4	97.0		
#10	93.4		
#20	86.0		
#40	79.2		
#60	72.3		
#100	65.8		
#140	49.6		
#200	44.9		

(no specification provided)

Soil Description

PL= Atterberg Limits
 LL= PI=

D₈₅= 0.755 Coefficients
 D₆₀= 0.132 D₅₀= 0.107
 D₃₀= D₁₅=
 C_u= C_c=

USCS= Classification
 AASHTO=

Remarks

Sample No.: 249
 Location: TC-10-4

Source of Sample:

Date:
 Elev./Depth: 18.5'

NODARSE & ASSOCIATES, INC.

Client:
 Project: EAA

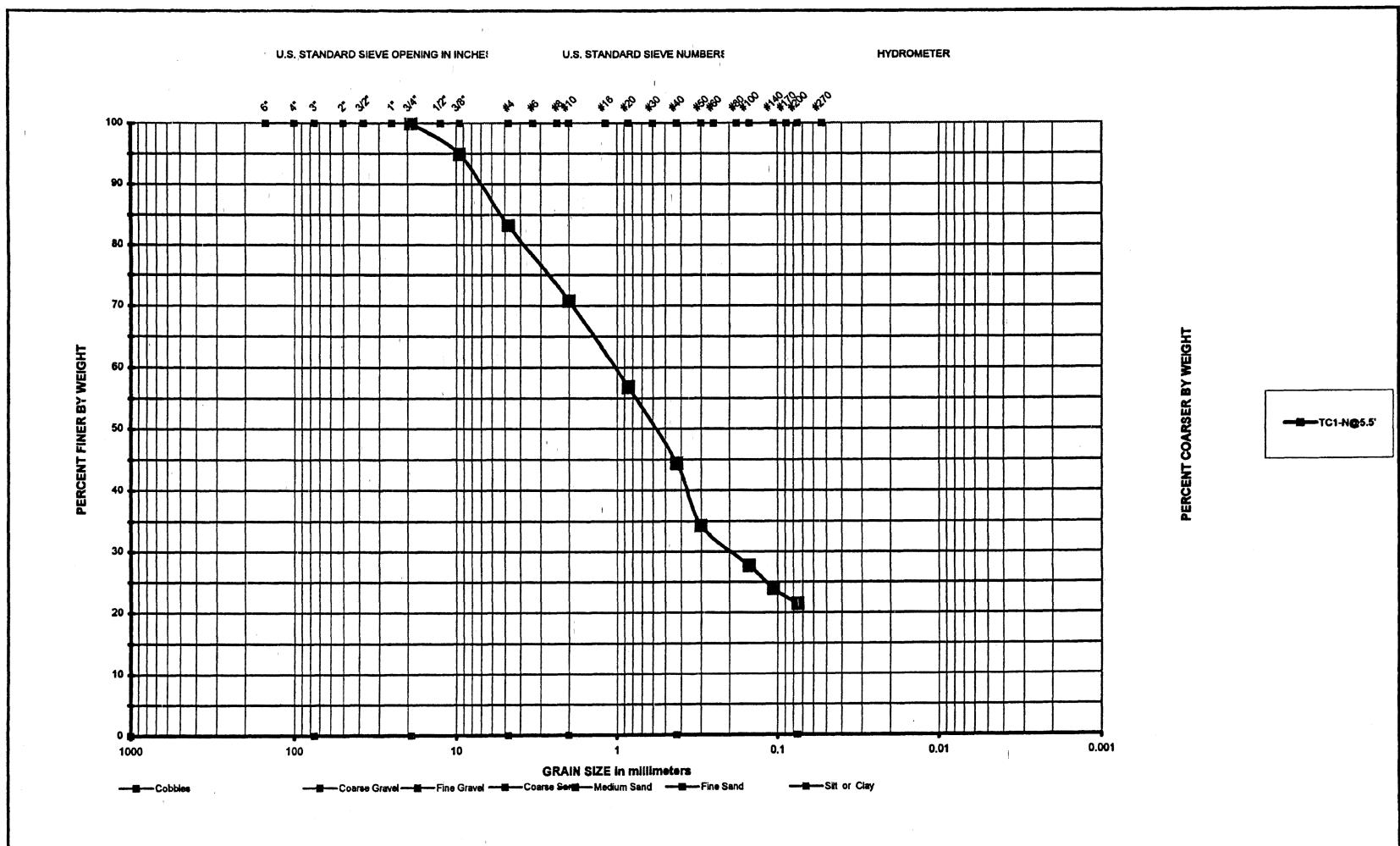
Project No: W04-G-487

Plate

**LABORATORY TEST RESULTS FOR
EAA RESERVOIR
PROJECT No: 05-05-0013-101.
N&A**

Boring Number	Approximate Sample Depth (feet)	Passing Sieve Number (%)					Moisture Content (%)	Organic Content (%)	Atterberg Limits		Classification	Stratum Number
		10	40	60	100	200			LL	PI		
TC1-N	5.5'	71	44	34	28	22	15	-	-	-		
TC1-N	33.5'	96	85	73	31	6	26	-	-	-		
TC1-N	53.5'	53	35	27	20	13	15	-	-	-		
TC1-N	68.5'	55	29	22	16	11	18	-	-	-		
TC1-N	73.5'	63	30	20	11	8	24	-	-	-		
TC1-N	88.5'	76	50	37	21	17	25	-	-	-		
TC1-E	13.5'	69	53	44	35	25	21	-	-	-		
TC1-E	53.5'	50	28	22	18	14	17	-	-	-		
TC1-E	58.5'	79	43	30	20	15	25	-	-	-		
TC1-E	83.5'	60	34	23	13	10	22	-	-	-		
TC1-E	88.5'	82	49	29	14	12	21	-	-	-		
TC1-E	98.5'	73	35	25	16	12	15	-	-	-		
TC1-W	13.5'	69	55	46	36	23	26	-	-	-		
TC1-W	48.5'	88	79	75	53	15	26	-	-	-		

Boring Number	Approximate Sample Depth (feet)	Passing Sieve Number (%)					Moisture Content (%)	Organic Content (%)	Atterberg Limits		Classification	Stratum Number
		10	40	60	100	200			LL	PI		
TC1-W	68.5'	56	29	22	15	12	19	-	-	-		
TC1-W	78.5'	69	37	25	15	12	22	-	-	-		
TC1-W	93.5'	84	39	23	17	14	22	-	-	-		
TC1-S	13.5'	84	68	57	43	25	21	-	-	-		
TC1-S	33.5'	82	53	34	19	6	20	-	-	-		
TC1-S	68.5'	63	33	25	17	13	20	-	-	-		
TC1-S	93.5'	82	39	22	14	12	23	-	-	-		



GRADATION CURVES

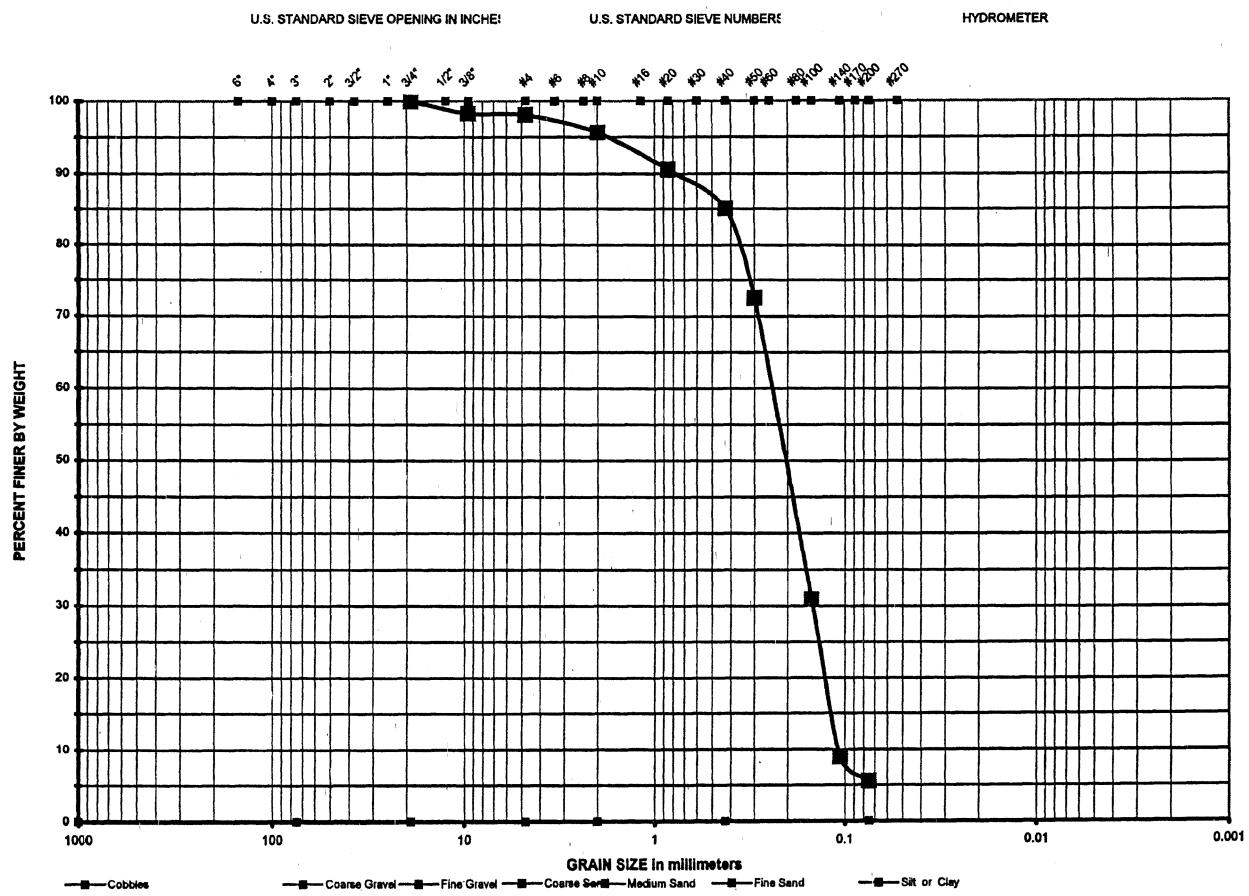
Project: EAA Reservoirs

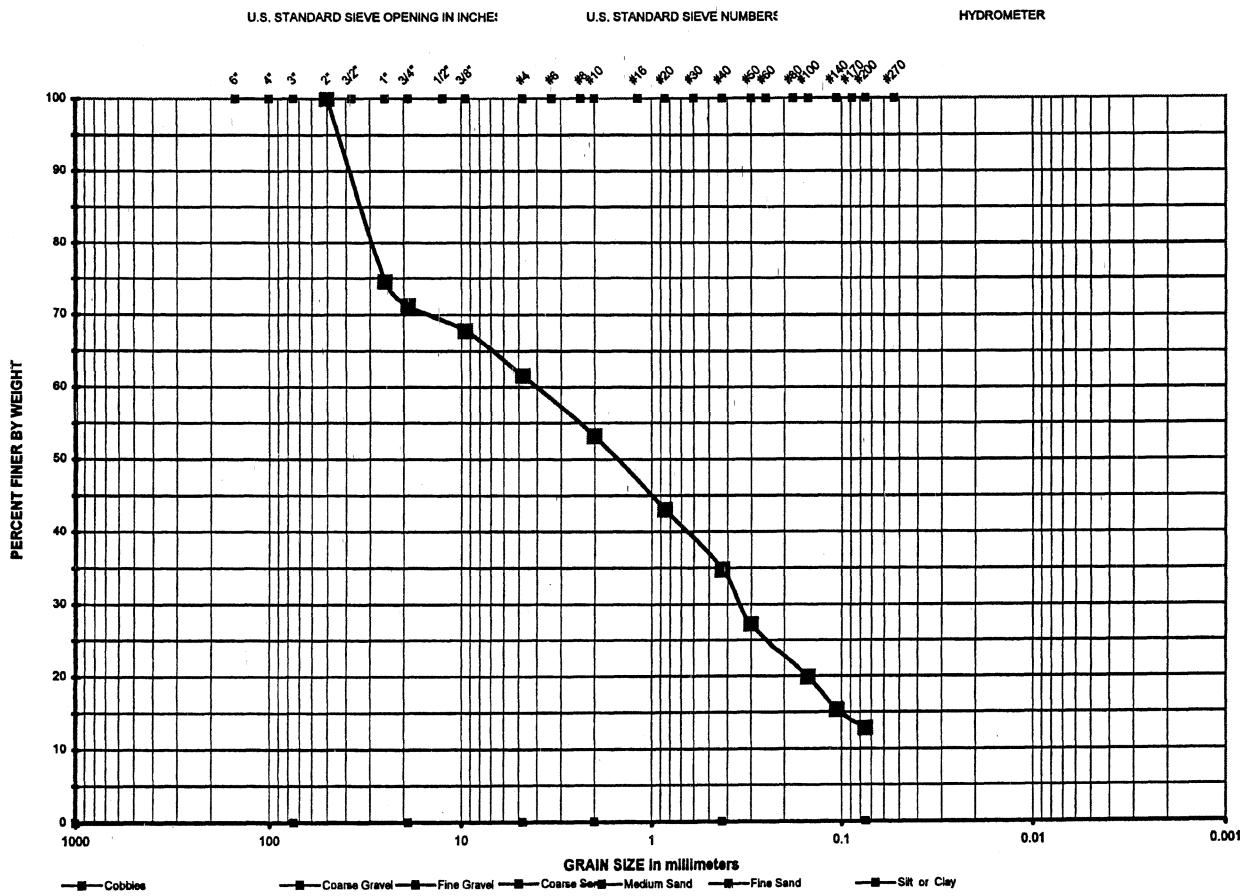
Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No. _____

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-N@5.5'		15	-	-	-







GRADATION CURVES

Project: EAA Reservoirs

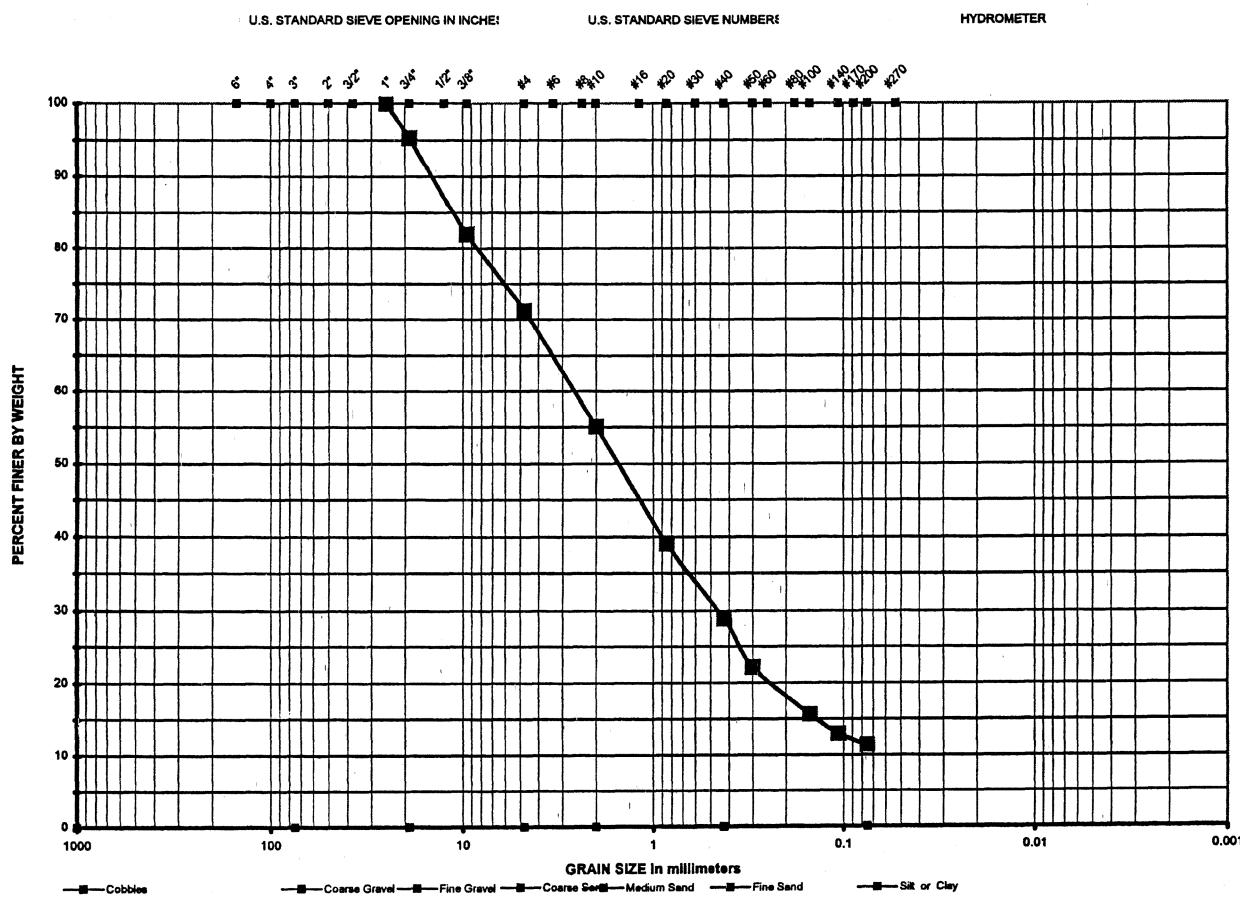
1/0/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No. _____

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-N@53.5'		15	-	-	-





GRADATION CURVES

Project: EAA Reservoirs

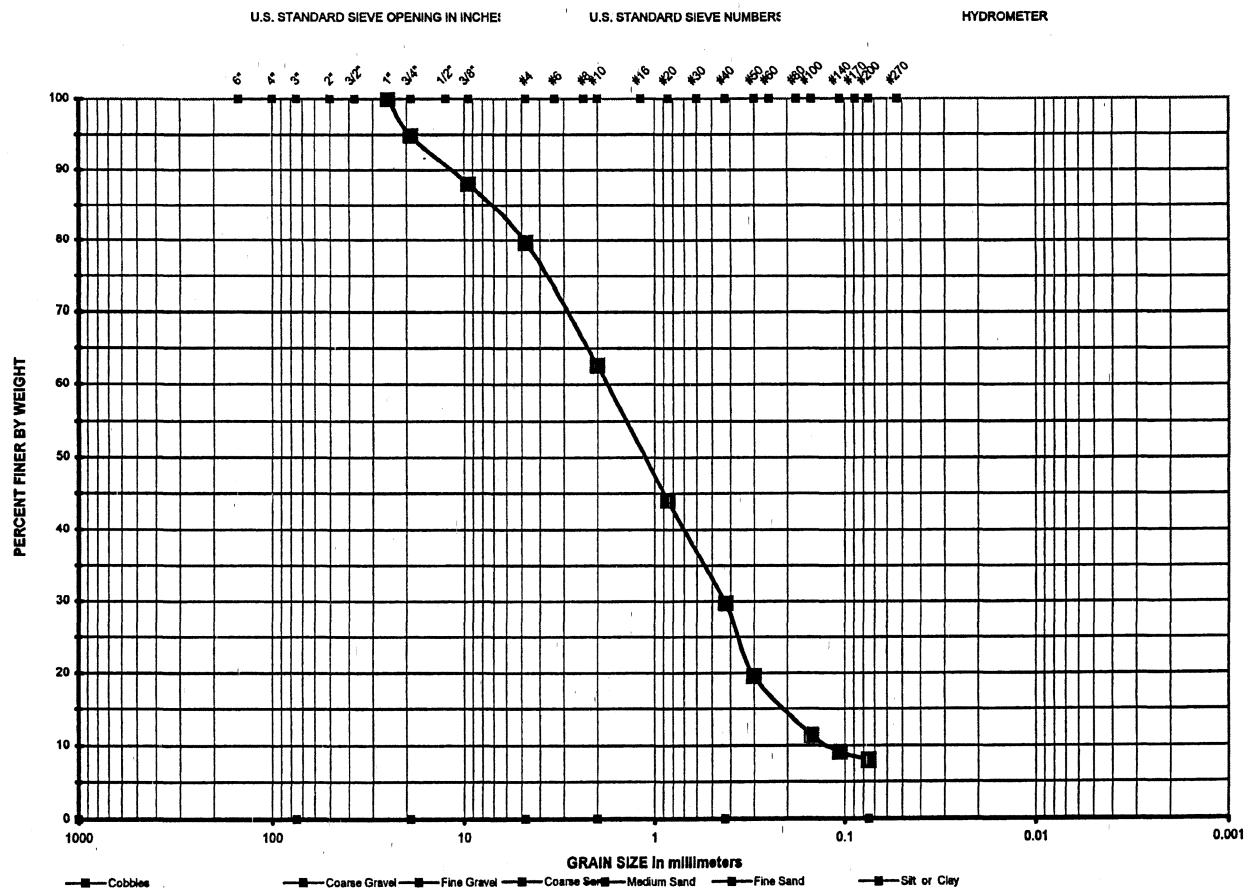
10/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No. _____

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-N@68.5'		18	-	-	-





GRADATION CURVES

Project: EAA Reservoirs

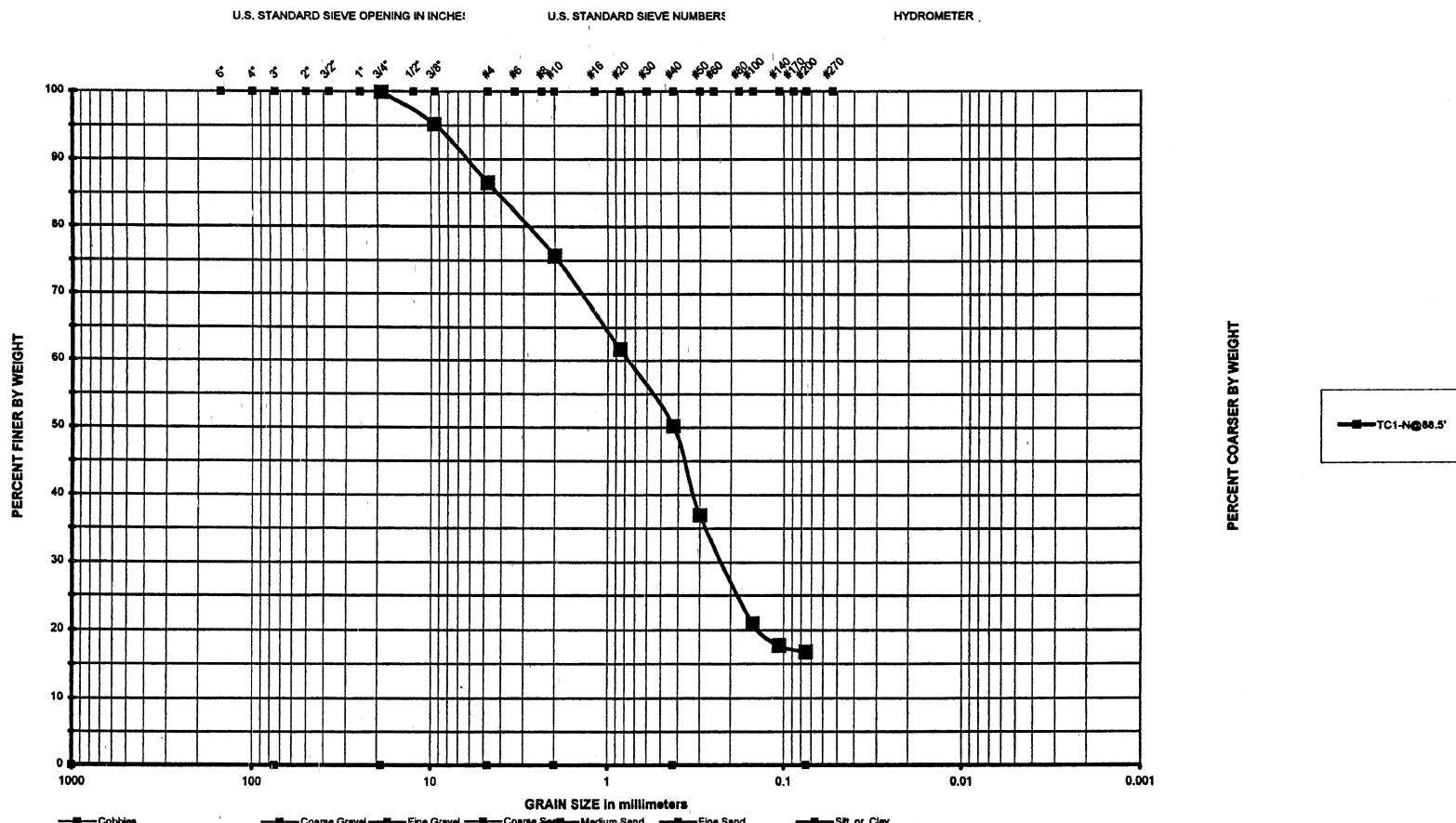
1/0/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No. _____

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-N@73.5'		24	-	-	-





GRADATION CURVES

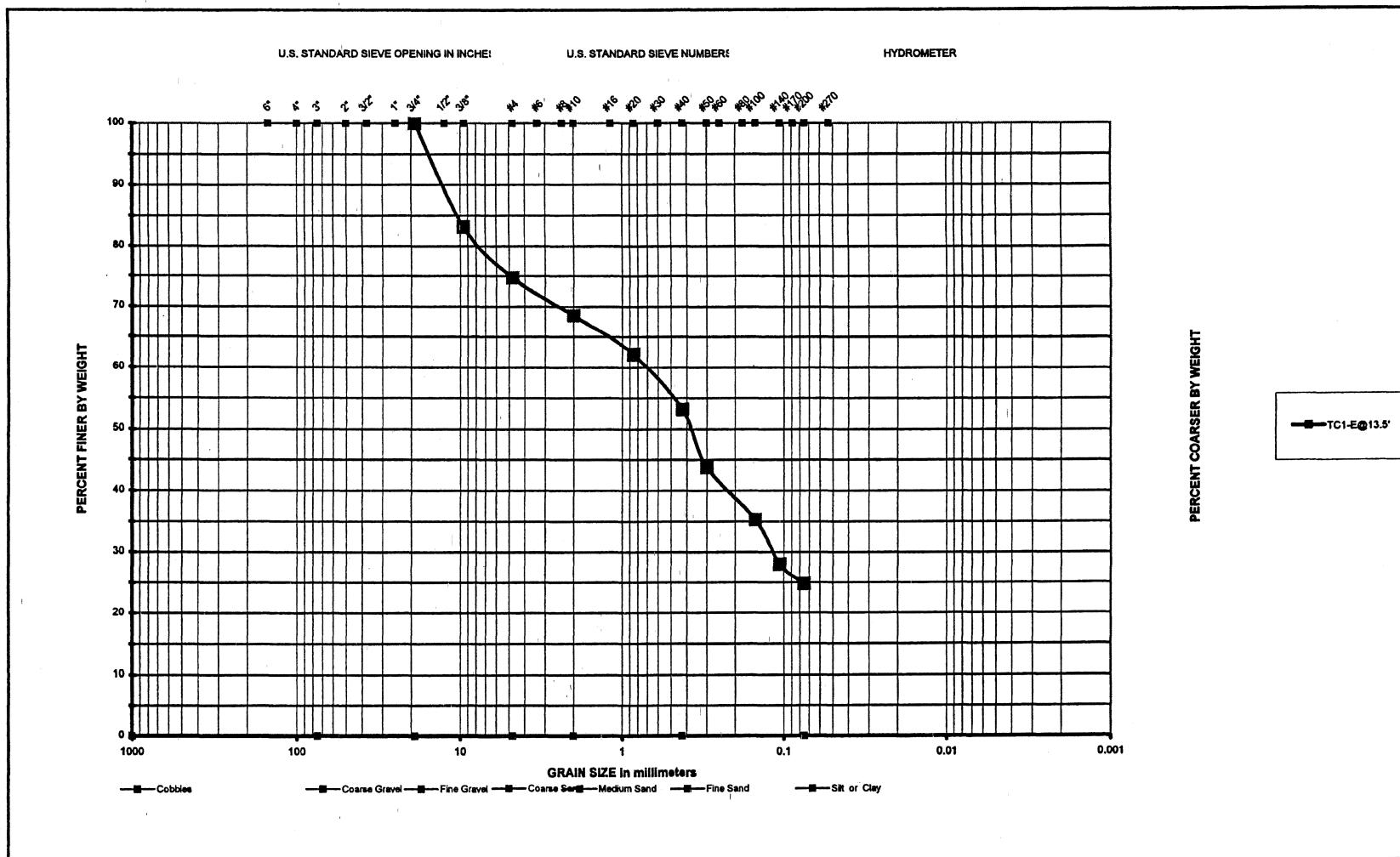
Project: EAA Reservoirs

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No. _____

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-N@88.5'		25	-	-	-

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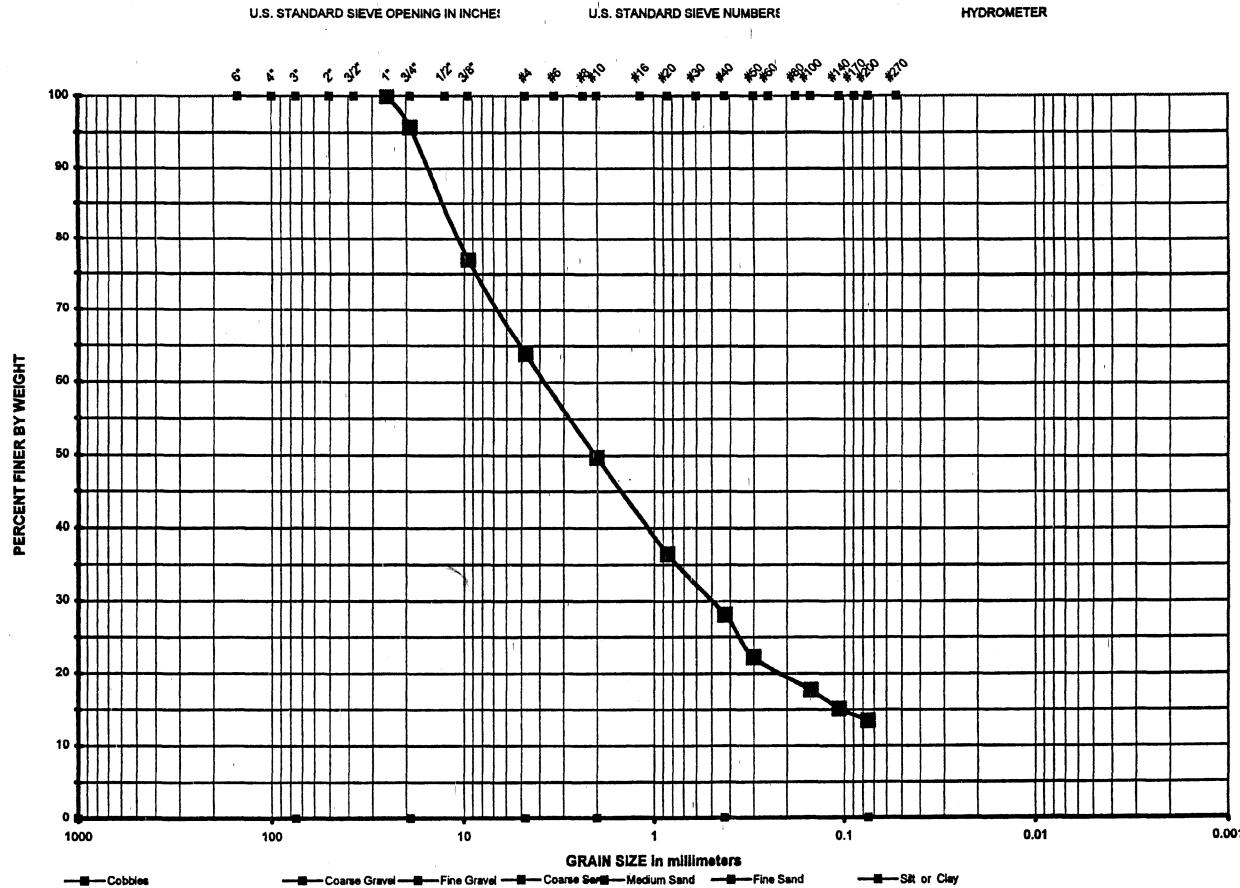


GRADATION CURVES

Project: EAA Reservoirs
1/0/1900
Date: 4/13/2005 N&A Project No. 05-05-0013-1
Figure No. _____

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-E@13.5'		21	-	-	-

NODARSE
ASSOCIATES, INC.



Project: EAA Reservoirs

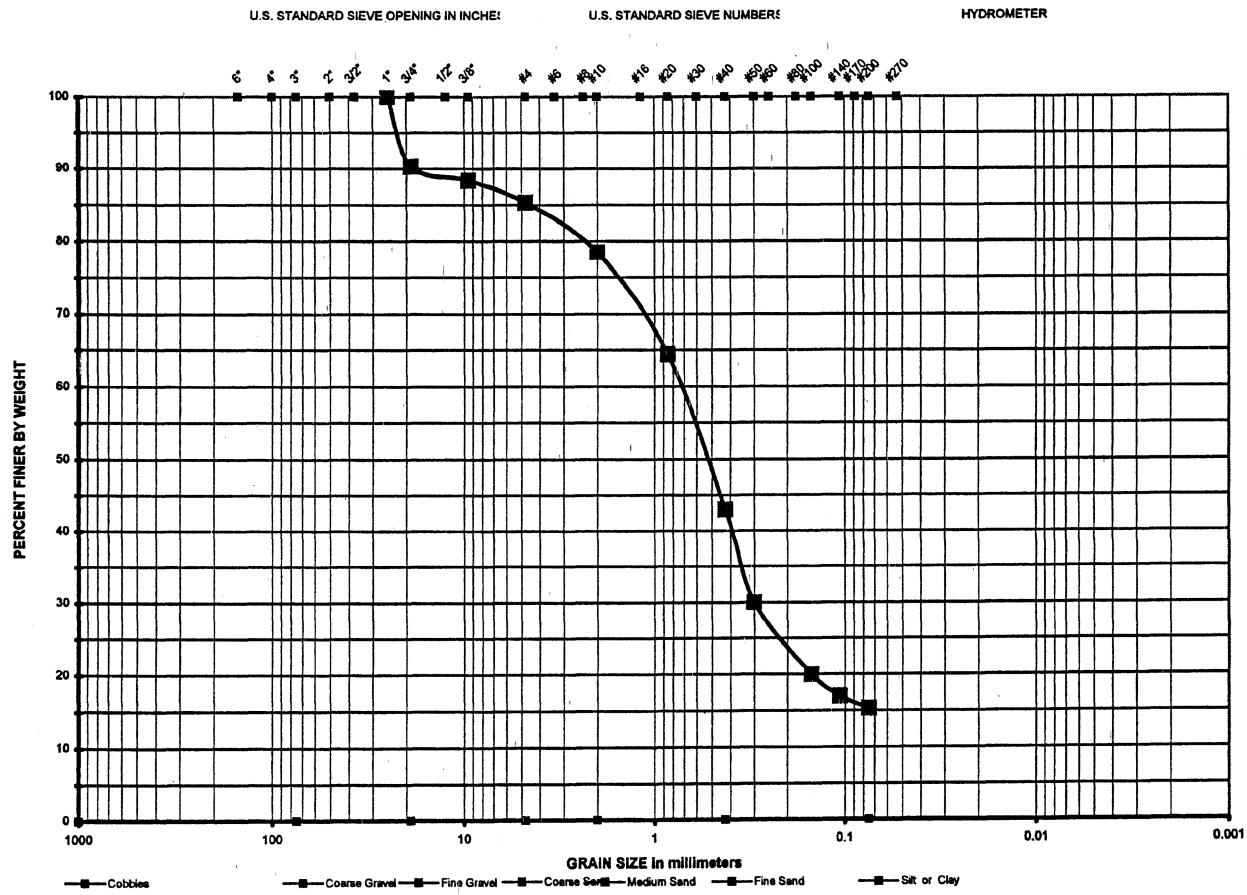
1/0/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No. _____

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-E@53.5'		17	-	-	-





PERCENT COARSER BY WEIGHT

— TC1-E@58.5

Project: EAA Reservoirs

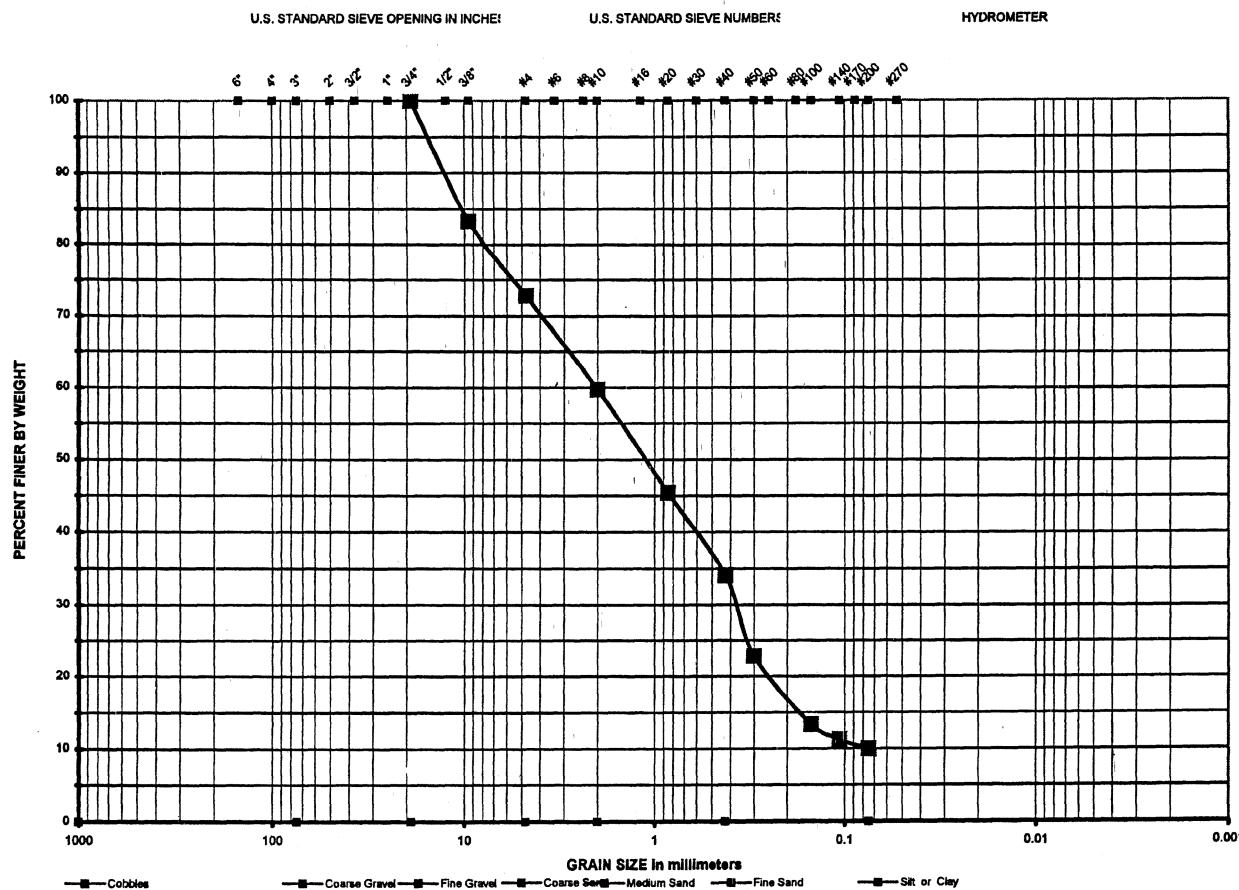
Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No.

GRADATION CURVES



NODARSE
G ASSOCIATES, INC.



TC1-E 83.5'

PERCENT COARSER BY WEIGHT

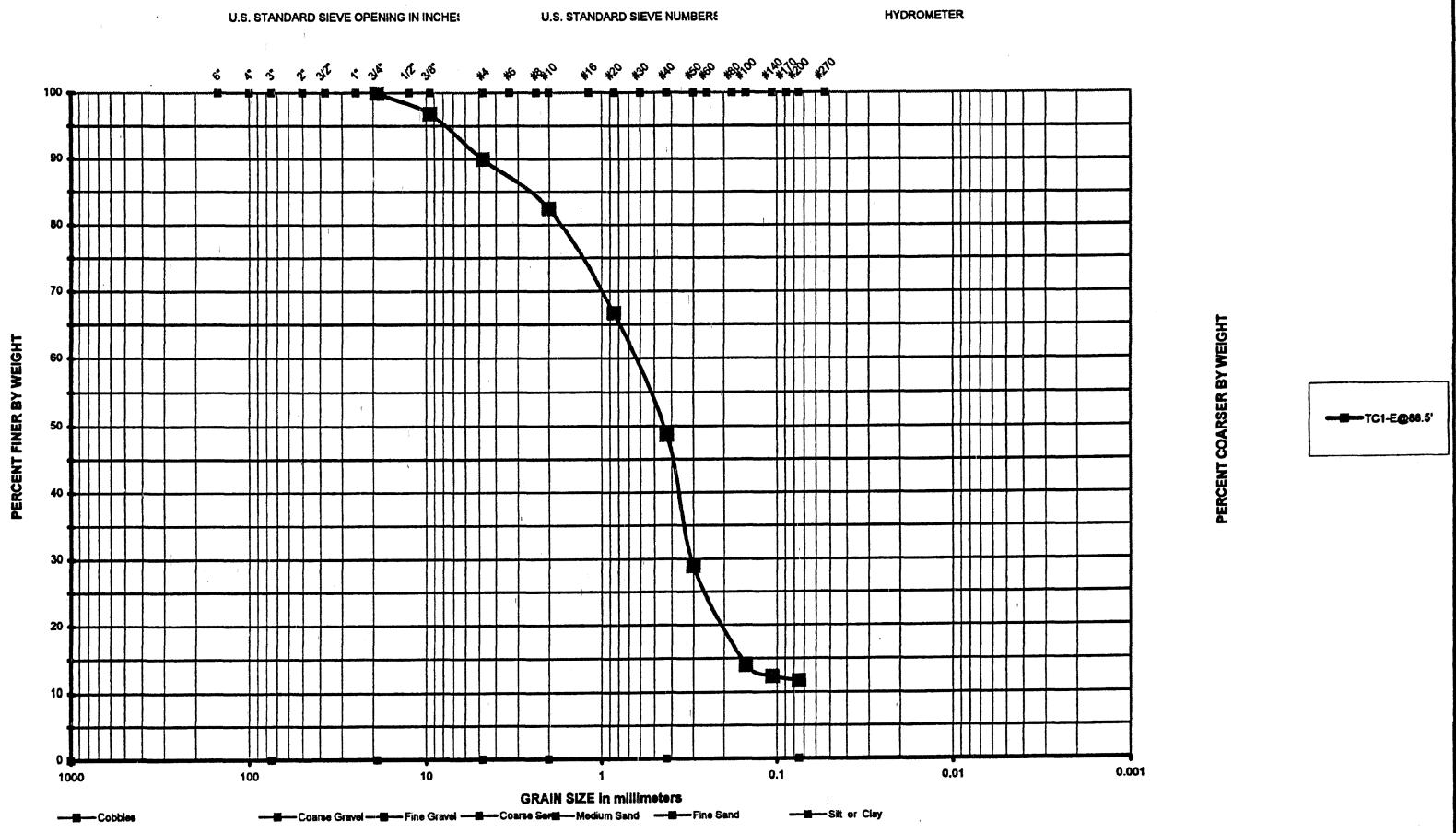
Project: EAA Reservoirs
Date: 1/0/1900
4/13/2005 N&A Project No. 05-05-0013-1

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No.



NODARSE
ASSOCIATES, INC.



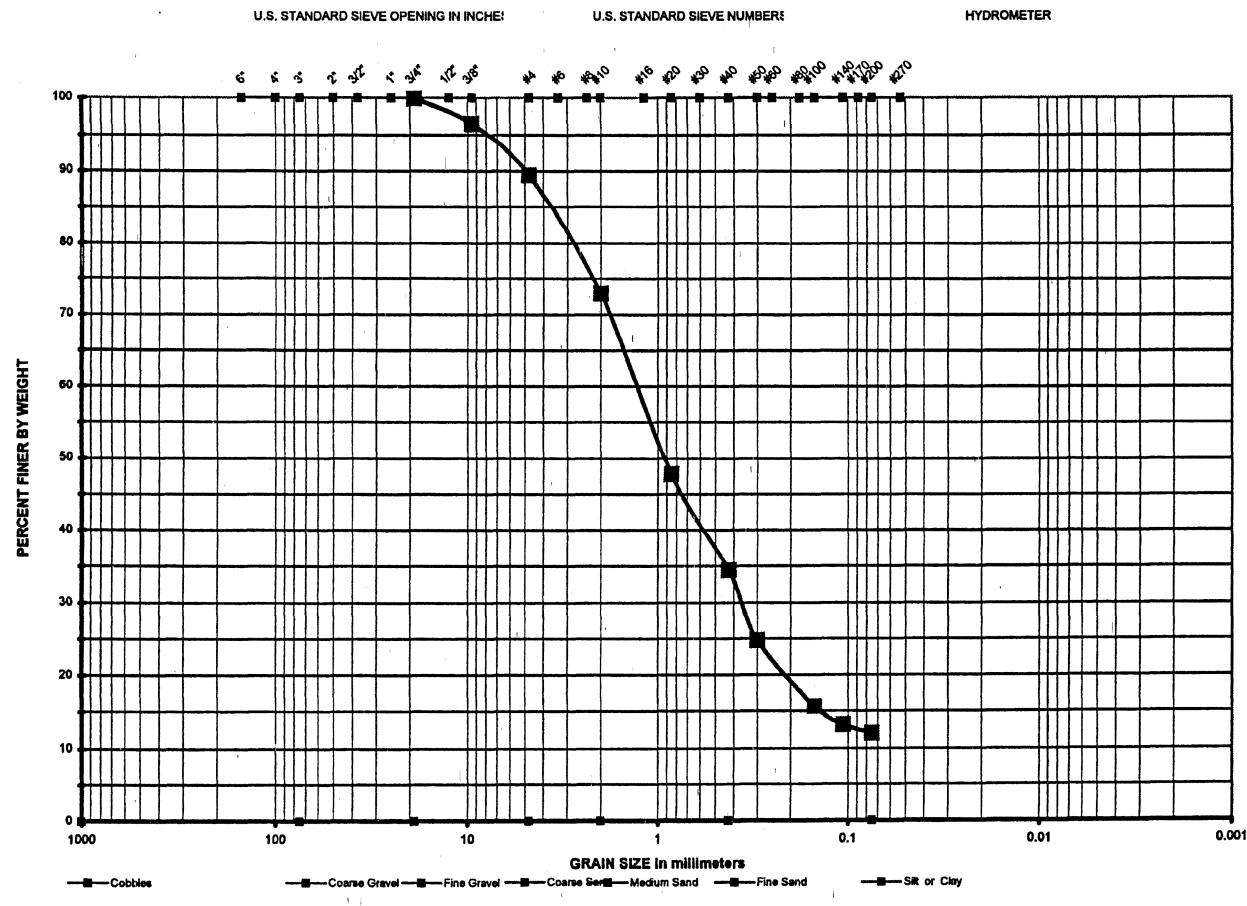
GRADATION CURVES

Project: EAA Reservoirs
1/0/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1
Figure No. _____

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-E@88.5'		21	-	-	-

NODARSE
 ASSOCIATES, INC.



GRADATION CURVES

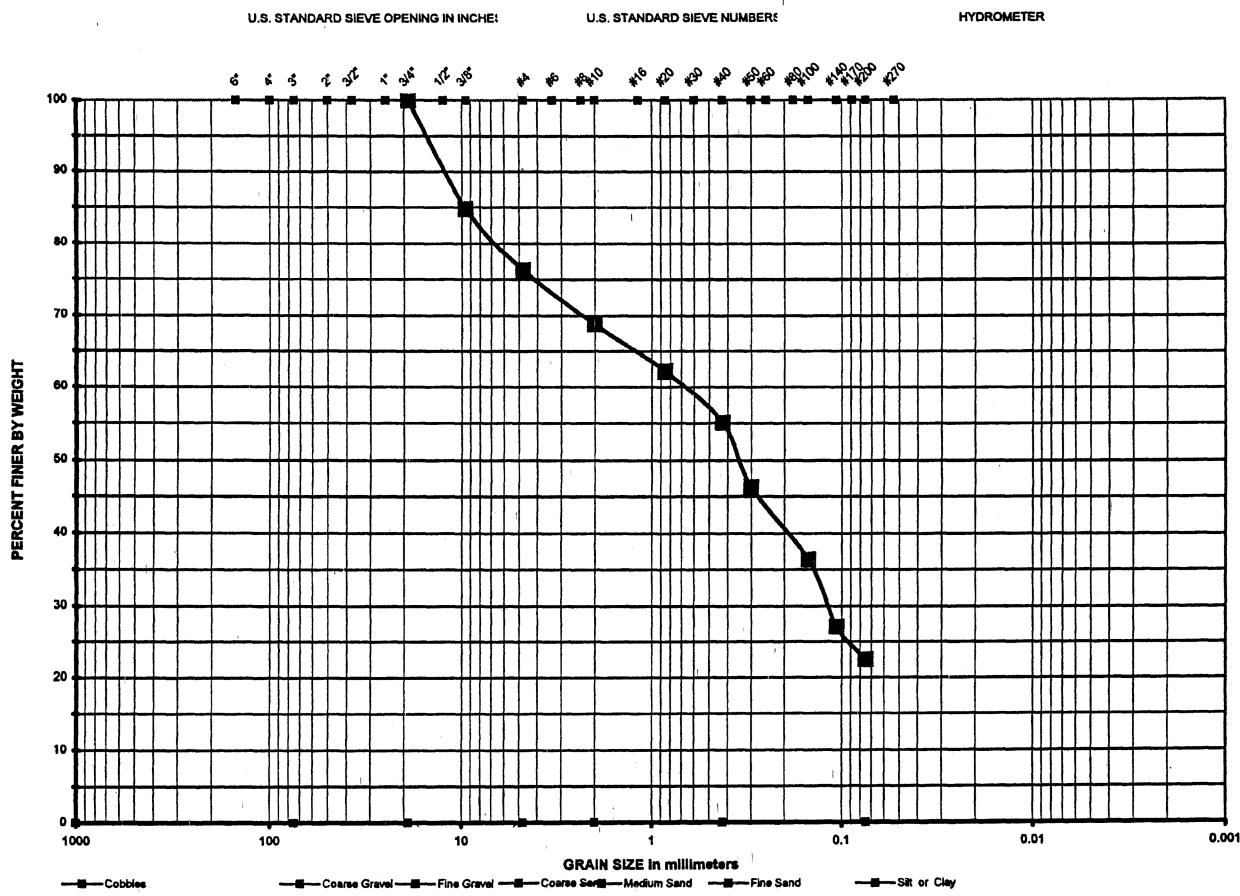
Project: EAA Reservoirs

0/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No.





PERCENT COARSER BY WEIGHT

TC1-W@13.5'

Project: EAA Reservoirs

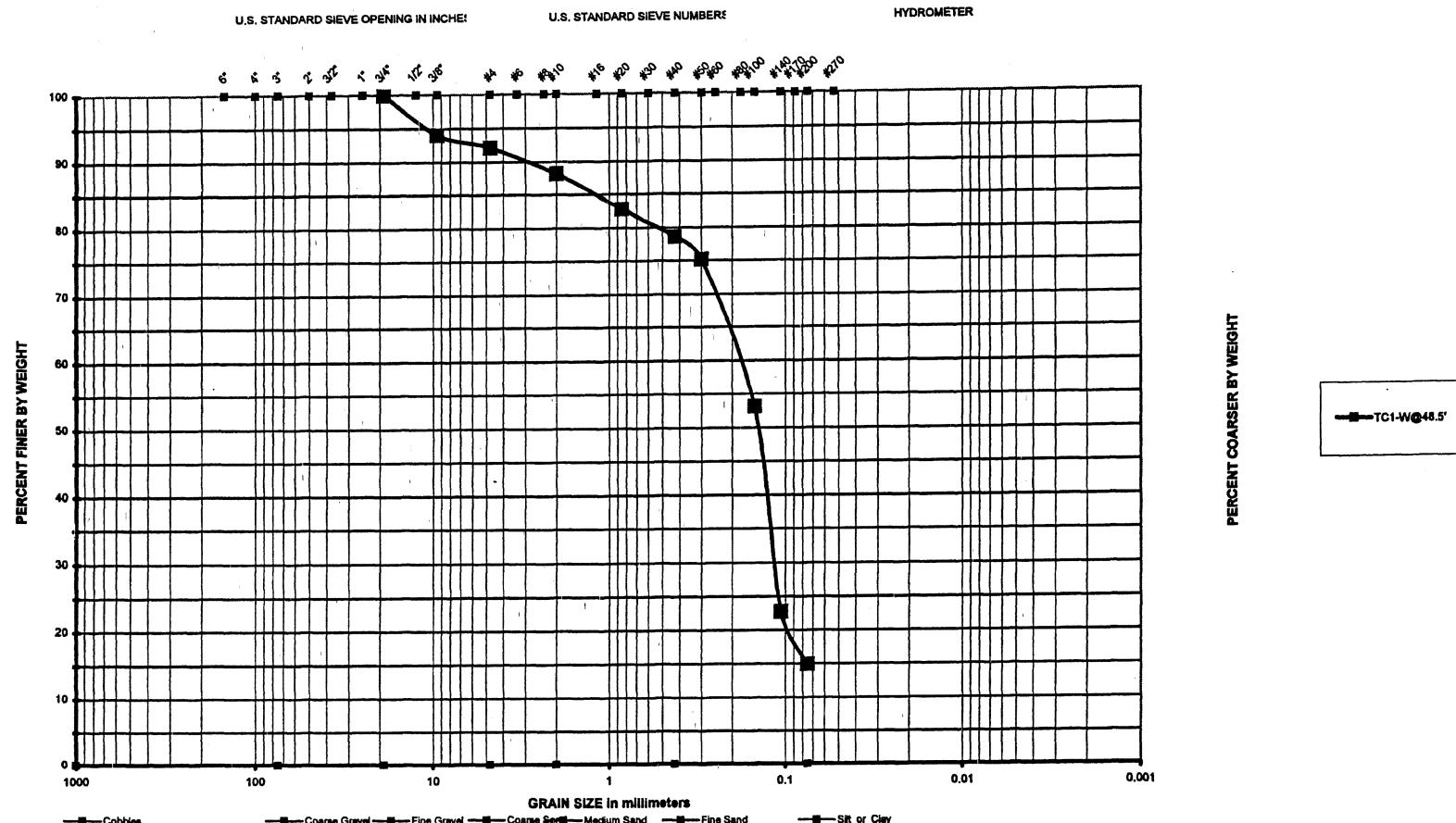
1/0/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No.

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-W@13.5'		26	-	-	-





GRADATION CURVES

Project: EAA Reservoirs

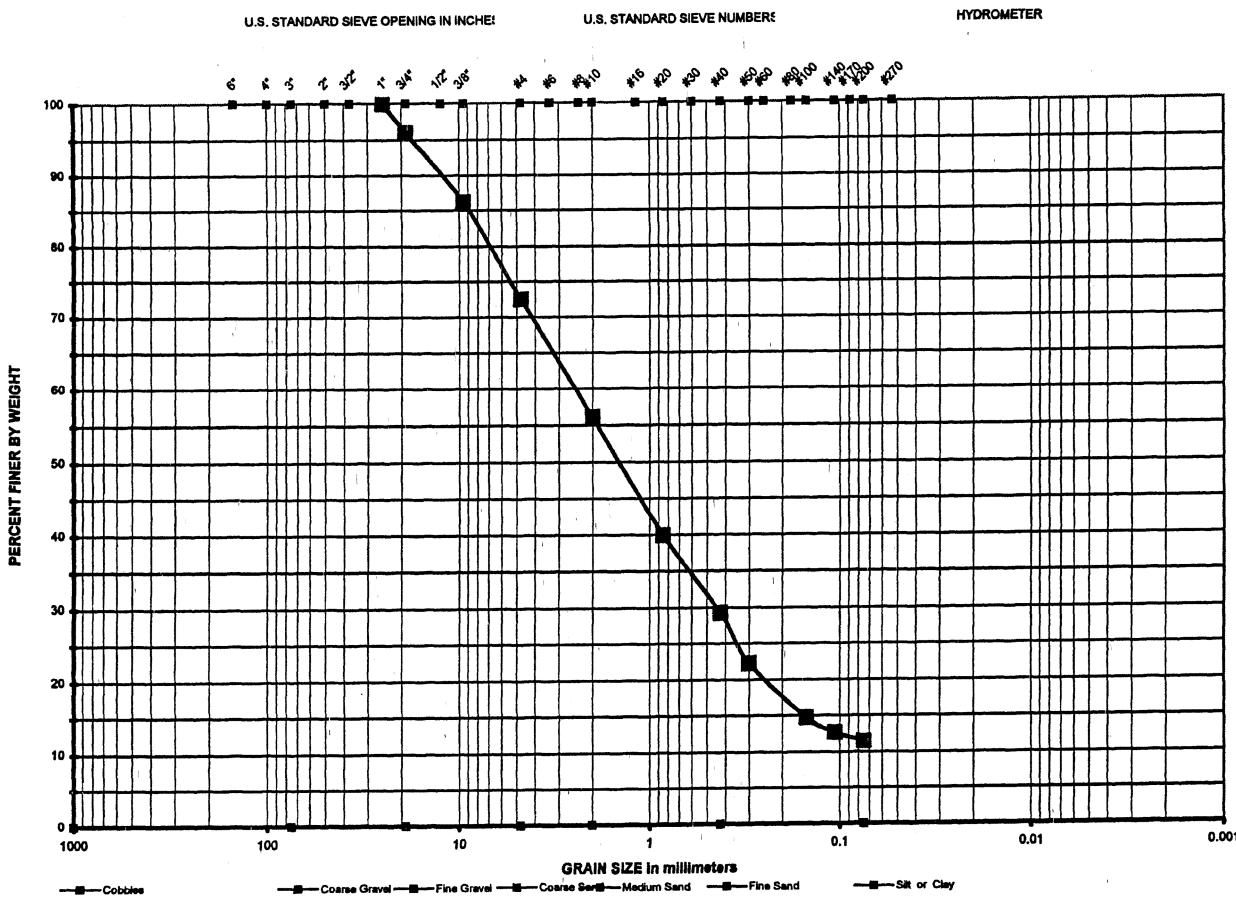
1/0/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No.

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-W@48.5'		26	-	-	-





PERCENT COARSER BY WEIGHT

— TC1-W@68.5'

Project: EAA Reservoirs

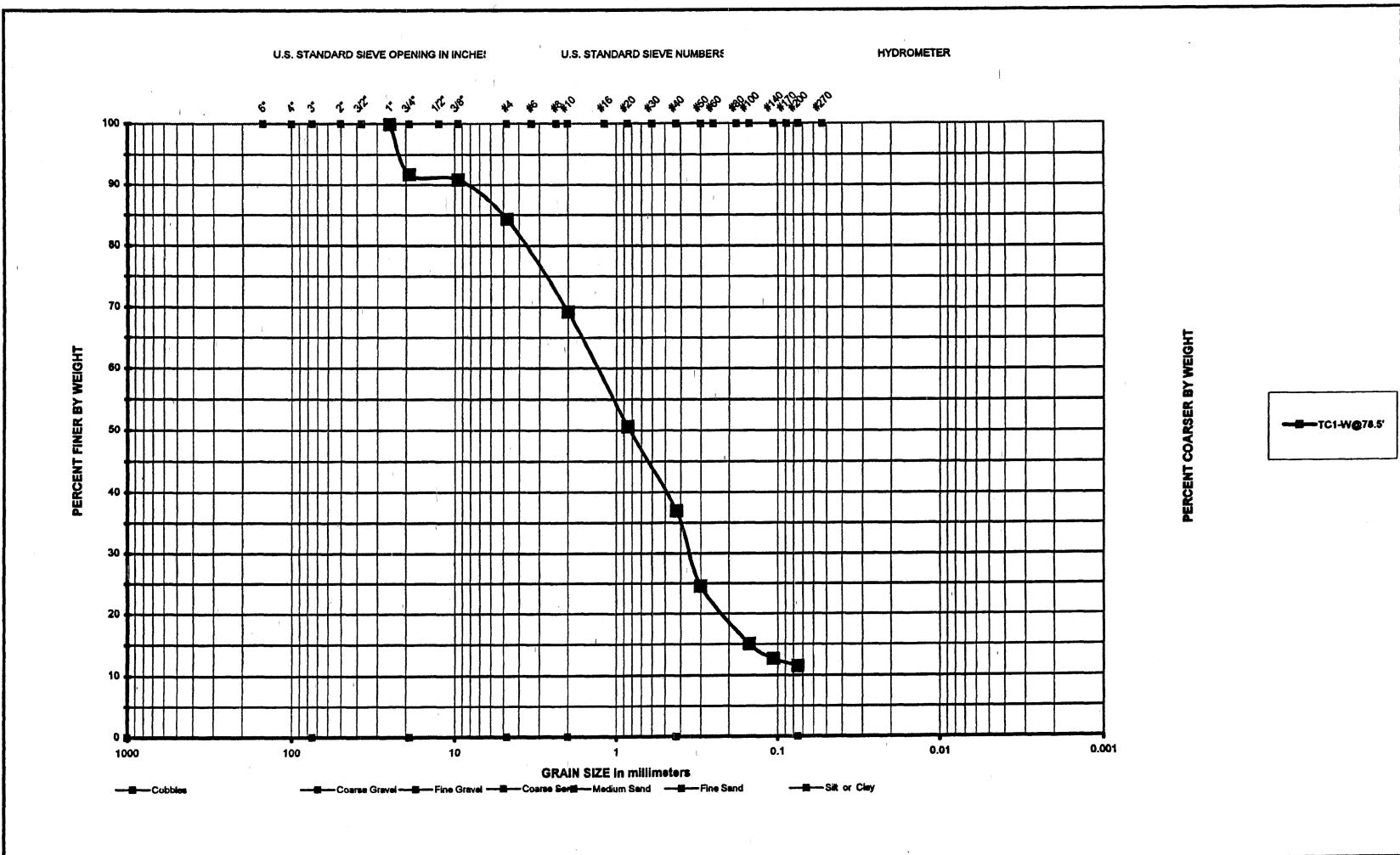
1/0/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No. _____

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-W@68.5'		19	-	-	-





GRADATION CURVES

Project: EAA Reservoirs

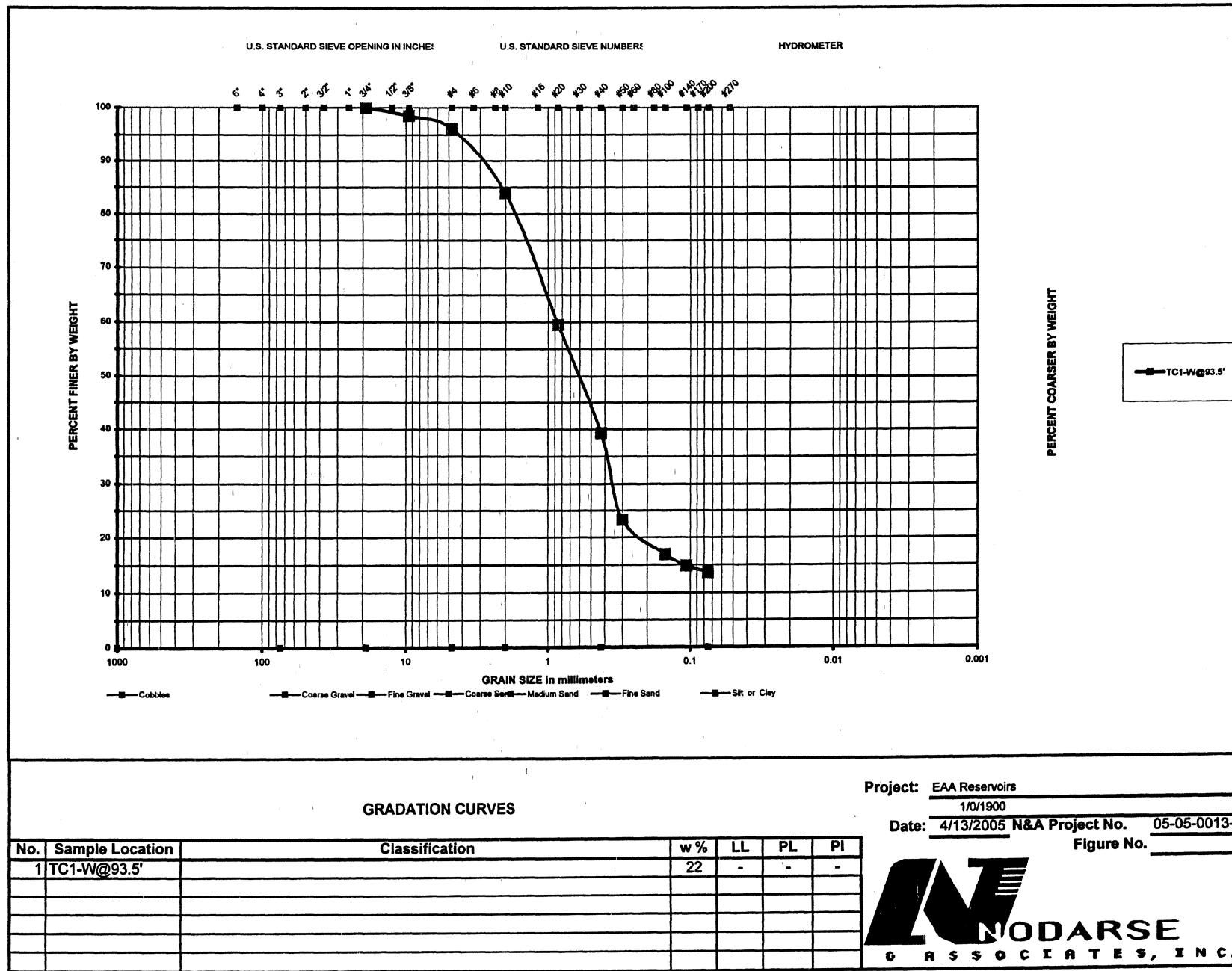
1/0/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No. _____

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-W@78.5'		22	-	-	-





GRADATION CURVES

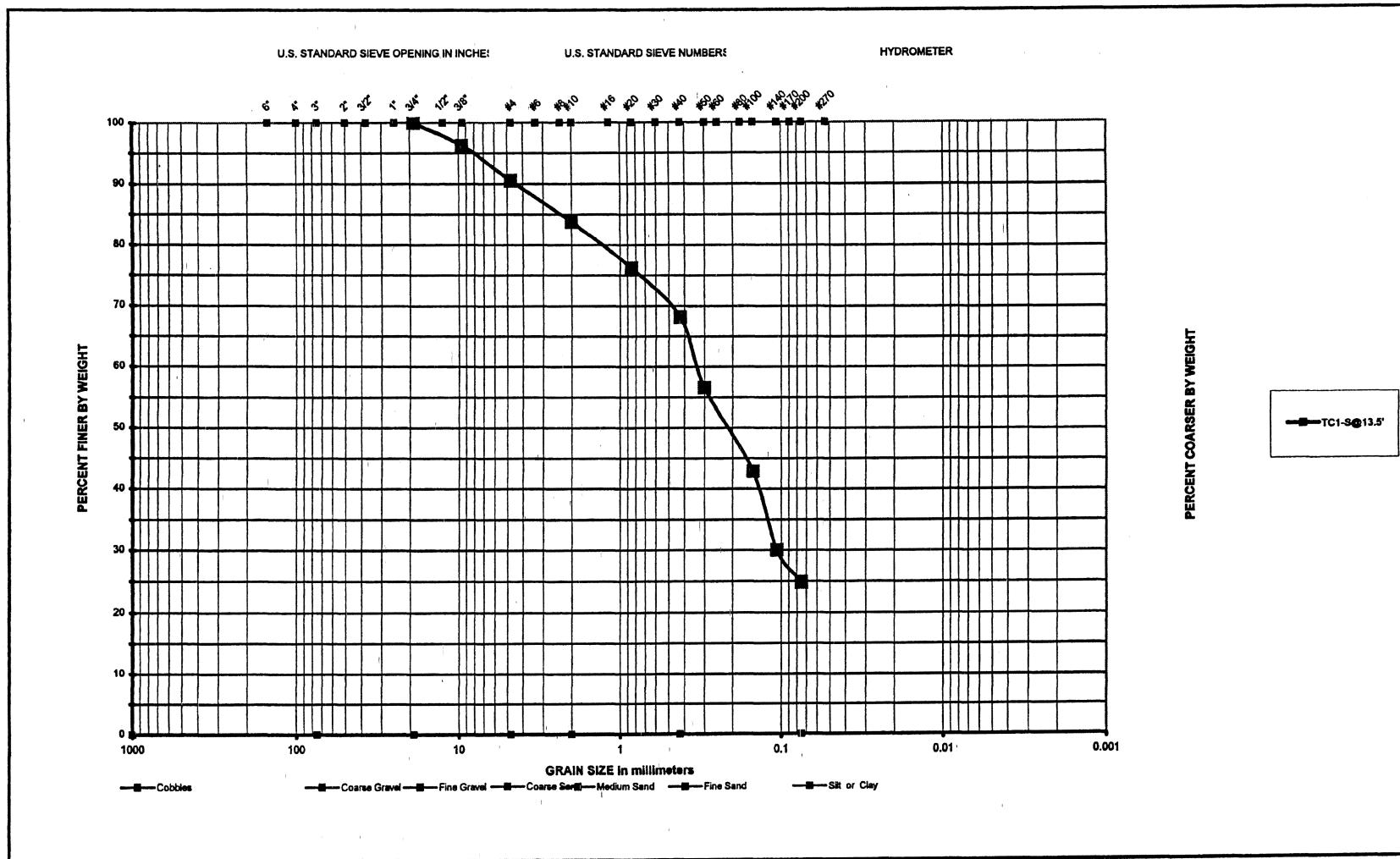
Project: EAA Reservoirs

1/0/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No.





GRADATION CURVES

Project: EAA Reservoirs

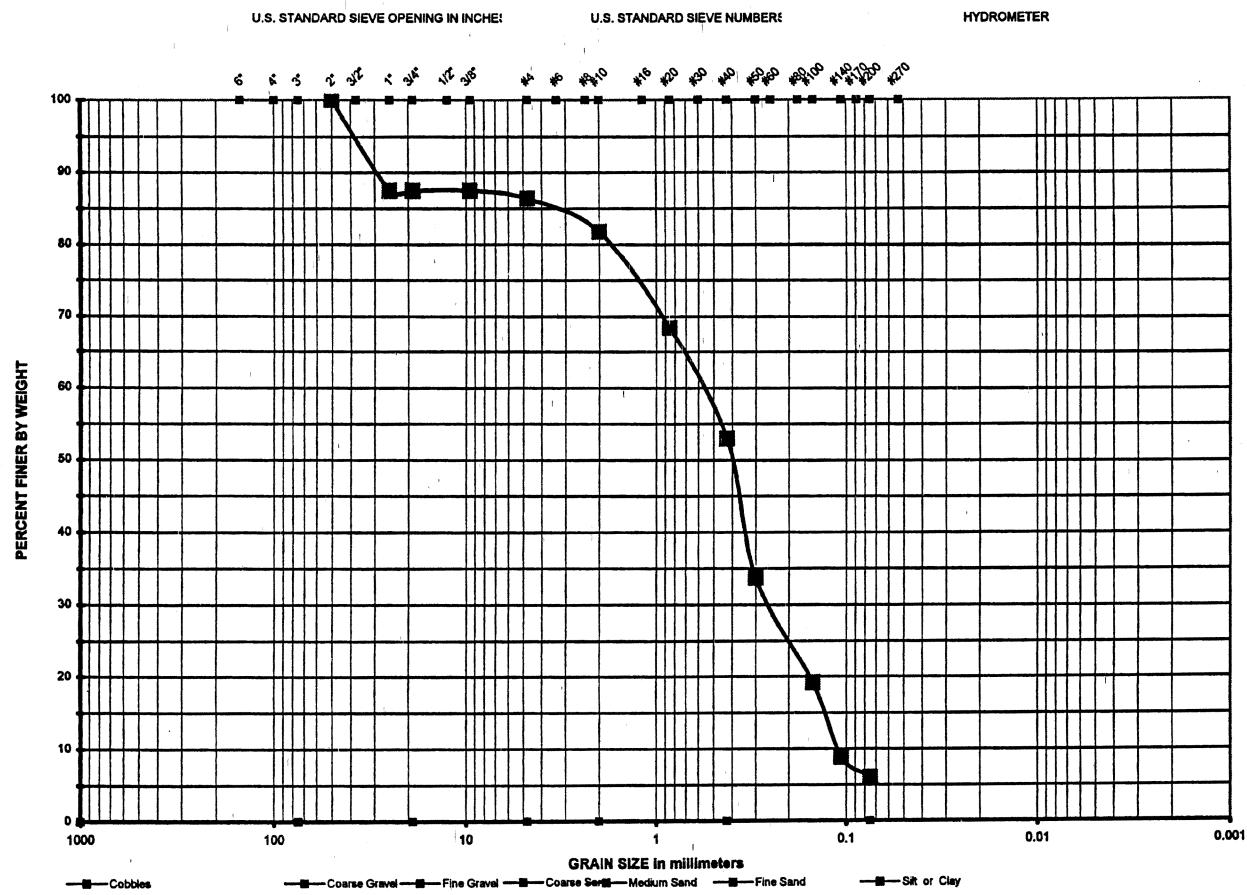
1/0/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No.

No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-S@13.5'		21	-	-	-





GRADATION CURVES

Project: EAA Reservoirs

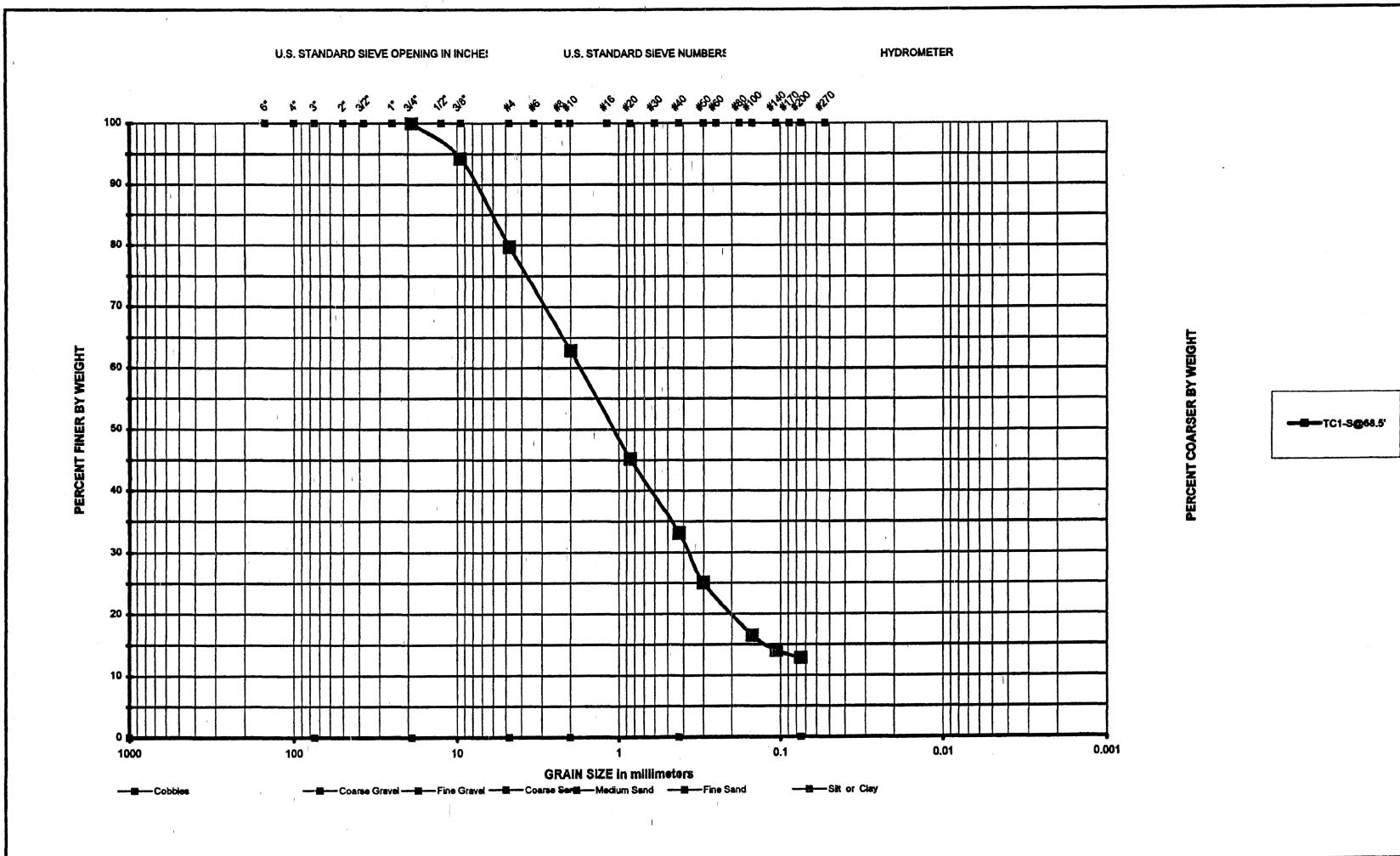
1/0/1900

Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No.



**NODARSE
ASSOCIATES, INC.**



GRADATION CURVES

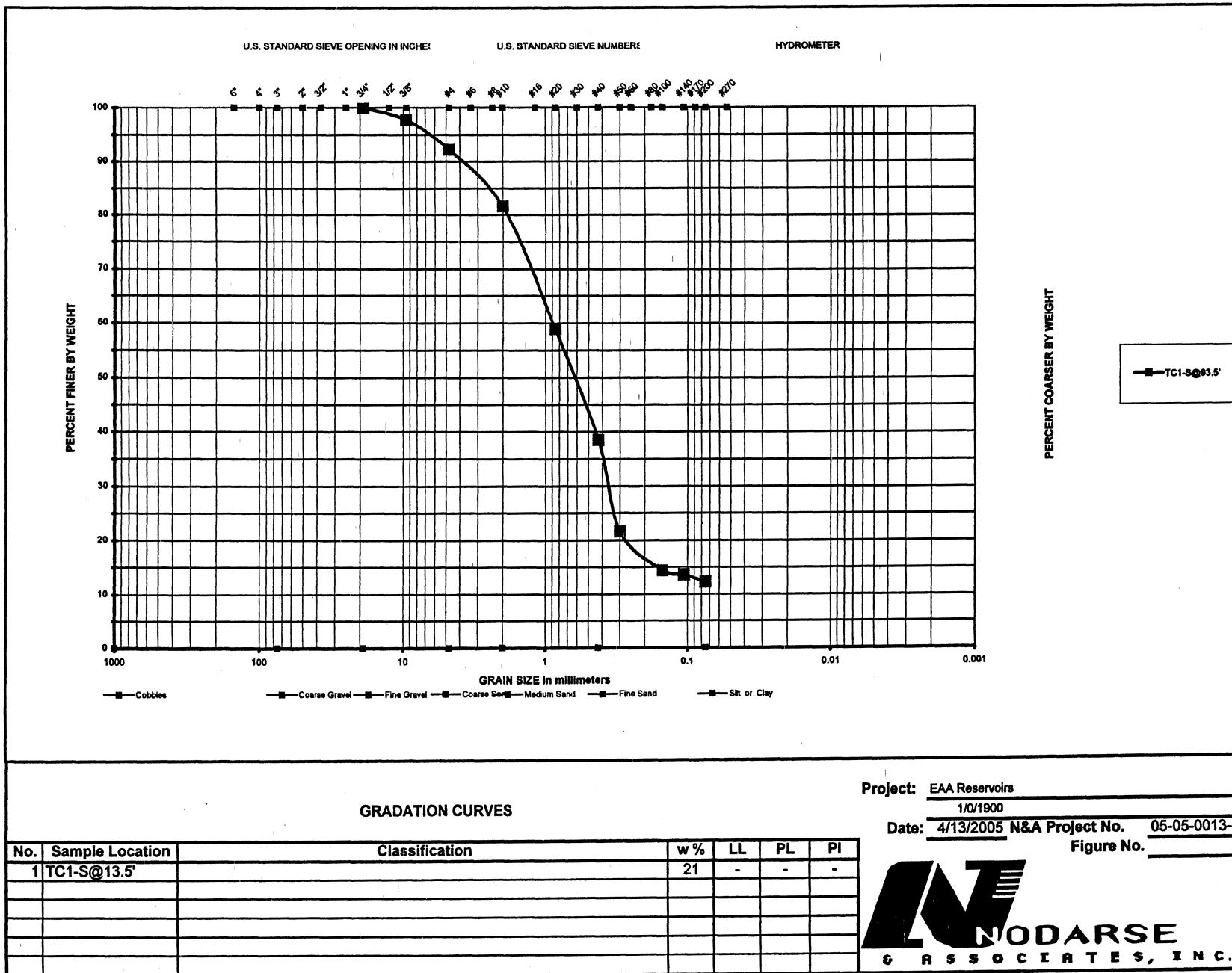
No.	Sample Location	Classification	w %	LL	PL	PI
1	TC1-S@68.5'		21	-	-	-

Project: EAA Reservoirs

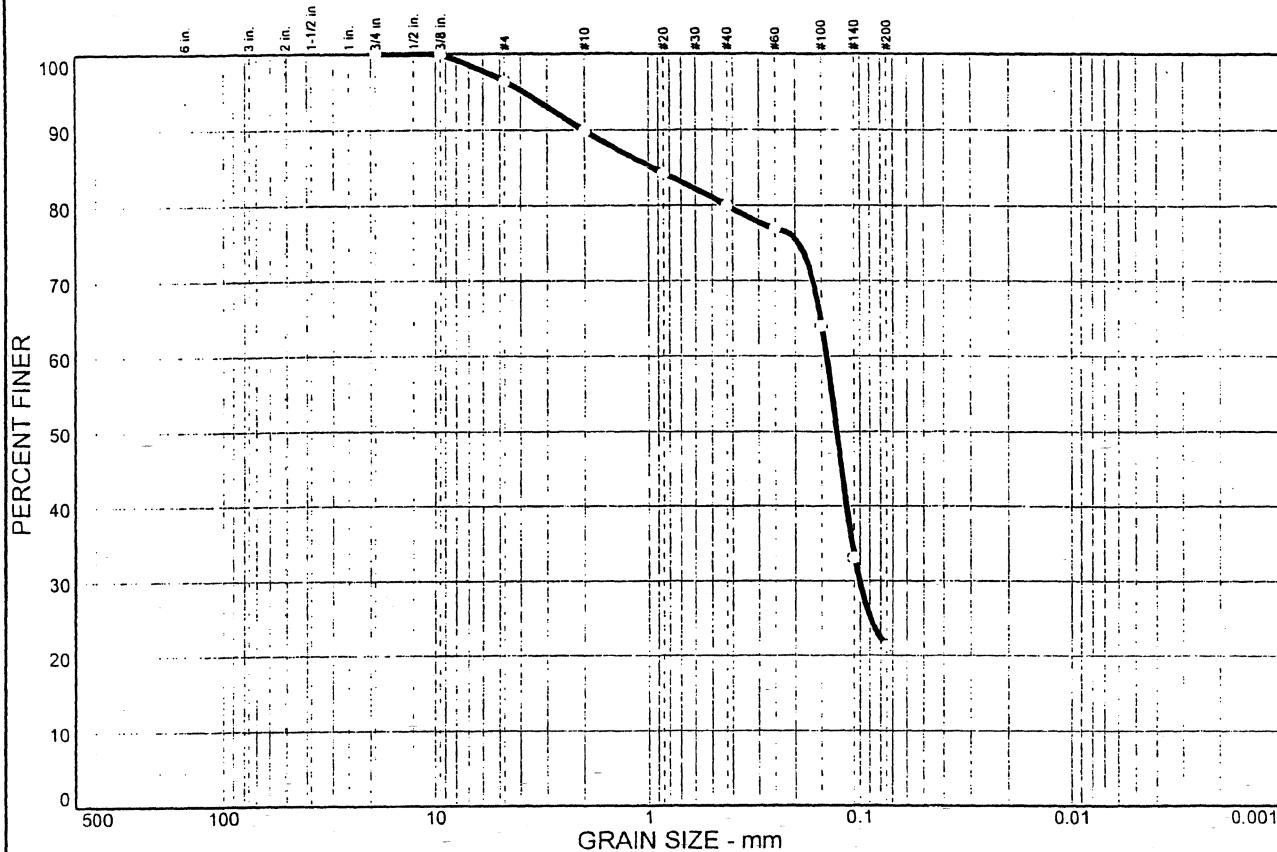
Date: 4/13/2005 N&A Project No. 05-05-0013-1

Figure No. _____





Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
0.0	0.0	3.6	6.5	9.9	58.8	21.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	100.0		
#4	96.4		
#10	89.9		
#20	84.3		
#40	80.0		
#60	77.0		
#100	64.0		
#140	33.1		
#200	21.2		

Soil Description		
PL=	<u>Atterberg Limits</u>	PI=
	LL=	
D ₈₅ = 0.954	C _u =	D ₅₀ = 0.128
D ₃₀ = 0.101	D ₁₅ =	D ₁₀ =
C _c =		
USCS=	<u>Classification</u>	AASHTO=
	<u>Remarks</u>	

* (no specification provided)

Sample No.: 282
Location: TCIS-10

Source of Sample:

Date:
Elev./Depth: 48.5'

NODARSE & ASSOCIATES, INC.	Client: Project: EAA	Plate
	Project No: W04-G-487	

LABORATORY TEST RESULTS FOR
EAA RESERVOIR - WO#2
PROJECT No: 05-05-0013-101
N&A

Boring Number	Approximate Sample Depth (feet)	Passing Sieve Number (%)					Moisture Content (%)	Organic Content (%)	Atterberg Limits		Classification	Stratum Number
		10	20	60	100	200			LL	PI		
CB-157 CP05-EAARS-CB-0255	9.0'	74	44	35	29	24	33	-	-	-	SM	Silty sand with gravel
CB-157 CP05-EAARS-CB-0255	13.5'	81	66	57	47	32	27	-	-	-	SM	Silty sand with gravel
CB-157 CP05-EAARS-CB-0255	18.5'	54	35	27	20	11	19	-	-	-	SW-SM	Well graded sand with silt+gravel
CB-158 CP05-EAARS-CB-0256	50.5'	75	46	32	17	10	19	-	-	-	SW-SM	Well graded sand with silt+gravel
CB-158 CP05-EAARS-CB-0256	55.0'	97	61	39	17	8	23	-	-	-	SP-SM	Poorly graded sand with silt
CB-158 CP05-EAARS-CB-0256	65.5'	74	49	34	21	14	21	-	-	-	SW-SM	Well graded sand with gravel
CB-158 CP05-EAARS-CB-0256	70.0'	93	83	67	35	13	28	-	-	-	SP-SM	Poorly graded sand with silt
CB-158 CP05-EAARS-CB-0256	38.5'	86	81	79	59	22	28	-	-	-	SM	Silty sand
CB-158 CP05-EAARS-CB-0256	44.5'	99	97	92	27	8	29	-	-	-	SP-SM	Poorly graded sand with silt

Boring Number	Approximate Sample Depth (feet)	Passing Sieve Number (%)					Moisture Content (%)	Organic Content (%)	Atterberg Limits		Classification	Stratum Number
		10	20	60	100	200			LL	PI		
CB-158 CP05-EAARS-CB-0256	23.5'	72	43	33	26	19	29	-	-	-	SM	Silty sand with gravel
CB-158 CP05-EAARS-CB-0256	21.5'	65	41	34	30	23	21	-	-	-	SM	Silty sand with gravel
CB-158 CP05-EAARS-CB-0256	76.0'	54	29	21	16	11	28	-	-	-	SP-SM	Poorly graded sand with gravel
CB-158 CP05-EAARS-CB-0256	80.5'	55	26	18	12	10	26	-	-	-	SP-SM	Poorly graded sand with silt
CB-158 CP05-EAARS-CB-0256	85.0'	55	26	18	12	10	26	-	-	-	SW-SM	Well graded sand with silt+gravel
CB-158 CP05-EAARS-CB-0256	89.5'	53	27	14	11	9	22	-	-	-	SW-SM	Well graded sand with silt+gravel
CB-158 CP05-EAARS-CB-0256	91.0'	57	43	38	23	17	21	-	-	-	SM	Silty sand with gravel
CB-158 CP05-EAARS-CB-0256	98.5'	71	61	56	34	20	22	-	-	-	SM	Silty sand with gravel

**LABORATORY TEST RESULTS FOR
EAA RESERVOIR - WO#4
PROJECT No: 05-05-0013-101
N&A**

LABORATORY TEST RESULTS FOR
EAA RESERVOIR - WO#3
PROJECT No: 05-05-0013-101
N&A

Boring Number	Approximate Sample Depth (feet)	Passing Sieve Number (%)					Moisture Content (%)	Organic Content (%)	Atterberg Limits		Classification	Stratum Number
		10	20	60	100	200			LL	PI		
CB-0169 CP05-EAARS-CB-0266	5.5'	37	25	14	11	8	13	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0169 CP05-EAARS-CB-0266	11.5'	72	59	39	33	28	24	-	-	-	Silty sand with gravel.	(SM)
CB-0169 CP05-EAARS-CB-0266	14.5'	48	36	22	18	14	34	-	-	-	Well graded sand with silt and gravel.	(SW-SM)
CB-0169 CP05-EAARS-CB-0266	16'	81	65	41	32	25	36	-	-	-	Silty sand.	(SM)
CB-0169 CP05-EAARS-CB-0266	20.5'	87	76	54	42	27	28	-	-	-	Silty sand.	(SM)
CB-0169 CP05-EAARS-CB-0266	26.5'	87	72	48	35	13	22	-	-	-	Well graded sand with silt.	(SW-SM)
CB-0169 CP05-EAARS-CB-0266	31.0'	81	71	53	41	25	22	-	-	-	Silty sand.	(SM)
CB-0169 CP05-EAARS-CB-0266	37.0'	75	60	39	27	9	27	-	-	-	Well graded sand with silt.	(SW-SM)
CB-0169 CP05-EAARS-CB-0266	44.5'	99	94	22	8	3	25	-	-	-	Poorly graded sand.	(SP)
CB-0169 CP05-EAARS-CB-0266	49.0'	57	47	20	13	7	21	-	-	-	Well graded sand with silt and gravel.	(SW-SM)
CB-0169 CP05-EAARS-CB-0266	55.0'	86	81	75	59	22	30	-	-	-	Silty sand.	(SM)
CB-0169 CP05-EAARS-CB-0266	61.0'	44	36	23	17	11	30	-	-	-	Well graded sand with silt+gravel.	(SW-SM)

CB-0169 CP05-EAARS-CB-0266	65.5'	94	81	35	18	9	22	-	-	-	Well graded sand with silt.	(SW-SM)
CB-0169 CP05-EAARS-CB-0266	68.5'	62	50	26	18	8	22	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0169 CP05-EAARS-CB-0266	73.0'	64	56	38	19	10	21	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0169 CP05-EAARS-CB-0266	76.0'	56	48	29	17	11	18	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0169 CP05-EAARS-CB-0266	85.0'	33	25	12	8	6	14	-	-	-	Well graded gravel with silt and sand.	(GW-GM)
CB-0169 CP05-EAARS-CB-0266	89.5'	52	39	13	10	8	14	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0171 CP05-EAARS-CB-0268	13.5'	84	71	46	37	27	30	-	-	-	Silty sand.	(SM)
CB-0171 CP05-EAARS-CB-0268	18.5'	42	38	25	18	9	22	-	-	-	Poorly graded gravel with silt and sand.	(GP-GM)
CB-0171 CP05-EAARS-CB-0268	33.5'	76	66	47	30	9	18	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0172 CP05-EAARS-CB-0269	0.0'	76	72	35	21	14	137	-	-	-	Silty sand with gravel.	(SM)
CB-0172 CP05-EAARS-CB-0269	8.5'	57	39	21	16	12	24	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0172 CP05-EAARS-CB-0269	13.5'	78	71	49	38	25	32	-	-	-	Silty sand with gravel.	(SM)
CB-0172 CP05-EAARS-CB-0269	18.5'	85	68	40	27	10	23	-	-	-	Well graded sand with silt.	(SW-SM)
CB-0172 CP05-EAARS-CB-0269	33.5'	56	51	40	28	3	16	-	-	-	Poorly graded sand with gravel.	(SP)
CB-0172 CP05-EAARS-CB-0269	38.5'	74	65	52	22	6	21	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0173 CP05-EAARS-CB-0270	1.5'	45	31	15	10	7	158	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0173 CP05-EAARS-CB-0270	3.5'	26	22	18	16	14	27	-	-	-	Silty gravel with sand	(GM)

CB-0173 CP05-EAARS-CB-0270	13.5'	77	65	47	41	35	36	-	-	-	Silty sand.	(SM)
CB-0173 CP05-EAARS-CB-0270	18.5'	46	37	24	18	11	26	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0175 CP05-EAARS-CB-0271	0.0'	58	47	33	28	22	12	-	-	-	Silty sand with gravel.	(SM)
CB-0175 CP05-EAARS-CB-0271	2.0'	60	50	36	29	22	20	-	-	-	Silty sand with gravel.	(SM)
CB-0175 CP05-EAARS-CB-0271	10.5'	46	37	26	21	18	24	-	-	-	Silty sand with gravel.	(SM)
CB-0175 CP05-EAARS-CB-0271	18.5'	82	73	51	37	25	25	-	-	-	Silty sand.	(SM)
CB-0175 CP05-EAARS-CB-0271	23.5'	67	59	39	26	12	22	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0175 CP05-EAARS-CB-0271	38.5'	82	77	55	25	10	24	-	-	-	Poorly graded sand with silt and gravel.	(SP-SM)
CB-0176 CP05-EAARS-CB-0272	5.1'	45	33	21	18	15	19	-	-	-	Silty sand with gravel.	(SM)
CB-0176 CP05-EAARS-CB-0272	10.0'	79	69	55	39	24	29	-	-	-	Silty sand with gravel.	(SM)
CB-0176 CP05-EAARS-CB-0272	18.5'	52	46	36	22	9	11	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0176 CP05-EAARS-CB-0272	23.5'	47	42	37	22	7	15	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0176 CP05-EAARS-CB-0272	28.5'	98	97	94	38	5	29	-	-	-	Poorly graded sand.	(SP)
CB-0176 CP05-EAARS-CB-0272	33.5'	53	48	27	16	5	16	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0179 CP05-EAARS-CB-0275	5.5'	41	30	17	13	10	24	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0179 CP05-EAARS-CB-0275	7.5'	58	46	27	21	17	25	-	-	-	Silty sand with gravel.	(SM)
CB-0179 CP05-EAARS-CB-0275	13.5'	50	40	26	23	19	18	-	-	-	Silty sand with gravel.	(SM)

CB-0179 CP05-EAARS-CB-0275	23.5'	38	29	22	14	5	14	-	-	-	Well graded sand with gravel.	(SW)
CB-0179 CP05-EAARS-CB-0275	28.5'	52	48	39	21	7	15	-	-	-	Poorly graded sand with silt.	(SP-SM)
CB-0179 CP05-EAARS-CB-0275	33.5'	91	91	86	27	7	25	-	-	-	Poorly graded sand with silt.	(SP-SM)
CB-0179 CP05-EAARS-CB-0275	38.5'	72	71	49	15	4	21	-	-	-	Poorly graded sand with gravel.	(SP)
CB-0179 CP05-EAARS-CB-0275	48.5'	83	83	75	17	6	21	-	-	-	Poorly graded sand with silt+gravel.	(SP-SM)
CB-0179 CP05-EAARS-CB-0275	58.5'	61	53	35	20	9	23	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0179 CP05-EAARS-CB-0275	63.5'	57	48	33	16	7	28	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0179 CP05-EAARS-CB-0275	73.5'	99	96	70	15	10	22	-	-	-	Poorly graded sand with silt.	(SP-SM)
CB-0179 CP05-EAARS-CB-0275	83.5'	57	38	20	14	11	20	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0179 CP05-EAARS-CB-0275	93.5'	64	42	21	16	12	18	-	-	-	Well graded sand with silt.	(SW-SM)
CB-0180 CP05-EAARS-CB-0276	8.0'	43	32	21	17	12	17	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0180 CP05-EAARS-CB-0276	13.5'	54	43	27	21	13	25	-	-	-	Well graded sand with silt+gravel.	(SW-SM)
CB-0180 CP05-EAARS-CB-0276	18.5'	88	84	76	29	9	26	-	-	-	Poorly graded sand with silt.	(SP-SM)
CB-0180 CP05-EAARS-CB-0276	23.5'	87	81	58	19	4	25	-	-	-	Poorly graded sand.	(SP)
CB-0180 CP05-EAARS-CB-0276	28.5'	99	97	82	22	6	27	-	-	-	Poorly graded sand with silt.	(SP-SM)
CB-0180 CP05-EAARS-CB-0276	33.5'	96	95	92	44	9	27	-	-	-	Poorly graded sand with silt.	(SP-SM)
CB-0181 CP05-EAARS-CB-0277	23.5'	82	74	63	44	16	25	-	-	-	Silty sand.	(SM)

**LABORATORY TEST RESULTS FOR
EAA RESERVOIR - WO#5
PROJECT No: 05-05-0013-101
N&A**

Boring Number	Approximate Sample Depth (feet)	Passing Sieve Number (%)					Moisture Content (%)	Organic Content (%)	Atterberg Limits		Classification	Stratum Number
		10	20	60	100	200			LL	PI		
CB-0174 CP05-EAARS-VB-0283	5-10'	71	63	50	45	39	10	-	-	-	Sandy silty clay with gravel.	(CL-ML)
CB-0174 CP05-EAARS-VB-0283	10-15'	69	61	50	46	41	23	-	-	-	Sandy silty clay with gravel.	(CL-ML)
CB-0174 CP05-EAARS-VB-0283	100-105'	85	49	13	11	9	11	-	-	-	Poorly graded sand with silt.	(SP-SM)
CB-0174 CP05-EAARS-VB-0283	110-115'	81	52	22	17	14	18	-	-	-	Silty sand with gravel.	(SM)
CB-0174 CP05-EAARS-VB-0283	115-120'	66	46	20	15	12	16	-	-	-	Well graded sand with silt and gravel.	(SW-SM)
CB-0174 CP05-EAARS-VB-0283	125-130'	41	28	15	10	7	13	-	-	-	Well graded sand with silt and gravel.	(SW-SM)
CB-0174 CP05-EAARS-VB-0283	140-145'	76	63	45	15	10	19	-	-	-	Poorly graded sand with silt and gravel.	(SP-SM)
CB-0174 CP05-EAARS-VB-0283	150-155'	53	37	22	12	8	13	-	-	-	Well graded sand with silt and gravel.	(SW-SM)
CB-0174 CP05-EAARS-VB-0283	160-165'	50	35	21	15	9	14	-	-	-	Well graded sand with silt and gravel.	(SW-SM)

LABORATORY TEST RESULTS FOR

PROJECT NAME: EAA RESERVOIR (BLACK AND VEATCH) Work Order No. 6

PROJECT No: 05-05-0013-101

PALM BEACH COUNTY, FLORIDA

N&A

Boring No	Approximate Sample Depth (feet)	Passing Sieve Number (%)					Moisture Content (%)	Organic Content (%)	Atterberg Limits		AASHTO or U.S.C.S. Classification
		10	40	60	100	200			LL	PI	
CB-164 CP05-EAARS-VB-0282	5.0-10.0	37	24	20	17	14	6	-	-	-	GM
CB-164 CP05-EAARS-VB-0282	10.0-15.0	70	46	38	33	27	21	-	-	-	SM
CB-164 CP05-EAARS-VB-0282	30.0-35.0	50	39	34	26	17	8	-	-	-	SM
CB-164 CP05-EAARS-VB-0282	45.0-50.0	78	21	9	5	2	14	-	-	-	SP
CB-164 CP05-EAARS-VB-0282	55.0-60.0	51	30	20	15	8	10	-	-	-	SP-SM
CB-164 CP05-EAARS-VB-0282	70.0-75.0	31	22	17	12	7	7	-	-	-	GP-GM
CB-164 CP05-EAARS-VB-0282	95.0-100.0	78	36	17	8	6	22	-	-	-	SP-SM
CB-164 CP05-EAARS-VB-0282	115.0-120.0	67	56	53	42	27	20	-	-	-	SM
CB-164 CP05-EAARS-VB-0282	120.0-125.0	77	67	64	46	26	22	-	-	-	SM
CB-164 CP05-EAARS-VB-0282	130.0-135.0	89	84	83	40	25	21	-	-	-	SM
CB-164 CP05-EAARS-VB-0282	135.0-140.0	64	51	49	30	21	21	-	-	-	SM
CB-164 CP05-EAARS-VB-0282	145.0-150.0	60	43	39	18	11	13	-	-	-	SP-SM
CB-164 CP05-EAARS-VB-0282	165.0-170.0	37	21	18	12	7	14	-	-	-	GP-GM
CB-164 CP05-EAARS-VB-0282	180.0-185.0	81	68	65	51	20	20	-	-	-	SM
CB-164 CP05-EAARS-VB-0282	200.0-205.0	99	98	97	72	34	20	-	-	-	SM

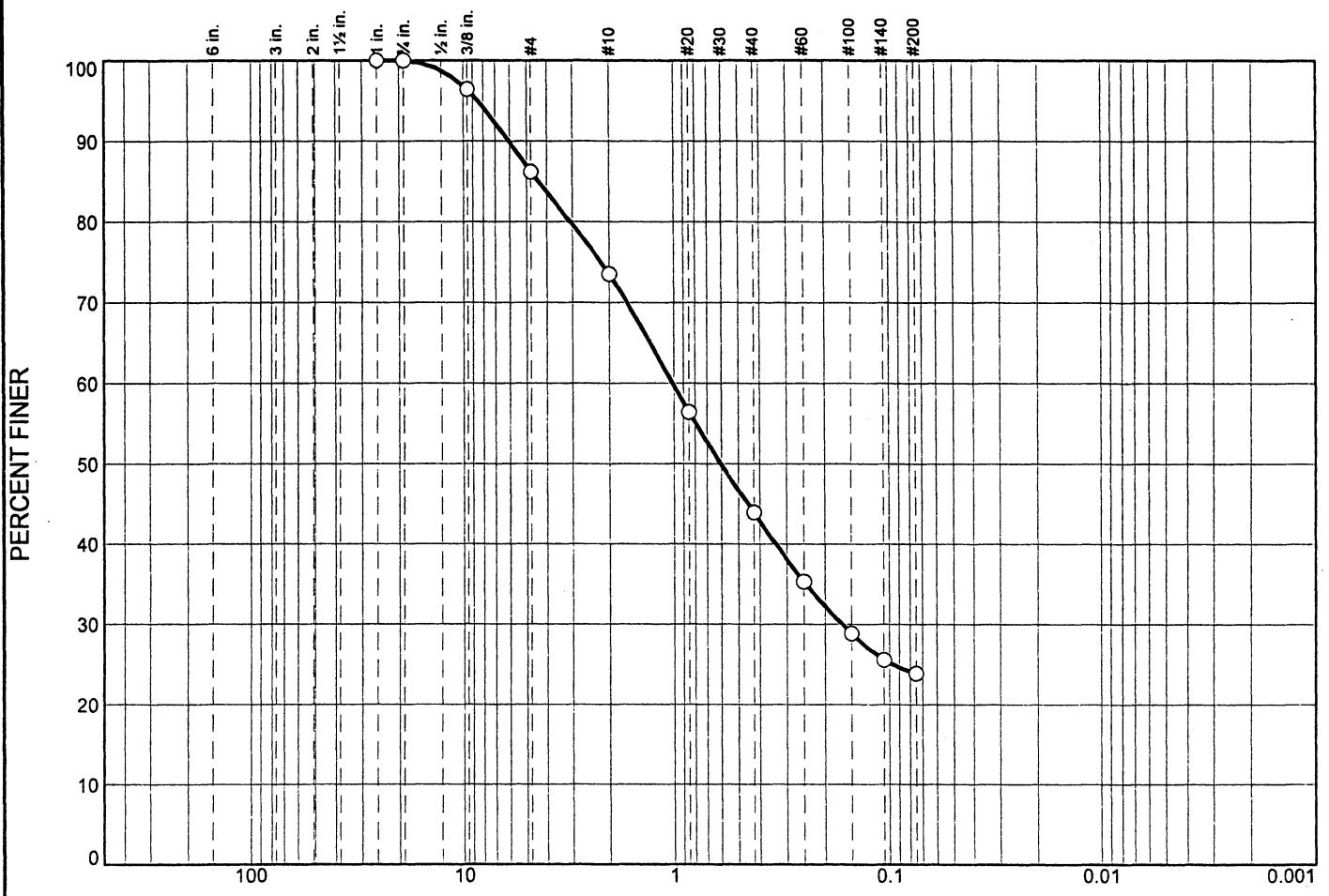
CB-164 CP05-EAARS-VB-0282	215.0-220.0	100	100	100	100	29	28	-	-	-	SM
CB-164 CP05-EAARS-VB-0282	225.0-230.0	100	100	99	98	75	36	-	-	-	ML
CB-170 CP05-EAARS-CB-0267	88.5-90.0	96	85	75	46	29	21	-	-	-	SM
CB-171 CP05-EAARS-CB-0268	78.5-80.0	99	92	86	65	39	26	-	-	-	SM
CB-174 CP05-EAARS-VB-0283	40.0-45.0	88	82	79	43	6	17	-	-	-	SP-SM
CB-174 CP05-EAARS-VB-0283	60.0-65.0	46	34	26	15	8	8	-	-	-	SP-SM
CB-176 CP05-EAARS-CB-0272	58.5-60.0	64	40	31	18	5	21	-	-	-	SP-SM
CB-182 CP05-EAARS-VB-0284	10.0-15.0	63	52	46	39	26	18	-	-	-	SM
CB-182 CP05-EAARS-VB-0284	20.0-25.0	97	95	91	31	4	26	-	-	-	SP
CB-182 CP05-EAARS-VB-0284	40.0-45.0	31	20	13	8	4	2	-	-	-	GP
CB-182 CP05-EAARS-VB-0284	55.0-60.0	50	39	31	18	9	16	-	-	-	SP-SM
CB-182 CP05-EAARS-VB-0284	70.0-75.0	53	20	14	10	7	9	-	-	-	SP-SM
CB-182 CP05-EAARS-VB-0284	90.0-95.0	65	25	15	9	7	15	-	-	-	SP-SM
CB-182 CP05-EAARS-VB-0284	100.0-105.0	49	17	11	8	6	11	-	-	-	GP-GM
CB-182 CP05-EAARS-VB-0284	120.0-125.0	53	30	25	19	13	13	-	-	-	SM
CB-182 CP05-EAARS-VB-0284	125.0-130.0	40	19	14	11	8	10	-	-	-	SP-SM
CB-182 CP05-EAARS-VB-0284	140.0-145.0	54	29	10	8	7	9	-	-	-	SP-SM
CB-182 CP05-EAARS-VB-0284	155.0-160.0	63	50	46	19	11	12	-	-	-	SP-SM
CB-182 CP05-EAARS-VB-0284	175.0-180.0	78	66	63	52	22	17	-	-	-	SM
CB-182 CP05-EAARS-VB-0284	185.0-190.0	93	83	82	75	35	15	-	-	-	SM
CB-182 CP05-EAARS-VB-0284	205.0-210.0	100	100	100	100	45	23	-	-	-	ML
CB-182 CP05-EAARS-VB-0284	210.0-215.0	100	100	100	99	43	26	-	-	-	ML

CB-182	225.0-230.0	100	100	100	99	99	75	-	-	-	ML
CB-190	215.0-220.0	100	97	95	91	71	43	-	-	-	CL
CB-190	220.0-225.0	100	90	80	71	62	88	-	-	-	CL
CB-190	225.0-230.0	100	95	92	89	86	148	-	127	66	CH
CB-205	5.0-10.0	52	31	25	21	16	14	-	-	-	SM
CB-205	15.0-20.0	67	49	40	31	20	18	-	-	-	SM
CB-205	30.0-35.0	77	56	43	25	6	16	-	-	-	SP-SM
CB-205	35.0-40.0	100	97	93	46	5	24	-	-	-	SP-SM
CB-205	60.0-65.0	49	31	23	16	11	14	-	-	-	SP-SM
CB-205	65.0-70.0	91	79	71	45	16	21	-	-	-	SM
CB-205	75.0-80.0	52	33	24	16	13	13	-	-	-	SM
CB-205	80.0-85.0	40	21	15	8	7	12	-	-	-	SP-SM
CB-205	95.0-100.0	87	48	24	11	8	17	-	-	-	SP-SM
CB-205	105.0-110.0	52	16	12	9	7	14	-	-	-	SP-SM
CB-205	110.0-115.0	62	46	43	37	30	20	-	-	-	SM
CB-205	125.0-130.0	50	25	20	16	12	17	-	-	-	SP-SM
CB-205	140.0-145.0	58	38	32	13	7	15	-	-	-	SP-SM
CB-205	160.0-165.0	58	39	35	24	12	20	-	-	-	SP-SM
CB-205	175.0-180.0	77	67	66	56	19	18	-	-	-	SM
CB-205	180.0-185.0	96	91	90	82	37	21	-	-	-	SM
CB-205	195.0-200.0	95	90	89	74	31	19	-	-	-	SM
CB-205	215.0-220.0	100	100	100	100	53	25	-	-	-	ML

CB-219 CP05-EAARS-CB-0317	14.0-15.5	94	77	70	64	52	23	-	-	-	ML
CB-219 CP05-EAARS-CB-0317	34.0-35.5	95	77	47	25	12	25	-	-	-	SP-SM
CB-228 CP05-EAARS-CB-0326	4.0-5.5	23	11	8	6	4	5	-	-	-	GP
CB-228 CP05-EAARS-CB-0326	14.0-15.5	74	44	32	24	11	23	-	-	-	SP-SM
CB-231 CP05-EAARS-CB-0329	8.5-10.0	61	32	25	20	14	17	-	-	-	SM
CB-231 CP05-EAARS-CB-0329	13.5-15.0	88	60	50	38	14	22	-	-	-	SM
CB-231 CP05-EAARS-CB-0329	18.5-20.0	54	38	32	22	12	13	-	-	-	SP-SM
CB-231 CP05-EAARS-CB-0329	23.5-25.0	87	69	54	18	6	26	-	-	-	SP-SM
CB-231 CP05-EAARS-CB-0329	33.5-35.0	65	60	58	40	8	16	-	-	-	SP-SM
CB-235 CP05-EAARS-CB-0333	8.5-10.0	63	38	32	29	24	24	-	-	-	SM
CB-248 CP05-EAARS-CB-0346	10.0-11.5	55	29	20	14	9	10	-	-	-	SP-SM
CB-260 CP05-EAARS-CB-0358	13.0-14.5	70	40	31	26	20	21	-	-	-	SM
CB-262 CP05-EAARS-CB-0360	8.5-10.0	38	21	15	11	8	26	-	-	-	GP-GM
CB-262 CP05-EAARS-CB-0360	13.5-15.0	82	59	53	49	46	31	-	-	-	SM
CB-262 CP05-EAARS-CB-0360	18.5-20.0	89	67	55	45	32	24	-	-	-	SM
CB-262 CP05-EAARS-CB-0360	23.5-25.0	69	46	38	29	15	22	-	-	-	SM
CB-268 CP05-EAARS-CB-0365	0.0-1.5	72	48	38	31	24	10	-	-	-	SM
CB-268 CP05-EAARS-CB-0365	1.5-3.0	60	41	35	30	24	13	-	-	-	SM
CB-268 CP05-EAARS-CB-0365	3.5-5.0	68	33	22	15	9	88	-	-	-	SP-SM
CB-268 CP05-EAARS-CB-0365	5.0-6.5	37	17	13	10	7	13	-	-	-	SP-SM
CB-268 CP05-EAARS-CB-0365	11.5-13.0	75	48	39	29	19	29	-	-	-	SM
CB-268 CP05-EAARS-CB-0365	18.5-20.0	96	82	71	59	41	23	-	-	-	SM

CB-268 CP05-EAARS-CB-0365	23.5-25.0	90	68	57	48	36	23	-	-	-	SM
CB-268 CP05-EAARS-CB-0365	28.5-30.0	86	63	55	46	31	21	-	-	-	SM
CB-268 CP05-EAARS-CB-0365	33.5-35.0	53	30	26	20	11	13	-	-	-	SP-SM
CB-276 CP05-EAARS-CB-0372	14.5-16.0	93	75	68	62	53	19	-	-	-	ML
CB-277 CP05-EAARS-CB-0373	19.0-20.5	83	67	56	41	21	25	-	-	-	SM
CB-277 CP05-EAARS-CB-0373	29.0-30.5	66	49	40	28	19	22	-	-	-	SM
CB-277 CP05-EAARS-CB-0373	34.0-35.5	100	98	95	37	5	26	-	-	-	SP
CB-281 CP05-EAARS-CB-0377	15.5-17.0	79	42	32	26	19	18	-	-	-	SM
CB-281 CP05-EAARS-CB-0377	19.0-20.5	92	68	54	40	25	26	-	-	-	SM
CB-281 CP05-EAARS-CB-0377	24.0-25.5	67	43	35	28	18	19	-	-	-	SM
CB-281 CP05-EAARS-CB-0377	29.0-30.5	72	49	41	31	17	15	-	-	-	SM
CB-310 CP05-EAARS-CB-0406	23.5-25.0	85	64	52	41	28	26	-	-	-	SM
CB-310 CP05-EAARS-CB-0406	33.5-35.0	53	34	30	21	9	13	-	-	-	SP-SM

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	0	14	12	30	20	24
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			4.3800	1.0135	0.6025	0.1656	

Material Description							USCS	AASHTO
○ Silty sand with gravel							SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-157 Depth: 9.0' Sample Number: 4

Remarks:

○ Moisture Content % 32.6 CP05-
EAARS-CB-0255 @ 9.0'

Date: ○

Nodarse & Associates, Inc.

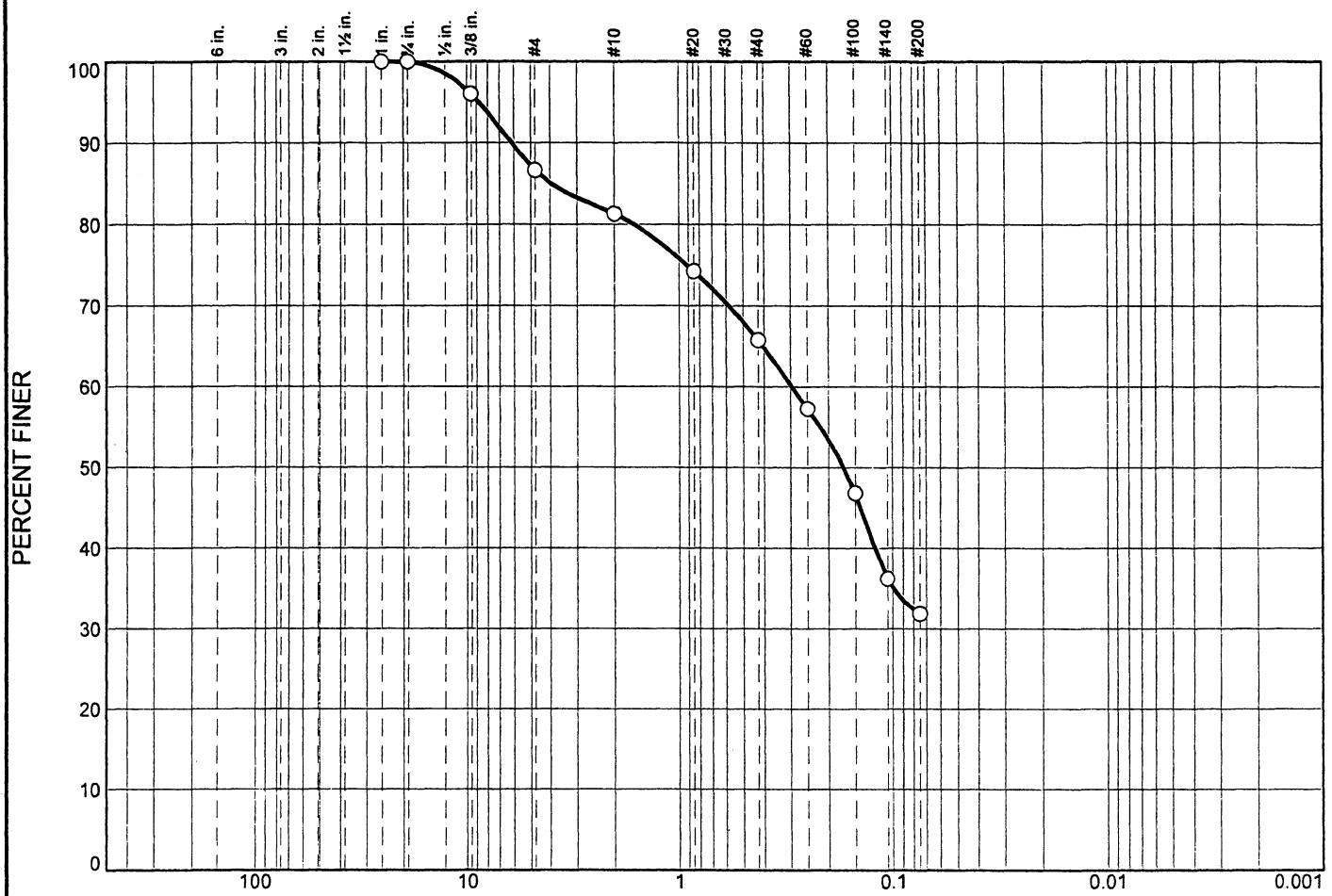
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report

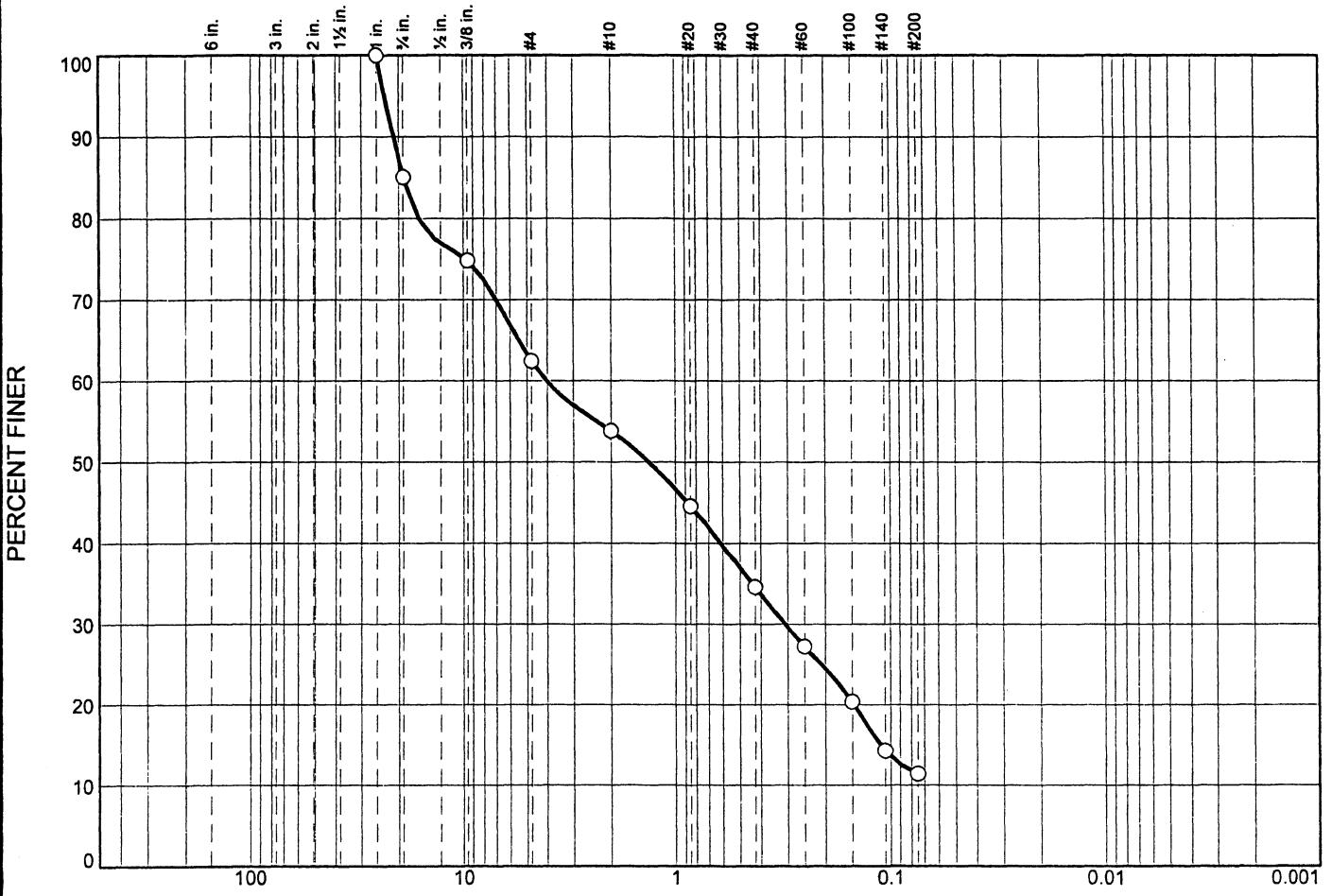


% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○	0	0	13	6	15	34	32	
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	
○			3.9736	0.2950	0.1690			
Material Description							USCS	AASHTO
○	Silty sand with gravel						SM	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	○ Moisture Content % 27.1 CP05-
○ Source of Sample: CB-157 Depth: 13.5'	EAARS-CB-0255 @ 13.5'
Date: ○	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Particle Size Distribution Report



Material Description	USCS	AASHTO
○ Well graded sand with silt	SW-SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-157

Depth: 18.5'

Sample Number: 6

Date: 8

Nodarse & Associates, Inc.

Miami Lakes, FL

Remarks:

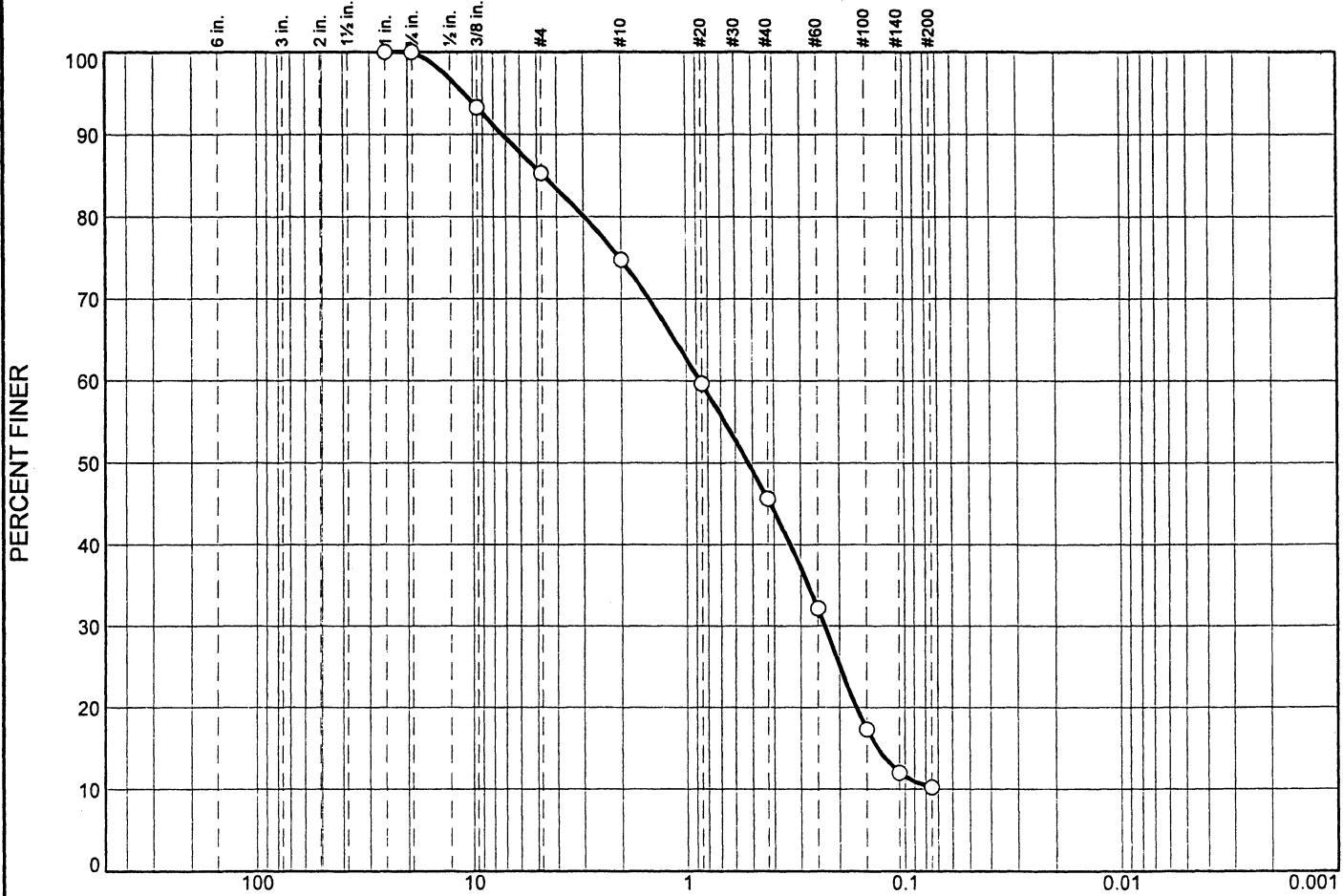
○ Moisture Content % 19.3 CP05-
FAARS-CB-0255 @ 18.5'

Tested By: Pedro Camaraza

Checked By: Michael Brown

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	0	15	10	29	36	10
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			4.6208	0.8654	0.5214	0.2327	0.1338

Material Description					USCS	AASHTO
○ Well graded sand with silt					SW-SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-158 Depth: 50.5' Sample Number: 32

Remarks:

○ Moisture Content % 18.6 CP05-
EAARS-CB-0256 @ 50.5'

Date: ○

Nodarse & Associates, Inc.

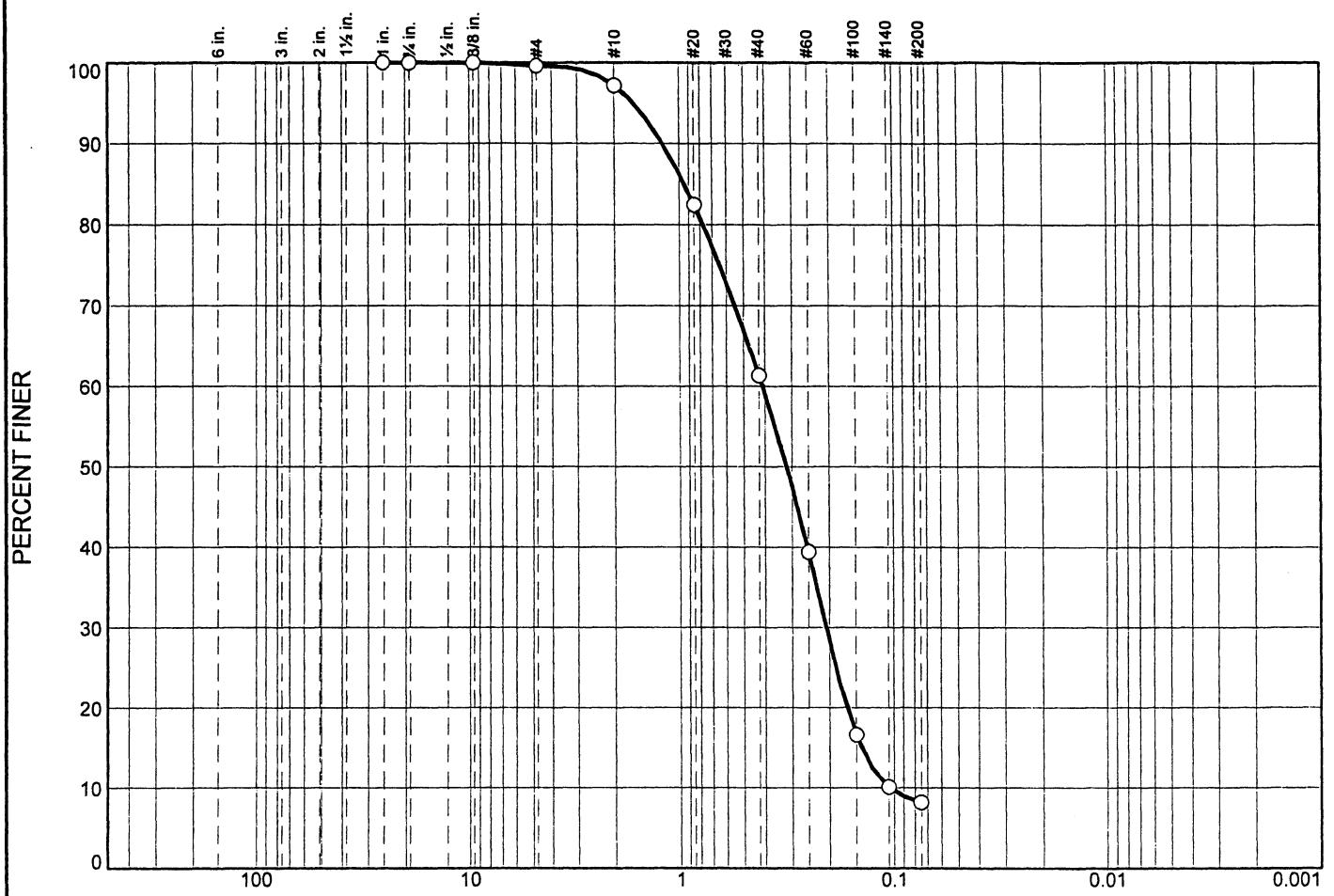
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Environ. Health Perspect.

USCS

Project No. 05-05-0013- Client: Black & Veatch

Project: E A A (Reservoir)

Source of Sample: CB-158

Depth: 55.0'

Sample Number: 35

Remarks:

○ Moisture Content % 23.1 CP05-
FAARS-CB-0256 @ 55.0'

Date: 8

Nodarse & Associates, Inc.

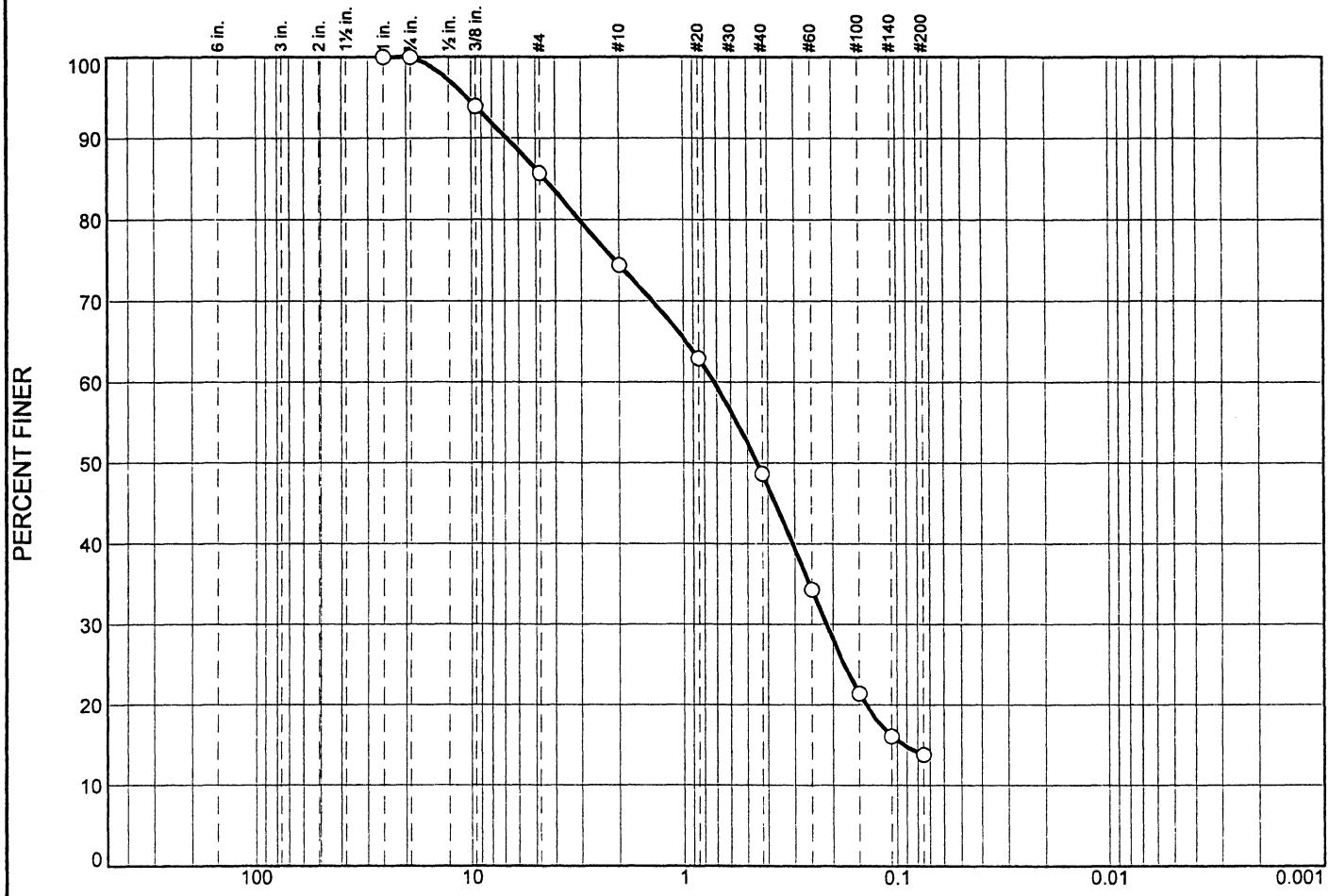
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	14	12	25	35	14
O							
X	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
O			4.4869	0.7184	0.4491	0.2138	0.0931
O							

Material Description						USCS	AASHTO
O Well graded sand with silt						SW-SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

O Source of Sample: CB-158 Depth: 65.5' Sample Number: 42

Remarks:

O Moisture Content % 21.2 CP05-
EAARS-CB-0256 @ 65.5'

Date: O

Nodarse & Associates, Inc.

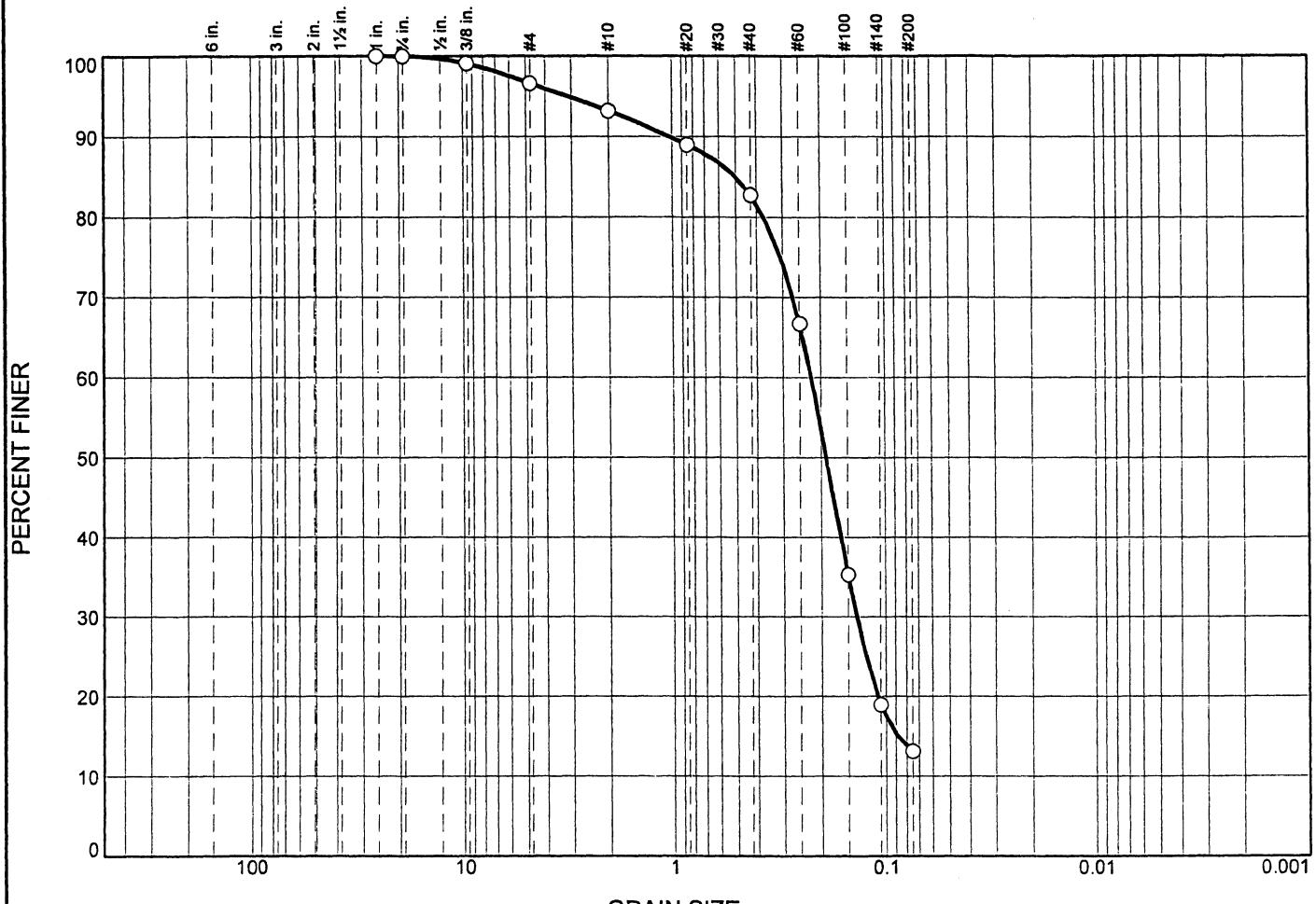
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	0	3	4	10	70		13
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input type="radio"/>			0.5005	0.2212	0.1887	0.1368	0.0883	
Material Description								USCS AASHTO
<input type="radio"/> Poorly graded sand with silt								SP-SM

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input type="radio"/> Moisture Content % 27.6 CP05-
<input type="radio"/> Source of Sample: CB-158 Depth: 70.0'	EAARS-CB-0256 @ 70.0'
Date: <input type="radio"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

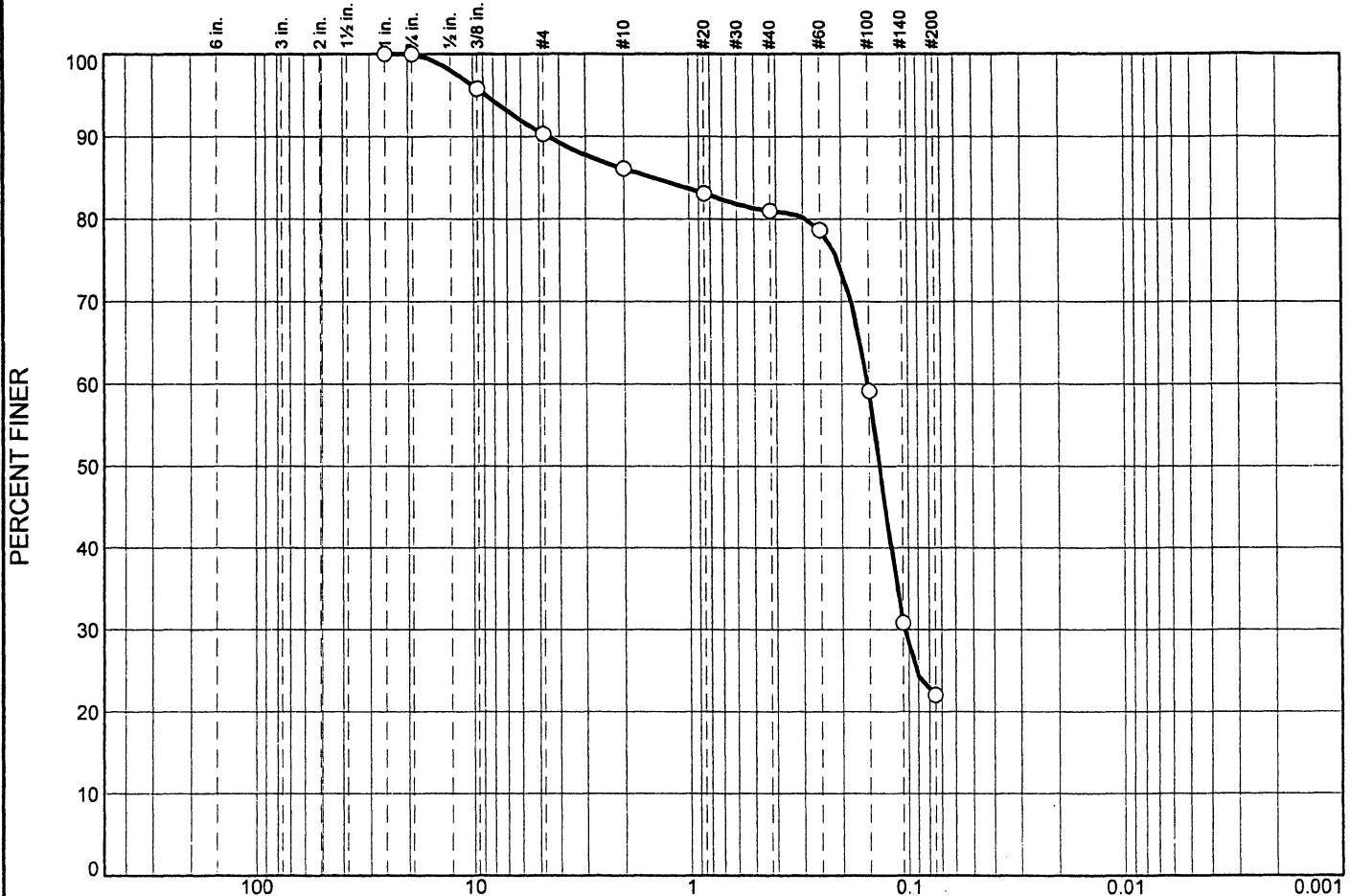
Remarks:
 Moisture Content % 27.6 CP05-
EAARS-CB-0256 @ 70.0'

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0	0	10	4	5	59	22	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input type="radio"/>			1.4588	0.1516	0.1344	0.1044		C _c
								C _u
Material Description								USCS
<input type="radio"/> Silty sand								SM
								AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-158 Depth: 38.5' Sample Number: 24

Remarks:

Moisture Content % 27.7 CP05-
EAARS-CB-0256 @ 38.5'

Date:

Nodarse & Associates, Inc.

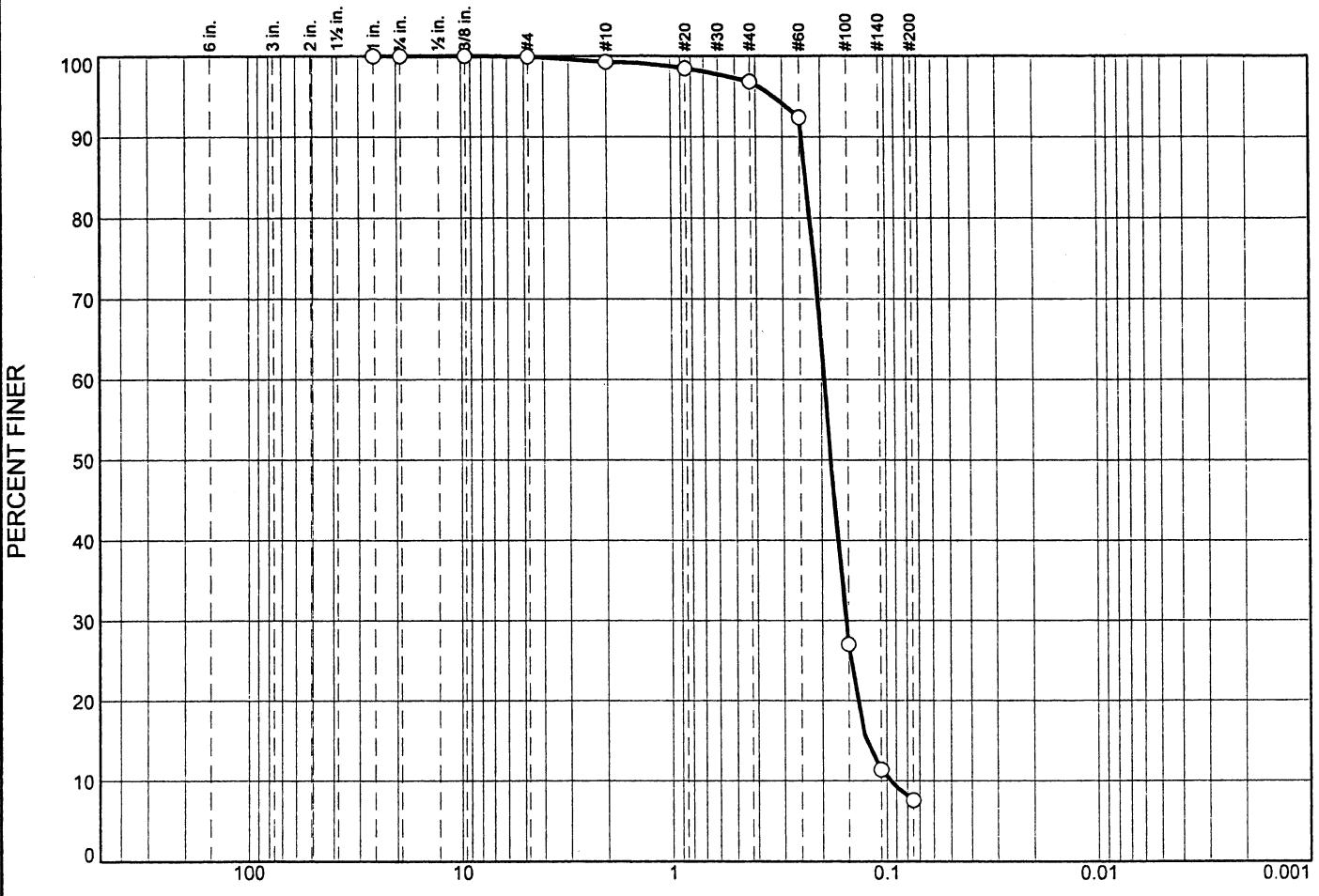
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Project No. 05-05-0013-**Client:** Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-158

Depth: 44.5'

Sample Number: 28

Date: 8

Nodarse & Associates, Inc.

Miami Lakes, FL

Remarks:

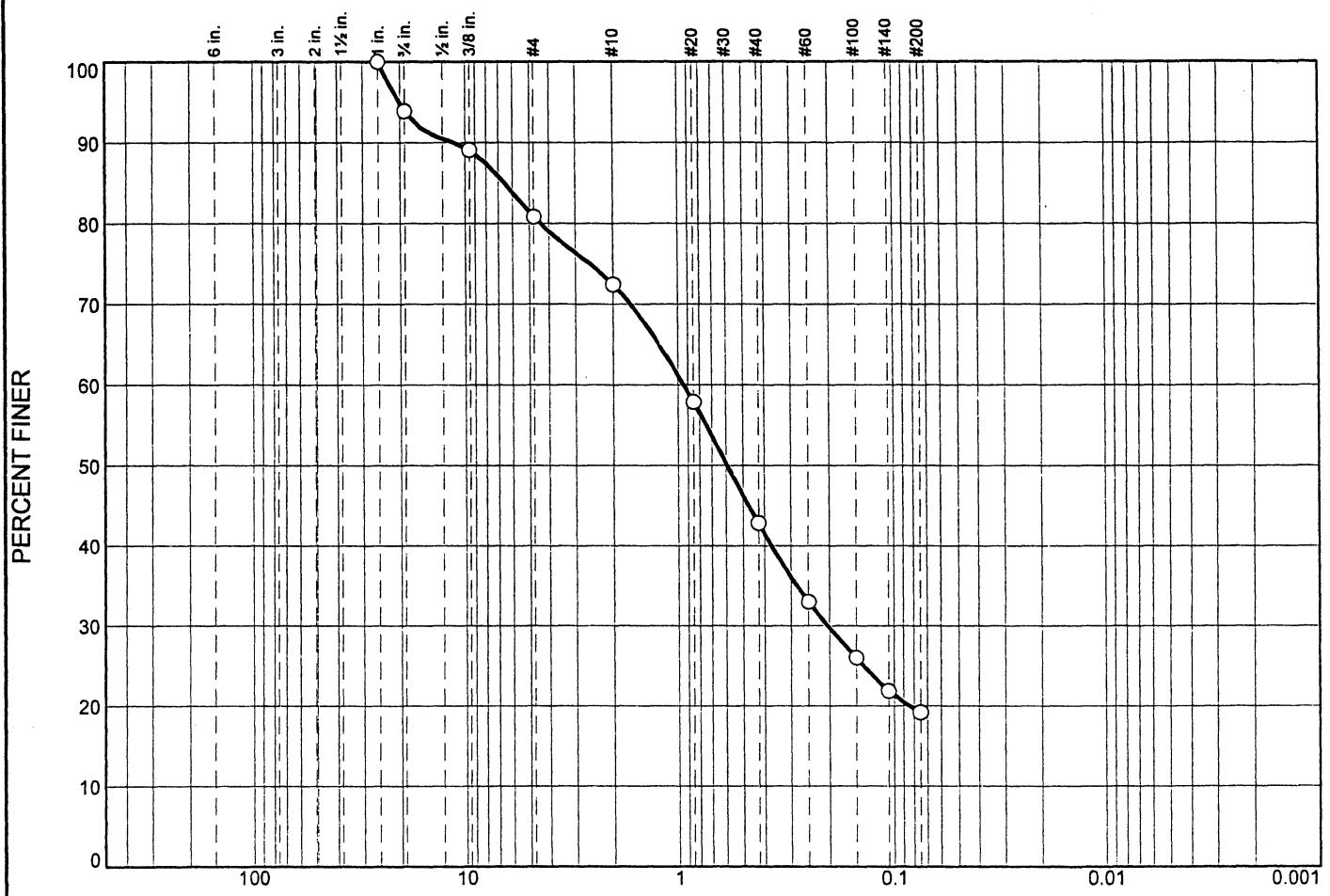
Moisture Content % 31.2 CP05-
EAARS-CB-0256 @ 44.5'

Tested By: Pedro Camaraza

Checked By: Michael Brown

Figure

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	6	13	9	29	24		19
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input type="radio"/>			6.5563	0.9411	0.5912	0.2037		C _c
								C _u

Material Description					USCS	AASHTO
<input type="radio"/> Silty sand with gravel					SM	

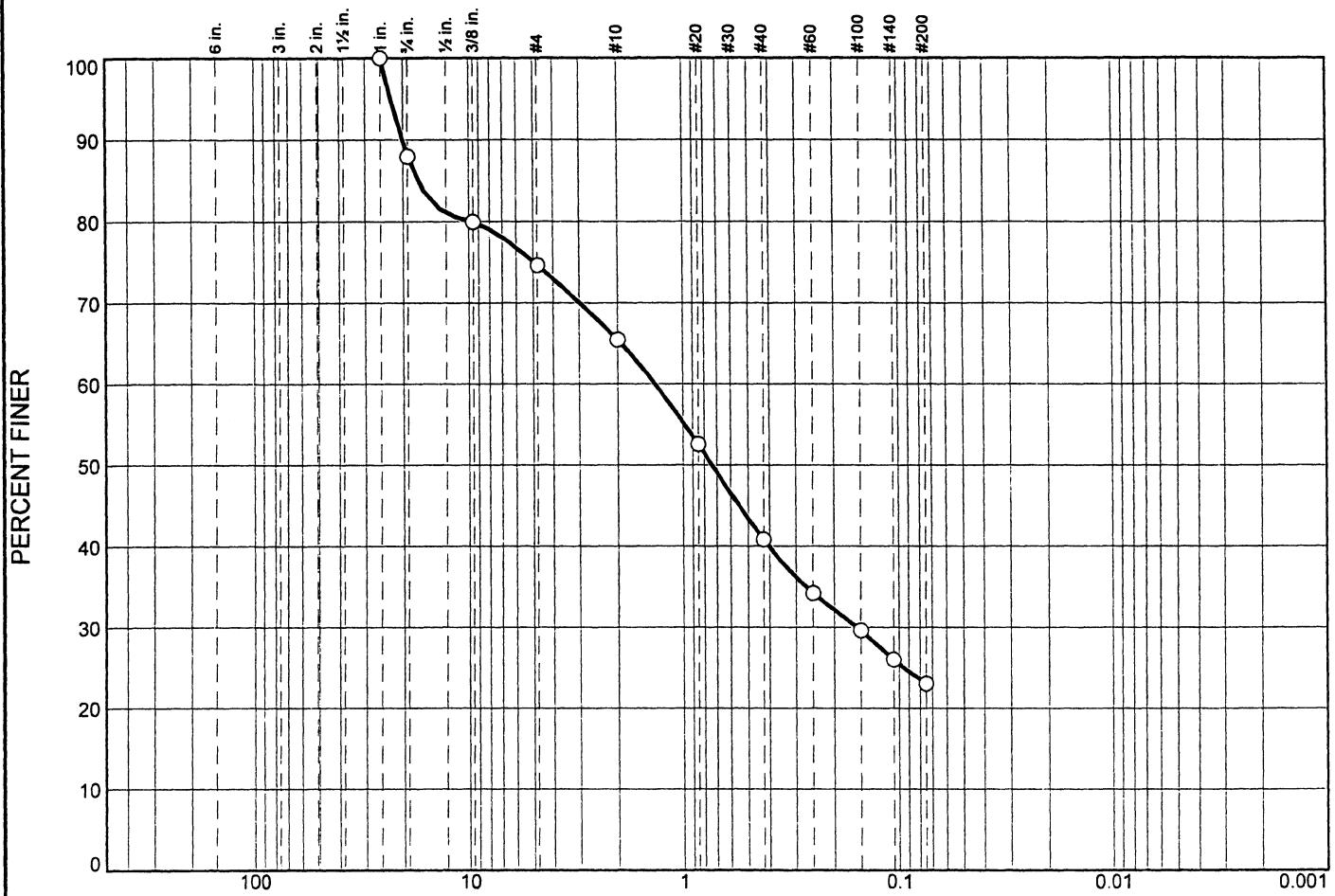
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-158 Depth: 23.5' Sample Number: 14 Date: <input type="radio"/>				Remarks: <input type="radio"/> Moisture Content % 29.3 CP05- EAARS-CB-0256 @ 23.5' Nodarse & Associates, Inc. Miami Lakes, FL
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Tested By: Pedro Camaraza

Checked By: Michael Brown

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0	12	13	10	24	18		23
○							

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○		17.0853	1.3499	0.7341	0.1557				
○									
○									
○									

Material Description				USCS	AASHTO
○ Silty sand with gravel				SM	

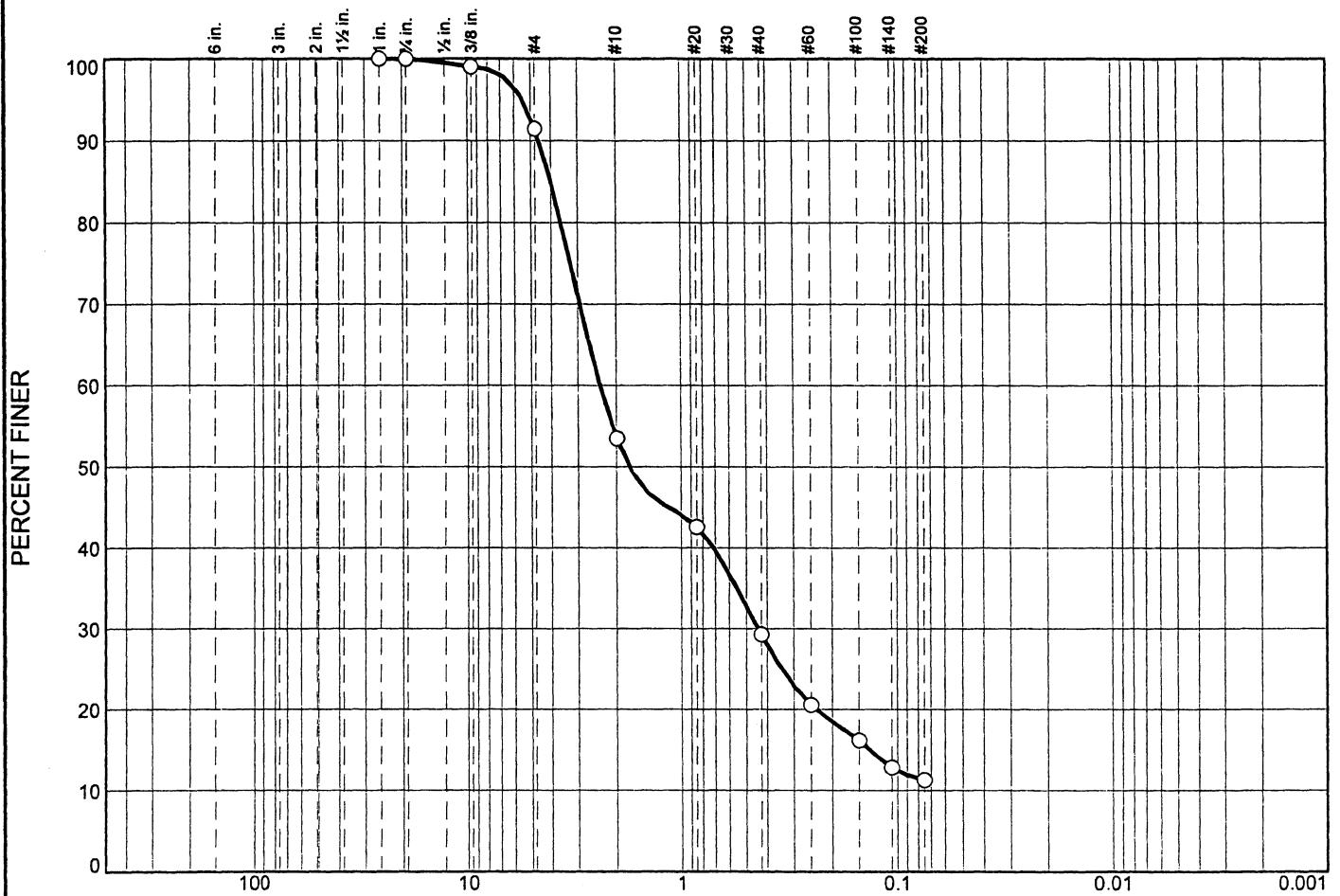
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	○ Moisture Content % 21.4 CP05-
○ Source of Sample: CB-158 Depth: 21.5'	EAARS-CB-0256 @ 21.5'
Date: ○	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	9	38	24	18	11

Material Description	USCS	AASHTO
○ Poorly graded sand with silt	SP-SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-158

Depth: 76.0"

Sample Number: 49

Remarks:

○ Moisture Content % 27.5 CP05-
EAARS-CB-0256 @ 76.0'

Date: 8

Nodarse & Associates, Inc.

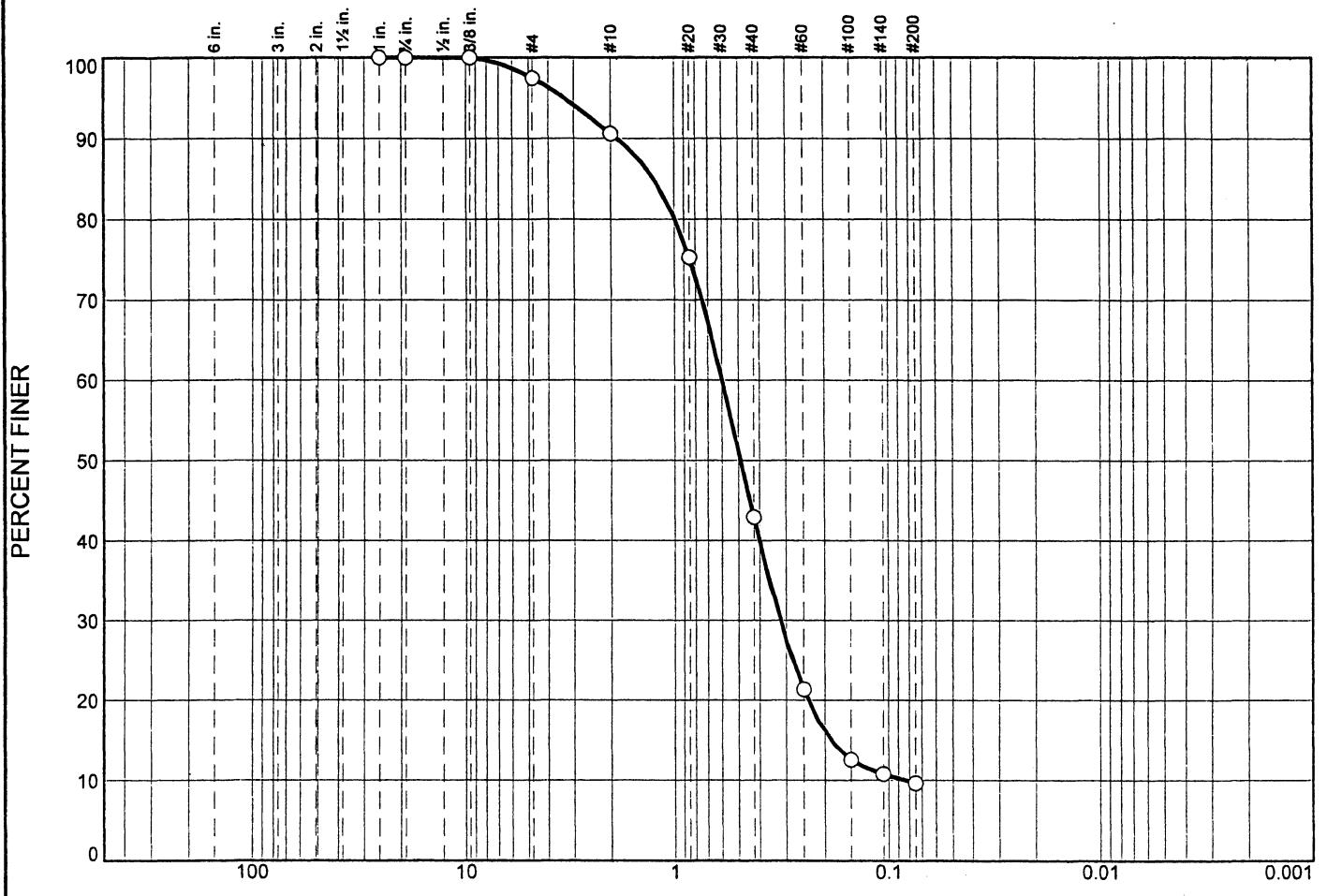
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Material Description	USCS	AASHTO
○ Poorly graded sand with silt	SP-SM	

Project No. 05-05-0013- Client: Black & Veatch

Remarks:

Project: E.A.A (Reservoir)

○ Moisture Content % 19.9 CP05-
EAARS-CB-0256 @ 80.5'

Source of Sample: CB-158

Depth: 80.5'

Sample Number: 52

Date: 0

Nodarse & Associates, Inc.

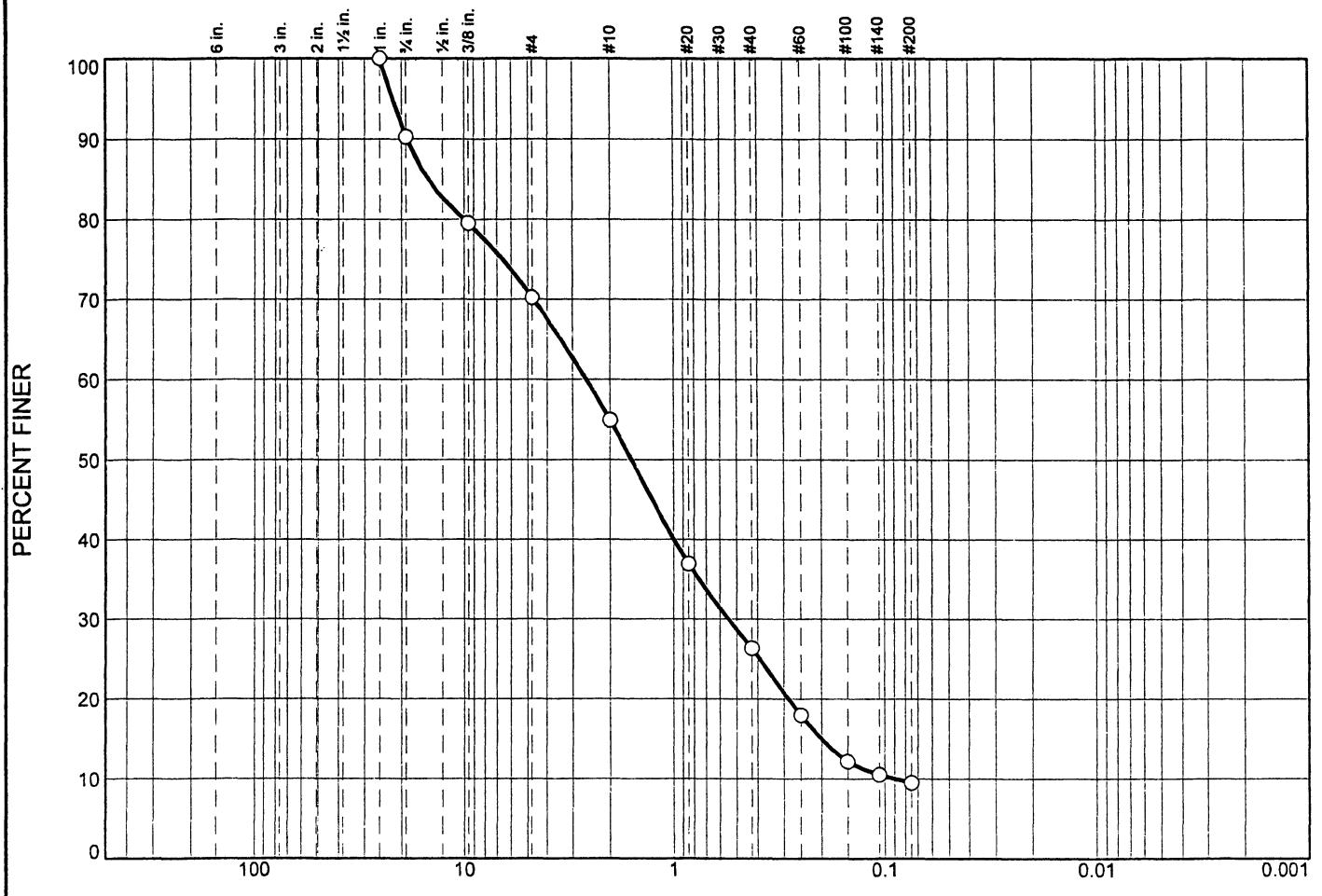
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O 0	10	20	15	29	17		9
X LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
O		14.9592	2.5838	1.5875	0.5455	0.2004	0.0896

Material Description					USCS	AASHTO
O Well graded sand with silt					SW-SM	

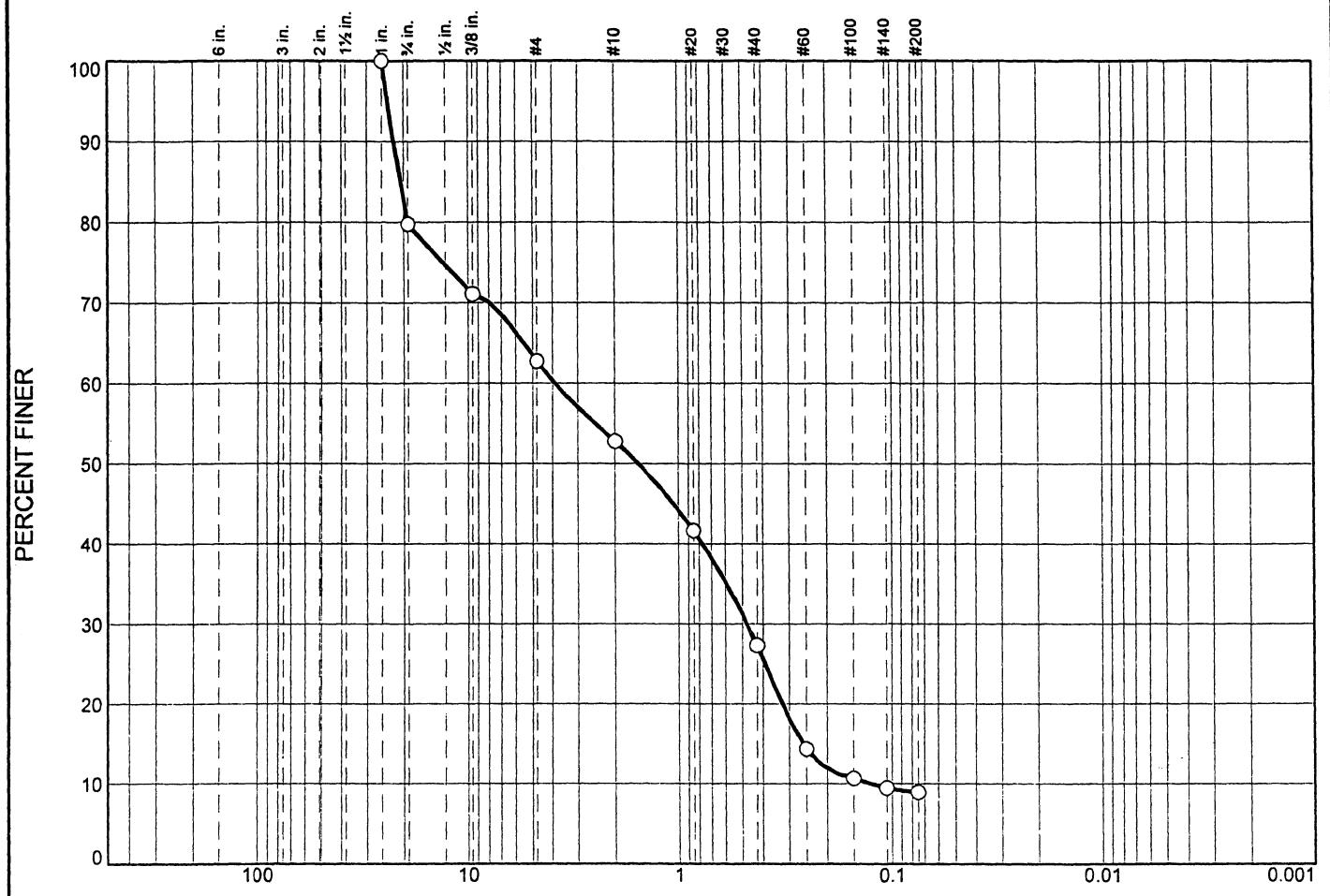
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) O Source of Sample: CB-158 Depth: 85.0' Sample Number: 55 Date: O	Remarks: O Moisture Content % 26.2 CP05- EAARS-CB-0256 @ 85.0'
Nodarse & Associates, Inc. Miami Lakes, FL	

Tested By: Pedro Camaraza

Checked By: Michael Brown

Figure

Particle Size Distribution Report



Material Description

Well graded sand with silt

SW-SM

AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-158

Depth: 89.5'

Sample Number: 58

Remarks:

○ Moisture Content % 26.2 CP05-
EAARS-CB-0256 @ 85.0'

Date: 8

Nodarse & Associates, Inc.

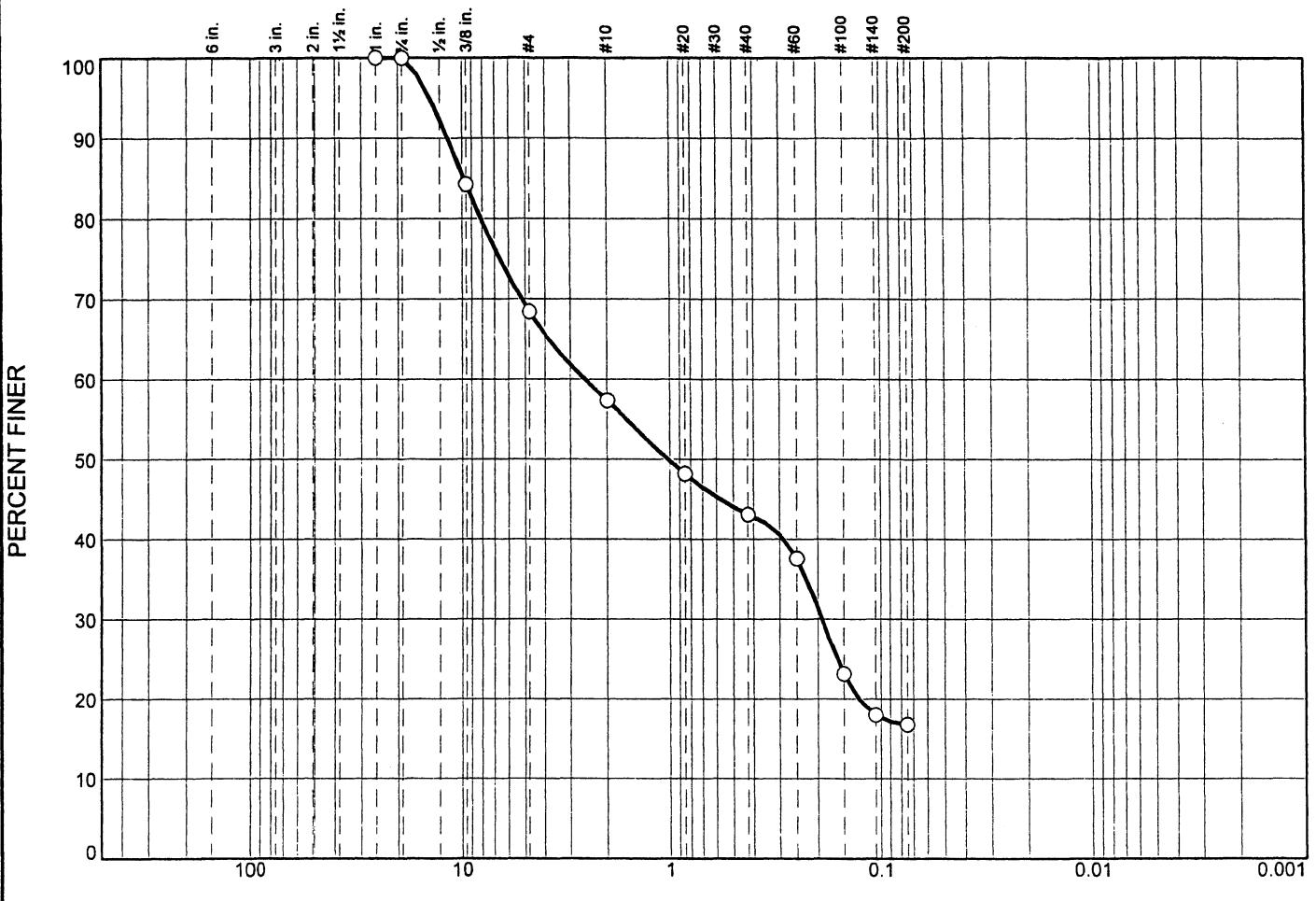
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report

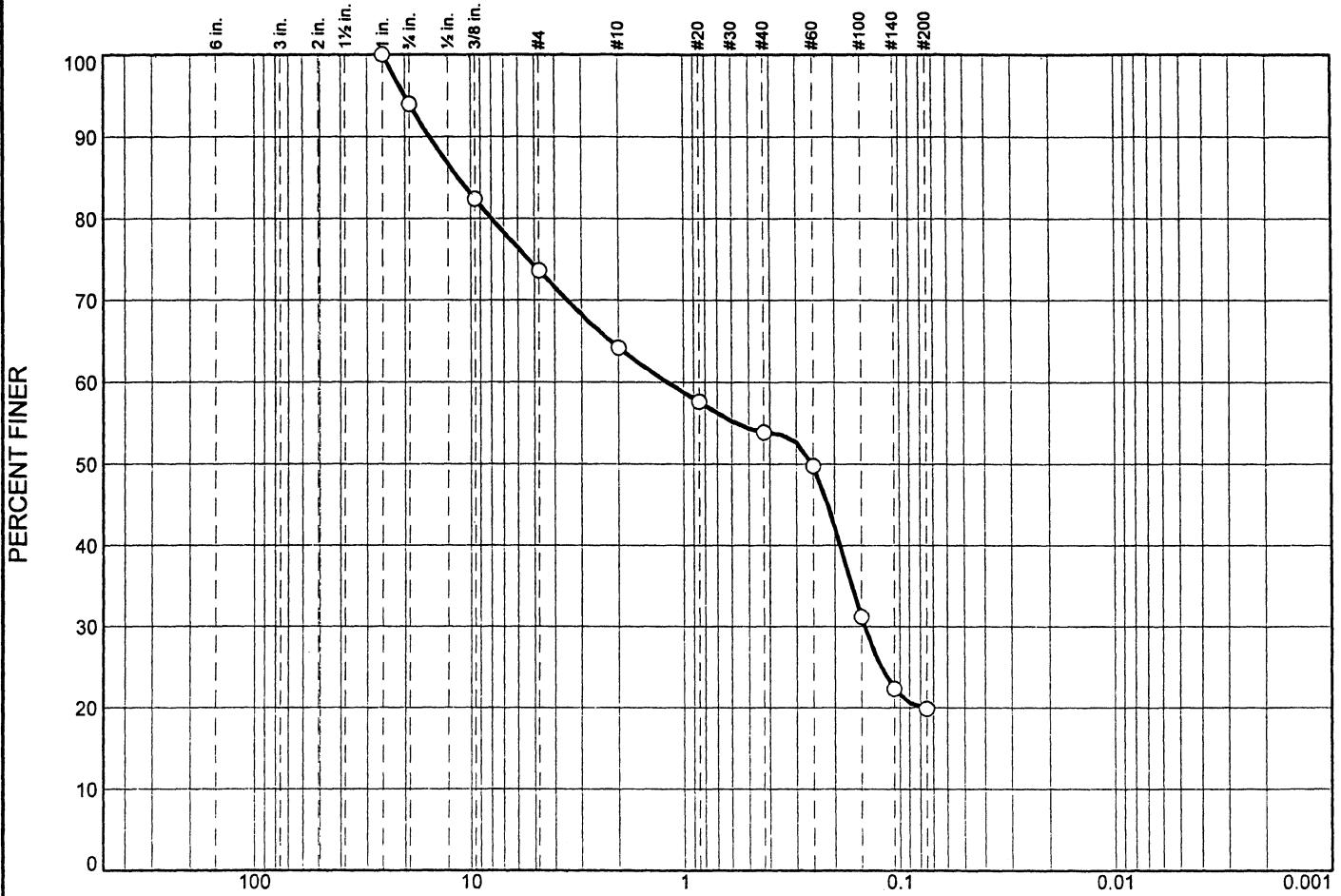


% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	32	11	14	26	17
X	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
O			9.7706	2.5428	1.0211	0.1905	
Material Description							USCS
O	Silty sand with gravel						SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	O Moisture Content % 21.1 CP05-
O Source of Sample: CB-158 Depth: 91.0'	EAARS-CB-0256 @ 91.0'
Date: O	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	6	20	10	10	34	20
X	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
O			11.3755	1.1886	0.2525	0.1450	
Material Description							USCS
O Silty sand with gravel							SM
							AASHTO

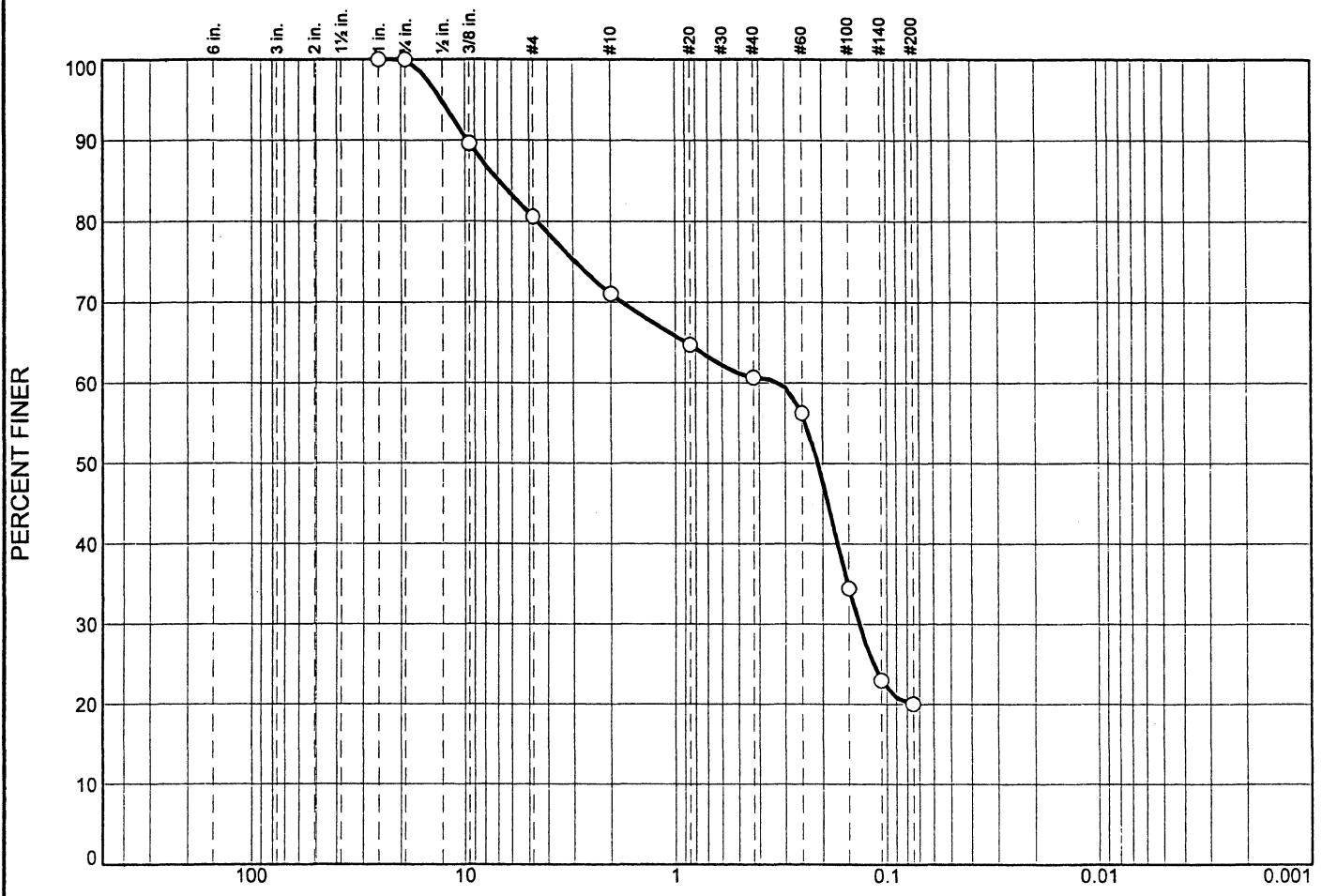
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	O Moisture Content % 19.3 CP05-
O Source of Sample: CB-158 Depth: 95.5' Sample Number: 62	EAARS-CB-0256 @ 95.5'
Date: O	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	0	19	10	10	41	20
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			6.9231	0.3181	0.2097	0.1346	

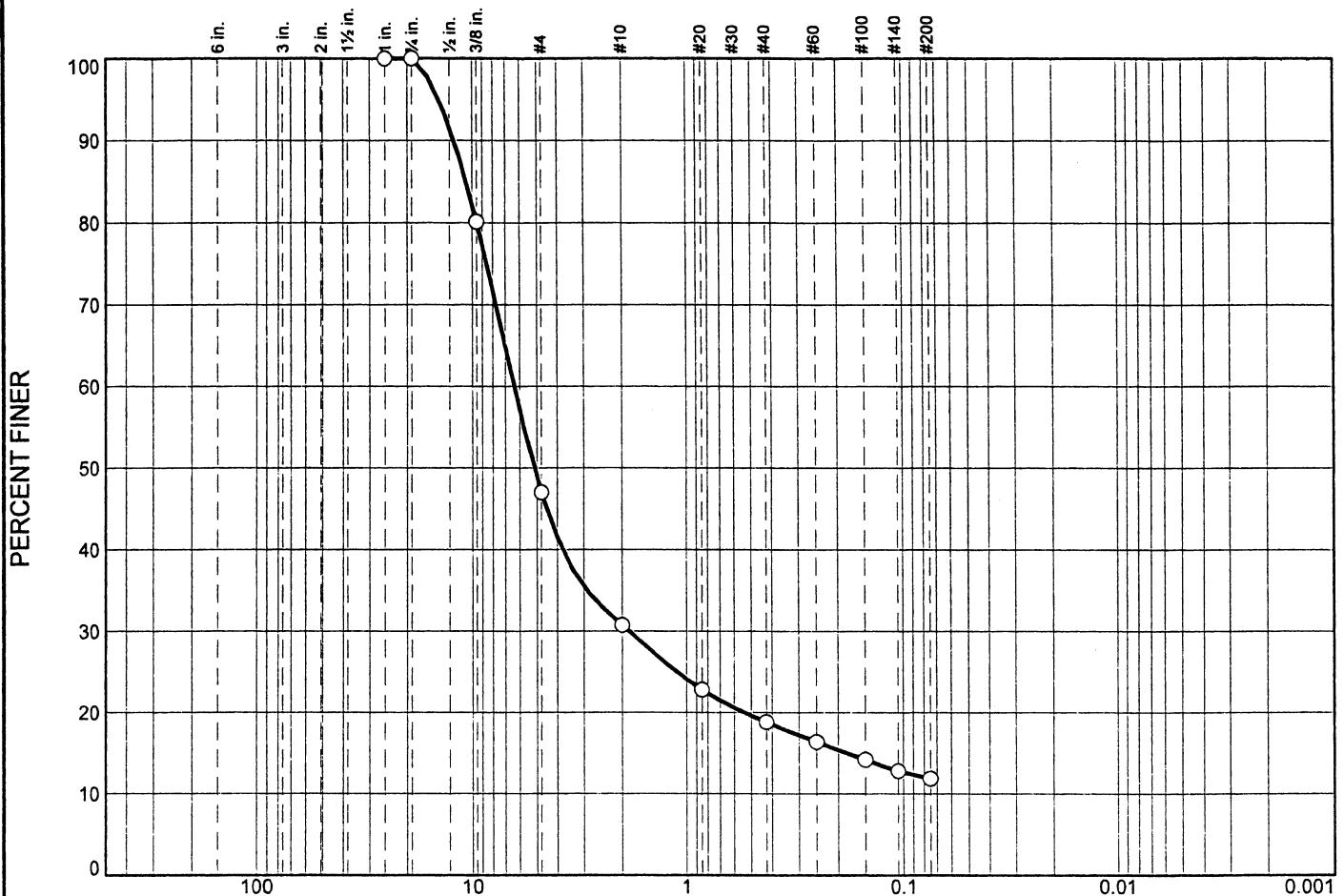
Material Description				USCS	AASHTO
○ Silty sand with gravel				SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-158 Depth: 98.5' Sample Number: 69 Date: ○	Remarks: ○ Moisture Content % 21.6 CP05- EAARS-CB-0256 @ 98.5'
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	53	16	12	7	12

Material Description	USCS	AASHTO
○ Poorly graded gravel with silt and sand	GP-GM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-158

Depth: 14.5'

Sample Number: 8

Remarks:

○ Moisture Content % 62.9 CP05-
EAARS-CB-0256 @ 14.5'

Date:

Nodarse & Associates, Inc.

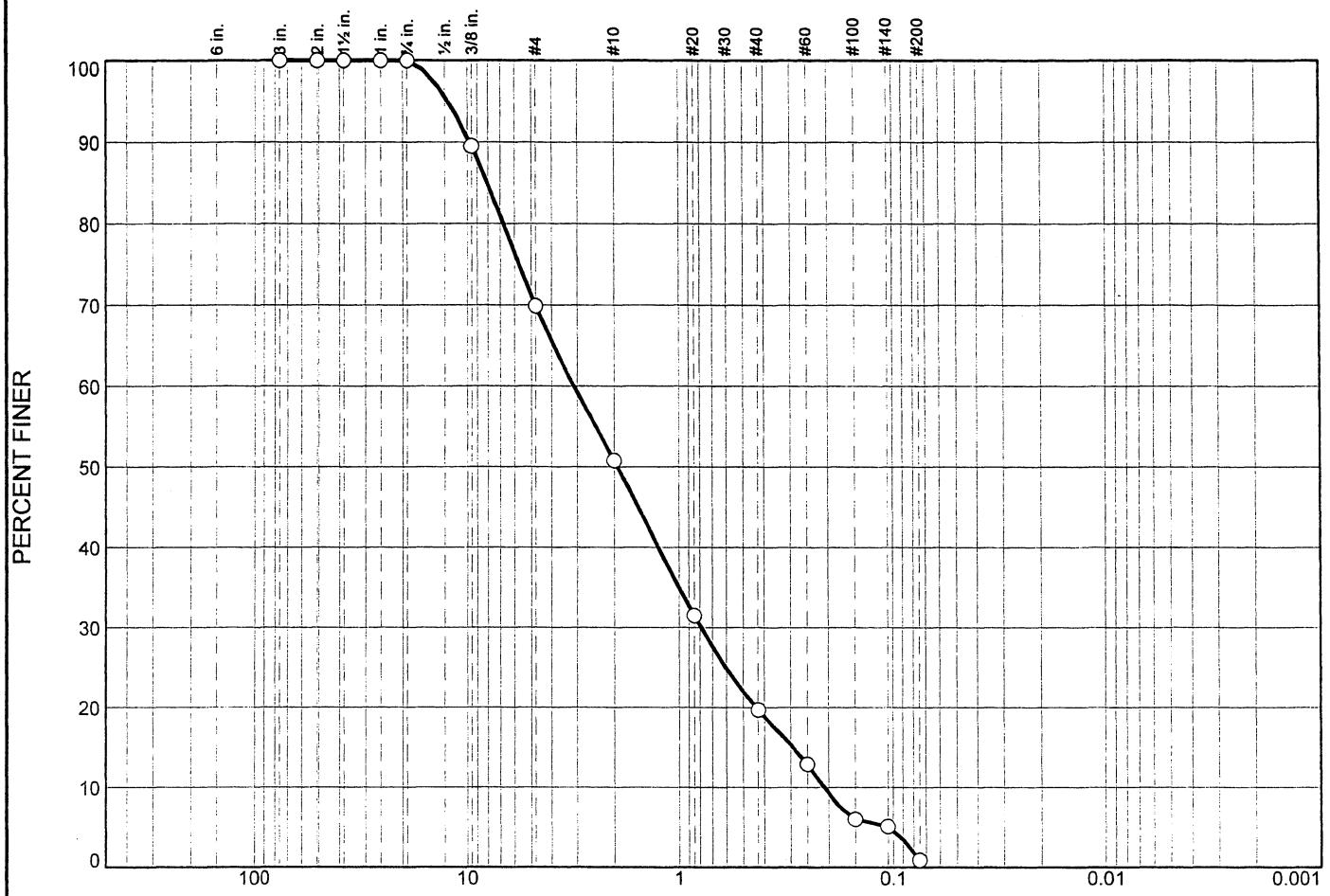
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O 0.0	0.0	30.1	19.1	31.1	18.8		0.9
X LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
O		8.0475	3.1055	1.9281	0.7896	0.2908	0.2084

Material Description	USCS	AASHTO
O WELL GRADED SAND WITH GRAVEL	SW	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A(Reservoir) W/O #4

O Depth: 4.5-9.5' Sample Number: CB-0168

Remarks:

O Moisture Content % 13 CP05-
EAARS-CB-0256 @ 4.5'-9.5'

Nodarse & Associates, Inc.

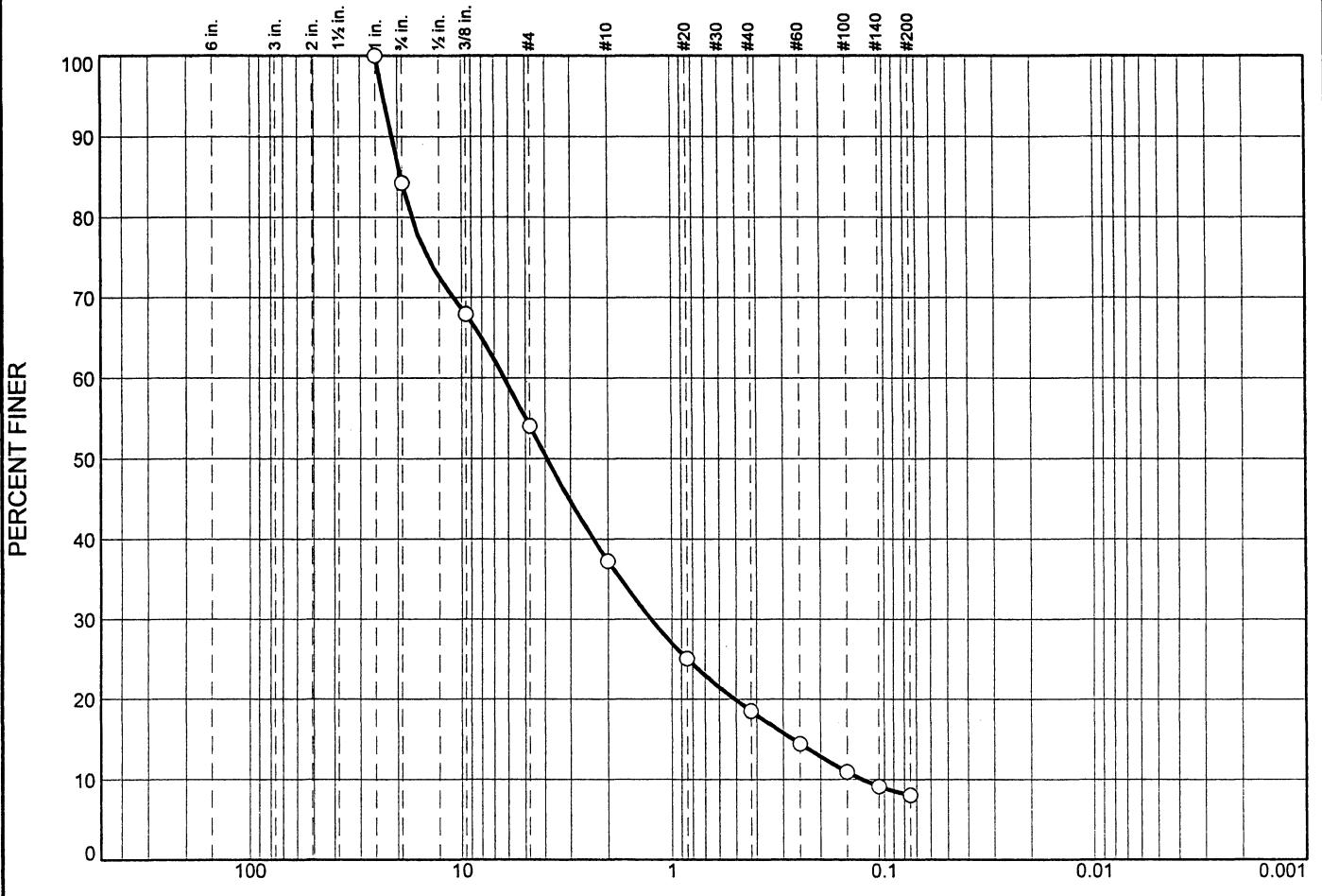
Miami Lakes, FL

Figure

Tested By: Camaraza

Checked By: M Brown

Particle Size Distribution Report



WU-Wiki-Lab-Workshop

USCS

Project No. 05-05-0013- Client: Black & Veatch

Project No. 05-05-0015-

Source of Sample: CB-0169

Depth: 5.5'

Sample Number: 3

Remarks:

Remarks.

CP05-EAARS-CB-0266

Date: 0

Nodarse & Associates, Inc.

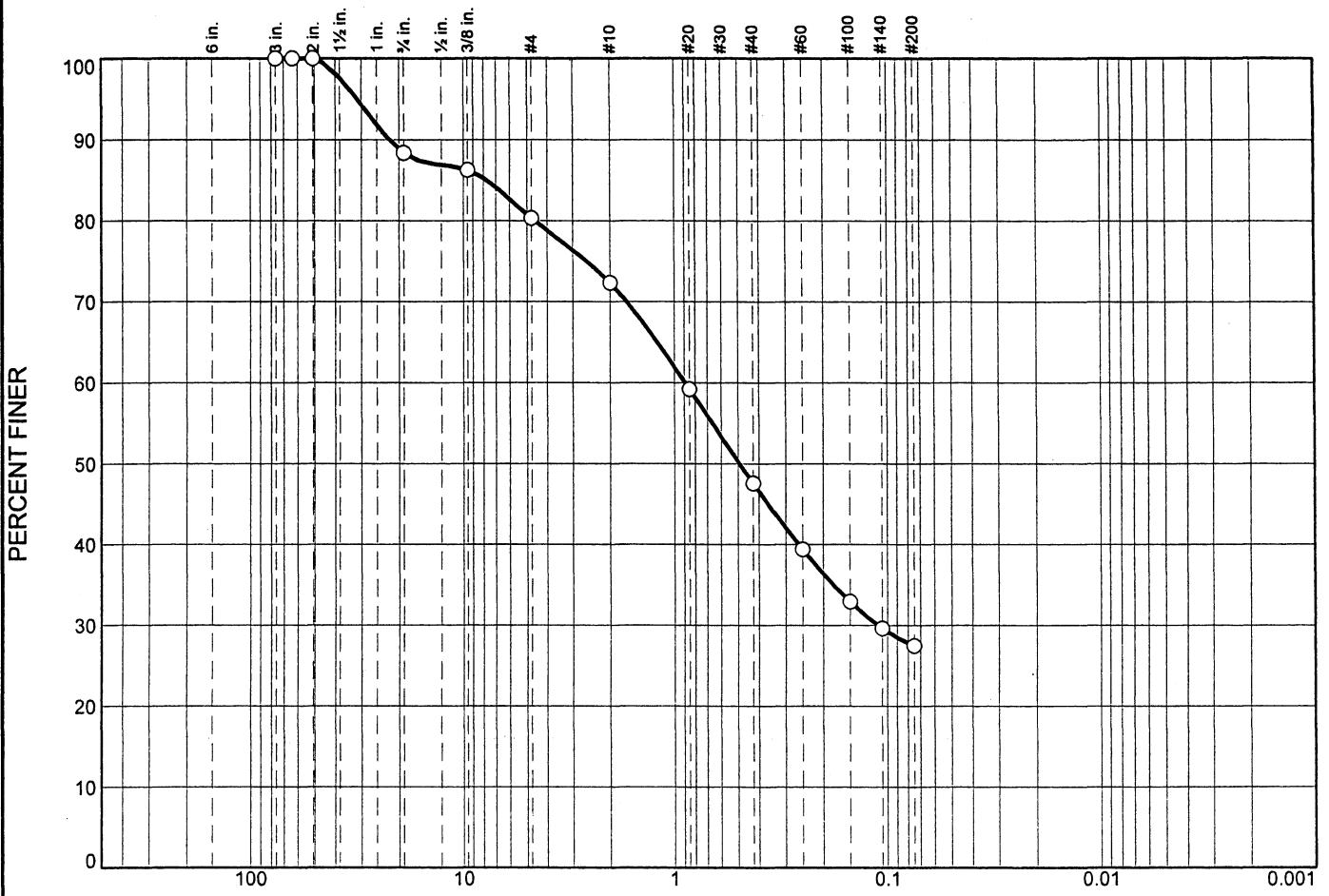
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○	0	12	8	8	24	21	27	
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	
○			7.7404	0.8895	0.4916	0.1110		
Material Description							USCS	AASHTO

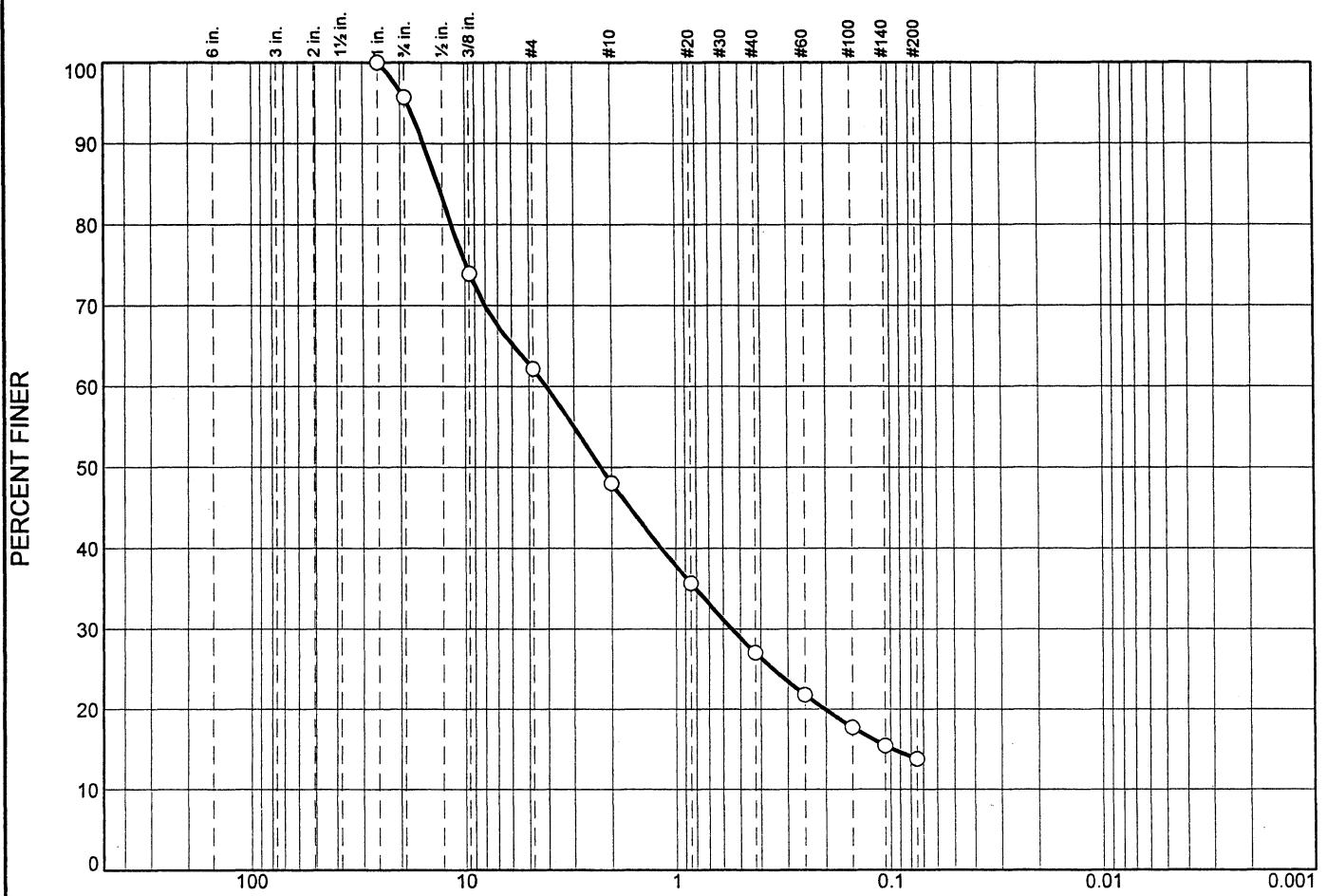
○ Silty sand with gravel	SM
,	
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	○ Moisture Content % 24.0
○ Source of Sample: CB-0169 Depth: 11.5' Sample Number: 7	CP05-EAARS-CB-0266
Date: ○	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0	4	34	14	21	13		14

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○		13.3363	4.0871	2.2470	0.5460	0.0976			

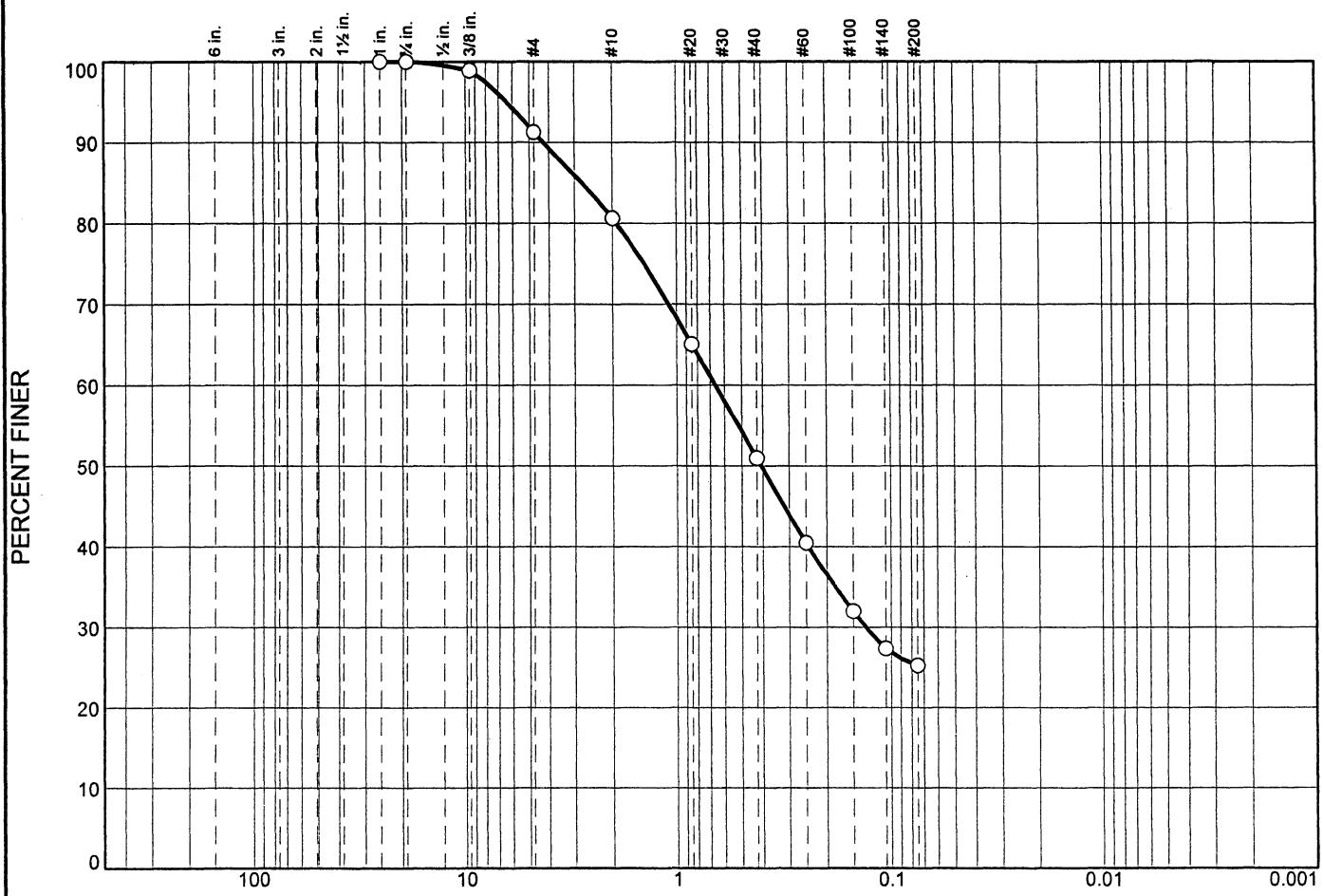
Material Description					USCS	AASHTO
○ Well graded sand with silt gravel					SW-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0169 Depth: 14.5' Sample Number: 9 Date: ○	Remarks: ○ Moisture Content % 34.3 CP05- EAARS-CB-0266
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



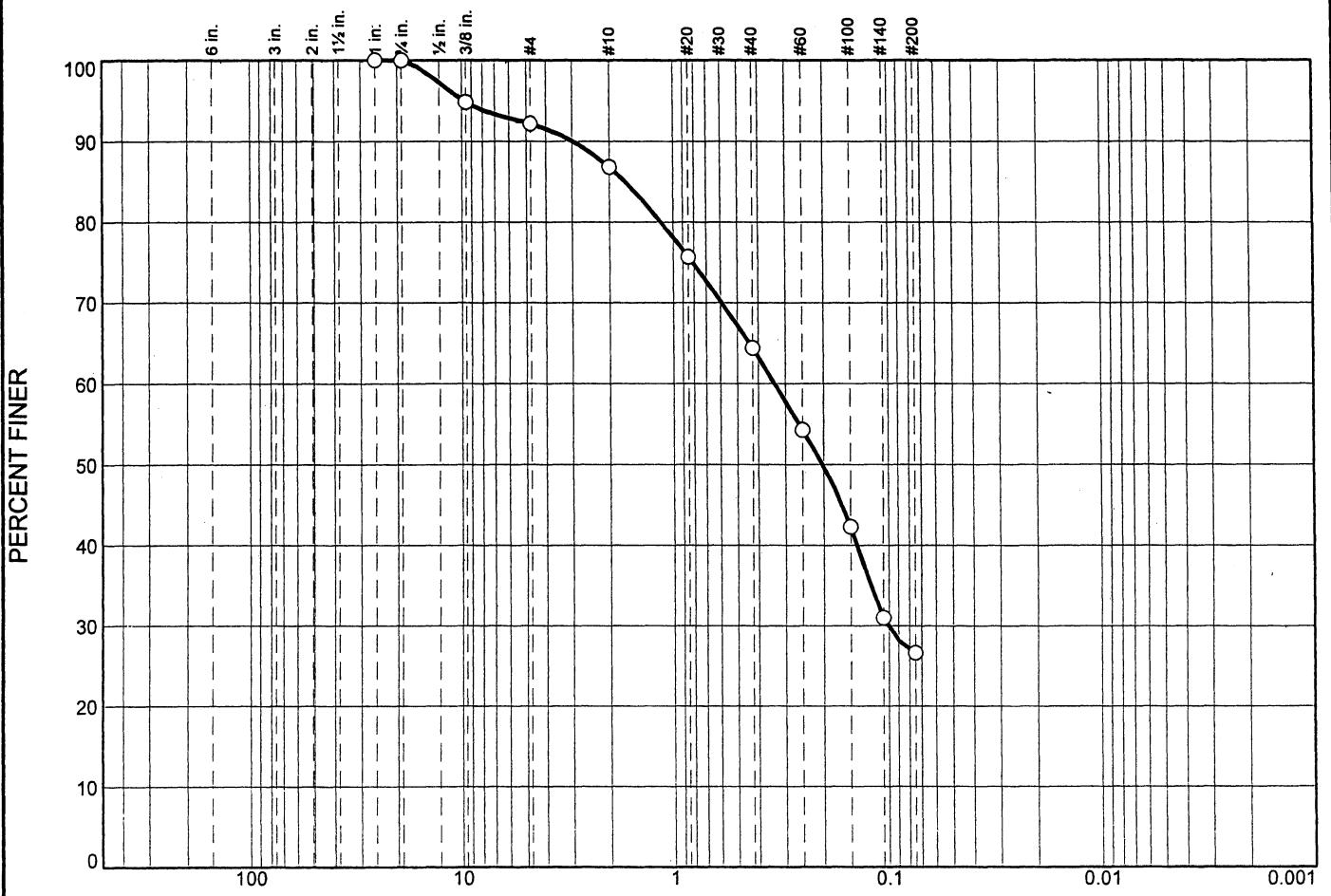
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	0	9	10	30	26	25
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			2.7798	0.6608	0.4050	0.1312	
Material Description							USCS
<input type="radio"/>	Silty sand						SM
							AASHTO

Project No. 05-05-0013-	Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)		<input type="radio"/> Moisture Content % 36.2
<input type="radio"/> Source of Sample: CB-0169	Depth: 16.0'	CP05-EAARS-CB-0266
Date: <input type="radio"/>		
Nodarse & Associates, Inc.		
Miami Lakes, FL		

Remarks:
 Moisture Content % 36.2
 CP05-EAARS-CB-0266

Figure

Particle Size Distribution Report



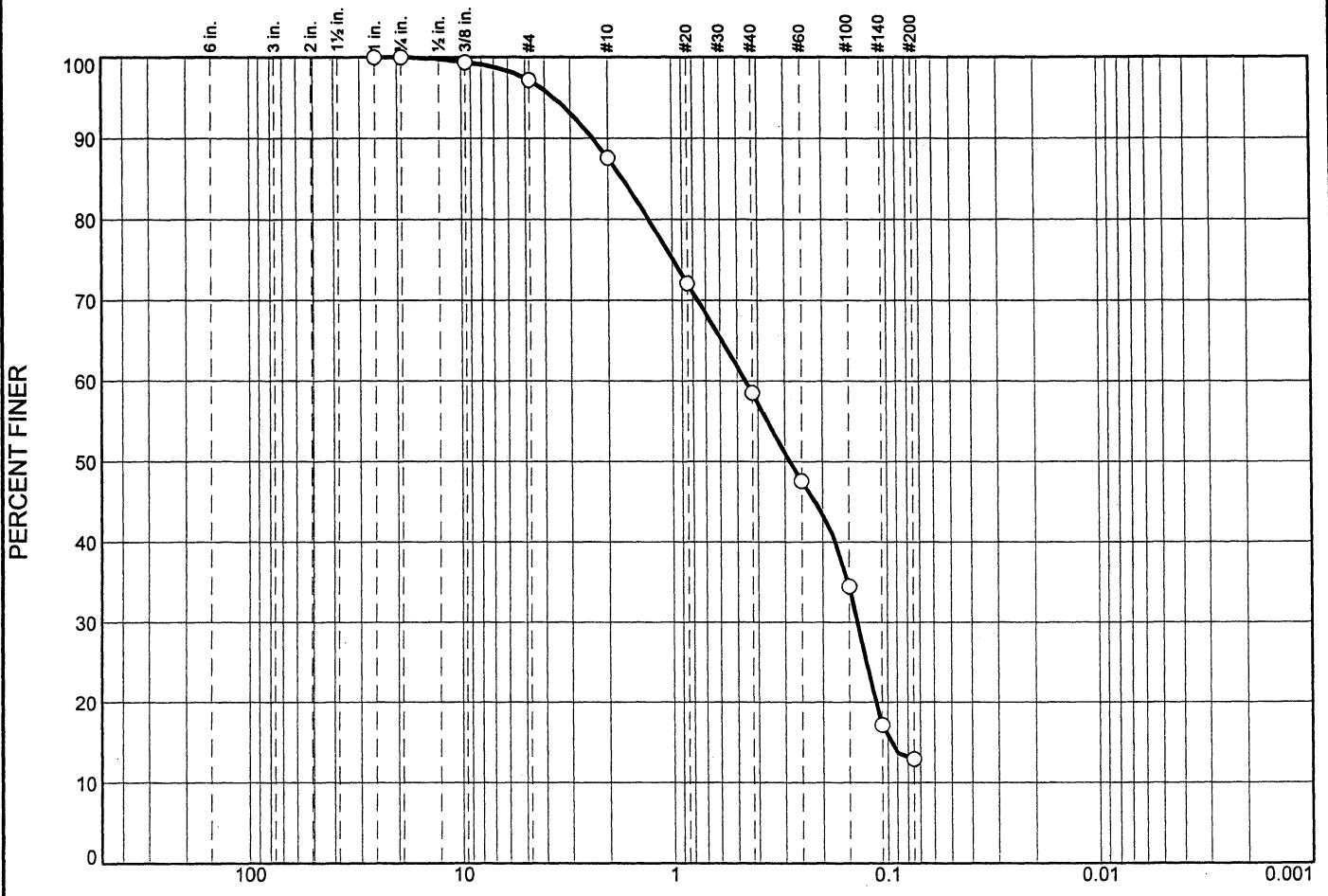
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	0	8	5	23	37	27
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			1.6852	0.3360	0.2016	0.1011	
Material Description							USCS AASHTO
<input type="radio"/> Silty sand							SM

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input type="radio"/> Moisture Content % 27.5
<input type="radio"/> Source of Sample: CB-0169 Depth: 20.5'	CP05-EAARS-CB-0266
Date: <input type="radio"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Remarks:
 Moisture Content % 27.5
 CP05-EAARS-CB-0266

Figure

Particle Size Distribution Report



Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0169

Depth: 26.5'

Sample Number: 17

Remarks:

○ Moisture Content % 22.0 CP05-
EAARS-CB-0266

Date:

Nodarse & Associates, Inc.

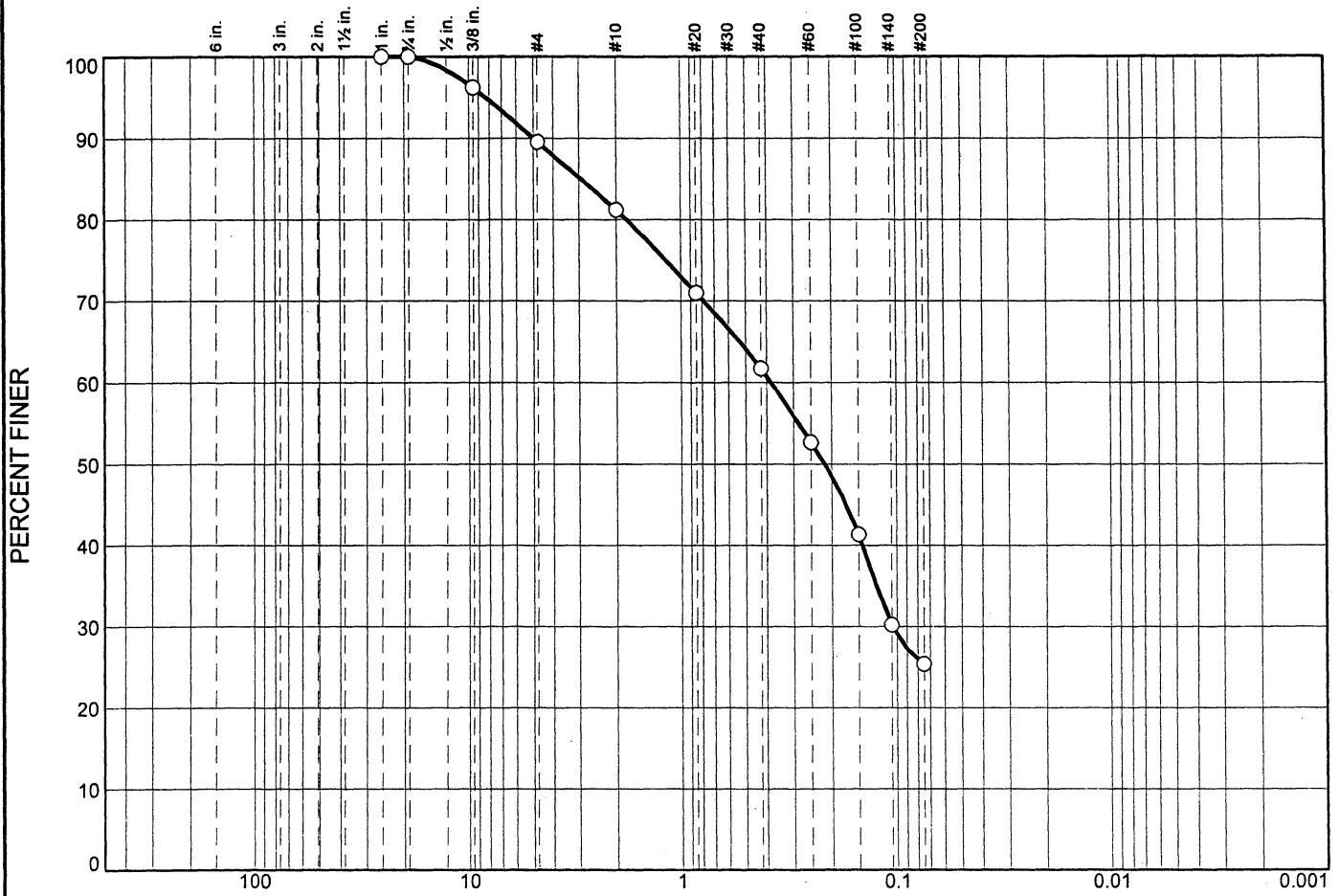
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	0	10	9	19	37	25
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			2.9309	0.3809	0.2156	0.1050	

Material Description **USCS** **AASHTO**

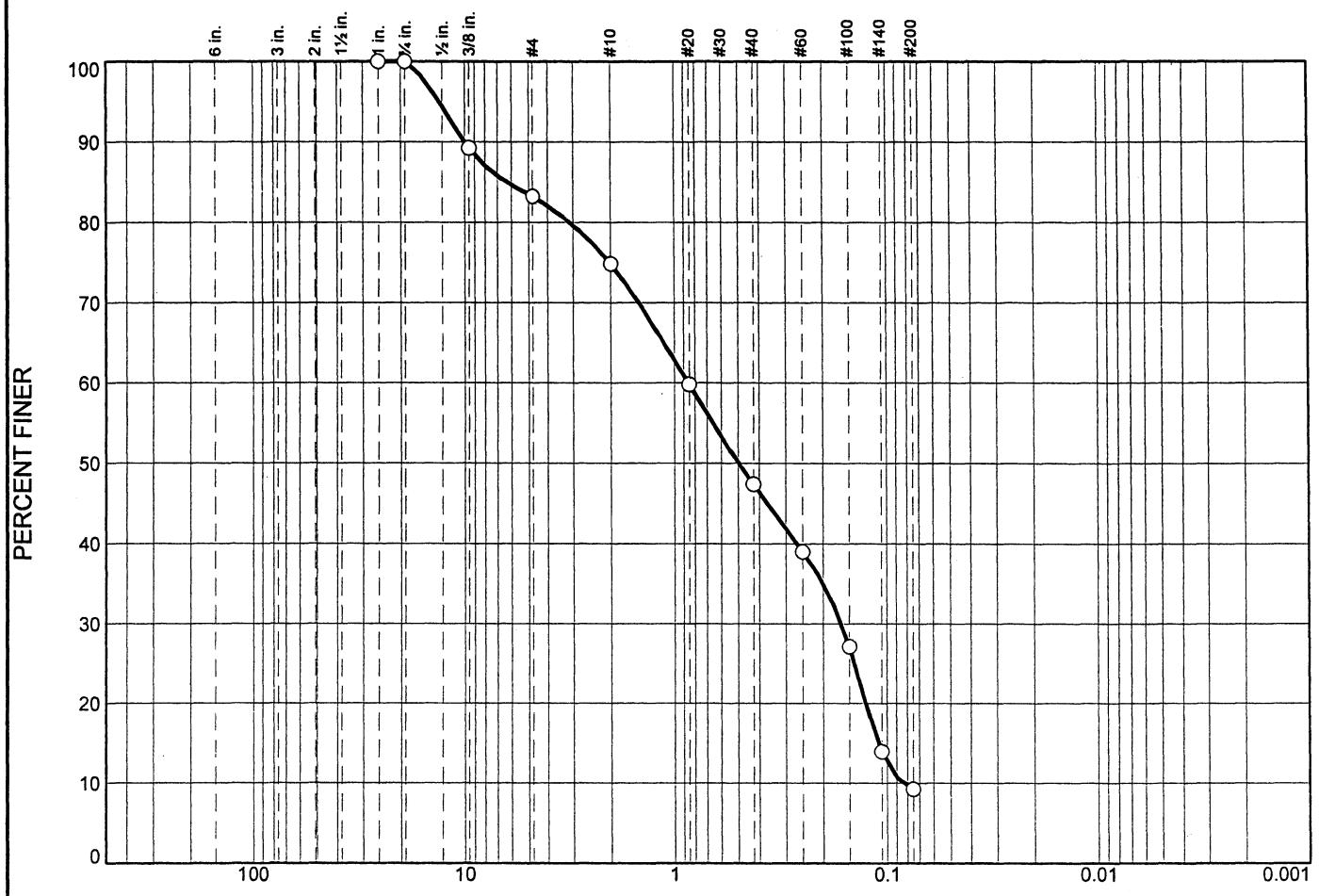
Silty sand SM

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0169 Depth: 31.0' Sample Number: 20 Date: <input type="radio"/>				Remarks: <input type="radio"/> Moisture Content % 22.0 CP05- EAARS-CB-0266
Nodarse & Associates, Inc. Miami Lakes, FL				Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



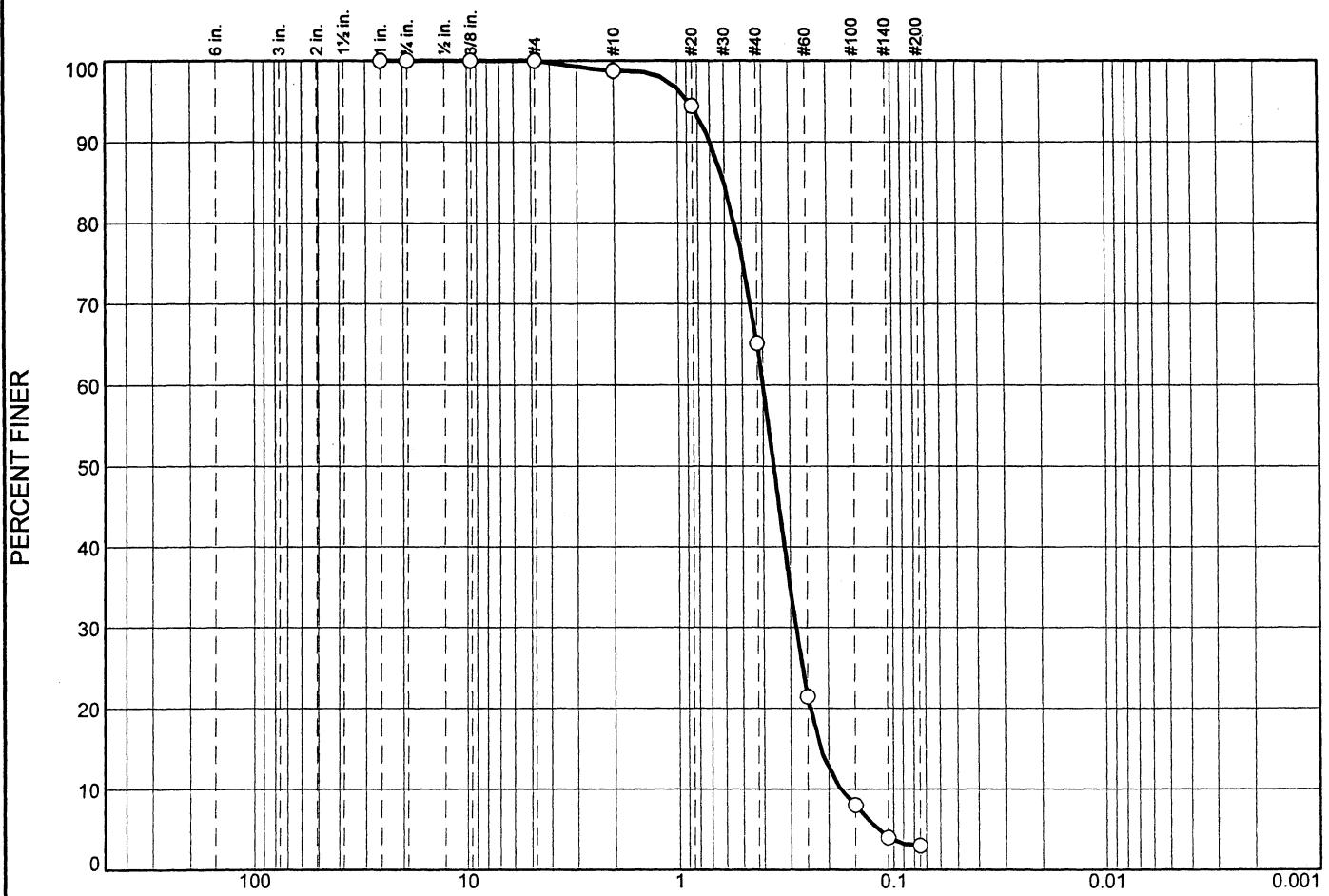
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	0	17	8	28	38	9
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			6.3126	0.8590	0.4962	0.1634	0.1098
							0.0835
							0.37
							10.28
Material Description							USCS
<input type="radio"/> Well graded sand with silt							SW-SM
							AASHTO

Project No. 05-05-0013-	Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)		<input type="radio"/> Moisture Content % 26.6
<input type="radio"/> Source of Sample: CB-0169	Depth: 37.0'	CP05-EAARS-CB-0266
Date: <input type="radio"/>		
Nodarse & Associates, Inc.		
Miami Lakes, FL		

Remarks:
 Moisture Content % 26.6
 CP05-EAARS-CB-0266

Figure

Particle Size Distribution Report



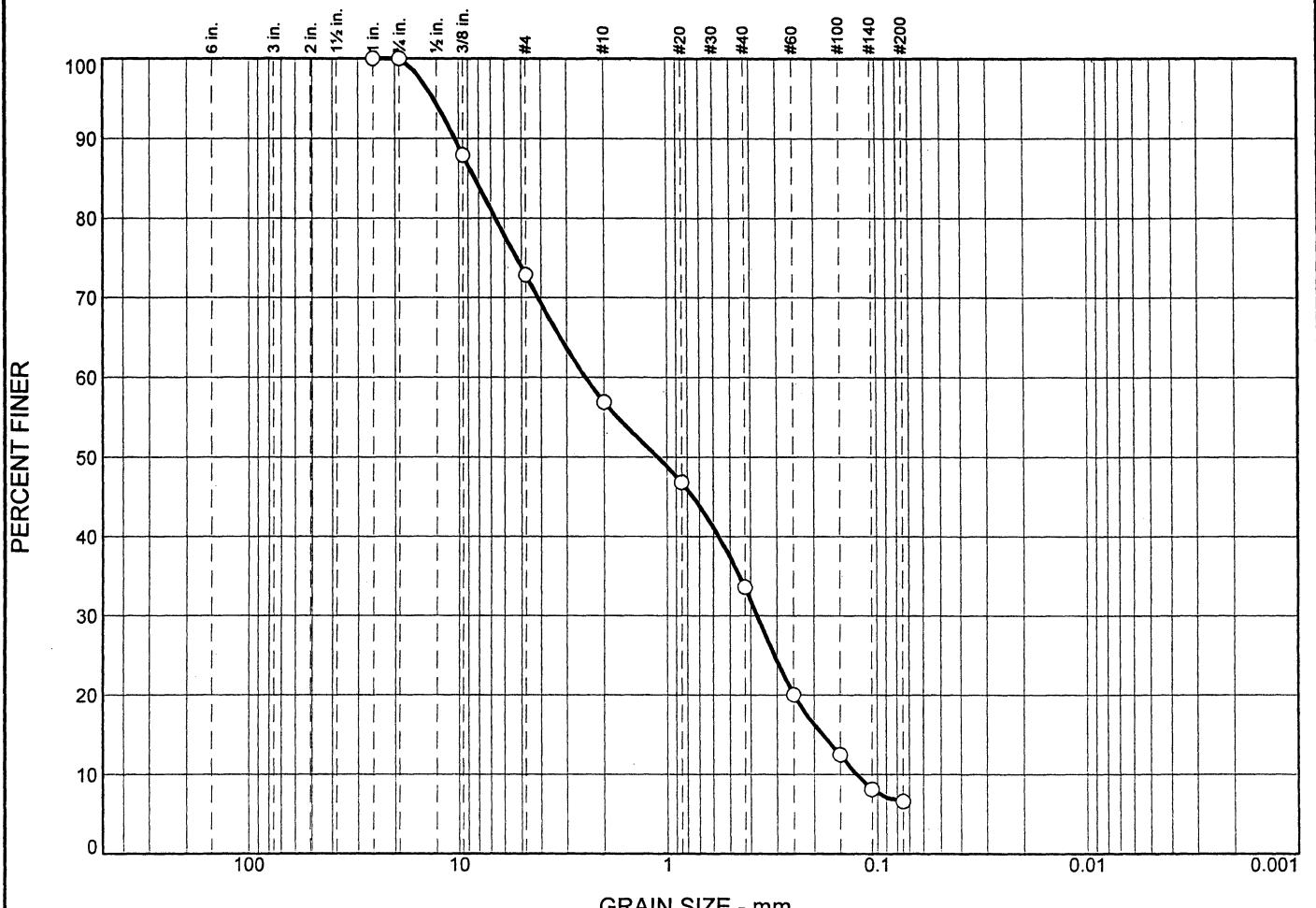
% +3"	% Gravel		% Sand			% Fines		Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine				
○	0	0	1	34	62				3
○									
○									
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
○			0.6013	0.3988	0.3559	0.2827	0.2173	0.1756	1.14
○									2.27
Material Description								USCS	AASHTO
○	Poorly graded sand							SP	

Project No. 05-05-0013-	Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)		○ Moisture Content % 24.9
○ Source of Sample: CB-0169	Depth: 44.5'	CP05-EAARS-CB-0266
Date: ○	Nodarse & Associates, Inc.	
Miami Lakes, FL		Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



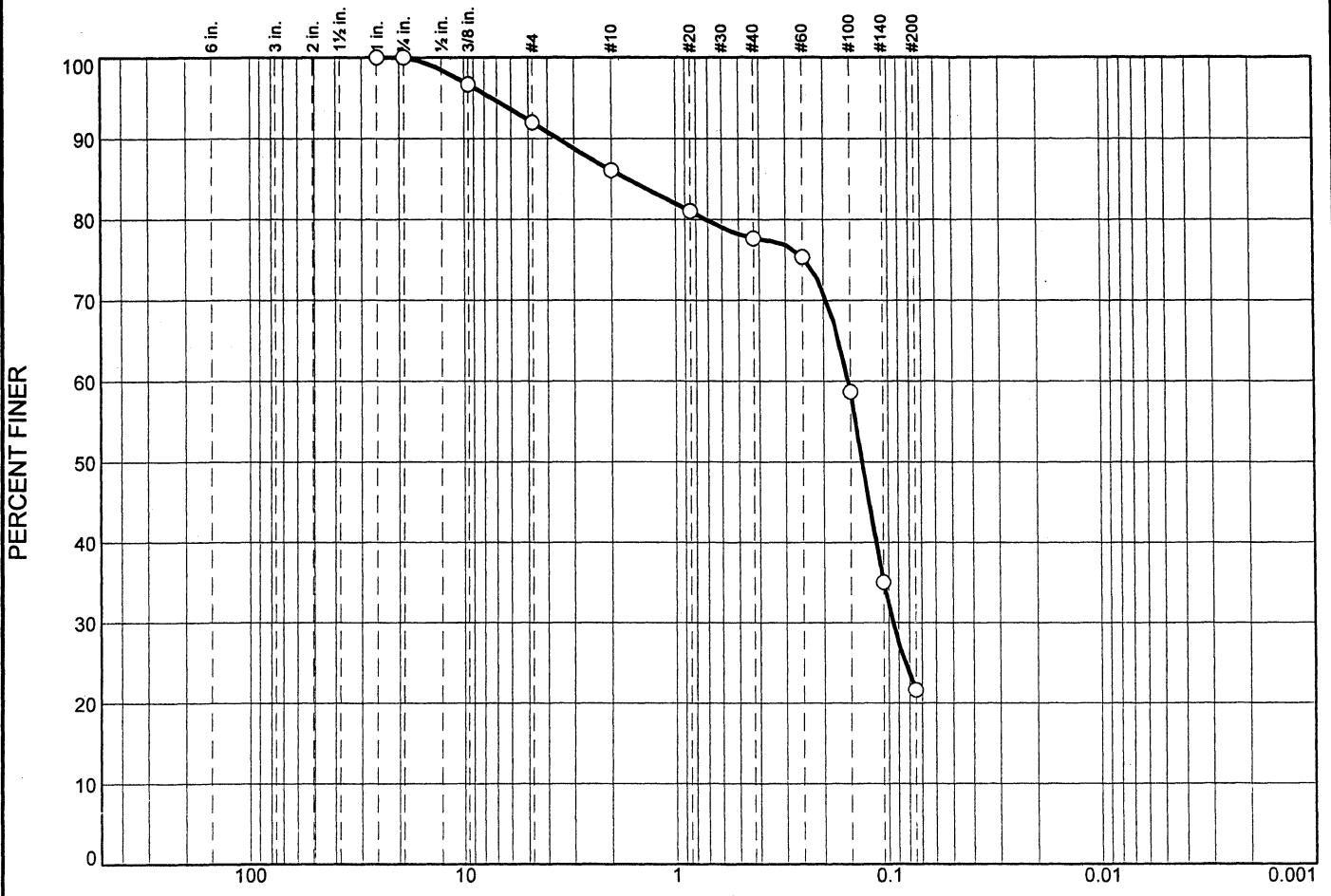
% +3"	% Gravel			% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0	0	27	16	23	27	7		
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
○			8.3569	2.4481	1.1035	0.3709	0.1820	0.1251	0.45 19.58
Material Description								USCS	AASHTO
○ Well graded sand with silt and gravel								SW-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0169 Depth: 49.0' Sample Number: 32						Remarks: ○ Moisture Content % 20.9 CP05-EAARS-CB-0266	
Date: ○							
Nodarse & Associates, Inc.						Figure	
Miami Lakes, FL							

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0	0	8	6	8	56		22
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			1.6787	0.1533	0.1319	0.0959	
Material Description							USCS AASHTO
○ Silty sand							SM

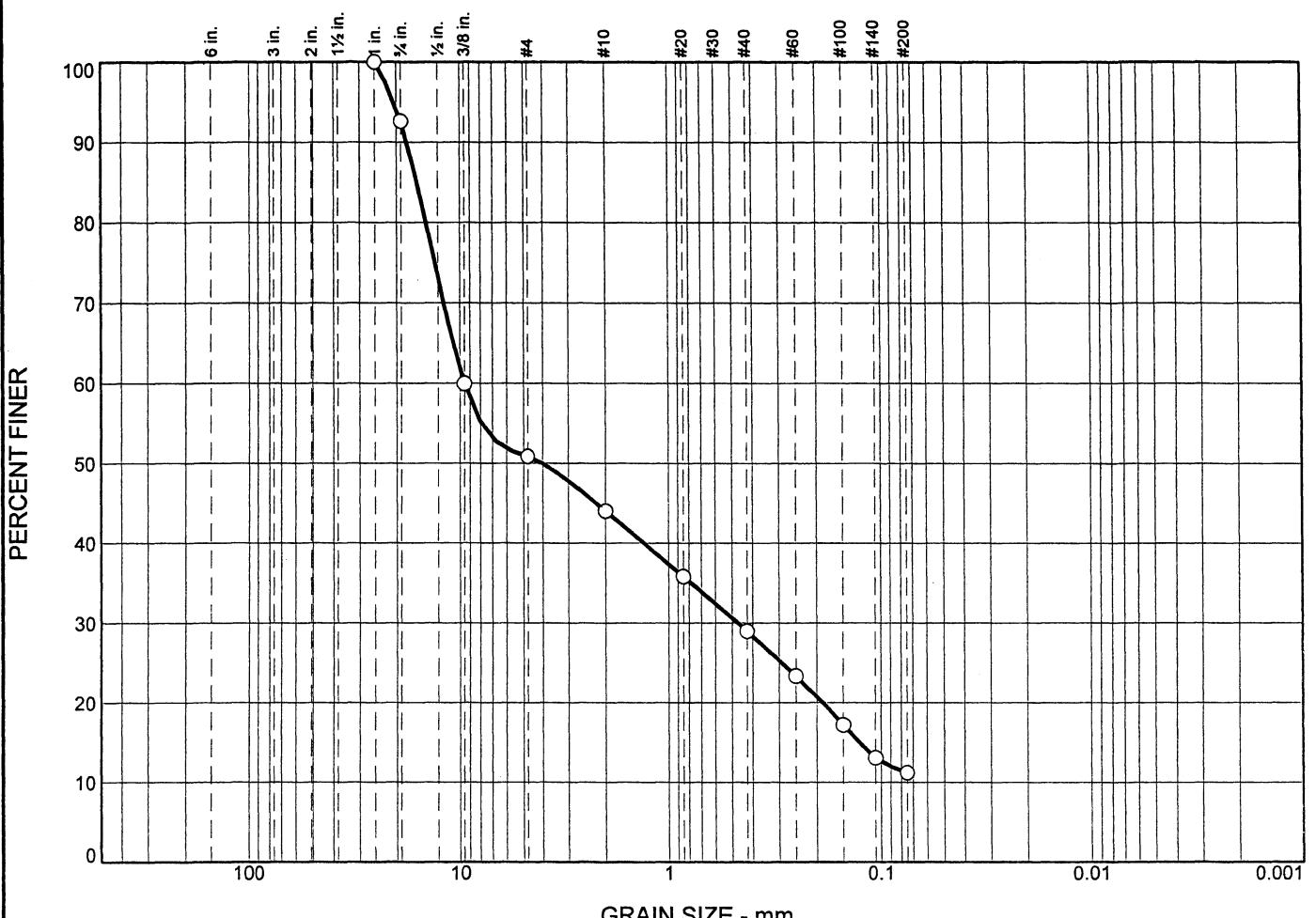
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	○ Moisture Content % 30.4
○ Source of Sample: CB-0169 Depth: 55.0'	CP05-EAARS-CB-0266
Date: ○	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report

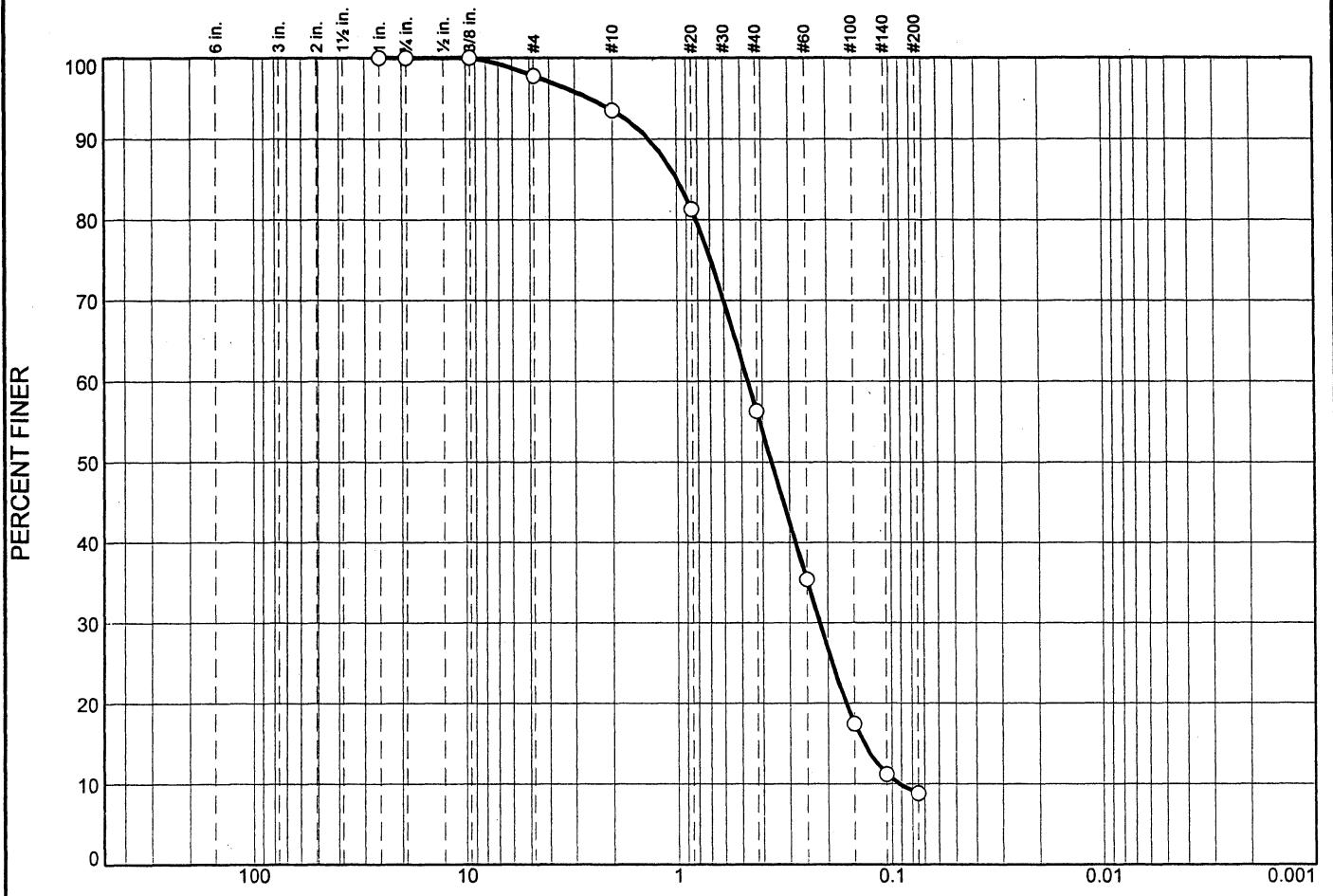


<p>Project No. 05-05-0013- Client: Black & Veatch</p> <p>Project: E.A.A (Reservoir)</p> <p><input type="radio"/> Source of Sample: CB-0169 Depth: 61.0' Sample Number: 40</p>		<p>Remarks:</p> <p><input type="radio"/> Moisture Content % 29.9 CP05-EAARS-CB-0266</p>
<p>Date: <input type="radio"/></p> <p style="text-align: center;">Nodarse & Associates, Inc.</p> <p style="text-align: center;">Miami Lakes, FL</p>		

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0169

Depth: 65.5'

Sample Number: 43

Remarks:

○ Moisture Content % 21.6
CP05-EAARS-CB-0266

Date: 0

Nodarse & Associates, Inc.

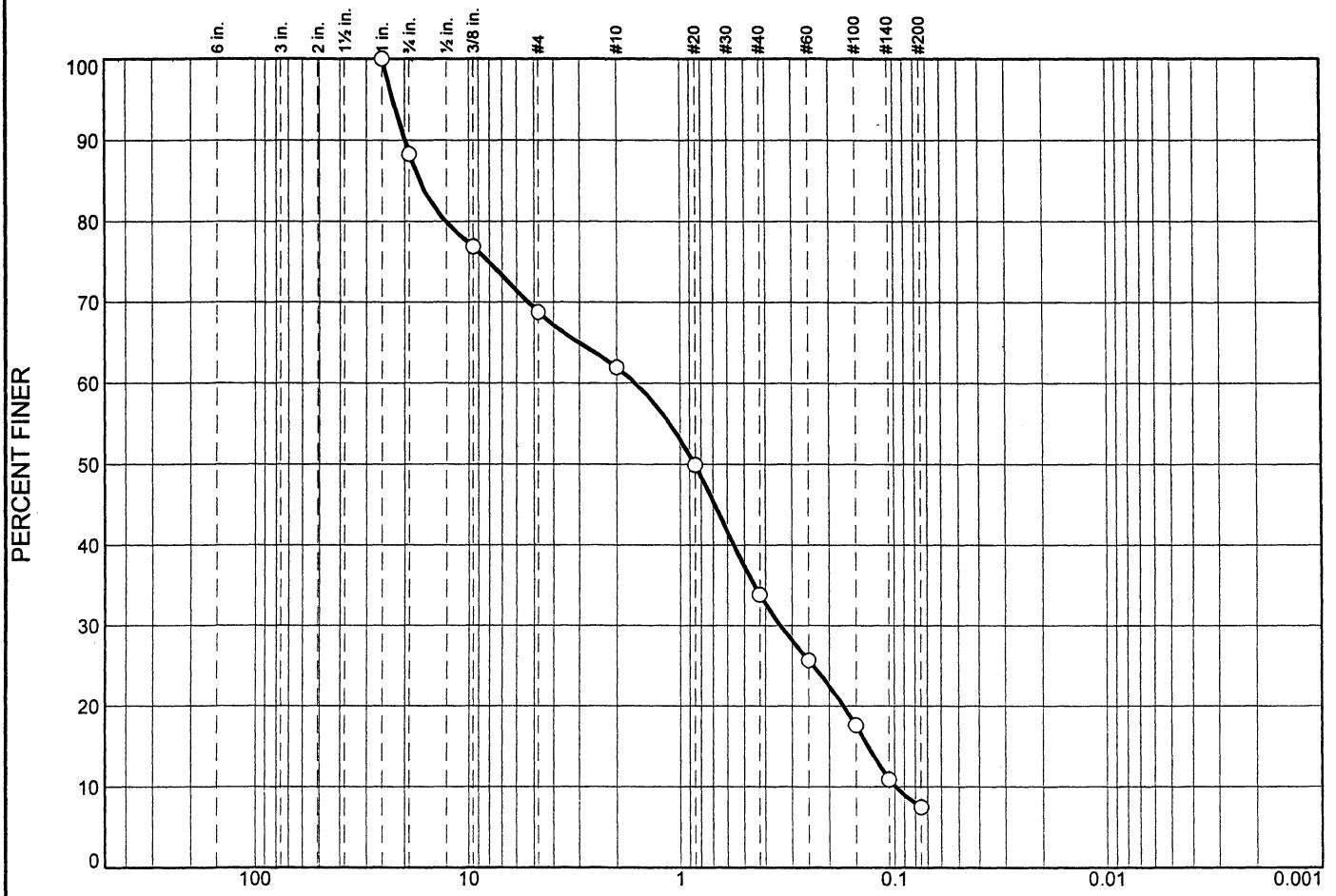
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	12	19	7	28	27	7
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			16.9881	1.6324	0.8528	0.3402	0.1320
Material Description							USCS
○ Well graded sand with silt and gravel							AASHTO

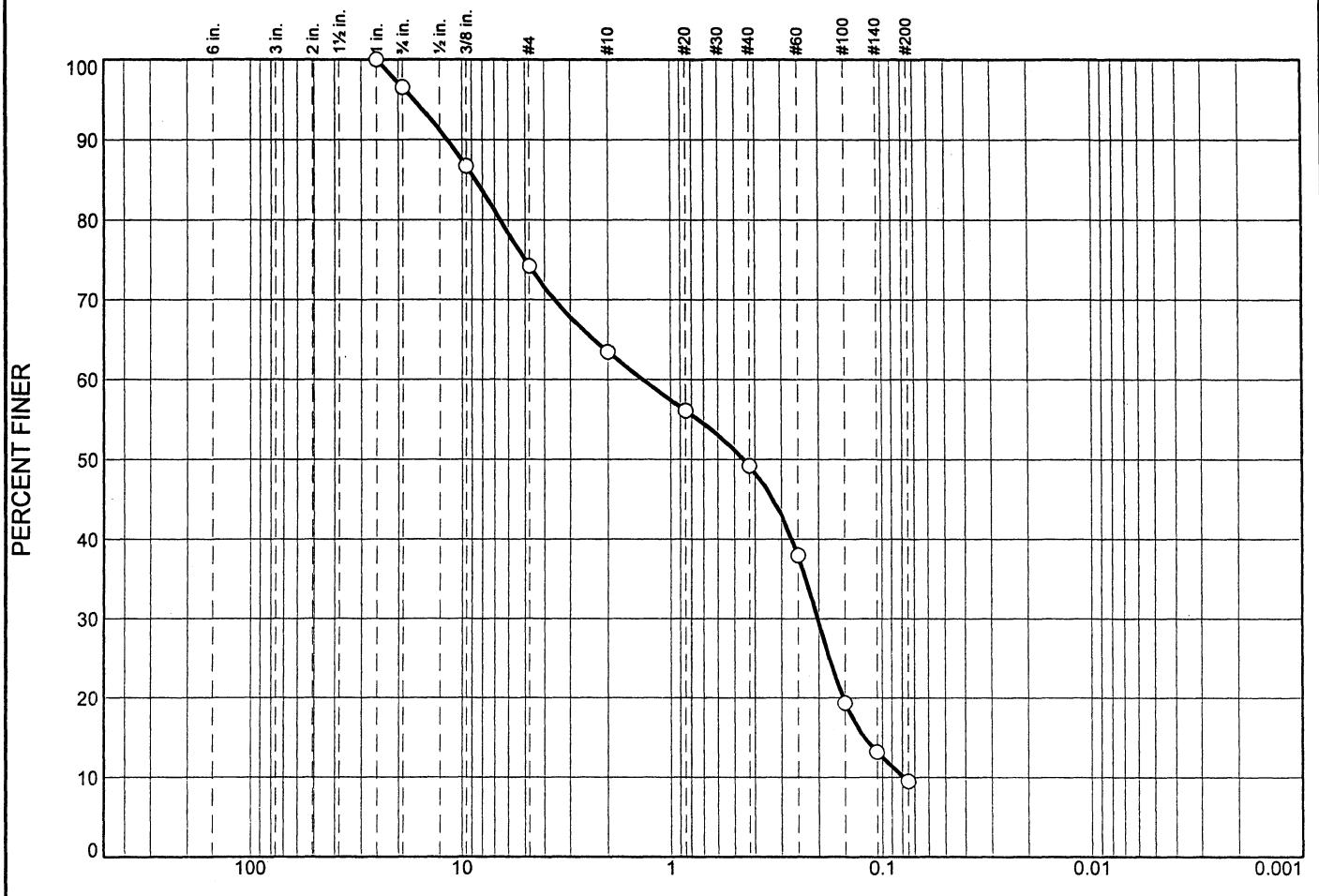
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0169 Depth: 68.5' Sample Number: 45 Date: ○	Remarks: ○ Moisture Content % 22.3 CP05-EAARS-CB-0266
Nodarse & Associates, Inc. Miami Lakes, FL	

Tested By: Pedro Camaraza

Checked By: Michael Brown

Figure

Particle Size Distribution Report

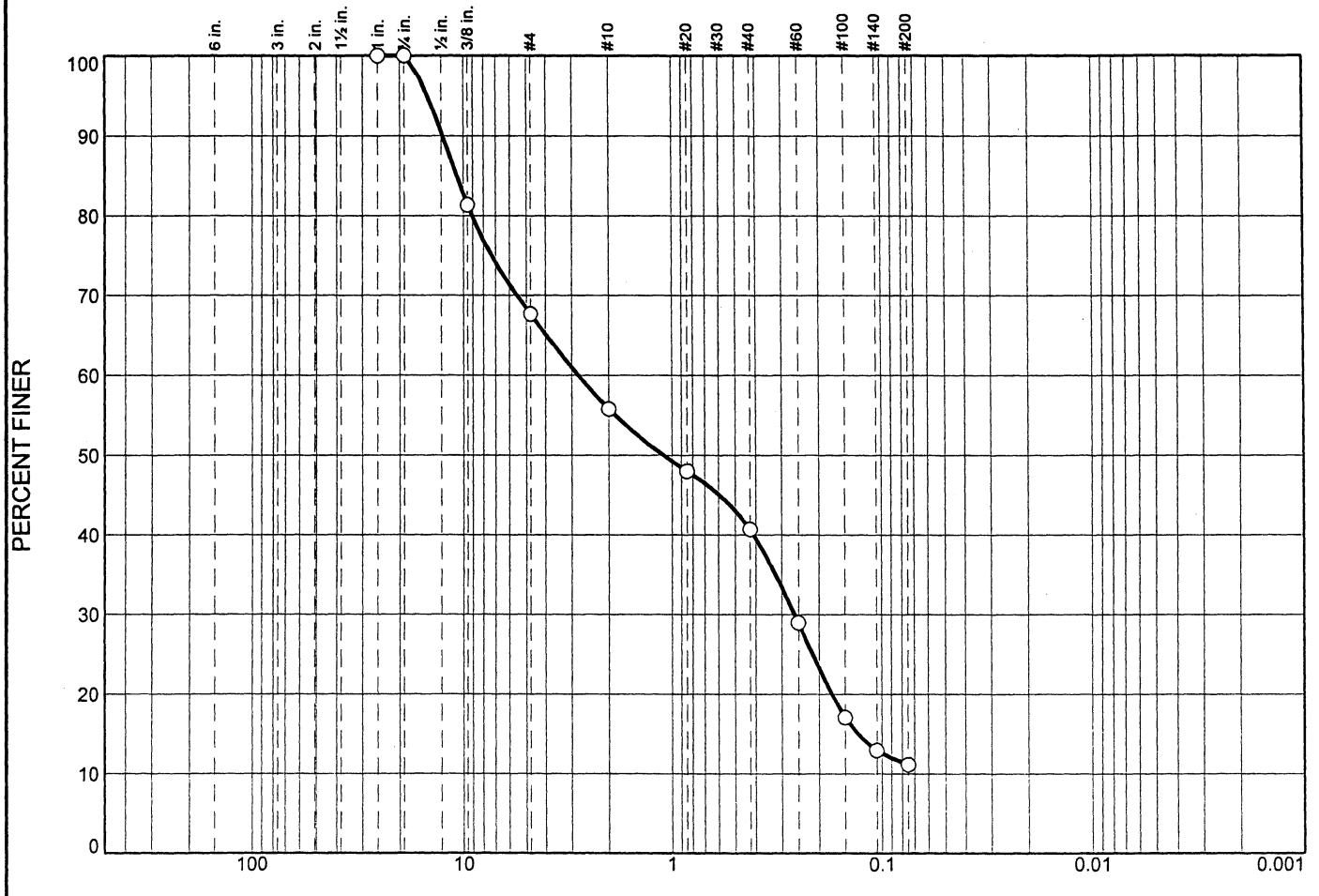


% +3"		% Gravel		% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input checked="" type="radio"/>	0	3	23	11	14	40		9	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input checked="" type="radio"/>			8.6203	1.3627	0.4514	0.2021	0.1215	0.0788	0.38 17.29
Material Description								USCS	AASHTO
<input checked="" type="radio"/> Well graded sand with silt and gravel								SW-SM	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input checked="" type="radio"/> Moisture Content % 21.3
<input checked="" type="radio"/> Source of Sample: CB-0169 Depth: 73.0'	CP05-EAARS-CB-0266
Date: <input checked="" type="radio"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	32	12	15	30	11

Material Description	USCS	AASHTO
○ Well graded sand with silt and gravel	SW-SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0169

Depth: 76.0'

Sample Number: 50

Remarks:

○ Moisture Content % 18.3 CP05-
EAARS-CB-0266

Date: 8

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	23	34	10	16	11	6

Material Description	USCS	AASHTO
○ Well graded gravel with silt and sand	GW-GM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0169

Depth: 85.0'

Sample Number: 56

Remarks:

○ Moisture Content % 18.4 CP05-
EAARS-CB-0266

Date: 8

Nodarse & Associates, Inc.

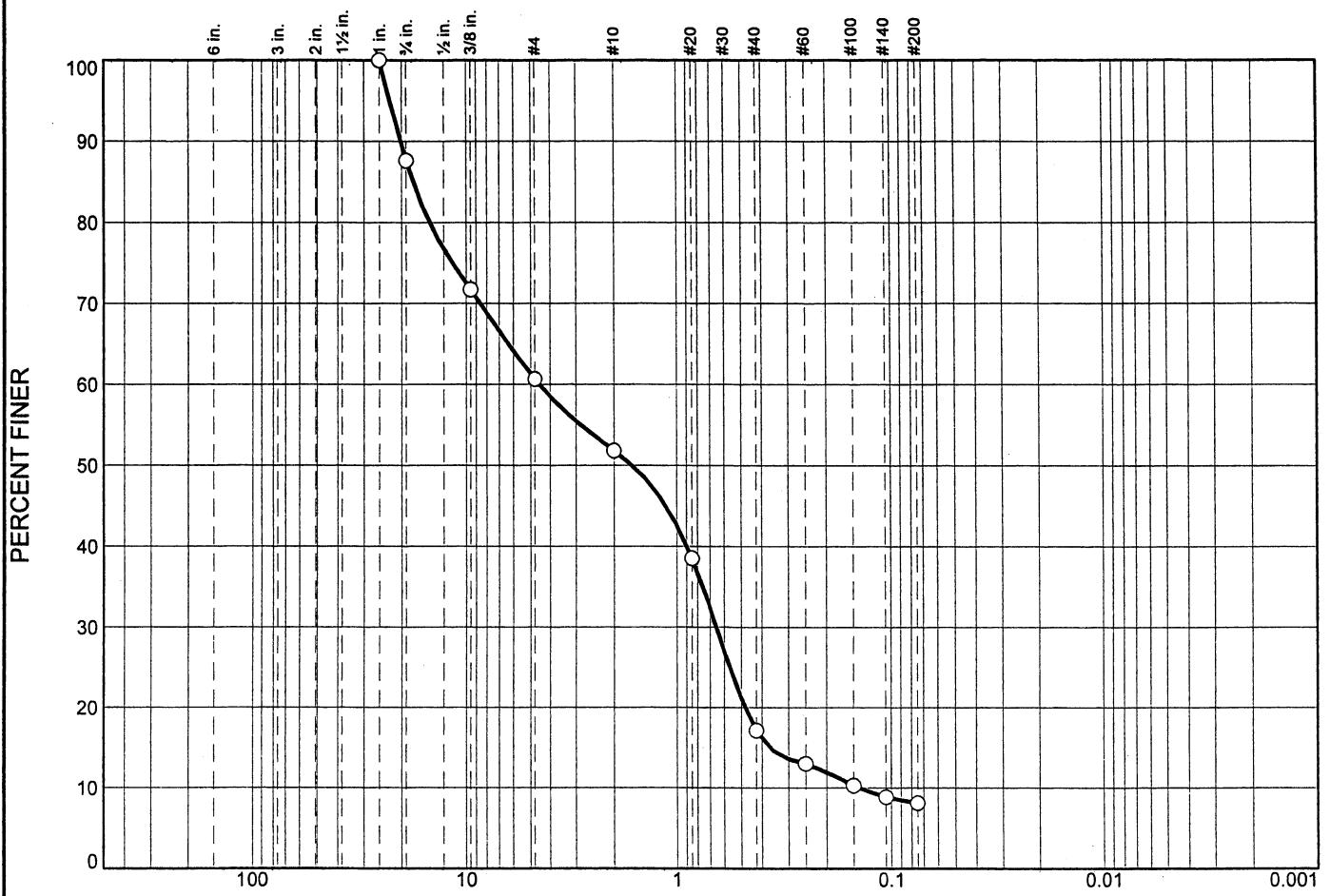
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0	12	27	9	35	9	8	

Material Description	USCS	AASHTO
○ Well graded sand with silt and gravel	SW-SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0169

Depth: 89.5'

Sample Number: 59

Remarks:

○ Moisture Content % 14.2

CP05-EAARS-CB-0266

Date: 8

Nodarse & Associates, Inc.

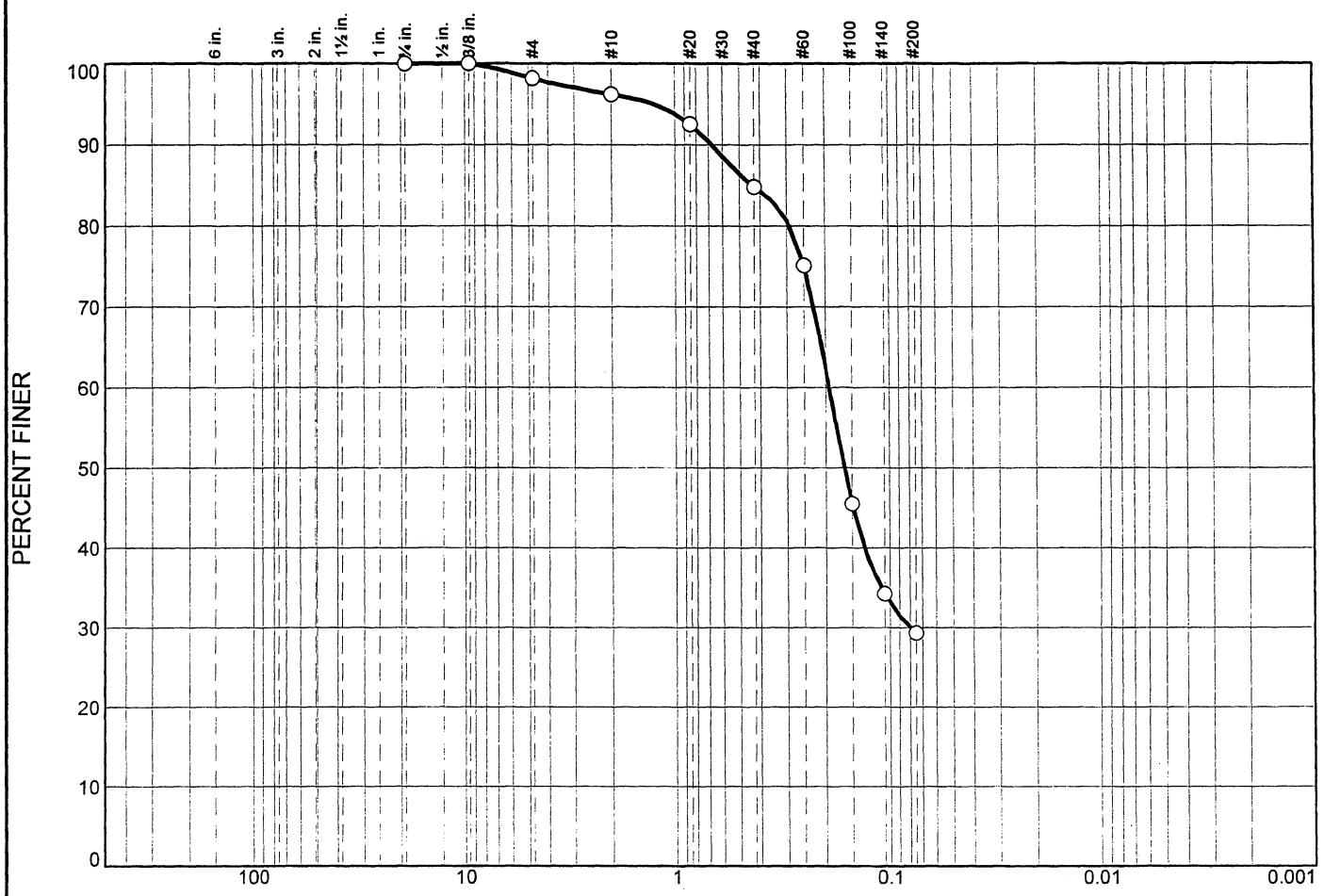
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



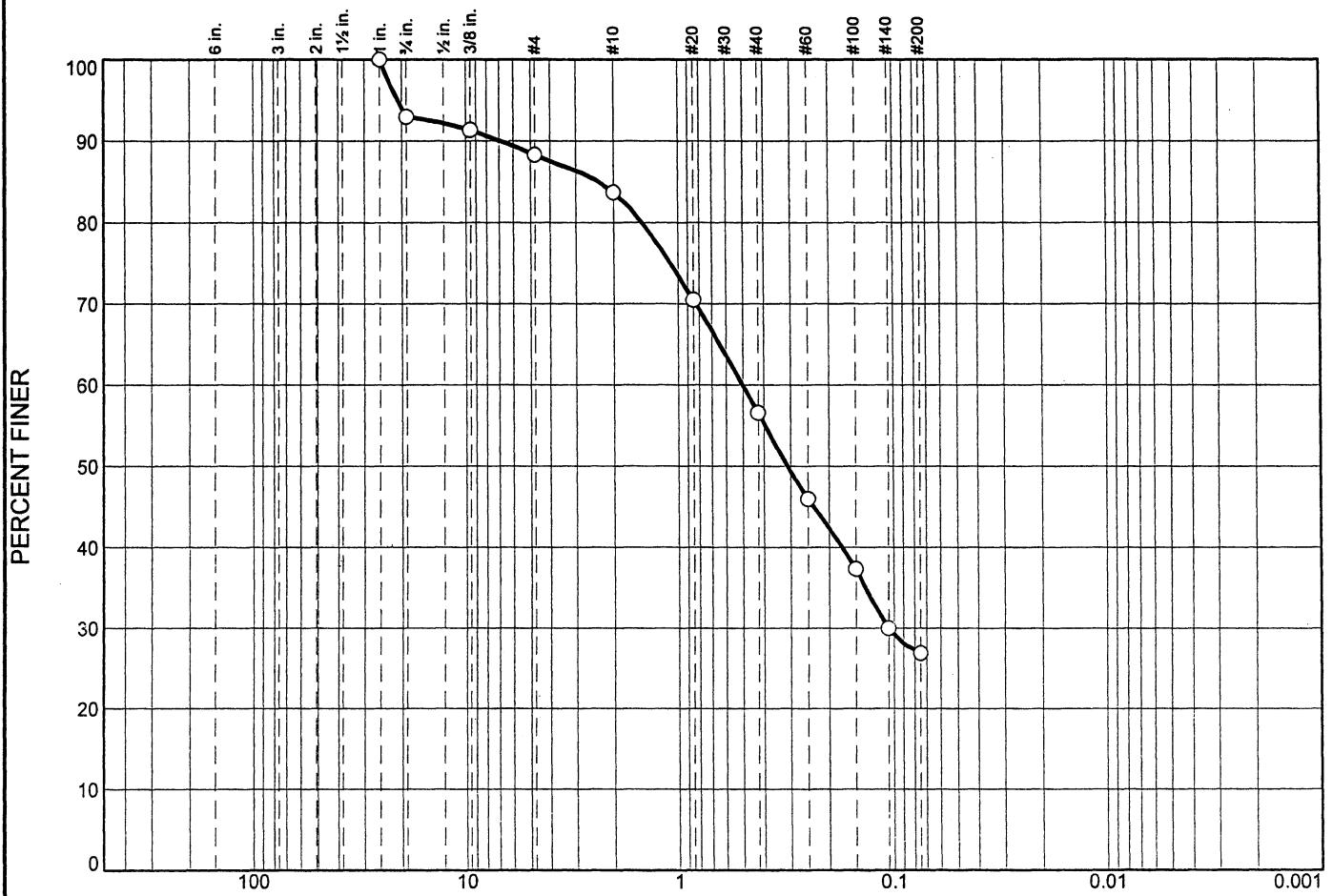
% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○ 0.0	0.0	1.9	1.9	11.4	55.5		29.3	
○ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
○		0.4344	0.1915	0.1630	0.0796			C _u
Material Description								USCS
○ Silty Sand								SM
								AASHTO

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Source of Sample: CB170 Depth: 88.5'-90.0' Sample Number: CB170			Remarks: ○ Moisture Content % 21.4 CP05-EAARS-CB-0267
Nodarse & Associates, Inc. Miami Lakes, FL			Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel			% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○ 0	7	5	4	27	30		27	
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○			2.3383	0.5011	0.3099	0.1060		
Material Description								USCS AASHTO
○ Silty sand							SM	

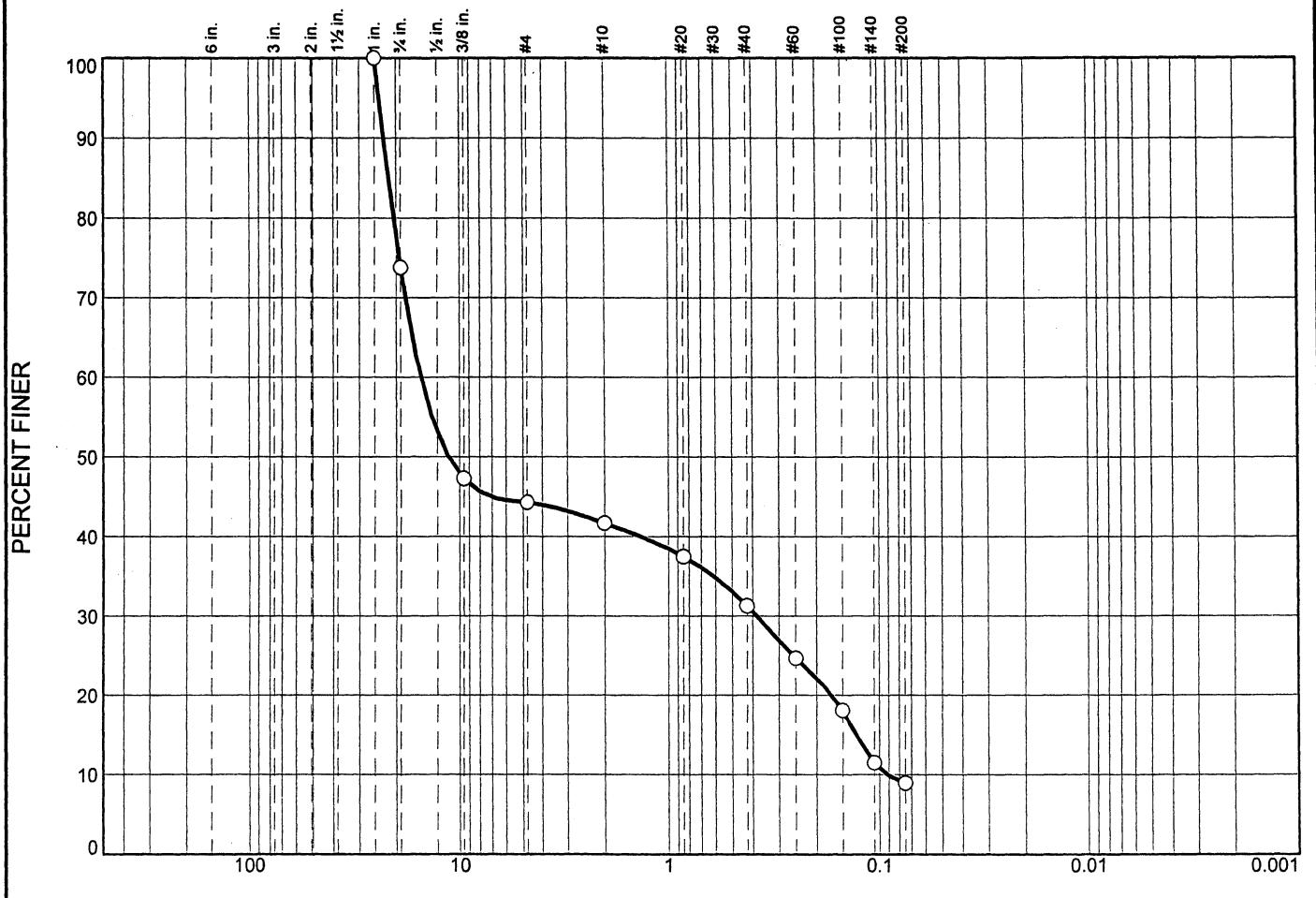
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	○ Moisture Content % 30.2 CP05-
○ Source of Sample: CB-0171 Depth: 13.5' Sample Number: 4	EAARS-CB-0268
Date: ○	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



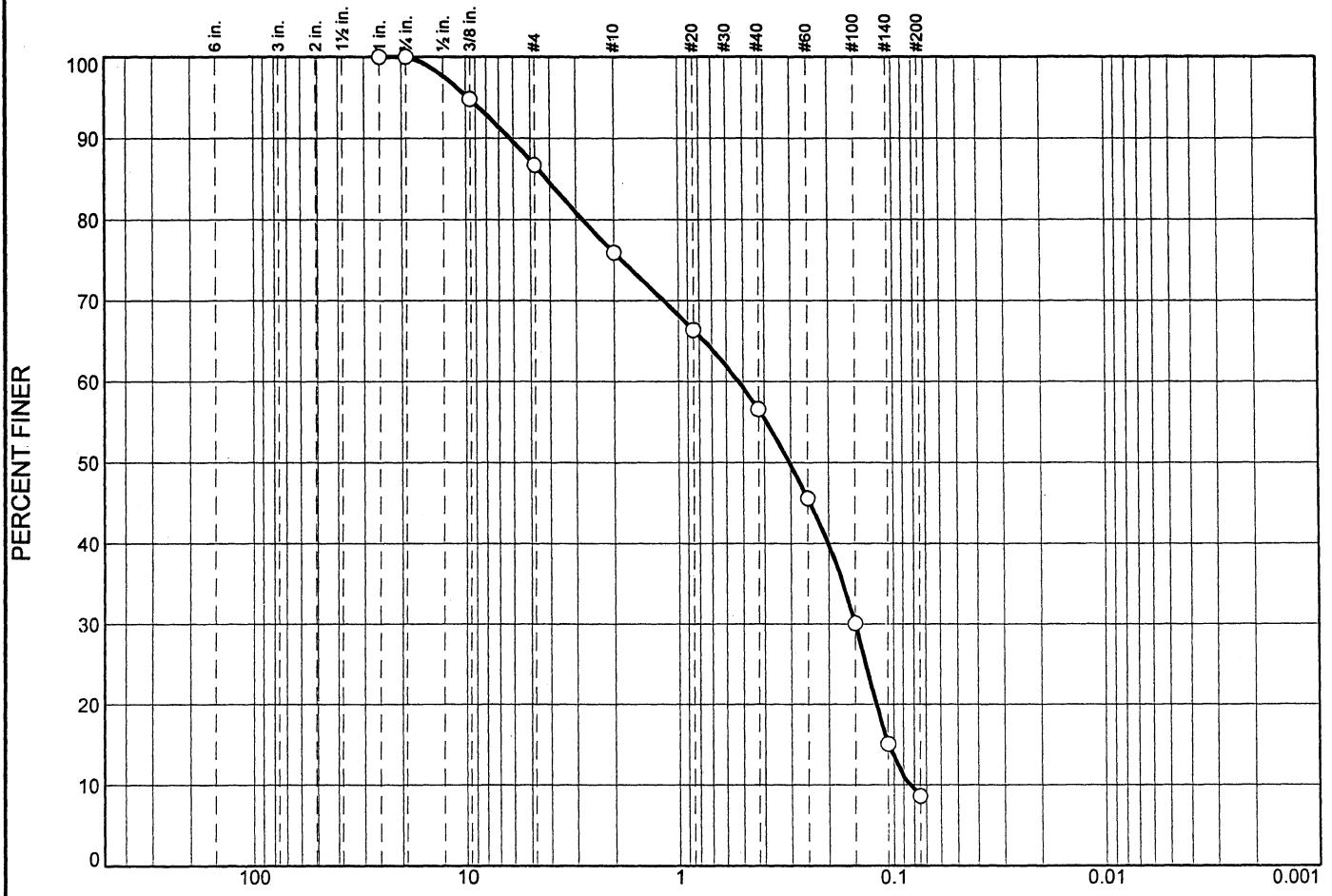
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	26	30	2	11	22	9
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₀
<input type="radio"/>			21.7308	15.2316	11.2605	0.3823	0.1285
Material Description							USCS
<input type="radio"/> Poorly graded gravel with silt and sand							GP-GM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0171 Depth: 18.5' Sample Number: 5				Remarks: <input type="radio"/> Moisture Content % 21.5 CP05-EAARS-CB-0268
Date: <input type="radio"/>				
Nodarse & Associates, Inc. Miami Lakes, FL				Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Project No. 05-05-0013- **Client:** Black & Veatch
Project: E.A.A (Reservoir)
○ **Source of Sample:** CB-0171 **Depth:** 33.5' **Sample Number:** 8

Remarks:

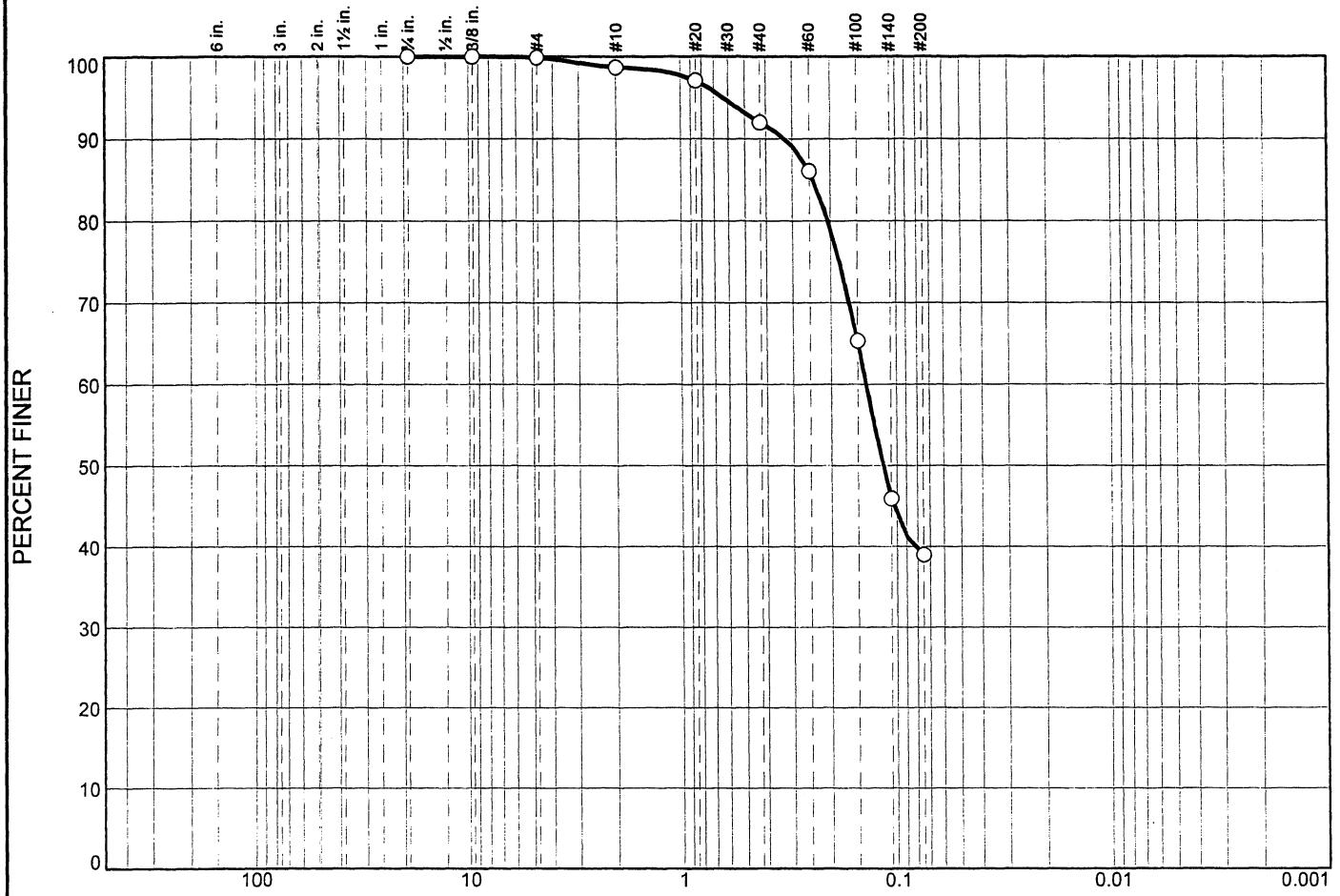
- Moisture Content % 17.7 CP05-
EAARS-CB-0268

Tested By: Pedro Camaraza

Checked By: Michael Brown

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0.0	0.0	0.1	1.2	6.7	53.0	39.0	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	
<input type="radio"/>			0.2395	0.1373	0.1157			
Material Description							USCS	AASHTO
<input type="radio"/> Silty sand							SM	

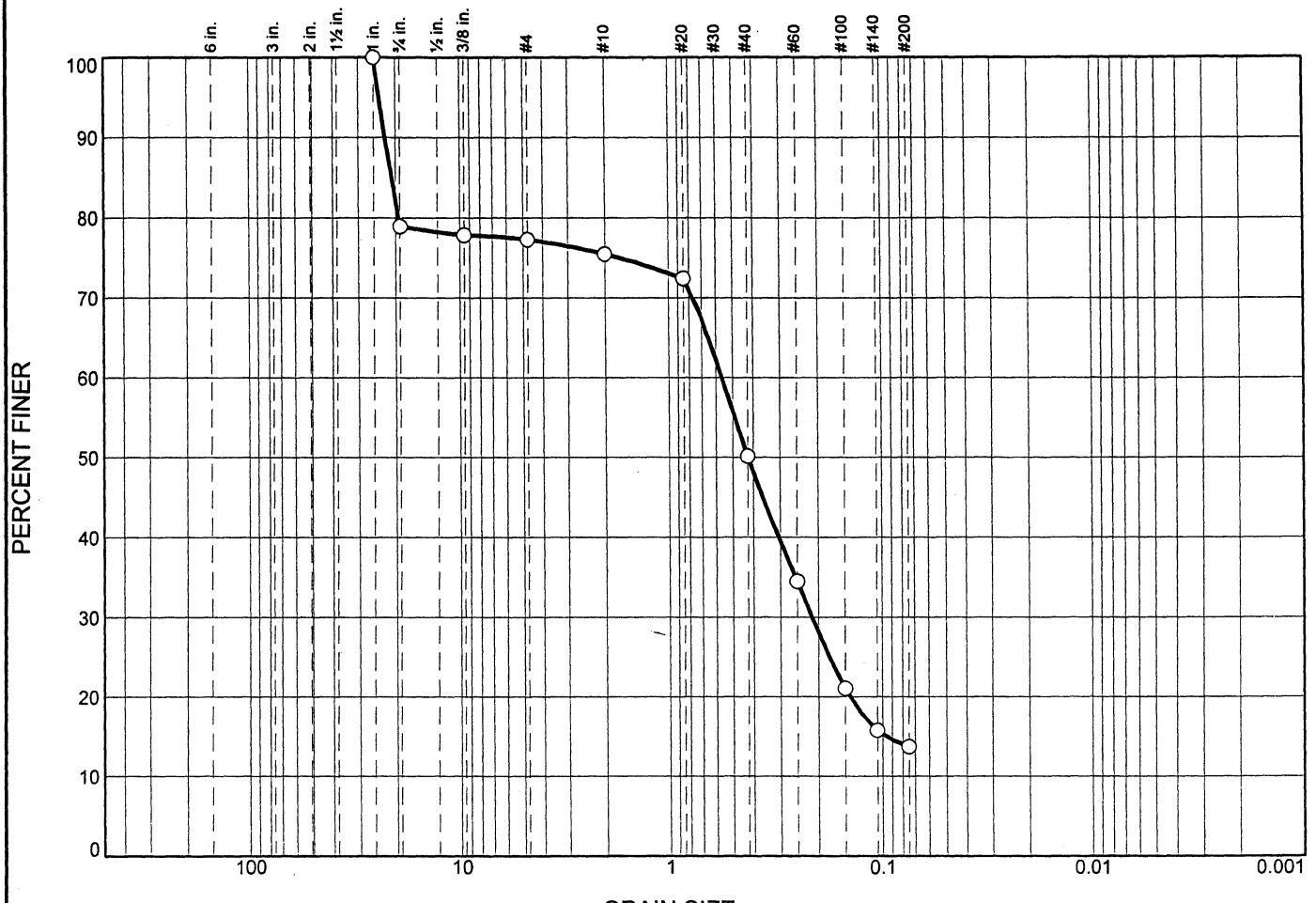
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 <input type="radio"/> Source of Sample: CB171 Depth: 78.5'-80.0 Sample Number: CB171	Remarks: <input type="radio"/> Moisture Content % 26.4 CP05-EAARS-CB-0268
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report

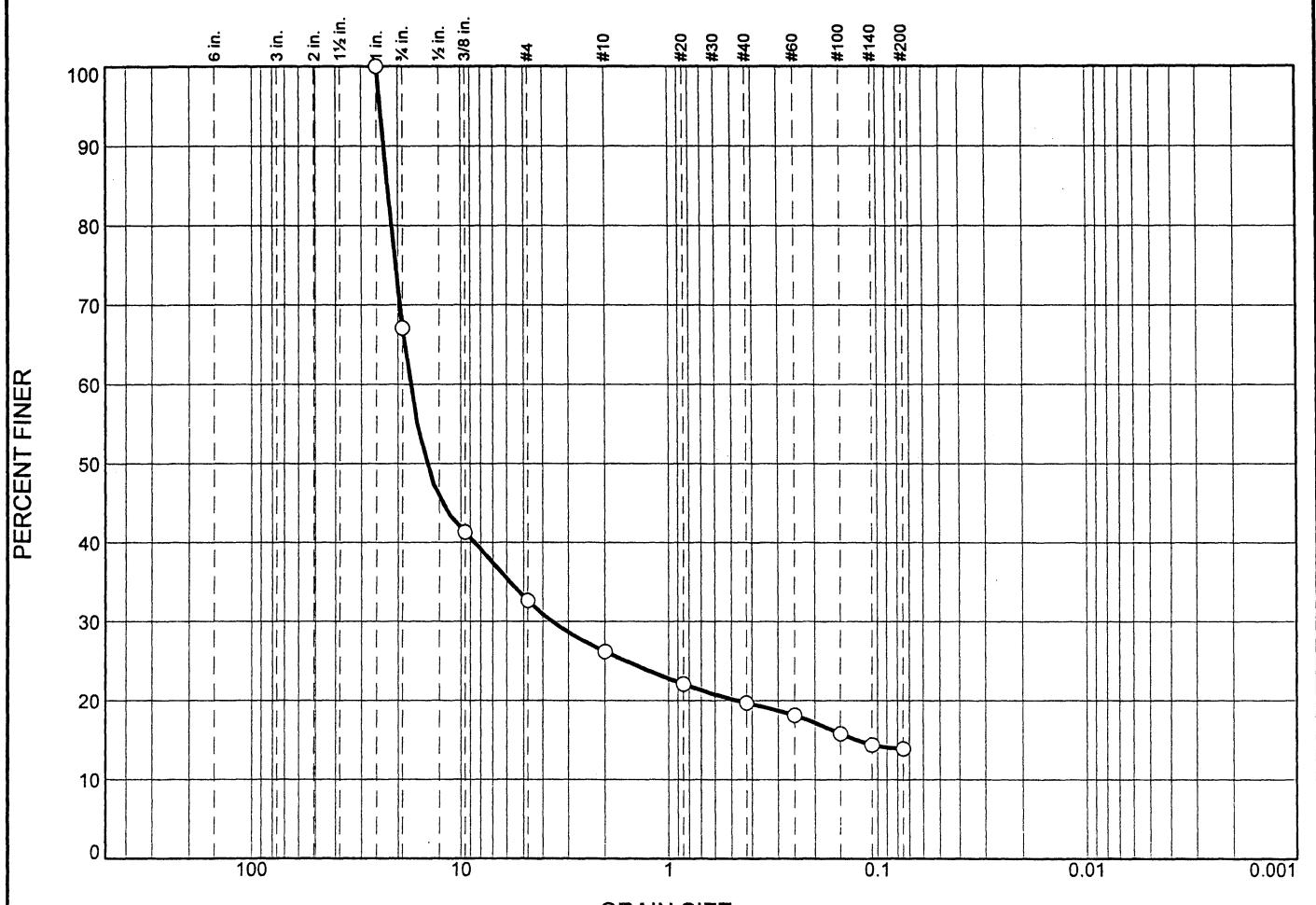


GRAIN SIZE - mm.									
% +3"		% Gravel		% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0	21	2	2	25	36		14	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="radio"/>			21.0463	0.5610	0.4232	0.2134	0.0963		
Material Description								USCS	AASHTO
<input type="radio"/> Silty sand with gravel								SM	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input type="radio"/> Moisture Content % 136.8 CP05-
<input type="radio"/> Source of Sample: CB-0172 Depth: 0.0' Sample Number: 1	EAARS-CB-0269
Date: <input type="radio"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	33	34	7	6	6	14

Material Description	USCS	AASHTO
○ Silty gravel with sand	GM	

Project No. 05-05-0013- Client: Black & Veatch

Remarks:

Project: E.A.A (Reservoir)

○ Moisture Content % 27 CP05-
EAARS-CB-0269

P-4

Nodarse & Associates, Inc.

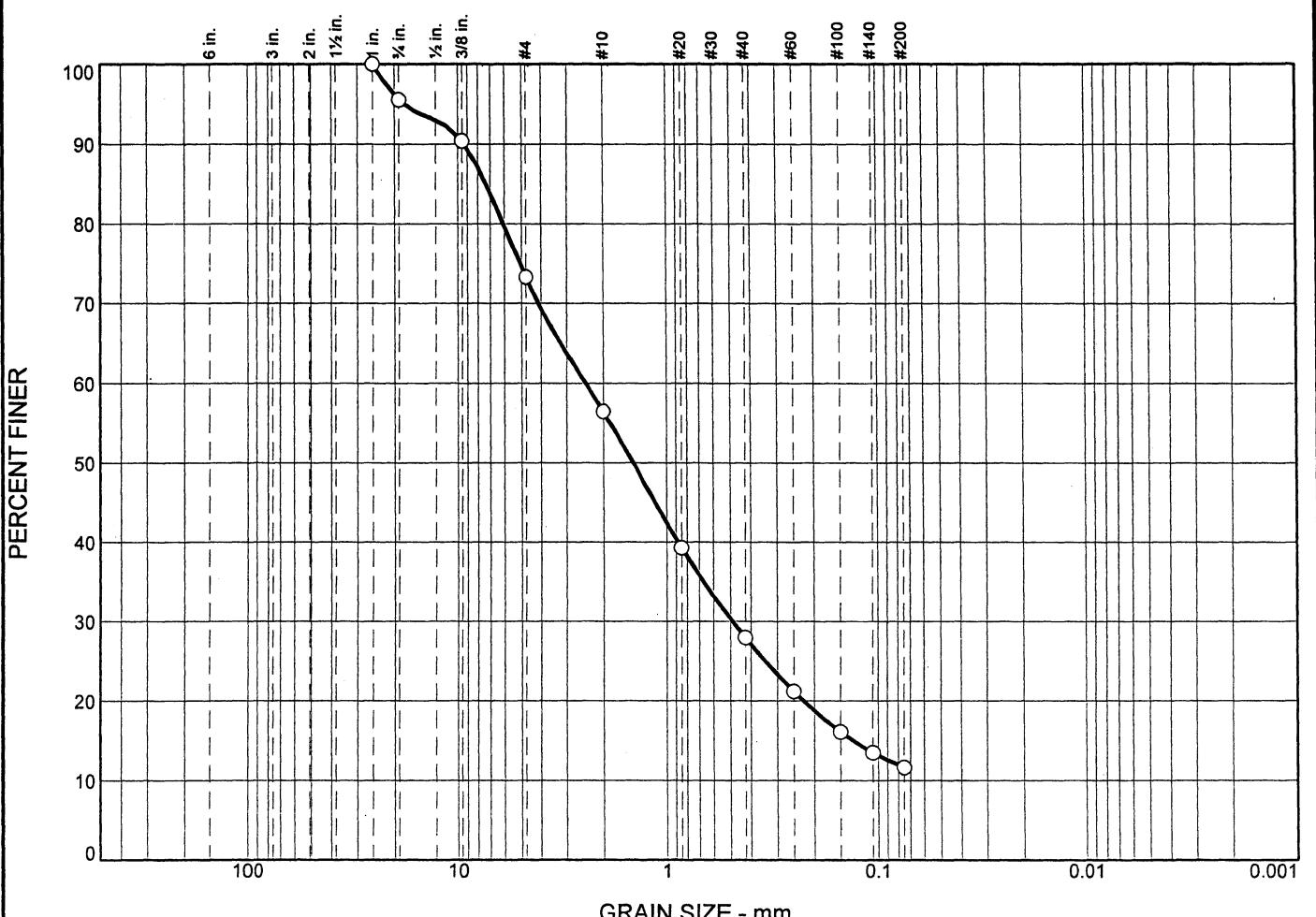
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	4	23	17	28	16	12
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			7.3316	2.4333	1.4431	0.4882	0.1307
Material Description							USCS
<input type="radio"/> Well graded sand with silt and gravel							SW-SM
							AASHTO

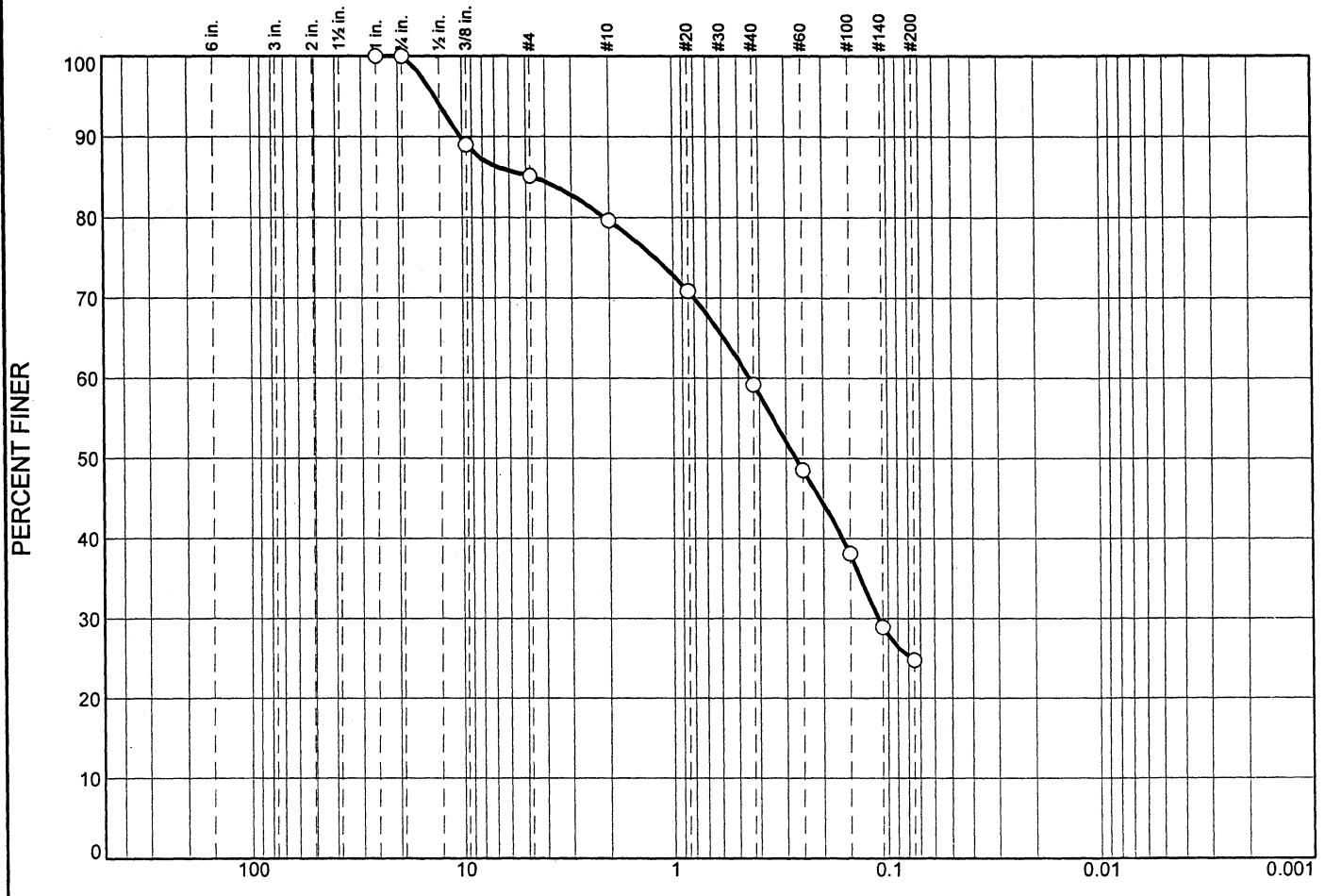
Project No. 05-05-0013- Client: Black & Veatch		Remarks:
Project: E.A.A (Reservoir)		<input type="radio"/> Moisture Content % 23.8 CP05-
<input type="radio"/> Source of Sample: CB-0172	Depth: 8.5'	EAARS-CB-0269
Date: <input type="radio"/>		
Nodarse & Associates, Inc.		
Miami Lakes, FL		

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	0	15	5	21	34		25
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input type="radio"/>			4.5605	0.4425	0.2697	0.1114		C _c
								C _u
Material Description								USCS
<input type="radio"/> Silty sand with gravel								SM
								AASHTO

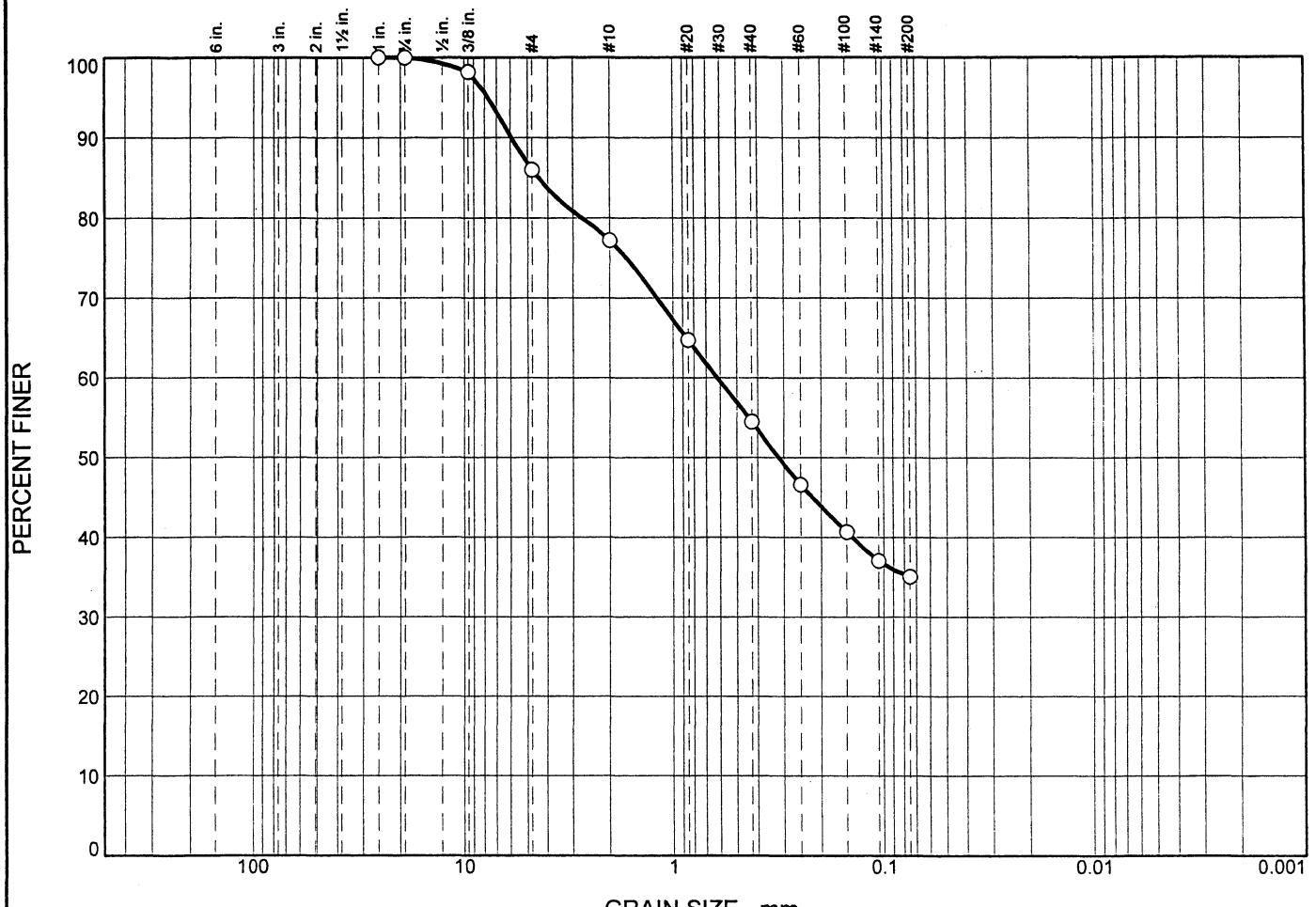
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0172 Depth: 13.5' Sample Number: 4 Date: <input type="radio"/>	Remarks: <input type="radio"/> Moisture Content % 31.9 CP05-EAARS-CB-0269
Nodarse & Associates, Inc. Miami Lakes, FL	

Tested By: Pedro Camaraza

Checked By: Michael Brown

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	0	14	9	23	19	35
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			4.4426	0.6188	0.3170		
Material Description							USCS
<input type="radio"/> Silty sand							SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0173 Depth: 13.5' Sample Number: 5

Remarks:

Moisture Content % 36.4 CP05-
EAARS-CB-0269

Date:

Nodarse & Associates, Inc.

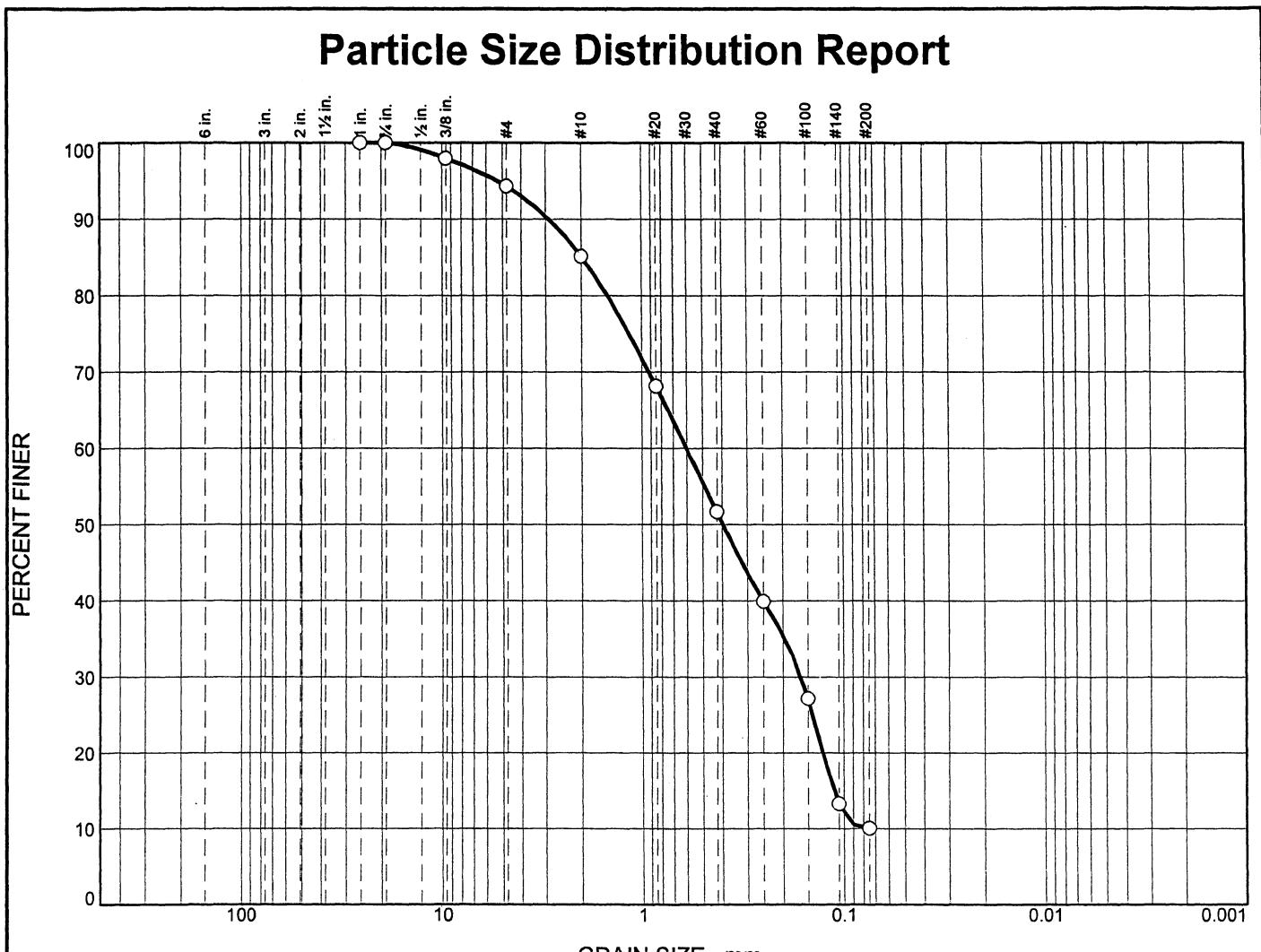
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Project No. 05-05-0013-**Client:** Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0172

Depth: 18.5'

Sample Number: 5

Remarks:

○ Moisture Content % 22.7 CP05-
EAARS-CB-0269

Date: 8

Nodarse & Associates, Inc.

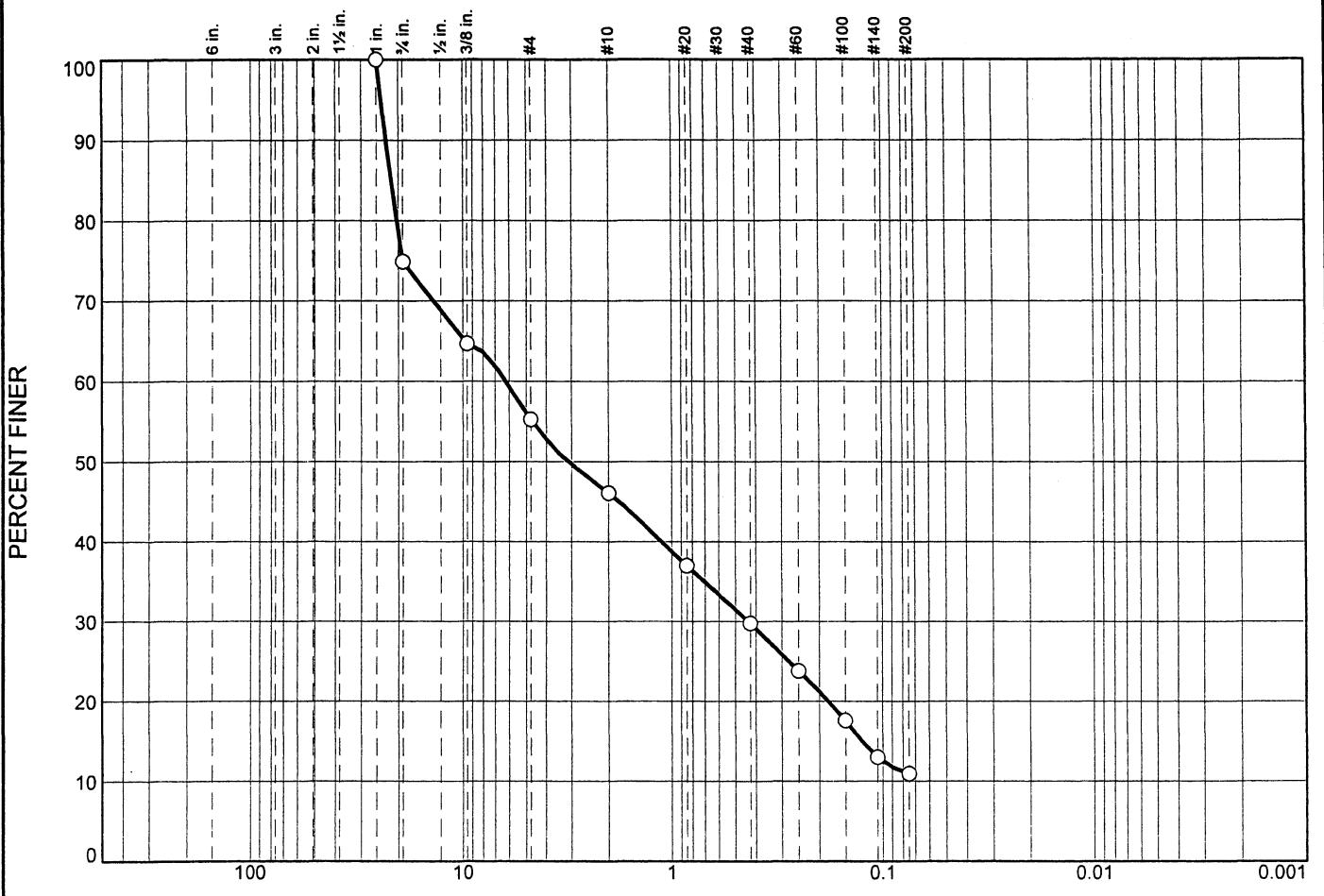
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	25	20	9	16	19	11

Material Description

USCS | AASHTO

- Well graded sand with silt and gravel

SW-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0173

Depth: 18.5'

Sample Number: 6

Remarks:

○ Moisture Content % 26.0 CP05-
EAARS-CB-0269

Date:

Nodarse & Associates, Inc.

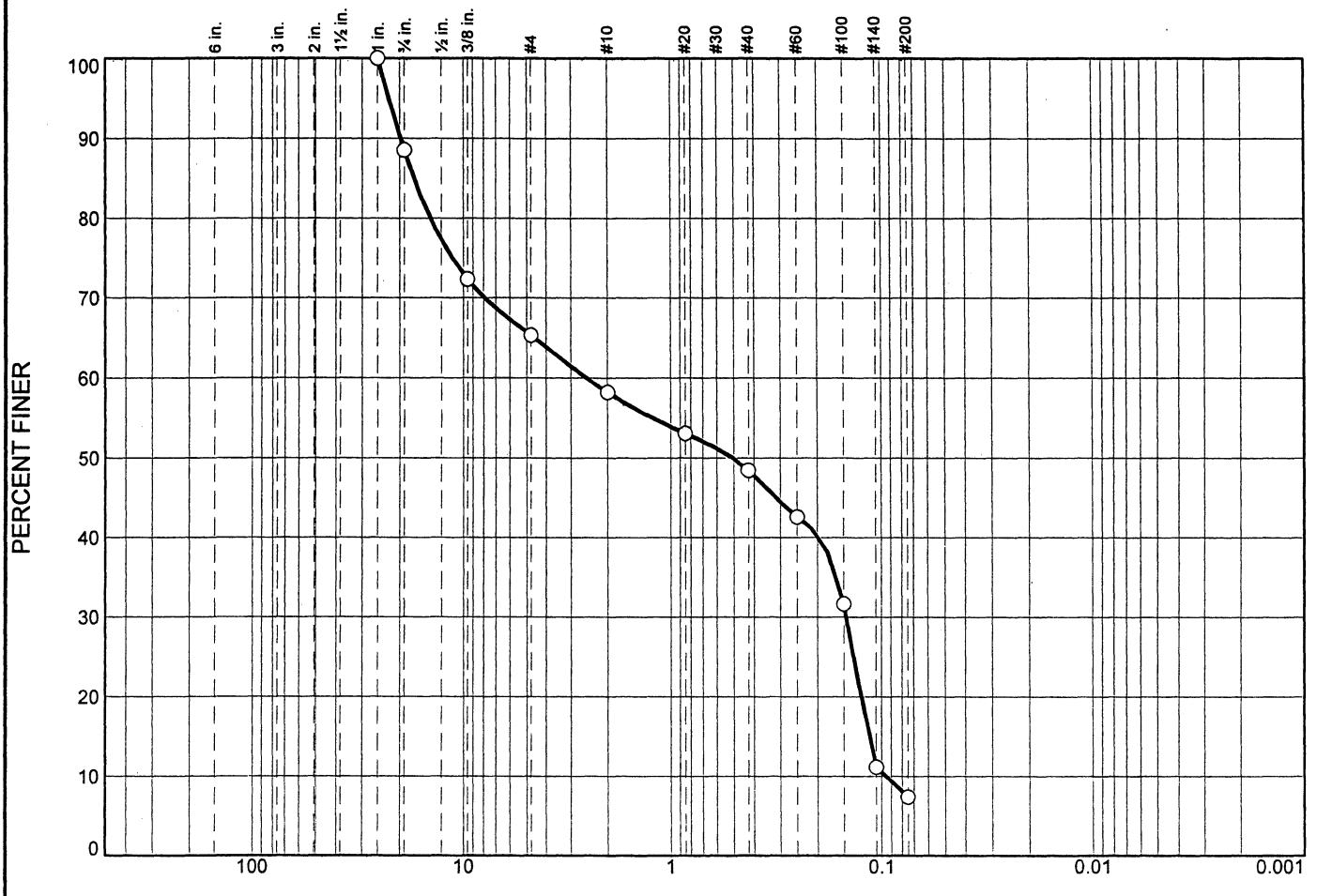
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0172

Depth: 33.5'

Sample Number: 8

Date: 8

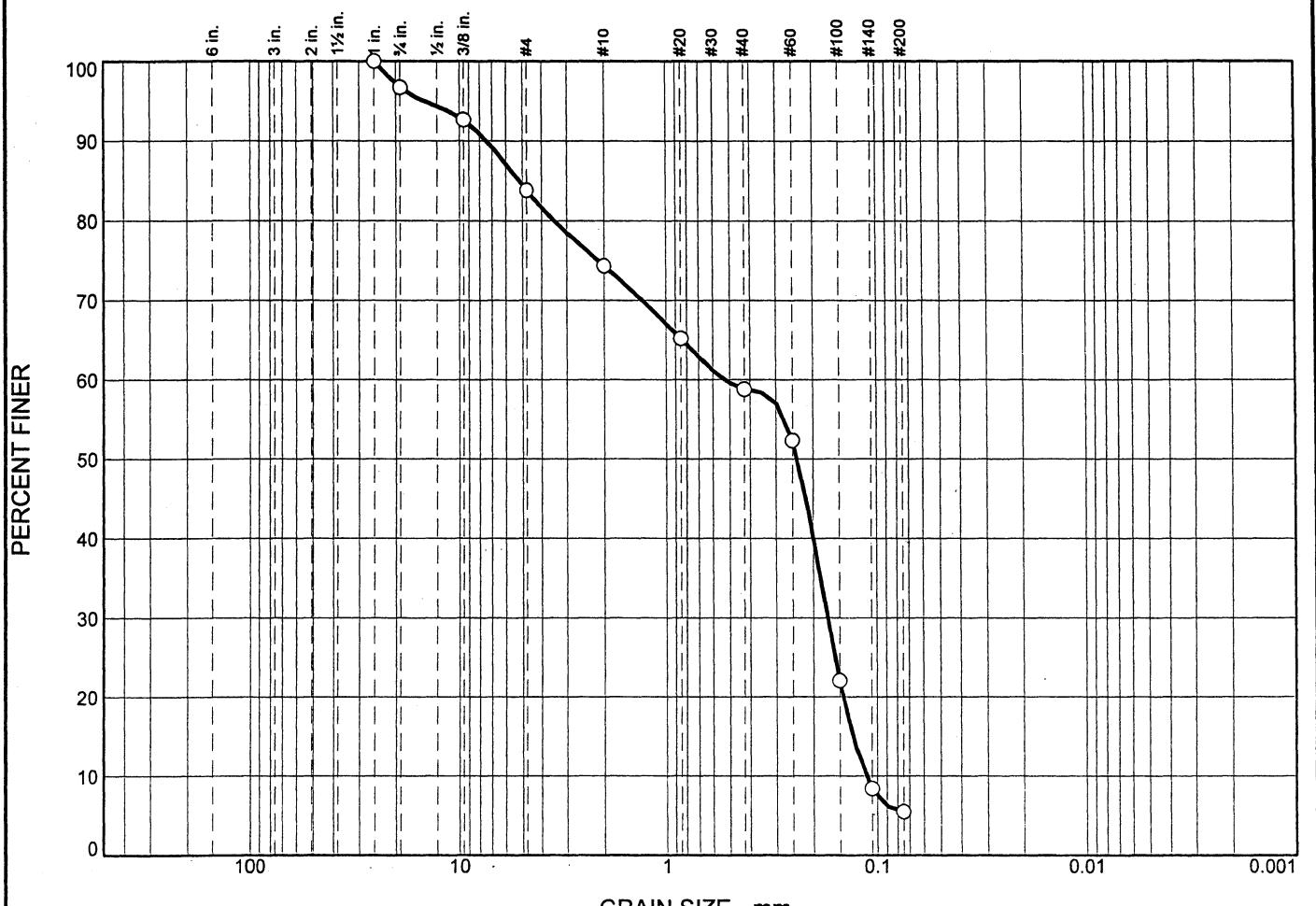
Nodarse & Associates, Inc.

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	3	13	10	15	54	5

Material Description	USCS	AASHTO
○ Well graded sand with silt and gravel	SW-SM	

Project No. 05-05-0013-**Client:** Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0172

Depth: 38.5'

Sample Number: 9

Remarks:

Moisture Content % 20.9 CP05-
EAARS-CB-0269

Date: 8

Nodarse & Associates, Inc.

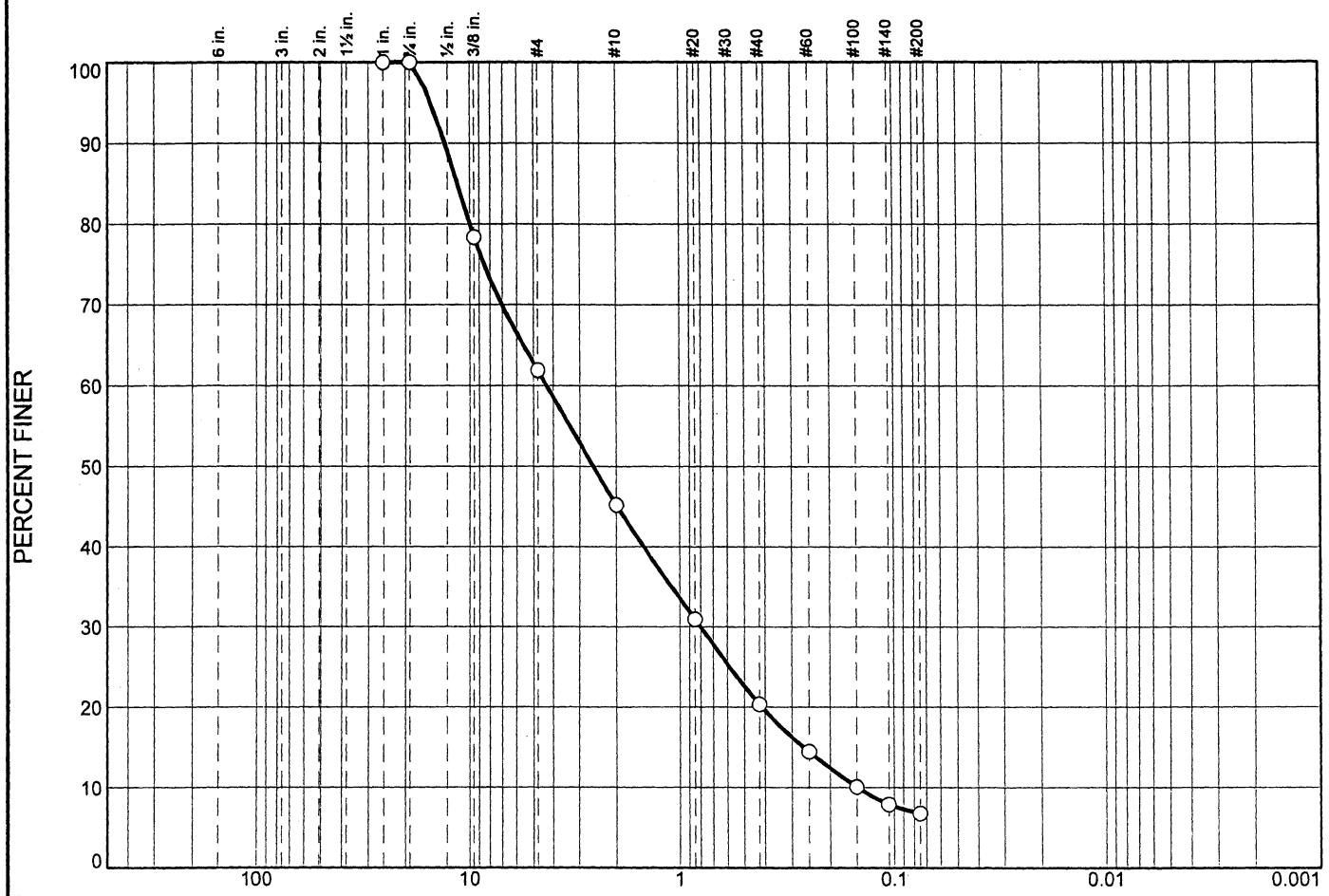
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0	0	38	17	25	13		7
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			11.4156	4.3044	2.5799	0.8016	0.2641

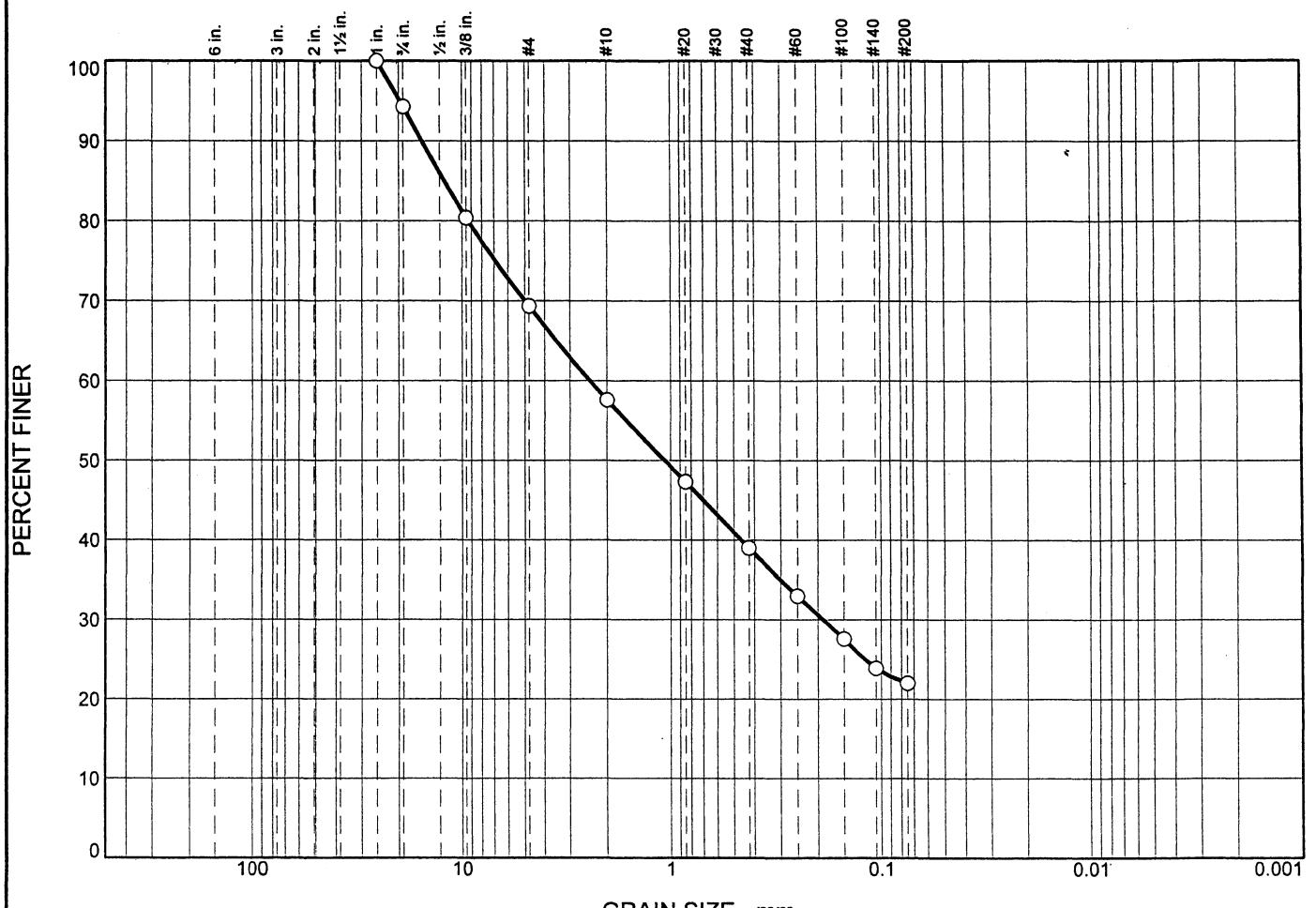
Material Description				USCS	AASHTO
○ Well graded sand with silt and gravel				SW-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0173 Depth: 1.5' Sample Number: 2				Remarks: ○ Moisture Content % 157.6 CP05- EAARS-CB-0270
Date: ○				
Nodarse & Associates, Inc. Miami Lakes, FL				Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



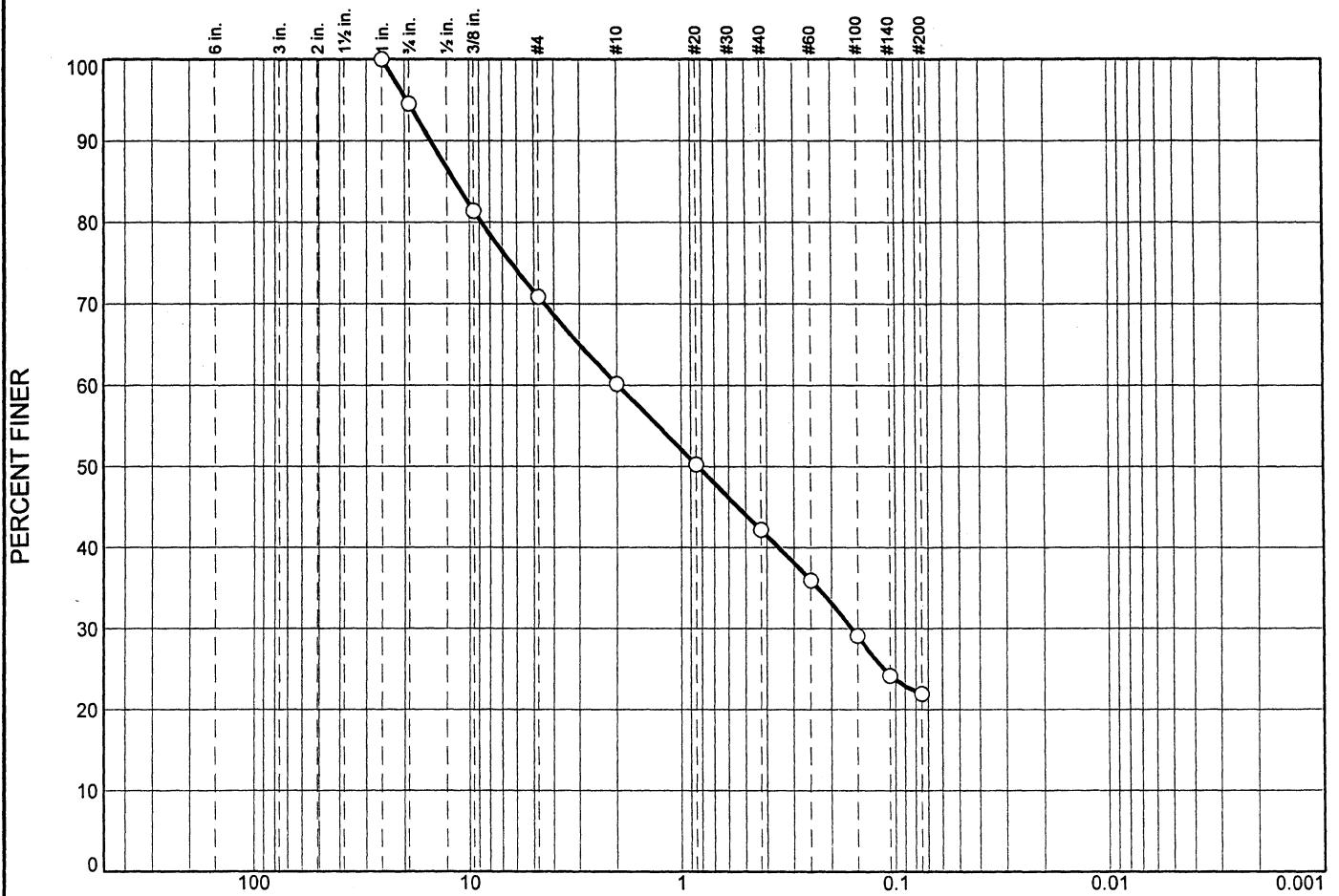
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	6	25	11	19	17	22
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			12.0906	2.4134	1.0653	0.1880	
Material Description							USCS AASHTO
<input type="radio"/> Silty sand with gravel							SM

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0175 Depth: 0.0' Sample Number: 1				Remarks: <input type="radio"/> Moisture Content % 12.3 CP05- EAARS-CB-0271
Date: <input type="radio"/> Nodarse & Associates, Inc. Miami Lakes, FL				Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	5	24	11	18	20	22
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
		11.6299	1.9706	0.8308	0.1595		
Material Description							USCS
○ Silty sand with gravel							SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0175

Depth: 2.0'

Sample Number: 2

Remarks:

○ Moisture Content % 20.4 CP05-EAARS-CB-0271

Date: ○

Nodarse & Associates, Inc.

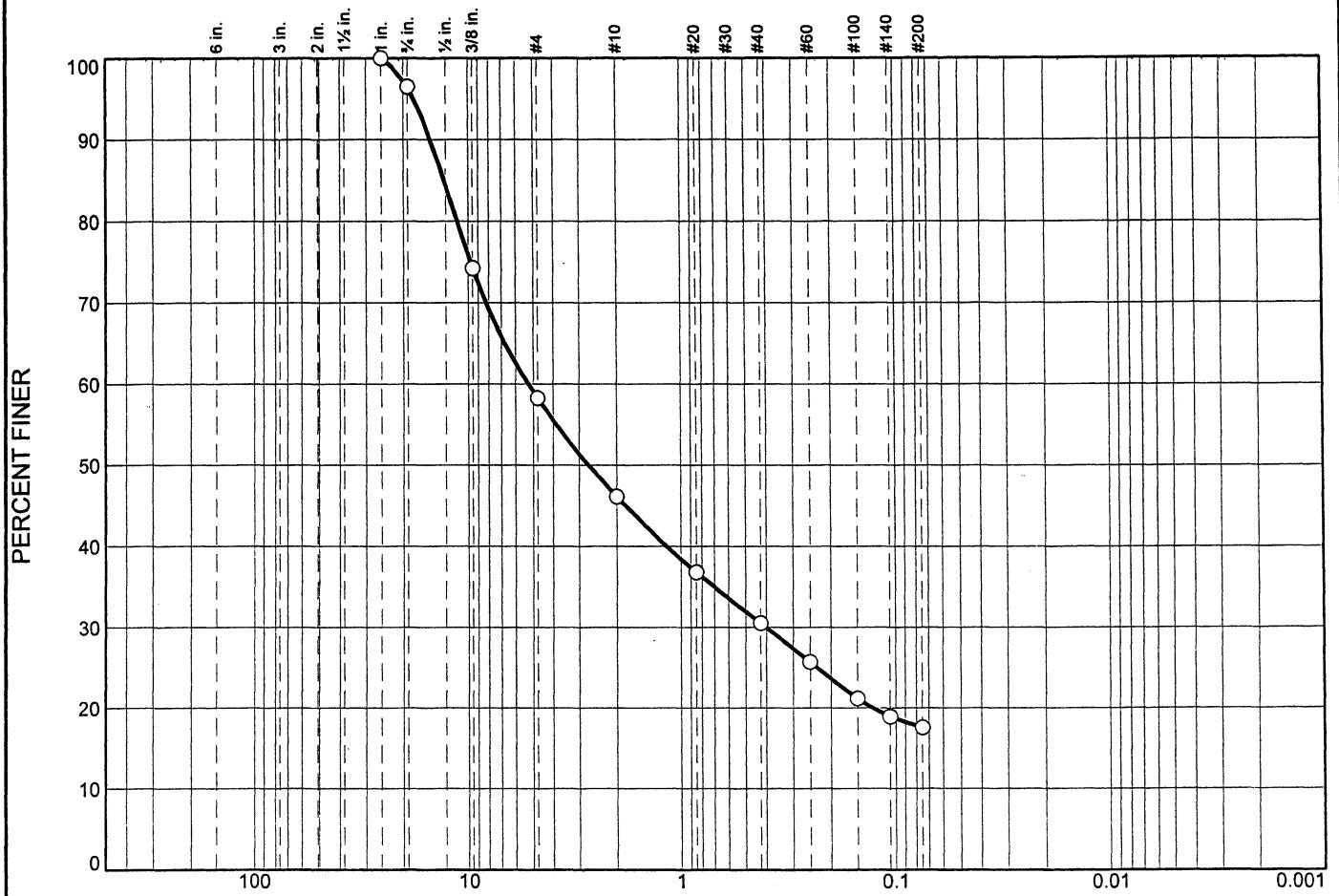
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report

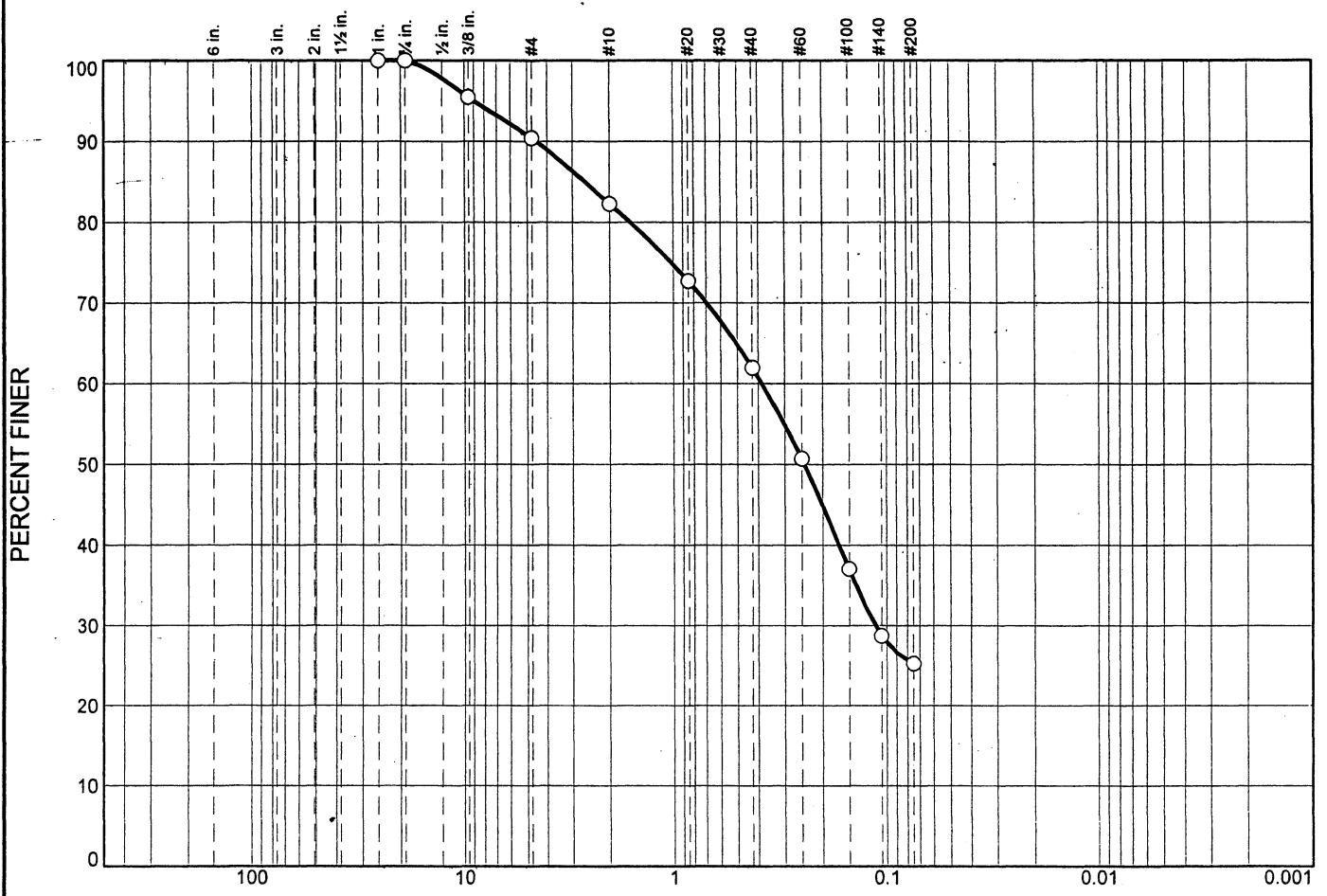


% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	4	38	12	15	13	18
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			12.9138	5.2460	2.7193	0.4005	
Material Description							USCS
<input type="radio"/> Silty sand with gravel							SM
							AASHTO

Project No. 05-05-0013-	Client: Black & Veatch	Remarks: <input type="radio"/> Moisture Content % 24.0 CP05- EAARS-CB-0271
Project: E.A.A (Reservoir)		
<input type="radio"/> Source of Sample: CB-0175	Depth: 10.5'	
Date: <input type="radio"/>	Sample Number: 4	
Nodarse & Associates, Inc.		
Miami Lakes, FL		

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0	0	10	8	20	37	25	
○ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○		2.6123	0.3832	0.2430	0.1135		
Material Description							USCS
○ Silty sand							SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0175 Depth: 18.5' Sample Number: 6

Remarks:

○ Moisture Content % 25.3 CP05-EAARS-CB-0271

Date: ○

Nodarse & Associates, Inc.

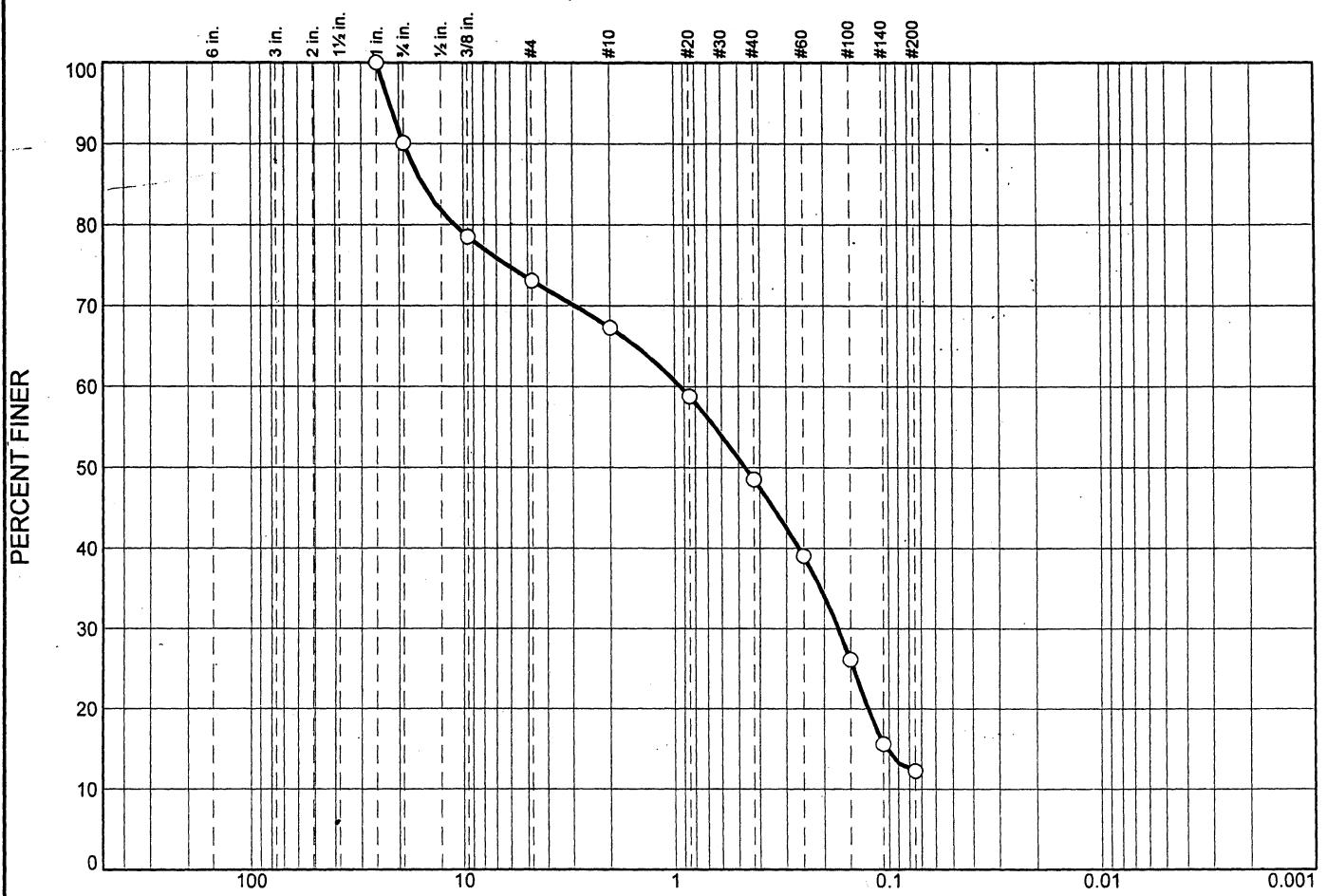
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



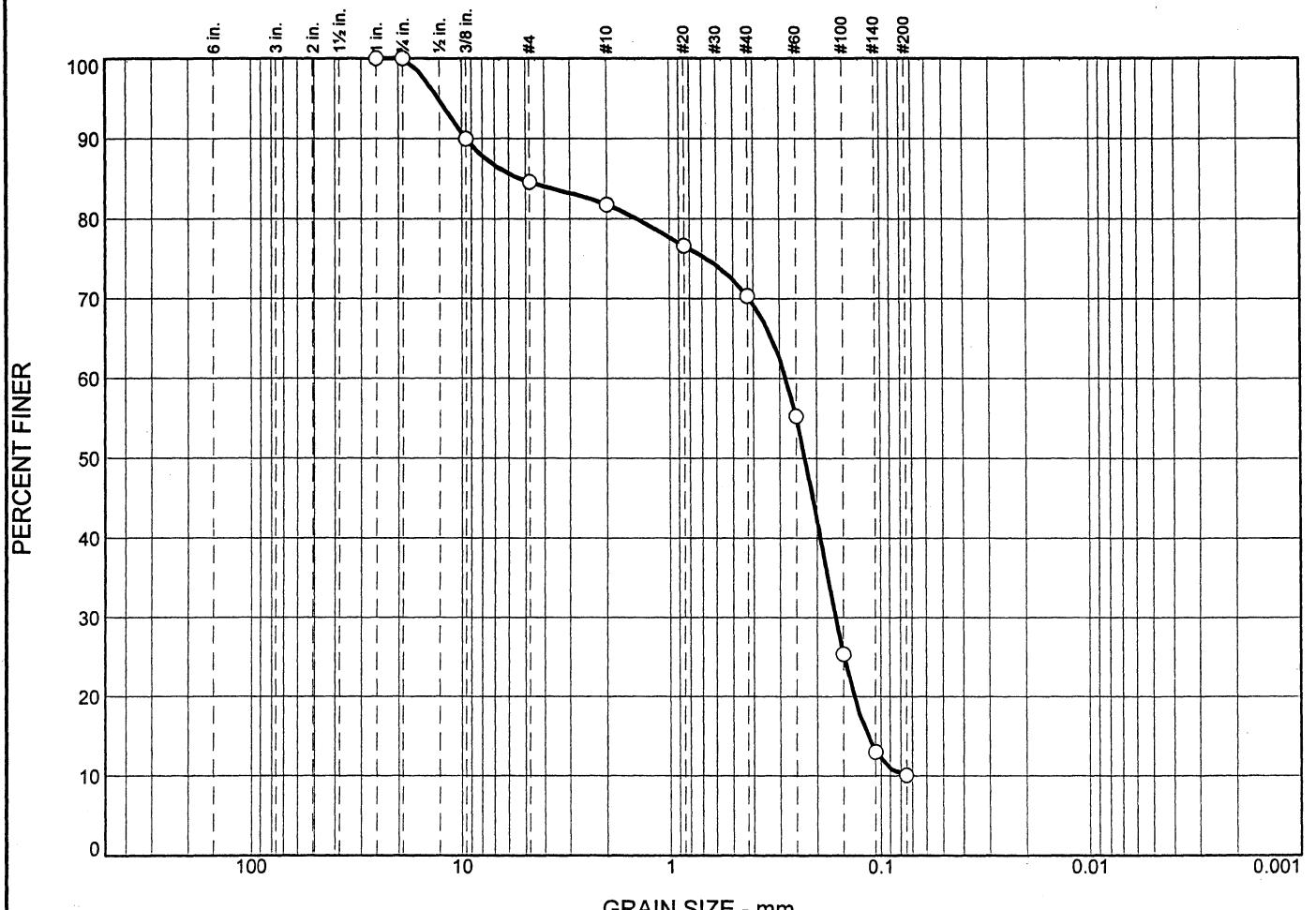
% +3"		% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input checked="" type="radio"/>	0	10	17	6	18	37		12
<input checked="" type="radio"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input checked="" type="radio"/>			15.4527	0.9369	0.4658	0.1706	0.1028	C _c
								C _u
Material Description								USCS AASHTO
<input checked="" type="radio"/> Well graded sand with silt and gravel								SW-SM

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input checked="" type="radio"/> Source of Sample: CB-0175 Depth: 23.5' Sample Number: 7				Remarks: <input checked="" type="radio"/> Moisture Content % 21.5 CP05-EAARS-CB-0271
Date: <input checked="" type="radio"/>				
Nodarse & Associates, Inc. Miami Lakes, FL				Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○	0	0	15	3	12	60	10	
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○			5.2820	0.2788	0.2265	0.1632	0.1154	
Material Description								USCS AASHTO
○	Poorly graded sand with silt and gravel						SP-SM	

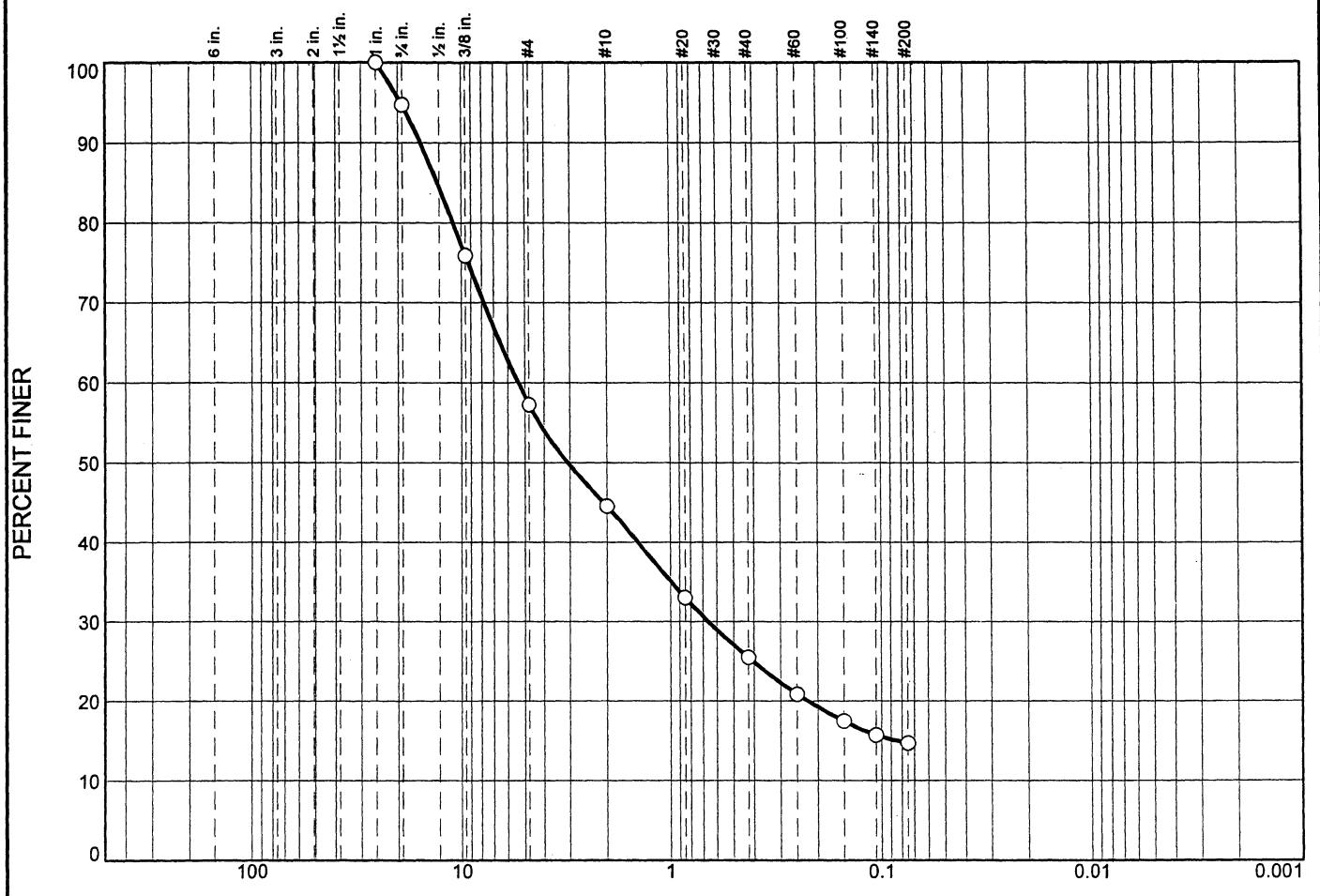
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0175 Depth: 38.5' Sample Number: 10 Date: ○	Remarks: ○ Moisture Content % 24.3 CP05-EAARS-CB-0271 Nodarse & Associates, Inc. Miami Lakes, FL
---------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------

Tested By: Pedro Camaraza

Checked By: Michael Brown

Figure

Particle Size Distribution Report

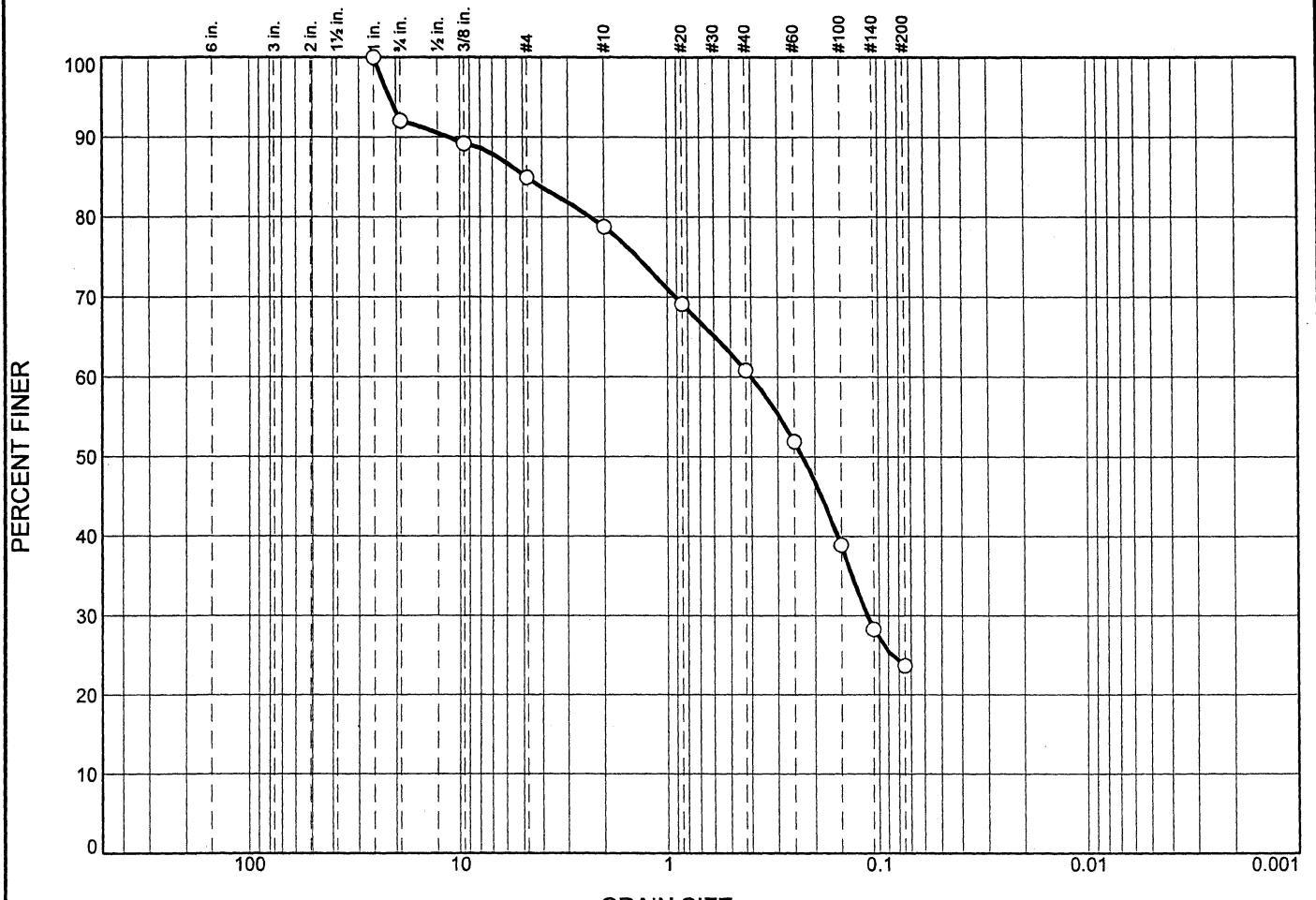


% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0	5	38	12	20	10		15
○ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○		12.9561	5.3701	3.0774	0.6588	0.0847	
Material Description							USCS
○ Silty sand with gravel							SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0176 Depth: 5.1' Sample Number: 2			Remarks: ○ Moisture Content % 19.0 CP05- EAARS-CB-0272
Date: ○ Nodarse & Associates, Inc. Miami Lakes, FL			

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	8	7	6	18	37	24

Material Description	USCS	AASHTO
○ Silty sand with gravel	SM	

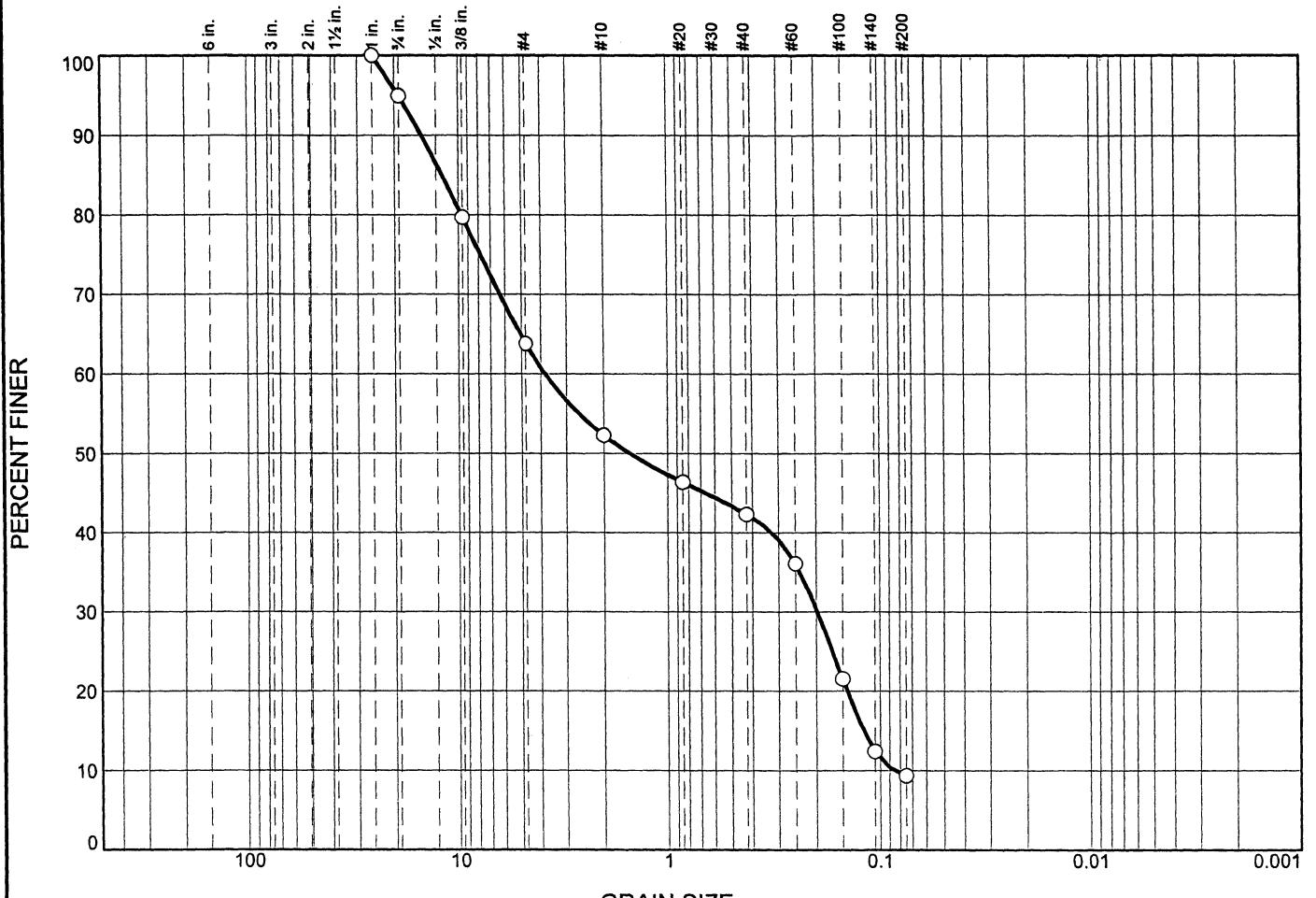
<p>Project No. 05-05-0013- Client: Black & Veatch</p> <p>Project: E.A.A (Reservoir)</p> <p><input type="radio"/> Source of Sample: CB-0176 Depth: 10.0' Sample Number: 4</p>			<p>Remarks:</p> <p><input type="radio"/> Moisture Content % 29.1 CP05-EAARS-CB-0272</p>
<p>Date: <input type="radio"/></p> <p style="text-align: center;">Nodarse & Associates, Inc.</p>			
<p style="text-align: center;">Miami Lakes, FL</p>			
<p style="text-align: right;">Figure</p>			

Tested By: Pedro Camaraza

Checked By: Michael Brown

Figure

Particle Size Distribution Report



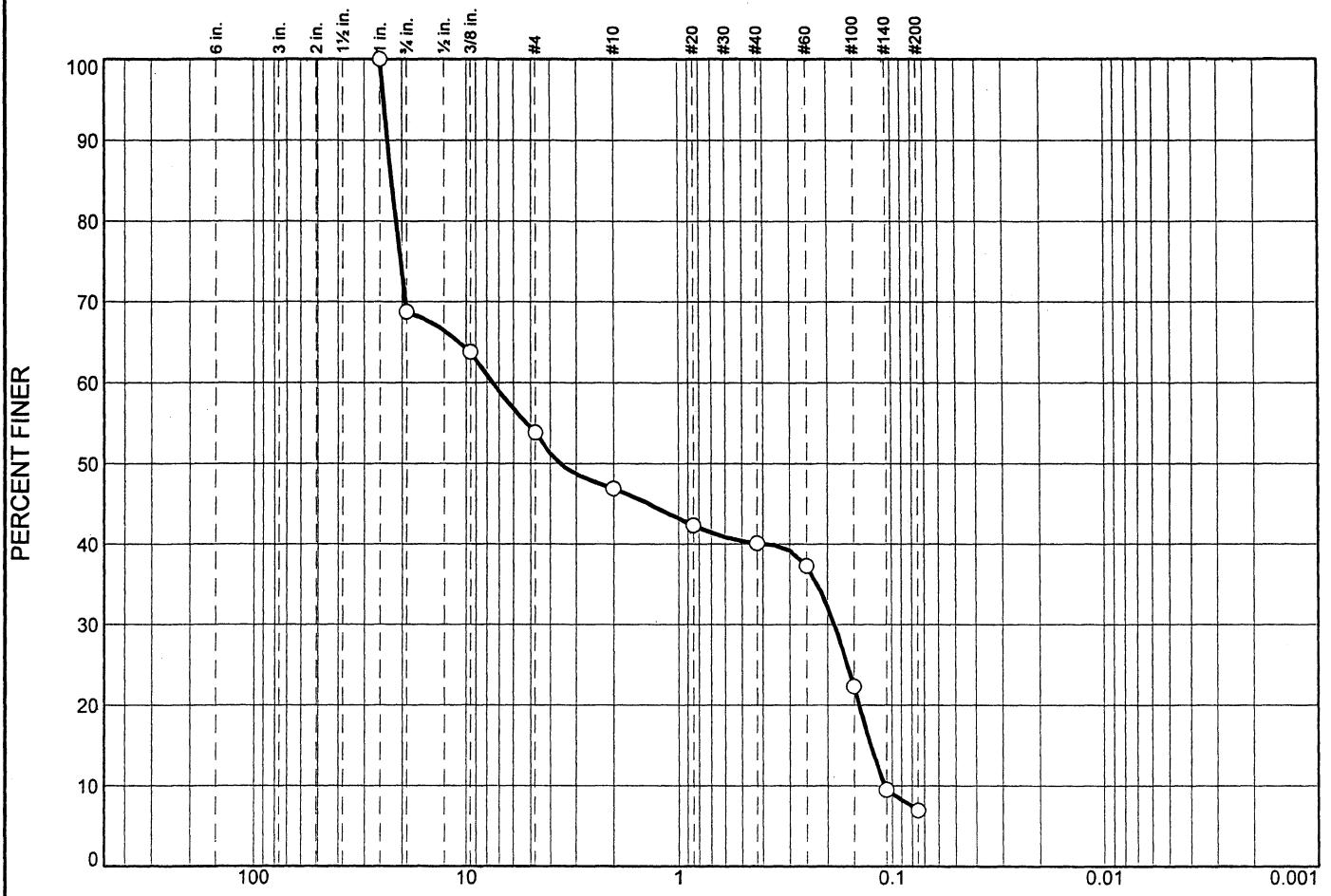
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0	5	31	12	10	33	9	
<hr/>							
✗ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○ 11.9080		3.8204	1.5043	0.1970	0.1197	0.0851	0.12
							44.89
<hr/>							
Material Description							USCS
○ Well graded sand with silt and gravel							SW-SM
<hr/>							AASHTO

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0176 Depth: 18.5' Sample Number: 6	Remarks: ○ Moisture Content % 10.6 CP05-EAARS-CB-0272
Date: ○	
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"		% Gravel			% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0	31	15	7	7	33		7		
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>			22.4677	7.5320	3.5705	0.1851	0.1256	0.1081	0.04	69.67
Material Description									USCS	AASHTO
<input type="radio"/> Well graded sand with silt and gravel									SW-SM	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input type="radio"/> Moisture Content % 14.5
<input type="radio"/> Source of Sample: CB-0176 Depth: 23.5'	CP05-EAARS-CB-0272
Date: <input type="radio"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

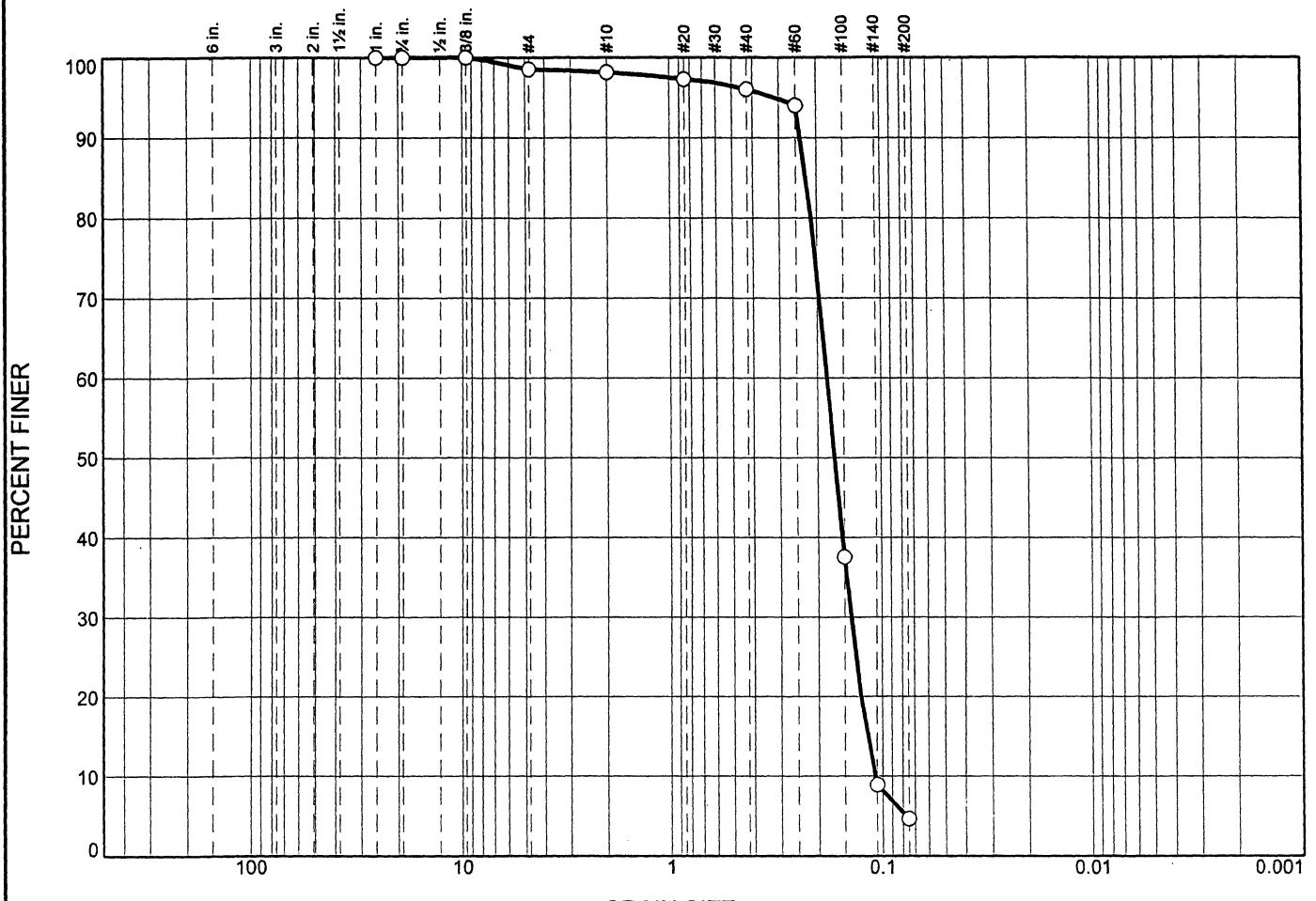
Remarks:
 Moisture Content % 14.5
 CP05-EAARS-CB-0272

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



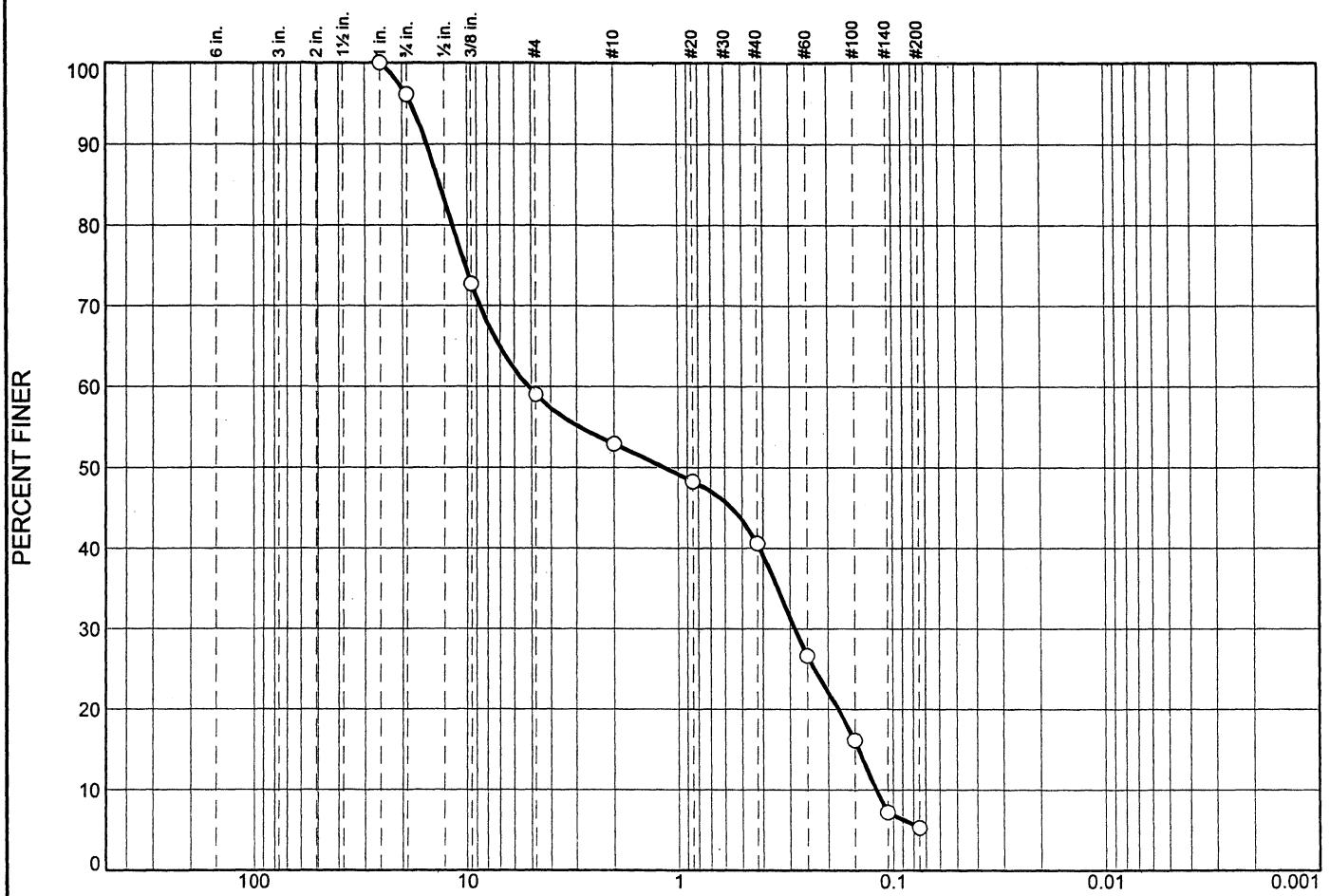
% +3"	% Gravel			% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0	0	1	1	2	91	5		
<hr/>									
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
<input type="radio"/>			0.2233	0.1798	0.1661	0.1400	0.1180	0.1085	1.01
<hr/>									
Material Description								USCS	AASHTO
<input type="radio"/> Poorly graded sand								SP	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0176 Depth: 28.5' Sample Number: 8				Remarks: <input type="radio"/> Moisture Content % 29.2 CP05-EAARS-CB-0272
Date: <input type="radio"/>				
Nodarse & Associates, Inc.				Figure
Miami Lakes, FL				

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



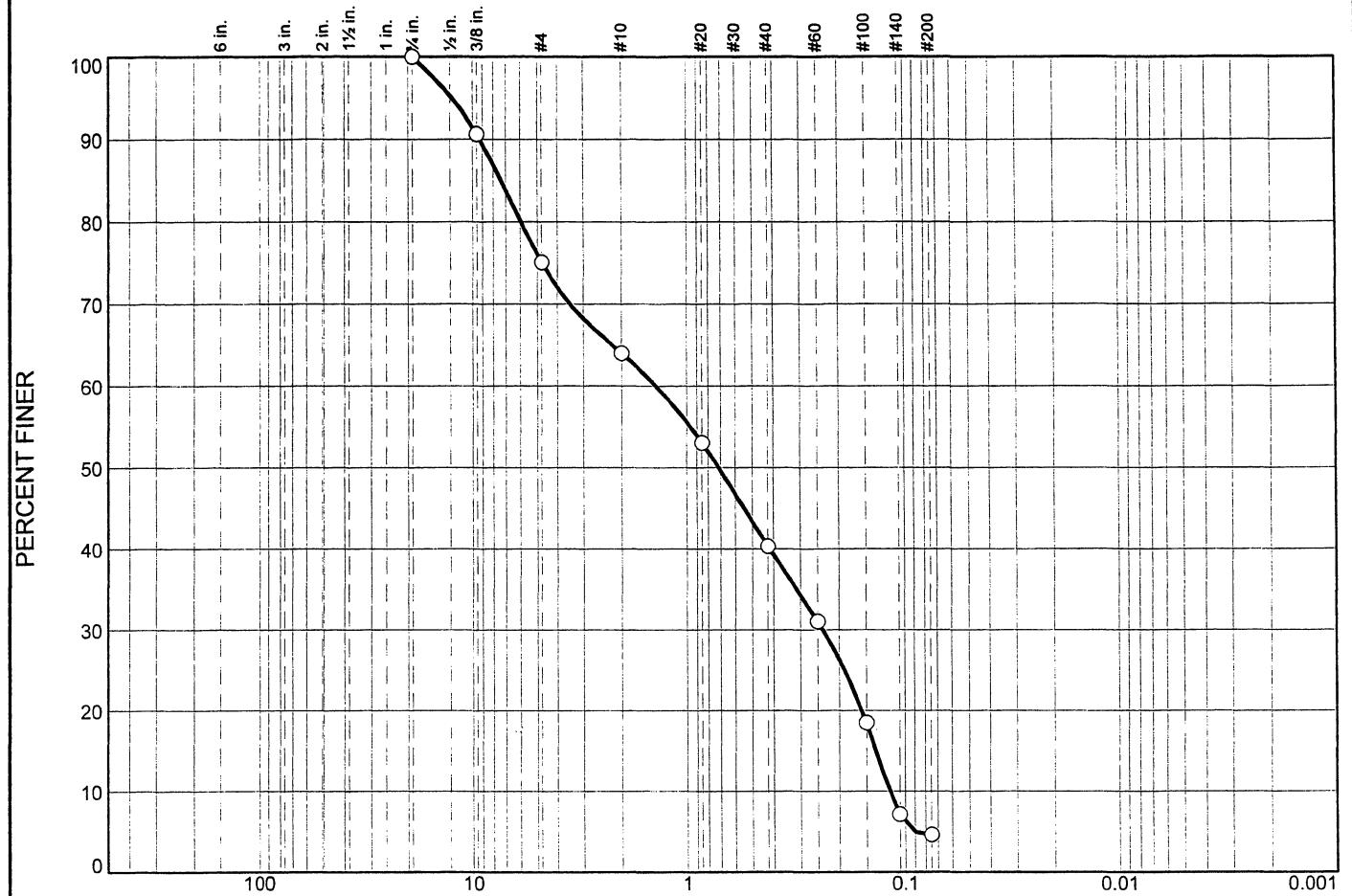
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O 0	4	37	6	12	36	5	
X LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
O		13.3245	5.1638	1.1584	0.2854	0.1436	0.1202
Material Description							USCS AASHTO
O Well graded sand with silt and gravel							SW-SM

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) O Source of Sample: CB-0176 Depth: 33.5' Sample Number: 9 Date: O	Remarks: O Moisture Content % 15.6 CP05- EAARS-CB-0272
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Project No. 05-05-0013- **Client:** Black & Veatch

Project: E.A.A (Reservoir)W/O#6

○ Source of Sample: CB176

Depth: 58.5'-60.0

Sample Number: CB176

Remarks:

○ Moisture Content % 21.4 CP05-
EAARS-CB-0272

Nodarse & Associates, Inc.

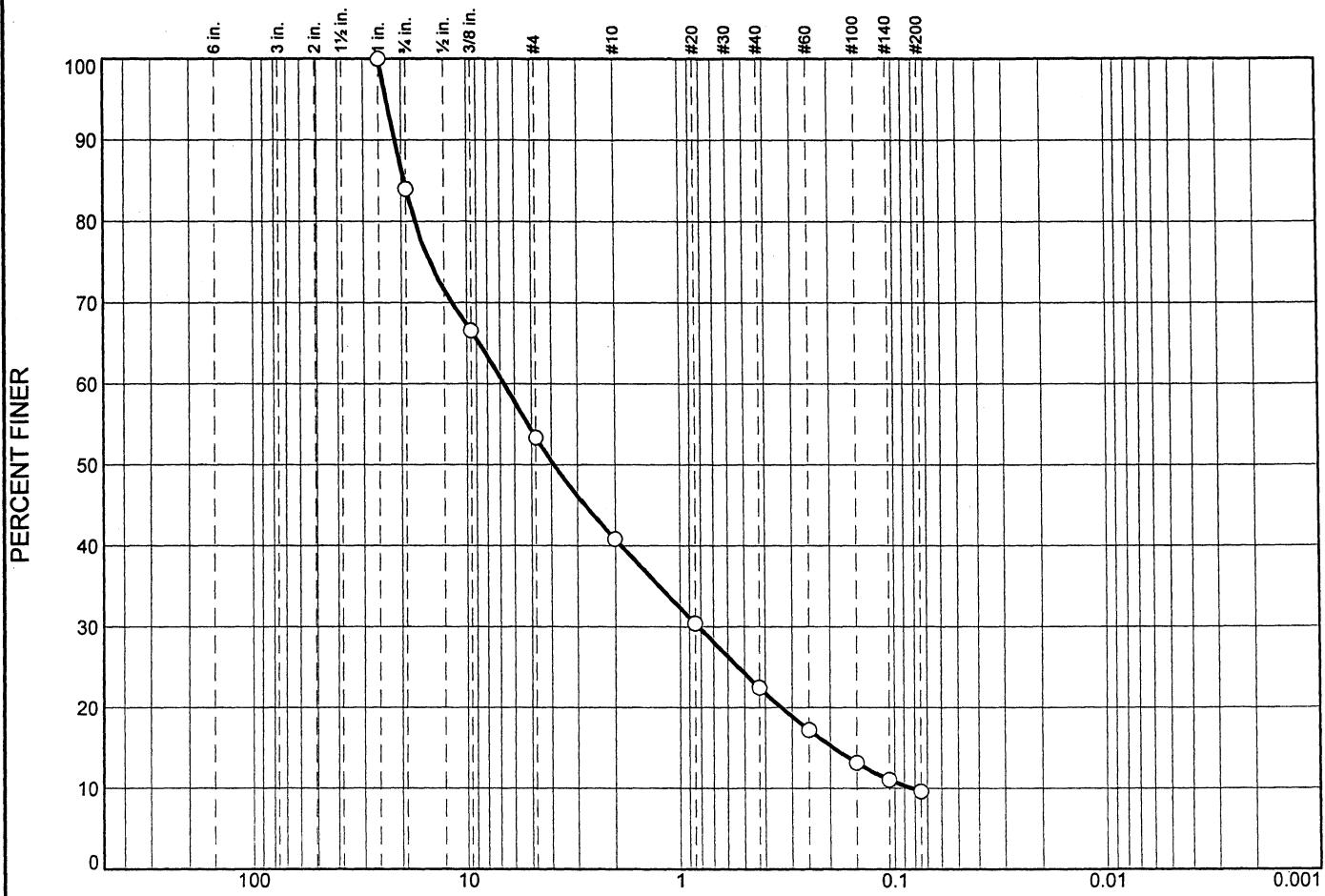
Miami Lakes, FL

Figure

Tested By: M Mazo

Checked By: M Brown

Particle Size Distribution Report



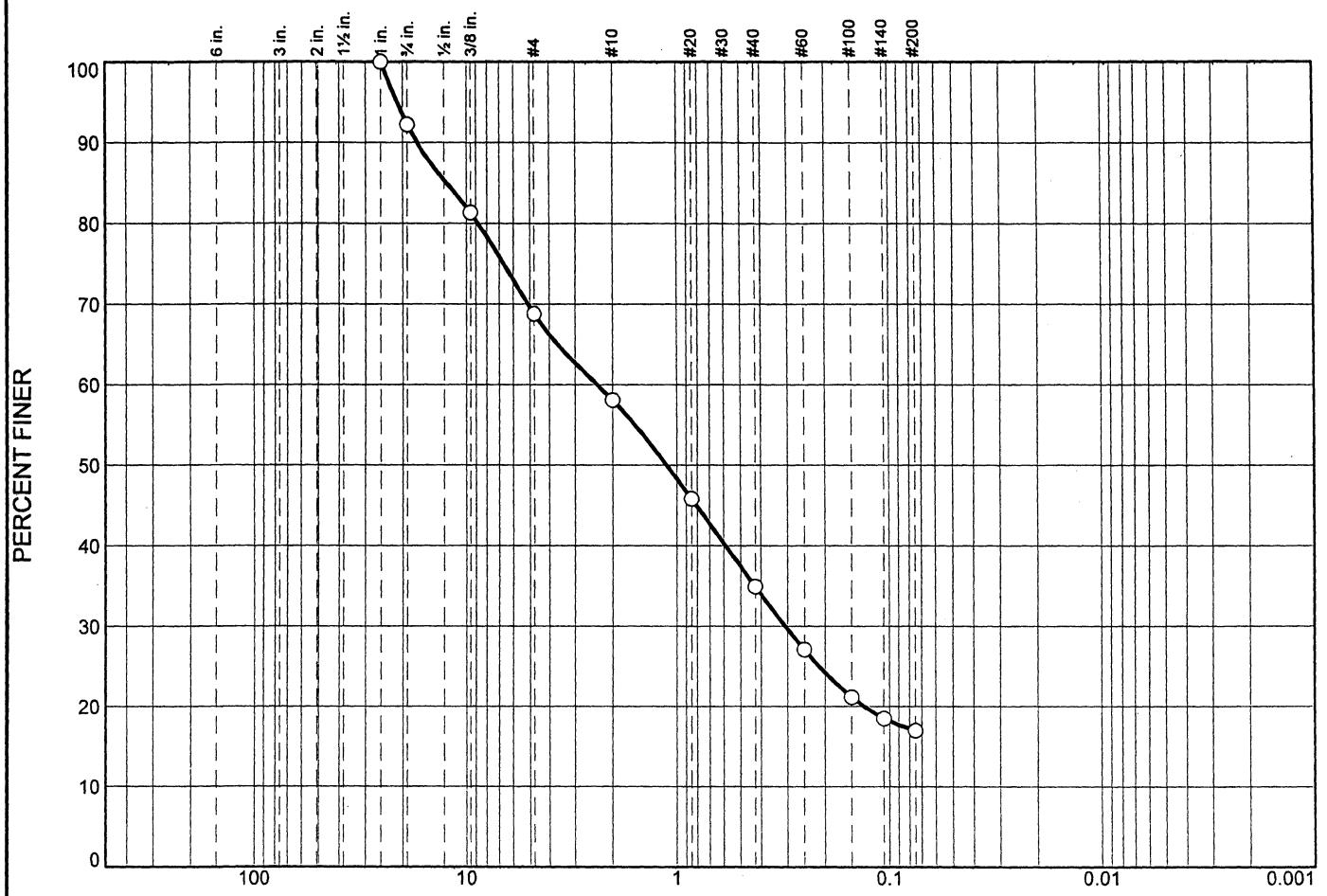
% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○ 0	16	31	12	19	12		10	
○ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
○ 19.4681		6.7137	3.8994	0.8206	0.1921	0.0831	1.21	80.82
Material Description							USCS	AASHTO
○ Well graded sand with silt and gravel							SW-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0179 Depth: 5.5' Sample Number: 5 Date: ○	Remarks: ○ Moisture Content % 24.3 CP05- EAARS-CB-0275
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0	8	23	11	23	18			17
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="radio"/>			12.3808	2.3590	1.1147	0.3071			
Material Description								USCS	AASHTO
<input type="radio"/>	Silty sand with gravel							SM	

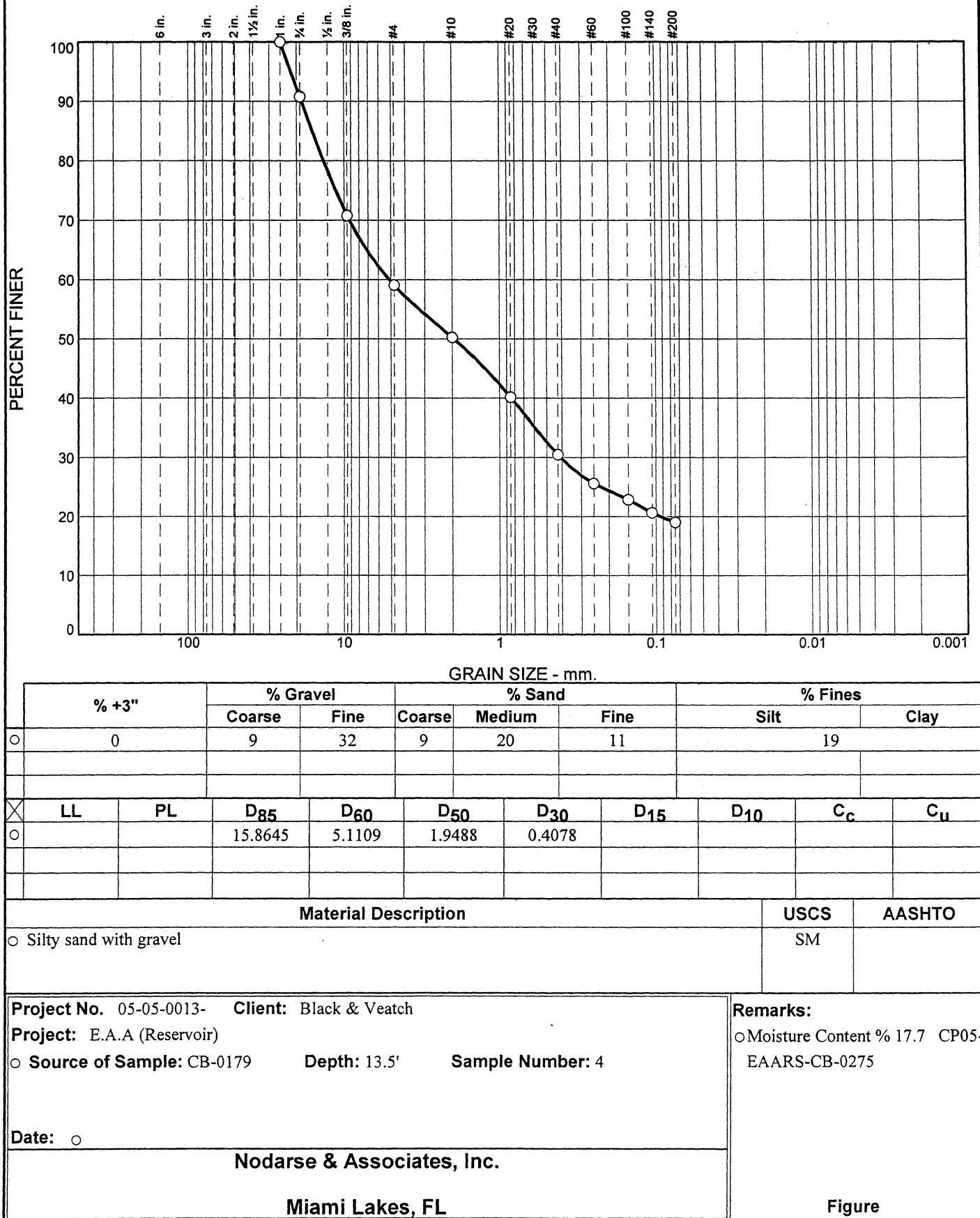
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input type="radio"/> Moisture Content % 25.0 CP05-EAARS-CB-0275
<input type="radio"/> Source of Sample: CB-0179 Depth: 7.5' Sample Number: 3	
Date: <input type="radio"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

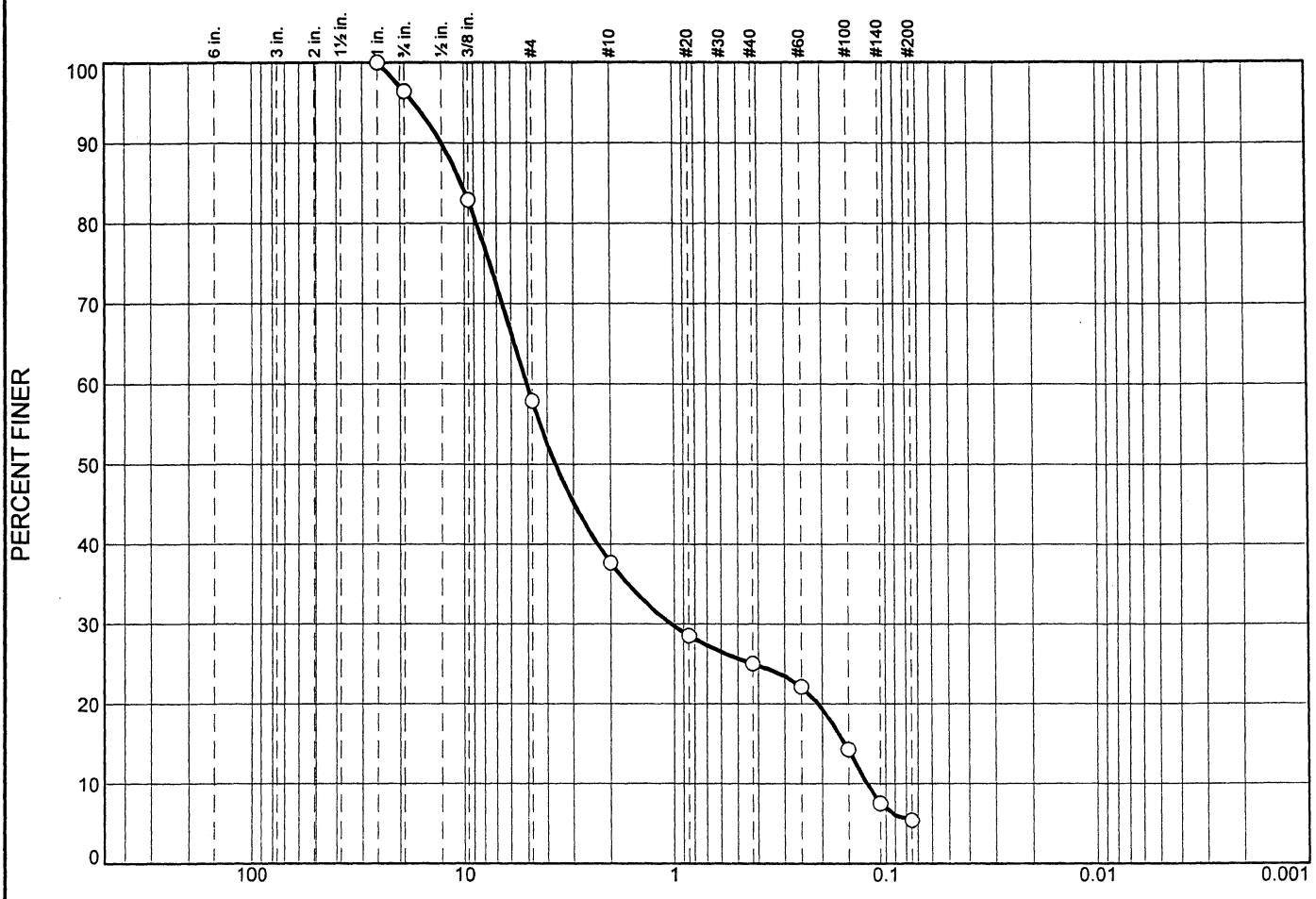
Particle Size Distribution Report



Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○	0	4	38	20	13	20	5	
○								
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○			10.2470	5.0457	3.6562	1.0304	0.1554	0.1226
○								
Material Description								USCS AASHTO
○ Well graded sand with gravel							SW	
○								

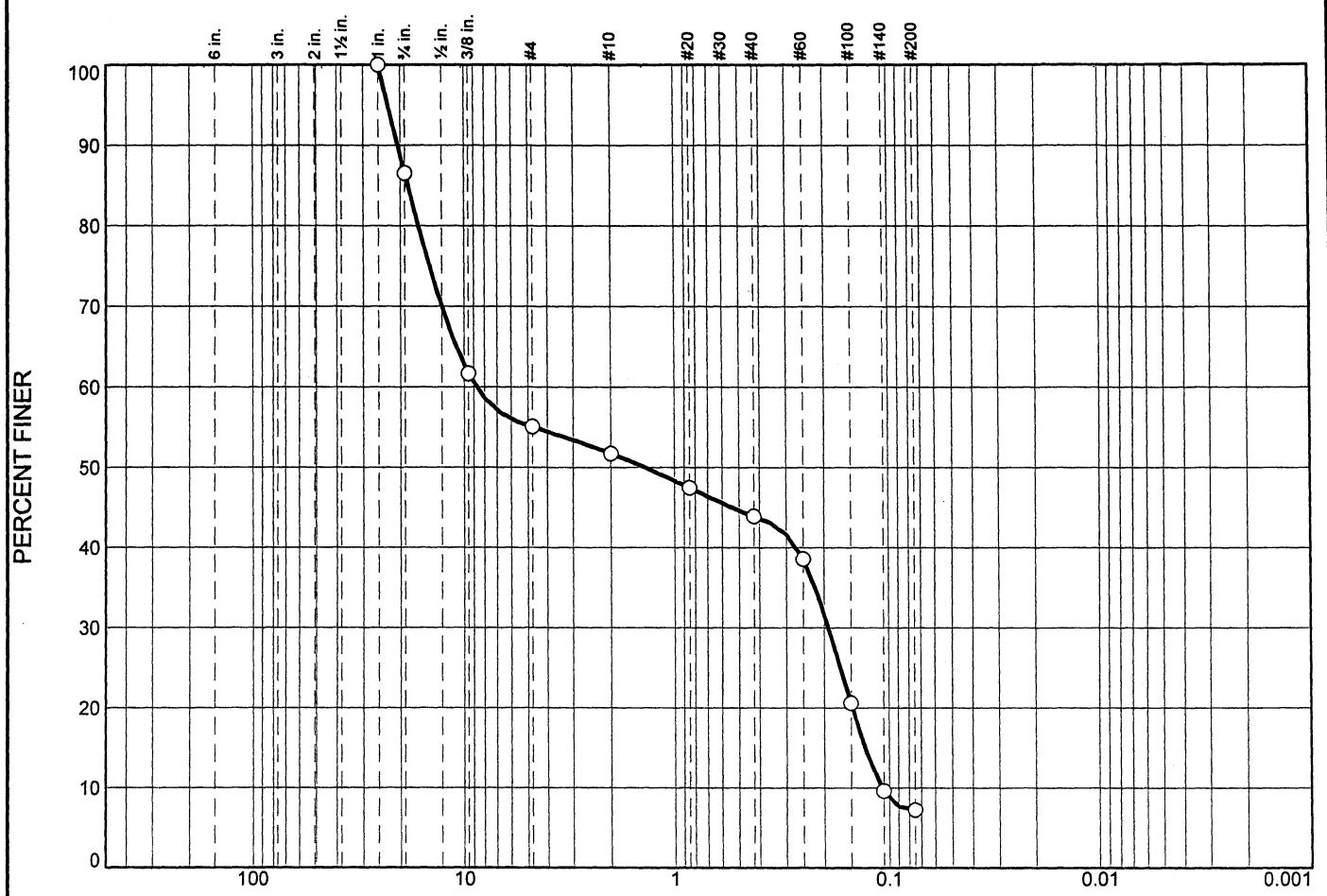
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	○ Moisture Content % 14.2 CP05-
○ Source of Sample: CB-0179 Depth: 23.5' Sample Number: 6	EAARS-CB-0275
Date: ○	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0179

Depth: 28.5'

Sample Number: 7

Remarks:

○ Moisture Content % 15.1 CP05-
EAARS-CB-0275

Date: 0

Nodarse & Associates, Inc.

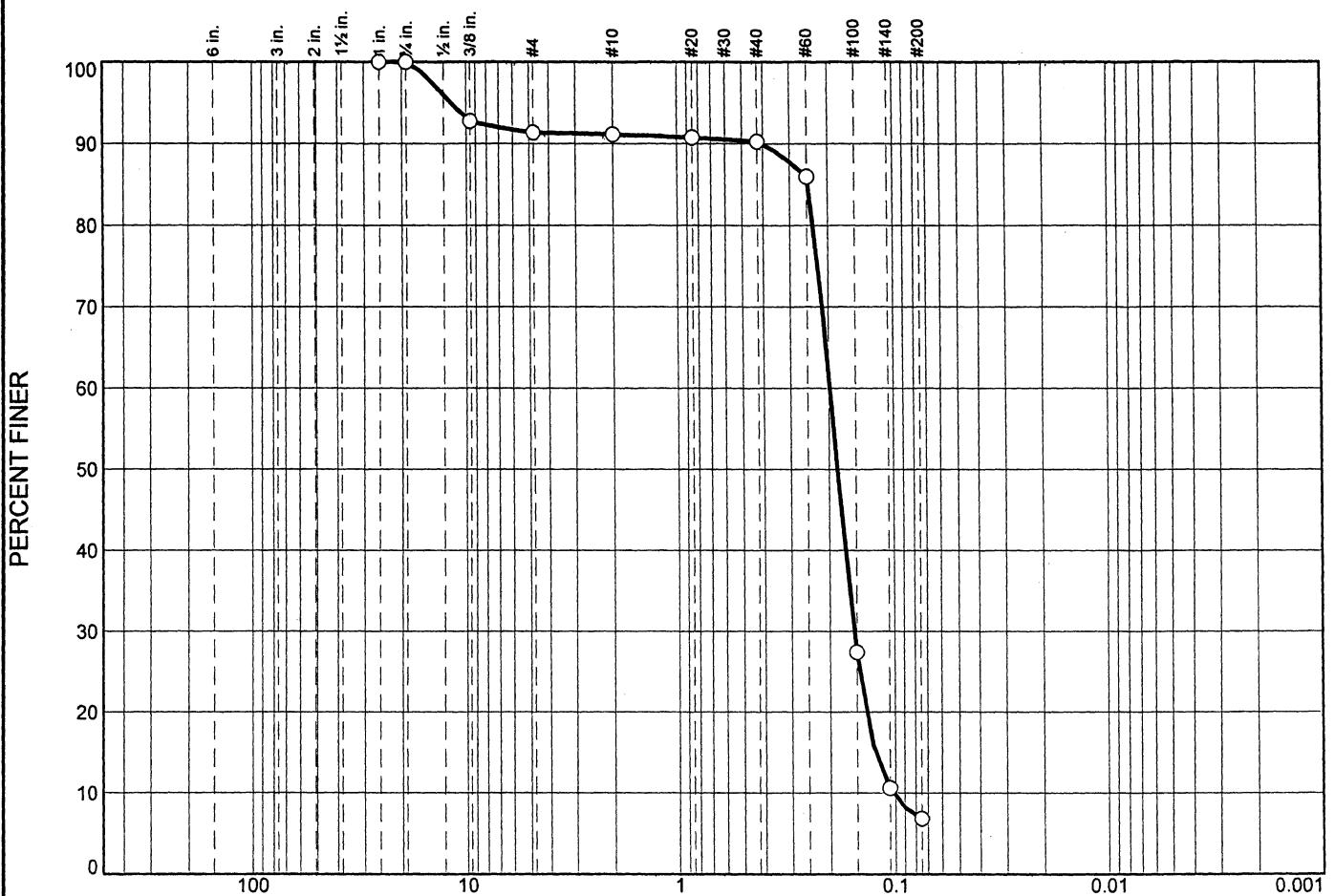
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○	0	0	9	0	1	83	7	
○								
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○			0.2469	0.1969	0.1824	0.1541	0.1236	0.1027
○								
Material Description								USCS AASHTO
○	Poorly graded sand with silt							SP-SM

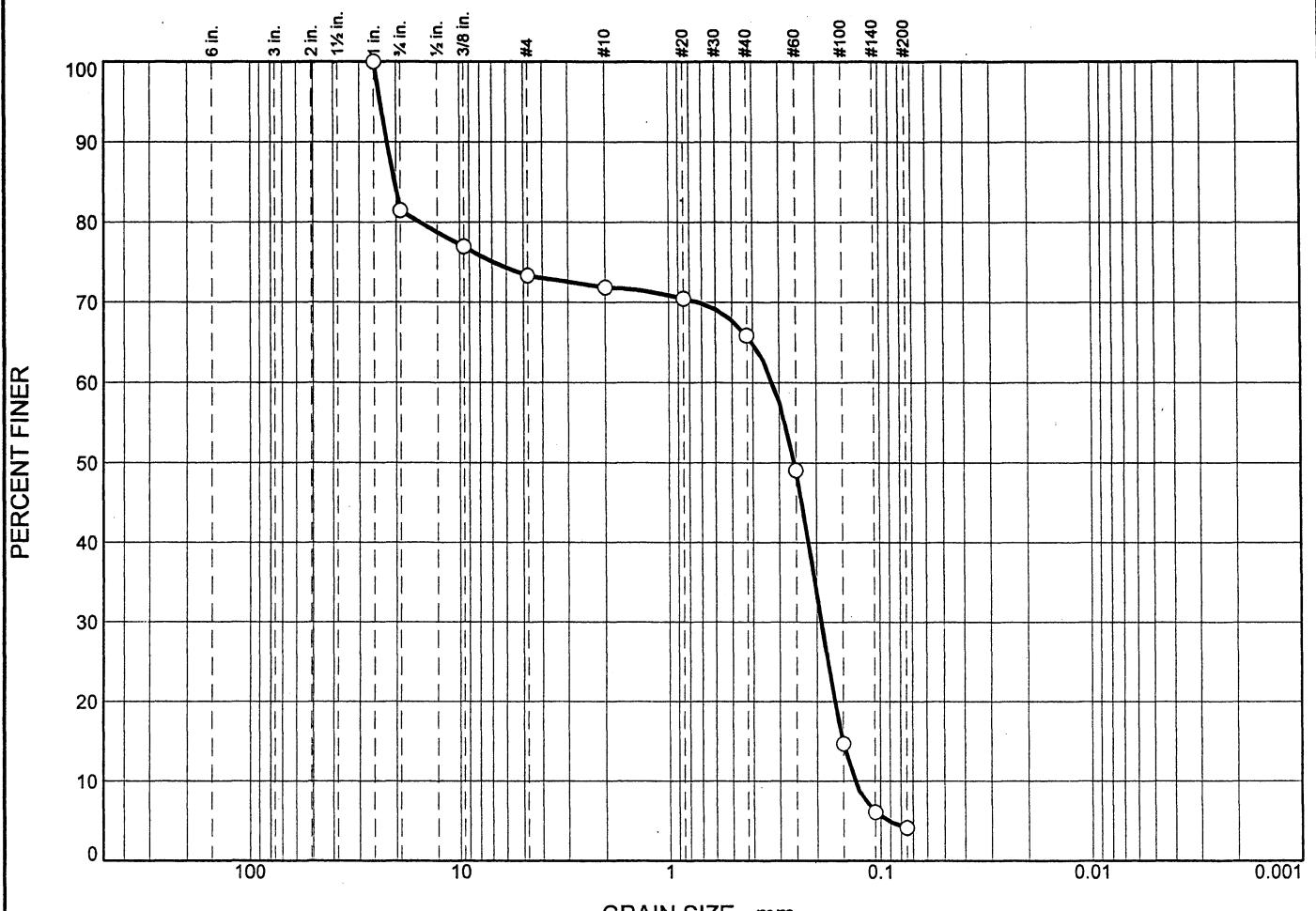
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	○ Moisture Content % 25.2 CP05-
○ Source of Sample: CB-0179 Depth: 33.5' Sample Number: 8	EAARS-CB-0275
Date: ○	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



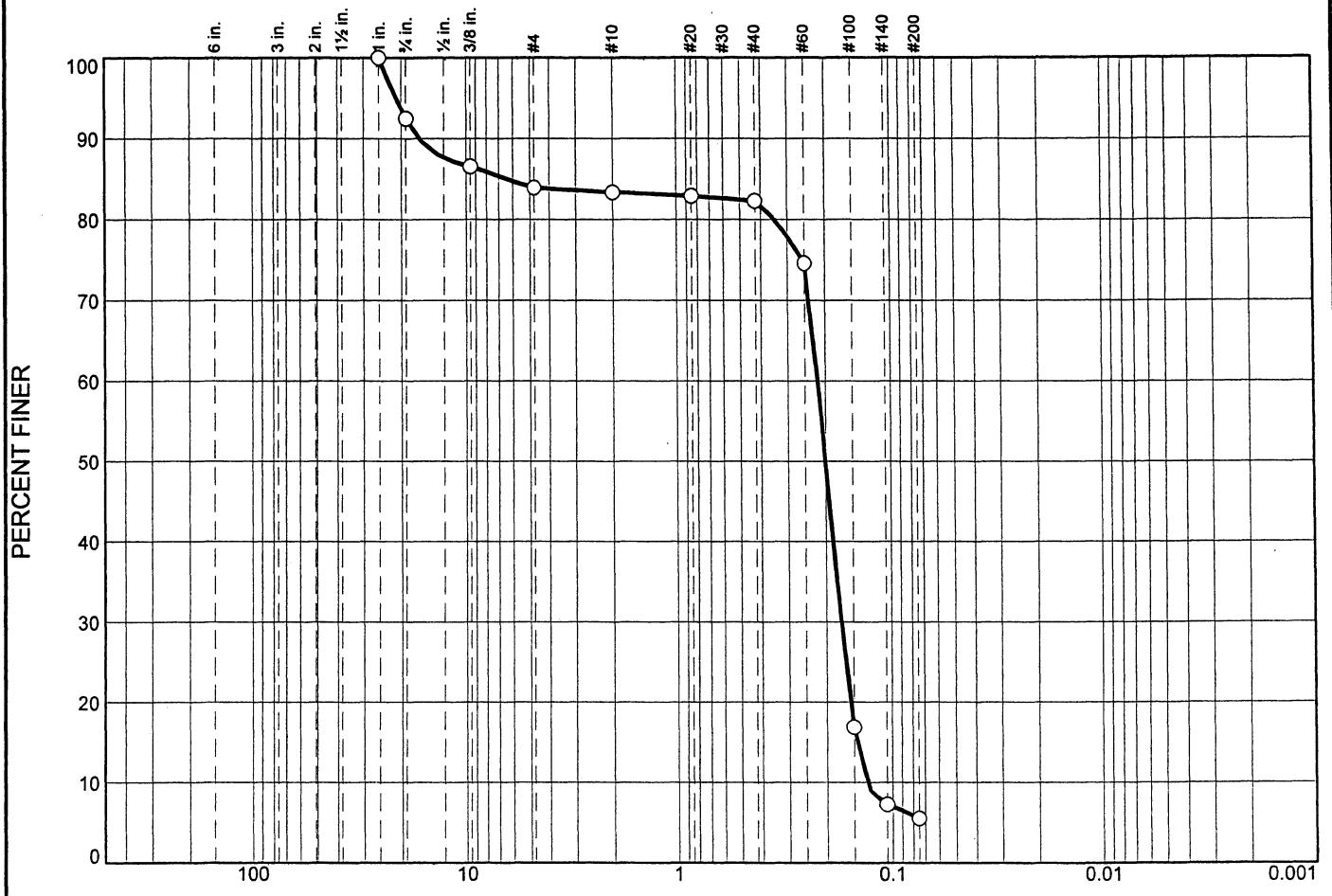
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	19	8	1	6	62	4
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			20.3903	0.3211	0.2542	0.1906	0.1509
						0.1325	0.85
							2.42
Material Description							USCS
○	Poorly graded sand with gravel						SP
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0179 Depth: 38.5' Sample Number: 9 Date: ○				Remarks: ○ Moisture Content % 20.9 CP05- EAARS-CB-0275
Nodarse & Associates, Inc. Miami Lakes, FL				Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



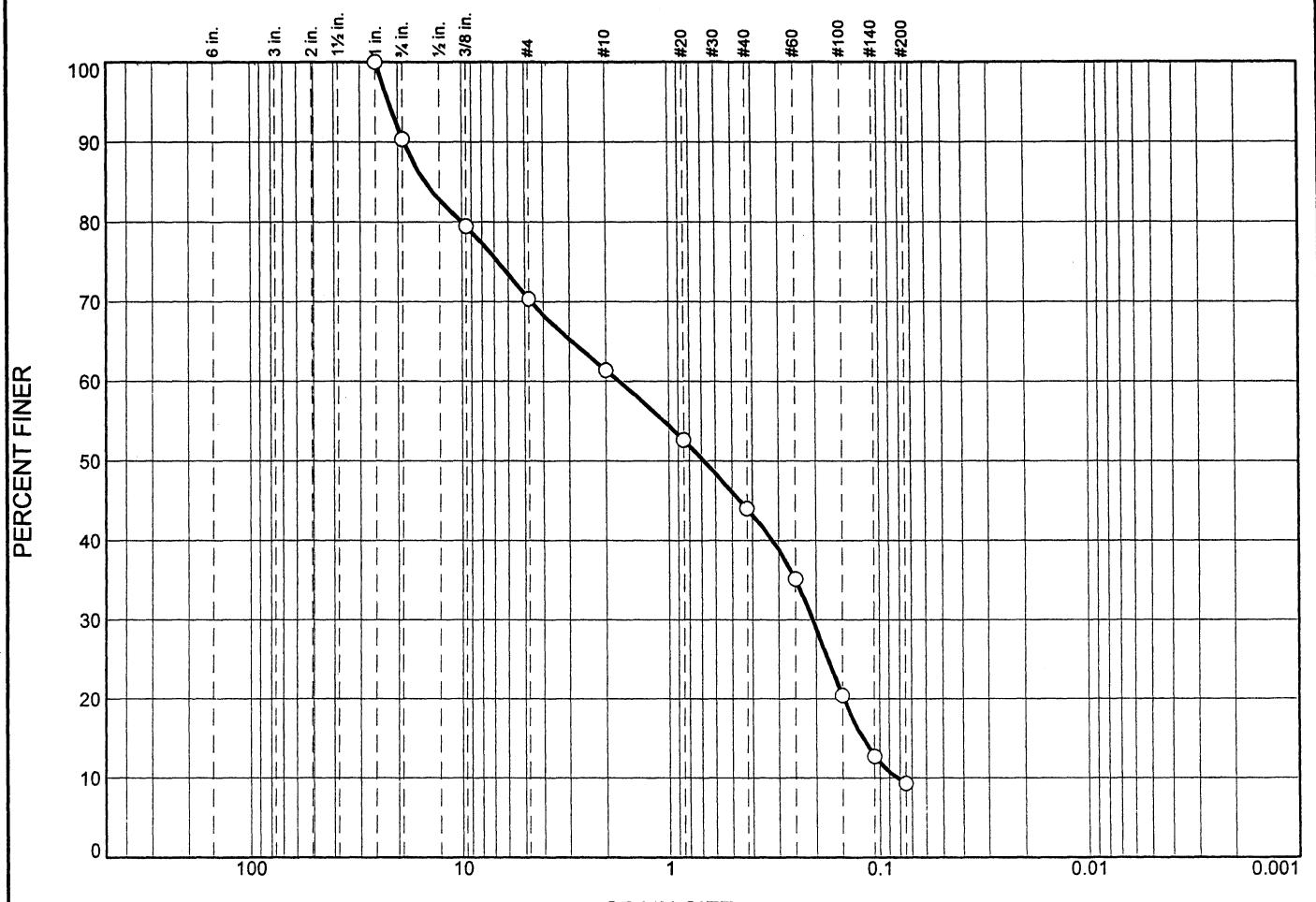
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	8	8	1	1	76	6
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			6.4523	0.2171	0.2006	0.1713	0.1460
Material Description							USCS
<input type="radio"/> Poorly graded sand with silt and gravel							SP-SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input type="radio"/> Moisture Content % 20.7 CP05-
<input type="radio"/> Source of Sample: CB-0179 Depth: 48.5' Sample Number: 11	EAARS-CB-0275
Date: <input type="radio"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	10	20	9	17	35	9

Material Description

USCS | AASHTO

- Well graded sand with silt and gravel

SW-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0179

Depth: 58.5'

Sample Number: 13

Remarks:

○ Moisture Content % 22.7 CP05-
EAARS-CB-0275

Date: 8

Nodarse & Associates, Inc.

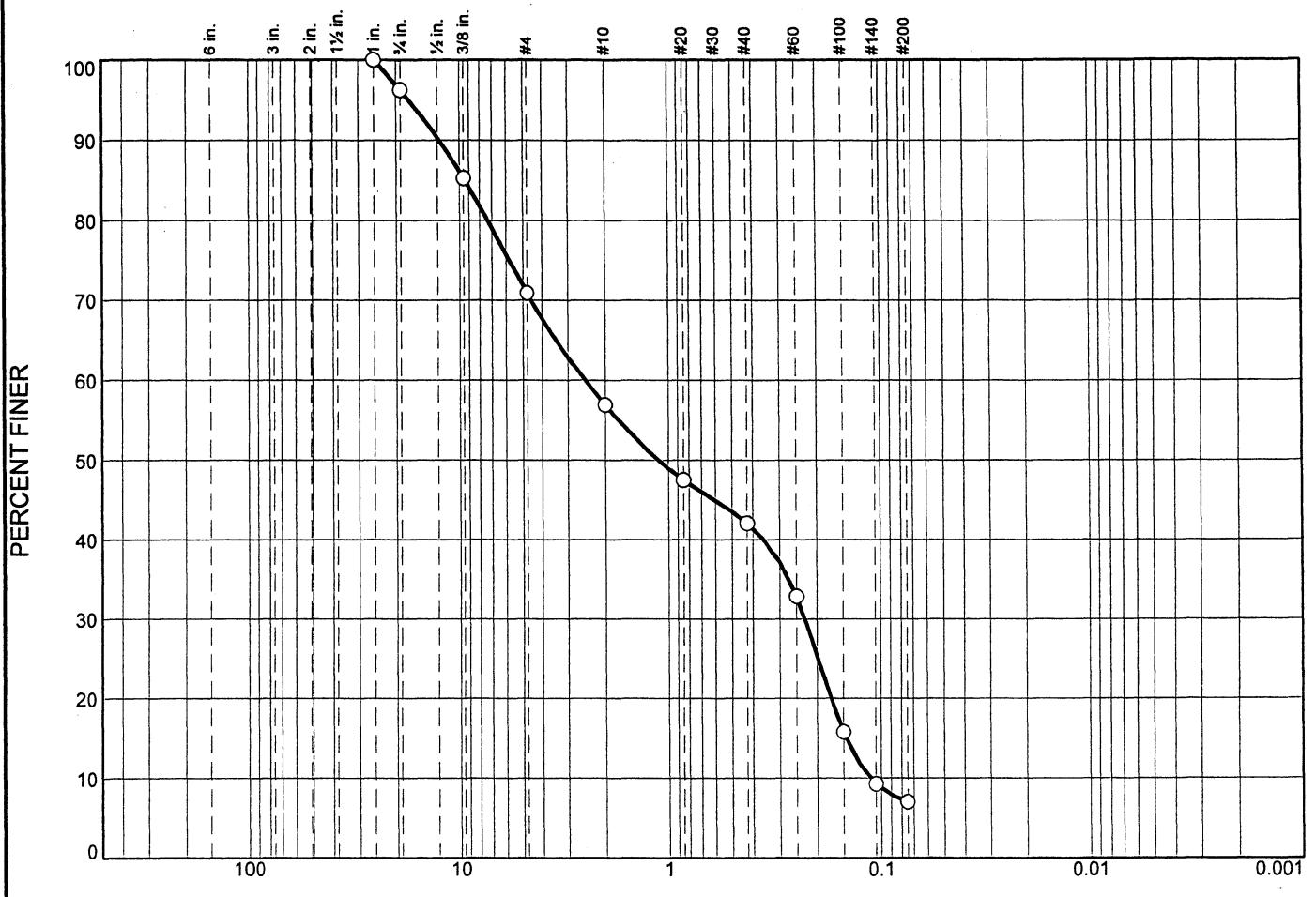
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



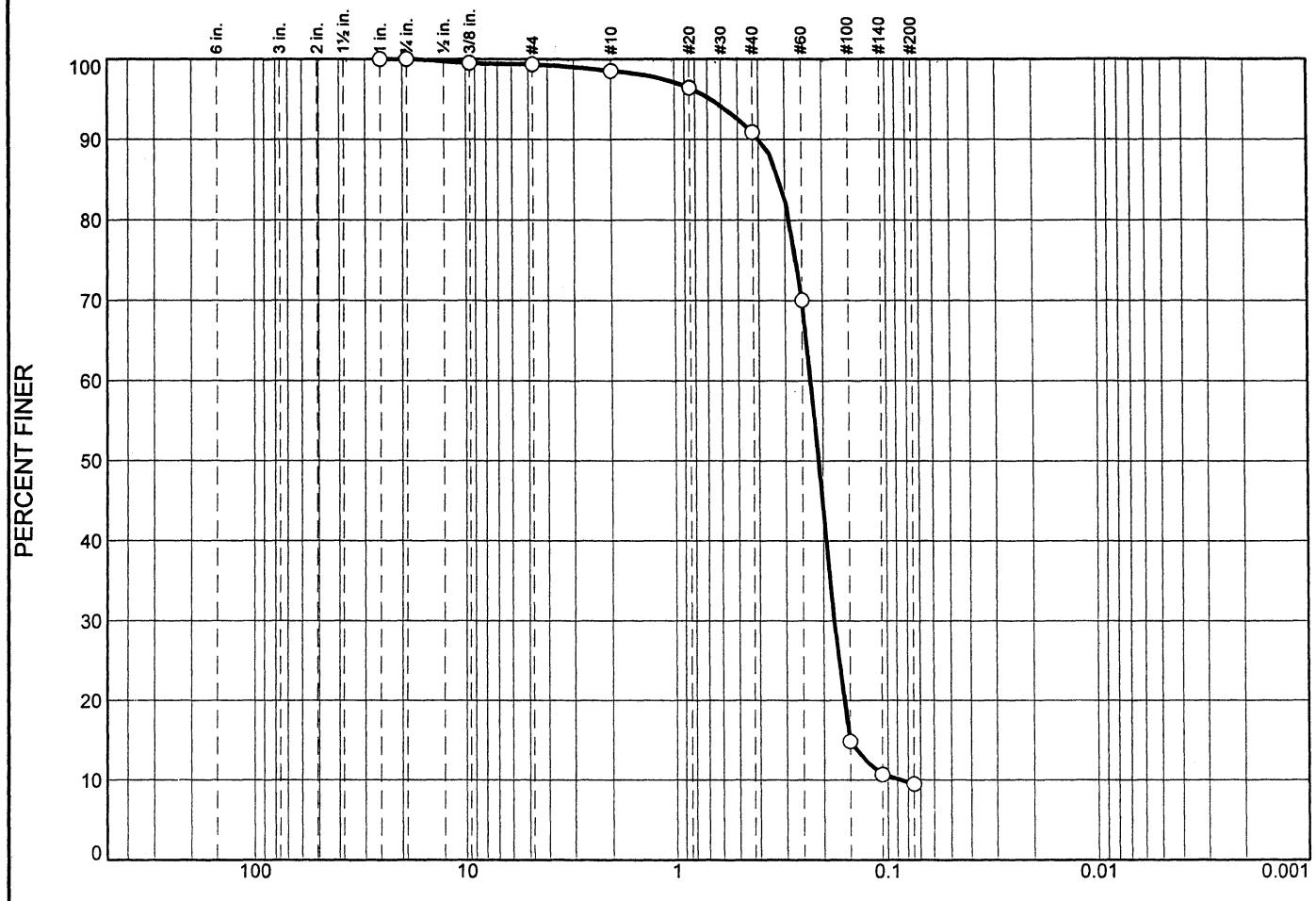
% +3"		% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	4	25	14	15	35		7
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input type="radio"/>			9.3797	2.4919	1.1159	0.2280	0.1457	0.1125
Material Description								USCS AASHTO
<input type="radio"/>	Well graded sand with silt and gravel							SW-SM

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0179 Depth: 63.5' Sample Number: 14 Date: <input type="radio"/>	Remarks: <input type="radio"/> Moisture Content % 28.1 CP05- EAARS-CB-0275
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	1	0	8	81	10

Material Description

USCS | AASHTO

Poorly graded sand with silt

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0179

Depth: 73.5'

Sample Number: 16

Remarks:

○ Moisture Content % 22.3 CP05-
EAARS-CB-0275

Date: 8

Nodarse & Associates, Inc.

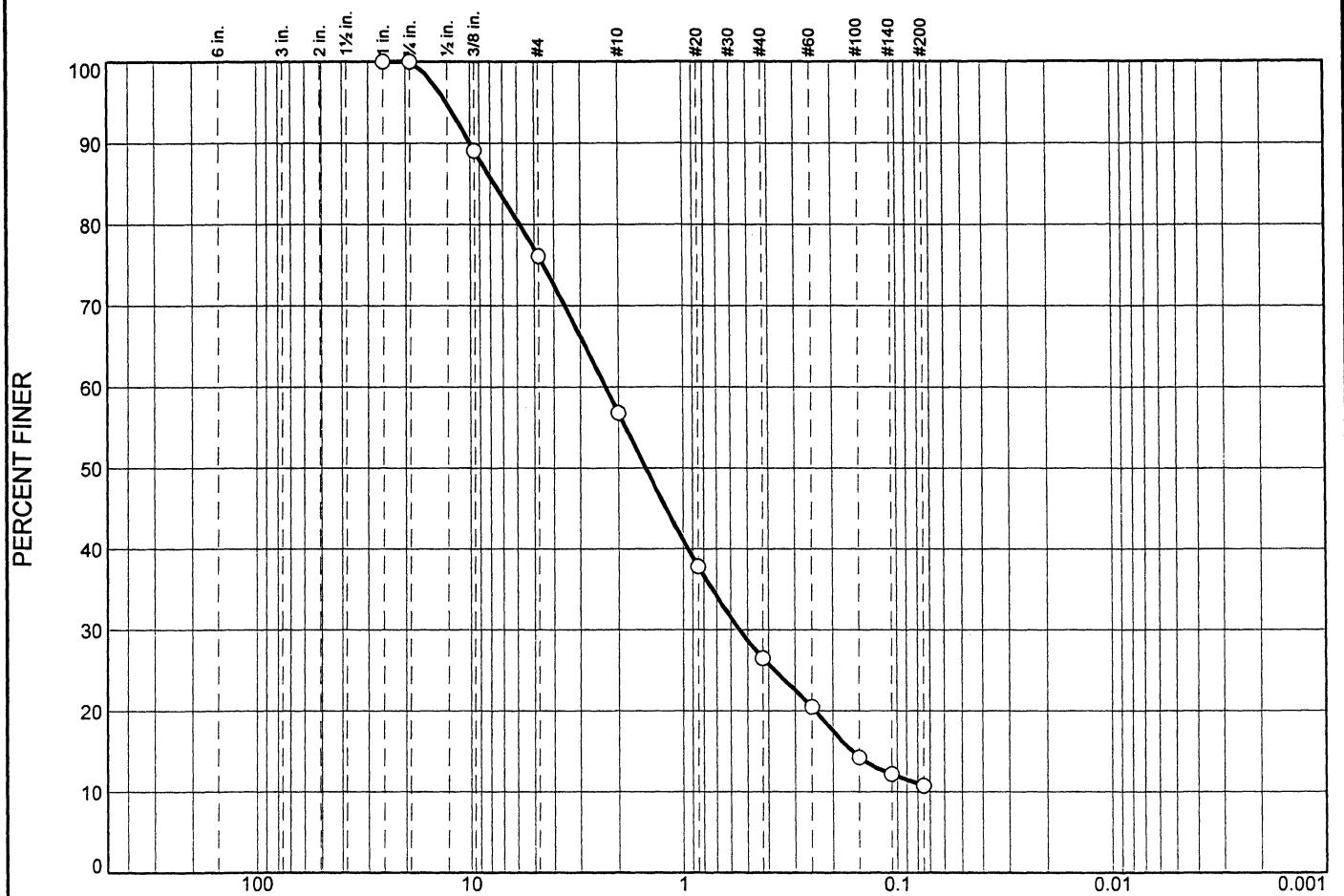
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	0	24	19	30	16	11
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			7.6741	2.2908	1.4926	0.5453	0.1619
Material Description							USCS
<input type="radio"/> Well graded sand with silt and gravel							SW-SM
							AASHTO

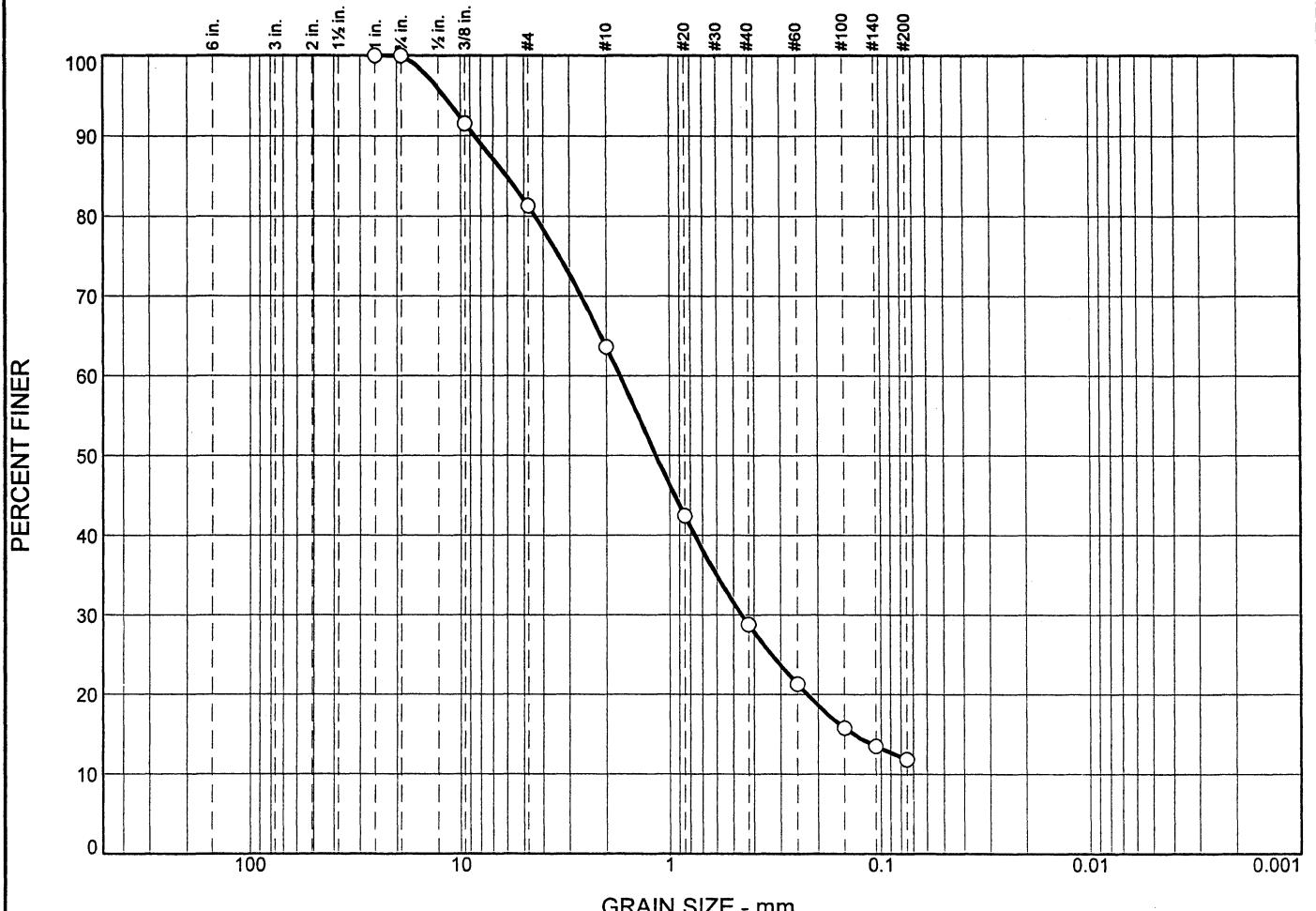
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0179 Depth: 83.5' Sample Number: 18 Date: <input type="radio"/>				Remarks: <input type="radio"/> Moisture Content % 20.0 CP05- EAARS-CB-0275	
Nodarse & Associates, Inc. Miami Lakes, FL					

Tested By: Pedro Camaraza

Checked By: Michael Brown

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	0	19	17	35	17	12
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			6.0425	1.7226	1.1603	0.4570	0.1355

Material Description								USCS	AASHTO
<input type="radio"/>	Well graded sand with silt							SW-SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0179 Depth: 93.5' Sample Number: 20

Remarks:

Moisture Content % 17.7 CP05
EAARS-CB-0275

Date:

Nodarse & Associates, Inc.

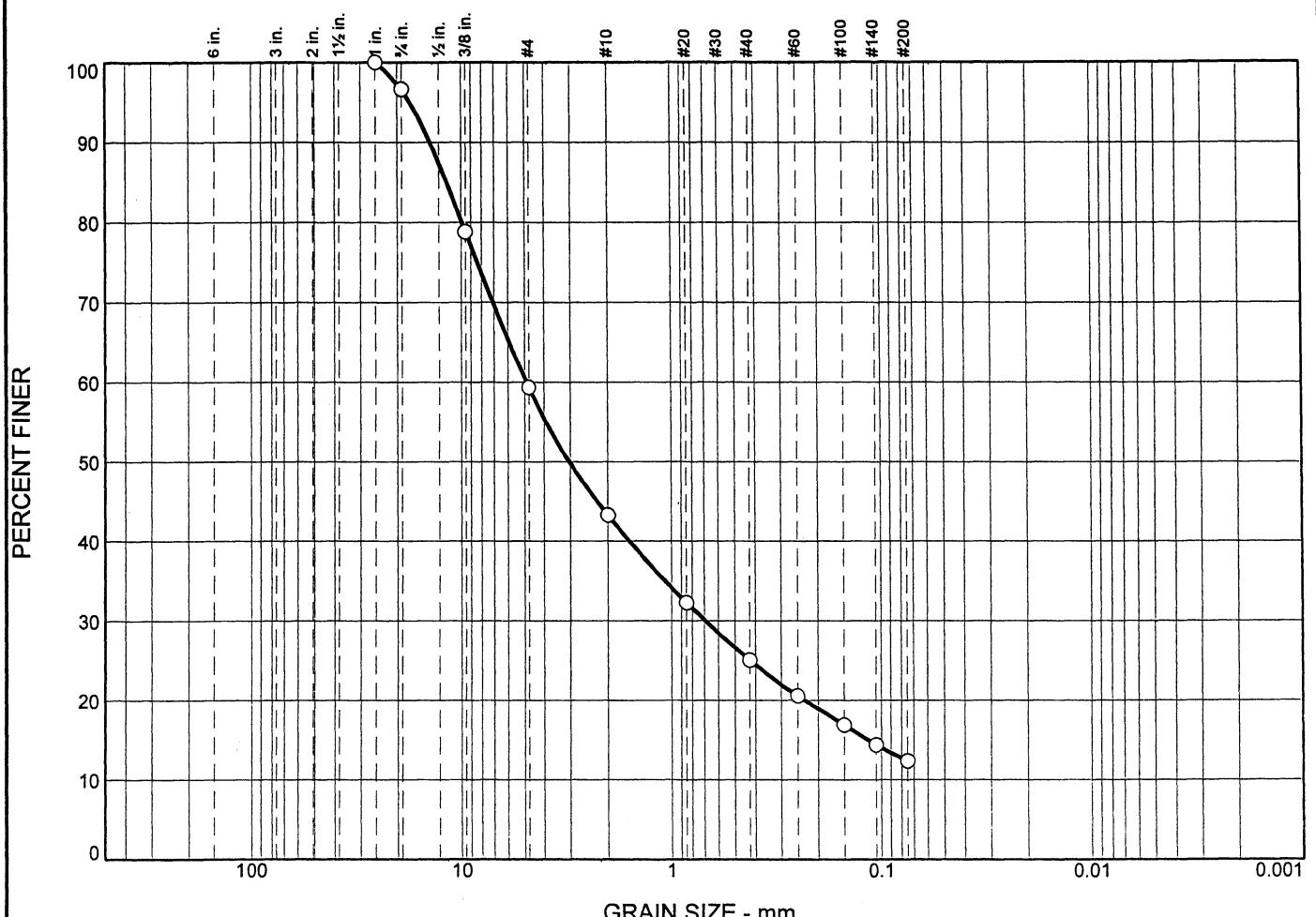
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	3	38	16	18	13	12

Material Description

USCS | AASHTO

- Well graded sand with silt and gravel

SW-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0180 Depth: 8.0' Sample Number: 3

Remarks:

○ Moisture Content % 16.7 CP05-
EAARS-CB-0276

Date:

Nodarse & Associates, Inc.

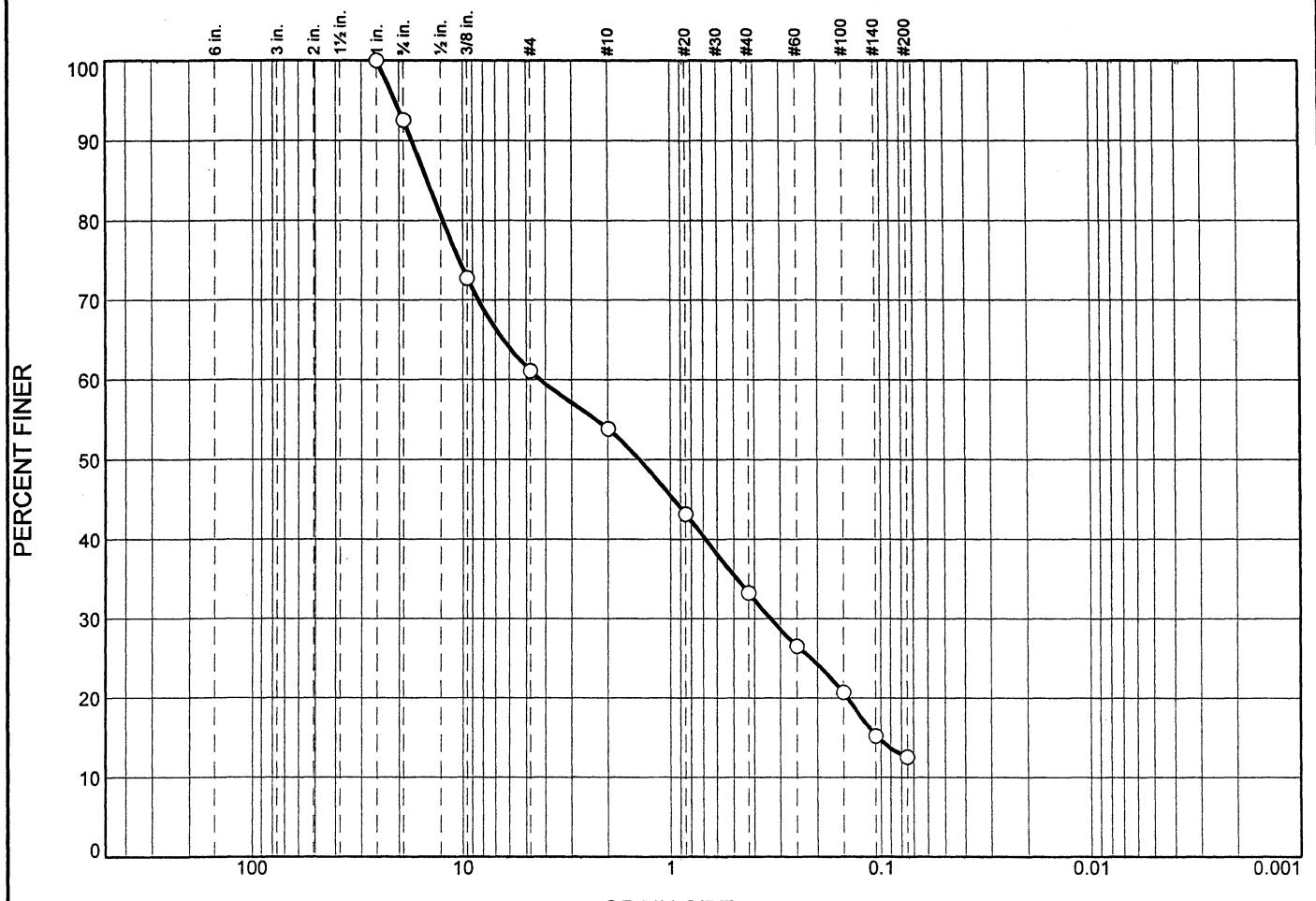
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	7	32	7	21	20	13

Material Description

USCS | AASHTO

- Well graded sand with silt

SW-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0180

Depth: 13.5'

Sample Number: 5

Remarks:

○ Moisture Content % 24.8 CP05-
EAARS-CB-0276

Date: 8

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O 0	0	8	4	8	71		9
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
O 0.9899		0.2050	0.1858	0.1511	0.1170	0.0946	1.18
							2.17
Material Description							USCS
O Poorly graded sand with silt							SP-SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

O Source of Sample: CB-0180 Depth: 18.5' Sample Number: 6

Remarks:

O Moisture Content % 25.5 CP05-
EAARS-CB-0276

Date: O

Nodarse & Associates, Inc.

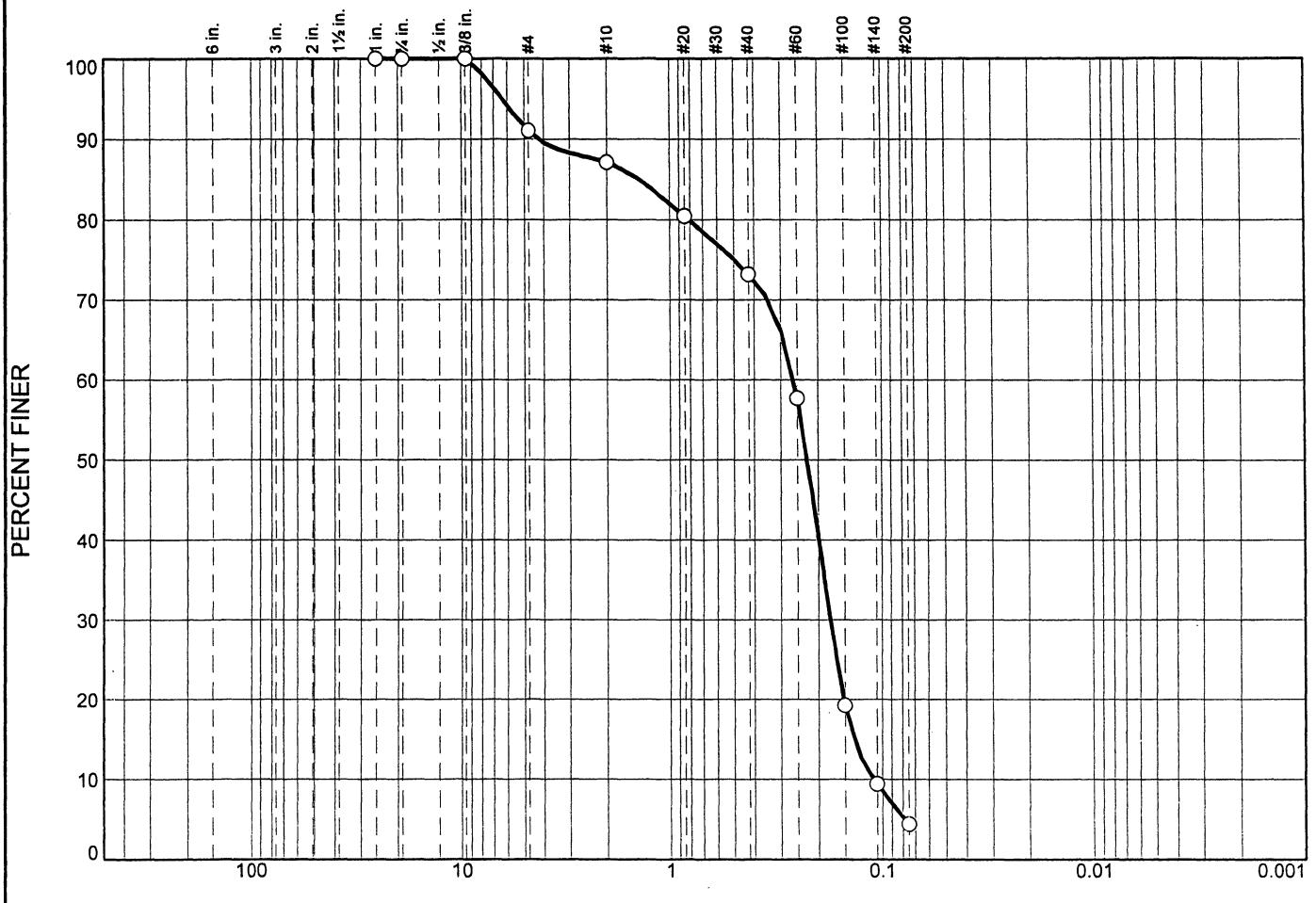
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



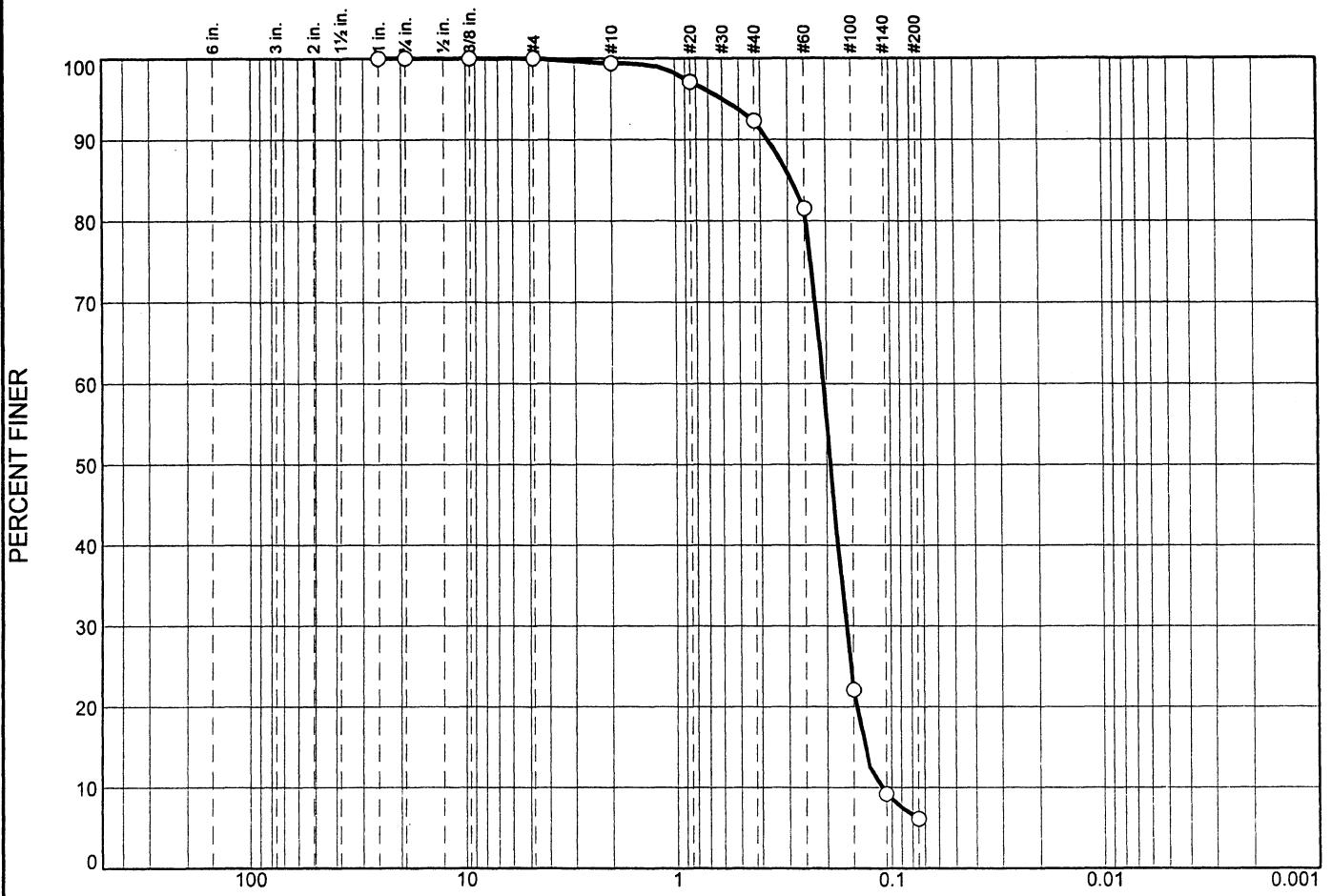
% +3"		% Gravel		% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input checked="" type="radio"/>	0	0	9	4	14	69		4	
<input checked="" type="radio"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input checked="" type="radio"/>			1.4049	0.2599	0.2242	0.1758	0.1363	0.1099	1.08 2.36
Material Description								USCS	AASHTO
<input checked="" type="radio"/>	Poorly graded sand								SP

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input checked="" type="radio"/> Source of Sample: CB-0180 Depth: 23.5' Sample Number: 7 Date: <input checked="" type="radio"/>					Remarks: <input checked="" type="radio"/> Moisture Content % 24.6 CP05-EAARS-CB-0276	
Nodarse & Associates, Inc. Miami Lakes, FL					Figure	

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



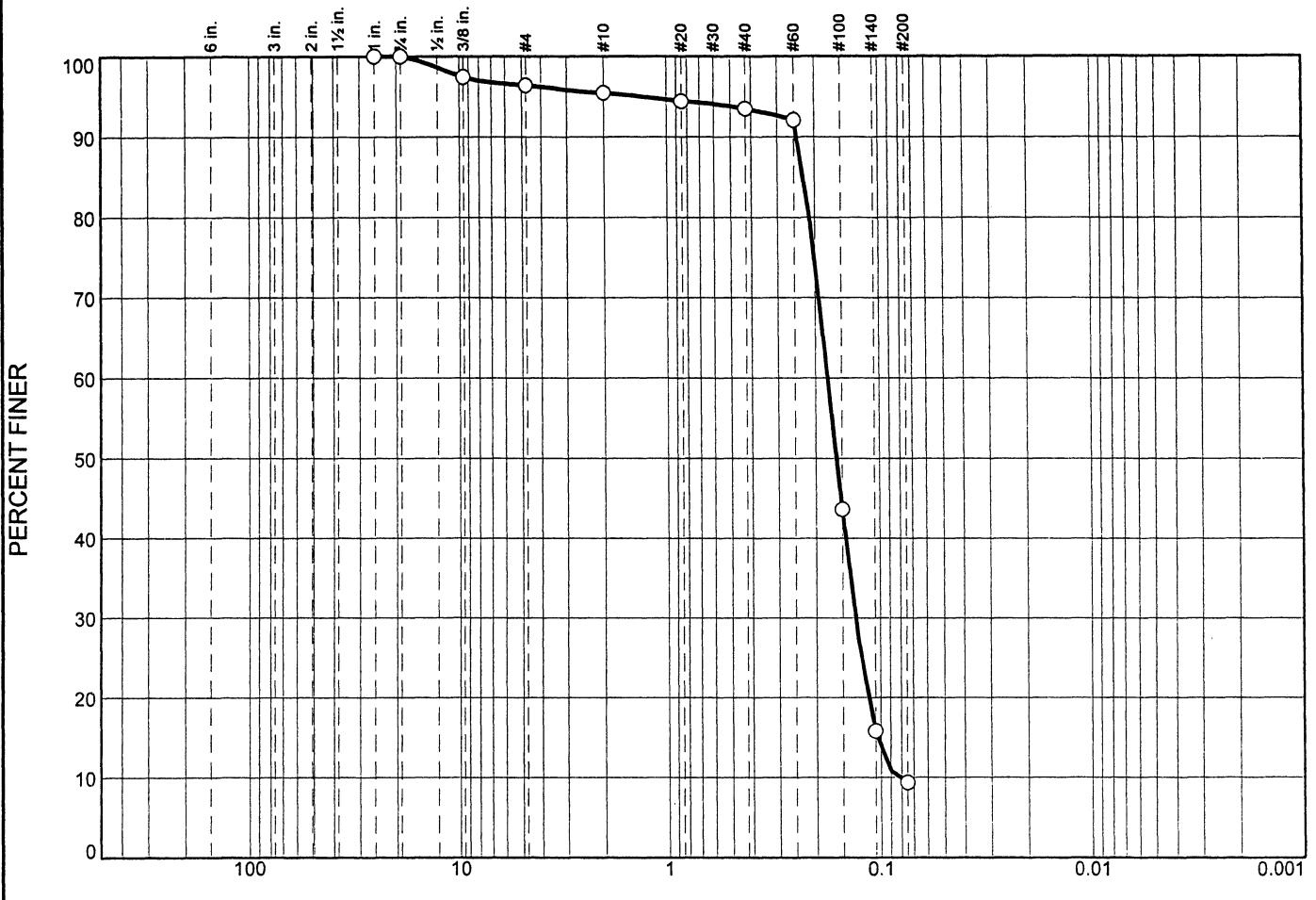
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	0	0	1	7	86	6
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			0.2876	0.2060	0.1910	0.1627	0.1343
Material Description							USCS
<input type="radio"/> Poorly graded sand with silt							SP-SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0180 Depth: 28.5' Sample Number: 8						Remarks: <input type="radio"/> Moisture Content % 26.5 CP05-EAARS-CB-0276	
Date: <input type="radio"/>							
Nodarse & Associates, Inc.						Figure	

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	4	1	2	84	9

Material Description

USCS | AASHTO

Poorly graded sand with silt

SP-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0180

Depth: 33.5'

Sample Number: 9

Remarks:

○ Moisture Content % 27.4

CP05-EAARS-CB-0276

Date:

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0	0	12	6	14	52	16	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input type="radio"/>			2.7524	0.2145	0.1653	0.1231		C _c
								C _u
Material Description								USCS
<input type="radio"/> Silty sand								SP-SM
								AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0181 Depth: 23.5' Sample Number: 7

Remarks:

Moisture Content % 24.7 CP05-
EAARS-CB-0277

Date:

Nodarse & Associates, Inc.

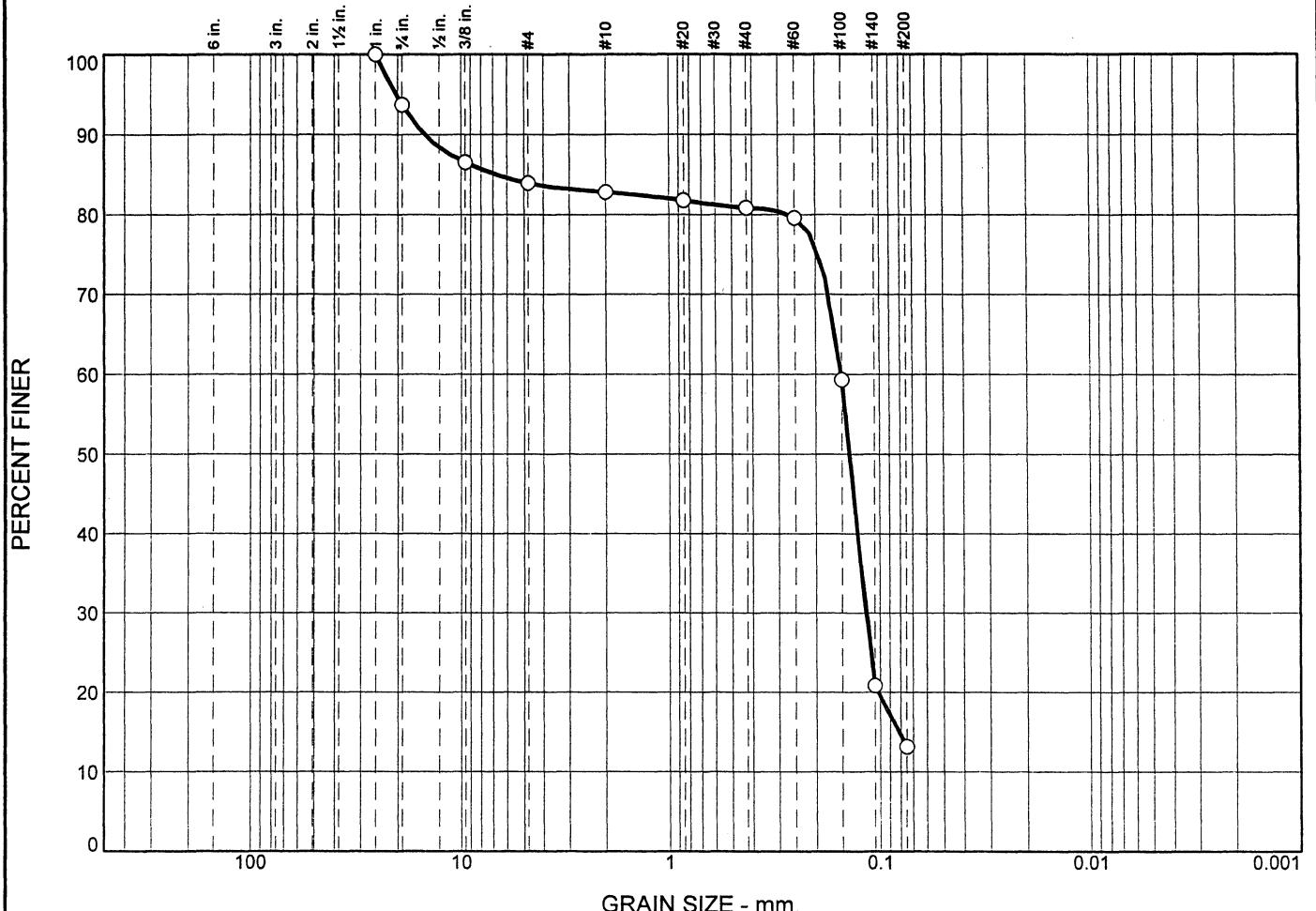
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O 0	6	10	1	2	68		13

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
O		6.7701	0.1510	0.1378	0.1167	0.0814			

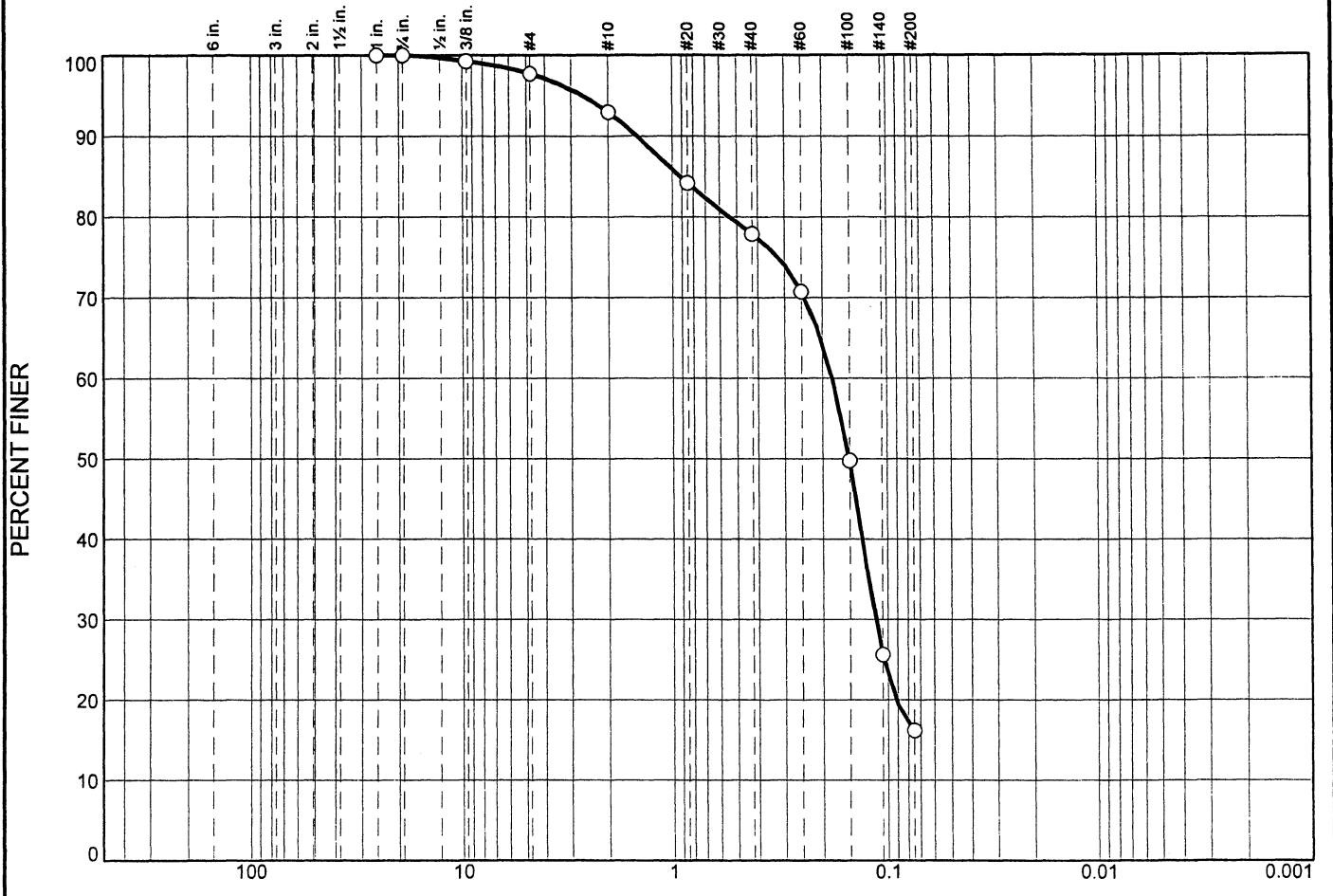
Material Description					USCS	AASHTO
O Poorly graded sand with silt and gravel					SP-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) O Source of Sample: CB-0181 Depth: 28.5' Sample Number: 8 Date: O	Remarks: O Moisture Content % 24.1 CP05- EAARS-CB-0277
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	2	5	15	62	16

Material Description

USCS | AASHTO

Silty sand

SM

Project No. 05-05-0013-**Client:** Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0181

Depth: 33.5'

Sample Number: 9

Remarks:

○ Moisture Content % 29.5 CP05-
EAARS-CB-0277

Date: 0

Nodarse & Associates, Inc.

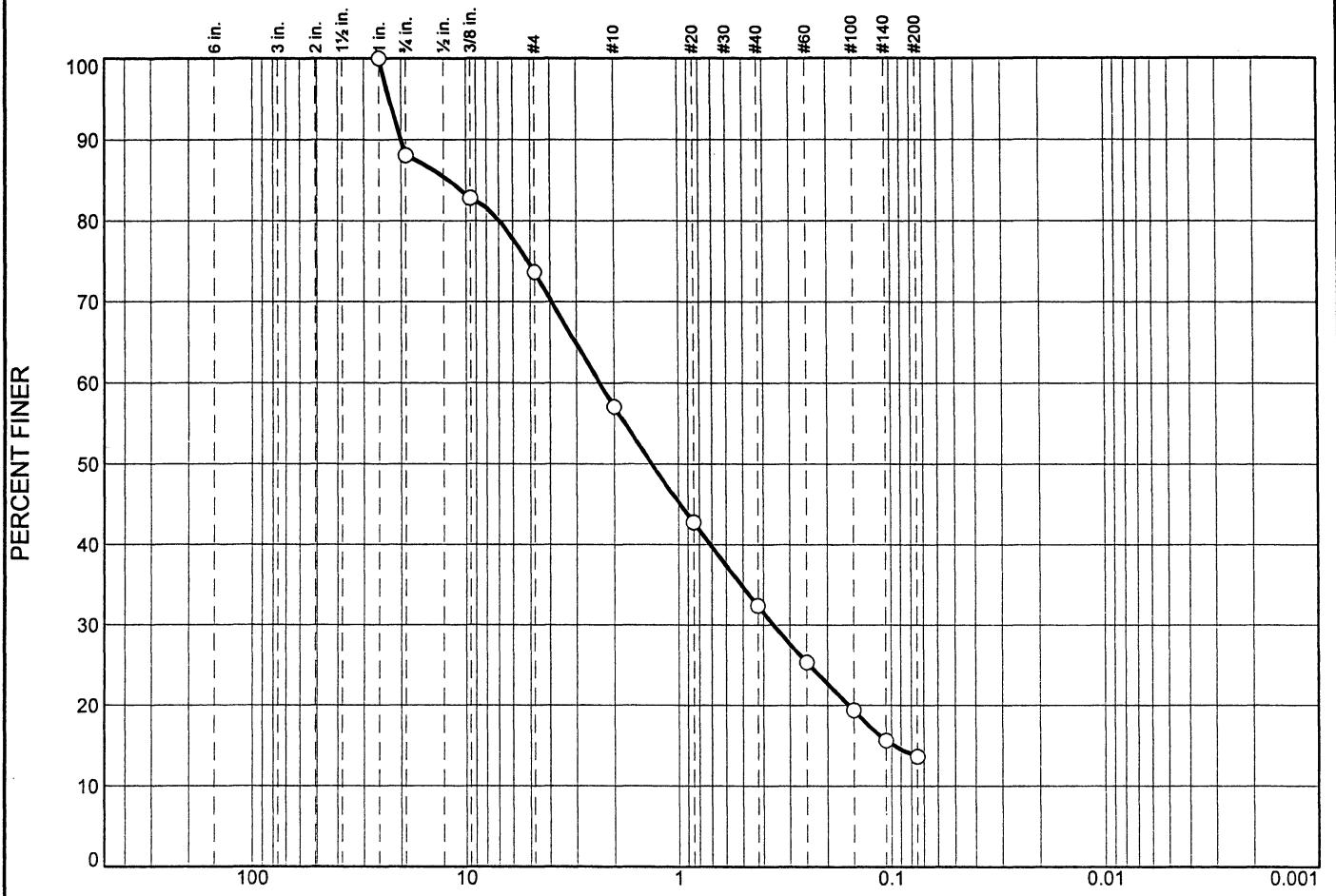
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	12	14	17	25	18	14

Material Description

USCS | AASHTO

- Well graded sand with silt and gravel

SW-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0183

Depth: 18.5'

Sample Number: 5

Remarks:

○ Moisture Content % 21.2 CP05-
EAARS-CB-0278

Date:

Nodarse & Associates, Inc.

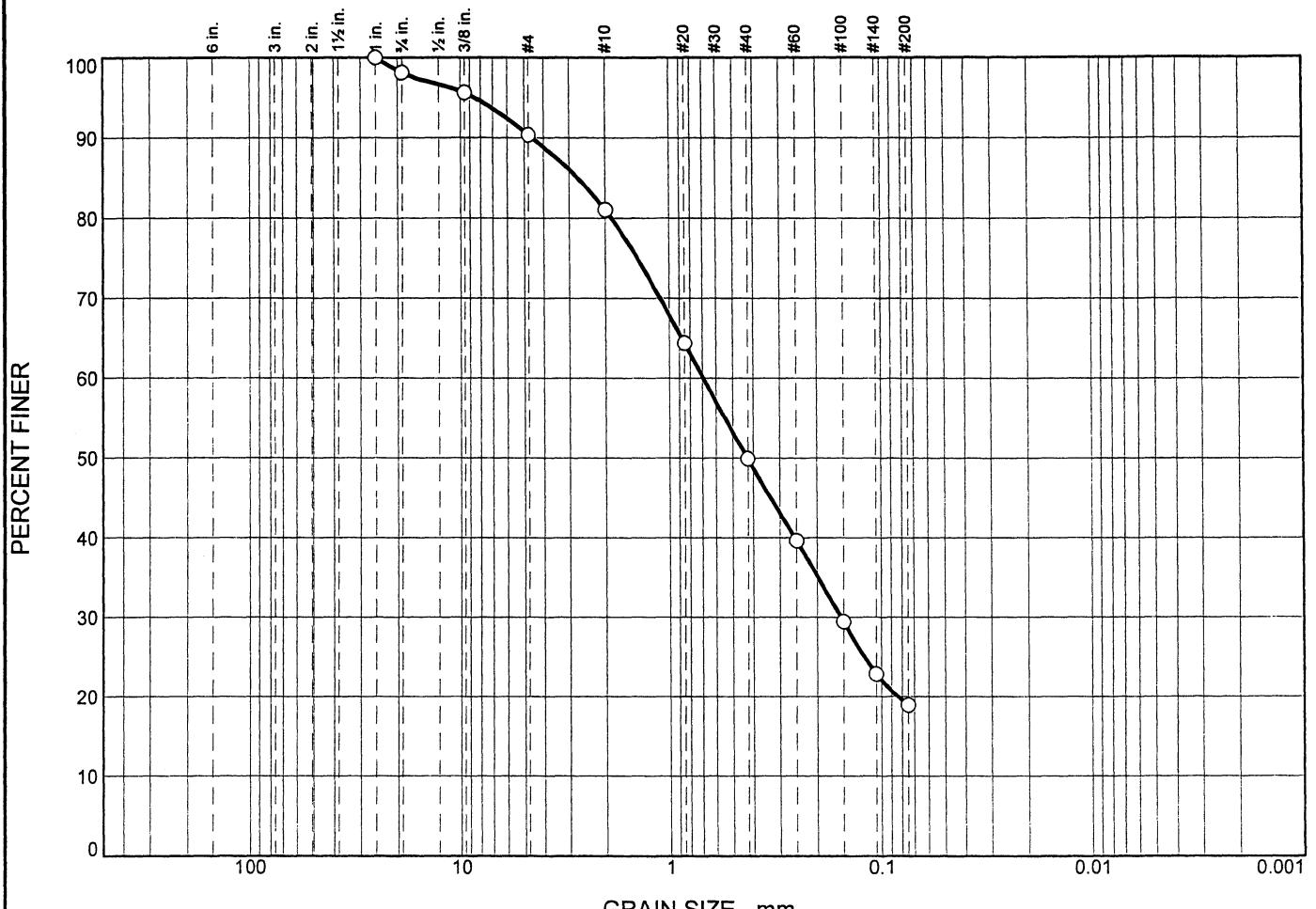
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O 0	2	8	9	31	31		19
X LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
O		2.7026	0.6923	0.4269	0.1541		
Material Description							USCS AASHTO
O Silty sand						SM	

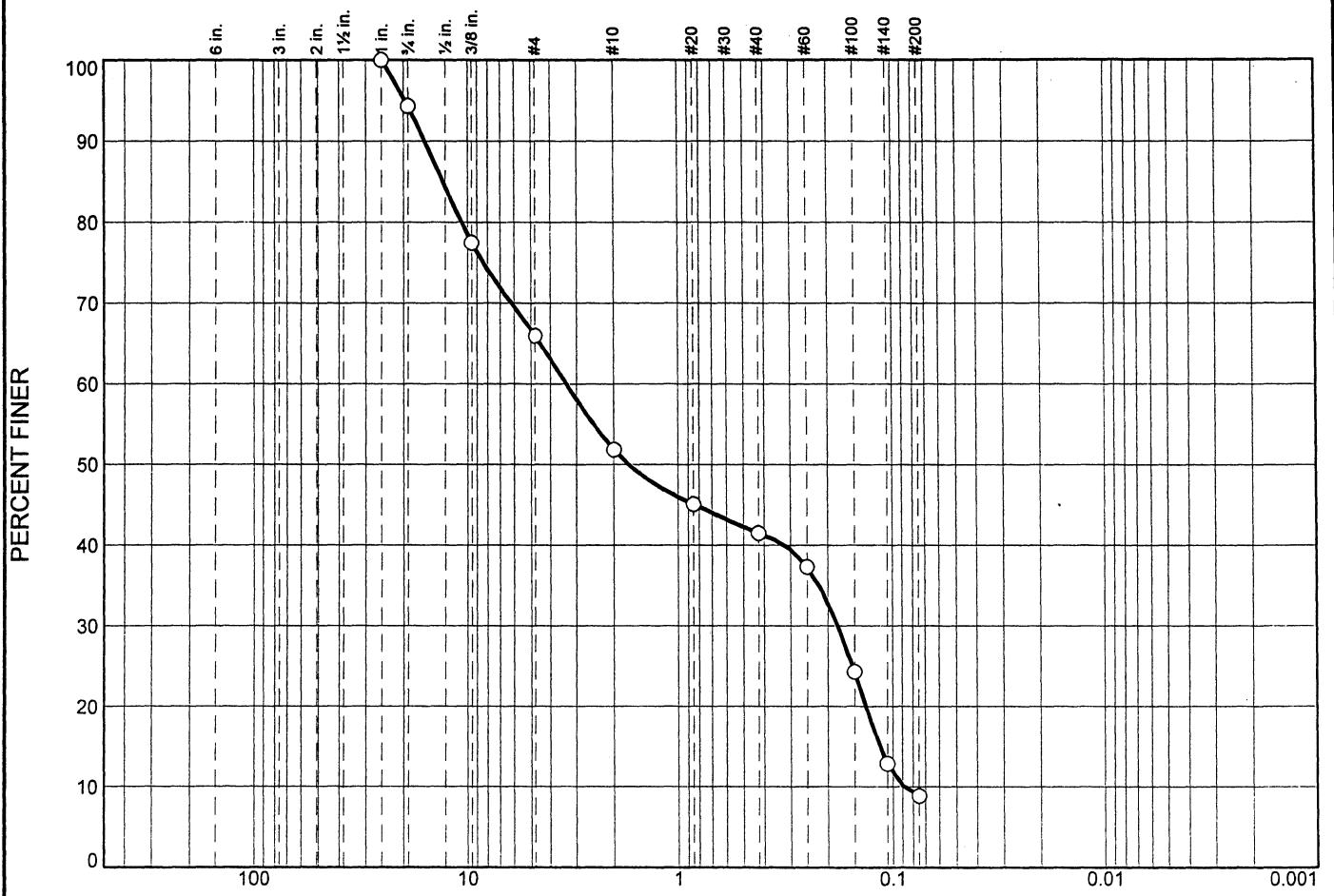
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) O Source of Sample: CB-0183 Depth: 23.5' Sample Number: 6				Remarks: O Moisture Content % 24.2 CP05- EAARS-CB-0278	
Date: O Nodarse & Associates, Inc.					
Miami Lakes, FL					

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	6	28	14	10	33	9

Material Description

USCS | AASHTO

Well graded sand with silt and gravel

SW-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0183

Depth: 28.5'

Sample Number: 7

Remarks:

○ Moisture Content % 12.3 CP05-
EAARS-CB-0278

Date:

Nodarse & Associates, Inc.

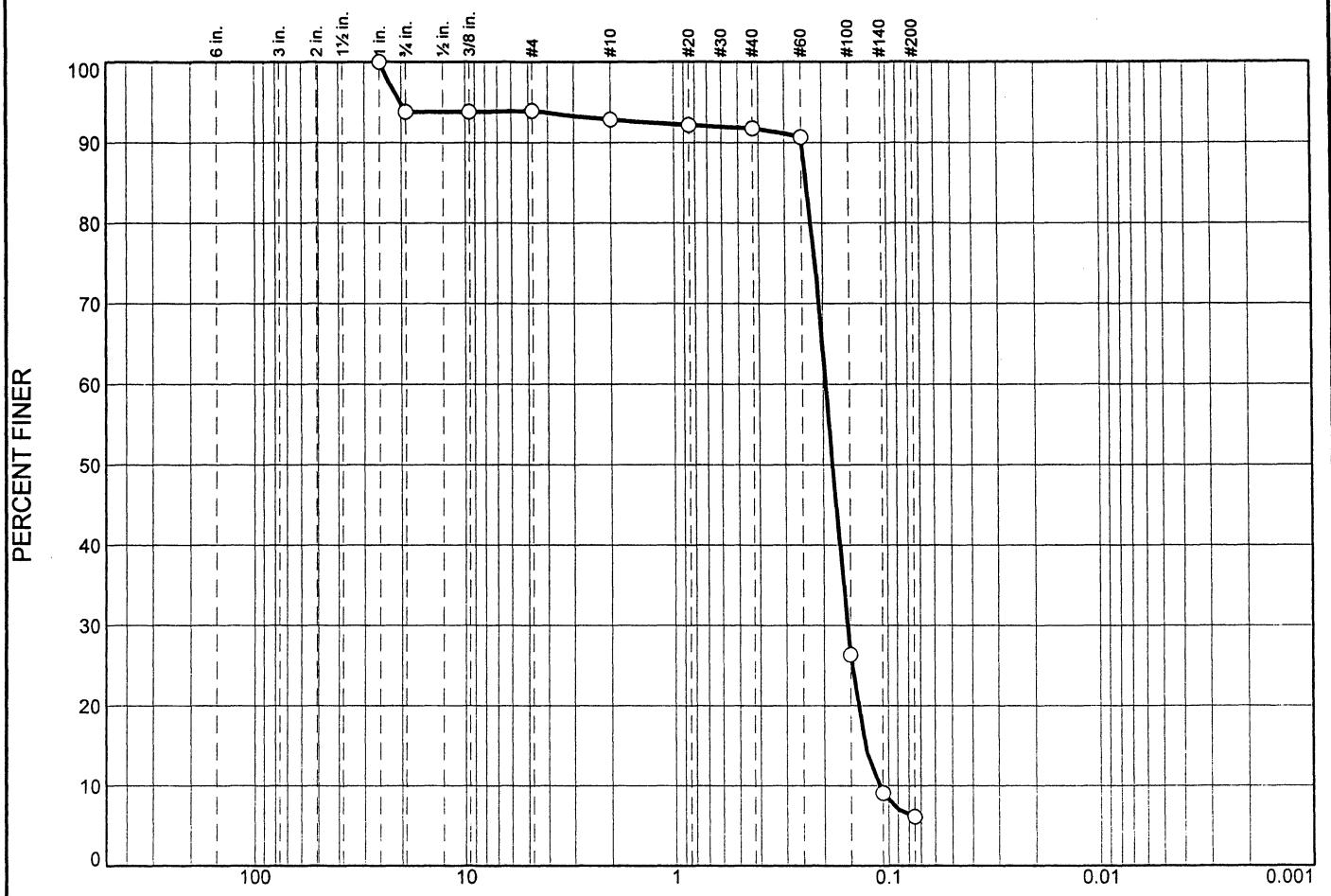
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



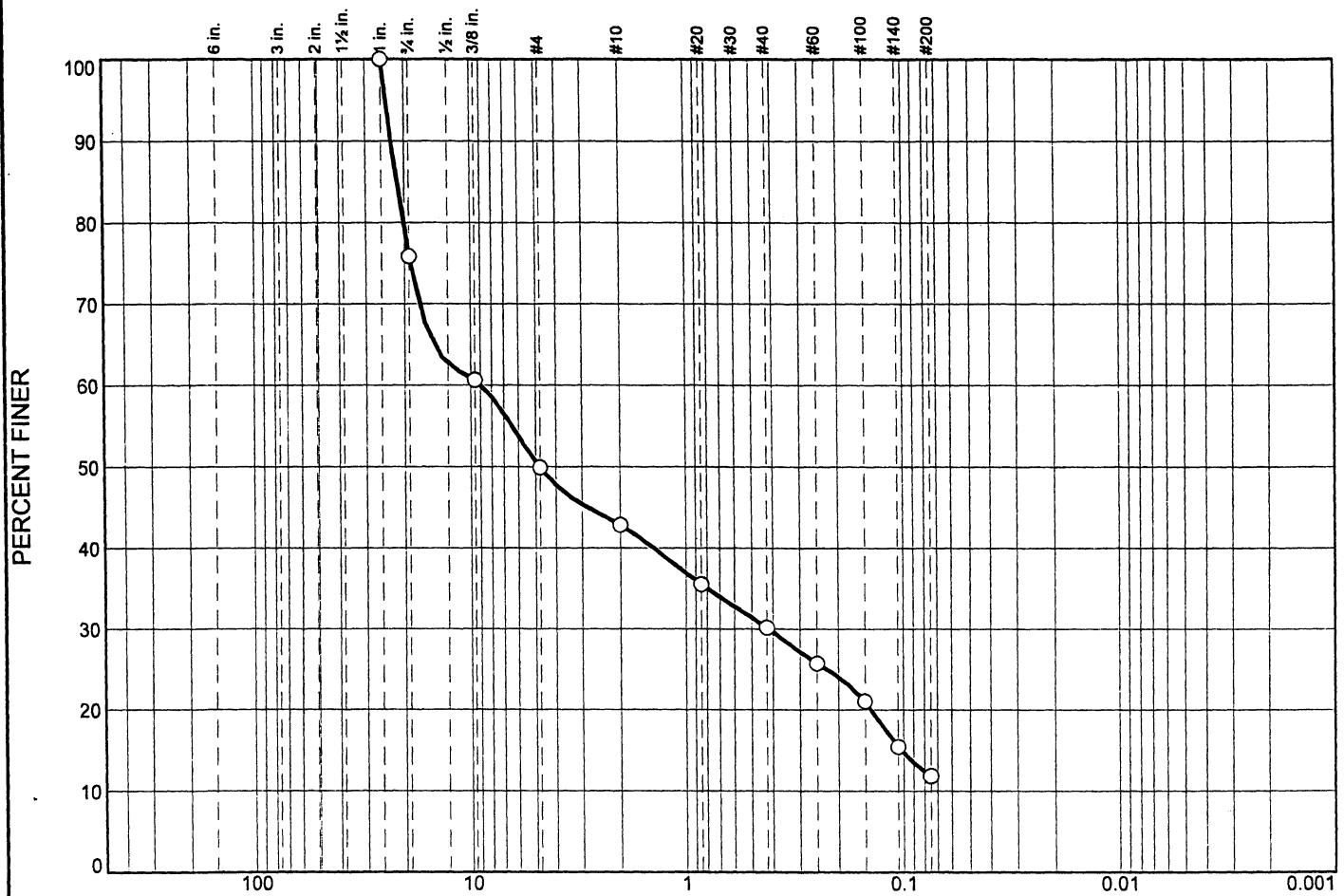
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	6	0	1	1	86	6
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			0.2350	0.1937	0.1808	0.1552	0.1283
						0.1110	1.12
							1.75
Material Description							USCS
○ Poorly graded sand with silt							SP-SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch		Remarks:
Project: E.A.A (Reservoir)		○ Moisture Content % 24.0 CP05-
○ Source of Sample: CB-0183	Depth: 33.5'	EAARS-CB-0278
Date: ○		
Nodarse & Associates, Inc.		
Miami Lakes, FL		Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	24	26	7	13	18	12	

Material Description

Poorly graded gravel with silt and sand

USCS | AASHTO

GP-GM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0184

Depth: 0.0'

Sample Number: 1

Remarks:

○ Moisture Content %11.0 CP05-
EAARS-CB-0279 @ 0.0'

Date: Q

Nodarse & Associates, Inc.

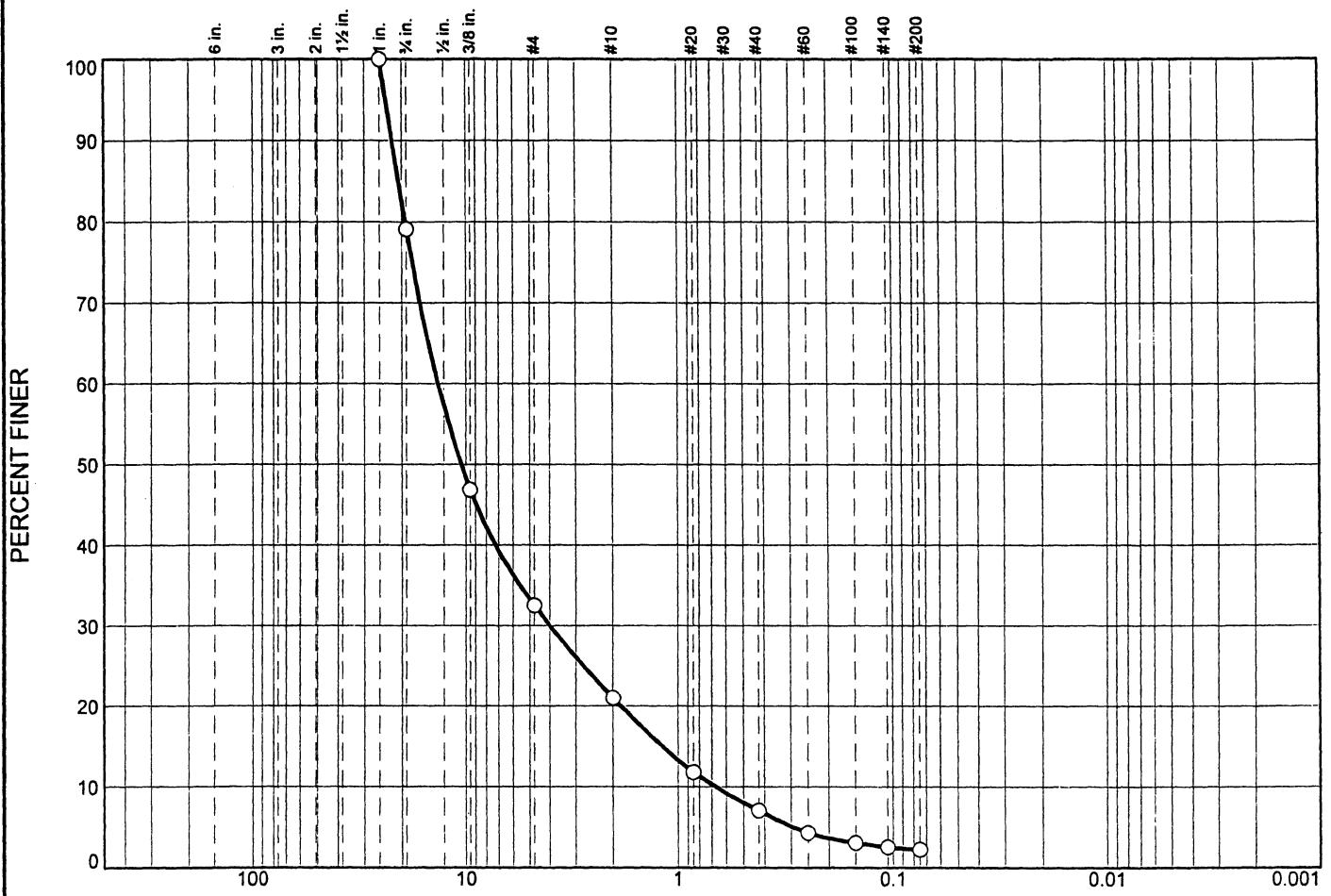
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report

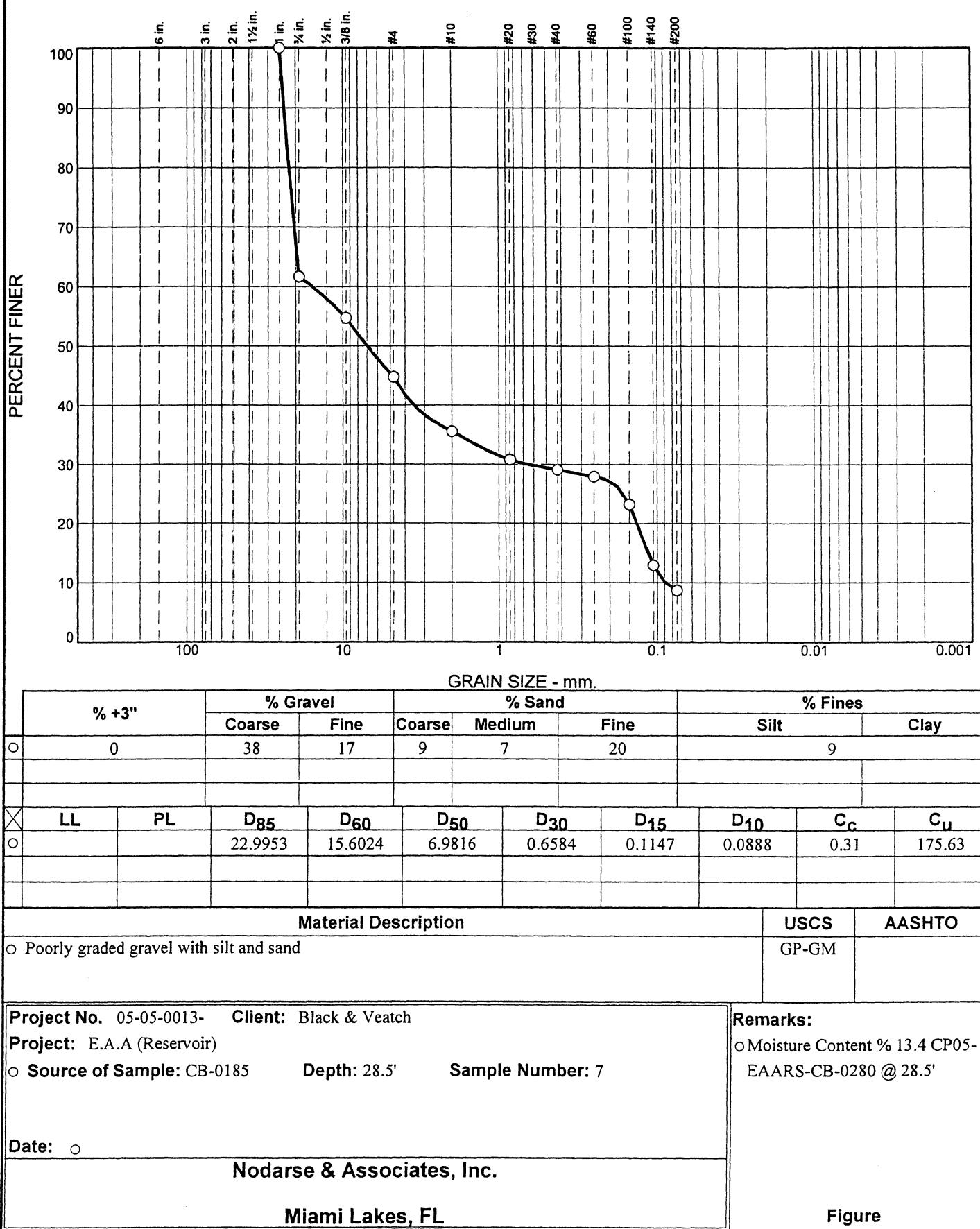


% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
O 0	21	46	12	14	5		2	
X LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
O		20.7582	13.5168	10.5011	3.9928	1.1866	0.6733	1.75 20.08

Material Description						USCS	AASHTO
O Well graded gravel with sand						GW	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) O Source of Sample: CB-0185 Depth: 7.0' Sample Number: 3 Date: O						Remarks: O Moisture Content % 18.1 CP05- EAARS-CB-0280 @ 7.0'	
Nodarse & Associates, Inc. Miami Lakes, FL						Figure	

Particle Size Distribution Report

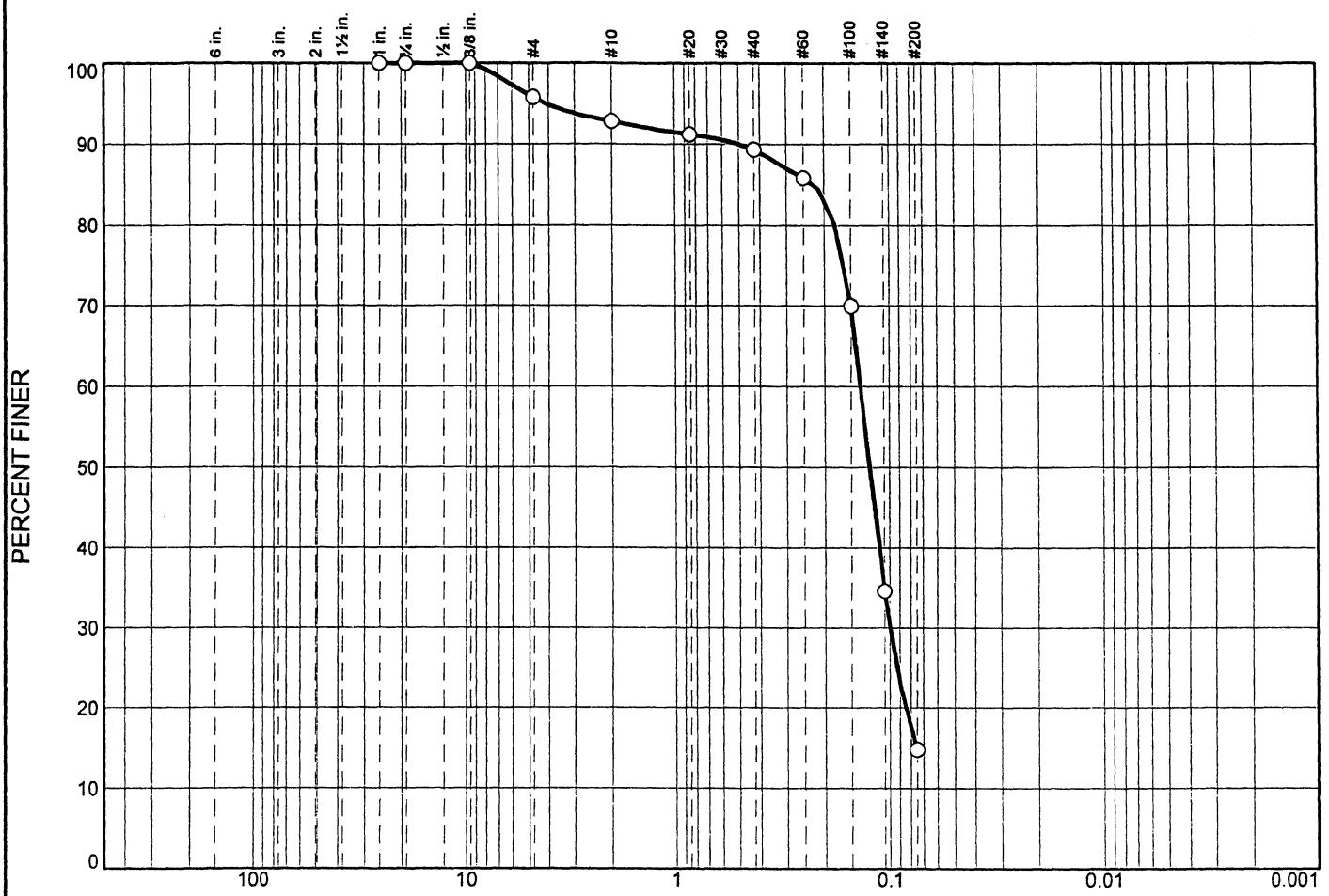


Tested By: Pedro Camaraza

Checked By: Michael Brown

Figure

Particle Size Distribution Report



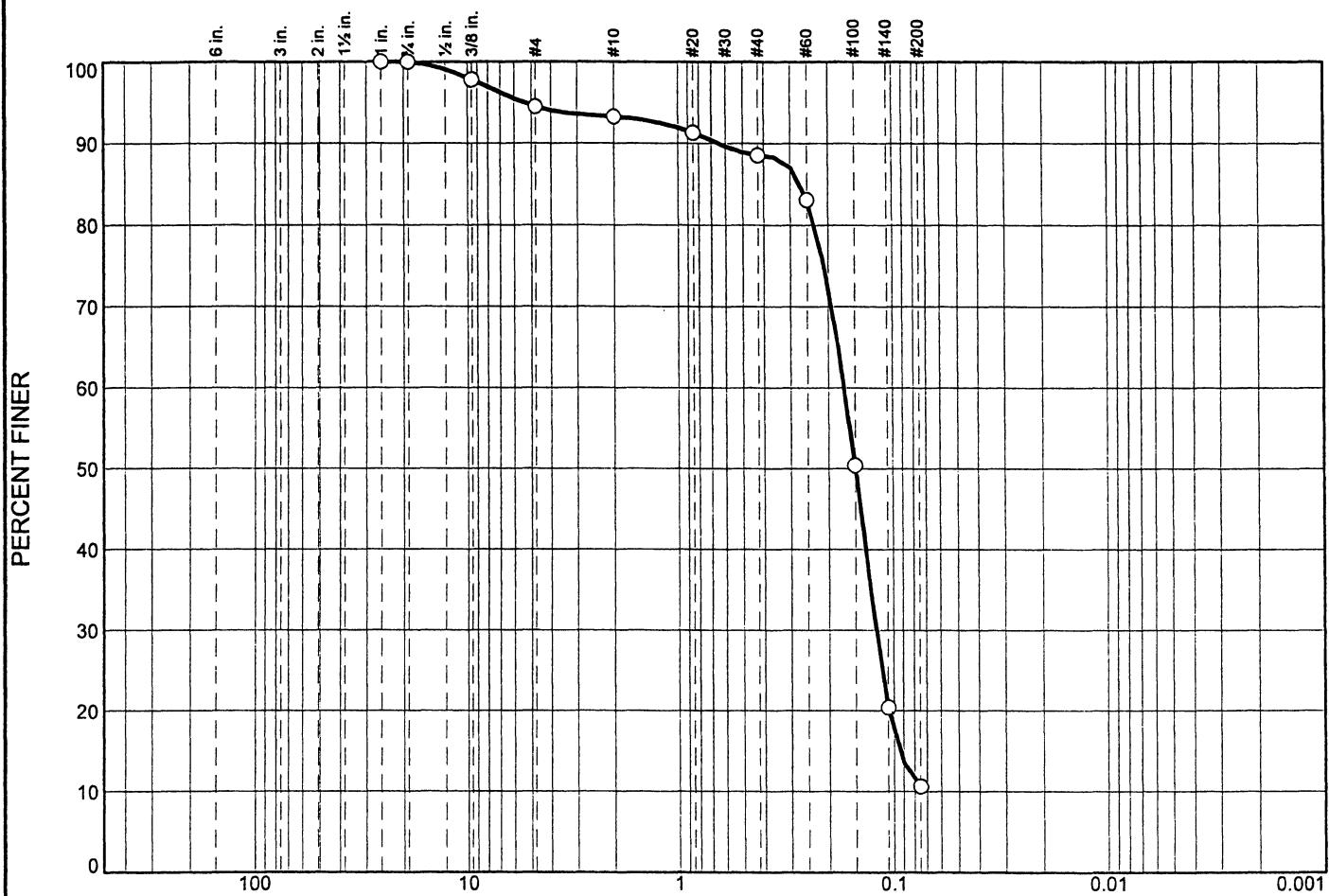
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O 0	0	4	3	4	74		15
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
O			0.2232	0.1351	0.1232	0.1002	0.0753
Material Description							USCS AASHTO
O Silty sand						SM	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	O Moisture Content % 28.0 CP05-
O Source of Sample: CB-0185 Depth: 33.5' Sample Number: 8	EAARS-CB-0280 @ 33.5'
Date: O	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Remarks:
 Moisture Content % 28.0 CP05-
 EAARS-CB-0280 @ 33.5'

Figure

Particle Size Distribution Report



Material Description								USCS	AASHTO
<input type="radio"/> Poorly graded sand with silt								SP-SM	
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0185 Depth: 38.5' Sample Number: 9									

Date: <input type="radio"/>	Nodarse & Associates, Inc.
Miami Lakes, FL	

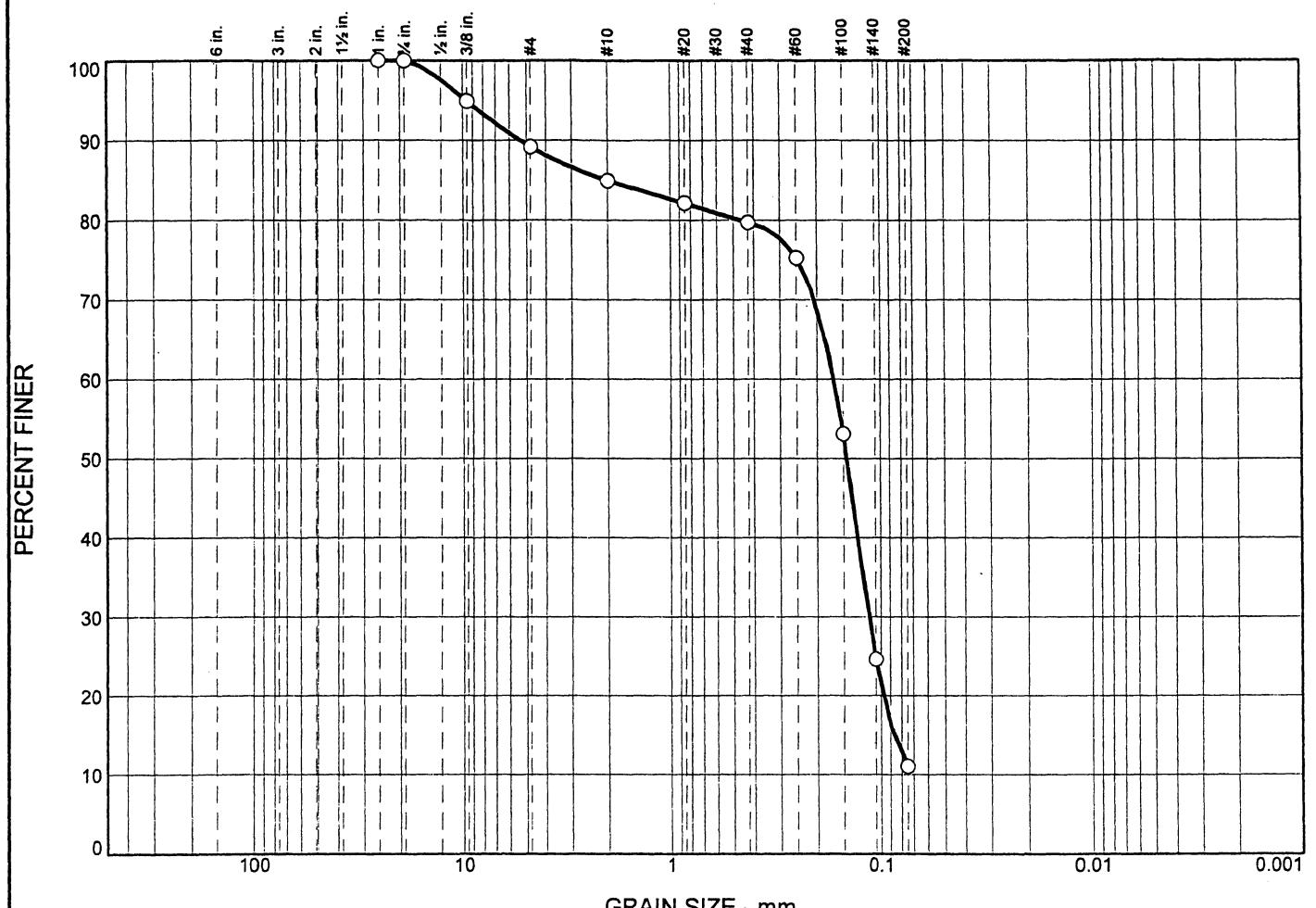
Remarks:
 Moisture Content % 24.3 CP05-
 EAARS-CB-0280 @ 38.5'

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Material Description

Poorly graded sand with silt

USCS AASHTO

SP-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0185 Depth: 43.5' Sample Number: 10

Remarks:

Moisture Content % 25.3 CP05-
EAARS-CB-0280 @ 43.5'

Date:

Nodarse & Associates, Inc.

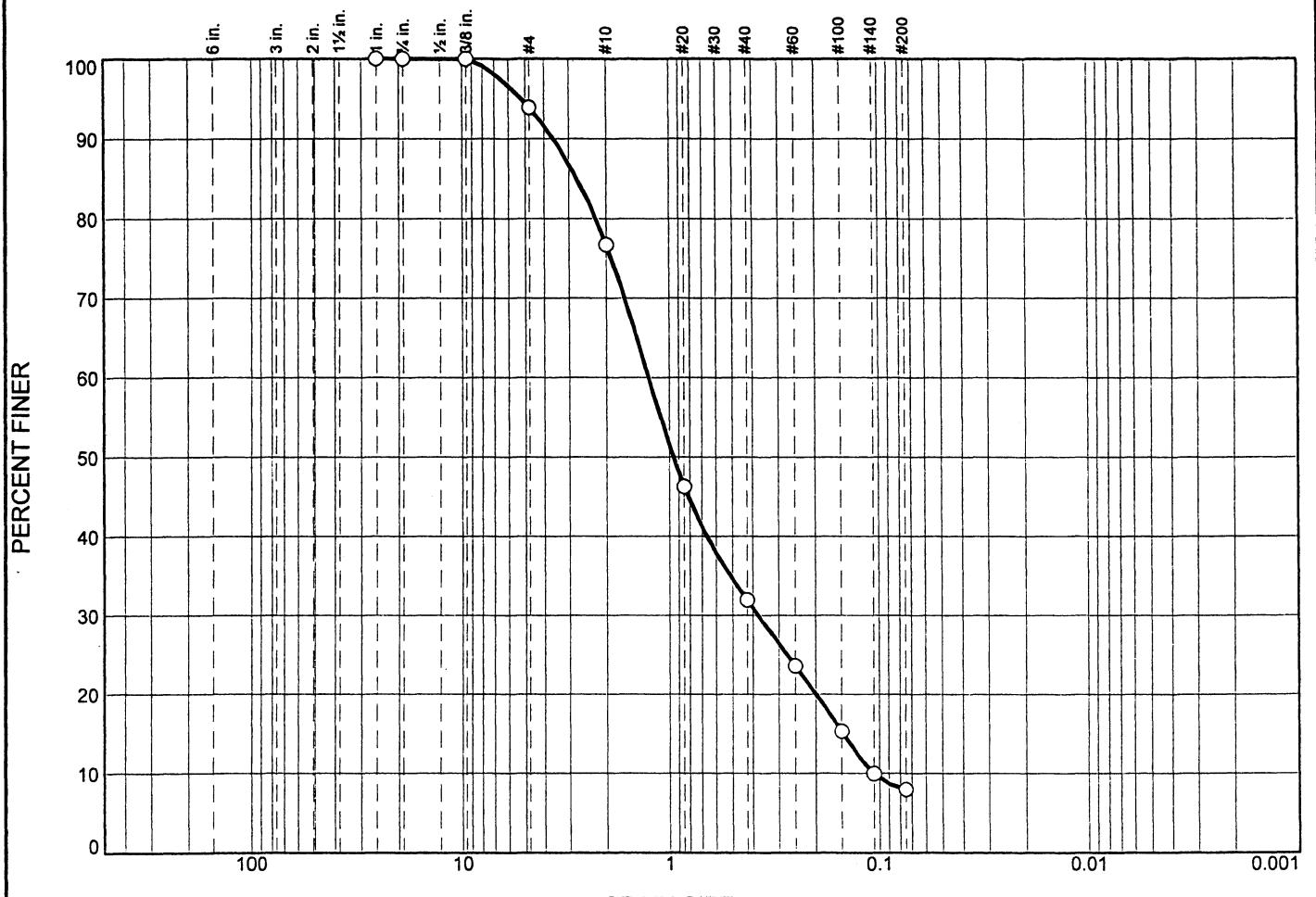
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	6	17	45	24	8
O							
O							
X	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
O			2.7478	1.2579	0.9556	0.3757	0.1471
O							
O							

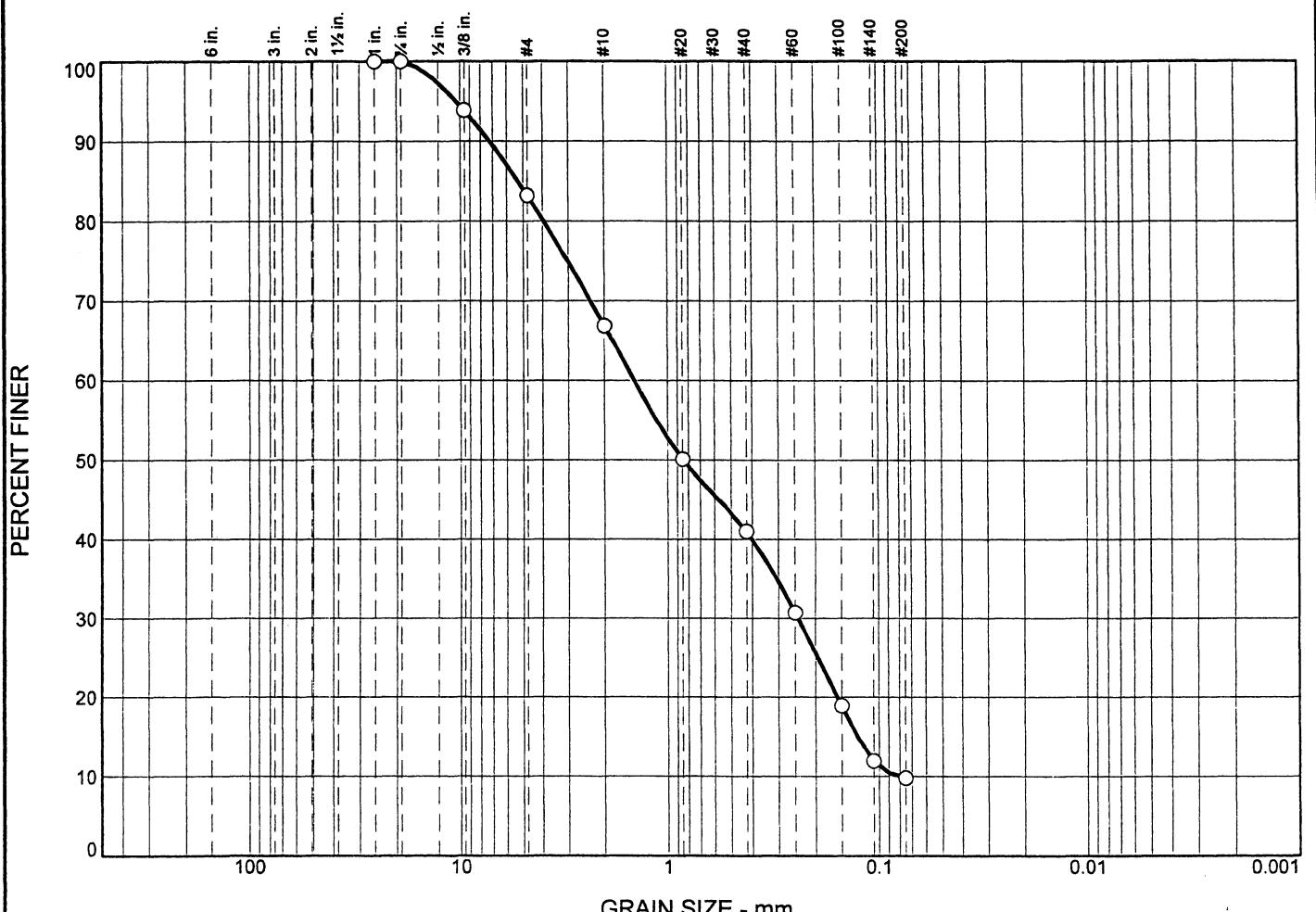
Material Description						USCS	AASHTO
O Well graded sand with silt						SW-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) O Source of Sample: CB-0185 Depth: 48.5' Sample Number: 11				Remarks: O Moisture Content % 28.9 CP05-EAARS-CB-0280 @ 48.5'
Date: O				
Nodarse & Associates, Inc. Miami Lakes, FL				Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	17	16	26	31	10

Material Description	USCS	AASHTO
○ Poorly graded sand with silt and gravel	SP-SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0185

Depth: 53.5'

Sample Number: 12

Remarks:

○ Moisture Content % 22.6 CP05-
EAARS-CB-0280 @ 53.5'

Date: 8

Nodarse & Associates, Inc.

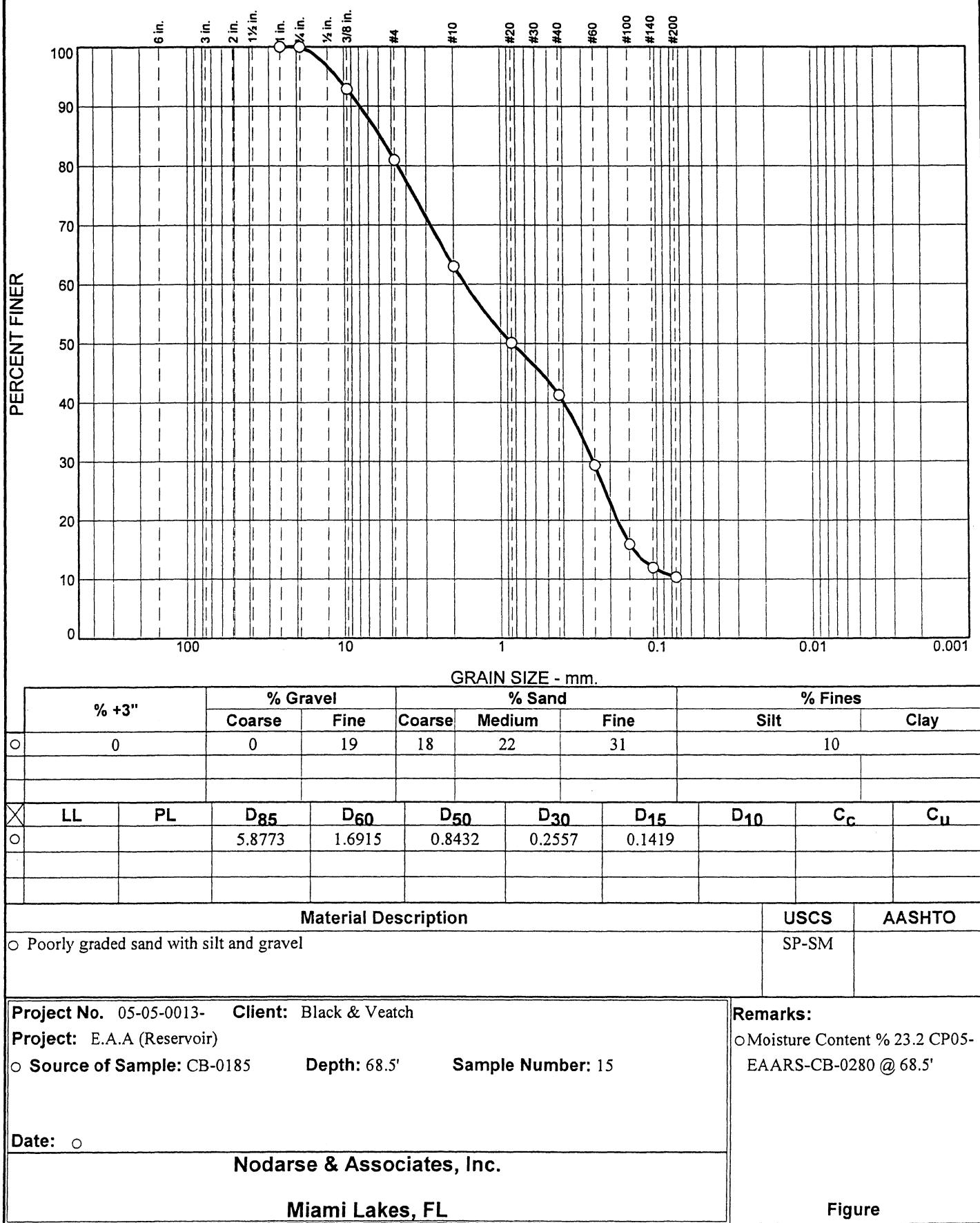
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

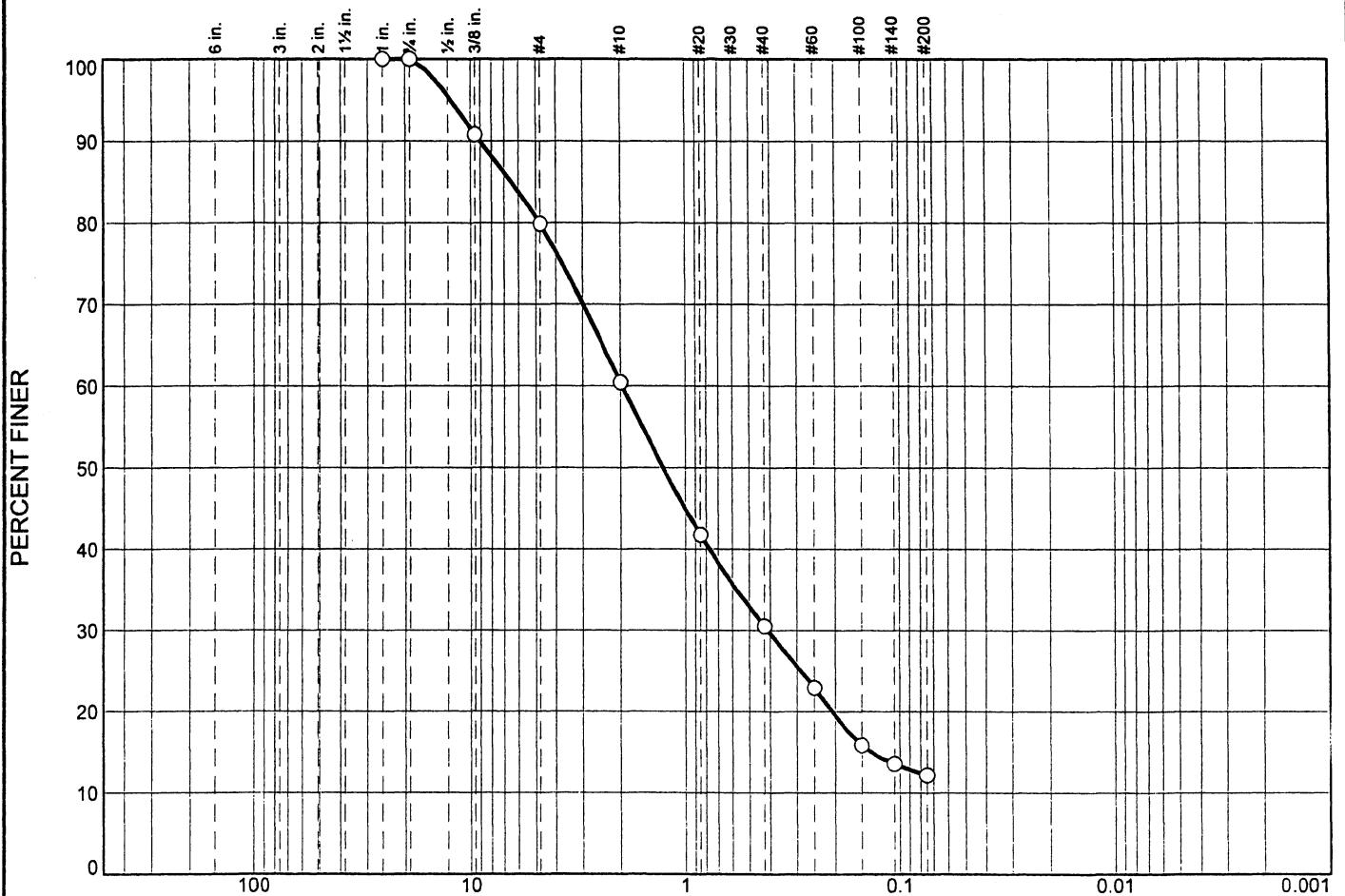
Particle Size Distribution Report



Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	20	20	29	19	12

Material Description	USCS	AASHTO
○ Well graded sand with silt and gravel	SW-SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0185

Depth: 73.5'

Sample Number: 16

Remarks:

○ Moisture Content % 25.7 CP05-
EAARS-CB-0280 @ 73.5'

Date:

Nodarse & Associates, Inc.

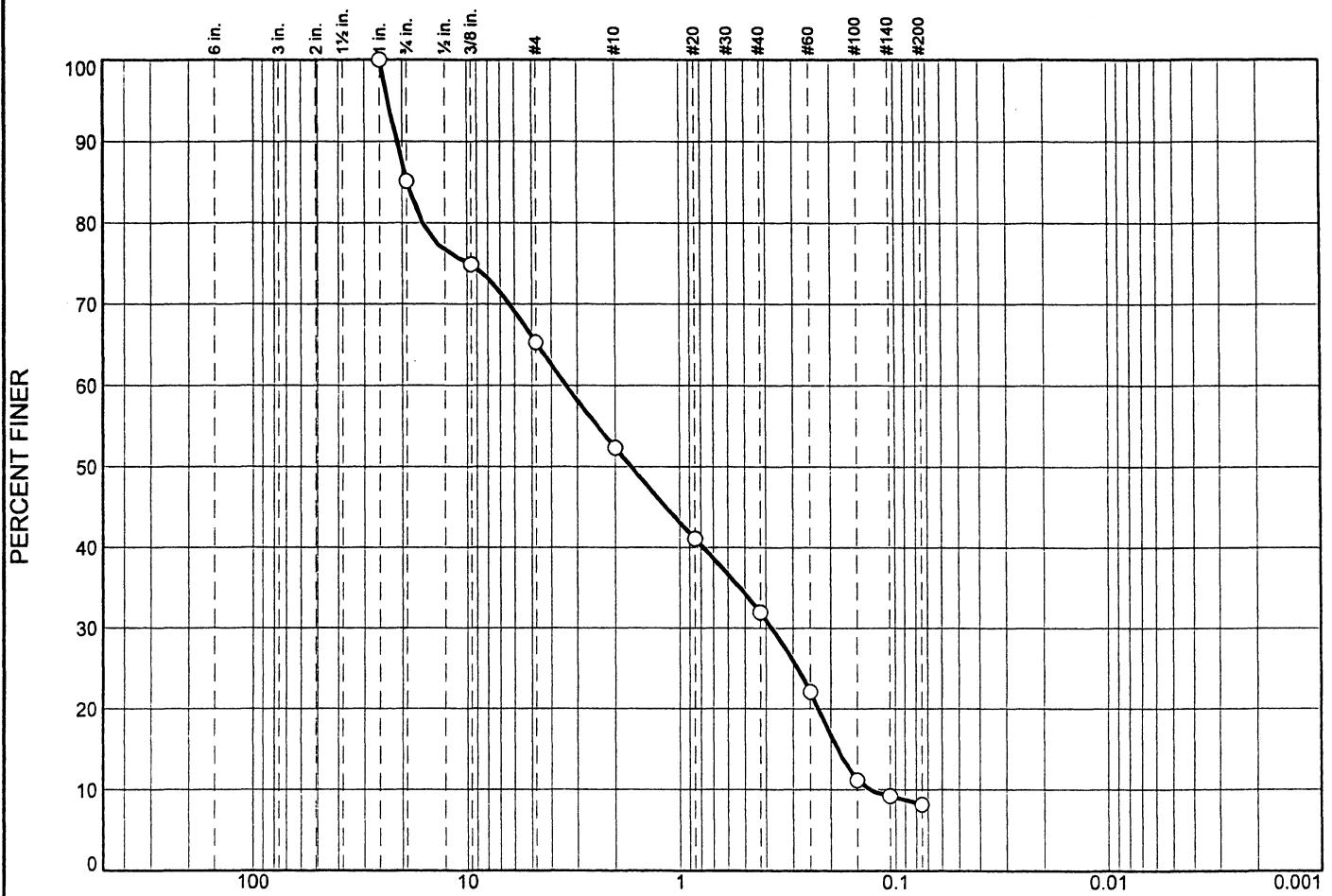
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report

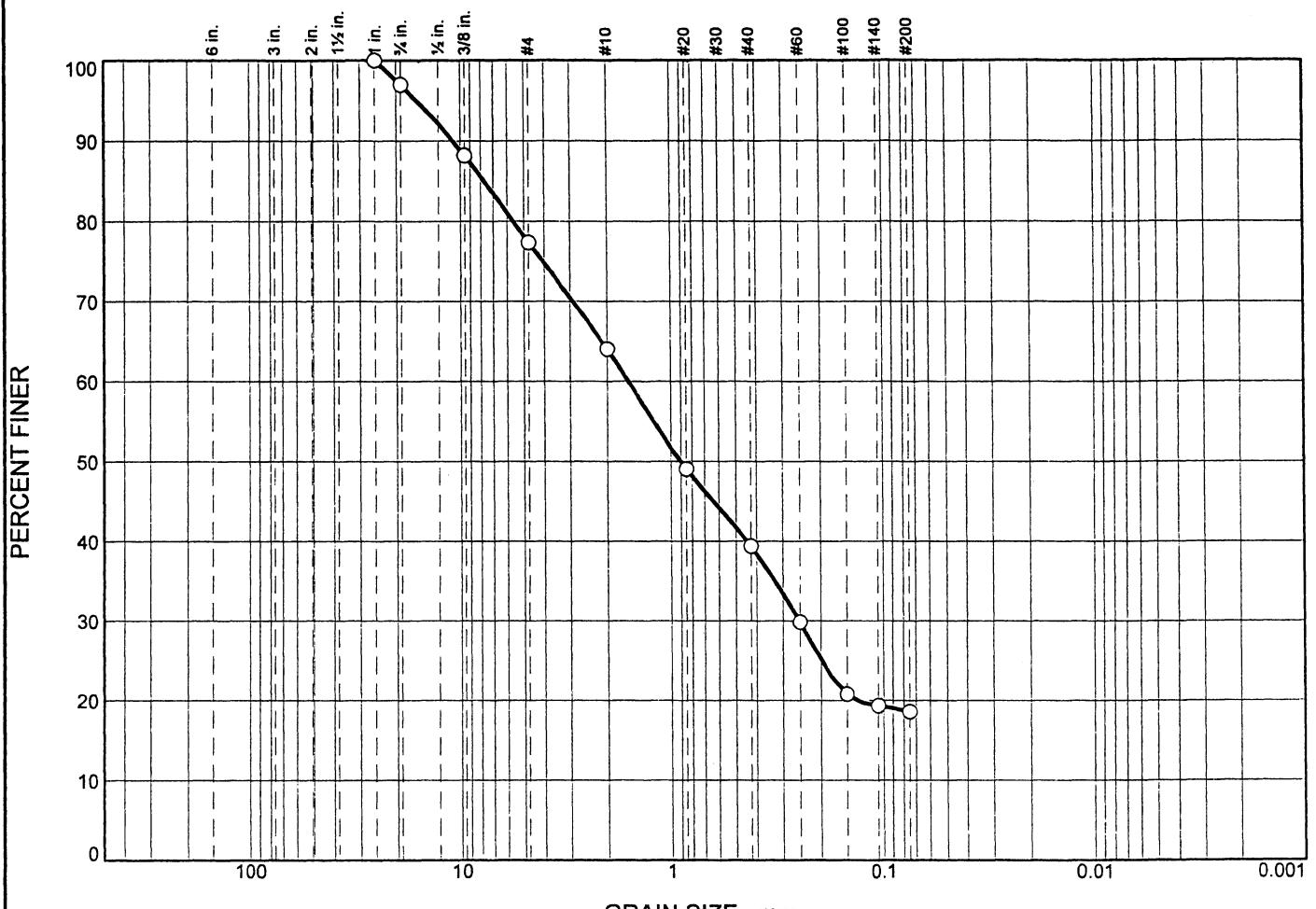


% +3"		% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input checked="" type="checkbox"/>	0	15	20	13	20	24		8
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input checked="" type="checkbox"/>			18.9695	3.3903	1.6902	0.3753	0.1857	0.1322
Material Description								USCS AASHTO
<input checked="" type="checkbox"/> Poorly graded sand with silt and gravel								SP-SM

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input checked="" type="checkbox"/> Moisture Content % 19.4 CP05-
<input checked="" type="checkbox"/> Source of Sample: CB-0185 Depth: 78.5' Sample Number: 17	EAARS-CB-0280 @ 78.5'
Date: <input checked="" type="checkbox"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○	0	3	20	13	25	20	19	
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○			7.7115	1.5914	0.9036	0.2518		C _c
								C _u
Material Description								USCS AASHTO
○	Silty sand with gravel							SM

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	○ Moisture Content % 21.9 CP05-
○ Source of Sample: CB-0185 Depth: 83.5' Sample Number: 18	EAARS-CB-0280 @ 83.5'
Date: ○	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

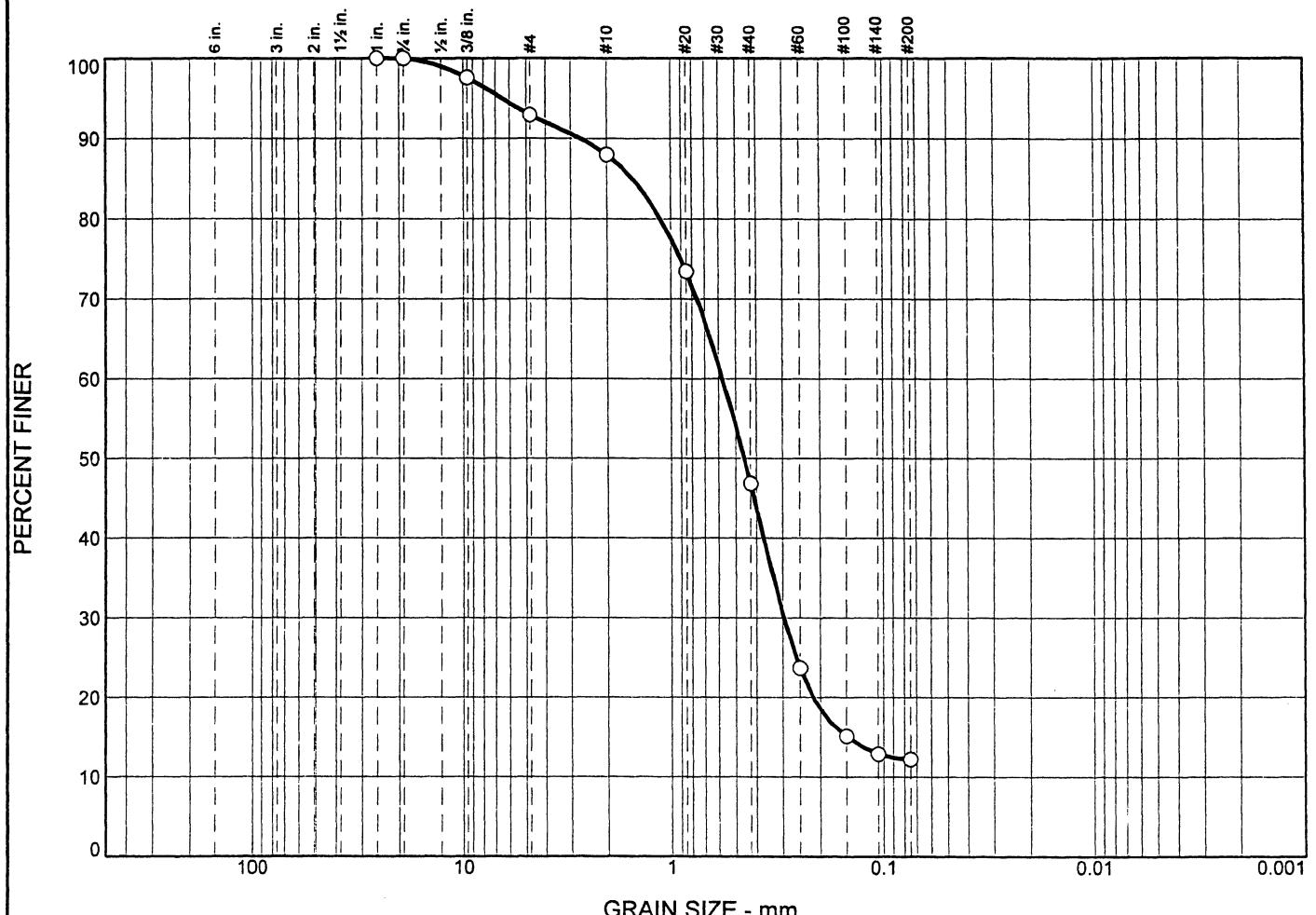
Remarks:
 Moisture Content % 21.9 CP05-
 EAARS-CB-0280 @ 83.5'

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report

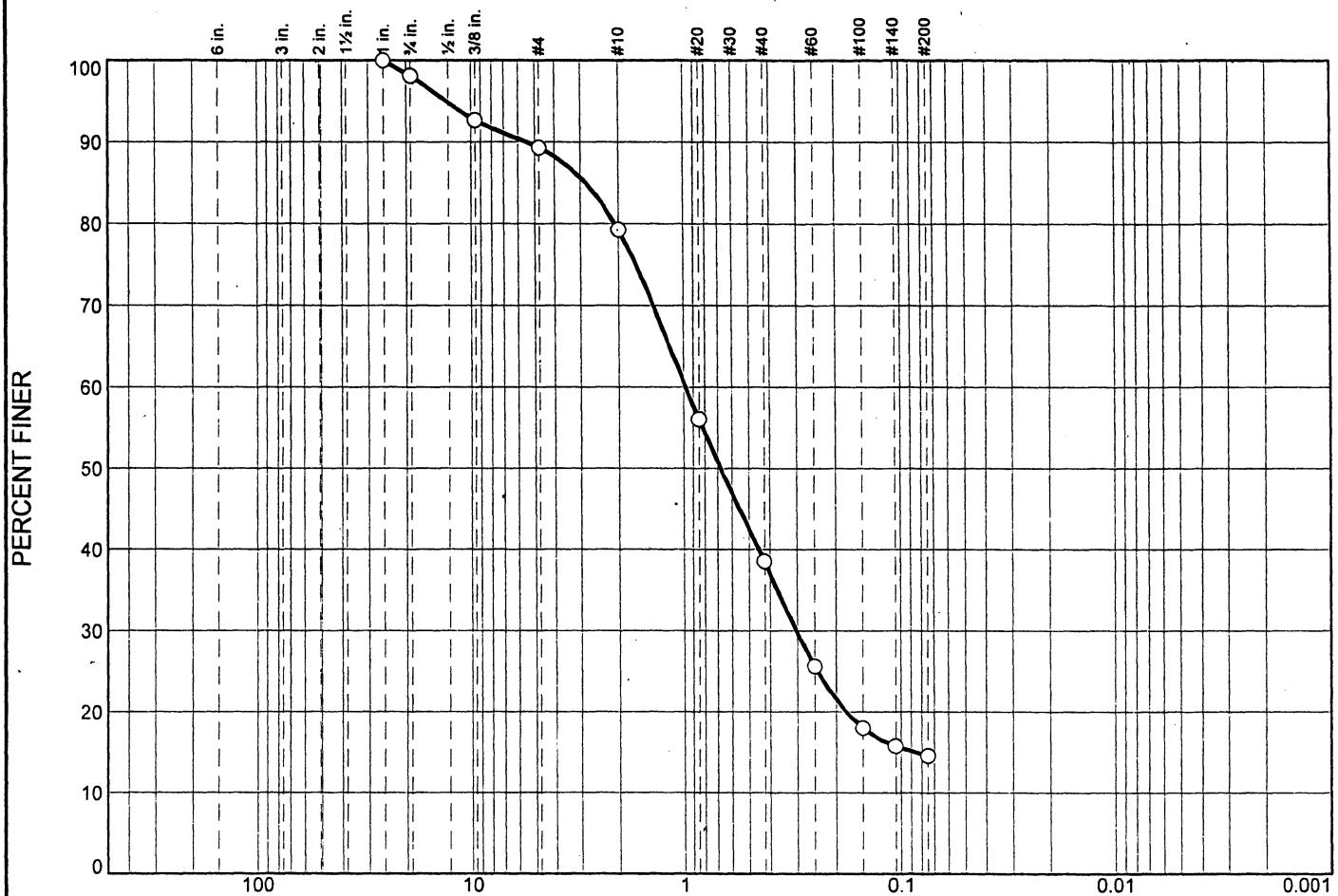


% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○	0	0	7	5	41	35		12
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○			1.5091	0.5746	0.4550	0.2965	0.1471	C _c
								C _u
Material Description								USCS AASHTO
○ Well graded sand with silt							SW-SM	

Project No. 05-05-0013-	Client: Black & Veatch	Remarks: ○ Moisture Content % 23.1 CP05- EAARS-CB-0280 @ 88.5'
Project: E.A.A (Reservoir)		
○ Source of Sample: CB-0185	Depth: 88.5'	
Date: ○		
Nodarse & Associates, Inc.		
Miami Lakes, FL		

Figure

Particle Size Distribution Report



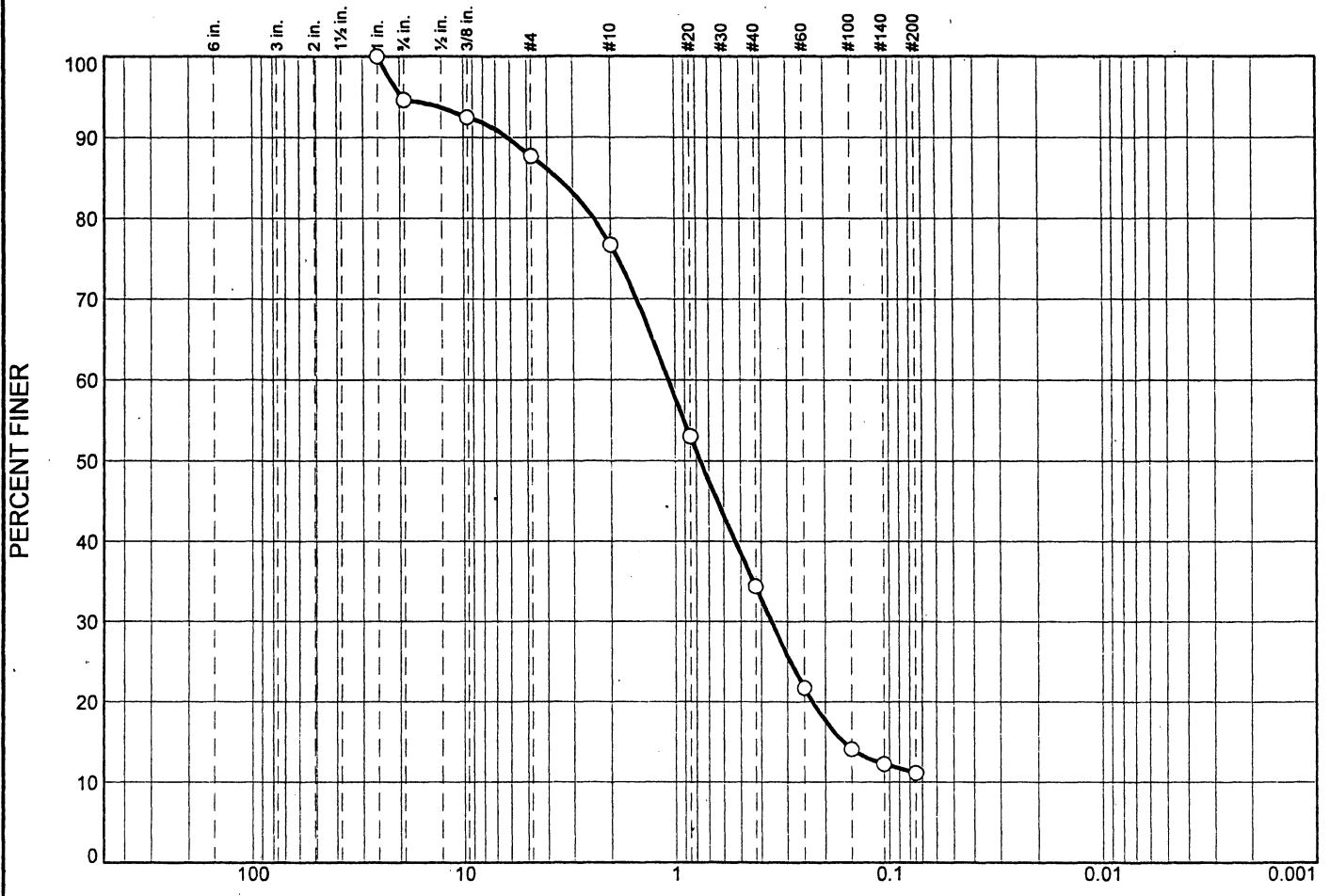
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0	2	9	10	40	24		15
○							
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			2.8337	0.9776	0.6751	0.3031	0.0858
Material Description							USCS
○ Silty sand							SM

Project No. 05-05-0013- Client: Black & Veatch		Remarks:
Project: E.A.A (Reservoir)		○ Moisture Content % 24.1 CP05-
○ Source of Sample: CB-0185	Depth: 93.5'	EAARS-CB-0280 @ 93.5'
Date: ○		
Nodarse & Associates, Inc.		
Miami Lakes, FL		Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



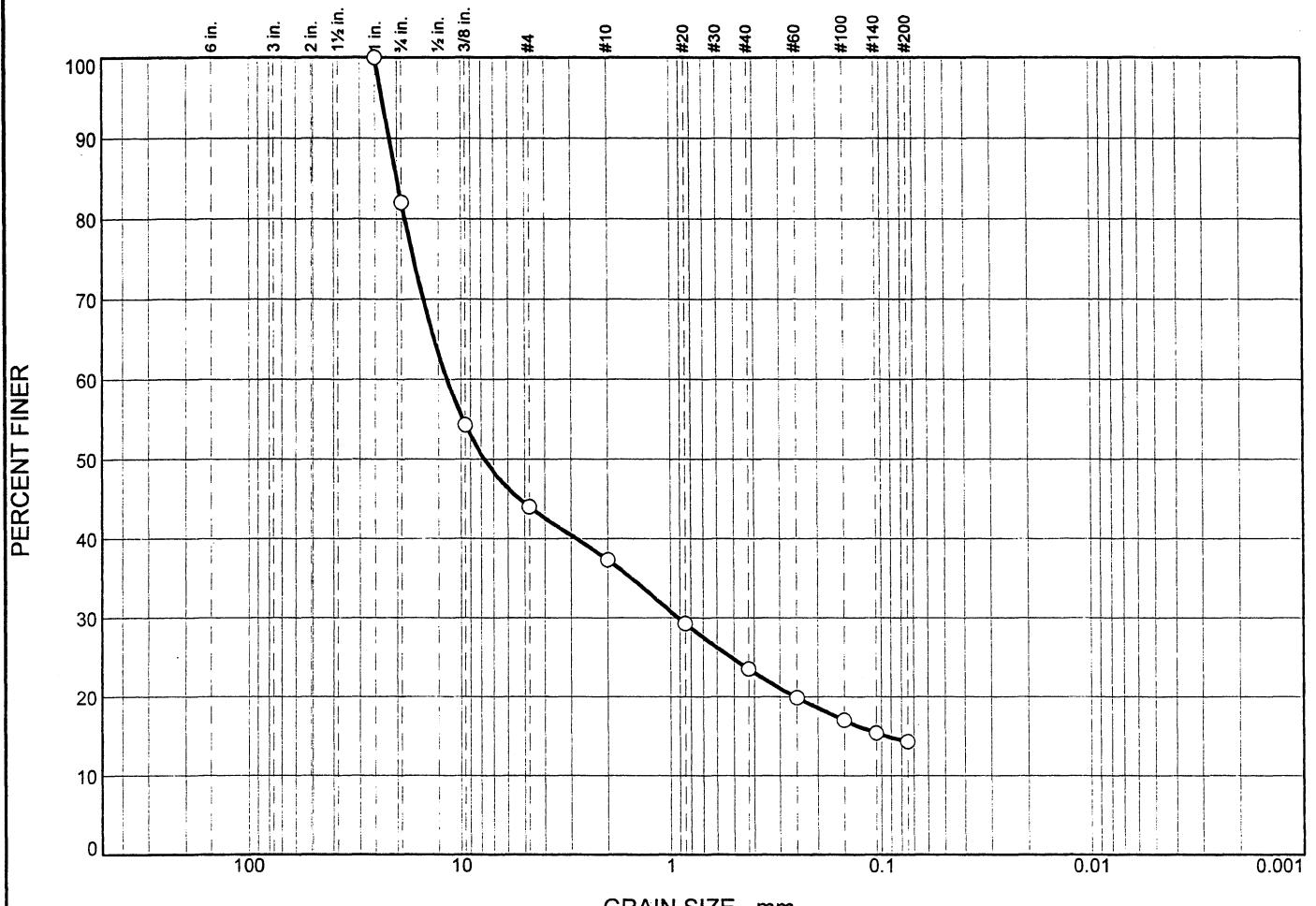
% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○ 0	5	7	11	43	23		11	
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	
○			3.5493	1.0734	0.7647	0.3575	0.1642	
Material Description							USCS	AASHTO
○ Poorly graded sand with silt							SP-SM	

Project No. 05-05-0013- Client: Black & Veatch			Remarks:
Project: E.A.A (Reservoir)			○ Moisture Content % 23.8 CP05-
○ Source of Sample: CB-0185	Depth: 98.5'	Sample Number: 21	EAARS-CB-0280 @ 98.5'
Date: ○			
Nodarse & Associates, Inc.			
Miami Lakes, FL			Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	18.0	38.0	6.7	13.8	9.2		14.3
<hr/>							
○ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
		20.0393	11.6207	7.7570	0.9163	0.0948	
<hr/>							
Material Description							USCS AASHTO
○ Silty gravel with sand							GM
<hr/>							

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir) W/O#6

○ Source of Sample: CB164 Depth: 5.0'-10.0' Sample Number: CB164

Remarks:

○ Moisture Content % 5.7 CP05-EAARS-VB-0282

Nodarse & Associates, Inc.

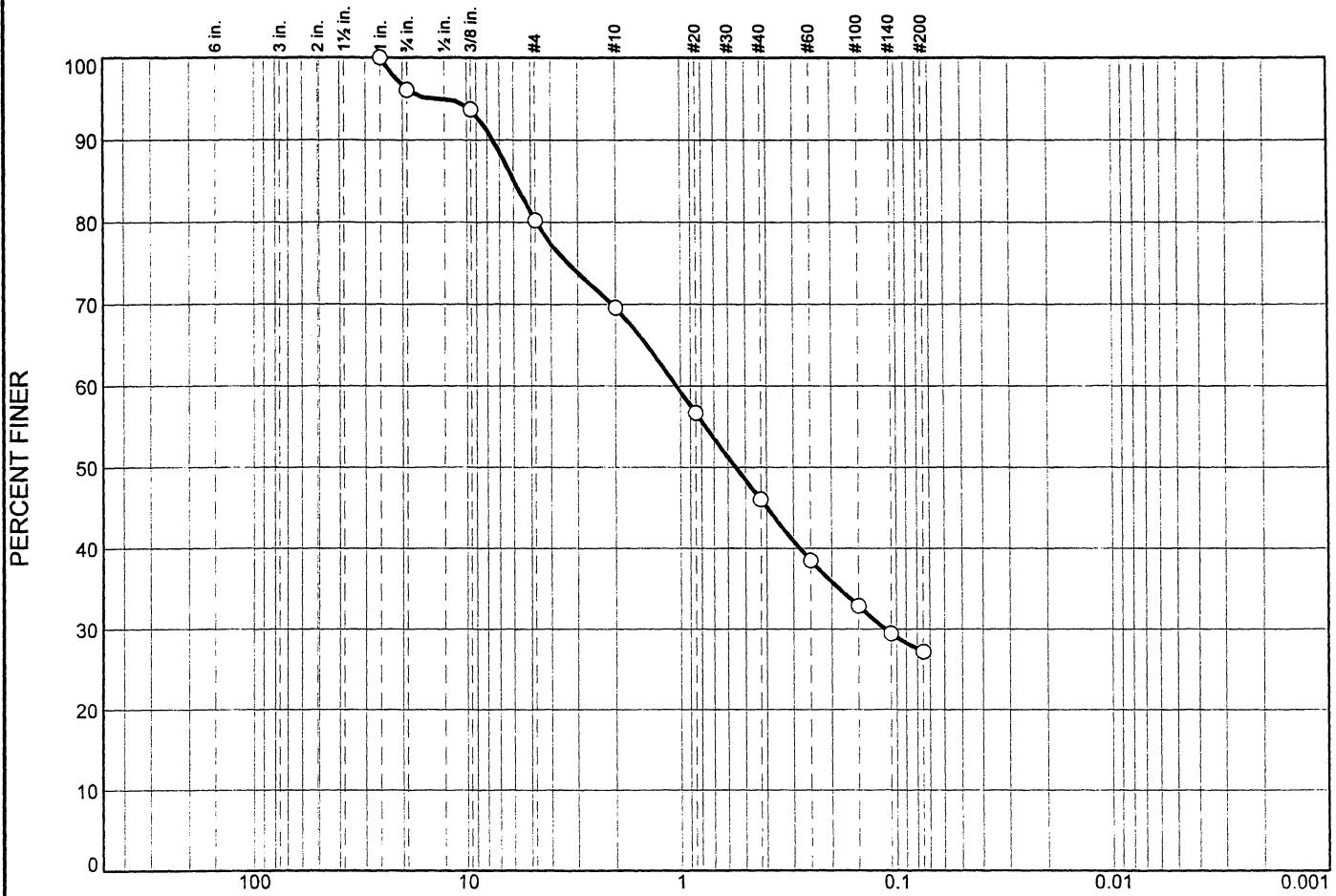
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	3.9	15.9	10.6	23.5	18.9		27.2
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			5.9549	1.0430	0.5522	0.1128	
Material Description							USCS
○ Silty sand with gravel							SM
							AASHTO

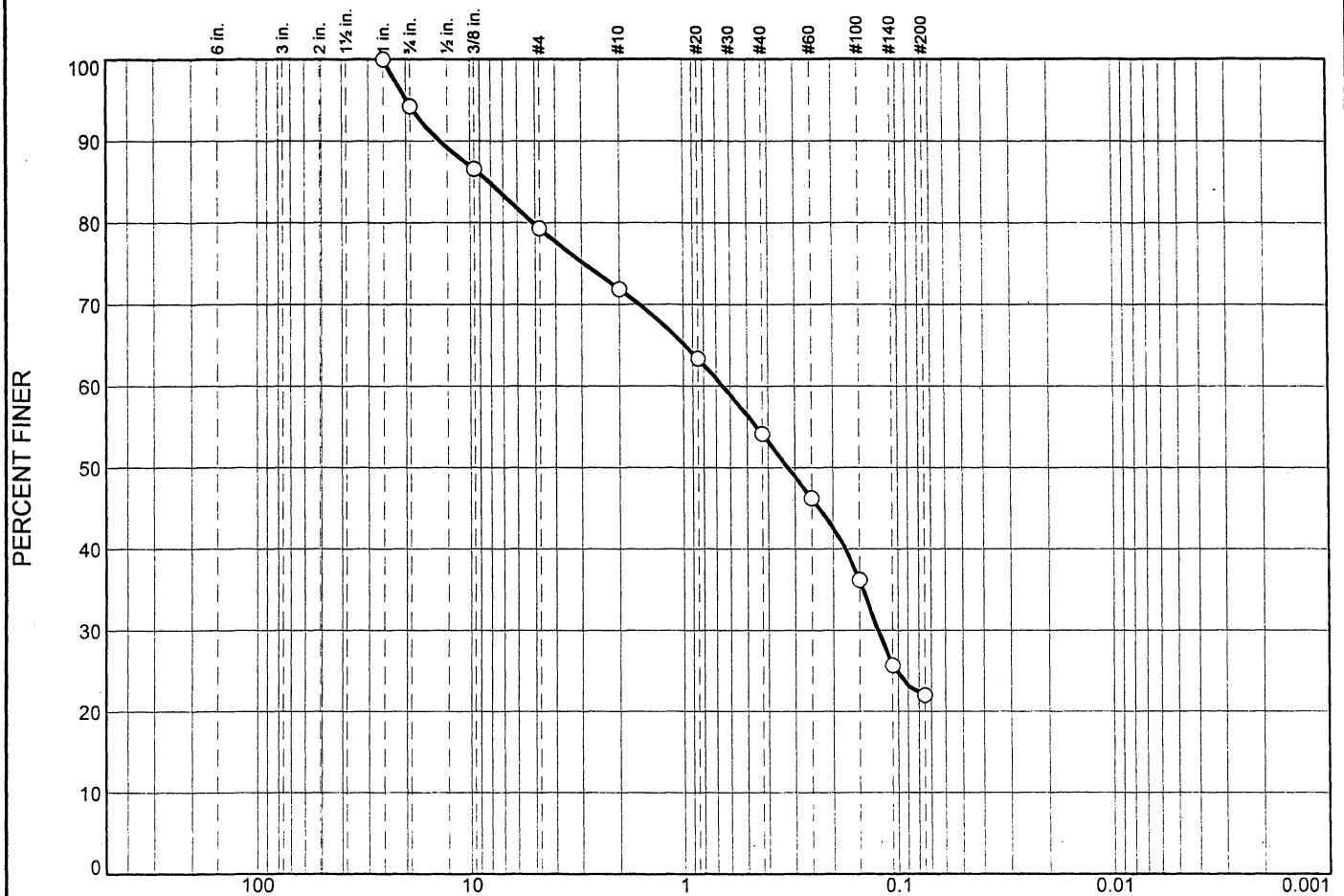
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB164 Depth: 10.0'-15.0' Sample Number: CB164	Remarks: ○ Moisture Content % 21.4 CP05- EAARS-VB-0282
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"		% Gravel			% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0	6	15	7	18	32			22	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>			8.1303	0.6480	0.3215	0.1237				
Material Description									USCS	AASHTO
<input type="radio"/> Silty sand with gravel									SM	

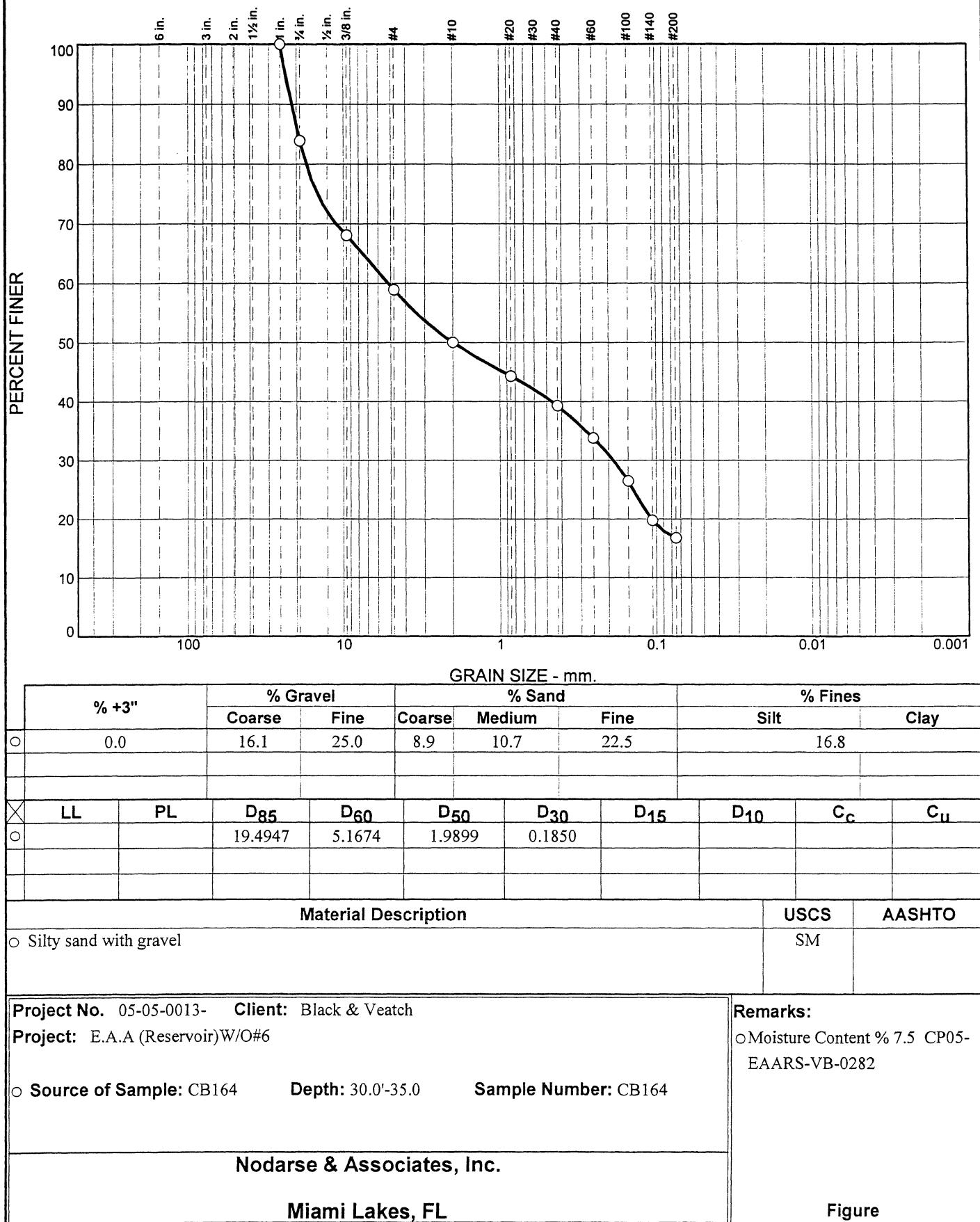
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0164 Depth: 15' to 30' Date: <input type="radio"/>	Remarks: <input type="radio"/> Moisture Content %20.0 CP05-EAARS-VB-0282
Nodarse & Associates, Inc. Miami Lakes, FL	

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Figure

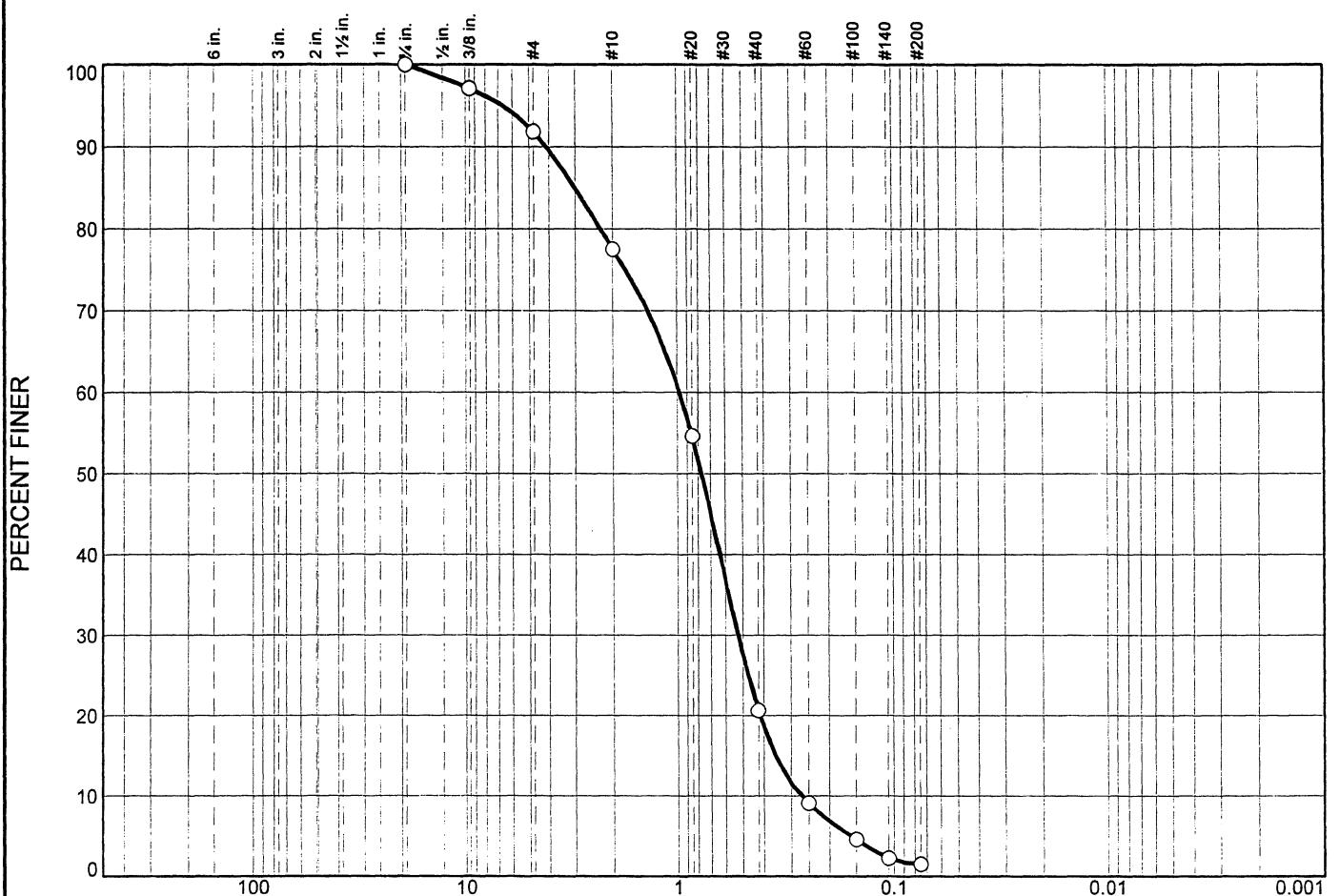
Particle Size Distribution Report



Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○ 0.0	0.0	8.1	14.4	56.9	19.1		1.5	
○ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
○		3.0098	0.9722	0.7703	0.5245	0.3541	0.2694	1.05
								3.61
Material Description								USCS
○ Well graded sand								SW
								AASHTO

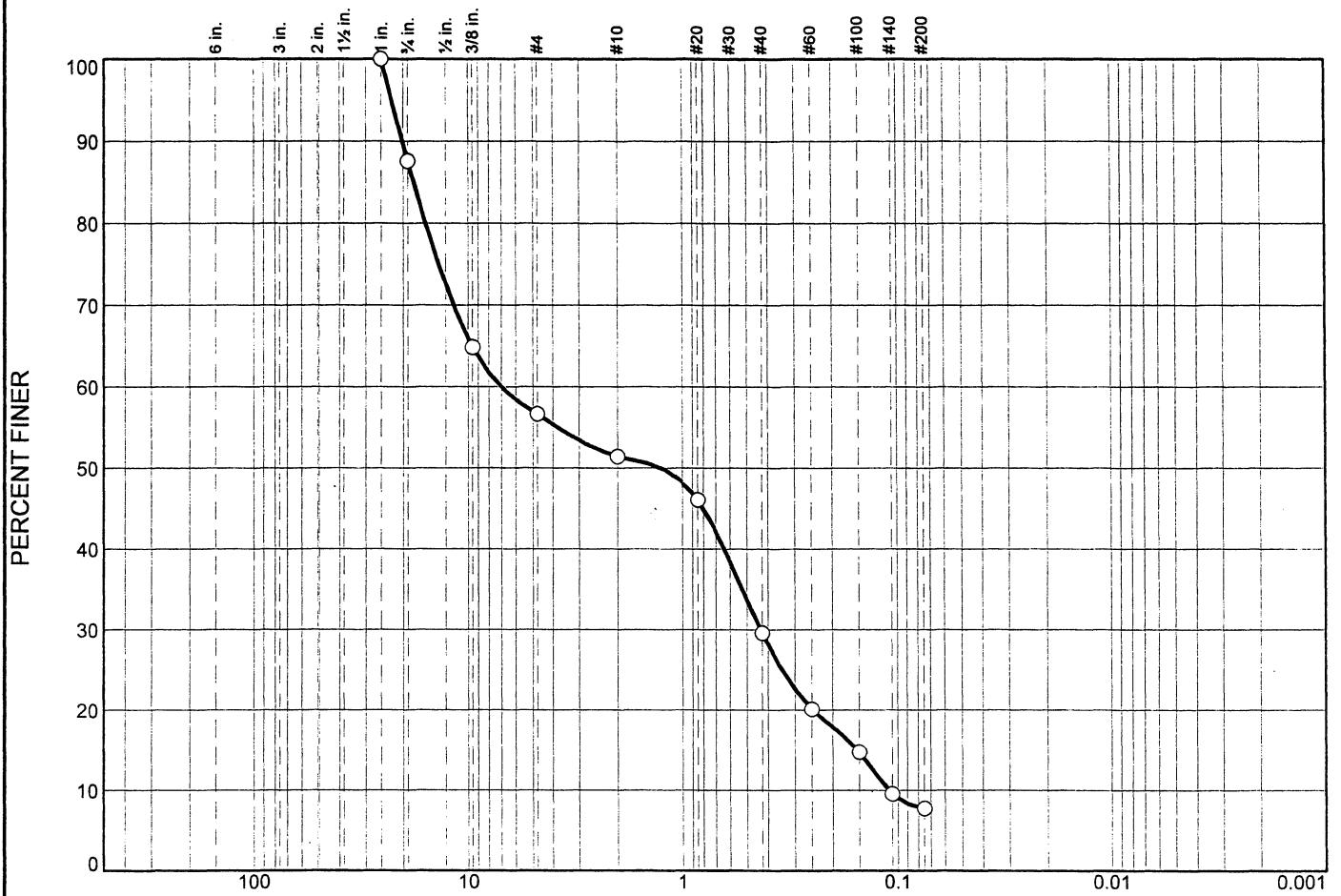
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Source of Sample: CB164 Depth: 45.0'-50.0' Sample Number: CB164	Remarks: ○ Moisture Content % 14.0 CP05-EAARS-VB-0282
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



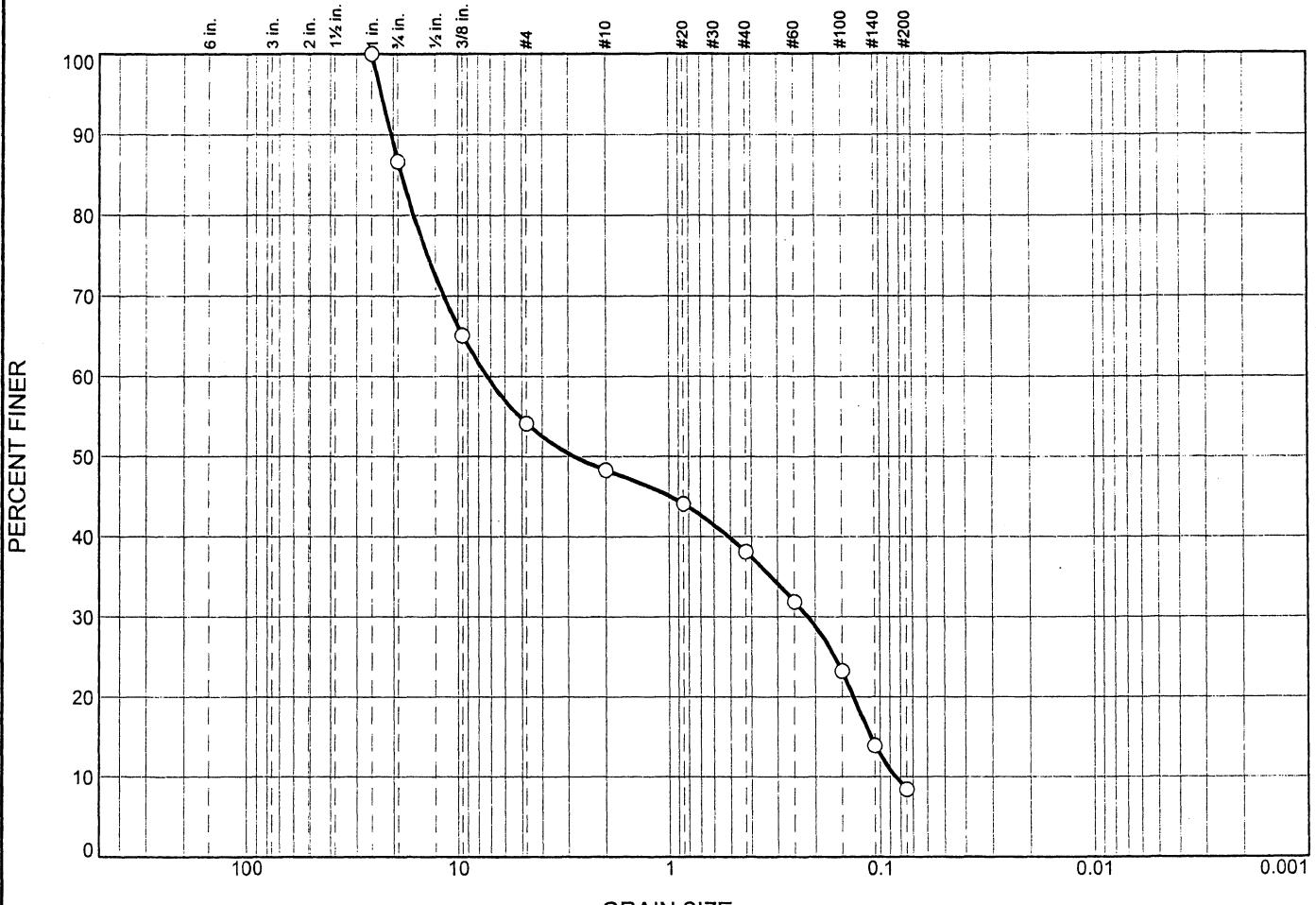
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	12.4	31.0	5.2	21.8	21.9	7.7	
GRAIN SIZE - mm.							
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			17.8777	7.0260	1.2499	0.4323	0.1524
						0.1100	0.24
							63.87
Material Description							USCS
○ Poorly graded sand with silt and gravel							SP-SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Source of Sample: CB164 Depth: 55.0'-60.0' Sample Number: CB164	Remarks: ○ Moisture Content % 10.2 CP05-EAARS-VB-0282
Nodarse & Associates, Inc. Miami Lakes, FL	
Figure	

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	13	33	6	10	30	8

Material Description	USCS	AASHTO
○ Poorly graded sand with silt and gravel	SP-SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0164

Depth: 60' to 65'

Remarks:

○ Moisture Content % 11.7
CP05-EAARS-VB-0282

Date: 0

Nodarse & Associates, Inc.

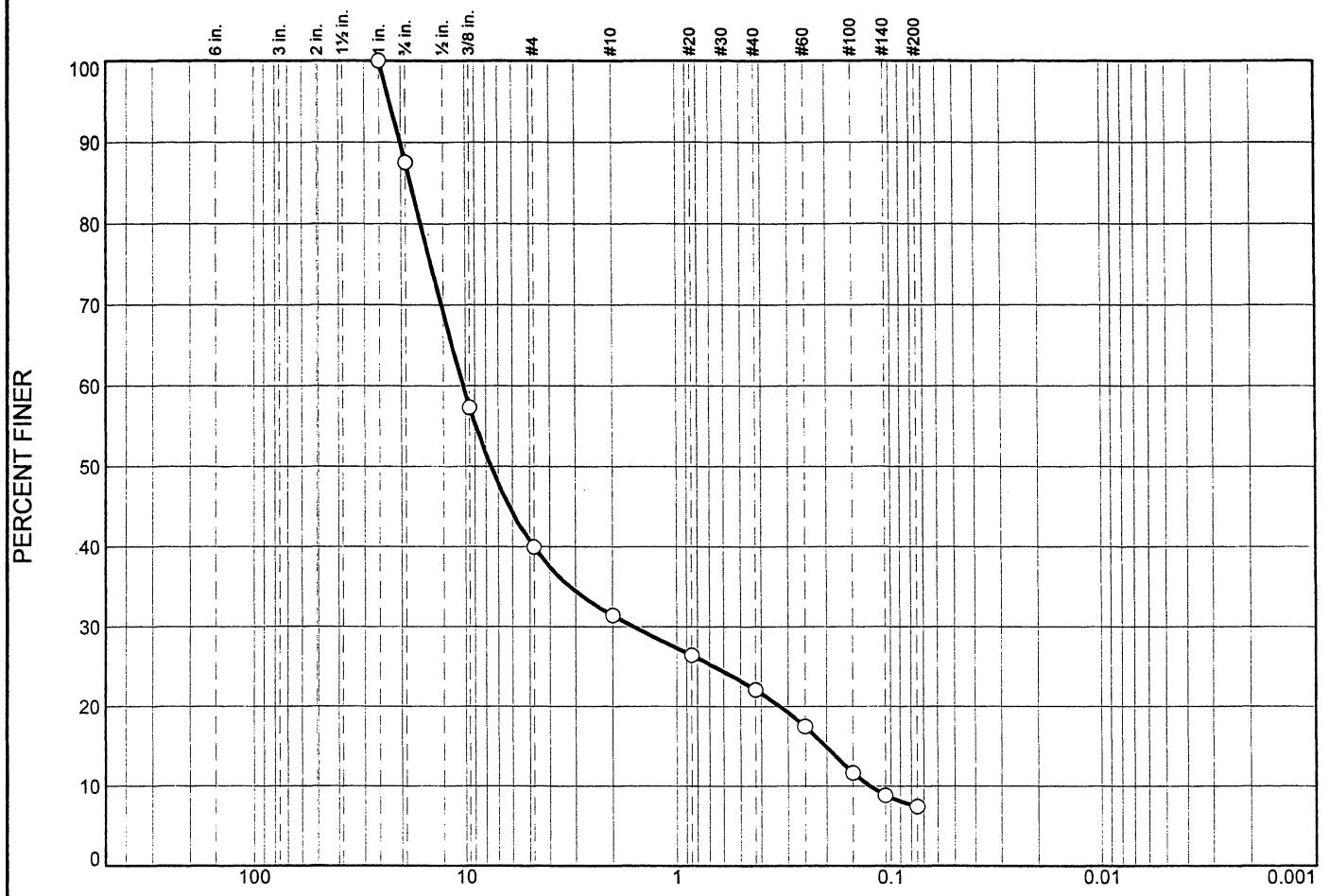
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	12.4	47.6	8.6	9.3	14.7		7.4
○ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
		18.0005	10.2300	7.5847	1.5879	0.2011	0.1252
Material Description							USCS AASHTO
○ Poorly graded gravel with silt							GP-GM

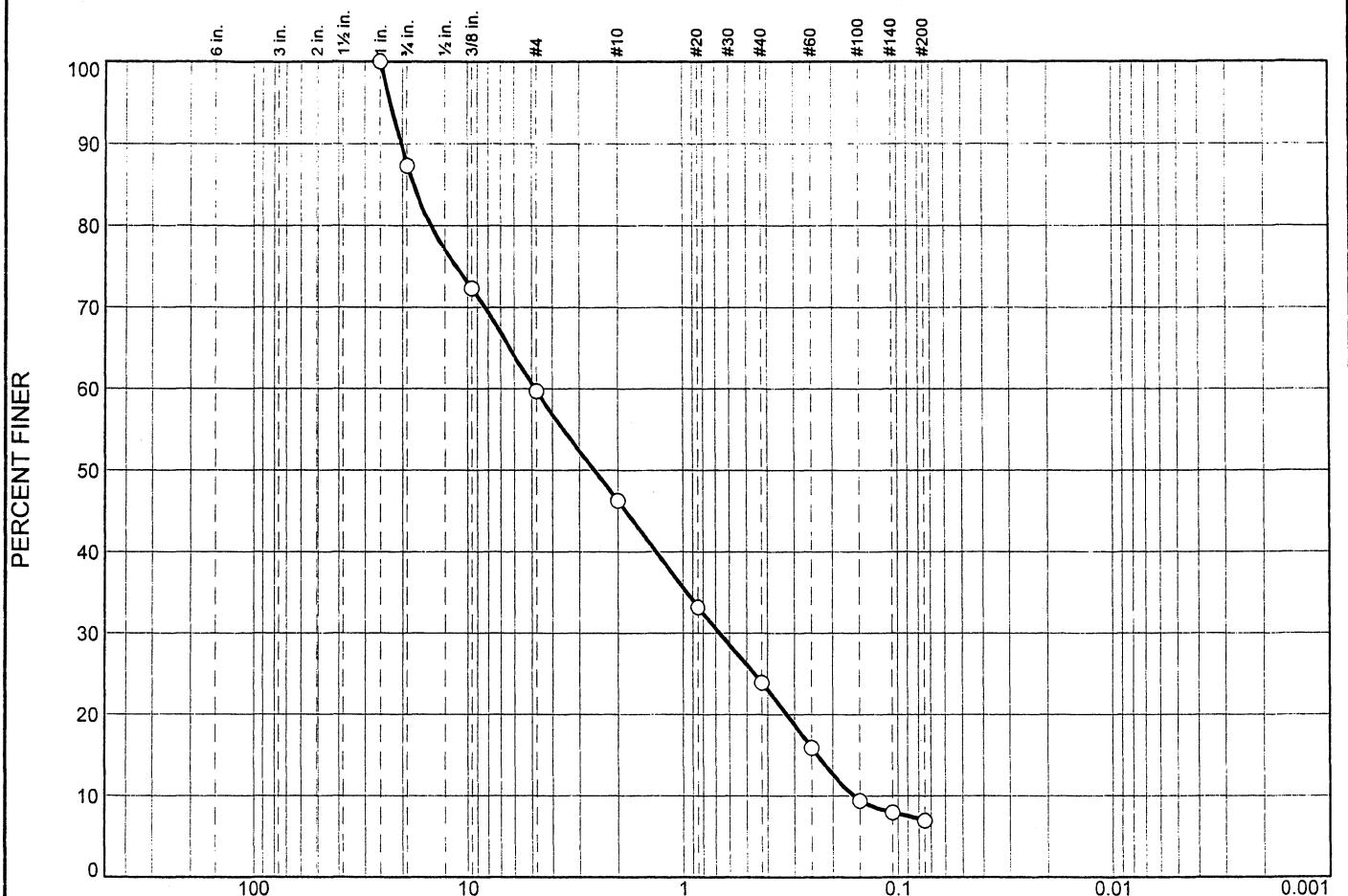
<p>Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB164 Depth: 70.0'-75.0' Sample Number: CB164</p>	<p>Remarks: ○ Moisture Content % 7.0 CP05-EAARS-VB-0282</p>
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



Material Description	USCS	AASHTO
○ Poorly graded sand with silt and gravel	SP-SM	

Project No. 05-05-0013- **Client:** Black & Veatch
Project: E.A.A (Reservoir)
○ **Source of Sample:** CB-0164 **Depth:** 80' to 8

Remarks:
○ Moisture Content % 11.0 CP05-
EAARS-VB-0282

Date: _____

Nodarse & Associates, Inc.

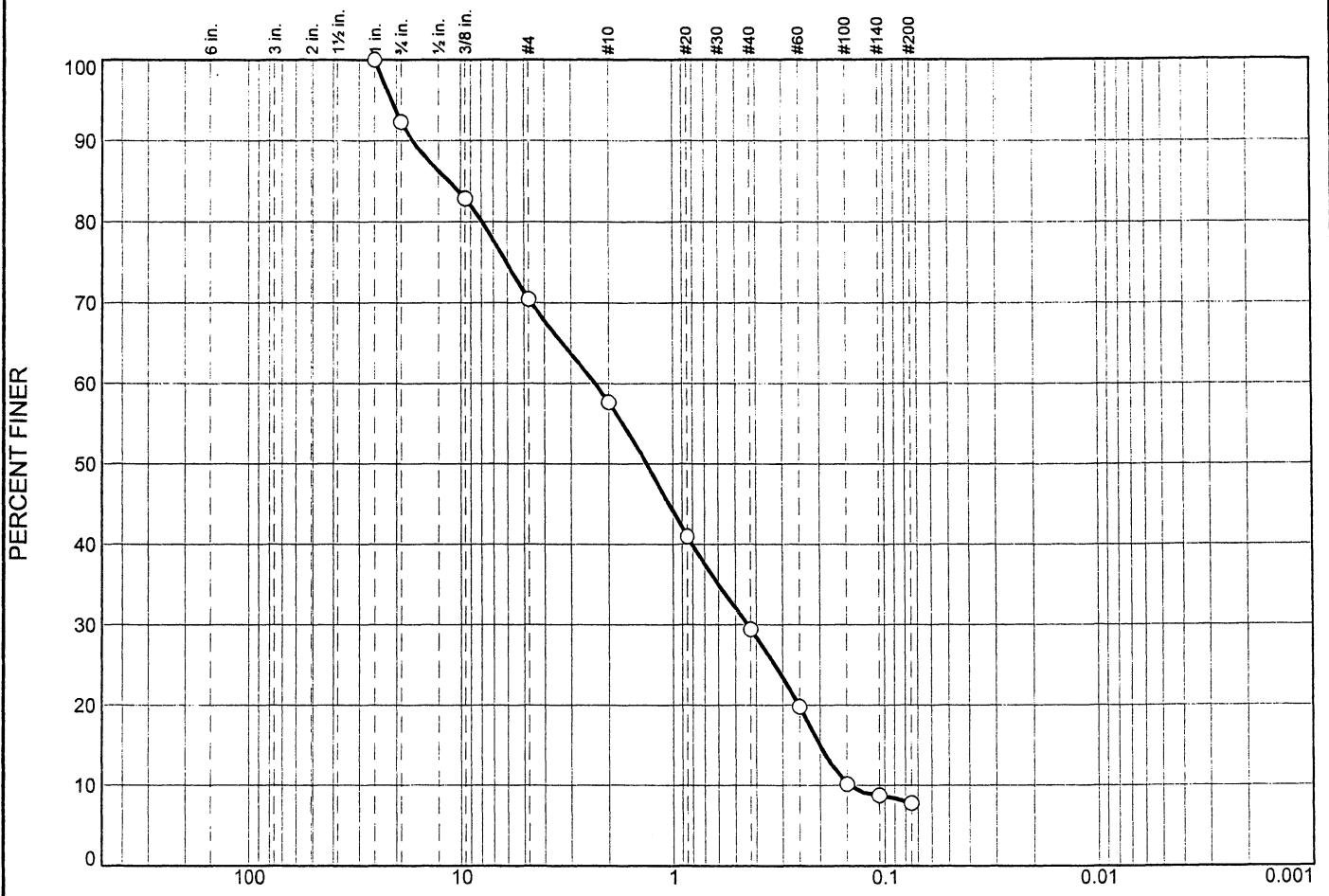
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



Material Description	USCS	AASHTO
○ Poorly graded sand with silt and gravel	SP-SM	

Project No. 05-05-0013- **Client:** Black & Veatch
Project: E.A.A (Reservoir)
o **Source of Sample:** CB-0164 **Depth:** 85' to 90'

Date: o

Remarks:

Moisture Content % 11.3
CP05-EAARS-VB-0282

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



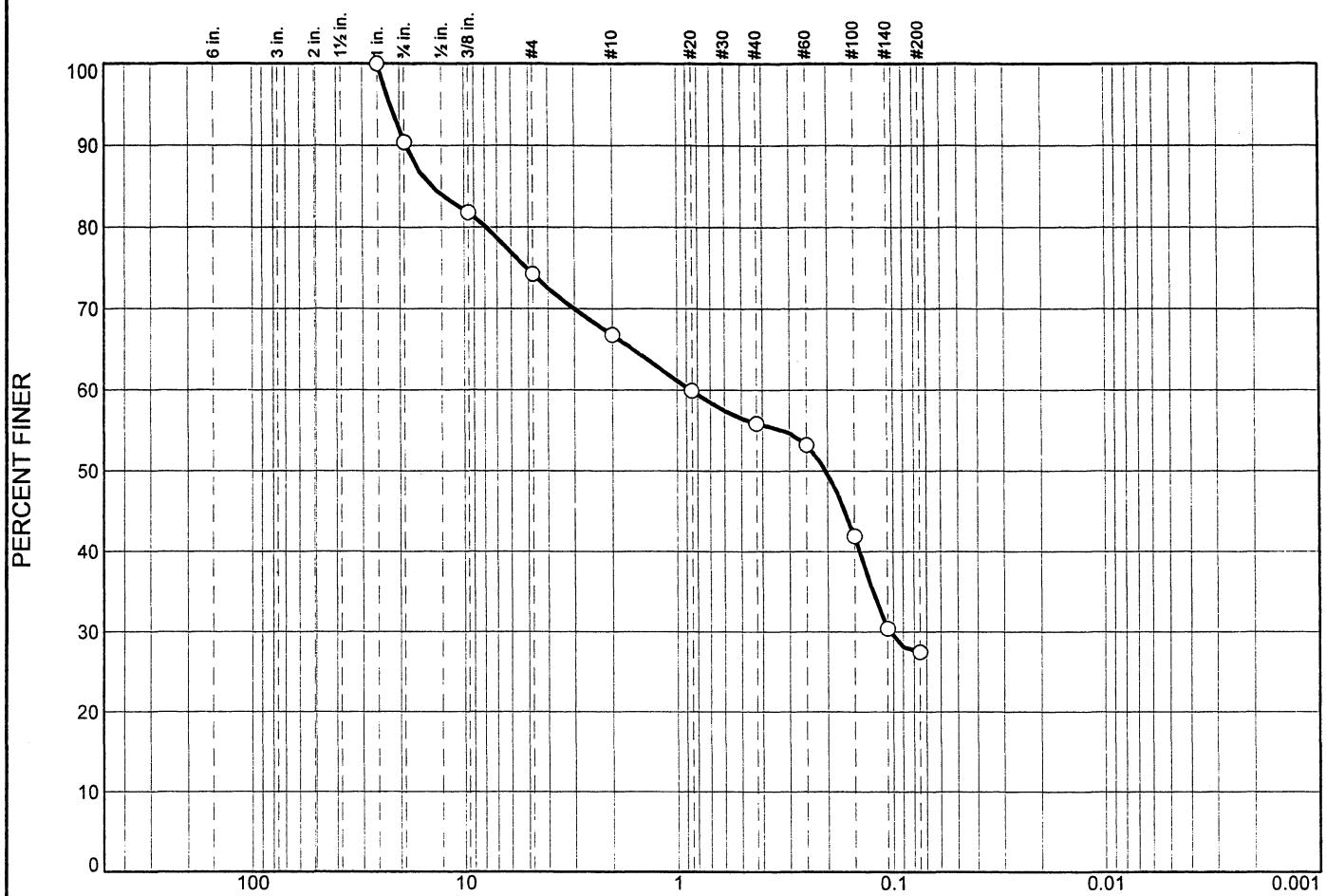
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	12.7	5.3	4.2	42.0	29.6		6.2
<hr/>							
○ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
		12.4963	1.0282	0.7182	0.3608	0.2311	0.1767
Material Description							USCS
○ Poorly graded sand with silt							SP-SM
<hr/>							AASHTO

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB164 Depth: 95.0'-100.0' Sample Number: CB164	Remarks: ○ Moisture Content % 21.9 CP05-EAARS-VB-0282
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input checked="" type="radio"/>	0.0	9.6	16.2	7.4	11.0	28.3		27.5
<input checked="" type="radio"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input checked="" type="radio"/>			14.1219	0.8574	0.2026	0.1039		C _c
								C _u
Material Description								USCS AASHTO
<input checked="" type="radio"/>	Silty sand with gravel							SM

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)W/O#6	<input checked="" type="radio"/> Moisture Content % 19.7 CP05-EAARS-VB-0282
<input checked="" type="radio"/> Sample Source: CB164 Depth: 115.0'-120.0' Sample No.: CB164	

Remarks:
 Moisture Content % 19.7 CP05-EAARS-VB-0282

Nodarse & Associates, Inc.

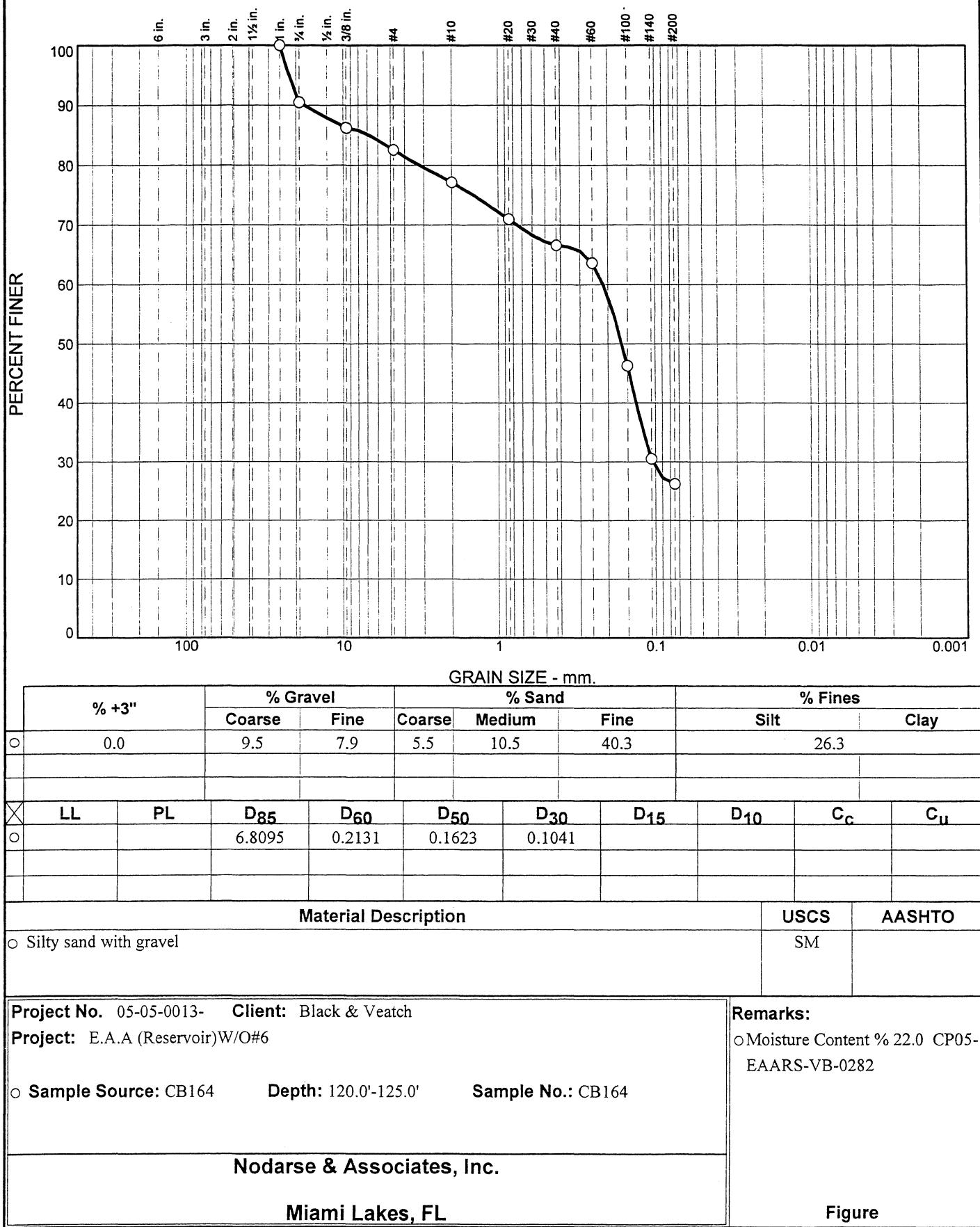
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

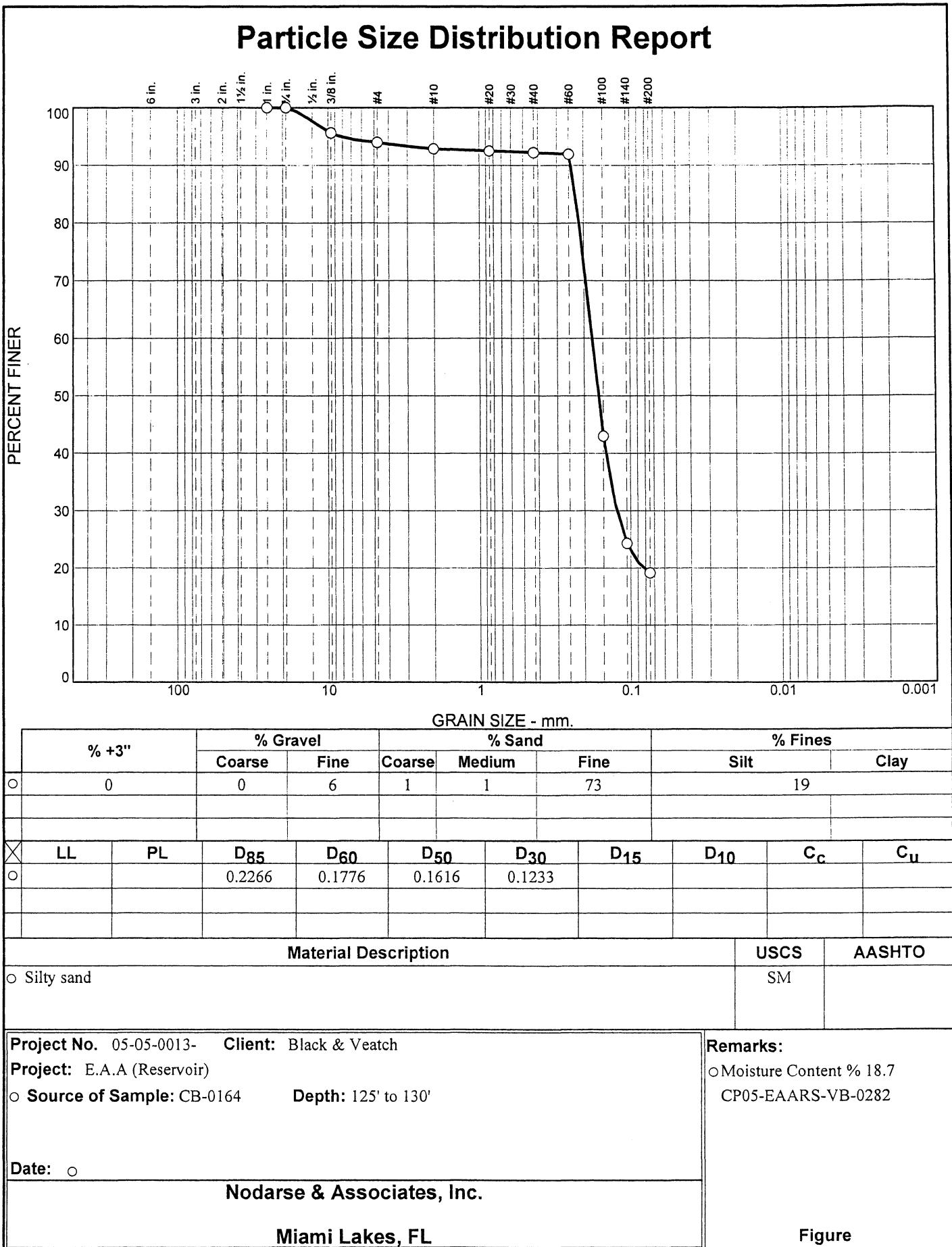
Particle Size Distribution Report



Tested By: Bolooki

Checked By: K Leung

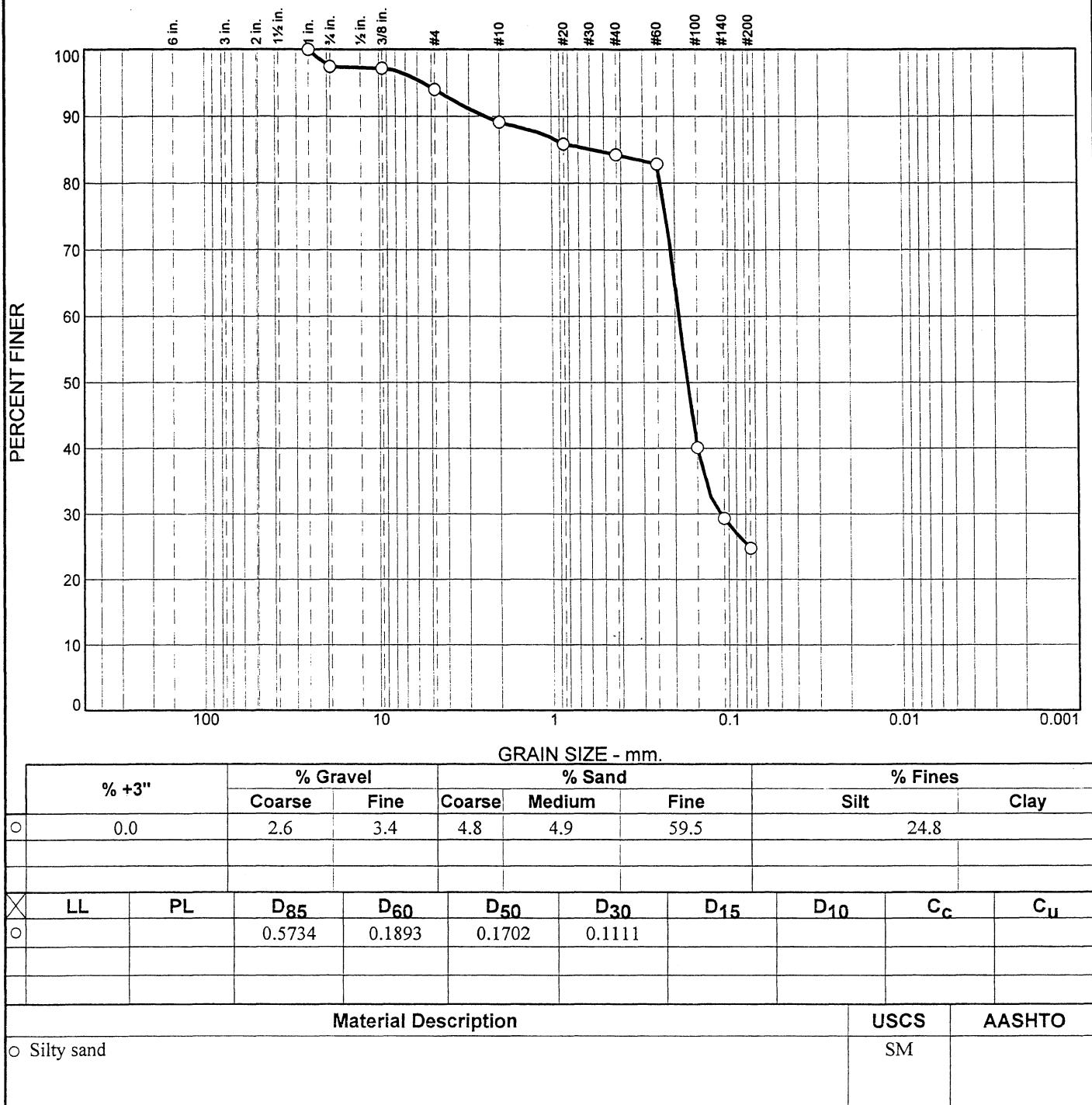
Particle Size Distribution Report



Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir) W/O#6

○ Source of Sample: CB164 Depth: 130'-135' Sample Number: CB164

Remarks:

○ Moisture Content % 21.1 CP05-EAARS-VB-0282

Nodarse & Associates, Inc.

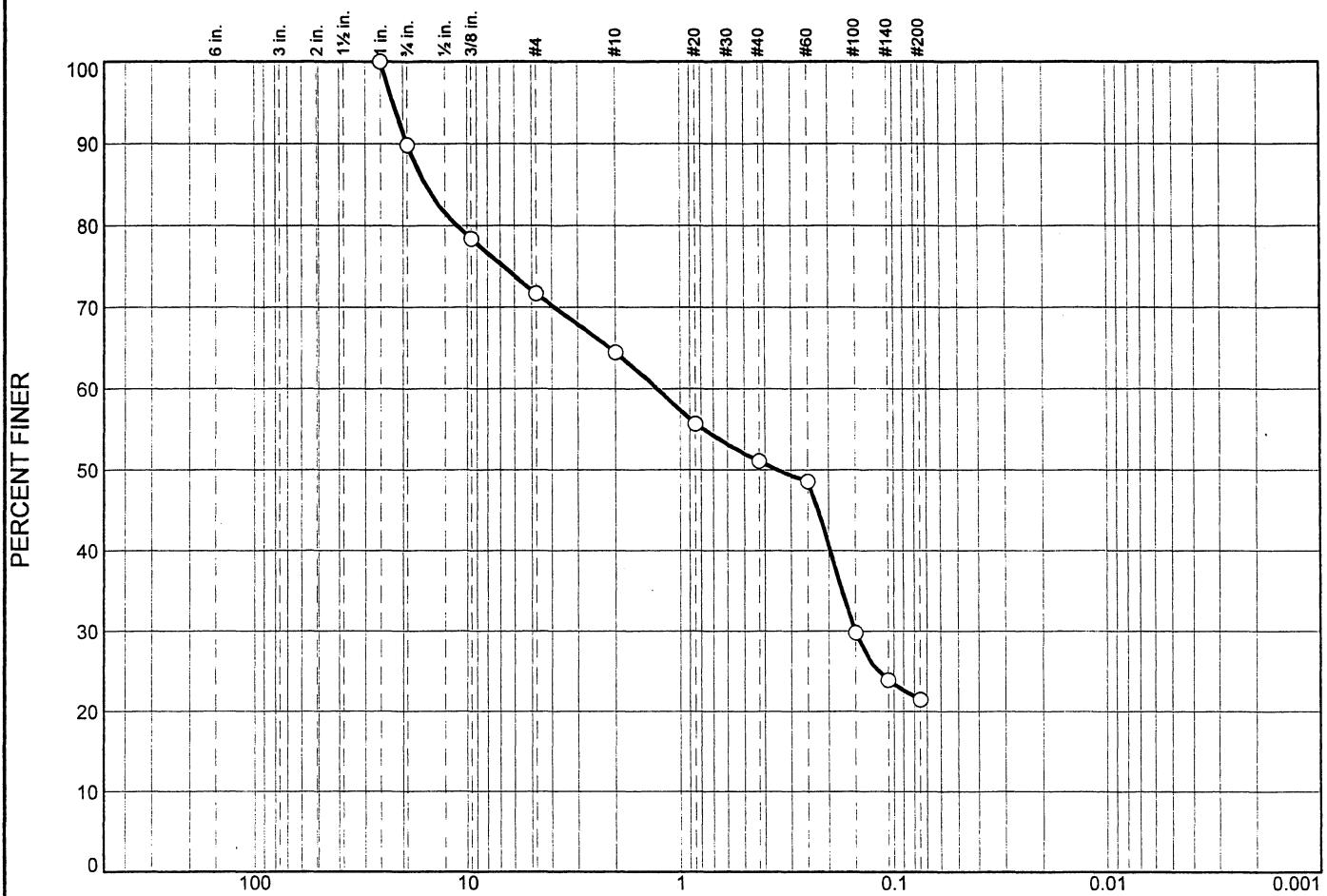
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



Project No. 05-05-0013- **Client:** Black & Veatch

Project: E.A.A (Reservoir)W/O#6

○ Sample Source: CB164

Depth: 135.0'-140.0'

Sample No.: CB164

Remarks:

○ Moisture Content % 20.9 CP05-
EAARS-VB-0282

Nodarse & Associates, Inc.

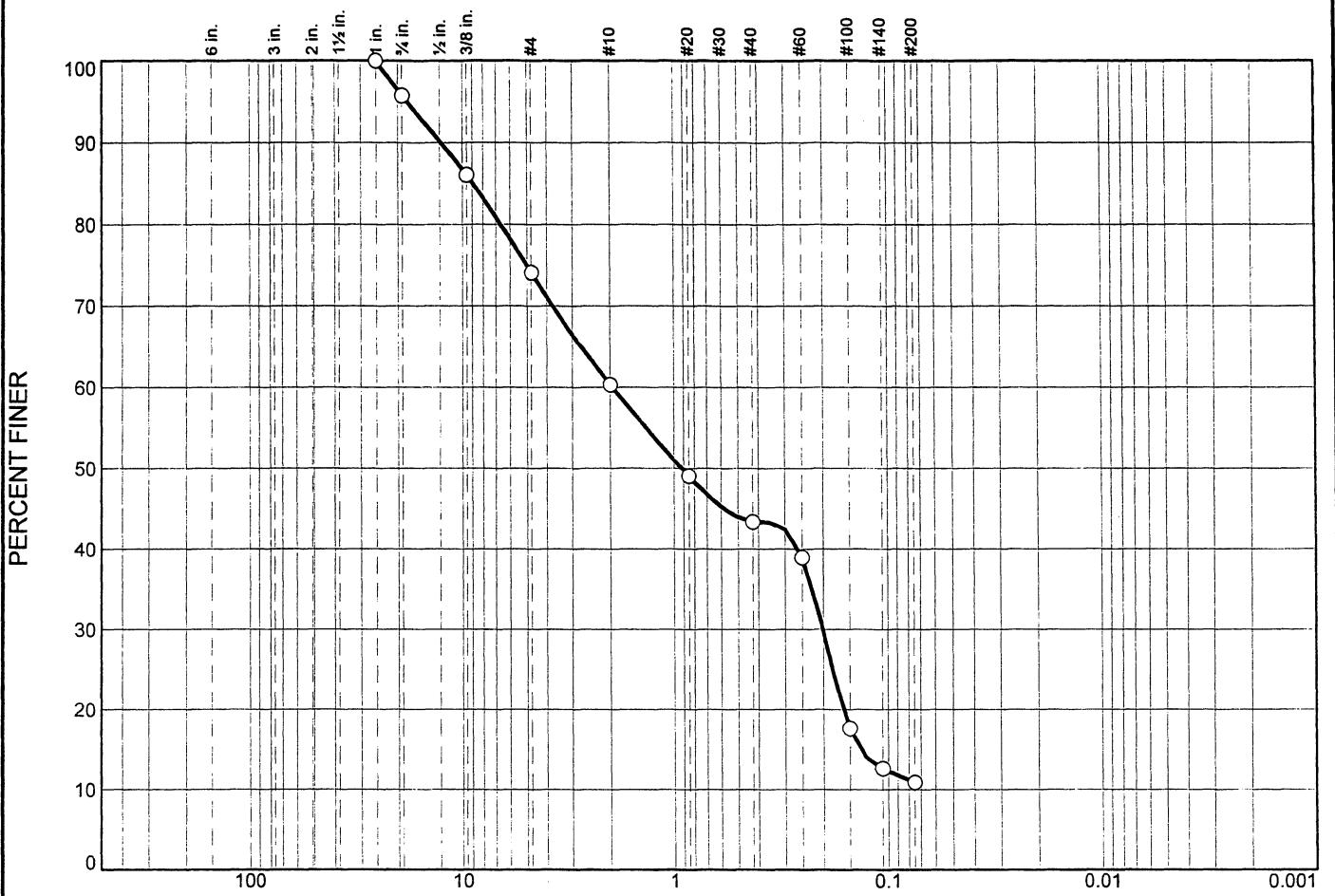
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0.0	4.3	21.6	13.8	16.9	32.5		10.9
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input type="radio"/>			8.9081	1.9524	0.9175	0.2006	0.1342	C _c
								C _u
Material Description								USCS AASHTO
<input type="radio"/> Poorly graded sand with silt and gravel								SP-SM

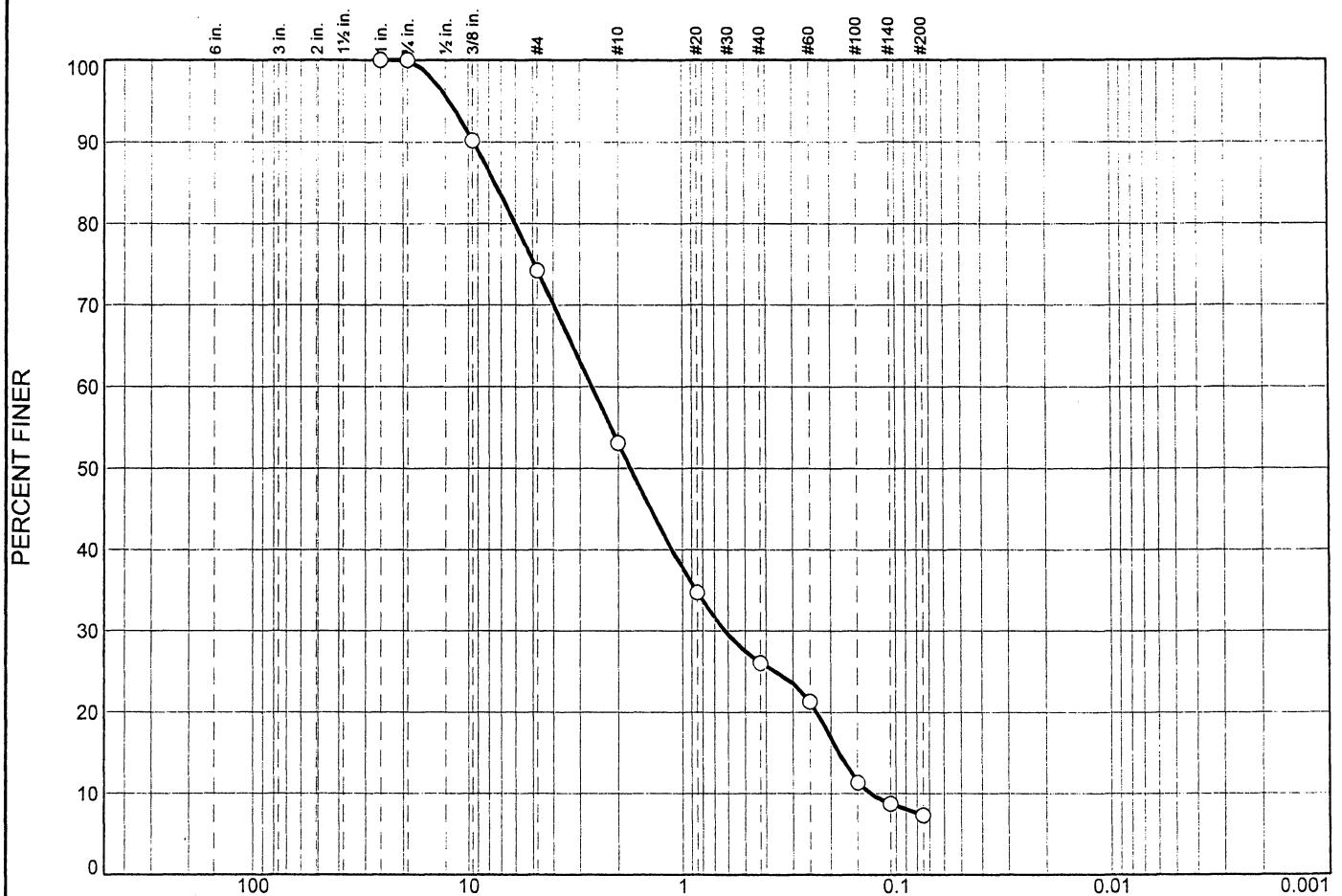
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 <input type="radio"/> Sample Source: CB164 Depth: 145.0'-150.0' Sample No.: CB164	Remarks: <input type="radio"/> Moisture Content % 12.7 CP05-EAARS-VB-0282
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



Material Description

USCS | AASHTO

○ Poorly graded sand with silt and gravel

SP-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0164

Depth: 150' to 155'

Remarks:

○Moisture Content % 14.9
CP05-EAARS-VB-0282

Date:

Nodarse & Associates, Inc.

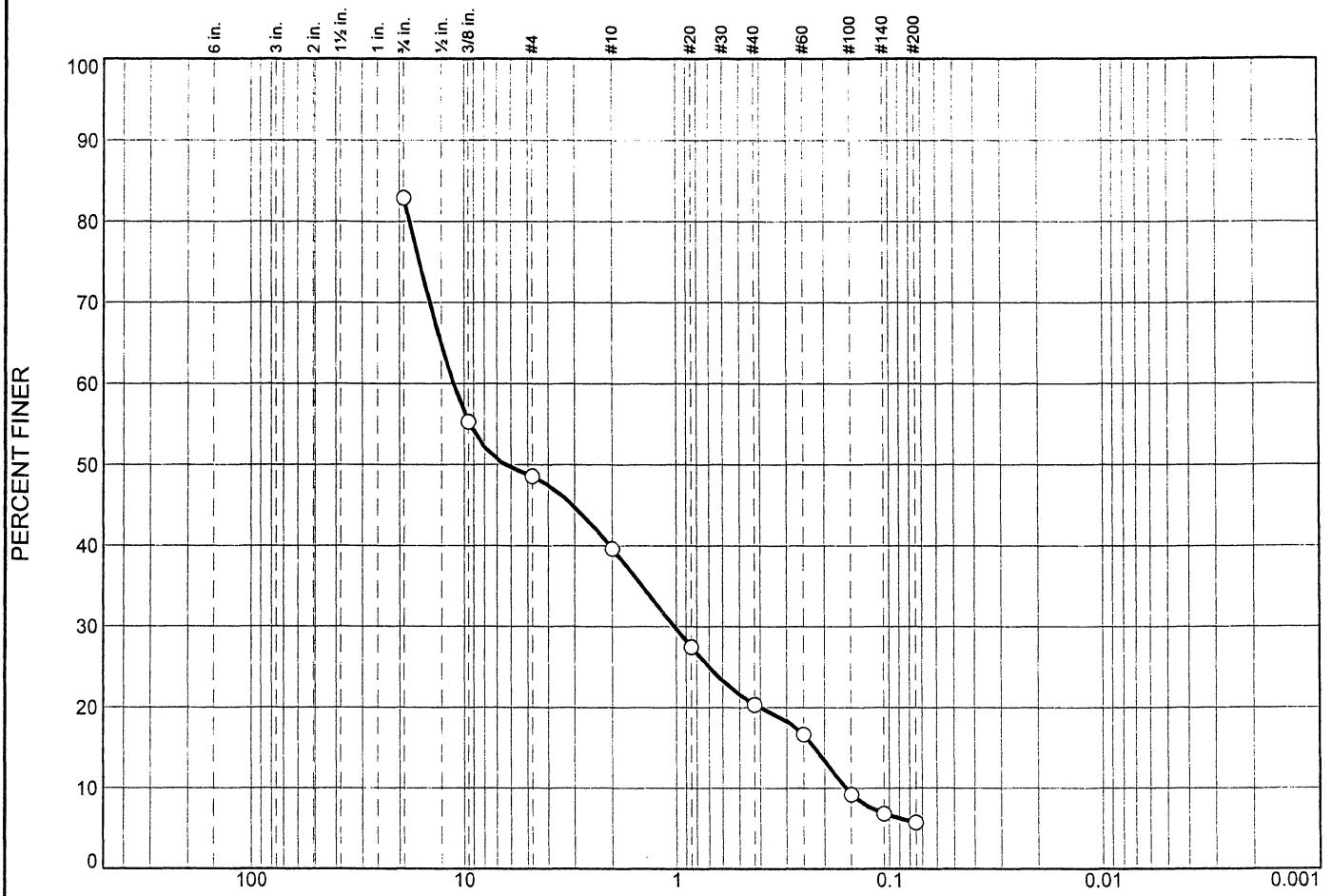
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



Material Description	USCS	AASHTO
○ Poorly graded gravel with silt and sand	GP-GM	

Project No. 05-05-0013- **Client:** Black & Veatch
Project: E.A.A (Reservoir)
○ **Source of Sample:** CB-0164 **Depth:** 155' to 160'

Date: ○

Remarks:

- Moisture Content % 9.9

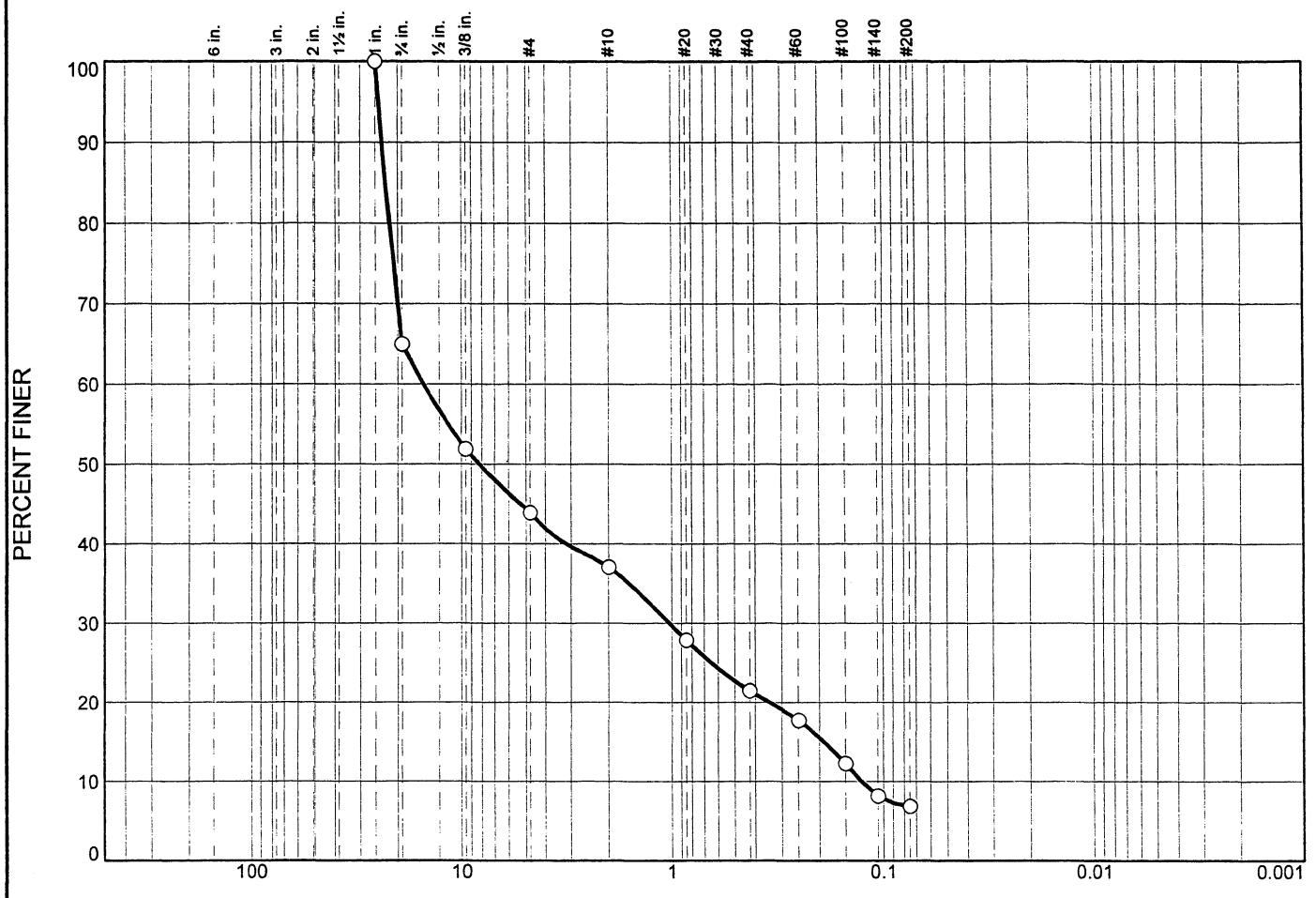
CP05-EAARS-VB-0282

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"	% Gravel			% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	35.0	21.1	6.8	15.6	14.7		6.8	
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
○			22.7402	15.0819	8.2175	1.0253	0.1889	0.1262	0.55 119.52
Material Description								USCS	AASHTO
○	Poorly graded gravel with silt and sand								GP-GM

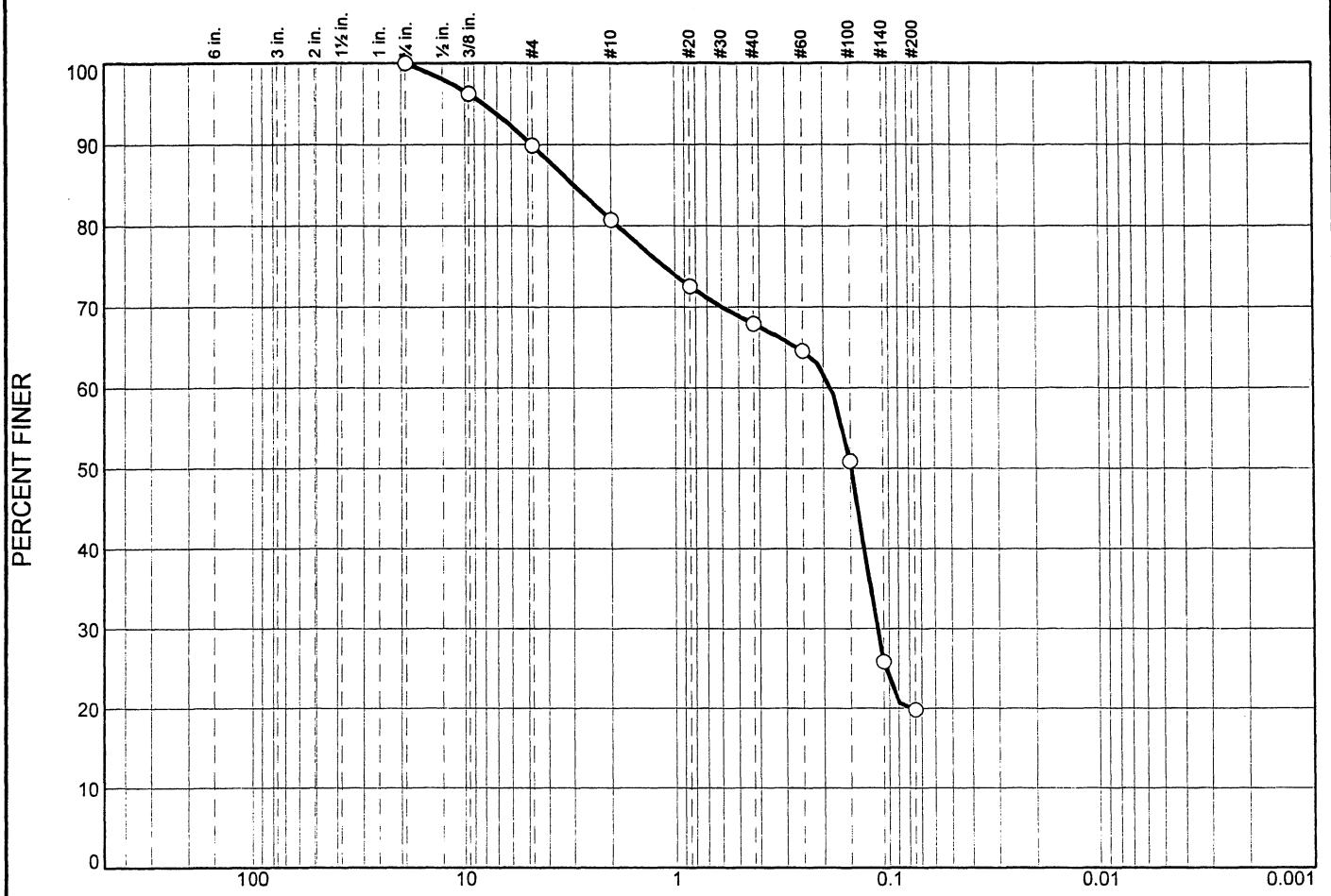
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Sample Source: CB164 Depth: 165.0'-170.0' Sample No.: CB164	Remarks: ○ Moisture Content % 13.8 CP05-EAARS-VB-0282
Nodarse & Associates, Inc. Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O 0.0	0.0	10.1	9.1	12.9	48.1		19.8
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
O 2.9826		0.1836	0.1480	0.1136			
Material Description							USCS
O Silty sand with gravel							SM
							AASHTO

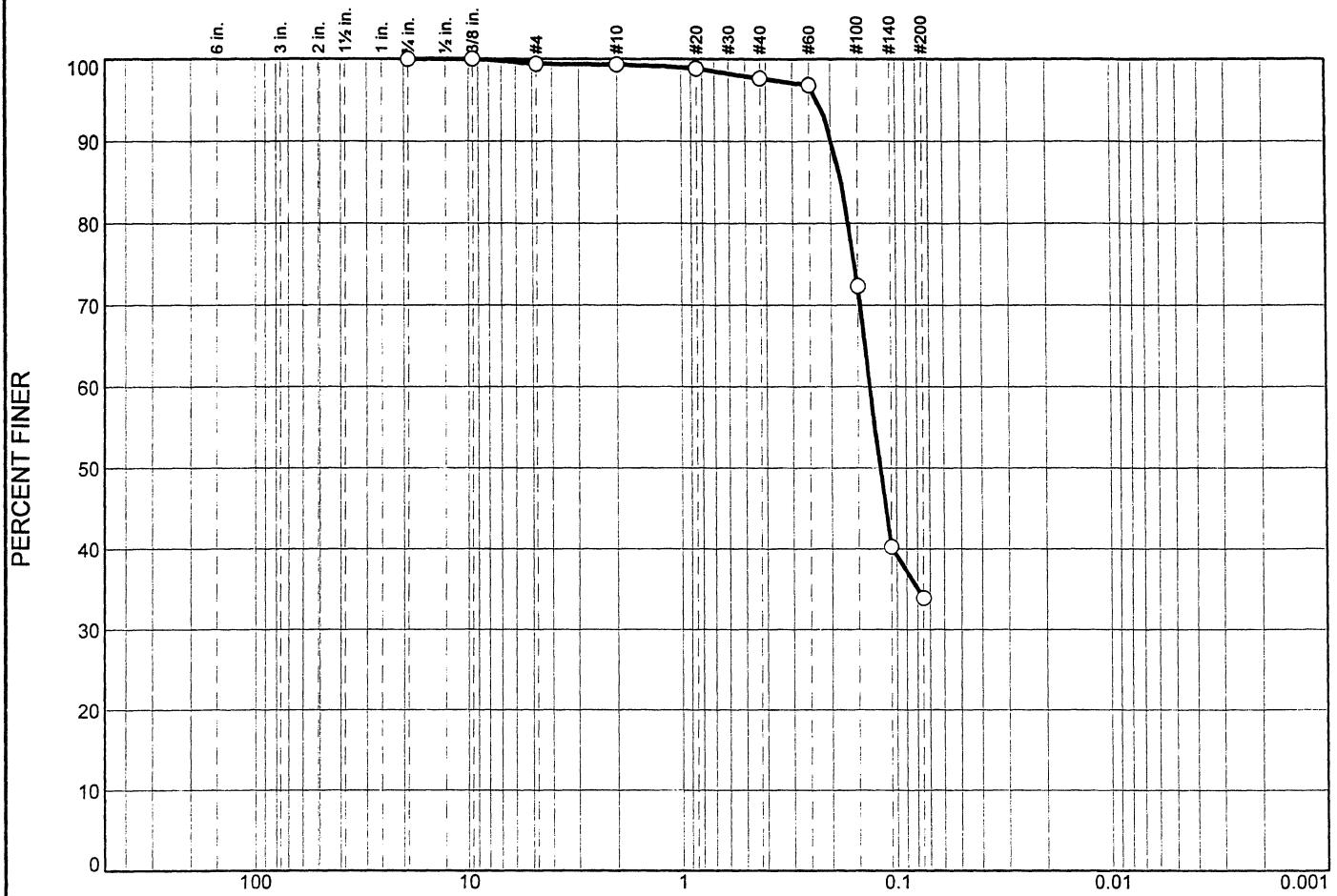
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)W/O#6	O Moisture Content % 19.6 CP05-EAARS-VB-0282
O Sample Source: CB164 Depth: 180.0'-185.0' Sample No.: CB164	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.6	0.1	1.6	63.8	33.9
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			0.1781	0.1324	0.1198		
Material Description							USCS
○ Sandy silt							ML
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir) W/O#6	○ Moisture Content % 20.2 CP05-EAARS-VB-0282
○ Sample Source: CB164 Depth: 200.0'-205.0' Sample No.: CB164	

Remarks:
 Moisture Content % 20.2 CP05-EAARS-VB-0282

Nodarse & Associates, Inc.

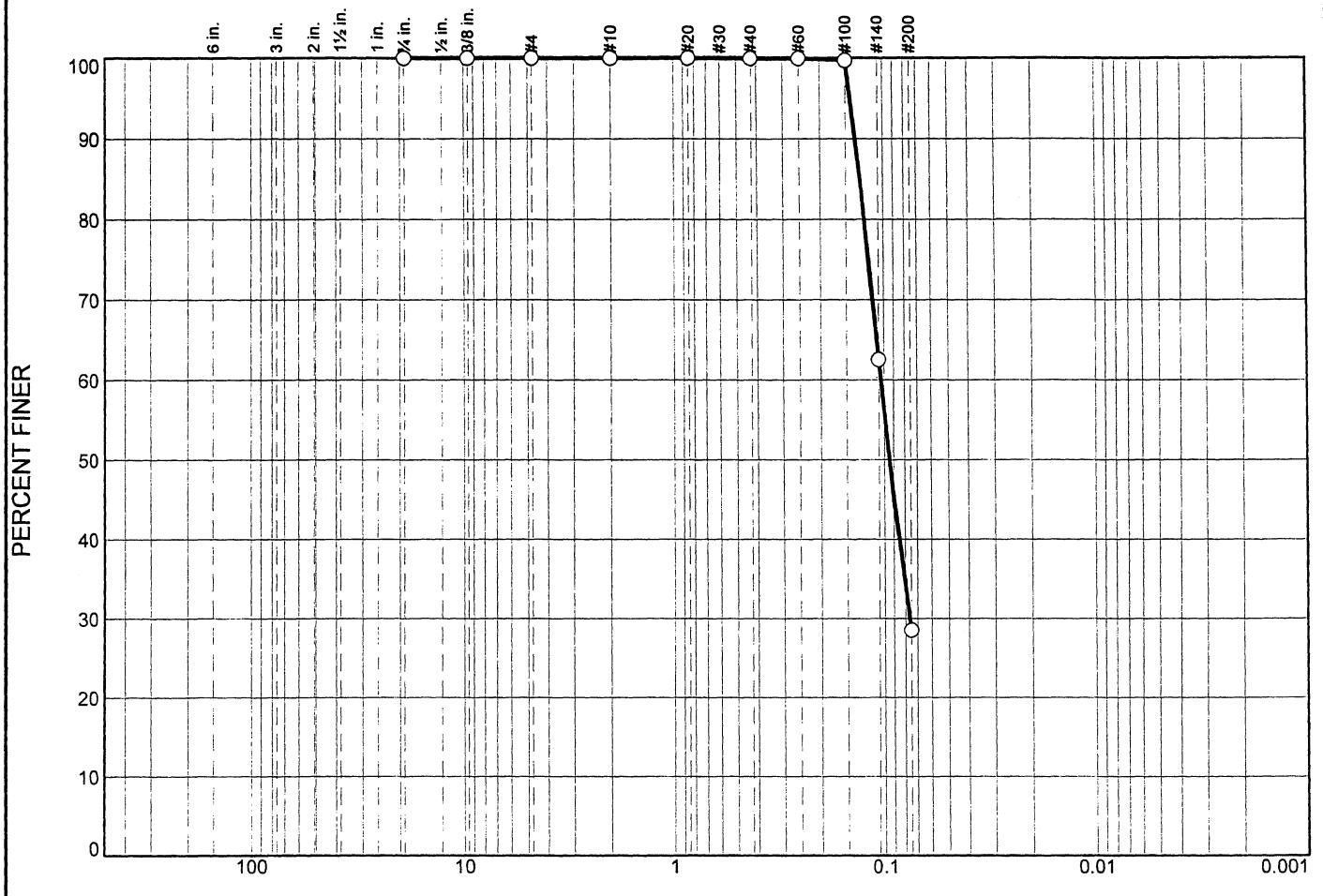
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



Material Description									USCS	AASHTO
○ Silty sand									SM	

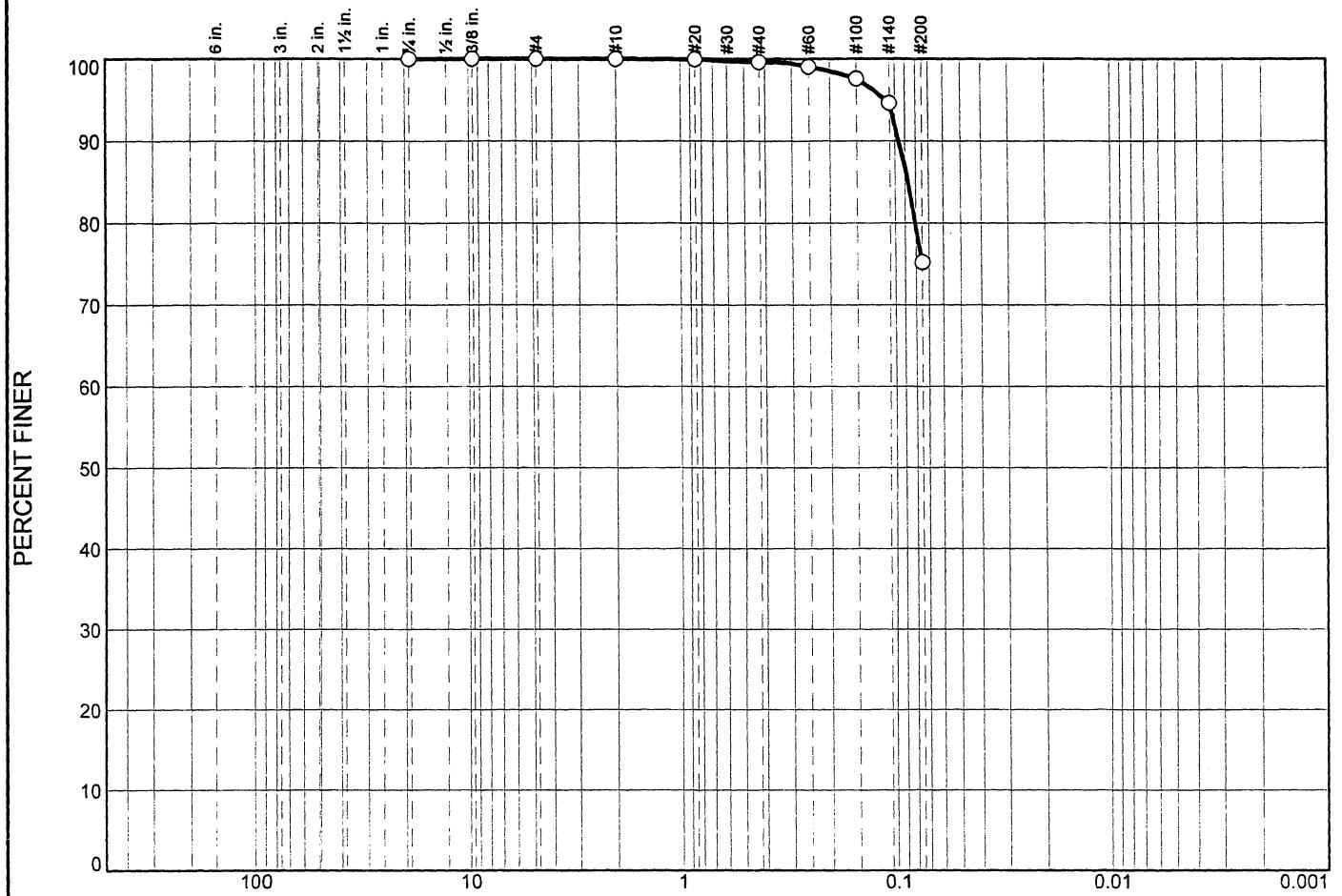
<p>Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6</p> <p>○ Sample Source: CB164 Depth: 215.0'-220.0' Sample No.: CB164</p> <p>Nodarse & Associates, Inc.</p> <p>Miami Lakes, FL</p>	<p>Remarks:</p> <p>○ Moisture Content % 27.5 CP05-EAARS-VB-0282</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



<input checked="" type="checkbox"/> LL	<input type="checkbox"/> PL	<input type="checkbox"/> D ₈₅	<input type="checkbox"/> D ₆₀	<input type="checkbox"/> D ₅₀	<input type="checkbox"/> D ₃₀	<input type="checkbox"/> D ₁₅	<input type="checkbox"/> D ₁₀	<input type="checkbox"/> C _c	<input type="checkbox"/> C _u
<input type="radio"/>		0.0870							
Material Description								USCS	AASHTO
<input type="radio"/> Inorganic silts and very fine sand								ML	

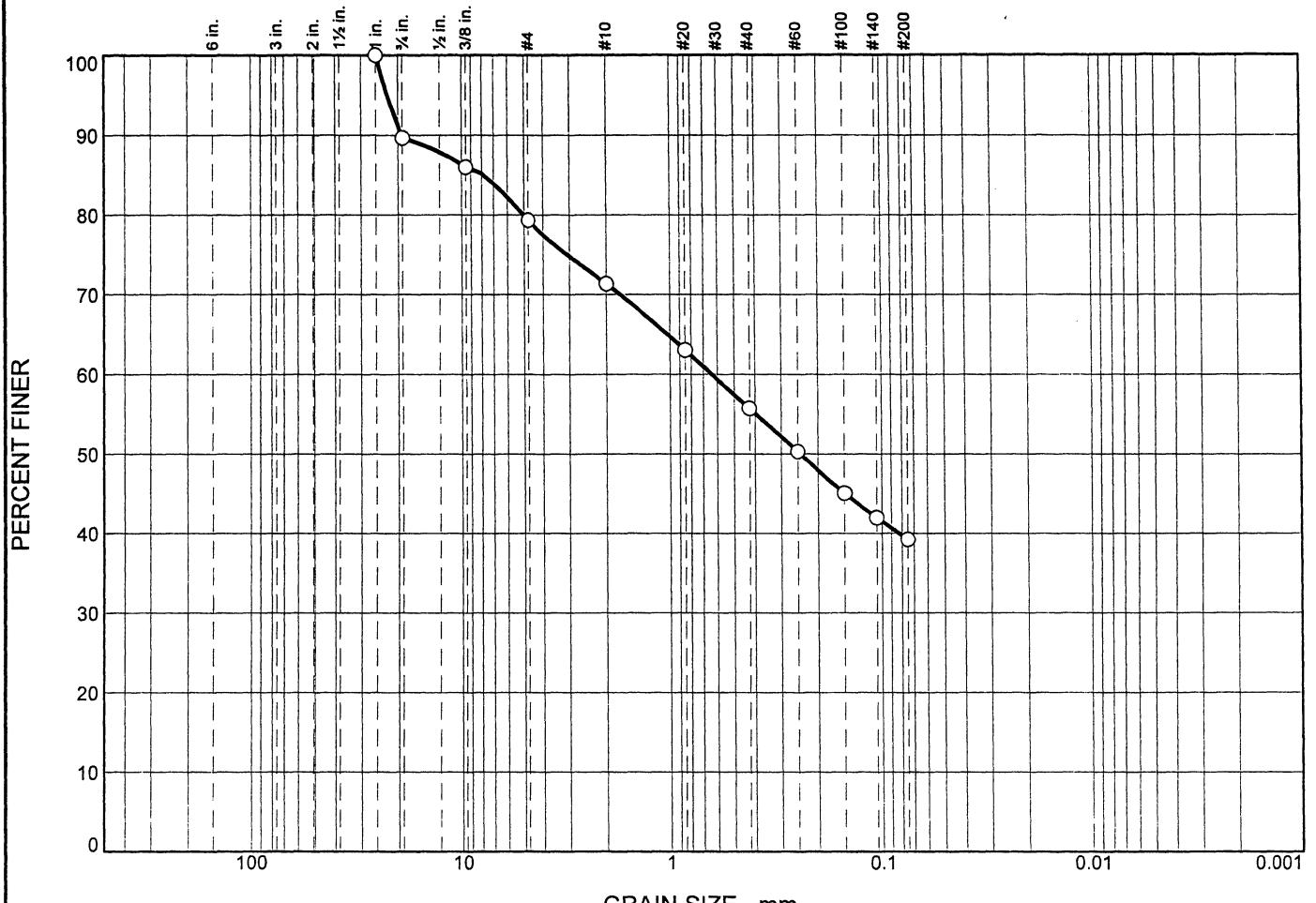
<p>Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 <input type="radio"/> Source of Sample: CB164 Depth: 225.0'-230.0' Sample Number: CB164</p> <p>Nodarse & Associates, Inc. Miami Lakes, FL</p>	<p>Remarks: <input type="radio"/> Moisture Content % 36.0 CP05- EAARS-VB-0282</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel			% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○ 0	10	11	8	15	17		39		
○									
○									

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○		7.8183	0.6365	0.2417					
○									
○									
○									

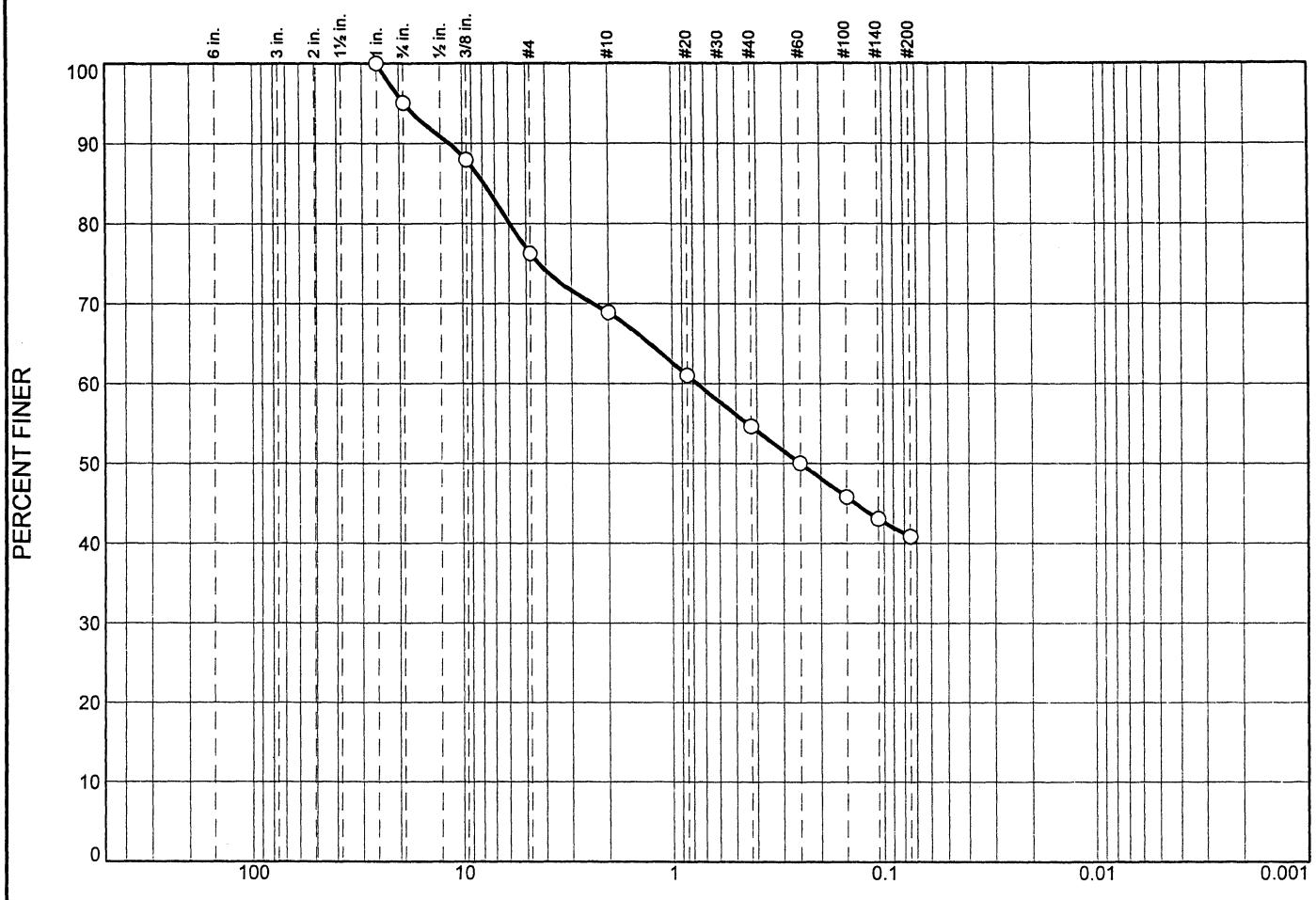
Material Description						USCS	AASHTO
○ Sandy silty clay with gravel						CL-ML	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0174 Depth: 5'-10'	Remarks: ○ Moisture Content % 9.81 CP05- EAARS-VB-0283
Date: ○	
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Pedro camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0174

Depth: 10'-15'

Remarks:

○ Moisture Content % 22.8 CP05-
EAARS-VB-0283

Date: 8

Nodarse & Associates, Inc.

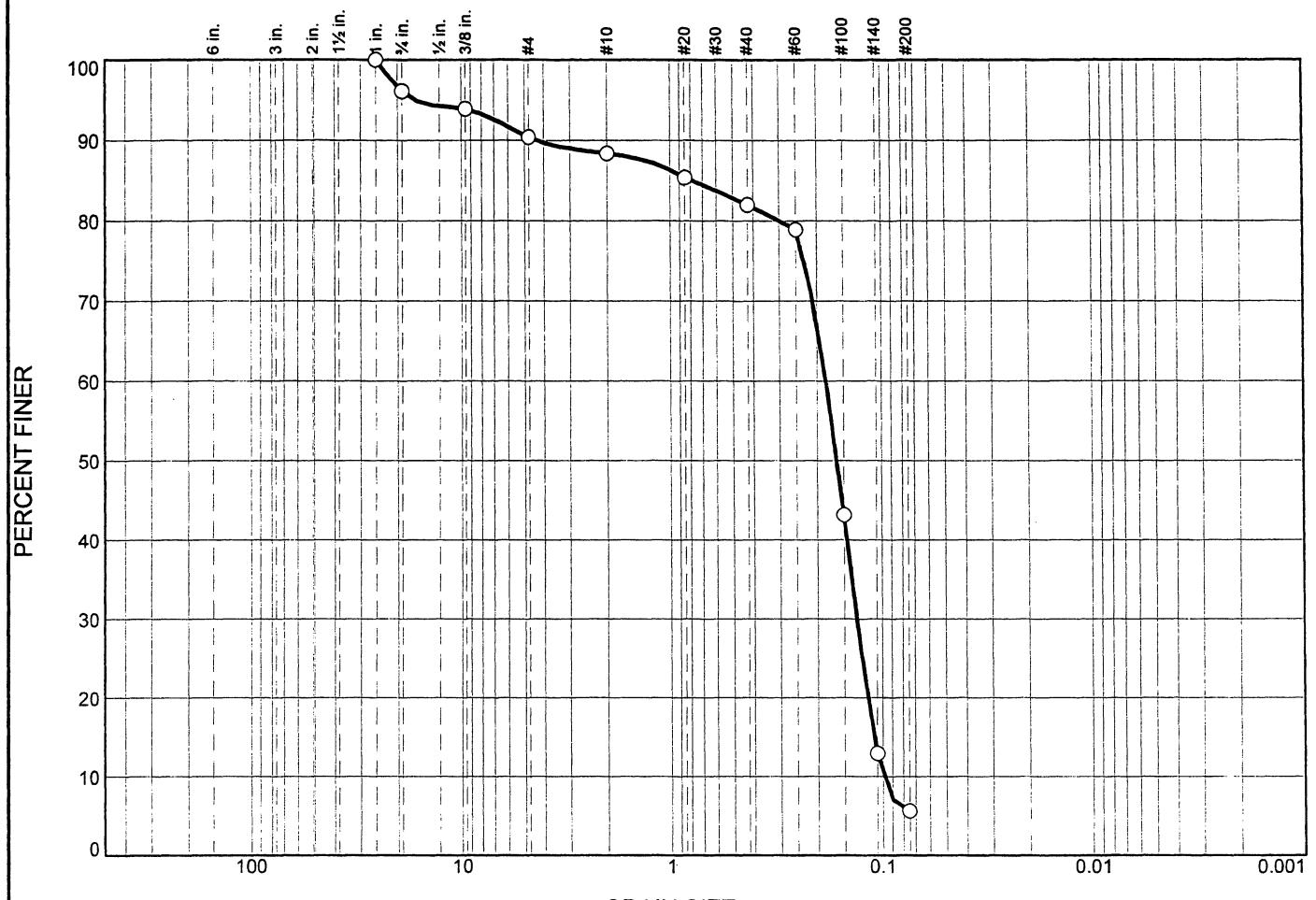
Miami Lakes, FL

Figure

Tested By: Pedro camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○	0.0	3.9	5.7	2.0	6.4	76.4	5.6	
○								
○								
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○			0.7798	0.1812	0.1613	0.1312	0.1097	0.0996
○								
Material Description								USCS AASHTO
○	Poorly graded sand with silt							SP-SM

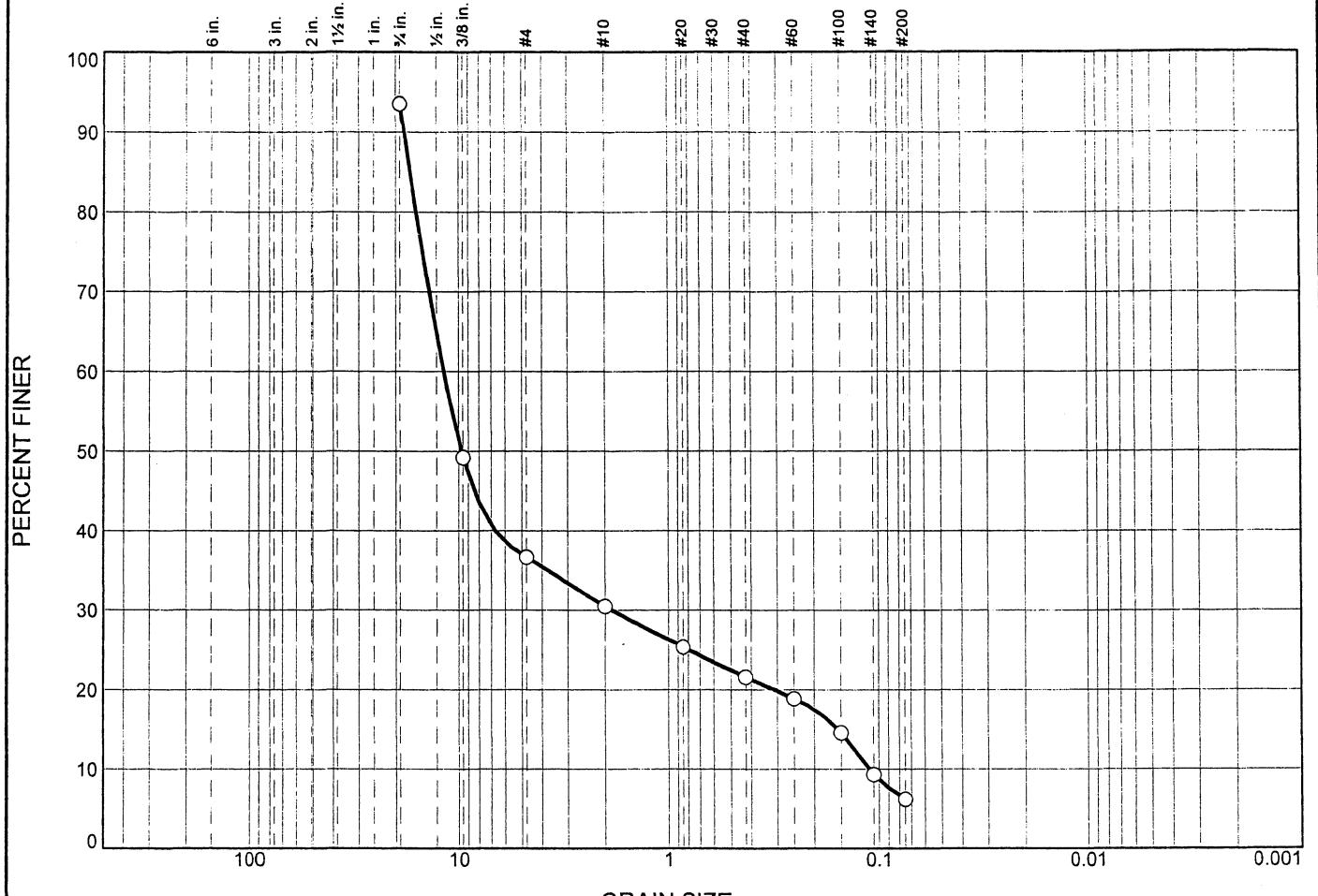
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Source of Sample: CB174 Depth: 40.0'-45.0' Sample Number: CB174	Remarks: ○ Moisture content % 17.1 CP05-EAARS-VB-0283
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: L Mazo

Checked By: M Brown

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>			57	7	8	16	6
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			17.0084	11.7946	9.7039	1.8617	0.1550
Material Description							USCS
<input type="radio"/> Poorly graded gravel with silt and sand							GP-GM
							AASHTO

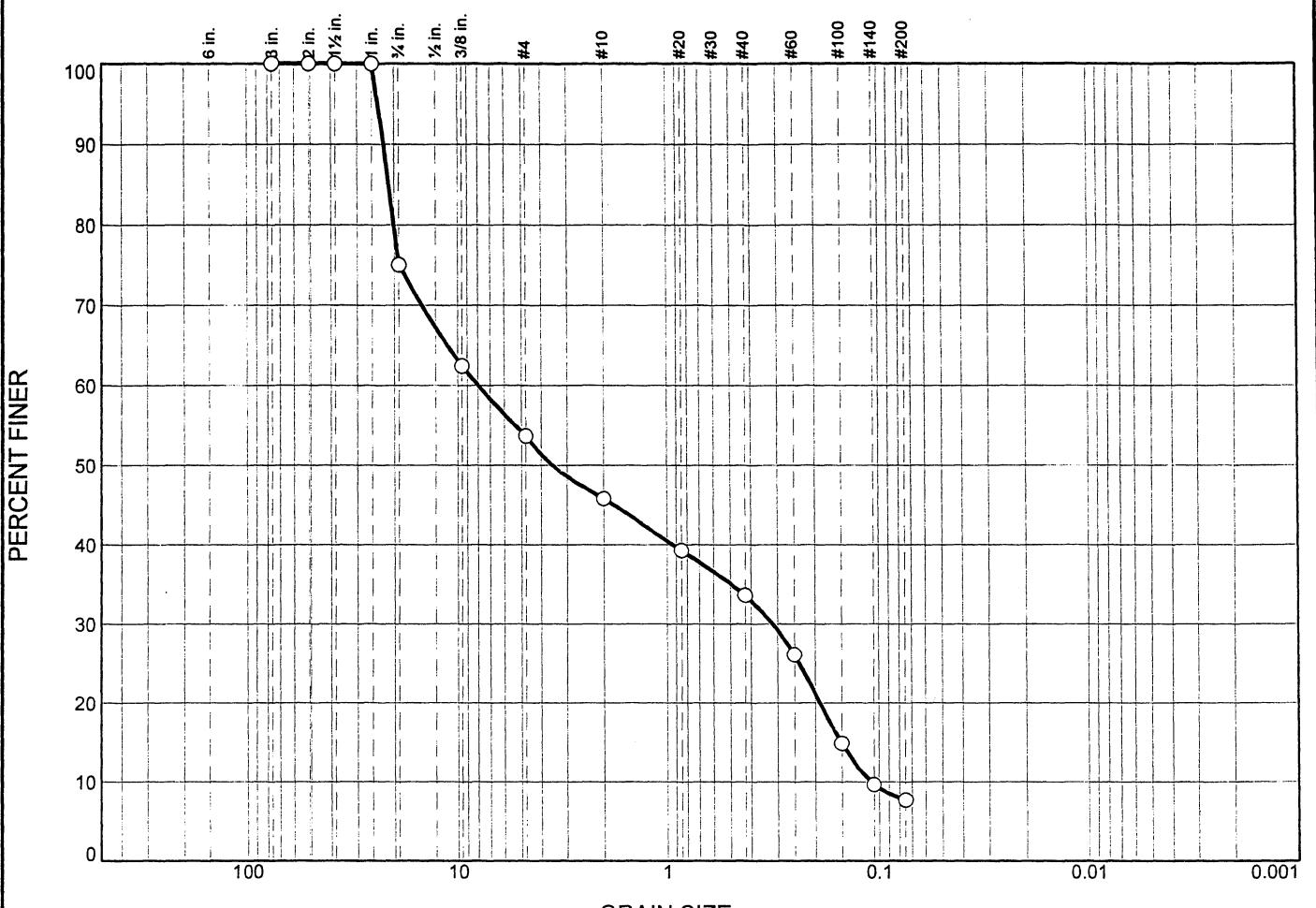
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input type="radio"/> Moisture Content % 4.0
<input type="radio"/> Source of Sample: CB-0174 Depth: 45' to 50'	CP05-EAARS-VB-0283
Date: <input type="radio"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	25.0	21.3	7.9	12.2	25.9		7.7
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○		21.2325	7.9734	3.5183	0.3143	0.1510	0.1096	0.11	72.78

Material Description

○ Poorly graded sand with silt and gravel	USCS	AASHTO
-------------------------------------------	------	--------

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Source of Sample: CB174 Depth: 60.0'-65.0' Sample Number: CB174	Remarks: ○ Moisture content % 7.6 CP05-EAARS-VB-0283
----------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Tested By: L Mazo

Checked By: M Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	0.0	12.7	3.8	7.7	60.5		15.3
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			2.8557	0.1528	0.1369	0.1154	
Material Description							USCS
○ Silty sand							SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch
 Project: E.A.A (Reservoir) W/O#6

○ Source of Sample: CB174 Depth: 70'-75.0' Sample Number: CB174

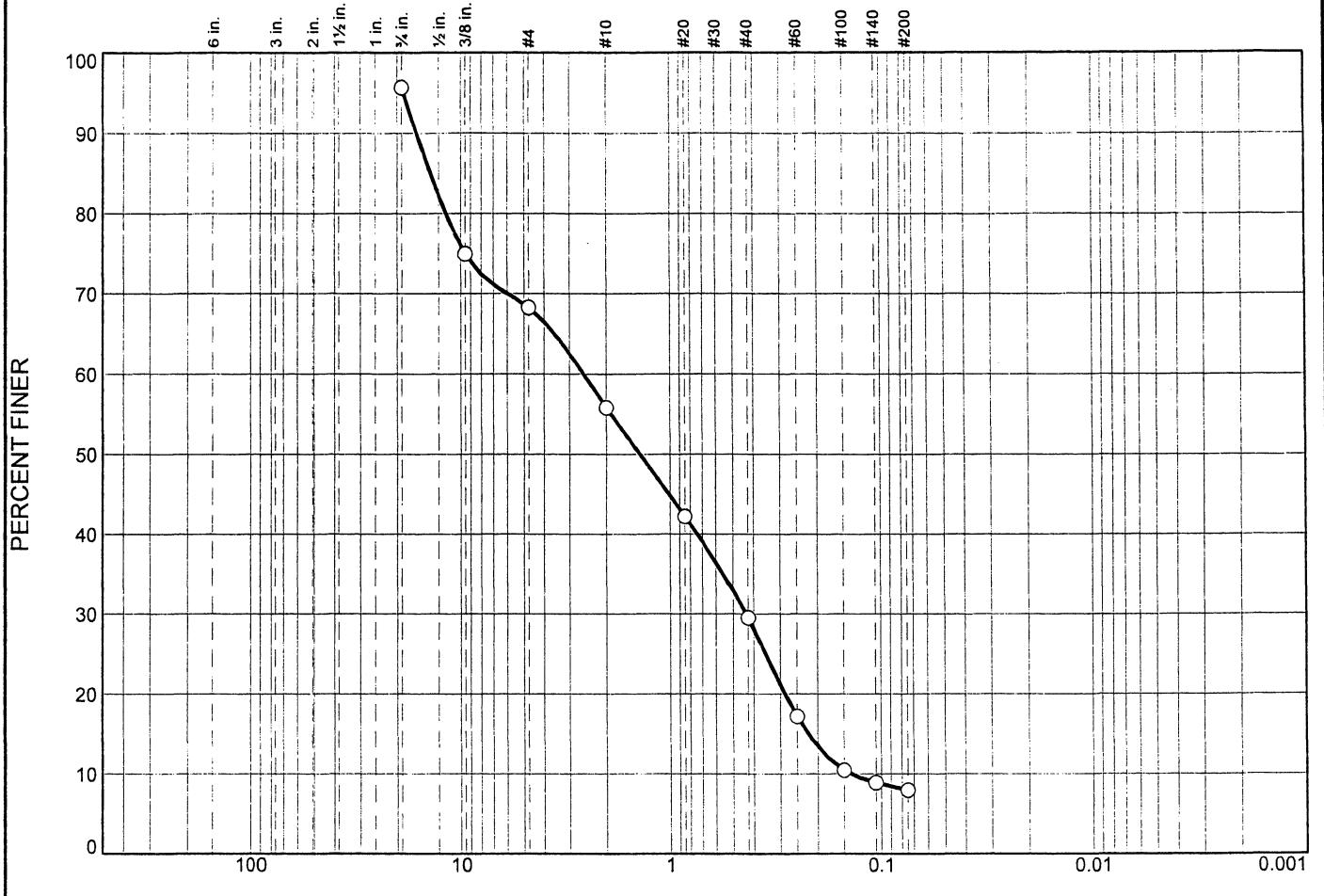
Remarks:
 ○ Moisture content % 14.82 CP05-
 EAARS-VB-0283

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>		28	12	27	21		8
<input checked="" type="checkbox"/> LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
		13.9640	2.5708	1.3924	0.4347	0.2217	0.1394

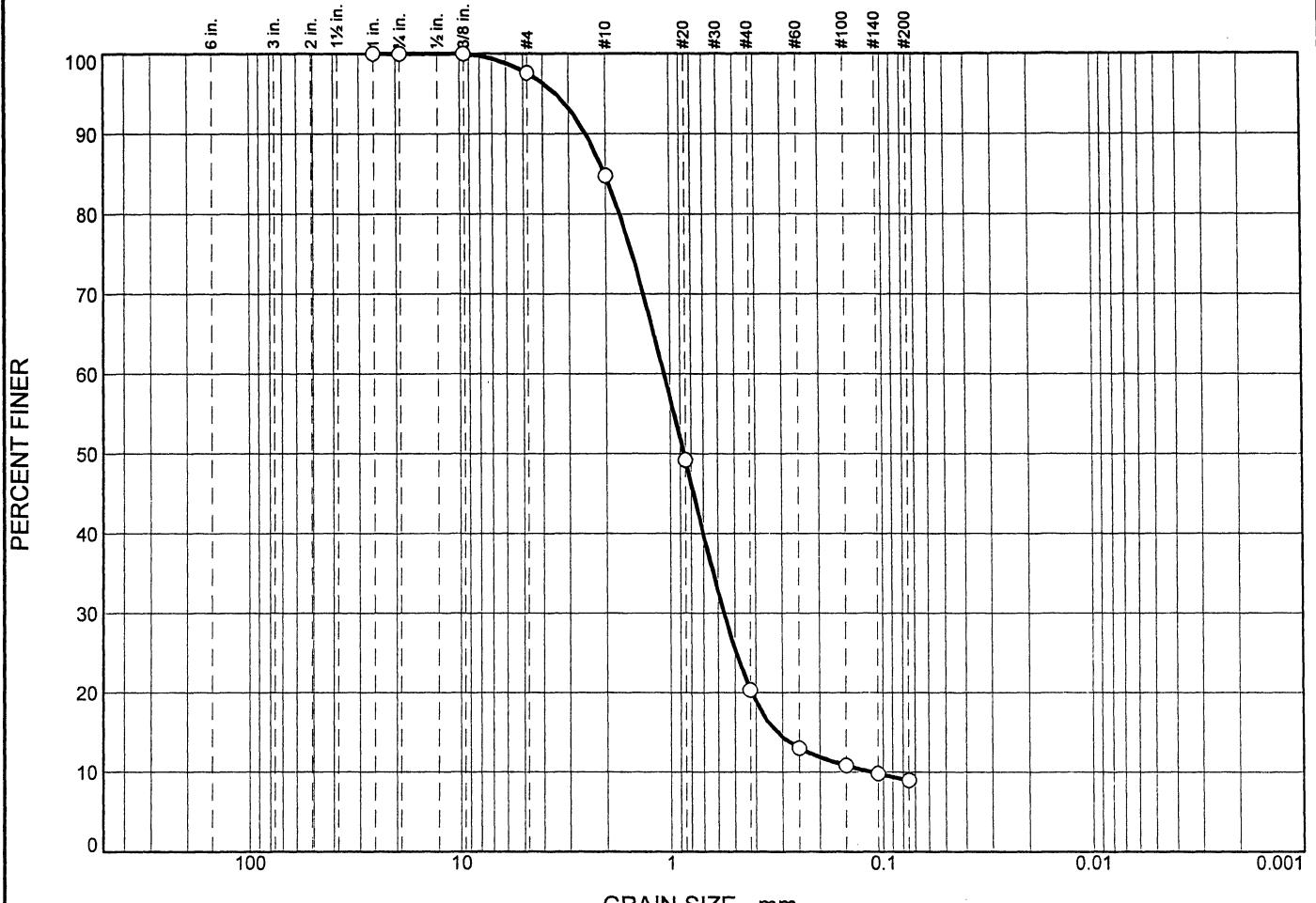
Material Description				USCS	AASHTO
<input type="radio"/> Poorly graded sand with silt and gravel				SP-SM	

Project No. 05-05-0013- Client: Black & Veatch		Remarks:
Project: E.A.A (Reservoir)		<input type="radio"/> Moisture Content % 11.6
<input type="radio"/> Source of Sample: CB-0174 Depth: 75' to 80'		CP05-EAARS-VB-0283
Date: <input type="radio"/>		
Nodarse & Associates, Inc.		
Miami Lakes, FL		Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	2	13	65	11	9

Material Description

USCS | AASHTO

Poorly graded sand with silt

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0174

Depth: 100'-105'

Remarks:

○ Moisture Content % 10.6 CP05-
EAARS-VB-0283

Date: 0

Nodarse & Associates, Inc.

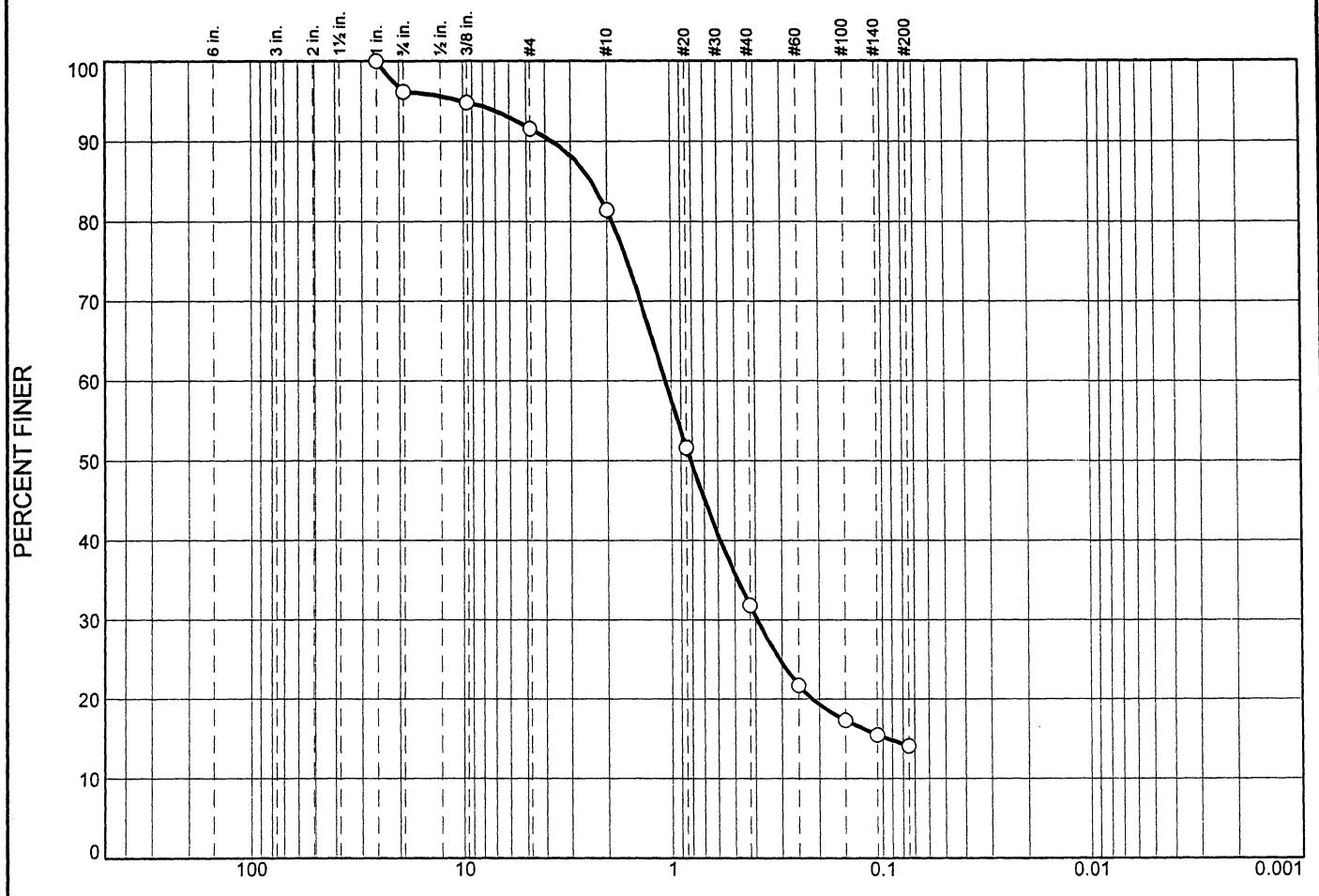
Miami Lakes, FL

Figure

Tested By: Pedro camaraza

Checked By: Michael Brown

Particle Size Distribution Report



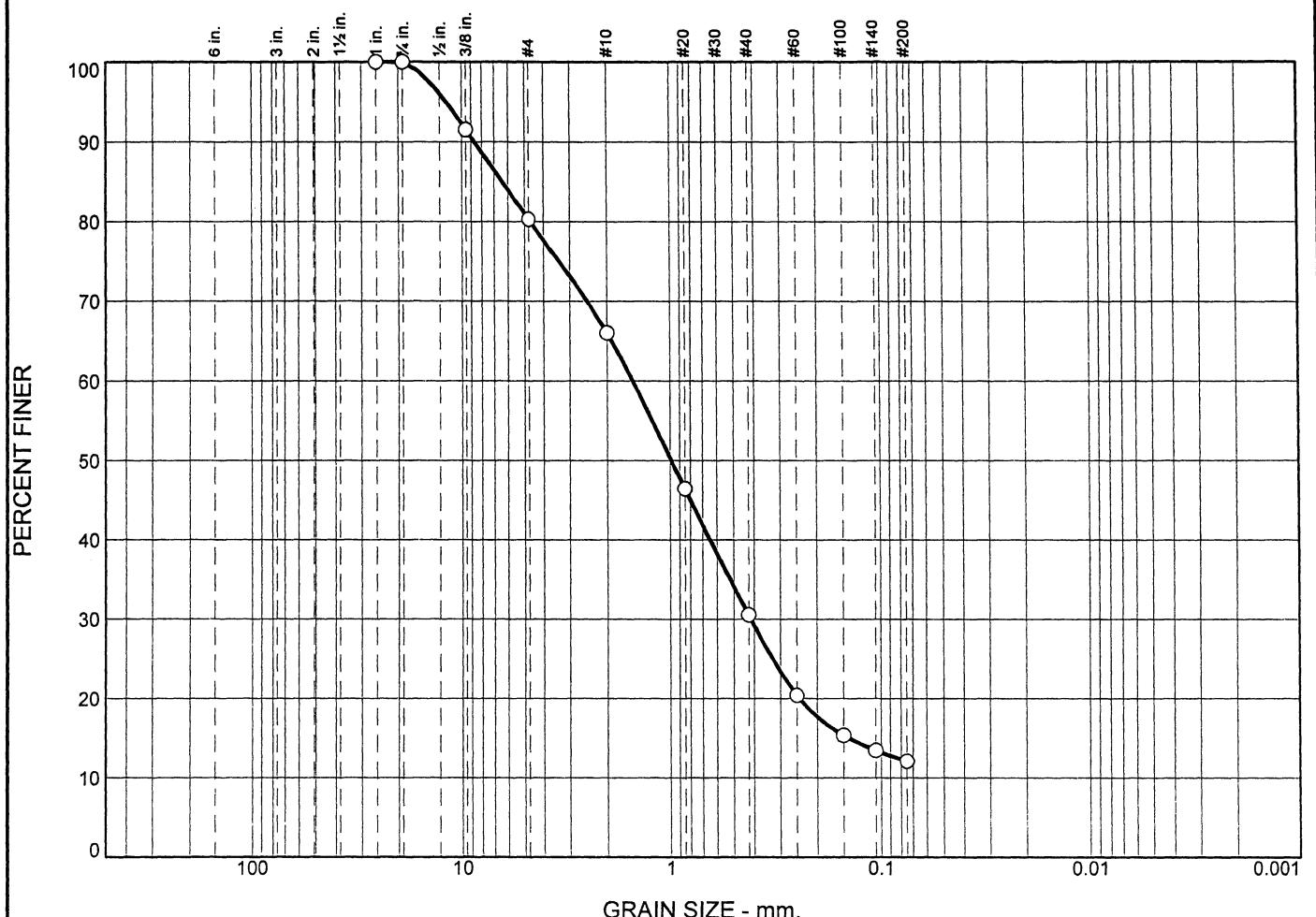
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	4	4	11	49	18	14
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			2.3691	1.0654	0.8100	0.3921	0.0946
Material Description							USCS
<input type="radio"/> Silty sand with gravel							SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0174 Depth: 110'-115'	Date: <input type="radio"/> Nodarse & Associates, Inc. Miami Lakes, FL	Remarks: <input type="radio"/> Moisture Content % 18.1 CP05-EAARS-VB-0283
		Figure

Tested By: Pedro camaraza

Checked By: Michael Brown

Particle Size Distribution Report

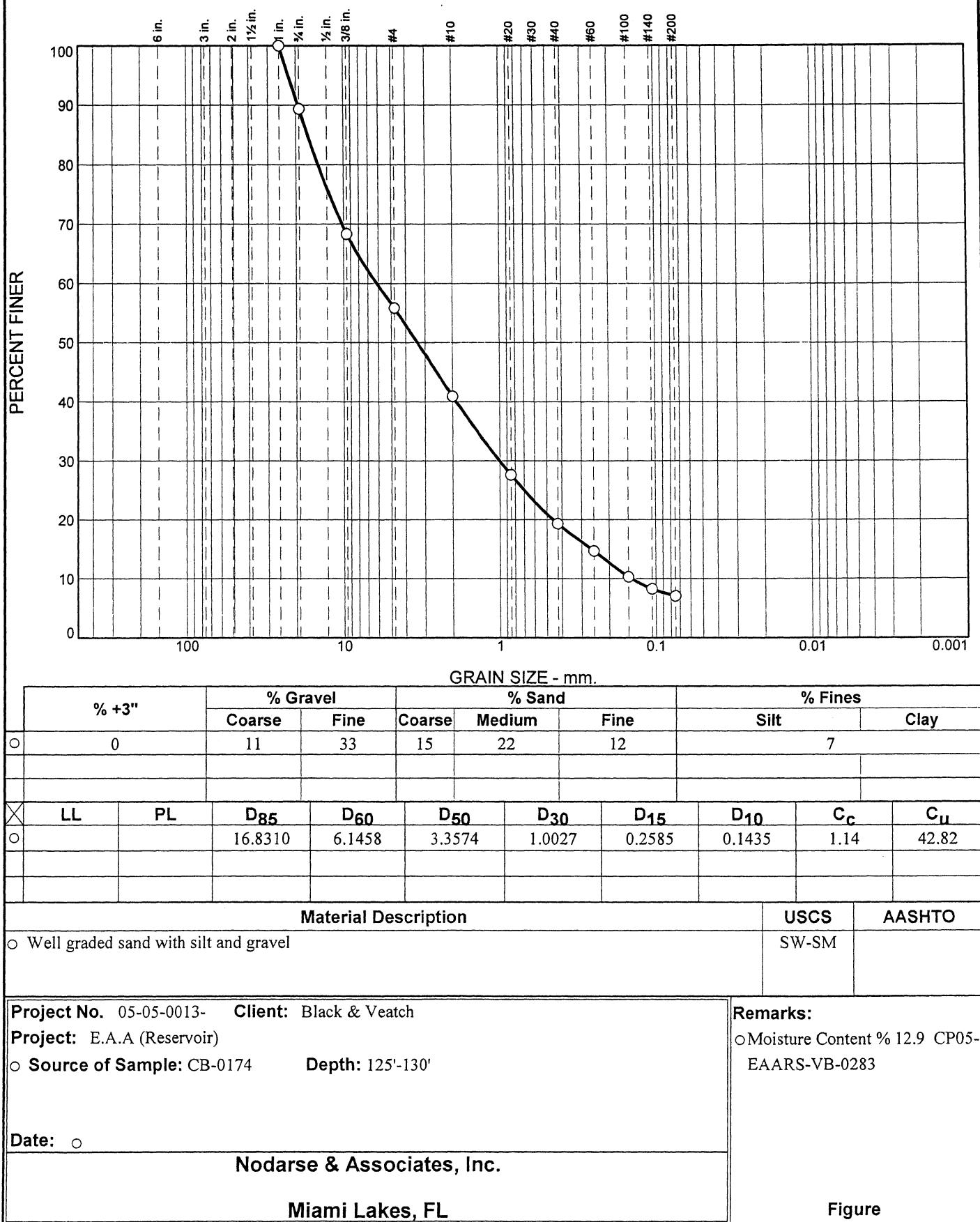


% +3"		% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	0	20	14	35	19		12
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input type="radio"/>			6.3892	1.5030	0.9841	0.4144	0.1415	C _c
Material Description								USCS AASHTO
<input type="radio"/> Well graded sand with silt and gravel								SW-SM
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0174 Depth: 115'-120' Date: <input type="radio"/>					Remarks: <input type="radio"/> Moisture Content % 16.1 CP05- EAARS-VB-0283			
Nodarse & Associates, Inc. Miami Lakes, FL								Figure

Tested By: Pedro camaraza

Checked By: Michael Brown

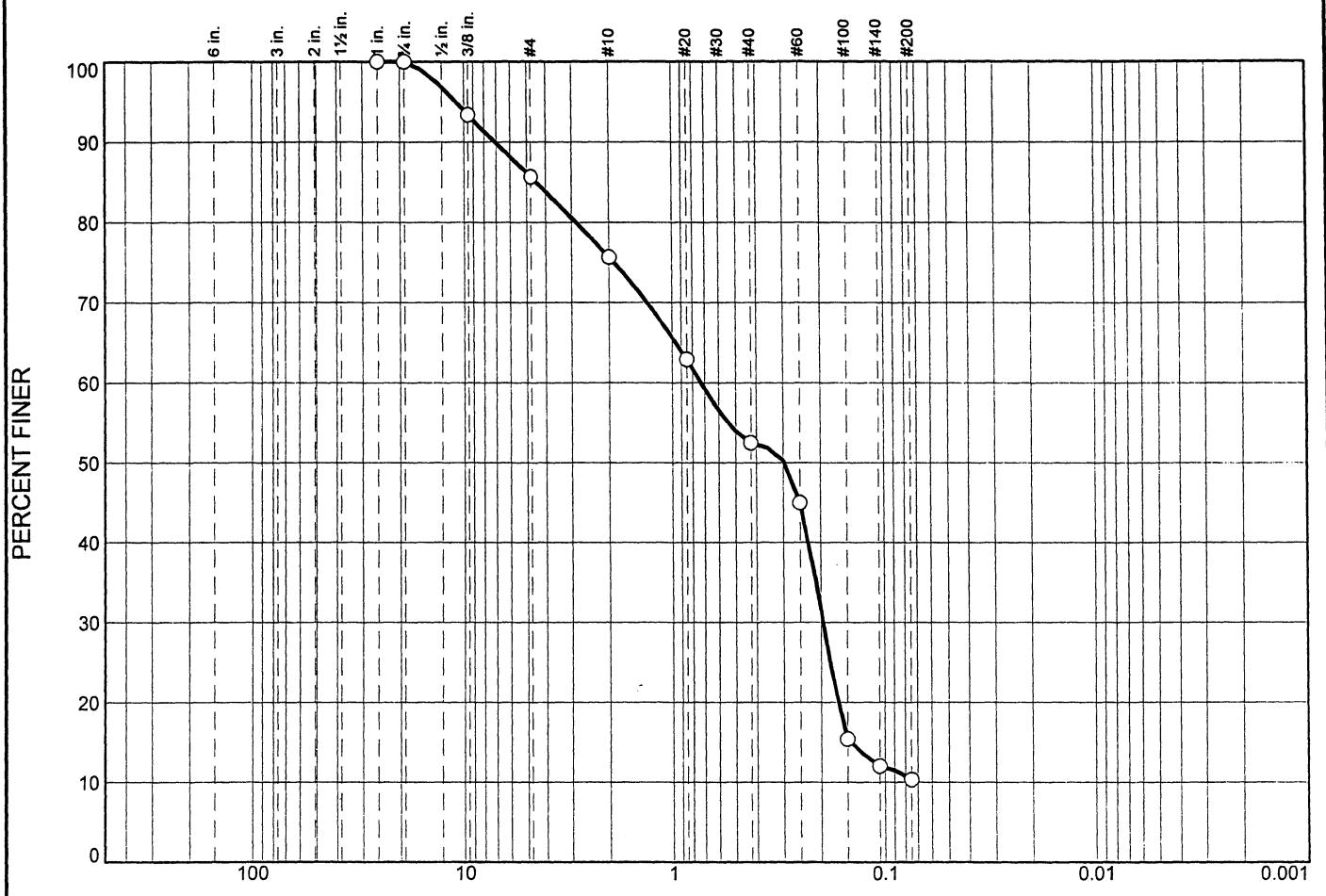
Particle Size Distribution Report



Tested By: Pedro camaraza

Checked By: Michael Brown

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	14	10	23	43	10

Material Description

USCS | AASHTO

Poorly graded sand with silt and gravel

SP-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0174

Depth: 140'-145'

Remarks:

○ Moisture Content % 18.9 CP05-
EAARS-VB-0283

Date: ○

Nodarse & Associates, Inc.

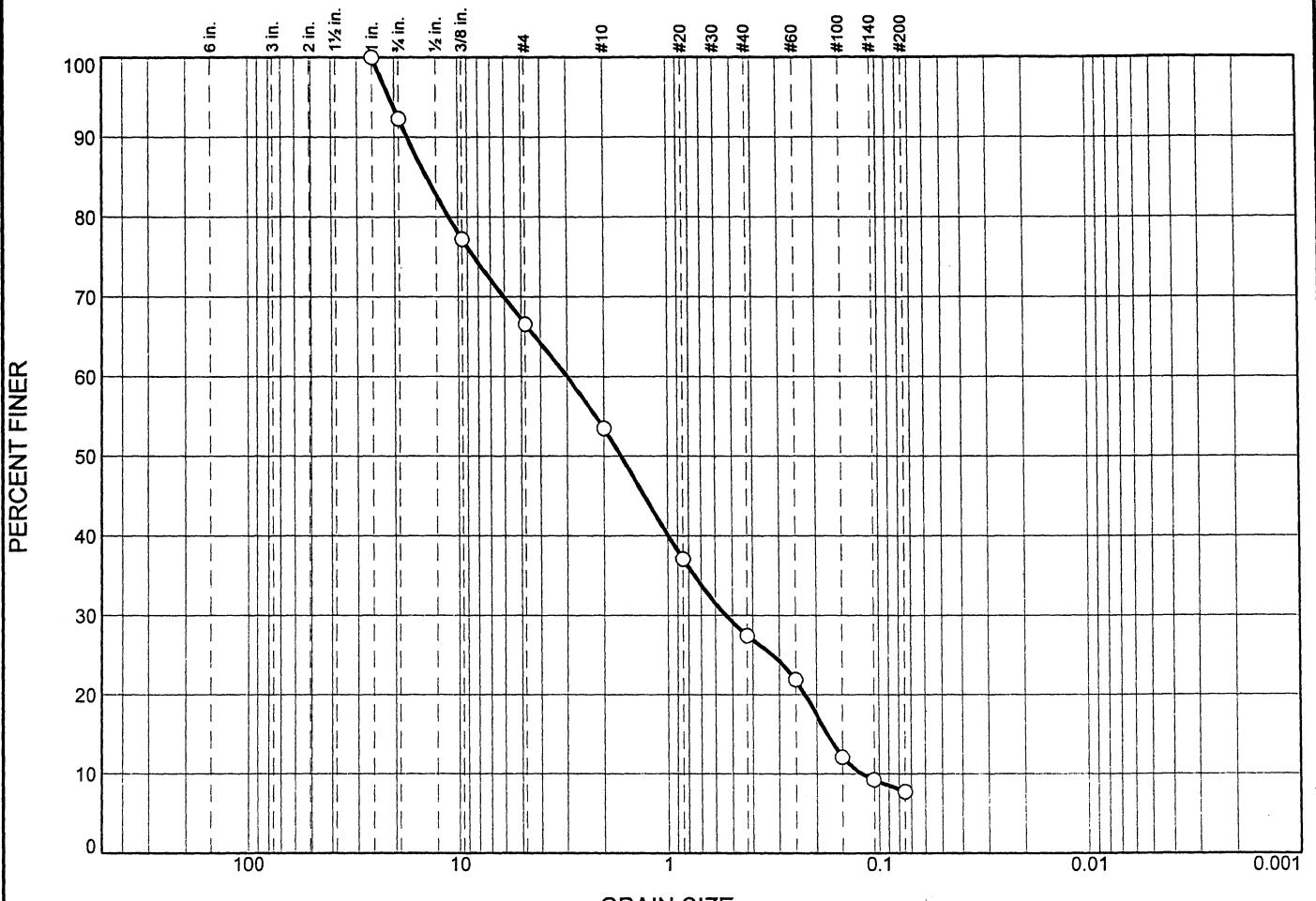
Miami Lakes, FL

Figure

Tested By: Pedro camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0	8	25	14	26	19		8
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			14.0549	2.9872	1.6578	0.5359	0.1771
							0.1213
							0.79
							24.63
Material Description							USCS
○ Well graded sand with silt and gravel							SW-SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0174 Depth: 150'-155'

Remarks:

○ Moisture Content % 12.9 CP05-
EAARS-VB-0283

Date: ○

Nodarse & Associates, Inc.

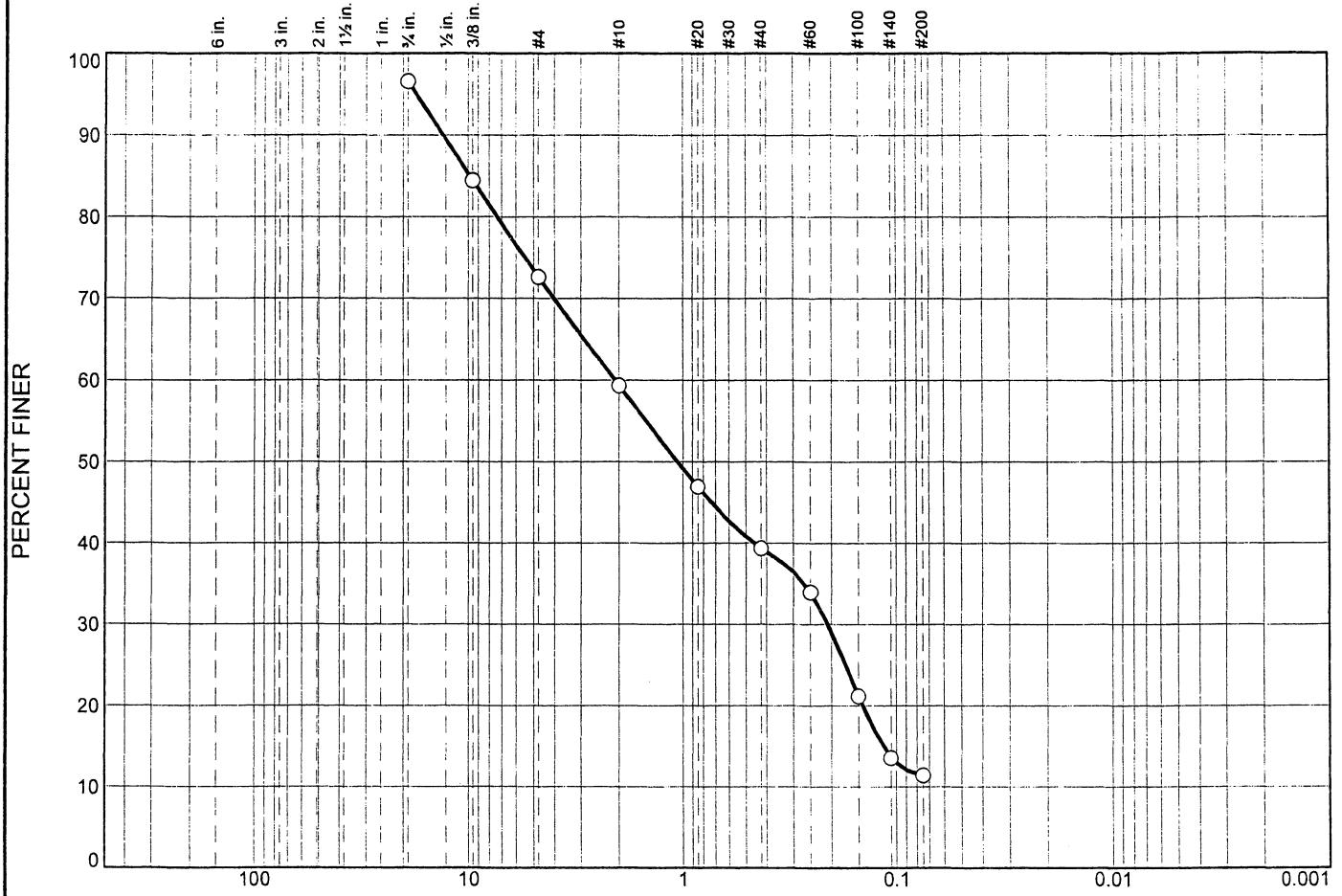
Miami Lakes, FL

Figure

Tested By: Pedro camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
	24	14	20	28	11		
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
9.8196		2.0871	1.0603	0.2081	0.1157		
Material Description							USCS
Poorly graded sand with silt and gravel							AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0174 Depth: 155' to 160'

Date:

Nodarse & Associates, Inc.

Miami Lakes, FL

Remarks:

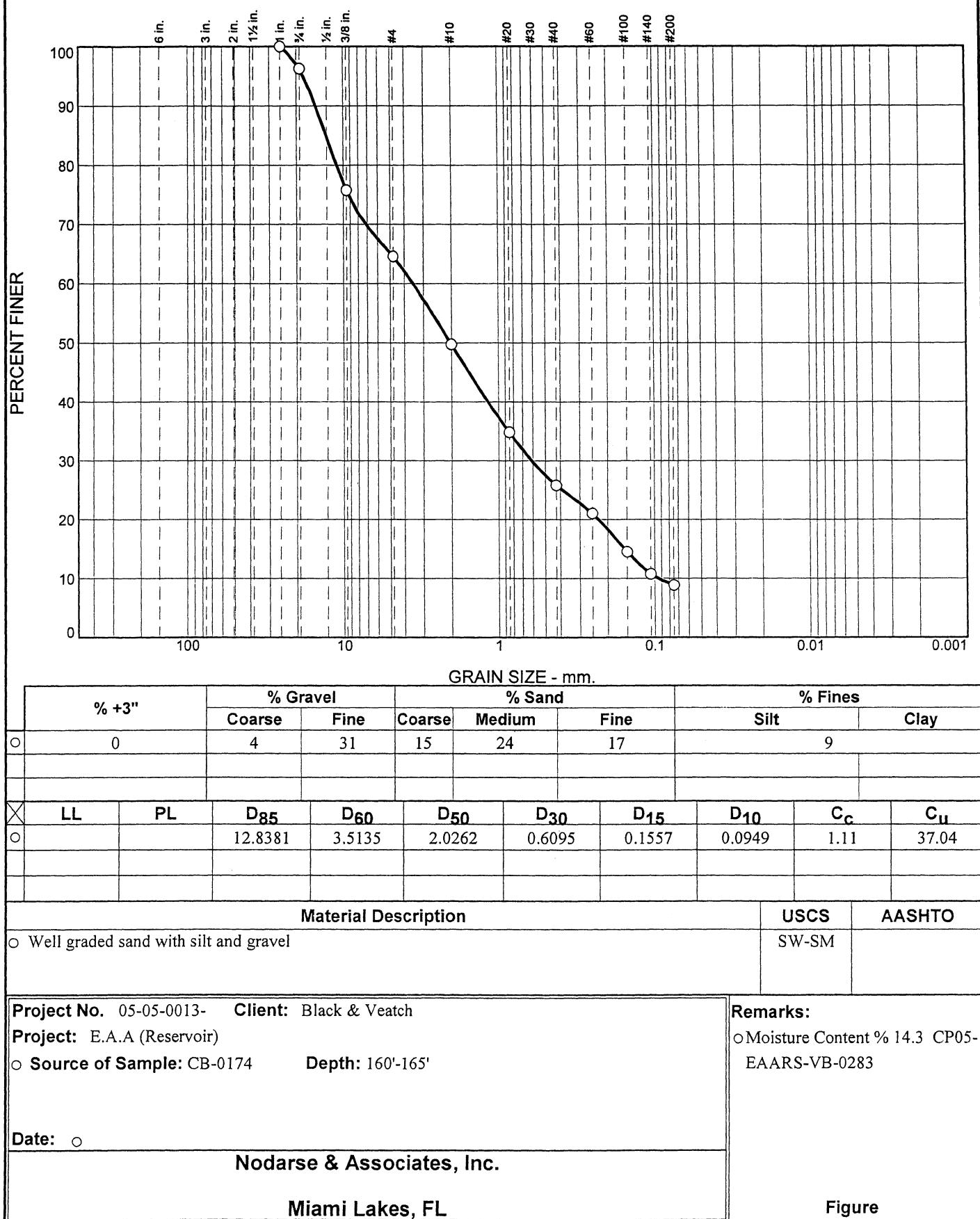
Moisture Content % 15.1
CP05-EAARS-VB-0283

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

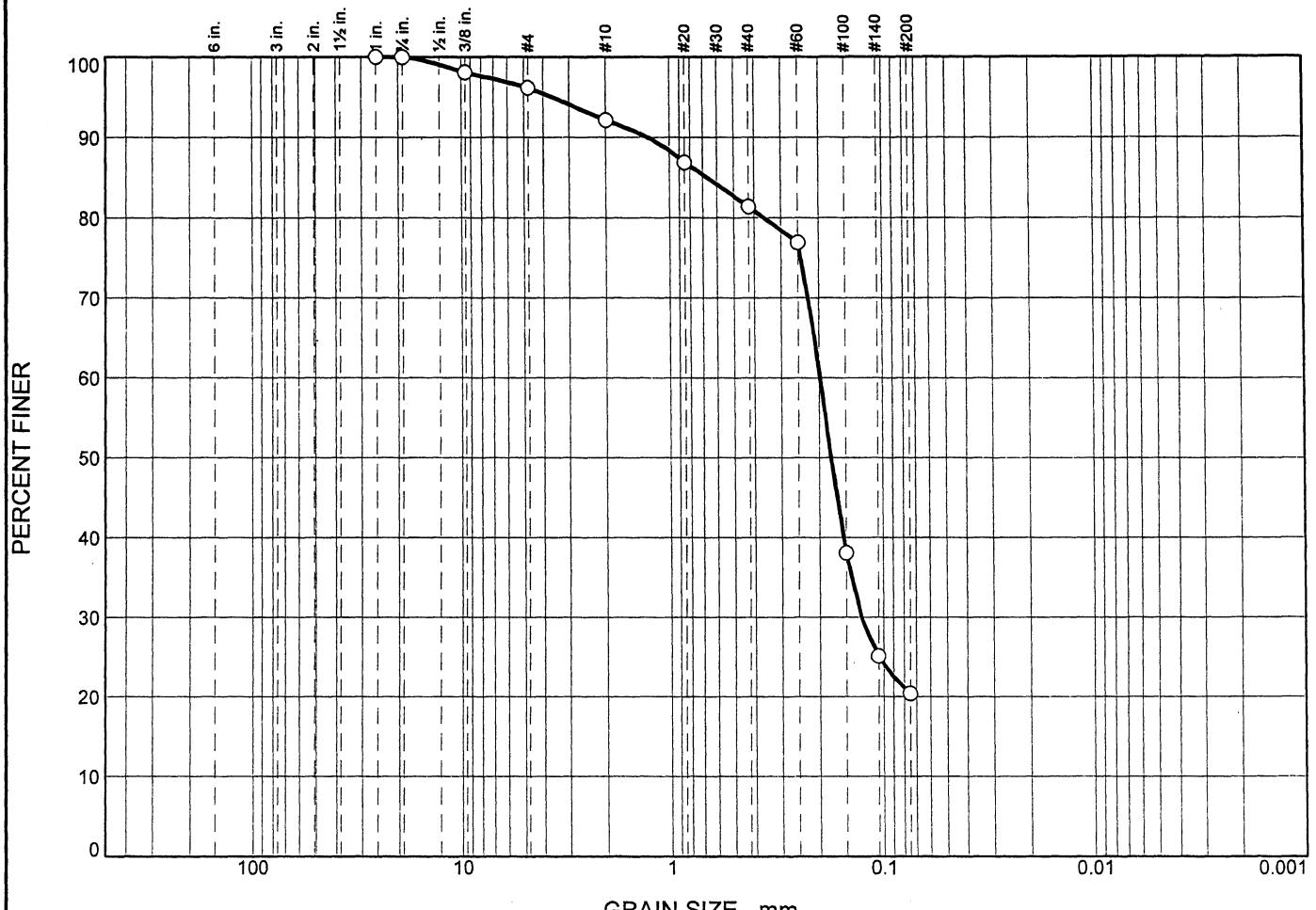
Particle Size Distribution Report



Tested By: Pedro camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0	0	4	4	11	61		20	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="radio"/>			0.6669	0.1972	0.1755	0.1272			

Material Description				USCS	AASHTO
<input type="radio"/> Silty sand				SM	

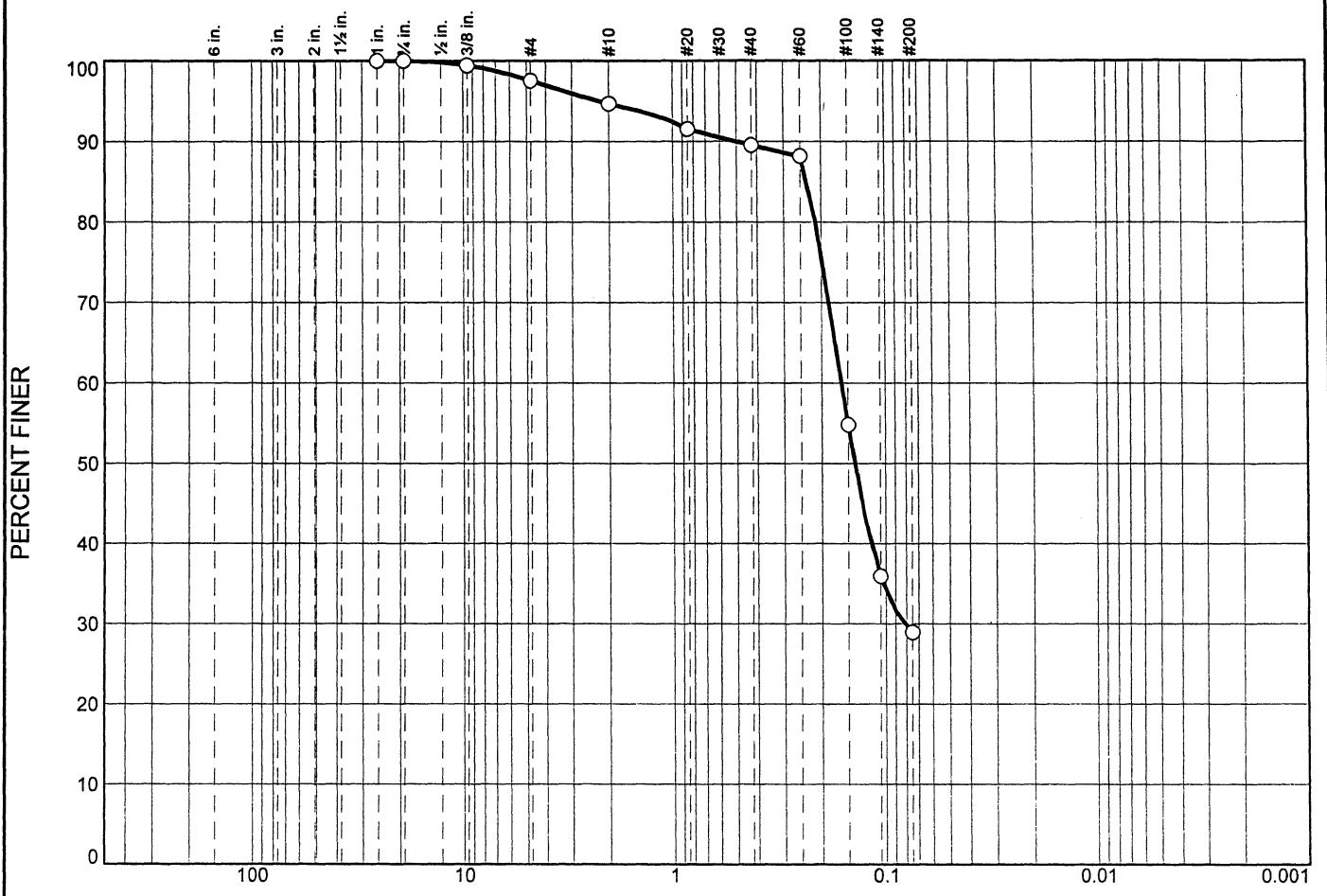
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input type="radio"/> Moisture Content % 20.3 CP05-
<input type="radio"/> Source of Sample: CB-0174 Depth: 165'-170'	EAARS-VB-0283
Date: <input type="radio"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Pedro camaraza

Checked By: Michael Brown

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	2	3	5	61	29

Material Description	USCS	AASHTO
<input type="radio"/> Silty sand	SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ **Source of Sample:** CB-0174

Depth: 180'-185'

Remarks:

○ Moisture Content % 19.7 CP05-
EAARS-VB-0283

Date: 8

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Tested By: Pedro camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O 0	0	6	4	7	42		41
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
O 0.7647		0.1355	0.1120				
Material Description							USCS
O Silty sand with gravel							SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

O Source of Sample: CB-0174 Depth: 185'-190'

Remarks:

O Moisture Content % 20.4 CP05-
EAARS-VB-0283

Date: O

Nodarse & Associates, Inc.

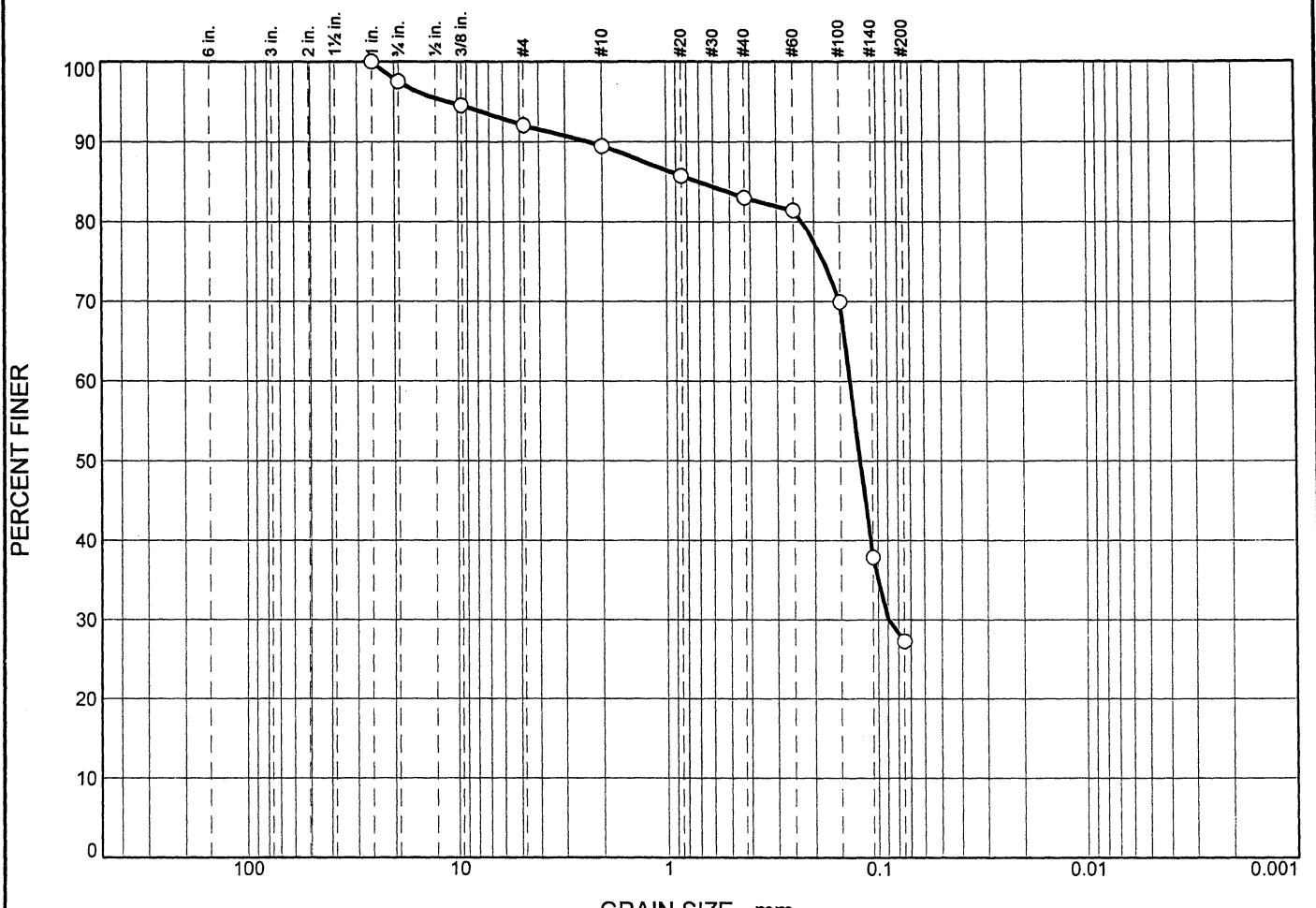
Miami Lakes, FL

Figure

Tested By: Pedro camaraza

Checked By: Michael Brown

Particle Size Distribution Report



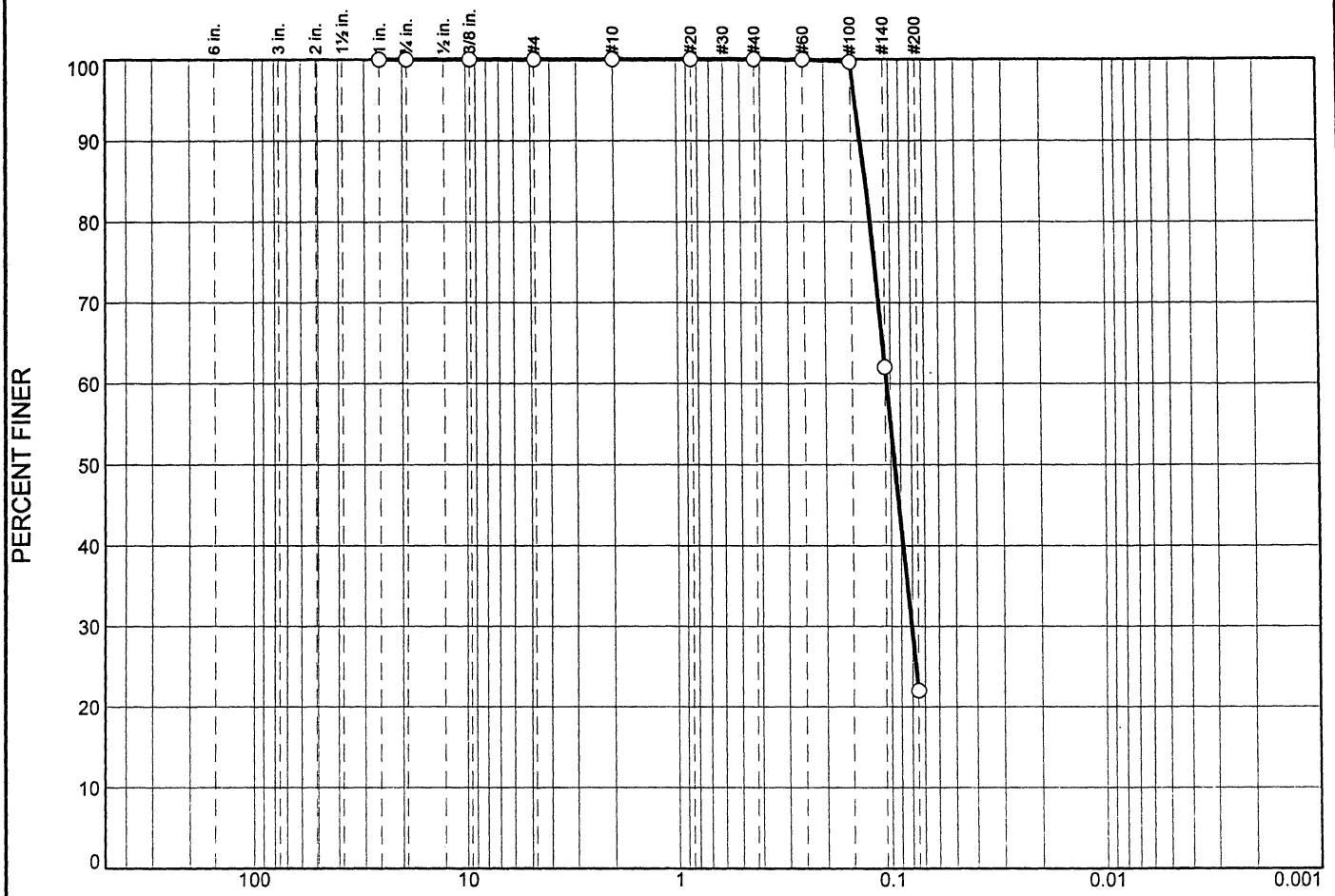
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>			0.7053	0.1341	0.1215	0.0892				
Material Description									USCS	AASHTO
<input type="radio"/>	Silty sand with gravel								SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0174 Depth: 195'-200'		Remarks: <input type="radio"/> Moisture Content % 16.8 CP05-EAARS-VB-0283
Date: <input type="radio"/> Nodarse & Associates, Inc. Miami Lakes, FL		Figure

Tested By: Pedro camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Material Description

○ Silty sand

USCS AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0174 Depth: 200'-205'

Remarks:

○ Moisture Content % 24.8 CP05-
EAARS-VB-0283

Date: ○

Nodarse & Associates, Inc.

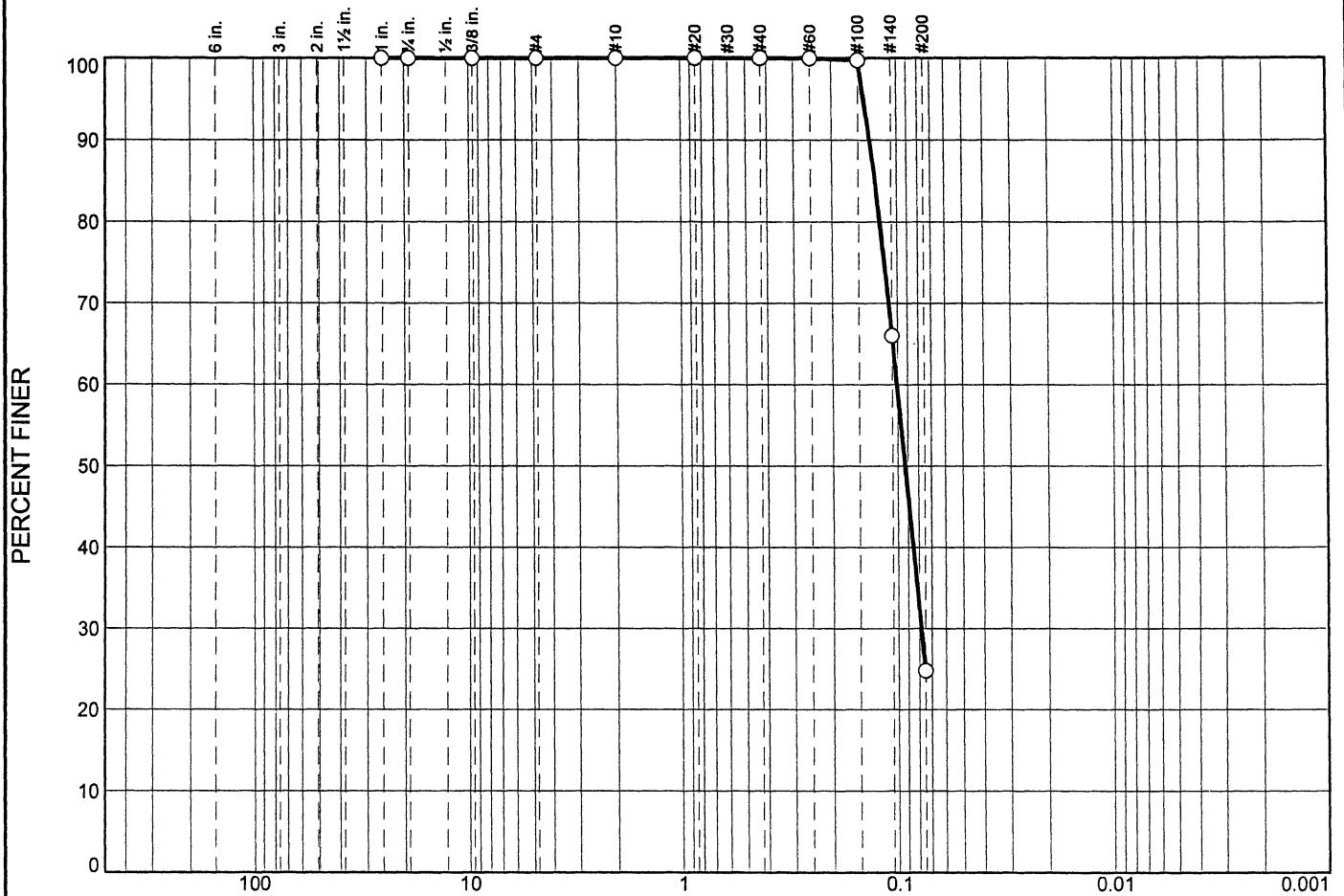
Miami Lakes, FL

Figure

Tested By: Pedro camaraza

Checked By: Michael Brown

Particle Size Distribution Report



Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0174 Depth: 205'-210'

Remarks:

Moisture Content % 25.7 CP05-
EAARS-VB-0283

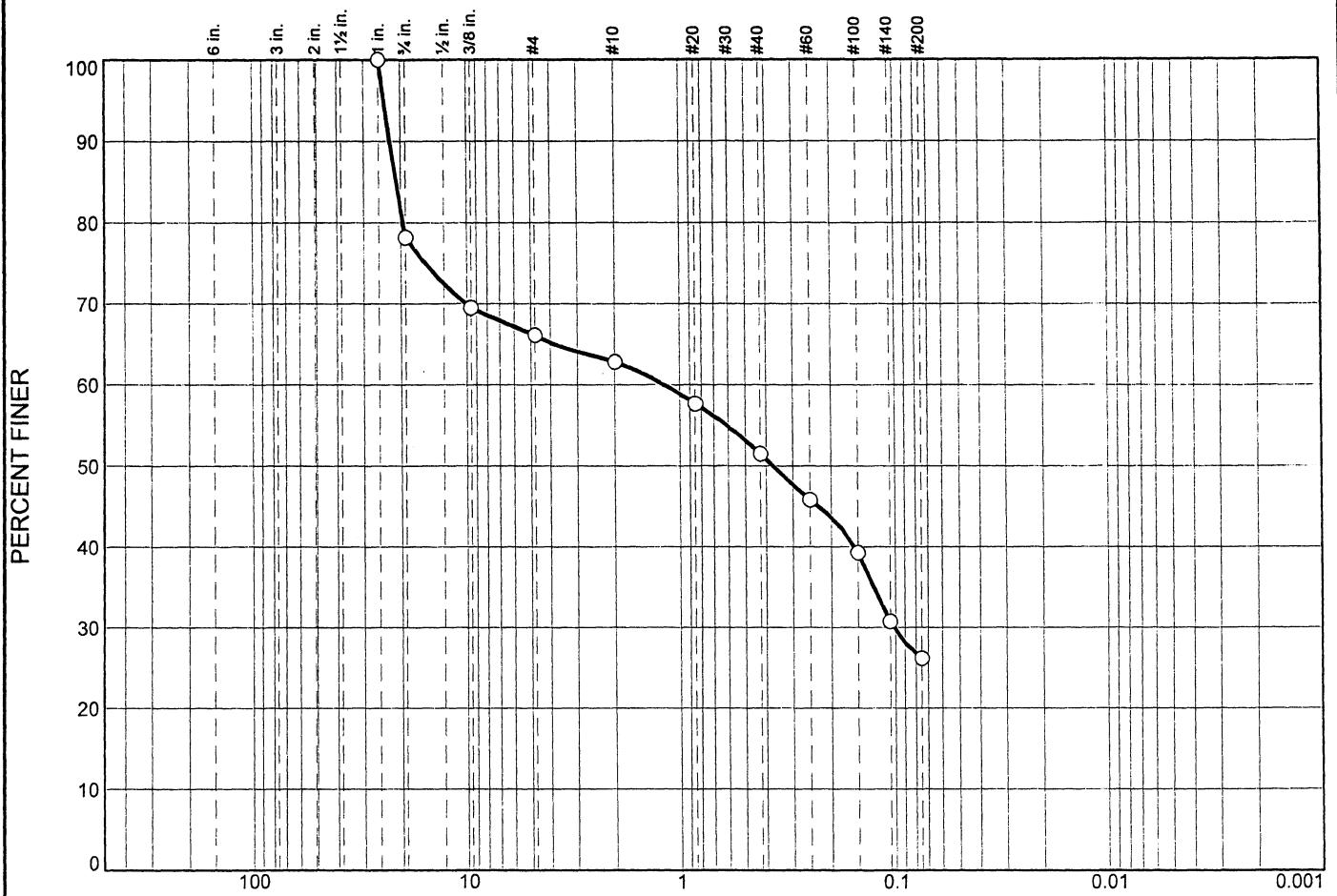
Date:

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Particle Size Distribution Report



Silty sand with gravel

SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0182

Depth: 10' to 15'

Remarks:

○ Moisture Content % 18.3 CP05-
EAARS-VB-0284

Date:

Nodarse & Associates, Inc.

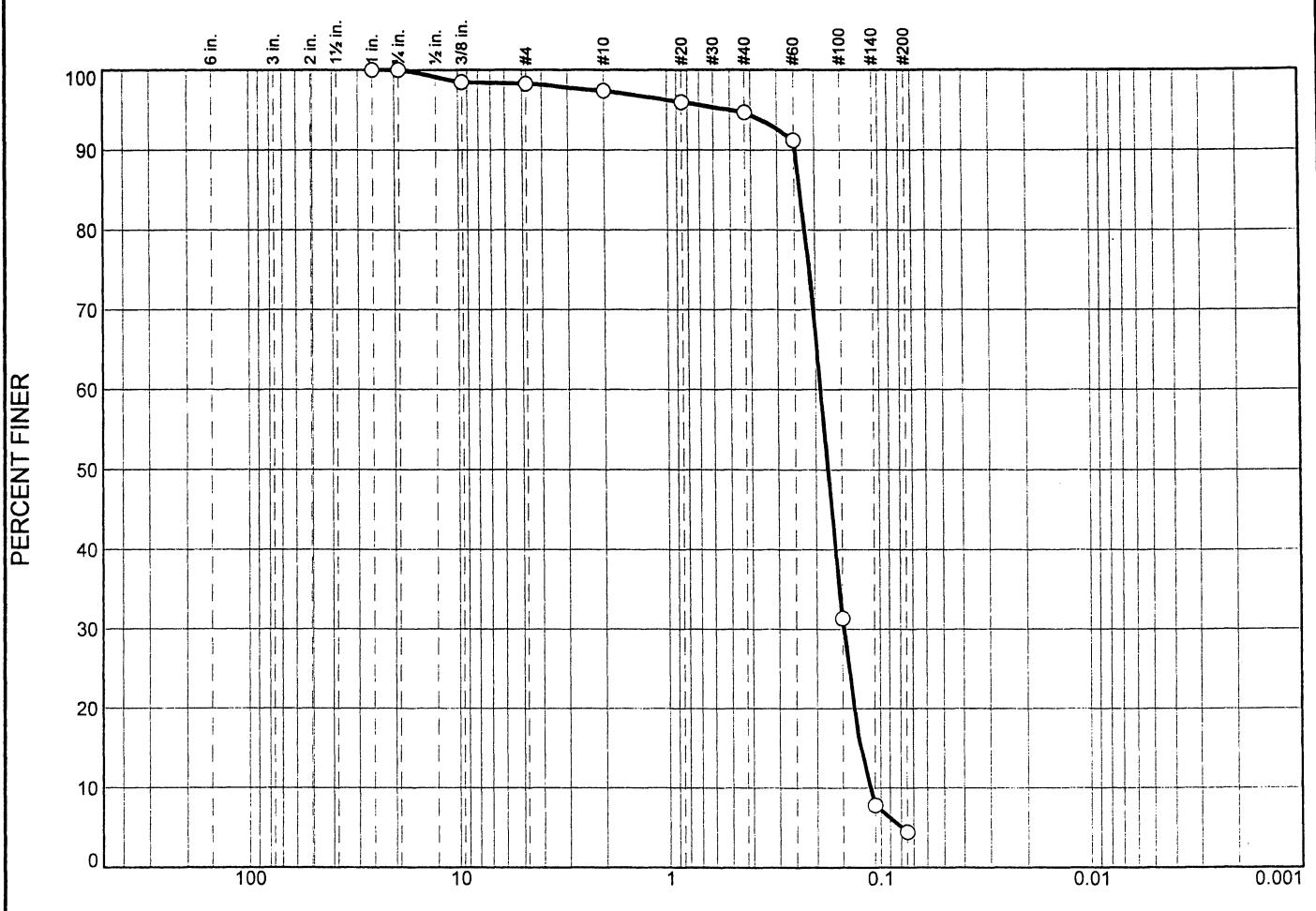
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0	0	2	1	2	91	4
O							
O							

X	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
O			0.2321	0.1883	0.1746	0.1481	0.1237	0.1125	1.04	1.67
O										
O										

Material Description						USCS	AASHTO
O Poorly graded sand						SP	

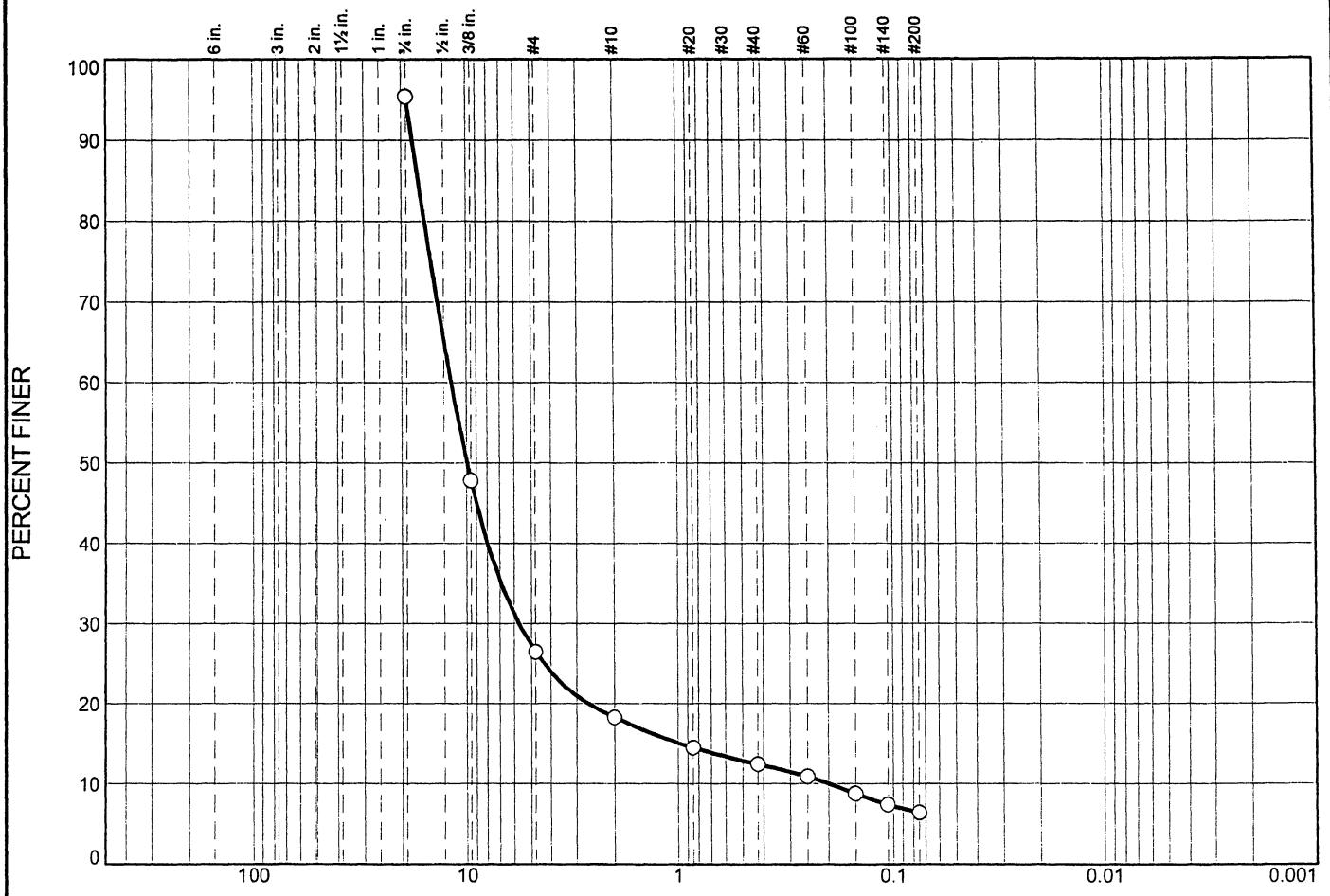
Project No. 05-05-0013- Client: Black & Veatch		Remarks:
Project: E.A.A (Reservoir)		O Moisture Content % 25.9 CP05-
O Source of Sample: CB-0182 Depth: 20' to 25'		EAARS-VB-0284
Date: O		
Nodarse & Associates, Inc.		
Miami Lakes, FL		

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○		69	8	6	6		6
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			16.6441	11.7433	9.9304	5.7187	0.9693

Material Description						USCS	AASHTO
○ Poorly graded gravel with silt and sand						GP-GM	

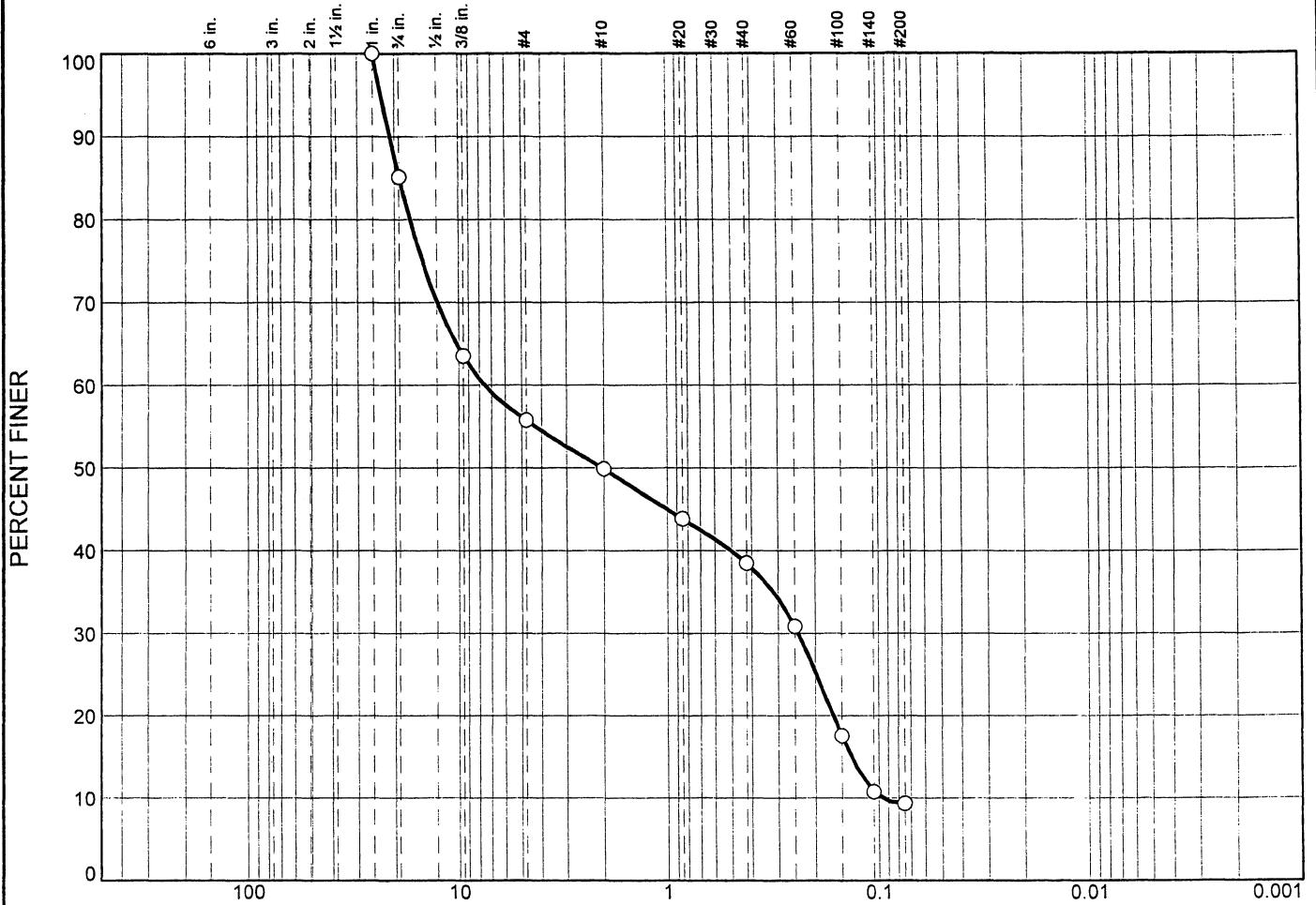
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0182 Depth: 45' to 50' Date: ○	Remarks: ○ Moisture Content CP05- EAARS-VB-0284
Nodarse & Associates, Inc. Miami Lakes, FL	

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	15	29	6	11	30		9
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
		18.9898	7.5526	2.0365	0.2402	0.1348	0.0972

Material Description

○ Poorly graded sand with silt and gravel

USCS AASHTO

SP-SM

Project No. 05-05-0013- Client: Black & Veatch

Remarks:

Project: E.A.A (Reservoir)

○ Moisture Content % 16.2 CP05-
EAARS-VB-0284

○ Source of Sample: CB-0182

Depth: 55' to 60'

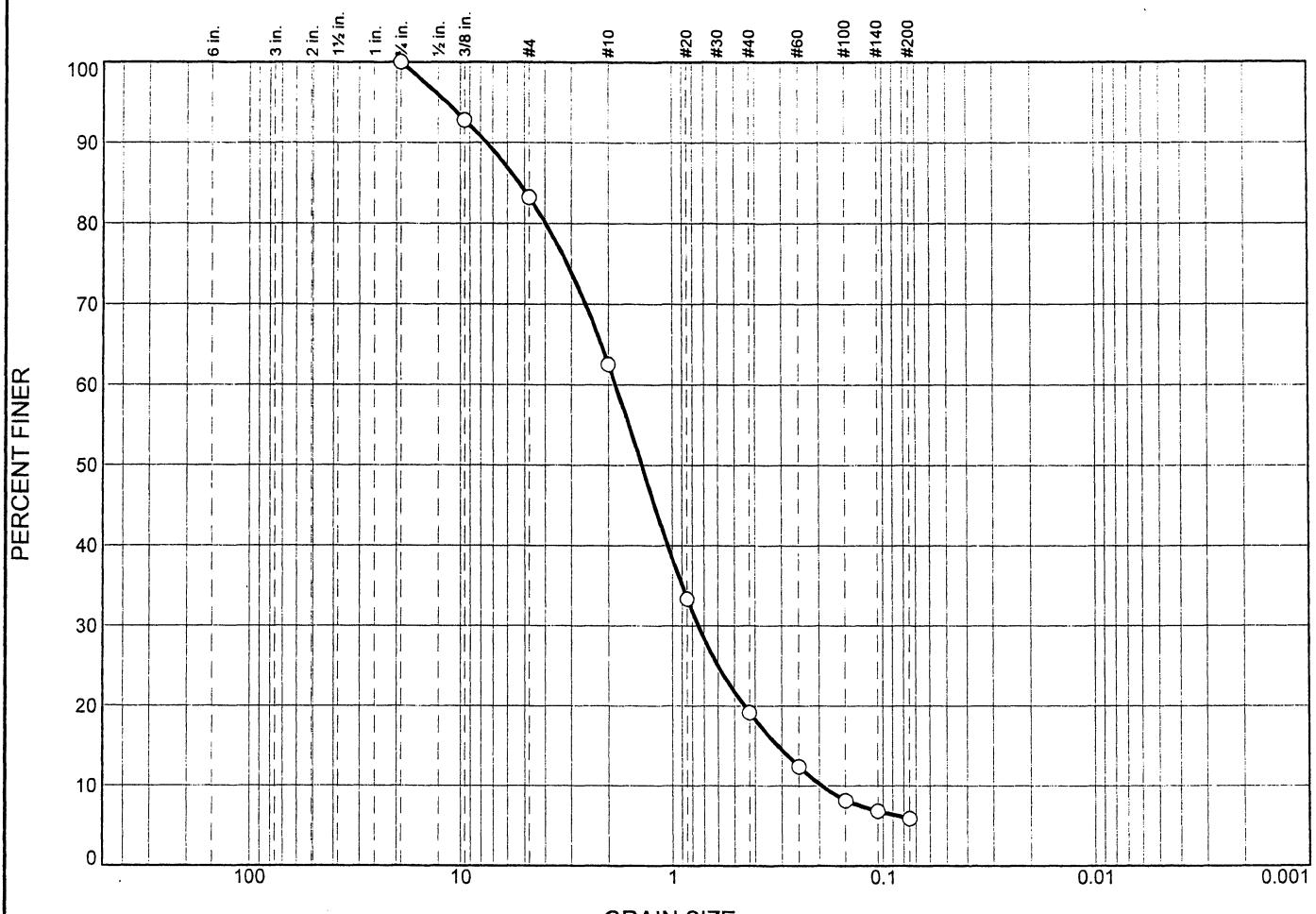
Date: ○

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	17	20	44	13	6
X	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
O			5.2877	1.8502	1.3945	0.7504	0.3130

Material Description						USCS	AASHTO
Poorly graded sand with silt and gravel						SP-SM	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	○ Moisture Content % 11.1
○ Source of Sample: CB-0182 Depth: 75' to 80'	CP05-EAARS-VB-0284
Date: ○	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Remarks:

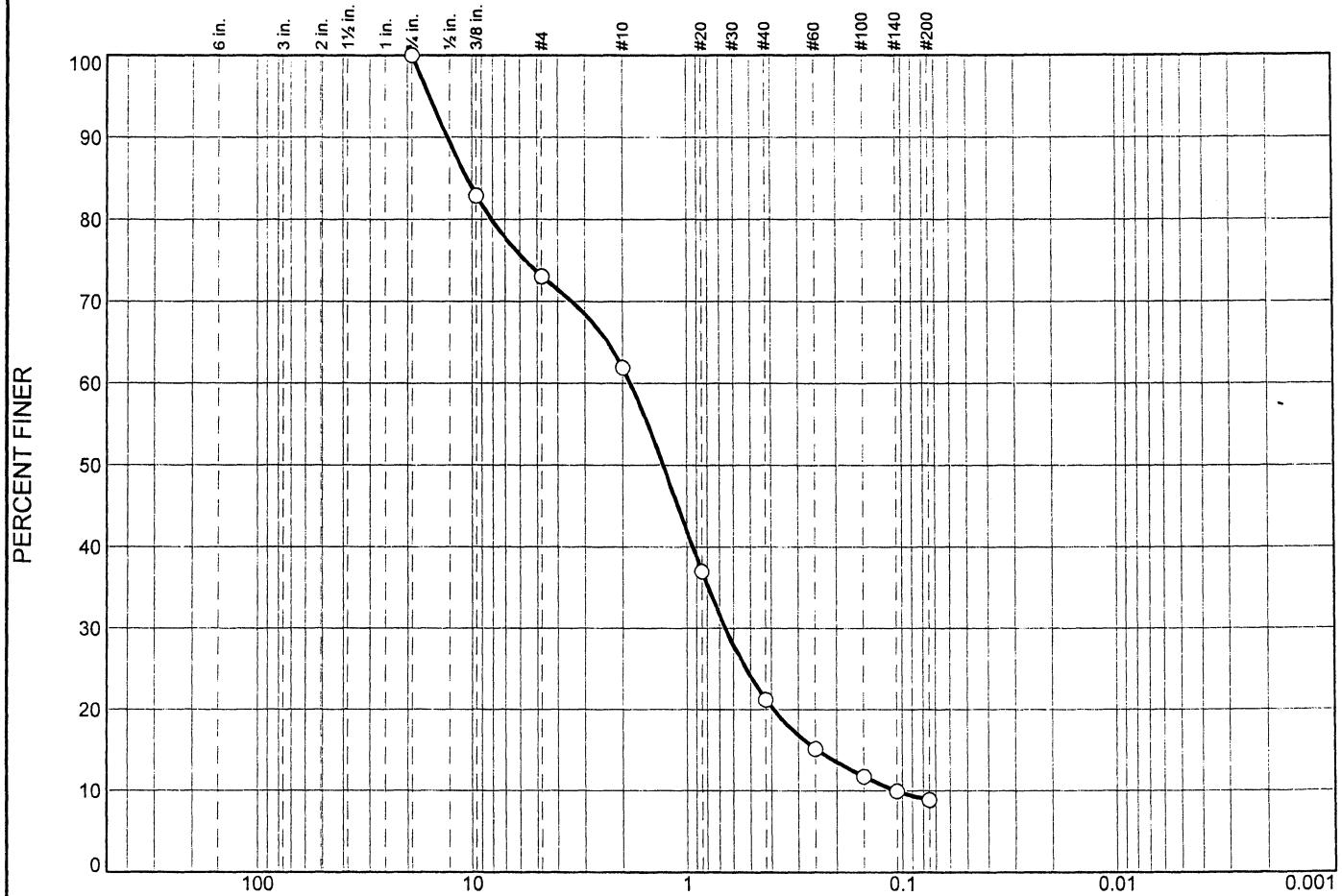
○ Moisture Content % 11.1
CP05-EAARS-VB-0284

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	27	11	41	12		9
X	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
O			10.5341	1.8396	1.2933	0.6557	0.2449

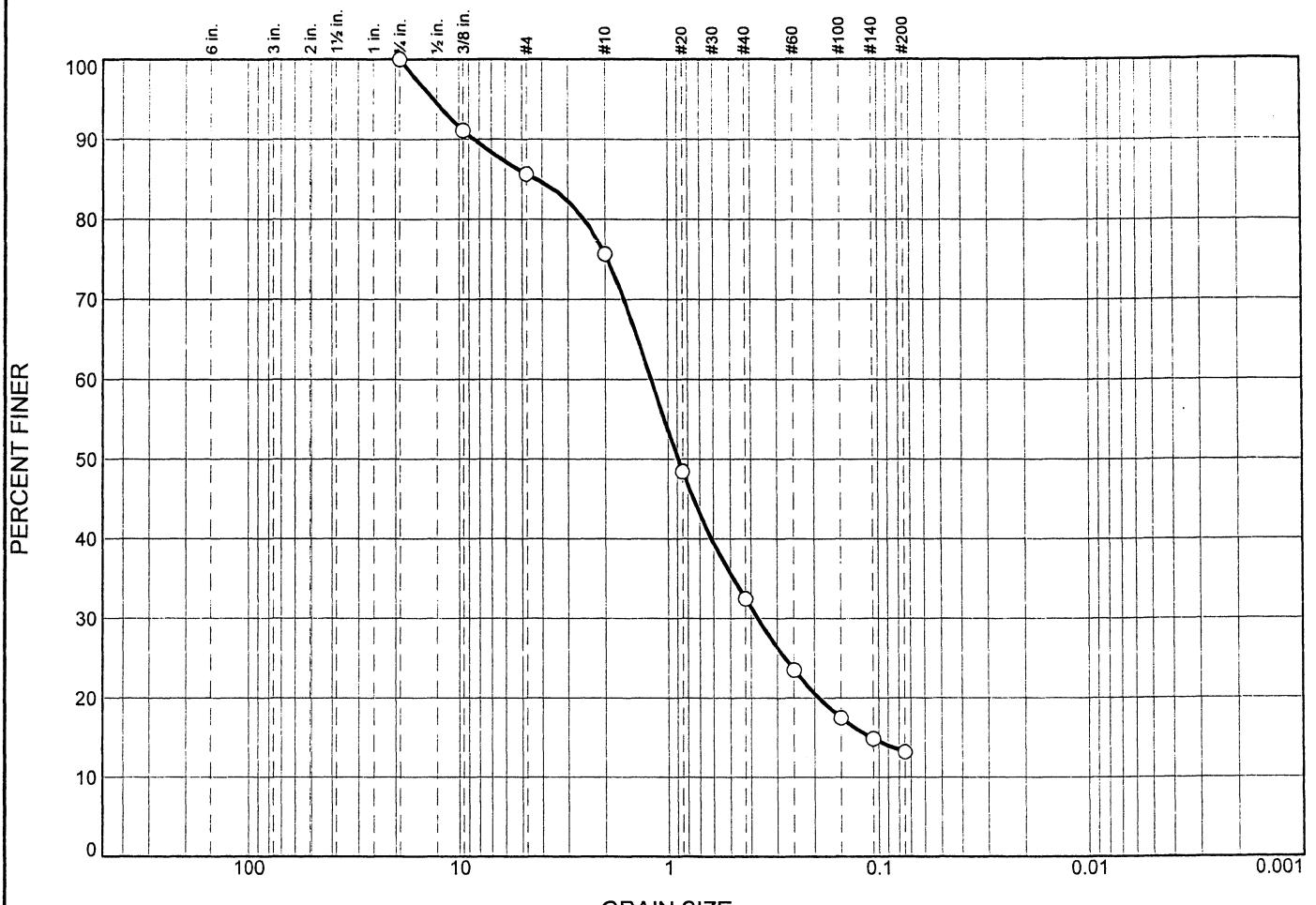
Material Description		USCS	AASHTO
O Poorly graded sand with silt and gravel		SP-SM	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	O Moisture Content % 16.1
O Source of Sample: CB-0182 Depth: 110' to 115'	CP05-EAARS-VB-0284
Date: O	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Pedro Camaraza Checked By: Kevin Leung

Figure

Particle Size Distribution Report



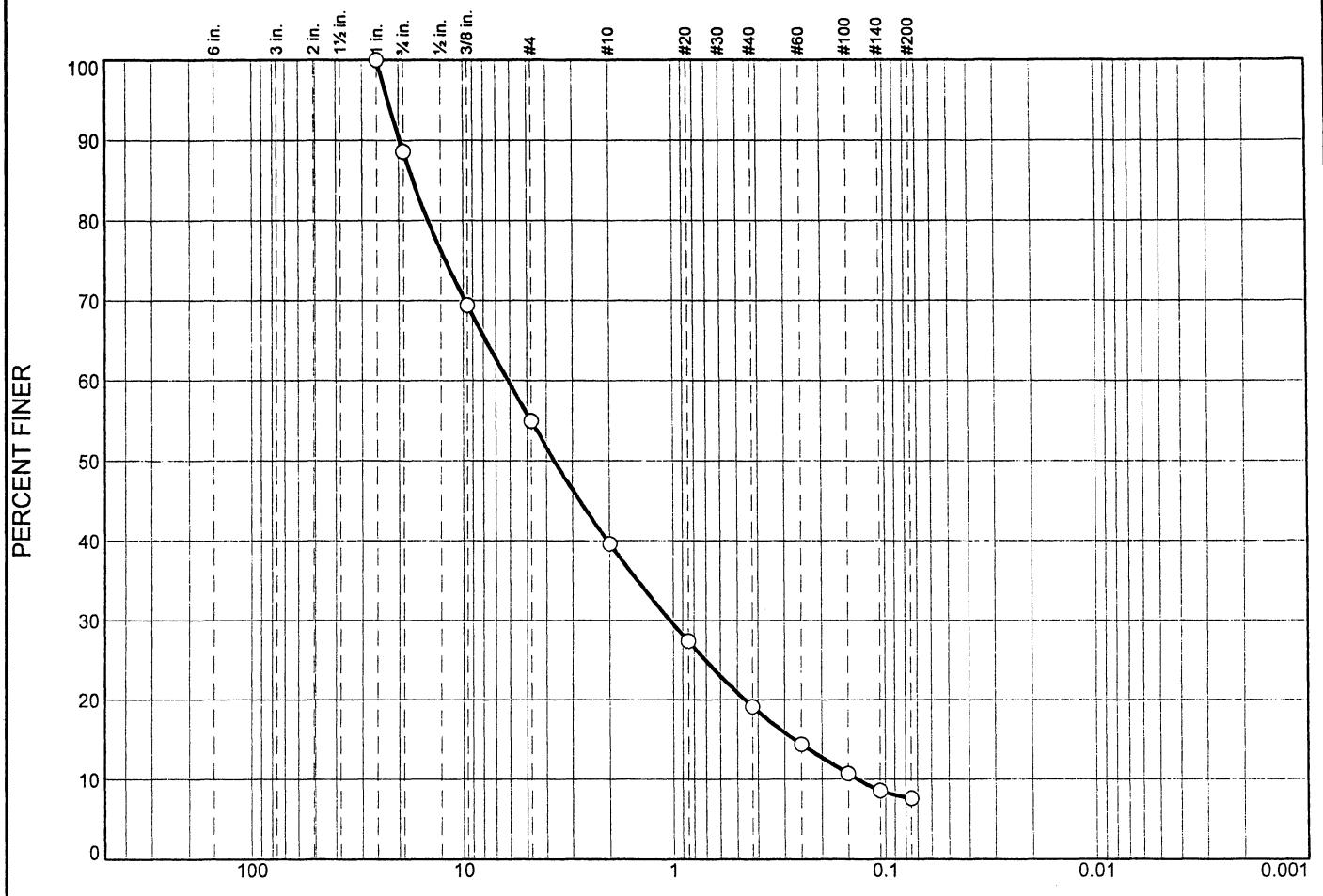
GRAIN SIZE - mm.									
% +3"		% Gravel		% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0	0	14	10	44	19		13	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="radio"/>			4.2449	1.2042	0.8939	0.3714	0.1087		
Material Description								USCS	AASHTO
<input type="radio"/> Poorly graded sand with silt								SP-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0182 Depth: 115' to 120' Date: <input type="radio"/>		Remarks: <input type="radio"/> Moisture Content % 15.8 CP05-EAARS-VB-0284
Nodarse & Associates, Inc. Miami Lakes, FL		Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	11	34	15	21	11	8
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			17.1668	6.1287	3.6565	1.0348	0.2701
						0.1350	1.29
							45.40

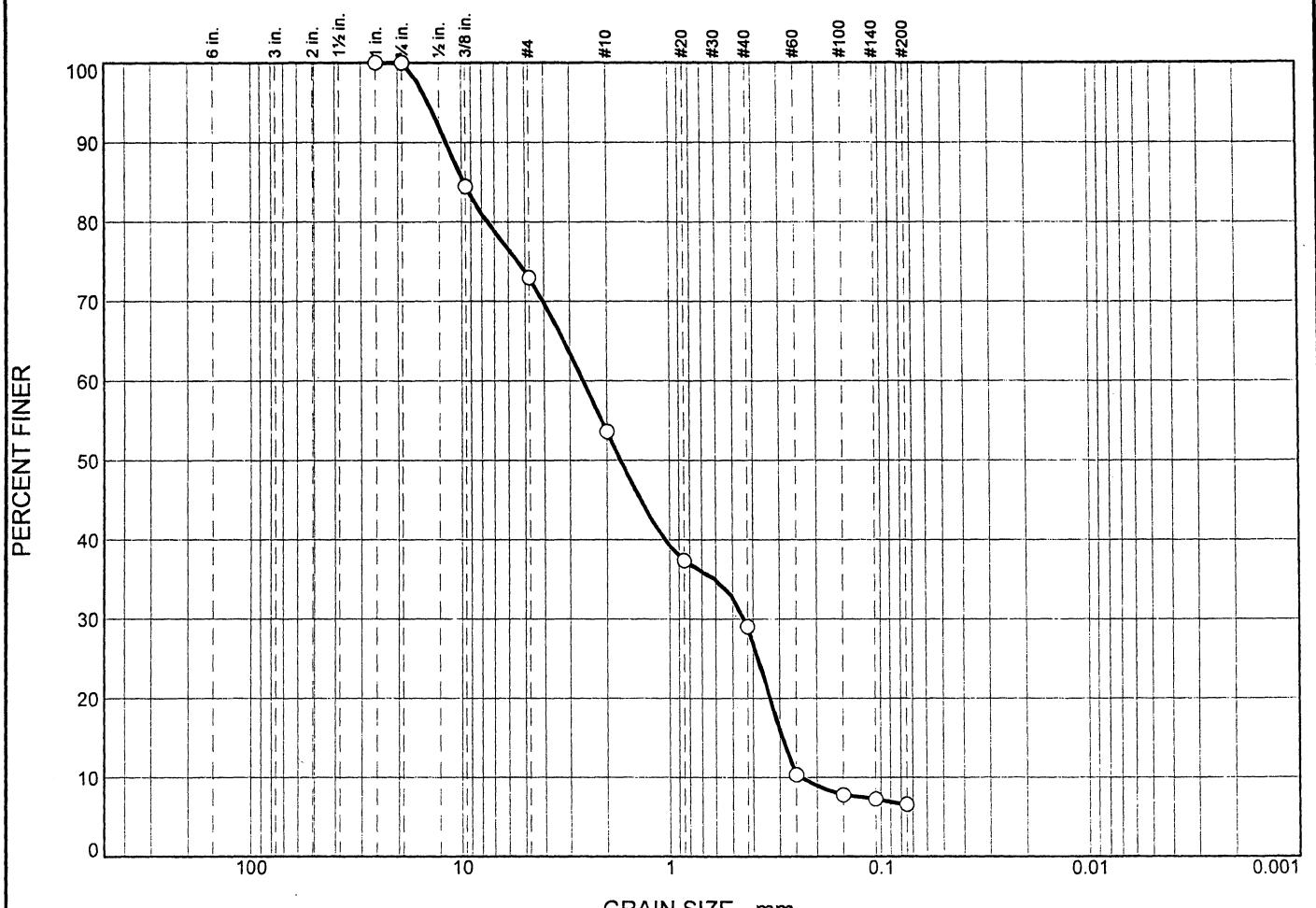
Material Description						USCS	AASHTO
○ Poorly graded sand with silt and gravel						SP-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0182 Depth: 125' to 130'		Remarks: ○ Moisture Content % 9.5 CP05- EAARS-VB-0284
Date: ○		
Nodarse & Associates, Inc. Miami Lakes, FL		Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
O		9.7354	2.5953	1.7240	0.4399	0.2916	0.2374	0.31	10.93

Material Description

USCS | AASHTO

Poorly graded sand with silt and gravel

SP-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0182 **Depth:** 140' to 145'

Remarks:

○ Moisture Content % 9.0 CP05-
EAARS-VB-0284

Date: ○

Nodarse & Associates, Inc.

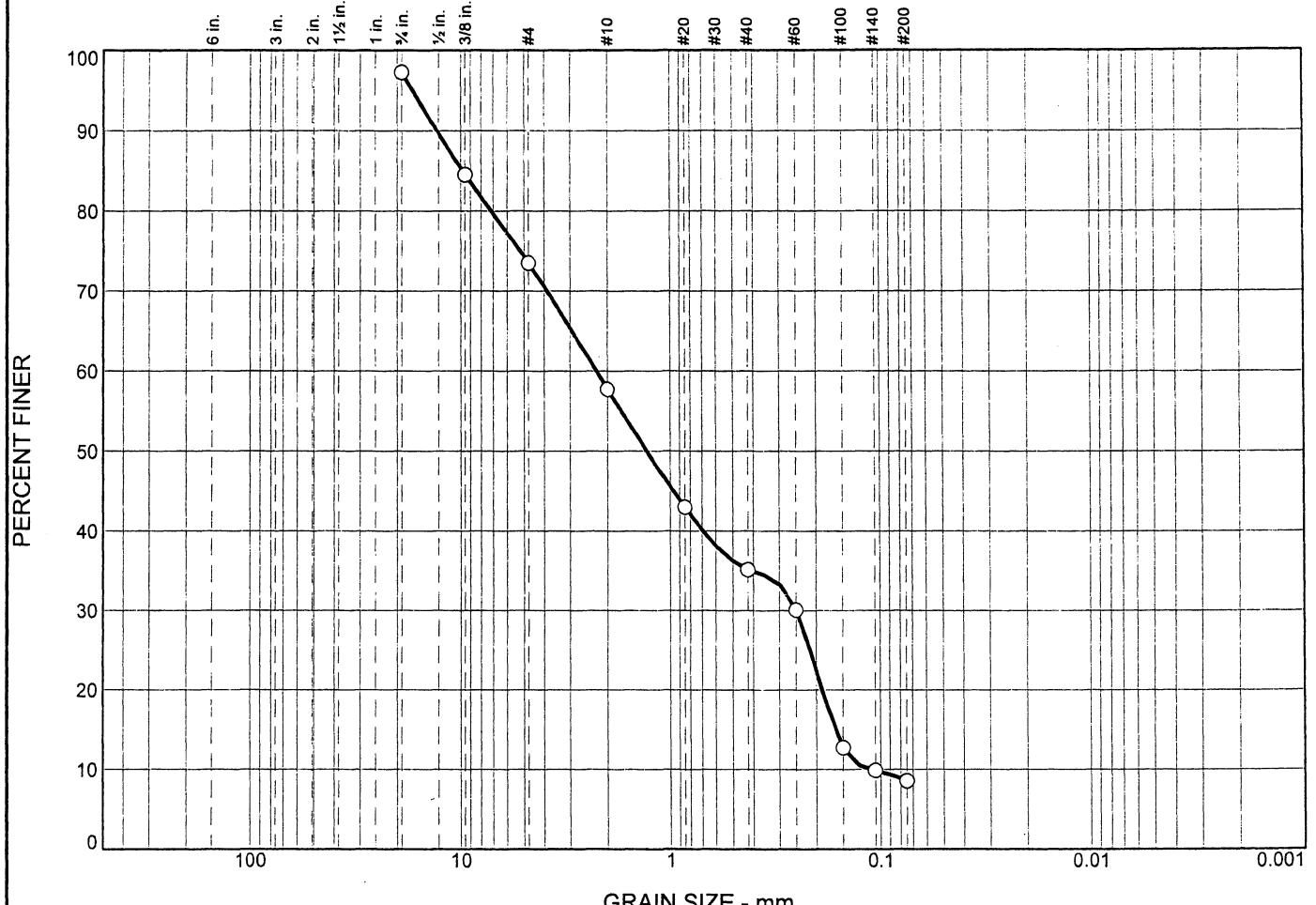
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
<input type="radio"/>			24	15	23	26		9		
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>			9.7852	2.2565	1.3000	0.2495	0.1632	0.1116	0.25	20.21
Material Description								USCS	AASHTO	
<input type="radio"/> Poorly graded sand with silt and gravel								SP-SM		

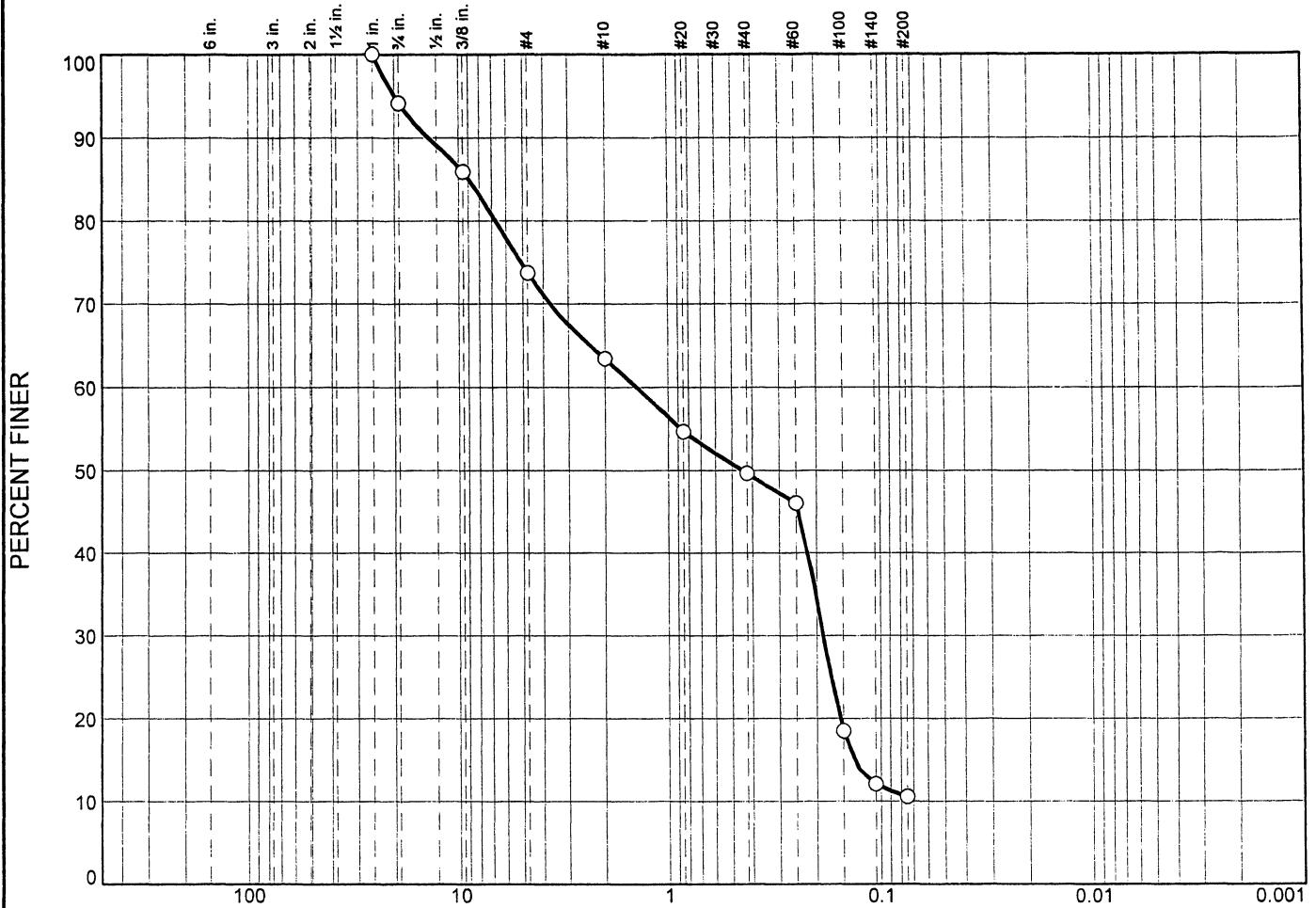
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input type="radio"/> Moisture Content % 10.0
<input type="radio"/> Source of Sample: CB-0182 Depth: 150' to 155'	CP05-EAARS-VB-0284
Date: <input type="radio"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



Material Description

USCS | AASHTO

Poorly graded sand with silt and gravel

SP-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0182

Depth: 155' to 160'

Remarks:

○ Moisture Content % 12.0 CP05-
EAARS-VB-0284

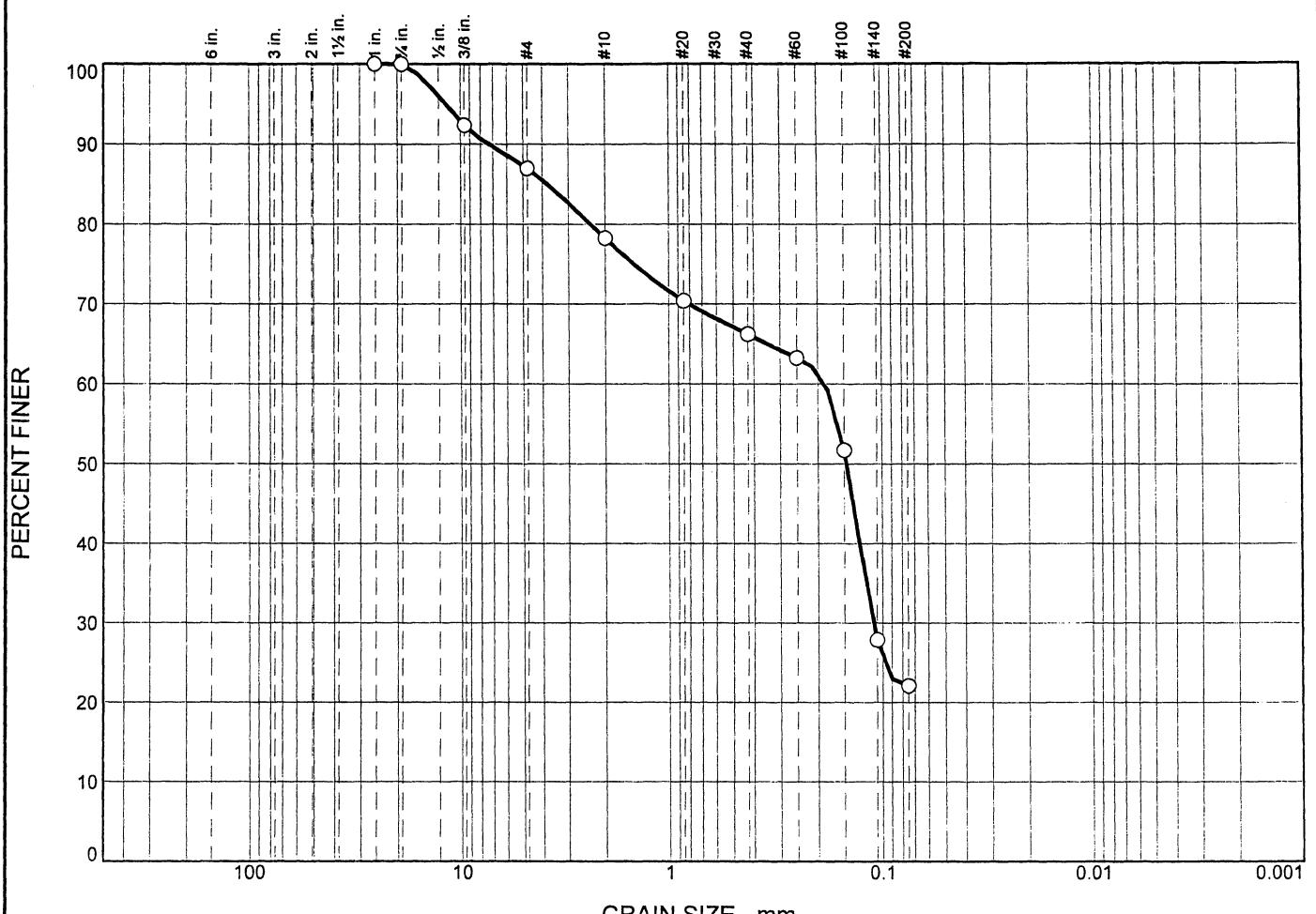
Date:

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	0	13	9	12	44	22
○							

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○		3.7710	0.1845	0.1459	0.1102				
○									

Material Description				USCS	AASHTO
○ Silty sand with gravel				SM	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	○ Moisture Content % 16.5 CP05-
○ Source of Sample: CB-0182 Depth: 175' to 180'	EAARS-VB-0284

Date: ○

Nodarse & Associates, Inc.

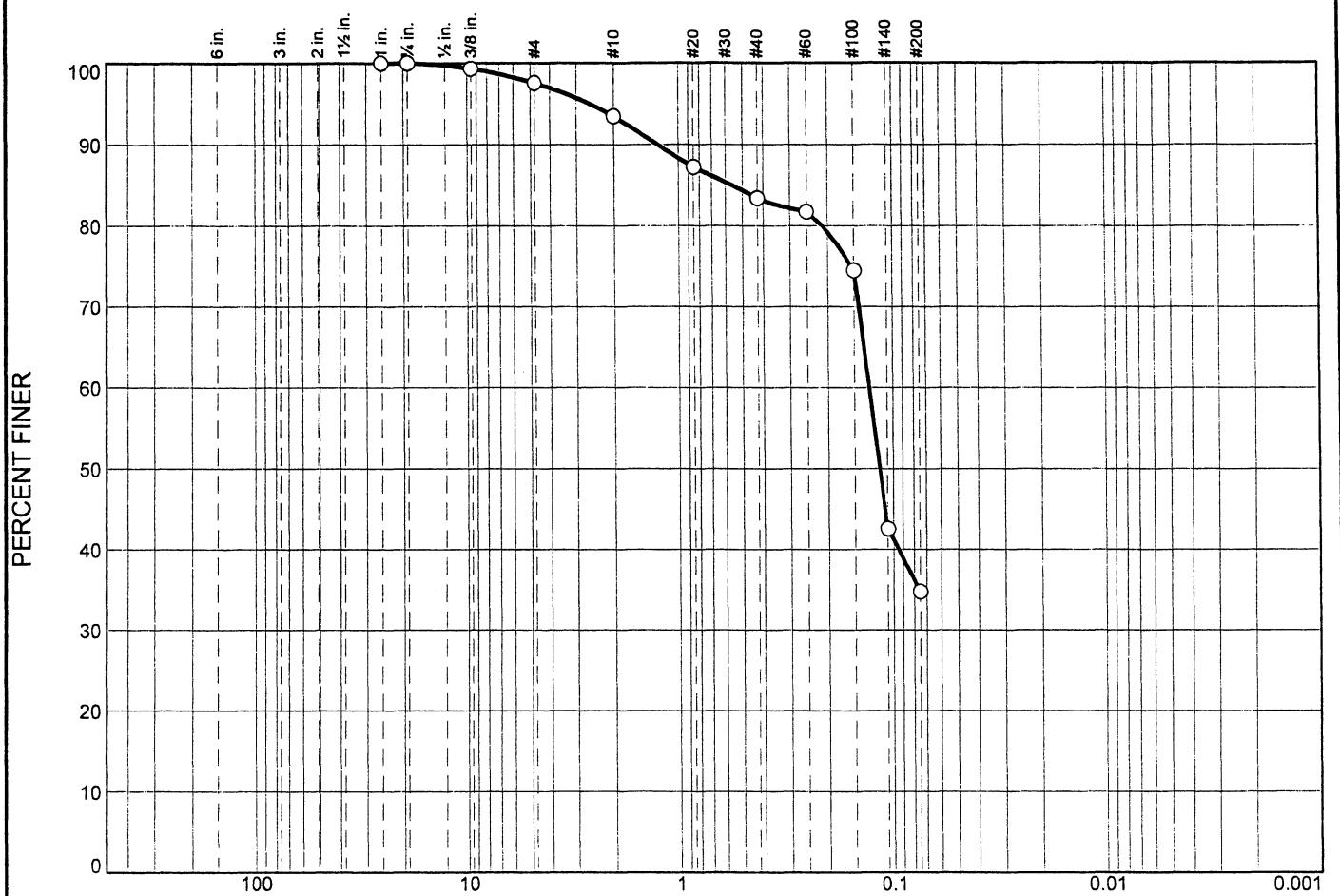
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	0	2	5	10	48	35
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			0.5563	0.1281	0.1160		

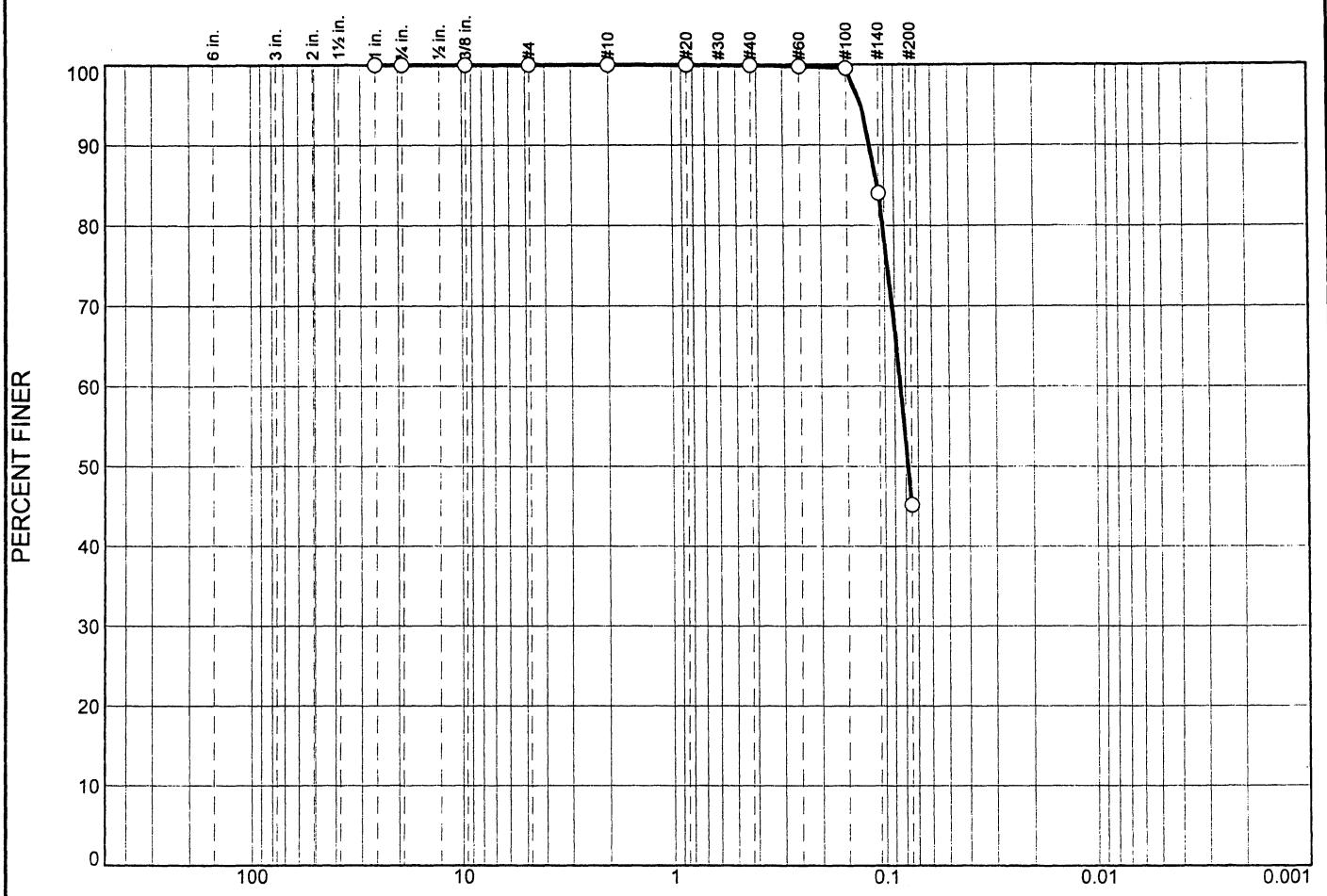
Material Description						USCS	AASHTO
○ Silty sand						SM	

Project No. 05-05-0013- Client: Black & Veatch	Project: E.A.A (Reservoir)	Date: ○	Remarks:
○ Source of Sample: CB-0182	Depth: 185' to 190'		○ Moisture Content % 14.5 CP05- EAARS-VB-0284
Nodarse & Associates, Inc.			
Miami Lakes, FL		Figure	

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



Material Description								USCS	AASHTO
<input type="radio"/> Sandy silt								ML	

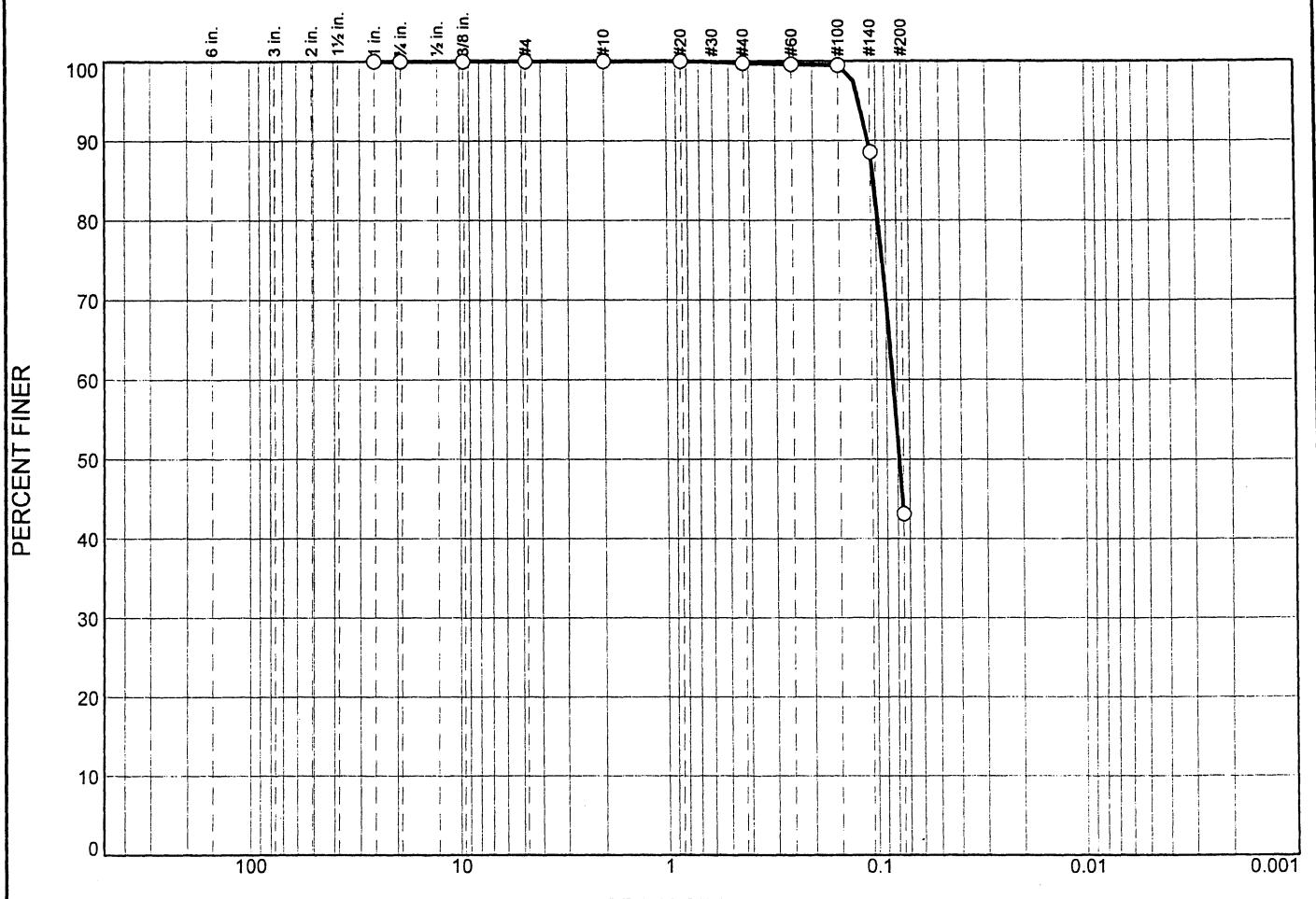
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input type="radio"/> Moisture Content % 23.1 CP05-
<input type="radio"/> Source of Sample: CB-0182 Depth: 205' to 210'	EAARS-VB-0284
Date: <input type="radio"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



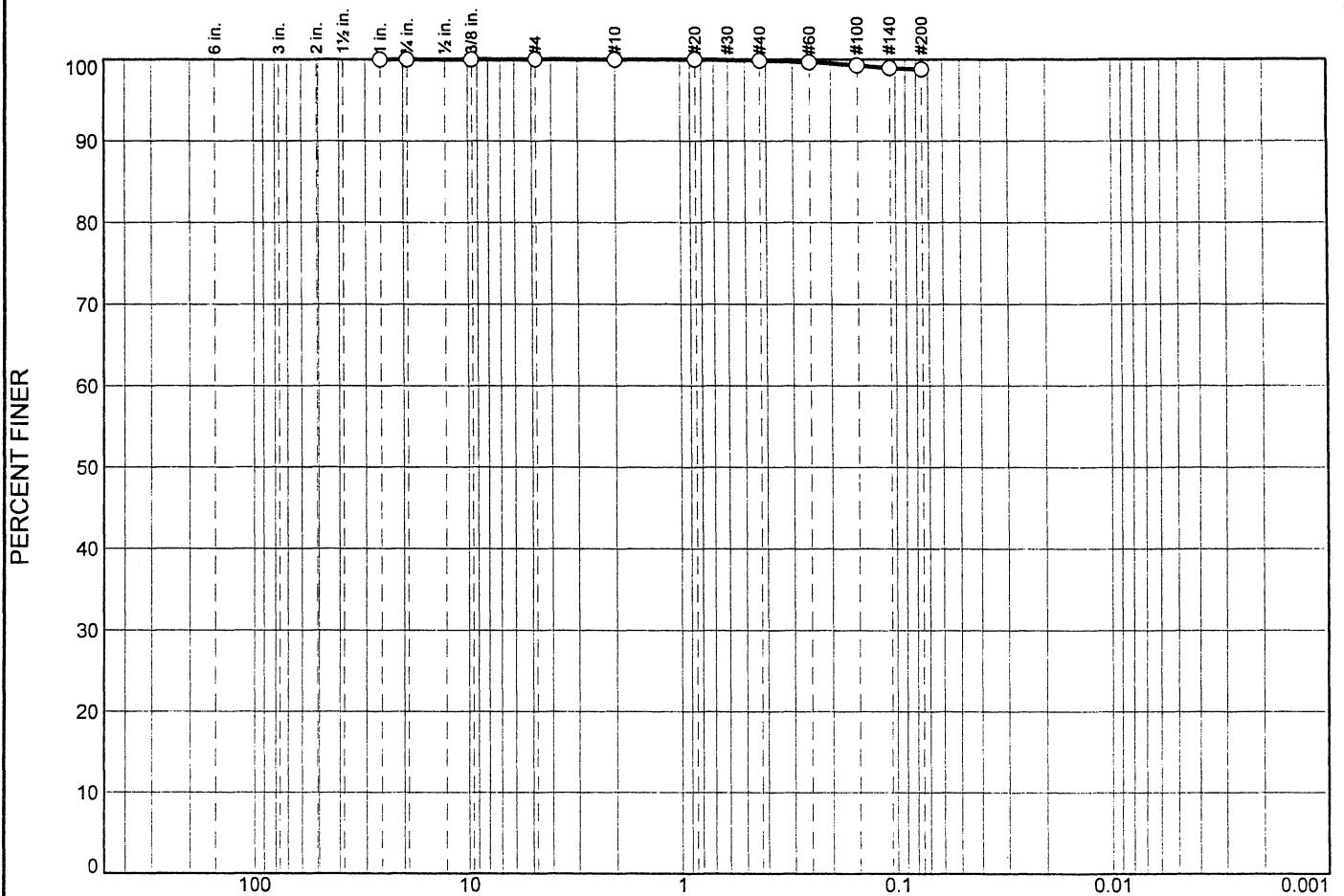
% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○	0	0	0	0	57		43	
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	
○			0.1019	0.0837	0.0784			
Material Description							USCS	AASHTO
○	Sandy silt						ML	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) ○ Source of Sample: CB-0182 Depth: 210' to 215' Date: ○	Remarks: ○ Moisture Content % 25.7 CP05- EAARS-VB-0284
Nodarse & Associates, Inc.	Figure
Miami Lakes, FL	

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"	% Gravel			% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
O	0	0	0	0	1		99	
X	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
O								C _c
								C _u

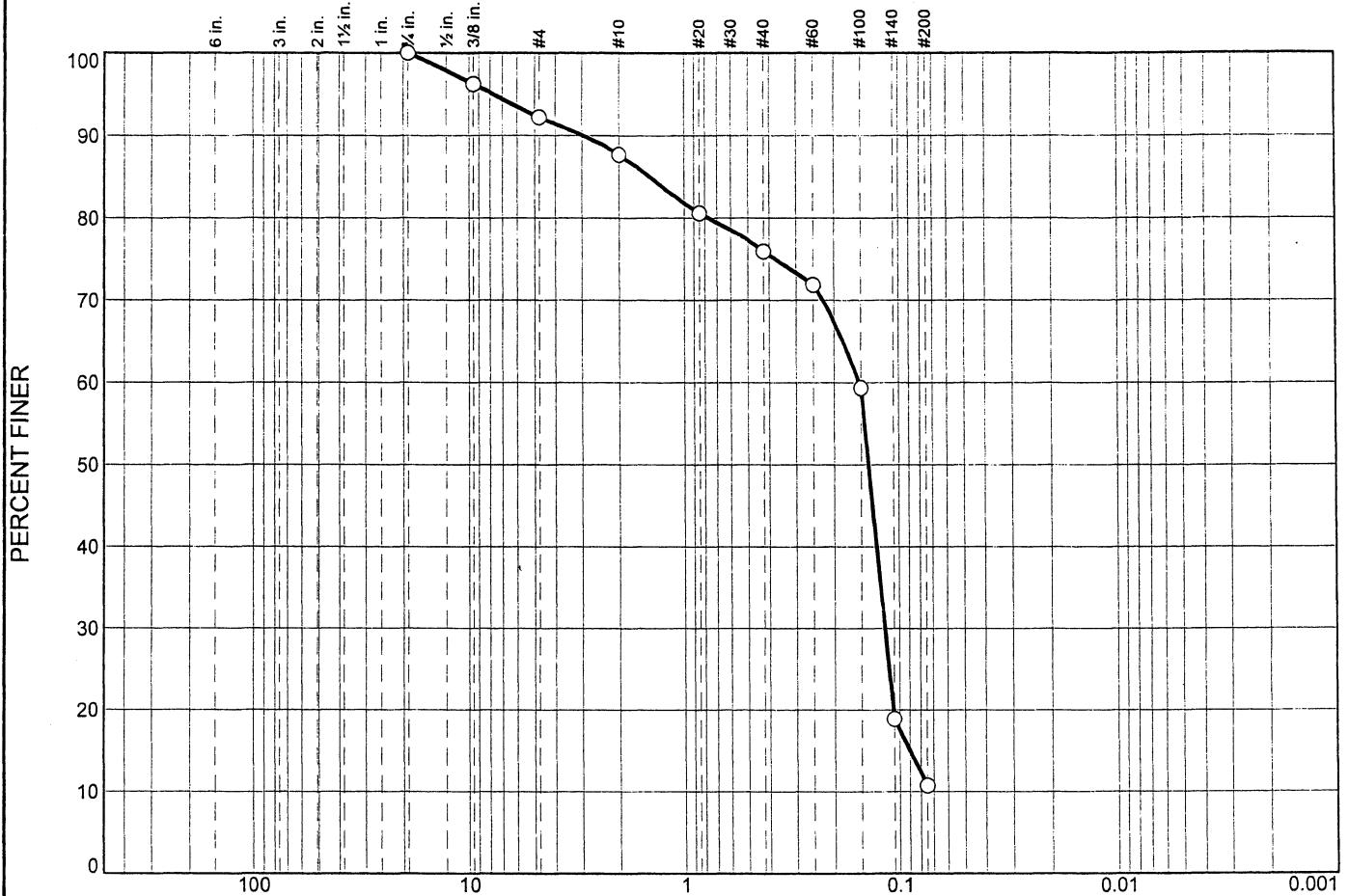
Material Description				USCS	AASHTO
O Sandy silt				ML	

Project No. 05-05-0013- Client: Black & Veatch		Remarks:
Project: E.A.A (Reservoir)		O Moisture Content % 75.1 CP05-
O Source of Sample: CB-0182 Depth: 225' to 230'		EAARS-VB-0284
Date: O		
Nodarse & Associates, Inc.		
Miami Lakes, FL		Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0	0	8	4	12	65		11	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="radio"/>			1.4423	0.1530	0.1378	0.1178	0.0898		
Material Description								USCS	AASHTO
<input type="radio"/> Poorly graded sand with silt								SP-SM	

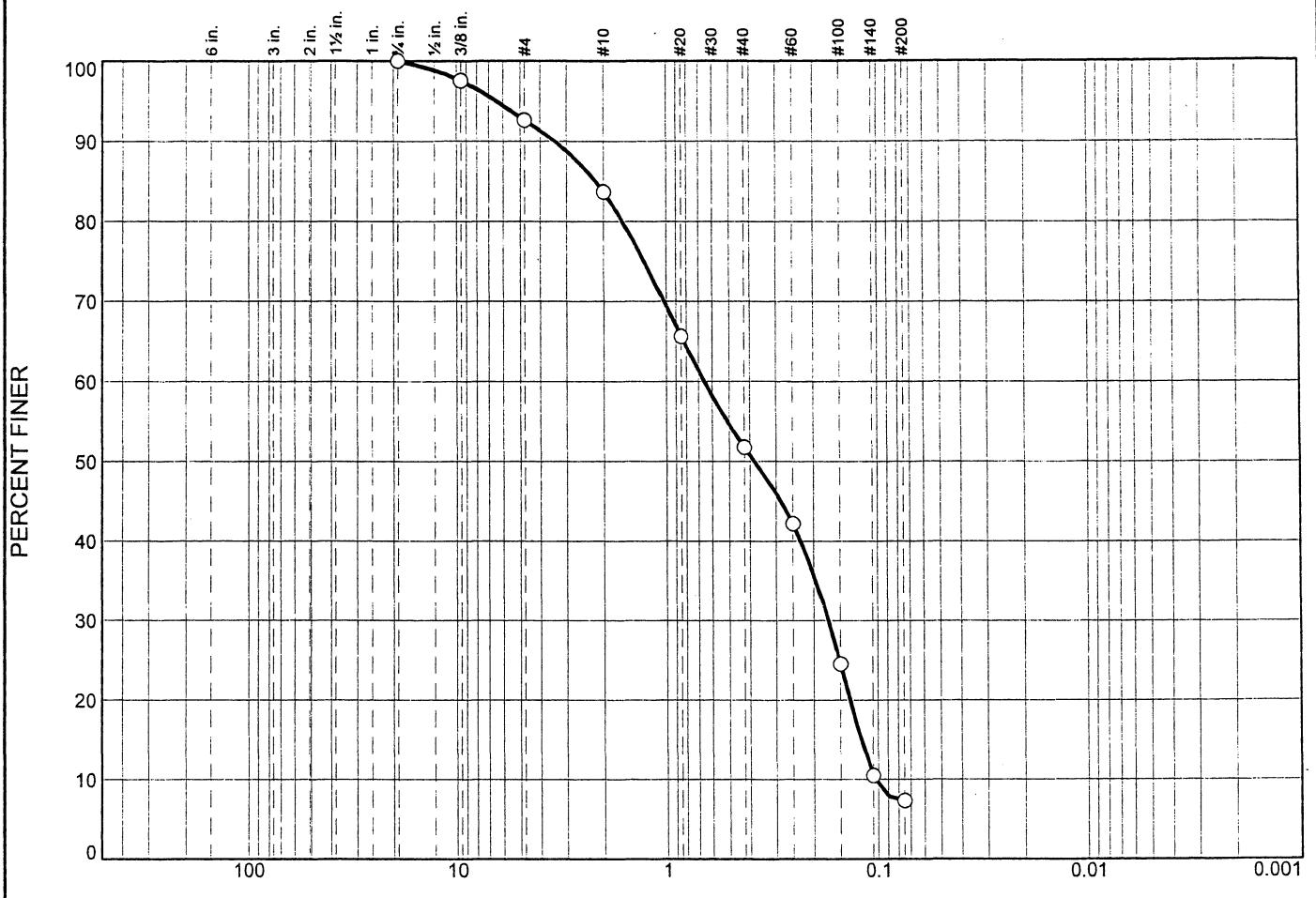
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	<input type="radio"/> Moisture Content % 21.5
<input type="radio"/> Source of Sample: CB-0190 Depth: 40' to 45'	CP05-EAARS-VB-0285
Date: <input type="radio"/>	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



Material Description

USCS AASHTO

Poorly graded sand with silt

SP-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0190

Depth: 45' to 50'

Remarks:

○ Moisture Content % 18.6
CP05-EAARS-VB-0285

Date: 0

Nodarse & Associates, Inc.

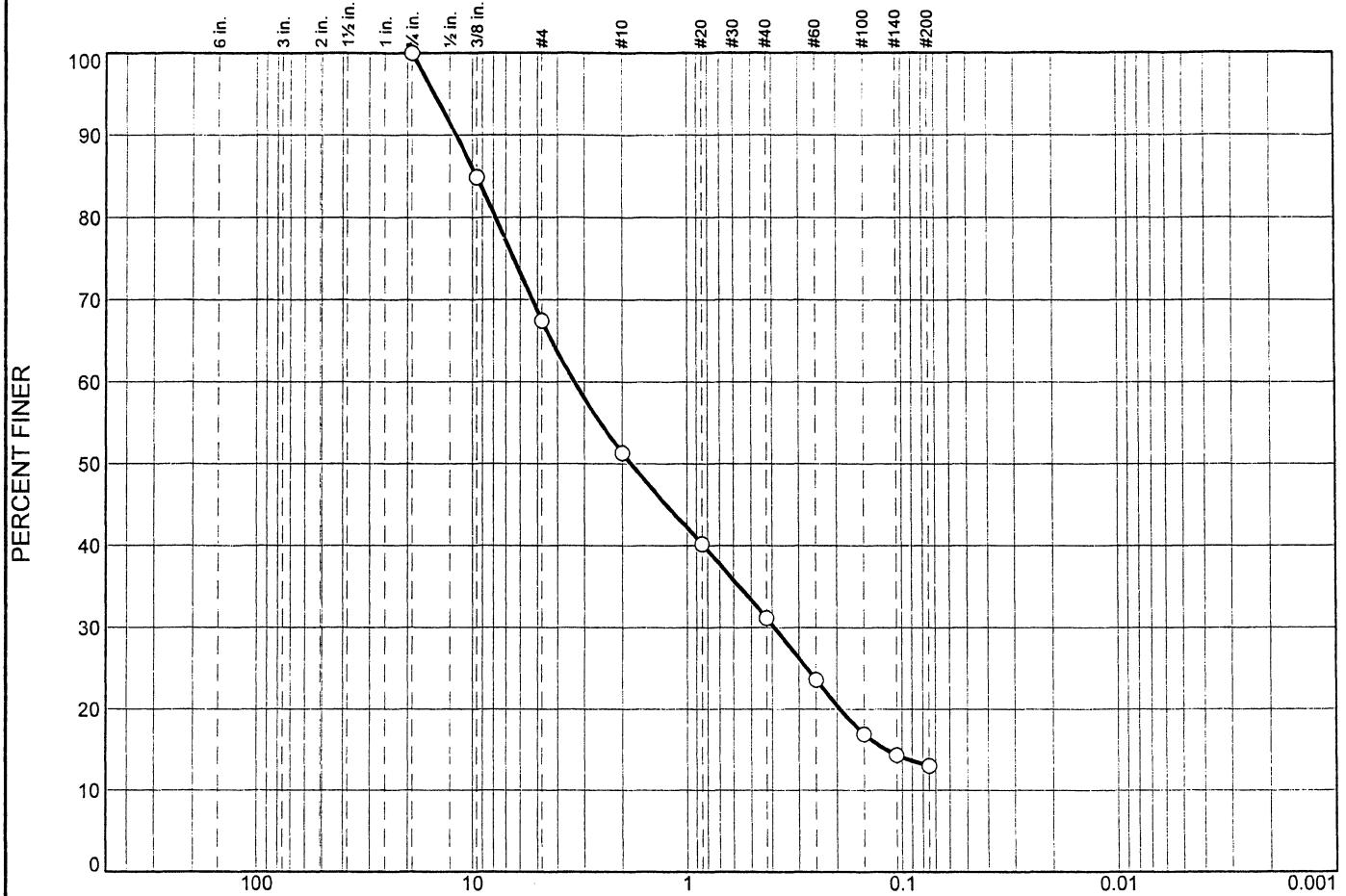
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0	0	33	16	20	18		13
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀

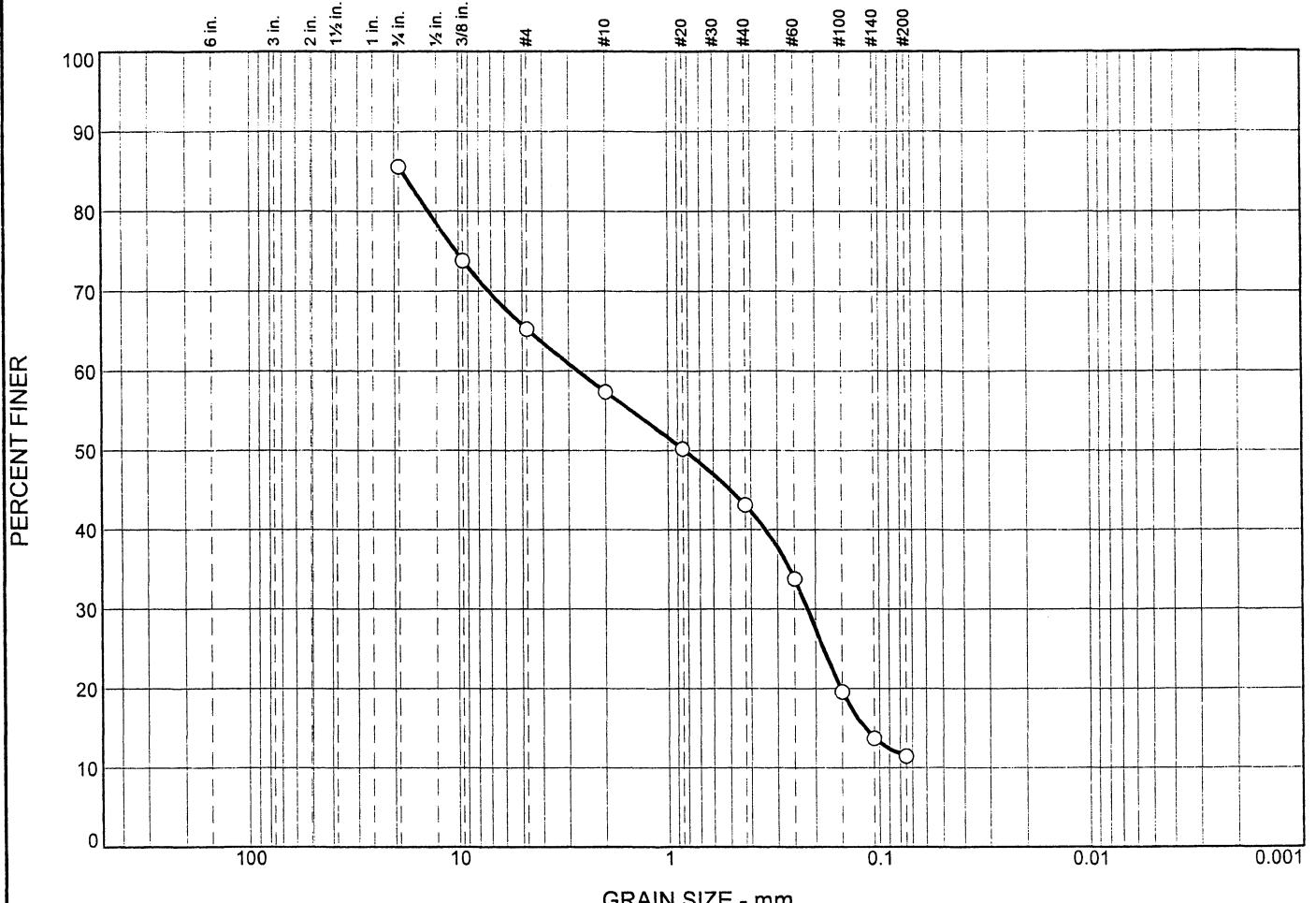
Material Description							USCS	AASHTO
<input type="radio"/>	Poorly graded sand with silt and gravel						SP-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0190 Depth: 70' to 75' Date: <input type="radio"/>	Remarks: <input type="radio"/> Moisture Content % 14.8 CP05-EAARS-VB-0285
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○			21	8	14	32	11
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			18.4096	2.7228	0.8308	0.2172	0.1177
Material Description							USCS
○ Poorly graded sand with silt and gravel							AASHTO
							SP-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0190 Depth: 75' to 80'

Date: ○

Nodarse & Associates, Inc.

Miami Lakes, FL

Remarks:

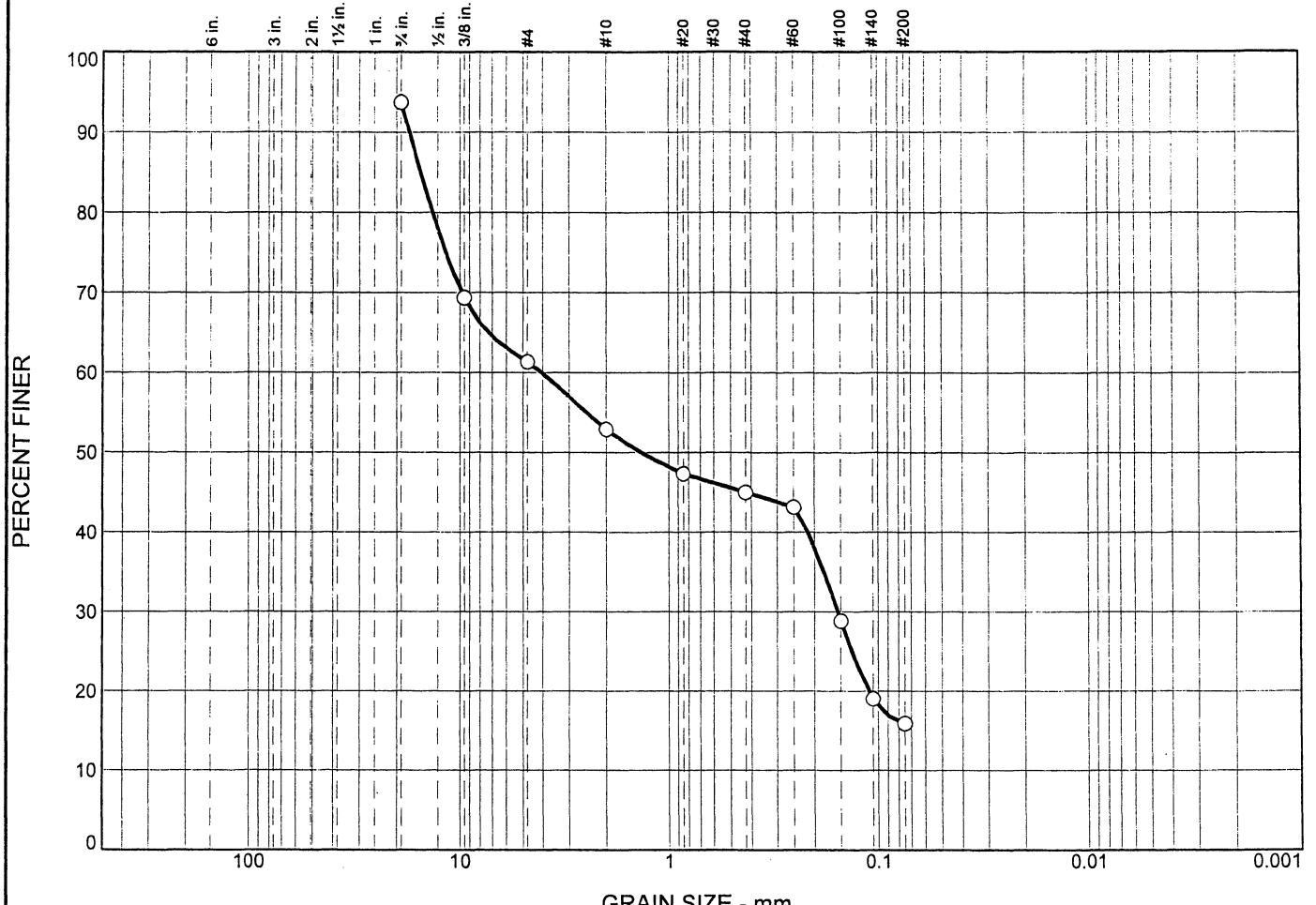
○ Moisture Content % 17.1
CP05-EAARS-VB-0285

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Figure

Particle Size Distribution Report



	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	33	8	8		29		16
<input checked="" type="checkbox"/> LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input type="radio"/>		15.3817	4.0643	1.3624	0.1553		C _c
							C _u
Material Description							USCS
<input type="radio"/> Poorly graded sand with silt and gravel							SP-SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0190 Depth: 110' to 115'

Remarks:

Moisture Content % 13.5
CP05-EAARS-VB-0285

Date:

Nodarse & Associates, Inc.

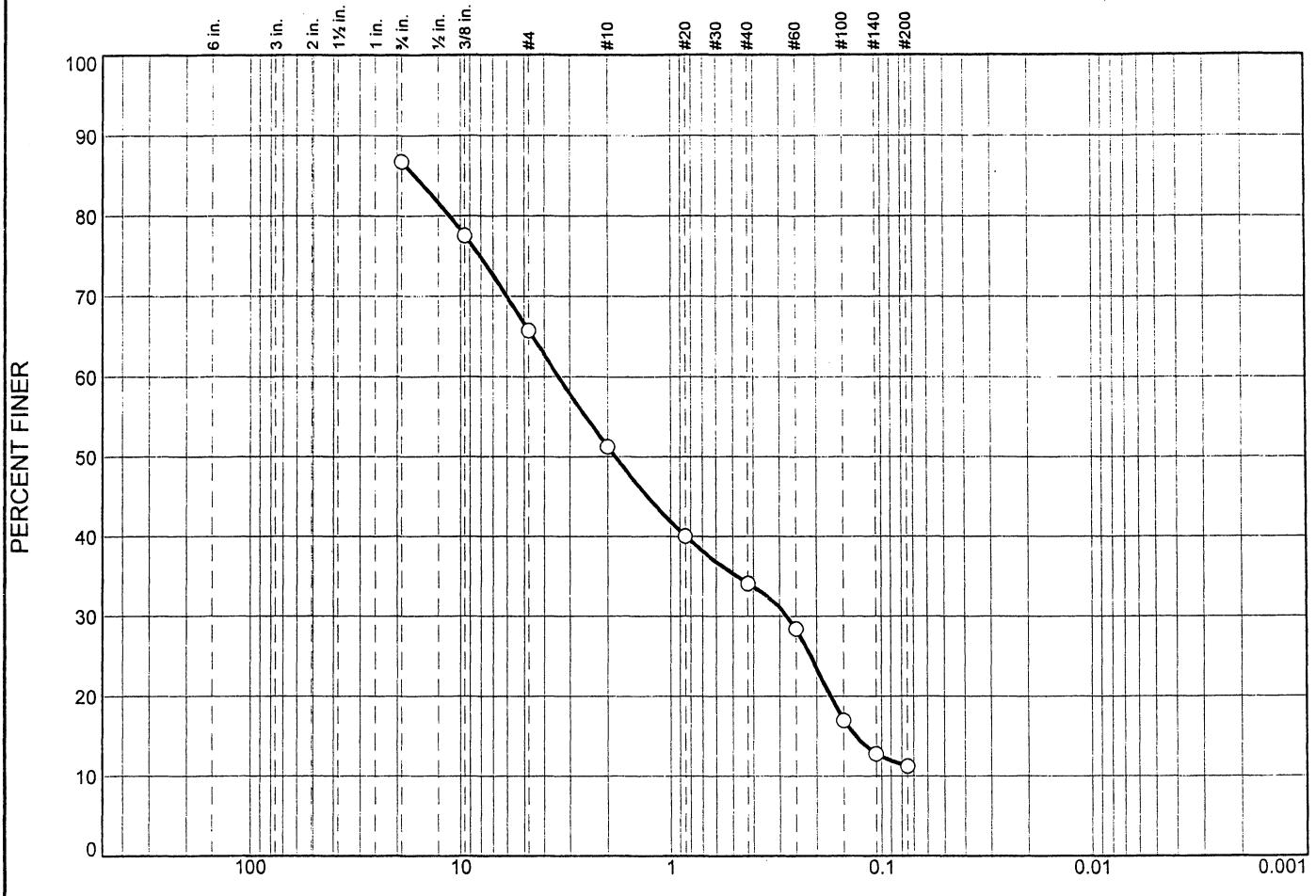
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○			21	15	17	23	11
○							
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			16.5258	3.4175	1.8409	0.2754	0.1326
○							
Material Description							USCS
○ Poorly graded sand with silt and gravel							SP-SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0190 Depth: 115' to 120'

Remarks:

○ Moisture Content % 11.6
CP05-EAARS-VB-0285

Date: ○

Nodarse & Associates, Inc.

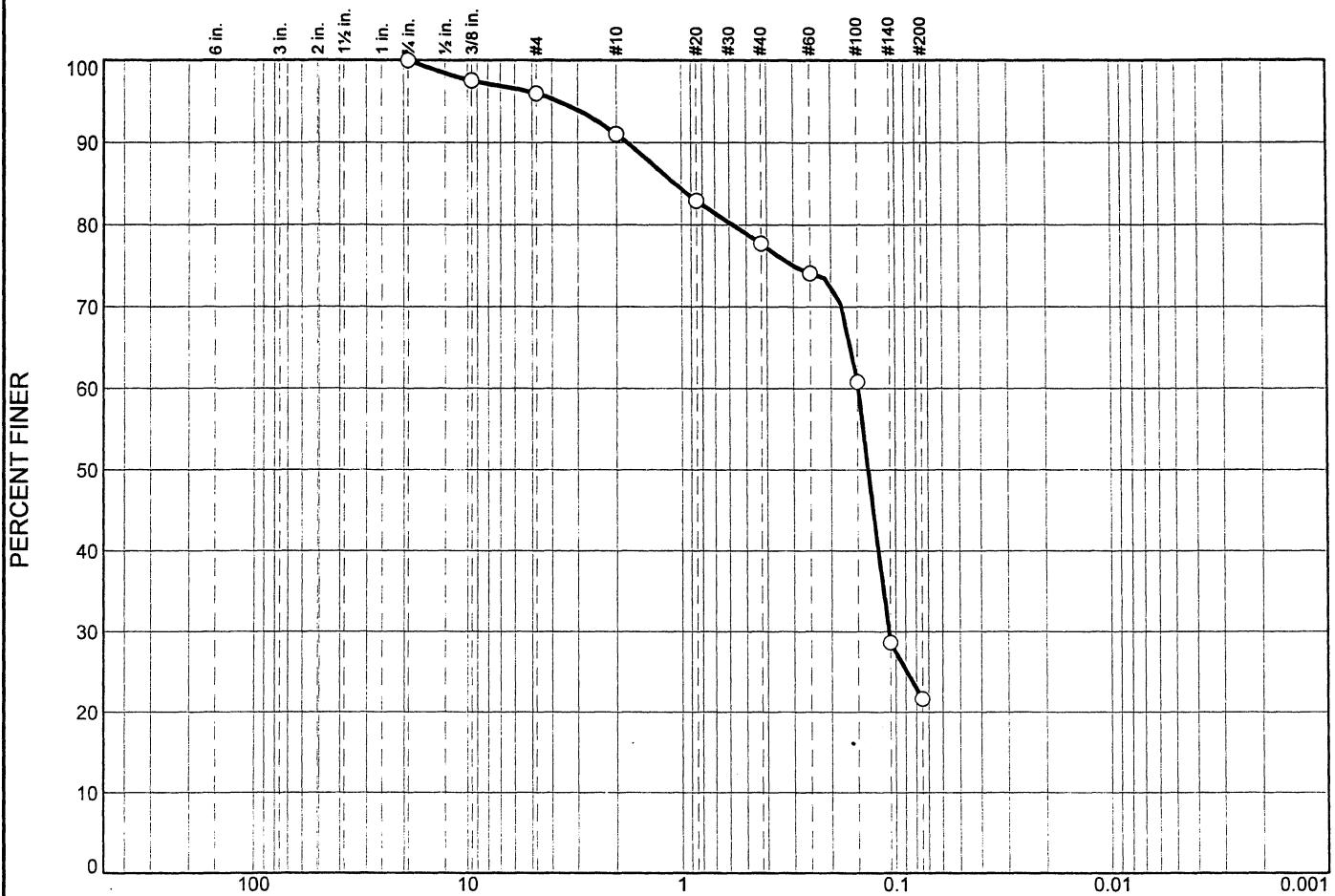
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"	% Gravel			% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○ 0.0	0.0	4.0	4.9	13.4	56.0		21.7	
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○			1.0644	0.1485	0.1334	0.1081		C _c
								C _u
Material Description								USCS AASHTO
○ Silty sand							SM	

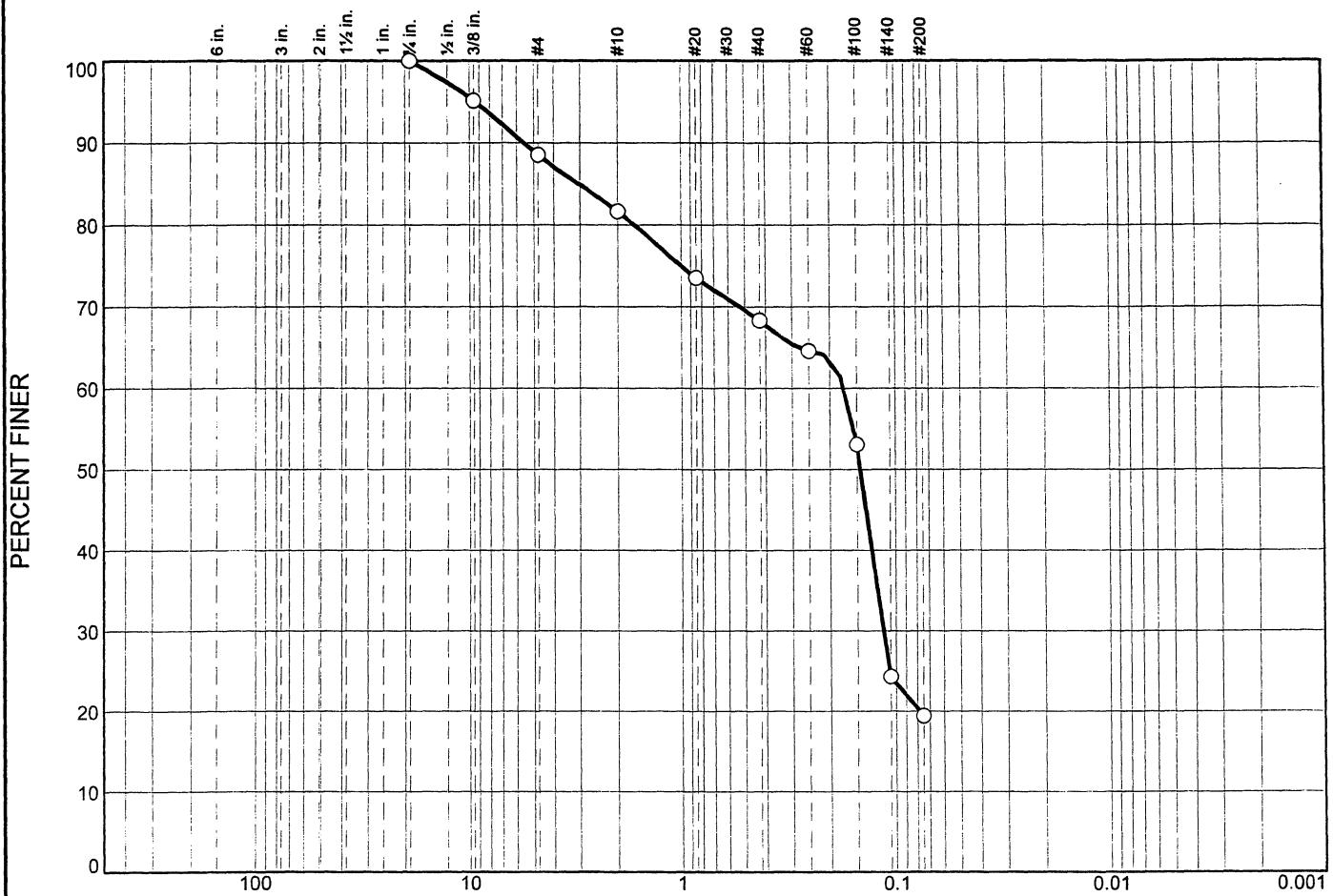
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Sample Source: CB-0190 Depth: 150.0'-155.0' Sample No.: CB190	Remarks: ○ Moisture Content % 18.75 CP05- EAARS-VB-285
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: L MAZO

Checked By: Michael Brown

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	11.5	6.8	13.4	48.9	19.4

Material Description		USCS	AASHTO
<input type="radio"/> Silty sand		SM	

Project No. 05-05-0013- **Client:** Black & Veatch
Project: E.A.A (Reservoir) W/O#6

Remarks:

- Moisture Content % 18.11 CP05-
EAARS-VB-285

Sample Source: CB-0190 **Depth:** 155.0'-160.0' **Sample No.:** CB190

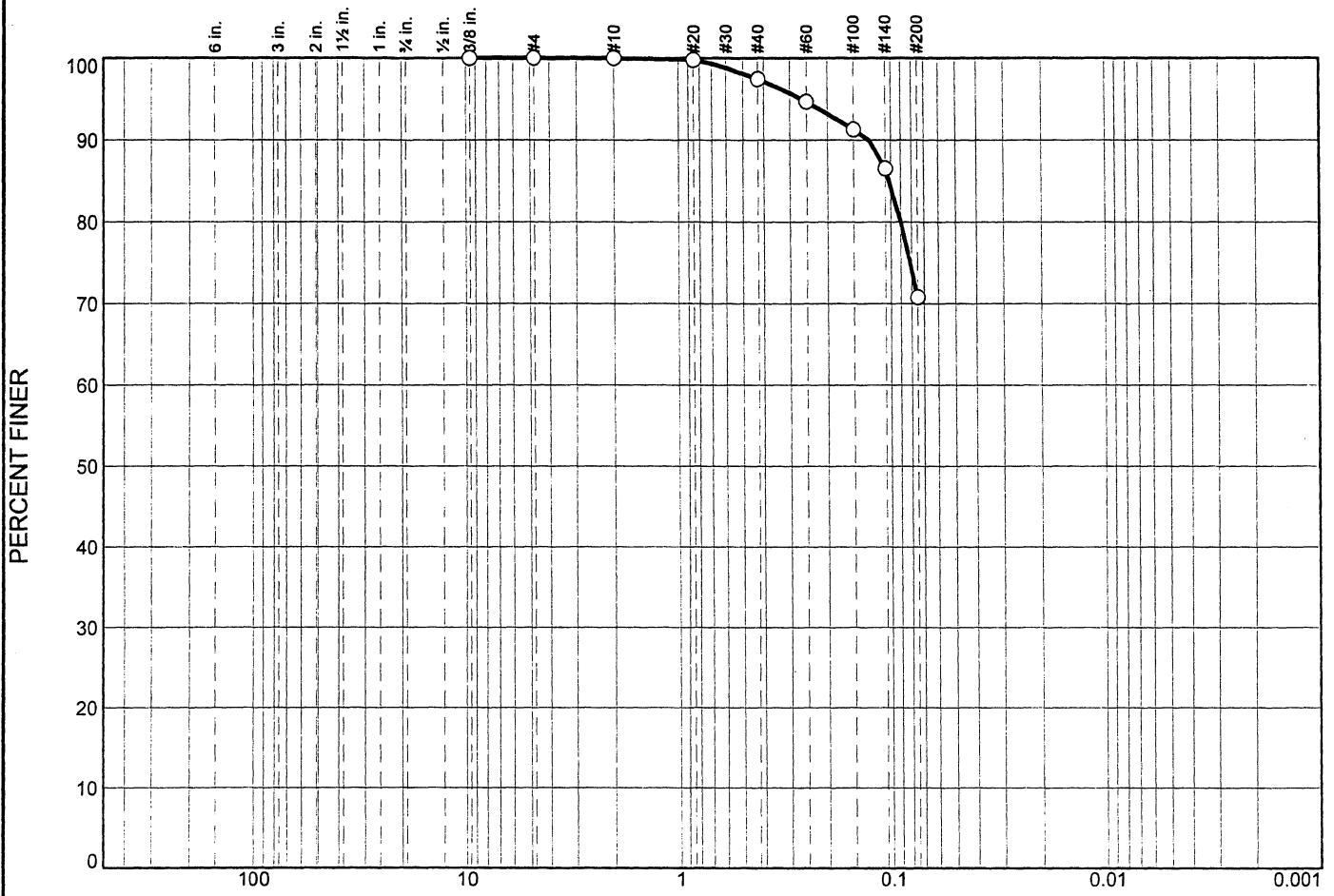
Nodarse & Associates, Inc.

Figure

Tested By: L MAZO

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	0.0	0.0	0.0	2.6	26.6		70.8
○ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
		0.1011					C _c
							C _u

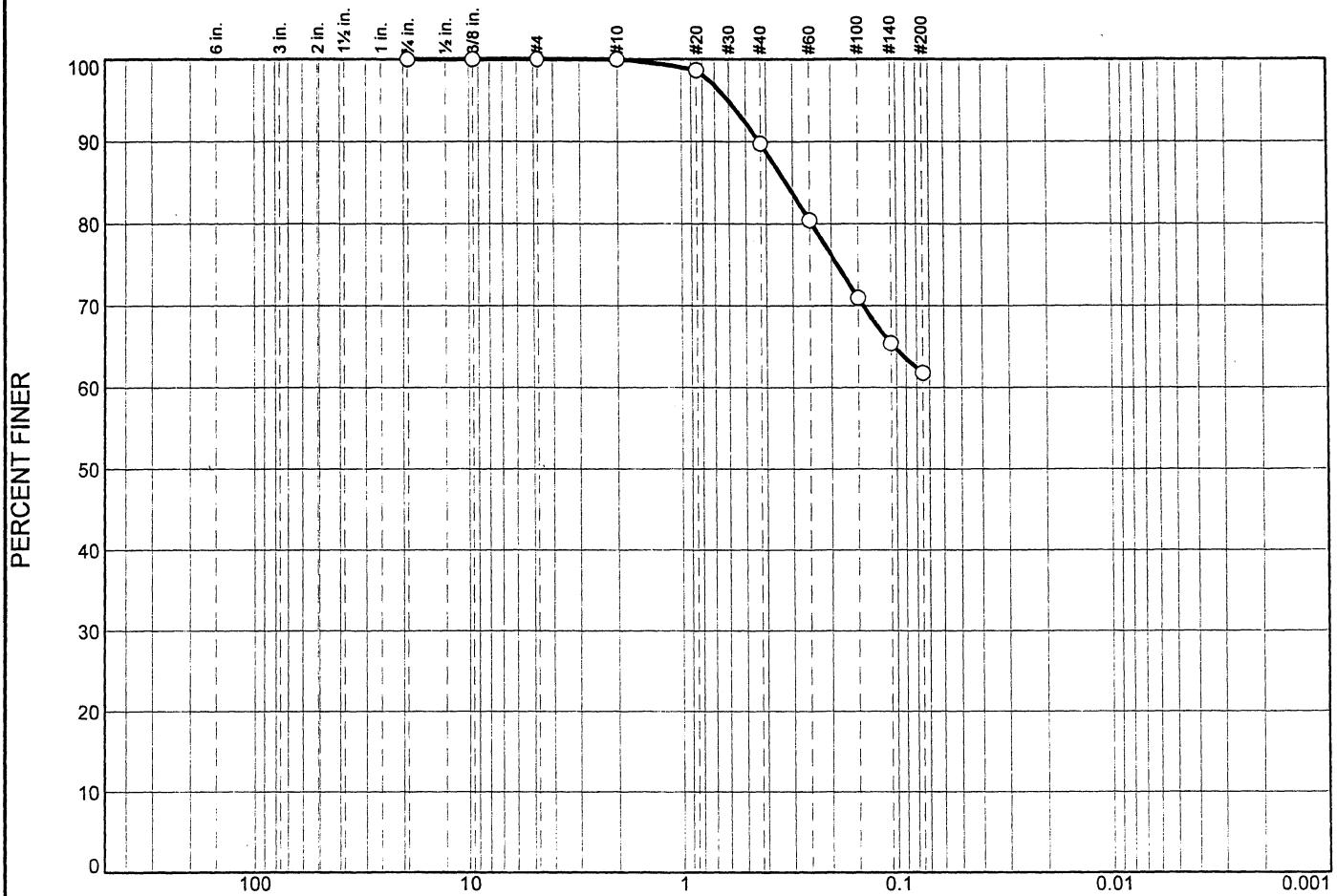
Material Description			USCS	AASHTO
○ Silty sand			ML	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Sample Source: CB-0190 Depth: 215.0'-220.0' Sample No.: CB190	Remarks: ○ Moisture Content %43.4 CPO5- EAARS-VB-0285
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: L MAZO

Checked By: Michael Brown

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	0.0	0.0	0.0	10.2	28.0		61.8
○ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○		0.3214					

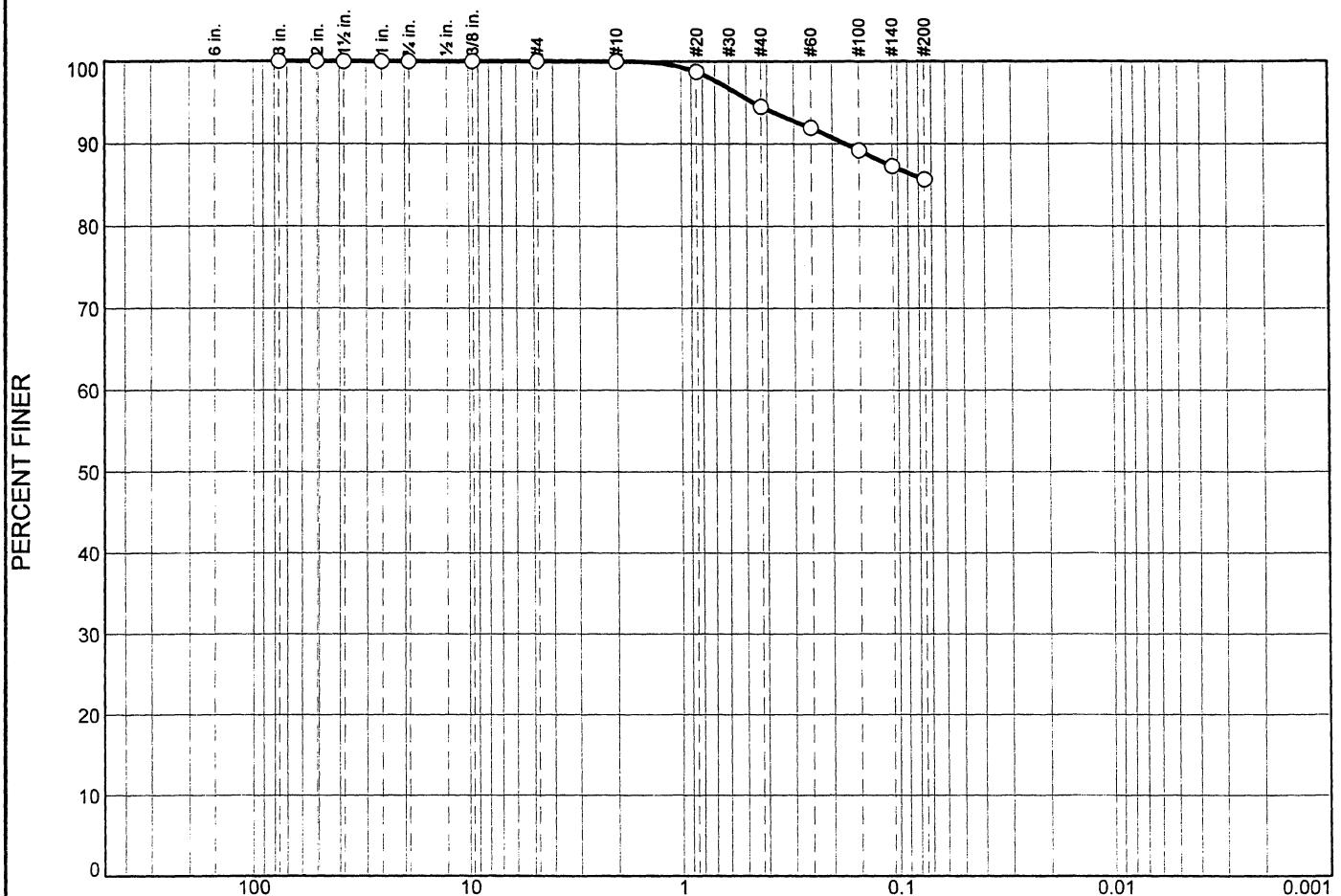
Material Description			USCS	AASHTO
○ Silty sand			ML	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Sample Source: CB-0190 Depth: 220.0'-225.0' Sample No.: CB190	Remarks: ○ Moisture Content % 88.1 CP05- EAARS-VB-285
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: L MAZO

Checked By: Michael Brown

Particle Size Distribution Report



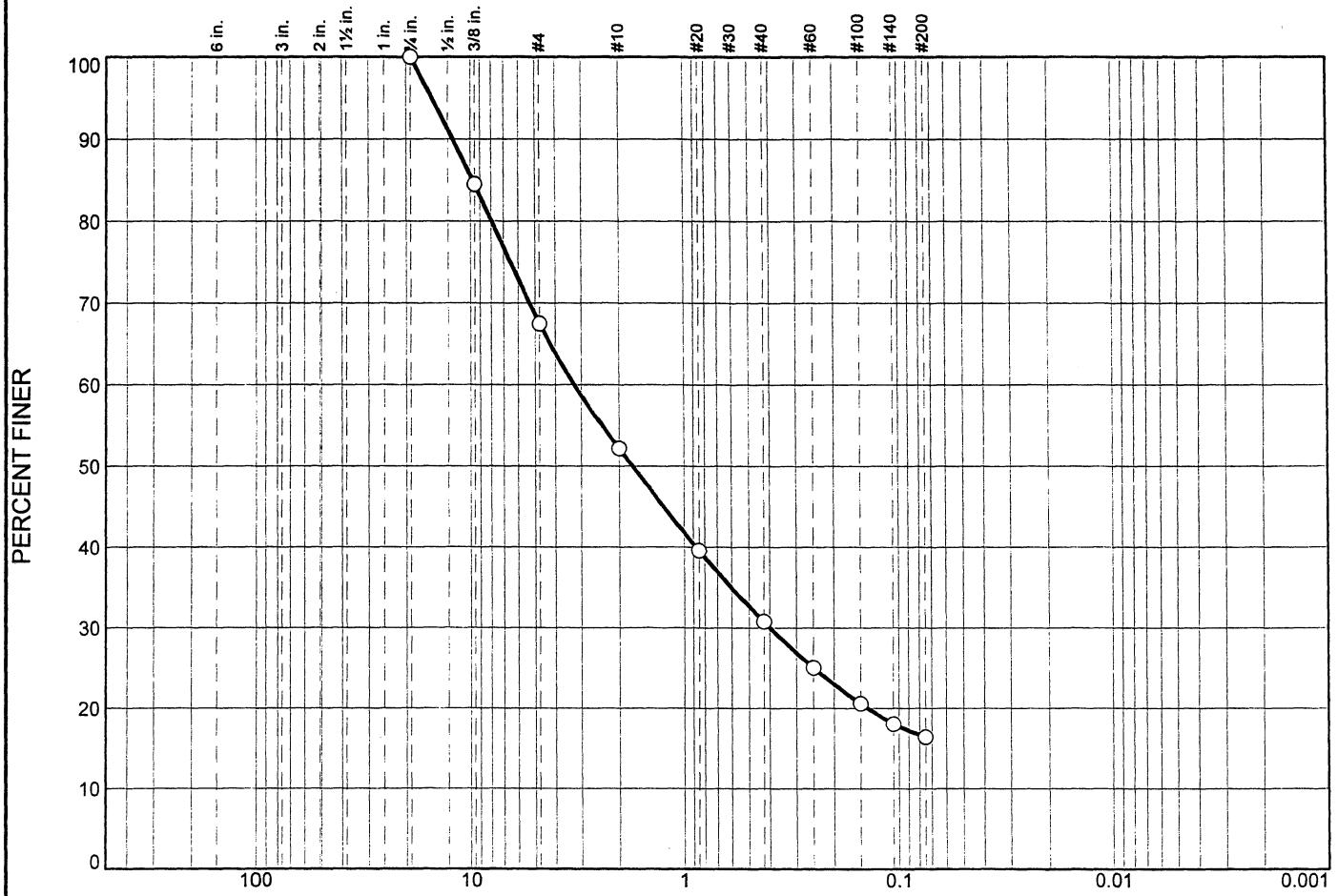
% +3"	% Gravel			% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0.0	0.0	0.0	0.0	5.5	8.8		85.7	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="radio"/>	127	66							
Material Description								USCS	AASHTO
<input type="radio"/>	Silty sand							ML	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 <input type="radio"/> Source of Sample: CB-0190 Depth: 225'-230' Sample Number: CB190			Remarks: <input type="radio"/> Moisture Content % 148.3 CP05- EAARS-VB0285
Nodarse & Associates, Inc. Miami Lakes, FL			Figure

Tested By: L MAZO

Checked By: Michael Brown

Particle Size Distribution Report



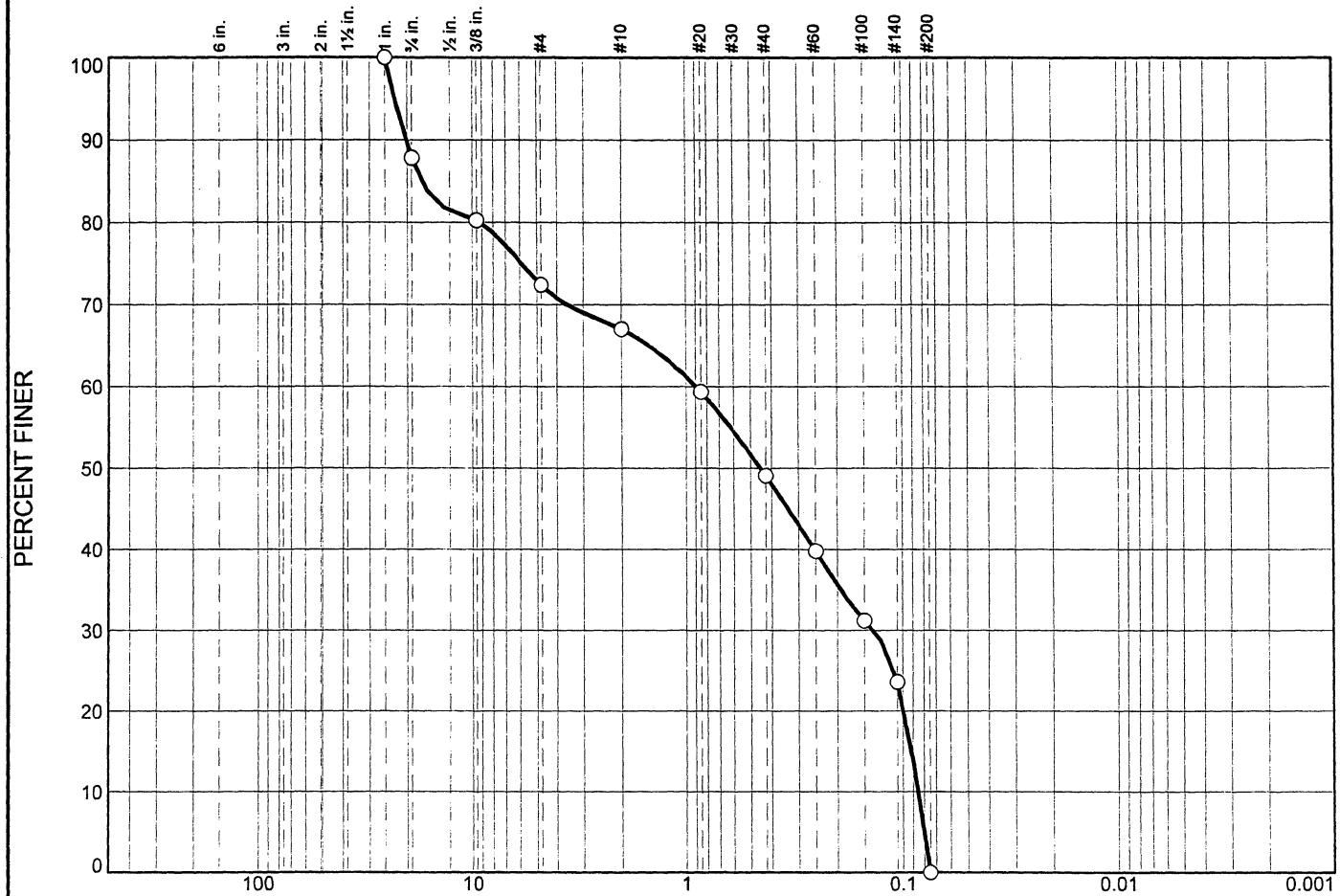
GRAIN SIZE - mm.											
% +3"		% Gravel		% Sand			% Fines				
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
<input type="radio"/>	0.0	0.0	32.5	15.3	21.4	14.4			16.4		
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
<input type="radio"/>			9.7174	3.2447	1.7354	0.3970					
Material Description									USCS	AASHTO	
<input type="radio"/>	Silty sand with gravel									SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 <input type="radio"/> Source of Sample: CB205 Depth: 5.0'-10.0' Sample Number: CB205			Remarks: <input type="radio"/> Moisture Content %13.5 CP05- EAARS-VB-0286
Nodarse & Associates, Inc. Miami Lakes, FL			Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"		% Gravel			% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
O	0.0	12.2	15.4	5.4	17.9	49.1	0.0	0.0		
X	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
O			17.1241	0.8955	0.4494	0.1364	0.0913	0.0852	0.24	10.51

Material Description

O Poorly graded sand with silt and gravel SP-SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)W/O#6

O Source of Sample: CB205 Depth: 15.0'-20.0' Sample Number: CB205

Remarks:

O Moisture Content % 18.1 CP05-
EAARS-VB-0286

Nodarse & Associates, Inc.

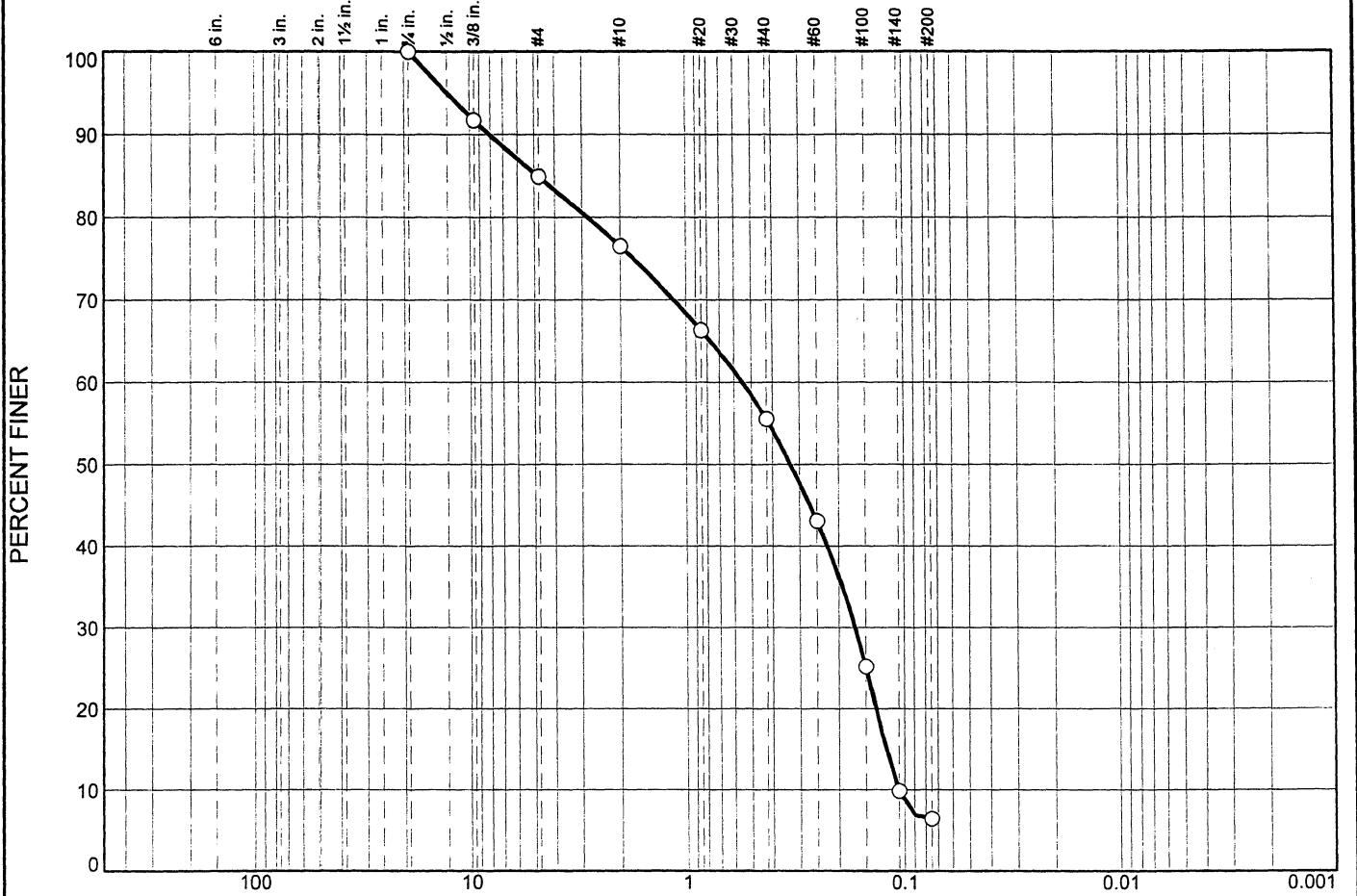
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	15.1	8.4	21.0	49.1	6.4

Material Description	USCS	AASHTO
○ Poorly graded sand with silt and gravel	SP-SM	

Project No. 05-05-0013- **Client:** Black & Veatch
Project: E.A.A (Reservoir)W/O#6

○ **Source of Sample:** CB205 **Depth:** 30.0'-35.0 **Sample Number:** CB205

Remarks:

○ Moisture Content % 16.2 CP05-
EAARS-VB-0286

Nodarse & Associates, Inc.

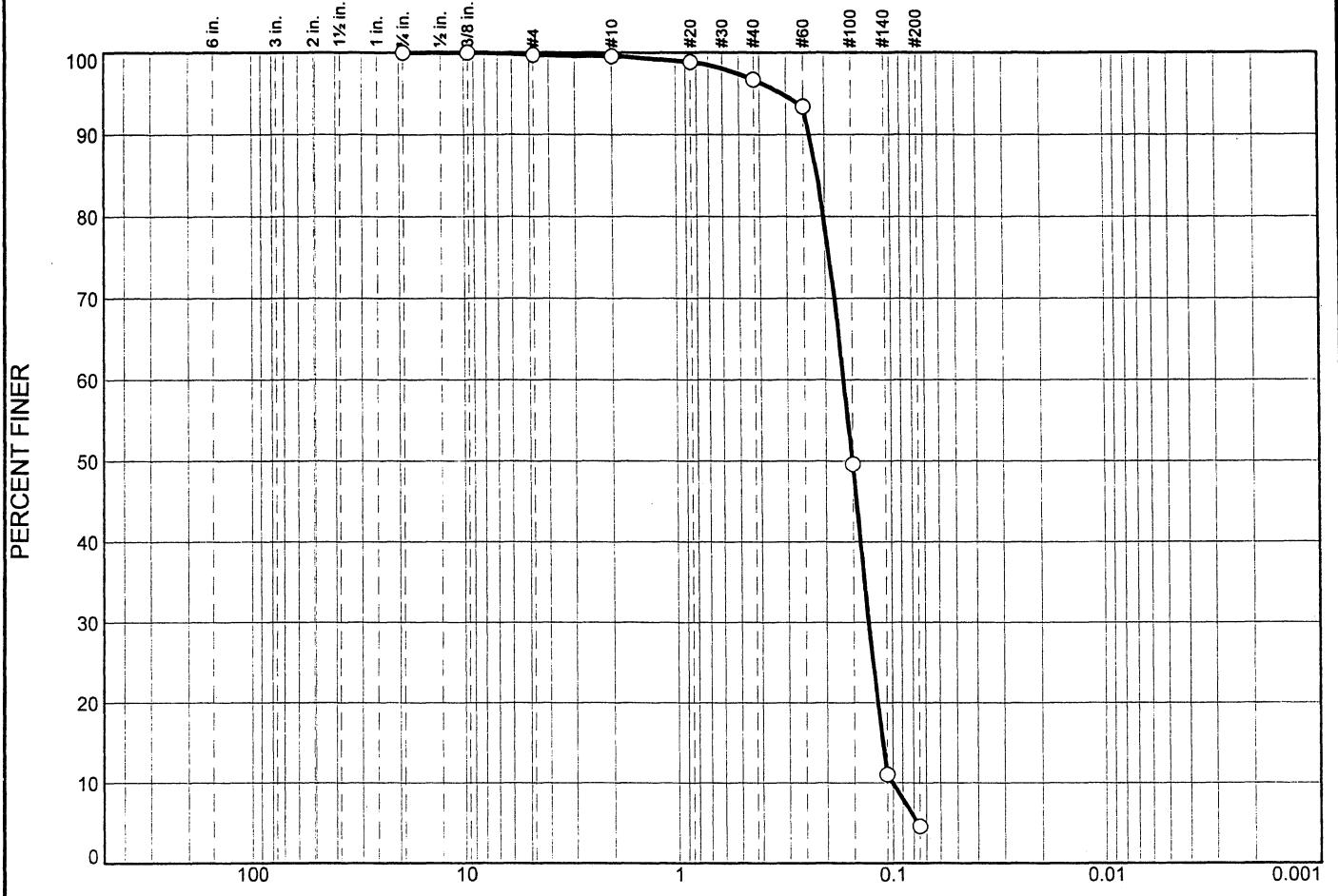
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



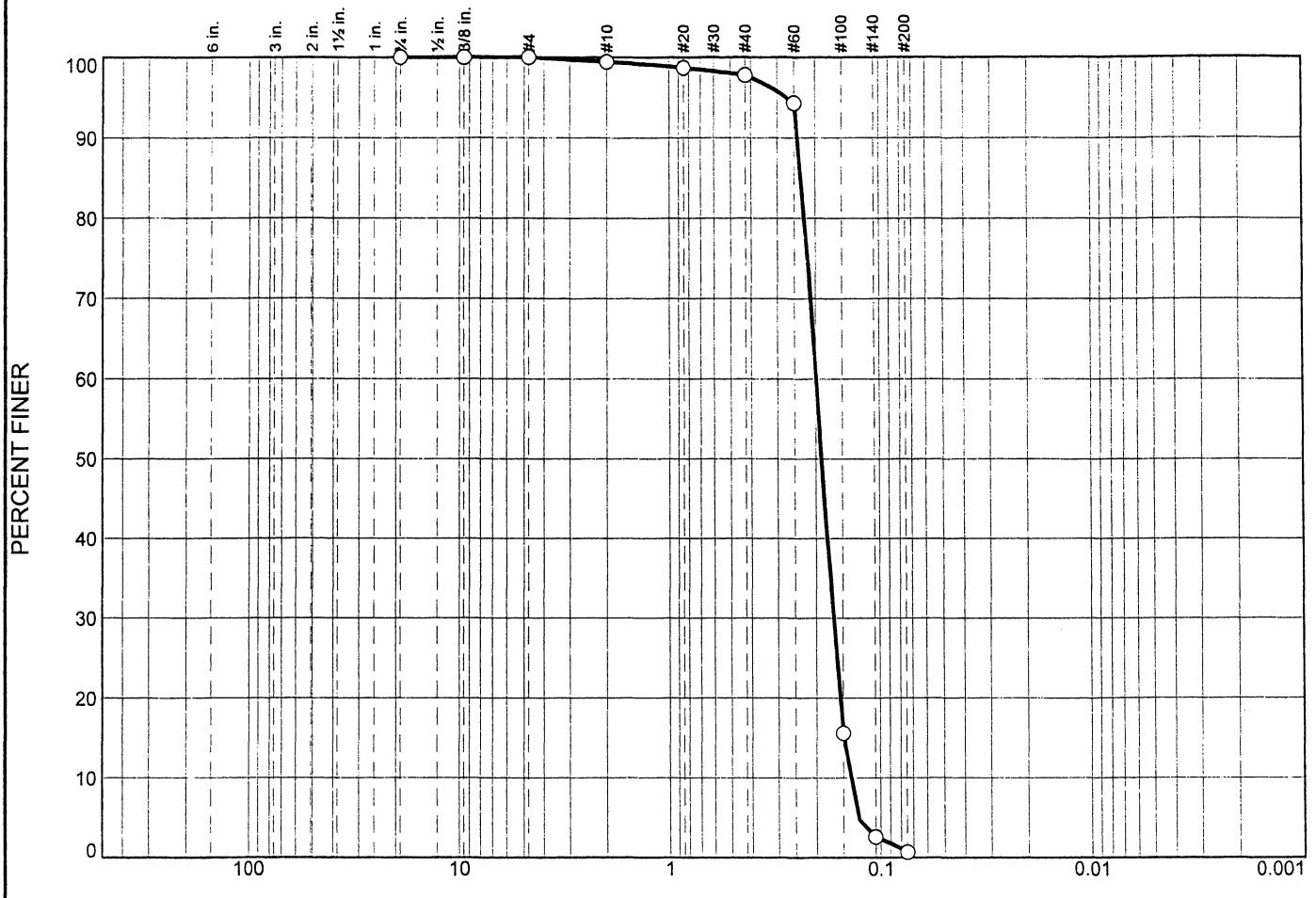
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0.0	0.0	0.3	0.1	2.9	92.1	4.6
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			0.2147	0.1638	0.1504	0.1282	0.1115
Material Description							USCS
<input type="radio"/> Poorly graded sand with silt							SP-SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 <input type="radio"/> Source of Sample: CB205 Depth: 35.0'-40.0' Sample Number: CB205	Remarks: <input type="radio"/> Moisture Content % 23.8 CP05-EAARS-VB-0286
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

○ Source of Sample: CB-0205 Depth: 40' to 45'

Date: ○

Nodarse & Associates, Inc.

Miami Lakes, FL

Remarks:

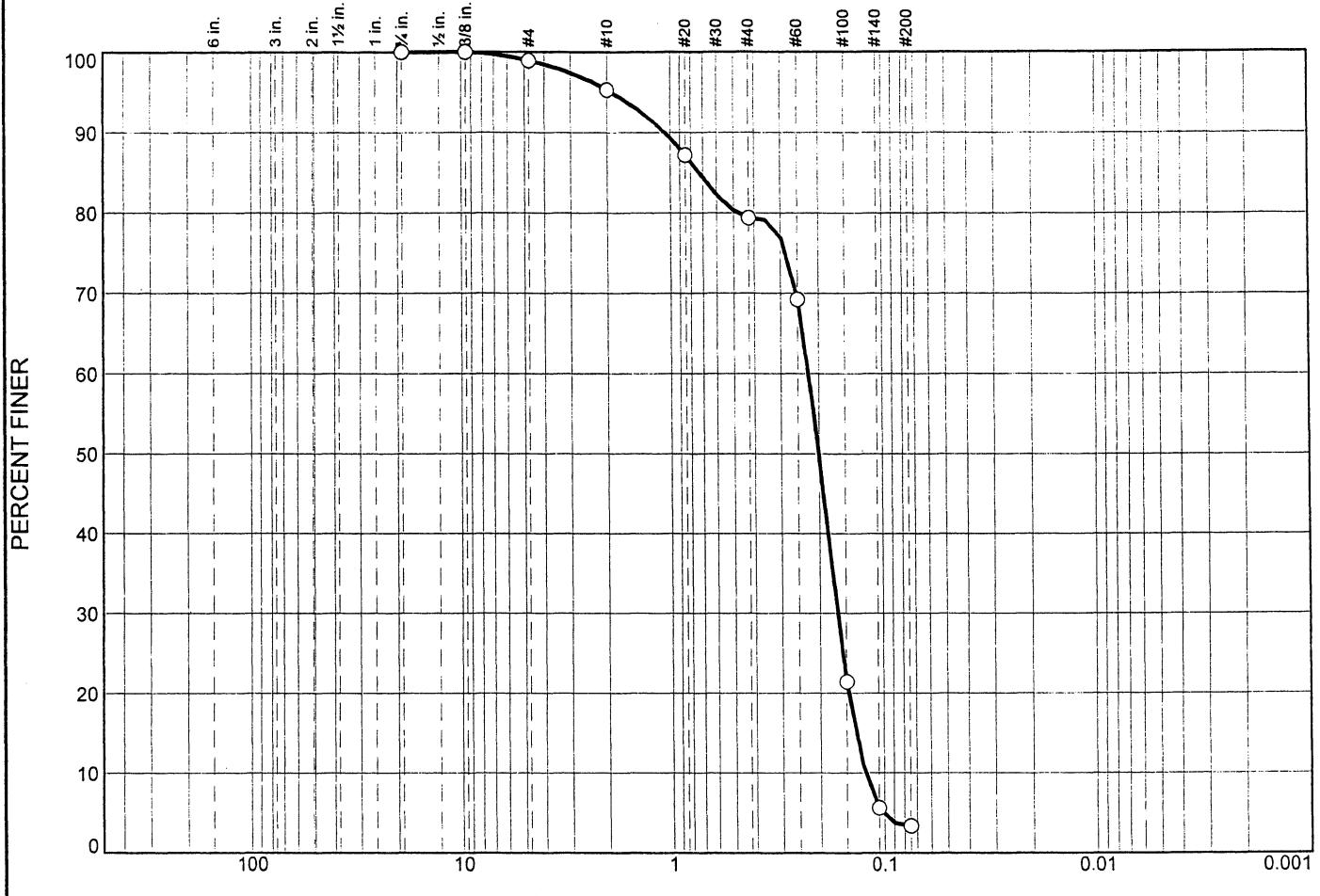
○ Moisture Content % 25.2
CP05-EAARS-VB-0286

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines		Silt	Clay
		Coarse	Fine	Coarse	Medium	Fine				
<input type="radio"/>	0	0	1	4	16	76			3	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>			0.7273	0.2225	0.2009	0.1653	0.1365	0.1232	1.00	1.81
Material Description								USCS	AASHTO	
<input type="radio"/>	Poorly graded sand								SP	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

Source of Sample: CB-0205 Depth: 45' to 50'

Date:

Nodarse & Associates, Inc.

Miami Lakes, FL

Remarks:

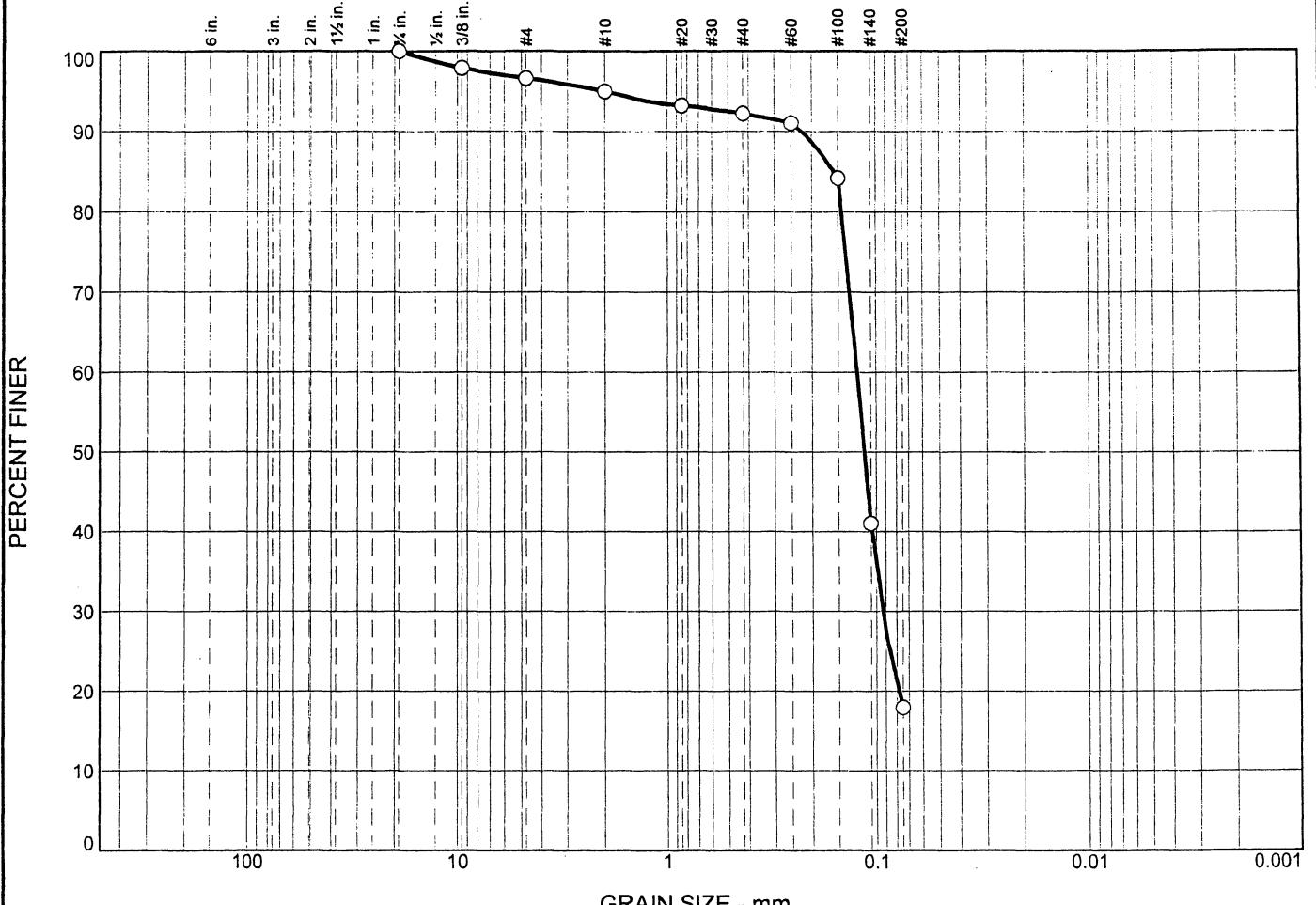
Moisture Content % 22.5
CP05-EAARS-VB-0286

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	3	2	3	74		18
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
0.1566		0.1229	0.1141	0.0937			
Material Description							USCS AASHTO
Silty sand							SM

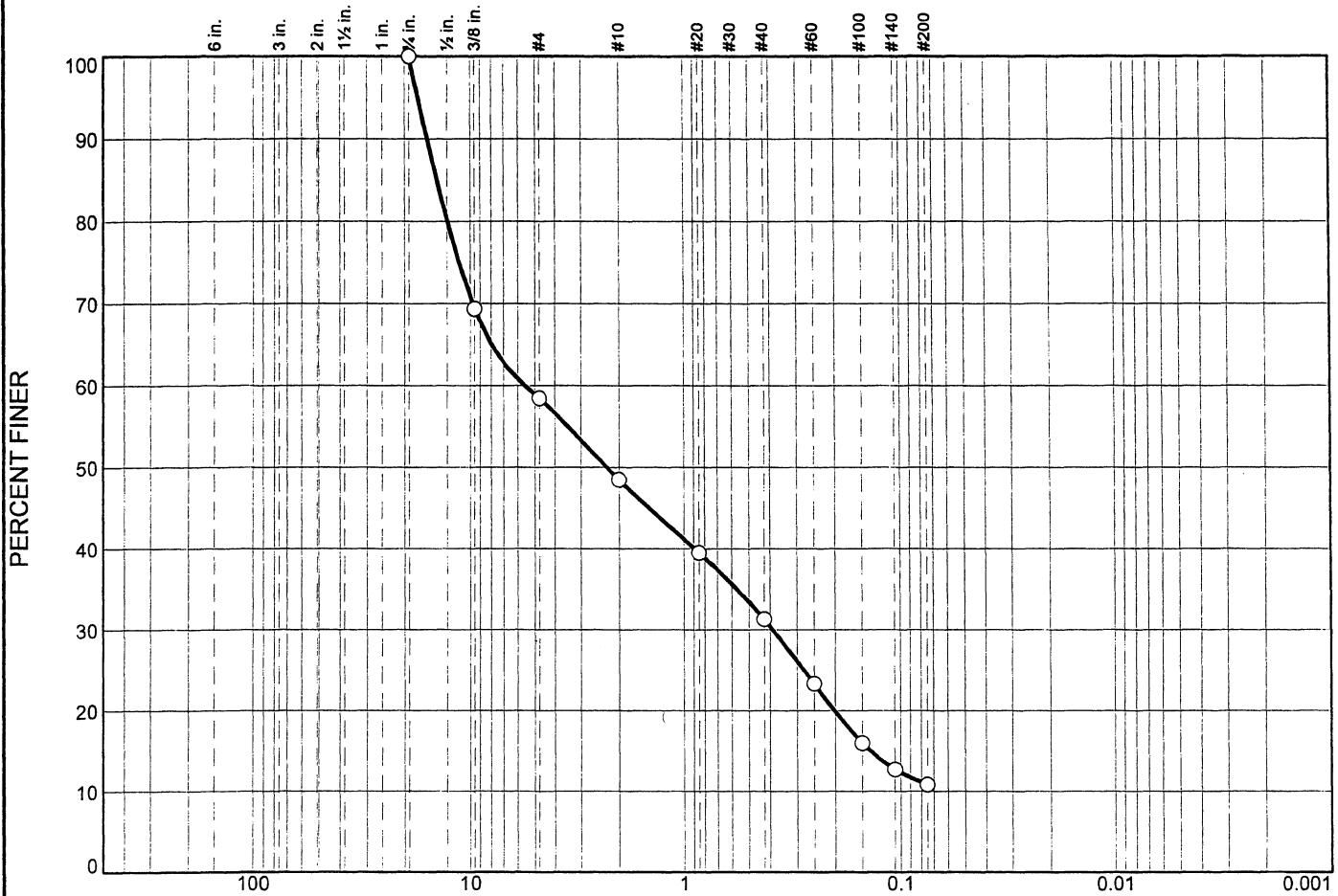
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	○ Moisture Content % 27.7
○ Source of Sample: CB-0205 Depth: 50' to 55'	CP05-EAARS-VB-0286
Date: ○	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	41.5	10.0	17.2	20.5	10.8
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			14.1250	5.5497	2.2752	0.3869	0.1374

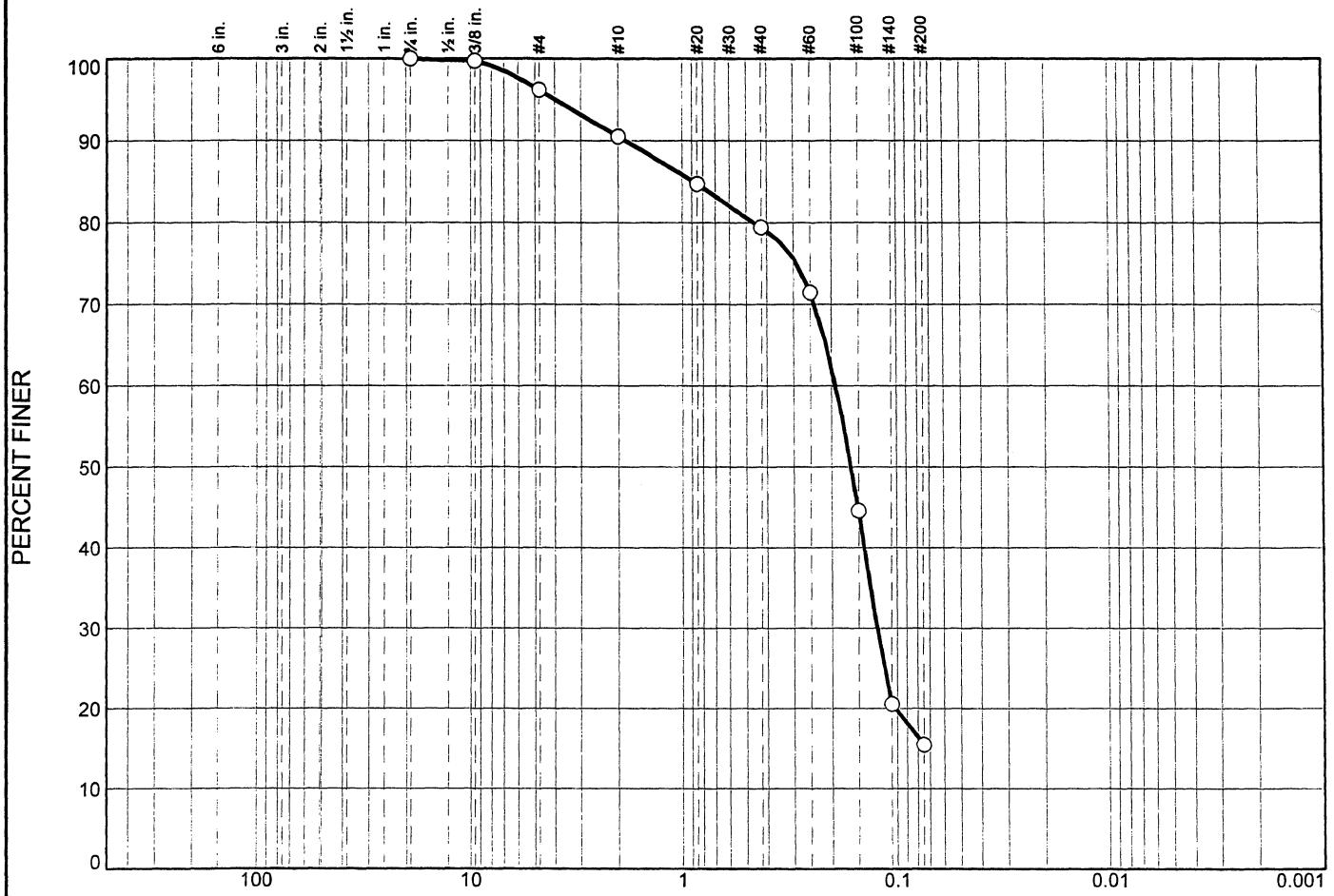
Material Description						USCS	AASHTO
○	Poorly graded sand with silt and gravel					SP-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Source of Sample: CB205 Depth: 60.0'-65.0' Sample Number: CB205	Remarks: ○ Moisture Content % 14.2 CP05- EAARS-VB-0286
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	3.8	5.7	11.1	63.9	15.5
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			0.8815	0.1907	0.1619	0.1239	

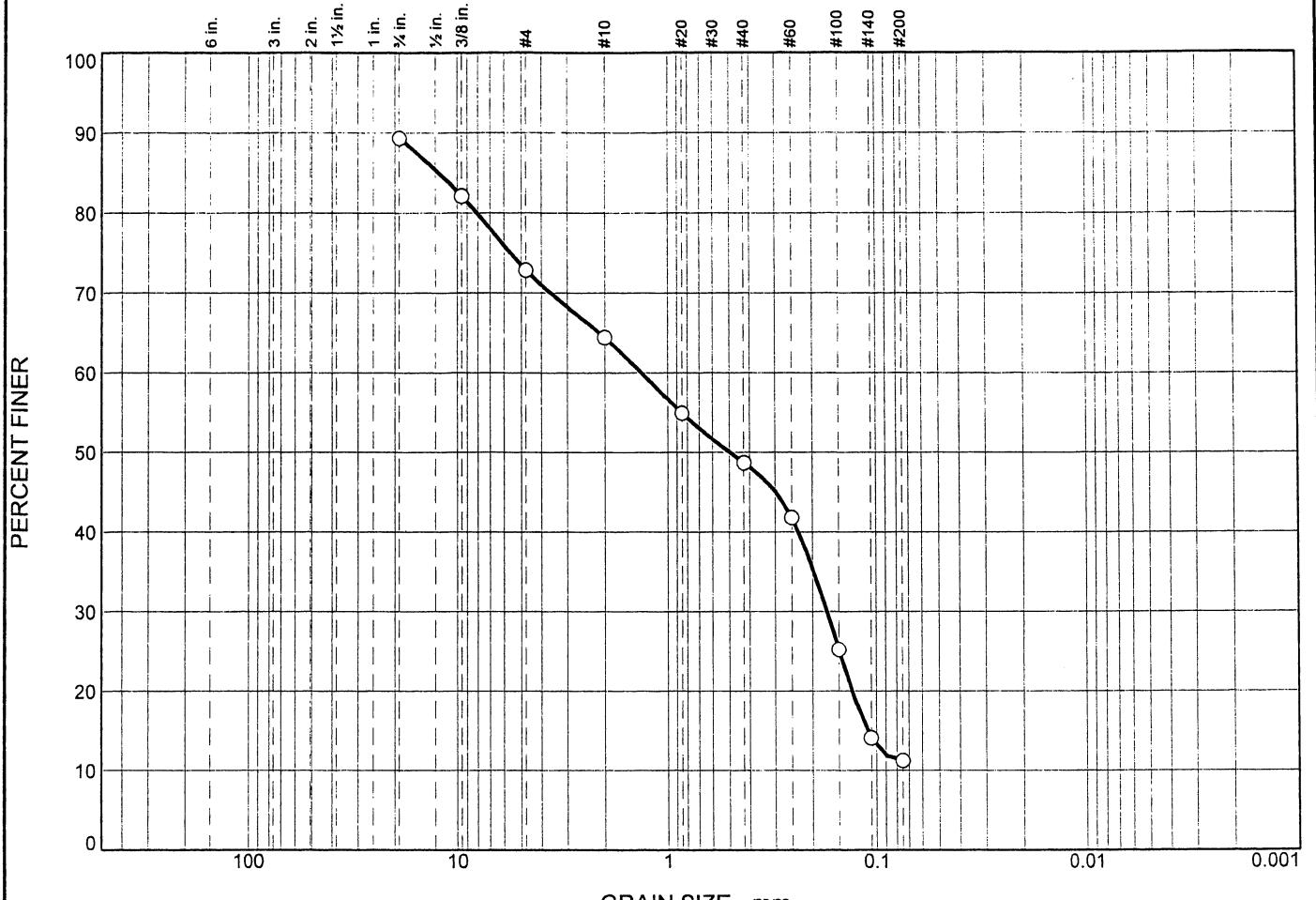
Material Description						USCS	AASHTO
○ Silty sand						SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB205 Depth: 65.0'-70.0' Sample Number: CB205						Remarks: ○ Moisture Content % 20.6 CP05-EAARS-VB-0286	
Nodarse & Associates, Inc. Miami Lakes, FL						Figure	

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○			16	9	15	38		11
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○			12.2562	1.3364	0.4978	0.1704	0.1104	
Material Description								USCS AASHTO
○ Poorly graded sand with silt and gravel								SP-SM

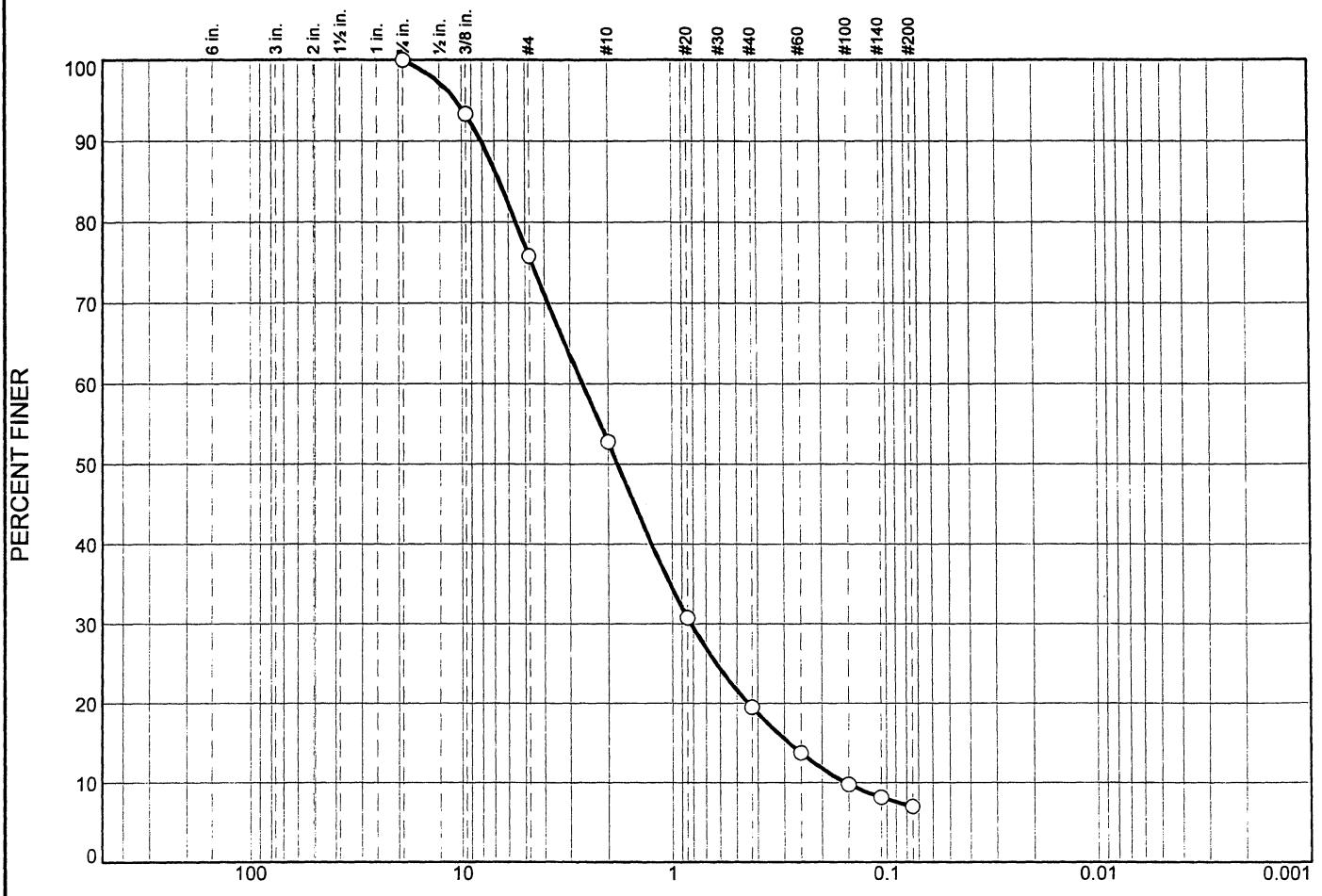
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)	○ Moisture Content % 17.5
○ Source of Sample: CB-0205 Depth: 70' to 75'	CP05-EAARS-VB-0286
Date: ○	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



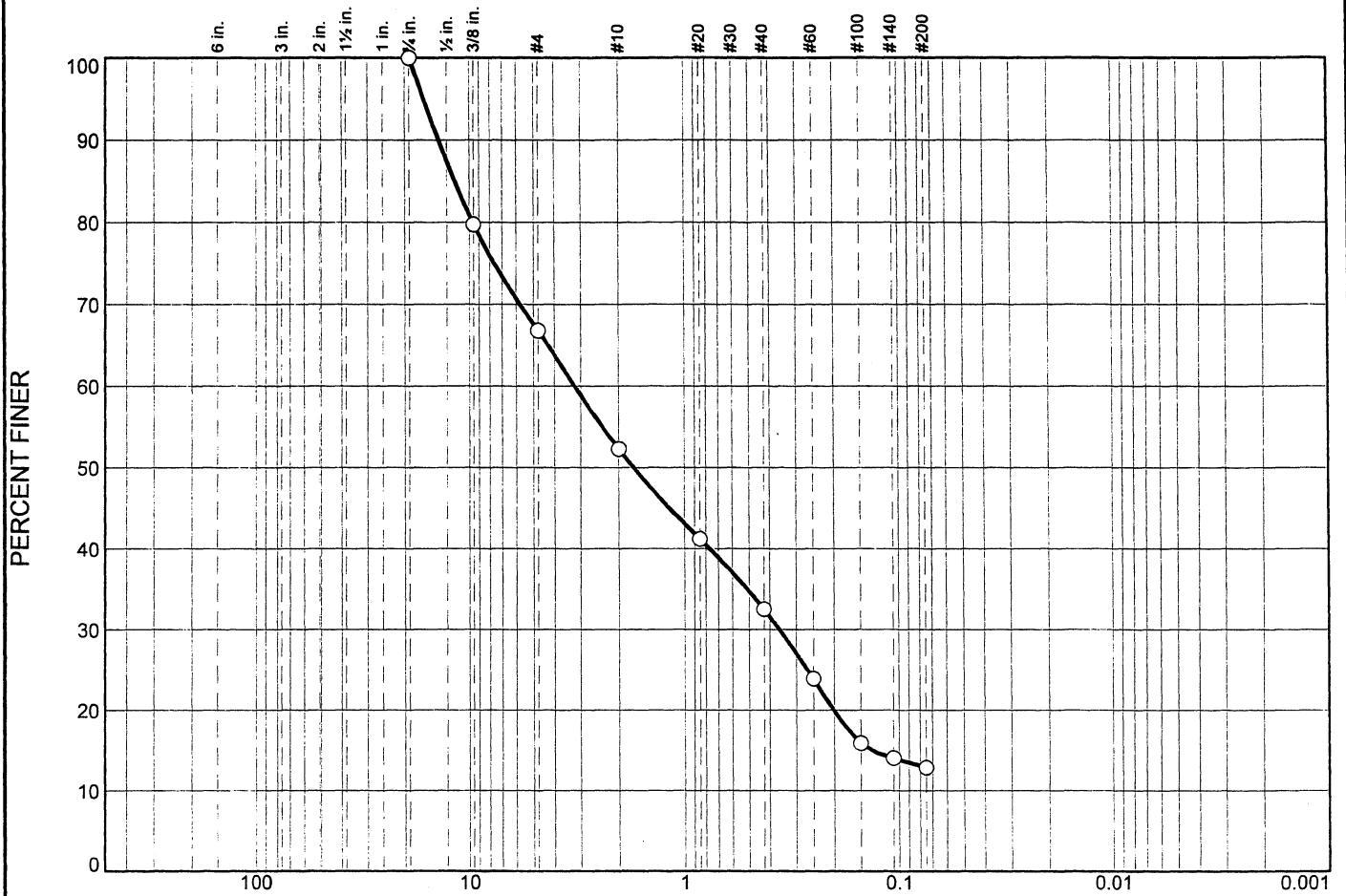
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	24.2	23.0	33.3	12.5	7.0
<hr/>							
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			6.6065	2.6252	1.8071	0.8197	0.2840
Material Description							USCS
○ Poorly graded sand with silt and gravel							AASHTO
							SP-SM

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB205 Depth: 70.0'-75.0' Sample Number: CB205			Remarks: ○ Moisture Content % 9.3 CP05-EAARS-VB-0286
Nodarse & Associates, Inc. Miami Lakes, FL			Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	33.2	14.5	19.8	19.7	12.8
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅

○	11.6744	3.1951	1.7104	0.3590	0.1333	D ₁₀	C _c	C _u
○								

Material Description						USCS	AASHTO
○ Well graded sand with silt and gravel						SW-SM	

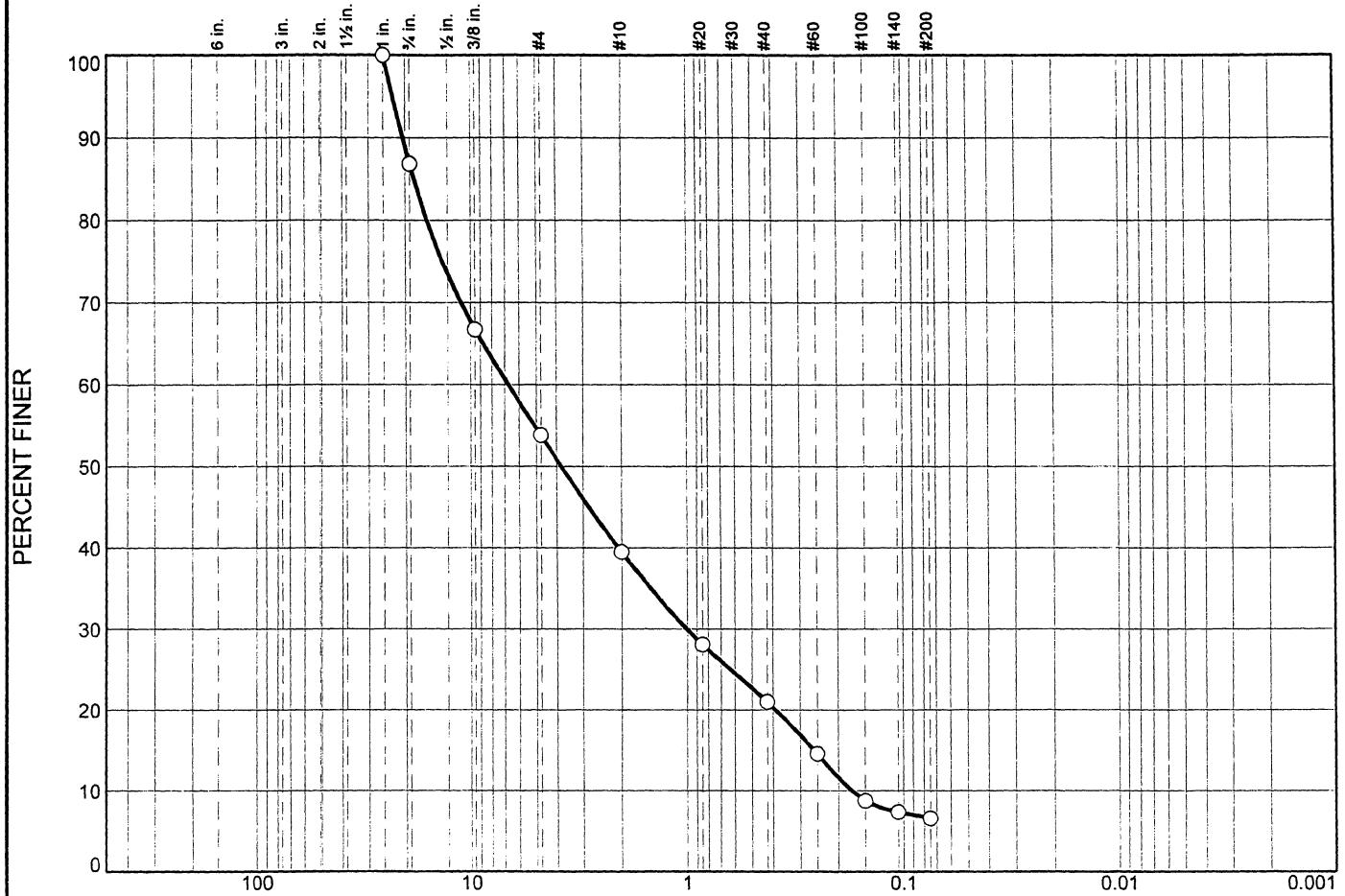
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB205 Depth: 75.0'-80.0' Sample Number: CB205	Remarks: ○ Moisture Content % 13.4 CP05- EAARS-VB-0286
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Nodarse & Associates, Inc. Miami Lakes, FL	Figure
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Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



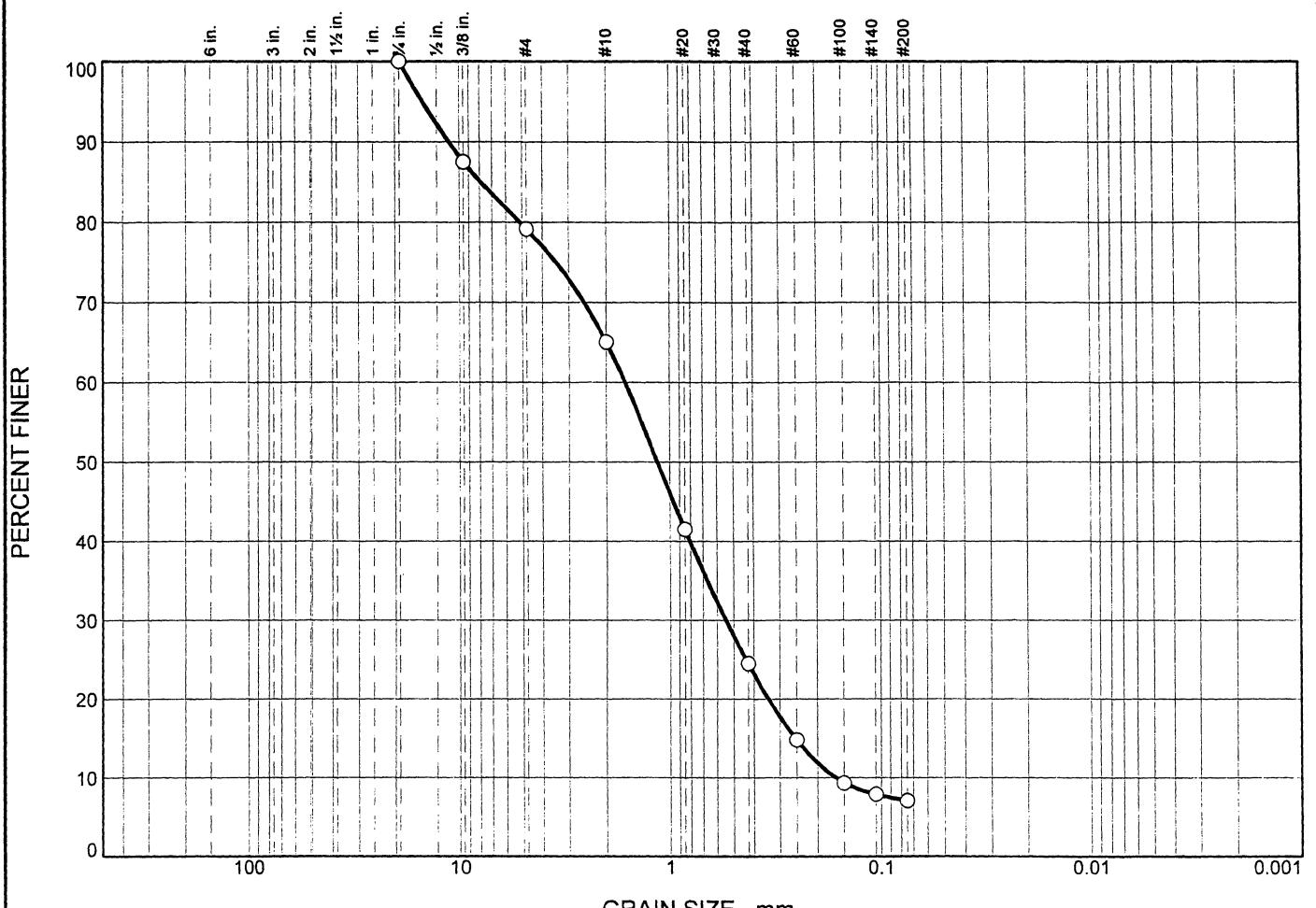
GRAIN SIZE - mm.										
% +3"	% Gravel			% Sand			% Fines			
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
○	0.0	13.2	33.0	14.3	18.5	14.4		6.6		
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○			18.2007	6.7382	3.7962	1.0033	0.2582	0.1729	0.86	38.97
Material Description								USCS	AASHTO	
○	Poorly graded sand with silt and gravel								SP-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Source of Sample: CB205 Depth: 80.0'-85.0' Sample Number: CB205	Remarks: ○ Moisture Content % 11.7 CP05- EAARS-VB-0286
Nodarse & Associates, Inc. Miami Lakes, FL	
Figure	

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel			% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	0.0	20.8	14.1	40.6	17.4		7.1	
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
○			7.9074	1.6310	1.1437	0.5431	0.2533	0.1649	1.10 9.89
Material Description								USCS	AASHTO
○	Poorly graded sand with silt and gravel								SP-SM

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB205 Depth: 90.0'-95.0' Sample Number: CB205	Remarks: ○ Moisture Content % 15.1 CP05-EAARS-VB-0286
Nodarse & Associates, Inc.	

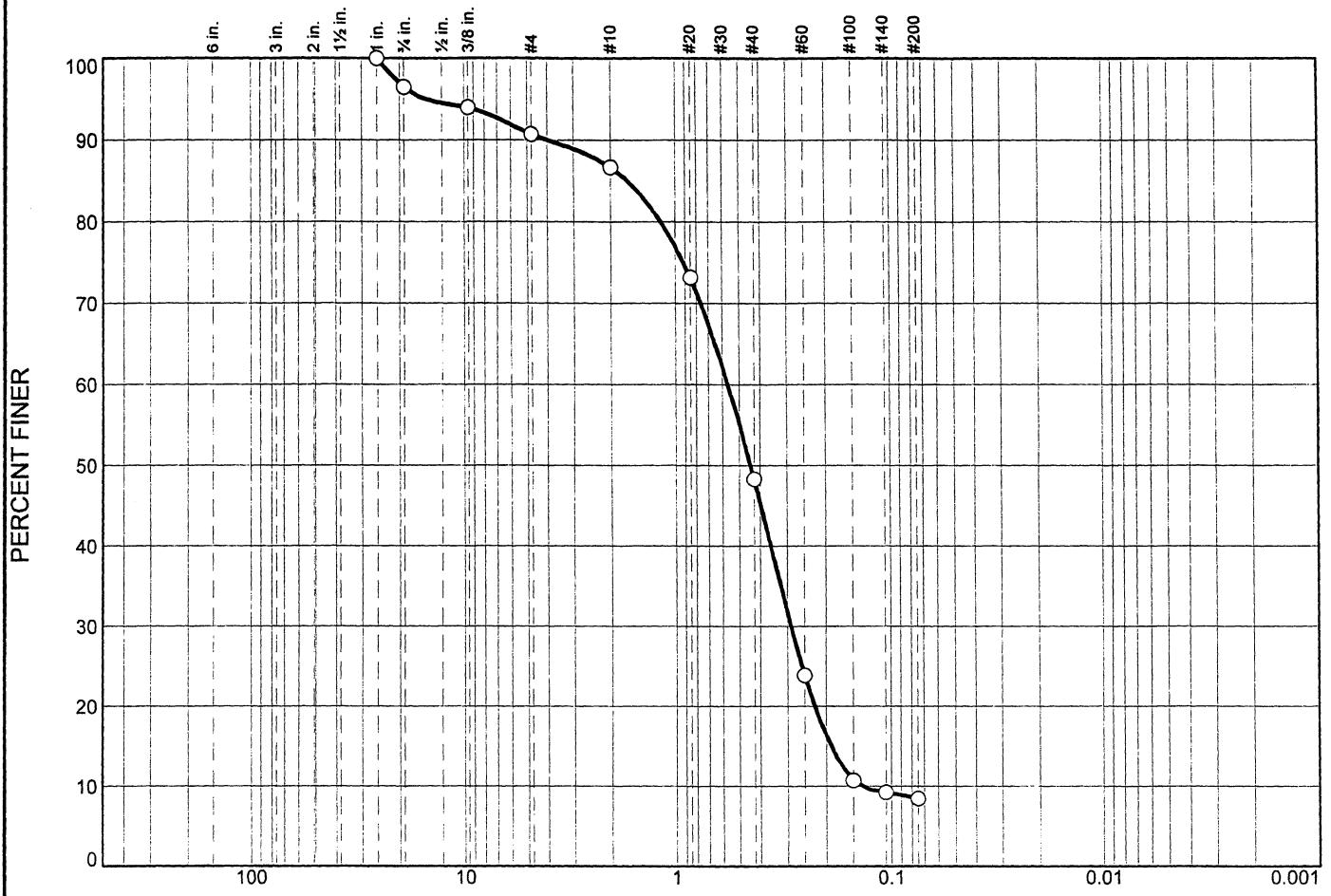
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir) W/O#6

○ Source of Sample: CB205

Depth: 95.0'-100.0'

Sample Number: CB205

Remarks:

○ Moisture Content % 16.8 CP05-
EAARS VR 0286

Nodarse & Associates, Inc.

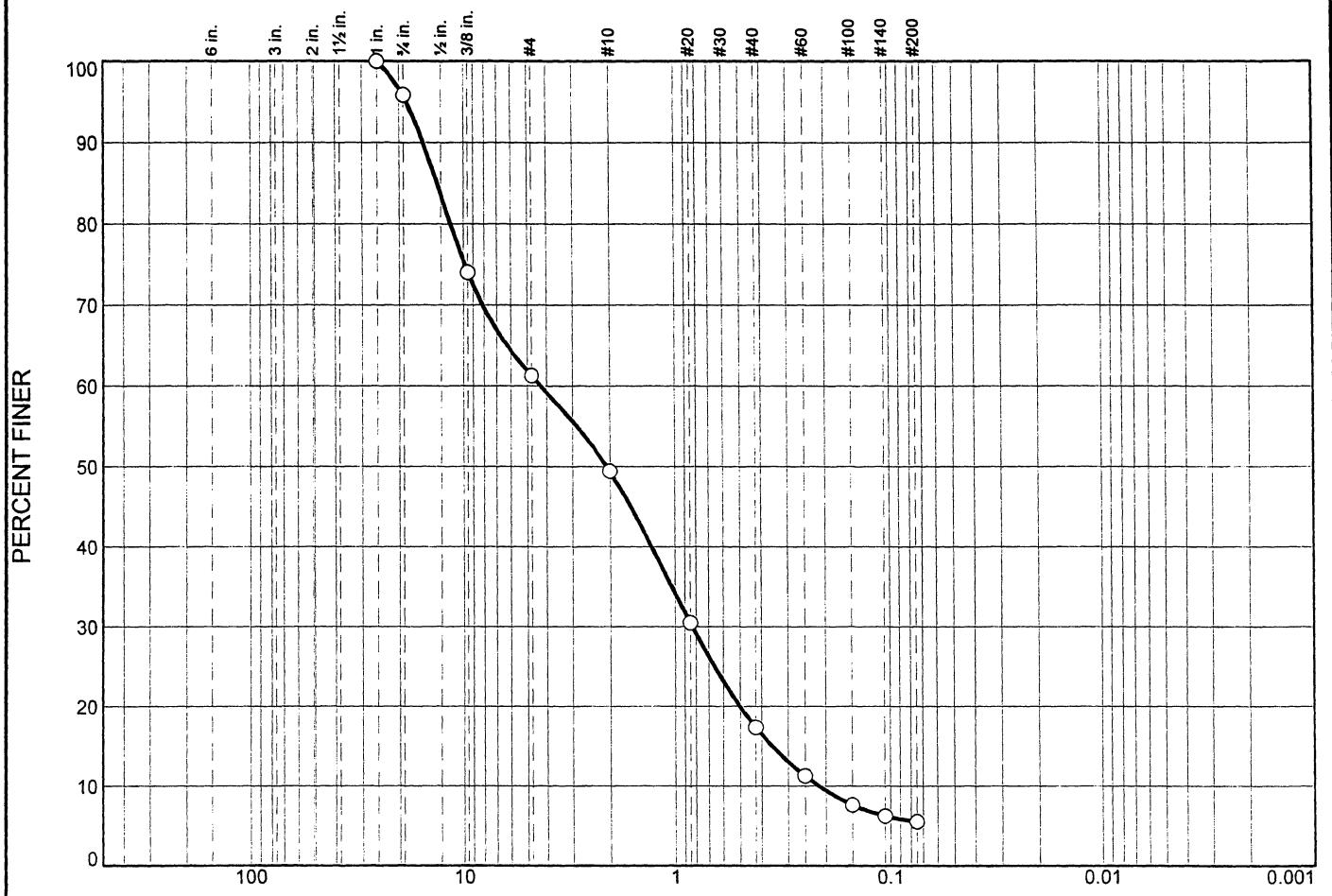
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	4.1	34.6	11.9	32.0	11.9	5.5
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			13.2217	4.2709	2.0650	0.8318	0.3563
Material Description							USCS
○	well graded sand with silt and gravel						SW-SM

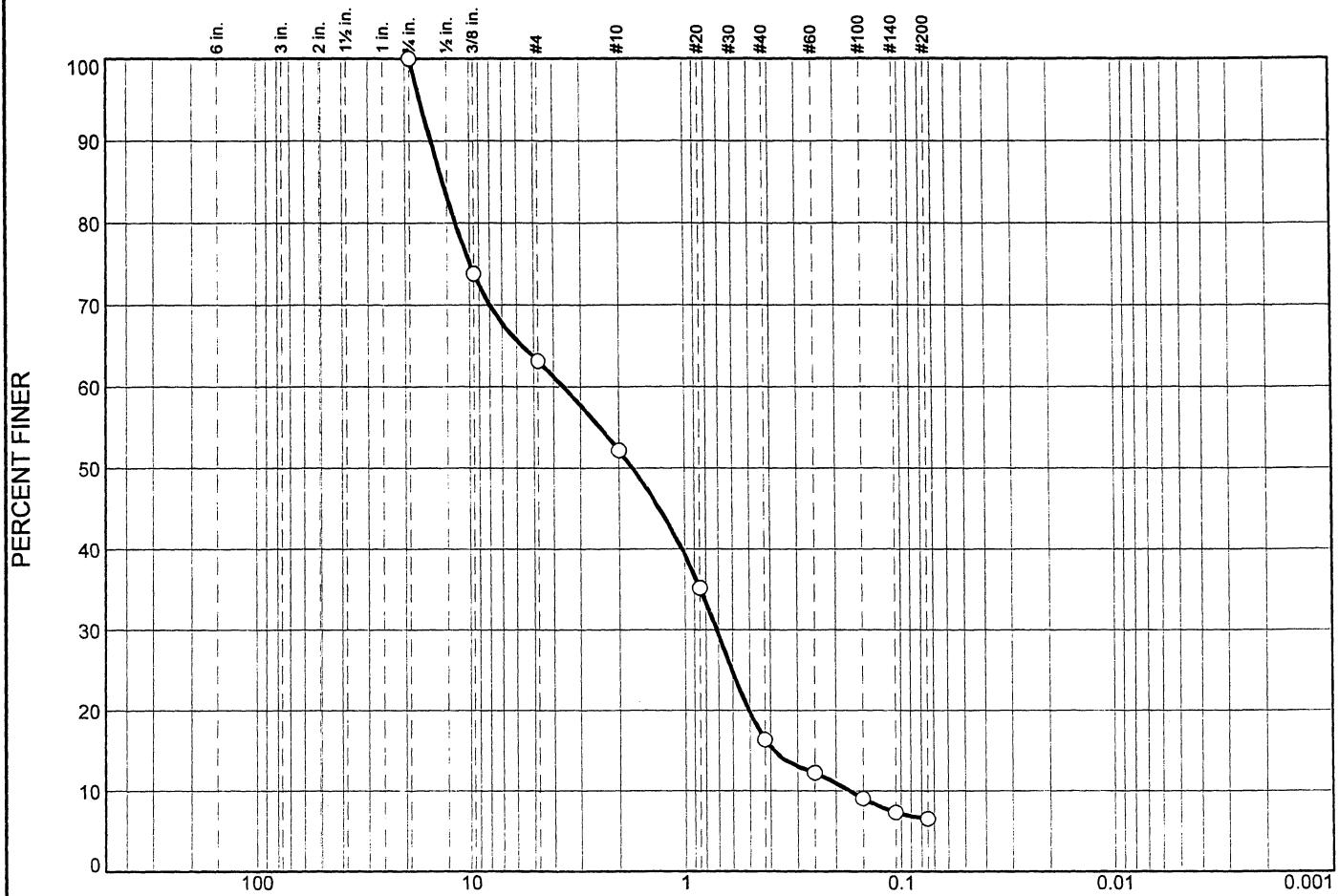
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Sample Source: CB205 Depth: 100.0'-105.0' Sample No.: CB205	Remarks: ○ Moisture Content % 10.9 CP05- EAARS-VB-0286
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	36.8	11.0	35.9	9.8	6.5
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			13.3199	3.5918	1.7351	0.7133	0.3870

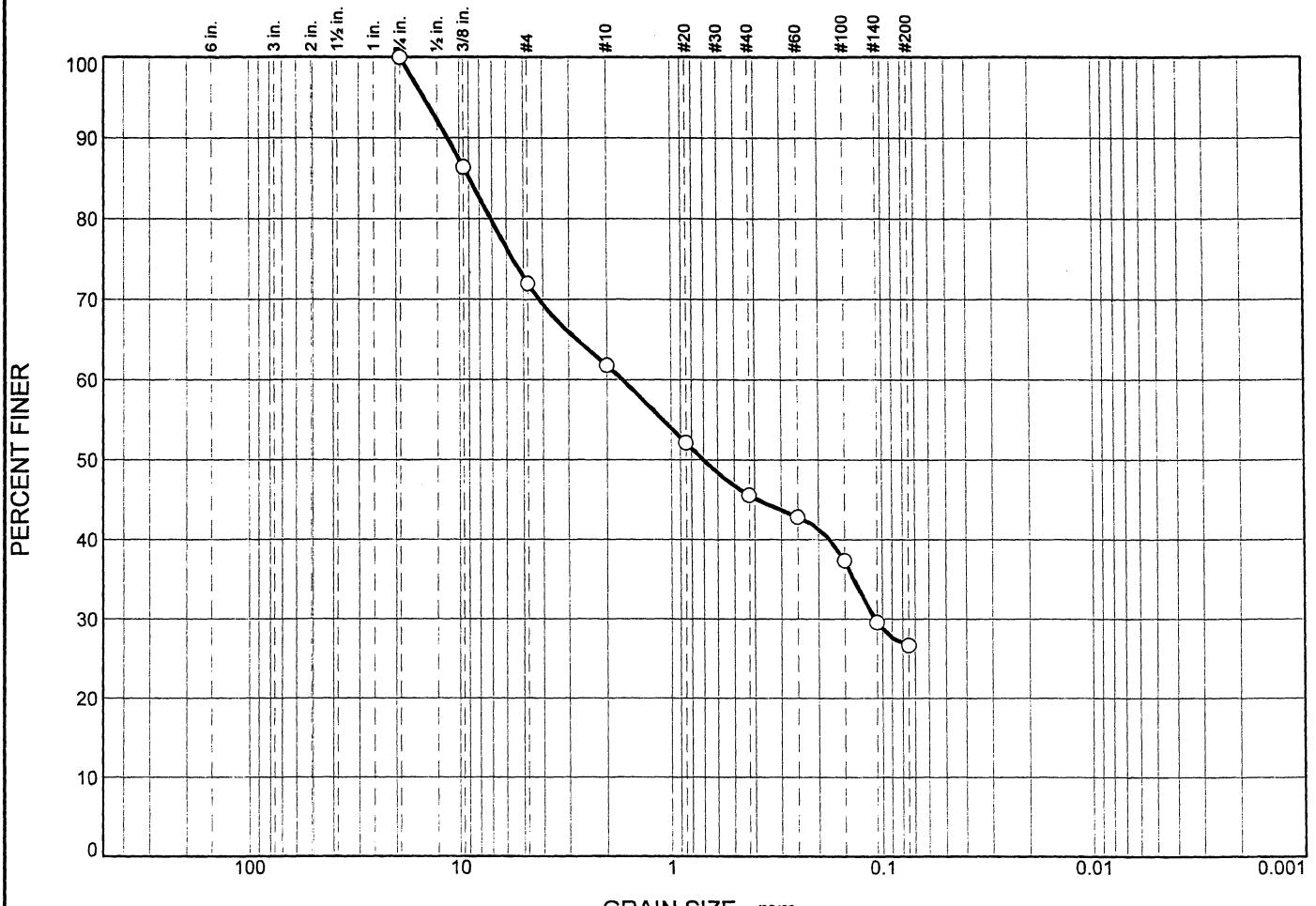
Material Description			USCS	AASHTO
○ Poorly graded sand with silt and gravel			SP-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Sample Source: CB205 Depth: 105.0'-110.0' Sample No.: CB205	Remarks: ○ Moisture Content % 13.5 CP05- EAARS-VB-0286
Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



Material Description

USCS | AASHTO

Silty sand with gravel

SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir) W/O#6

Remarks:

○ Moisture Content % 19.8 CP05-
EAARS-VB-0286

Sample Source: CB205 Depth: 110.0'-115.0' Sample No.: CB205

Nodarse & Associates, Inc.

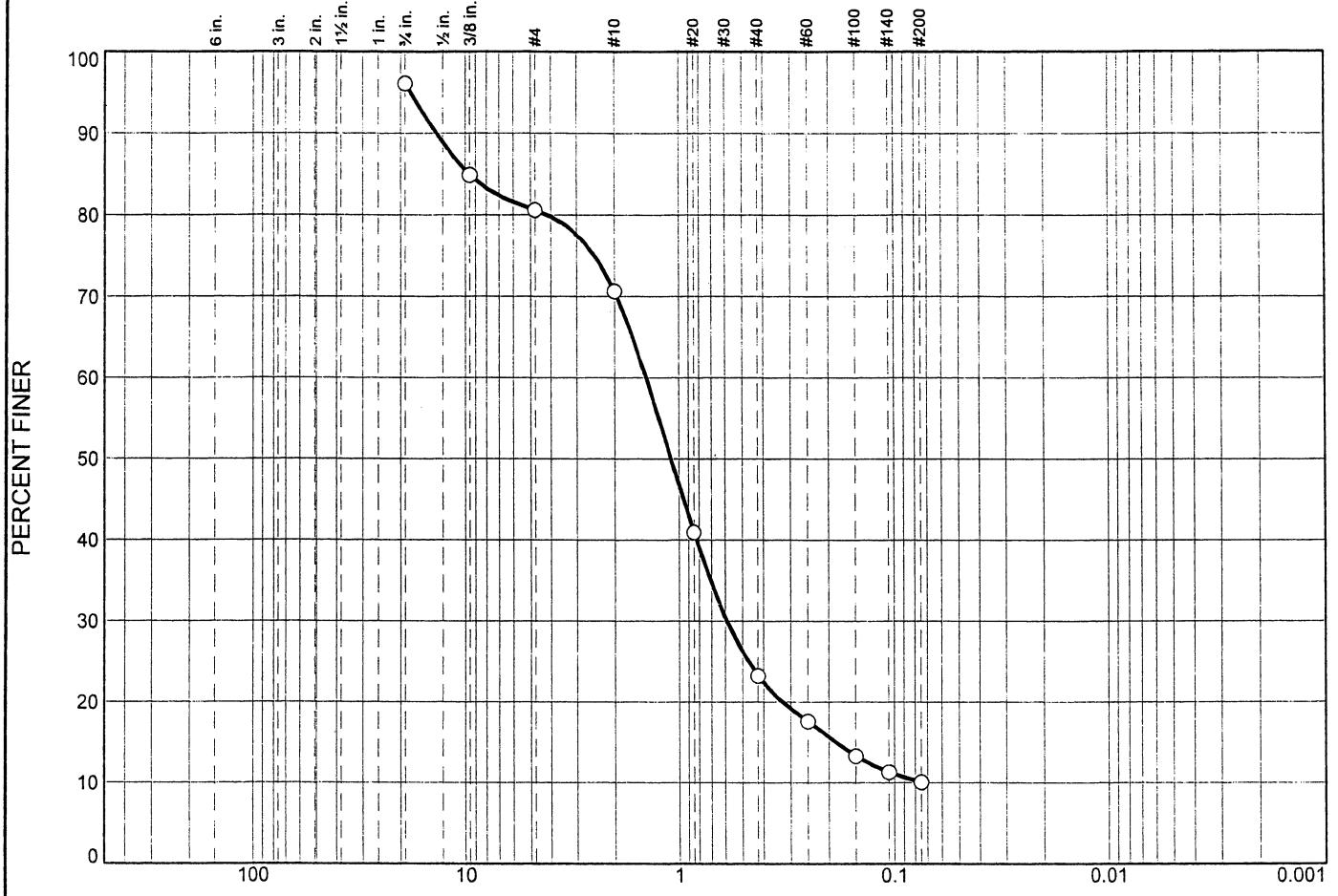
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O			15	10	48	13	10

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
O		9.6337	1.4233	1.0888	0.5903	0.1853			

Material Description

Poorly graded sand with silt and gravel	USCS	AASHTO
O	SP-SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)

O Source of Sample: CB-0205 Depth: 115' to 120'

Remarks:

O Moisture Content % 15.5
CP05-EAARS-VB-0286

Date: O

Nodarse & Associates, Inc.

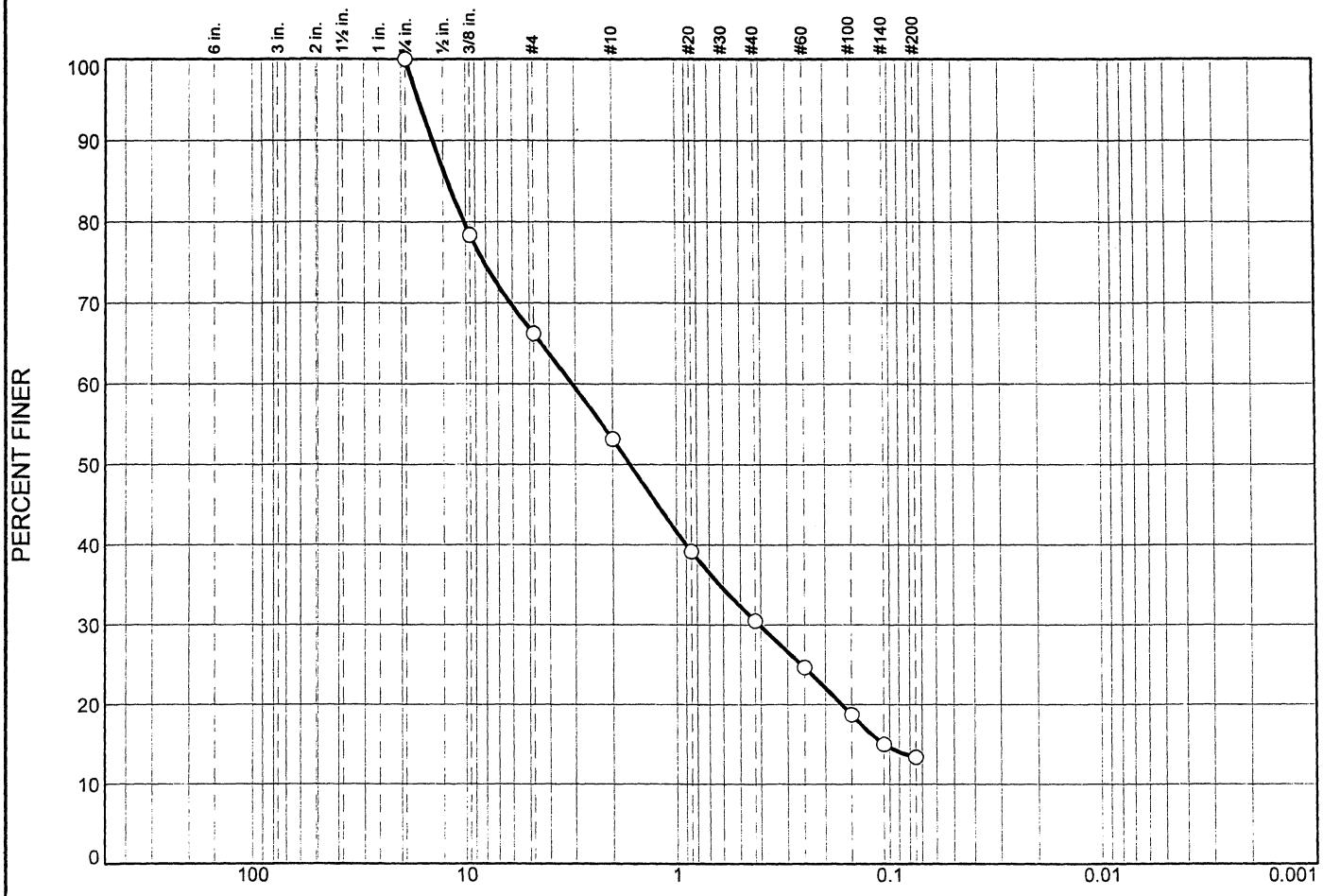
Miami Lakes, FL

Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	33.8	13.0	22.7	17.1	13.4
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
12.1172		3.0958		1.6547	0.4065	0.1060	

Material Description			USCS	AASHTO
well graded sand with silt and gravel			SW-SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)W/O#6

Sample Source: CB205 Depth: 120.0'-125.0' Sample No.: CB205

Remarks:

Moisture Content % 13.4 CP05-
EAARS-VB-0286

Nodarse & Associates, Inc.

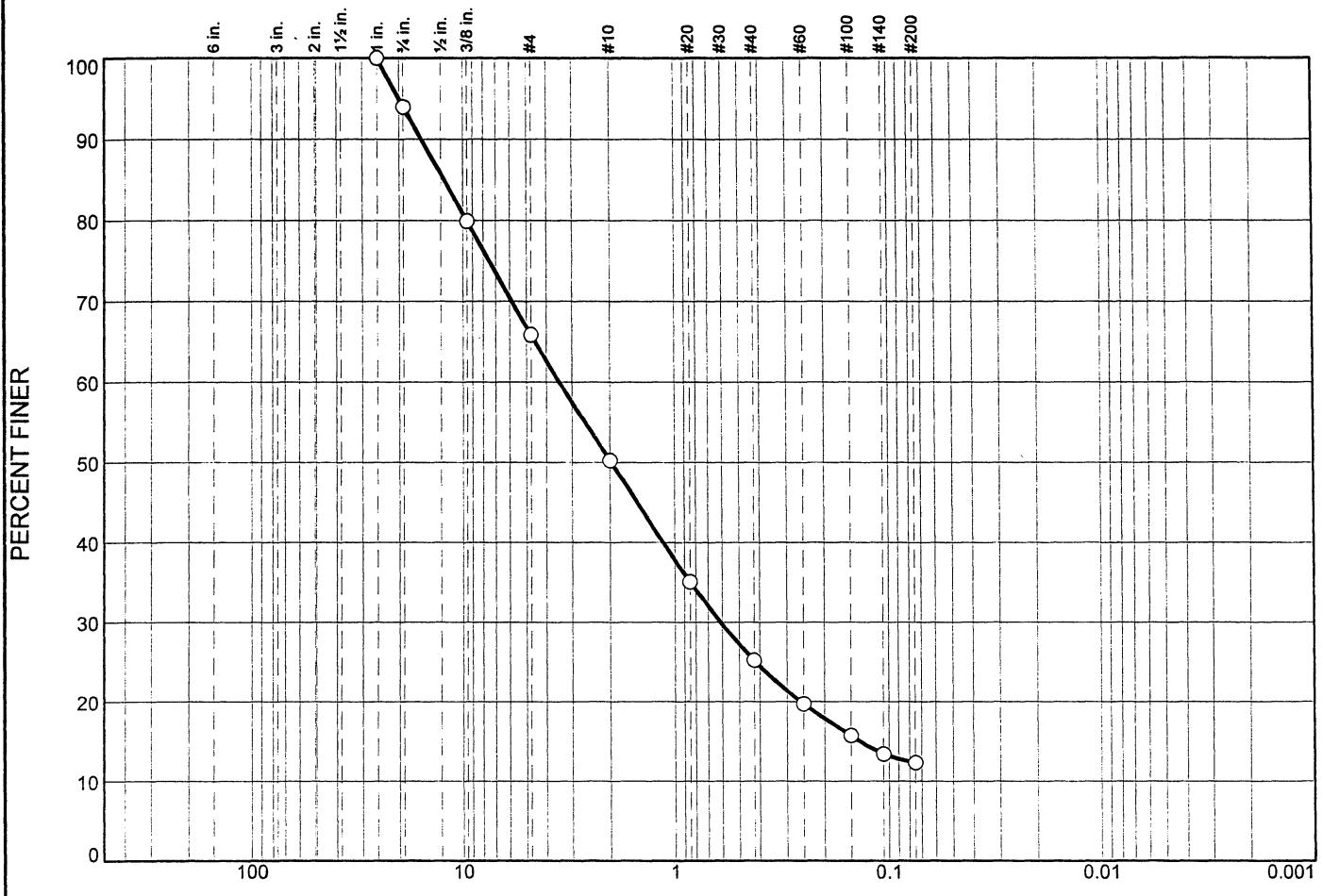
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	6.0	28.1	15.6	25.1	12.9	12.3
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			12.2356	3.4620	1.9692	0.6103	0.1357
Material Description							USCS
○ Poorly graded sand with silt and gravel							AASHTO

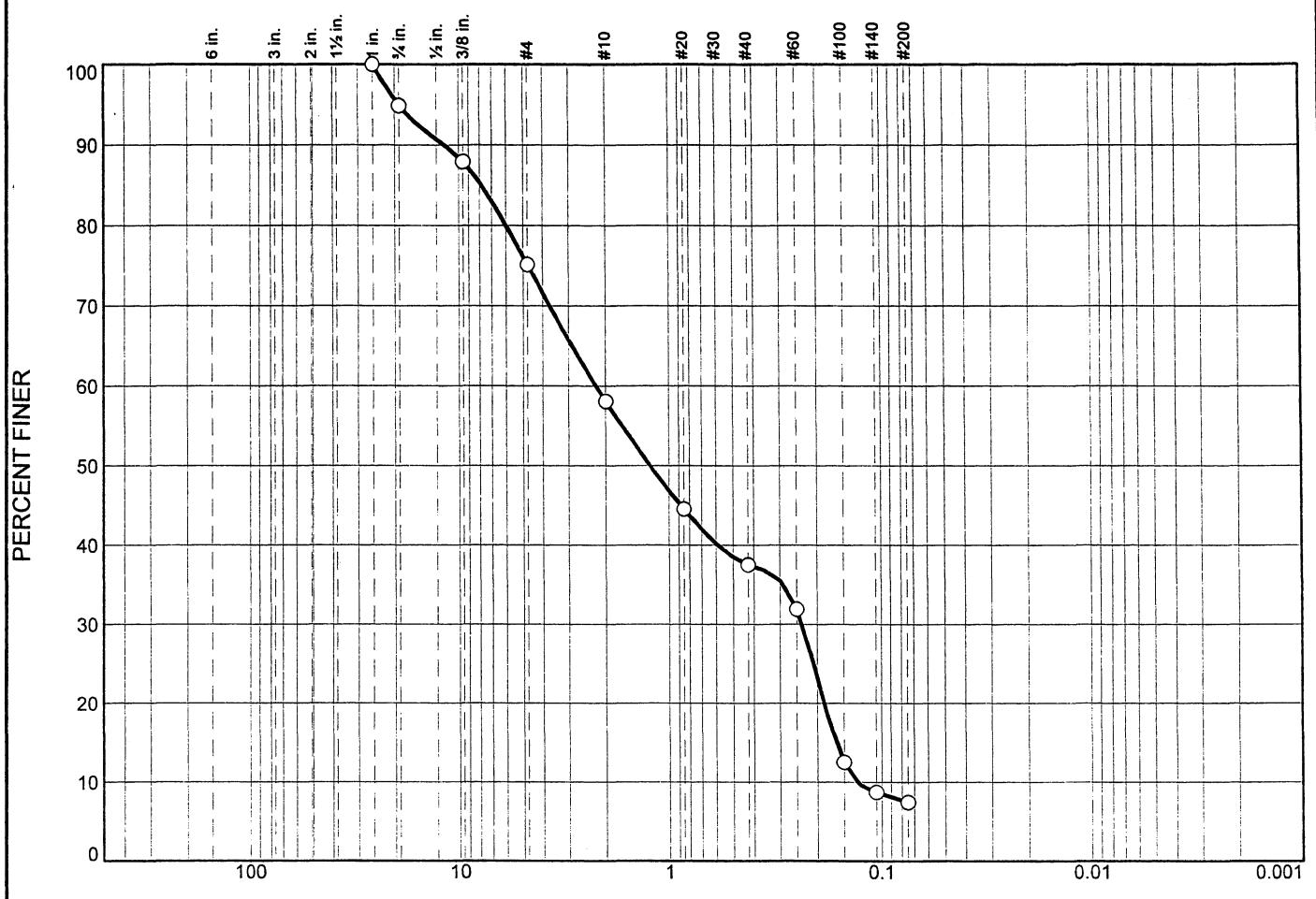
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB205 Depth: 125'-130.0' Sample Number: CB205	Remarks: ○ Moisture Content % 16.6 CP05-EAARS-VB-0286
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	5.1	19.7	17.1	20.6	30.0	7.5
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			7.8082	2.2231	1.2327	0.2356	0.1627
○						0.1304	0.19
○							17.05
Material Description							USCS
○ Poorly graded sand with silt and gravel							SP-SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)W/O#6

○ Sample Source: CB205 Depth: 140.0'-145.0' Sample No.: CB205

Remarks:

○ Moisture Content % 15.0 CP05-
EAARS-VB-0286

Nodarse & Associates, Inc.

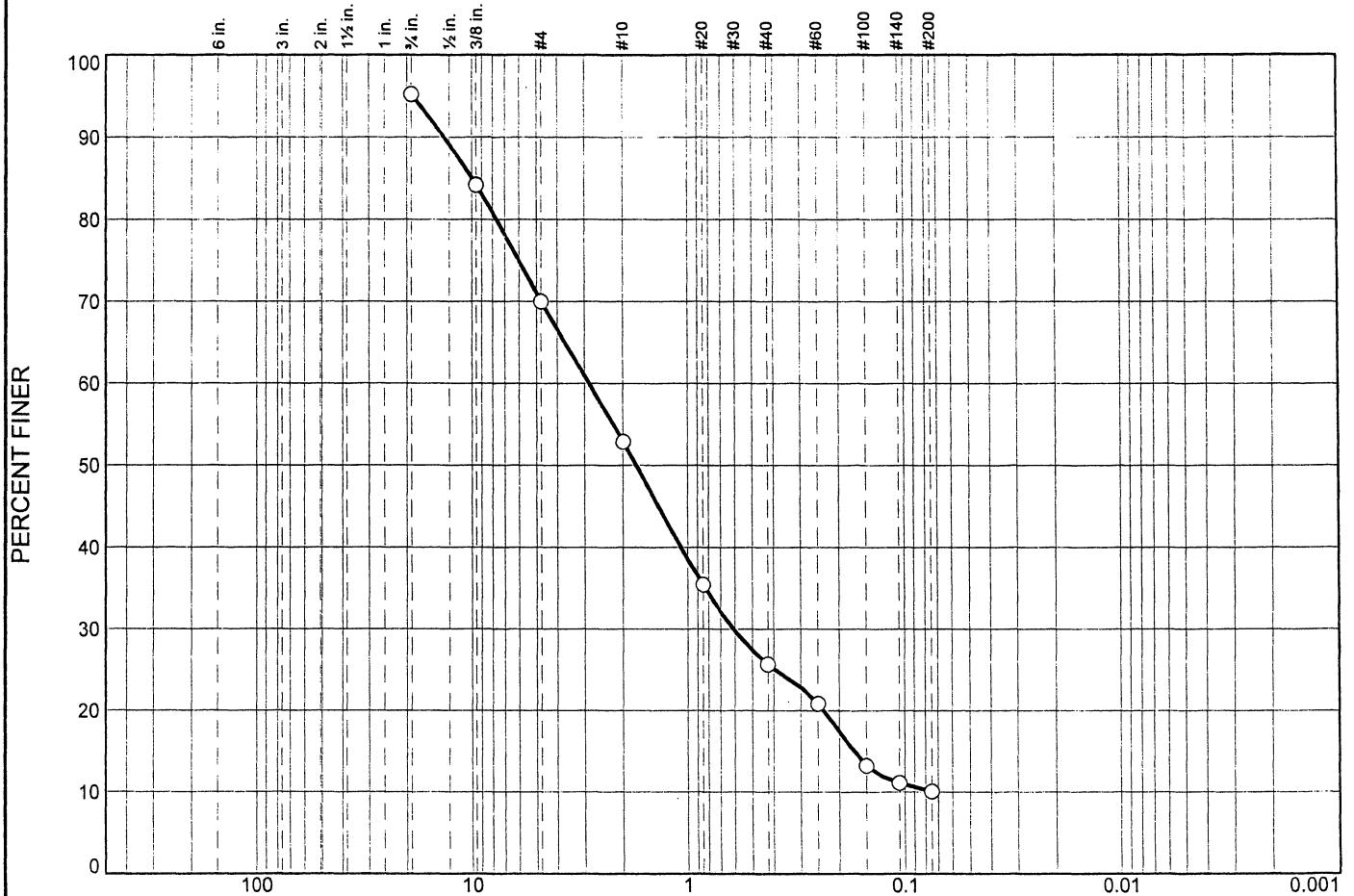
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



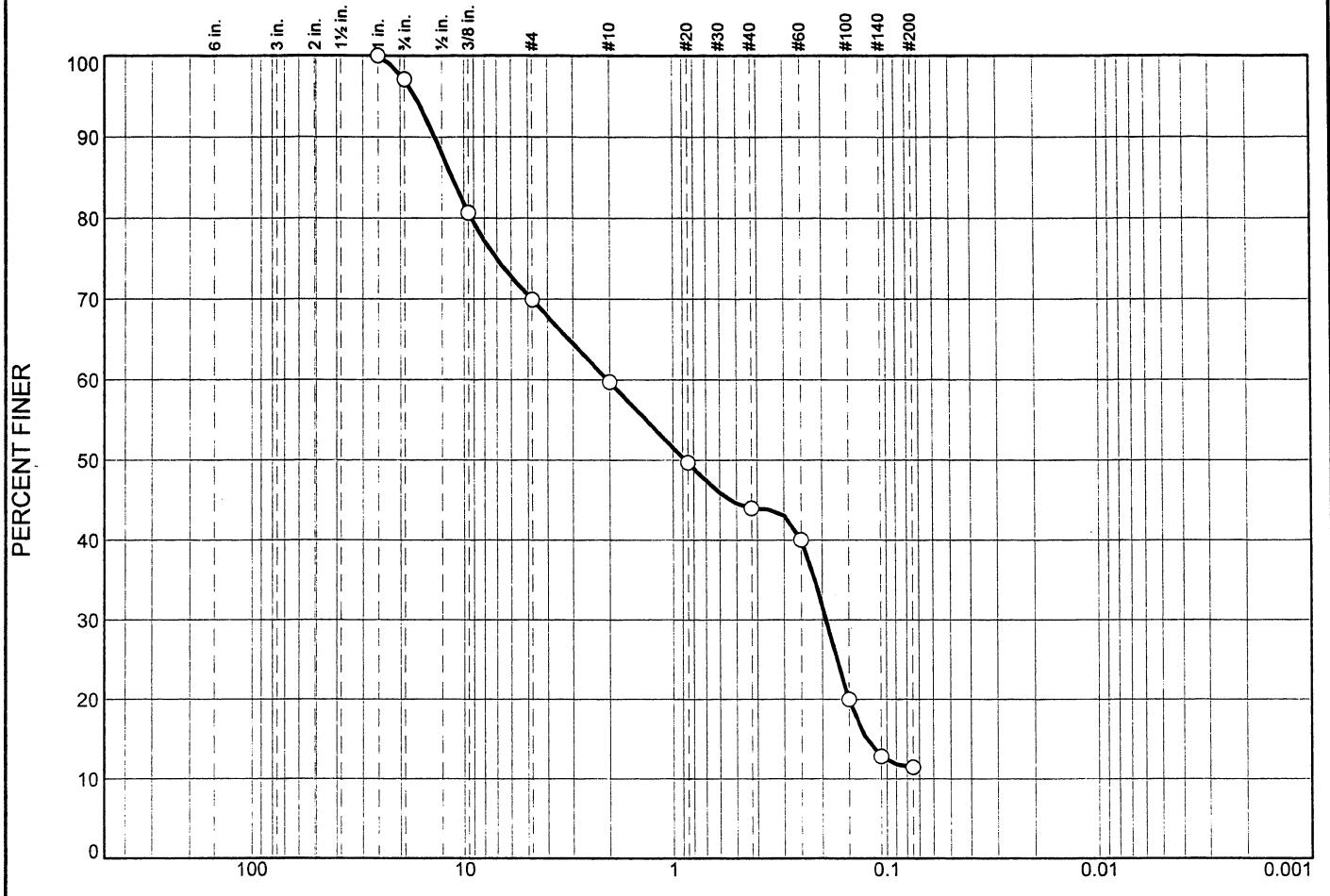
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	25	17	27	27	16	10	
<input checked="" type="checkbox"/> LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
<input type="radio"/>		9.9537	2.8667	1.7431	0.6109	0.1716	
Material Description							USCS AASHTO
<input type="radio"/> Poorly graded sand with silt and gravel							SP-SM

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) <input type="radio"/> Source of Sample: CB-0205 Depth: 150' to 155'	Remarks: <input type="radio"/> Moisture Content % 14.1 CP05-EAARS-VB-0286
Date: <input type="radio"/> Nodarse & Associates, Inc. Miami Lakes, FL	Figure

Tested By: Pedro Camaraza

Checked By: Kevin Leung

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input checked="" type="radio"/>	0.0	2.9	27.2	10.2	15.7	32.5		11.5	
<hr/>									
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input checked="" type="radio"/>			11.3484	2.0447	0.8724	0.1915	0.1238		
<hr/>								Material Description	
<input checked="" type="radio"/> Poorly graded sand with silt and gravel								USCS	AASHTO
								SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6	Remarks: <input checked="" type="radio"/> Moisture Content % 13.34 CP05-EAARS-VB-0286
<input checked="" type="radio"/> Sample Source: CB205 Depth: 1565.0'-160.0' Sample No.: CB205	

Nodarse & Associates, Inc.

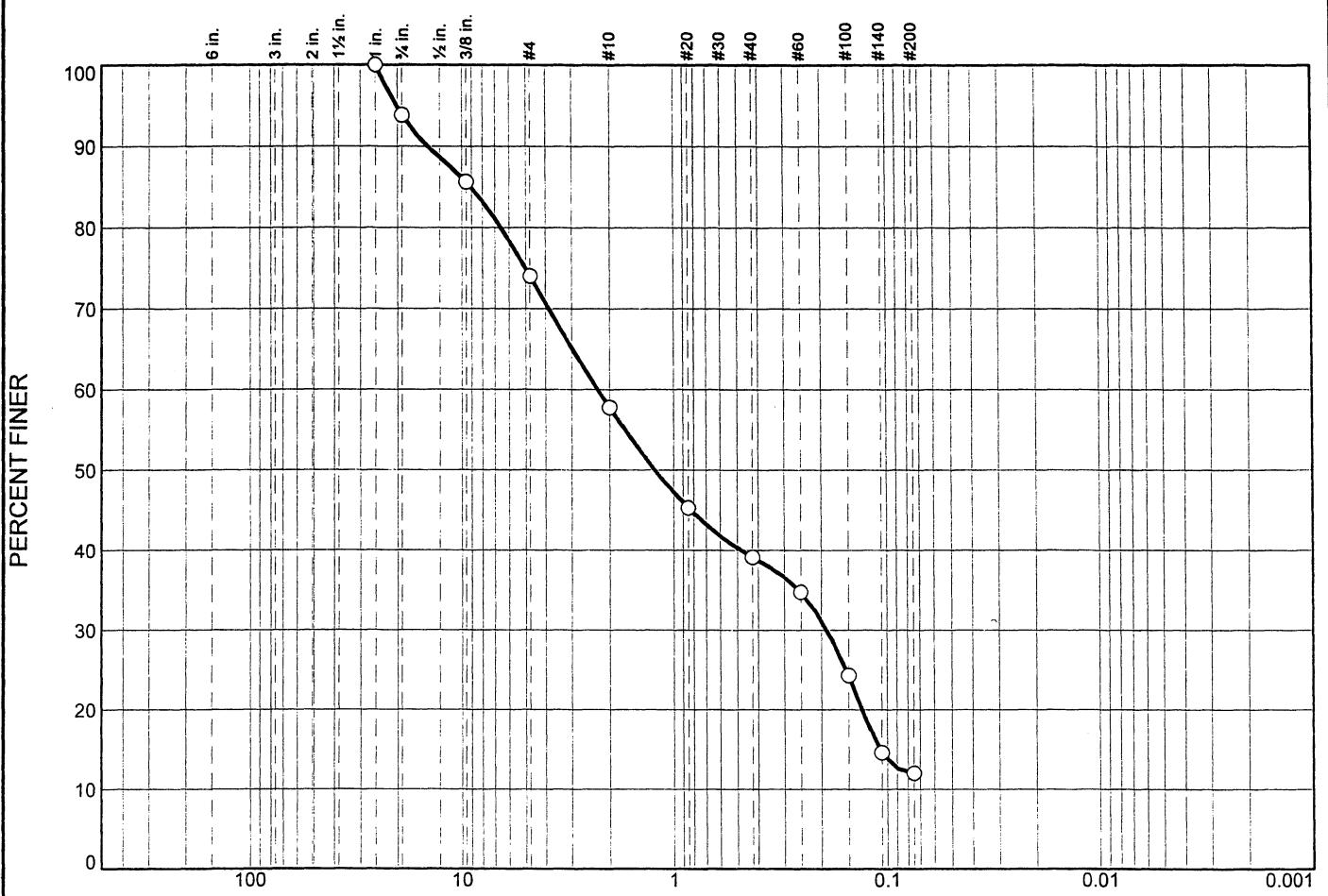
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	6.2	19.8	16.2	18.7	27.1		12.0
○ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○		9.0486	2.2687	1.2245	0.1881	0.1081	
Material Description							USCS
○ Poorly graded sand with silt and gravel							SP-SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Sample Source: CB205 Depth: 160.0'-165.0' Sample No.: CB205			Remarks: <input type="checkbox"/> Moisture Content % 20.0 CP05-EAARS-VB-0286
Nodarse & Associates, Inc. Miami Lakes, FL			Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine				
○	0.0	7.2	11.3	4.2	8.6	49.7			19.0
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
○			7.0278	0.1770	0.1395	0.1122			C _u
Material Description								USCS	AASHTO
○	Silty sand with gravel							SM	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir) W/O#6

○ Sample Source: CB205 Depth: 175.0'-180.0' Sample No.: CB205

Remarks:

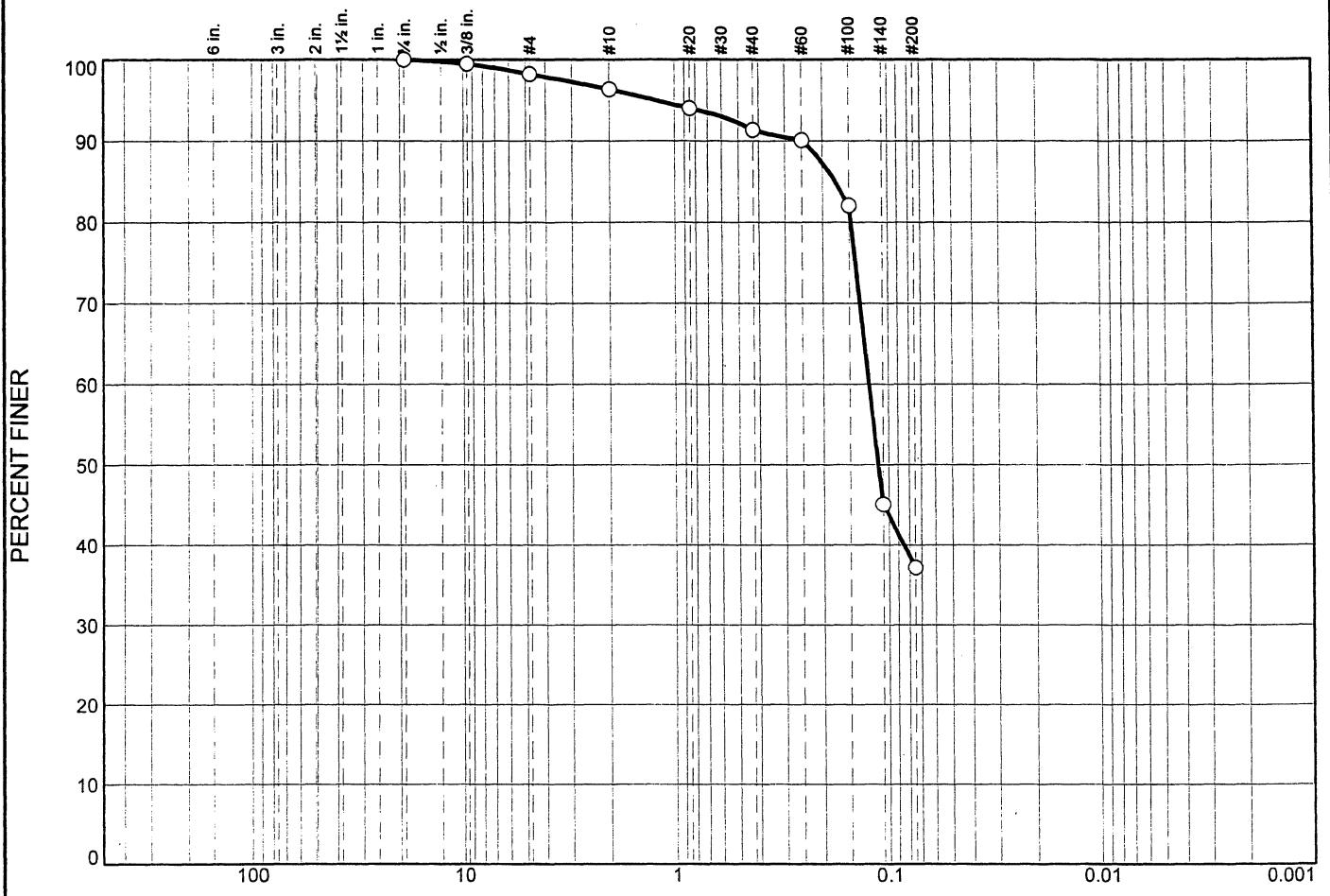
○ Moisture Content % 18.3 CP05-EAARS-VB-0286

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Particle Size Distribution Report



Material Description

USCS AASHTO

Silty sand

SM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir) W/O#6

Sample Source: CB205 Depth: 180.0'-185.0' Sample No.: CB205

Remarks:

Moisture Content % 20.7 CP05-
EAARS-VB-0286

Nodarse & Associates, Inc.

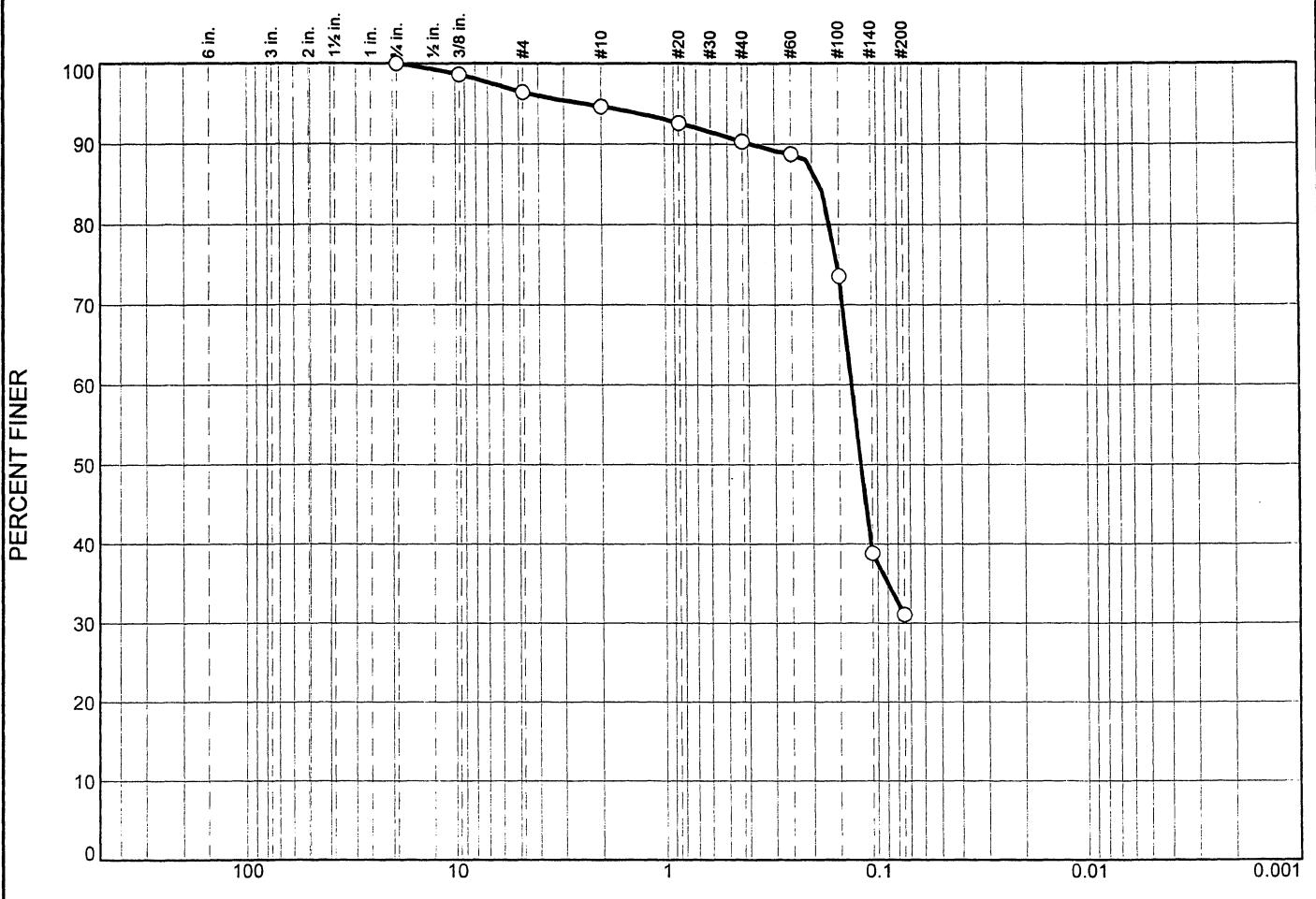
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



Material Description

○ Silty sand	USCS	AASHTO
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Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir) W/O#6

○ Sample Source: CB205 Depth: 195.0'-200.0' Sample No.: CB205

Remarks:

○ Moisture Content % 18.5 CP05-
EAARS-VB-0286

Nodarse & Associates, Inc.

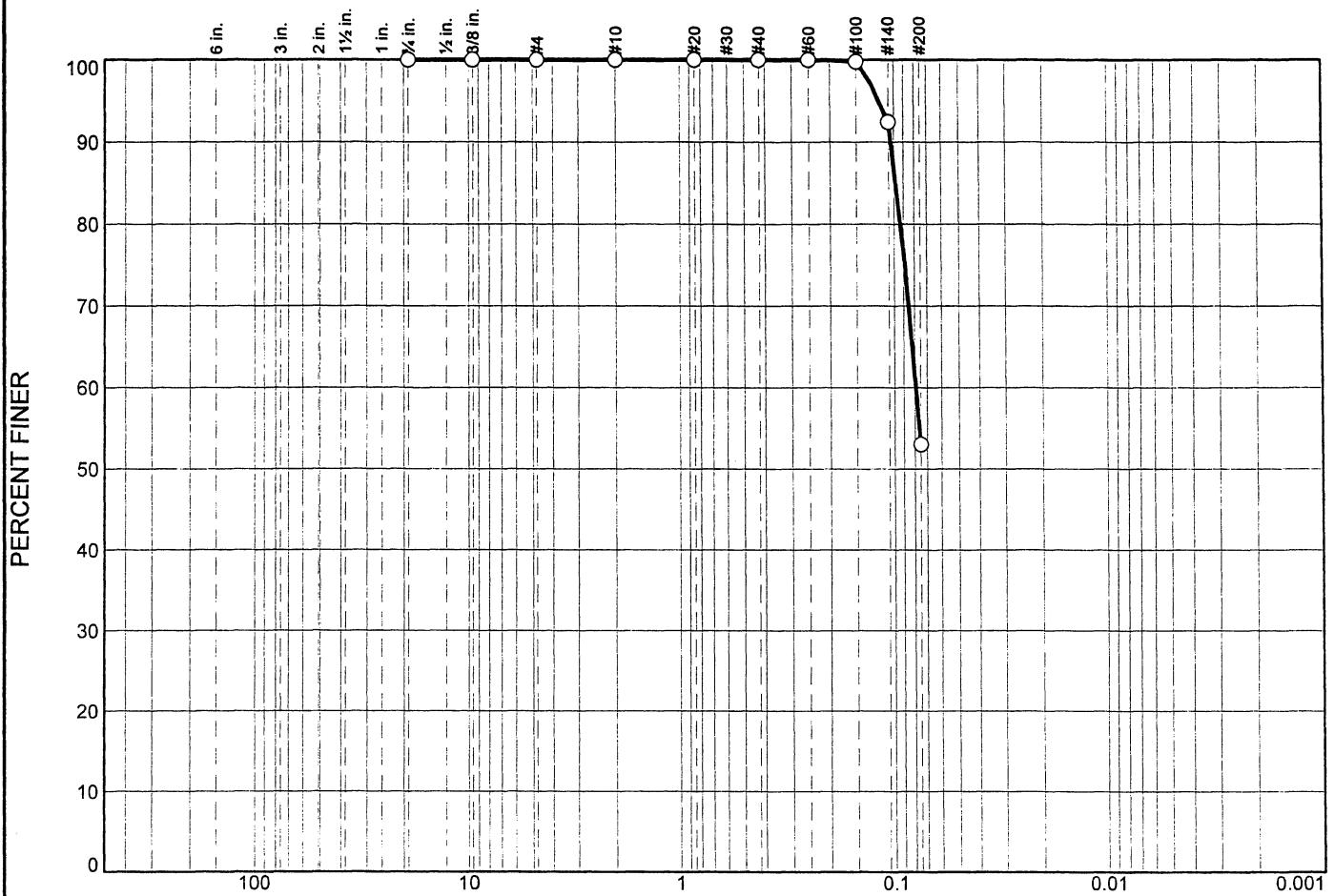
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine				
○	0.0	0.0	0.0	0.0	46.9				53.1
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
○			0.0970	0.0789					
Material Description								USCS	AASHTO
○	Inorganic silts with very fine sand								SM

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir) W/O#6	○ Moisture Content % 24.7 CP05-EAARS-VB-0286
○ Sample Source: CB205 Depth: 215.0'-220.0'	Sample No.: CB205

Remarks:
 Moisture Content % 24.7 CP05-EAARS-VB-0286

Nodarse & Associates, Inc.

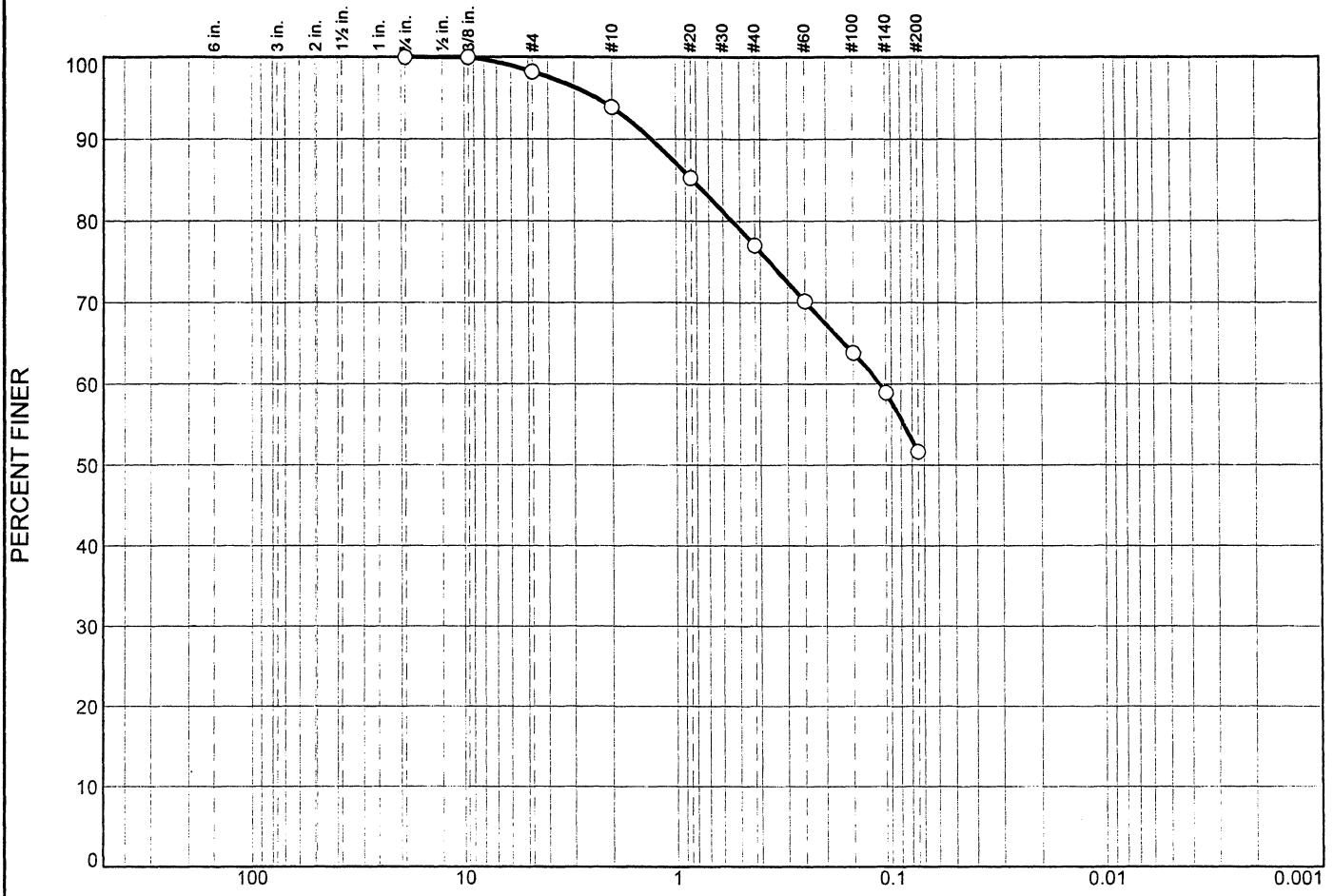
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine				
○	0.0	0.0	1.8	4.3	16.9	25.3			51.7
○	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
○			0.8308	0.1129					C _u
Material Description								USCS	AASHTO
○	Inorganic silts and very fine sands							ML	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB219 Depth: 14.0'-15.5' Sample Number: CB219	Remarks: ○ Moisture Content %22.8 CP05- EAARS-CB-0317
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: L Mazo

Checked By: M Brown

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine				
0.0	0.0	2.7	2.7	17.9	64.6			12.1	
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
0.5563	0.3138	0.2661	0.1729	0.1057					
Material Description								USCS	AASHTO
Poorly graded sand with silt								SP-SM	

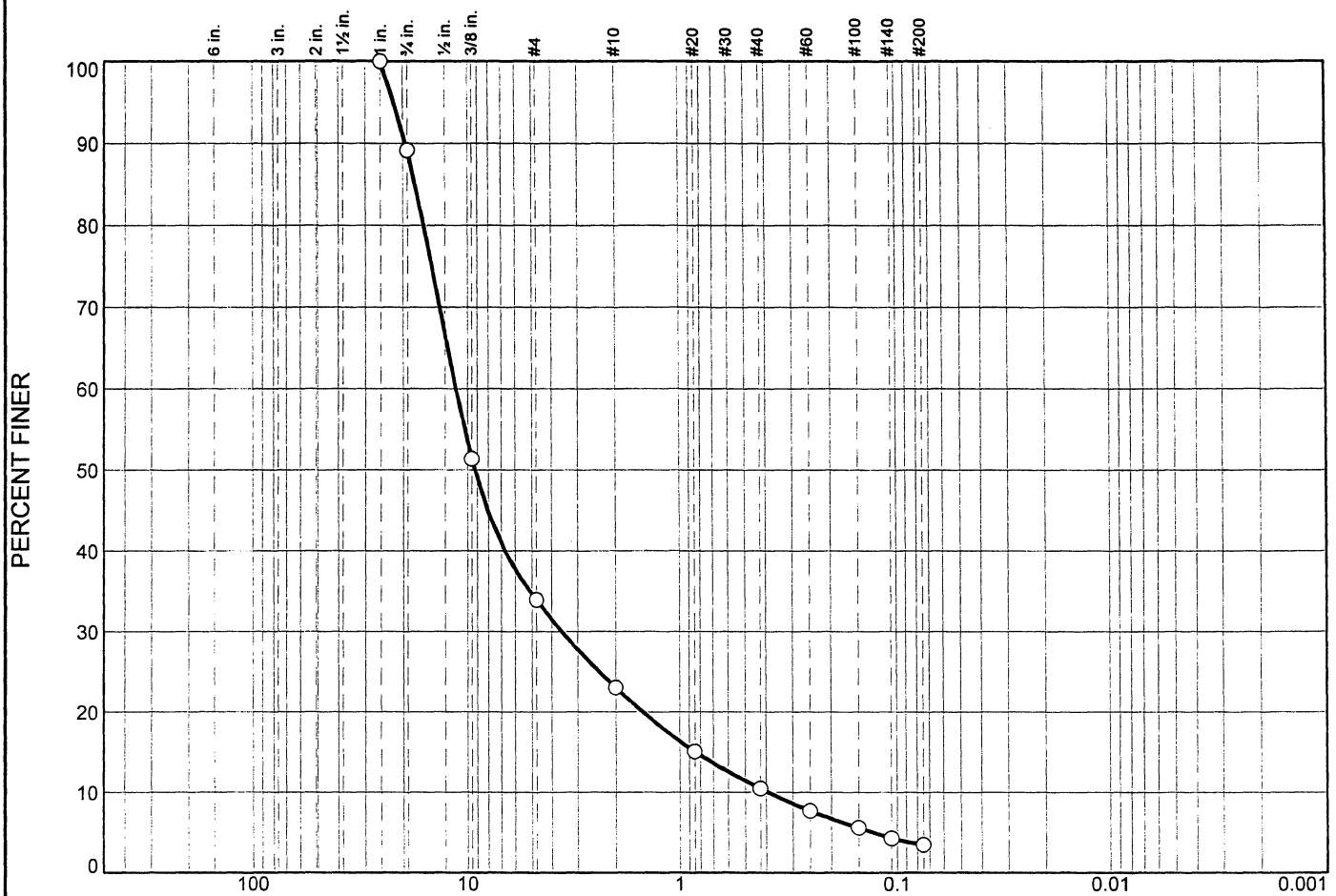
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir) W/O#6	Moisture Content % 25.4 CP05-EAARS-CB-0317
Source of Sample: CB219 Depth: 34.0'-35.5' Sample Number: CB219	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: L Mazo

Checked By: M Brown

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	10.8	55.3	10.9	12.5	7.0	3.5

Material Description	USCS	AASHTO
○ Poorly graded gravel with sand	GP	

Project No. 05-05-0013- **Client:** Black & Veatch
Project: E.A.A (Reservoir)W/O#6

Remarks:

○ Source of Sample: CB0228 Depth: 4.0'-5.5' Sample Number: CB0228

Depth: 4.0'-5.5'

Sample Number: CB0228

Nature & Agriculture

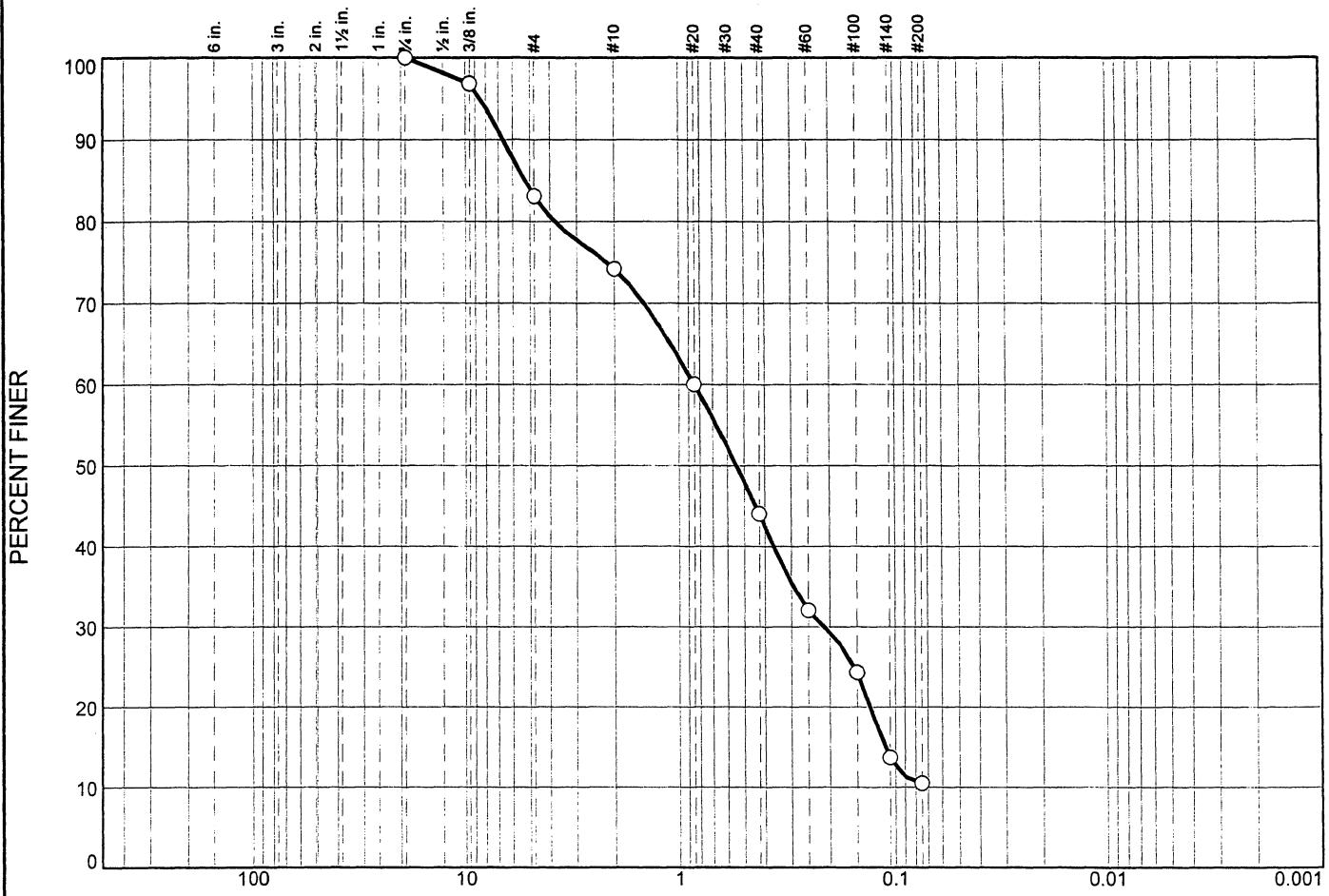
Miami Lakes, FL

Figure

Tested By: M Mazo

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine				
○	0.0	0.0	16.9	8.9	30.2	33.5			10.5
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
○			5.2567	0.8482	0.5416	0.2123	0.1115		C _u
Material Description								USCS	AASHTO
○	Poorly graded sand with silt and gravel							SP-SM	

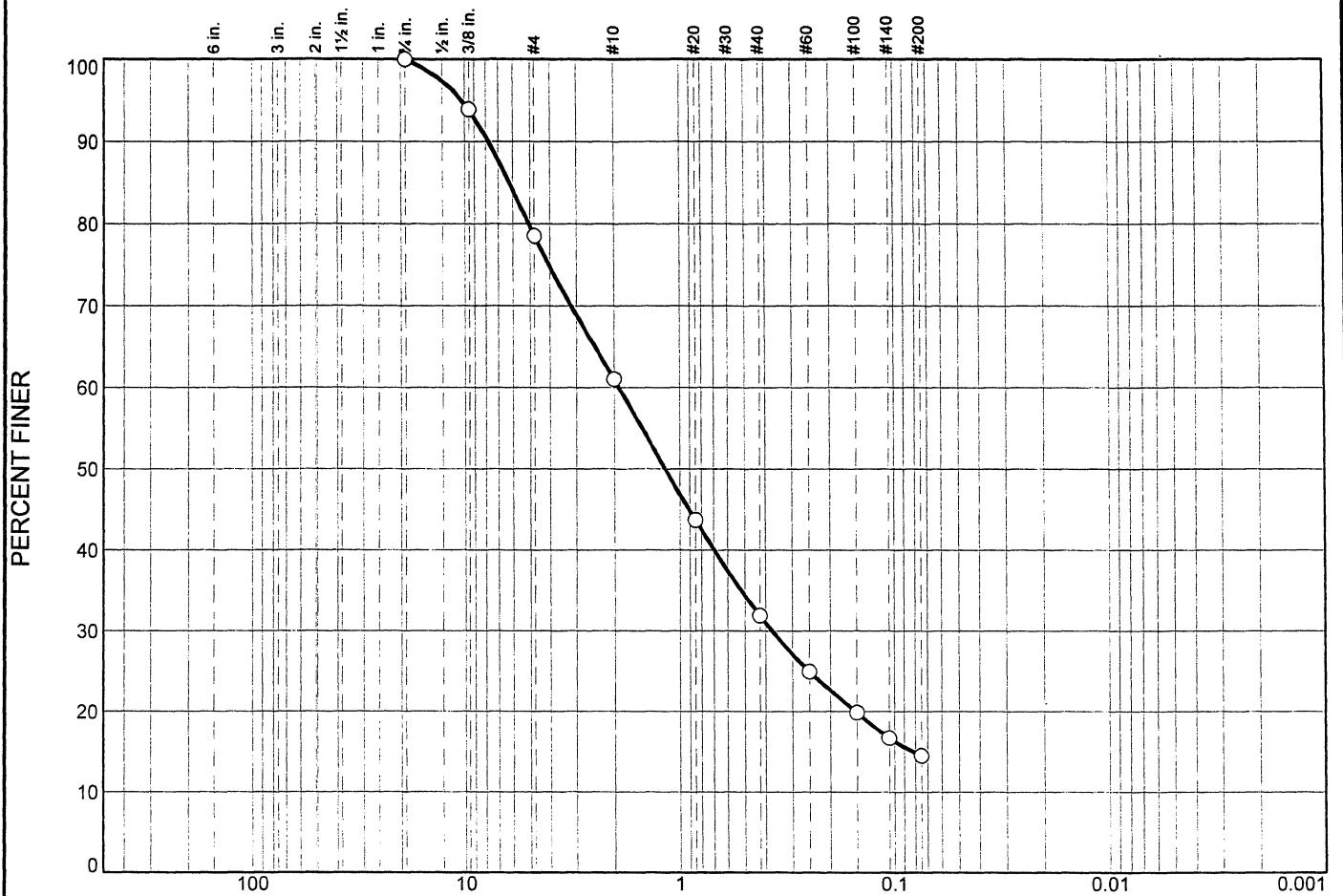
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir) W/O#6	○ Moisture Content % 22.6 CP05-EAARS-CB-0326
○ Source of Sample: CB0228 Depth: 14.0'-15.5 Sample Number: CB0228	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	0.0	21.5	17.5	29.1	17.4		14.5
GRAIN SIZE - mm.							
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			6.2268	1.8989	1.1658	0.3721	0.0819
Material Description							
○ Silty sand with gravel						SM	
USCS AASHTO							

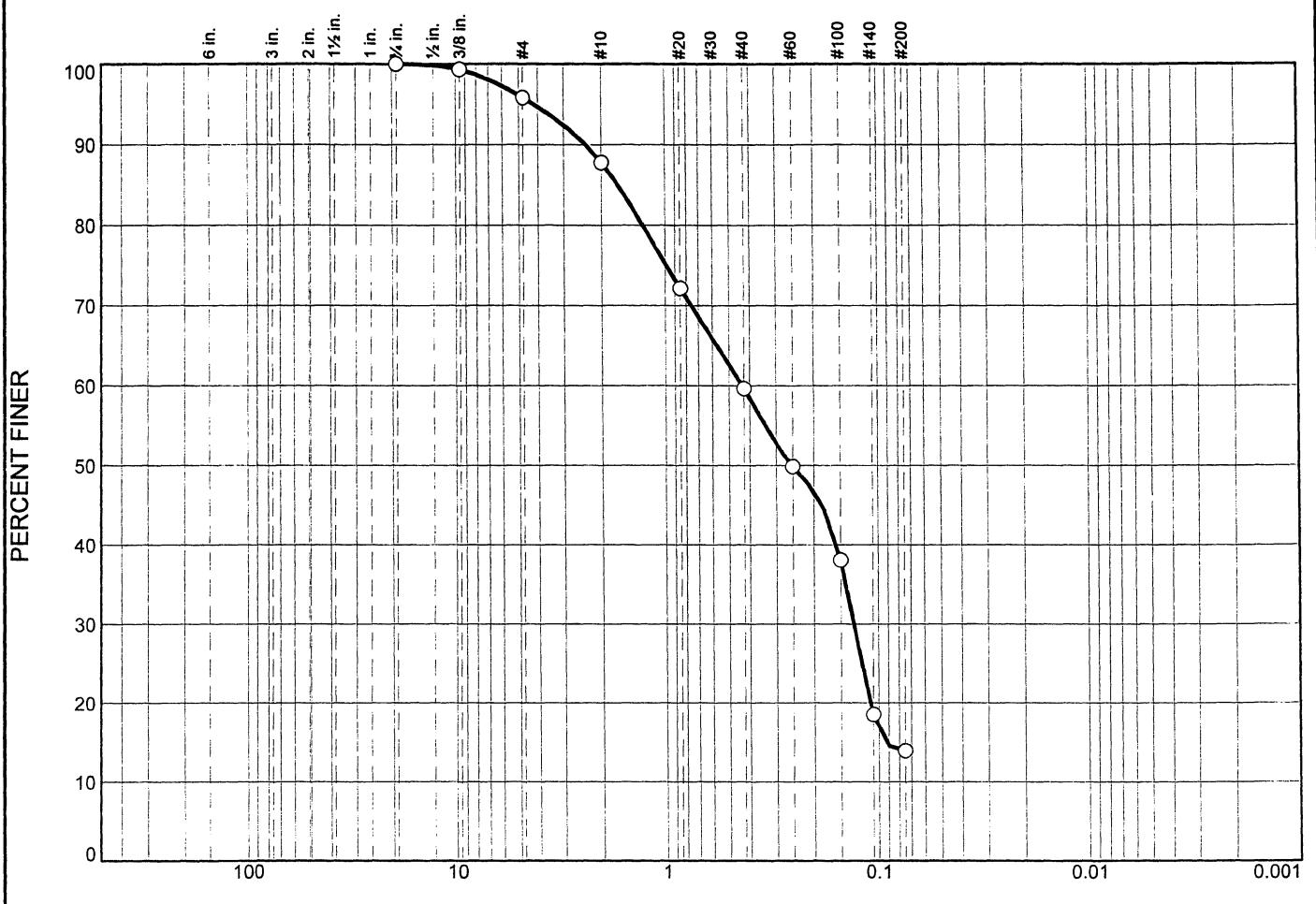
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Source of Sample: CB231 Depth: 8.5'-10.0' Sample Number: CB231	Remarks: ○ Moisture Content % 16.8 CP05- EAARS-CB-0329
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	4.2	8.0	28.1	45.7	14.0

Material Description

USCS AASHTO

Poorly graded sand with silt

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)W/O#6

○ Source of Sample: CB231

Depth: 13.5'-15.0'

Sample Number: CB231

Remarks:

○ Moisture Content % 22.0 CP05-
EAARS-CB-0329

Nodarse & Associates, Inc.

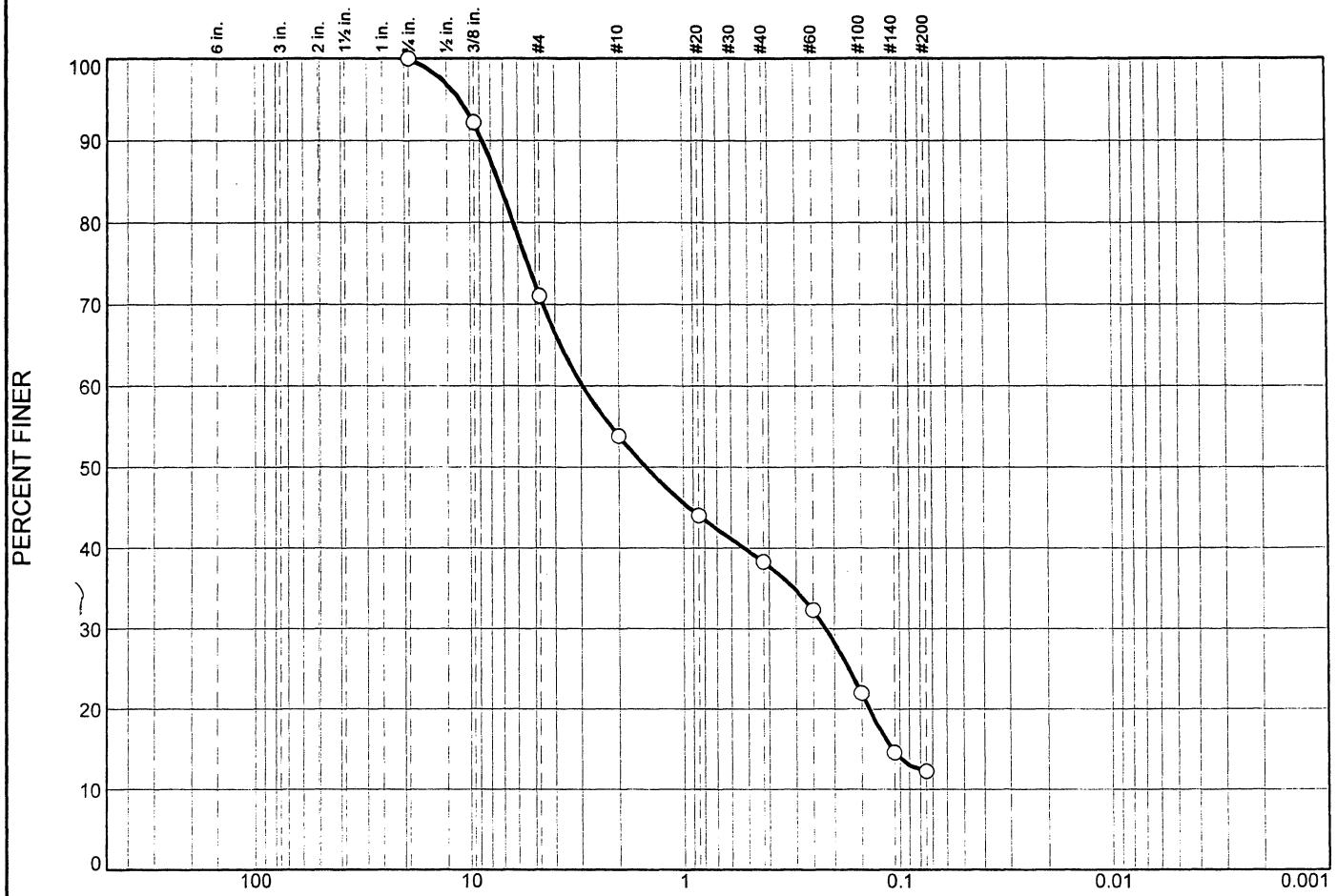
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel			% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○	0.0	0.0	28.9	17.3	15.5	26.0		12.3
○								
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○			7.3318	2.9564	1.4925	0.2181	0.1089	
Material Description								USCS AASHTO
○	Poorly graded sand with silt and gravel						SP-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB231 Depth: 18.5'-20.0 Sample Number: CB231	Remarks: ○ Moisture Content % 13.0 CP05-EAARS-CB-0329
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.0	8.1	18.1	62.5		6.3
<input checked="" type="checkbox"/> LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
1.6571		0.2831	0.2339	0.1787	0.1394	0.1185	0.95
Material Description							USCS
Poorly graded sand with silt							SP-SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir) W/O#6	Moisture Content % 25.6 CP05-EAARS-CB-0329
<input checked="" type="checkbox"/> Source of Sample: CB231	Depth: 23.5'-25.0
	Sample Number: CB231
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	28.6	6.0	5.2	52.2	8.0

Material Description	USCS	AASHTO
○ Poorly graded fine sand with silt and gravel	SP-SM	

Project No. 05-05-0013- **Client:** Black & Veatch
Project: E.A.A (Reservoir)W/O#6

Source of Sample: CB231 Depth: 33.5'-35.0 Sample Number: CB231

Remarks:

- Moisture Content % 15.7 CP05-
EAARS-CB-0329

Nodarse & Associates, Inc.

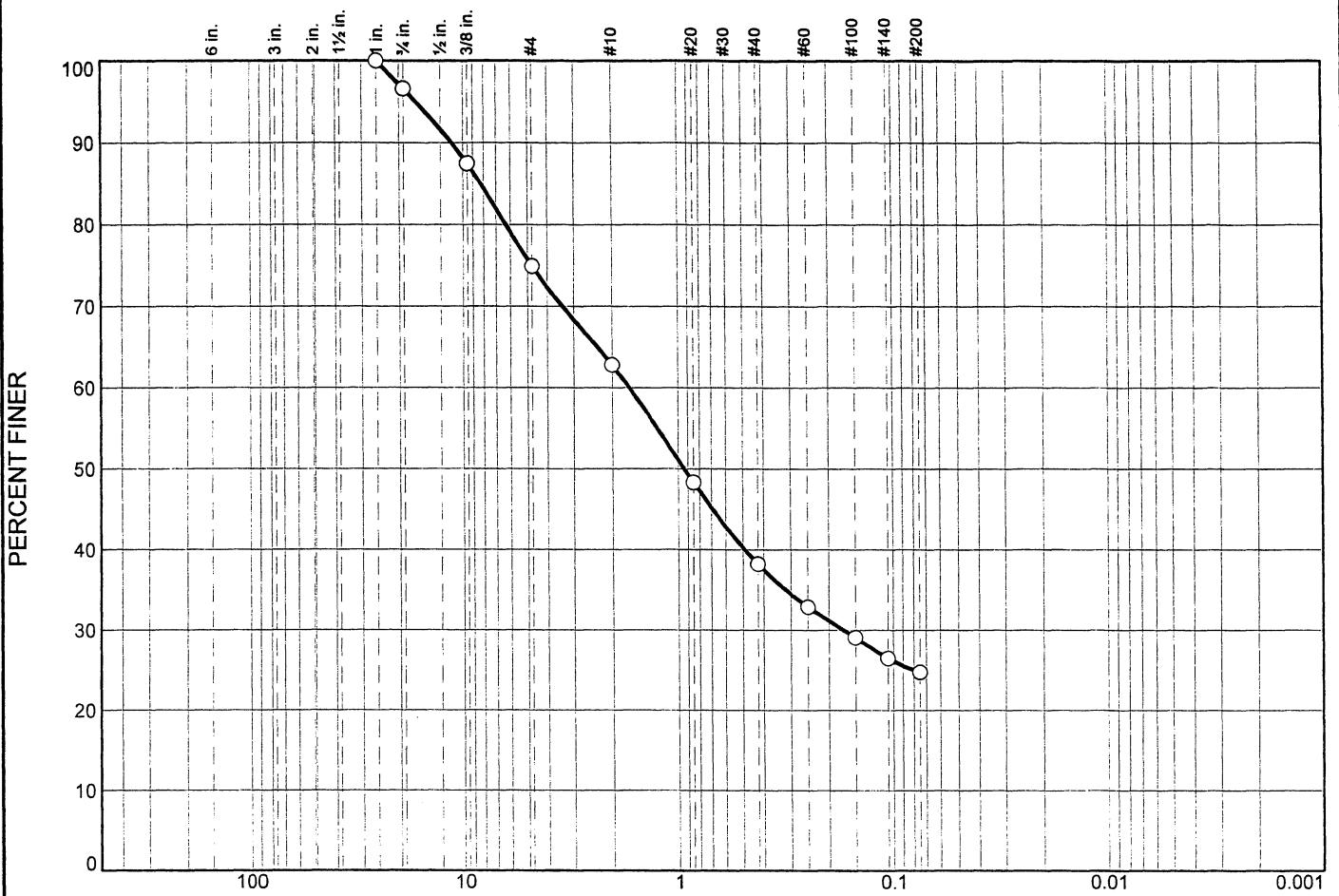
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	3.4	21.7	12.1	24.6	13.4	24.8

Material Description	USCS	AASHTO
○ Silty sand with gravel	SM	

Project No. 05-05-0013- **Client:** Black & Veatch
Project: E.A.A (Reservoir)W/O#6

Source of Sample: CB235 **Depth:** 8.5'-10.0 **Sample Number:** CB235

Remarks:

Nodarse & Associates, Inc.

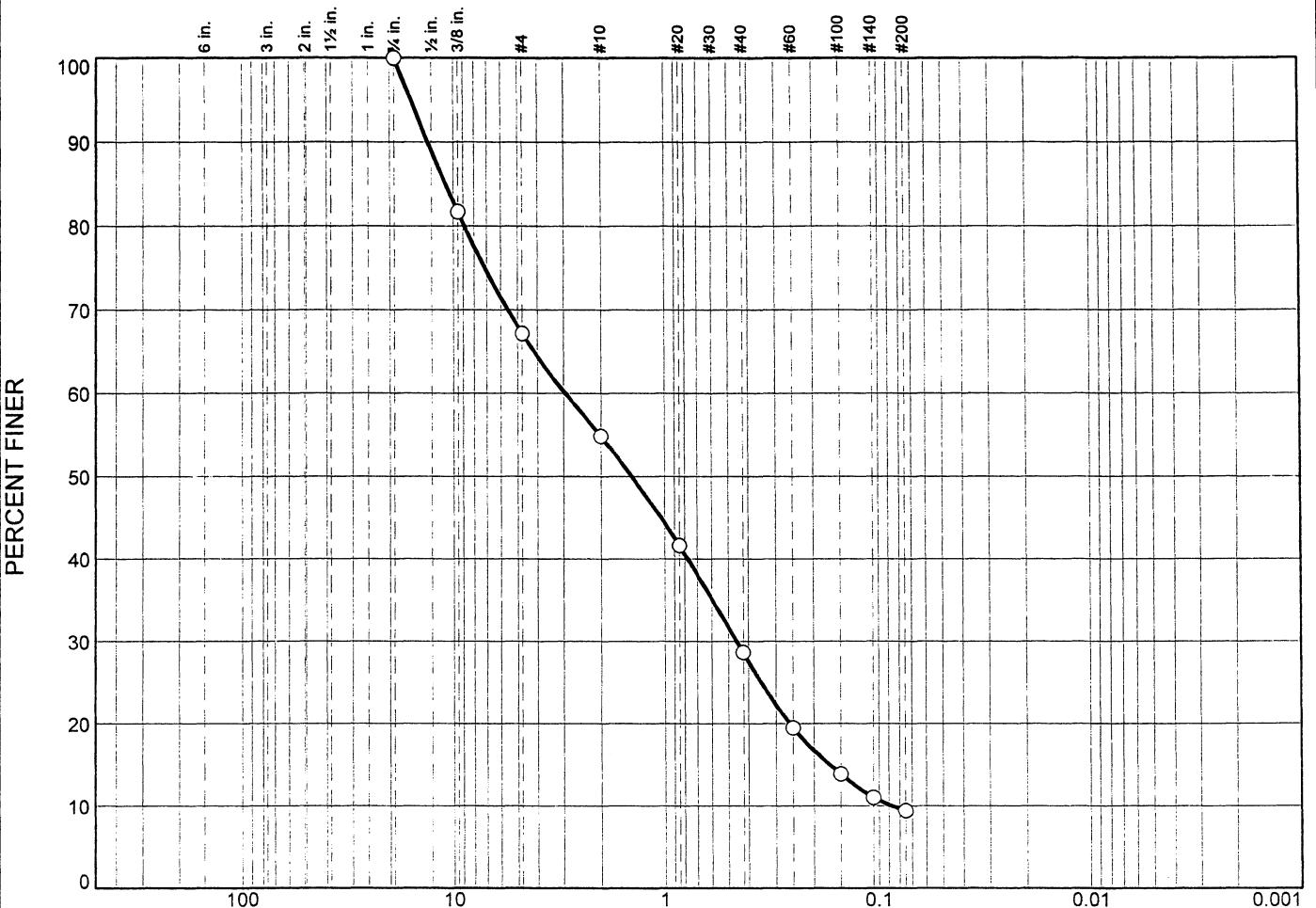
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



Material Description

○ Poorly graded sand with silt and gravel

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir) W/O#6

○ Source of Sample: CB248

Depth: 10.0'-11.5'

Sample Number: CB248

Remarks:

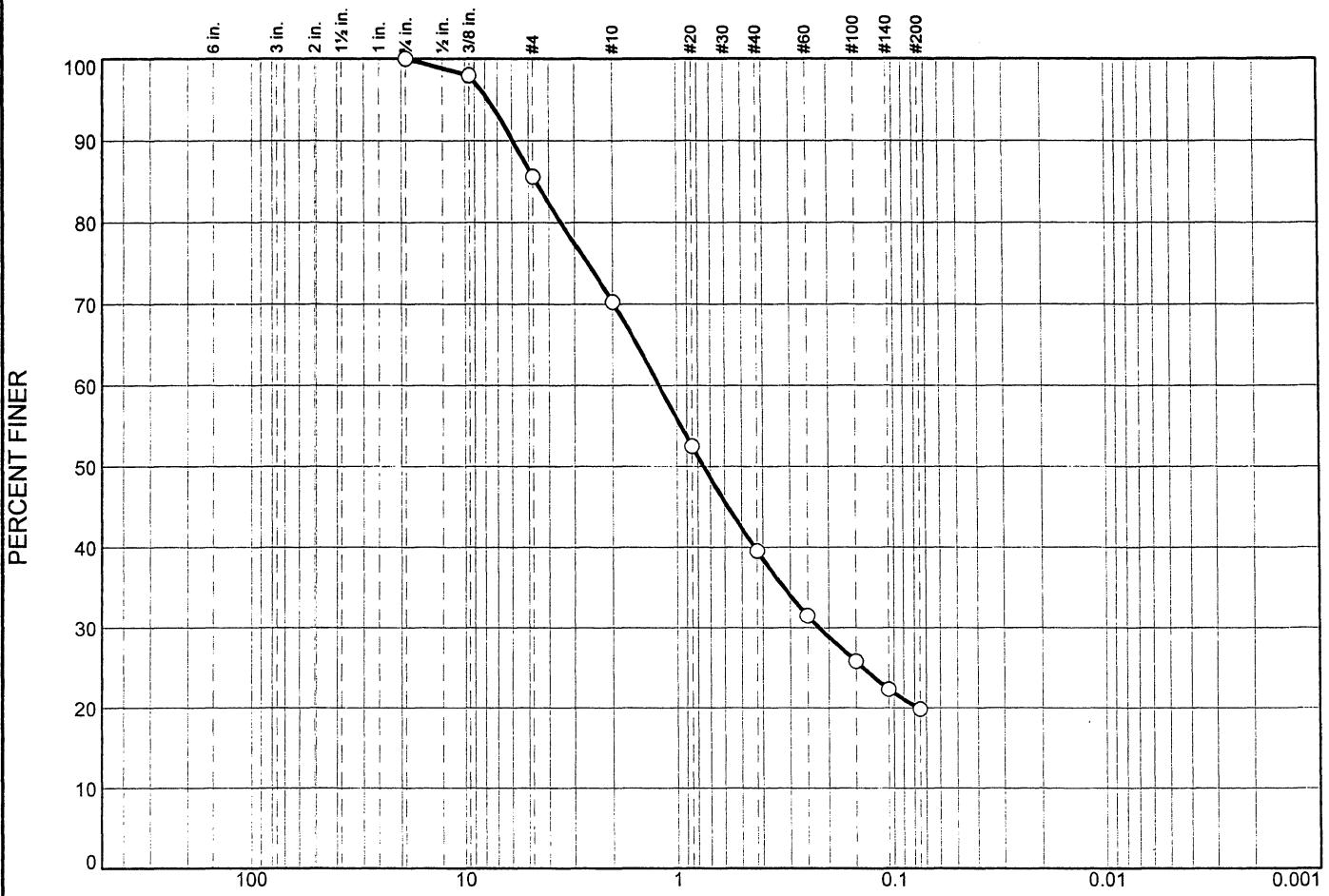
Moisture Content %10.1 CP05-
EAARS CR 0346

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Particle Size Distribution Report



% +3"	% Gravel			% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○ 0.0	0.0	14.4	15.3	30.7	19.7			19.9
○ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
○		4.6041	1.2124	0.7504	0.2212			C _u
Material Description								USCS AASHTO
○ Silty sand with gravel							SM	

Project No. 05-05-0013- Client: Black & Veatch
 Project: E.A.A (Reservoir)W/O#6

○ Source of Sample: CB260 Depth: 13.0'-13.5' Sample Number: CB260

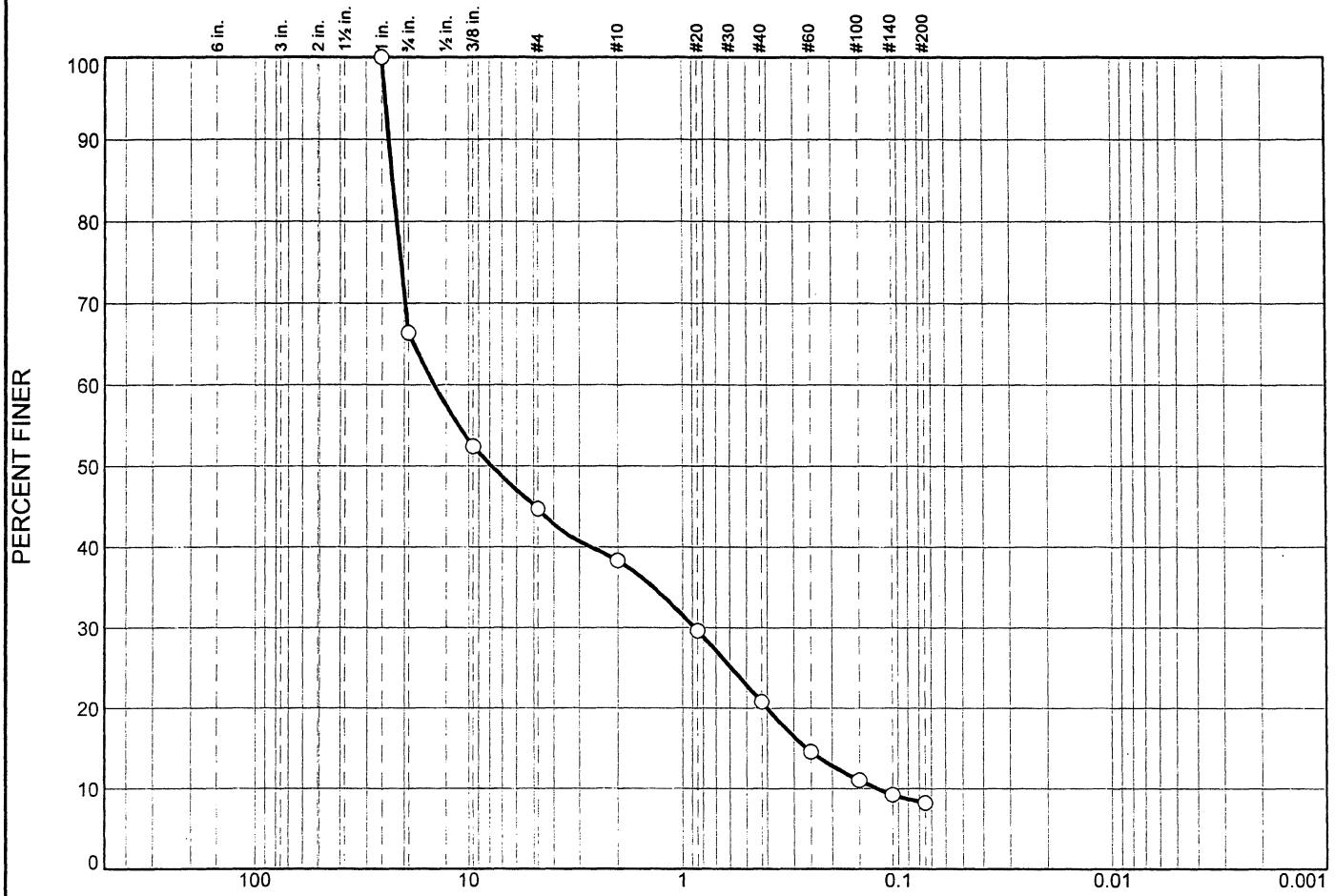
Remarks:
 ○ Moisture Content % 20.6 CP05-
 EAARS-CB-0358

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	33.6	21.7	6.4	17.5	12.6		8.2

Material Description

USCS | AASHTO

Poorly graded gravel with silt and sand

GP-GM

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir) W/O#6

Remarks:

○ Source of Sample: CB262

Depth: 8.5'-10.0

Sample Number: CB262

○ Moisture Content % 25.6 CP05-
EAARS-CB-0360

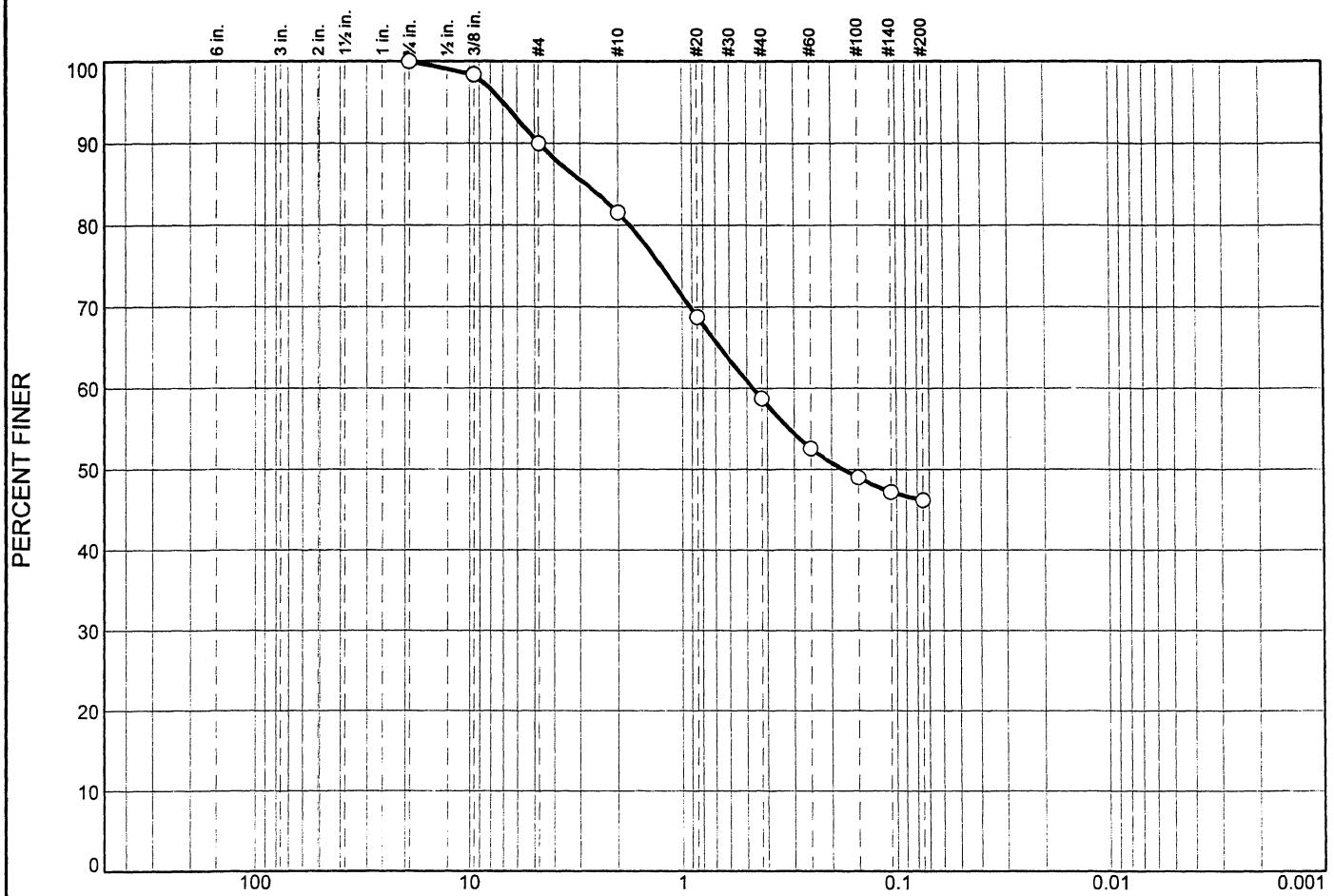
Nodarse & Associates, Inc.

Figure

Tested By: Bojooki

Checked By: K Leung

Particle Size Distribution Report



GRAIN SIZE - mm.									
% +3"		% Gravel			% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0.0	0.0	10.0	8.4	22.8	12.6		46.2	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="radio"/>			2.8203	0.4664	0.1766				
Material Description								USCS	AASHTO
<input type="radio"/> Silty sand with gravel								SM	

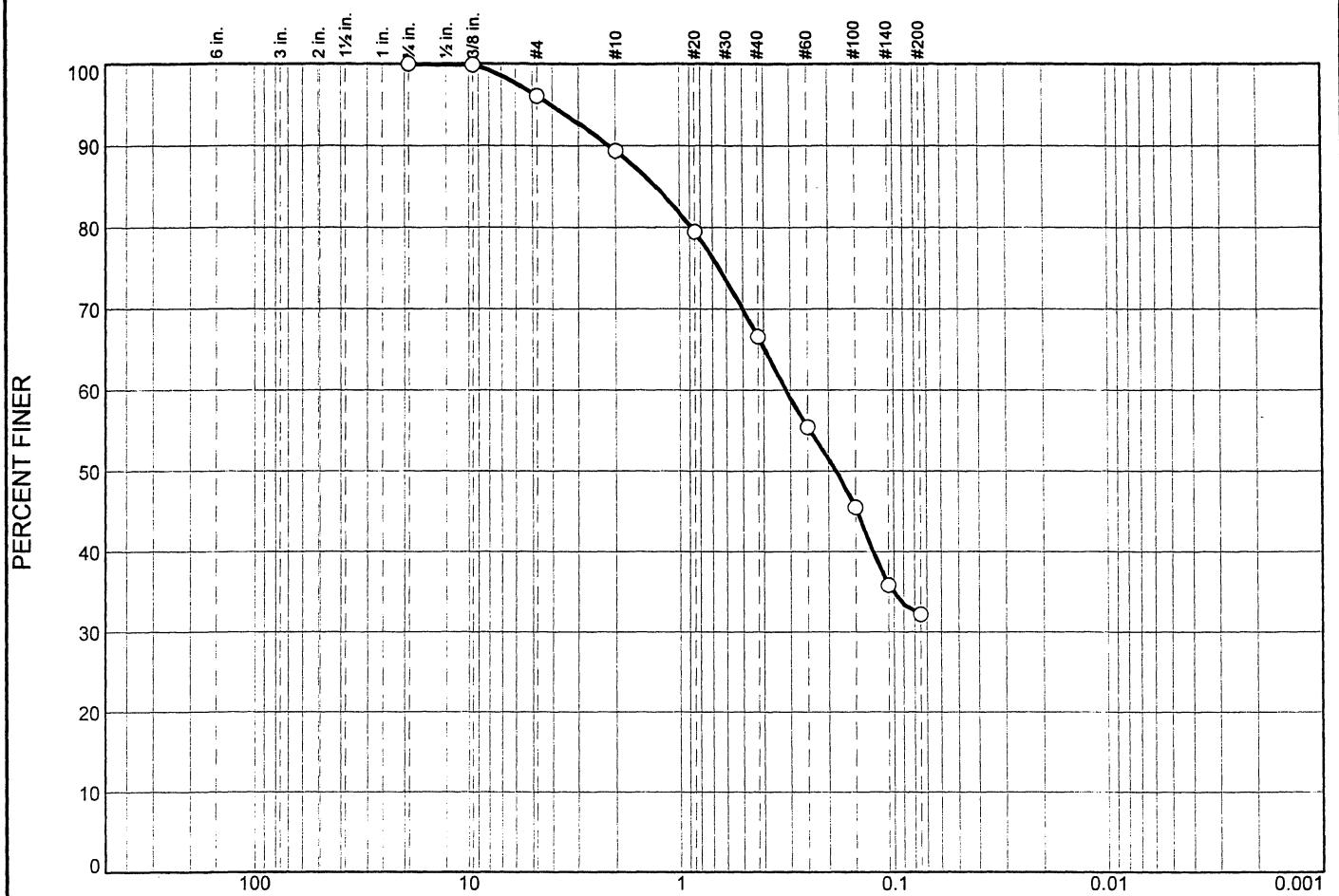
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 <input type="radio"/> Source of Sample: CB262 Depth: 13.5'-15.0' Sample Number: CB262	Remarks: <input type="radio"/> Moisture Content % 31.4 CP05-EAARS-CB-0360
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	3.9	6.7	22.8	34.4	32.2

Material Description	USCS	AASHTO
○ Silty sand	SM	

Project No. 05-05-0013- **Client:** Black & Veatch

Project: E.A.A (Reservoir)W/O#6

Source of Sample: CB262

Depth: 18.5'-20.0

Sample Number: CB262

Remarks:

○ Moisture Content % 24.2 CP05-EAARS-CB-0360

Nodarse & Associates, Inc.

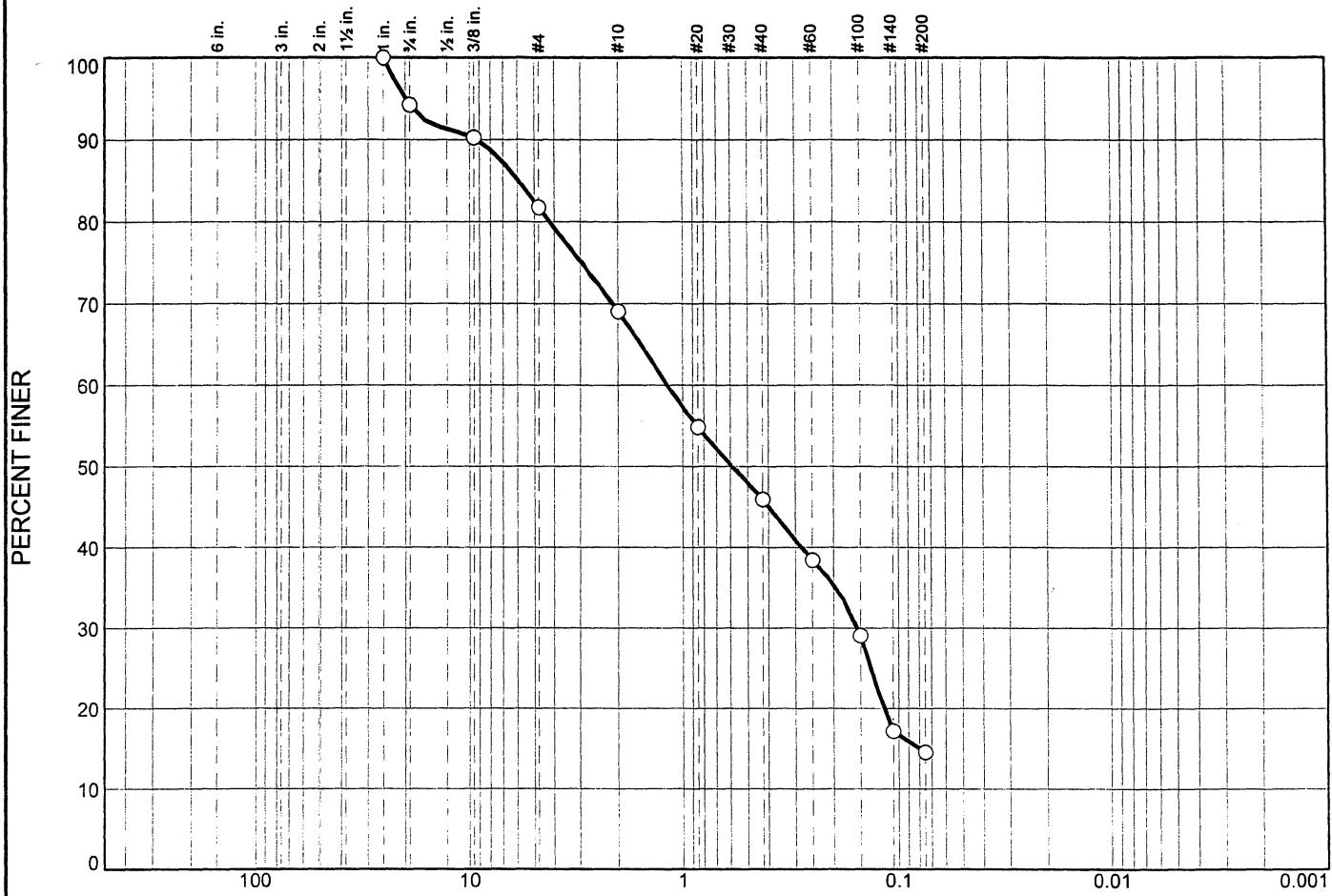
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	5.7	12.5	12.7	23.2	31.4		14.5
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			5.9210	1.1761	0.5855	0.1547	0.0796
Material Description							USCS AASHTO
○ Silty sand with gravel							SM

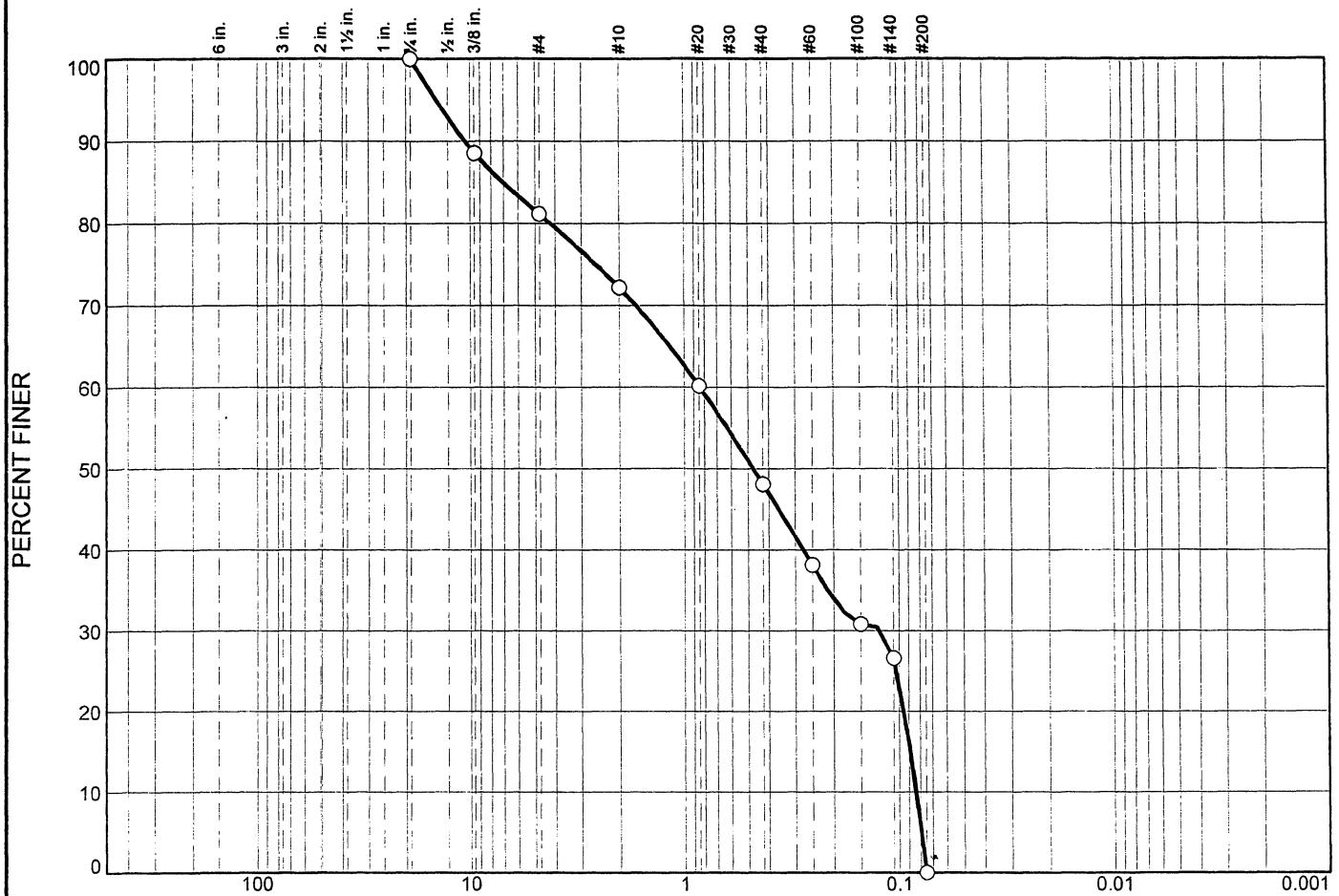
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB262 Depth: 23.5'-25.0 Sample Number: CB262	Remarks: ○ Moisture Content % 21.9 CP05-EAARS-CB-0360
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel			% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	0.0	18.8	9.0	24.1	48.1	0.0	0.0	0.0
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
○			7.0631	0.8402	0.4709	0.1204	0.0886	0.0836	0.21
									10.06
Material Description								USCS	AASHTO
○ Poorly graded sand with gravel								SP	

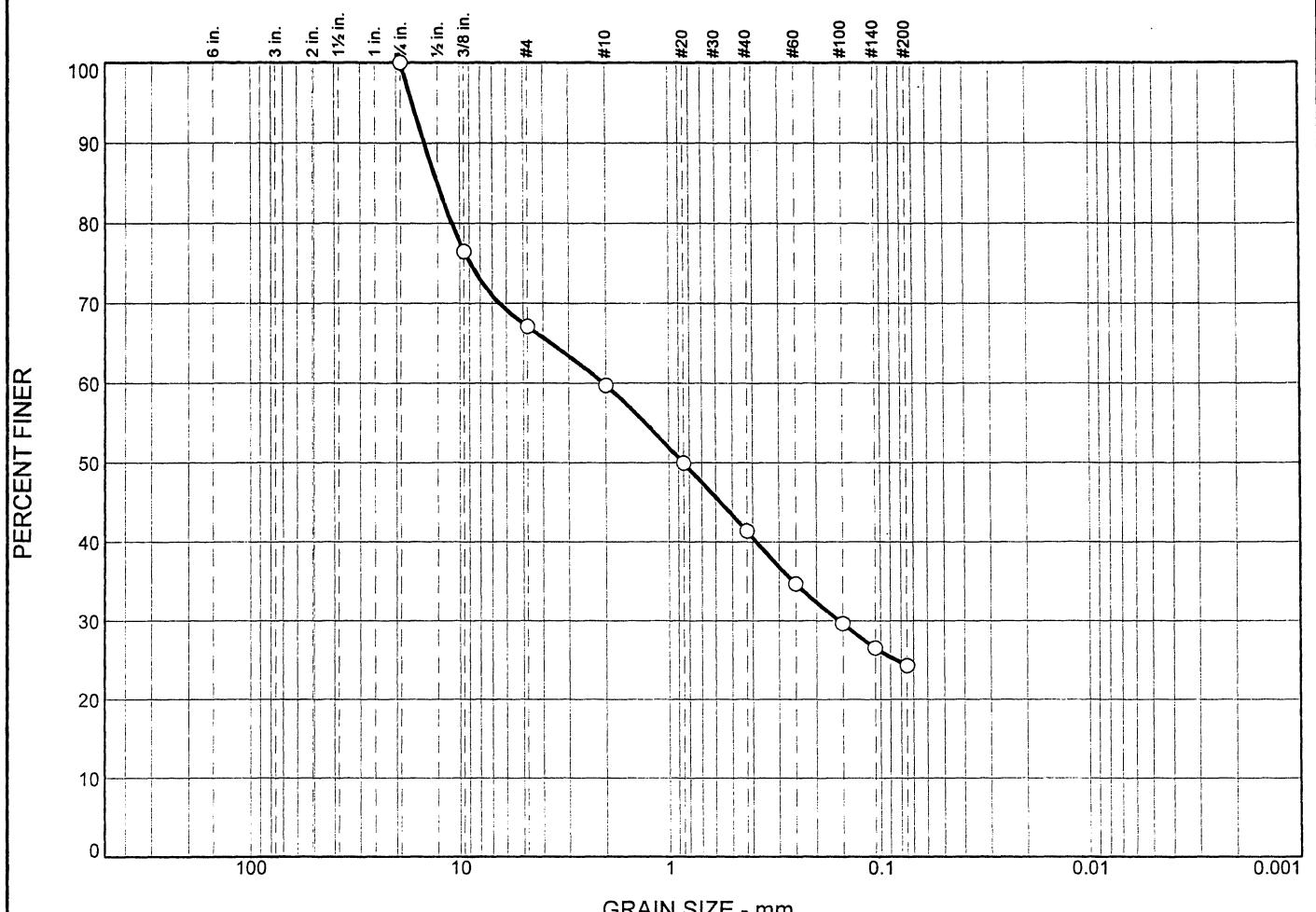
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB268 Depth: 0.0'-1.5' Sample Number: CB268	Remarks: ○ Moisture Content % 10.1 CP05-EAARS-CB-0365
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	0.0	32.9	7.3	18.4	17.1		24.3
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			12.7439	2.0512	0.8540	0.1557	
Material Description							USCS AASHTO
○ Silty sand with gravel						SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Source of Sample: CB268 Depth: 1.5'-3.0' Sample Number: CB268	Remarks: ○ Moisture Content % 12.9 CP05-EAARS-CB-0365
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



Project No. 05-05-0013- **Client:** Black & Veatch
Project: E.A.A (Reservoir)W/O#6

Remarks:

- Moisture Content % 87.5 CP05-
EAARS-CB-0365

Source of Sample: CB268 Depth: 3.5'-5.0 Sample Number: CB268

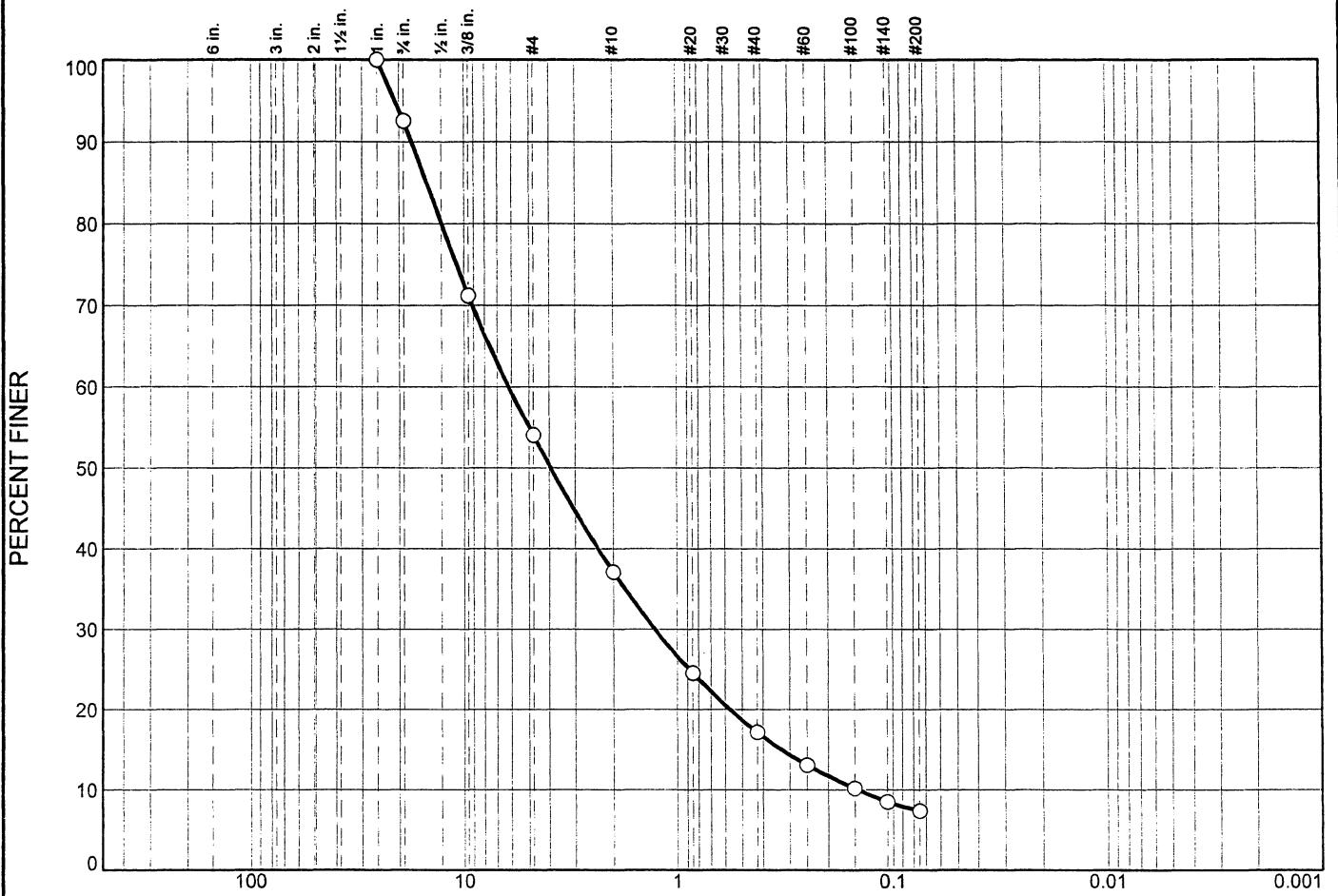
Nodarse & Associates, Inc.

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	7.4	38.5	17.0	19.9	9.8	7.4
○							

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○		14.8118	6.1887	3.9230	1.2769	0.3276	0.1446	1.82	42.80
○									

Material Description			USCS	AASHTO
○ Poorly graded sand with silt and gravel			SP-SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Source of Sample: CB268 Depth: 5.0'-6.5' Sample Number: CB268	Remarks: ○ Moisture Content % 12.8 CP05-EAARS-CB-0365
Nodarse & Associates, Inc.	

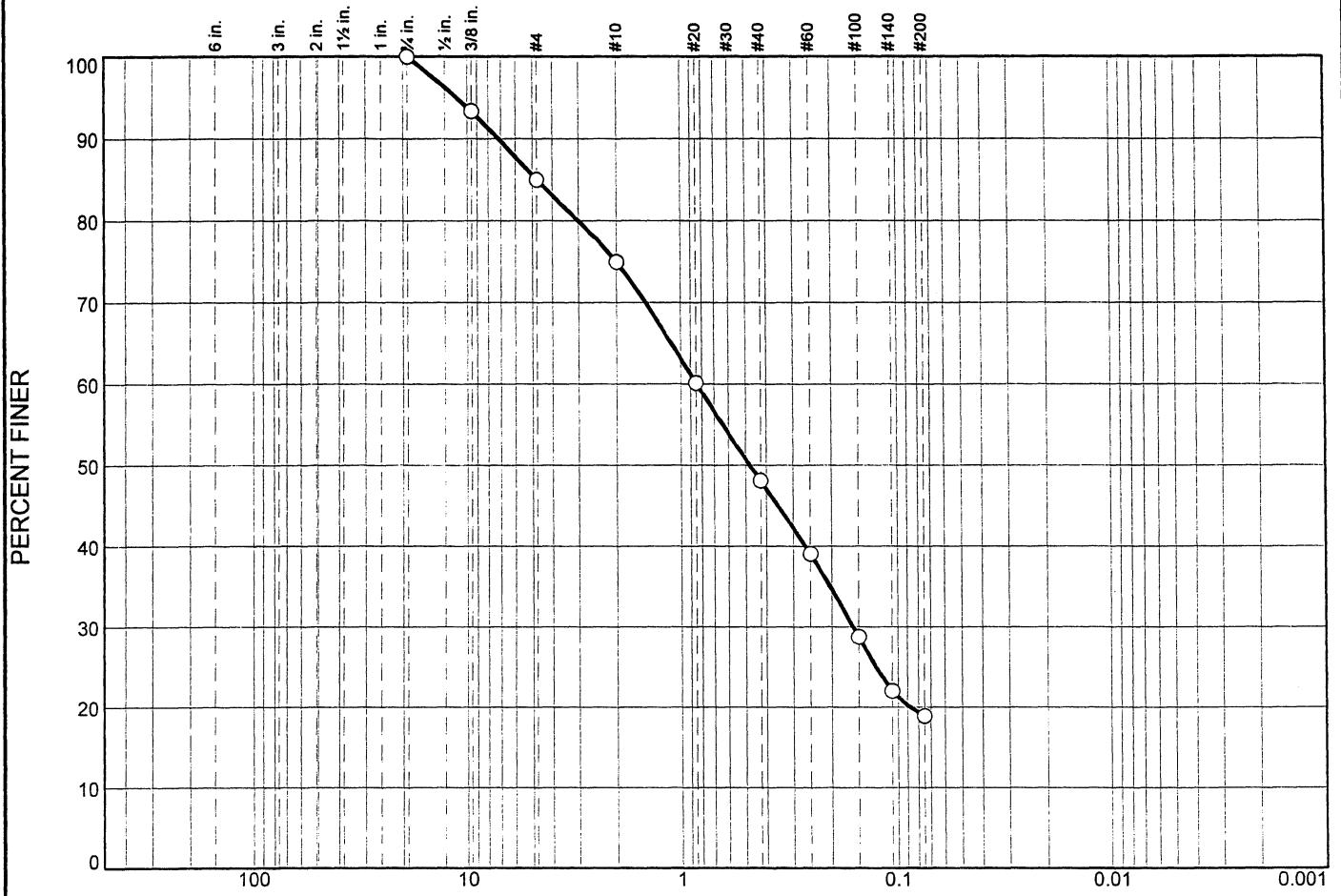
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	0.0	15.0	10.0	26.9	29.2		18.9
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			4.7460	0.8429	0.4759	0.1589	
Material Description							USCS
○ Silty sand with gravel							SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir) W/O#6	○ Moisture Content % 29.3 CP05- EAARS-CB-0365
○ Source of Sample: CB268 Depth: 11.5'-13.0 Sample Number: CB268	

Remarks:
 Moisture Content % 29.3 CP05- EAARS-CB-0365

Nodarse & Associates, Inc.

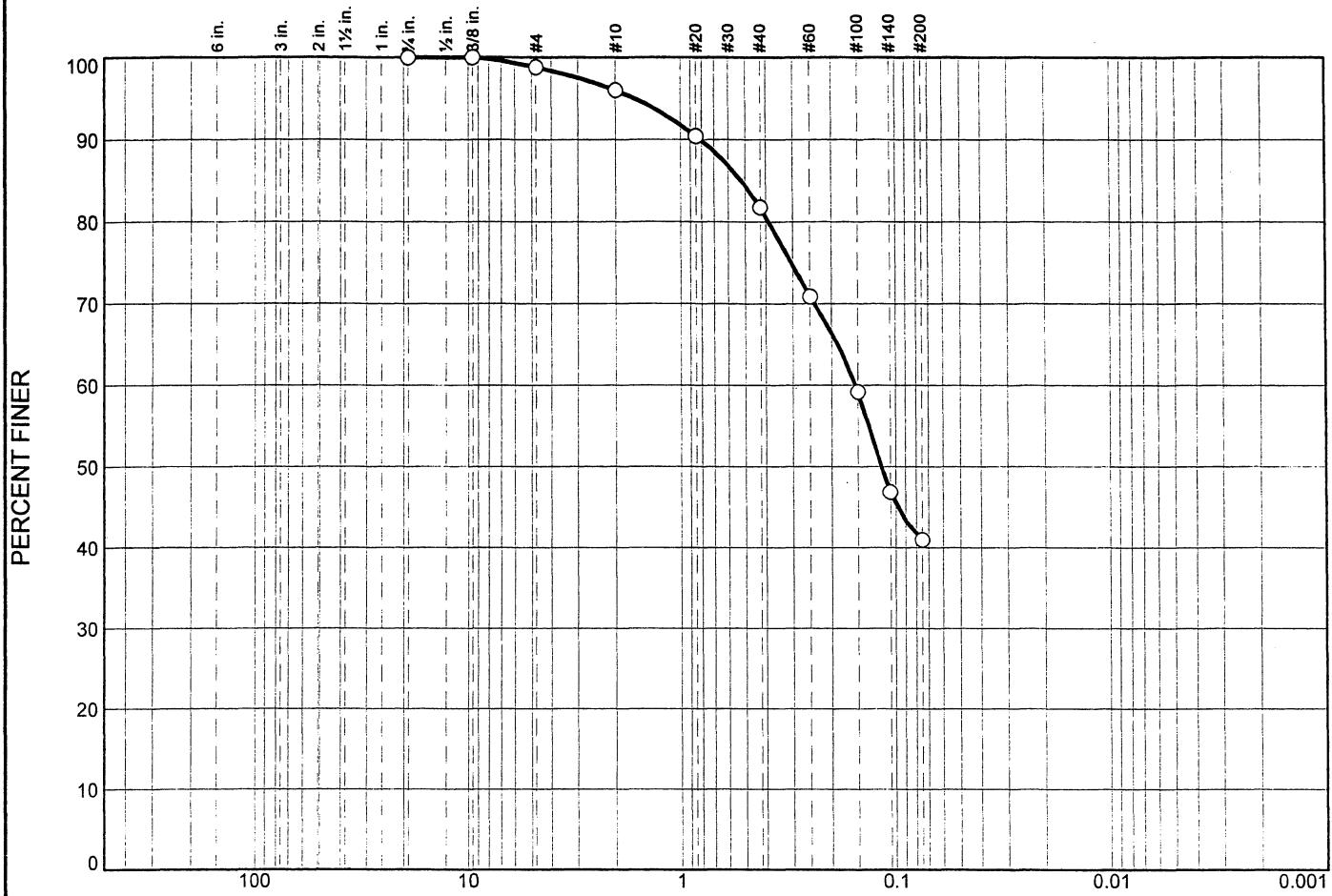
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0.0	0.0	1.2	2.8	14.2	40.8	41.0	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	
<input type="radio"/>			0.5194	0.1536	0.1167			
Material Description							USCS	AASHTO
<input type="radio"/> Silty sand							SM	

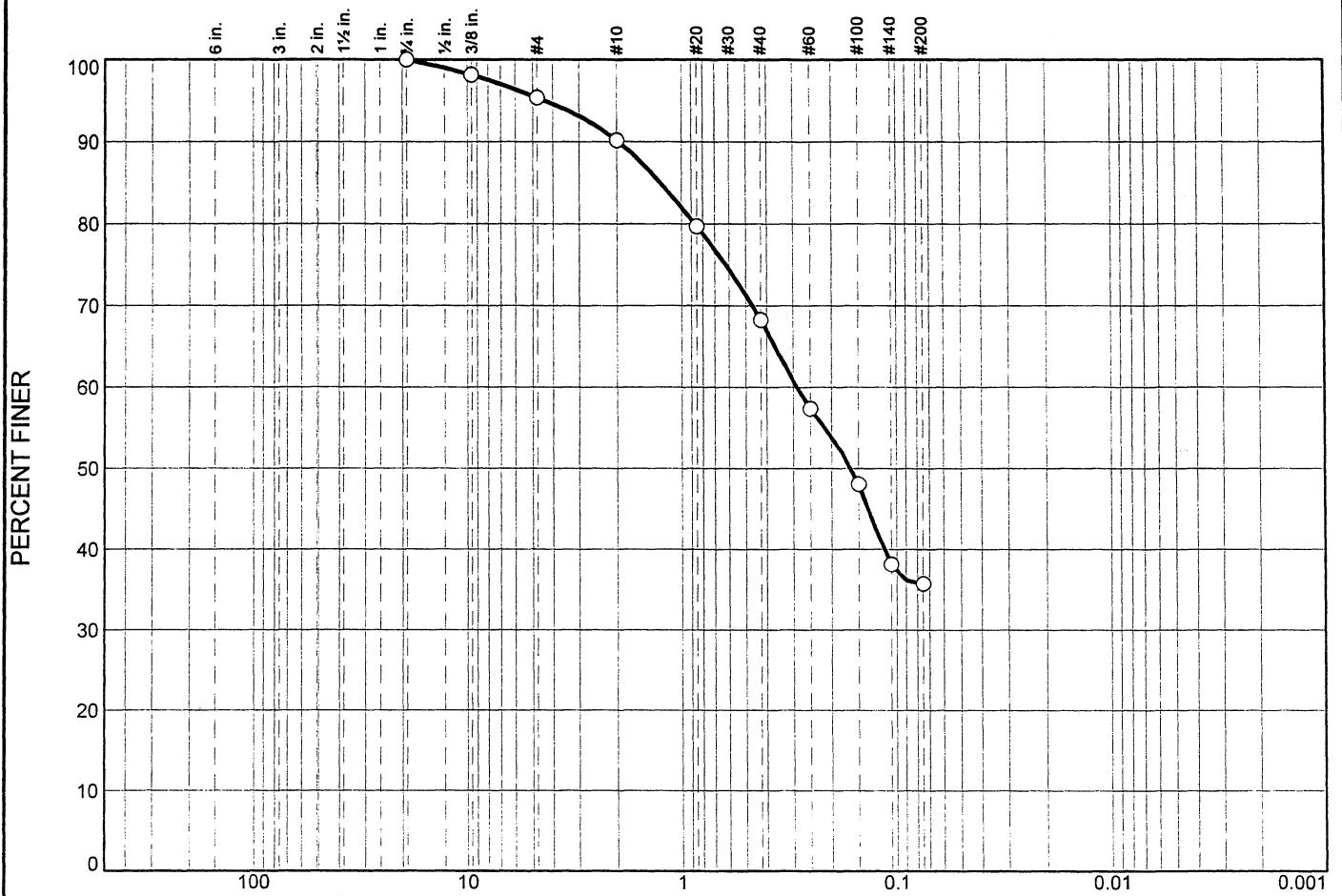
<p>Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 <input type="radio"/> Source of Sample: CB268 Depth: 18.5'-22.0' Sample Number: CB268</p> <p>Nodarse & Associates, Inc. Miami Lakes, FL</p>	<p>Remarks: <input type="radio"/> Moisture Content % 23.0 CP05-EAARS-CB-0365</p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



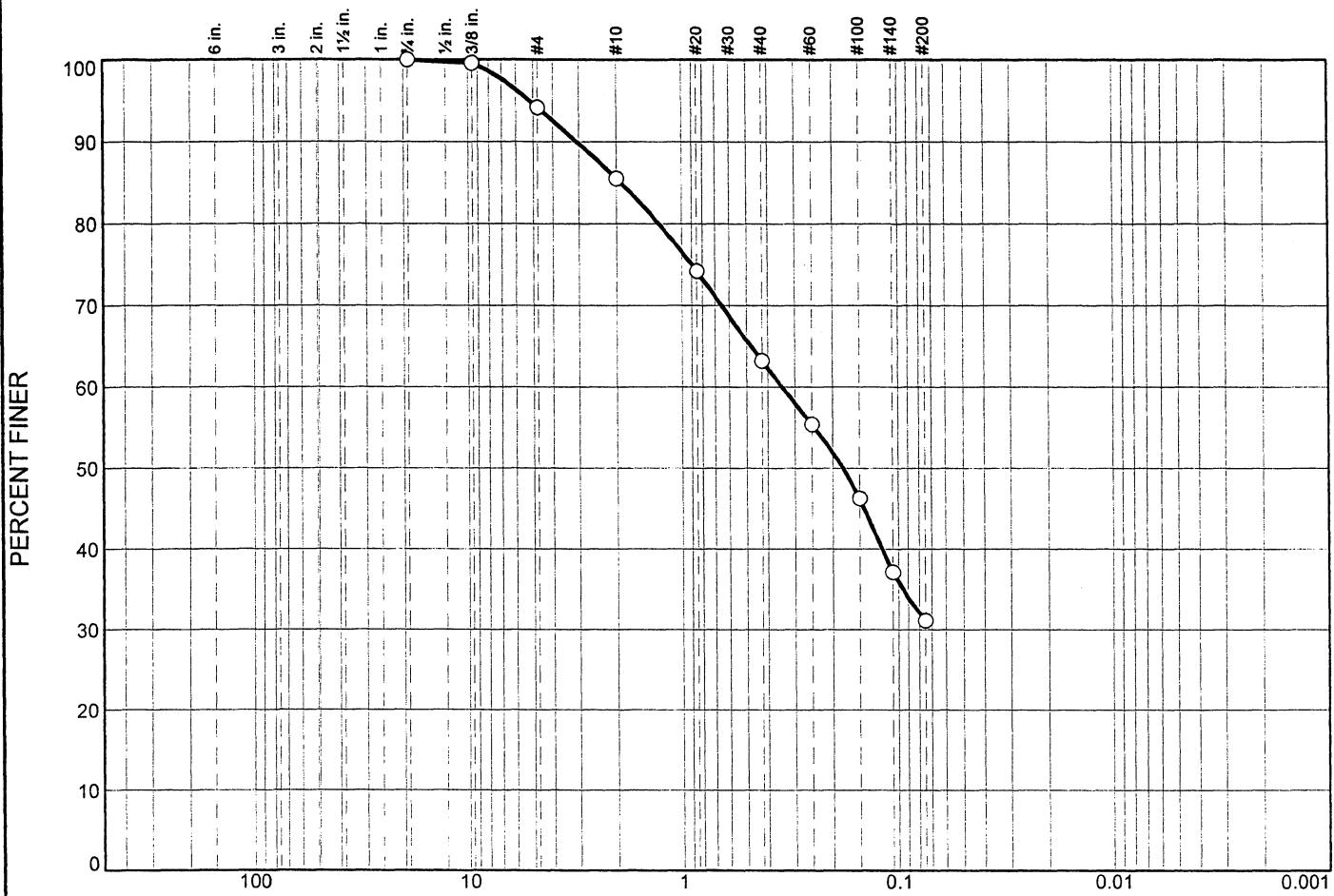
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	0.0	4.6	5.2	21.9	32.6		35.7
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			1.2520	0.2875	0.1620		
Material Description							USCS AASHTO
○ Silty sand						SM	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir) W/O#6	○ Moisture Content % 22.5 CP05-EAARS-CB-0365
○ Source of Sample: CB268 Depth: 23.5'-25.0 Sample Number: CB268	

Nodarse & Associates, Inc.
Miami Lakes, FL

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	5.8	8.7	22.3	32.1	31.1
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			1.9072	0.3429	0.1781		
Material Description							USCS
○ Silty sand							SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)W/O#6

○ Source of Sample: CB268 Depth: 28.5'-30.0 Sample Number: CB268

Remarks:

○ Moisture Content % 20.5 CP05-
EAARS-CB-0365

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.9	21.3	22.0	22.3	19.8	10.7	

Material Description	USCS	AASHTO
○ Poorly graded sand with silt and gravel	SP-sm	

Project No. 05-05-0013- **Client:** Black & Veatch
Project: E.A.A (Reservoir)W/O#6

Source of Sample: CB268 **Depth:** 33.5'-35.0'

© 2006 by Campbell Wiley

Source of Sample: CB268 **Depth:** 33.5'-35.0' **Sample Number:** CB268

Source of Sample: CB268 **Depth:** 33.5'-35.0' **Sample Number:** CB268

1

Remarks:

Nodarse & Associates, Inc.

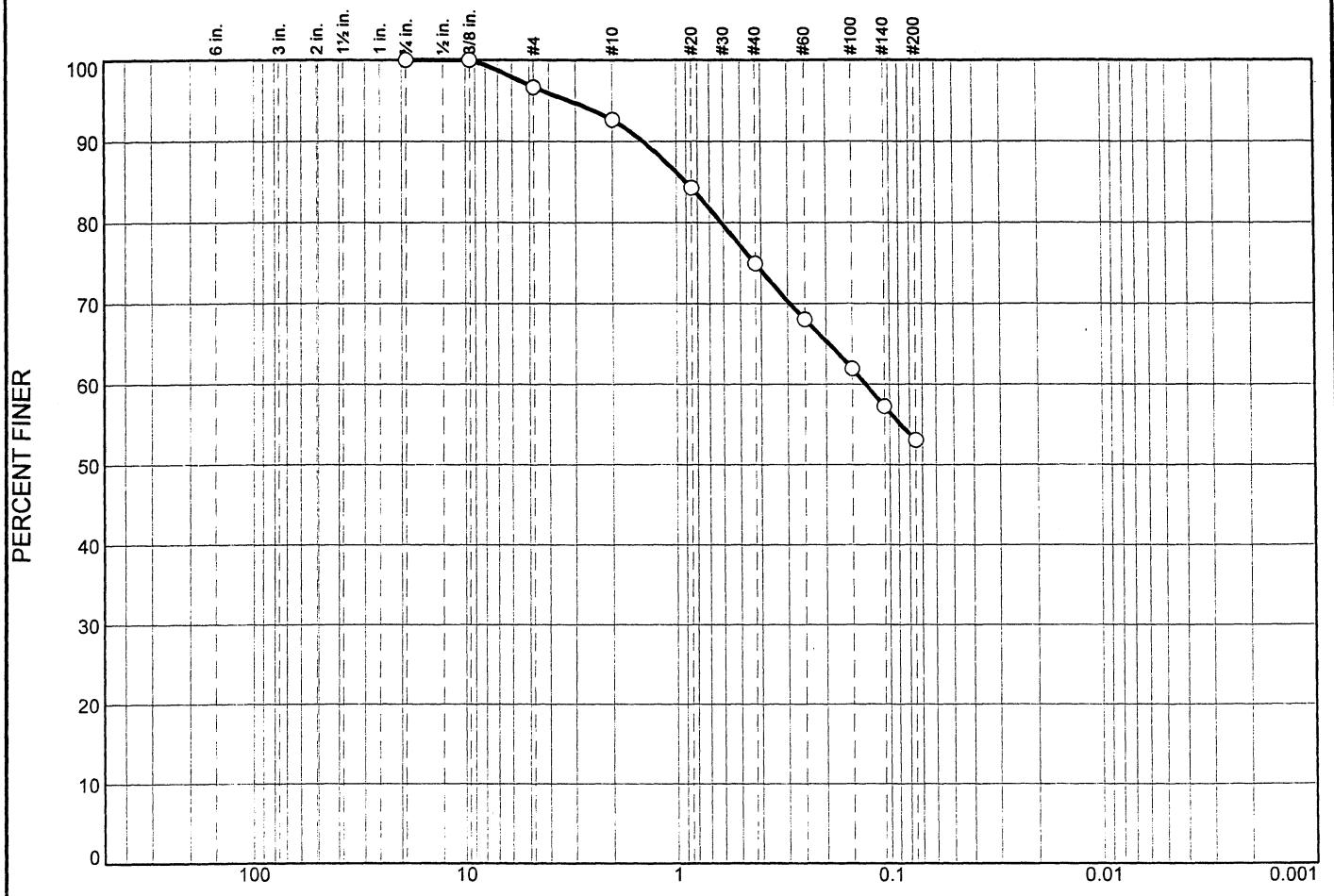
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○ 0.0	0.0	3.3	4.1	17.6	21.9		53.1
✗ LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
○		0.9016	0.1296				
Material Description							USCS
○ Sandy silt							ML
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir) W/O#6	○ Moisture Content % 19.0 CP05-EAARS-CB-0372
○ Source of Sample: CB276 Depth: 14.5'-16.0'	Sample Number: CB276
Nodarse & Associates, Inc.	

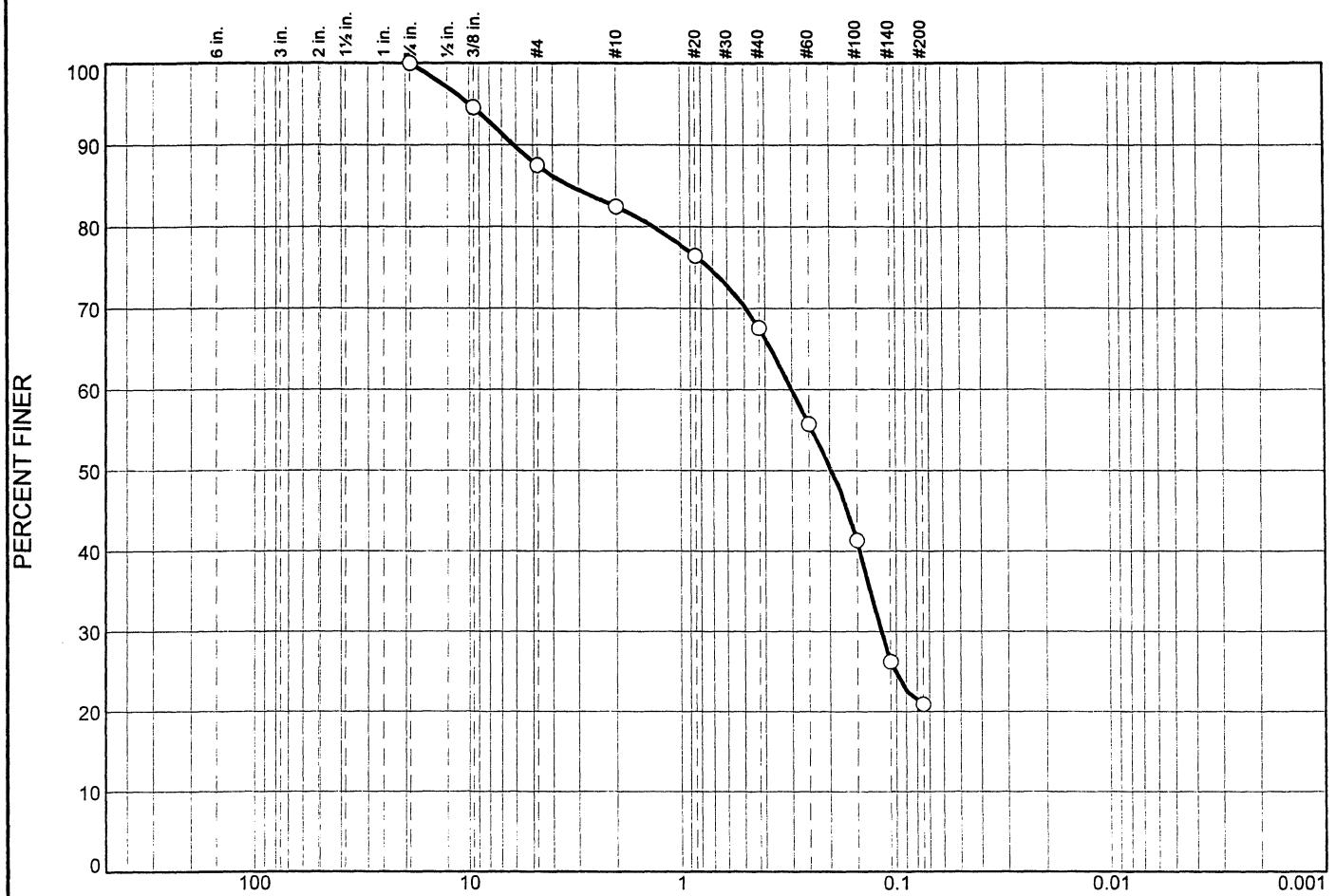
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	12.5	5.0	14.9	46.7	20.9

Material Description	USCS	AASHTO
○ Silty sand with gravel	SM	

Project No. 05-05-0013- **Client:** Black & Veatch
Project: E.A.A (Reservoir)W/O#6

○ **Source of Sample:** CB277 **Depth:** 19.0'-20.5' **Sample Number:** CB277

Remarks:

Nodarse & Associates, Inc.

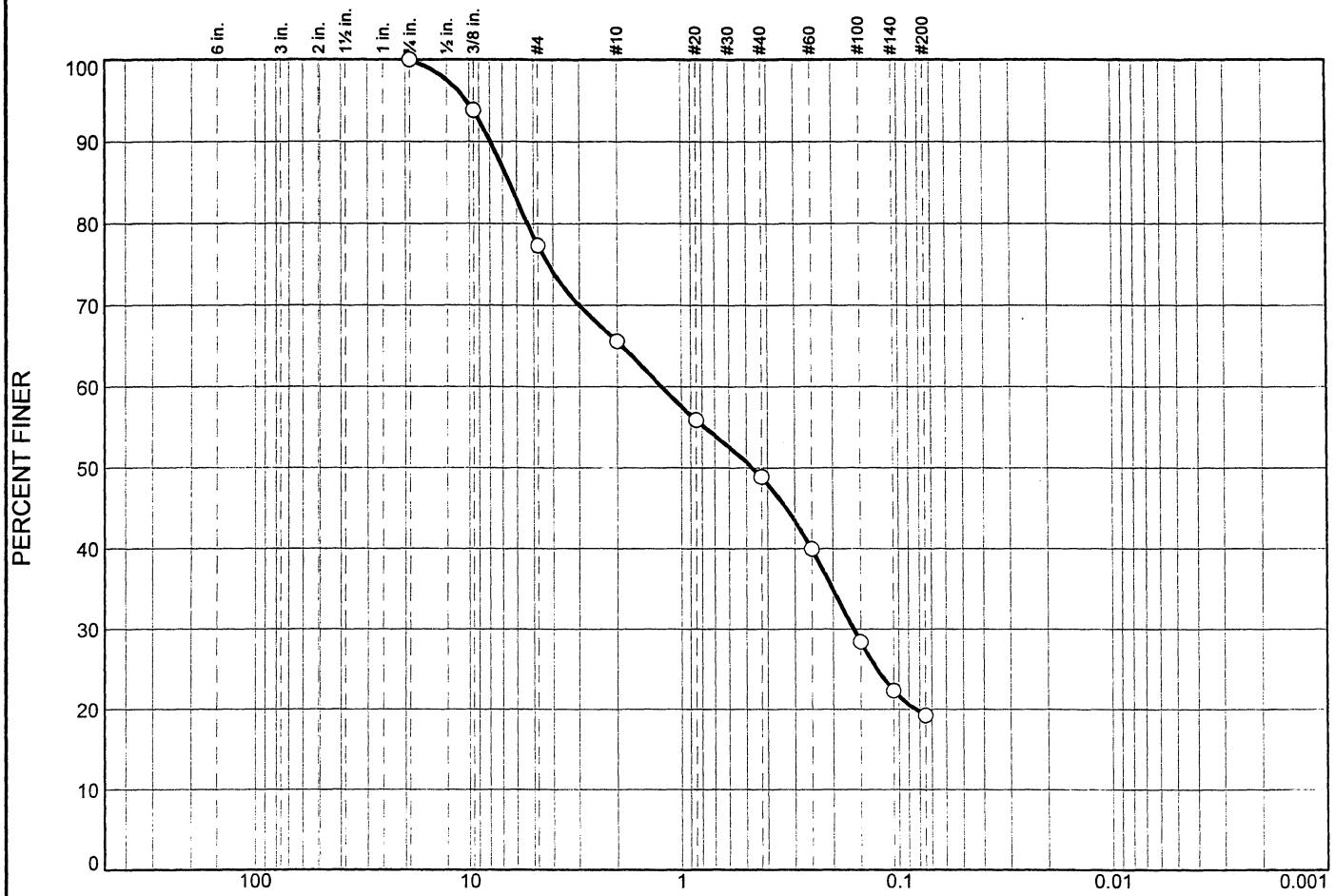
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	22.7	11.7	16.7	29.7	19.2
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			6.5031	1.2320	0.4654	0.1611	
Material Description							USCS
○ Silty sand with gravel							SM
							AASHTO

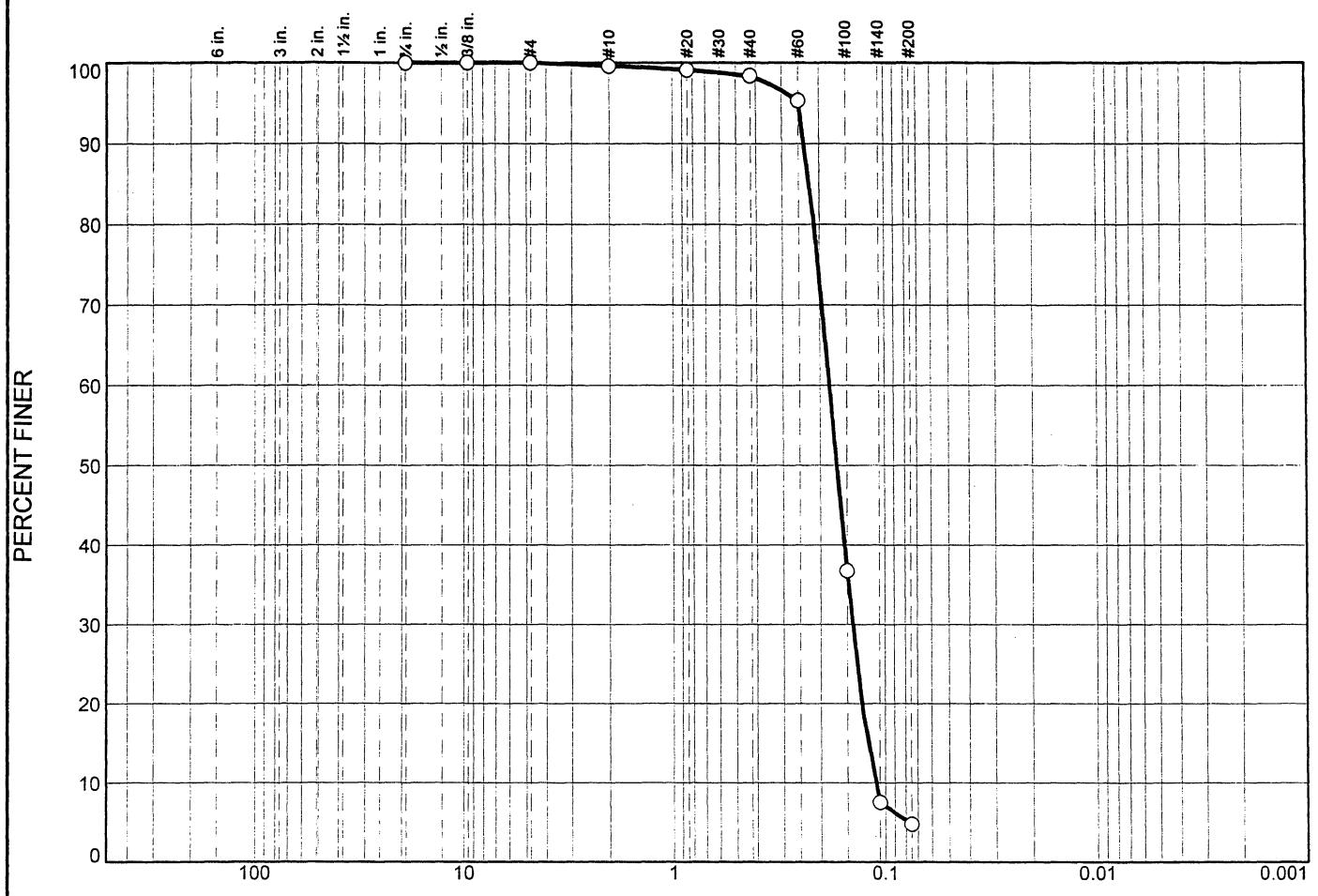
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 ○ Source of Sample: CB277 Depth: 29.0'-30.5' Sample Number: CB277	Remarks: ○ Moisture Content % 21.6 CP05-EAARS-CB-0373
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
<input type="radio"/>	0.0	0.0	0.0	0.4	1.2	93.6		4.8	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
<input type="radio"/>			0.2214	0.1799	0.1667	0.1414	0.1204	0.1116	1.00
									1.61

Material Description				USCS	AASHTO
<input type="radio"/> Poorly graded sand				sp	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir) W/O#6	<input type="radio"/> Moisture Content % 25.5 CP05-EAARS-CB-0373
<input type="radio"/> Source of Sample: CB277 Depth: 34.0'-35.5' Sample Number: CB277	

Moisture Content % 25.5 CP05-EAARS-CB-0373

Nodarse & Associates, Inc.

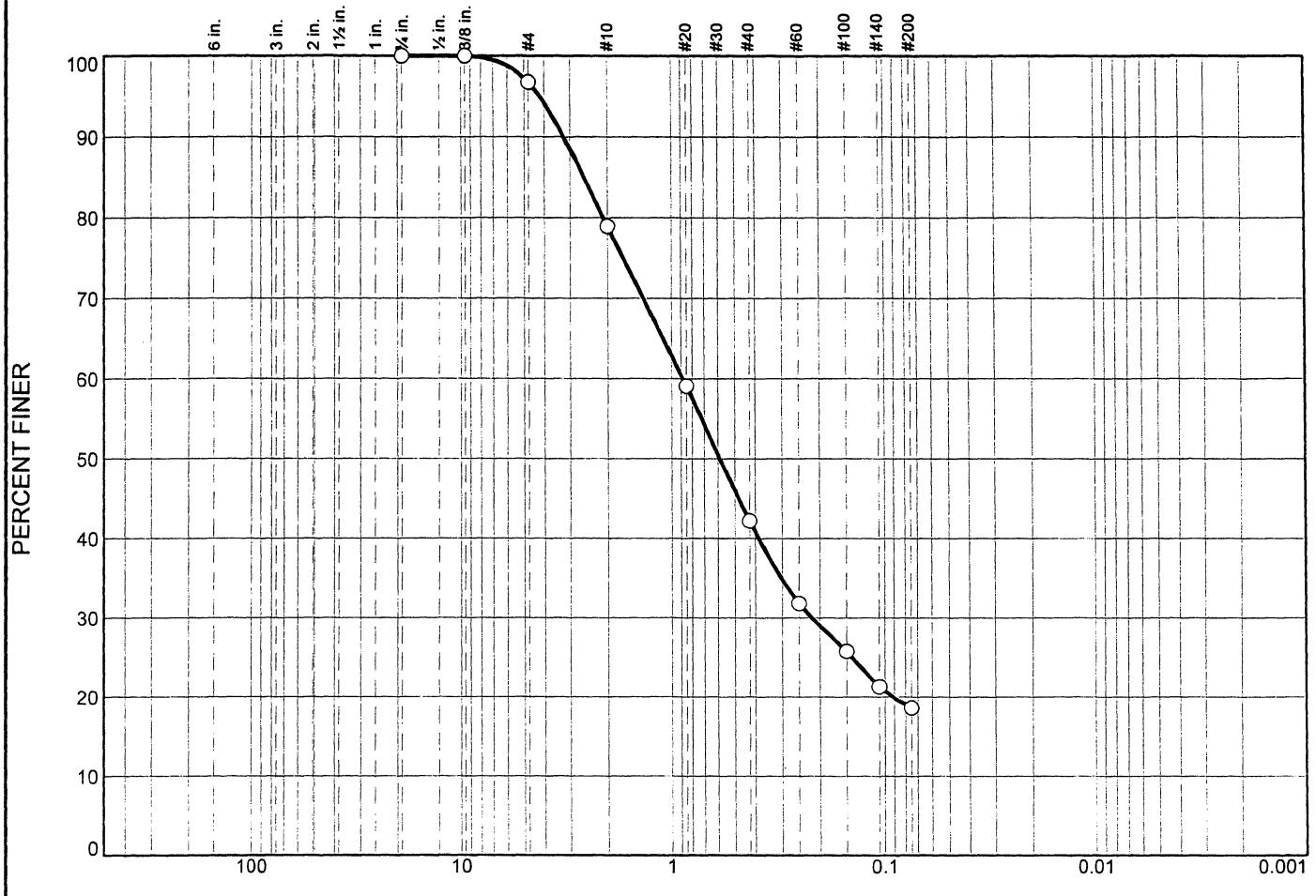
Miami Lakes, FL

Figure

Tested By: Bolooki

Checked By: K Leung

Particle Size Distribution Report



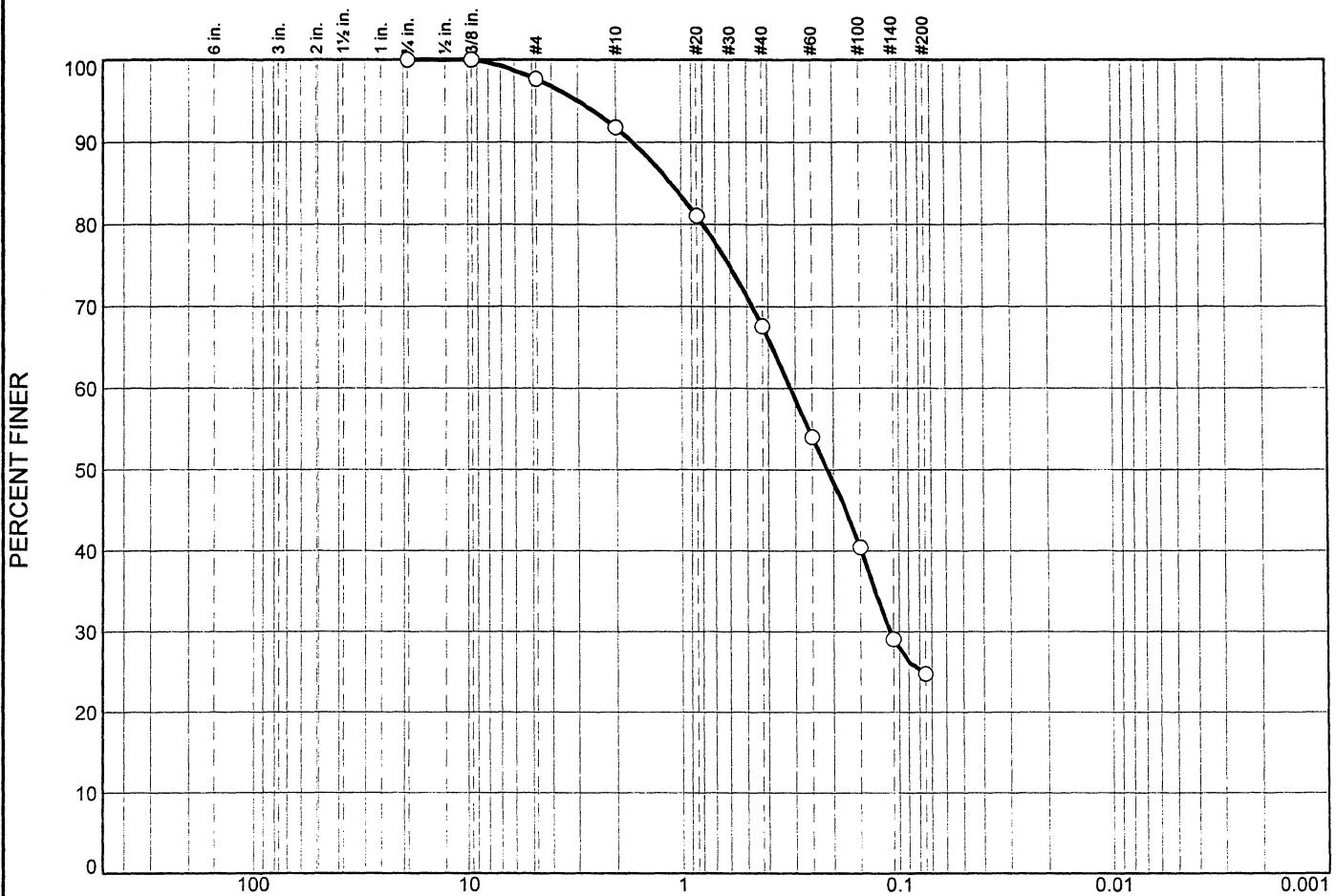
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0.0	0.0	3.2	17.8	36.8	23.6	18.6
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			2.5756	0.8822	0.5869	0.2173	
Material Description							USCS
<input type="radio"/> Silty sand with gravel							SM
							AASHTO

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)W/O#6	<input type="radio"/> Moisture Content %18.2 CB05-FAARS-CB-0377
<input type="radio"/> Source of Sample: CB281 Depth: 15.5'-17.0'	Sample Number: CB281
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Tested By: Bolooki Checked By: K Leung

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0.0	0.0	2.3	5.9	24.2	42.8	24.8
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			1.1108	0.3153	0.2118	0.1100	
Material Description							USCS
<input type="radio"/> Silty sand							SM
							AASHTO

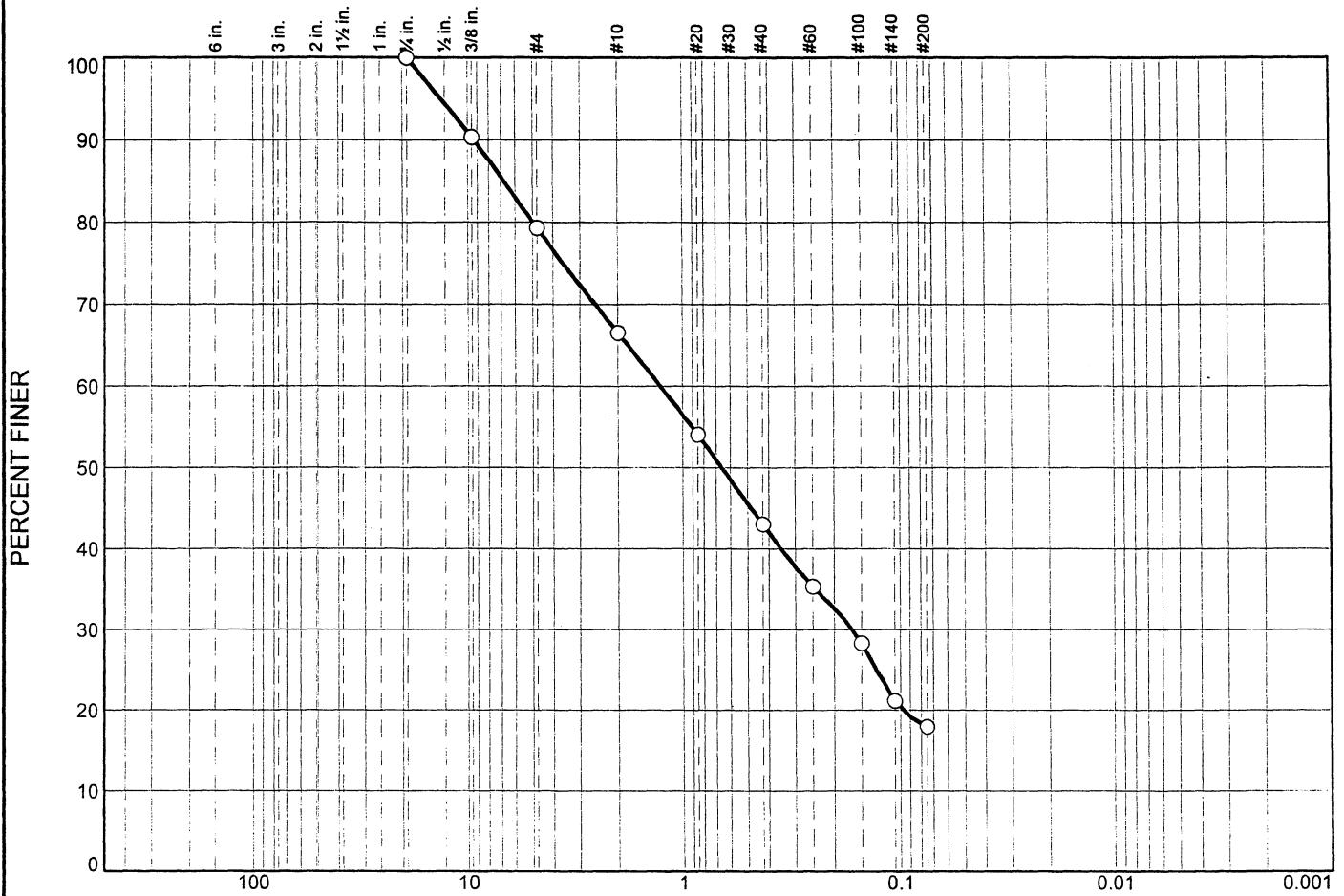
Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir) W/O#6	<input type="radio"/> Moisture Content % 26.1 CB05-EAARS-CB-0377
<input type="radio"/> Source of Sample: CB281 Depth: 19'-20.5' Sample Number: CB281	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Figure

Tested By: Bolooki

Checked By: K Leung

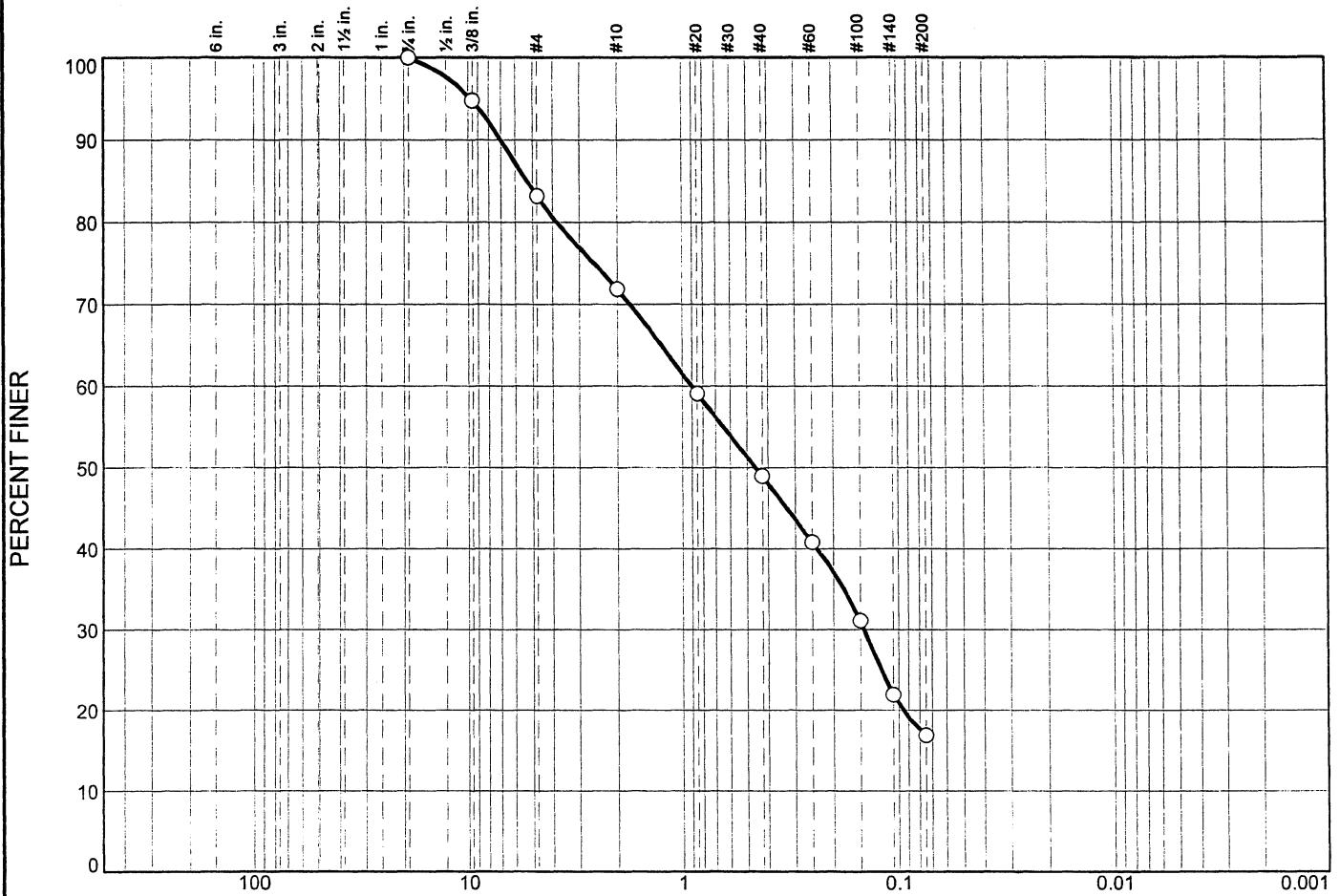
Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	20.7	12.8	23.5	25.0	18.0
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
○			6.7792	1.2674	0.6570	0.1652	
Material Description							USCS AASHTO
○	Silty sand with gravel					SM	

Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6 ○ Source of Sample: CB281 Depth: 24.0'-25.5' Sample Number: CB281			Remarks: ○ Moisture Content % 19.3 CB05-EAARS-CB-0377
Nodarse & Associates, Inc. Miami Lakes, FL			Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0.0	0.0	16.8	11.3	22.9	32.1	16.9
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅
<input type="radio"/>			5.2904	0.9019	0.4549	0.1437	
Material Description							USCS
<input type="radio"/> Silty sand with gravel							SM
							AASHTO

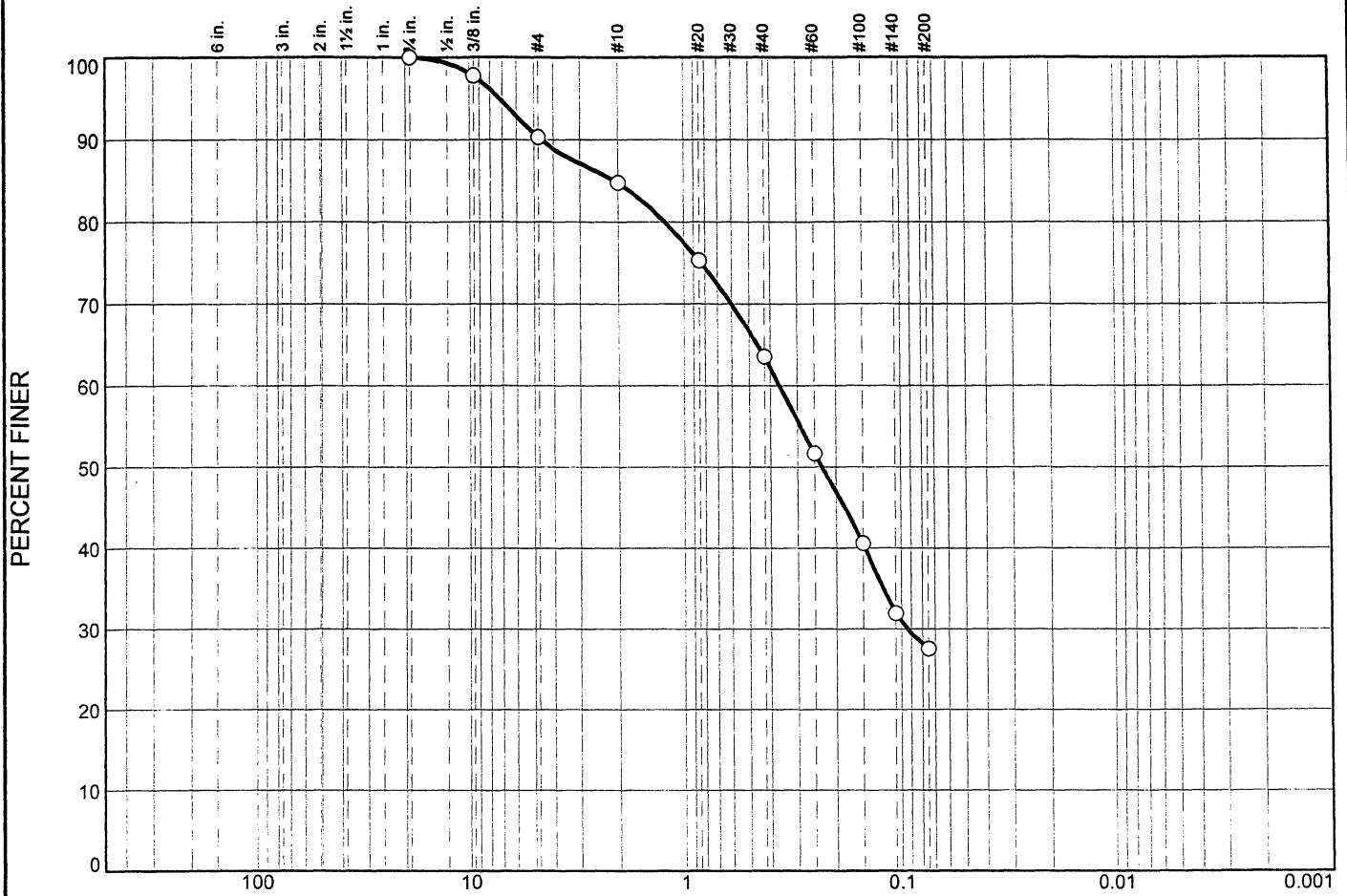
Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir) W/O#6 <input type="radio"/> Source of Sample: CB281 Depth: 29.0'-30.5' Sample Number: CB281	Remarks: <input type="radio"/> Moisture Content % 14.7 CB05-EAARS-CB-0377
Nodarse & Associates, Inc. Miami Lakes, FL	

Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report



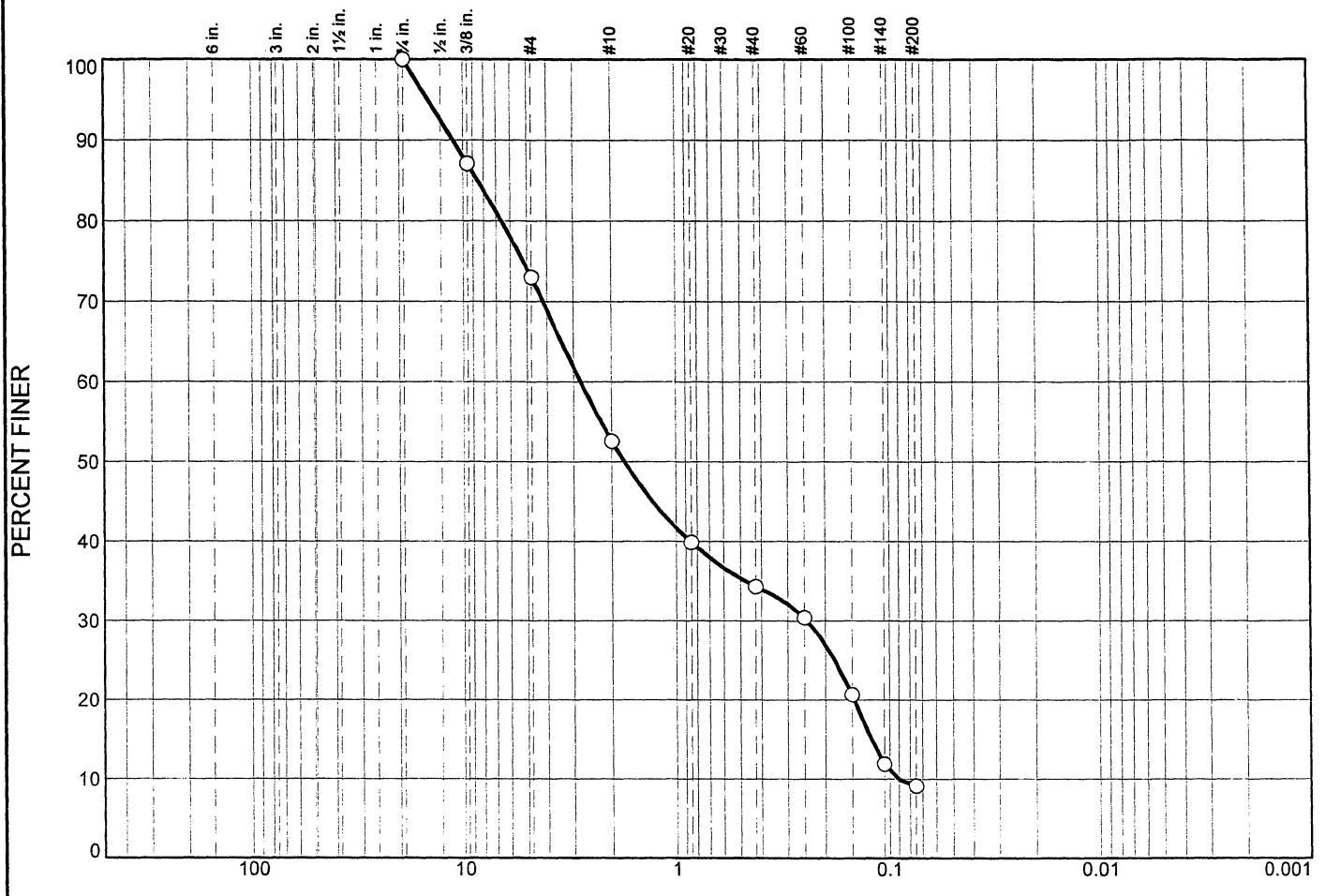
% +3"	% Gravel			% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0.0	0.0	9.7	5.5	21.2	36.0		27.6	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="radio"/>			2.0697	0.3611	0.2308	0.0940			
Material Description								USCS	AASHTO
<input type="radio"/> Silty sand with gravel								SM	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir) W/O#6	<input type="radio"/> Moisture Content % 25.8 CP05-EAARS-CB-0406
<input type="radio"/> Source of Sample: CB310	Depth: 23.5'-25.0'
Sample Number: CB310	
Nodarse & Associates, Inc.	
Miami Lakes, FL	

Remarks:
 Moisture Content % 25.8 CP05-EAARS-CB-0406

Figure

Particle Size Distribution Report



% +3"	% Gravel			% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0.0	0.0	27.0	20.4	18.3	25.2		9.1	
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c C _u
<input type="radio"/>			8.5204	2.7741	1.7491	0.2417	0.1218	0.0902	0.23 30.74
Material Description								USCS	AASHTO
<input type="radio"/> Poorly graded sand with silt and gravel								SP-SM	

<p>Project No. 05-05-0013- Client: Black & Veatch Project: E.A.A (Reservoir)W/O#6</p> <p><input type="radio"/> Source of Sample: CB310 Depth: 33.5'-35.0' Sample Number: CB310</p>	<p>Remarks: <input type="radio"/> Moisture Content % 12.8 CP05-EAARS-CB-0406</p>
Nodarse & Associates, Inc.	
Miami Lakes, FL	

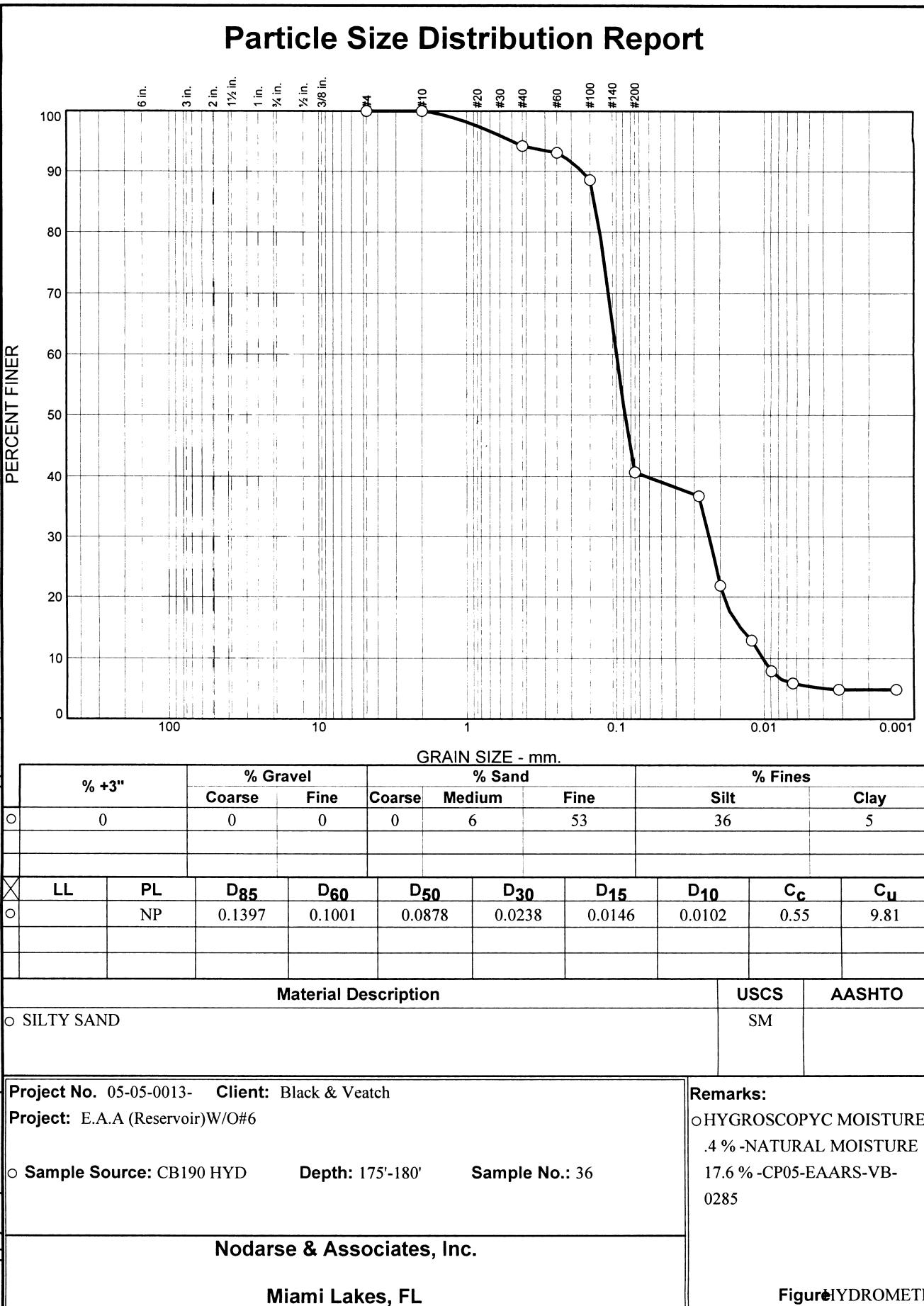
Tested By: Bolooki

Checked By: K Leung

Figure

Particle Size Distribution Report

These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.

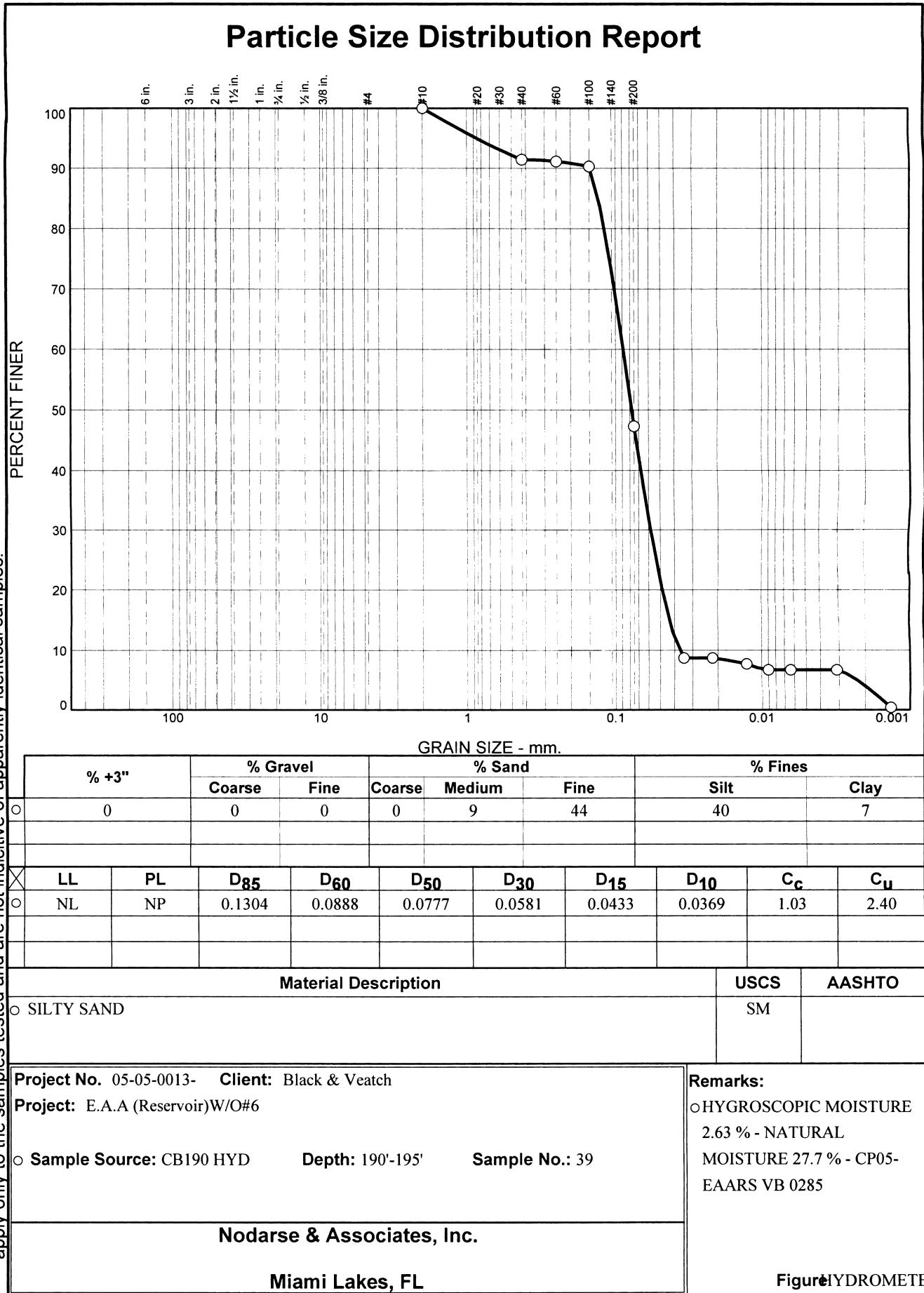


Tested By: CAMARAZA Checked By: MAZO

Figure HYDROMETE

Particle Size Distribution Report

These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.

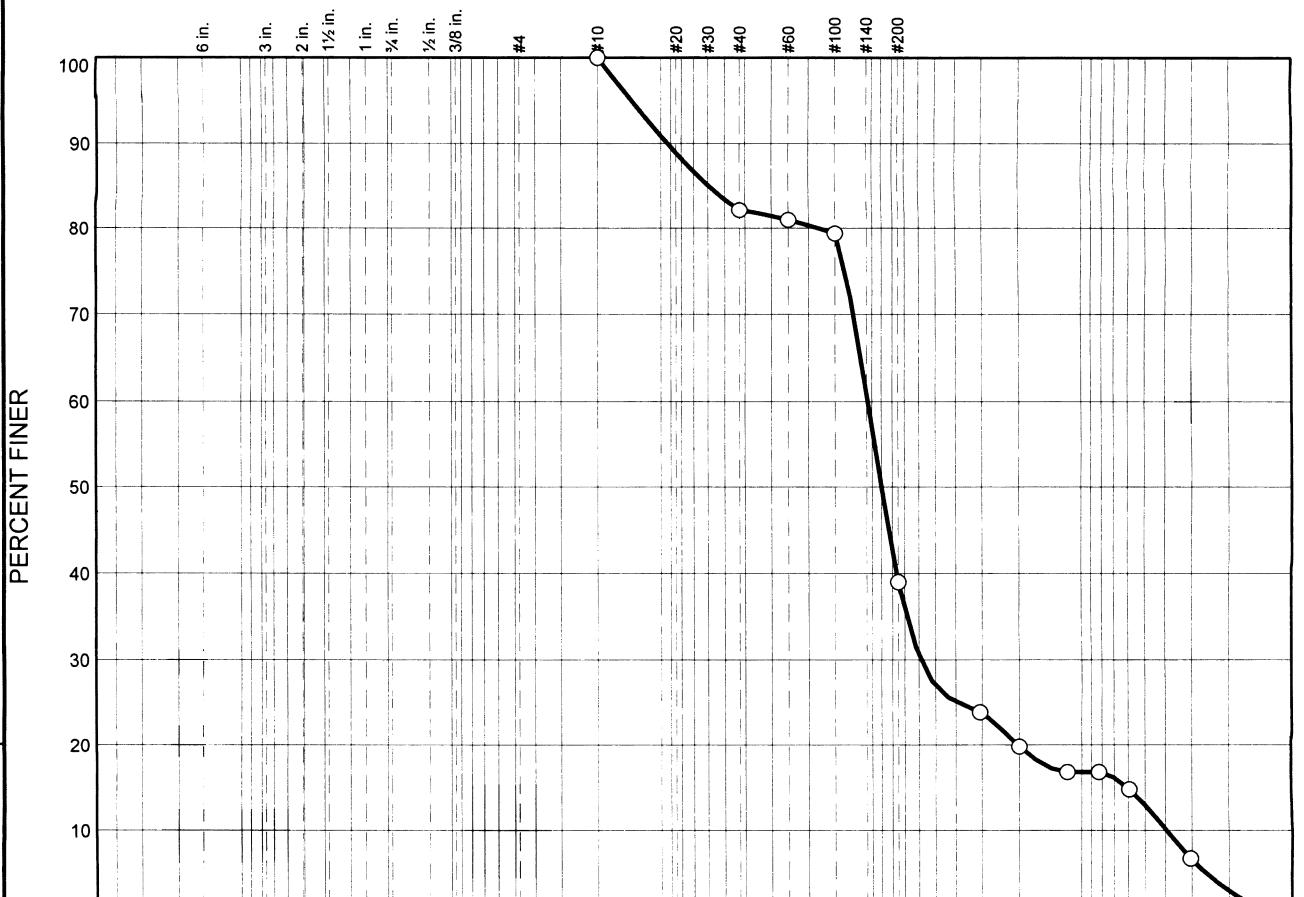


Tested By: CAMARAZA

Checked By: MAZO

Particle Size Distribution Report

These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	18	43	26	13
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
	NP	0.5911	0.1047	0.0903	0.0587	0.0061	0.0040

Material Description			USCS	AASHTO
SILTY SAND			SM	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)W/O#6	○ HYGROSCOPIC MOISTURE 4.0 % -NATURAL MOISTURE 31.8 % -CP05-EAARS-VB-0285.
Sample Source: CB190 HYD Depth: 205'-210' Sample No.: 44	

Nodarse & Associates, Inc.

Miami Lakes, FL

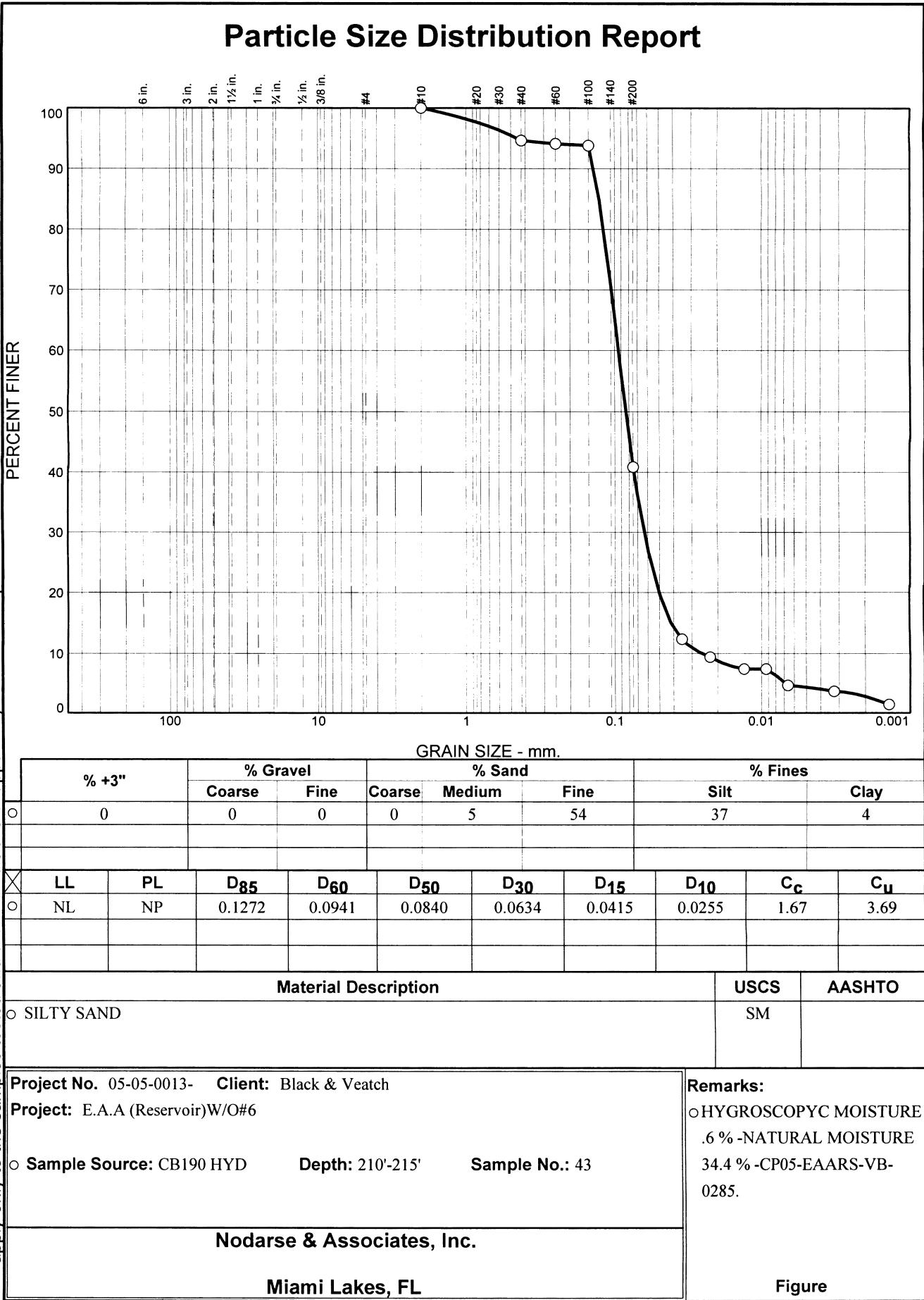
Figure 1 YDROMETE

Tested By: CAMARAZA

Checked By: MAZO

Particle Size Distribution Report

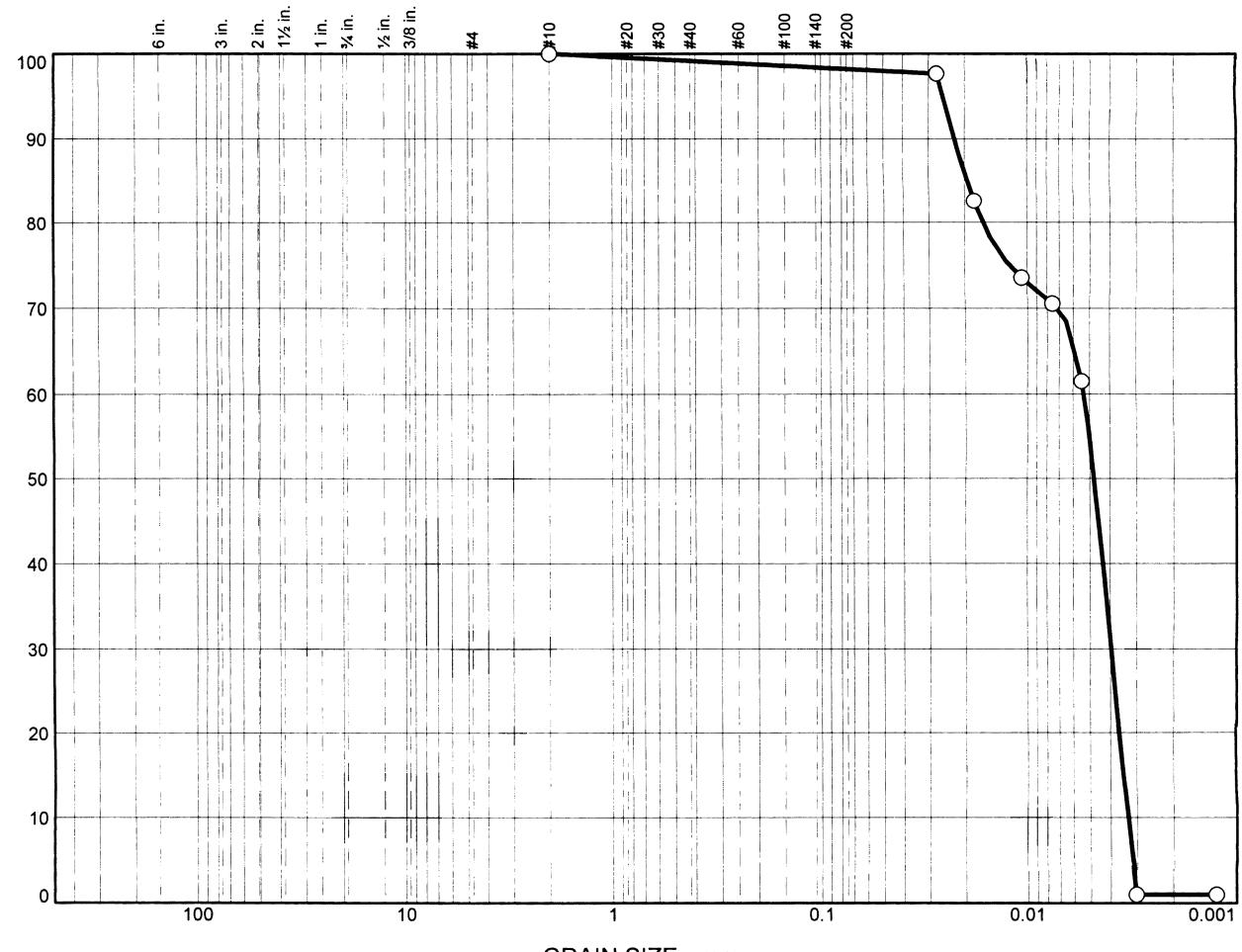
These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.



Tested By: CAMARAZA

Checked By: MAZO

Particle Size Distribution Report



These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.

	% +3"		% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
	0	0	0	1	1	43	55			
	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
	65	24	0.0195	0.0053	0.0048	0.0040	0.0035	0.0033	0.89	1.61

Material Description				USCS	AASHTO
SANDY ELASTIC SILT				MH	

Project No. 05-05-0013- Client: Black & Veatch

Project: E.A.A (Reservoir)W/O#6

Sample Source: CB190 HYD Depth: 215'-220' Sample No.: 44

Remarks:

HYGROSCOPIC MOISTURE
7.7 -NATURAL MOISTURE
43.3 % -CP05-EAARS-VB-0285

Nodarse & Associates, Inc.

Miami Lakes, FL

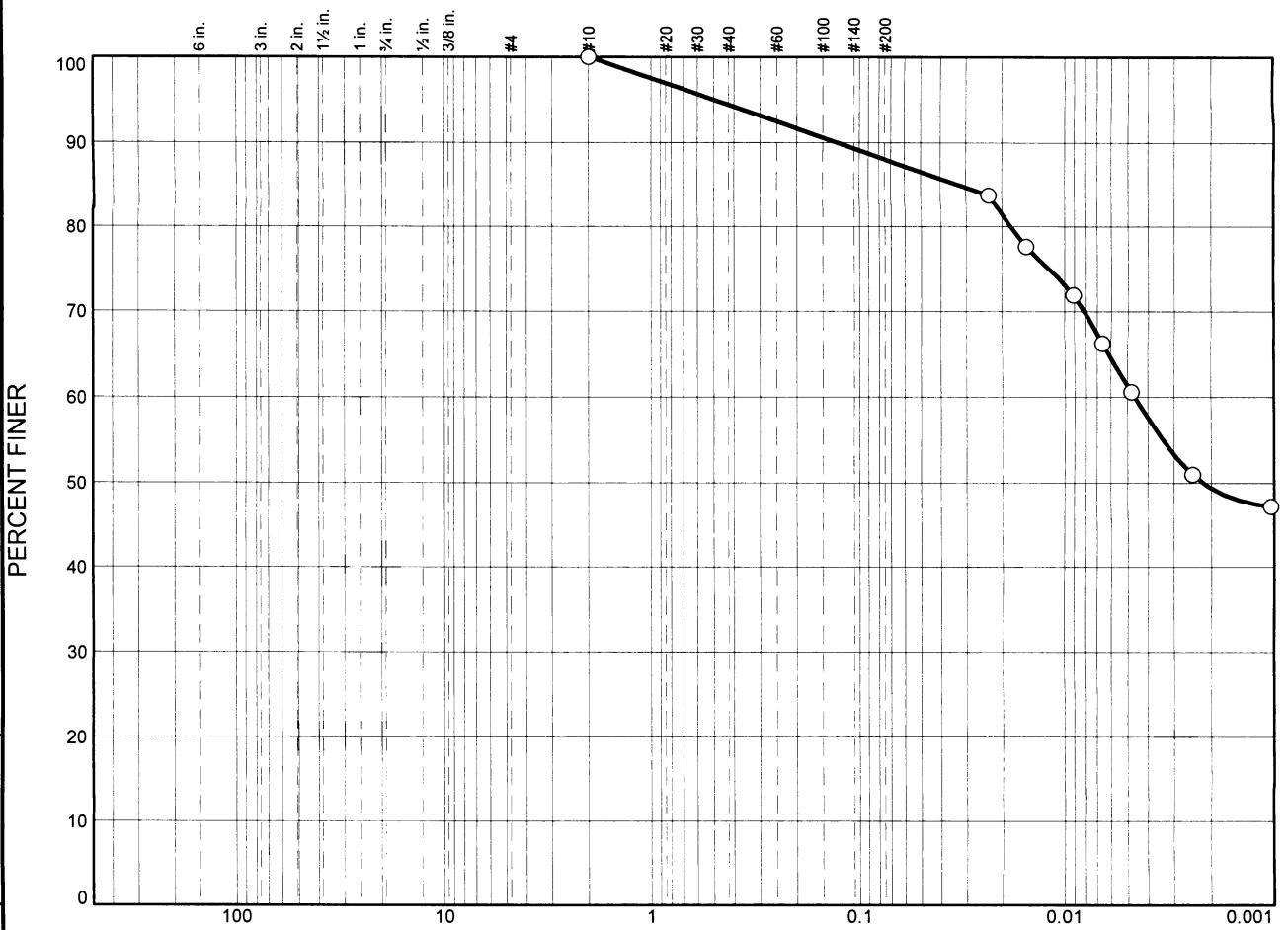
Figure HYDROMET

Tested By: CAMARAZA

Checked By: MAZO

Particle Size Distribution Report

These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	6	6	27	61
LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀
		0.0324	0.0046	0.0022			

Material Description	USCS	AASHTO
SANDY ELASTIC SILT -With green glauconite colour	MH	

Project No. 05-05-0013- Client: Black & Veatch	Remarks:
Project: E.A.A (Reservoir)W/O#6	○HYGROSCOPIC MOISTURE 9.6% - NATURAL MOISTURE
Source of Sample: CB190 HYD Depth: 225' Sample Number: 15E	CONTENT 101.4 % -CP05- EAARS-VB-0285-Insufficient sample for Atteberg limits.

Nodarse & Associates, Inc.

Miami Lakes, FL

Figure HYDROMETE

Tested By: CAMARAZA

Checked By: MAZO

Particle Size Distribution Report

These results are for the exclusive use of the client for whom they were obtained. They apply only to the samples tested and are not indicative of apparently identical samples.

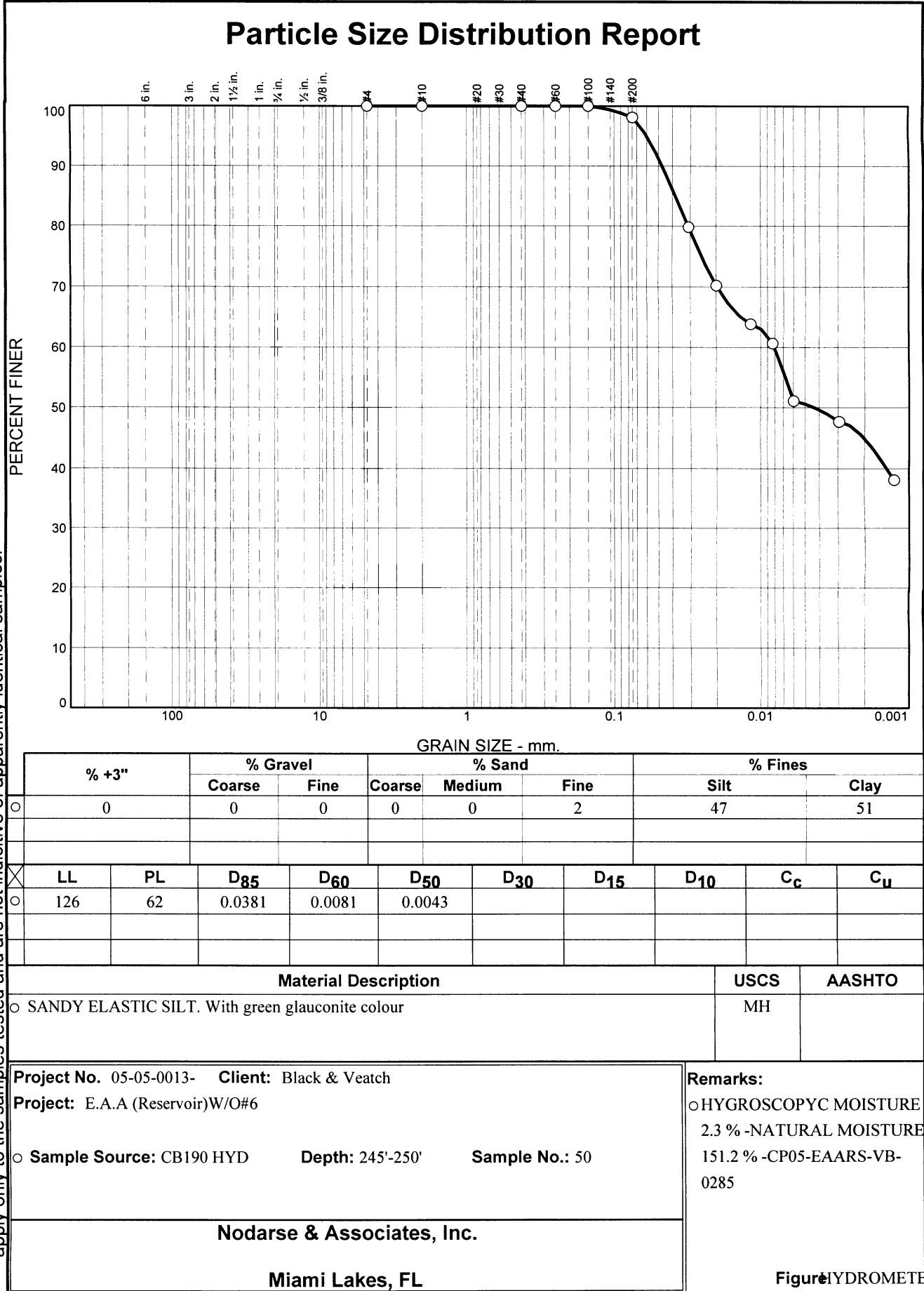


Figure HYDROMETE

Tested By: CAMARAZA

Checked By: MAZO

EAA Reservoir
Project 05 05 0013 016A
Work Order No: 4

Compressive Strength of Rock Cores

Core Identification	Core Depth (feet)	Compressive Strength (psi)
CB-0158	1.0-5.5	2600
CB-0159	4.75-9.75	1250
CB-0161	4.5-8.0	1430
CB-0163	5.5-10.5	4340
CB-0165	6.5-11.5	3690
CB-0167	6.5-11.5	1530
CB-0172	2.5-7.5	1570
CB-0173	5.0-5.5	1860
CB-0175	3.5-6.5	4620
CB-0176	1.0-5.0	2650
CB-0177	4.5-9.5	3090
CB-0178	9.5-12.0	433
CB-0179	0.4-3.5	1676
CB-0187	2.5-3	1105
CB-0187	25-30	2400
CB-0188	1.0-6.0	650
CB-0211	5.0-10.0	5200
CB-0212	10.0-15.0	2710
CB-0212	3.0-3.5	5920
CB-0184	4-9	1870

Notes:

1 Core compressive strength determined in general accordance with ASTM D2938

EAA Reservoir
Project 05 05 0013 016A
Work Order No: 6

Compressive Strength of Rock Cores

(P05 - EARS - CB)

Core Identification	Core Depth (feet)	Compressive Strength (psi)
CB-0248 - 0346	5.0-10.0	5010
CB-0260 - 0358	8.5-13.0	2500
CB-0268 - 0365	6.5-11.5	1500
CB-0276 - 0372	4.0-9.0	3570
CB-0276 - 0372	10.0-14.0	1570
CB-0277 - 0373	4.5-9.5	1000
CB-0277 - 0373	9.5-14.5	4430
CB-0281 - 0377	5.5-10.5	3880
CB-0281 - 0377	10.5-15.5	2250
CB-0302 - 0398	7.0-12.0	2100
CB-0302 - 0398	12.0-17.0	1040

Notes:

- 1 Core compressive strength determined in general accordance with ASTM D2938

Date: 10/18/2005
 Project No: 05-05-0013-101 W.O.#5
 Project Name: EAA Reservoir
 Requested by: Black & Veatch

Nodarse & Associates, Inc.

CP05 - STAR2S - C13

Sample No.	Length(inches)	Avg Diameter(inches)	Load (lbs)	Strength(psi)	Comments
CB_0162. 7-12 ft	-0266	4.83	2.48	47180	9768
CB-0191. 9.6-10.9ft	-0290	4.83	2.48	4220	874
CB-0191 24-29ft	-0290	4	2.48	10700	2215
CB-0194 41.5-45.5ft	-0293	83	2.49	5120	1053
CB-0204 10-15ft	-0303	4.86	2.49	41020	8389
CB-0206 9.5-14.5ft	-0304	4.86	2.49	15530	3195
CB-0208 8.25-11.0ft	-0306	4.86	2.49	39270	8080
CB-0216 26.1-27ft	-0314	4.86	2.46	14090	2979
CB-0216 32.9-34.1ft	-0314	4.73	2.49	23890	4916
CB-0220 19.9-25ft	-0318	4.86	2.49	4650	960
CB-0220 25.0-30.0ft	-0318	4.86	2.49	15040	3095
CB-0222 17.5-18.1ft	-0320	4.86	2.49	7200	1481
CB-0231 2.0-7.0ft	-0329	4.52	2.47	8440	1867
CB-0292 0-5.0ft	-0388	4.79	2.47	10150	2119
CB-0296 0-5.0ft	-0392	4.83	2.48	8720	1805

Nodarse & Associates, Inc.

Date: 10/4/2005

Project Name: EAA Resivior A-1

ASTM D 6473-99 Test Method

Project No: 05-05-0013-101 WO#5

Specific Gravity & Absorption
of Rock for Erosion Control

Tested by: Chris B

Depth See sample #

Checked by: Chris B

CP05 - LARRS - CBA

Sample No.	Wt.inH2O (C) gr.	SSD Wt. (B) gr.	Oven Dry Wt. (A) gr.	Bulk Sp G.	Bulk (SSD) Sp. Gr	Apparent Sp. Gr	Absorption	Comments
CB-0191 24-29ft	<i>-0296</i> 320.1	544.1	516.8	2.31	2.43	2.63	5.26	
CB-0194 37.8-38.5ft	<i>-0293</i> 663.1	1157.8	1062	2.14	2.34	2.66	9.02	
CB-0201 10-10.7ft	<i>-0300</i> 958.1	1631.5	1555.2	2.31	2.42	2.61	7.96	
CB-0204 10-15ft	<i>-0303</i> 548.2	981.7	889.1	2.05	2.26	2.61	10.43	
CB-0208 8.25-11ft	<i>-0306</i> 815.2	1346.1	1310.8	2.47	2.53	2.64	2.69	
CB-0220 19.9-25ft	<i>-0318</i> 562.5	1023.5	889.2	1.93	2.22	2.72	15.1	
CB-0220 25-30.0ft	<i>-0318</i> 658.2	1142.6	1059.4	2.19	2.36	2.31	7.85	

Bulk spec. gravity =A/(B-C)

Bulk spec. gravity(SSD)=B/(B-C)

Apparent spec. gravity=A(A-C)

Absorption = [(B-A)/A]X100%

EAA Reservoir
05 05 0013 106A
Work Order No: 4
Rock Core Specific Gravity and Absorption

CPO 5 - ERRORS

	Core Identification	Core Depth (feet)	Bulk Specific Gravity	Bulk (SSD) Specific Gravity	Apparent Specific Gravity	Absorption (%)
CB-0312	CB-0214	32.5-33.2	1.501	1.600	1.680	7.38
CB-0324	CB-0226	4.74-9.75	2.340	2.440	2.600	4.35
CB-0324	CB-0226	16.0-21.0	2.390	2.460	2.560	2.90
CB-0325	CB-0227	5.75-10.75	2.400	2.480	2.600	3.27
CB-0326	CB-0228	6.5-11.5	2.204	2.360	2.610	7.11
CB-0326	CB-0228	17.5-22.5	2.010	2.210	2.550	11.0
CB-0287	CB-0187	2.5-3.0	2.000	2.210	2.550	10.97
CB-0289	CB-0189	20.5-25.5	2.460	2.550	2.700	3.56
CB-0309	CB-0211	5.0-10.0	2.460	2.510	2.585	1.83
CB-0310	CB-0212	10.0-15.0	1.740	1.890	2.030	8.41
CB-0310	CB-0212	30.0-35.0	2.960	3.140	3.600	6.10
CB-0311	CB-0213	23.5-28.5	1.910	2.170	2.570	13.28
CB-0274	CB-0178	9.5-12.0	2.260	2.350	2.500	4.10
CB-0275	CB-0179	0.4-5.5	2.400	2.500	2.680	4.44
CB-0276	CB-0180	1.0-4.5	2.240	2.340	2.501	4.70
CB-0279	CB-0184	4.0-9.0	2.220	2.370	2.603	6.70
CB-0287	CB-0187	25.0-30.0	2.470	2.520	2.601	2.05
CB-0288	CB-0188	1.0-6.0	2.330	2.460	2.670	5.40
CB-0267	CB-0170	6.0-9.5	2.320	2.450	2.660	5.35
CB-0269	CB-0172	2.5-7.5	2.520	2.600	2.730	3.10
CB-0270	CB-0173	5.0-8.5	2.350	2.420	2.550	3.32
CB-0271	CB-0175	3.5-6.5	2.620	2.680	2.700	2.10
CB-0272	CB-0176	1.0-5.0	2.400	2.500	2.700	4.65
CB-0273	CB-0177	4.5-9.5	2.140	2.240	2.380	4.73
CB-0256	CB-0158	1.0-5.5	2.410	2.500	2.621	3.30
CB-0257	CB-0159	4.75-9.75	2.030	2.190	2.410	7.71
CB-0259	CB-0161	4.5-8.0	1.440	1.850	2.480	29.5

Notes:

- 1 Specific Gravity and Absorption determined in general accordance with ASTM D6473-99.

**EAA Reservoir
05 05 0013 106A
Work Order No: 4
Rock Core Specific Gravity and Absorption**

CPO5-ERRRS -

Notes:

2 Specific Gravity and Absorption determined in general accordance with
ASTM D6473-99.

EAA Reservoir

05 05 0013 106A

Work Order No: 6

Rock Core Specific Gravity and Absorption

CP05 - EARS - C3A

Core Identification	Core Depth (feet)	Bulk Specific Gravity	Bulk (SSD) Specific Gravity	Apparent Specific Gravity	Absorption (%)
CB-0248-0346	5.0-10.0	2.42	2.49	2.60	2.90
CB-0260-0358	2.0-7.0	2.40	2.50	2.50	1.51
CB-0260-0358	8.5-13.0	2.17	2.30	2.50	6.10
CB-0268-0365	6.5-11.5	1.84	2.13	2.60	16.00
CB-0276-0372	4.0-9.0	2.17	2.34	2.60	7.87
CB-0276-0372	10.0-14.0	2.36	2.45	2.60	3.97
CB-0277-0373	4.5-9.5	2.23	2.37	2.60	6.20
CB-0277-0373	9.5-14.5	2.23	2.39	2.70	7.10
CB-0281-0377	5.5-10.5	2.19	2.33	2.60	6.78
CB-0281-0377	10.5-15.5	2.47	2.51	2.60	1.87
CB-0302-0398	7.0-12.0	2.04	2.20	2.40	7.90
CB-0302-0398	12.0-17.0	2.15	2.32	2.60	8.04

Notes: Specific Gravity and Absorption determined in general accordance with ASTM D6473-99.

Nodarse & Associates, Inc.

Date: 10/19/2005

Project Name: EAA Resivior A-1

ASTM D 6473-99 Test Method

Project No: 05-05-0013-101 WO#4

Specific Gravity & Absorption
of Rock for Erosion Control

Tested by: Chris B

Depth See sample #

Checked by: Chris B

Sample No.	Wt.inH2O (C) gr.	SSD Wt. (B) gr.	Oven Dry Wt. (A) gr.	Bulk Sp G.	Bulk (SSD) Sp. Gr	Apparent Sp. Gr	Absorption	Comments
Rip Rap sample 1	411.1	700.7	680.1	2.35	2.42	2.53	3.02	
Rip Rap sample 2	350.3	587.7	569.9	2.4	2.48	2.59	3.12	
Rip Rap sample 3	447.3	763.4	741.7	2.35	2.42	2.52	2.93	

Bulk spec. gravity = $A/(B-C)$

Bulk spec. gravity(SSD)= $B/(B-C)$

Apparent spec. gravity= $A(A-C)$

Absorption = $[(B-A)/A] \times 100\%$

EAA Reservoir A-1
Laboratory Work Order No. 4, Rip Rap Samples
Los Angles Abrasion

Sample Number	1	2	3
Percent Wear	31.3	31.3	30.6
Grading	"A"	"A"	"A"

Note: Laboratory testing completed by Wingerter Laboratories Inc. of Miami Florida
Laboratory testing completed in accordance with ASTM C-131 & C-535.

EAA Reservoir A-1
Laboratory Work Order No. 4, Rip Rap Samples
Soundness of Rock

Sample Number	1	2	3
Percentage Loss	0%	0%	0%

Notes: Laboratory testing completed in general accordance with ASTM D5240.

**LABORATORY TEST RESULTS FOR
EAA RESERVOIR A-1**
Nodarse & Associates, Inc. Project No. 05-05-0013

Boring Number	Sample Depth (ft)	Carbonate Content (%)
TC1-N-2	8.5	79.0
TC1-N-12	58.5	63.2
TC1-N-16	78.5	45.9
TC1-E-3	9.0	82.3
TC1-E-7	28.5	14.5
TC1-E-14	63.5	41.6
TC1-E-16	73.5	69.1
TC1-W-4	18.5	91.9
TC1-W-7	33.5	56.5
TC1-W-15	73.5	65.0
TC1-W-20	98.5	67.7
TC1-S-4	18.5	87.1
TC1-S-9	43.5	25.3
TC1-S-15	73.5	68.9
TC1-S-16	78.5	67.8
TC1-S-8	38.5	40.7

EAA Reservoir
05 05 0013 106A
Work Order No. 3
Carbonate Test Data

CB - 0266

Boring Number	Depth (feet)	Carbonate Content (%)
CB 169 CB05 - EPARS	5.5-8.5	76.6
CB 171 CB05 - EPARS - CB - 0268	7.0-10.0	81.6
CB 175 CB05 - EPARS - CB - 0271	13.5-15.0	81.8
CB 186 CB05 - EPARS - CB - 0281	33.5-35.0	34.7

227 TC-2 S 4
11.0'



Project Name: EAA
Project No: _____
Date: 2 21

Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{89.5}} \quad \% \quad$$

Crucible Number:	T	
Wt. of Crucible:	B	72.7778
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	72.8828
Insoluble Residue: $A-B = R$	R	0.1050

C = % of Carbonates of calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

FZR

TC-2 W 8

33.5'

Project Name: EAA
Project No: _____
Date: 7-21



Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{23.3}} \quad \% \quad$$

Crucible Number:	105	
Wt. of Crucible:	B	76.4745
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	77.2415
Insoluble Residue: $A-B = R$	R	0.7670

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

305

TC-Z W S
11.0'

Project Name: EAA
 Project No: _____
 Date: 2 21

Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{78.6\%}}$$

Crucible Number:	500	
wt. of Crucible:	B	70.8534
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	71.0673
Insoluble Residue: $A-B = R$	R	0.2139

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

234

TC-2 E S
18.5

Project Name: EAA
 Project No: _____
 Date: 2 21



Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\hspace{10em}} \quad 80.6 \quad \% \quad \underline{\hspace{10em}}$$

Crucible Number:	C	
Wt. of Crucible:	B	75.5465
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	75.7410
Insoluble Residue: $A-B = R$	R	0.1945

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%
 50% and up \pm 0.9%

234

TC-2 E S
18.5'

Project Name: EAA
 Project No: _____
 Date: 2 21



Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\hspace{10em}} \quad 80.6 \quad \% \quad \underline{\hspace{10em}}$$

Crucible Number:	C	
Wt. of Crucible:	B	75.5465
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	75.7410
Insoluble Residue: A-B = R	R	0.1945

C = % of Carbonates of Calcium and Magnesium

W = Mass of Sample

R = Insoluble Residue

Carbonate Range:90% and up \pm 0.4%50% and up \pm 0.9%

227 TC-2 S 4
11.0'

Project Name: EAA
 Project No: _____
 Date: 2 21

Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{89.5}} \quad \% \quad$$

Crucible Number:	T	
wt. of crucible:	B	72.7778
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	72.8828
Insoluble Residue: $A-B = R$	R	0.1050

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:90% and up \pm 0.4%50% and up \pm 0.9%

FZR

TC-2 W 8

33.5'



Project Name: EAA
 Project No: _____
 Date: 2-21

Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{23.3\%}}$$

Crucible Number:	105	
Wt. of Crucible:	B	76.4745
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	77.2415
Insoluble Residue: A-B = R	R	0.7670

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:90% and up \pm 0.4%
50% and up \pm 0.9%

305

TC-2 W 3

11.0'



Project Name: 5AA
 Project No: _____
 Date: 2 21

Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\hspace{10em}} \quad 78.6 \quad \% \quad \underline{\hspace{10em}}$$

Crucible Number:	500	
Wt. of Crucible:	B	70.8534
Mass of Sample:	W	1.0600
Crucible + Insoluble Residue After Burn:	A	71.0673
Insoluble Residue: A-B = R	R	0.2139

C = % of Carbonates of calcium and magnesium

W = Mass of Sample

R = Insoluble Residue

Carbonate Range:90% and up \pm 0.4%50% and up \pm 0.9%

EAA Reservoir
05 05 0013 106A
Work Order No: 5
Carbonate Test Data

CP05 - EAAZS - VB

Boring Number	Depth (feet)	Carbonate Content (%)
CB-0174	100-105	71.7
" CB-0174	110-115	75.5
" CB-0174	115-120	75.9
" CB-0174	125-130	77.7
" CB-0174	140-145	53.0
" CB-0174	150-155	68.3
" CB-0174	160-165	67.2
" CB-0174	165-170	41.2
" CB-0174	180-185	37.9
" CB-0174	185-190	53.6
" CB-0174	195-200	36.6
" CB-0174	200-205	23.9
CB-0174	205-210	30.5

Notes:

- 1 Carbonate content determined in general accordance with FDOT Standard.

EAA Reservoir
05 05 0013 106A
Work Order No. 6
Carbonate Test Data

CP 05 - ERRORS - VB -

Boring Number	Depth (feet)	Carbonate Content (%)
0282	CB 164	55060
0282	CB 164	70-75
0282	CB 164	130-135
0282	CB 164	180-185
0284	CB 182	70-75
0284	CB 182	90-95
0284	CB 182	140-145
0284	CB 182	175-180
0284	CB 205	60-65
0284	CB 205	75-80
0284	CB 205	140-145
0286	CB 205	160-165

281

Project Name: EAA
 Project No: _____
 Date: _____



102

BA-01
 5.5 - 7.0
Carbonates

$$C = \frac{(W-R)}{W} \times 100 = 87.4\%$$

Crucible Number:	202	
Wt. of Crucible:	B	18.3244
Mass of Sample:	W	1.6001
Crucible + Insoluble Residue After Burn:	A	18.4508
Insoluble Residue: A-B = R	R	0.1264

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

205

Project Name: EAA
 Project No: _____
 Date: _____



BA-01
 28.5 - 30.0
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\hspace{10em}} \quad 29.1 \quad \underline{\hspace{1em}} \quad \%$$

Crucible Number:	C	
wt. of Crucible:	B	75.5444
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	76.2531
Insoluble Residue: A-B = R	R	0.7087

C = % of Carbonates of calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

2

302

Project Name: EAA
 Project No: _____
 Date: _____



BA-01
 43.5 - 45.0'
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{10.9}} \quad \% \quad$$

Crucible Number:	203	
WT. OF Crucible:	B	17.2999
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	18.1907
Insoluble Residue: A-B = R	R	0.8908

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

216

Project Name: EAA
 Project No: _____
 Date: _____



BA-03
 2.5 - 10.0
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{82.6\%}}$$

Crucible Number:	105	
Wt. of Crucible:	B	25.8748
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	26.0486
Insoluble Residue: A-B = R	R	0.1738

C = % of Carbonates of calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%
 50% and up \pm 0.9%

200

100

Project Name: EAA
 Project No: _____
 Date: _____



BA-03
29-30.5
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad 40.5\%$$

Crucible Number:	100	
Wt. of Crucible:	B	26.1823
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	26.7771
Insoluble Residue: A-B = R	R	0.5948

C = % of Carbonates of Calcium and Magnesium

W = Mass of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

263

105

Project Name: EAA
 Project No: _____
 Date: _____



BA-03
 43.5' - 45.0'
Carbonates

$$C = \frac{(W-R)}{W} \times 100 = 37.3\%$$

Crucible Number:	105	
wt. of Crucible:	B	25.8741
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	26.5013
Insoluble Residue: A-B = R	R	0.4272

C = % of carbonates of calcium and magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

253

Project Name: EAA
 Project No: _____
 Date: _____



101

BA - 04
 6.2
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad 87.7\%$$

Crucible Number:	203	
Wt. of Crucible:	B	17.2991
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	17.4720
Insoluble Residue: A-B = R	R	0.1729

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

800

Project Name: EAA
 Project No: _____
 Date: _____



BA-64,
^{18.5'}
 Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{82.7}} \quad \% \quad$$

Crucible Number:	B	
Wt. of Crucible:	B	76.4770
Mass of Sample:	W	1.0001
Crucible + Insoluble Residue After Burn:	A	76.6500
Insoluble Residue: A-B = R	R	0.1730

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

207

101

Project Name: EAA
Project No: _____
Date: _____



BA-04 33.5° Carbonates

$$C = \frac{(W-R)}{W} \times 100$$

_____ : 31.4%

Crucible Number:		101
Wt. of Crucible:	B	25.2995
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	25.9857
Insoluble Residue: $A - B = R$	R	0.6862

C = % of Carbonates of Calcium and Magnesium

w = Mass of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%
50% and up \pm 0.9%

222

Project Name: EAA
 Project No: _____
 Date: _____



**B4-05
28.5'
Carbonates**

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{36.8 \%}}$$

Crucible Number:	100	
Wt. of Crucible:	B	26.1721
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	26.8037
Insoluble Residue: $A-B = R$	R	0.6316

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

246

Project Name: EAA
 Project No: _____
 Date: _____



BA - 05
 8.5°
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{86.2}} \quad \% \quad$$

Crucible Number:	101	
wt. of Crucible:	B	25.3000
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	25.4383
Insoluble Residue: A-B = R	R	0.1383

C = % of Carbonates of Calcium and Magnesium

W = Mass of Sample

R = Insoluble Residue

Carbonate Range:

90% and up ± 0.4%

50% and up ± 0.9%

231

Project Name: EAA
Project No: _____
Date: _____



BA-OS

38.5'

Carbonates

$$C = \frac{(W-R)}{W} \times 100$$

31.4 %

Crucible Number:		11
Wt. of Crucible:	B	29.4254
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	30.1114
Insoluble Residue: $A - B = R$	R	0.6860

C = % of carbonates of calcium and magnesium

W = Mass of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

TT-6

Project Name: EAA
Project No: _____
Date: _____



**BA - 06
6.0 - 7.5
Carbonates**

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{84.7}} \quad \% \quad$$

Crucible Number:	100	
Wt. of Crucible:	B	26.1653
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	26.3184
Insoluble Residue: $A-B = R$	R	0.1531

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

309

EAA

Project Name: EAA
 Project No: _____
 Date: _____



BA-06
 28.5-30.0'
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{27.6}} \quad \% \quad$$

Crucible Number:	C	
Wt. of Crucible:	B	75.5440
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	76.2680
Insoluble Residue: A-B = R	R	0.7240

C = % of Carbonates of Calcium and Magnesium

W = Mass of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

261



Project Name: EAA
Project No: _____
Date: _____

BA-04
48.5-50.0
Carbonates

$$C = \frac{(W-R)}{W} \times 100$$

34.6 %

Crucible Number:	J02	
Wt. of Crucible:	B	25.6848
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	26.3388
Insoluble Residue: $A-B = R$	R	0.6540

C = % of Carbonates of Calcium and Magnesium

W = Mass of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

~~500~~ 500

Project Name: EAA
 Project No: _____
 Date: _____



**BA-07
6.0 - 7.5.
Carbonates**

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\hspace{10em}} \quad 83.0 \quad \%$$

Crucible Number:	204	
wt. of Crucible:	B	17.8940
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	18.0643
Insoluble Residue: $A-B = R$	R	0.1703

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

~~205~~ 260

Project Name: EAA
Project No: _____
Date: _____



B4.07
18.5-20.0'
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{84.8\%}}$$

Crucible Number:	202	
Wt. of Crucible:	B	18.3399
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	18.4918
Insoluble Residue: A-B = R	R	0.1519

C = % of Carbonates of Calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%
50% and up \pm 0.9%

~~803~~ 803

Project Name: EAA
Project No: _____
Date: _____



BA · 07
38.5 · 40.0'

Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{28.5}} \quad \% \quad$$

Crucible Number:	102	
Wt. of Crucible:	B	25.6892
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	26.4045
Insoluble Residue: $A-B = R$	R	0.7153

C = % of Carbonates of calcium and magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

279

Project Name: EAA
 Project No: _____
 Date: _____



BA-08
8.5-10.0'
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{85.9\%}}$$

Crucible Number:	105	
Wt. of Crucible:	B	25.8640
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	26.0054
Insoluble Residue: A-B = R	R	0.14M

C = % of Carbonates of Calcium and Magnesium

W = Mass of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

252

Project Name: EAA
 Project No: _____
 Date: _____



BA-08
 13.5 - 15.0' ¹⁰⁰
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{83.7\%}}$$

Crucible Number:	11	
wt. of Crucible:	B	29.4172
Mass of Sample:	W	1.0600
Crucible + Insoluble Residue After Burn:	A	29.5807
Insoluble Residue: A-B = R	R	0.1635

C = % of Carbonates of Calcium and Magnesium

W = Mass of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

225

Project Name: EAA
 Project No: _____
 Date: _____



BA-08
 38.5-40.0
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad 32.0\%$$

Crucible Number:	101	
Wt. of Crucible:	B	25.2934
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	25.9733
Insoluble Residue: A-B = R	R	0.32.01

C = % of Carbonates of calcium and magnesium

W = Mass of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%
 50% and up \pm 0.9%

301

Project Name: EAA
Project No: _____
Date: _____



BA-09
23.5-25.0' 105

Carbonates

$$C = \frac{(W-R)}{W} \times 100$$

78.5 %

Crucible Number:		204
Wt. of Crucible:	B	17.9684
Mass of Sample:	W	1.0001
Crucible + Insoluble Residue After Burn:	A	18.0836
Insoluble Residue: $A - B = R$	R	0.2150

C = % of carbonates of Calcium and Magnesium

w = Mass of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%
50% and up \pm 0.9%

255

Project Name: EAA
 Project No: _____
 Date: _____



BA.09
38.5-40.0
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{25.3}} \quad \% \quad \underline{\underline{}}$$

Crucible Number:	T	
Wt. of Crucible:	B	1.0001
Mass of Sample:	W	72.7716
Crucible + Insoluble Residue After Burn:	A	73.5187
Insoluble Residue: A-B = R	R	0.7471

C = % of Carbonates of calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

SECA



Project Name: EAA
Project No: _____
Date: _____

**BA-10
13.5-15.0'**
Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{83.5}} \quad \% \quad$$

Crucible Number:	A	
Wt. of Crucible:	B	75.0438
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	75.2091
Insoluble Residue: $A-B = R$	R	0.1653

C = % of Carbonates of calcium and Magnesium

W = Mass Of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

241

102

Project Name: EAA
 Project No: _____
 Date: _____



BA-10
33.5.35.0

Carbonates

$$C = \frac{(W-R)}{W} \times 100 \quad \underline{\underline{26.7 \%}}$$

Crucible Number:	102	
Wt. of Crucible:	B	25.6924
Mass of Sample:	W	1.0000
Crucible + Insoluble Residue After Burn:	A	26.4250
Insoluble Residue: $A-B = R$	R	0.7326

C = % of Carbonates of Calcium and Magnesium

W = Mass of Sample

R = Insoluble Residue

Carbonate Range:

90% and up \pm 0.4%

50% and up \pm 0.9%

TRIAXIAL TEST RESULTS

Note: Material for triaxial tests on remolded samples was obtained from soil used in Test Cell construction.

EAA Reservoir
05 05 0013 106A
Work Order No: 5
Corrosion Test Data

CP05 - EAA RS - √B - 1

Boring Number	Depth (feet)	Electrical Resistivity (0hm-cm)	pH	Chlorides (ppm)	Sulfates (ppm)
- 0283	CB-0174	5-10	8.2 x 1k	8.5	60
- 0283	CB-0174	115-120	3.0 x 1k	8.3	60
					Less than 5

Notes:

- 1 Corrosion Series determined in general accordance with FDOT Standards.

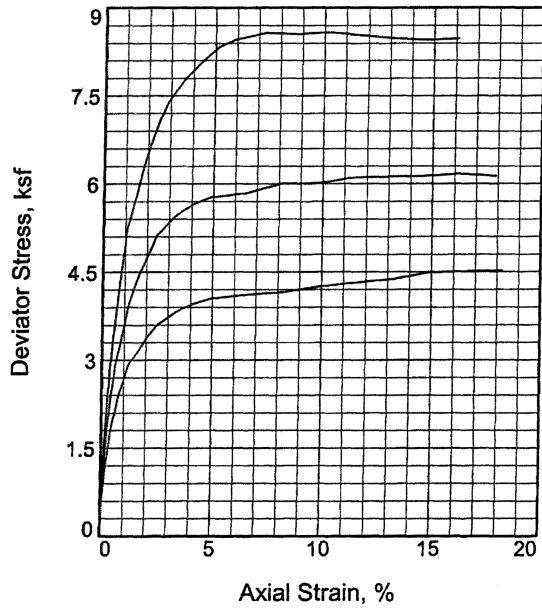
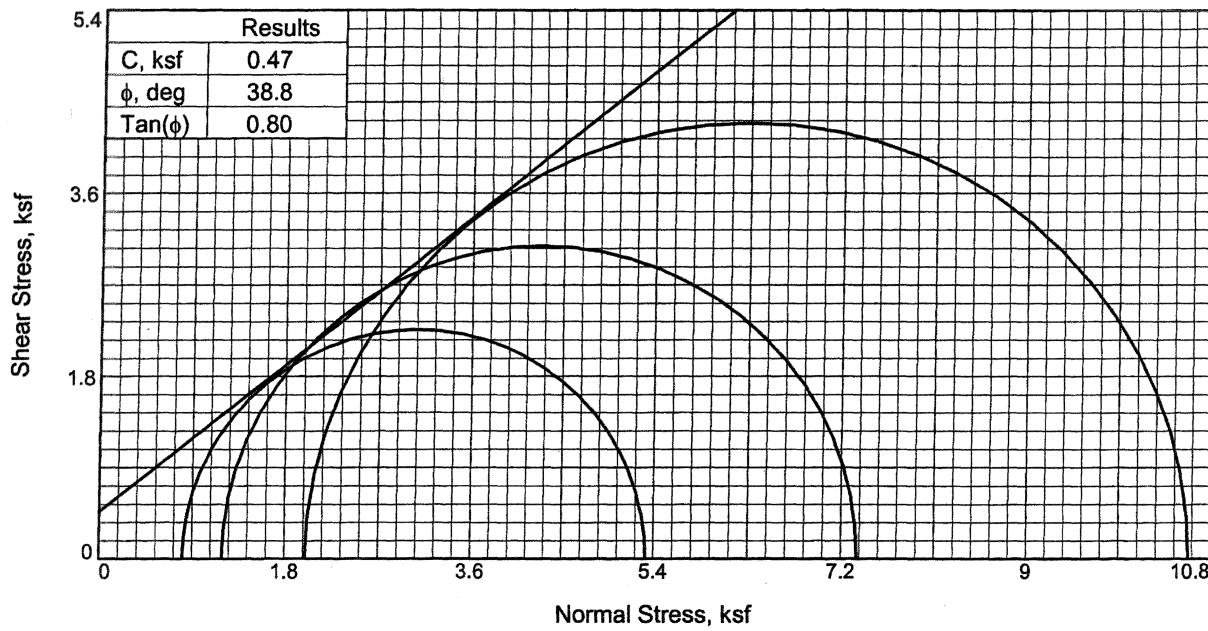
EAA Reservoir
05 05 0013 106A
Work Order No: 6
Corrosion Test Data

Boring Number	Depth (feet)	Electrical Resistivity (0hm-cm)	pH	Chlorides (ppm)	Sulfates (ppm)
CB-0164	5-10	6.1 x 1k	8.9	90	60

1ep05 - EAA RS - CB - 0361

Notes:

- 1 Corrosion Series determined in general accordance with FDOT Standards.



	Sample No.	1	2	3
Initial	Water Content,	15.9	16.2	15.8
	Dry Density, pcf	104.4	107.4	107.3
	Saturation,	67.4	74.0	71.9
	Void Ratio	0.6508	0.6047	0.6066
	Diameter, in.	2.84	2.84	2.84
	Height, in.	6.05	6.15	6.83
At Test	Water Content,	22.8	21.7	21.9
	Dry Density, pcf	105.8	107.8	107.5
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.6304	0.6000	0.6044
	Diameter, in.	2.83	2.84	2.84
	Height, in.	6.02	6.14	6.83
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		0.0	0.0	0.0
Cell Pressure, ksf		0.8	1.2	2.0
Fail. Stress, ksf		4.5	6.2	8.6
Ult. Stress, ksf				
σ_1 Failure, ksf		5.3	7.4	10.6
σ_3 Failure, ksf		0.8	1.2	2.0

Type of Test:

Unconsolidated Undrained

Sample Type: remold

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity = 2.762

Remarks: sample moist cured 14 days

Reviewed By _____

Client: Nodarse and Associates

Project: Material Testing-Nodarse

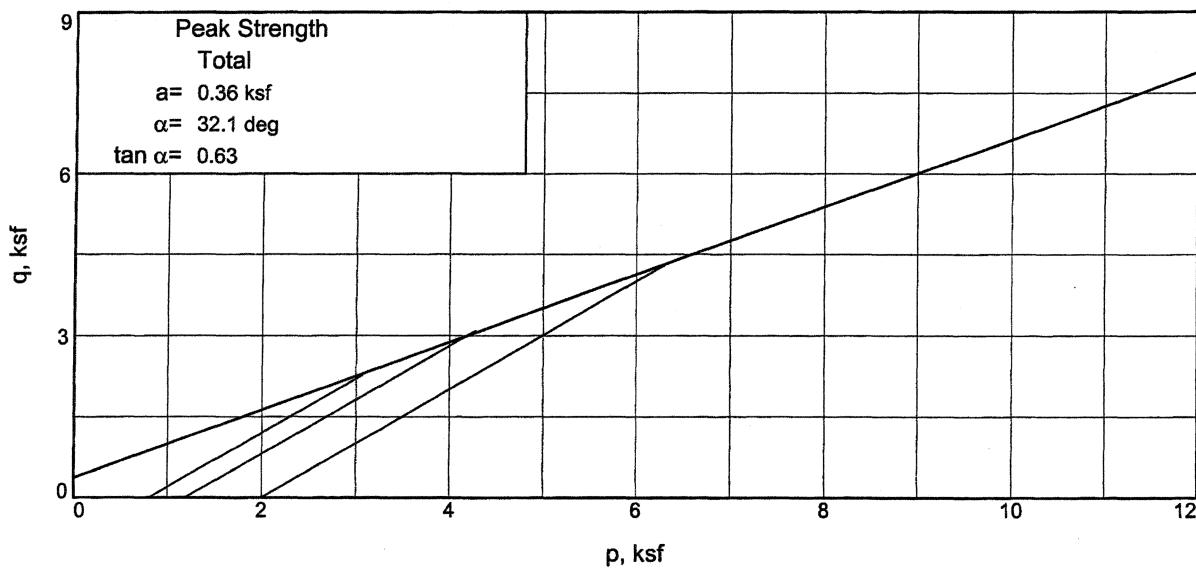
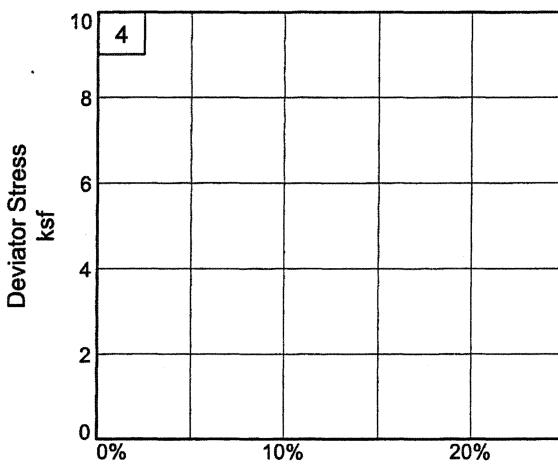
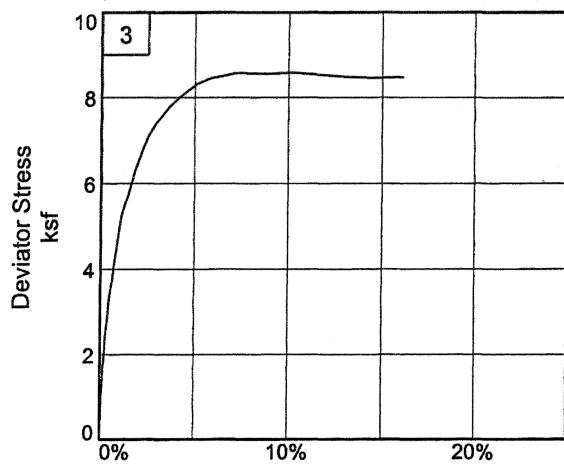
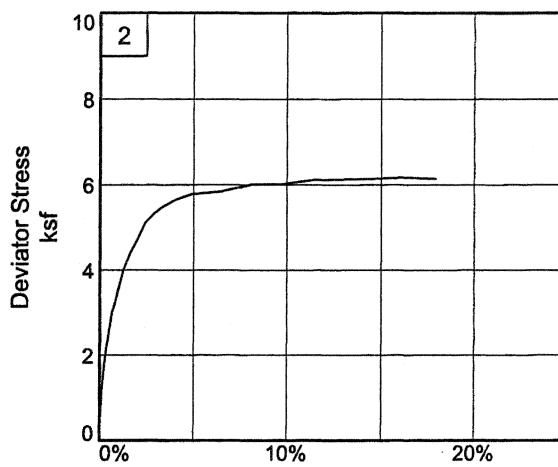
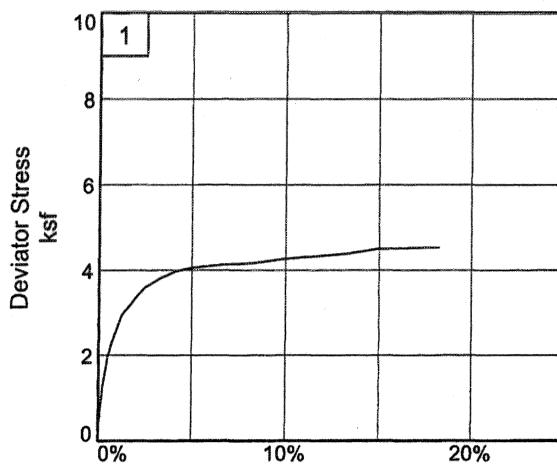
Sample Number: UU-95% 14 day cured

Proj. No.: 6738-05-4573

Date: 6-28-05

TRIAXIAL SHEAR TEST REPORT
MACTEC ENGINEERING AND CONSULTING, INC.
Tested By: MC _____

Checked By: *Rajni Sukhwani*



Client: Nodarse and Associates
Project: Material Testing-Nodarse
Sample Number: UU-95% 14 day cured
Project No.: 6738-05-4573

Reviewed By _____

MACTEC Engineering and Consulting, Inc.

Tested By: MC _____ Checked By: _____

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

7/14/2005

9:00 AM

Date: 6-28-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: UU-95% 14 day cured
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks: sample moist cured 14 days
Type of Sample: remold
Specific Gravity=2.762 LL= PL= PI=

Test Method: COE uniform strain**Parameters for Specimen No. 1**

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	125.860		413.600
Moisture content: Dry soil+tare, gms.	112.030		364.200
Moisture content: Tare, gms.	24.930		50.800
Moisture, %	15.9	22.8	15.8
Moist specimen weight, gms.	1217.6		
Diameter, in.	2.84	2.83	
Area, in.²	6.33	6.28	
Height, in.	6.05	6.02	
Net decrease in height, in.		0.03	
Wet Density, pcf	121.0	129.9	
Dry density, pcf	104.4	105.8	
Void ratio	0.6508	0.6304	
Saturation, %	67.4	100.0	

Test Readings for Specimen No. 1**Primary load ring constant = .463 lbs. per input unit****Membrane modulus = 0.124105 kN/cm²****Membrane thickness = 0.02 cm****Cell pressure = 5.60 psi (0.81 ksf)****Back pressure = 0.00 psi (0.00 ksf)****Strain rate, in./min. = 0.05****Fail. Stress = 4.52 ksf at reading no. 27**

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator	Minor Princ.	Major Princ.	1:3 Ratio	P ksf	Q ksf
					Stress ksf	Stress ksf	Stress ksf			
0	0.0000	0.0	0.0	0.0	0.00	0.81	0.81	1.00		0.81
1	0.0010	12.0	5.6	0.0	0.13	0.81	0.93	1.16		0.87
2	0.0050	65.0	30.1	0.1	0.69	0.81	1.50	1.85		1.15
3	0.0100	95.0	44.0	0.2	1.01	0.81	1.81	2.25		1.31
4	0.0150	124.0	57.4	0.2	1.31	0.81	2.12	2.63		1.46
5	0.0200	145.0	67.1	0.3	1.53	0.81	2.34	2.90		1.57
6	0.0250	165.0	76.4	0.4	1.74	0.81	2.55	3.16		1.68
7	0.0300	183.0	84.7	0.5	1.93	0.81	2.74	3.40		1.77
8	0.0350	195.0	90.3	0.6	2.06	0.81	2.86	3.55		1.84
9	0.0400	208.0	96.3	0.7	2.19	0.81	3.00	3.72		1.90
10	0.0450	222.0	102.8	0.7	2.34	0.81	3.14	3.90		1.98
11	0.0500	233.0	107.9	0.8	2.45	0.81	3.26	4.04		2.03
12	0.0750	280.0	129.6	1.2	2.93	0.81	3.74	4.64		2.27
13	0.1000	303.0	140.3	1.7	3.16	0.81	3.97	4.92		2.39
14	0.1250	327.0	151.4	2.1	3.40	0.81	4.20	5.21		2.51
15	0.1500	347.0	160.7	2.5	3.59	0.81	4.40	5.45		2.60
16	0.1750	359.0	166.2	2.9	3.70	0.81	4.51	5.59		2.66
17	0.2000	371.0	171.8	3.3	3.81	0.81	4.61	5.72		2.71
18	0.2500	389.0	180.1	4.1	3.96	0.81	4.76	5.91		2.78
19	0.3000	401.0	185.7	5.0	4.04	0.81	4.85	6.01		2.83
20	0.4000	415.0	192.1	6.6	4.11	0.81	4.92	6.10		2.86
21	0.5000	427.0	197.7	8.3	4.16	0.81	4.96	6.15		2.88
22	0.6000	445.0	206.0	10.0	4.25	0.81	5.06	6.27		2.93
23	0.7000	460.0	213.0	11.6	4.31	0.81	5.12	6.35		2.96
24	0.8000	475.0	219.9	13.3	4.37	0.81	5.18	6.42		2.99
25	0.9000	497.0	230.1	14.9	4.49	0.81	5.29	6.56		3.05
26	1.0000	509.0	235.7	16.6	4.51	0.81	5.31	6.59		3.06
27	1.1000	521.0	241.2	18.3	4.52	0.81	5.33	6.60		3.07

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	128.130		1393.600
Moisture content: Dry soil+tare, gms.	114.500		1212.300
Moisture content: Tare, gms.	30.350		116.100
Moisture, %	16.2	21.7	16.5
Moist specimen weight, gms.	1276.8		
Diameter, in.	2.84	2.84	
Area, in.²	6.33	6.32	
Height, in.	6.15	6.14	
Net decrease in height, in.		0.01	
Wet Density, pcf	124.9	131.2	
Dry density, pcf	107.4	107.8	
Void ratio	0.6047	0.6000	
Saturation, %	74.0	100.0	

Test Readings for Specimen No. 2

Primary load ring constant = .463 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 8.30 psi (1.20 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 6.16 ksf at reading no. 25

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.0	0.0	0.0	0.00	1.20	1.20	1.00		1.20
1	0.0010	33.0	15.3	0.0	0.35	1.20	1.54	1.29		1.37
2	0.0050	77.0	35.7	0.1	0.81	1.20	2.01	1.68		1.60
3	0.0100	127.0	58.8	0.2	1.34	1.20	2.53	2.12		1.86
4	0.0150	164.0	75.9	0.2	1.73	1.20	2.92	2.44		2.06
5	0.0200	193.0	89.4	0.3	2.03	1.20	3.22	2.70		2.21
6	0.0250	220.0	101.9	0.4	2.31	1.20	3.51	2.93		2.35
7	0.0300	242.0	112.0	0.5	2.54	1.20	3.73	3.12		2.46
8	0.0350	262.0	121.3	0.6	2.75	1.20	3.94	3.30		2.57
9	0.0400	287.0	132.9	0.7	3.01	1.20	4.20	3.52		2.70
10	0.0450	298.0	138.0	0.7	3.12	1.20	4.31	3.61		2.75
11	0.0500	310.0	143.5	0.8	3.24	1.20	4.44	3.71		2.82
12	0.0750	380.0	175.9	1.2	3.96	1.20	5.15	4.31		3.17
13	0.1000	426.0	197.2	1.6	4.42	1.20	5.61	4.70		3.40
14	0.1250	460.0	213.0	2.0	4.75	1.20	5.95	4.98		3.57
15	0.1500	497.0	230.1	2.4	5.11	1.20	6.31	5.28		3.75
16	0.2000	534.0	247.2	3.3	5.45	1.20	6.64	5.56		3.92
17	0.2500	558.0	258.4	4.1	5.64	1.20	6.84	5.72		4.02
18	0.3000	575.0	266.2	4.9	5.77	1.20	6.96	5.83		4.08
19	0.4000	592.0	274.1	6.5	5.84	1.20	7.03	5.88		4.11
20	0.5000	619.0	286.6	8.1	6.00	1.20	7.19	6.02		4.19
21	0.6000	631.0	292.2	9.8	6.00	1.20	7.20	6.02		4.20
22	0.7000	653.0	302.3	11.4	6.10	1.20	7.30	6.11		4.25
23	0.8000	667.0	308.8	13.0	6.12	1.20	7.31	6.12		4.25
24	0.9000	681.0	315.3	14.6	6.13	1.20	7.32	6.13		4.26

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
	1.0000	698.0	323.2	16.3	6.16	1.20	7.36	6.16		4.28
25	1.1000	708.0	327.8	17.9	6.13	1.20	7.32	6.13		4.26

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	122.870		333.740
Moisture content: Dry soil+tare, gms.	110.280		294.900
Moisture content: Tare, gms.	30.550		52.160
Moisture, %	15.8	21.9	16.0
Moist specimen weight, gms.	1411.4		
Diameter, in.	2.84	2.84	
Area, in.²	6.33	6.33	
Height, in.	6.83	6.83	
Net decrease in height, in.	0.00		
Wet Density, pcf	124.3	131.0	
Dry density, pcf	107.3	107.5	
Void ratio	0.6066	0.6044	
Saturation, %	71.9	100.0	

Test Readings for Specimen No. 3

Primary load ring constant = .463 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 13.90 psi (2.00 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 8.58 ksf at reading no. 24

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
	0.0000	0.0	0.0	0.0	0.00	2.00	2.00	1.00		2.00
1	0.0010	27.0	12.5	0.0	0.28	2.00	2.29	1.14		2.14
2	0.0050	78.0	36.1	0.1	0.82	2.00	2.82	1.41		2.41
3	0.0100	146.0	67.6	0.1	1.54	2.00	3.54	1.77		2.77
4	0.0150	192.0	88.9	0.2	2.02	2.00	4.02	2.01		3.01
5	0.0200	233.0	107.9	0.3	2.45	2.00	4.45	2.22		3.23
6	0.0250	265.0	122.7	0.4	2.78	2.00	4.78	2.39		3.39
7	0.0300	295.0	136.6	0.4	3.09	2.00	5.10	2.55		3.55
8	0.0350	323.0	149.5	0.5	3.39	2.00	5.39	2.69		3.69
9	0.0400	347.0	160.7	0.6	3.63	2.00	5.64	2.82		3.82
10	0.0450	368.0	170.4	0.7	3.85	2.00	5.85	2.92		3.93
11	0.0500	393.0	182.0	0.7	4.11	2.00	6.11	3.05		4.06
12	0.0750	503.0	232.9	1.1	5.24	2.00	7.24	3.62		4.62
13	0.1000	553.0	256.0	1.5	5.74	2.00	7.74	3.87		4.87
14	0.1250	609.0	282.0	1.8	6.30	2.00	8.30	4.15		5.15
15	0.1500	655.0	303.3	2.2	6.75	2.00	8.75	4.37		5.38
16	0.1750	693.0	320.9	2.6	7.11	2.00	9.11	4.55		5.56
17	0.2000	724.0	335.2	2.9	7.40	2.00	9.40	4.70		5.70
18	0.2500	768.0	355.6	3.7	7.79	2.00	9.80	4.89		5.90

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator	Minor Princ.	Major Princ.	1:3 Ratio	P ksf	Q ksf
					Stress ksf	Stress ksf	Stress ksf			
19	0.3000	802.0	371.3	4.4	8.08	2.00	10.08	5.04		6.04
20	0.3500	832.0	385.2	5.1	8.32	2.00	10.32	5.15		6.16
21	0.4000	852.0	394.5	5.9	8.45	2.00	10.45	5.22		6.23
22	0.5000	878.0	406.5	7.3	8.57	2.00	10.57	5.28		6.29
23	0.6000	890.0	412.1	8.8	8.55	2.00	10.55	5.27		6.28
24	0.7000	908.0	420.4	10.3	8.58	2.00	10.59	5.29		6.29
25	0.8000	917.0	424.6	11.7	8.53	2.00	10.53	5.26		6.27
26	0.9000	927.0	429.2	13.2	8.48	2.00	10.48	5.24		6.24
27	1.0000	940.0	435.2	14.6	8.45	2.00	10.45	5.22		6.23
28	1.1000	959.0	444.0	16.1	8.47	2.00	10.48	5.23		6.24

14 day cured specimens

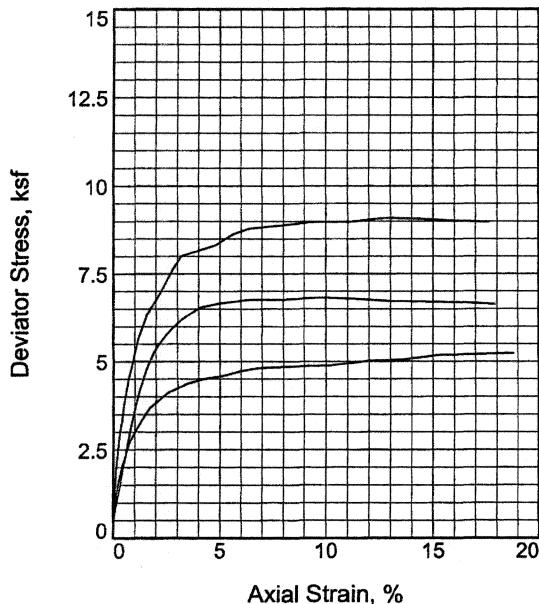
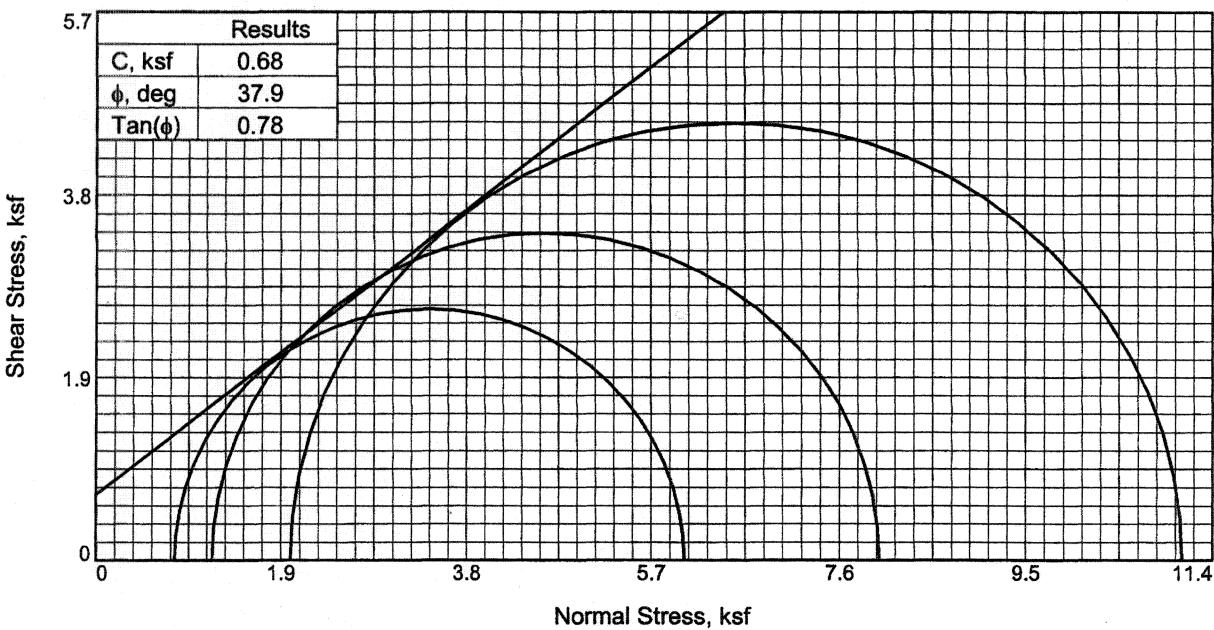
Nodarse 6738-05-4576-02

cast 6-28-05

tested 7-12-05

Tube Weight	766.2	Tube Diameter (in)	2.84	Area	6.334702	Length	25.2 cm	maximum density
						9.92126 in	115.5	

weight w/ sample and tube	weight sample (lb)	distance to sample (cm)	sample length (in)	sample volume (cuft)	sample wet density (lb/cuft)	wet wt w/ can	dry wt. w/ can	can wt	% moisture	sample dry density (lb/cuft)	% compactio n	
2104.2	2.95	9.6	6.14	0.0225	131.0	113.5	101.81	30.01	16.28	112.67026	97.6	not used
2147.1	3.04	7.8	6.85	0.0251	121.2	113.5	101.81	30.01	16.28	104.25353	90.3	1 A 13.9
2182.2	3.12	7	7.17	0.0263	118.8	112.71	100.4	24.58	16.24	102.24443	88.5	2 A 5.6
2253.5	3.28	6.7	7.28	0.0267	122.8	122.11	109.3	30.67	16.29	105.60068	91.4	not used
1978	2.67	9.8	6.06	0.0222	120.2	122.11	109.3	30.67	16.29	103.35942	89.5	3 A 8.3
2117.8	2.98	8	6.77	0.0248	120.0	119.18	124.23	32.03	16.15	103.34316	89.5	4
2173.6	3.10	7.5	6.97	0.0255	121.5	115.81	103.08	26.0	16.31	104.43123	90.4	5
2128	3.00	6.1	6.73	0.0247	121.6	93.51	84.65	30.01	16.22	104.67476	90.6	6
2135.8	3.02	8.3	6.65	0.0244	123.8	93.51	84.65	30.01	16.22	106.52016	92.2	not used
1996.8	2.71	10.5	5.79	0.0212	127.9	114.18	102.63	30.35	15.98	110.25697	95.5	1
2047.3	2.83	9.9	6.02	0.0221	128.0	125.86	112.03	24.93	15.88	110.41974	95.6	2
2057.3	2.85	9.7	6.10	0.0224	127.2	128.13	114.5	30.35	16.20	109.5015	94.8	3
2153.9	3.15	8	6.77	0.0248	126.8	122.87	110.28	30.55	15.79	109.50206	94.8	4
2080	2.90	9.3	6.26	0.0229	126.2	137.56	122.83	31.78	16.18	108.64164	94.1	5
1989	2.70	10.4	5.83	0.0214	126.2	106.78	96.22	31.52	16.32	108.49796	93.9	6



	Sample No.	1	2	3
Initial	Water Content, Dry Density,pcf	16.0	16.3	16.2
	Saturation,	108.3	108.0	107.6
	Void Ratio	74.5	75.5	74.1
	Diameter, in.	0.5925	0.5972	0.6030
	Height, in.	2.84	2.84	2.84
		5.87	6.15	6.28
At Test	Water Content, Dry Density,pcf	20.9	21.3	20.9
	Saturation,	109.4	108.5	109.3
	Void Ratio	100.0	100.0	100.0
	Diameter, in.	0.5763	0.5886	0.5770
	Height, in.	2.83	2.83	2.82
		5.85	6.14	6.25
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		0.0	0.0	0.0
Cell Pressure, ksf		0.8	1.2	2.0
Fail. Stress, ksf		5.2	6.8	9.1
Ult. Stress, ksf				
σ_1 Failure, ksf		6.0	8.0	11.1
σ_3 Failure, ksf		0.8	1.2	2.0

Type of Test:

Unconsolidated Undrained

Sample Type: remold

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks: Samples moist cured 14 days

Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: UU-95% 14 day cured

Proj. No.: 6738-05-4573

Date: 6-28-05

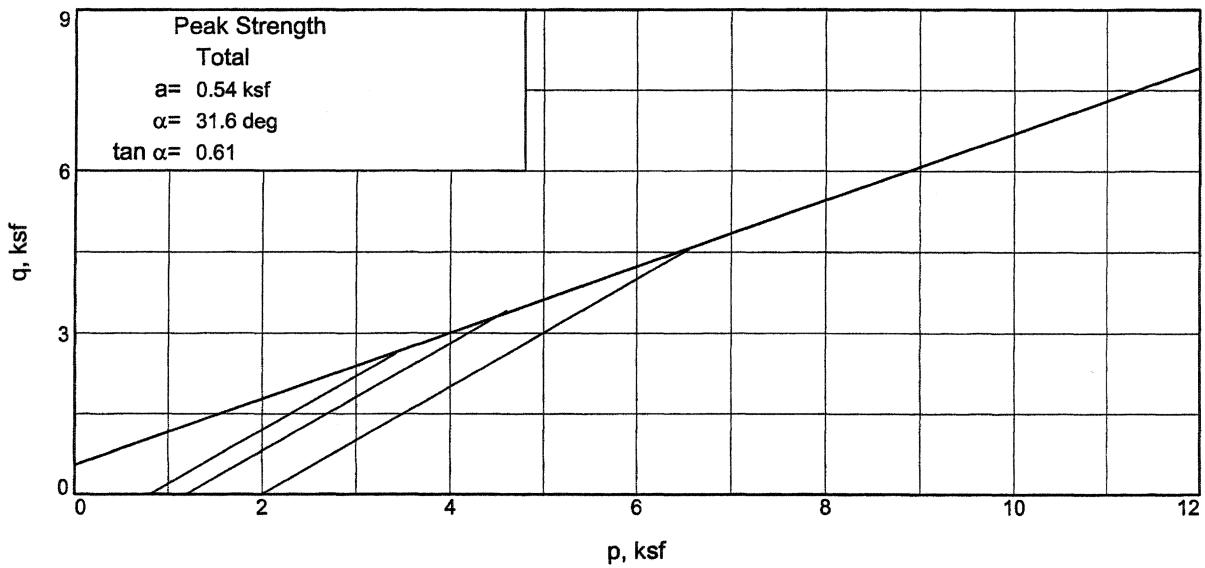
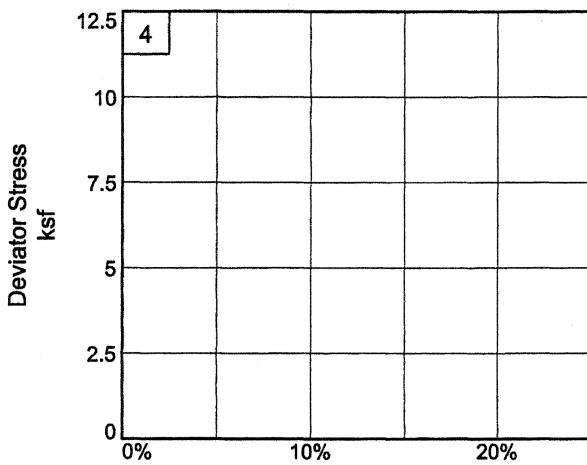
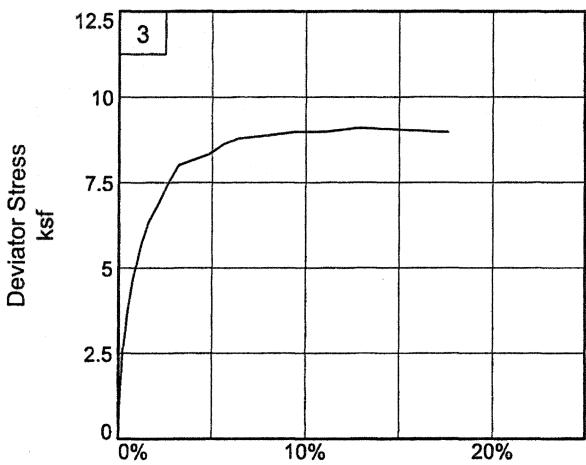
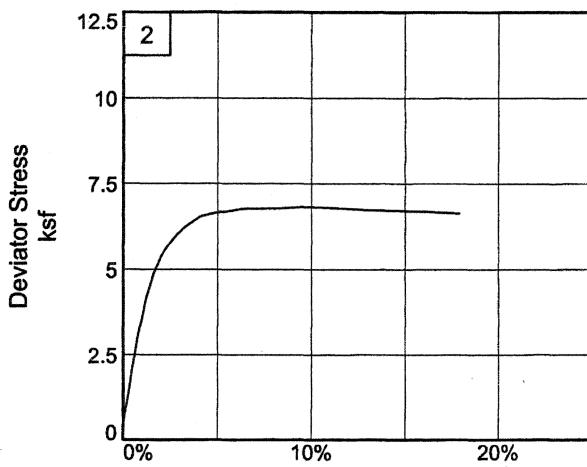
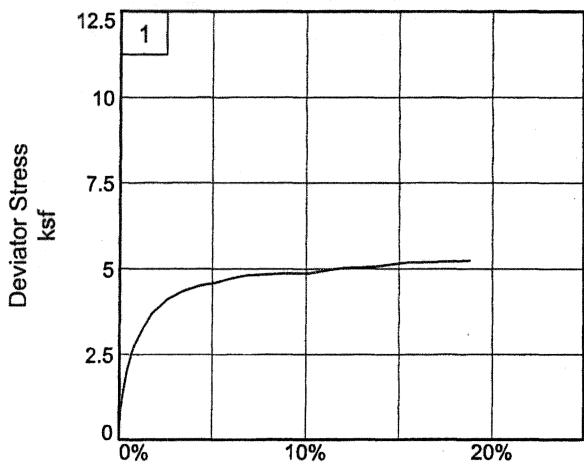
TRIAXIAL SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.

Reviewed By _____

Tested By: MC

Checked By: Rajni Sukhwani



Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: UU-95% 14 day cured

Project No.: 6738-05-4573

Reviewed By _____

MACTEC Engineering and Consulting, Inc.

Tested By: MC

Checked By: _____

TRIAXIAL COMPRESSION TEST

7/14/2005

Unconsolidated Undrained

9:03 AM

Date: 6-28-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: UU-95% 14 day cured
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks: Samples moist cured 14 days
Type of Sample: remold
Specific Gravity=2.762 LL= PL= PI=

Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	114.180		409.300
Moisture content: Dry soil+tare, gms.	102.630		360.550
Moisture content: Tare, gms.	30.350		52.330
Moisture, %	16.0	20.9	15.8
Moist specimen weight, gms.	1225.7		
Diameter, in.	2.84	2.83	
Area, in.²	6.33	6.29	
Height, in.	5.87	5.85	
Net decrease in height, in.		0.02	
Wet Density, pcf	125.6	132.2	
Dry density, pcf	108.3	109.4	
Void ratio	0.5925	0.5763	
Saturation, %	74.5	100.0	

Test Readings for Specimen No. 1

Primary load ring constant = .463 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 5.60 psi (0.81 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 5.23 ksf at reading no. 28

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.0	0.0	0.0	0.00	0.81	0.81	1.00		0.81
1	0.0010	31.0	14.4	0.0	0.33	0.81	1.13	1.41		0.97
2	0.0050	78.0	36.1	0.1	0.83	0.81	1.63	2.02		1.22
3	0.0100	121.0	56.0	0.2	1.28	0.81	2.09	2.59		1.45
4	0.0150	148.0	68.5	0.3	1.56	0.81	2.37	2.94		1.59
5	0.0200	172.0	79.6	0.3	1.82	0.81	2.62	3.25		1.71
6	0.0250	193.0	89.4	0.4	2.04	0.81	2.84	3.53		1.82
7	0.0300	210.0	97.2	0.5	2.21	0.81	3.02	3.75		1.91
8	0.0350	227.0	105.1	0.6	2.39	0.81	3.20	3.97		2.00
9	0.0400	243.0	112.5	0.7	2.56	0.81	3.36	4.17		2.09
10	0.0450	256.0	118.5	0.8	2.69	0.81	3.50	4.34		2.15
11	0.0500	268.0	124.1	0.9	2.82	0.81	3.62	4.49		2.21
12	0.0750	312.0	144.5	1.3	3.26	0.81	4.07	5.05		2.44
13	0.1000	352.0	163.0	1.7	3.67	0.81	4.47	5.55		2.64
14	0.1250	374.0	173.2	2.1	3.88	0.81	4.69	5.81		2.75
15	0.1500	397.0	183.8	2.6	4.10	0.81	4.91	6.08		2.86
16	0.1750	410.0	189.8	3.0	4.21	0.81	5.02	6.23		2.91
17	0.2000	425.0	196.8	3.4	4.35	0.81	5.16	6.39		2.98
18	0.2500	443.0	205.1	4.3	4.49	0.81	5.30	6.57		3.05
19	0.3000	455.0	210.7	5.1	4.57	0.81	5.38	6.67		3.09
20	0.3500	473.0	219.0	6.0	4.71	0.81	5.52	6.84		3.16
21	0.4000	486.0	225.0	6.8	4.80	0.81	5.60	6.95		3.21
22	0.5000	500.0	231.5	8.5	4.85	0.81	5.65	7.01		3.23
23	0.6000	512.0	237.1	10.3	4.87	0.81	5.68	7.04		3.24
24	0.7000	537.0	248.6	12.0	5.01	0.81	5.82	7.21		3.31
25	0.8000	552.0	255.6	13.7	5.05	0.81	5.86	7.26		3.33
26	0.9000	577.0	267.2	15.4	5.17	0.81	5.98	7.42		3.39
27	1.0000	591.0	273.6	17.1	5.19	0.81	6.00	7.44		3.40
28	1.1000	608.0	281.5	18.8	5.23	0.81	6.04	7.49		3.42

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	106.780		858.900
Moisture content: Dry soil+tare, gms.	96.220		771.000
Moisture content: Tare, gms.	31.520		230.300
Moisture, %	16.3	21.3	16.3
Moist specimen weight, gms.	1284.2		
Diameter, in.	2.84	2.83	
Area, in.²	6.33	6.31	
Height, in.	6.15	6.14	
Net decrease in height, in.		0.01	
Wet Density, pcf	125.6	131.7	
Dry density, pcf	108.0	108.5	
Void ratio	0.5972	0.5886	
Saturation, %	75.5	100.0	

Test Readings for Specimen No. 2

Primary load ring constant = .463 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 8.30 psi (1.20 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 6.81 ksf at reading no. 23

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.0	0.0	0.0	0.00	1.20	1.20	1.00		1.20
1	0.0010	37.0	17.1	0.0	0.39	1.20	1.59	1.33		1.39
2	0.0050	62.0	28.7	0.1	0.65	1.20	1.85	1.55		1.52
3	0.0100	90.0	41.7	0.2	0.95	1.20	2.14	1.79		1.67
4	0.0150	115.0	53.2	0.2	1.21	1.20	2.41	2.01		1.80
5	0.0200	141.0	65.3	0.3	1.48	1.20	2.68	2.24		1.94
6	0.0250	168.0	77.8	0.4	1.77	1.20	2.96	2.48		2.08
7	0.0300	195.0	90.3	0.5	2.05	1.20	3.24	2.71		2.22
8	0.0350	220.0	101.9	0.6	2.31	1.20	3.51	2.93		2.35
9	0.0400	245.0	113.4	0.7	2.57	1.20	3.77	3.15		2.48
10	0.0450	270.0	125.0	0.7	2.83	1.20	4.03	3.37		2.61
11	0.0500	296.0	137.0	0.8	3.10	1.20	4.30	3.59		2.75
12	0.0750	395.0	182.9	1.2	4.12	1.20	5.32	4.45		3.26
13	0.1000	467.0	216.2	1.6	4.85	1.20	6.05	5.06		3.62
14	0.1250	520.0	240.8	2.0	5.38	1.20	6.58	5.50		3.89
15	0.1500	555.0	257.0	2.4	5.72	1.20	6.91	5.79		4.05
16	0.1750	584.0	270.4	2.9	5.99	1.20	7.19	6.01		4.19
17	0.2000	608.0	281.5	3.3	6.21	1.20	7.41	6.20		4.30
18	0.2500	644.0	298.2	4.1	6.53	1.20	7.72	6.46		4.46
19	0.3000	660.0	305.6	4.9	6.63	1.20	7.83	6.55		4.51
20	0.3500	672.0	311.1	5.7	6.69	1.20	7.89	6.60		4.54
21	0.4000	685.0	317.2	6.5	6.76	1.20	7.96	6.66		4.58
22	0.5000	697.0	322.7	8.1	6.76	1.20	7.96	6.66		4.58
23	0.6000	715.0	331.0	9.8	6.81	1.20	8.01	6.70		4.60
24	0.7000	724.0	335.2	11.4	6.78	1.20	7.97	6.67		4.58

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator	Minor Princ.	Major Princ.	1:3 Ratio	P ksf	Q ksf
					Stress ksf	Stress ksf	Stress ksf			
25	0.8000	731.0	338.5	13.0	6.72	1.20	7.91	6.62		4.55
26	0.9000	743.0	344.0	14.7	6.70	1.20	7.89	6.60		4.54
27	1.0000	755.0	349.6	16.3	6.68	1.20	7.87	6.59		4.53
28	1.1000	764.0	353.7	17.9	6.62	1.20	7.82	6.54		4.51

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	137.560		345.130
Moisture content: Dry soil+tare, gms.	122.830		304.400
Moisture content: Tare, gms.	31.780		49.860
Moisture, %	16.2	20.9	16.0
Moist specimen weight, gms.	1305.0		
Diameter, in.	2.84	2.82	
Area, in. ²	6.33	6.27	
Height, in.	6.28	6.25	
Net decrease in height, in.		0.03	
Wet Density, pcf	125.0	132.2	
Dry density, pcf	107.6	109.3	
Void ratio	0.6030	0.5770	
Saturation, %	74.1	100.0	

Test Readings for Specimen No. 3

Primary load ring constant = .463 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 13.90 psi (2.00 ksf)

Back pressure = 0.00 psi (0.00 ksf)

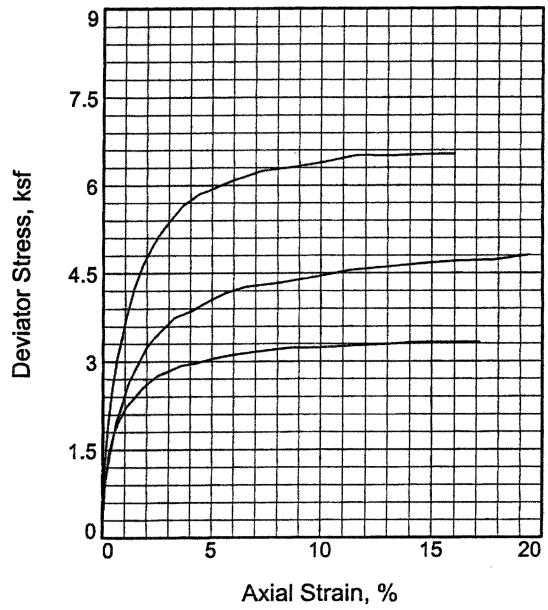
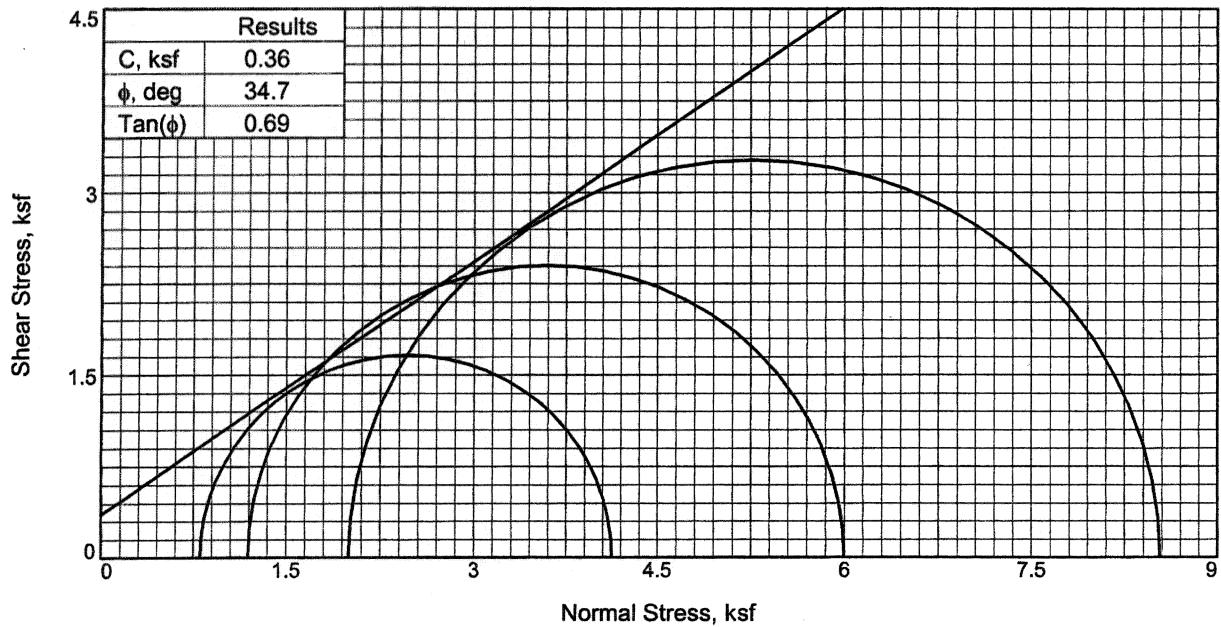
Strain rate, in./min. = 0.05

Fail. Stress = 9.09 ksf at reading no. 24

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator	Minor Princ.	Major Princ.	1:3 Ratio	P ksf	Q ksf
					Stress ksf	Stress ksf	Stress ksf			
0	0.0000	0.0	0.0	0.0	0.00	2.00	2.00	1.00		2.00
1	0.0010	32.0	14.8	0.0	0.34	2.00	2.34	1.17		2.17
2	0.0050	118.0	54.6	0.1	1.25	2.00	3.26	1.63		2.63
3	0.0100	188.0	87.0	0.2	2.00	2.00	4.00	2.00		3.00
4	0.0150	242.0	112.0	0.2	2.57	2.00	4.57	2.28		3.29
5	0.0200	281.0	130.1	0.3	2.98	2.00	4.98	2.49		3.49
6	0.0250	313.0	144.9	0.4	3.32	2.00	5.32	2.66		3.66
7	0.0300	348.0	161.1	0.5	3.68	2.00	5.69	2.84		3.84
8	0.0350	375.0	173.6	0.6	3.97	2.00	5.97	2.98		3.99
9	0.0400	403.0	186.6	0.6	4.26	2.00	6.26	3.13		4.13
10	0.0450	427.0	197.7	0.7	4.51	2.00	6.51	3.25		4.26
11	0.0500	446.0	206.5	0.8	4.71	2.00	6.71	3.35		4.36
12	0.0750	538.0	249.1	1.2	5.66	2.00	7.66	3.83		4.83
13	0.1000	605.0	280.1	1.6	6.33	2.00	8.34	4.16		5.17
14	0.1250	645.0	298.6	2.0	6.73	2.00	8.73	4.36		5.36
15	0.1500	690.0	319.5	2.4	7.17	2.00	9.17	4.58		5.58
16	0.1750	737.0	341.2	2.8	7.62	2.00	9.62	4.81		5.81

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
17	0.2000	777.0	359.8	3.2	8.00	2.00	10.00	5.00		6.00
18	0.3000	821.0	380.1	4.8	8.32	2.00	10.32	5.15		6.16
19	0.3500	858.0	397.3	5.6	8.62	2.00	10.62	5.31		6.31
20	0.4000	882.0	408.4	6.4	8.78	2.00	10.79	5.39		6.39
21	0.5000	907.0	419.9	8.0	8.88	2.00	10.88	5.44		6.44
22	0.6000	934.0	432.4	9.6	8.98	2.00	10.98	5.49		6.49
23	0.7000	951.0	440.3	11.2	8.98	2.00	10.99	5.49		6.49
24	0.8000	980.0	453.7	12.8	9.09	2.00	11.09	5.54		6.55
25	0.9000	995.0	460.7	14.4	9.06	2.00	11.06	5.53		6.53
26	1.0000	1008.0	466.7	16.0	9.01	2.00	11.01	5.50		6.51
27	1.1000	1023.0	473.6	17.6	8.97	2.00	10.97	5.48		6.49


Type of Test:

Unconsolidated Undrained

Sample Type: Remolded

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks: Specimen cured 14 days after molding.

Reviewed By _____

	Sample No.	1	2	3
Initial	Water Content,	16.2	16.3	16.3
	Dry Density,pcf	103.5	100.7	101.2
	Saturation,	67.4	63.2	63.8
	Void Ratio	0.6653	0.7122	0.7043
	Diameter, in.	2.84	2.84	2.84
	Height, in.	7.04	6.19	6.89
At Test	Water Content,	22.7	25.2	24.9
	Dry Density,pcf	105.9	101.7	102.2
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.6278	0.6957	0.6866
	Diameter, in.	2.82	2.83	2.83
	Height, in.	6.99	6.17	6.87
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		0.00	0.00	0.00
Cell Pressure, ksf		0.81	1.20	2.00
Fail. Stress, ksf		3.32	4.80	6.53
Ult. Stress, ksf				
σ_1 Failure, ksf		4.13	6.00	8.53
σ_3 Failure, ksf		0.81	1.20	2.00

Client: Nodarse and Associates

Project: Material Testing-Nodarse

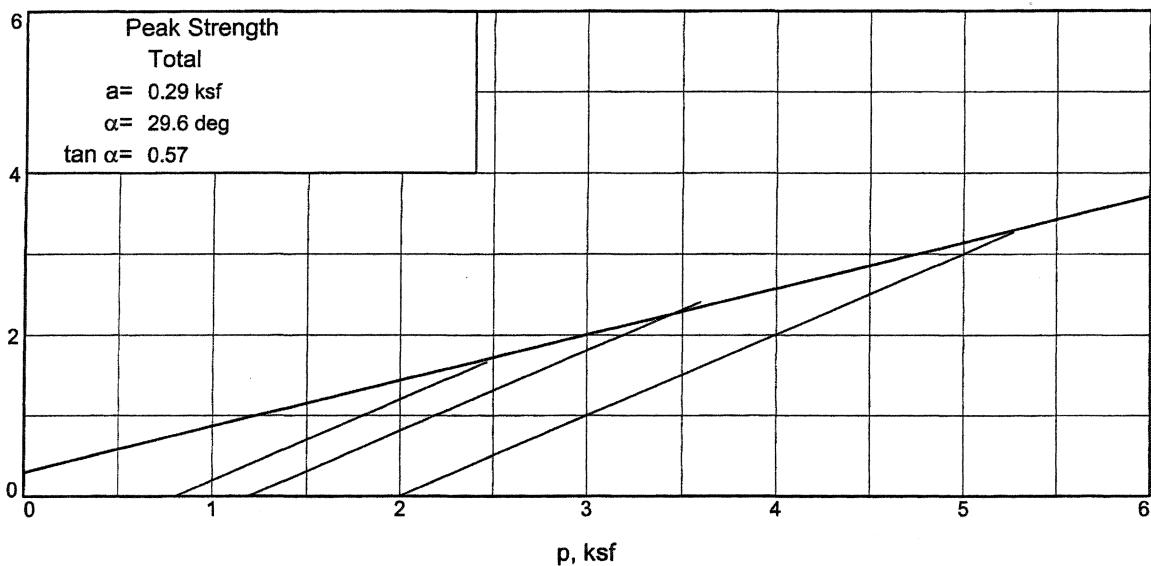
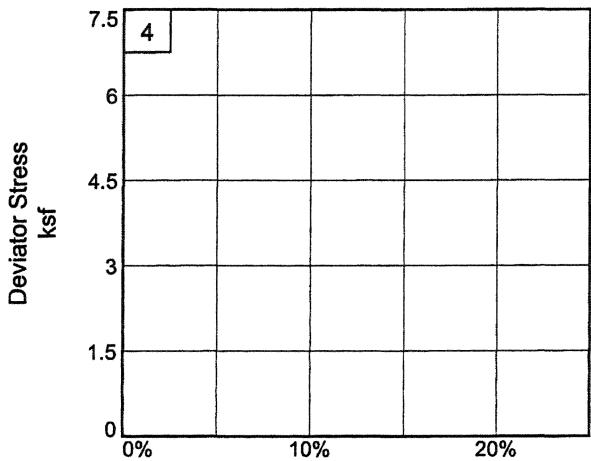
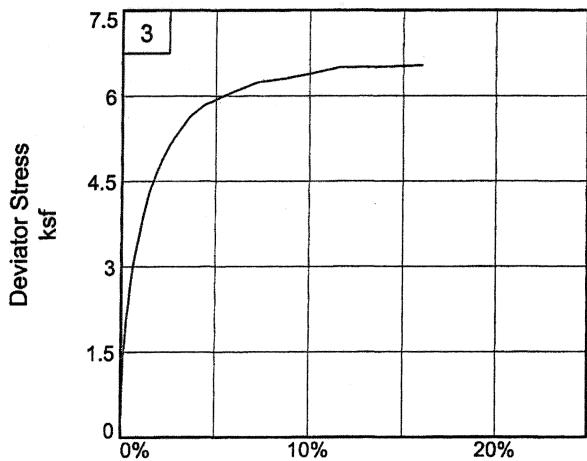
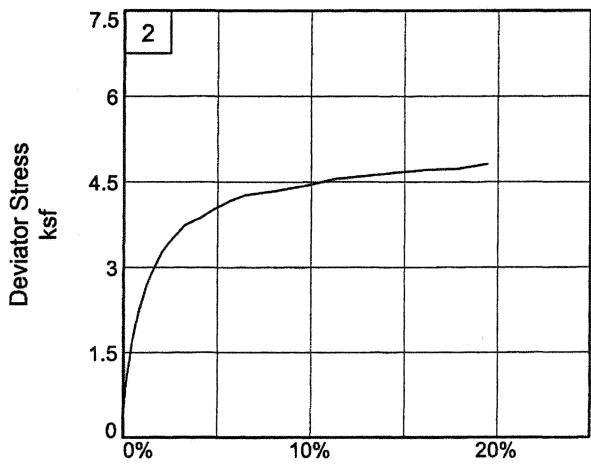
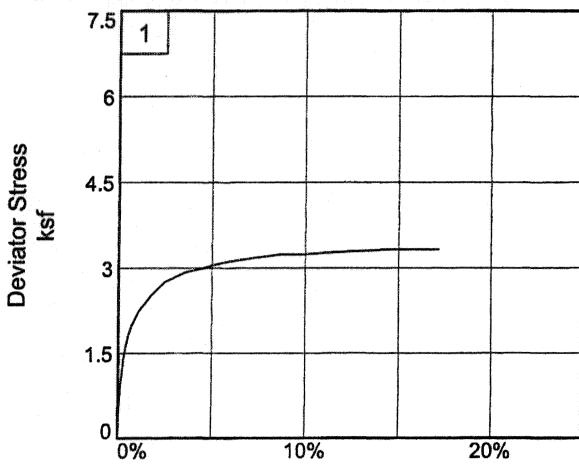
Sample Number: UU-90% 14 day cured

Proj. No.: 6738-05-4573

Date: 7/12/05

TRIAXIAL SHEAR TEST REPORT
MACTEC ENGINEERING AND CONSULTING, INC.
Tested By: MC

Checked By: Rajni Sukhwani



Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: UU-90% 14 day cured

Project No.: 6738-05-4573

Reviewed By _____

MACTEC Engineering and Consulting, Inc.

Tested By: MC _____

Checked By: _____

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

7/14/2005

8:57 AM

Date: 7/12/05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: UU-90% 14 day cured
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks: Specimen cured 14 days after molding.
Type of Sample: Remolded

Specific Gravity=2.762 **LL**= **PL**= **PI**=

Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	112.710		1524.300
Moisture content: Dry soil+tare, gms.	100.400		1328.800
Moisture content: Tare, gms.	24.580		115.390
Moisture, %	16.2	22.7	16.1
Moist specimen weight, gms.	1408.9		
Diameter, in.	2.84	2.82	
Area, in.²	6.33	6.24	
Height, in.	7.04	6.99	
Net decrease in height, in.		0.05	
Wet Density, pcf	120.4	130.0	
Dry density, pcf	103.5	105.9	
Void ratio	0.6653	0.6278	
Saturation, %	67.4	100.0	

Test Readings for Specimen No. 1

Primary load ring constant = .463 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 5.60 psi (0.81 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 3.32 ksf at reading no. 28

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator	Minor Princ.	Major Princ.	1:3 Ratio	P ksf	Q ksf
					Stress ksf	Stress ksf	Stress ksf			
0	0.0000	0.0	0.0	0.0	0.00	0.81	0.81	1.00		0.81
1	0.0010	20.0	9.3	0.0	0.21	0.81	1.02	1.26		0.91
2	0.0050	56.0	25.9	0.1	0.60	0.81	1.40	1.74		1.11
3	0.0100	93.0	43.1	0.1	0.99	0.81	1.80	2.23		1.30
4	0.0150	107.0	49.5	0.2	1.14	0.81	1.95	2.41		1.38
5	0.0200	130.0	60.2	0.3	1.39	0.81	2.19	2.72		1.50
6	0.0250	142.0	65.7	0.4	1.51	0.81	2.32	2.87		1.56
7	0.0300	153.0	70.8	0.4	1.63	0.81	2.43	3.02		1.62
8	0.0350	164.0	75.9	0.5	1.74	0.81	2.55	3.16		1.68
9	0.0400	173.0	80.1	0.6	1.84	0.81	2.64	3.28		1.73
10	0.0450	178.0	82.4	0.6	1.89	0.81	2.70	3.34		1.75
11	0.0500	186.0	86.1	0.7	1.97	0.81	2.78	3.45		1.79
12	0.0750	210.0	97.2	1.1	2.22	0.81	3.03	3.75		1.92
13	0.1000	226.0	104.6	1.4	2.38	0.81	3.19	3.95		2.00
14	0.1250	241.0	111.6	1.8	2.53	0.81	3.34	4.14		2.07
15	0.1500	253.0	117.1	2.1	2.65	0.81	3.45	4.28		2.13
16	0.1750	264.0	122.2	2.5	2.75	0.81	3.56	4.41		2.18
17	0.2000	270.0	125.0	2.9	2.80	0.81	3.61	4.48		2.21
18	0.2500	283.0	131.0	3.6	2.92	0.81	3.72	4.62		2.26
19	0.3000	290.0	134.3	4.3	2.97	0.81	3.77	4.68		2.29
20	0.3500	299.0	138.4	5.0	3.03	0.81	3.84	4.76		2.32
21	0.4000	307.0	142.1	5.7	3.09	0.81	3.90	4.84		2.35
22	0.5000	319.0	147.7	7.2	3.16	0.81	3.97	4.92		2.39
23	0.6000	330.0	152.8	8.6	3.22	0.81	4.03	5.00		2.42
24	0.7000	336.0	155.6	10.0	3.23	0.81	4.04	5.01		2.42
25	0.8000	345.0	159.7	11.4	3.26	0.81	4.07	5.05		2.44
26	0.9000	353.0	163.4	12.9	3.29	0.81	4.09	5.08		2.45
27	1.0000	362.0	167.6	14.3	3.31	0.81	4.12	5.11		2.46
28	1.1000	369.0	170.8	15.7	3.32	0.81	4.13	5.12		2.47
29	1.2000	375.0	173.6	17.2	3.32	0.81	4.13	5.12		2.47

Parameters for Specimen No. 2			
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	122.110		1314.500
Moisture content: Dry soil+tare, gms.	109.300		1148.100
Moisture content: Tare, gms.	30.670		108.500
Moisture, %	16.3	25.2	16.0
Moist specimen weight, gms.	1205.4		
Diameter, in.	2.84	2.83	
Area, in. ²	6.33	6.29	
Height, in.	6.19	6.17	
Net decrease in height, in.		0.02	
Wet Density, pcf	117.1	127.3	
Dry density, pcf	100.7	101.7	
Void ratio	0.7122	0.6957	
Saturation, %	63.2	100.0	

Test Readings for Specimen No. 2

Primary load ring constant = .463 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 8.30 psi (1.20 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 4.80 ksf at reading no. 29

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.0	0.0	0.0	0.00	1.20	1.20	1.00		1.20
1	0.0010	25.0	11.6	0.0	0.26	1.20	1.46	1.22		1.33
2	0.0050	68.0	31.5	0.1	0.72	1.20	1.91	1.60		1.56
3	0.0100	94.0	43.5	0.2	0.99	1.20	2.19	1.83		1.69
4	0.0150	113.0	52.3	0.2	1.19	1.20	2.39	2.00		1.79
5	0.0200	130.0	60.2	0.3	1.37	1.20	2.57	2.15		1.88
6	0.0250	146.0	67.6	0.4	1.54	1.20	2.74	2.29		1.97
7	0.0300	162.0	75.0	0.5	1.71	1.20	2.90	2.43		2.05
8	0.0350	175.0	81.0	0.6	1.84	1.20	3.04	2.54		2.12
9	0.0400	189.0	87.5	0.6	1.99	1.20	3.18	2.66		2.19
10	0.0450	197.0	91.2	0.7	2.07	1.20	3.27	2.73		2.23
11	0.0500	208.0	96.3	0.8	2.19	1.20	3.38	2.83		2.29
12	0.0750	255.0	118.1	1.2	2.67	1.20	3.86	3.23		2.53
13	0.1000	285.0	132.0	1.6	2.97	1.20	4.17	3.49		2.68
14	0.1250	313.0	144.9	2.0	3.25	1.20	4.44	3.72		2.82
15	0.1500	332.0	153.7	2.4	3.43	1.20	4.63	3.87		2.91
16	0.1750	348.0	161.1	2.8	3.58	1.20	4.78	4.00		2.99
17	0.2000	364.0	168.5	3.2	3.73	1.20	4.93	4.12		3.06
18	0.2500	379.0	175.5	4.1	3.85	1.20	5.05	4.22		3.12
19	0.3000	399.0	184.7	4.9	4.02	1.20	5.22	4.36		3.21
20	0.3500	416.0	192.6	5.7	4.16	1.20	5.35	4.48		3.27
21	0.4000	430.0	199.1	6.5	4.26	1.20	5.46	4.56		3.33
22	0.5000	445.0	206.0	8.1	4.33	1.20	5.53	4.62		3.36
23	0.6000	463.0	214.4	9.7	4.43	1.20	5.62	4.70		3.41
24	0.7000	484.0	224.1	11.3	4.55	1.20	5.74	4.80		3.47

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
25	0.8000	499.0	231.0	13.0	4.60	1.20	5.80	4.85		3.50
26	0.9000	515.0	238.4	14.6	4.66	1.20	5.85	4.90		3.53
27	1.0000	530.0	245.4	16.2	4.70	1.20	5.90	4.94		3.55
28	1.1000	542.0	250.9	17.8	4.72	1.20	5.91	4.95		3.55
29	1.2000	563.0	260.7	19.4	4.80	1.20	6.00	5.02		3.60

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	113.500		1454.600
Moisture content: Dry soil+tare, gms.	101.810		1264.500
Moisture content: Tare, gms.	30.010		106.100
Moisture, %	16.3	24.9	16.4
Moist specimen weight, gms.	1347.8		
Diameter, in.	2.84	2.83	
Area, in.²	6.33	6.29	
Height, in.	6.89	6.87	
Net decrease in height, in.		0.02	
Wet Density, pcf	117.6	127.6	
Dry density, pcf	101.2	102.2	
Void ratio	0.7043	0.6866	
Saturation, %	63.8	100.0	

Test Readings for Specimen No. 3

Primary load ring constant = .463 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 13.90 psi (2.00 ksf)

Back pressure = 0.00 psi (0.00 ksf)

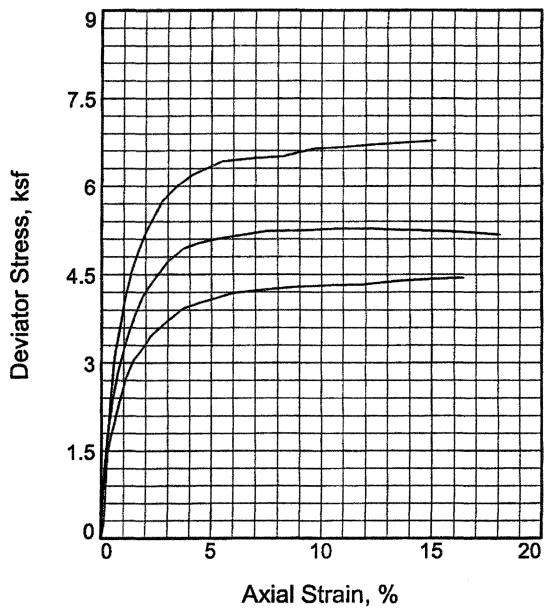
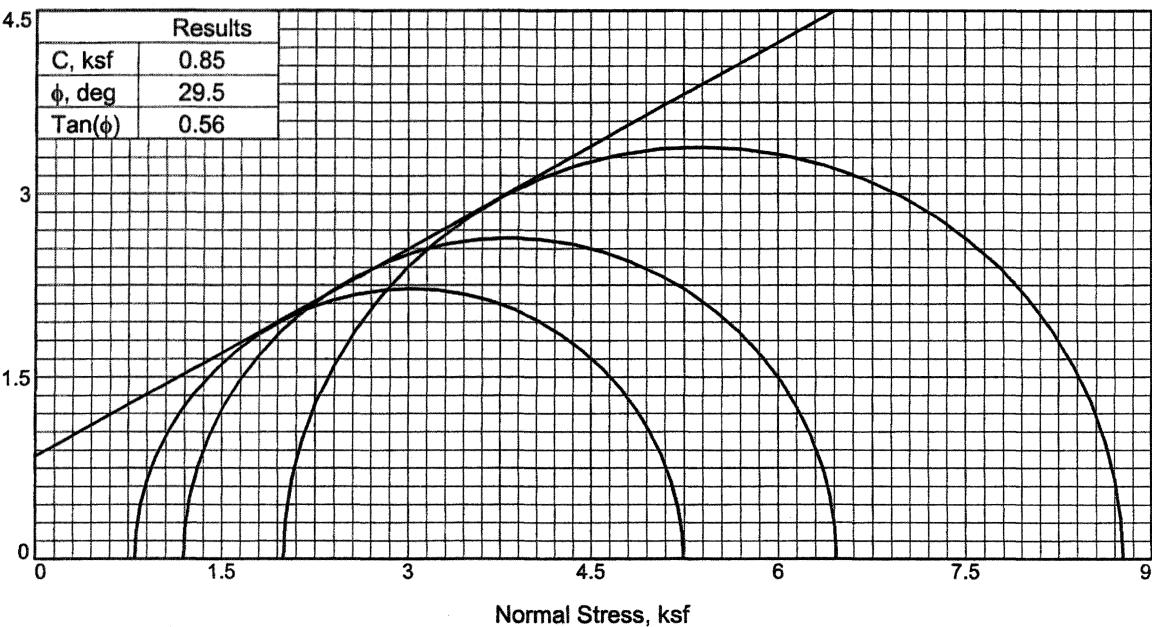
Strain rate, in./min. = 0.05

Fail. Stress = 6.53 ksf at reading no. 28

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.0	0.0	0.0	0.00	2.00	2.00	1.00		2.00
1	0.0010	15.0	6.9	0.0	0.16	2.00	2.16	1.08		2.08
2	0.0050	87.0	40.3	0.1	0.92	2.00	2.92	1.46		2.46
3	0.0100	138.0	63.9	0.1	1.46	2.00	3.46	1.73		2.73
4	0.0150	170.0	78.7	0.2	1.80	2.00	3.80	1.90		2.90
5	0.0200	193.0	89.4	0.3	2.04	2.00	4.04	2.02		3.02
6	0.0250	217.0	100.5	0.4	2.29	2.00	4.29	2.14		3.15
7	0.0300	237.0	109.7	0.4	2.50	2.00	4.50	2.25		3.25
8	0.0350	255.0	118.1	0.5	2.69	2.00	4.69	2.34		3.35
9	0.0400	272.0	125.9	0.6	2.87	2.00	4.87	2.43		3.43
10	0.0450	290.0	134.3	0.7	3.05	2.00	5.06	2.53		3.53
11	0.0500	300.0	138.9	0.7	3.16	2.00	5.16	2.58		3.58
12	0.0750	360.0	166.7	1.1	3.77	2.00	5.78	2.89		3.89
13	0.1000	408.0	188.9	1.5	4.26	2.00	6.26	3.13		4.13
14	0.1250	445.0	206.0	1.8	4.63	2.00	6.63	3.31		4.32
15	0.1500	473.0	219.0	2.2	4.90	2.00	6.91	3.45		4.45

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
16	0.1750	497.0	230.1	2.5	5.13	2.00	7.13	3.56	4.57	
17	0.2000	517.0	239.4	2.9	5.32	2.00	7.32	3.66	4.66	
18	0.2500	553.0	256.0	3.6	5.65	2.00	7.65	3.82	4.83	
19	0.3000	576.0	266.7	4.4	5.84	2.00	7.84	3.92	4.92	
20	0.3500	591.0	273.6	5.1	5.94	2.00	7.95	3.97	4.97	
21	0.4000	607.0	281.0	5.8	6.06	2.00	8.06	4.03	5.03	
22	0.5000	635.0	294.0	7.3	6.24	2.00	8.24	4.12	5.12	
23	0.6000	652.0	301.9	8.7	6.31	2.00	8.31	4.15	5.15	
24	0.7000	672.0	311.1	10.2	6.40	2.00	8.40	4.20	5.20	
25	0.8000	695.0	321.8	11.7	6.51	2.00	8.51	4.25	5.26	
26	0.9000	706.0	326.9	13.1	6.50	2.00	8.50	4.25	5.25	
27	1.0000	720.0	333.4	14.6	6.52	2.00	8.52	4.26	5.26	
28	1.1000	734.0	339.8	16.0	6.53	2.00	8.53	4.26	5.27	


Type of Test:

Unconsolidated Undrained

Sample Type: remold

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks: Specimens cured 14 days

Reviewed By _____

	Sample No.	1	2	3
Initial	Water Content,	16.2	16.2	16.3
	Dry Density, pcf	105.1	105.8	103.8
	Saturation,	69.7	71.1	68.1
	Void Ratio	0.6400	0.6298	0.6609
	Diameter, in.	2.85	2.84	2.84
	Height, in.	6.72	6.65	7.32
At Test	Water Content,	22.6	22.2	22.4
	Dry Density, pcf	106.1	106.9	106.5
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.6254	0.6136	0.6189
	Diameter, in.	2.84	2.83	2.82
	Height, in.	6.70	6.63	7.26
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		0.00	0.00	0.00
Cell Pressure, ksf		0.81	1.20	2.00
Fail. Stress, ksf		4.44	5.27	6.77
Ult. Stress, ksf				
σ_1 Failure, ksf		5.24	6.47	8.77
σ_3 Failure, ksf		0.81	1.20	2.00

Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: UU-90%-14 day cured

Proj. No.: 6738-05-4573

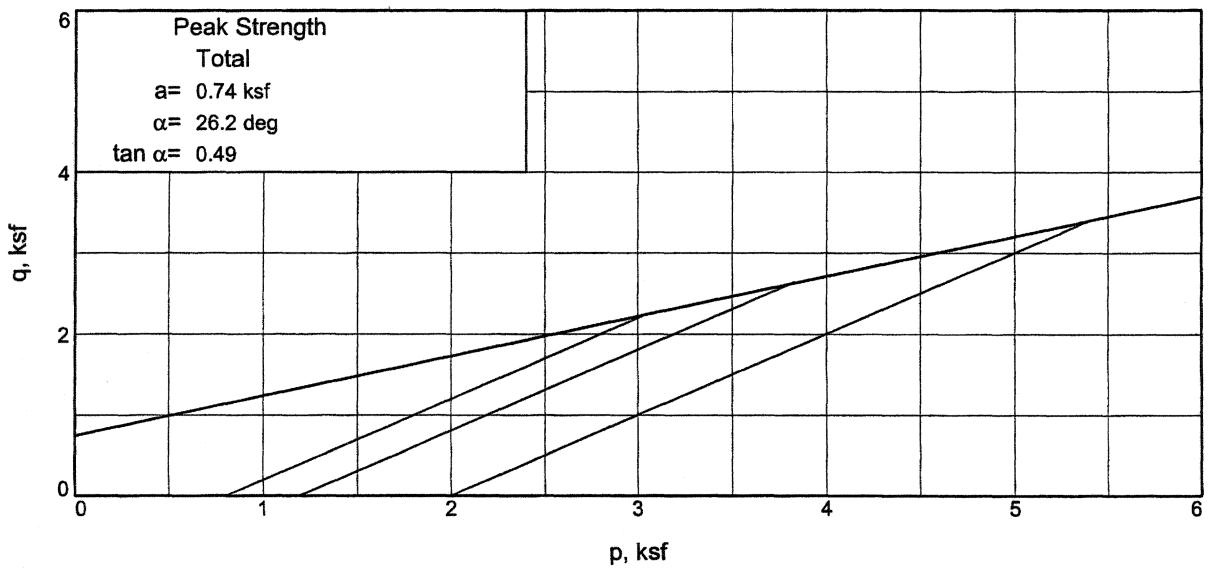
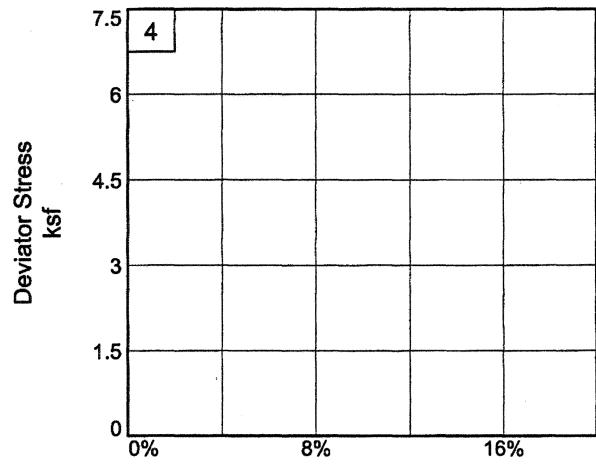
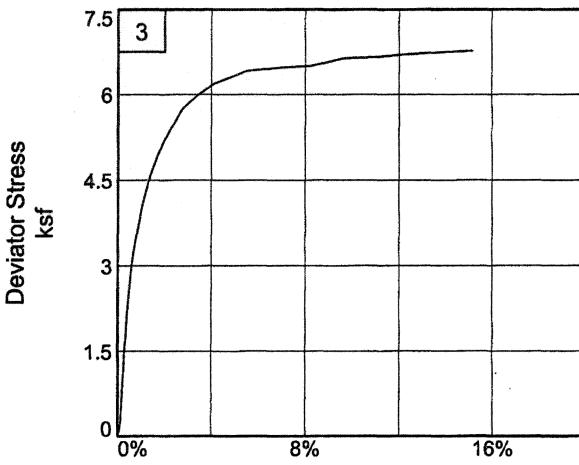
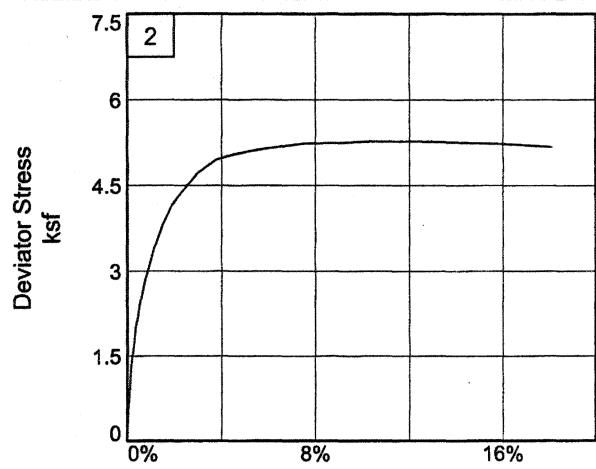
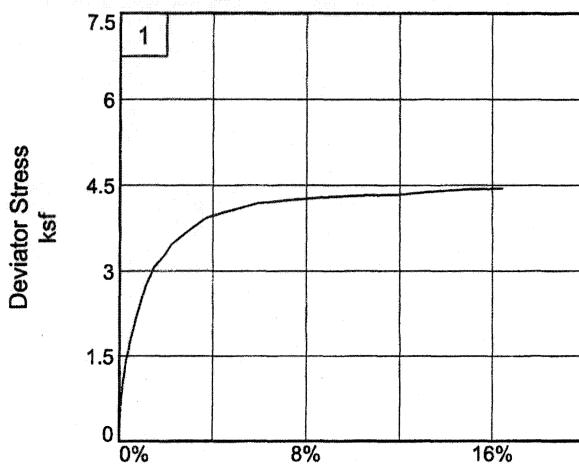
Date: 6-28-05

TRIAXIAL SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.

Tested By: MC

Checked By: *Pajni Sukhwani*



Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: UU-90%-14 day cured

Project No.: 6738-05-4573

Reviewed By _____

MACTEC Engineering and Consulting, Inc.

Tested By: MC

Checked By: _____

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

7/14/2005

8:59 AM

Date: 6-28-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: UU-90%-14 day cured
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks: Specimens cured 14 days
Type of Sample: remold
Specific Gravity=2.762 LL= PL= PI=

Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	139.180		1490.700
Moisture content: Dry soil+tare, gms.	124.280		1300.300
Moisture content: Tare, gms.	32.030		116.290
Moisture, %	16.2	22.6	16.1
Moist specimen weight, gms.	1374.2		
Diameter, in.	2.85	2.84	
Area, in.²	6.38	6.34	
Height, in.	6.72	6.70	
Net decrease in height, in.		0.02	
Wet Density,pcf	122.1	130.1	
Dry density,pcf	105.1	106.1	
Void ratio	0.6400	0.6254	
Saturation, %	69.7	100.0	

Test Readings for Specimen No. 1**Primary load ring constant = .463 lbs. per input unit****Membrane modulus = 0.124105 kN/cm²****Membrane thickness = 0.02 cm****Cell pressure = 5.60 psi (0.81 ksf)****Back pressure = 0.00 psi (0.00 ksf)****Strain rate, in./min. = 0.05****Fail. Stress = 4.44 ksf at reading no. 27**

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.0	0.0	0.0	0.00	0.81	0.81	1.00		0.81
1	0.0010	23.0	10.6	0.0	0.24	0.81	1.05	1.30		0.93
2	0.0050	68.0	31.5	0.1	0.71	0.81	1.52	1.89		1.16
3	0.0100	98.0	45.4	0.1	1.03	0.81	1.84	2.28		1.32
4	0.0150	117.0	54.2	0.2	1.23	0.81	2.03	2.52		1.42
5	0.0200	138.0	63.9	0.3	1.45	0.81	2.25	2.79		1.53
6	0.0250	150.0	69.5	0.4	1.57	0.81	2.38	2.95		1.59
7	0.0300	167.0	77.3	0.4	1.75	0.81	2.55	3.17		1.68
8	0.0350	178.0	82.4	0.5	1.86	0.81	2.67	3.31		1.74
9	0.0400	188.0	87.0	0.6	1.96	0.81	2.77	3.44		1.79
10	0.0450	201.0	93.1	0.7	2.10	0.81	2.91	3.60		1.86
11	0.0500	211.0	97.7	0.7	2.20	0.81	3.01	3.73		1.91
12	0.0750	262.0	121.3	1.1	2.72	0.81	3.53	4.38		2.17
13	0.1000	296.0	137.0	1.5	3.07	0.81	3.87	4.80		2.34
14	0.1250	314.0	145.4	1.9	3.24	0.81	4.05	5.02		2.43
15	0.1500	337.0	156.0	2.2	3.46	0.81	4.27	5.30		2.54
16	0.2000	364.0	168.5	3.0	3.71	0.81	4.52	5.60		2.66
17	0.2500	388.0	179.6	3.7	3.93	0.81	4.73	5.87		2.77
18	0.3000	400.0	185.2	4.5	4.02	0.81	4.82	5.98		2.81
19	0.3500	411.0	190.3	5.2	4.10	0.81	4.90	6.08		2.85
20	0.4000	423.0	195.8	6.0	4.18	0.81	4.99	6.19		2.90
21	0.5000	436.0	201.9	7.5	4.24	0.81	5.05	6.26		2.93
22	0.6000	448.0	207.4	9.0	4.29	0.81	5.09	6.32		2.95
23	0.7000	458.0	212.1	10.4	4.31	0.81	5.12	6.35		2.96
24	0.8000	467.0	216.2	11.9	4.32	0.81	5.13	6.36		2.97
25	0.9000	482.0	223.2	13.4	4.39	0.81	5.19	6.44		3.00
26	1.0000	494.0	228.7	14.9	4.42	0.81	5.22	6.48		3.02
27	1.1000	505.0	233.8	16.4	4.44	0.81	5.24	6.50		3.03

Parameters for Specimen No. 2			
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	93.510		1475.100
Moisture content: Dry soil+tare, gms.	84.650		1284.200
Moisture content: Tare, gms.	30.010		115.500
Moisture, %	16.2	22.2	16.3
Moist specimen weight, gms.	1359.6		
Diameter, in.	2.84	2.83	
Area, in.²	6.33	6.29	
Height, in.	6.65	6.63	
Net decrease in height, in.		0.02	
Wet Density, pcf	123.0	130.6	
Dry density, pcf	105.8	106.9	
Void ratio	0.6298	0.6136	
Saturation, %	71.1	100.0	

Test Readings for Specimen No. 2

Primary load ring constant = .463 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 8.30 psi (1.20 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 5.27 ksf at reading no. 25

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.0	0.0	0.0	0.00	1.20	1.20	1.00		1.20
1	0.0010	20.0	9.3	0.0	0.21	1.20	1.41	1.18		1.30
2	0.0050	63.0	29.2	0.1	0.67	1.20	1.86	1.56		1.53
3	0.0100	110.0	50.9	0.2	1.16	1.20	2.36	1.97		1.78
4	0.0150	141.0	65.3	0.2	1.49	1.20	2.69	2.25		1.94
5	0.0200	166.0	76.9	0.3	1.75	1.20	2.95	2.47		2.07
6	0.0250	190.0	88.0	0.4	2.01	1.20	3.20	2.68		2.20
7	0.0300	205.0	94.9	0.5	2.16	1.20	3.36	2.81		2.28
8	0.0350	223.0	103.2	0.5	2.35	1.20	3.55	2.97		2.37
9	0.0400	239.0	110.7	0.6	2.52	1.20	3.71	3.11		2.45
10	0.0450	254.0	117.6	0.7	2.67	1.20	3.87	3.24		2.53
11	0.0500	268.0	124.1	0.8	2.82	1.20	4.01	3.36		2.60
12	0.0750	322.0	149.1	1.1	3.37	1.20	4.57	3.82		2.88
13	0.1000	365.0	169.0	1.5	3.81	1.20	5.00	4.19		3.10
14	0.1250	398.0	184.3	1.9	4.14	1.20	5.33	4.46		3.26
15	0.1500	420.0	194.5	2.3	4.35	1.20	5.54	4.64		3.37
16	0.1750	440.0	203.7	2.6	4.54	1.20	5.73	4.80		3.46
17	0.2000	460.0	213.0	3.0	4.73	1.20	5.92	4.95		3.56
18	0.2500	485.0	224.6	3.8	4.94	1.20	6.14	5.14		3.67
19	0.3000	498.0	230.6	4.5	5.04	1.20	6.23	5.21		3.71
20	0.3500	508.0	235.2	5.3	5.10	1.20	6.29	5.27		3.74
21	0.4000	517.0	239.4	6.0	5.15	1.20	6.34	5.31		3.77
22	0.5000	534.0	247.2	7.5	5.23	1.20	6.43	5.38		3.81
23	0.6000	544.0	251.9	9.1	5.24	1.20	6.44	5.39		3.82
24	0.7000	556.0	257.4	10.6	5.27	1.20	6.46	5.41		3.83

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
25	0.8000	566.0	262.1	12.1	5.27	1.20	6.47	5.41		3.83
26	0.9000	574.0	265.8	13.6	5.26	1.20	6.45	5.40		3.82
27	1.0000	582.0	269.5	15.1	5.24	1.20	6.43	5.38		3.81
28	1.1000	590.0	273.2	16.6	5.21	1.20	6.41	5.36		3.80
29	1.2000	596.0	275.9	18.1	5.17	1.20	6.37	5.33		3.78

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	115.810		358.120
Moisture content: Dry soil+tare, gms.	103.080		315.900
Moisture content: Tare, gms.	25.010		54.860
Moisture, %	16.3	22.4	16.2
Moist specimen weight, gms.	1469.7		
Diameter, in.	2.84	2.82	
Area, in.²	6.33	6.23	
Height, in.	7.32	7.26	
Net decrease in height, in.		0.06	
Wet Density, pcf	120.7	130.4	
Dry density, pcf	103.8	106.5	
Void ratio	0.6609	0.6189	
Saturation, %	68.1	100.0	

Test Readings for Specimen No. 3

Primary load ring constant = .463 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 13.90 psi (2.00 ksf)

Back pressure = 0.00 psi (0.00 ksf)

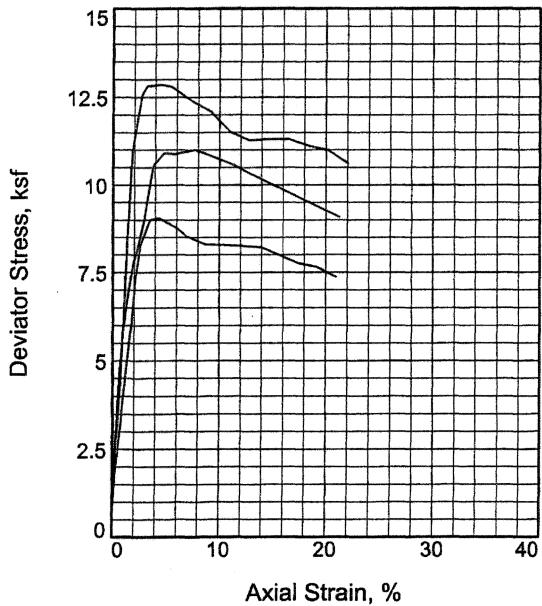
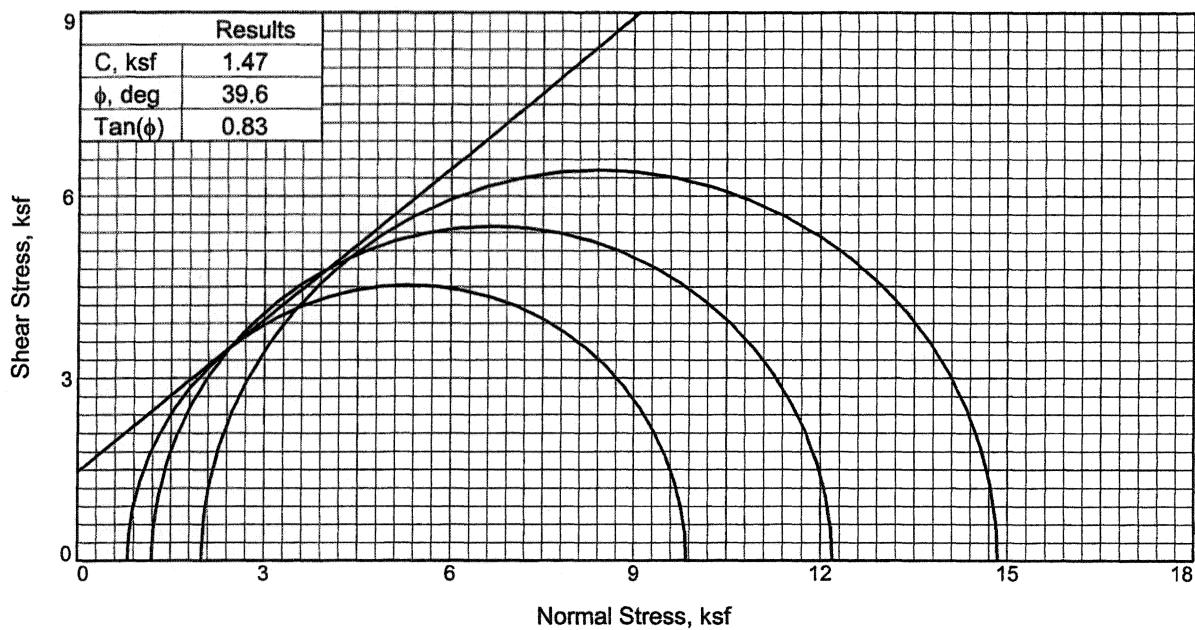
Strain rate, in./min. = 0.05

Fail. Stress = 6.77 ksf at reading no. 27

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.0	0.0	0.0	0.00	2.00	2.00	1.00		2.00
1	0.0010	5.0	2.3	0.0	0.05	2.00	2.06	1.03		2.03
2	0.0050	7.0	3.2	0.1	0.07	2.00	2.08	1.04		2.04
3	0.0100	25.0	11.6	0.1	0.27	2.00	2.27	1.13		2.14
4	0.0150	80.0	37.0	0.2	0.85	2.00	2.86	1.43		2.43
5	0.0200	123.0	56.9	0.3	1.31	2.00	3.31	1.66		2.66
6	0.0250	175.0	81.0	0.3	1.87	2.00	3.87	1.93		2.94
7	0.0300	209.0	96.8	0.4	2.23	2.00	4.23	2.11		3.12
8	0.0350	240.0	111.1	0.5	2.56	2.00	4.56	2.28		3.28
9	0.0400	268.0	124.1	0.6	2.85	2.00	4.86	2.43		3.43
10	0.0450	290.0	134.3	0.6	3.09	2.00	5.09	2.54		3.54
11	0.0500	307.0	142.1	0.7	3.26	2.00	5.27	2.63		3.63
12	0.0750	378.0	175.0	1.0	4.01	2.00	6.01	3.00		4.00
13	0.1000	432.0	200.0	1.4	4.56	2.00	6.56	3.28		4.28
14	0.1250	470.0	217.6	1.7	4.95	2.00	6.95	3.47		4.47
15	0.1500	501.0	232.0	2.1	5.25	2.00	7.25	3.62		4.63

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
16	0.2000	552.0	255.6	2.8	5.75	2.00	7.75	3.87		4.88
17	0.2500	580.0	268.5	3.4	6.00	2.00	8.00	4.00		5.00
18	0.3000	603.0	279.2	4.1	6.19	2.00	8.19	4.09		5.10
19	0.3500	618.0	286.1	4.8	6.30	2.00	8.30	4.15		5.15
20	0.4000	634.0	293.5	5.5	6.41	2.00	8.42	4.20		5.21
21	0.5000	649.0	300.5	6.9	6.47	2.00	8.47	4.23		5.24
22	0.6000	662.0	306.5	8.3	6.50	2.00	8.50	4.25		5.25
23	0.7000	686.0	317.6	9.6	6.64	2.00	8.64	4.32		5.32
24	0.8000	699.0	323.6	11.0	6.66	2.00	8.66	4.33		5.33
25	0.9000	715.0	331.0	12.4	6.71	2.00	8.71	4.35		5.35
26	1.0000	730.0	338.0	13.8	6.74	2.00	8.74	4.37		5.37
27	1.1000	745.0	344.9	15.2	6.77	2.00	8.77	4.38		5.39



Type of Test:
Unconsolidated Undrained

Sample Type: remold

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks:

Reviewed By _____

Sample No.		1	2	3
Initial	Water Content,	15.3	15.3	15.4
	Dry Density,pcf	109.5	109.0	108.9
	Saturation,	73.5	72.7	72.9
	Void Ratio	0.5754	0.5818	0.5835
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.73	5.23	5.47
At Test	Water Content,	20.4	19.3	20.3
	Dry Density,pcf	110.4	112.5	110.5
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.5622	0.5331	0.5601
	Diameter, in.	2.83	2.81	2.83
	Height, in.	5.71	5.18	5.44
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		0.0	0.0	0.0
Cell Pressure, ksf		0.8	1.2	2.0
Fail. Stress, ksf		9.1	11.0	12.8
Ult. Stress, ksf				
σ_1 Failure, ksf		9.9	12.2	14.8
σ_3 Failure, ksf		0.8	1.2	2.0

Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: UU-95%-B

Proj. No.: 6738-05-4573

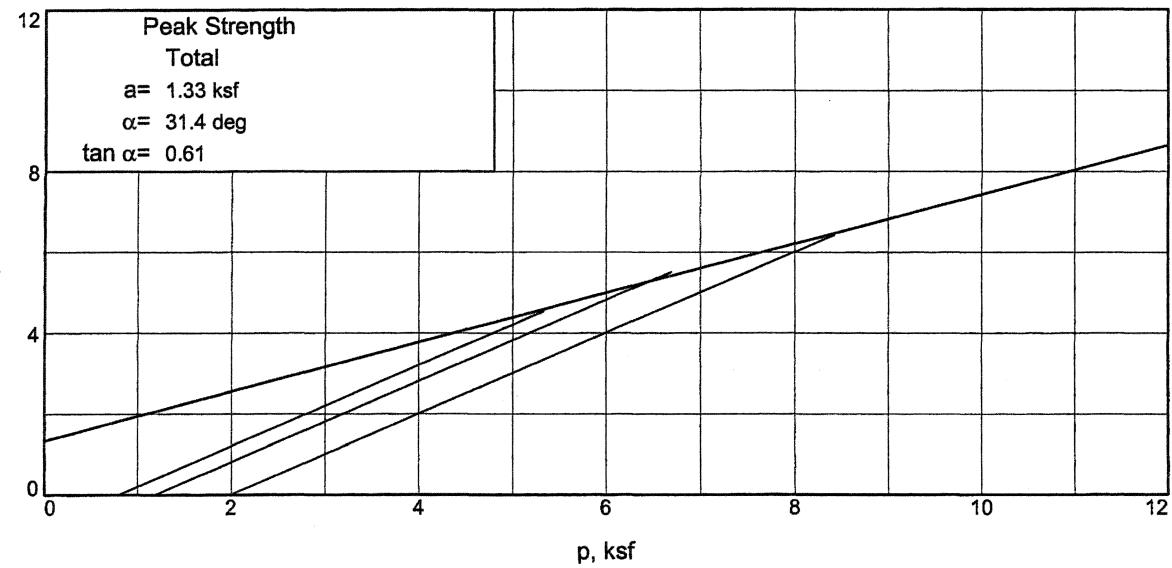
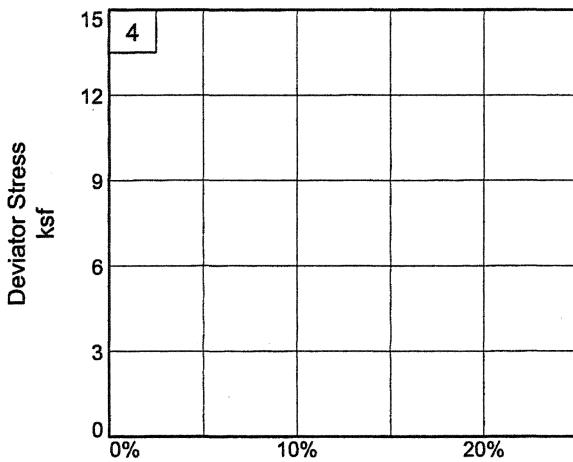
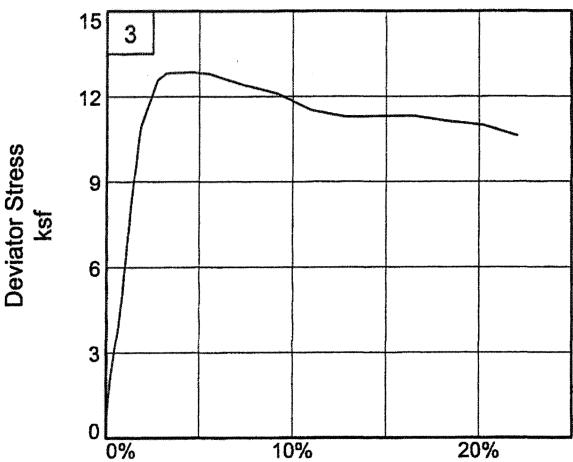
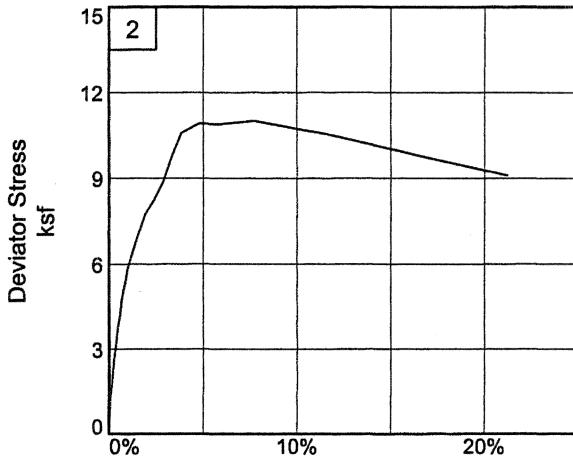
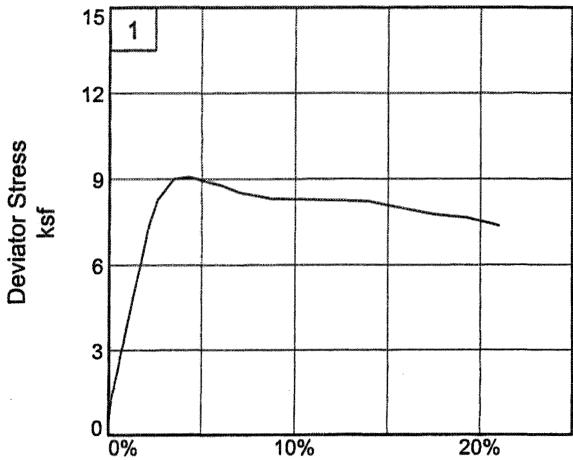
Date: 6-11-05

TRIAXIAL SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.

Tested By: mc

Checked By: Rajni Sukhwani



Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: UU-95%-B

Project No.: 6738-05-4573

Reviewed By _____

MACTEC Engineering and Consulting, Inc.

Tested By: mc _____

Checked By: _____

TRIAXIAL COMPRESSION TEST
Unconsolidated Undrained

6/15/2005
10:46 AM

Date: 6-11-05
 Client: Nodarse and Associates
 Project: Material Testing-Nodarse
 Project No.: 6738-05-4573
 Sample Number: UU-95%-B
 Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
 Remarks:
 Type of Sample: remold
 Specific Gravity=2.762 LL= PL= PI=

Test Method: COE uniform strain

Parameters for Specimen No. 1			
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	188.130		1340.400
Moisture content: Dry soil+tare, gms.	170.070		1175.600
Moisture content: Tare, gms.	52.090		116.300
Moisture, %	15.3	20.4	15.6
Moist specimen weight, gms.	1202.5		
Diameter, in.	2.84	2.83	
Area, in. ²	6.33	6.30	
Height, in.	5.73	5.71	
Net decrease in height, in.		0.02	
Wet Density, pcf	126.2	132.8	
Dry density, pcf	109.5	110.4	
Void ratio	0.5754	0.5622	
Saturation, %	73.5	100.0	

Test Readings for Specimen No. 1

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 5.60 psi (0.81 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 9.05 ksf at reading no. 17

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	0.81	0.81	1.00		0.81
1	0.0010	5.00	16.6	0.0	0.38	0.81	1.19	1.47		1.00
2	0.0050	12.00	39.8	0.1	0.91	0.81	1.71	2.13		1.26
3	0.0100	18.00	59.6	0.2	1.36	0.81	2.17	2.69		1.49
4	0.0150	22.00	72.9	0.3	1.66	0.81	2.47	3.06		1.64
5	0.0200	26.00	86.1	0.4	1.96	0.81	2.77	3.43		1.79
6	0.0250	29.00	96.1	0.4	2.19	0.81	2.99	3.71		1.90
7	0.0300	32.00	106.0	0.5	2.41	0.81	3.22	3.99		2.01
8	0.0350	36.00	119.3	0.6	2.71	0.81	3.52	4.36		2.16
9	0.0400	40.00	132.5	0.7	3.01	0.81	3.81	4.73		2.31
10	0.0450	43.00	142.5	0.8	3.23	0.81	4.04	5.01		2.42
11	0.0500	47.00	155.7	0.9	3.53	0.81	4.33	5.38		2.57
12	0.0750	65.00	215.3	1.3	4.86	0.81	5.66	7.02		3.24
13	0.1000	81.00	268.4	1.8	6.03	0.81	6.83	8.47		3.82
14	0.1250	100.00	331.3	2.2	7.41	0.81	8.21	10.19		4.51
15	0.1500	112.00	371.1	2.6	8.26	0.81	9.07	11.24		4.94
16	0.2000	123.00	407.5	3.5	8.99	0.81	9.80	12.15		5.30
17	0.2500	125.00	414.1	4.4	9.05	0.81	9.86	12.23		5.33
18	0.3000	124.00	410.8	5.3	8.90	0.81	9.70	12.03		5.26
19	0.3500	123.00	407.5	6.1	8.74	0.81	9.55	11.84		5.18
20	0.4000	121.00	400.9	7.0	8.52	0.81	9.33	11.57		5.07
21	0.5000	120.00	397.6	8.8	8.29	0.81	9.10	11.28		4.95
22	0.6000	122.00	404.2	10.5	8.27	0.81	9.08	11.25		4.94
23	0.7000	124.00	410.8	12.3	8.24	0.81	9.05	11.22		4.93
24	0.8000	126.00	417.4	14.0	8.21	0.81	9.01	11.18		4.91
25	0.9000	125.00	414.1	15.8	7.98	0.81	8.78	10.89		4.79
26	1.0000	124.00	410.8	17.5	7.75	0.81	8.55	10.61		4.68
27	1.1000	125.00	414.1	19.3	7.64	0.81	8.45	10.48		4.63
28	1.2000	123.00	407.5	21.0	7.36	0.81	8.17	10.13		4.49

Parameters for Specimen No. 2				
Specimen Parameter	Initial	Saturated	Final	
Moisture content: Moist soil+tare, gms.	188.130		1199.200	
Moisture content: Dry soil+tare, gms.	170.070		1052.600	
Moisture content: Tare, gms.	52.090		115.000	
Moisture, %	15.3	19.3	15.6	
Moist specimen weight, gms.	1093.1			
Diameter, in.	2.84	2.81		
Area, in.²	6.33	6.20		
Height, in.	5.23	5.18		
Net decrease in height, in.		0.05		
Wet Density, pcf	125.7	134.2		
Dry density, pcf	109.0	112.5		
Void ratio	0.5818	0.5331		
Saturation, %	72.7	100.0		

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 8.30 psi (1.20 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 11.00 ksf at reading no. 20

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.20	1.20	1.00		1.20
1	0.0010	5.00	16.6	0.0	0.38	1.20	1.58	1.32		1.39
2	0.0050	16.00	53.0	0.1	1.23	1.20	2.42	2.03		1.81
3	0.0100	26.00	86.1	0.2	2.00	1.20	3.19	2.67		2.19
4	0.0150	35.00	116.0	0.3	2.68	1.20	3.88	3.25		2.54
5	0.0200	41.00	135.8	0.4	3.14	1.20	4.34	3.63		2.77
6	0.0250	49.00	162.3	0.5	3.75	1.20	4.95	4.14		3.07
7	0.0300	54.00	178.9	0.6	4.13	1.20	5.32	4.45		3.26
8	0.0350	61.00	202.1	0.7	4.66	1.20	5.85	4.90		3.52
9	0.0400	66.00	218.7	0.8	5.04	1.20	6.23	5.21		3.71
10	0.0450	70.00	231.9	0.9	5.34	1.20	6.53	5.46		3.86
11	0.0500	76.00	251.8	1.0	5.79	1.20	6.98	5.84		4.09
12	0.0750	90.00	298.2	1.4	6.82	1.20	8.02	6.71		4.61
13	0.1000	103.00	341.2	1.9	7.77	1.20	8.96	7.50		5.08
14	0.1250	110.00	364.4	2.4	8.25	1.20	9.45	7.91		5.32
15	0.1500	119.00	394.2	2.9	8.89	1.20	10.08	8.43		5.64
16	0.1750	132.00	437.3	3.4	9.81	1.20	11.00	9.21		6.10
17	0.2000	143.00	473.8	3.9	10.57	1.20	11.77	9.85		6.48
18	0.2500	149.00	493.6	4.8	10.90	1.20	12.10	10.12		6.65
19	0.3000	150.00	497.0	5.8	10.87	1.20	12.06	10.09		6.63
20	0.4000	155.00	513.5	7.7	11.00	1.20	12.19	10.20		6.69
21	0.5000	155.00	513.5	9.7	10.77	1.20	11.96	10.01		6.58
22	0.6000	155.00	513.5	11.6	10.54	1.20	11.73	9.82		6.46
23	0.7000	154.00	510.2	13.5	10.24	1.20	11.44	9.57		6.32
24	0.8000	153.00	506.9	15.5	9.95	1.20	11.14	9.32		6.17

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
25	0.9000	152.00	503.6	17.4	9.66	1.20	10.85	9.08		6.02
26	1.0000	151.00	500.3	19.3	9.37	1.20	10.56	8.84		5.88
27	1.1000	150.00	497.0	21.3	9.08	1.20	10.28	8.60		5.74

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	189.370		1256.200
Moisture content: Dry soil+tare, gms.	171.030		1099.800
Moisture content: Tare, gms.	51.890		98.400
Moisture, %	15.4	20.3	15.6
Moist specimen weight, gms.	1142.9		
Diameter, in.	2.84	2.83	
Area, in.²	6.33	6.27	
Height, in.	5.47	5.44	
Net decrease in height, in.		0.03	
Wet Density, pcf	125.7	132.9	
Dry density, pcf	108.9	110.5	
Void ratio	0.5835	0.5601	
Saturation, %	72.9	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 13.90 psi (2.00 ksf)

Back pressure = 0.00 psi (0.00 ksf)

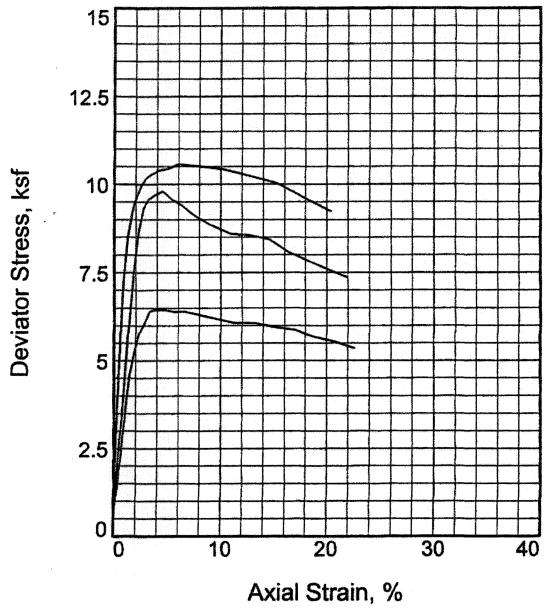
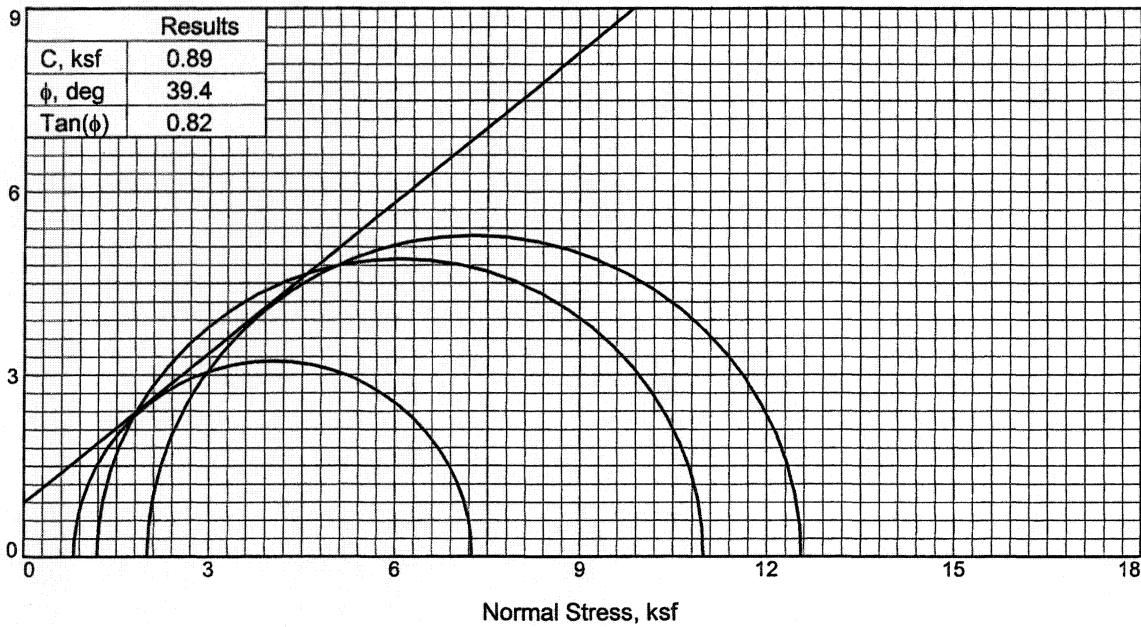
Strain rate, in./min. = 0.05

Fail. Stress = 12.84 ksf at reading no. 17

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.00	2.00	1.00		2.00
1	0.0010	6.00	19.9	0.0	0.46	2.00	2.46	1.23		2.23
2	0.0050	17.00	56.3	0.1	1.29	2.00	3.29	1.65		2.65
3	0.0100	24.00	79.5	0.2	1.82	2.00	3.82	1.91		2.91
4	0.0150	30.00	99.4	0.3	2.28	2.00	4.28	2.14		3.14
5	0.0200	36.00	119.3	0.4	2.73	2.00	4.73	2.36		3.37
6	0.0250	41.00	135.8	0.5	3.10	2.00	5.11	2.55		3.55
7	0.0300	46.00	152.4	0.6	3.48	2.00	5.48	2.74		3.74
8	0.0350	51.00	169.0	0.6	3.85	2.00	5.86	2.93		3.93
9	0.0400	57.00	188.8	0.7	4.30	2.00	6.31	3.15		4.15
10	0.0450	64.00	212.0	0.8	4.83	2.00	6.83	3.41		4.42
11	0.0500	72.00	238.5	0.9	5.43	2.00	7.43	3.71		4.71
12	0.0750	112.00	371.1	1.4	8.40	2.00	10.40	5.20		6.20
13	0.1000	146.00	483.7	1.8	10.90	2.00	12.90	6.45		7.45
14	0.1500	170.00	563.2	2.8	12.57	2.00	14.58	7.28		8.29
15	0.1750	174.00	576.5	3.2	12.81	2.00	14.81	7.40		8.41
16	0.2000	175.00	579.8	3.7	12.82	2.00	14.82	7.41		8.41
17	0.2500	177.00	586.4	4.6	12.84	2.00	14.85	7.42		8.42

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
18	0.3000	178.00	589.7	5.5	12.79	2.00	14.79	7.39	8.40	
19	0.3500	177.00	586.4	6.4	12.60	2.00	14.60	7.29	8.30	
20	0.4000	176.00	583.1	7.3	12.40	2.00	14.40	7.20	8.20	
21	0.5000	175.00	579.8	9.2	12.09	2.00	14.09	7.04	8.05	
22	0.6000	170.00	563.2	11.0	11.51	2.00	13.51	6.75	7.75	
23	0.7000	170.00	563.2	12.9	11.27	2.00	13.27	6.63	7.64	
24	0.8000	174.00	576.5	14.7	11.29	2.00	13.29	6.64	7.65	
25	0.9000	178.00	589.7	16.5	11.30	2.00	13.30	6.65	7.65	
26	1.0000	179.00	593.0	18.4	11.11	2.00	13.12	6.55	7.56	
27	1.1000	181.00	599.7	20.2	10.98	2.00	12.99	6.49	7.49	
28	1.2000	179.00	593.0	22.0	10.61	2.00	12.61	6.30	7.31	



Type of Test:
Unconsolidated Undrained

Sample Type: remolded

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks:

Reviewed By _____

Sample No.		1	2	3
Initial	Water Content,	16.6	16.1	16.8
	Dry Density, pcf	104.1	103.5	104.6
	Saturation,	70.0	66.7	71.5
	Void Ratio	0.6567	0.6651	0.6486
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.32	5.50	5.90
At Test	Water Content,	22.9	23.3	22.8
	Dry Density, pcf	105.6	105.0	105.7
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.6334	0.6425	0.6310
	Diameter, in.	2.83	2.83	2.83
	Height, in.	5.29	5.47	5.88
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		0.0	0.0	0.0
Cell Pressure, ksf		0.8	1.2	2.0
Fail. Stress, ksf		6.4	9.8	10.6
Ult. Stress, ksf				
σ_1 Failure, ksf		7.3	11.0	12.6
σ_3 Failure, ksf		0.8	1.2	2.0

Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: UU-90%-B

Proj. No.: 6738-05-4573

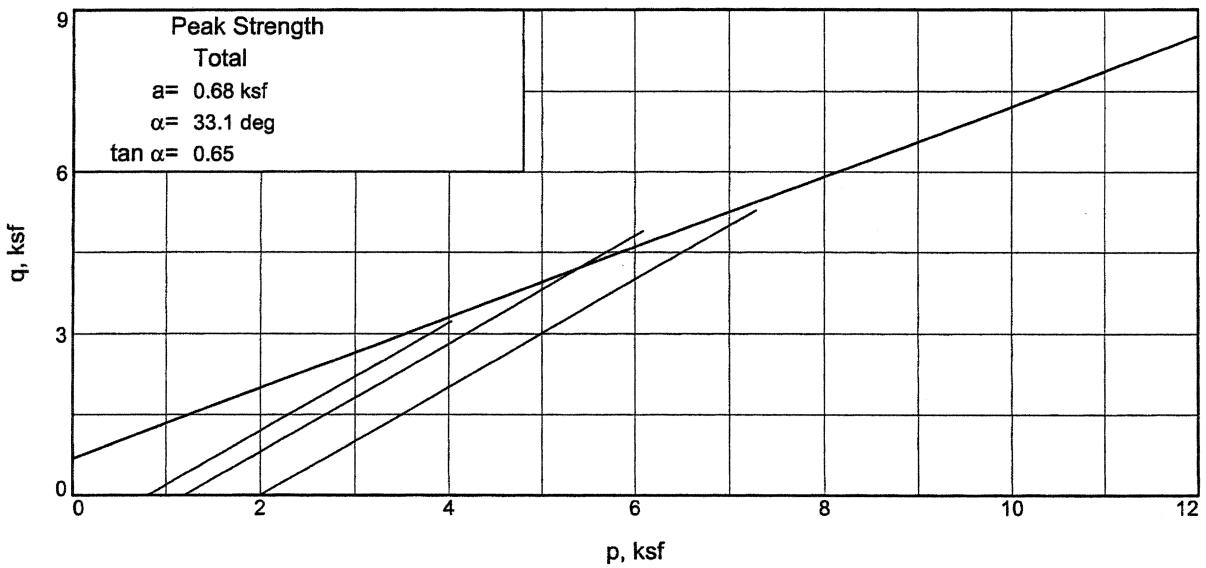
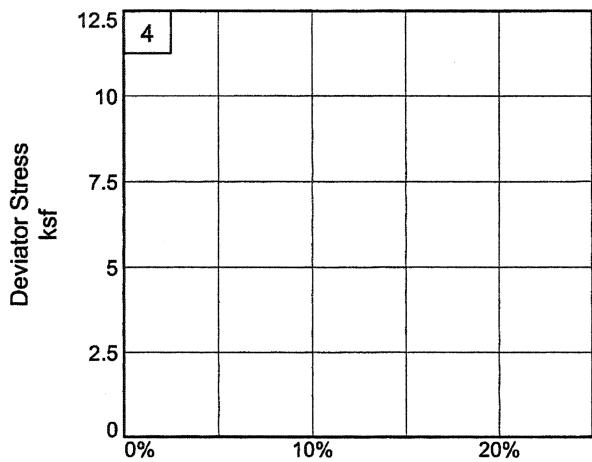
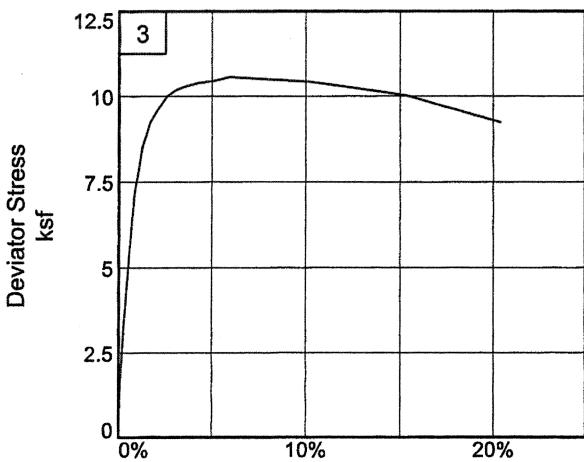
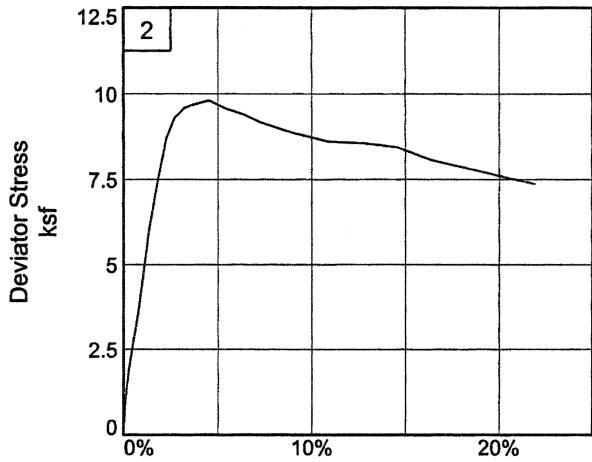
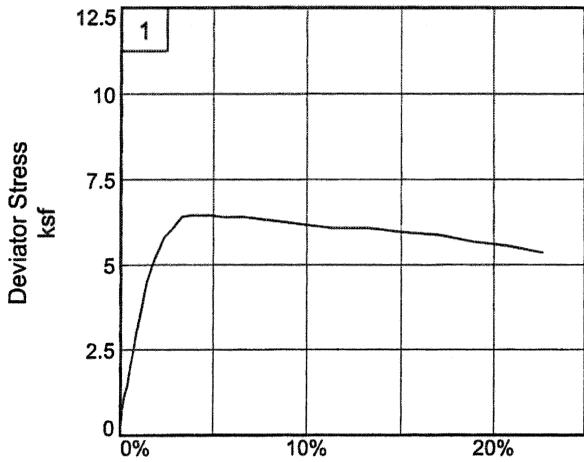
Date: 6-10-05

TRIAXIAL SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.

Tested By: mc

Checked By: Rajni Sukhwani



Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: UU-90%-B

Project No.: 6738-05-4573

Reviewed By _____

MACTEC Engineering and Consulting, Inc.

Tested By: mc

Checked By: _____

TRIAXIAL COMPRESSION TEST
Unconsolidated Undrained

6/15/2005
10:45 AM

Date: 6-10-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: UU-90%-B
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks:
Type of Sample: remolded
Specific Gravity=2.762 **LL**= **PL**= **PI**=
Test Method: COE uniform strain

Parameters for Specimen No. 1			
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	229.580		1194.700
Moisture content: Dry soil+tare, gms.	204.670		1041.000
Moisture content: Tare, gms.	55.040		115.200
Moisture, %	16.6	22.9	16.6
Moist specimen weight, gms.	1074.0		
Diameter, in.	2.84	2.83	
Area, in.²	6.33	6.28	
Height, in.	5.32	5.29	
Net decrease in height, in.		0.03	
Wet Density, pcf	121.4	129.8	
Dry density, pcf	104.1	105.6	
Void ratio	0.6567	0.6334	
Saturation, %	70.0	100.0	

Test Readings for Specimen No. 1

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 5.60 psi (0.81 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 6.45 ksf at reading no. 18

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	0.81	0.81	1.00		0.81
1	0.0010	3.00	9.9	0.0	0.23	0.81	1.03	1.28		0.92
2	0.0050	10.00	33.1	0.1	0.76	0.81	1.57	1.94		1.19
3	0.0100	14.00	46.4	0.2	1.06	0.81	1.87	2.32		1.34
4	0.0150	17.00	56.3	0.3	1.29	0.81	2.10	2.60		1.45
5	0.0200	19.00	62.9	0.4	1.44	0.81	2.25	2.78		1.53
6	0.0250	24.00	79.5	0.5	1.82	0.81	2.62	3.25		1.71
7	0.0300	28.00	92.8	0.6	2.12	0.81	2.92	3.62		1.86
8	0.0350	31.00	102.7	0.7	2.34	0.81	3.15	3.90		1.98
9	0.0400	35.00	116.0	0.8	2.64	0.81	3.45	4.27		2.13
10	0.0450	39.00	129.2	0.8	2.94	0.81	3.75	4.65		2.28
11	0.0500	42.00	139.1	0.9	3.16	0.81	3.97	4.92		2.39
12	0.0750	60.00	198.8	1.4	4.50	0.81	5.30	6.58		3.05
13	0.1000	70.00	231.9	1.9	5.22	0.81	6.03	7.47		3.42
14	0.1250	78.00	258.4	2.4	5.79	0.81	6.60	8.18		3.70
15	0.1500	82.00	271.7	2.8	6.06	0.81	6.86	8.51		3.84
16	0.1750	87.00	288.2	3.3	6.40	0.81	7.20	8.93		4.00
17	0.2000	88.00	291.5	3.8	6.44	0.81	7.24	8.98		4.03
18	0.2500	89.00	294.9	4.7	6.45	0.81	7.25	8.99		4.03
19	0.3000	89.00	294.9	5.7	6.38	0.81	7.19	8.92		4.00
20	0.3500	90.00	298.2	6.6	6.39	0.81	7.20	8.92		4.00
21	0.4000	90.00	298.2	7.6	6.33	0.81	7.13	8.84		3.97
22	0.5000	90.00	298.2	9.4	6.20	0.81	7.00	8.68		3.90
23	0.6000	90.00	298.2	11.3	6.07	0.81	6.87	8.52		3.84
24	0.7000	92.00	304.8	13.2	6.07	0.81	6.88	8.53		3.84
25	0.8000	92.00	304.8	15.1	5.94	0.81	6.74	8.36		3.78
26	0.9000	93.00	308.1	17.0	5.87	0.81	6.67	8.28		3.74
27	1.0000	92.00	304.8	18.9	5.67	0.81	6.48	8.04		3.64
28	1.1000	92.00	304.8	20.8	5.54	0.81	6.35	7.87		3.58
29	1.2000	91.00	301.5	22.7	5.35	0.81	6.16	7.63		3.48

Parameters for Specimen No. 2			
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	299.270		1196.700
Moisture content: Dry soil+tare, gms.	265.040		1041.800
Moisture content: Tare, gms.	51.880		106.200
Moisture, %	16.1	23.3	16.6
Moist specimen weight, gms.	1099.1		
Diameter, in.	2.84	2.83	
Area, in. ²	6.33	6.28	
Height, in.	5.50	5.47	
Net decrease in height, in.		0.03	
Wet Density, pcf	120.2	129.4	
Dry density, pcf	103.5	105.0	
Void ratio	0.6651	0.6425	
Saturation, %	66.7	100.0	

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 8.30 psi (1.20 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 9.79 ksf at reading no. 18

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.20	1.20	1.00		1.20
1	0.0010	3.00	9.9	0.0	0.23	1.20	1.42	1.19		1.31
2	0.0050	11.00	36.4	0.1	0.84	1.20	2.03	1.70		1.61
3	0.0100	18.00	59.6	0.2	1.37	1.20	2.56	2.14		1.88
4	0.0150	24.00	79.5	0.3	1.82	1.20	3.01	2.52		2.10
5	0.0200	28.00	92.8	0.4	2.12	1.20	3.32	2.77		2.26
6	0.0250	32.00	106.0	0.5	2.42	1.20	3.62	3.03		2.41
7	0.0300	37.00	122.6	0.5	2.80	1.20	3.99	3.34		2.59
8	0.0350	40.00	132.5	0.6	3.02	1.20	4.22	3.53		2.71
9	0.0400	45.00	149.1	0.7	3.40	1.20	4.59	3.84		2.89
10	0.0450	49.00	162.3	0.8	3.69	1.20	4.89	4.09		3.04
11	0.0500	54.00	178.9	0.9	4.07	1.20	5.26	4.40		3.23
12	0.0750	80.00	265.0	1.4	6.00	1.20	7.19	6.02		4.19
13	0.1000	100.00	331.3	1.8	7.46	1.20	8.66	7.24		4.93
14	0.1250	117.00	387.6	2.3	8.69	1.20	9.88	8.27		5.54
15	0.1500	126.00	417.4	2.7	9.31	1.20	10.51	8.79		5.85
16	0.1750	130.00	430.7	3.2	9.56	1.20	10.76	9.00		5.98
17	0.2000	132.00	437.3	3.7	9.67	1.20	10.86	9.09		6.03
18	0.2500	135.00	447.3	4.6	9.79	1.20	10.99	9.19		6.09
19	0.3000	133.00	440.6	5.5	9.55	1.20	10.75	8.99		5.97
20	0.3500	132.00	437.3	6.4	9.39	1.20	10.59	8.86		5.89
21	0.4000	130.00	430.7	7.3	9.16	1.20	10.35	8.66		5.77
22	0.5000	128.00	424.1	9.1	8.84	1.20	10.04	8.40		5.62
23	0.6000	127.00	420.8	11.0	8.59	1.20	9.79	8.19		5.49
24	0.7000	129.00	427.4	12.8	8.55	1.20	9.75	8.15		5.47

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
25	0.8000	130.00	430.7	14.6	8.44	1.20	9.63	8.06		5.41
26	0.9000	127.00	420.8	16.4	8.07	1.20	9.26	7.75		5.23
27	1.0000	126.00	417.4	18.3	7.83	1.20	9.02	7.55		5.11
28	1.1000	125.00	414.1	20.1	7.59	1.20	8.79	7.35		4.99
29	1.2000	124.00	410.8	21.9	7.36	1.20	8.55	7.16		4.87

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	169.450		1346.000
Moisture content: Dry soil+tare, gms.	152.380		1169.600
Moisture content: Tare, gms.	50.720		115.300
Moisture, %	16.8	22.8	16.7
Moist specimen weight, gms.	1198.4		
Diameter, in.	2.84	2.83	
Area, in.²	6.33	6.29	
Height, in.	5.90	5.88	
Net decrease in height, in.		0.02	
Wet Density, pcf	122.2	129.9	
Dry density, pcf	104.6	105.7	
Void ratio	0.6486	0.6310	
Saturation, %	71.5	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 13.90 psi (2.00 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 10.56 ksf at reading no. 20

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.00	2.00	1.00		2.00
1	0.0010	8.00	26.5	0.0	0.61	2.00	2.61	1.30		2.30
2	0.0050	22.00	72.9	0.1	1.67	2.00	3.67	1.83		2.84
3	0.0100	31.00	102.7	0.2	2.35	2.00	4.35	2.17		3.18
4	0.0150	42.00	139.1	0.3	3.18	2.00	5.18	2.59		3.59
5	0.0200	50.00	165.7	0.3	3.78	2.00	5.78	2.89		3.89
6	0.0250	58.00	192.2	0.4	4.38	2.00	6.38	3.19		4.19
7	0.0300	66.00	218.7	0.5	4.98	2.00	6.98	3.49		4.49
8	0.0350	74.00	245.2	0.6	5.58	2.00	7.58	3.79		4.79
9	0.0400	81.00	268.4	0.7	6.10	2.00	8.10	4.05		5.05
10	0.0450	88.00	291.5	0.8	6.62	2.00	8.63	4.31		5.31
11	0.0500	95.00	314.7	0.9	7.14	2.00	9.15	4.57		5.57
12	0.0750	114.00	377.7	1.3	8.54	2.00	10.54	5.26		6.27
13	0.1000	124.00	410.8	1.7	9.25	2.00	11.25	5.62		6.62
14	0.1250	130.00	430.7	2.1	9.65	2.00	11.65	5.82		6.83
15	0.1500	135.00	447.3	2.6	9.98	2.00	11.98	5.99		6.99

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator	Minor Princ.	Major Princ.	1:3 Ratio	P ksf	Q ksf
					Stress ksf	Stress ksf	Stress ksf			
16	0.1750	138.00	457.2	3.0	10.16	2.00	12.16	6.07		7.08
17	0.2000	140.00	463.8	3.4	10.26	2.00	12.26	6.12		7.13
18	0.2500	143.00	473.8	4.3	10.39	2.00	12.39	6.19		7.19
19	0.3000	145.00	480.4	5.1	10.44	2.00	12.44	6.21		7.22
20	0.3500	148.00	490.3	6.0	10.56	2.00	12.56	6.27		7.28
21	0.4000	149.00	493.6	6.8	10.53	2.00	12.53	6.26		7.27
22	0.5000	151.00	500.3	8.5	10.48	2.00	12.48	6.24		7.24
23	0.6000	153.00	506.9	10.2	10.42	2.00	12.42	6.21		7.21
24	0.7000	154.00	510.2	11.9	10.29	2.00	12.29	6.14		7.15
25	0.8000	155.00	513.5	13.6	10.16	2.00	12.16	6.07		7.08
26	0.9000	156.00	516.8	15.3	10.02	2.00	12.02	6.01		7.01
27	1.0000	155.00	513.5	17.0	9.76	2.00	11.76	5.87		6.88
28	1.1000	154.00	510.2	18.7	9.50	2.00	11.50	5.74		6.75
29	1.2000	153.00	506.9	20.4	9.24	2.00	11.24	5.61		6.62

Vaeth, Dick

From: Stathis Payiatakis [stathisp@nodarse.com]
Sent: Monday, February 06, 2006 7:53 AM
To: Vaeth, Dick
Cc: Stathis Payiatakis
Subject: FW: EAA Proctor

Dick,
As agreed on Friday
Regards
Stathis P

From: Coleman, Mark [mailto:MACOLEMAN@mactec.com]
Sent: Friday, February 03, 2006 3:15 PM
To: Stathis Payiatakis
Subject: EAA Proctor

Stathis,

I reviewed the select fill compaction test report for the EAA project, MACTEC project number 6738-05-4573-02. The test specification D-1557-91 procedure B modified shown on the report should be D-698-91 procedure B standard. If you have any questions please call.

Thanks,

Mark Coleman

MACTEC Engineering and Consulting

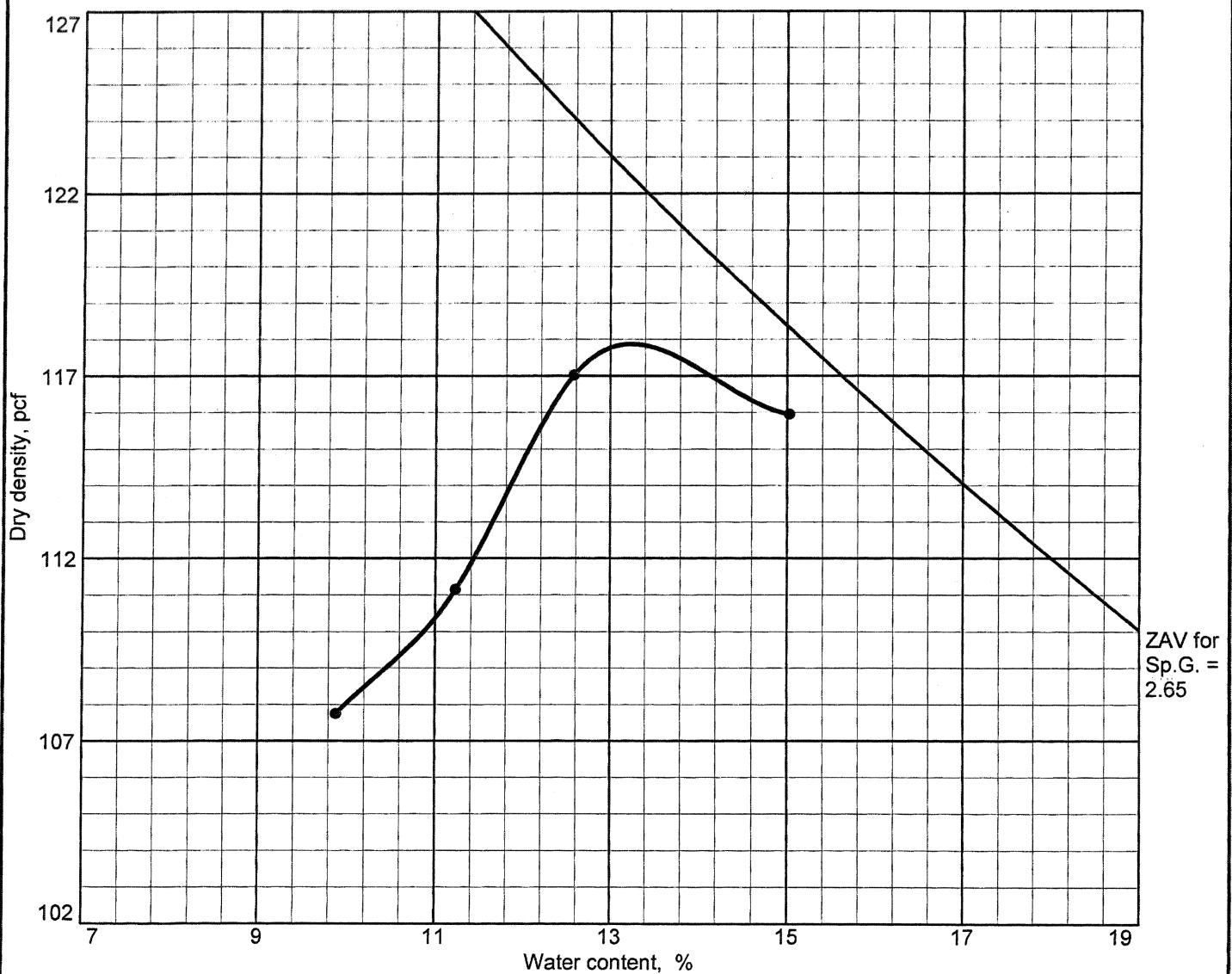
Jacksonville, Florida 32207

904-398-1084

Fax 904-398-1084

macoleman@mactec.com

COMPACTION TEST REPORT



Test specification: ASTM D 1557-91 Procedure B Modified
Oversize correction applied to each point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
	SM	A-1-b					18.3	21.1

ROCK CORRECTED TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 118.0 pcf	Light gray and tan clayey fine SAND with limerock and shell fragments
Optimum moisture = 13.0 %	

Project No.: 6738-05-4573-02 **Client:** Nodarse and Associates, Inc.
Project: EAA

Remarks:

● Source: Select Fill

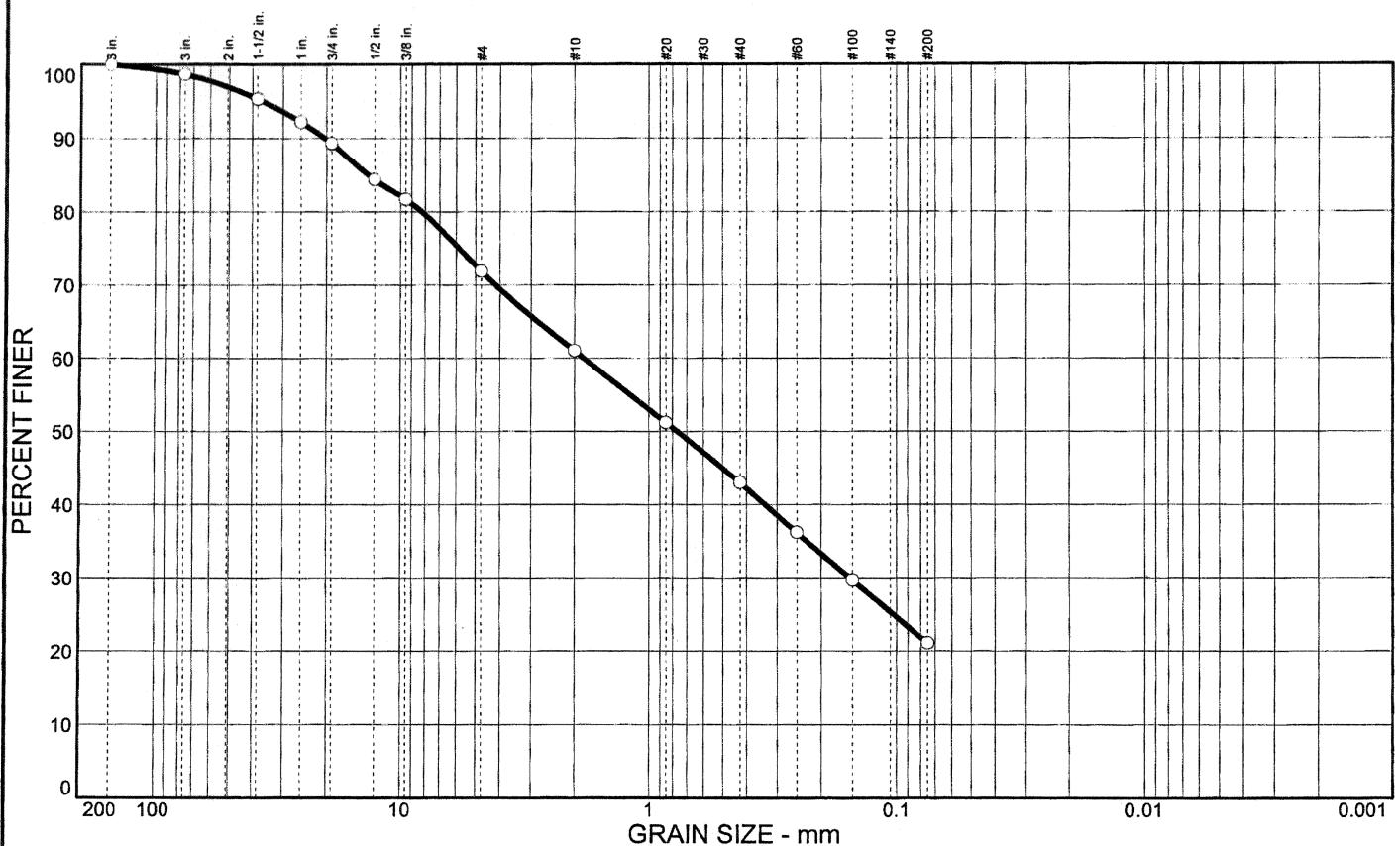
Sample No : composite

COMPACTNESS TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.

Reviewed By

Grain Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○ 1.3	26.8	50.8	21.1		SM	A-1-b		

SIEVE inches size	PERCENT FINER		
	○		
6	100.0		
3	98.7		
1.5	95.3		
1	92.2		
.75	89.3		
.5	84.4		
.375	81.7		

GRAIN SIZE			
D ₆₀	D ₃₀	D ₁₀	
1.83	0.154		

COEFFICIENTS			
C _c			

○ Source: Select Fill

Sample No.: composite

SIEVE number size	PERCENT FINER		
#4	71.9		
#10	61.0		
#20	51.2		
#40	43.0		
#60	36.2		
#100	29.7		
#200	21.1		

SOIL DESCRIPTION

○ Light gray and tan clayey fine SAND with limerock and shell fragments

REMARKS:

○

**MACTEC ENGINEERING.
AND CONSULTING, INC.**

Client: Nodarse and Associates, Inc.

Project: EAA

Project No.: 6738-05-4573-02

R.S
Reviewed By

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Nodarse and Associates, Inc.
Project: EAA
Project Number: 6738-05-4573-02

Sample Data

Source: Select Fill
Sample No.: composite
Elev. or Depth:
Location:
Description: Light gray and tan clayey fine SAND with limerock and shell fragments
Liquid Limit:
USCS Classification: SM
Testing Remarks:

Sample Length (in./cm.):
Plastic Limit:
AASHTO Classification: A-1-b

Mechanical Analysis Data

Initial

Dry sample and tare= 183928.00

Tare = 0.00

Dry sample weight = 183928.00

Sample split on .5 inch sieve

Split sample data:

Sample and tare = 478.20 Tare = .00 Sample weight = 478.20

Cumulative weight retained tare= .00

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.6 inch	0.00	100.0
.3 inch	2404.00	98.7
.1.5 inch	8637.00	95.3
.1 inch	14330.00	92.2
.075 inch	19677.00	89.3
.05 inch	28701.00	84.4
.0375 inch	15.49	81.7
# 4	70.85	71.9
# 10	132.55	61.0
# 20	188.10	51.2
# 40	234.34	43.0
# 60	273.23	36.2
# 100	309.97	29.7
# 200	358.68	21.1

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

% COBBLES = 1.3 % GRAVEL = 26.8 % SAND = 50.8
% FINES = 21.1

D₈₅= 13.42 D₆₀= 1.83 D₅₀= 0.77
D₃₀= 0.15

MOISTURE DENSITY TEST DATA

Client: Nodarse and Associates, Inc.

Project: EAA

Project Number: 6738-05-4573-02

Specimen Data

Source: Select Fill

Sample No.: composite

Elev. or Depth:

Location:

Description: Light gray and tan clayey fine SAND with limerock and shell fragments

USCS Classification: SM

AASHTO Classification: A-1-b

Natural Moisture:

Liquid Limit:

Plasticity Index:

Testing Remarks:

Percent retained on 3/8 in. sieve: 18.3

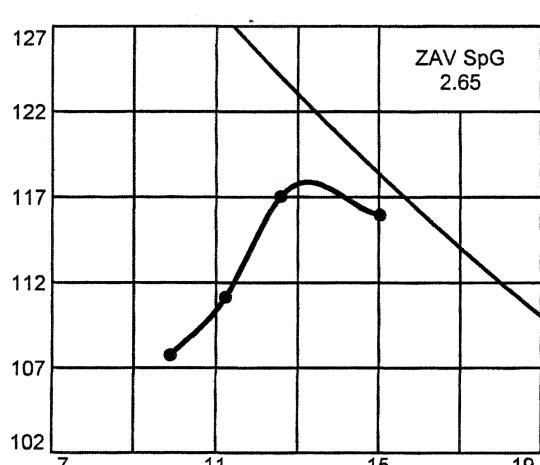
Percent passing No. 200 sieve: 21.1 **Specific gravity:**

Test Data And Results

Type of test: ASTM D 1557-91 Procedure B Modified

Mold Dia.: 4.00 in. **Hammer Wt.:** 10 lb. **Drop:** 18 in.

Layers: five **Blows per Layer:** 25



POINT NO.	1	2	3	4
WM + WS	6084.0	6114.0	5941.0	5850.0
WM	4129.0	4129.0	4129.0	4129.0
WW+T	540.90	451.40	507.80	478.20
WD+T	478.20	388.78	455.60	435.46
TARE	0.00	0.00	0.00	0.00
MOIST	13.1	16.1	11.5	9.8

MOISTURE	12.6	15.0	11.2	9.9
DRY DEN	117.0	116.0	111.2	107.8

Max dry den= 118.0 pcf Opt moisture= 13.0 %

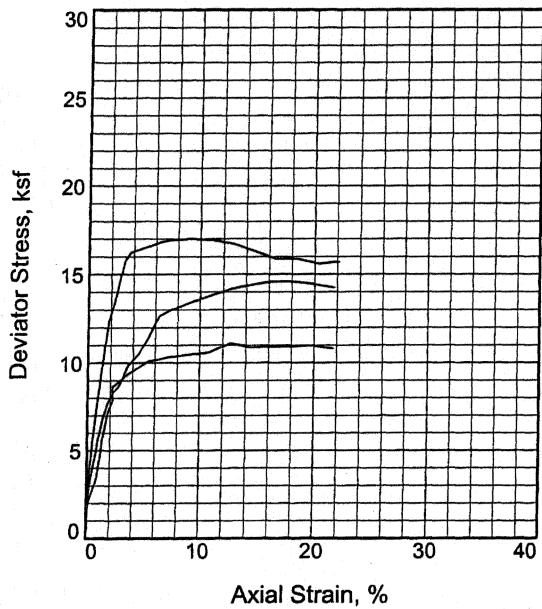
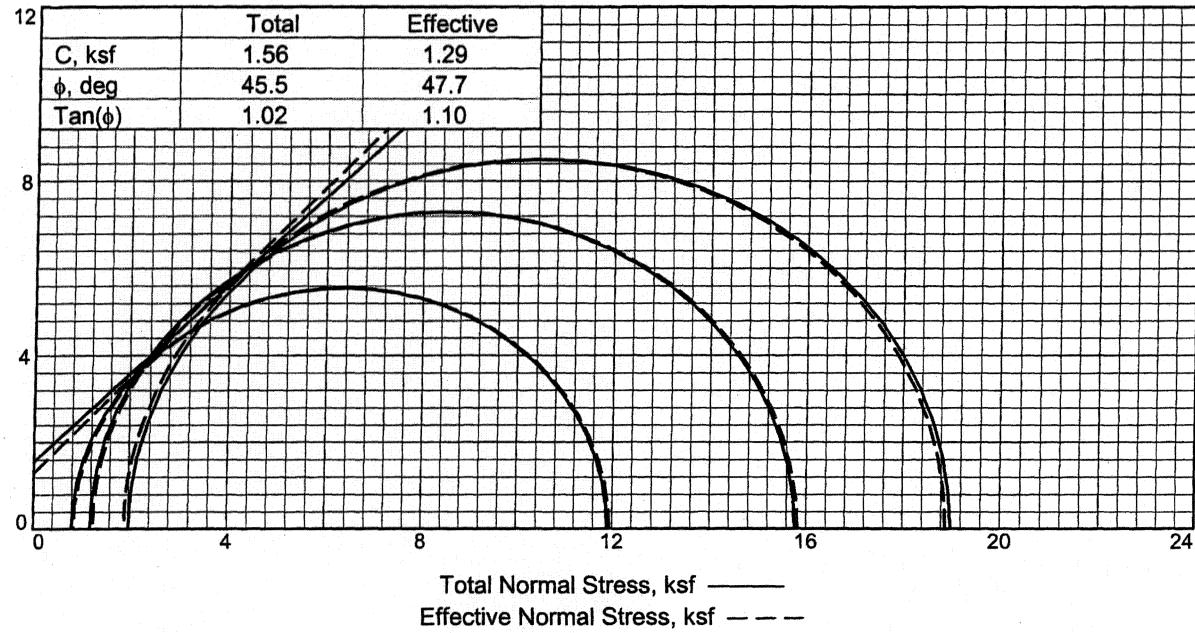
Max dry den= 115.5 pcf Opt moisture= 14.0 %

ASTM D 4718 Correction Data:

Bulk Specific Gravity of Oversize Material = 2.095

Moisture of Oversize Material = 10.2 %

Corrections Applied to Every Test Point



	Sample No.	1	2	3
Initial	Water Content,	16.2	16.2	16.2
	Dry Density,pcf	108.3	108.0	110.0
	Saturation,	75.6	75.0	78.7
	Void Ratio	0.5917	0.5966	0.5674
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.58	5.54	5.43
At Test	Water Content,	20.1	21.1	20.0
	Dry Density,pcf	110.9	108.9	111.1
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.5543	0.5836	0.5518
	Diameter, in.	2.82	2.83	2.83
	Height, in.	5.54	5.53	5.41
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		7.2	7.2	7.2
Cell Pressure, ksf		8.0	8.4	9.2
Fail. Stress, ksf		11.1	14.6	17.0
Total Pore Pr., ksf		7.2	7.1	7.3
Ult. Stress, ksf				
Total Pore Pr., ksf				
σ_1 Failure, ksf		11.9	15.8	18.9
σ_3 Failure, ksf		0.8	1.3	1.9

Type of Test:

CU with Pore Pressures

Sample Type: remold

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks:

Reviewed By _____

Client: Nodarse and Associates

Project: Material Testing-Nodarse

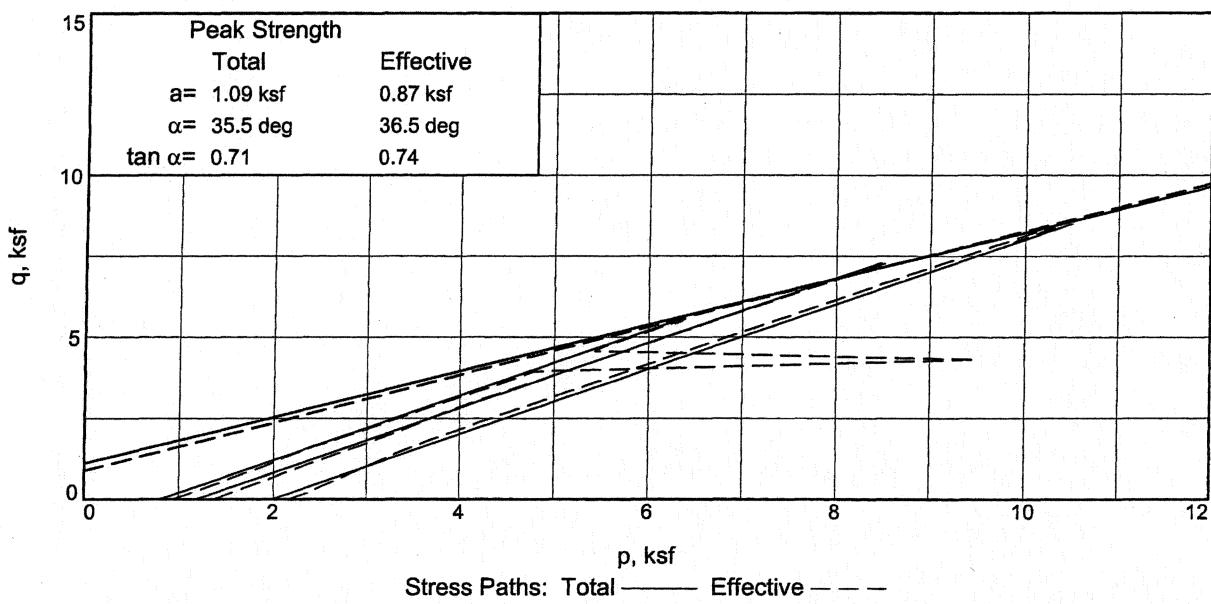
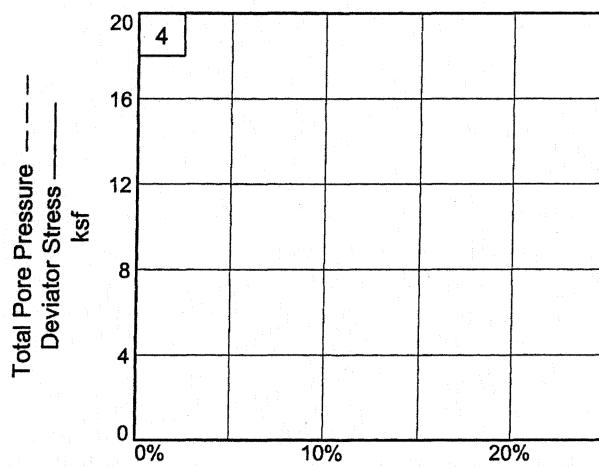
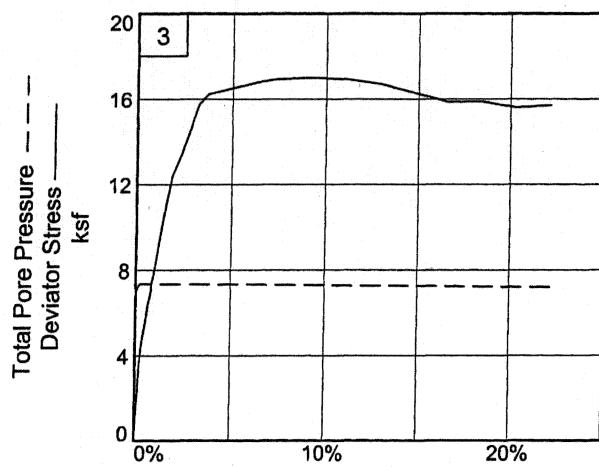
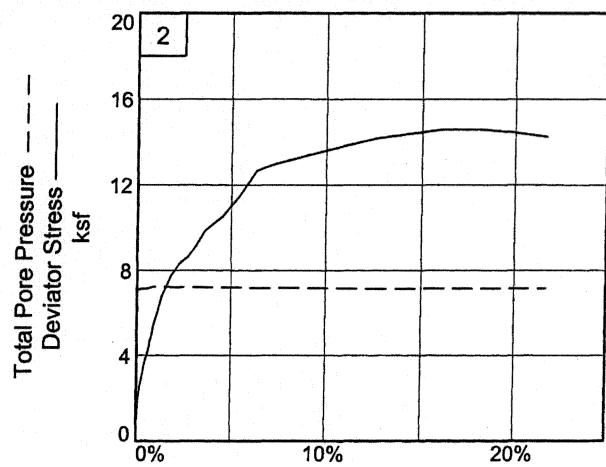
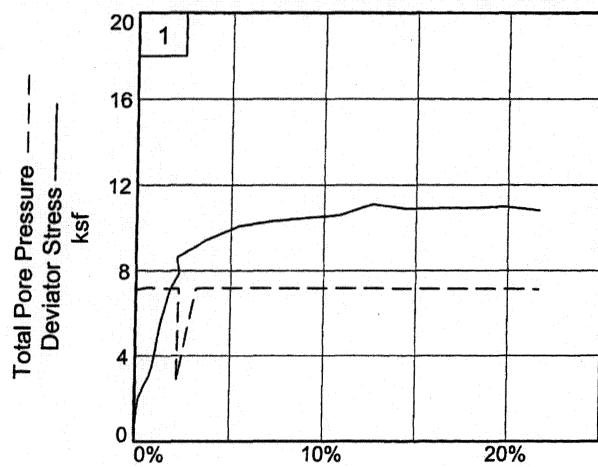
Sample Number: CU-95%-B

Proj. No.: 6738-05-4573

Date: 6-12-05

TRIAXIAL SHEAR TEST REPORT
MACTEC ENGINEERING AND CONSULTING, INC.
Tested By: mc _____

Checked By: Rajni Sukhwani



Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: CU-95%-B

Project No.: 6738-05-4573

Reviewed By _____

MACTEC Engineering and Consulting, Inc.

Tested By: mc _____

Checked By: _____

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

6/16/2005

10:57 AM

Date: 6-12-05
 Client: Nodarse and Associates
 Project: Material Testing-Nodarse
 Project No.: 6738-05-4573
 Sample Number: CU-95%-B
 Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
 Remarks:

Type of Sample: remold

Specific Gravity=2.762 LL= PL= PI=

Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	173.410			1326.000
Moisture content: Dry soil+tare, gms.	156.910			1142.000
Moisture content: Tare, gms.	55.030			115.790
Moisture, %	16.2	21.4	20.1	17.9
Moist specimen weight, gms.	1167.9			
Diameter, in.	2.84	2.84	2.82	
Area, in. ²	6.33	6.33	6.23	
Height, in.	5.58	5.58	5.54	
Net decrease in height, in.		0.00	0.04	
Wet Density, pcf	125.9	131.5	133.2	
Dry density, pcf	108.3	108.3	110.9	
Void ratio	0.5917	0.5917	0.5543	
Saturation, %	75.6	100.0	100.0	

Test Readings for Specimen No. 1

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 55.60 psi (8.01 ksf)

Consolidation back pressure = 50.00 psi (7.20 ksf)

Consolidation effective confining stress = 0.81 ksf

Strain rate, in./min. = 0.05

Fail. Stress = 11.10 ksf at reading no. 24

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	0.95	0.95	1.00	49.00	0.95	0.00
1	0.0010	8.00	26.5	0.0	0.61	0.94	1.55	1.65	49.10	1.24	0.31
2	0.0050	19.00	62.9	0.1	1.45	0.91	2.36	2.60	49.30	1.63	0.73
3	0.0100	26.00	86.1	0.2	1.99	0.89	2.88	3.22	49.40	1.89	0.99
4	0.0150	29.00	96.1	0.3	2.21	0.88	3.09	3.52	49.50	1.98	1.11
5	0.0200	31.00	102.7	0.4	2.36	0.86	3.23	3.74	49.60	2.05	1.18
6	0.0250	34.00	112.6	0.5	2.59	0.84	3.43	4.10	49.80	2.13	1.29
7	0.0300	36.00	119.3	0.5	2.74	0.84	3.57	4.28	49.80	2.21	1.37
8	0.0350	38.00	125.9	0.6	2.89	0.82	3.71	4.52	49.90	2.27	1.44
9	0.0400	40.00	132.5	0.7	3.04	0.82	3.86	4.70	49.90	2.34	1.52
10	0.0450	43.00	142.5	0.8	3.26	0.82	4.08	4.98	49.90	2.45	1.63
11	0.0500	46.00	152.4	0.9	3.49	0.84	4.32	5.18	49.80	2.58	1.74
12	0.0750	75.00	248.5	1.4	5.66	0.85	6.51	7.66	49.70	3.68	2.83
13	0.1000	95.00	314.7	1.8	7.14	0.88	8.02	9.13	49.50	4.45	3.57
14	0.1250	105.00	347.9	2.3	7.85	0.86	8.72	10.09	49.60	4.79	3.93
15	0.1200	115.00	381.0	2.2	8.61	5.20	13.81	2.66	49.50	9.50	4.30
16	0.1750	123.00	407.5	3.2	9.11	0.88	9.99	11.38	49.50	5.44	4.56
17	0.2000	127.00	420.8	3.6	9.37	0.84	10.20	12.21	49.80	5.52	4.68
18	0.3000	139.00	460.5	5.4	10.06	0.84	10.89	13.04	49.80	5.86	5.03
19	0.3000	139.00	460.5	5.4	10.06	0.84	10.89	13.04	49.80	5.86	5.03
20	0.3500	142.00	470.4	6.3	10.18	0.84	11.01	13.19	49.80	5.92	5.09
21	0.4000	145.00	480.4	7.2	10.29	0.85	11.14	13.12	49.70	6.00	5.15
22	0.5000	150.00	497.0	9.0	10.44	0.85	11.29	13.29	49.70	6.07	5.22
23	0.6000	155.00	513.5	10.8	10.57	0.85	11.42	13.45	49.70	6.14	5.29
24	0.7000	166.00	550.0	12.6	11.10	0.85	11.95	14.06	49.70	6.40	5.55
25	0.8000	166.00	550.0	14.5	10.87	0.86	11.73	13.58	49.60	6.30	5.43
26	0.9000	170.00	563.2	16.3	10.89	0.86	11.76	13.61	49.60	6.31	5.45
27	1.0000	174.00	576.5	18.1	10.91	0.86	11.77	13.63	49.60	6.32	5.45
28	1.1000	179.00	593.0	19.9	10.98	0.88	11.85	13.49	49.50	6.37	5.49
29	1.2000	180.00	596.3	21.7	10.79	0.89	11.68	13.08	49.40	6.29	5.39

Corrections
Made
M 6-16-05

Specimen Parameter		Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	173.410				1288.400
Moisture content: Dry soil+tare, gms.	156.910				1108.100
Moisture content: Tare, gms.	55.030				95.600
Moisture, %	16.2		21.6	21.1	17.8
Moist specimen weight, gms.	1156.0				
Diameter, in.	2.84		2.84	2.83	
Area, in.²	6.33		6.33	6.30	
Height, in.	5.54		5.54	5.53	
Net decrease in height, in.		0.00		0.01	
Wet Density, pcf	125.5		131.3	131.9	
Dry density, pcf	108.0		108.0	108.9	
Void ratio	0.5966		0.5966	0.5836	
Saturation, %	75.0		100.0	100.0	

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 58.30 psi (8.40 ksf)

Consolidation back pressure = 50.00 psi (7.20 ksf)

Consolidation effective confining stress = 1.20 ksf

Strain rate, in./min. = 0.05

Fail. Stress = 14.58 ksf at reading no. 26

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.38	1.38	1.00	48.70	1.38	0.00
1	0.0010	10.00	33.1	0.0	0.76	1.35	2.11	1.56	48.90	1.73	0.38
2	0.0050	24.00	79.5	0.1	1.82	1.31	3.13	2.39	49.20	2.22	0.91
3	0.0100	33.00	109.3	0.2	2.49	1.30	3.79	2.92	49.30	2.54	1.25
4	0.0150	39.00	129.2	0.3	2.95	1.28	4.23	3.30	49.40	2.75	1.47
5	0.0200	44.00	145.8	0.4	3.32	1.28	4.60	3.59	49.40	2.94	1.66
6	0.0250	49.00	162.3	0.5	3.69	1.27	4.96	3.91	49.50	3.11	1.85
7	0.0300	53.00	175.6	0.5	3.99	1.27	5.26	4.15	49.50	3.26	2.00
8	0.0350	57.00	188.8	0.6	4.29	1.25	5.54	4.42	49.60	3.40	2.14
9	0.0400	62.00	205.4	0.7	4.66	1.22	5.88	4.81	49.80	3.55	2.33
10	0.0450	66.00	218.7	0.8	4.96	1.20	6.15	5.15	50.00	3.67	2.48
11	0.0500	72.00	238.5	0.9	5.40	1.17	6.57	5.63	50.20	3.87	2.70
12	0.0750	91.00	301.5	1.4	6.80	1.17	7.96	6.83	50.20	4.56	3.40
13	0.1000	104.00	344.6	1.8	7.73	1.20	8.93	7.47	50.00	5.06	3.87
14	0.1250	112.00	371.1	2.3	8.29	1.20	9.48	7.94	50.00	5.34	4.14
15	0.1500	117.00	387.6	2.7	8.62	1.20	9.81	8.21	50.00	5.50	4.31
16	0.1750	125.00	414.1	3.2	9.17	1.20	10.36	8.67	50.00	5.78	4.58
17	0.2000	135.00	447.3	3.6	9.85	1.21	11.06	9.15	49.90	6.14	4.93
18	0.2500	145.00	480.4	4.5	10.48	1.21	11.69	9.67	49.90	6.45	5.24
19	0.3000	160.00	530.1	5.4	11.46	1.21	12.67	10.47	49.90	6.94	5.73
20	0.3500	178.00	589.7	6.3	12.62	1.22	13.85	11.31	49.80	7.54	6.31
21	0.4000	184.00	609.6	7.2	12.92	1.22	14.15	11.56	49.80	7.69	6.46
22	0.5000	194.00	642.7	9.0	13.36	1.24	14.60	11.79	49.70	7.92	6.68
23	0.6000	204.00	675.9	10.9	13.77	1.25	15.02	11.99	49.60	8.14	6.88

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
24	0.7000	214.00	709.0	12.7	14.15	1.27	15.42	12.17	49.50	8.34	7.08
25	0.8000	222.00	735.5	14.5	14.38	1.27	15.64	12.34	49.50	8.46	7.19
26	0.9000	230.00	762.0	16.3	14.58	1.25	15.83	12.64	49.60	8.54	7.29
27	1.0000	235.00	778.6	18.1	14.57	1.25	15.83	12.63	49.60	8.54	7.29
28	1.1000	238.00	788.5	19.9	14.43	1.25	15.69	12.52	49.60	8.47	7.22
29	1.2000	240.00	795.1	21.7	14.23	1.25	15.48	12.36	49.60	8.37	7.11

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	132.350			1281.400
Moisture content: Dry soil+tare, gms.	121.490			1110.500
Moisture content: Tare, gms.	54.280			106.100
Moisture, %	16.2	20.5	20.0	17.0
Moist specimen weight, gms.	1153.8			
Diameter, in.	2.84	2.84	2.83	
Area, in.²	6.33	6.33	6.29	
Height, in.	5.43	5.43	5.41	
Net decrease in height, in.		0.00	0.02	
Wet Density, pcf	127.8	132.6	133.3	
Dry density, pcf	110.0	110.0	111.1	
Void ratio	0.5674	0.5674	0.5518	
Saturation, %	78.7	100.0	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 63.90 psi (9.20 ksf)

Consolidation back pressure = 50.00 psi (7.20 ksf)

Consolidation effective confining stress = 2.00 ksf

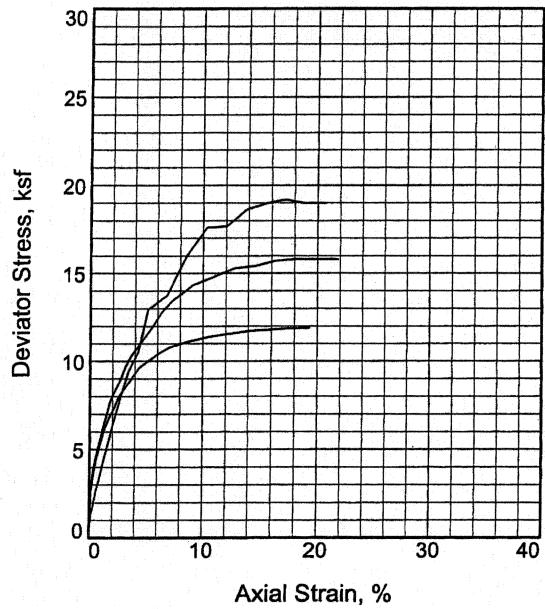
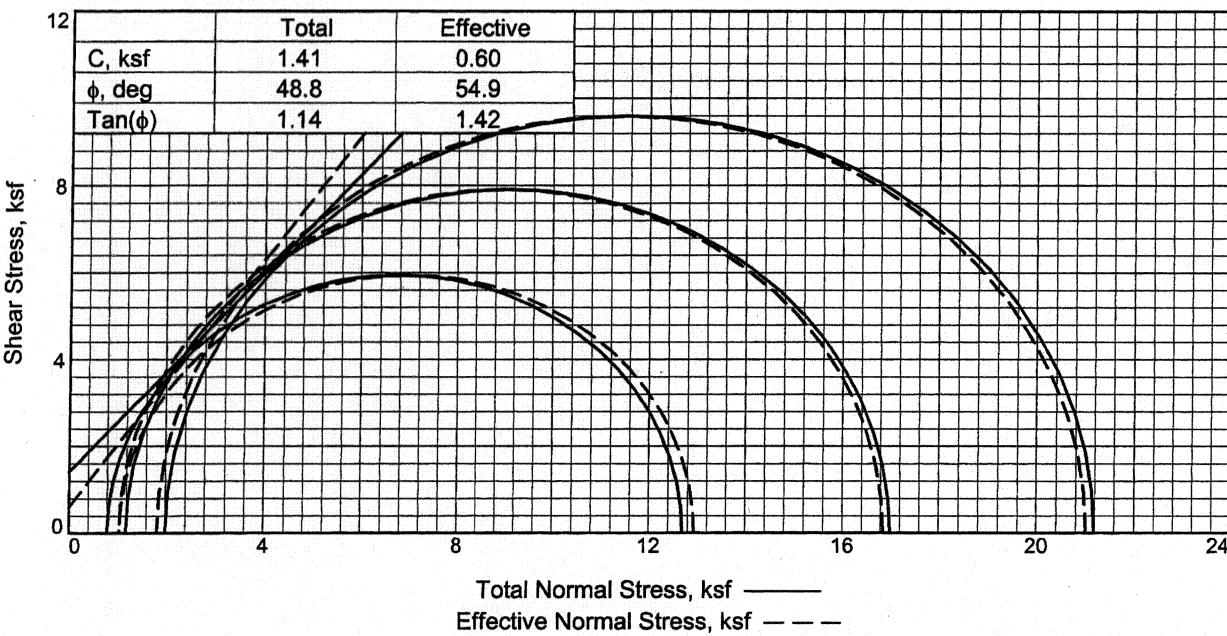
Strain rate, in./min. = 0.05

Fail. Stress = 17.00 ksf at reading no. 22

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.17	2.17	1.00	48.80	2.17	0.00
1	0.0010	5.00	16.6	0.0	0.38	2.17	2.55	1.17	48.80	2.36	0.19
2	0.0050	22.00	72.9	0.1	1.67	2.03	3.70	1.82	49.80	2.86	0.83
3	0.0100	39.00	129.2	0.2	2.95	1.90	4.85	2.55	50.70	3.38	1.48
4	0.0150	52.00	172.3	0.3	3.93	1.86	5.79	3.12	51.00	3.82	1.97
5	0.0200	62.00	205.4	0.4	4.68	1.84	6.53	3.54	51.10	4.18	2.34
6	0.0250	69.00	228.6	0.5	5.21	1.84	7.05	3.82	51.10	4.45	2.60
7	0.0300	77.00	255.1	0.6	5.81	1.84	7.65	4.15	51.10	4.75	2.90
8	0.0350	85.00	281.6	0.6	6.40	1.84	8.25	4.47	51.10	5.04	3.20
9	0.0400	91.00	301.5	0.7	6.85	1.84	8.69	4.72	51.10	5.27	3.42
10	0.0450	98.00	324.7	0.8	7.37	1.84	9.21	5.00	51.10	5.53	3.68
11	0.0500	104.00	344.6	0.9	7.81	1.84	9.65	5.24	51.10	5.75	3.91
12	0.0750	138.00	457.2	1.4	10.32	1.86	12.17	6.55	51.00	7.02	5.16
13	0.1000	166.00	550.0	1.8	12.35	1.86	14.21	7.65	51.00	8.03	6.18

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
14	0.1250	180.00	596.3	2.3	13.33	1.86	15.19	8.18	51.00	8.52	6.67
15	0.1500	198.00	656.0	2.8	14.60	1.87	16.47	8.80	50.90	9.17	7.30
16	0.1750	215.00	712.3	3.2	15.77	1.87	17.64	9.43	50.90	9.76	7.89
17	0.2000	222.00	735.5	3.7	16.21	1.87	18.08	9.66	50.90	9.98	8.10
18	0.2500	227.00	752.1	4.6	16.41	1.87	18.29	9.77	50.90	10.08	8.21
19	0.3000	232.00	768.6	5.5	16.61	1.87	18.49	9.87	50.90	10.18	8.31
20	0.3500	237.00	785.2	6.5	16.81	1.87	18.68	9.98	50.90	10.27	8.40
21	0.4000	241.00	798.4	7.4	16.92	1.89	18.81	9.97	50.80	10.35	8.46
22	0.5000	247.00	818.3	9.2	17.00	1.90	18.90	9.94	50.70	10.40	8.50
23	0.6000	251.00	831.6	11.1	16.92	1.92	18.83	9.83	50.60	10.37	8.46
24	0.7000	253.00	838.2	12.9	16.70	1.93	18.63	9.65	50.50	10.28	8.35
25	0.8000	252.00	834.9	14.8	16.28	1.94	18.22	9.37	50.40	10.08	8.14
26	0.9000	251.00	831.6	16.6	15.86	1.96	17.82	9.10	50.30	9.89	7.93
27	1.0000	257.00	851.4	18.5	15.88	1.97	17.86	9.05	50.20	9.91	7.94
28	1.1000	258.00	854.8	20.3	15.58	1.99	17.57	8.84	50.10	9.78	7.79
29	1.2000	266.00	881.3	22.2	15.69	2.00	17.70	8.84	50.00	9.85	7.85


Type of Test:

CU with Pore Pressures

Sample Type: remolded

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks:
Reviewed By _____

	Sample No.	1	2	3
Initial	Water Content,	16.6	16.6	16.6
	Dry Density, pcf	109.1	109.5	109.5
	Saturation,	79.1	79.9	79.8
	Void Ratio	0.5800	0.5745	0.5747
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.70	5.52	5.82
At Test	Water Content,	20.7	20.0	20.3
	Dry Density, pcf	109.8	111.1	110.5
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.5709	0.5523	0.5609
	Diameter, in.	2.83	2.83	2.83
	Height, in.	5.69	5.49	5.80
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		7.2	7.2	7.2
Cell Pressure, ksf		8.0	8.4	9.2
Fail. Stress, ksf		11.9	15.8	19.2
Total Pore Pr., ksf		7.0	7.3	7.4
Ult. Stress, ksf				
Total Pore Pr., ksf				
σ_1 Failure, ksf		12.9	16.9	21.0
σ_3 Failure, ksf		1.1	1.1	1.8

Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: CU-95%-A

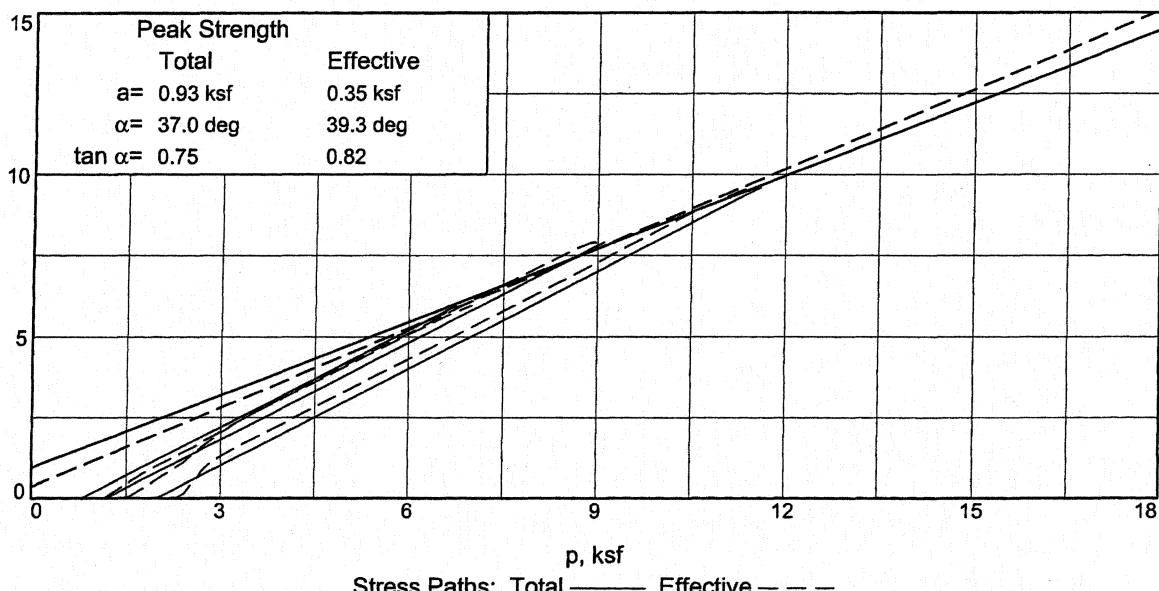
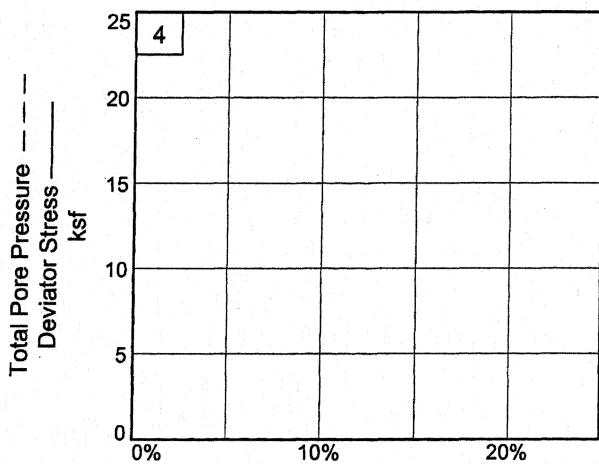
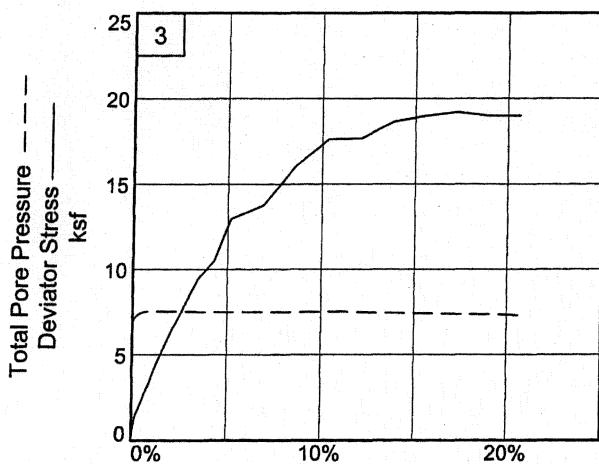
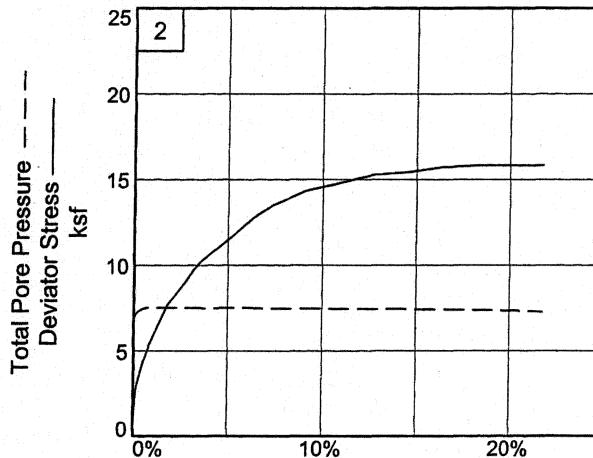
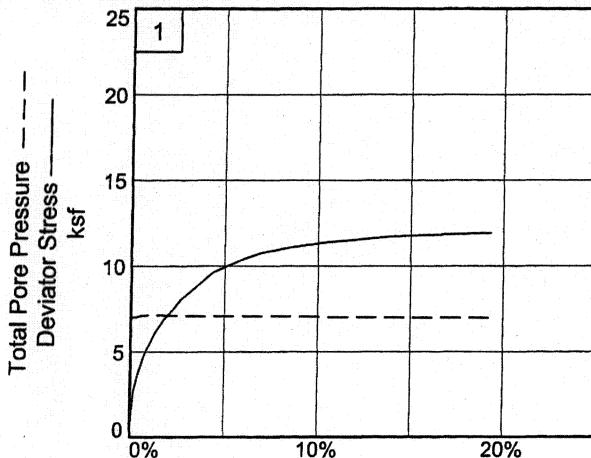
Proj. No.: 6738-05-4573

Date: 6-10-05

 TRIAXIAL SHEAR TEST REPORT
 MACTEC ENGINEERING AND CONSULTING, INC.

Tested By: mc _____

Checked By: Rajni Sukhwani



Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: CU-95%-A

Project No.: 6738-05-4573

Reviewed By _____

MACTEC Engineering and Consulting, Inc.

Tested By: mc

Checked By: _____

TRIAXIAL COMPRESSION TEST
CU with Pore Pressures

6/16/2005
10:39 AM

Date: 6-10-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: CU-95%-A
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks:
Type of Sample: remolded
Specific Gravity=2.762 **LL=** **PL=** **PI=**
Test Method: COE uniform strain

Parameters for Specimen No. 1				
Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	188.090			1333.800
Moisture content: Dry soil+tare, gms.	168.510			1149.300
Moisture content: Tare, gms.	50.650			95.400
Moisture, %	16.6	21.0	20.7	17.5
Moist specimen weight, gms.	1206.2			
Diameter, in.	2.84	2.84	2.83	
Area, in.²	6.33	6.33	6.31	
Height, in.	5.70	5.70	5.69	
Net decrease in height, in.		0.00	0.01	
Wet Density, pcf	127.3	132.0	132.5	
Dry density, pcf	109.1	109.1	109.8	
Void ratio	0.5800	0.5800	0.5709	
Saturation, %	79.1	100.0	100.0	

Test Readings for Specimen No. 1

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 55.60 psi (8.01 ksf)

Consolidation back pressure = 50.00 psi (7.20 ksf)

Consolidation effective confining stress = 0.81 ksf

Strain rate, in./min. = 0.05

Fail. Stress = 11.89 ksf at reading no. 28

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.17	1.17	1.00	47.50	1.17	0.00
1	0.0010	5.00	16.6	0.0	0.38	1.11	1.49	1.34	47.90	1.30	0.19
2	0.0050	22.00	72.9	0.1	1.66	1.01	2.67	2.65	48.60	1.84	0.83
3	0.0100	35.00	116.0	0.2	2.64	0.99	3.64	3.66	48.70	2.31	1.32
4	0.0150	41.00	135.8	0.3	3.09	1.01	4.10	4.07	48.60	2.55	1.55
5	0.0200	47.00	155.7	0.4	3.54	0.96	4.51	4.67	48.90	2.74	1.77
6	0.0250	51.00	169.0	0.4	3.84	0.96	4.80	4.98	48.90	2.88	1.92
7	0.0300	55.00	182.2	0.5	4.14	0.94	5.07	5.42	49.10	3.00	2.07
8	0.0350	59.00	195.5	0.6	4.43	0.92	5.35	5.81	49.20	3.14	2.22
9	0.0400	63.00	208.7	0.7	4.73	0.91	5.64	6.21	49.30	3.27	2.36
10	0.0450	66.00	218.7	0.8	4.95	0.91	5.86	6.46	49.30	3.38	2.48
11	0.0500	69.00	228.6	0.9	5.17	0.89	6.06	6.79	49.40	3.48	2.59
12	0.0750	82.00	271.7	1.3	6.12	0.89	7.01	7.85	49.40	3.95	3.06
13	0.1000	92.00	304.8	1.8	6.83	0.91	7.74	8.53	49.30	4.32	3.42
14	0.1250	100.00	331.3	2.2	7.39	0.91	8.30	9.15	49.30	4.60	3.70
15	0.1500	109.00	361.1	2.6	8.02	0.92	8.95	9.71	49.20	4.93	4.01
16	0.1750	115.00	381.0	3.1	8.43	0.92	9.35	10.14	49.20	5.14	4.21
17	0.2000	121.00	400.9	3.5	8.83	0.92	9.75	10.58	49.20	5.33	4.41
18	0.2500	133.00	440.6	4.4	9.61	0.94	10.55	11.27	49.10	5.74	4.81
19	0.3000	140.00	463.8	5.3	10.03	0.94	10.96	11.71	49.10	5.95	5.01
20	0.3500	147.00	487.0	6.2	10.43	0.95	11.38	11.97	49.00	6.17	5.21
21	0.4000	153.00	506.9	7.0	10.75	0.96	11.72	12.15	48.90	6.34	5.38
22	0.5000	161.00	533.4	8.8	11.10	0.96	12.07	12.51	48.90	6.52	5.55
23	0.6000	168.00	556.6	10.5	11.36	0.99	12.36	12.43	48.70	6.67	5.68
24	0.7000	174.00	576.5	12.3	11.54	1.01	12.54	12.44	48.60	6.78	5.77
25	0.8000	180.00	596.3	14.1	11.69	1.02	12.72	12.44	48.50	6.87	5.85
26	0.9000	185.00	612.9	15.8	11.77	1.04	12.81	12.36	48.40	6.92	5.89
27	1.0000	190.00	629.5	17.6	11.84	1.04	12.88	12.42	48.40	6.96	5.92
28	1.1000	195.00	646.0	19.3	11.89	1.05	12.94	12.31	48.30	7.00	5.95

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	188.090			1272.600
Moisture content: Dry soil+tare, gms.	168.510			1089.700
Moisture content: Tare, gms.	50.650			106.200
Moisture, %	16.6	20.8	20.0	18.6
Moist specimen weight, gms.	1172.2			
Diameter, in.	2.84	2.84	2.83	
Area, in.²	6.33	6.33	6.28	
Height, in.	5.52	5.52	5.49	
Net decrease in height, in.		0.00	0.03	
Wet Density, pcf	127.7	132.3	133.3	
Dry density, pcf	109.5	109.5	111.1	
Void ratio	0.5745	0.5745	0.5523	
Saturation, %	79.9	100.0	100.0	

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 58.30 psi (8.40 ksf)

Consolidation back pressure = 50.00 psi (7.20 ksf)

Consolidation effective confining stress = 1.20 ksf

Strain rate, in./min. = 0.05

Fail. Stress = 15.81 ksf at reading no. 28

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.51	1.51	1.00	47.80	1.51	0.00
1	0.0010	10.00	33.1	0.0	0.76	1.47	2.23	1.52	48.10	1.85	0.38
2	0.0050	29.00	96.1	0.1	2.20	1.31	3.51	2.68	49.20	2.41	1.10
3	0.0100	39.00	129.2	0.2	2.96	1.17	4.13	3.54	50.20	2.65	1.48
4	0.0150	45.00	149.1	0.3	3.41	1.08	4.49	4.16	50.80	2.79	1.71
5	0.0200	50.00	165.7	0.4	3.79	1.02	4.81	4.70	51.20	2.92	1.89
6	0.0250	55.00	182.2	0.5	4.16	0.96	5.13	5.31	51.60	3.05	2.08
7	0.0300	59.00	195.5	0.5	4.46	0.94	5.40	5.77	51.80	3.17	2.23
8	0.0350	62.00	205.4	0.6	4.68	0.91	5.59	6.16	52.00	3.25	2.34
9	0.0400	66.00	218.7	0.7	4.98	0.89	5.87	6.58	52.10	3.38	2.49
10	0.0450	70.00	231.9	0.8	5.28	0.88	6.16	7.01	52.20	3.52	2.64
11	0.0500	73.00	241.8	0.9	5.50	0.88	6.38	7.26	52.20	3.63	2.75
12	0.0750	88.00	291.5	1.4	6.60	0.88	7.48	8.51	52.20	4.18	3.30
13	0.1000	103.00	341.2	1.8	7.69	0.88	8.57	9.75	52.20	4.72	3.84
14	0.1250	112.00	371.1	2.3	8.32	0.88	9.20	10.47	52.20	5.04	4.16
15	0.1500	121.00	400.9	2.7	8.95	0.88	9.83	11.19	52.20	5.35	4.47
16	0.1750	132.00	437.3	3.2	9.72	0.89	10.61	11.88	52.10	5.75	4.86
17	0.2000	140.00	463.8	3.6	10.26	0.91	11.16	12.31	52.00	6.04	5.13
18	0.2500	152.00	503.6	4.6	11.03	0.91	11.94	13.16	52.00	6.42	5.52
19	0.3000	165.00	546.6	5.5	11.86	0.89	12.75	14.28	52.10	6.82	5.93
20	0.3500	179.00	593.0	6.4	12.74	0.91	13.65	15.05	52.00	7.28	6.37
21	0.4000	190.00	629.5	7.3	13.39	0.92	14.32	15.53	51.90	7.62	6.70
22	0.5000	207.00	685.8	9.1	14.31	0.92	15.23	16.52	51.90	8.07	7.15
23	0.6000	218.00	722.2	10.9	14.76	0.94	15.70	16.77	51.80	8.32	7.38

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
24	0.7000	230.00	762.0	12.7	15.26	0.95	16.21	17.05	51.70	8.58	7.63
25	0.8000	237.00	785.2	14.6	15.39	0.96	16.36	16.96	51.60	8.66	7.70
26	0.9000	247.00	818.3	16.4	15.70	0.99	16.70	16.80	51.40	8.84	7.85
27	1.0000	254.00	841.5	18.2	15.80	1.02	16.82	16.45	51.20	8.92	7.90
28	1.1000	260.00	861.4	20.0	15.81	1.05	16.86	16.04	51.00	8.96	7.90
29	1.2000	266.00	881.3	21.8	15.81	1.12	16.93	15.07	50.50	9.03	7.90

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	216.390			1358.600
Moisture content: Dry soil+tare, gms.	192.800			1164.300
Moisture content: Tare, gms.	50.680			108.400
Moisture, %	16.6	20.8	20.3	18.4
Moist specimen weight, gms.	1235.6			
Diameter, in.	2.84	2.84	2.83	
Area, in. ²	6.33	6.33	6.30	
Height, in.	5.82	5.82	5.80	
Net decrease in height, in.		0.00	0.02	
Wet Density, pcf	127.7	132.3	132.9	
Dry density, pcf	109.5	109.5	110.5	
Void ratio	0.5747	0.5747	0.5609	
Saturation, %	79.8	100.0	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 63.90 psi (9.20 ksf)

Consolidation back pressure = 50.00 psi (7.20 ksf)

Consolidation effective confining stress = 2.00 ksf

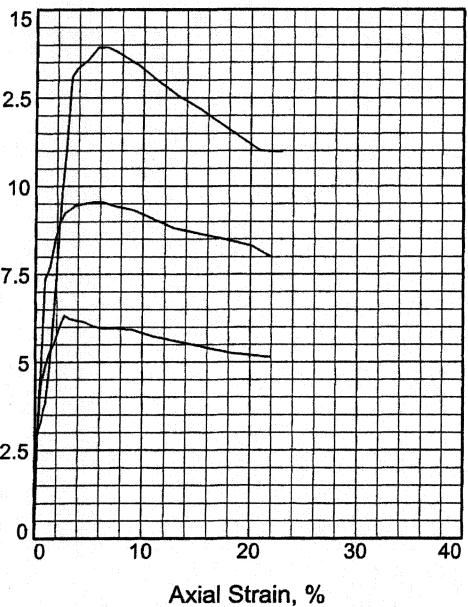
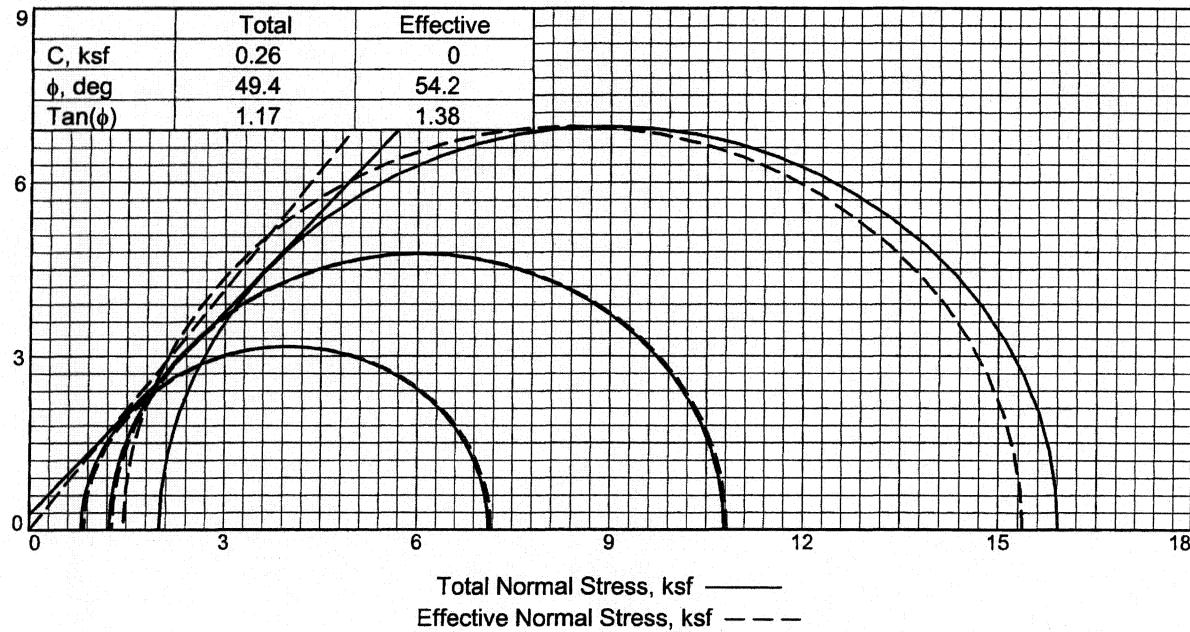
Strain rate, in./min. = 0.05

Fail. Stress = 19.19 ksf at reading no. 26

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.30	2.30	1.00	47.90	2.30	0.00
1	0.0010	4.00	13.3	0.0	0.30	2.28	2.58	1.13	48.10	2.43	0.15
2	0.0050	11.00	36.4	0.1	0.83	2.12	2.95	1.39	49.20	2.53	0.42
3	0.0100	18.00	59.6	0.2	1.36	1.97	3.33	1.69	50.20	2.65	0.68
4	0.0150	21.00	69.6	0.3	1.59	1.89	3.47	1.84	50.80	2.68	0.79
5	0.0200	24.00	79.5	0.3	1.81	1.83	3.64	1.99	51.20	2.73	0.91
6	0.0250	28.00	92.8	0.4	2.11	1.77	3.88	2.19	51.60	2.83	1.06
7	0.0300	31.00	102.7	0.5	2.34	1.74	4.08	2.34	51.80	2.91	1.17
8	0.0350	35.00	116.0	0.6	2.64	1.71	4.35	2.54	52.00	3.03	1.32
9	0.0400	38.00	125.9	0.7	2.86	1.70	4.56	2.68	52.10	3.13	1.43
10	0.0450	41.00	135.8	0.8	3.08	1.68	4.77	2.83	52.20	3.23	1.54
11	0.0500	44.00	145.8	0.9	3.30	1.68	4.99	2.96	52.20	3.34	1.65
12	0.0750	60.00	198.8	1.3	4.49	1.68	6.17	3.66	52.20	3.93	2.24
13	0.1000	75.00	248.5	1.7	5.58	1.68	7.27	4.31	52.20	4.48	2.79

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
14	0.1250	89.00	294.9	2.2	6.60	1.68	8.28	4.92	52.20	4.98	3.30
15	0.1500	102.00	337.9	2.6	7.53	1.68	9.21	5.47	52.20	5.45	3.76
16	0.1750	116.00	384.3	3.0	8.52	1.70	10.22	6.02	52.10	5.96	4.26
17	0.2000	129.00	427.4	3.4	9.44	1.71	11.15	6.51	52.00	6.43	4.72
18	0.2500	145.00	480.4	4.3	10.51	1.71	12.22	7.13	52.00	6.97	5.26
19	0.3000	180.00	596.3	5.2	12.93	1.73	14.66	8.48	51.90	8.19	6.47
20	0.4000	195.00	646.0	6.9	13.75	1.73	15.48	8.96	51.90	8.60	6.88
21	0.5000	232.00	768.6	8.6	16.06	1.71	17.77	10.37	52.00	9.74	8.03
22	0.6000	259.00	858.1	10.3	17.59	1.68	19.28	11.44	52.20	10.48	8.80
23	0.7000	265.00	877.9	12.1	17.65	1.73	19.38	11.22	51.90	10.55	8.83
24	0.8000	285.00	944.2	13.8	18.61	1.77	20.38	11.51	51.60	11.08	9.31
25	0.9000	296.00	980.6	15.5	18.95	1.80	20.75	11.53	51.40	11.27	9.47
26	1.0000	306.00	1013.8	17.2	19.19	1.83	21.01	11.49	51.20	11.42	9.59
27	1.1000	309.00	1023.7	19.0	18.97	1.86	20.83	11.21	51.00	11.34	9.49
28	1.2000	316.00	1046.9	20.7	18.99	1.93	20.92	10.84	50.50	11.42	9.49



	Sample No.	1	2	3
Initial	Water Content,	16.2	16.2	16.2
	Dry Density, pcf	103.7	104.0	103.8
	Saturation,	67.5	67.9	67.7
	Void Ratio	0.6631	0.6587	0.6612
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.50	5.50	5.29
At Test	Water Content,	22.5	22.4	22.1
	Dry Density, pcf	106.3	106.5	107.1
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.6225	0.6191	0.6107
	Diameter, in.	2.82	2.82	2.81
	Height, in.	5.46	5.46	5.24
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		7.2	7.2	7.2
Cell Pressure, ksf		8.0	8.4	9.2
Fail. Stress, ksf		6.3	9.5	13.9
Total Pore Pr., ksf		7.2	7.2	7.7
Ult. Stress, ksf				
Total Pore Pr., ksf				
σ_1 Failure, ksf		7.2	10.8	15.4
σ_3 Failure, ksf		0.8	1.3	1.5

Type of Test:

CU with Pore Pressures

Sample Type: remold

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks:
Reviewed By _____

Client: Nodarse and Associates

Project: Material Testing-Nodarse

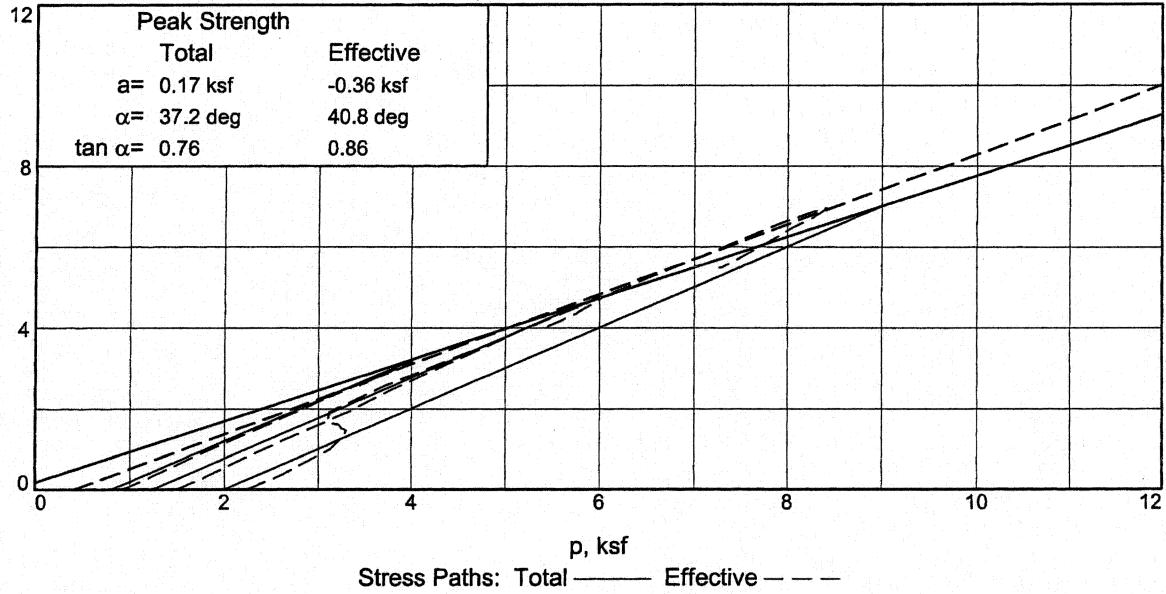
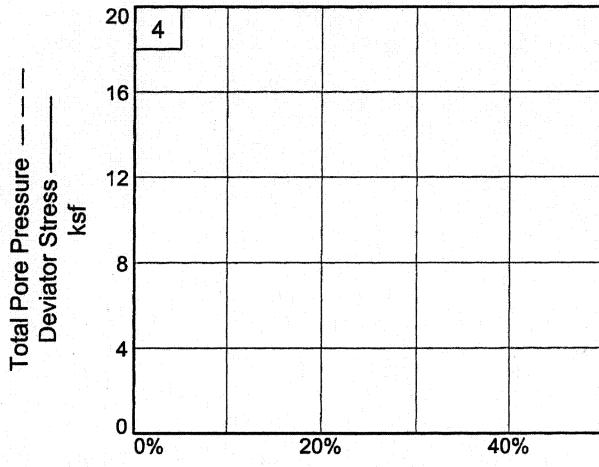
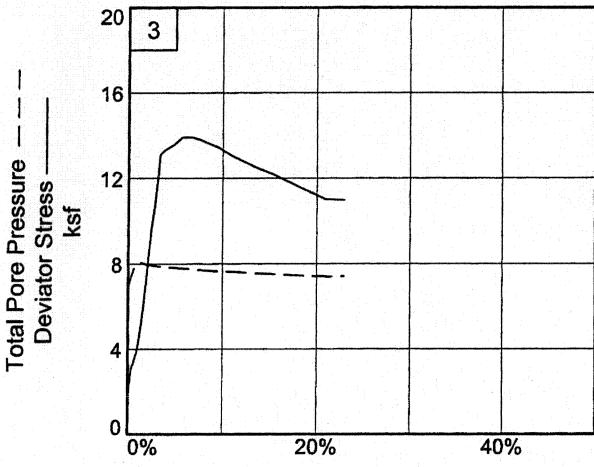
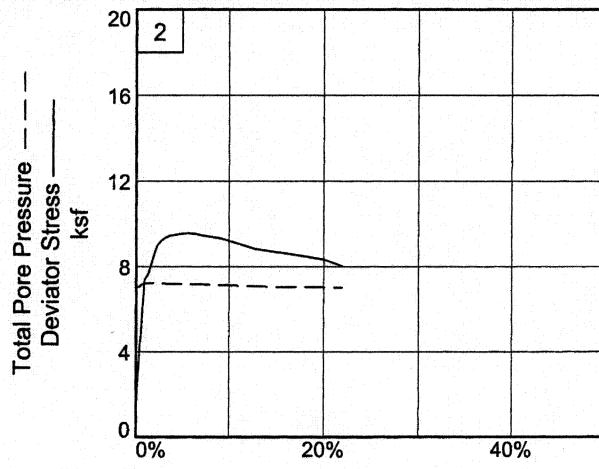
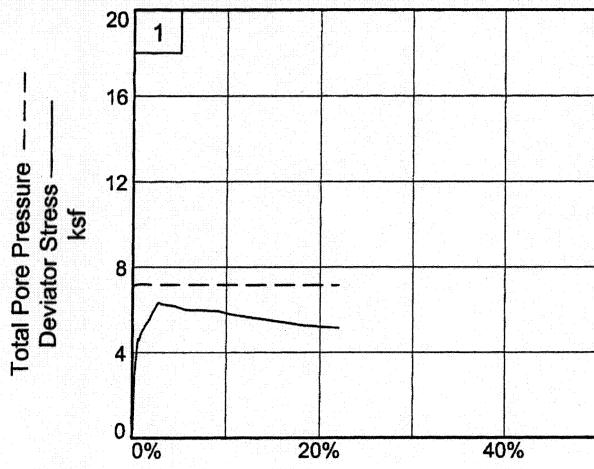
Sample Number: CU-90%-B

Proj. No.: 6738-05-4573

Date: 6-15-05

TRIAXIAL SHEAR TEST REPORT
MACTEC ENGINEERING AND CONSULTING, INC.
Tested By: mc _____

Checked By: Rajni Sukhwani



Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: CU-90%-B

Project No.: 6738-05-4573

Reviewed By _____

MACTEC Engineering and Consulting, Inc.

Tested By: mc

Checked By: _____

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

6/16/2005

10:29 AM

Date: 6-15-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: CU-90%-B
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks:
Type of Sample: remold
Specific Gravity=2.762 LL= PL= PI=

Test Method: COE uniform strain

Parameters for Specimen No. 1				
Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	276.340			1296.900
Moisture content: Dry soil+tare, gms.	244.810			1117.500
Moisture content: Tare, gms.	50.150			115.570
Moisture, %	16.2	24.0	22.5	17.9
Moist specimen weight, gms.	1101.8			
Diameter, in.	2.84	2.84	2.82	
Area, in.²	6.33	6.33	6.23	
Height, in.	5.50	5.50	5.46	
Net decrease in height, in.		0.00	0.04	
Wet Density, pcf	120.5	128.6	130.2	
Dry density, pcf	103.7	103.7	106.3	
Void ratio	0.6631	0.6631	0.6225	
Saturation, %	67.5	100.0	100.0	

Test Readings for Specimen No. 1**Load ring constant** = 3.313 lbs. per input unit**Membrane modulus** = 0.124105 kN/cm²**Membrane thickness** = 0.02 cm**Consolidation cell pressure** = 55.60 psi (8.01 ksf)**Consolidation back pressure** = 50.00 psi (7.20 ksf)**Consolidation effective confining stress** = 0.81 ksf**Strain rate, in./min.** = 0.05**Fail. Stress** = 6.33 ksf at reading no. 15

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	0.92	0.92	1.00	49.20	0.92	0.00
1	0.0010	1.00	3.3	0.0	0.08	0.92	1.00	1.08	49.20	0.96	0.04
2	0.0050	5.00	16.6	0.1	0.38	0.92	1.30	1.42	49.20	1.11	0.19
3	0.0100	24.00	79.5	0.2	1.83	0.86	2.70	3.12	49.60	1.78	0.92
4	0.0150	39.00	129.2	0.3	2.98	0.86	3.84	4.45	49.60	2.35	1.49
5	0.0200	46.00	152.4	0.4	3.51	0.85	4.36	5.13	49.70	2.60	1.75
6	0.0250	52.00	172.3	0.5	3.96	0.85	4.81	5.66	49.70	2.83	1.98
7	0.0300	57.00	188.8	0.5	4.34	0.84	5.18	6.20	49.80	3.01	2.17
8	0.0350	61.00	202.1	0.6	4.64	0.84	5.48	6.56	49.80	3.16	2.32
9	0.0400	60.00	198.8	0.7	4.56	0.84	5.40	6.46	49.80	3.12	2.28
10	0.0450	62.00	205.4	0.8	4.71	0.84	5.54	6.64	49.80	3.19	2.35
11	0.0500	64.00	212.0	0.9	4.86	0.84	5.69	6.81	49.80	3.26	2.43
12	0.0750	70.00	231.9	1.4	5.29	0.84	6.12	7.33	49.80	3.48	2.64
13	0.1000	74.00	245.2	1.8	5.56	0.84	6.40	7.66	49.80	3.62	2.78
14	0.1250	80.00	265.0	2.3	5.98	0.85	6.83	8.04	49.70	3.84	2.99
15	0.1500	85.00	281.6	2.7	6.33	0.85	7.18	8.45	49.70	4.01	3.16
16	0.1750	84.00	278.3	3.2	6.23	0.85	7.07	8.33	49.70	3.96	3.11
17	0.2000	84.00	278.3	3.7	6.20	0.85	7.05	8.29	49.70	3.95	3.10
18	0.2500	84.00	278.3	4.6	6.14	0.85	6.99	8.22	49.70	3.92	3.07
19	0.3000	83.00	275.0	5.5	6.01	0.85	6.85	8.07	49.70	3.85	3.00
20	0.3500	83.00	275.0	6.4	5.95	0.85	6.80	8.00	49.70	3.82	2.97
21	0.4000	84.00	278.3	7.3	5.96	0.85	6.81	8.01	49.70	3.83	2.98
22	0.5000	85.00	281.6	9.2	5.91	0.85	6.76	7.96	49.70	3.81	2.96
23	0.6000	84.00	278.3	11.0	5.72	0.86	6.59	7.62	49.60	3.73	2.86
24	0.7000	84.00	278.3	12.8	5.61	0.86	6.47	7.49	49.60	3.67	2.80
25	0.8000	84.00	278.3	14.7	5.49	0.86	6.35	7.35	49.60	3.61	2.74
26	0.9000	84.00	278.3	16.5	5.37	0.86	6.23	7.22	49.60	3.55	2.69
27	1.0000	84.00	278.3	18.3	5.25	0.88	6.13	6.98	49.50	3.50	2.63
28	1.1000	85.00	281.6	20.2	5.20	0.86	6.06	7.01	49.60	3.46	2.60
29	1.2000	86.00	284.9	22.0	5.14	0.88	6.01	6.85	49.50	3.45	2.57

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	276.340			1291.100
Moisture content: Dry soil+tare, gms.	244.810			1113.500
Moisture content: Tare, gms.	50.150			115.000
Moisture, %	16.2	23.8	22.4	17.8
Moist specimen weight, gms.	1104.7			
Diameter, in.	2.84	2.84	2.82	
Area, in.²	6.33	6.33	6.23	
Height, in.	5.50	5.50	5.46	
Net decrease in height, in.		0.00	0.04	
Wet Density, pcf	120.8	128.7	130.4	
Dry density, pcf	104.0	104.0	106.5	
Void ratio	0.6587	0.6587	0.6191	
Saturation, %	67.9	100.0	100.0	

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 58.60 psi (8.44 ksf)

Consolidation back pressure = 50.00 psi (7.20 ksf)

Consolidation effective confining stress = 1.24 ksf

Strain rate, in./min. = 0.05

Fail. Stress = 9.55 ksf at reading no. 19

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.50	1.50	1.00	48.20	1.50	0.00
1	0.0010	6.00	19.9	0.0	0.46	1.50	1.96	1.31	48.20	1.73	0.23
2	0.0050	23.00	76.2	0.1	1.76	1.43	3.18	2.23	48.70	2.30	0.88
3	0.0100	34.00	112.6	0.2	2.60	1.41	4.01	2.84	48.80	2.71	1.30
4	0.0150	42.00	139.1	0.3	3.21	1.41	4.62	3.27	48.80	3.01	1.60
5	0.0200	50.00	165.7	0.4	3.81	1.40	5.21	3.73	48.90	3.30	1.91
6	0.0250	58.00	192.2	0.5	4.42	1.35	5.77	4.26	49.20	3.56	2.21
7	0.0300	64.00	212.0	0.5	4.87	1.32	6.20	4.68	49.40	3.76	2.44
8	0.0350	70.00	231.9	0.6	5.32	1.31	6.63	5.06	49.50	3.97	2.66
9	0.0400	80.00	265.0	0.7	6.08	1.30	7.37	5.69	49.60	4.33	3.04
10	0.0450	88.00	291.5	0.8	6.68	1.28	7.96	6.21	49.70	4.62	3.34
11	0.0500	97.00	321.4	0.9	7.36	1.27	8.62	6.80	49.80	4.95	3.68
12	0.0750	102.00	337.9	1.4	7.70	1.25	8.95	7.15	49.90	5.10	3.85
13	0.1000	112.00	371.1	1.8	8.41	1.24	9.65	7.79	50.00	5.45	4.21
14	0.1250	120.00	397.6	2.3	8.97	1.24	10.21	8.25	50.00	5.73	4.49
15	0.1500	124.00	410.8	2.7	9.23	1.25	10.48	8.37	49.90	5.87	4.61
16	0.1750	126.00	417.4	3.2	9.33	1.27	10.60	8.37	49.80	5.93	4.67
17	0.2000	128.00	424.1	3.7	9.44	1.27	10.70	8.45	49.80	5.99	4.72
18	0.2500	130.00	430.7	4.6	9.49	1.27	10.76	8.49	49.80	6.01	4.75
19	0.3000	132.00	437.3	5.5	9.55	1.28	10.83	8.45	49.70	6.06	4.77
20	0.3500	133.00	440.6	6.4	9.53	1.28	10.81	8.43	49.70	6.04	4.76
21	0.4000	133.00	440.6	7.3	9.43	1.30	10.73	8.28	49.60	6.01	4.72
22	0.5000	134.00	443.9	9.2	9.32	1.32	10.64	8.03	49.40	5.98	4.66
23	0.6000	133.00	440.6	11.0	9.06	1.35	10.41	7.69	49.20	5.88	4.53

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
24	0.7000	132.00	437.3	12.8	8.81	1.38	10.19	7.37	49.00	5.79	4.40
25	0.8000	133.00	440.6	14.7	8.69	1.41	10.10	7.16	48.80	5.75	4.34
26	0.9000	134.00	443.9	16.5	8.56	1.41	9.98	7.07	48.80	5.69	4.28
27	1.0000	135.00	447.3	18.3	8.44	1.41	9.85	6.98	48.80	5.63	4.22
28	1.1000	136.00	450.6	20.2	8.31	1.43	9.74	6.83	48.70	5.58	4.16
29	1.2000	134.00	443.9	22.0	8.00	1.43	9.43	6.61	48.70	5.43	4.00

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	276.340			1252.000
Moisture content: Dry soil+tare, gms.	244.810			1083.200
Moisture content: Tare, gms.	50.150			121.200
Moisture, %	16.2	23.9	22.1	17.5
Moist specimen weight, gms.	1060.9			
Diameter, in.	2.84	2.84	2.81	
Area, in.²	6.33	6.33	6.21	
Height, in.	5.29	5.29	5.24	
Net decrease in height, in.		0.00	0.05	
Wet Density, pcf	120.6	128.6	130.7	
Dry density, pcf	103.8	103.8	107.1	
Void ratio	0.6612	0.6612	0.6107	
Saturation, %	67.7	100.0	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 63.90 psi (9.20 ksf)

Consolidation back pressure = 50.00 psi (7.20 ksf)

Consolidation effective confining stress = 2.00 ksf

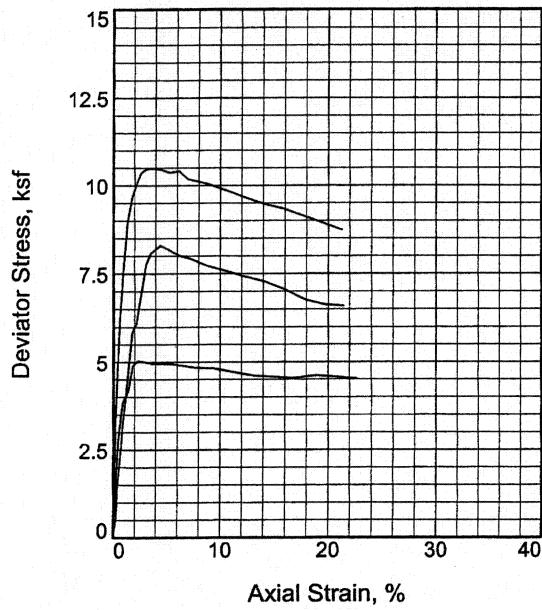
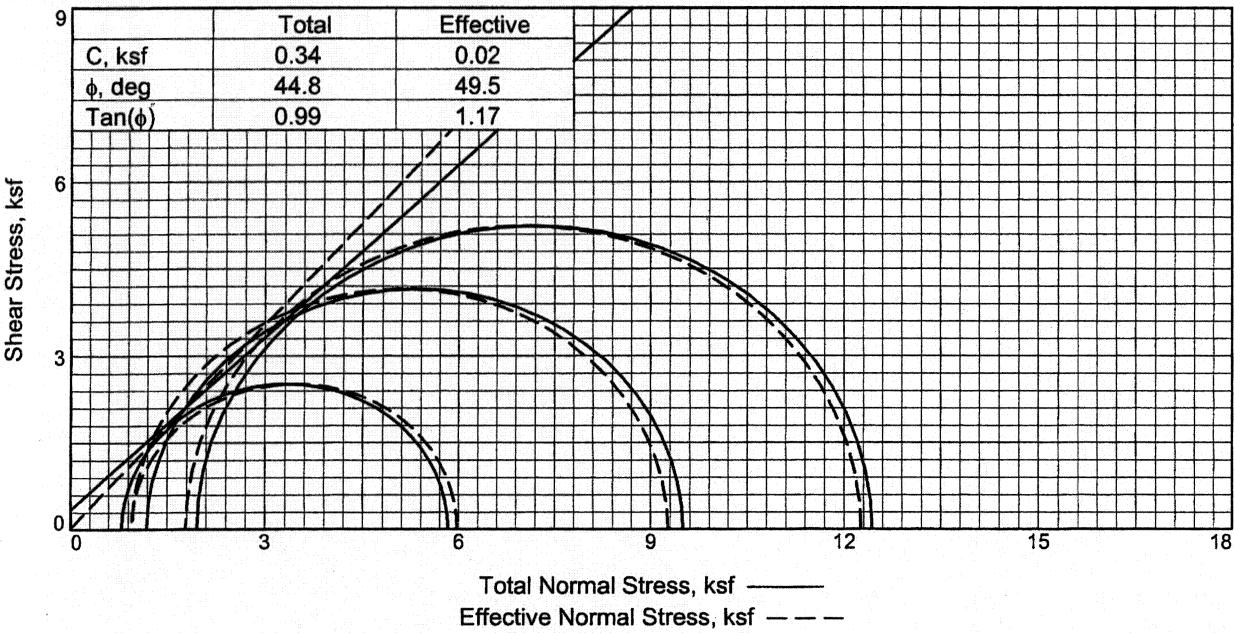
Strain rate, in./min. = 0.05

Fail. Stress = 13.92 ksf at reading no. 20

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.25	2.25	1.00	48.30	2.25	0.00
1	0.0010	9.00	29.8	0.0	0.69	2.25	2.94	1.31	48.30	2.59	0.35
2	0.0050	26.00	86.1	0.1	2.00	2.13	4.13	1.94	49.10	3.13	1.00
3	0.0100	33.00	109.3	0.2	2.53	1.99	4.52	2.27	50.10	3.25	1.27
4	0.0150	38.00	125.9	0.3	2.91	1.84	4.76	2.58	51.10	3.30	1.46
5	0.0200	40.00	132.5	0.4	3.06	1.71	4.78	2.79	52.00	3.25	1.53
6	0.0250	42.00	139.1	0.5	3.21	1.61	4.83	2.99	52.70	3.22	1.61
7	0.0300	43.00	142.5	0.6	3.29	1.47	4.76	3.24	53.70	3.11	1.64
8	0.0350	45.00	149.1	0.7	3.44	1.38	4.82	3.49	54.30	3.10	1.72
9	0.0400	47.00	155.7	0.8	3.59	1.31	4.90	3.74	54.80	3.10	1.79
10	0.0450	49.00	162.3	0.9	3.73	1.25	4.99	3.98	55.20	3.12	1.87
11	0.0500	50.00	165.7	1.0	3.81	1.21	5.02	4.15	55.50	3.11	1.90
12	0.0750	68.00	225.3	1.4	5.15	1.15	6.30	5.47	55.90	3.73	2.58
13	0.1000	94.00	311.4	1.9	7.09	1.24	8.33	6.72	55.30	4.78	3.54

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
14	0.1250	125.00	414.1	2.4	9.38	1.27	10.65	8.40	55.10	5.96	4.69
15	0.1500	146.00	483.7	2.9	10.90	1.31	12.21	9.32	54.80	6.76	5.45
16	0.1750	176.00	583.1	3.3	13.08	1.34	14.42	10.77	54.60	7.88	6.54
17	0.2000	180.00	596.3	3.8	13.31	1.37	14.68	10.73	54.40	8.02	6.65
18	0.2500	185.00	612.9	4.8	13.54	1.40	14.94	10.70	54.20	8.17	6.77
19	0.3000	192.00	636.1	5.7	13.92	1.43	15.34	10.76	54.00	8.38	6.96
20	0.3500	194.00	642.7	6.7	13.92	1.45	15.37	10.57	53.80	8.41	6.96
21	0.4000	194.00	642.7	7.6	13.78	1.50	15.27	10.20	53.50	8.39	6.89
22	0.5000	193.00	639.4	9.5	13.42	1.56	14.98	9.63	53.10	8.27	6.71
23	0.6000	190.00	629.5	11.5	12.93	1.58	14.52	9.17	52.90	8.05	6.47
24	0.7000	188.00	622.8	13.4	12.52	1.64	14.16	8.63	52.50	7.90	6.26
25	0.8000	187.00	619.5	15.3	12.18	1.68	13.86	8.23	52.20	7.77	6.09
26	0.9000	185.00	612.9	17.2	11.78	1.73	13.51	7.82	51.90	7.62	5.89
27	1.0000	183.00	606.3	19.1	11.38	1.77	13.15	7.43	51.60	7.46	5.69
28	1.1000	181.00	599.7	21.0	10.99	1.80	12.79	7.11	51.40	7.30	5.50
29	1.2000	185.00	612.9	22.9	10.96	1.79	12.75	7.14	51.50	7.27	5.48



	Sample No.	1	2	3
Initial	Water Content,	16.3	16.3	16.3
	Dry Density, pcf	103.7	103.7	103.6
	Saturation,	68.0	68.1	67.8
	Void Ratio	0.6626	0.6624	0.6650
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.35	5.62	5.66
At Test	Water Content,	22.1	22.9	23.3
	Dry Density, pcf	107.0	105.6	104.9
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.6116	0.6323	0.6430
	Diameter, in.	2.81	2.82	2.83
	Height, in.	5.29	5.59	5.63
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		7.2	7.2	7.2
Cell Pressure, ksf		8.0	8.4	9.2
Fail. Stress, ksf		5.0	8.3	10.5
Total Pore Pr., ksf		7.1	7.4	7.4
Ult. Stress, ksf				
Total Pore Pr., ksf				
σ_1 Failure, ksf		6.0	9.3	12.3
σ_3 Failure, ksf		1.0	1.0	1.8

Type of Test:

CU with Pore Pressures

Sample Type: remold

Description: Tan Slightly Clayey Silty Medium to
Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks:

Reviewed By _____

Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: CU-90%-A

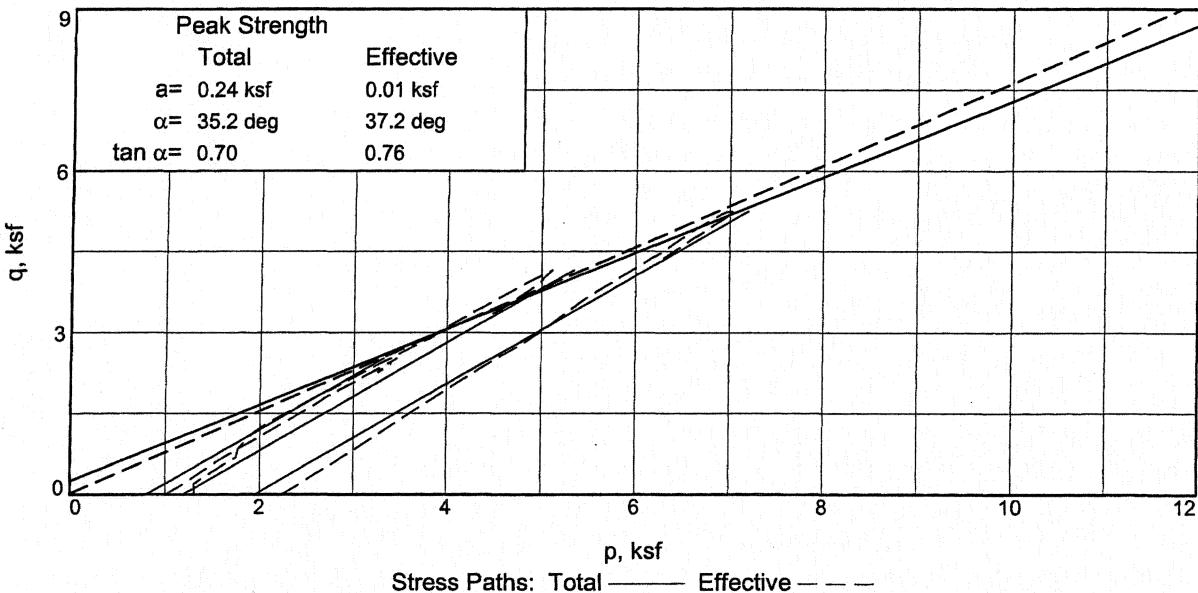
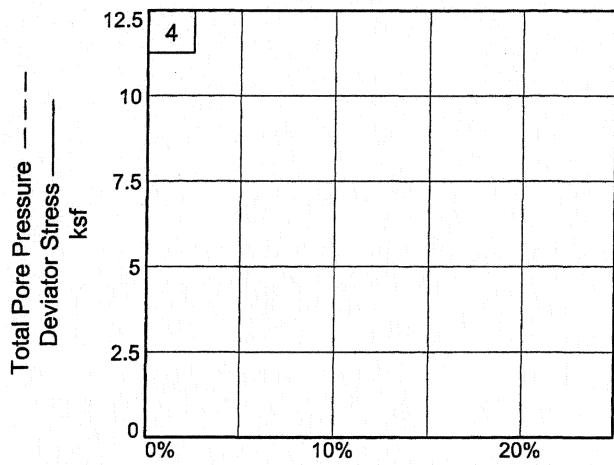
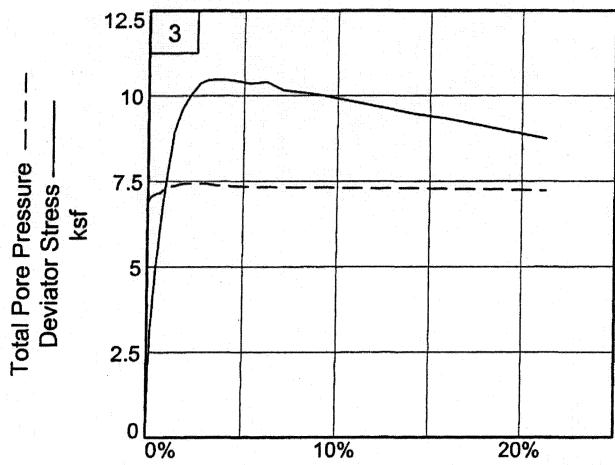
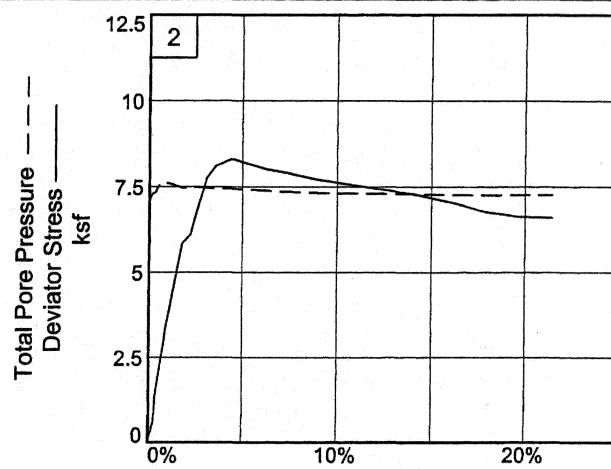
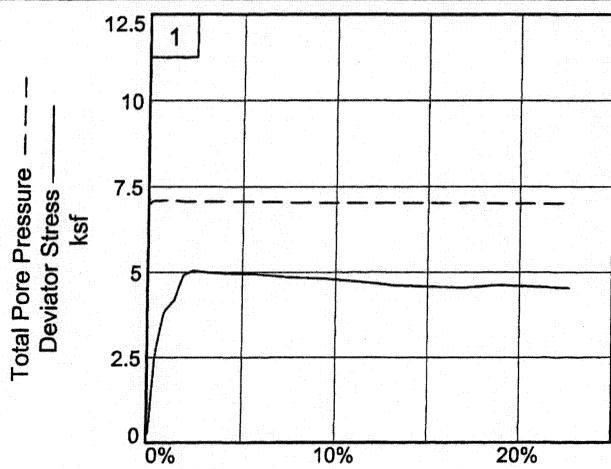
Proj. No.: 6738-05-4573

Date: 6-14-05

TRIAXIAL SHEAR TEST REPORT
MACTEC ENGINEERING AND CONSULTING, INC.

Tested By: mc _____

Checked By: Rajni Sukhwani



Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: CU-90%-A

Project No.: 6738-05-4573

Reviewed By _____

MACTEC Engineering and Consulting, Inc.

Tested By: mc

Checked By: _____

TRIAXIAL COMPRESSION TEST
CU with Pore Pressures

6/16/2005
10:07 AM

Date: 6-14-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: CU-90%-A
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks:
Type of Sample: remold
Specific Gravity=2.762 **LL=** **PL=** **PI=**
Test Method: COE uniform strain

Parameters for Specimen No. 1				
Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	238.320			1187.000
Moisture content: Dry soil+tare, gms.	212.600			1009.800
Moisture content: Tare, gms.	55.000			115.150
Moisture, %	16.3	24.0	22.1	19.8
Moist specimen weight, gms.	1073.2			
Diameter, in.	2.84	2.84	2.81	
Area, in.²	6.33	6.33	6.20	
Height, in.	5.35	5.35	5.29	
Net decrease in height, in.		0.00	0.06	
Wet Density, pcf	120.6	128.6	130.7	
Dry density, pcf	103.7	103.7	107.0	
Void ratio	0.6626	0.6626	0.6116	
Saturation, %	68.0	100.0	100.0	

Test Readings for Specimen No. 1

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 55.60 psi (8.01 ksf)

Consolidation back pressure = 50.00 psi (7.20 ksf)

Consolidation effective confining stress = 0.81 ksf

Strain rate, in./min. = 0.05

Fail. Stress = 5.03 ksf at reading no. 14

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.01	1.01	1.00	48.60	1.01	0.00
1	0.0010	3.00	9.9	0.0	0.23	1.01	1.24	1.23	48.60	1.12	0.12
2	0.0050	4.00	13.3	0.1	0.31	1.01	1.32	1.30	48.60	1.16	0.15
3	0.0100	14.00	46.4	0.2	1.07	0.95	2.02	2.13	49.00	1.49	0.54
4	0.0150	23.00	76.2	0.3	1.76	0.94	2.70	2.88	49.10	1.82	0.88
5	0.0200	31.00	102.7	0.4	2.37	0.94	3.31	3.54	49.10	2.12	1.19
6	0.0250	36.00	119.3	0.5	2.76	0.94	3.69	3.94	49.10	2.31	1.38
7	0.0300	40.00	132.5	0.6	3.06	0.94	3.99	4.27	49.10	2.47	1.53
8	0.0350	43.00	142.5	0.7	3.28	0.94	4.22	4.51	49.10	2.58	1.64
9	0.0400	46.00	152.4	0.8	3.51	0.92	4.43	4.81	49.20	2.68	1.76
10	0.0450	49.00	162.3	0.8	3.74	0.92	4.66	5.05	49.20	2.79	1.87
11	0.0500	51.00	169.0	0.9	3.88	0.92	4.81	5.21	49.20	2.86	1.94
12	0.0750	55.00	182.2	1.4	4.17	0.94	5.11	5.45	49.10	3.02	2.08
13	0.1000	65.00	215.3	1.9	4.90	0.95	5.85	6.16	49.00	3.40	2.45
14	0.1250	67.00	222.0	2.4	5.03	0.95	5.98	6.29	49.00	3.47	2.52
15	0.1500	67.00	222.0	2.8	5.01	0.95	5.96	6.27	49.00	3.45	2.50
16	0.1750	67.00	222.0	3.3	4.98	0.95	5.93	6.24	49.00	3.44	2.49
17	0.2000	67.00	222.0	3.8	4.96	0.95	5.91	6.22	49.00	3.43	2.48
18	0.3000	68.00	225.3	5.7	4.93	0.95	5.88	6.19	49.00	3.42	2.47
19	0.4000	68.00	225.3	7.6	4.83	0.98	5.81	5.94	48.80	3.40	2.42
20	0.5000	69.00	228.6	9.4	4.80	0.99	5.80	5.84	48.70	3.40	2.40
21	0.6000	69.00	228.6	11.3	4.70	0.99	5.70	5.73	48.70	3.35	2.35
22	0.7000	69.00	228.6	13.2	4.60	0.99	5.60	5.63	48.70	3.30	2.30
23	0.8000	70.00	231.9	15.1	4.57	0.99	5.56	5.60	48.70	3.28	2.28
24	0.9000	71.00	235.2	17.0	4.53	0.99	5.52	5.56	48.70	3.26	2.27
25	1.0000	74.00	245.2	18.9	4.62	1.01	5.62	5.58	48.60	3.32	2.31
26	1.1000	75.00	248.5	20.8	4.57	1.01	5.58	5.53	48.60	3.29	2.28
27	1.2000	76.00	251.8	22.7	4.52	1.01	5.53	5.48	48.60	3.27	2.26

Specimen Parameter		Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.		238.320			1262.200
Moisture content: Dry soil+tare, gms.		212.600			1068.100
Moisture content: Tare, gms.		55.000			108.400
Moisture, %		16.3	24.0	22.9	20.2
Moist specimen weight, gms.		1127.5			
Diameter, in.		2.84	2.84	2.82	
Area, in.²		6.33	6.33	6.26	
Height, in.		5.62	5.62	5.59	
Net decrease in height, in.		0.00	0.00	0.03	
Wet Density, pcf		120.7	128.6	129.8	
Dry density, pcf		103.7	103.7	105.6	
Void ratio		0.6624	0.6624	0.6323	
Saturation, %		68.1	100.0	100.0	

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 58.30 psi (8.40 ksf)

Consolidation back pressure = 50.00 psi (7.20 ksf)

Consolidation effective confining stress = 1.20 ksf

Strain rate, in./min. = 0.05

Fail. Stress = 8.30 ksf at reading no. 18.

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.31	1.31	1.00	49.20	1.31	0.00
1	0.0010	1.00	3.3	0.0	0.08	1.27	1.34	1.06	49.50	1.31	0.04
2	0.0050	3.00	9.9	0.1	0.23	1.20	1.42	1.19	50.00	1.31	0.11
3	0.0100	5.00	16.6	0.2	0.38	1.11	1.49	1.34	50.60	1.30	0.19
4	0.0150	8.00	26.5	0.3	0.61	1.09	1.70	1.56	50.70	1.40	0.30
5	0.0200	18.00	59.6	0.4	1.37	1.07	2.43	2.28	50.90	1.75	0.68
6	0.0250	22.00	72.9	0.4	1.67	0.94	2.61	2.78	51.80	1.77	0.83
7	0.0300	26.00	86.1	0.5	1.97	0.86	2.84	3.28	52.30	1.85	0.99
8	0.0350	30.00	99.4	0.6	2.27	0.79	3.06	3.87	52.80	1.93	1.14
9	0.0400	34.00	112.6	0.7	2.57	0.78	3.35	4.31	52.90	2.06	1.29
10	0.0450	38.00	125.9	0.8	2.87	0.78	3.65	4.70	52.90	2.21	1.44
11	0.0500	43.00	142.5	0.9	3.25	0.79	4.04	5.10	52.80	2.42	1.62
12	0.0750	60.00	198.8	1.3	4.51	0.85	5.36	6.31	52.40	3.11	2.26
13	0.1000	78.00	258.4	1.8	5.84	0.94	6.78	7.24	51.80	3.86	2.92
14	0.1250	82.00	271.7	2.2	6.11	0.91	7.02	7.74	52.00	3.96	3.06
15	0.1500	94.00	311.4	2.7	6.97	0.92	7.90	8.57	51.90	4.41	3.49
16	0.1750	105.00	347.9	3.1	7.75	0.94	8.69	9.28	51.80	4.81	3.88
17	0.2000	110.00	364.4	3.6	8.09	0.95	9.04	9.51	51.70	4.99	4.04
18	0.2500	114.00	377.7	4.5	8.30	0.96	9.27	9.60	51.60	5.12	4.15
19	0.3000	113.00	374.4	5.4	8.15	0.99	9.15	9.20	51.40	5.07	4.08
20	0.3500	112.00	371.1	6.3	8.00	1.02	9.03	8.83	51.20	5.02	4.00
21	0.4000	112.00	371.1	7.2	7.93	1.05	8.98	8.54	51.00	5.01	3.96
22	0.5000	111.00	367.7	9.0	7.70	1.08	8.78	8.13	50.80	4.93	3.85
23	0.6000	111.00	367.7	10.7	7.55	1.09	8.65	7.90	50.70	4.87	3.78

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
24	0.7000	111.00	367.7	12.5	7.40	1.11	8.51	7.68	50.60	4.81	3.70
25	0.8000	111.00	367.7	14.3	7.25	1.12	8.37	7.45	50.50	4.75	3.63
26	0.9000	110.00	364.4	16.1	7.03	1.14	8.17	7.18	50.40	4.65	3.52
27	1.0000	108.00	357.8	17.9	6.76	1.15	7.91	6.87	50.30	4.53	3.38
28	1.1000	108.00	357.8	19.7	6.61	1.14	7.75	6.81	50.40	4.44	3.31
29	1.2000	110.00	364.4	21.5	6.58	1.14	7.72	6.79	50.40	4.43	3.29

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	238.320			1285.300
Moisture content: Dry soil+tare, gms.	212.600			1102.400
Moisture content: Tare, gms.	55.000			115.700
Moisture, %	16.3	24.1	23.3	18.5
Moist specimen weight, gms.	1133.7			
Diameter, in.	2.84	2.84	2.83	
Area, in.²	6.33	6.33	6.28	
Height, in.	5.66	5.66	5.63	
Net decrease in height, in.		0.00	0.03	
Wet Density, pcf	120.5	128.5	129.4	
Dry density, pcf	103.6	103.6	104.9	
Void ratio	0.6650	0.6650	0.6430	
Saturation, %	67.8	100.0	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 63.60 psi (9.16 ksf)

Consolidation back pressure = 50.00 psi (7.20 ksf)

Consolidation effective confining stress = 1.96 ksf

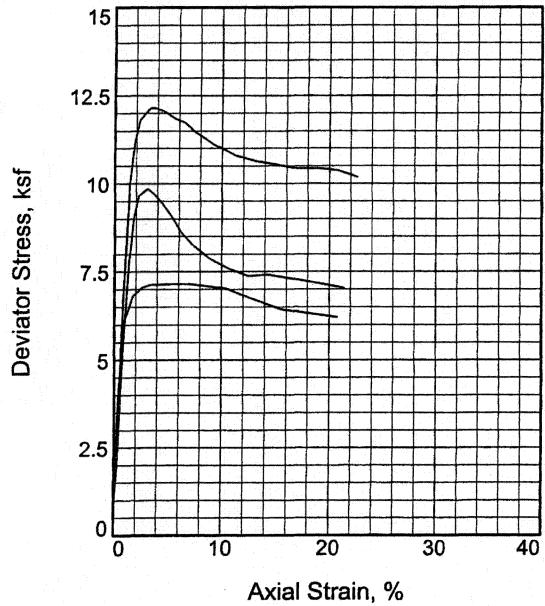
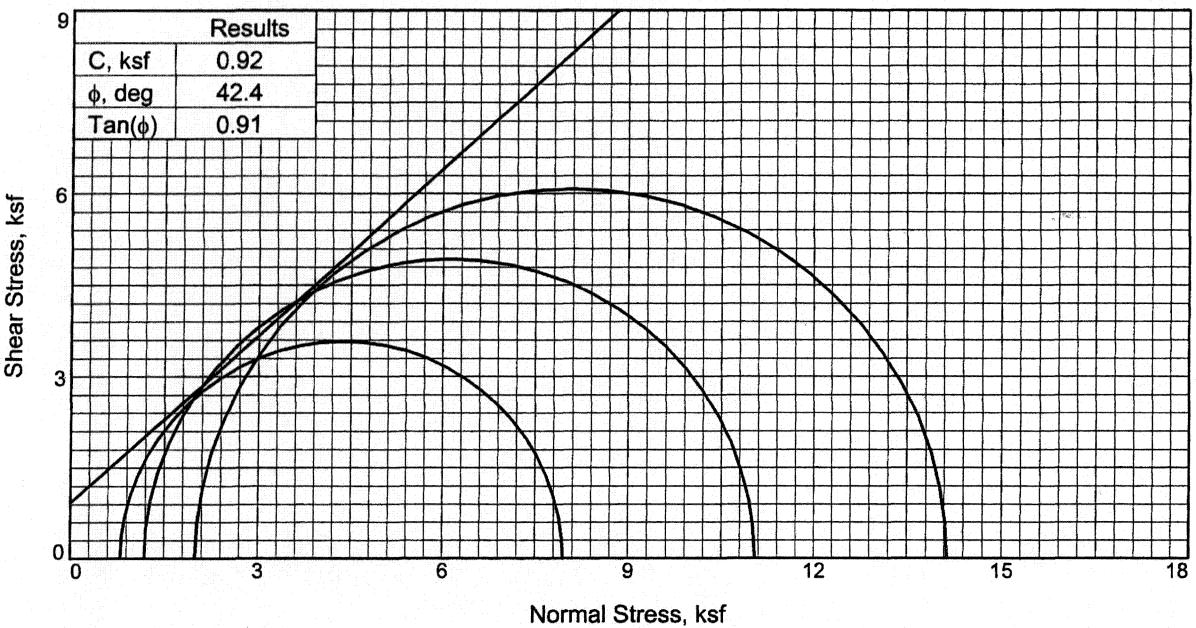
Strain rate, in./min. = 0.05

Fail. Stress = 10.48 ksf at reading no. 16

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.25	2.25	1.00	48.00	2.25	0.00
1	0.0010	4.00	13.3	0.0	0.30	2.25	2.55	1.14	48.00	2.40	0.15
2	0.0050	22.00	72.9	0.1	1.67	2.19	3.86	1.76	48.40	3.02	0.84
3	0.0100	42.00	139.1	0.2	3.19	2.10	5.29	2.52	49.00	3.70	1.59
4	0.0150	50.00	165.7	0.3	3.79	2.07	5.86	2.83	49.20	3.97	1.89
5	0.0200	58.00	192.2	0.4	4.39	2.04	6.44	3.15	49.40	4.24	2.20
6	0.0250	66.00	218.7	0.4	4.99	2.02	7.01	3.48	49.60	4.51	2.50
7	0.0300	73.00	241.8	0.5	5.52	2.02	7.53	3.74	49.60	4.77	2.76
8	0.0350	80.00	265.0	0.6	6.04	1.99	8.03	4.04	49.80	5.01	3.02
9	0.0450	91.00	301.5	0.8	6.86	1.89	8.75	4.64	50.50	5.32	3.43
10	0.0500	97.00	321.4	0.9	7.30	1.84	9.15	4.96	50.80	5.50	3.65
11	0.0750	119.00	394.2	1.3	8.92	1.80	10.72	5.96	51.10	6.26	4.46
12	0.1000	129.00	427.4	1.8	9.63	1.74	11.37	6.53	51.50	6.56	4.81
13	0.1250	135.00	447.3	2.2	10.03	1.73	11.76	6.80	51.60	6.74	5.02

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
14	0.1500	140.00	463.8	2.7	10.35	1.73	12.08	6.99	51.60	6.91	5.18
15	0.1750	142.00	470.4	3.1	10.45	1.74	12.20	7.00	51.50	6.97	5.23
16	0.2000	143.00	473.8	3.5	10.48	1.79	12.27	6.87	51.20	7.03	5.24
17	0.2500	144.00	477.1	4.4	10.46	1.80	12.26	6.81	51.10	7.03	5.23
18	0.3000	144.00	477.1	5.3	10.36	1.83	12.19	6.66	50.90	7.01	5.18
19	0.3500	146.00	483.7	6.2	10.40	1.83	12.23	6.69	50.90	7.03	5.20
20	0.4000	144.00	477.1	7.1	10.16	1.84	12.01	6.51	50.80	6.93	5.08
21	0.5000	145.00	480.4	8.9	10.04	1.84	11.88	6.45	50.80	6.86	5.02
22	0.6000	145.00	480.4	10.6	9.84	1.86	11.70	6.30	50.70	6.78	4.92
23	0.7000	145.00	480.4	12.4	9.65	1.87	11.52	6.15	50.60	6.70	4.82
24	0.8000	145.00	480.4	14.2	9.45	1.87	11.33	6.05	50.60	6.60	4.73
25	0.9000	146.00	483.7	16.0	9.32	1.89	11.21	5.94	50.50	6.55	4.66
26	1.0000	146.00	483.7	17.7	9.12	1.90	11.03	5.80	50.40	6.46	4.56
27	1.1000	146.00	483.7	19.5	8.93	1.92	10.84	5.66	50.30	6.38	4.46
28	1.2000	146.00	483.7	21.3	8.73	1.93	10.66	5.52	50.20	6.30	4.37



Type of Test:

Unconsolidated Undrained

Sample Type: remold

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity = 2.762

Remarks:

Reviewed By _____

Tested By: mc

Checked By: Rajni Sukhwani

	Sample No.	1	2	3
Initial	Water Content,	15.7	15.6	15.4
	Dry Density, pcf	110.6	109.4	109.4
	Saturation,	77.3	75.1	73.9
	Void Ratio	0.5596	0.5756	0.5765
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.77	5.64	5.32
At Test	Water Content,	20.3	19.5	20.0
	Dry Density, pcf	110.6	112.0	111.0
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.5596	0.5398	0.5534
	Diameter, in.	2.84	2.82	2.83
	Height, in.	5.77	5.60	5.29
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		0.0	0.0	0.0
Cell Pressure, ksf		0.8	1.2	2.0
Fail. Stress, ksf		7.1	9.9	12.1
Ult. Stress, ksf				
σ_1 Failure, ksf		8.0	11.0	14.1
σ_3 Failure, ksf		0.8	1.2	2.0

Client: Nodarse and Associates

Project: Material Testing-Nodarse

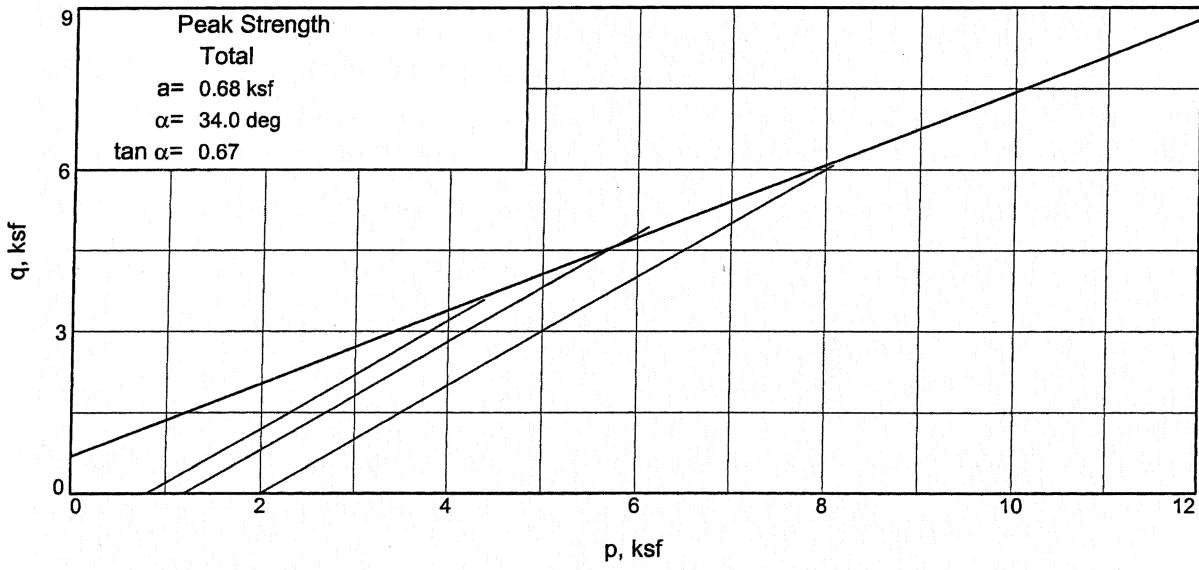
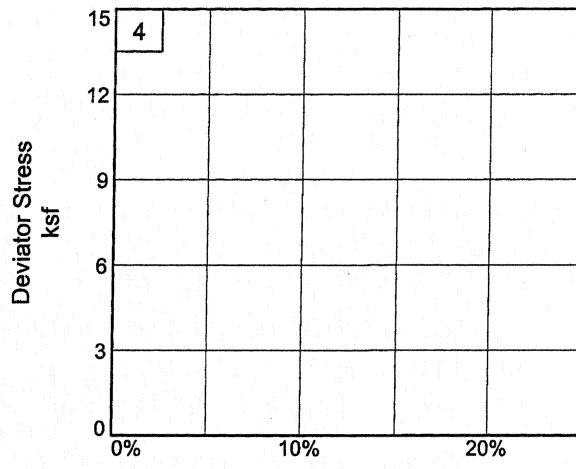
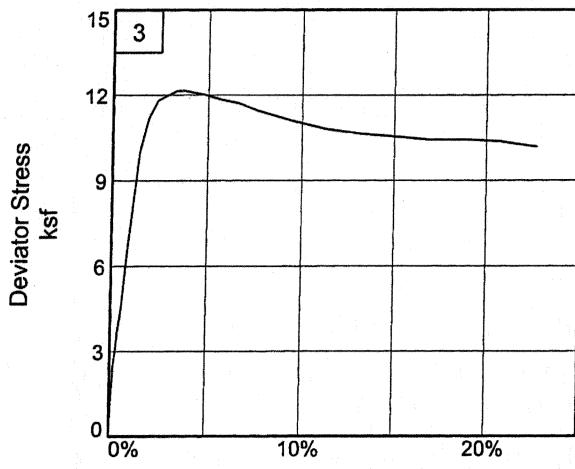
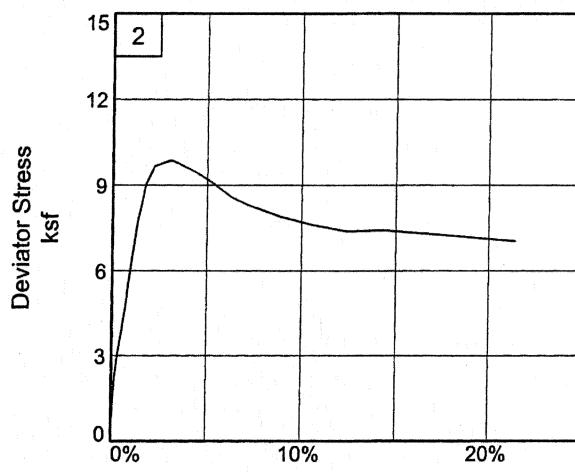
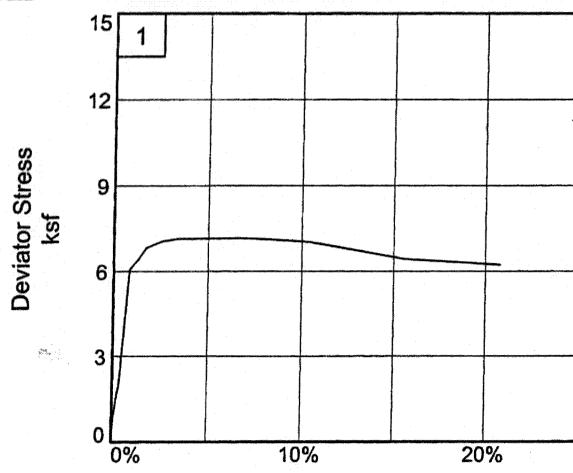
Sample Number: UU-95%-A

Proj. No.: 6738-05-4573

Date: 6-11-05

TRIAXIAL SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.



Client: Nodarse and Associates

Project: Material Testing-Nodarse

Sample Number: UU-95%-A

Project No.: 6738-05-4573

Reviewed By _____

MACTEC Engineering and Consulting, Inc.

Tested By: mc

Checked By: _____

TRIAXIAL COMPRESSION TEST
Unconsolidated Undrained

6/15/2005
10:46 AM

Date: 6-11-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: UU-95%-A
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks:
Type of Sample: remold
Specific Gravity=2.762 **LL=** **PL=** **PI=**
Test Method: COE uniform strain

Parameters for Specimen No. 1			
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	224.300		1320.500
Moisture content: Dry soil+tare, gms.	200.660		1168.100
Moisture content: Tare, gms.	49.750		230.100
Moisture, %	15.7	20.3	16.2
Moist specimen weight, gms.	1226.9		
Diameter, in.	2.84	2.84	
Area, in.²	6.33	6.33	
Height, in.	5.77	5.77	
Net decrease in height, in.		0.00	
Wet Density, pcf	127.9	133.0	
Dry density, pcf	110.6	110.6	
Void ratio	0.5596	0.5596	
Saturation, %	77.3	100.0	

Test Readings for Specimen No. 1

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 5.60 psi (0.81 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 7.15 ksf at reading no. 21

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator	Minor Princ.	Major Princ.	1:3 Ratio	P ksf	Q ksf
					Stress ksf	Stress ksf	Stress ksf			
0	0.0000	0.00	0.0	0.0	0.00	0.81	0.81	1.00		0.81
1	0.0010	5.00	16.6	0.0	0.38	0.81	1.18	1.47		0.99
2	0.0050	12.00	39.8	0.1	0.90	0.81	1.71	2.12		1.26
3	0.0100	17.00	56.3	0.2	1.28	0.81	2.08	2.58		1.45
4	0.0150	22.00	72.9	0.3	1.65	0.81	2.46	3.05		1.63
5	0.0200	26.00	86.1	0.3	1.95	0.81	2.76	3.42		1.78
6	0.0250	35.00	116.0	0.4	2.62	0.81	3.43	4.25		2.12
7	0.0300	44.00	145.8	0.5	3.30	0.81	4.10	5.09		2.45
8	0.0350	53.00	175.6	0.6	3.97	0.81	4.77	5.92		2.79
9	0.0400	62.00	205.4	0.7	4.64	0.81	5.44	6.75		3.12
10	0.0450	71.00	235.2	0.8	5.31	0.81	6.11	7.58		3.46
11	0.0500	81.00	268.4	0.9	6.05	0.81	6.85	8.50		3.83
12	0.0750	86.00	284.9	1.3	6.39	0.81	7.20	8.93		4.00
13	0.1000	92.00	304.8	1.7	6.81	0.81	7.61	9.44		4.21
14	0.1250	94.00	311.4	2.2	6.93	0.81	7.73	9.59		4.27
15	0.1500	96.00	318.0	2.6	7.04	0.81	7.85	9.73		4.33
16	0.1750	97.00	321.4	3.0	7.08	0.81	7.89	9.78		4.35
17	0.2000	98.00	324.7	3.5	7.12	0.81	7.93	9.84		4.37
18	0.2500	99.00	328.0	4.3	7.13	0.81	7.94	9.85		4.38
19	0.3000	100.00	331.3	5.2	7.14	0.81	7.95	9.85		4.38
20	0.3500	101.00	334.6	6.1	7.14	0.81	7.95	9.86		4.38
21	0.4000	102.00	337.9	6.9	7.15	0.81	7.96	9.87		4.38
22	0.5000	103.00	341.2	8.7	7.08	0.81	7.89	9.79		4.35
23	0.6000	104.00	344.6	10.4	7.02	0.81	7.82	9.70		4.32
24	0.7000	103.00	341.2	12.1	6.82	0.81	7.62	9.45		4.21
25	0.8000	102.00	337.9	13.9	6.62	0.81	7.42	9.21		4.11
26	0.9000	101.00	334.6	15.6	6.42	0.81	7.23	8.96		4.02
27	1.0000	102.00	337.9	17.3	6.35	0.81	7.16	8.87		3.98
28	1.1000	103.00	341.2	19.1	6.28	0.81	7.08	8.79		3.95
29	1.2000	104.00	344.6	20.8	6.20	0.81	7.01	8.69		3.91

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	165.540		1261.000
Moisture content: Dry soil+tare, gms.	150.080		1103.500
Moisture content: Tare, gms.	51.290		109.000
Moisture, %	15.6	19.5	15.8
Moist specimen weight, gms.	1186.9		
Diameter, in.	2.84	2.82	
Area, in.²	6.33	6.24	
Height, in.	5.64	5.60	
Net decrease in height, in.		0.04	
Wet Density, pcf	126.6	133.9	
Dry density, pcf	109.4	112.0	
Void ratio	0.5756	0.5398	
Saturation, %	75.1	100.0	

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 8.30 psi (1.20 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 9.85 ksf at reading no. 16

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.20	1.20	1.00		1.20
1	0.0010	8.00	26.5	0.0	0.61	1.20	1.81	1.51		1.50
2	0.0050	18.00	59.6	0.1	1.38	1.20	2.57	2.15		1.88
3	0.0100	30.00	99.4	0.2	2.29	1.20	3.49	2.92		2.34
4	0.0150	36.00	119.3	0.3	2.75	1.20	3.94	3.30		2.57
5	0.0200	42.00	139.1	0.4	3.20	1.20	4.40	3.68		2.80
6	0.0250	47.00	155.7	0.4	3.58	1.20	4.77	3.99		2.98
7	0.0300	51.00	169.0	0.5	3.88	1.20	5.07	4.25		3.13
8	0.0350	56.00	185.5	0.6	4.26	1.20	5.45	4.56		3.32
9	0.0400	62.00	205.4	0.7	4.71	1.20	5.90	4.94		3.55
10	0.0450	67.00	222.0	0.8	5.08	1.20	6.28	5.25		3.74
11	0.0500	74.00	245.2	0.9	5.61	1.20	6.80	5.69		4.00
12	0.0750	102.00	337.9	1.3	7.70	1.20	8.89	7.44		5.04
13	0.1000	120.00	397.6	1.8	9.01	1.20	10.21	8.54		5.70
14	0.1250	129.00	427.4	2.2	9.65	1.20	10.84	9.07		6.02
15	0.1500	131.00	434.0	2.7	9.75	1.20	10.95	9.16		6.07
16	0.1750	133.00	440.6	3.1	9.85	1.20	11.05	9.24		6.12
17	0.2000	132.00	437.3	3.6	9.73	1.20	10.93	9.14		6.06
18	0.2500	129.00	427.4	4.5	9.42	1.20	10.62	8.89		5.91
19	0.3000	125.00	414.1	5.4	9.05	1.20	10.24	8.57		5.72
20	0.3500	120.00	397.6	6.3	8.60	1.20	9.80	8.20		5.50
21	0.4000	117.00	387.6	7.1	8.31	1.20	9.50	7.95		5.35
22	0.5000	113.00	374.4	8.9	7.87	1.20	9.07	7.58		5.13
23	0.6000	111.00	367.7	10.7	7.58	1.20	8.77	7.34		4.98
24	0.7000	110.00	364.4	12.5	7.36	1.20	8.56	7.16		4.88

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
25	0.8000	113.00	374.4	14.3	7.41	1.20	8.60	7.20		4.90
26	0.9000	114.00	377.7	16.1	7.32	1.20	8.51	7.12		4.85
27	1.0000	115.00	381.0	17.9	7.22	1.20	8.42	7.04		4.81
28	1.1000	116.00	384.3	19.7	7.13	1.20	8.32	6.96		4.76
29	1.2000	117.00	387.6	21.4	7.03	1.20	8.22	6.88		4.71

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	178.450		1186.300
Moisture content: Dry soil+tare, gms.	161.940		1039.700
Moisture content: Tare, gms.	54.840		106.200
Moisture, %	15.4	20.0	15.7
Moist specimen weight, gms.	1116.7		
Diameter, in.	2.84	2.83	
Area, in. ²	6.33	6.27	
Height, in.	5.32	5.29	
Net decrease in height, in.		0.03	
Wet Density, pcf	126.2	133.2	
Dry density, pcf	109.4	111.0	
Void ratio	0.5765	0.5534	
Saturation, %	73.9	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 13.90 psi (2.00 ksf)

Back pressure = 0.00 psi (0.00 ksf)

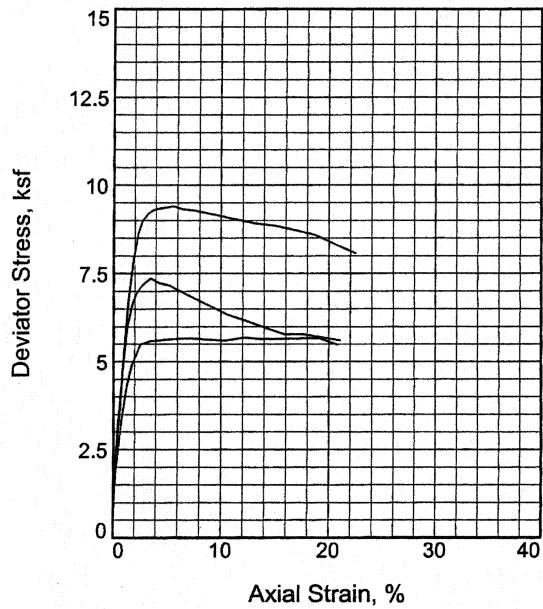
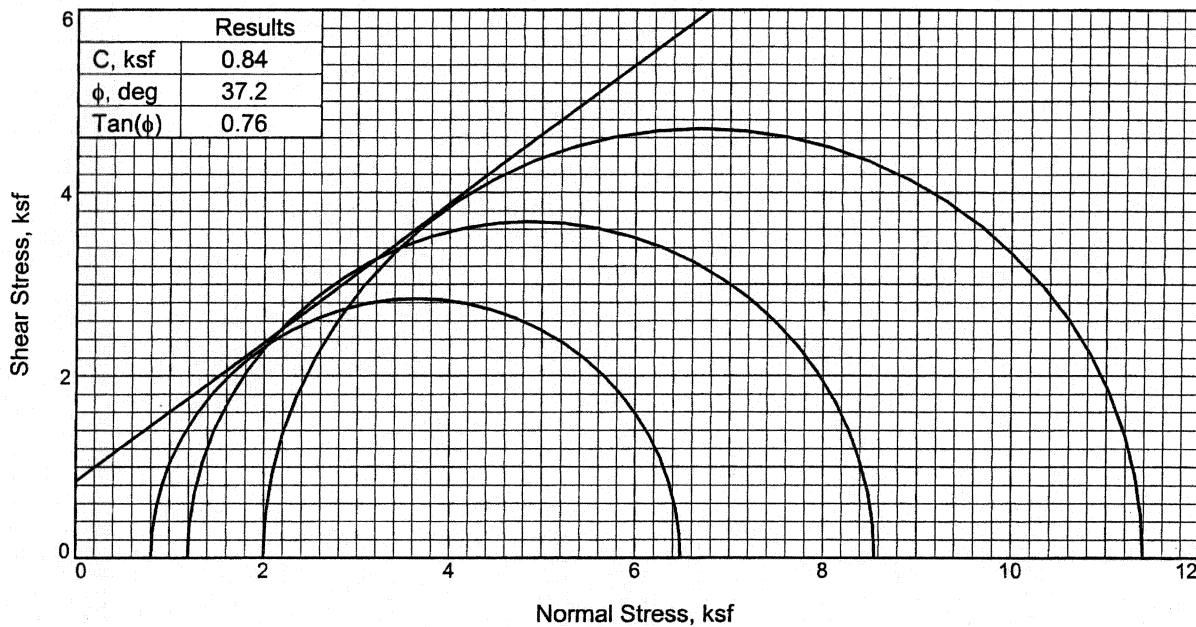
Strain rate, in./min. = 0.05

Fail. Stress = 12.15 ksf at reading no. 17

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.00	2.00	1.00		2.00
1	0.0010	6.00	19.9	0.0	0.46	2.00	2.46	1.23		2.23
2	0.0050	20.00	66.3	0.1	1.52	2.00	3.52	1.76		2.76
3	0.0100	32.00	106.0	0.2	2.43	2.00	4.43	2.21		3.22
4	0.0150	40.00	132.5	0.3	3.03	2.00	5.04	2.52		3.52
5	0.0200	48.00	159.0	0.4	3.64	2.00	5.64	2.82		3.82
6	0.0250	55.00	182.2	0.5	4.16	2.00	6.16	3.08		4.08
7	0.0300	62.00	205.4	0.6	4.69	2.00	6.69	3.34		4.35
8	0.0350	71.00	235.2	0.7	5.36	2.00	7.37	3.68		4.68
9	0.0400	80.00	265.0	0.8	6.04	2.00	8.04	4.02		5.02
10	0.0450	89.00	294.9	0.9	6.71	2.00	8.71	4.35		5.36
11	0.0500	96.00	318.0	0.9	7.23	2.00	9.23	4.61		5.62
12	0.0750	133.00	440.6	1.4	9.97	2.00	11.97	5.98		6.99
13	0.1000	150.00	497.0	1.9	11.19	2.00	13.19	6.59		7.60
14	0.1250	159.00	526.8	2.4	11.81	2.00	13.81	6.90		7.91
15	0.1500	162.00	536.7	2.8	11.97	2.00	13.97	6.98		7.99

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator	Minor Princ.	Major Princ.	1:3 Ratio	P ksf	Q ksf
					Stress ksf	Stress ksf	Stress ksf			
16	0.1750	165.00	546.6	3.3	12.13	2.00	14.14	7.06		8.07
17	0.2000	166.00	550.0	3.8	12.15	2.00	14.15	7.07		8.08
18	0.2500	166.00	550.0	4.7	12.03	2.00	14.03	7.01		8.02
19	0.3000	165.00	546.6	5.7	11.84	2.00	13.84	6.91		7.92
20	0.3500	165.00	546.6	6.6	11.72	2.00	13.72	6.85		7.86
21	0.4000	163.00	540.0	7.6	11.46	2.00	13.46	6.73		7.73
22	0.5000	161.00	533.4	9.4	11.09	2.00	13.09	6.54		7.55
23	0.6000	160.00	530.1	11.3	10.79	2.00	12.79	6.39		7.40
24	0.7000	161.00	533.4	13.2	10.63	2.00	12.63	6.31		7.31
25	0.8000	163.00	540.0	15.1	10.52	2.00	12.53	6.26		7.26
26	0.9000	165.00	546.6	17.0	10.42	2.00	12.42	6.20		7.21
27	1.0000	169.00	559.9	18.9	10.43	2.00	12.43	6.21		7.21
28	1.1000	172.00	569.8	20.8	10.36	2.00	12.36	6.18		7.18
29	1.2000	173.00	573.1	22.7	10.17	2.00	12.18	6.08		7.09


Type of Test:

Unconsolidated Undrained

Sample Type: remolded

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks:
Reviewed By _____

	Sample No.	1	2	3
Initial	Water Content,	16.6	16.6	16.6
	Dry Density, pcf	104.1	103.8	104.0
	Saturation,	69.9	69.4	69.7
	Void Ratio	0.6562	0.6605	0.6579
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.78	5.72	5.36
At Test	Water Content,	22.9	22.8	23.0
	Dry Density, pcf	105.7	105.9	105.4
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.6313	0.6284	0.6357
	Diameter, in.	2.83	2.82	2.83
	Height, in.	5.75	5.68	5.34
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		0.0	0.0	0.0
Cell Pressure, ksf		0.8	1.2	2.0
Fail. Stress, ksf		5.7	7.4	9.4
Ult. Stress, ksf				
σ_1 Failure, ksf		6.5	8.6	11.4
σ_3 Failure, ksf		0.8	1.2	2.0

Client: Nodarse and Associates

Project: Material Testing-Nodarse

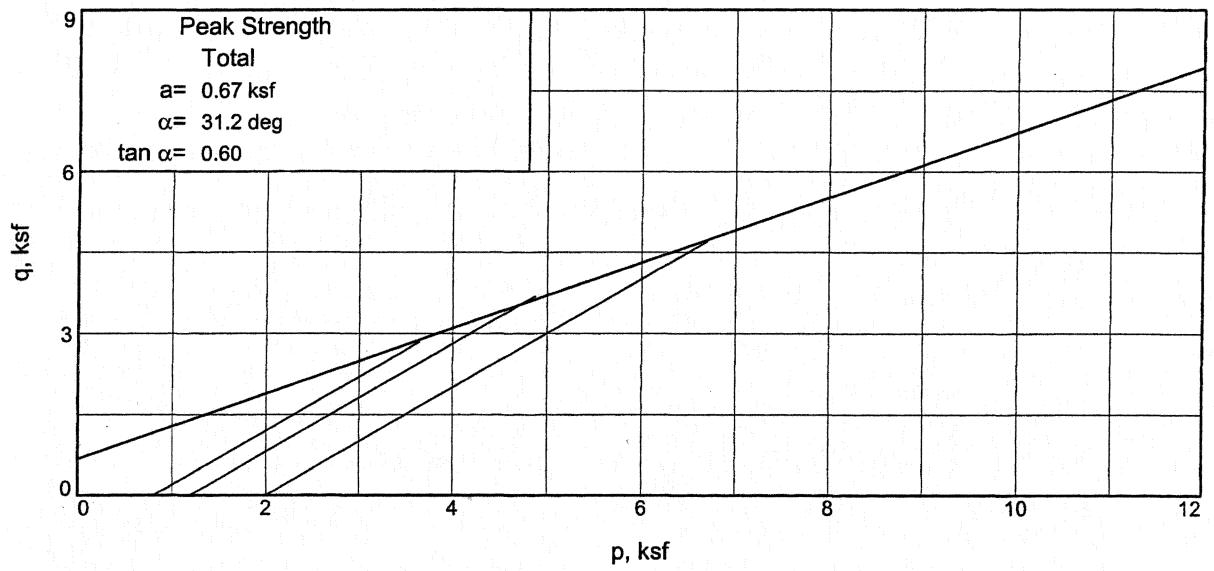
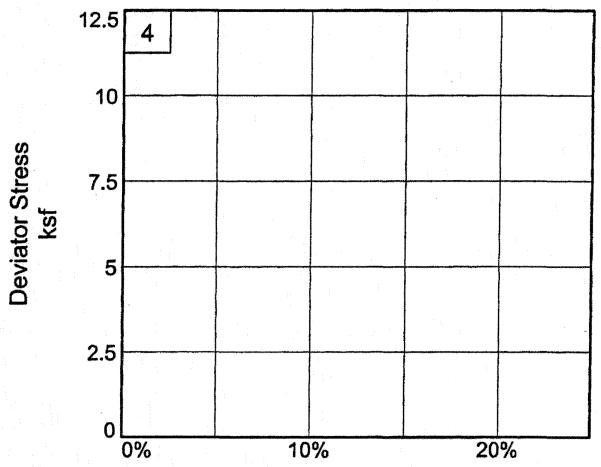
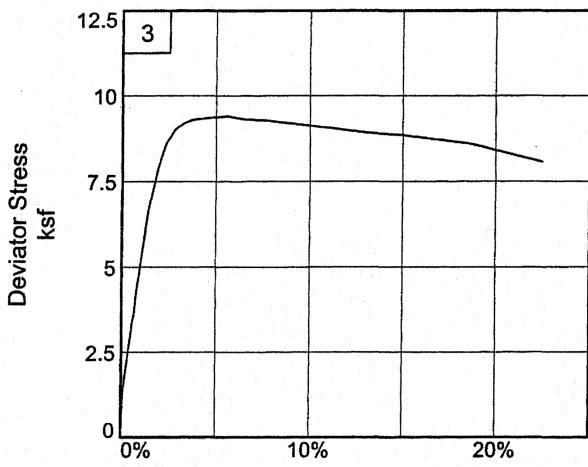
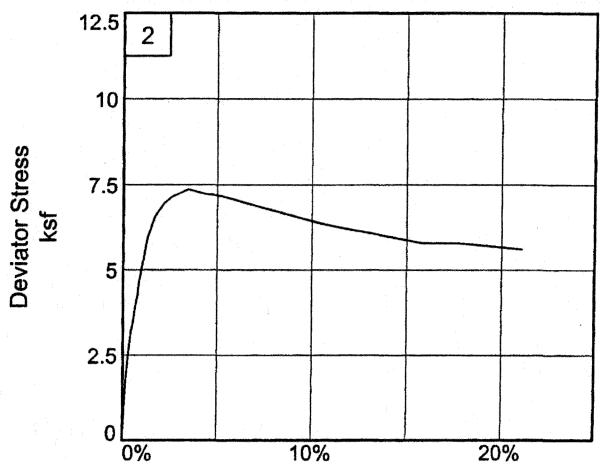
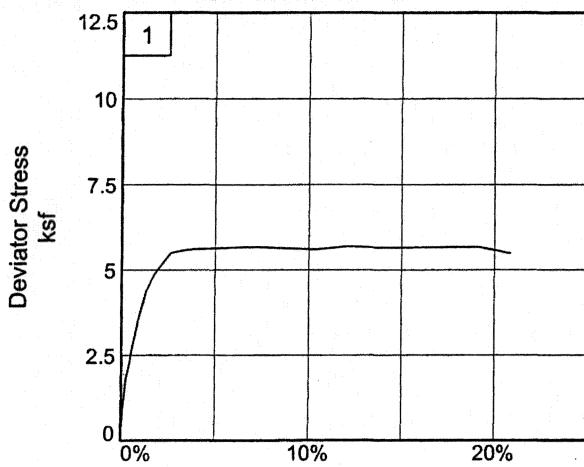
Sample Number: UU-90%-A

Proj. No.: 6738-05-4573

Date: 6-10-05

TRIAXIAL SHEAR TEST REPORT
MACTEC ENGINEERING AND CONSULTING, INC.
Tested By: mc

Checked By: *Kajni Sukhwani*



Client: Nodarse and Associates
Project: Material Testing-Nodarse
Sample Number: UU-90%-A
Project No.: 6738-05-4573

Reviewed By _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: mc

Checked By: _____

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

6/15/2005

10:45 AM

Date: 6-10-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: UU-90%-A
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks:
Type of Sample: remolded
Specific Gravity=2.762 LL= PL= PI=

Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	178.470		1181.000
Moisture content: Dry soil+tare, gms.	160.220		1025.700
Moisture content: Tare, gms.	50.320		115.200
Moisture, %	16.6	22.9	17.1
Moist specimen weight, gms.	1166.8		
Diameter, in.	2.84	2.83	
Area, in. ²	6.33	6.27	
Height, in.	5.78	5.75	
Net decrease in height, in.		0.03	
Wet Density, pcf	121.4	129.9	
Dry density, pcf	104.1	105.7	
Void ratio	0.6562	0.6313	
Saturation, %	69.9	100.0	

Test Readings for Specimen No. 1

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 5.60 psi (0.81 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 5.68 ksf at reading no. 23

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator	Minor Princ.	Major Princ.	1:3 Ratio	P ksf	Q ksf
					Stress ksf	Stress ksf	Stress ksf			
0	0.0000	0.00	0.0	0.0	0.00	0.81	0.81	1.00		0.81
1	0.0010	3.00	9.9	0.0	0.23	0.81	1.03	1.28		0.92
2	0.0050	12.00	39.8	0.1	0.91	0.81	1.72	2.13		1.26
3	0.0100	18.00	59.6	0.2	1.37	0.81	2.17	2.70		1.49
4	0.0150	24.00	79.5	0.3	1.82	0.81	2.63	3.26		1.72
5	0.0200	27.00	89.5	0.3	2.05	0.81	2.85	3.54		1.83
6	0.0250	30.00	99.4	0.4	2.27	0.81	3.08	3.82		1.94
7	0.0300	34.00	112.6	0.5	2.57	0.81	3.38	4.19		2.09
8	0.0350	37.00	122.6	0.6	2.80	0.81	3.60	4.47		2.21
9	0.0400	40.00	132.5	0.7	3.02	0.81	3.83	4.75		2.32
10	0.0450	43.00	142.5	0.8	3.25	0.81	4.05	5.02		2.43
11	0.0500	46.00	152.4	0.9	3.47	0.81	4.28	5.30		2.54
12	0.0750	58.00	192.2	1.3	4.35	0.81	5.16	6.40		2.98
13	0.1000	65.00	215.3	1.7	4.86	0.81	5.67	7.03		3.24
14	0.1500	74.00	245.2	2.6	5.48	0.81	6.29	7.80		3.55
15	0.1750	75.00	248.5	3.0	5.53	0.81	6.34	7.86		3.57
16	0.2000	76.00	251.8	3.5	5.58	0.81	6.39	7.92		3.60
17	0.2500	77.00	255.1	4.3	5.60	0.81	6.41	7.95		3.61
18	0.3000	78.00	258.4	5.2	5.62	0.81	6.43	7.97		3.62
19	0.3500	79.00	261.7	6.1	5.64	0.81	6.45	8.00		3.63
20	0.4000	80.00	265.0	7.0	5.66	0.81	6.47	8.02		3.64
21	0.5000	81.00	268.4	8.7	5.63	0.81	6.43	7.98		3.62
22	0.6000	82.00	271.7	10.4	5.59	0.81	6.39	7.93		3.60
23	0.7000	85.00	281.6	12.2	5.68	0.81	6.49	8.04		3.65
24	0.8000	86.00	284.9	13.9	5.63	0.81	6.44	7.98		3.62
25	0.9000	88.00	291.5	15.6	5.65	0.81	6.45	8.00		3.63
26	1.0000	90.00	298.2	17.4	5.66	0.81	6.46	8.01		3.63
27	1.1000	92.00	304.8	19.1	5.66	0.81	6.47	8.02		3.64
28	1.2000	91.00	301.5	20.9	5.48	0.81	6.28	7.79		3.55

Parameters for Specimen No. 2			
Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	178.470		1253.500
Moisture content: Dry soil+tare, gms.	160.220		1090.600
Moisture content: Tare, gms.	50.320		116.400
Moisture, %	16.6	22.8	16.7
Moist specimen weight, gms.	1151.7		
Diameter, in.	2.84	2.82	
Area, in. ²	6.33	6.25	
Height, in.	5.72	5.68	
Net decrease in height, in.		0.04	
Wet Density, pcf	121.1	130.0	
Dry density, pcf	103.8	105.9	
Void ratio	0.6605	0.6284	
Saturation, %	69.4	100.0	

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 8.30 psi (1.20 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 7.36 ksf at reading no. 17

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.20	1.20	1.00		1.20
1	0.0010	5.00	16.6	0.0	0.38	1.20	1.58	1.32		1.39
2	0.0050	14.00	46.4	0.1	1.07	1.20	2.26	1.89		1.73
3	0.0100	24.00	79.5	0.2	1.83	1.20	3.02	2.53		2.11
4	0.0150	31.00	102.7	0.3	2.36	1.20	3.55	2.97		2.37
5	0.0200	36.00	119.3	0.4	2.74	1.20	3.93	3.29		2.56
6	0.0250	42.00	139.1	0.4	3.19	1.20	4.39	3.67		2.79
7	0.0300	45.00	149.1	0.5	3.42	1.20	4.61	3.86		2.90
8	0.0350	49.00	162.3	0.6	3.72	1.20	4.91	4.11		3.05
9	0.0400	53.00	175.6	0.7	4.02	1.20	5.21	4.36		3.20
10	0.0450	56.00	185.5	0.8	4.24	1.20	5.43	4.55		3.31
11	0.0500	61.00	202.1	0.9	4.61	1.20	5.81	4.86		3.50
12	0.0750	79.00	261.7	1.3	5.95	1.20	7.14	5.98		4.17
13	0.1000	88.00	291.5	1.8	6.60	1.20	7.79	6.52		4.49
14	0.1250	93.00	308.1	2.2	6.94	1.20	8.13	6.81		4.67
15	0.1500	96.00	318.0	2.6	7.13	1.20	8.33	6.97		4.76
16	0.1750	98.00	324.7	3.1	7.25	1.20	8.44	7.06		4.82
17	0.2000	100.00	331.3	3.5	7.36	1.20	8.56	7.16		4.88
18	0.2500	99.00	328.0	4.4	7.22	1.20	8.42	7.04		4.81
19	0.3000	99.00	328.0	5.3	7.15	1.20	8.35	6.99		4.77
20	0.3500	98.00	324.7	6.2	7.02	1.20	8.21	6.87		4.70
21	0.4000	97.00	321.4	7.0	6.88	1.20	8.08	6.76		4.64
22	0.5000	95.00	314.7	8.8	6.61	1.20	7.81	6.53		4.50
23	0.6000	93.00	308.1	10.6	6.35	1.20	7.54	6.31		4.37
24	0.7000	92.00	304.8	12.3	6.15	1.20	7.35	6.15		4.27

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
25	0.8000	91.00	301.5	14.1	5.97	1.20	7.16	5.99		4.18
26	0.9000	90.00	298.2	15.8	5.78	1.20	6.97	5.84		4.08
27	1.0000	92.00	304.8	17.6	5.78	1.20	6.98	5.84		4.09
28	1.2000	93.00	308.1	21.1	5.60	1.20	6.79	5.68		3.99

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	178.470		1178.400
Moisture content: Dry soil+tare, gms.	160.220		1022.600
Moisture content: Tare, gms.	50.320		115.200
Moisture, %	16.6	23.0	17.2
Moist specimen weight, gms.	1080.9		
Diameter, in.	2.84	2.83	
Area, in.²	6.33	6.28	
Height, in.	5.36	5.34	
Net decrease in height, in.		0.02	
Wet Density, pcf	121.3	129.7	
Dry density, pcf	104.0	105.4	
Void ratio	0.6579	0.6357	
Saturation, %	69.7	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Cell pressure = 13.90 psi (2.00 ksf)

Back pressure = 0.00 psi (0.00 ksf)

Strain rate, in./min. = 0.05

Fail. Stress = 9.40 ksf at reading no. 19

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.00	2.00	1.00		2.00
1	0.0010	7.00	23.2	0.0	0.53	2.00	2.53	1.27		2.27
2	0.0050	17.00	56.3	0.1	1.29	2.00	3.29	1.64		2.65
3	0.0100	23.00	76.2	0.2	1.74	2.00	3.75	1.87		2.87
4	0.0150	28.00	92.8	0.3	2.12	2.00	4.12	2.06		3.06
5	0.0200	34.00	112.6	0.4	2.57	2.00	4.58	2.29		3.29
6	0.0250	39.00	129.2	0.5	2.95	2.00	4.95	2.47		3.48
7	0.0300	44.00	145.8	0.6	3.32	2.00	5.33	2.66		3.66
8	0.0350	48.00	159.0	0.7	3.62	2.00	5.63	2.81		3.81
9	0.0400	54.00	178.9	0.7	4.07	2.00	6.07	3.03		4.04
10	0.0450	60.00	198.8	0.8	4.52	2.00	6.52	3.26		4.26
11	0.0500	64.00	212.0	0.9	4.82	2.00	6.82	3.41		4.41
12	0.0750	89.00	294.9	1.4	6.67	2.00	8.67	4.33		5.34
13	0.1000	105.00	347.9	1.9	7.83	2.00	9.83	4.91		5.92
14	0.1250	116.00	384.3	2.3	8.61	2.00	10.61	5.30		6.31
15	0.1500	122.00	404.2	2.8	9.01	2.00	11.01	5.50		6.51
16	0.1750	125.00	414.1	3.3	9.19	2.00	11.19	5.59		6.60

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator	Minor Princ.	Major Princ.	1:3 Ratio	P ksf	Q ksf
					Stress ksf	Stress ksf	Stress ksf			
17	0.2000	127.00	420.8	3.7	9.29	2.00	11.29	5.64		6.65
18	0.2500	129.00	427.4	4.7	9.34	2.00	11.35	5.67		6.67
19	0.3000	131.00	434.0	5.6	9.40	2.00	11.40	5.69		6.70
20	0.3500	131.00	434.0	6.6	9.30	2.00	11.30	5.65		6.65
21	0.4000	132.00	437.3	7.5	9.28	2.00	11.28	5.64		6.64
22	0.5000	133.00	440.6	9.4	9.16	2.00	11.16	5.58		6.58
23	0.6000	134.00	443.9	11.2	9.04	2.00	11.04	5.52		6.52
24	0.7000	135.00	447.3	13.1	8.91	2.00	10.91	5.45		6.46
25	0.8000	137.00	453.9	15.0	8.85	2.00	10.85	5.42		6.43
26	0.9000	138.00	457.2	16.9	8.72	2.00	10.72	5.36		6.36
27	1.0000	139.00	460.5	18.7	8.58	2.00	10.58	5.29		6.29
28	1.1000	138.00	457.2	20.6	8.32	2.00	10.33	5.16		6.16
29	1.2000	137.00	453.9	22.5	8.07	2.00	10.07	5.03		6.04

**LABORATORY TESTING PERFORMED FOR THE PREPARATION OF THE
EAA SUPPLEMENTAL GEOTECHNICAL SERVICES
GEOTECHNICAL DATA REPORT – SUPPLEMENT 2, BLACK & VEATCH (2007)**

Nodarse & Associates, Inc.

Geotechnical, Environmental Consulting & Materials Engineering
2448 Metrocentre Blvd., West Palm Beach, FL 33407
Telephone 561.616.0870, Facsimile 561.616.0871

Black & Veatch Corporation
1601 Belvedere Road, Suite 3015
West Palm Beach, Florida 33406

Report Date: 11/16/06
Project No.: 05-06-0070-101
Sheet: 1
Report No.: 1

Attn: Mr. Ray A. Moore, P.E.

IN-PLACE DENSITY TEST REPORT
EAA Reservoir A-1 WO #16
Palm Beach County, Florida

Test Date: 11/16/06
Technician: J. Olson

General Test Location:

Test Cell #2

Required Compaction (%):

95

Moisture-Density Relationship Data:

Soil ID	Maximum Density	Optimum Moisture	Test Method	Description	LBR
11	115.9	14.5	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A
13	115.8	14.6	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A
15	115.2	15.6	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A
17	118.8	14.3	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A

Notes:

- 1) *Test result below minimum compaction requirement.
- 2) **Retest result meets minimum compaction requirement.
- 3) Density in pounds per cubic foot (pcf).
- 4) Depth of test referenced from elevation

- 5) Test Methods:
Density: ASTM D2922 Nuclear Gauge
- 6) Density/Moisture Standards:
- 7) Adjustments: N/A

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Black & Veatch Corporation
1601 Belvedere Road, Suite 3015
West Palm Beach, Florida 33406

Report Date: 11/17/06
Project No: 05-06-0070-101
Sheet: 1

Attn: Mr. Ray A. Moore, P.E.

IN-PLACE DENSITY TEST REPORT(SAND CONE)
EAA Reservoir A-1 WO #16
Palm Beach County, Florida

Test Date: 11/17/06
Technician: J. Olson

General Test Location: Test Cell #2 **Required Compaction (%):** 95

Moisture-Density Relationship Data:

Soil ID	Maximum Density	Optimum Moisture	Test Method	Description	LBR
13	115.8	14.6	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A
15	115.2	15.6	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A
17	118.8	14.3	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A

Notes:

- 1) *Test result below minimum compaction requirement.
- 2) **Retest result meets minimum compaction requirement.
- 3) Density in pounds per cubic foot (pcf).
- 4) Depth of test referenced from elevation

- 5) Test Methods:
ASTM D1556
- 6) Density/Moisture Standards:
- 7) Adjustments: N/A

Nodarse & Associates, Inc.

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Black & Veatch Corporation
1601 Belvedere Road, Suite 3015
West Palm Beach, Florida 33406

Report Date: 11/18/06
Project No: 05-06-0070-101
Sheet: 1

Attn: Mr. Ray A. Moore, P.E.

IN-PLACE DENSITY TEST REPORT(SAND CONE)
EAA Reservoir A-1 WO #16
Palm Beach County, Florida

Test Date: 11/18/06
Technician: J. Olson

General Test Location: Test Cell #2 **Required Compaction (%):** 95

Moisture-Density Relationship Data:

Soil ID	Maximum Density	Optimum Moisture	Test Method	Description	LBR
11	115.9	14.5	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A
13	115.8	14.6	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A
18	117.2	14.4	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A

Notes:

- 1) *Test result below minimum compaction requirement.
- 2) **Retest result meets minimum compaction requirement.
- 3) Density in pounds per cubic foot (pcf).
- 4) Depth of test referenced from elevation

- 5) Test Methods:
ASTM D1556
- 6) Density/Moisture Standards:
- 7) Adjustments: N/A

Nodarse & Associates, Inc.

Geotechnical, Environmental Consulting & Materials Engineering
2448 Metrocentre Blvd., West Palm Beach, FL 33407
Telephone 561.616.0870, Facsimile 561.616.0871

Black & Veatch Corporation
1601 Belvedere Road, Suite 3015
West Palm Beach, Florida 33406

Report Date: 11/20/06
Project No: 05-06-0070-101
Sheet: 1

Attn: Mr. Ray A. Moore, P.E.

IN-PLACE DENSITY TEST REPORT(SAND CONE)
EAA Reservoir A-1 WO #16
Palm Beach County, Florida

Test Date: 11/20/06
Technician: J. Olson

General Test Location: Test Cell #2 **Required Compaction (%):** 95

Moisture-Density Relationship Data:

Soil ID	Maximum Density	Optimum Moisture	Test Method	Description	LBR
12	115.2	14.5	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A
14	114.6	14.5	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A
16	115.7	15.8	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A

Notes:

- 1) *Test result below minimum compaction requirement.
- 2) **Retest result meets minimum compaction requirement.
- 3) Density in pounds per cubic foot (pcf).
- 4) Depth of test referenced from elevation

- 5) Test Methods:
ASTM D1556
- 6) Density/Moisture Standards:
- 7) Adjustments: N/A

Nodarse & Associates, Inc.

Geotechnical, Environmental Consulting & Materials Engineering
 2448 Metrocentre Blvd., West Palm Beach, FL 33407
 Telephone 561.616.0870, Facsimile 561.616.0871

Black & Veatch Corporation
 1601 Belvedere Road, Suite 3015
 West Palm Beach, Florida 33406

Report Date: 11/21/06
Project No: 05-06-0070-101
Sheet:
Report No.: 1

Attn: Mr. Ray A. Moore, P.E.

IN-PLACE DENSITY TEST REPORT
 EAA Reservoir A-1 WO #16
 Palm Beach County, Florida

Test Date: 11/21/06
Technician: J. Olson

General Test Location: Test Cell #2 **Required Compaction (%):** 95

Test No.	Test Location	(ft.) Depth/Elevation	Soil ID	Wet Density	Moisture (%)	Dry Density	Compaction (%)	Notes (Below)
1	Sand Cone, N.W. Corner, Lift #4	EL+12.00'-12"	18	129.2	11.4	116.0	99	
2	Sand Cone, N.W. Corner, Lift #4	EL+12.00'-12"	18	133.1	11.2	119.7	100+	
3	Sand Cone, N.W. Corner, Lift #4	EL+12.00'-12"	18	132.9	11.6	119.1	100+	
4	Sand Cone, N.W. Corner, Lift #3	EL+9.00'-12"	16	134.8	10.7	121.8	100+	
5	Sand Cone, N.W. Corner, Lift #3	EL+9.00'-12"	16	135.4	10.6	122.4	100+	
6	Sand Cone, N.W. Corner, Lift #3	EL+9.00'-12"	16	131.0	11.3	117.7	100+	
7	Sand Cone, N.W. Corner, Lift #2	EL+6.00'-12"	14	131.2	12.3	116.8	100+	
8	Sand Cone, N.W. Corner, Lift #2	EL+6.00'-12"	14	133.3	12.1	118.9	100+	
9	Sand Cone, N.W. Corner, Lift #2	EL+6.00'-12"	14	136.4	14.1	119.5	100+	
10	Sand Cone, N.W. Corner, Lift #1	EL+3.00'-12"	12	131.3	12.7	116.5	100+	
11	Sand Cone, N.W. Corner, Lift #1	EL+3.00'-12"	12	132.0	12.3	117.5	100+	
12	Sand Cone, N.W. Corner, Lift #1	EL+3.00'-12"	12	127.0	15.7	109.8	95	

Moisture-Density Relationship Data:

Soil ID	Maximum Density	Optimum Moisture	Test Method	Description	LBR
12	115.2	14.5	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A
14	114.6	14.5	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A
16	115.7	15.8	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A
18	117.2	14.4	ASTM D-698	Tan Coarse Sand with Limerock and Shell	N/A

- Notes:
- 1) *Test result below minimum compaction requirement.
 - 2) **Retest result meets minimum compaction requirement.
 - 3) Density in pounds per cubic foot (pcf).
 - 4) Depth of test referenced from elevation

- 5) Test Methods:
 Density: ASTM D2922 Nuclear Gauge
 6) Density/Moisture Standards:
 7) Adjustments: N/A

TESTED FOR: Nodarse and Associates
West Palm Beach, Florida

PROJECT NAME: E A A Reservoir

SAMPLE # Proctor # 14 Lab 2308

PROJECT NO: 05-06-0070-101

MATERIAL Tan Coarse Sand W/Limerock & Shell

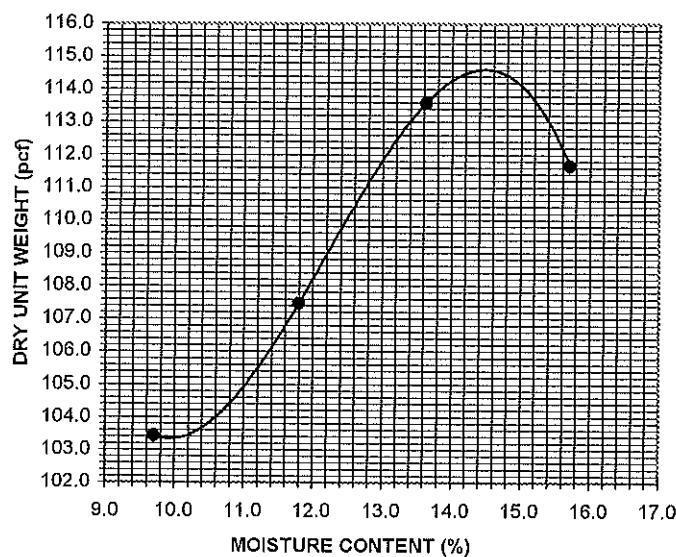
TEST METHOD: D-698

DATE TESTED: December 19, 2006

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 2B

SOIL DESCRIPTION: Tan Coarse Sand W/Limerock & Shell

WT SOIL + CYLINDER	lbs	23.10	23.60	24.27	24.28
WT CYLINDER	lbs	14.59	14.59	14.59	14.59
WT WET SOIL	lbs	8.51	9.01	9.68	9.69
WET DENSITY	pcf	113.47	120.13	129.07	129.20
DRY DENSITY	pcf	103.4	107.5	113.6	111.7
TARE NUMBER		7A	3A	3M	4A
WET SOIL + CAN	gm	696.50	696.30	693.80	697.10
DRY SOIL + CAN	gm	644.50	634.40	623.80	617.00
WATER WEIGHT	gm	52.00	61.90	70.00	80.10
TARE WT	gm	108.80	109.60	110.30	107.10
WEIGHT DRY SOIL	gm	535.70	524.80	513.50	509.90
MOISTURE	%	9.7	11.8	13.6	15.7



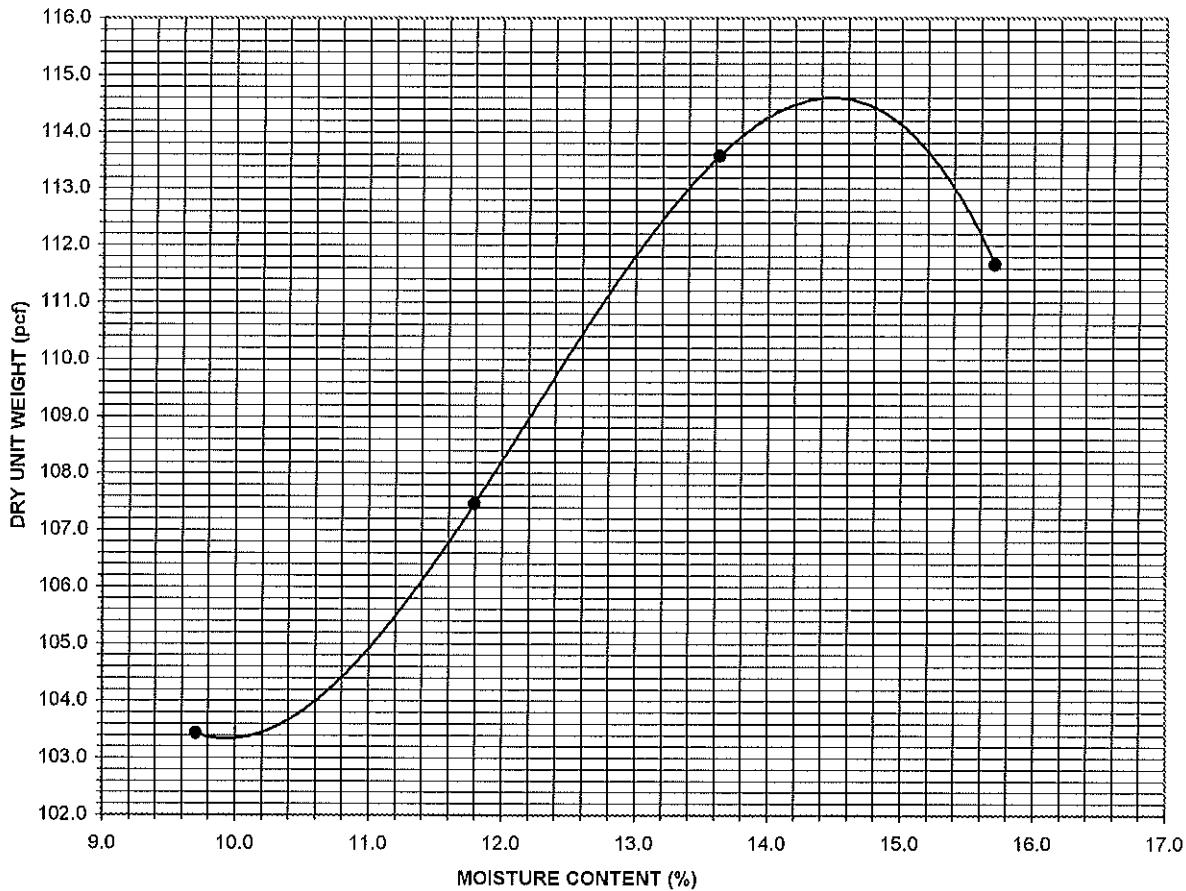
TEST RESULTS AASHTO Spec Report

OPT MOISTURE:	14.5	15
MAX DENSITY:	114.6	115

TESTED FOR: Nodarse and Associates
West Palm Beach, Florida
MATERIAL Tan Coarse Sand W/Limerock & Shell
DATE TESTED: December 19, 2006

PROJECT: E A A Reservoir
PROJECT NO: 05-06-0070-101
SAMPLE # Proctor # 14 Lab 2308
TEST METHOD: D-698

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 2B

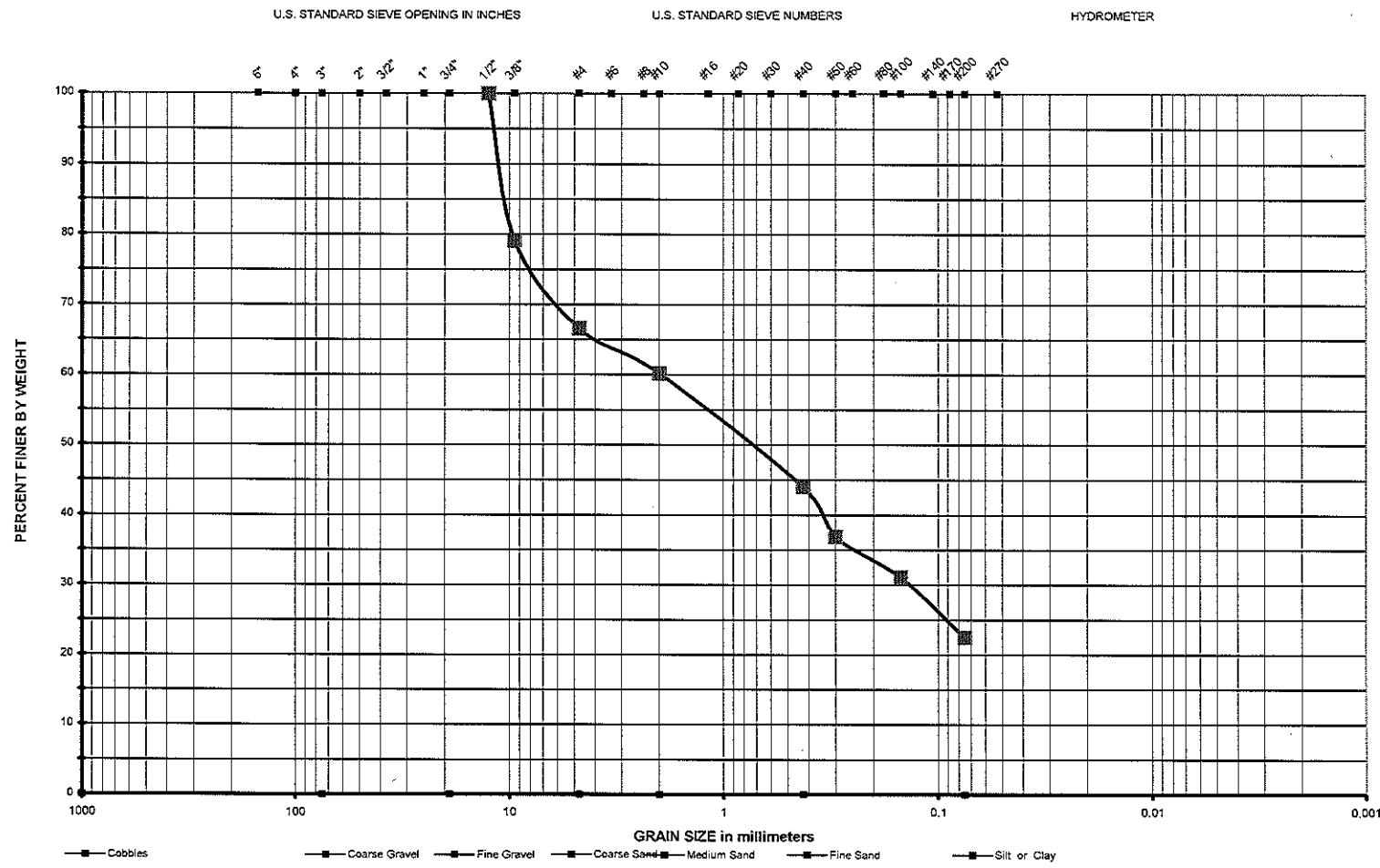


OPT MOISTURE:

14.5

MAX DENSITY:

114.6



Grain-size Distribution Analysis

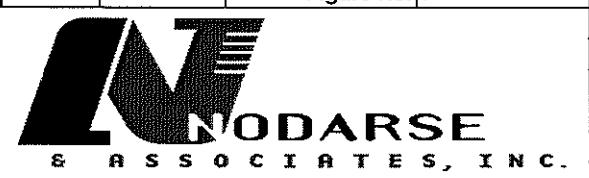
Project name:

EAA Reservoir

Date: 12/18/2006 N&A Project No. 05-06-0070-101

Figure No. 7

No.	Sample Location	Classification	-200	w %	LL	PL	PI
3	Test Cell 2 S.E. Lift 2B	SM	22.5	5	-	-	-
	#2308						



TESTED FOR: Nodarse and Associates
West Palm Beach, Florida

PROJECT NAME: E A A Reservoir

SAMPLE # Proctor # 13 Lab 2307

PROJECT NO: 05-06-0070-101

MATERIAL: Tan Coarse Sand W/Limerock & Shell

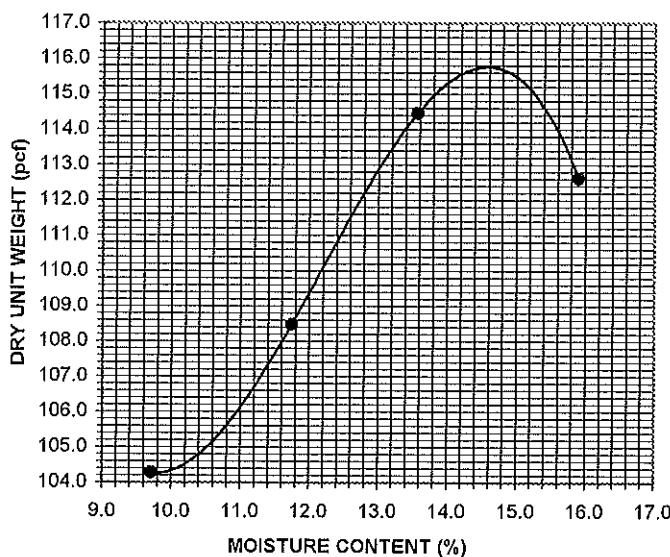
TEST METHOD: D-698

DATE TESTED: December 19, 2006

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 2A

SOIL DESCRIPTION: Tan Coarse Sand W/Limerock & Shell

WT SOIL + CYLINDER	lbs	23.17	23.68	24.34	24.38
WT CYLINDER	lbs	14.59	14.59	14.59	14.59
WT WET SOIL	lbs	8.58	9.09	9.75	9.79
WET DENSITY	pcf	114.40	121.20	130.00	130.53
DRY DENSITY	pcf	104.3	108.5	114.5	112.6
TARE NUMBER		3G	15A	11A	17A
WET SOIL + CAN	gm	697.50	696.70	695.50	694.30
DRY SOIL + CAN	gm	645.40	634.90	625.40	614.00
WATER WEIGHT	gm	52.10	61.80	70.10	80.30
TARE WT	gm	109.10	108.70	108.90	109.00
WEIGHT DRY SOIL	gm	536.30	526.20	516.50	505.00
MOISTURE	%	9.7	11.7	13.6	15.9



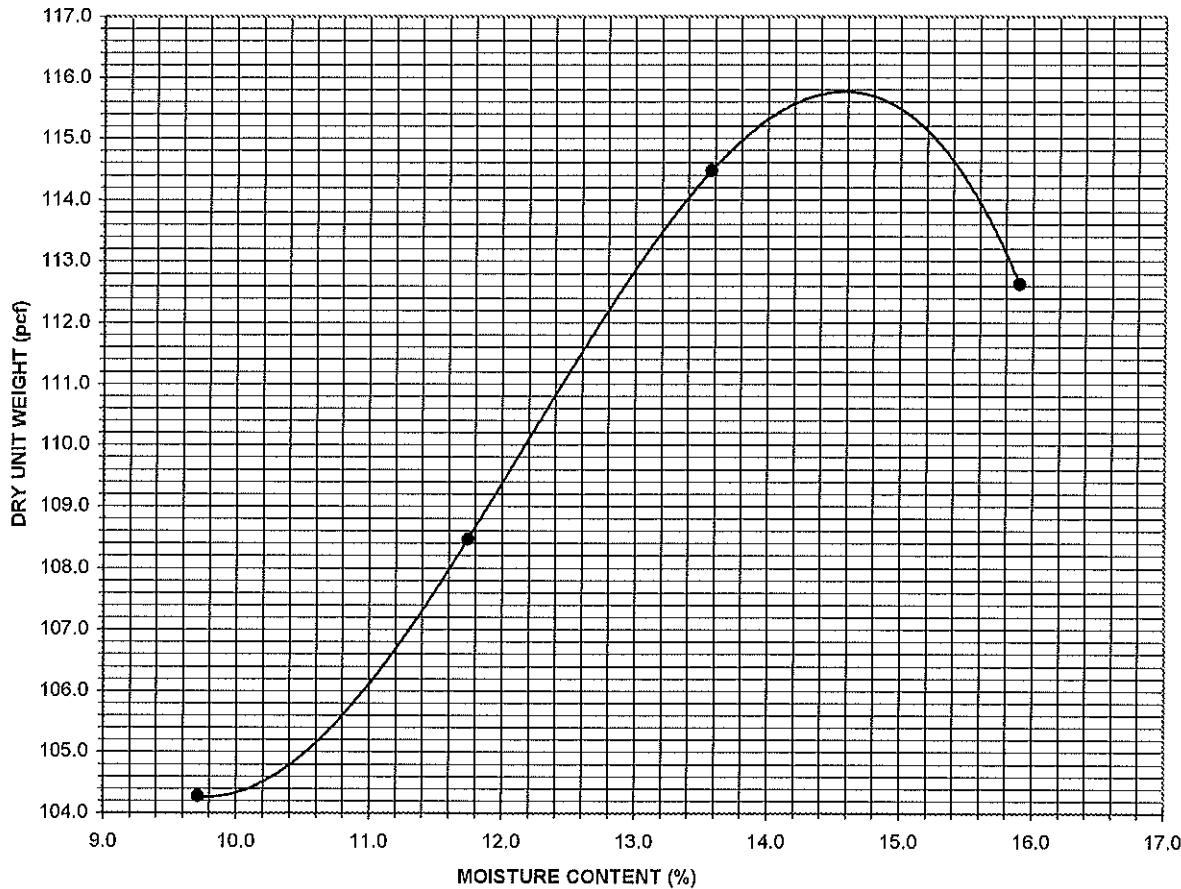
TEST RESULTS AASHTO Spec Report

OPT MOISTURE:	14.6	15
MAX DENSITY:	115.8	116

TESTED FOR: Nodarse and Associates
West Palm Beach, Florida
MATERIAL Tan Coarse Sand W/Limerock & Shell
DATE TESTED: December 19, 2006

PROJECT: E A A Reservoir
PROJECT NO: 05-06-0070-101
SAMPLE #: Proctor # 13 Lab 2307
TEST METHOD: D-698

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 2A

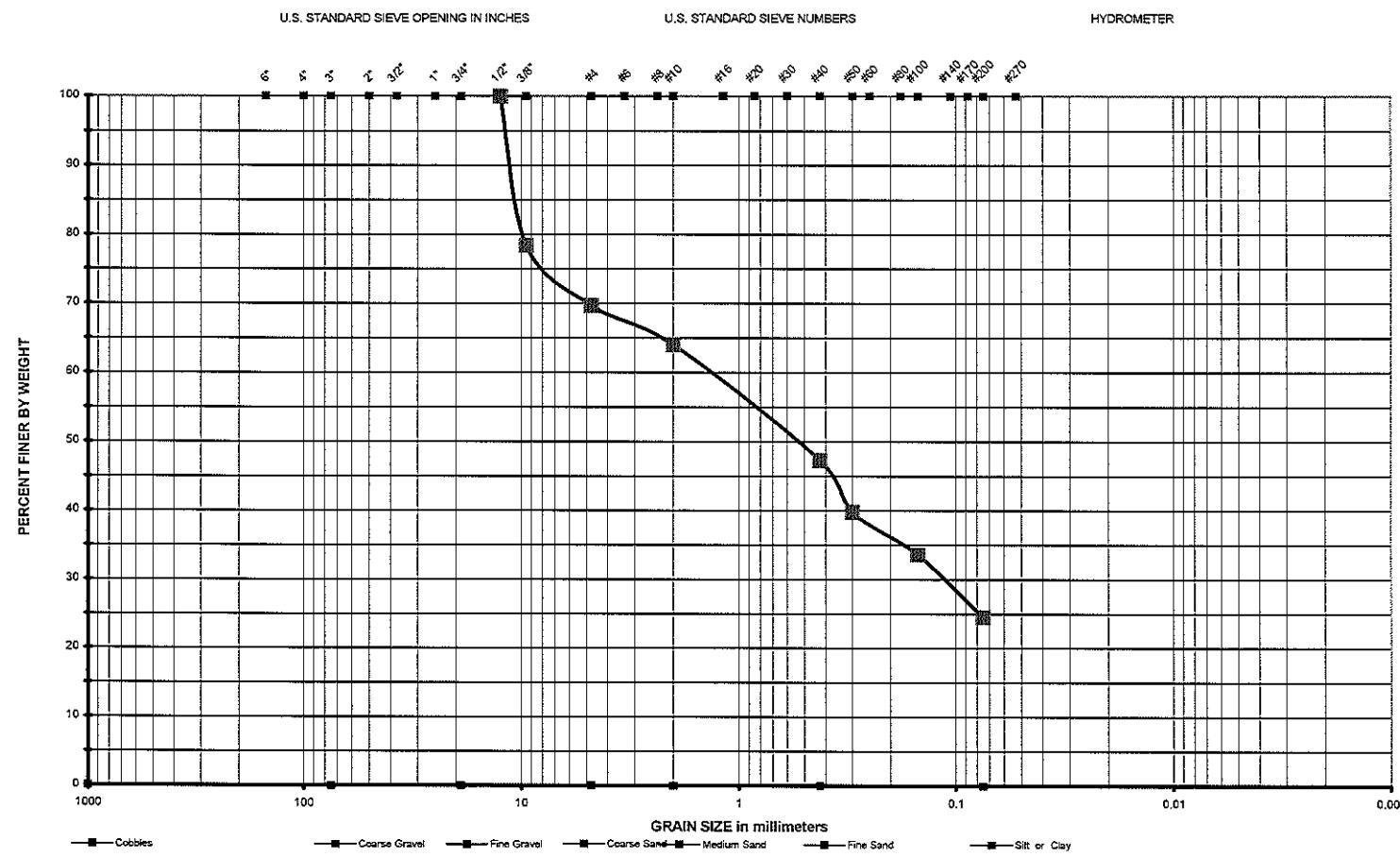


OPT MOISTURE:

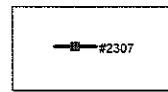
14.6

MAX DENSITY:

115.8



PERCENT COARSER BY WEIGHT



Grain-size Distribution Analysis

Project name:

EAA Reservoir

Date:	12/18/2006	N&A Project No.	05-06-0070-101
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Figure No. 9

No.	Sample Location	Classification	-200	w %	LL	PL	PI
4	Test Cell 2 S.E. Lift 2A	SM	24.5	5	-	-	-
	#2307						



TESTED FOR: Nodarse and Associates
West Palm Beach, Florida

PROJECT NAME: E A A Reservoir

SAMPLE # Proctor # 11 Lab 2305

PROJECT NO: 05-06-0070-101

MATERIAL Tan Coarse Sand W/Limerock & Shell

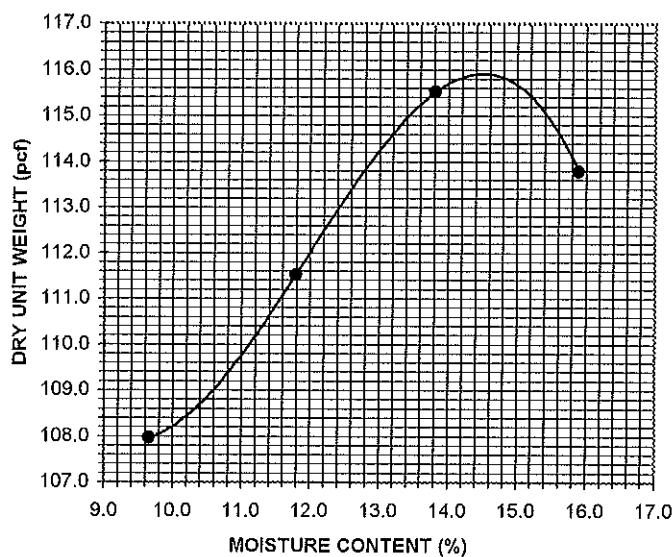
TEST METHOD: D-698

DATE TESTED: December 18, 2006

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 1A

SOIL DESCRIPTION: Tan Coarse Sand W/Limerock & Shell

WT SOIL + CYLINDER	lbs	23.47	23.94	24.45	24.48
WT CYLINDER	lbs	14.59	14.59	14.59	14.59
WT WET SOIL	lbs	8.88	9.35	9.86	9.89
WET DENSITY	pcf	118.40	124.67	131.47	131.87
DRY DENSITY	pcf	108.0	111.5	115.5	113.8
TARE NUMBER		12A	3C	5A	2A
WET SOIL + CAN	gm	694.20	695.60	694.10	695.70
DRY SOIL + CAN	gm	642.50	633.80	623.10	615.40
WATER WEIGHT	gm	51.70	61.80	71.00	60.30
TARE WT	gm	107.20	109.80	109.10	110.20
WEIGHT DRY SOIL	gm	535.30	524.00	514.00	505.20
MOISTURE	%	9.7	11.8	13.8	15.9



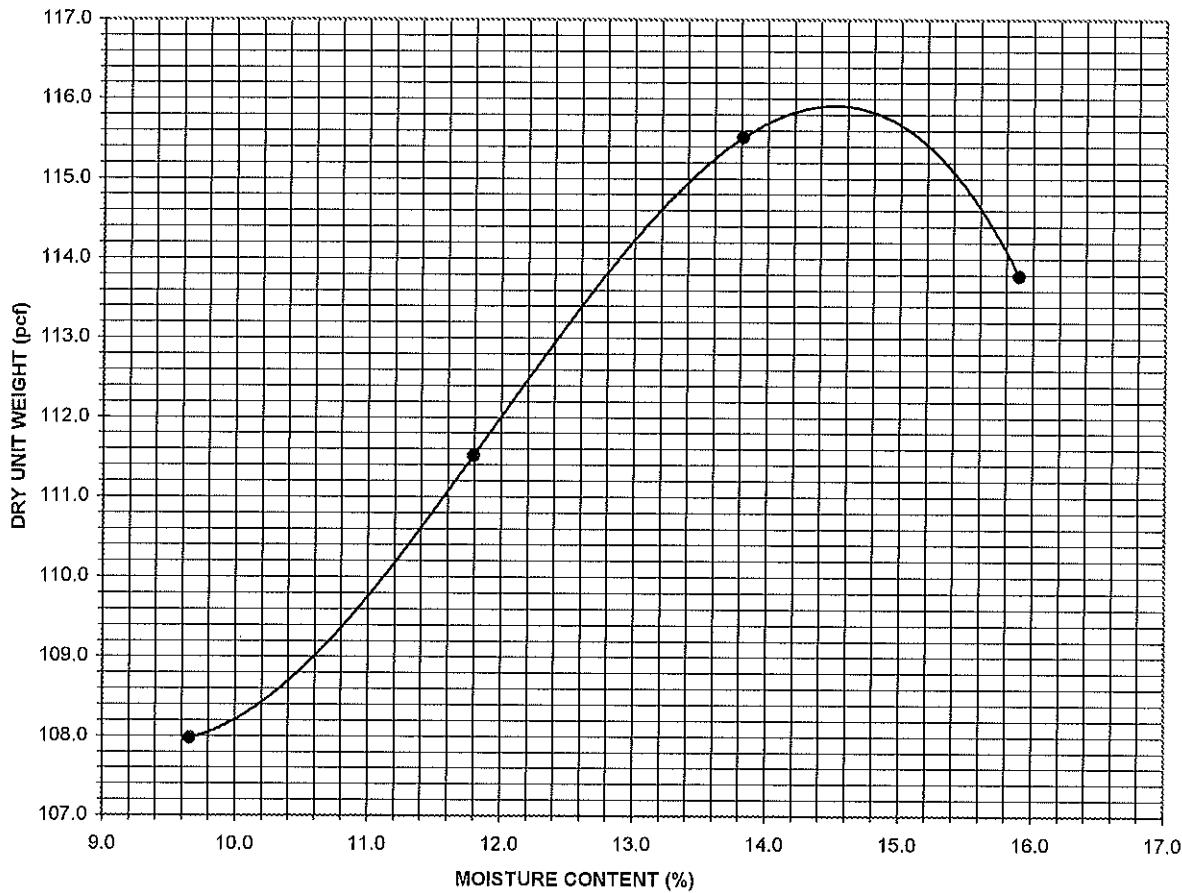
TEST RESULTS AASHTO Spec Report

OPT MOISTURE:	14.5	15
MAX DENSITY:	115.9	116

TESTED FOR: Nodarse and Associates
West Palm Beach, Florida
MATERIAL Tan Coarse Sand W/Limerock & Shell
DATE TESTED: December 18, 2006

PROJECT: E A A Reservoir
PROJECT NO: 05-06-0070-101
SAMPLE # Proctor # 11 Lab 2305
TEST METHOD: D-698

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 1A

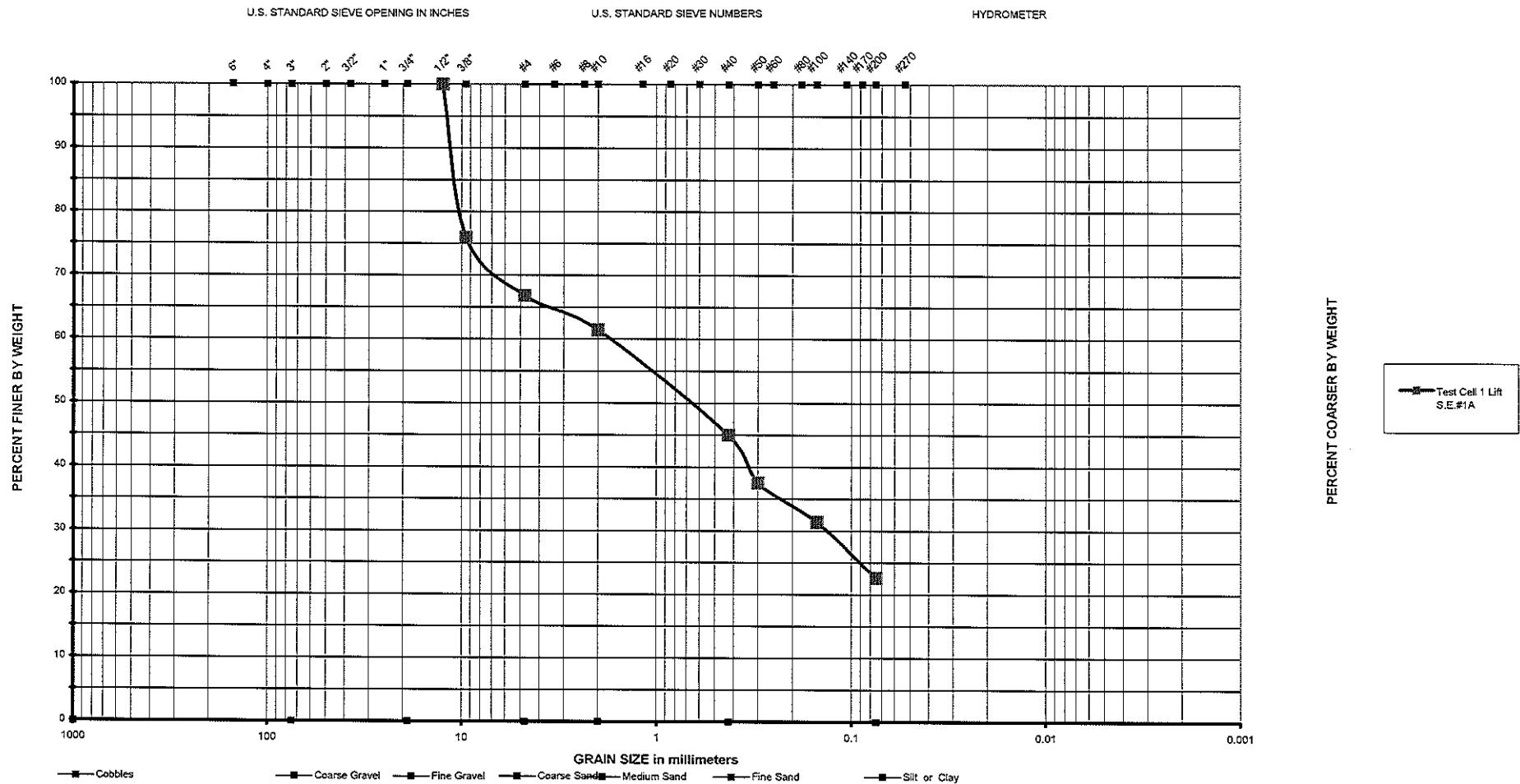


OPT MOISTURE:

14.5

MAX DENSITY:

115.9



Grain-size Distribution Analysis

Project name:

EAA Reservoir

Date: 12/18/2006 N&A Project No. 05-06-0070-101

Figure No. 6

No.	Sample Location	Classification	-200	w %	LL	PL	PI
2	Test Cell 1 Lift S.E.#1A	SM	22.6	7	-	-	-
	#2305						



TESTED FOR: Nodarse and Associates
West Palm Beach, Florida

PROJECT NAME: E A A Reservoir

SAMPLE # Proctor # 12 Lab 2306

PROJECT NO: 05-06-0070-101

MATERIAL: Tan Coarse Sand W/Limerock & Shell

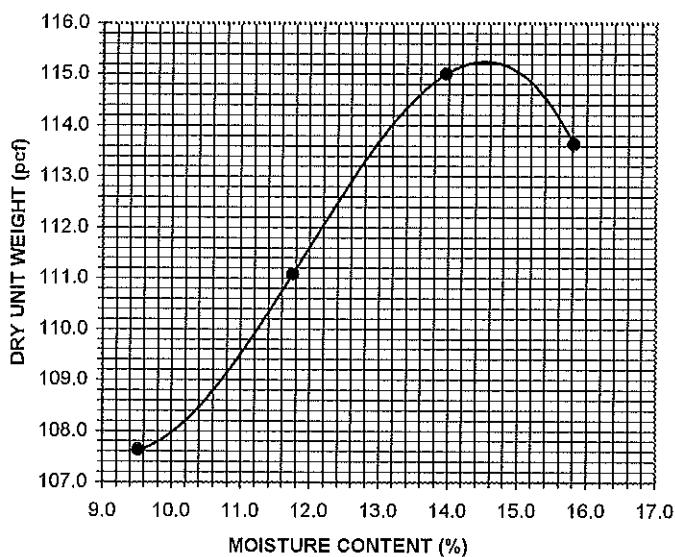
TEST METHOD: D-698

DATE TESTED: December 18, 2006

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 1B

SOIL DESCRIPTION: Tan Coarse Sand W/Limerock & Shell

WT SOIL + CYLINDER	lbs	23.43	23.90	24.42	24.46
WT CYLINDER	lbs	14.59	14.59	14.59	14.59
WT WET SOIL	lbs	8.84	9.31	9.83	9.87
WET DENSITY	pcf	117.87	124.13	131.07	131.60
DRY DENSITY	pcf	107.6	111.1	115.0	113.6
TARE NUMBER		113	9A	3B	3F
WET SOIL + CAN	gm	751.60	698.40	696.60	695.00
DRY SOIL + CAN	gm	699.50	636.40	624.70	615.00
WATER WEIGHT	gm	52.10	62.00	71.90	60.00
TARE WT	gm	152.10	109.00	110.00	109.20
WEIGHT DRY SOIL	gm	547.40	527.40	514.70	505.80
MOISTURE	%	9.5	11.8	14.0	15.8



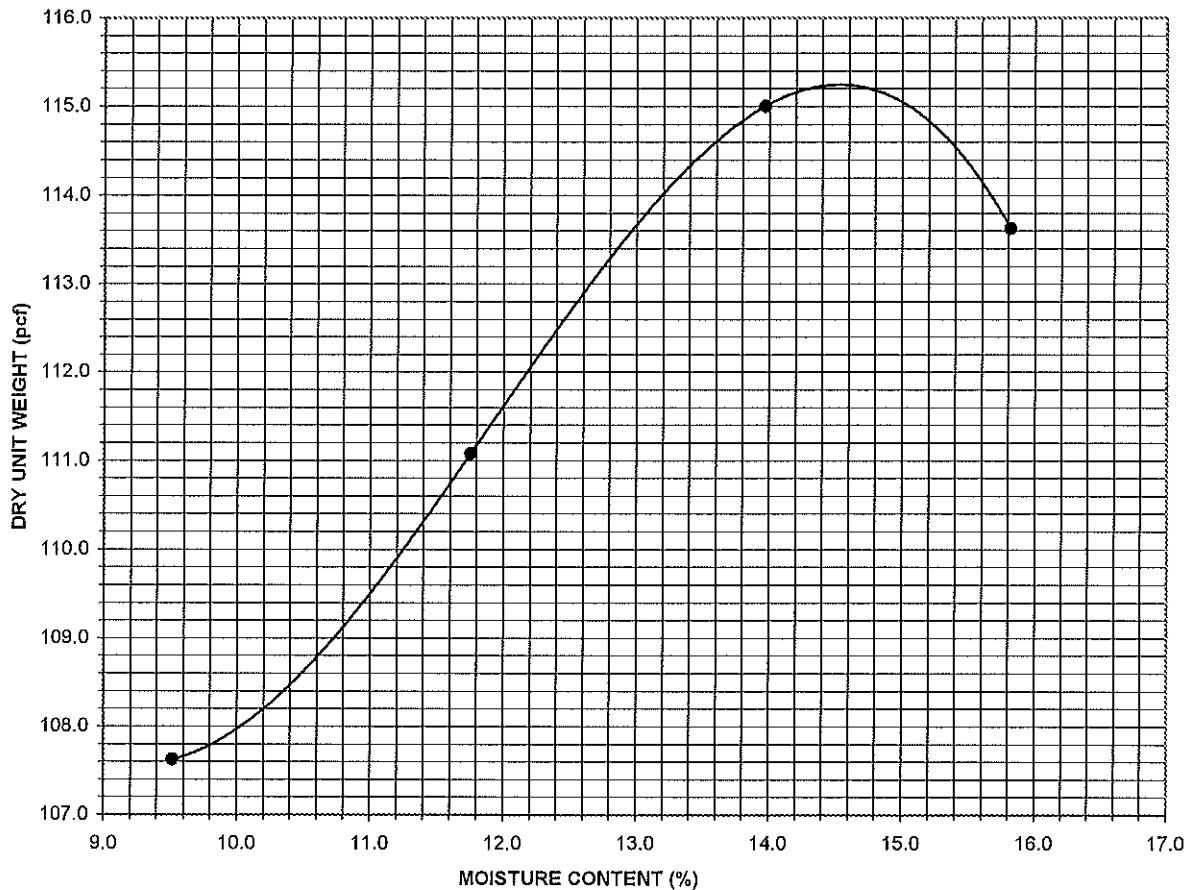
TEST RESULTS AASHTO Spec Report

OPT MOISTURE:	14.5	15
MAX DENSITY:	115.2	115

TESTED FOR: Nodarse and Associates
West Palm Beach, Florida
MATERIAL Tan Coarse Sand W/Limerock & Shell
DATE TESTED: December 18, 2006

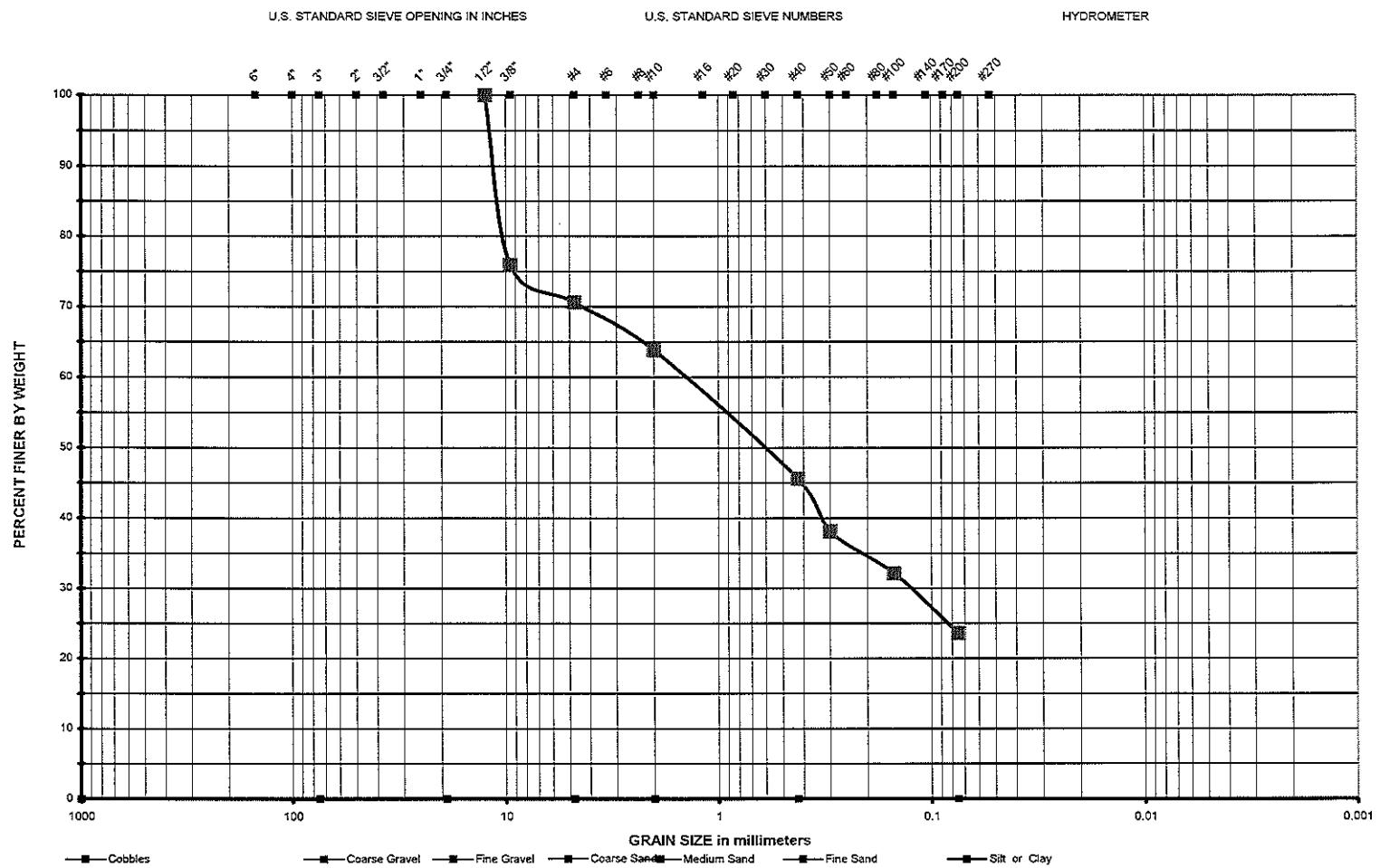
PROJECT: E A A Reservoir
PROJECT NO: 05-06-0070-101
SAMPLE # Proctor # 12 Lab 2306
TEST METHOD: D-698

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 1B



OPT MOISTURE: 14.5

MAX DENSITY: 115.2



Grain-size Distribution Analysis

Project name:

EAA Reservoir

Date: 12/18/2006 N&A Project No. 05-06-0070-101

Figure No. 5



TESTED FOR: Nodarse and Associates
West Palm Beach, Florida

PROJECT NAME: E A A Reservoir

SAMPLE # Proctor # 18 Lab 2312

PROJECT NO: 05-06-0070-101

MATERIAL Tan Coarse Sand W/Limerock & Shell

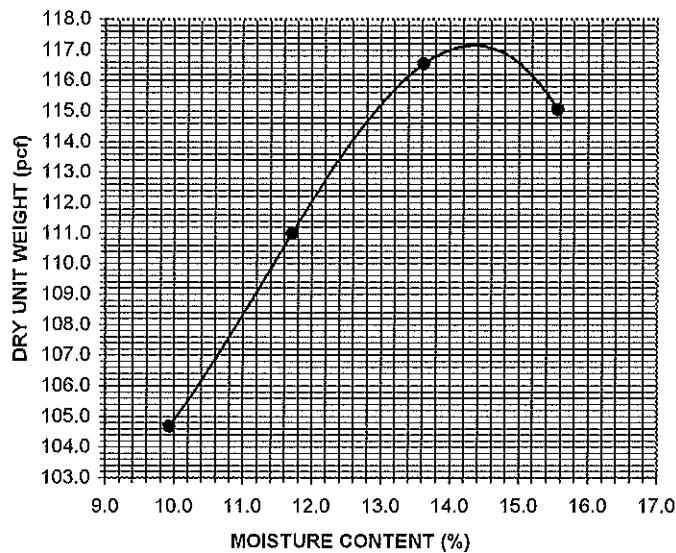
TEST METHOD: D-698

DATE TESTED: December 19, 2006

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 4B

SOIL DESCRIPTION: Tan Coarse Sand W/Limerock & Shell

WT SOIL + CYLINDER	lbs	23.22	23.89	24.52	24.56
WT CYLINDER	lbs	14.59	14.59	14.59	14.59
WT WET SOIL	lbs	8.63	9.30	9.93	9.97
WET DENSITY	pcf	115.07	124.00	132.40	132.93
DRY DENSITY	pcf	104.7	111.0	116.5	115.0
TARE NUMBER		3A	3M	7A	4A
WET SOIL + CAN	gm	694.00	695.70	696.10	698.20
DRY SOIL + CAN	gm	641.20	634.30	625.70	618.60
WATER WEIGHT	gm	52.80	61.40	70.40	79.60
TARE WT	gm	109.60	110.30	108.80	107.10
WEIGHT DRY SOIL	gm	531.60	524.00	516.90	511.50
MOISTURE	%	9.9	11.7	13.6	15.6



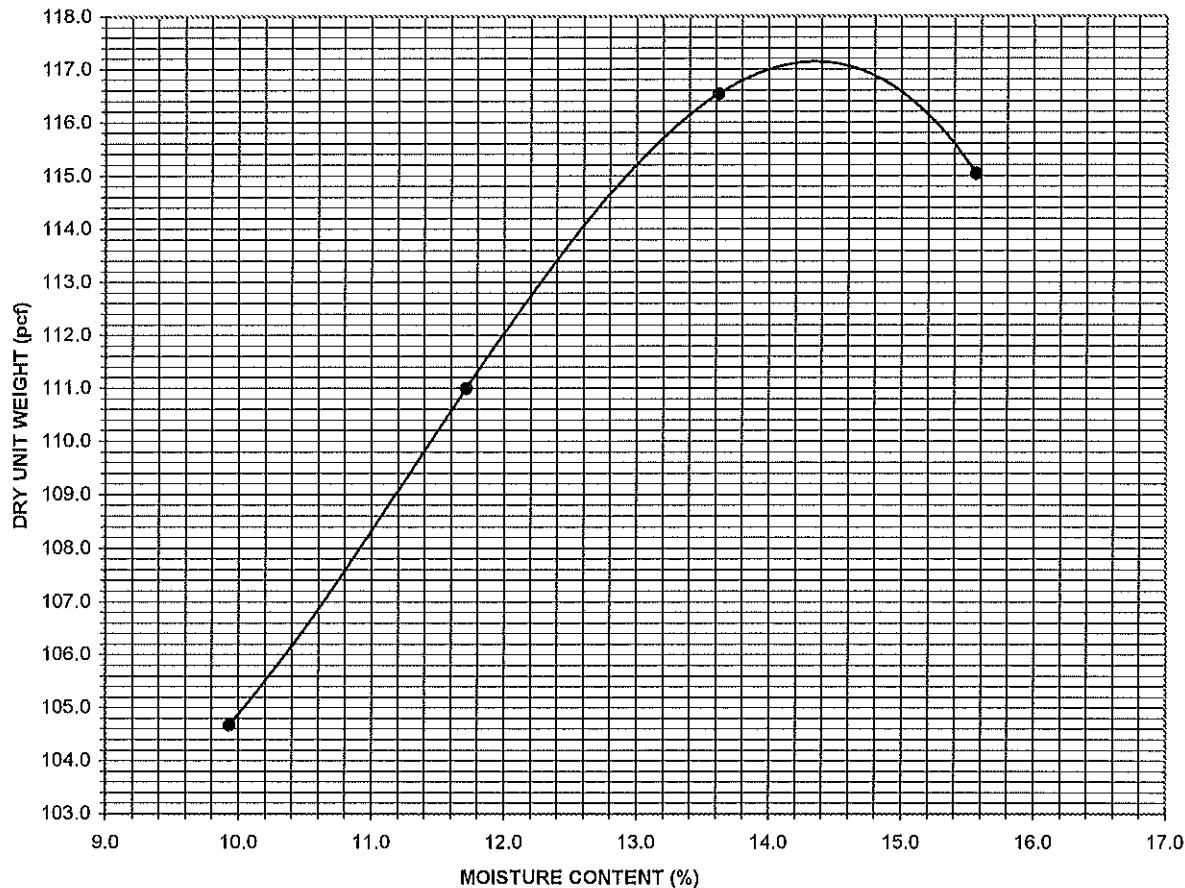
TEST RESULTS AASHTO Spec Report

OPT MOISTURE:	14.4	14
MAX DENSITY:	117.2	117

TESTED FOR: Nodarse and Associates
West Palm Beach, Florida
MATERIAL Tan Coarse Sand W/Limerock & Shell
DATE TESTED: December 19, 2006

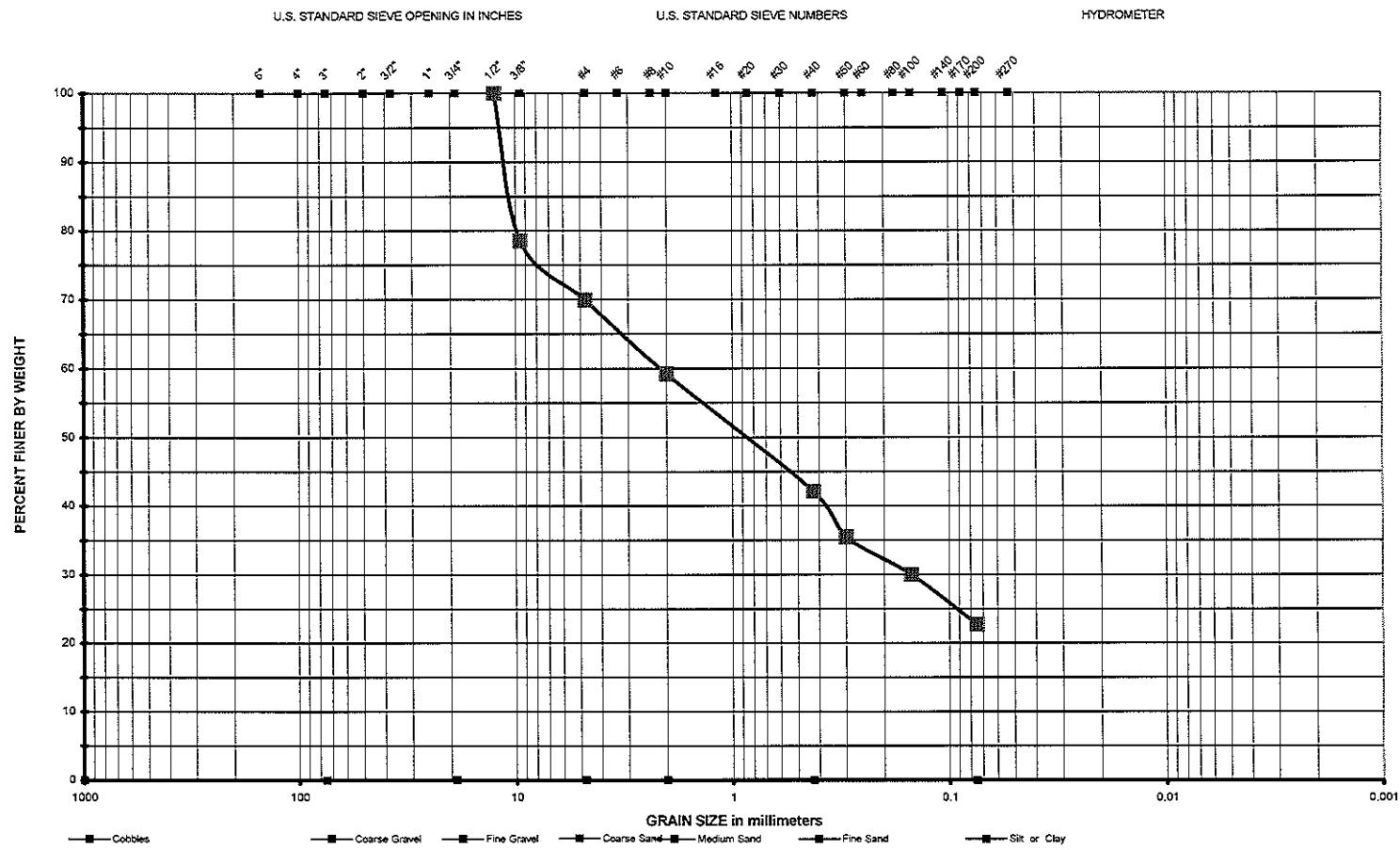
PROJECT: E A A Reservoir
PROJECT NO 05-06-0070-101
SAMPLE # Proctor # 18 Lab 2312
TEST METHOD: D-698

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 4B

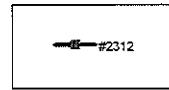


OPT MOISTURE: **14.4**

MAX DENSITY: **117.2**



PERCENT COARSER BY WEIGHT



Project name:

EAA Reservoir

Date:	12/18/2006	N&A Project No.	05-06-0070-101
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Figure No. 9

Grain-size Distribution Analysis								Project name:	EAA Reservoir		
No.	Sample Location	Classification	-200	w %	LL	PL	PI	Date:	12/18/2006	N&A Project No.	05-06-0070-101
5	#2312 Test Cell 4 S.E. Lift 4B	SM	22.7	1	-	-	-				



TESTED FOR: Nodarse and Associates
West Palm Beach, Florida

PROJECT NAME: E A A Reservoir

SAMPLE # Proctor # 16 Lab 2310

PROJECT NO: 05-06-0070-101

MATERIAL Tan Coarse Sand W/Limerock & Shell

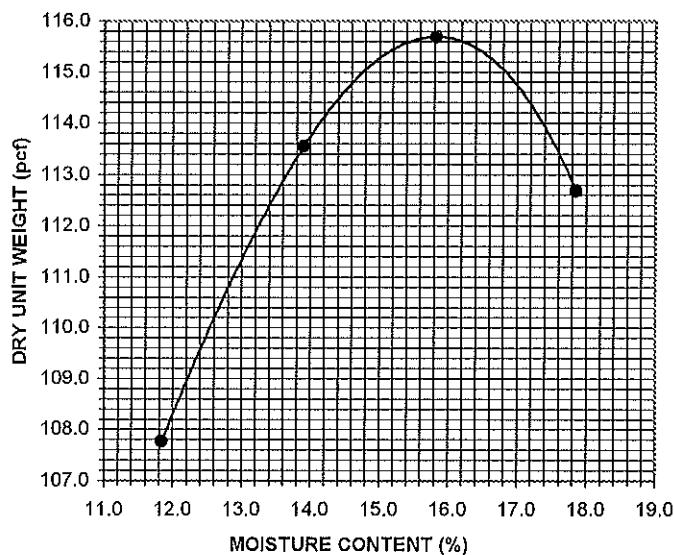
TEST METHOD: D-698

DATE TESTED: December 19, 2006

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 3B

SOIL DESCRIPTION: Tan Coarse Sand W/Limerock & Shell

WT SOIL + CYLINDER	lbs	23.63	24.29	24.64	24.55
WT CYLINDER	lbs	14.59	14.59	14.59	14.59
WT WET SOIL	lbs	9.04	9.70	10.05	9.96
WET DENSITY	pcf	130.53	139.33	134.00	132.80
DRY DENSITY	pcf	107.8	113.5	115.7	112.7
TARE NUMBER		2A	5A	3C	12A
WET SOIL + CAN	gm	695.70	698.00	696.80	694.50
DRY SOIL + CAN	gm	633.70	626.10	616.60	605.53
WATER WEIGHT	gm	62.00	71.90	80.20	88.97
TARE WT	gm	110.20	109.10	109.80	107.20
WEIGHT DRY SOIL	gm	523.50	517.00	506.60	486.33
MOISTURE	%	11.8	13.9	15.8	17.9



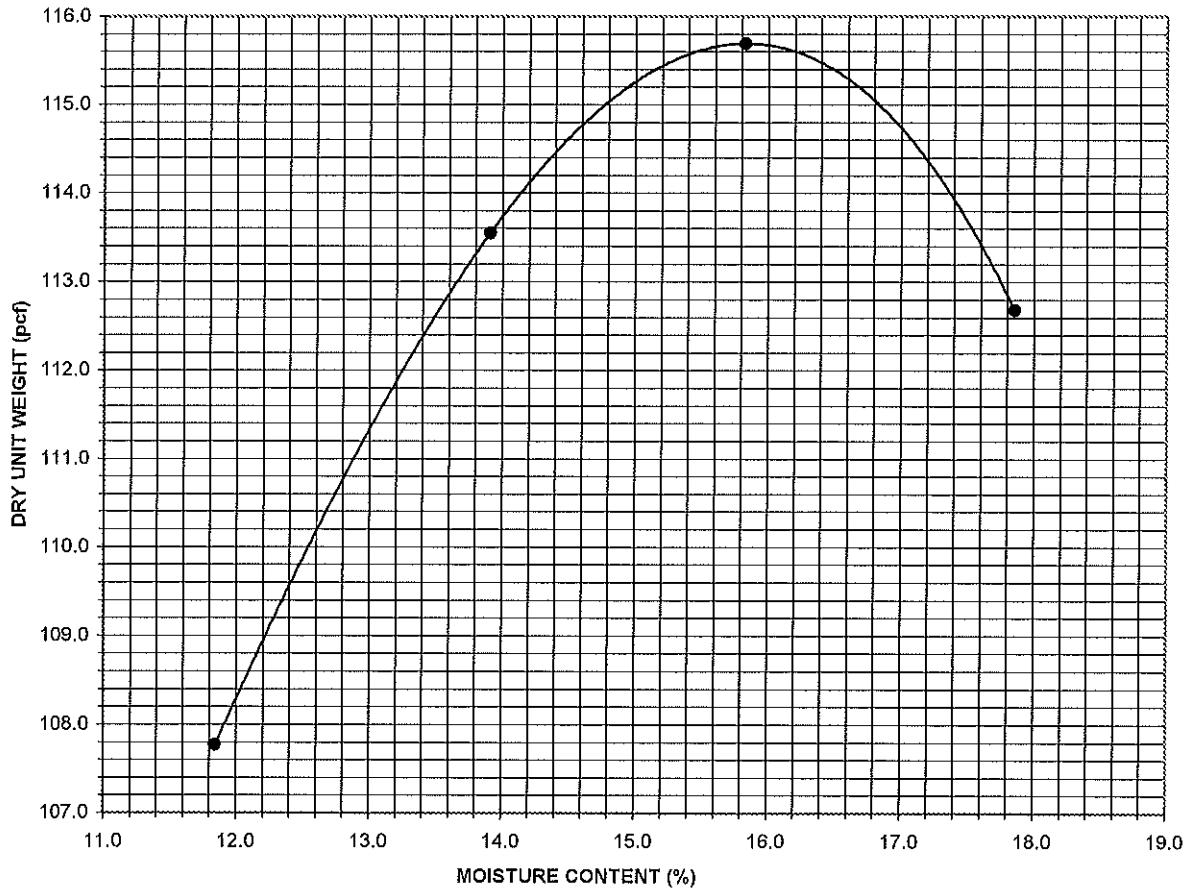
TEST RESULTS AASHTO Spec Report

OPT MOISTURE:	15.8	16
MAX DENSITY:	115.7	116

TESTED FOR: Nodarse and Associates
West Palm Beach, Florida
MATERIAL Tan Coarse Sand W/Limerock & Shell
DATE TESTED: December 19, 2006

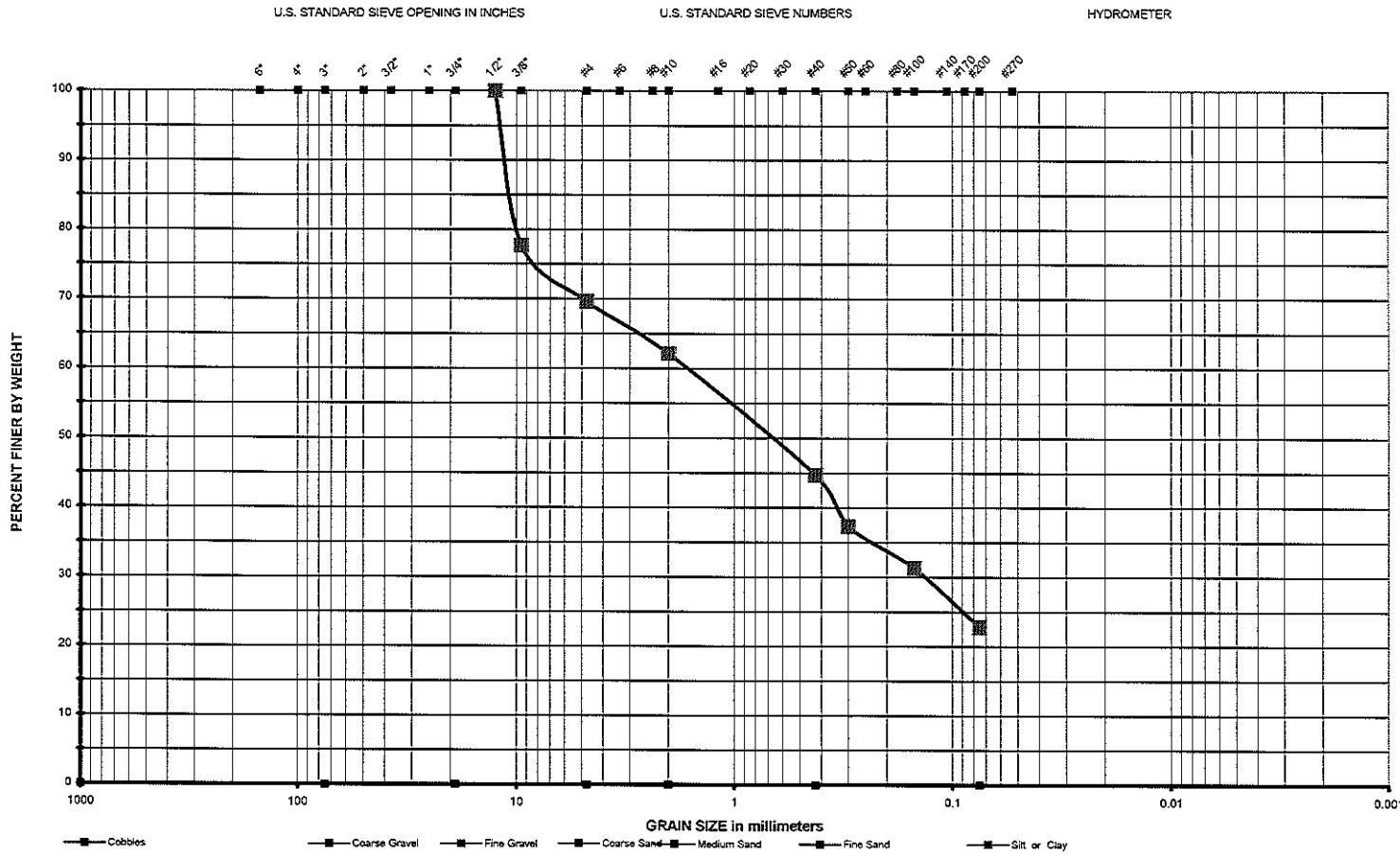
PROJECT: E A A Reservoir
PROJECT NO: 05-06-0070-101
SAMPLE # Proctor # 16 Lab 2310
TEST METHOD: D-698

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 3B



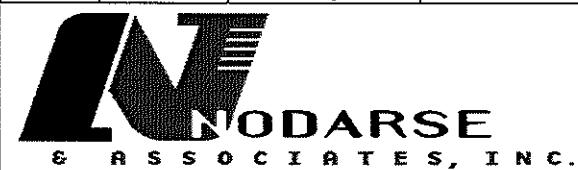
OPT MOISTURE: **15.8**

MAX DENSITY: **115.7**



PERCENT COARSER BY WEIGHT

Project name:					EAA Reservoir					
No.	Sample Location	Classification	-200	w %	LL	PL	PI	Date:	N&A Project No.	Figure No.
8	Test Cell 3 S.E. Lift 3B	SM	22.8	1	-	-	-	12/18/2006	05-06-0070-101	9
	#2310									



TESTED FOR: Nodarse and Associates
West Palm Beach, Florida

SAMPLE # Proctor # 17 Lab 2311

MATERIAL: Tan Coarse Sand W/Limerock & Shell

TEST METHOD: D-698

DATE TESTED: December 19, 2006

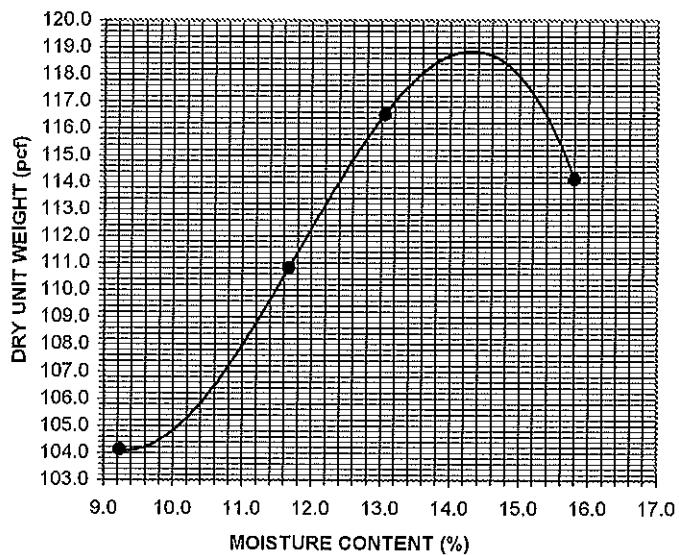
PROJECT NAME: E A A Reservoir

PROJECT NO: 05-06-0070-101

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 4A

SOIL DESCRIPTION: Tan Coarse Sand W/Limerock & Shell

WT SOIL + CYLINDER	lbs	23.12	23.87	24.47	24.50
WT CYLINDER	lbs	14.59	14.59	14.59	14.59
WT WET SOIL	lbs	8.53	9.28	9.88	9.91
WET DENSITY	pcf	113.73	123.73	131.73	132.13
DRY DENSITY	pcf	104.1	110.8	116.5	114.1
TARE NUMBER		11A	3G	17A	15A
WET SOIL + CAN	gm	694.70	697.50	697.80	695.00
DRY SOIL + CAN	gm	645.20	636.00	629.80	615.00
WATER WEIGHT	gm	49.50	61.50	68.00	80.00
TARE WT	gm	108.90	109.10	109.00	108.70
WEIGHT DRY SOIL	gm	536.30	526.90	520.80	506.30
MOISTURE	%	9.2	11.7	13.1	15.8



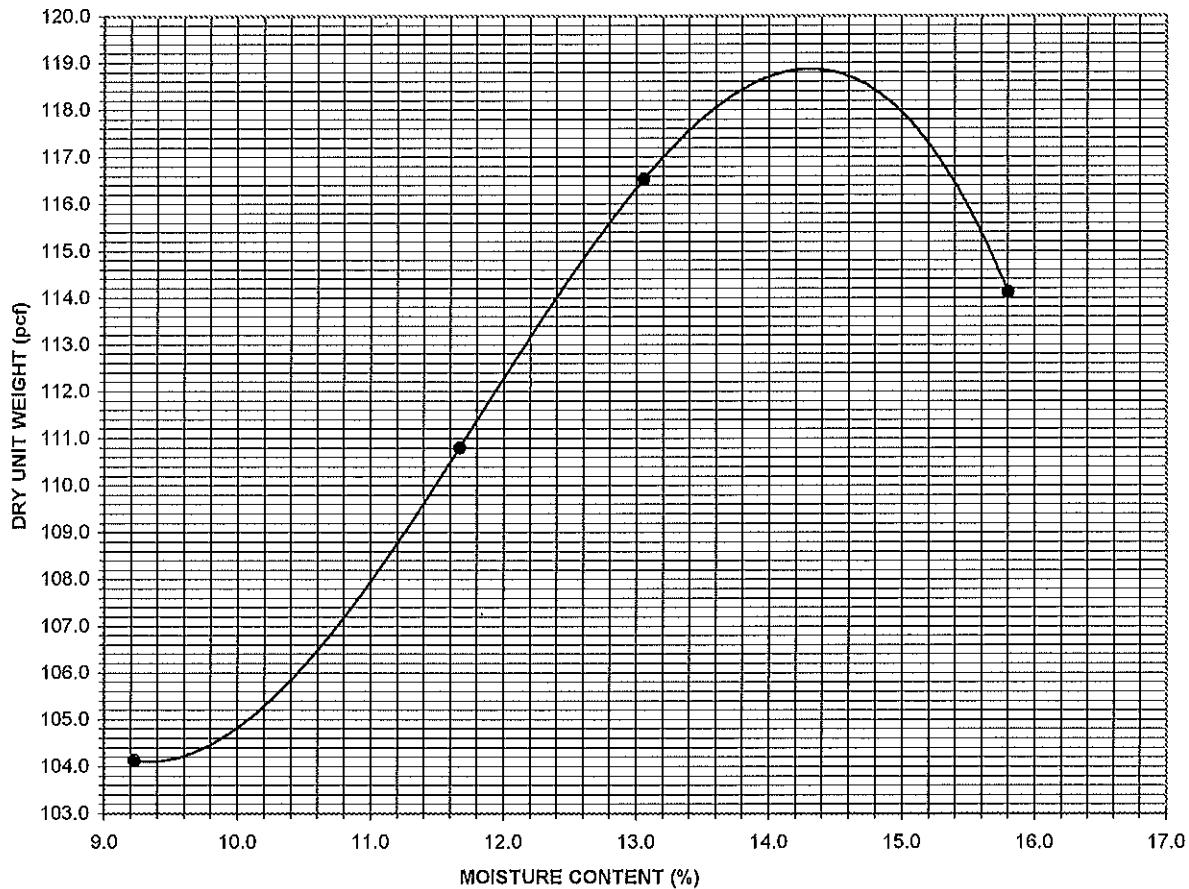
TEST RESULTS AASHTO Spec Report

OPT MOISTURE:	14.3	14
MAX DENSITY:	118.8	119

TESTED FOR: Nodarse and Associates
West Palm Beach, Florida
MATERIAL Tan Coarse Sand W/Limerock & Shell
DATE TESTED: December 19, 2006

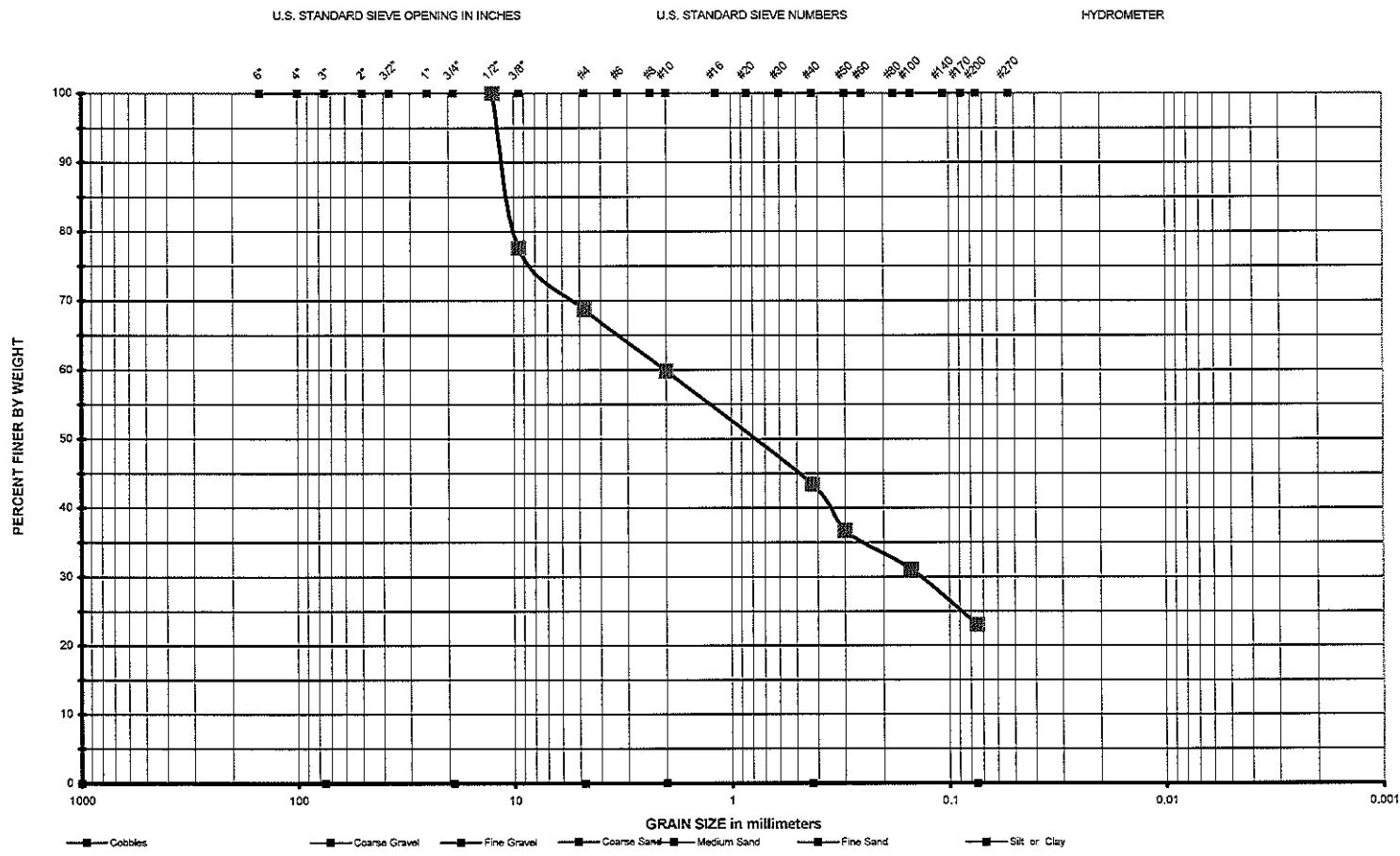
PROJECT: E A A Reservoir
PROJECT: NO 05-06-0070-101
SAMPLE # Proctor # 17 Lab 2311
TEST METHOD: D-698

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 4A



OPT MOISTURE: **14.3**

MAX DENSITY: **118.8**



Grain-size Distribution Analysis

No.	Sample Location	Classification	-200	w %	LL	PL	PI
6	Test Cell #4 S.E. Lift 4 #2311	SM	23	1	-	-	-

TESTED FOR: Nodarse and Associates
West Palm Beach, Florida

PROJECT NAME: E A A Reservoir

SAMPLE #: Proctor # 15 Lab 2309

PROJECT NO: 05-06-0070-101

MATERIAL: Tan Coarse Sand W/Limerock & Shell

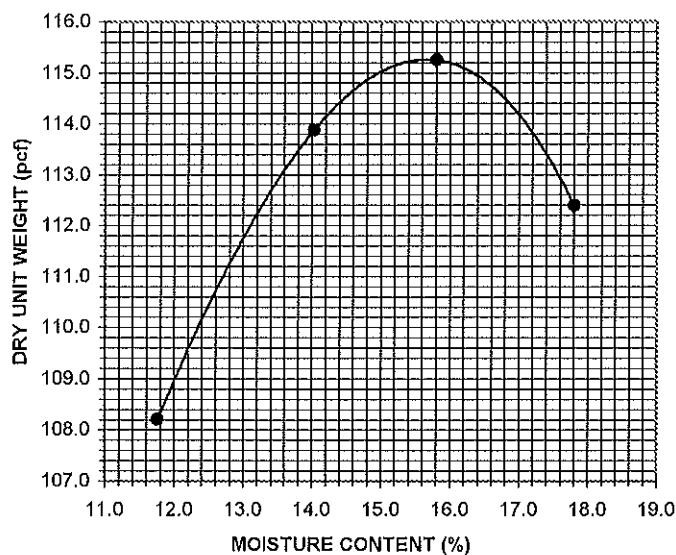
TEST METHOD: D-698

DATE TESTED: December 19, 2006

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 3A

SOIL DESCRIPTION: Tan Coarse Sand W/Limerock & Shell

WT SOIL + CYLINDER	lbs	23.66	24.33	24.60	24.52
WT CYLINDER	lbs	14.59	14.59	14.59	14.59
WT WET SOIL	lbs	9.07	9.74	10.01	9.93
WET DENSITY	pcf	120.93	129.87	133.47	132.40
DRY DENSITY	pcf	108.2	113.9	115.2	112.4
TARE NUMBER		3A	3M	7A	4A
WET SOIL + CAN	gm	696.80	693.60	695.60	694.60
DRY SOIL + CAN	gm	635.00	621.80	615.50	605.80
WATER WEIGHT	gm	61.80	71.80	80.10	88.80
TARE WT	gm	109.60	110.30	108.80	107.10
WEIGHT DRY SOIL	gm	525.40	511.50	506.70	498.70
MOISTURE	%	11.8	14.0	15.8	17.8



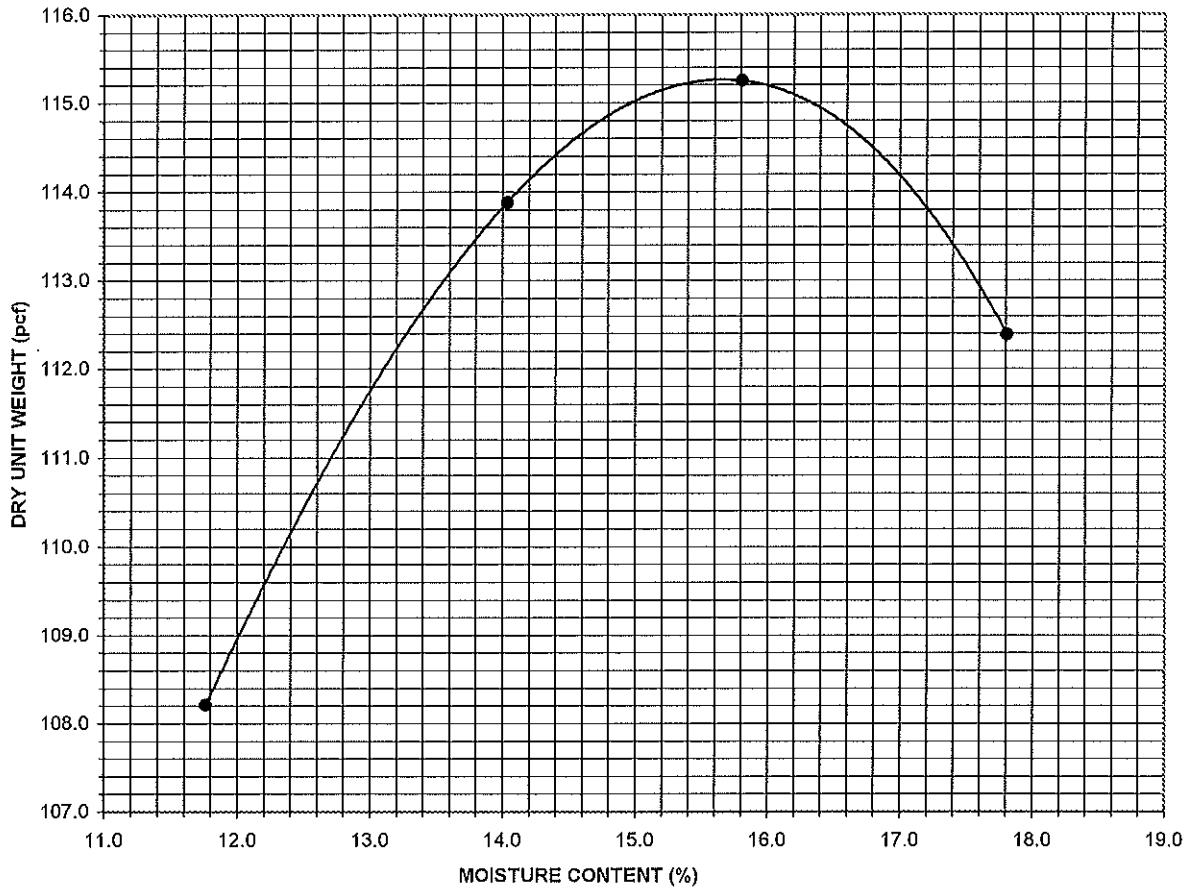
TEST RESULTS AASHTO Spec Report

OPT MOISTURE:	15.6	16
MAX DENSITY:	115.2	115

TESTED FOR: Nodarse and Associates
West Palm Beach, Florida
MATERIAL Tan Coarse Sand W/Limerock & Shell
DATE TESTED: December 19, 2006

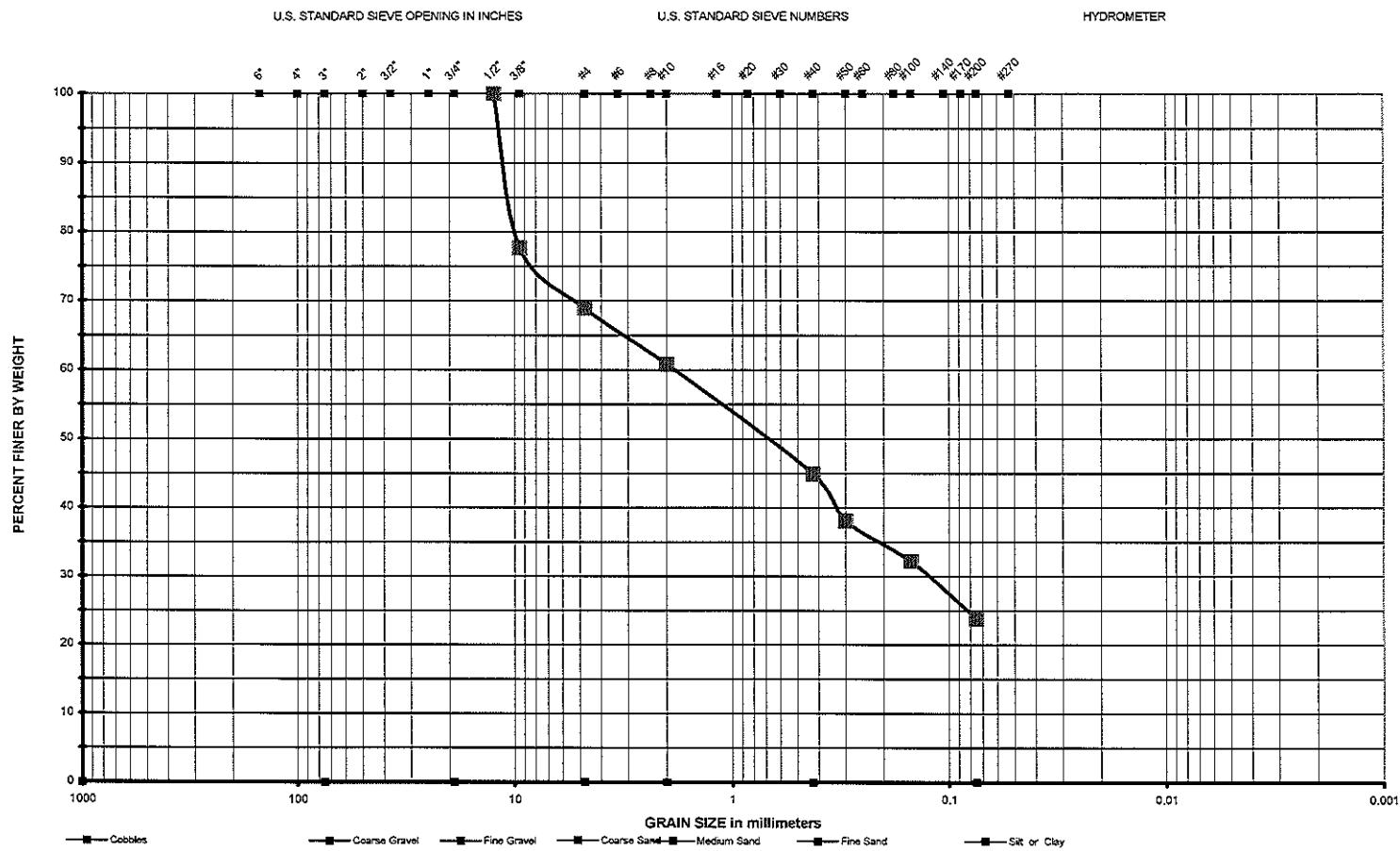
PROJECT: E A A Reservoir
PROJECT: NO 05-06-0070-101
SAMPLE # Proctor # 15 Lab 2309
TEST METHOD: D-698

SAMPLE LOCATION: Test Cell 2 S.E. Corner Lift - 3A



OPT MOISTURE: **15.6**

MAX DENSITY: **115.2**



Grain-size Distribution Analysis

Project name:

EAA Reservoir

Date:	12/18/2006	N&A Project No.	05-06-0070-101
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Figure No. 9

No.	Sample Location	Classification	-200	w %	LL	PL	PI
7	Test Cell 3 Lift #3A	SM	23.8	1	-	-	-
	#2309						



GRAIN SIZE DISTRIBUTION TEST DATA

Client:

Project: EAA Reservoir

Project Number: 05-06-0070

Sample Data

Source:

Sample No.: 1

Elev. or Depth: 22.5-24.0'

Location: CP06-EAARS-CB-0462

Description:

Date: PL:

USCS Classification:

Testing Remarks:

Sample Length (in./cm.):

AASHTO Classification:

Mechanical Analysis Data

Initial

Dry sample and tare= 266.30
Tare = 0.00
Dry sample weight = 266.30
Tare for cumulative weight retained=.00

Sieve	Cumul. Wt.	Percent
	retained	finer
1/2 inch	0.00	100.0
3/8 inch	2.75	99.0
# 4	8.60	96.8
# 10	14.00	94.7

Hydrometer Analysis Data

Separation sieve is #10

Percent -#10 based upon complete sample= 94.7

Weight of hydrometer sample: 60.0

Hygroscopic moisture correction:

Moist weight & tare = 38.50
Dry weight & tare = 38.50
Tare = 28.30
Hygroscopic moisture= 0.0 %

Calculated biased weight= 63.36

Table of composite correction values:

Temp, deg C:	21.7	22.2	22.8	23.3	24.4
Comp. corr:	-6.5	-6.4	-6.3	-6.2	-6.0

Meniscus correction only= 0.0

Specific gravity of solids= 2.69

Specific gravity correction factor= 0.991

Hydrometer type: 152H

Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	23.3	8.0	1.8	0.0130	8.0	15.0	0.0354	2.8
5.00	23.3	7.0	0.8	0.0130	7.0	15.1	0.0225	1.3
15.00	23.3	7.0	0.8	0.0130	7.0	15.1	0.0130	1.3
30.00	23.3	6.0	-0.2	0.0130	6.0	15.3	0.0093	0.0
60.00	23.3	6.0	-0.2	0.0130	6.0	15.3	0.0065	0.0
250.00	23.9	5.0	-1.1	0.0129	5.0	15.5	0.0032	0.0

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1440.00	23.3	5.0	-1.2	0.0130	5.0	15.5	0.0013	0.0

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

% COBBLES = % GRAVEL = 3.2 (% coarse = % fine = 3.2)

% SAND = 82.8 (% coarse = 2.1 % medium = 32.1 % fine = 48.6)

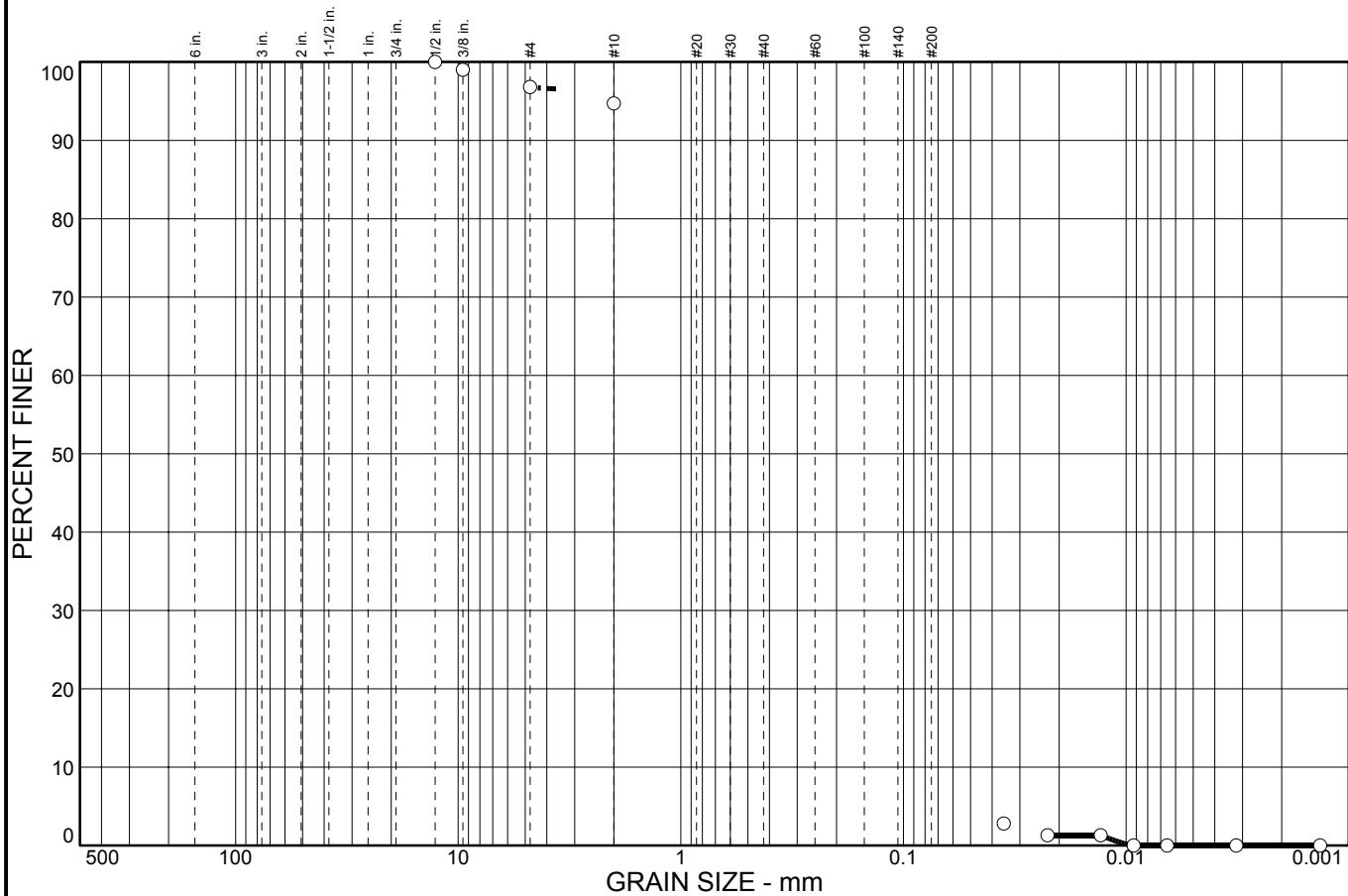
% FINES = 14.0

D₈₅= 1.02 D₆₀= 0.39 D₅₀= 0.28

D₃₀= 0.14 D₁₅= 0.08 D₁₀= 0.06

C_c= 0.846 C_u= 6.3362

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT
0.0	0.0	3.2	2.1	32.1	48.6	14.0
						0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2 in.	100.0		
3/8 in.	99.0		
#4	96.8		
#10	94.7		

<u>Material Description</u>		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₈₅ = 1.02	D ₆₀ = 0.388	D ₅₀ = 0.279
D ₃₀ = 0.142	D ₁₅ = 0.0786	D ₁₀ = 0.0613
C _u = 6.34	C _c = 0.85	
<u>Classification</u>		
USCS=	AASHTO=	
<u>Remarks</u>		

* (no specification provided)

Sample No.: 1

Source of Sample:

Date:

Location: CP06-EAARS-CB-0462

Elev./Depth: 22.5-24.0'

Nodarse & Associates, Inc.

Winter Park, FL

Client:

Project: EAA Reservoir

Project No: 05-06-0070

Plate

GRAIN SIZE DISTRIBUTION TEST DATA

Client:

Project: EAA Reservoir

Project Number: 05-06-0070

Sample Data

Source:

Sample No.: 2

Elev. or Depth: 24.0-25.5'

Location: CP06-EAARS-CB-0462

Description:

Date: PL:

USCS Classification:

Testing Remarks:

Sample Length (in./cm.):

LL: PI:

AASHTO Classification:

Mechanical Analysis Data

Initial

Dry sample and tare= 301.85
Tare = 0.00
Dry sample weight = 301.85
Tare for cumulative weight retained=.00

Sieve	Cumul. Wt.	Percent
	retained	finer
3/4 inch	0.00	100.0
1/2 inch	5.20	98.3
3/8 inch	9.24	96.9
# 4	14.90	95.1
# 10	18.94	93.7

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 93.7
Weight of hydrometer sample: 60.0
Hygroscopic moisture correction:

Moist weight & tare = 38.20
Dry weight & tare = 38.16
Tare = 28.30
Hygroscopic moisture= 0.4 %
Calculated biased weight= 63.78
Table of composite correction values:
Temp, deg C: 21.7 22.2 23.9 23.3 24.4
Comp. corr: -6.5 -6.4 -6.1 -6.2 -6.0

Meniscus correction only= 0.0
Specific gravity of solids= 2.72
Specific gravity correction factor= 0.985
Hydrometer type: 152H

Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	23.3	36.0	29.8	0.0128	36.0	10.4	0.0293	46.0
5.00	23.3	33.0	26.8	0.0128	33.0	10.9	0.0189	41.4
15.00	23.9	31.5	25.4	0.0127	31.5	11.1	0.0110	39.2
30.00	23.9	30.0	23.9	0.0127	30.0	11.4	0.0078	36.9
60.00	23.9	27.5	21.4	0.0127	27.5	11.8	0.0056	33.0

Elapsed time, min	Temp, Actual deg C	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
250.00	24.4	24.0	18.0	0.0127	24.0	12.4	0.0028 27.6
1440.00	23.9	21.0	14.9	0.0127	21.0	12.9	0.0012 23.0

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

% COBBLES = % GRAVEL = 4.9 (% coarse = % fine = 4.9)

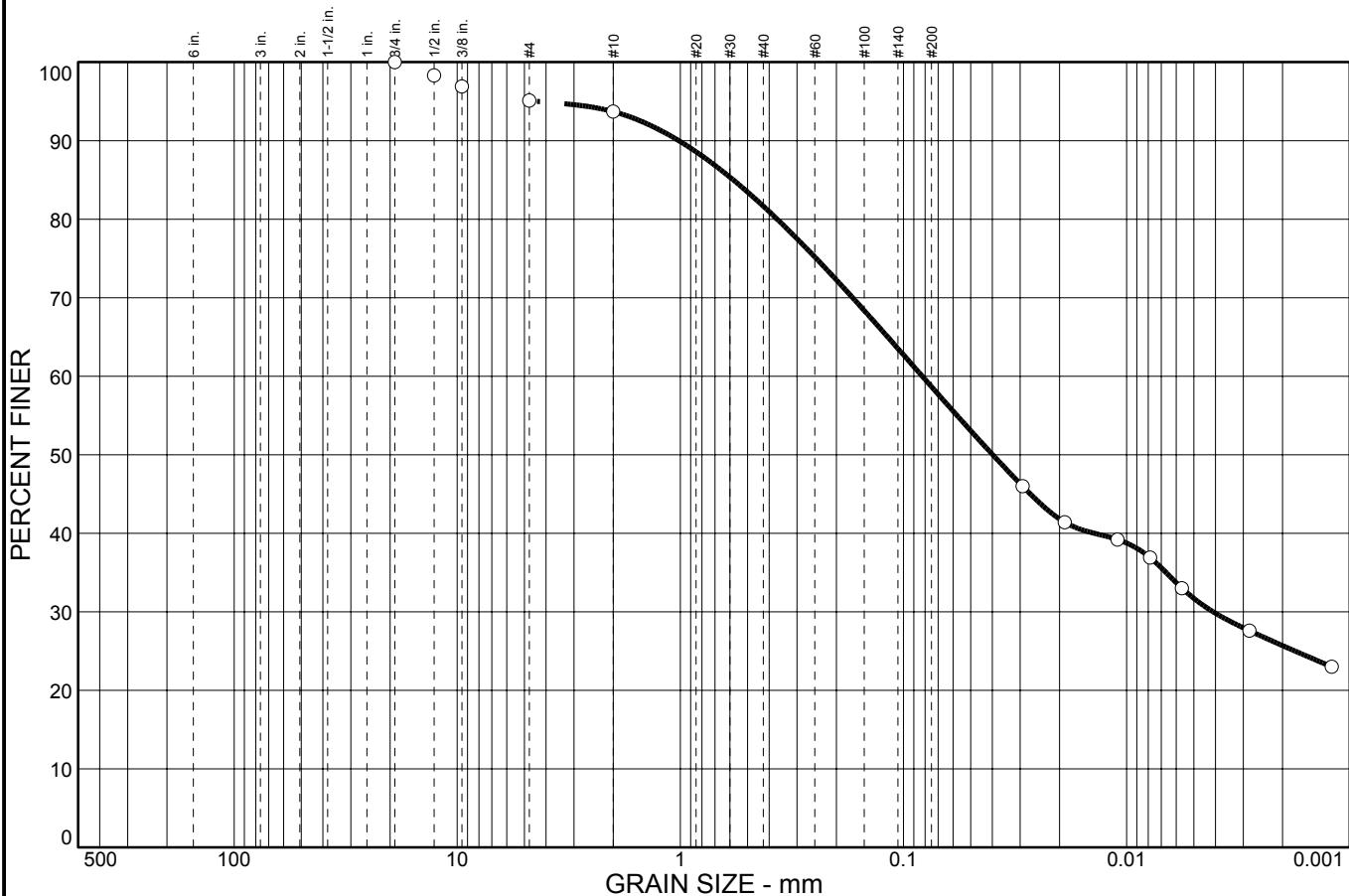
% SAND = 36.4 (% coarse = 1.4 % medium = 12.0 % fine = 23.0)

% SILT = 27.0 % CLAY = 31.7

D₈₅= 0.58 D₆₀= 0.08 D₅₀= 0.04

D₃₀= 0.00

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES		
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	4.9	1.4	12.0	23.0	27.0	31.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
1/2 in.	98.3		
3/8 in.	96.9		
#4	95.1		
#10	93.7		

<u>Material Description</u>		
PL=	<u>Atterberg Limits</u>	PI=
LL=		
D ₈₅ = 0.580	<u>Coefficients</u>	D ₅₀ = 0.0398
D ₃₀ = 0.0041	D ₆₀ = 0.0824	D ₁₀ =
C _u =	C _c =	
USCS=	<u>Classification</u>	AASHTO=
	<u>Remarks</u>	

* (no specification provided)

Sample No.: 2

Source of Sample:

Date:

Location: CP06-EAARS-CB-0462

Elev./Depth: 24.0-25.5'

Nodarse & Associates, Inc.

Winter Park, FL

Client:

Project: EAA Reservoir

Project No: 05-06-0070

Plate

GRAIN SIZE DISTRIBUTION TEST DATA

Client:

Project: EAA Reservoir

Project Number: 05-06-0070

Sample Data

Source:

Sample No.: 3

Elev. or Depth: 16.5-18.0'

Location: CP06-EAARS-CB-0463

Description:

Date: PL:

USCS Classification:

Testing Remarks:

Sample Length (in./cm.):

LL: PI:

AASHTO Classification:

Mechanical Analysis Data

Initial

Dry sample and tare= 274.70
Tare = 0.00
Dry sample weight = 274.70
Tare for cumulative weight retained=.00

Sieve	Cumul. Wt.	Percent
	retained	finer
1/2 inch	0.00	100.0
3/8 inch	4.35	98.4
# 4	30.50	88.9
# 10	84.12	69.4

Hydrometer Analysis Data

Separation sieve is #10

Percent -#10 based upon complete sample= 69.4

Weight of hydrometer sample: 60.0

Hygroscopic moisture correction:

Moist weight & tare = 38.10
Dry weight & tare = 37.93
Tare = 28.30
Hygroscopic moisture= 1.8 %

Calculated biased weight= 84.96

Table of composite correction values:

Temp, deg C:	21.7	22.2	23.9	23.3	24.4
Comp. corr:	-6.5	-6.4	-6.1	-6.2	-6.0

Meniscus correction only= 0.0

Specific gravity of solids= 3.06

Specific gravity correction factor= 0.925

Hydrometer type: 152H

Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	24.4	37.0	31.0	0.0116	37.0	10.2	0.0262	33.6
5.00	24.4	34.0	28.0	0.0116	34.0	10.7	0.0170	30.4
15.00	24.4	31.0	25.0	0.0116	31.0	11.2	0.0100	27.1
30.00	24.4	28.0	22.0	0.0116	28.0	11.7	0.0072	23.8
60.00	24.4	26.0	20.0	0.0116	26.0	12.0	0.0052	21.7
250.00	24.4	24.0	18.0	0.0116	24.0	12.4	0.0026	19.5

Elapsed time, min	Temp, Actual deg C	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer	
1440.00	23.9	22.0	15.9	0.0116	22.0	12.7	0.0011	17.3

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

% COBBLES = % GRAVEL = 11.1 (% coarse = % fine = 11.1)

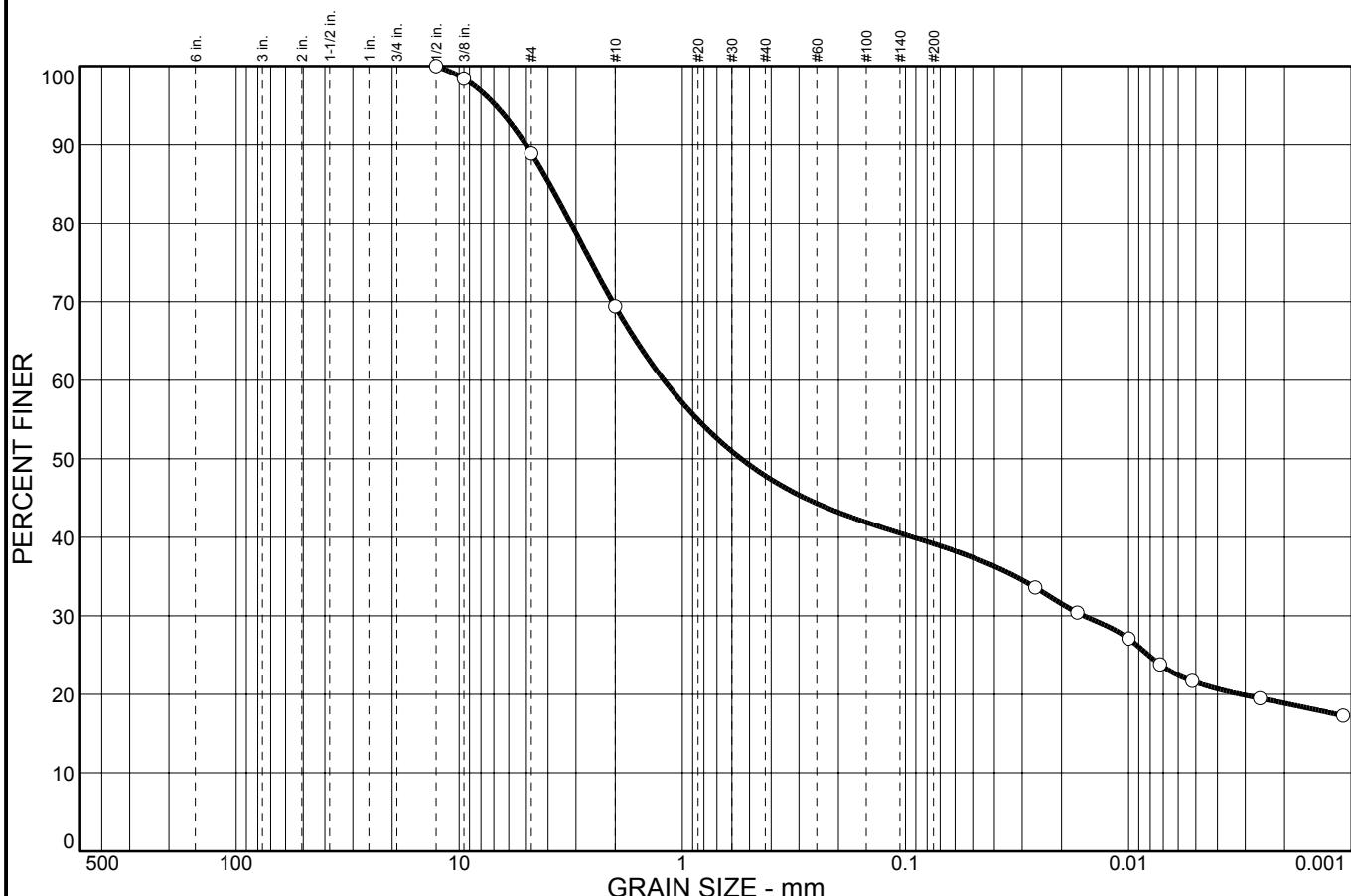
% SAND = 49.7 (% coarse = 19.5 % medium = 21.6 % fine = 8.6)

% SILT = 17.6 % CLAY = 21.6

D₈₅= 3.94 D₆₀= 1.21 D₅₀= 0.55

D₃₀= 0.02

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES		
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	11.1	19.5	21.6	8.6	17.6	21.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2 in.	100.0		
3/8 in.	98.4		
#4	88.9		
#10	69.4		

<u>Material Description</u>		
PL=	<u>Atterberg Limits</u>	PI=
	LL=	
D ₈₅ = 3.94	Coefficients	D ₅₀ = 0.545
D ₃₀ = 0.0158	D ₆₀ = 1.21	D ₁₀ =
C _u =	D ₁₅ =	C _c =
USCS=	Classification	AASHTO=
	<u>Remarks</u>	

* (no specification provided)

Sample No.: 3

Source of Sample:

Date:

Location: CP06-EAARS-CB-0463

Elev./Depth: 16.5-18.0'

Nodarse & Associates, Inc.
Winter Park, FL

Client:
Project: EAA Reservoir

Project No: 05-06-0070

Plate

GRAIN SIZE DISTRIBUTION TEST DATA

Client:

Project: EAA Reservoir

Project Number: 05-06-0070

Sample Data

Source:

Sample No.: 4

Elev. or Depth: 13.5-15.0'

Location: CP06-EAARS-CB-0463

Description:

Date: PL:

USCS Classification:

Testing Remarks:

Sample Length (in./cm.):

LL: PI:

AASHTO Classification:

Mechanical Analysis Data

Initial

Dry sample and tare= 197.50
Tare = 0.00
Dry sample weight = 197.50
Tare for cumulative weight retained=.00

Sieve	Cumul. Wt.	Percent
	retained	finer
3/4 inch	0.00	100.0
1/2 inch	9.12	95.4
3/8 inch	11.35	94.3
# 4	24.70	87.5
# 10	55.12	72.1

Hydrometer Analysis Data

Separation sieve is #10
Percent -#10 based upon complete sample= 72.1
Weight of hydrometer sample: 38.0
Hygroscopic moisture correction:

Moist weight & tare = 39.00
Dry weight & tare = 38.87
Tare = 28.30
Hygroscopic moisture= 1.2 %
Calculated biased weight= 52.06
Table of composite correction values:
Temp, deg C: 21.7 22.2 23.9 23.3 25.6
Comp. corr: -6.5 -6.4 -6.1 -6.2 -5.8

Meniscus correction only= 0.0
Specific gravity of solids= 2.14
Specific gravity correction factor= 1.169
Hydrometer type: 152H

Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	25.6	5.0	-0.8	0.0153	5.0	15.5	0.0427	0.0
5.00	25.6	5.0	-0.8	0.0153	5.0	15.5	0.0270	0.0
15.00	25.6	5.0	-0.8	0.0153	5.0	15.5	0.0156	0.0
30.00	25.6	5.0	-0.8	0.0153	5.0	15.5	0.0110	0.0
60.00	25.6	4.0	-1.8	0.0153	4.0	15.6	0.0078	0.0

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
250.00	25.6	4.0	-1.8	0.0153	4.0	15.6	0.0038	0.0
1440.00	25.6	3.0	-2.8	0.0153	3.0	15.8	0.0016	0.0

Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

% COBBLES = % GRAVEL = 12.5 (% coarse = % fine = 12.5)

% SAND = 83.9 (% coarse = 15.4 % medium = 36.4 % fine = 32.1)

% FINES = 3.6

D₈₅= 4.02 D₆₀= 1.16 D₅₀= 0.77

D₃₀= 0.33 D₁₅= 0.16 D₁₀= 0.12

C_c= 0.7831 C_u= 9.5563

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND		% FINES		
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	12.5	15.4	36.4	32.1	3.6	0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
1/2 in.	95.4		
3/8 in.	94.3		
#4	87.5		
#10	72.1		

<u>Material Description</u>		
PL=	<u>Atterberg Limits</u>	PI=
	LL=	
	Coefficients	
D ₈₅ = 4.02	D ₆₀ = 1.16	D ₅₀ = 0.768
D ₃₀ = 0.333	D ₁₅ = 0.163	D ₁₀ = 0.122
C _u = 9.56	C _c = 0.78	
USCS=	<u>Classification</u>	AASHTO=
	<u>Remarks</u>	

* (no specification provided)

Sample No.: 4

Source of Sample:

Date:

Location: CP06-EAARS-CB-0463

Elev./Depth: 13.5-15.0'

Nodarse & Associates, Inc.

Winter Park, FL

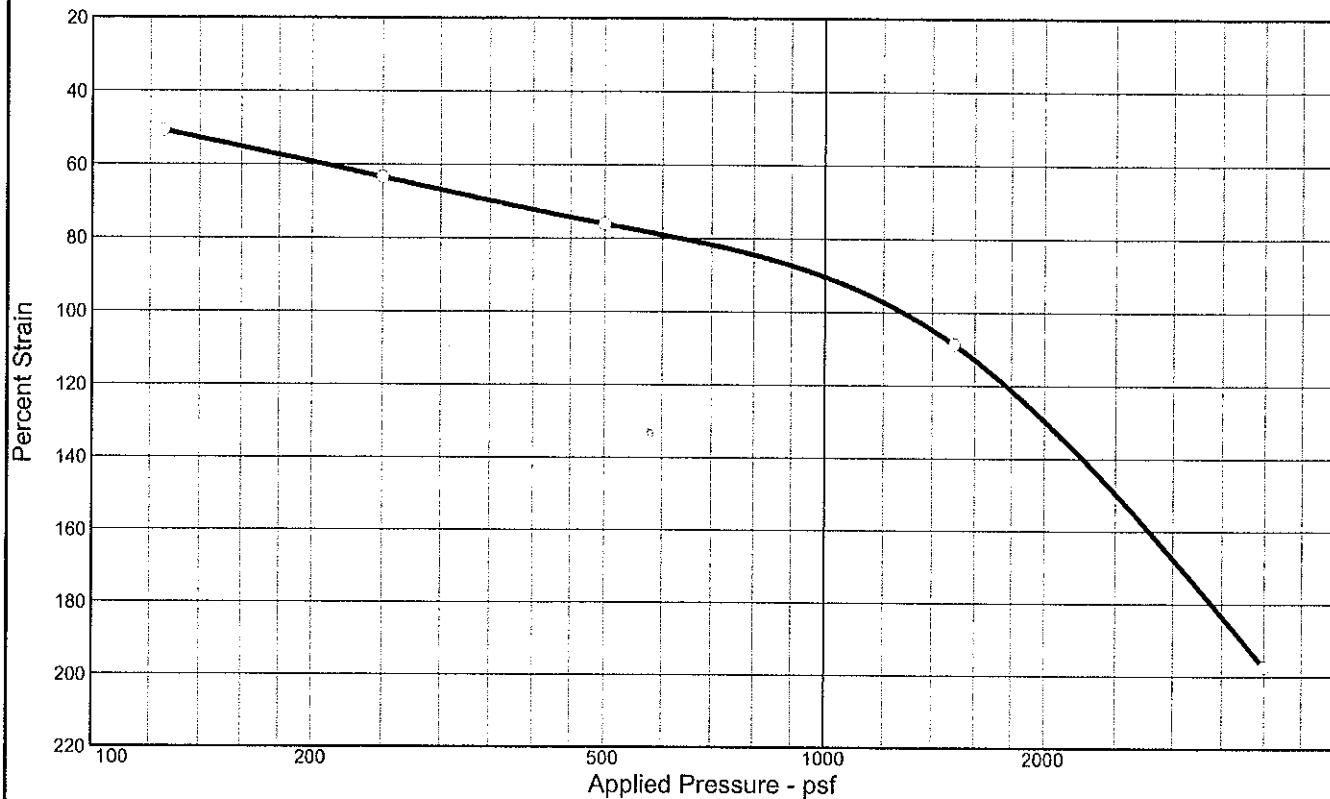
Client:

Project: EAA Reservoir

Project No: 05-06-0070

Plate

CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (psf)	C_V (ft. ² /day)	C_α	No.	Load (psf)	C_V (ft. ² /day)	C_α	No.	Load (psf)	C_V (ft. ² /day)	C_α
1	125	0.18	0.008								
2	250	0.02									
3	500	0.03									
4	1500	0.00	0.258								
5	4000	0.07	-0.010								

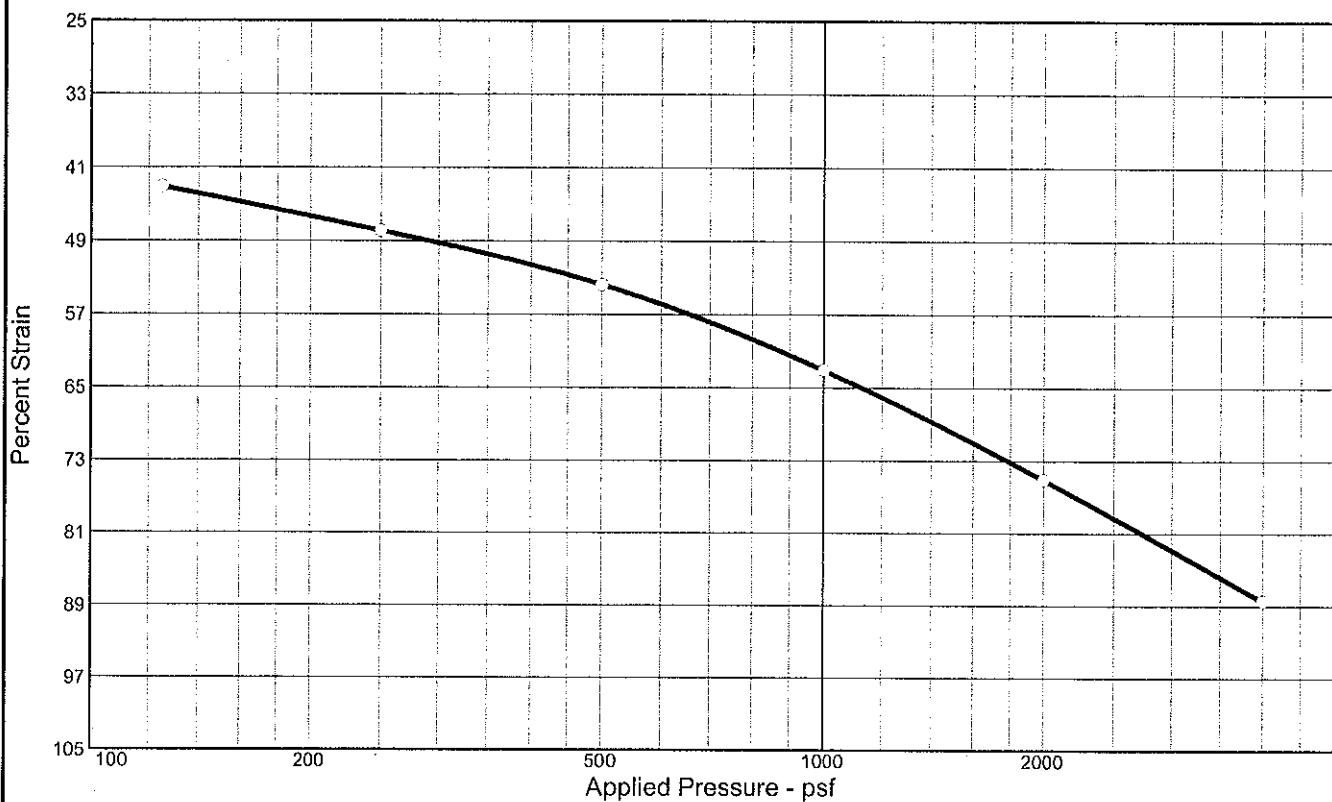
Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Heave %	e_0
Sat.	Moist.											
					2.69		1563	3.56				0.644

MATERIAL DESCRIPTION

USCS AASHTO

Project No.	Client: Black and Veatch	Remarks:
Project: EAA		Compacted to 96%
Source: Test Cell 2 – SE Corner	Sample No.: 1	
Nodarse & Associates, Inc. Winter Park, FL		Plate

CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α
1	125	0.05	0.001								
2	250	0.14	0.001								
3	500	0.21	0.007								
4	1000	0.04	0.000								
5	2000	0.02	0.000								
6	4000	0.01	0.000								

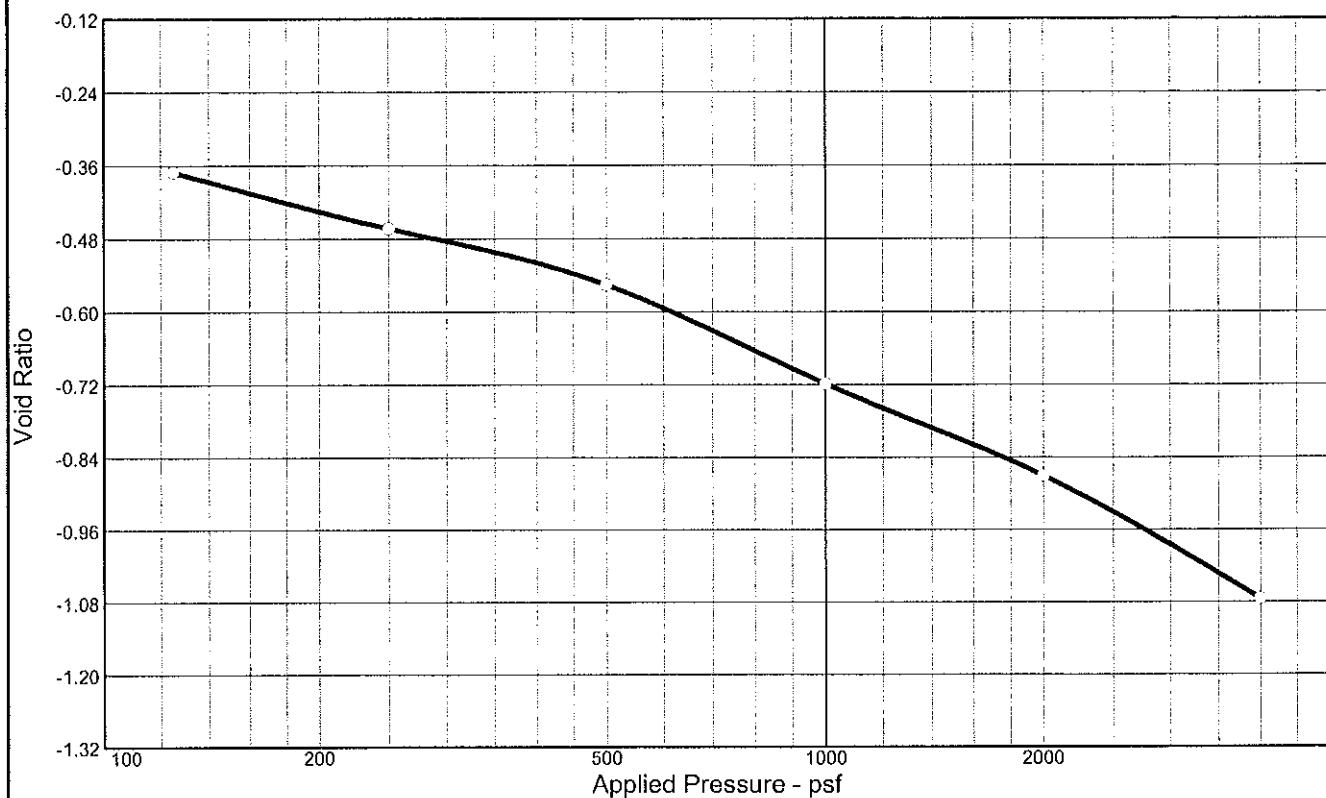
Natural Sat.	Dry Dens. (pcf) Moist.	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_f	Swell Press. (psf)	Heave %	e_0
				2.69		745	0.64				0.443

MATERIAL DESCRIPTION

USCS AASHTO

Project No.	Client: Black and Veatch	Remarks:
Project: EAA		Compacted to 96%
Source: Test Cell 2 – SE Corner	Sample No.: 2	
Nodarse & Associates, Inc.		Plate
Winter Park, FL		

CONSOLIDATION TEST REPORT



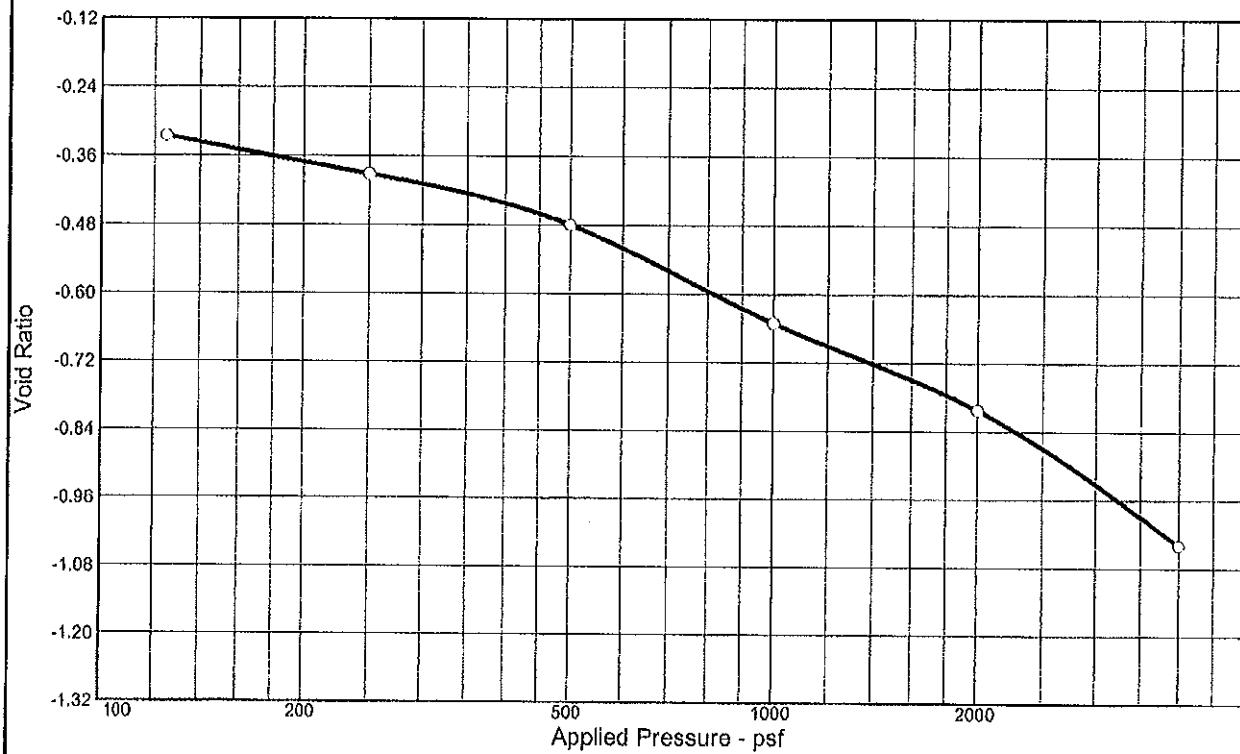
Coefficients of Consolidation and Secondary Consolidation											
No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α
1	125	0.05									
2	250	0.03	0.021								
3	500	0.05	0.000								
4	1000	0.01	0.025								
5	2000	0.01	0.055								
6	4000	0.00	0.029								

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Heave %	e_0
Sat.	Moist.											0.389
					2.69		849	0.69				

MATERIAL DESCRIPTION								USCS	AASHTO

Project No.	Client: Black and Veatch	Remarks:
Project: EAA		Compacted to 94%
Source: Test Cell 2 – SE Corner	Sample No.: 3	
Nodarse & Associates, Inc.		
Winter Park, FL		Plate

CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation											
No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α
1	125	0.05	0.004								
2	250	0.10	0.000								
3	500	0.10									
4	1000	0.04	0.043								
5	2000	0.01	0.000								
6	4000	0.00	0.000								

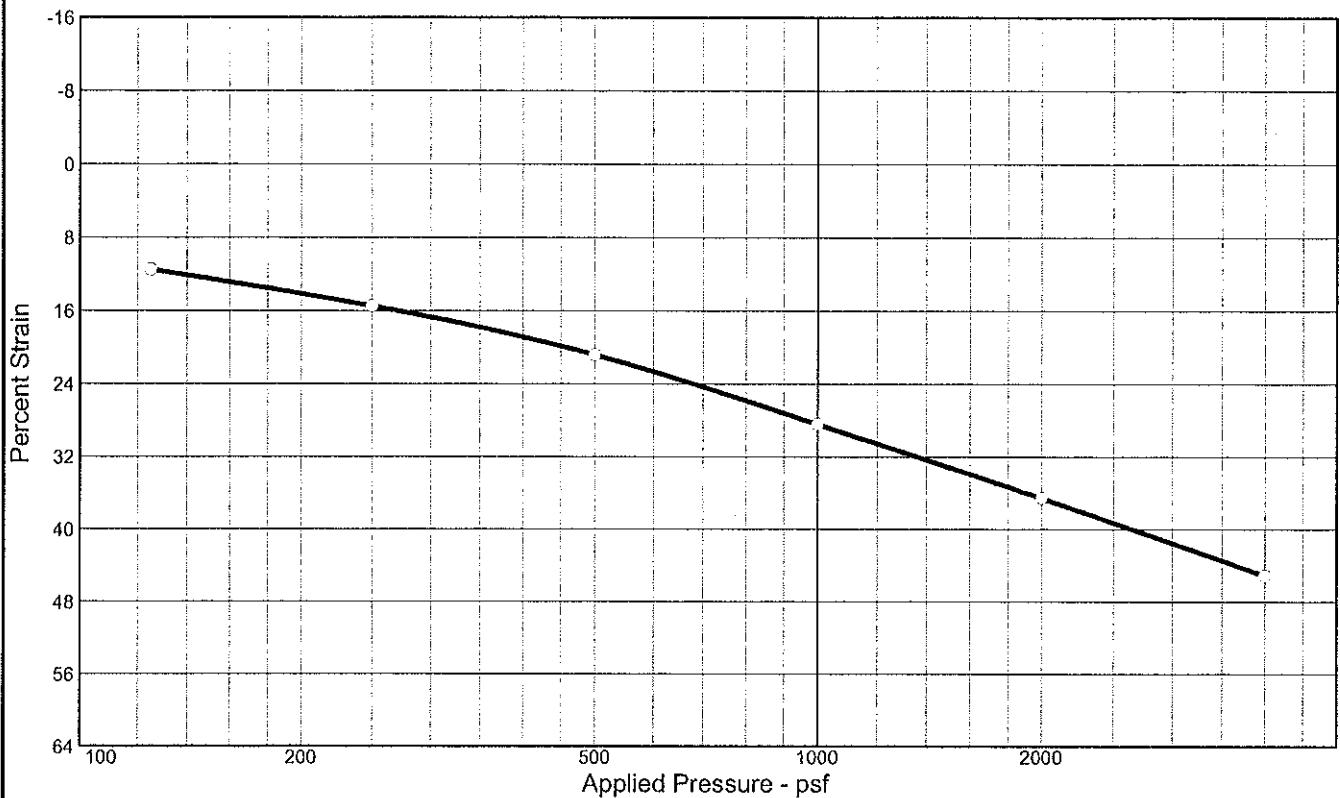
Natural Sat.	Dry Dens. Molst. (pcf)	LL	Pl	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Heave %	ϵ_0
					2.69		1011	0.81			0.496

MATERIAL DESCRIPTION

USCS AASHTO

Project No.	Client: Black and Veatch	Remarks:
Project: EAA		Compacted to 94%
Source: Test Cell 2 – SE Corner	Sample No.: 4	
Nodarse & Associates, Inc.		Plate

CONSOLIDATION TEST REPORT



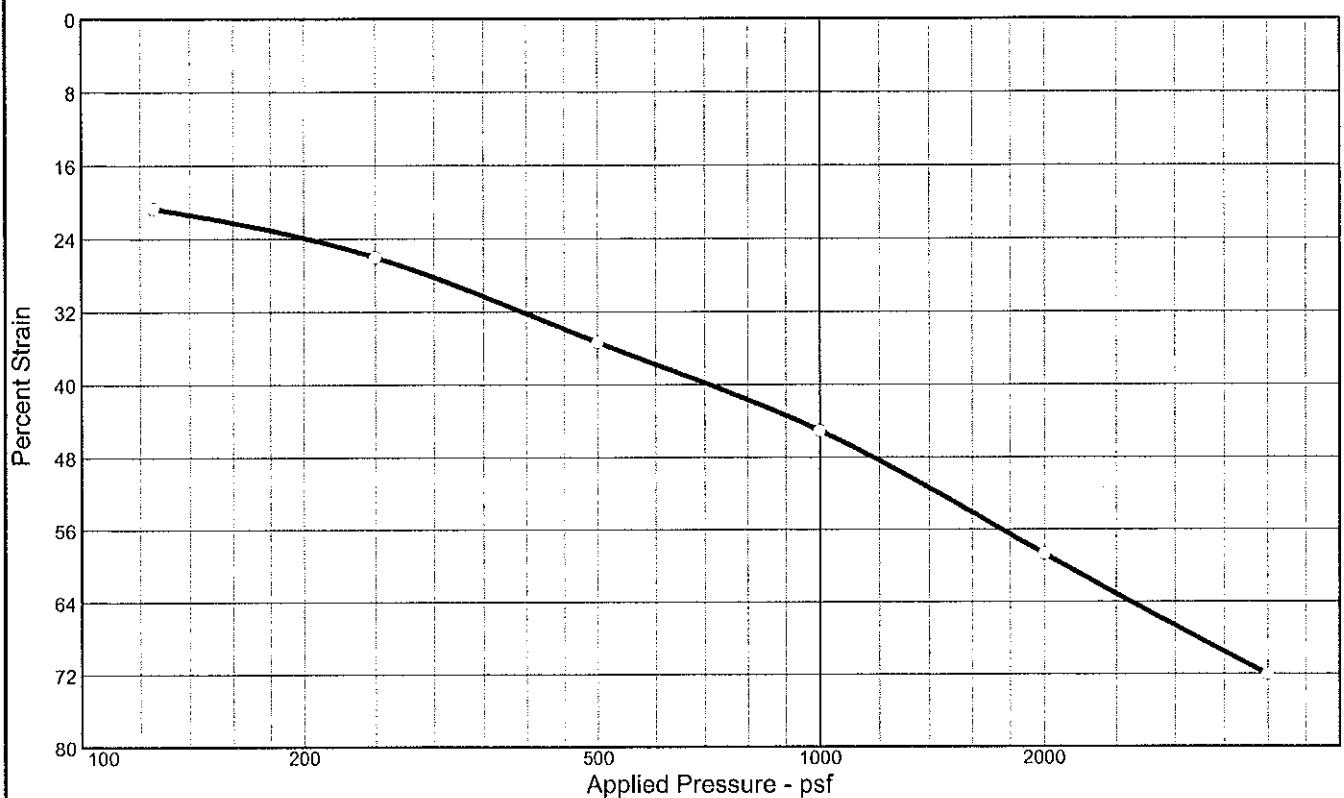
Coefficients of Consolidation and Secondary Consolidation											
No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α
1	125	0.42	0.003								
2	250	0.19	0.009								
3	500	0.60									
4	1000	0.06	0.008								
5	2000	0.05									
6	4000	0.14	0.017								

Natural		Dry Dens. (pcf)	LL	Pl	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Heave %	e_0
Sat.	Moist.						498					

MATERIAL DESCRIPTION								USCS	AASHTO

Project No.	Client: Black and Veatch	Remarks: Compacted at 92%
Project: EAA		
Source: Test Cell 2 – SE Corner	Sample No.: 1 at 92%	
Nodarse & Associates, Inc.		
Winter Park, FL		Plate

CONSOLIDATION TEST REPORT



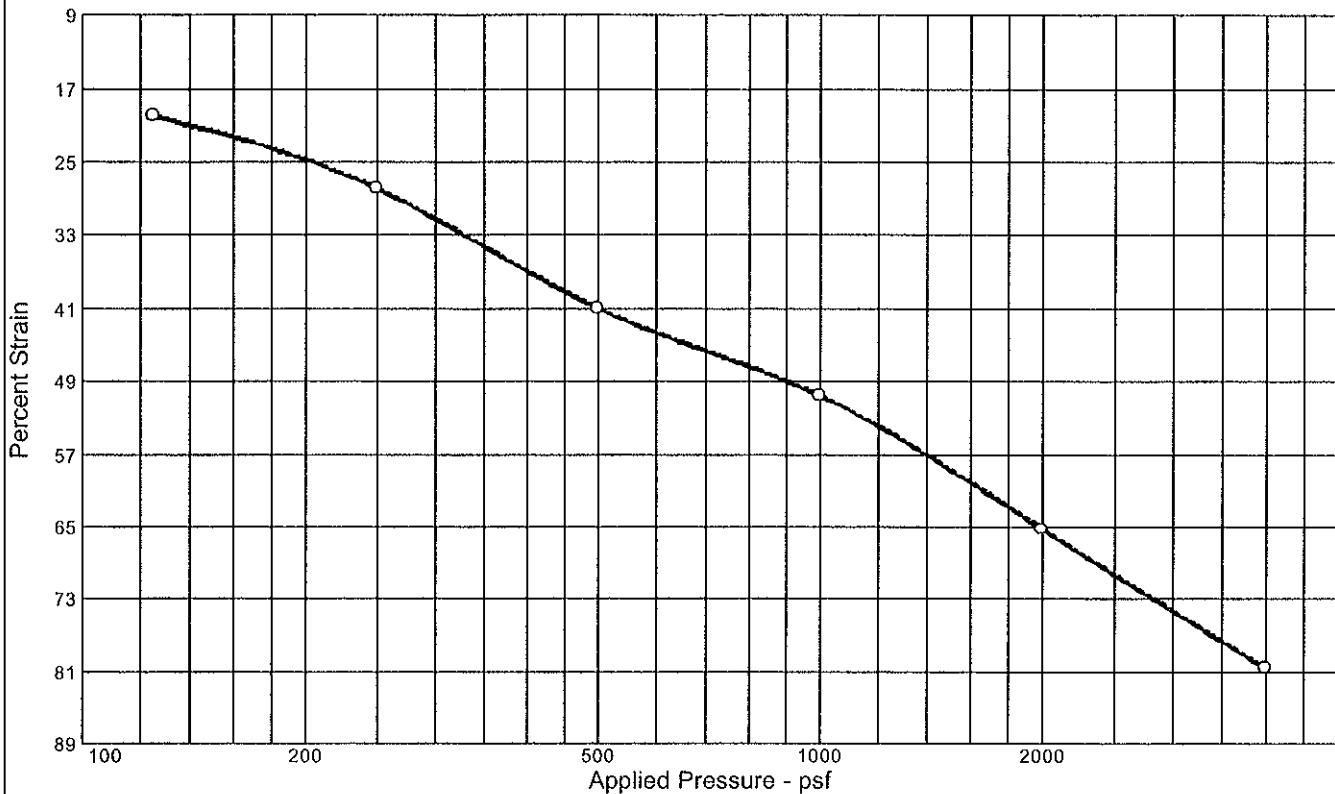
Coefficients of Consolidation and Secondary Consolidation											
No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α
1	125	0.10	0.005								
2	250	0.11									
3	500	0.05	0.012								
4	1000	0.06									
5	2000	0.01	0.040								
6	4000	0.04									

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Heave %	e_0
Sat.	Moist.											
							510					

MATERIAL DESCRIPTION										USCS	AASHTO

Project No.	Client: Black and Veatch	Remarks:
Project: EAA		Compacted at 92%
Source: Test Cell 2 – SE Corner	Sample No.: 2 at 92%	
	Nodarse & Associates, Inc.	
	Winter Park, FL	Plate

CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α
1	125	0.26	0.000								
2	250	0.04	0.011								
3	500	0.09	0.020								
4	1000	0.12	0.023								
5	2000	0.07	0.028								
6	4000	0.01	0.037								

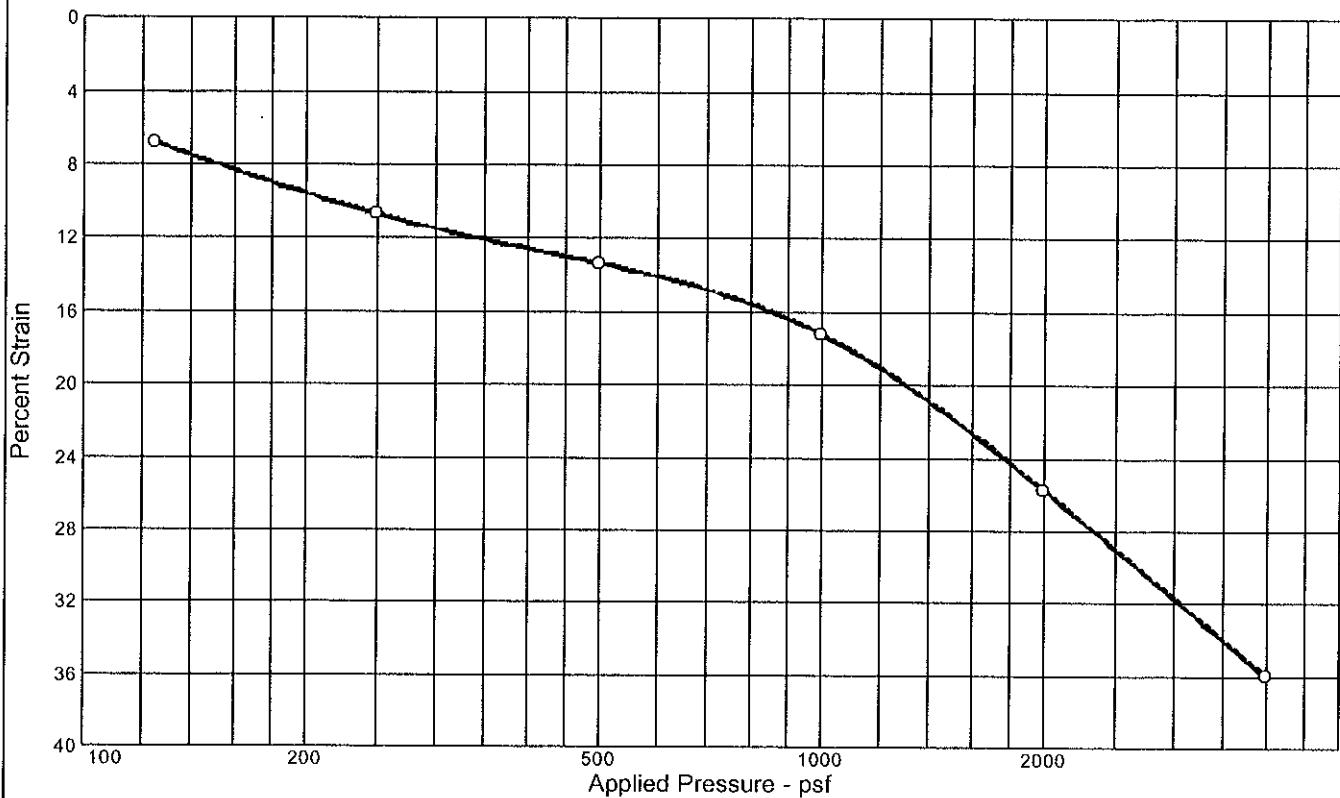
Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Heave %	e_0
Sat.	Moist.						698					

MATERIAL DESCRIPTION

USCS AASHTO

Project No.	Client: Black and Veatch	Remarks: Compacted to 90%
Project: EAA		
Source: Test Cell 2 -- SE Corner	Sample No.: 1 at 90%	
Nodarse & Associates, Inc.		
Winter Park, FL		Plate

CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation											
No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α	No.	Load (psf)	C_v (ft. ² /day)	C_α
1	125	0.10									
2	250	0.15	0.005								
3	500	0.08	0.001								
4	1000	0.36	0.011								
5	2000	0.04	0.020								
6	4000	0.22	0.014								

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Swell Press. (psf)	Heave %	e_0
Sat.	Moist.											
							912					

MATERIAL DESCRIPTION								USCS	AASHTO

Project No.	Client: Black and Veatch	Remarks:
Project: EAA		Compacted to 90%
Source: Test Cell 2 – SE Corner	Sample No.: 2 at 90%	
Nodarse & Associates, Inc.		
Winter Park, FL		Plate

Results of Constant Head Permeability Tests

Project No: 05-06-0070-101

Project Name: EAA Reservoir A-1

Description of material: Tan silty sand with limestone fragments

Area of Sample: 12.56 sq.inch

Height of Sample: 4.58 inches

Sample Preparation: All the samples were remolded in accordance to ASTM D-698 at the required relative compaction.

Table 1: Summary Table

Permeability Test No.	Compaction Percentage (%)	Hydraulic Gradient	Coefficient of Hydraulic Conductivity	
			cm/sec	in/sec
Perm # 1	95	10	1.86 E-04	7.32 E-05
Perm # 2	95	10	1.43 E-04	5.63 E-05
Perm # 3	95	10	1.30 E-05	0.51 E-05
Perm # 4	92	10	1.37 E-04	5.39 E-05
Perm # 5	92	10	5.20 E-05	2.05 E-05
Perm # 6	92	10	4.70 E-04	18.5 E-05

Note: Three trials were performed for each permeability tests. The average of the three trials is presented in the table above.

The permeability results for each test are presented in the tables below.

**Table 2: Perm#1 – 95% Compaction
Test Cell 2: SE Corner**

Test No.	Area of sample(A) cm²	Ht. Of sample(L) cm	Constant Head(h) cm	Volume(Q) cm³	Time(t) sec	Permeability(k) cm/s
1	81	11.63	116.3	47	300	1.93E-04
2	81	11.63	116.3	45	300	1.85E-04
3	81	11.63	116.3	44	300	1.81E-04
				Average		1.86E-04

Table 3: Perm#2 – 95% Compaction
Test Cell 2: SE Corner

Test No.	Area of sample(A) cm ²	Ht. Of sample(L) cm	Constant Head(h) cm	Volume(Q) cm ³	Time(t) sec	Permeability(k) cm/s
1	81	11.63	116.3	42	300	1.77E-04
2	81	11.63	116.3	35	300	1.47E-04
3	81	11.63	116.3	28	300	1.18E-04
			Average			1.43E-04

Table 4: Perm#3 - 95% Compaction
Test Cell 2: SE Corner

Test No.	Area of sample(A) cm ²	Ht. Of sample(L) cm	Constant Head(h) cm	Volume(Q) cm ³	Time(t) sec	Permeability(k) cm/s
1	81	11.63	116.3	13	1200	1.34E-05
2	81	11.63	116.3	12	1200	1.23E-05
3	81	11.63	116.3	13	1200	1.34E-05
				Average		1.30E-05

Table 5: Perm#4 – 92% Compaction
Test Cell 2: SE Corner

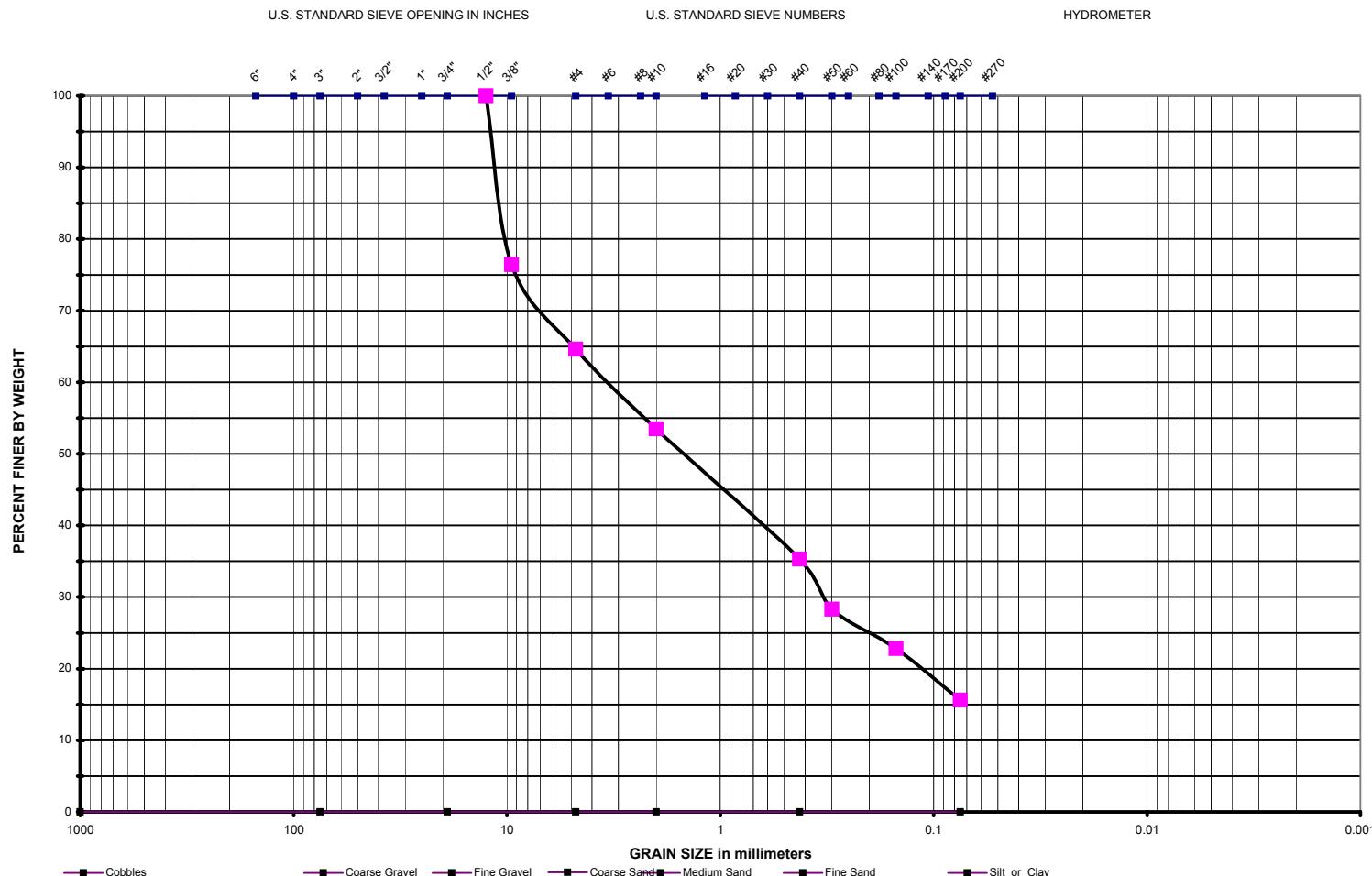
Test No.	Area of sample(A) cm ²	Ht. Of sample(L) cm	Constant Head(h) cm	Volume(Q) cm ³	Time(t) sec	Permeability(k) cm/s
1	81	11.63	116.3	38	300	1.56E-04
2	81	11.63	116.3	32	300	1.32E-04
3	81	11.63	116.3	30	300	1.23E-04
				Average		1.37E-04

Table 6: Perm#5 – 92% Compaction
Test Cell 2: SE Corner

Test No.	Area of sample(A) cm²	Ht. Of sample(L) cm	Constant Head(h) cm	Volume(Q) cm³	Time(t) sec	Permeability(k) cm/s
1	81	11.63	116.3	13	300	5.35E-05
2	81	11.63	116.3	12.5	300	5.14E-05
3	81	11.63	116.3	13	300	5.35E-05
			Average			5.20E-05

Table 7: Perm#6 – 92% Compaction
Test Cell 2: SE Corner

Test No.	Area of sample(A) cm²	Ht. Of sample(L) cm	Constant Head(h) cm	Volume(Q) cm³	Time(t) sec	Permeability(k) cm/s
1	81	11.63	116.3	123	300	5.06E-04
2	81	11.63	116.3	115	300	4.73E-04
3	81	11.63	116.3	106	300	4.36E-04
			Average			4.70E-04



Grain-size Distribution Analysis

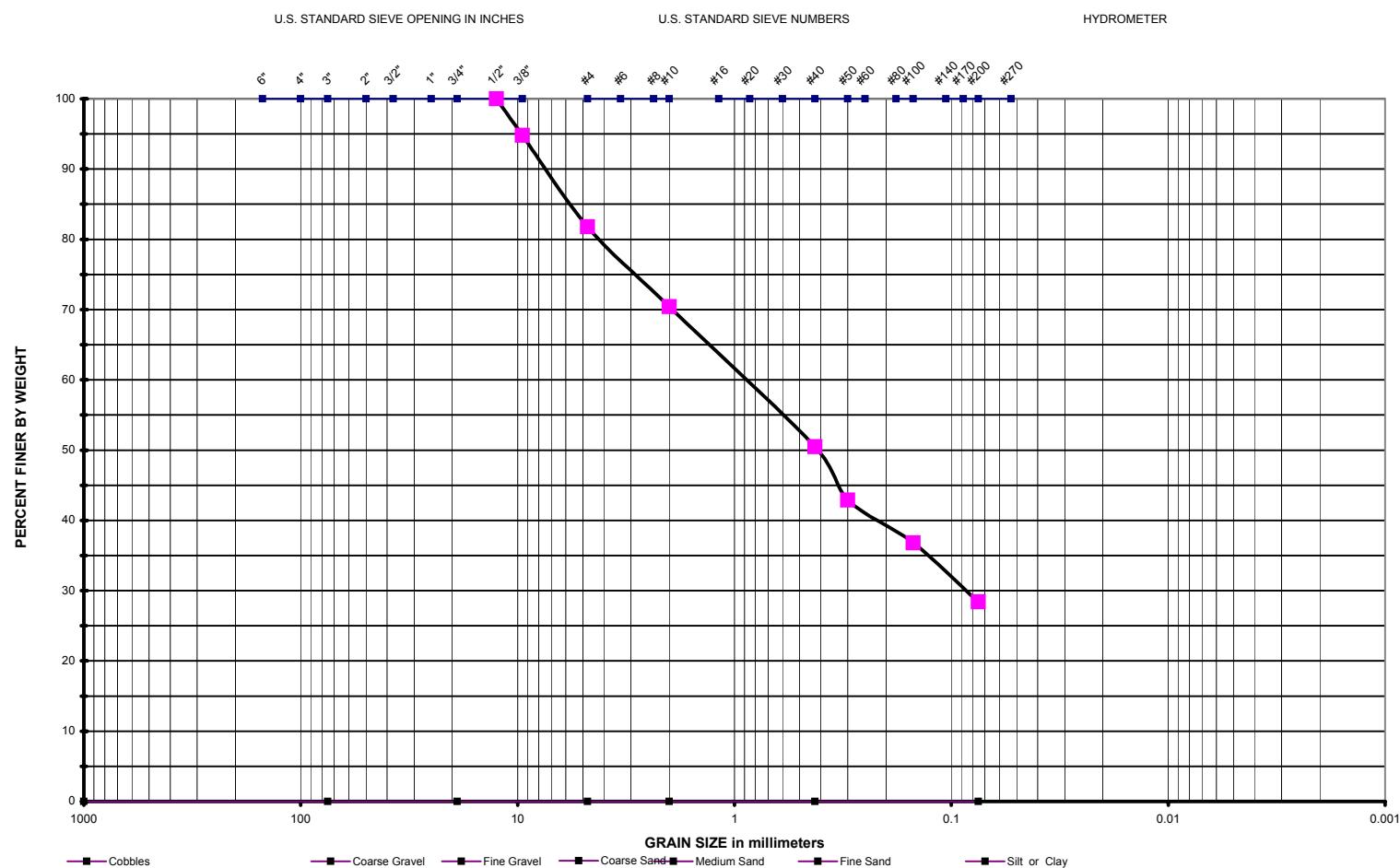
Project name:

EAA

Date: 1/22/2007 N&A Project No. 05-06-0070-101

Figure No. 1

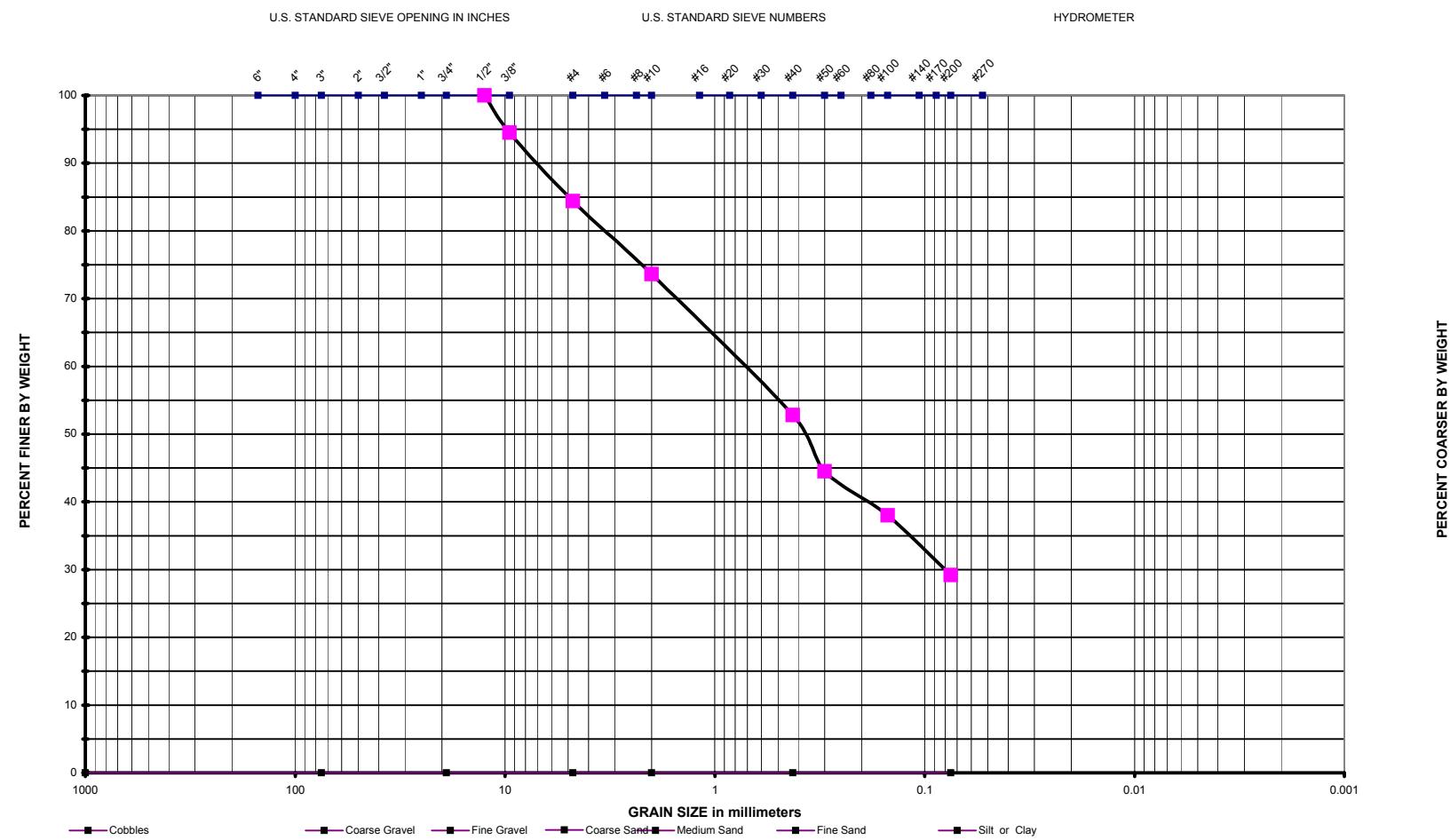




Grain-size Distribution Analysis

No.	Sample Location	Classification	-200	w %	Project name: EAA		
					Date: 1/22/2007	N&A Project No. 05-06-0070-101	Figure No. 2
2	Test Cell 2 - SE Corner	SM	28.4	16	-	-	-

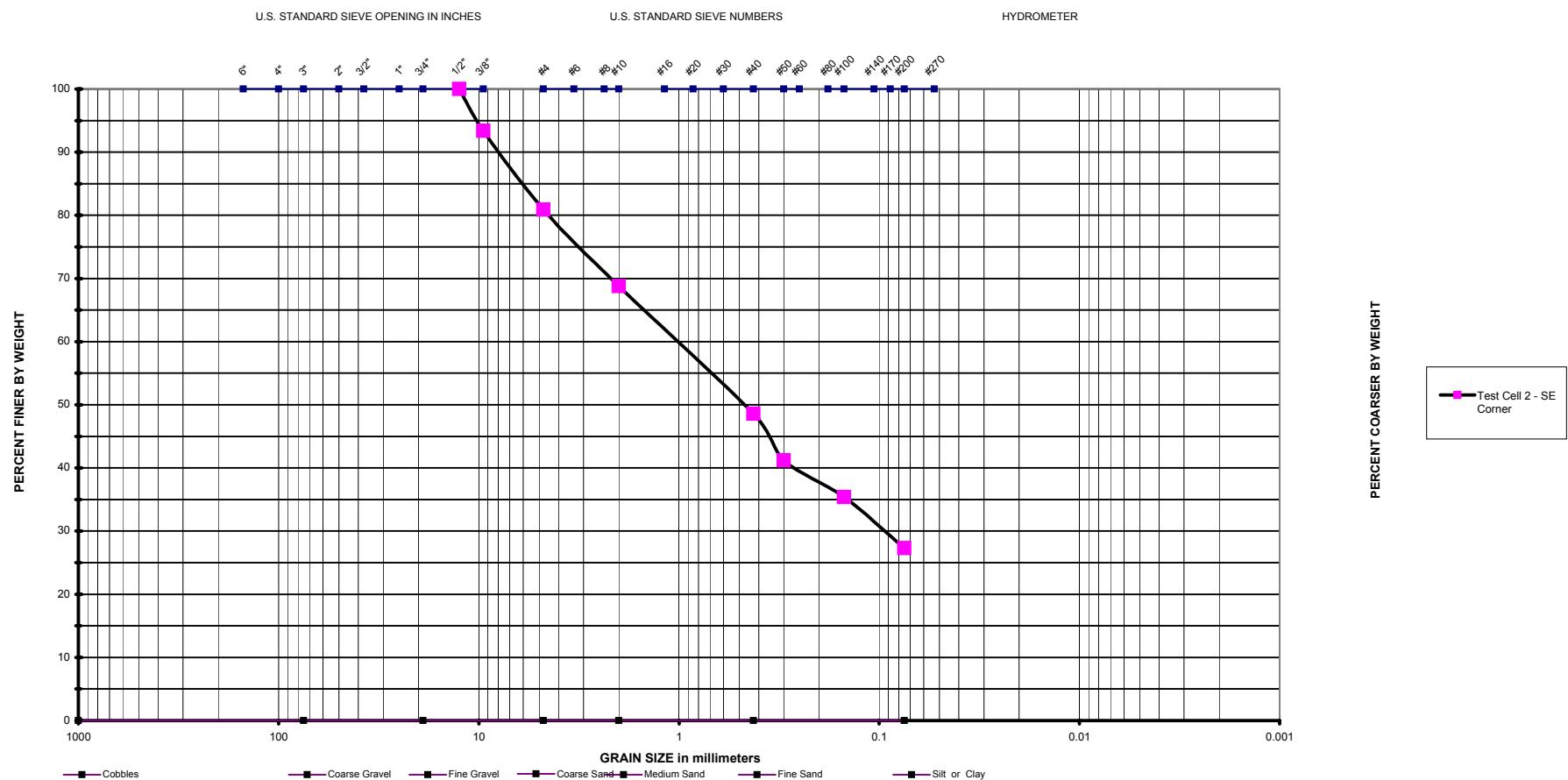




Grain-size Distribution Analysis

No.	Sample Location	Classification	-200	w %	Project name: EAA		
					Date: 1/22/2007	N&A Project No. 05-06-0070-101	Figure No. 3
3	Test Cell 2 - SE Corner	SM	-200	16	-	-	-





Grain-size Distribution Analysis

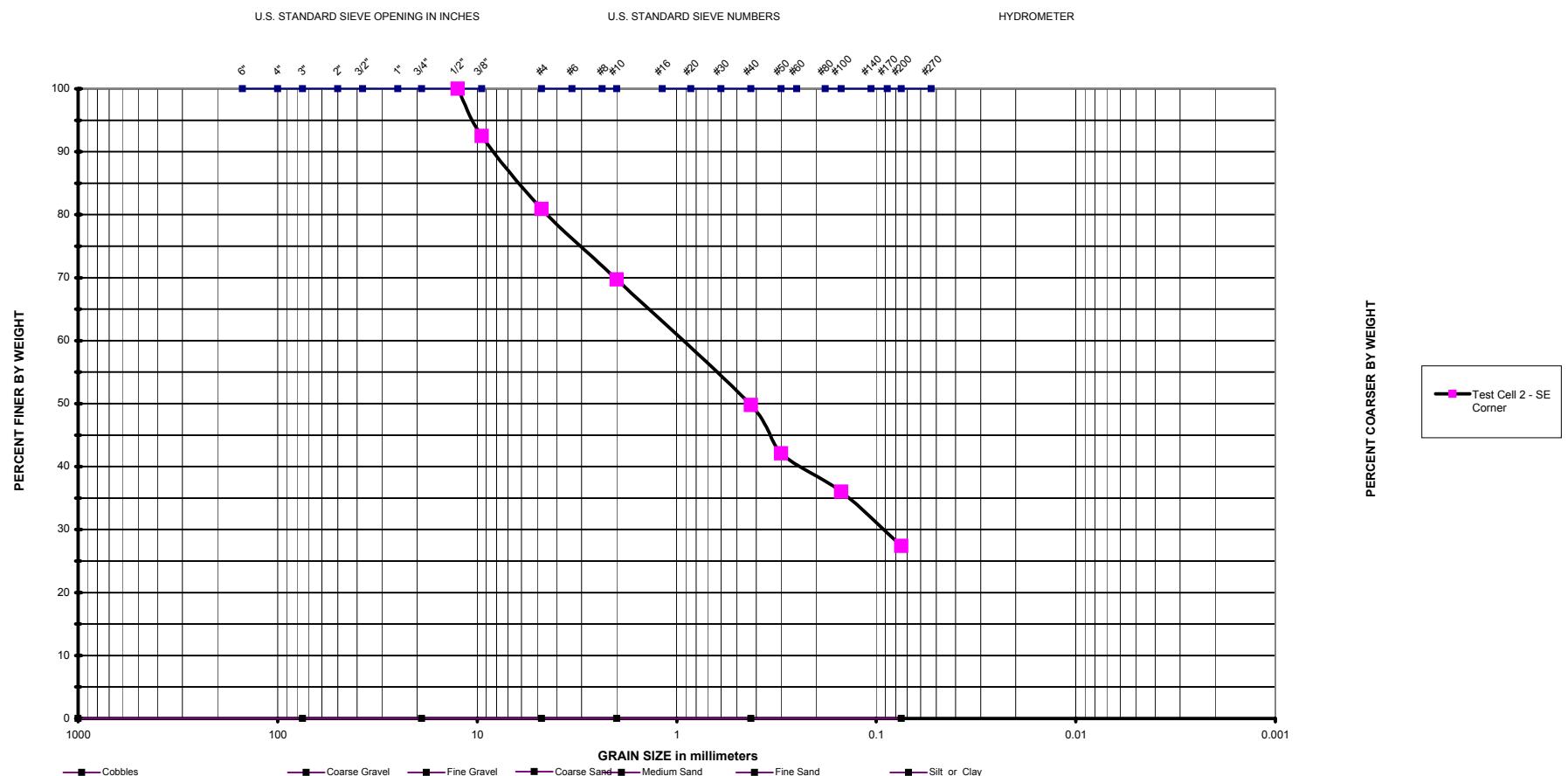
Project name: EAA

Date: 1/22/2007 N&A Project No. 05-06-0070-101

Figure No. 4

No.	Sample Location	Classification	-200	w %	LL	PL	PI
4	Test Cell 2 - SE Corner	SM	27.3	16	-	-	-





Grain-size Distribution Analysis

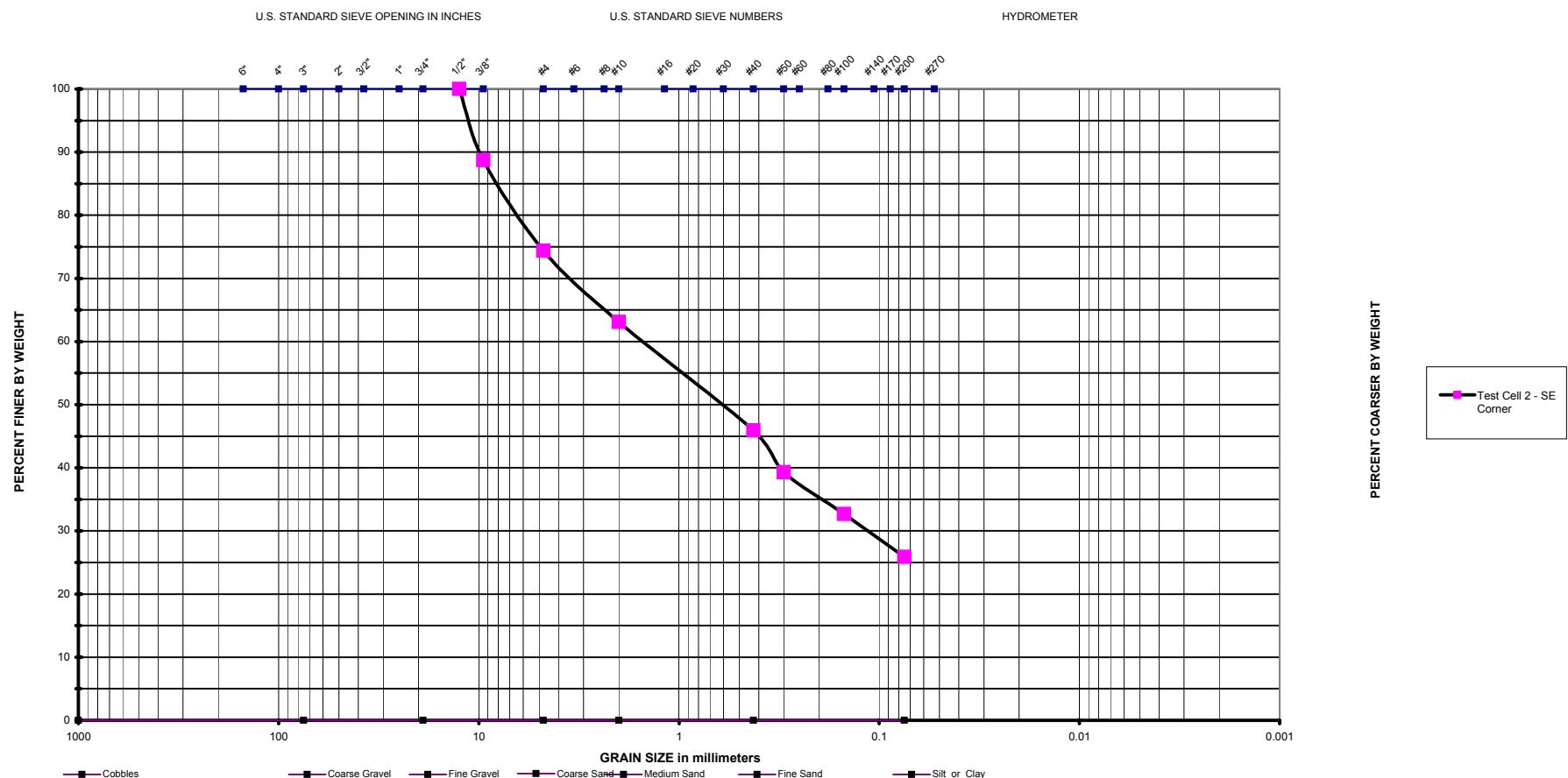
Project name: EAA

Date: 1/22/2007 N&A Project No. 05-06-0070-101

Figure No. 5

No.	Sample Location	Classification	-200	w %	LL	PL	PI
5	Test Cell 2 - SE Corner	SM	27.4	16	-	-	-





Grain-size Distribution Analysis

Project name: **EAA**

Date: **1/22/2007** N&A Project No. **05-06-0070-101**

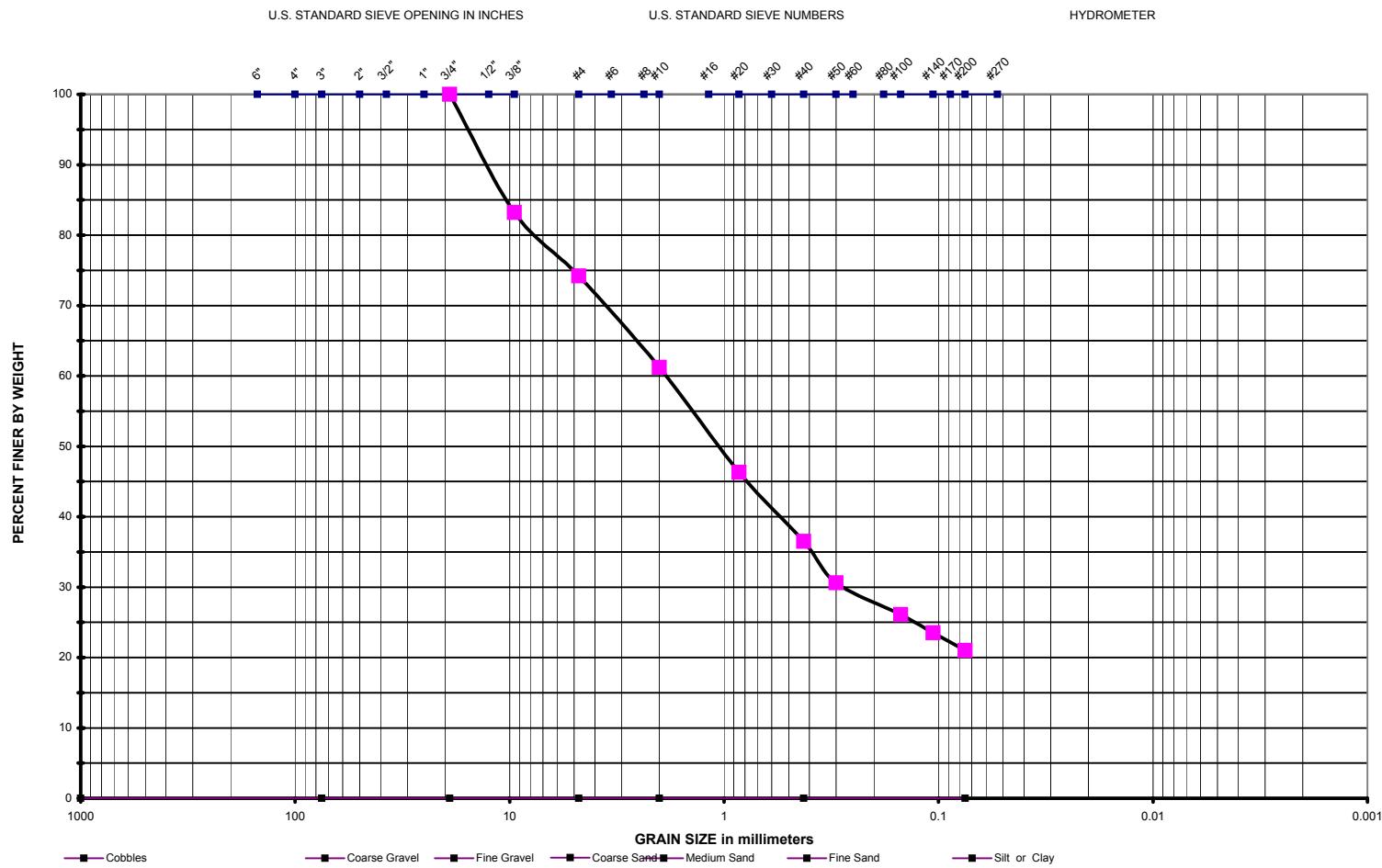
Figure No. **9**

No.	Sample Location	Classification	-200	w %	LL	PL	PI
6	Test Cell 2 - SE Corner	SM	25.9	16	-	-	-



LABORATORY TEST RESULTS FOR
PROJECT NAME: EAA RESERVOIR A-1
PROJECT No: 05-06-0070-101
WORK ORDER NO.16, SUPPLEMENT 2
N&A

Boring No	Approximate Sample Depth (feet)	Passing Sieve Number (%)					Moisture Content (%)	Organic Content (%)	Atterberg Limits		AASHTO or U.S.C.S. Classification
		10	40	60	100	200			LL	PI	
CB-450	7.0'-8.5'	61	37	31	26	21	16	-	-	-	SM
CB-450	8.5'-10.0'	47	29	25	22	18	22	-	-	-	SM
CB-450	13.5'-15.0'	88	69	60	51	34	28	-	-	-	SM
CB-450	28.5'-30.0'	61	52	48	33	10	15	-	-	-	SP-SM
CB-451	11.5'-13.0'	53	25	18	14	10	16	-	-	-	SP-SM
CB-451	33.5'-35.0'	53	34	30	22	11	13	-	-	-	SP-SM
CB-452	6.0'-7.5'	46	25	20	16	12	14	-	-	-	SP-SM
CB-452	18.5'-20.0'	80	51	44	37	21	22	-	-	-	SM
CB-452	33.5'-35.0'	73	59	50	28	9	18	-	-	-	SP-SM
CB-452	48.5'-50.0'	87	45	30	18	8	16	-	-	-	SP-SM
CB-453	7.0'-8.5'	47	31	27	24	20	19	-	-	-	SM
CB-453	13.5'-15.0'	73	49	43	39	34	20	-	-	-	SM
CB-453	23.5'-25.0'	86	63	51	37	16	23	-	-	-	SM
CB-453	43.5'-45.0'	58	44	39	32	8	14	-	-	-	SP-SM
CB-462	12.0'-13.5'	-	-	-	-	-	21	-	33	9	-
CB-462	25.5'-27.0'	-	-	-	-	7	21	-	-	-	-
CB-462	27.0'-28.5'	-	-	-	-	8	16	-	-	-	-
CB-462	39.0'-40.5'	-	-	-	-	13	7	-	-	-	-
CB-462	43.5'-45.0'	-	-	-	-	18	7	-	-	-	-
CB-463	3.0'-4.5'	-	-	-	-	18	8	-	-	-	-
CB-463	15.0'-16.5'	-	-	-	-	27	16	-	-	-	-
CB-463	18.0'-19.5'	-	-	-	-	-	24	-	29	9	-
CB-463	22.5'-24.0'	-	-	-	-	26	33	-	-	-	-
CB-463	34.5'-36.0'	-	-	-	-	28	24	-	-	-	-

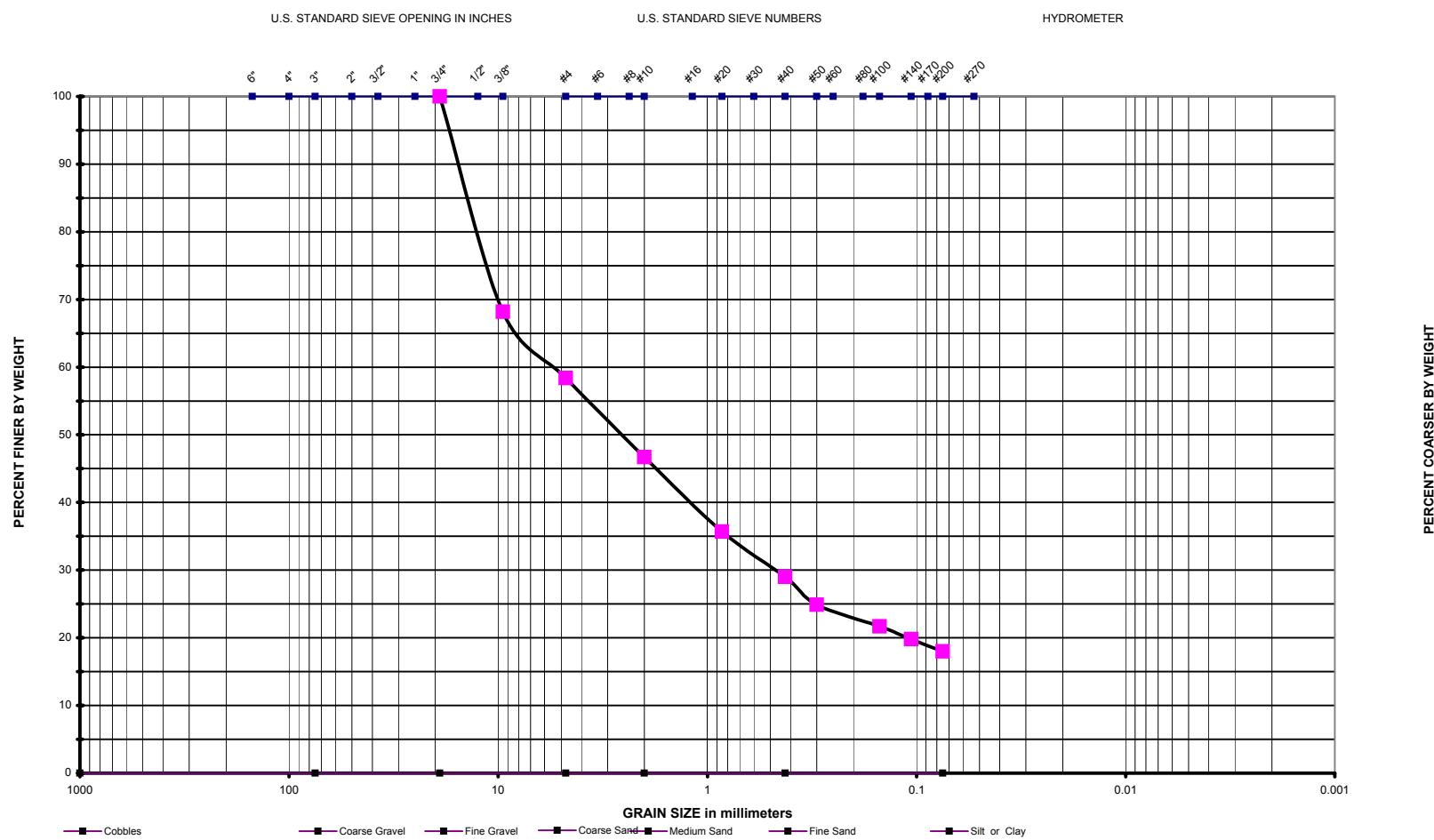


PERCENT COARSER BY WEIGHT

CB-450@7'-8.5'

Grain-size Distribution Analysis

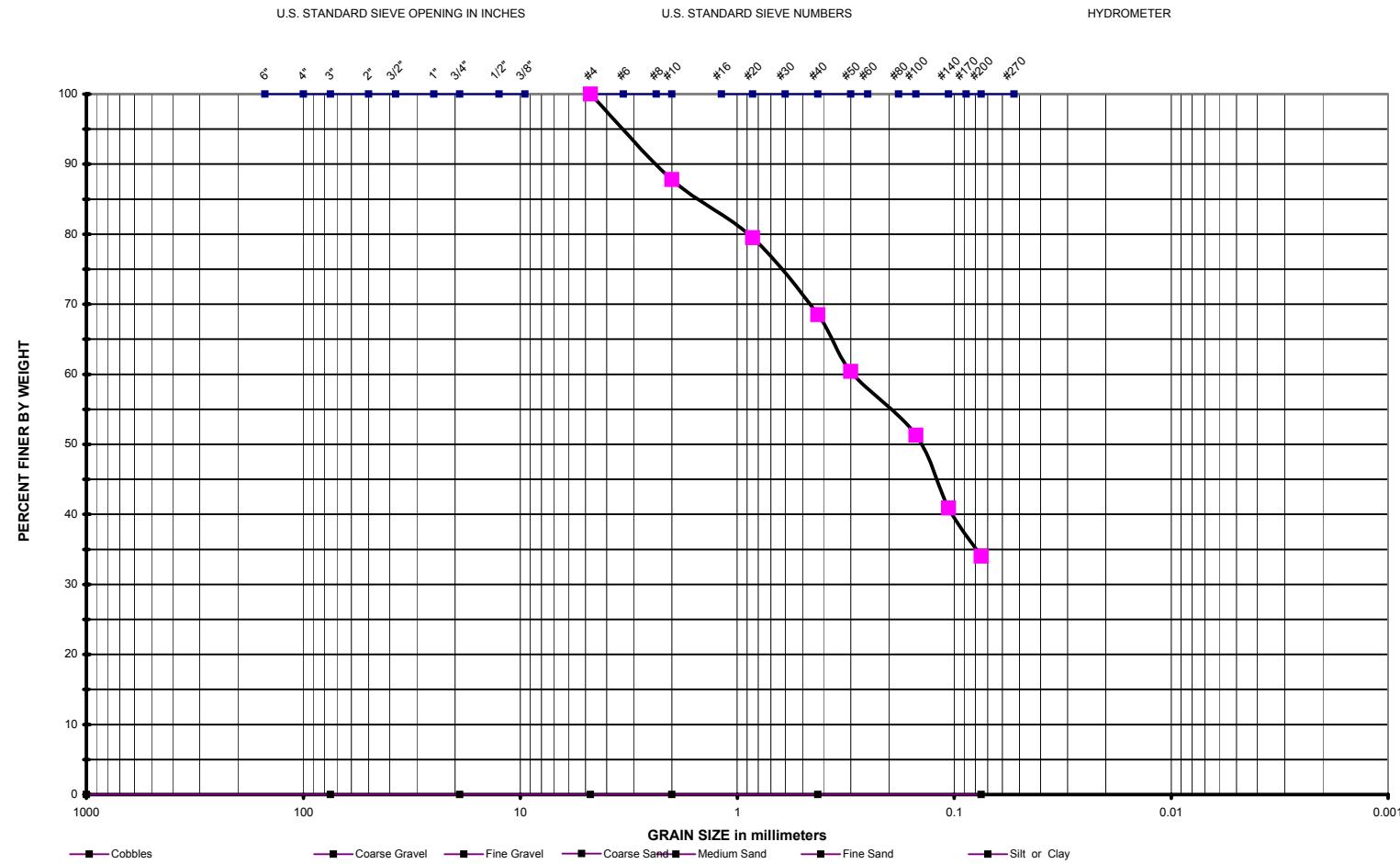




Grain-size Distribution Analysis

No.	Sample Location	Classification	-200	w %	Project name: EAA		
					Date: 1/29/2007	N&A Project No. 05-06-0070-101	Figure No. 2
2	CB-450@8.5'-10'	SM	-200	18	22	-	-

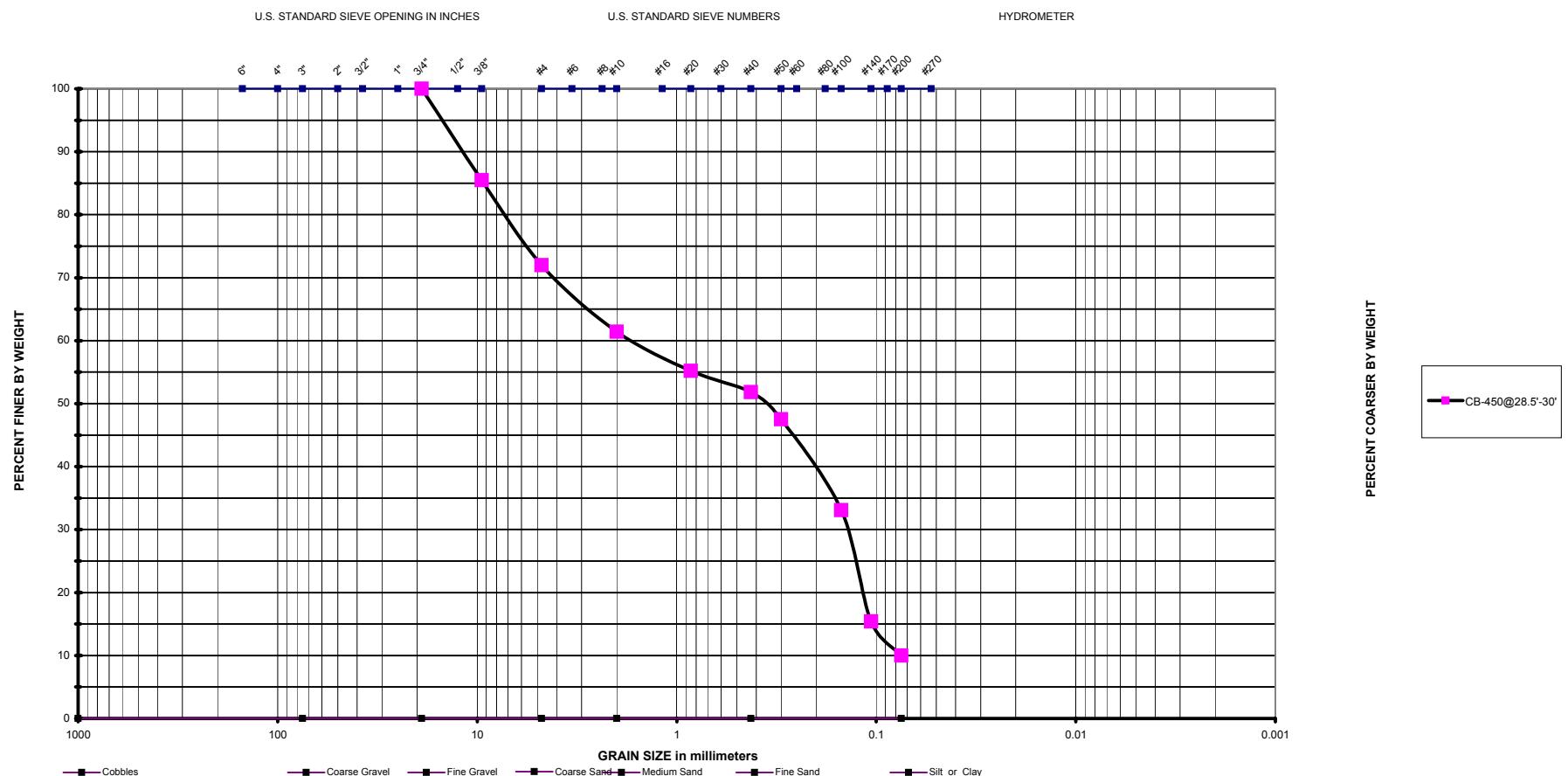




Grain-size Distribution Analysis

No.	Sample Location	Classification	-200	w %	Project name: EAA		
					Date: 1/29/2007	N&A Project No. 05-06-0070-101	Figure No. 3
3	CB-450@13.5'-15'	SM	-200	34	28	-	-





PERCENT COARSER BY WEIGHT

CB-450@28.5'-30'

Grain-size Distribution Analysis

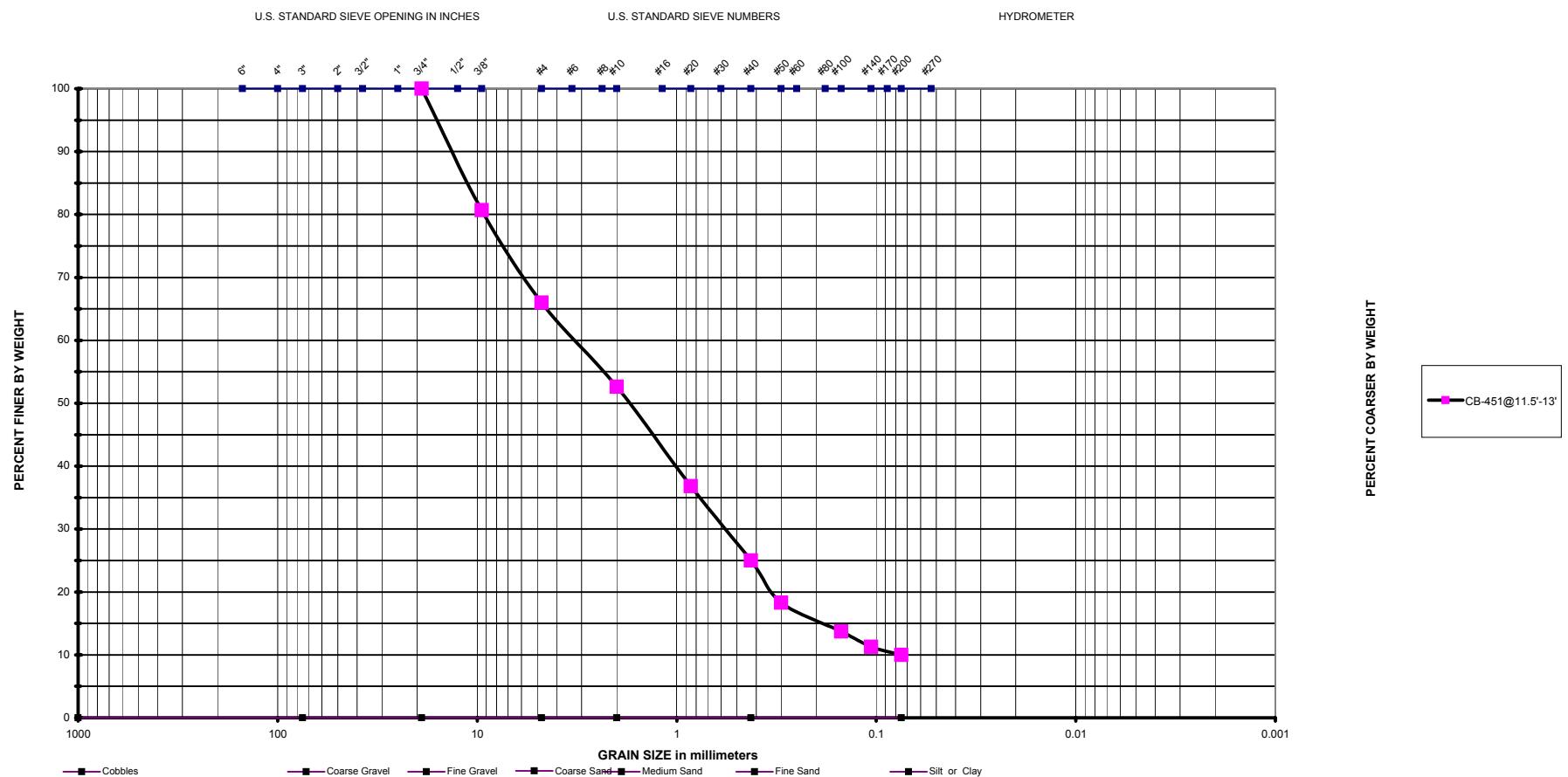
Project name: EAA

Date: 1/29/2007 N&A Project No. 05-06-0070-101

Figure No. 4

No.	Sample Location	Classification	-200	w %	LL	PL	PI
4	CB-450@28.5'-30'	SP-SM	10	15	-	-	-





Grain-size Distribution Analysis

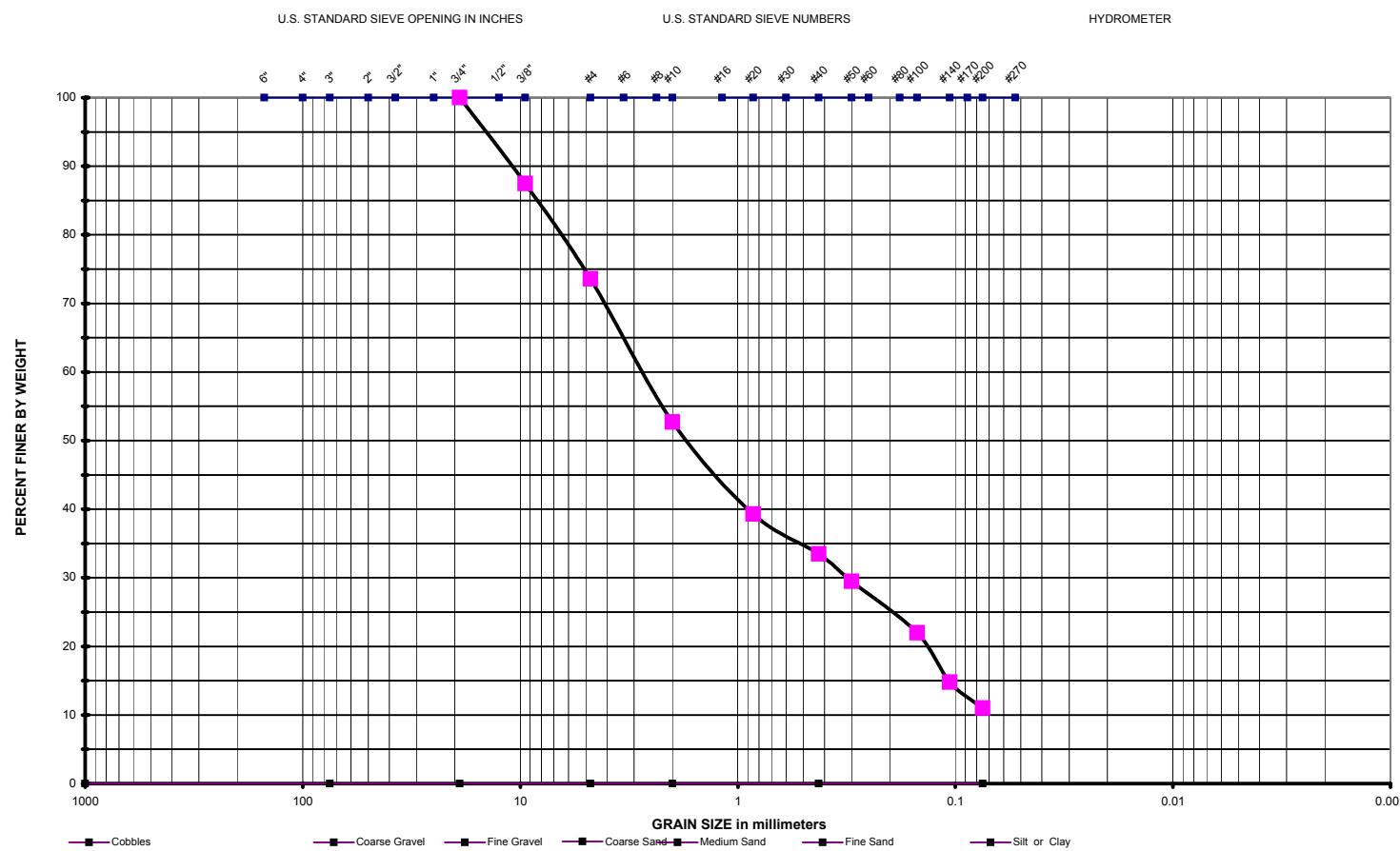
Project name: EAA

Date: 1/29/2007 N&A Project No. 05-06-0070-101

Figure No. 5

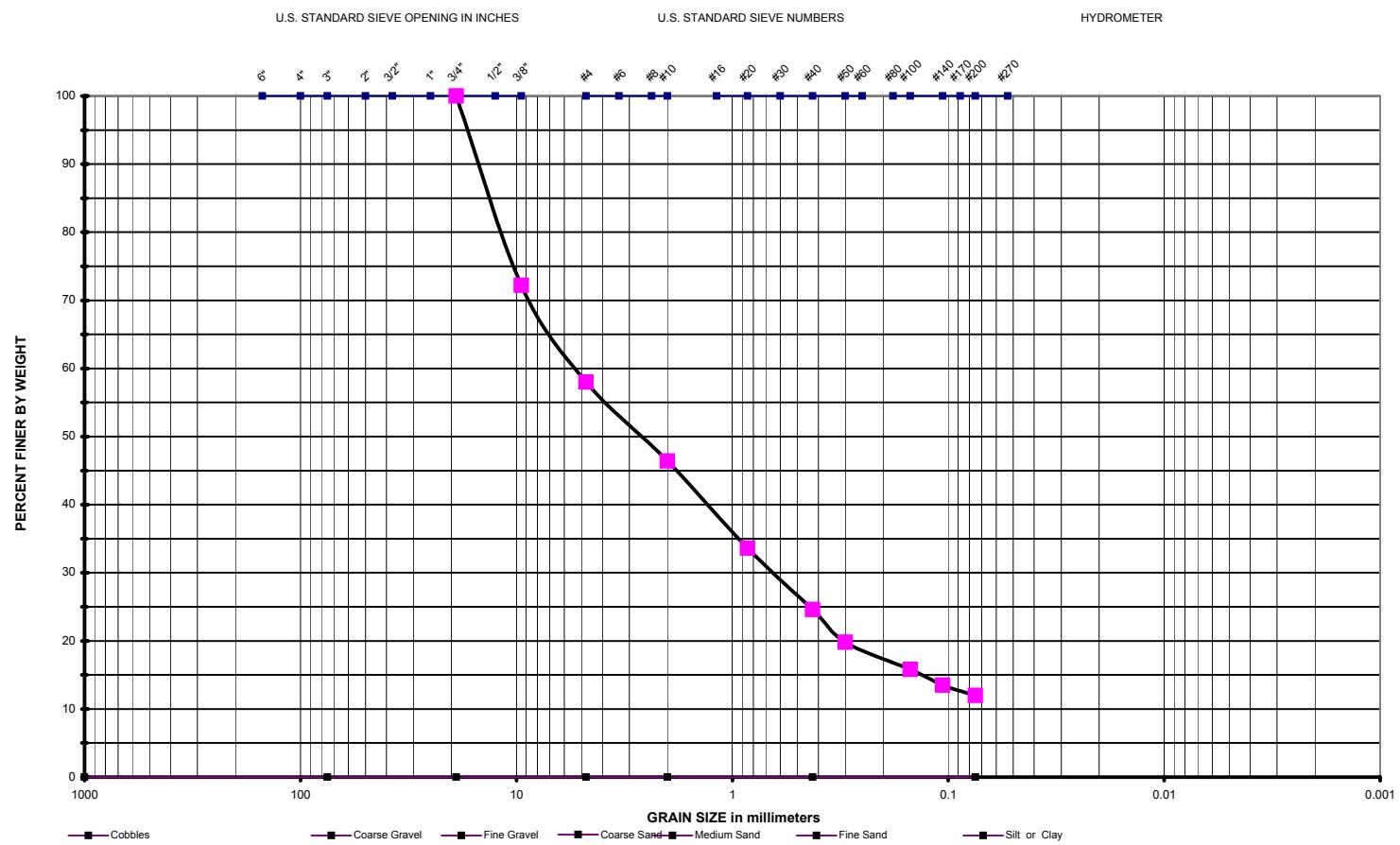
No.	Sample Location	Classification	-200	w %	LL	PL	PI
5	CB-451@11.5'-13'	SP-SM	10	16	-	-	-





Grain-size Distribution Analysis





PERCENT COARSER BY WEIGHT

CB-452@6'-7.5'

Grain-size Distribution Analysis

Project name:

EAA

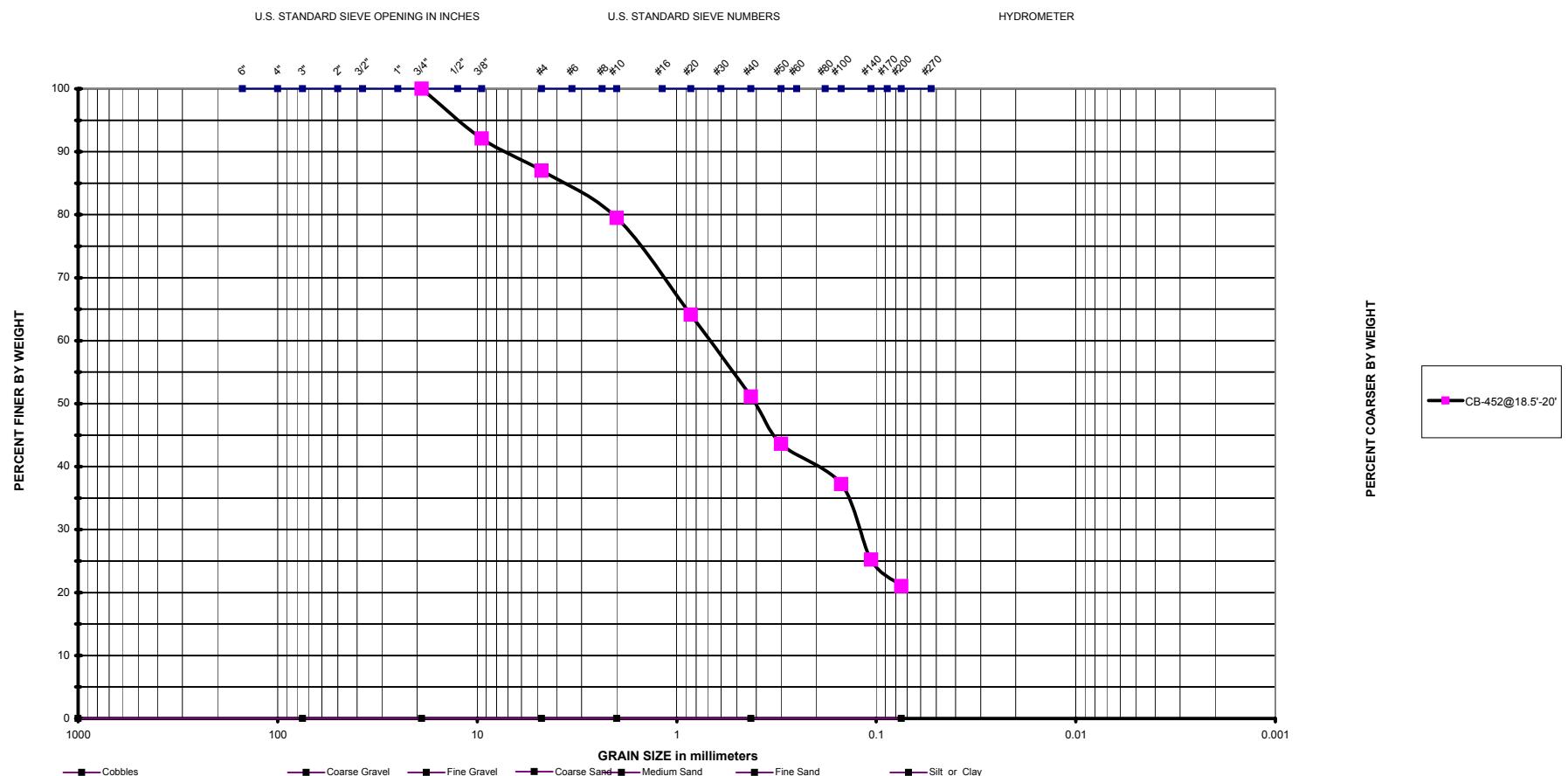
Date: 1/29/2007

N&A Project No. 05-06-0070-101

Figure No. 7

No.	Sample Location	Classification	-200	w %	LL	PL	PI
7	CB-452@6'-7.5'	SP-SM	12	14	-	-	-





PERCENT COARSER BY WEIGHT

CB-452@18.5'-20'

Grain-size Distribution Analysis

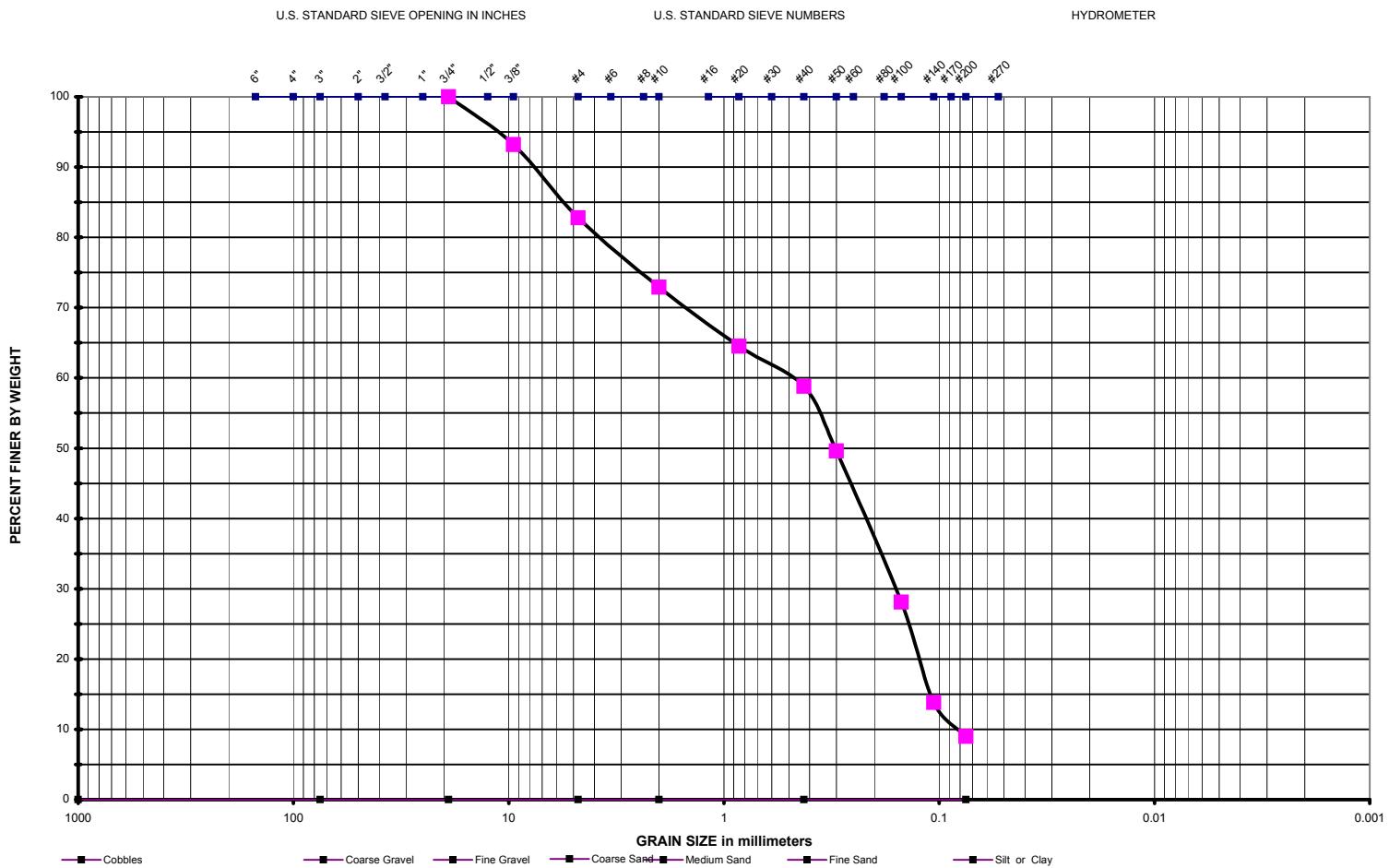
Project name: EAA

Date: 1/29/2007 N&A Project No. 05-06-0070-101

Figure No. 8



No.	Sample Location	Classification	-200	w %	LL	PL	PI
8	CB-452@18.5'-20'	SM	21	22	-	-	-



Grain-size Distribution Analysis

Project name:

EAA

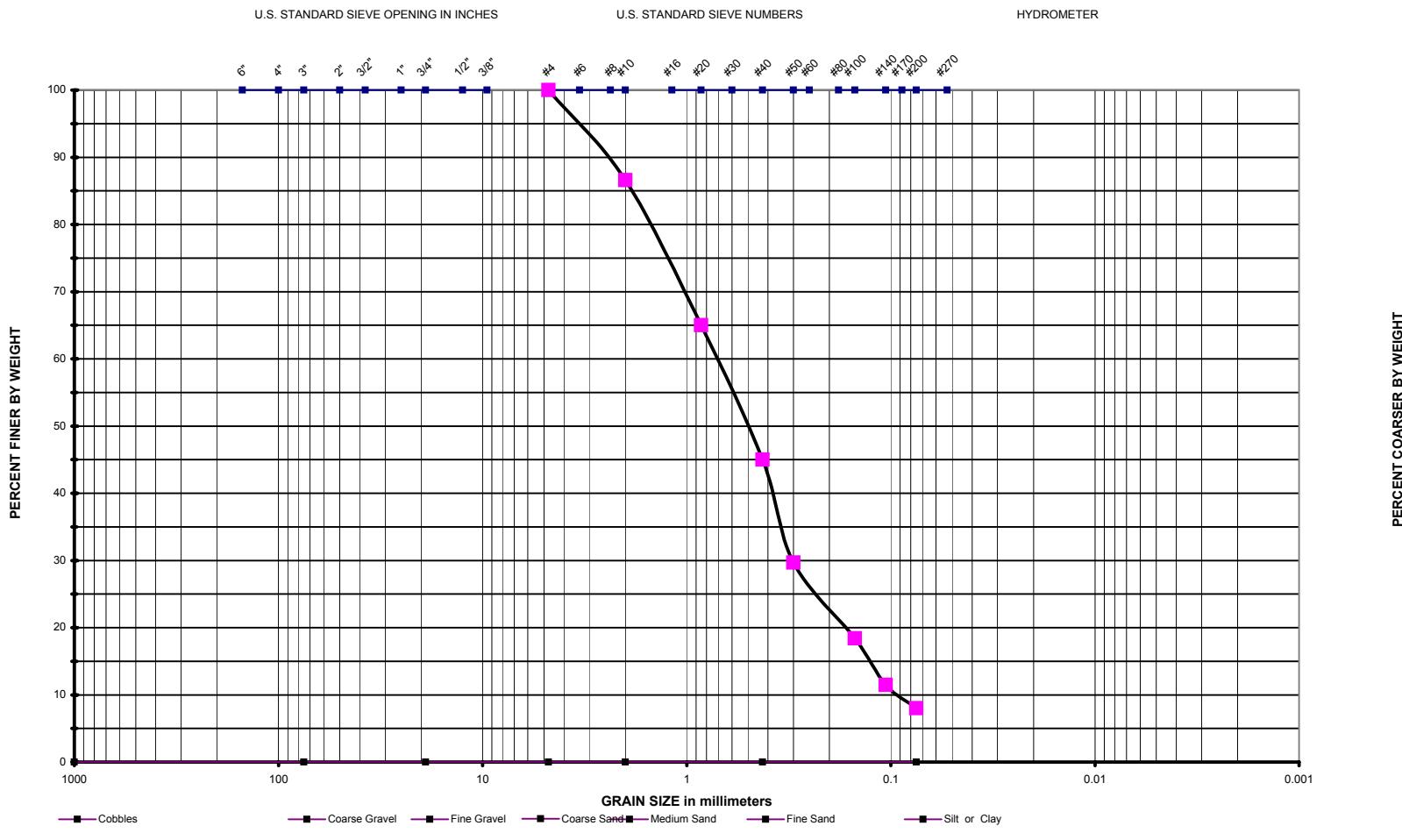
Date: 1/29/2007

N&A Project No. 05-06-0070-101

Figure No. 9

No.	Sample Location	Classification	-200	w %	LL	PL	PI
9	CB-452@33.5'-35'	SP-SM	9	18	-	-	-





Grain-size Distribution Analysis

Project name:

EAA

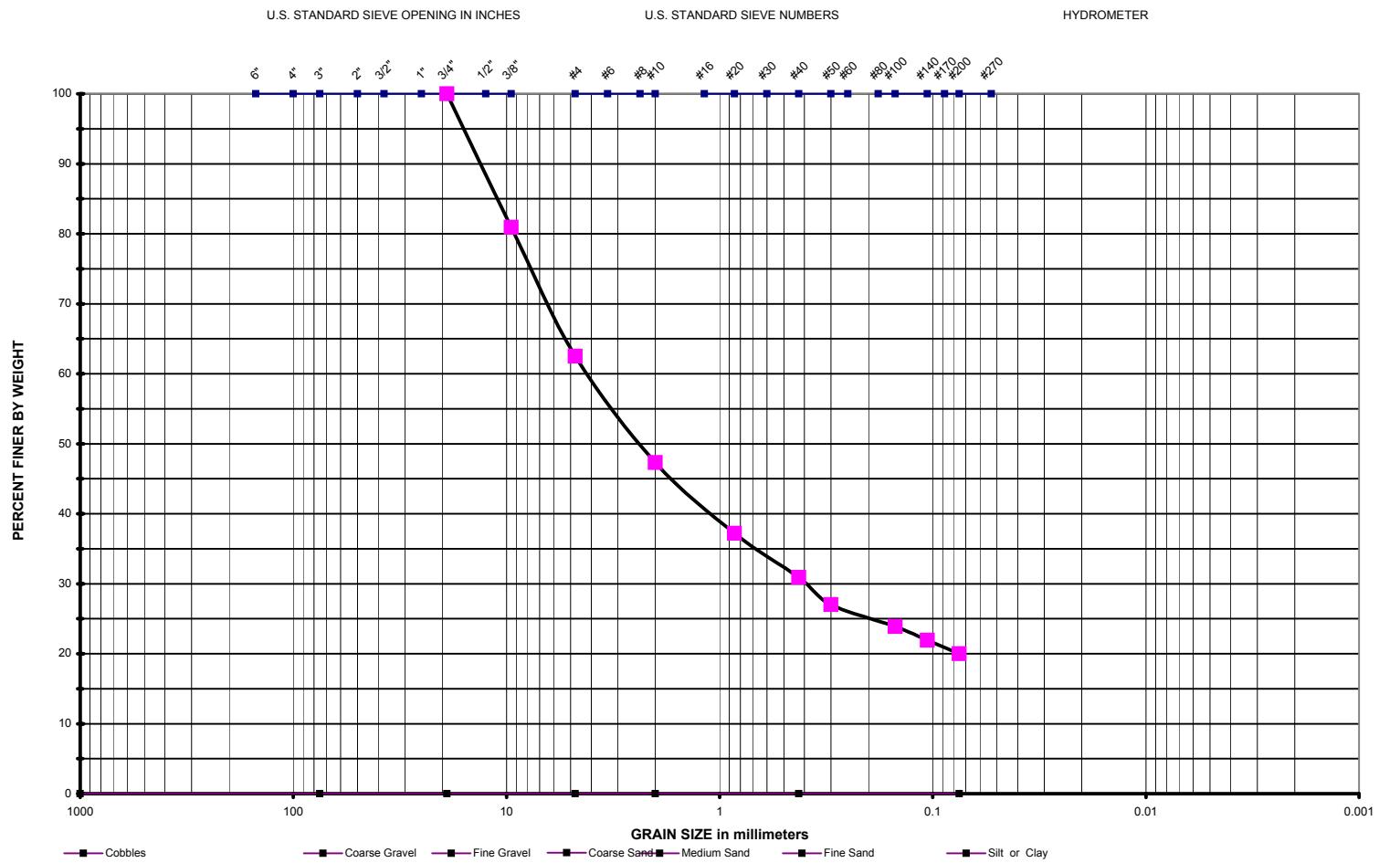
Date: 1/29/2007

N&A Project No. 05-06-0070-101

Figure No. 10

No.	Sample Location	Classification	-200	w %	LL	PL	PI
10	CB-452@48.5'-50'	SP-SM	8	16	-	-	-



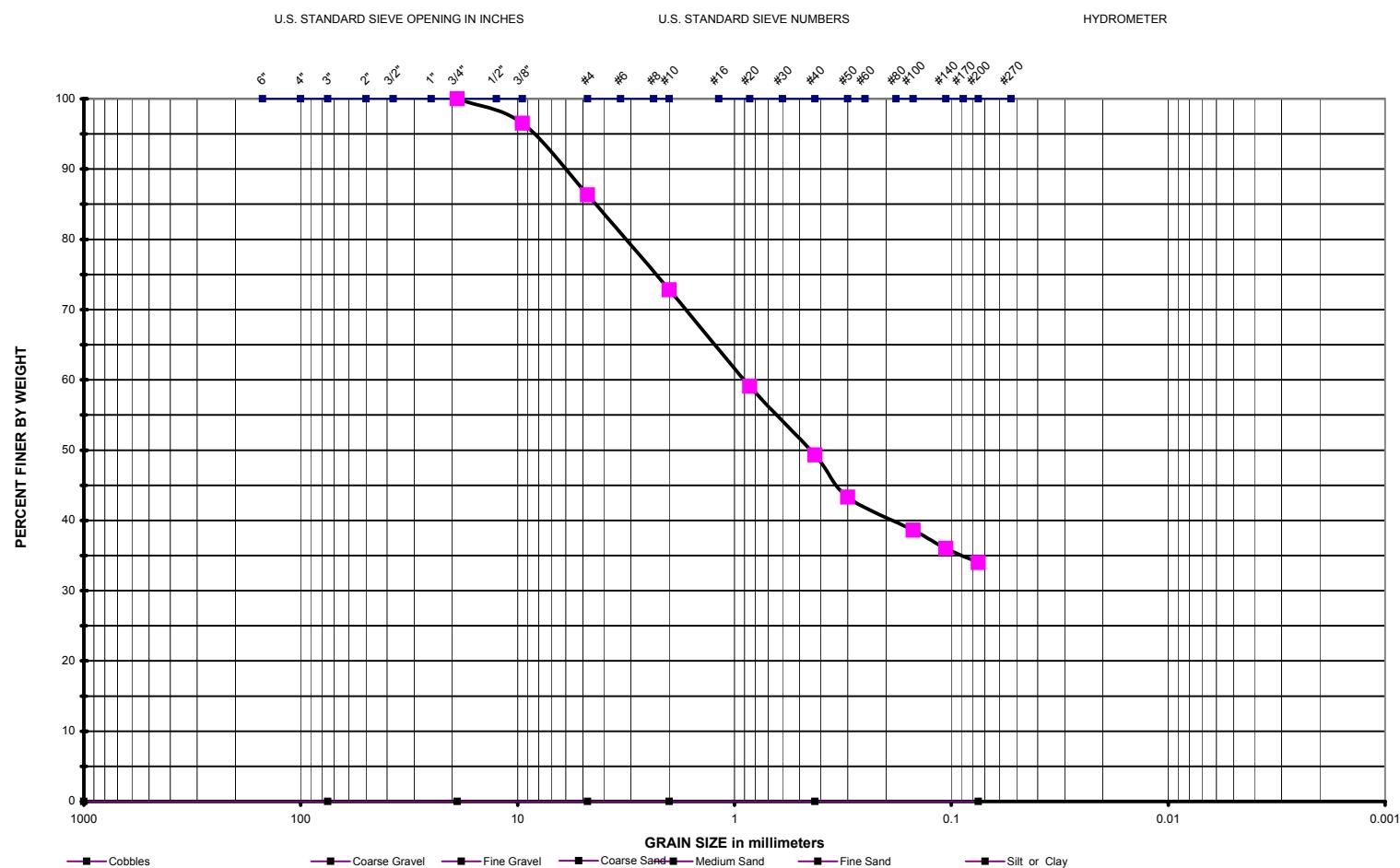


PERCENT COARSER BY WEIGHT

CB-453@7'-8.5'

Grain-size Distribution Analysis





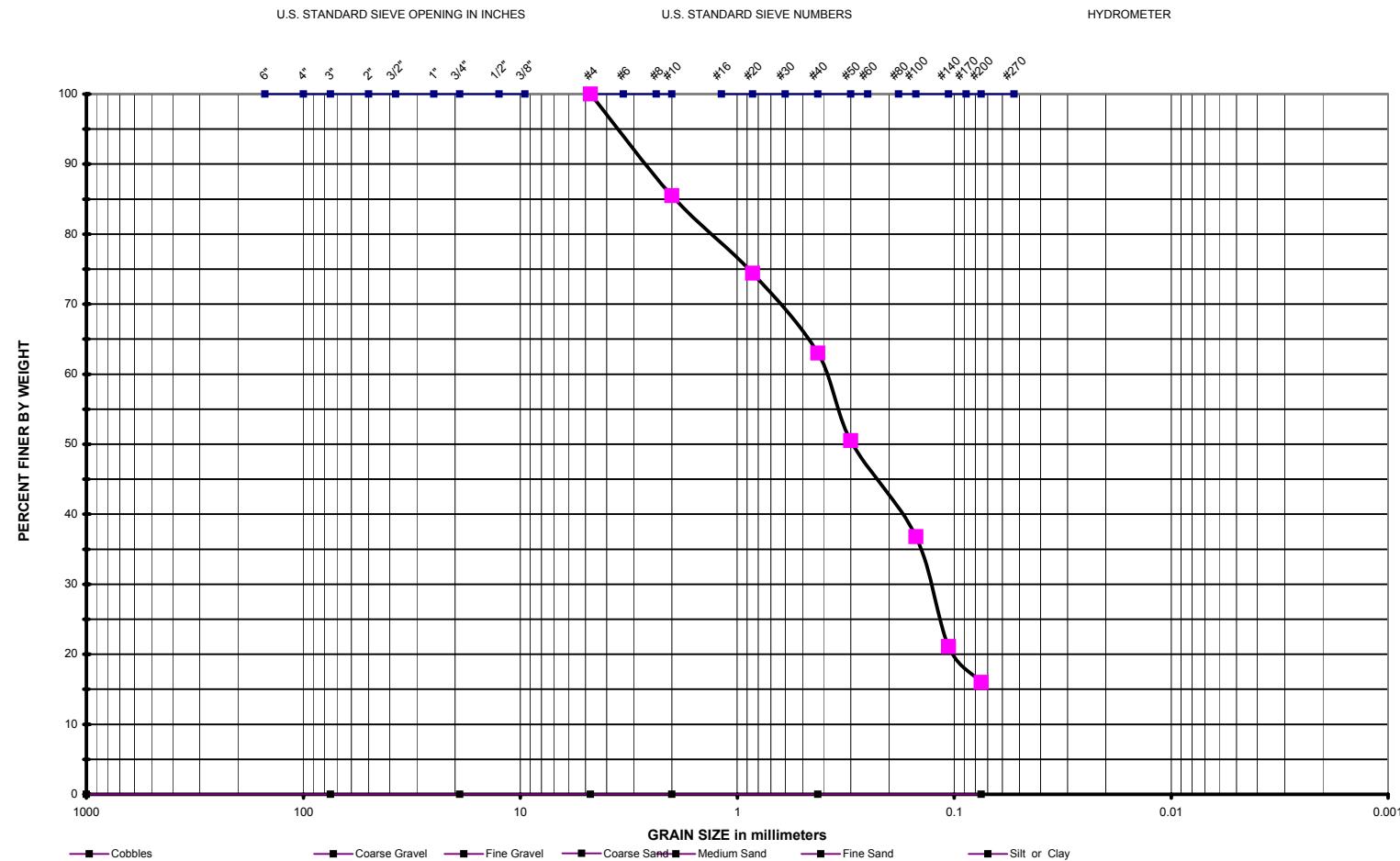
PERCENT COARSER BY WEIGHT

CB-453@13.5'-15'

Grain-size Distribution Analysis

No.	Sample Location	Classification	-200	w %	Project name: EAA		
					Date: 1/29/2007	N&A Project No. 05-06-0070-101	Figure No. 12
2	CB-453@13.5'-15'	SM	-200	34	20	-	-

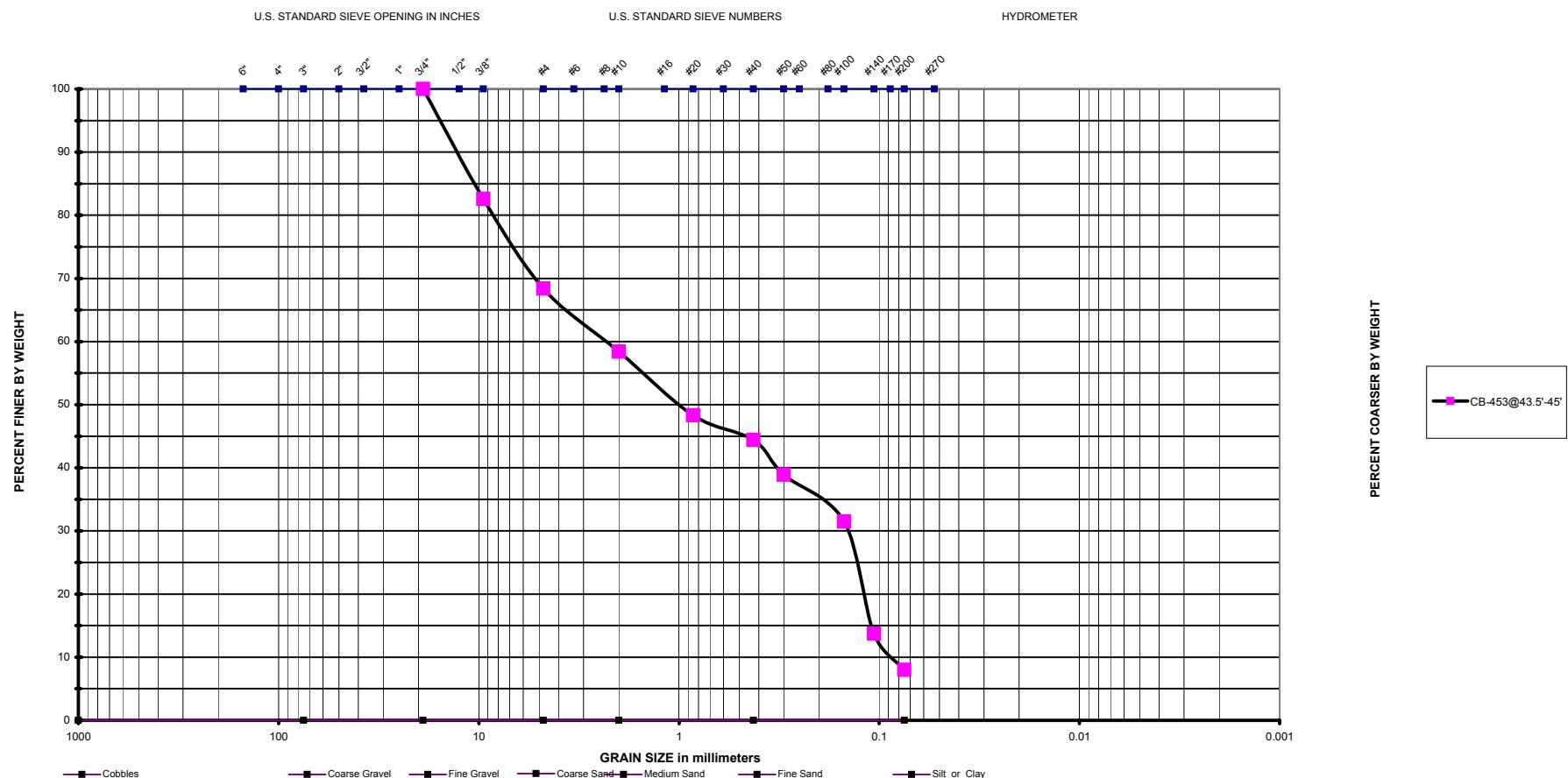




Grain-size Distribution Analysis

No.	Sample Location	Classification	-200	w %	Project name: EAA		
					Date: 1/29/2007	N&A Project No. 05-06-0070-101	Figure No. 13
3	CB-453@23.5'-25'	SM	-200	16	23	-	-





Grain-size Distribution Analysis

Project name: EAA

Date: 1/29/2007 N&A Project No. 05-06-0070-101

Figure No. 14

No.	Sample Location	Classification	-200	w %	LL	PL	PI
4	CB-453@43.5'-45'	SP-SM	8	14	-	-	-



LIMESTONE UNCONFINED COMPRESSION STRENGTH TEST RESULTS

Boring Location	Depth (ft)	Length (inch)	Diameter (inch)	L/D Ratio	Area (sq. inch)	Maximum Load (lbs)	Strength (psi)
CB-0440	25.0'-30.0'	5.15	2.39	2.15	4.49	22180	4940
CB-0441	26.9'-31.9'	5.04	2.39	2.10	4.49	19180	4270
CB-0443	23.8'-28.8'	5.10	2.39	2.13	4.49	16280	3630