PERIODIC SAFETY FACTOR ASSESSMENT
391-3-4-.10(4) and 40 C.F.R. PART 257.73
PLANT YATES ASH POND 2 (AP-2)
GEORGIA POWER COMPANY

The Federal CCR Rule, and, for Existing Surface Impoundments where applicable, the Georgia CCR Rule (391-3-4-.10) require the owner or operator of a CCR surface impoundment to conduct initial and periodic safety factor assessments. *See* 40 C.F.R. § 257.73(e); Ga. Comp. R. & Regs. r. 391.3-4-.10(4)(b)[1]. The owner or operator must conduct an assessment of the CCR unit and document that the minimum safety factors outlined in § 257.73(e)(1)(i) through (iv) for the critical embankment section are achieved. In addition, the Rules require a subsequent assessment be performed within 5 years of the previous assessment. *See* 40 C.F.R. § 257.73(f)(3); Ga. Comp. R. & Regs. r. 391.3-4-.10(4)(b) [1].

The CCR surface impoundment known as Plant Yates AP-2 is located on Plant Yates property, northwest of Newnan, Georgia. AP-2 is formed by an engineered cross-valley embankment. The critical section of AP-2 was previously determined to be at the midpoint of the cross-valley embankment. Under current conditions, the midpoint of the embankment remains the critical section. The Notification of Intent to Initiate Closure was placed in the Operating Record on 04/17/2019 and closure has been designed to have no negative impacts on the stability of the perimeter embankment. AP-2 is currently undergoing closure-by-removal, and all CCR has been removed from against the embankment and the unit no longer impounds water against the embankment on a regular basis, only containing periodic limited amounts of water after periods of rain. As a result, a long-term maximum storage pool analysis is no longer applicable.

The analyses used to determine the minimum safety factor for the critical section resulted in the following minimum safety factors:

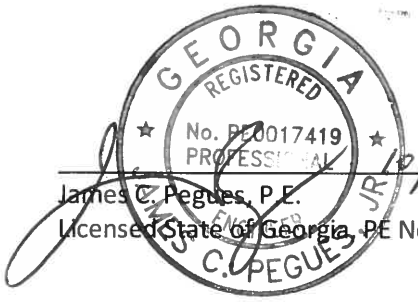
Loading Condition	Minimum Calculated Safety Factor	Minimum Required Safety Factor
Maximum Surcharge Pool (Static)	1.9	1.4
Seismic	1.7	1.0

The embankment of AP-2 is constructed of compacted clayey and silty sands that are not susceptible to liquefaction. Therefore, a minimum liquefaction safety factor determination was not required.

[1] In a typographical error, 391.3-4.10(4)(b) references the "structural integrity criteria in 40 CFR 247.73," when the reference to such criteria should be 40 CFR 257.73.

This assessment is supported by appropriate engineering calculations which are attached.

I hereby certify that the safety factor assessment was conducted in accordance with 40 C.F.R. Part 257.73 (e)(1).



10/15/2021

James C. Pegues, P.E.
Licensed State of Georgia, PE No. 17419

Southern Company

Technical and Project Solutions Calculation

Calculation Number: TV-YT-GPC1142841-001

Project/Plant: Plant Yates	**Unit(s):** 6-7	**Discipline/Area:** Env. Solutions
Title/Subject: Periodic Factor of Safety Assessment for CCR Rule		
Purpose/Objective: Determine the Factor of Safety of the Ash Pond 2 Dike		
System or Equipment Tag Numbers: n/a	**Originator:** Jacob A. Jordan, P.E.	

Contents

Revision Record

Rev. No.	Description	Originator Initial / Date	Reviewer Initial / Date	Approver Initial / Date
0	Issued for Information	JAJ/06-18-21	JCP/06-18-21	JCP/06-18-21

Notes:

Purpose of Calculation

The Eugene A. Yates Power Plant (Plant Yates) was once a seven-unit, coal fired, power generation facility. Units 1-5 have been demolished and Units 6 and 7 have been converted to natural gas. Ash Pond 2, constructed 1966 to 1967, was designed to receive and store coal combustion residuals produced during the electric power generating. Plant Yates ceased burning coal in 2015 and thus ceased sluicing ash to Ash Pond 2 at that time.

The purpose of this calculation is to provide an updated slope stability factor of safety assessment of the Plant Yates Ash Pond 2 dam under conditions prescribed by the EPA CCR rule.

Summary of Conclusions

The following table summarizes the factors of safety resulting from the slope stability analyses. The results indicate the safety factors of the Ash Pond 2 dam meet or exceed the minimum criteria set forth in the structural integrity criteria for existing CCR surface impoundments, 40 CFR 257.73.

Factor of Safety Summary Table

Loading Condition	Minimum Calculated Safety Factor	Minimum Required Safety Factor
Maximum Surcharge Pool (Static)	1.9	1.4
Seismic	1.7	1.0

Methodology

The calculation was performed using the following methods and software:

- GeoStudio 2021 R2 version 11.1.1.22085 Copyright 1991-2021, GEO-SLOPE International, Ltd.
- Strata (Version 0.8.0),University of Texas, Austin
- Morgenstern-Price analytical method

Criteria and Assumptions

The slope stability models were run using the following assumptions and design criteria:

- Seismic site response was determined using a one-dimensional equivalent linear site response analysis. The analysis was performed using Strata and utilizing random vibration theory. The input motion consisted of the USGS published 2014 Uniform Hazard Response Spectrum (UHRS) for Site Class B/C at a 2% Probability of Exceedance in 50 years. The UHRS was converted to a Fourier Amplitude Spectrum, and propagated through a representative one-dimensional soil column using linear wave propagation with strain-dependent dynamic soil properties. The input soil properties and layer thickness were

randomized based on defined statistical distributions to perform Monte Carlo simulations for 100 realizations, which were used to generate a median estimate of the surface ground motions.

- The median surface ground motions were then used to calculate a pseudostatic seismic coefficient for utilization in the stability analysis using the approach suggested by Bray and Tavasarou (2009). The procedure calculates the seismic coefficient for an allowable seismic displacement and a probability exceedance of the displacement. For this analysis, an allowable displacement of 0.5 ft, and a probability of exceedance of 16% were conservatively selected, providing a seismic coefficient of 0.038g for use as a horizontal acceleration in the stability analysis.
- The current required minimum criteria (factors of safety) were taken from the Structural Integrity Criteria for existing CCR surface impoundment from 40 CFR 257.73, published April 17, 2015.
- During March 2010, seven borings and five piezometers were performed and installed, respectively, on the crest of the dam, on the middle bench of the dam and on the riverbank.
- The soil properties used for the analysis (unit weight, phi angle, and cohesion) were obtained from triaxial shear testing performed on undisturbed Shelby tube samples of the dam fill and foundation soils obtained during drilling. Soil testing was performed according to applicable ASTM standards
- The COE EM 1110-2-1902, October 2003, allows the use of the phreatic surface established for the maximum storage condition (normal pool) in the analysis for the maximum surcharge loading condition. This is based on the short-term duration of the surcharge loading relative to the permeability of the embankment and the foundation materials.
- The ash pond is no longer designed to store water; therefore the maximum storage condition was not evaluated for this analysis. Stormwater may pool behind the dike during periods of elevated rainfall amounts. The maximum surcharge condition was evaluated using a maximum pool elevation of EL 717.6 ft, based on the design storm.
- The critical section was selected at location having the apparent maximum dam height. The cross-section of the Ash Pond 2 dam was modeled using the following sources:
    - A 2010 level profile survey extending from the pond surface on the upstream face of the dam to the river surface on the downstream face of the dam performed by Southern Company Services (SCS)
    - Historical drawing H-183, showing the profile of the dam raise that created the current configuration of the AP-2 dam, was used to model the upstream face of the dam.
- All CCR has been removed from the area between the AP-2 embankment and the temporary cofferdam constructed at the approximate middle of AP-2. Therefore, there is no CCR included or considered in the analysis.

Input Data

Ash Pond

Two consolidated, undrained triaxial strength tests were performed on Shelby tube samples recovered from borings performed at Ash Pond 2 to provide total and effective shear strength values of embankment and foundation soils. Soil classification testing, unit weight, and moisture content determination were also performed on the samples. The results of the laboratory analysis are included in attachments to this calculation. The following effective stress values were used in the analyses.

Soil Properties Table

Soil Description	Unit Weight, pcf	Effective Stress Parameters	
		Cohesion, psf	Phi Angle, degrees
Dam Fill	125	144	32
Soft ML and MH	118	130	30
Medium Dense Residuum	125	144	35
Soft Clayey Sand	125	15	28

Phreatic Surface

Piezometers were installed at the following locations:

- Dike Crest – one was installed in the dam fill and one was installed in the foundation soils.
- Bench – one was installed in the dam fill and one was installed in the foundation soils.
- Dike Toe – one was installed in the foundation material.

Loading Conditions

The Plant Yates Ash Pond 2 Dike was evaluated for the maximum surcharge and seismic loading conditions.

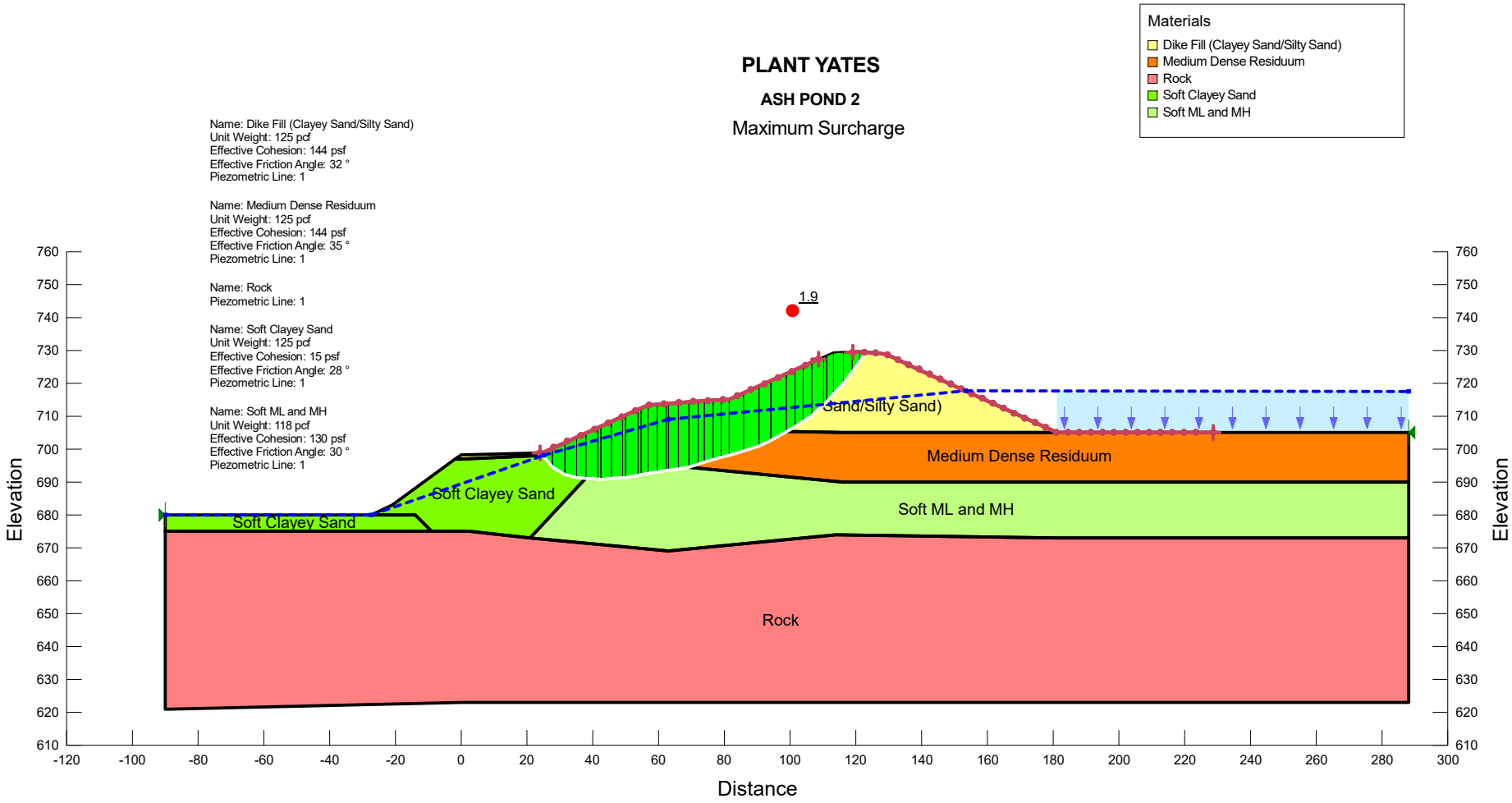
Design Inputs/References

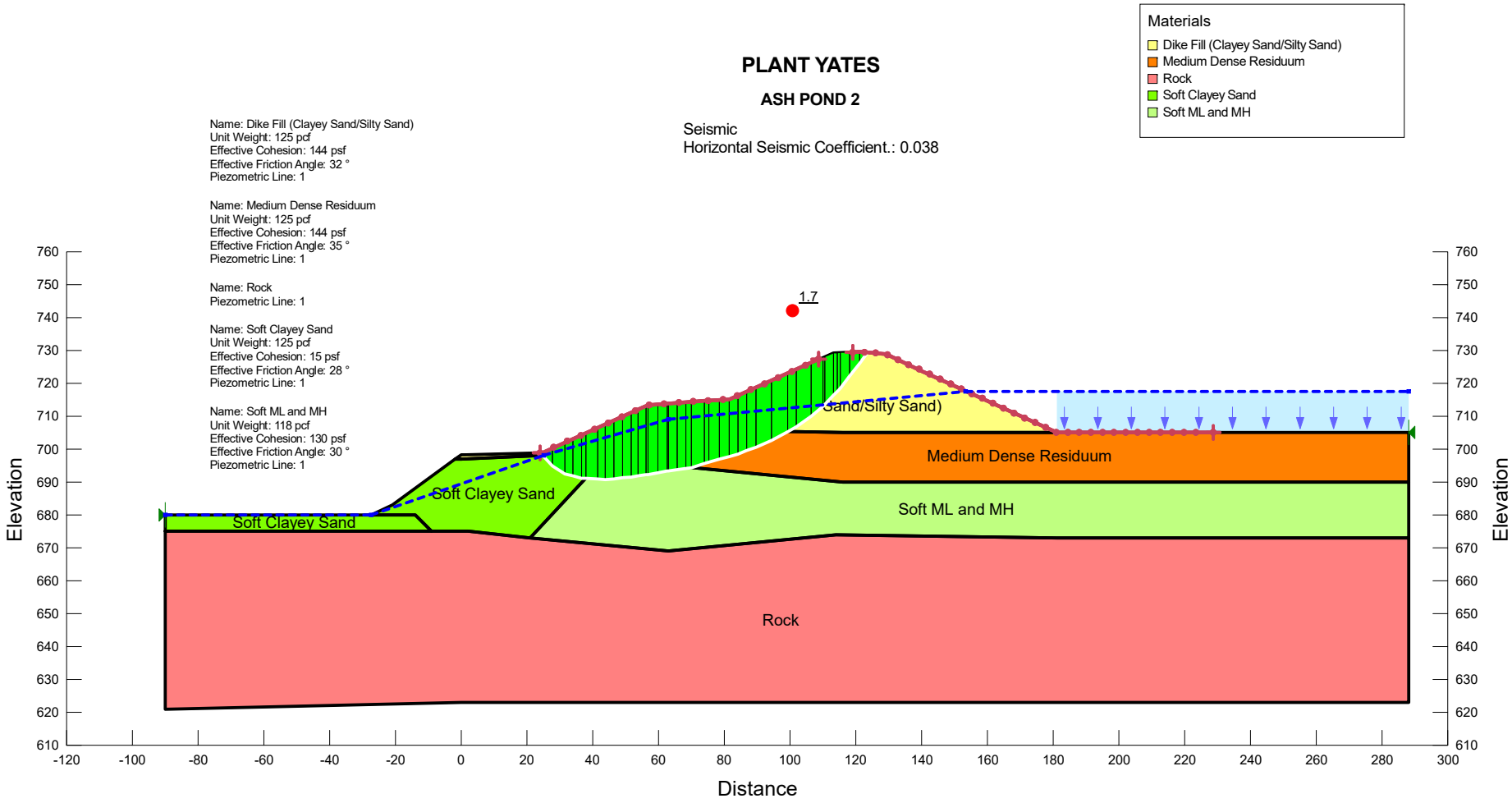
- SCS Calculation TV-YT-GPC603884-001
- Idriss and Boulanger, *Semi-empirical procedures for evaluating liquefaction potential during earthquakes,* 2004
- Youd and Idriss, Liquefaction *Resistance of Soils: Summary report from the 1996 NCEER and 1998 NCEER/NSF Workshops on evaluation of liquefaction resistance of soils*, 2001

- Bray, J. D. and Travasarou, T., *Pseudostatic Coefficient for Use in Simplified Seismic Slope Stability Evaluation*, Journal of Geotechnical and Environmental Engineering, American Society of Civil Engineers, September 2009
- GPC Drawing H-183, Dike Addition Plan and Profile Sections
- SCS Drawing ES1836S1A - Pond and Cross-section Layouts
- SCS Drawing ES1836S1B – Plant Yates Ash Pond Dike Cross-Sections
- SCS ES1836S2 Piezometer and Boring Layout
- SCS 2010 Boring and Piezometer Logs
- GPC Drawing - Yates Ash Pond No. 2, April 2014 Survey
- 2016 TRC-Yates Closures FINAL AP2 ash
- 2010 Laboratory Analyses

Body of Calculation

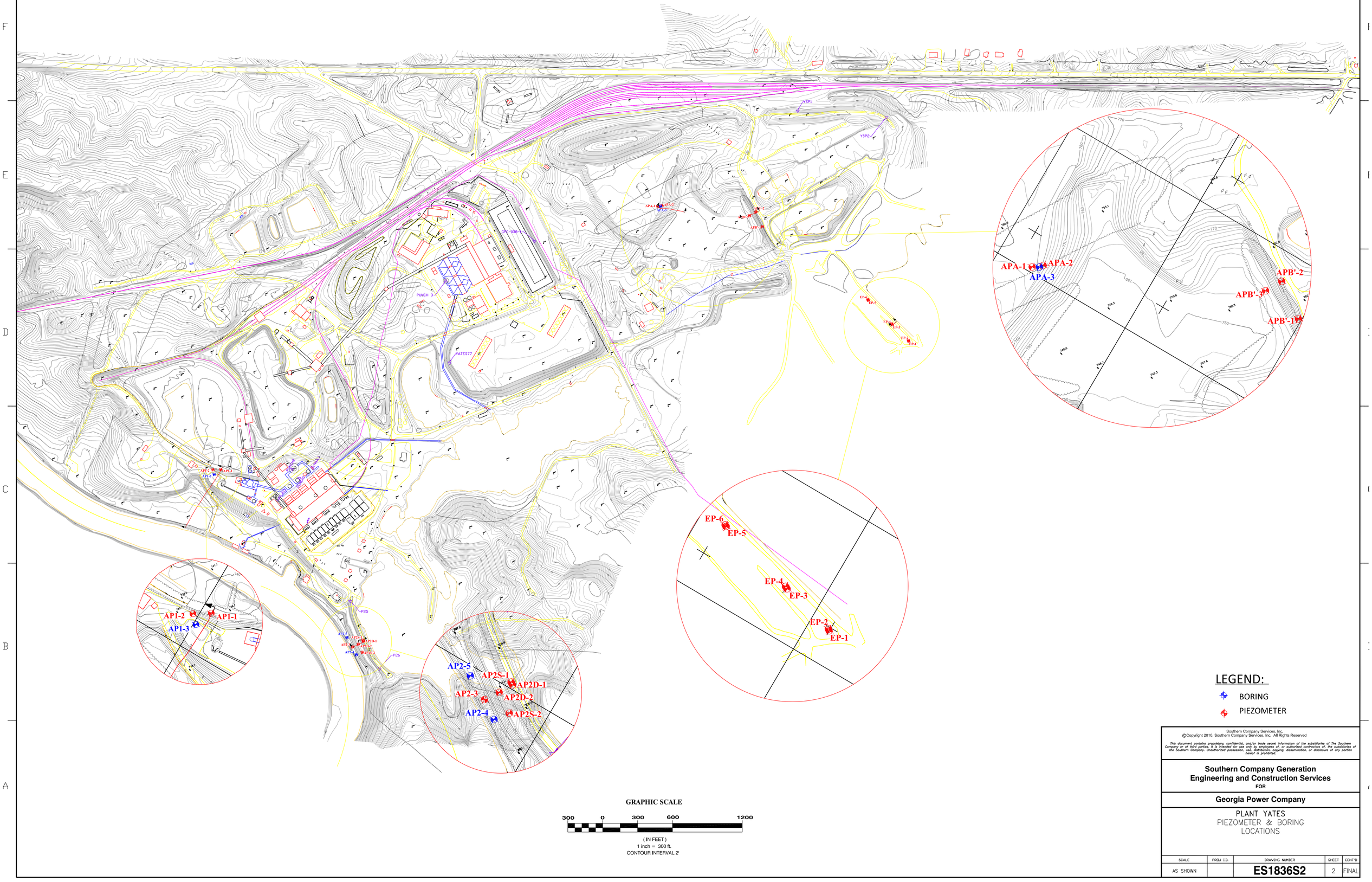
Slope/W analysis attached.


PLANT YATES
ASH POND 2
Maximum Surcharge
Materials
Dike Fill (Clayey Sand/Silty Sand)
Medium Dense Residuum
Rock
Soft Clayey Sand
Soft ML and MH
Name: Dike Fill (Clayey Sand/Silty Sand)
Unit Weight: 125 pcf
Effective Cohesion: 144 psf
Effective Friction Angle: 32 °
Piezometric Line: 1
Name: Medium Dense Residuum
Unit Weight: 125 pcf
Effective Cohesion: 144 psf
Effective Friction Angle: 35 °
Piezometric Line: 1
Name: Rock
Piezometric Line: 1
Name: Soft Clayey Sand
Unit Weight: 125 pcf
Effective Cohesion: 15 psf
Effective Friction Angle: 28 °
Piezometric Line: 1
Name: Soft ML and MH
Unit Weight: 118 pcf
Effective Cohesion: 130 psf
Effective Friction Angle: 30 °
Piezometric Line: 1
1.9
Sand/Silty Sand)
Medium Dense Residuum
Soft Clayey Sand
Soft Clayey Sand
Soft ML and MH
Rock
Elevation
Elevation
Distance
760
750
740
730
720
710
700
690
680
670
660
650
640
630
620
610
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300


PLANT YATES
ASH POND 2
Seismic
Horizontal Seismic Coefficient.: 0.038
Materials
Dike Fill (Clayey Sand/Silty Sand)
Medium Dense Residuum
Rock
Soft Clayey Sand
Soft ML and MH
Name: Dike Fill (Clayey Sand/Silty Sand)
Unit Weight: 125 pcf
Effective Cohesion: 144 psf
Effective Friction Angle: 32 °
Piezometric Line: 1
Name: Medium Dense Residuum
Unit Weight: 125 pcf
Effective Cohesion: 144 psf
Effective Friction Angle: 35 °
Piezometric Line: 1
Name: Rock
Piezometric Line: 1
Name: Soft Clayey Sand
Unit Weight: 125 pcf
Effective Cohesion: 15 psf
Effective Friction Angle: 28 °
Piezometric Line: 1
Name: Soft ML and MH
Unit Weight: 118 pcf
Effective Cohesion: 130 psf
Effective Friction Angle: 30 °
Piezometric Line: 1
1.7
Sand/Silty Sand)
Medium Dense Residuum
Soft Clayey Sand
Soft Clayey Sand
Soft ML and MH
Rock
Elevation
Distance
760
750
740
730
720
710
700
690
680
670
660
650
640
630
620
610
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300

Attachment A

Boring Location Plan



GRAPHIC SCALE

300 0 300 600 1200

(IN FEET)
1 inch = 300 ft.
CONTOUR INTERVAL 2'

LEGEND:

- BORING
- PIEZOMETER

Southern Company Generation
Engineering and Construction Services
FOR

Georgia Power Company

PLANT YATES
PIEZOMETER & BORING
LOCATIONS

SCALE	PROJ I.D.	DRAWING NUMBER	SHEET	CONT'D
AS SHOWN		**ES1836S2**	2	FINAL

ANSI F: 40x28 Acad2004

Attachment B
Boring and Piezometer Logs

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Ash Pond Dike Stability
LOCATION Whitesburg, Ga

DATE STARTED 3/8/2010 **COMPLETED** 3/8/2010 **SURF. ELEV.** 729.4 **COORDINATES:** N 1,259,231.10 E 2,070,344.54
CONTRACTOR SCS Field Services **EQUIPMENT** CME 55 **METHOD** Hollow Stem Auger
DRILLED BY T. Milam **LOGGED BY** R. Mudd **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 54.9 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** _____ **DELAYED** 30.8 ft. after 240 hrs.
NOTES Top of Ash Pond 2, Deep well Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silty Sand (SM)						
5		- red and dark brown, dry, fine to medium grain, *fill*, with medium to large micaceous pebbles in sample		SS -1	4.5-6.0	3-6-6 (12)		
10		- slightly moist, *fill*		SS -2	9.5-11.0	2-3-5 (8)		(MC = 18.4%; LL=51; PI=10; FC = 29.3%; Gravel = 9.3%)
15				SS -3	14.5-16.0	2-5-4 (9)		
20				SS -4	19.5-21.0	3-5-7 (12)		
			704.9					
25		**Clayey Sand (SC)** - gray and red, moist, dense, fine to medium grain, Top of sample is gray and red, while bottom is red. Probable fill to residuum transition.		SS -5	24.5-26.0	4-11-17 (28)		
			699.9					
30		**Clayey Sand (SC)** ▼ - gray, very moist, medium dense, medium grain, *residuum*		SS -6	29.5-31.0	4-9-9 (18)		(MC = 16.7%; LL=34; PI=11; FC = 32.9%; Gravel = 2.5%)
35		- micaceous, more clay than above		SS -7	34.5-36.0	6-6-10 (16)		

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Ash Pond Dike Stability
LOCATION Whitesburg, Ga

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
40		**Silt (ML)** - reddish light brown, moist, soft, high plasticity	689.9	SS -8	39.5-41.0	WH-WH-2 (2)		(MC = 30.7%; LL=45; PI=15; FC = 87.6%)
				UD -1	42.0-44.0		80	
45				UD -2	44.0-46.0		100	
			679.9					
50		**Elastic Silt (MH)** - dark black, wet, soft, medium to high plasticity		SS -9	49.5-51.0	WH-WH-2 (2)		(MC = 48.7%; LL=71; PI=24; FC = 79.1%)
			674.9					
55		**(GW)**	674.5	SS -10	54.5-54.9	50/5" (100+)		Auger Refusal.
		Bottom of borehole at 54.9 feet.						
60								
65								
70								
75								
80								
85								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 09/20/10 10:41 - T:\ESEE MAJOR PROJECTS\PROJECTS\YATES\YATES 2010\ES1836 EPA ASH POND INSPECTION\BORING INFORMATION\YATES ASH POND DIKES.GPJ

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Ash Pond Dike Stability
LOCATION Whitesburg, Ga

DATE STARTED 3/9/2010 **COMPLETED** 3/9/2010 **SURF. ELEV.** 729.5 **COORDINATES:** N 1,259,239.85 E 2,070,394.83
CONTRACTOR SCS Field Services **EQUIPMENT** CME 55 **METHOD** Hollow Stem Auger
DRILLED BY T. Milam **LOGGED BY** R. Mudd **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 32 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** _____ **DELAYED** 7 ft. after 216 hrs.
NOTES Top of Ash Pond 2, Shallow Well Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		▼						
10				UD -1	10.0-12.0		100	
15								
20				UD -2	20.0-22.0		100	
25								
30								
35				UD -3	32.0-34.0		0	UD attempted, material too dense for sampling, crushed Shelby tube.

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Ash Pond Dike Stability
LOCATION Whitesburg, Ga

DATE STARTED 3/9/2010 **COMPLETED** 3/9/2010 **SURF. ELEV.** 714.4 **COORDINATES:** N 1,259,256.83 E 2,070,344.54
CONTRACTOR SCS Field Services **EQUIPMENT** CME 55 **METHOD** Hollow Stem Auger
DRILLED BY T. Milam **LOGGED BY** R. Mudd **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 45.5 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** _____ **DELAYED** 17.4 ft. after 216 hrs.
NOTES Ash Pond 2 Berm, Deep Well Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silty Sand (SM)						
5		- SM: orange, tan, gray, light gray and red, moist, medium to fine grain, *fill*, some small pebbles in sample, micaceous		SS -1	4.5-6.0	3-5-12 (17)		(MC = 16.8%; FC = 24.9%; Gravel = 0.1%)
			706.9					Probable fill/residuum interface, cuttings turned from predominately red to predominately light brown.
10		- SM: dark brown, moist, medium dense, medium grain, *residuum*, white quartz angular pebbles in sample		SS -2	9.5-11.0	2-8-10 (18)		(MC = 16.2%; FC = 20%; Gravel = 2.2%)
15		- SM: greenish gray and white, very moist, medium dense, medium grain, *residuum*, some micaceous small angular pebbles in sample		SS -3	14.5-16.0	4-10-9 (19)		
			694.9					
20		**Fat Clay (CH)** - dark brown, very moist, soft, high plasticity, *residuum*, trace organics, SG = 2.774		SS -4	19.5-21.0	1-2-1 (3)		(MC = 42.6%; LL=52; PI=26; FC = 93.3%)
				UD -1	22.0-24.0		100	Auger cuttings very wet.
25		- CH: orange-red, moist, medium stiff, medium to high plasticity, *residuum*		SS -5	24.5-26.0	2-2-4 (6)		
			684.9					
30		**Elastic Silt (MH)** - gray, moist, soft, medium to high plasticity, *residuum*, alternates stiff and soft layers in spoon		SS -6	29.5-31.0	WH-1-2 (3)		(MC = 40.5%; LL=53; PI=20; FC = 87.2%)
			679.9					Auger cuttings appear to alternate between thicker, light gray/red-orange clay and dark gray, "oozy" clay.
35		**Poorly-graded Sand (SP)** - light and medium gray, very wet, loose, coarse grain, *residuum*, top 6" of sample is possibly gray CH from above		SS -7	34.5-36.0	4-4-3 (7)		difficult drilling for approximately 1

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Ash Pond Dike Stability
LOCATION Whitesburg, Ga

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
40		**Silty Sand (SM)** - dark brown and orange, moist, dense, fine grain, *residuum*, sapprolite, micaceous	674.9	SS -8	39.5-41.0	11-18-23 (41)		foot, then more "oozy" clay. (MC = 16.1%; FC = 27.3%; Gravel = 1.4%)
45		**Poorly-graded Sand (SP)** - black, dark gray and white layers, moist, very dense, fine grain, *residuum*, weathered in place gneiss	669.9 669.0	SS -9	44.5-44.9	50/5" (100+)		Auger Refusal.
		Bottom of borehole at 45.5 feet.						
50								
55								
60								
65								
70								
75								
80								
85								

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Ash Pond Dike Stability
LOCATION Whitesburg, Ga

DATE STARTED 3/15/2010 **COMPLETED** 3/15/2010 **SURF. ELEV.** 715.2 **COORDINATES:** N 1,259,192.20 E 2,070,301.10
CONTRACTOR SCS Field Services **EQUIPMENT** CME 55 **METHOD** Hollow Stem Auger
DRILLED BY T. Milam **LOGGED BY** R. Mudd **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 21 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** _____ **DELAYED** 6.2 ft. after 72 hrs.
NOTES Ash Pond 2 Berm, Shallow Well Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silty Sand (SM) - orange, gray and white, slightly moist, medium to fine grain, *fill*						
5				SS -1	4.5-6.0	6-7-8 (15)		
				SS -2	6.5-8.0	4-8-9 (17)		Cuttings changed from light red to medium brown. (MC = 15.4%; FC = 25.6%; Gravel = 1.3%) Very difficult drilling.
10		- dark brown and gray, Less clay, large white quartz in sample		SS -3	9.5-11.0	5-7-9 (16)		
15		- light tan with orange and gray, fine grain, *fill*, First sample attempt had no recovery, second sample attempt appears "oozy" in spoon, with trace clay, small recovery		SS -4	14.5-16.0	7-10-8 (18)		cuttings turned from medium brown to dark gray.
			697.7					probable fill/residuum interface, cuttings "oozed" from hole but quickly turned to balled up light brown clay.
20		- SP: gray and white, moist, dense, medium grain, *residuum*, Appears with CLAY (CH), dark brown, high plasticity and moist	694.2	SS -5	19.5-21.0	3-7-8 (15)		
		Bottom of borehole at 21.0 feet.						
25								
30								
35								

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Ash Pond Dike Stability
LOCATION Whitesburg, Ga

DATE STARTED 3/11/2010 **COMPLETED** 3/11/2010 **SURF. ELEV.** 698.5 **COORDINATES:** N 1,259,293.75 E 2,070,299.02
CONTRACTOR SCS Field Services **EQUIPMENT** CME 55 **METHOD** Hollow Stem Auger
DRILLED BY T. Milam **LOGGED BY** R. Mudd **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 23.9 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** 3.2 ft. **DELAYED** 5.7 ft. after 168 hrs.
NOTES Toe of Ash Pond 2, next to Chattahoochee River which was flowing 4' below top of boring at time of drilling (elevated due to recent rains) Well ins

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silty Sand (SM) - red						Surface material is very loose sand flood deposits.
		- dark gray, wet, loose, fine grain						
5				SS -1	4.5-6.0	2-3-3 (6)		(MC = 33.5%; PL=NP; FC = 45.5%; Gravel = 5.8%)
			690.5					
		Silt (ML) - dark brown-red, wet, very loose, medium plasticity, fine grain						
10				SS -2	9.5-11.0	WH-WH-WH (0)		(MC = 35.6%; LL=35; PI=9; FC = 55%)
				ST -1	13.0-15.0		0	UD contained no recovery, sample too loose to stay in tube.
15		- dark gray, very wet, very loose, fine grain		SS -3	15.0-16.5	WH-WH-WH (0)		(MC = 41%; LL=34; PI=9; FC = 62.8%)
20			678.0	SS -4	19.5-21.0	WH-1-13 (14)		
		Poorly-graded Sand (SP) - dark gray and white, moist, medium dense, medium grain, angular, weathered rock in sample	674.6					
25		Bottom of borehole at 23.9 feet.						Auger Refusal.
30								
35								

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Ash Pond Dike Stability
LOCATION Whitesburg, Ga

DATE STARTED 8/9/2010 **COMPLETED** 8/9/2010 **SURF. ELEV.** 698.5 **COORDINATES:** N 1,259,225.40 E 2,070,256.89
CONTRACTOR SCS Field Services **EQUIPMENT** CME 55 **METHOD** Casing Advance with removable bit
DRILLED BY T. Milam **LOGGED BY** R. Mudd **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 23.2 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** _____ **DELAYED** _____
NOTES AP2-4 and AP2-5 added after inspection for clarification of riverbank material characteristics; drilling method prevented groundwater reading

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Clayey Sand (SC)						
		- dark brown, medium dense, fine grain, micaceous		SS -1	3.5-5.0	7-8-7 (15)		
5			693.5					
		Sandy Lean Clay (CL)						
10		- dark brown, soft, low plasticity, with sand, micaceous		SS -2	9.5-11.0	WH-WH-WH (0)		
15		- more sand than above		SS -3	14.5-16.0	WH-WH-WH (0)		
			679.0					
20		**Clayey Sand (SC)** - dark brown and black, medium dense, fine to medium grain, pieces of rock in sample, micaceous		SS -4	19.5-21.0	WH-8-7 (15)		
			675.3					
		Bottom of borehole at 23.2 feet.						Refusal.
25								
30								
35								

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Yates Ash Pond Dike Stability
LOCATION Whitesburg, Ga

DATE STARTED 8/9/2010 **COMPLETED** 8/9/2010 **SURF. ELEV.** 698.6 **COORDINATES:** N 1,259,369.42 E 2,070,343.20
CONTRACTOR SCS Field Services **EQUIPMENT** CME 55 **METHOD** Casing Advance with removable bit
DRILLED BY T. Milam **LOGGED BY** R. Mudd **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 22.7 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** _____ **DELAYED** _____
NOTES AP2-4 and AP2-5 added after inspection for clarification of riverbank material characteristics; drilling method prevented groundwater reading; Hole

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Clayey Sand (SC)						
5		- dark gray, transitioning to red-brown with depth, medium dense, fine grain, micaceous		SS -1	4.5-6.0	8-5-5 (10)		
			689.1					
10		**Lean Clay (CL)** - dark brown, soft, medium plasticity, a few twigs and pieces of grass in sample, slightly micaceous		SS -2	9.5-11.0	WH-WH-WH (0)		
			684.1					
15		**Silty Sand (SM)** - light gray, loose, fine grain, large piece of wood in sample, micaceous		SS -3	14.5-16.0	1-4-4 (8)		
20		- No recovery, some small pieces of wood in spoon		SS -4	19.5-21.0	2-1-1 (2)		
			675.9					
		Bottom of borehole at 22.7 feet.						Refusal.
25								
30								
35								

GEOTECH ENGINEERING LOGS - ESEE DATABASE.GDT - 09/20/10 10:41 - T:\ESEE MAJOR PROJECTS\PROJECTS\YATES\YATES 2010\ES1836 EPA ASH POND INSPECTION\BORING INFORMATION\YATES ASH POND DIKES.GPJ

Attachment C
Laboratory Analyses

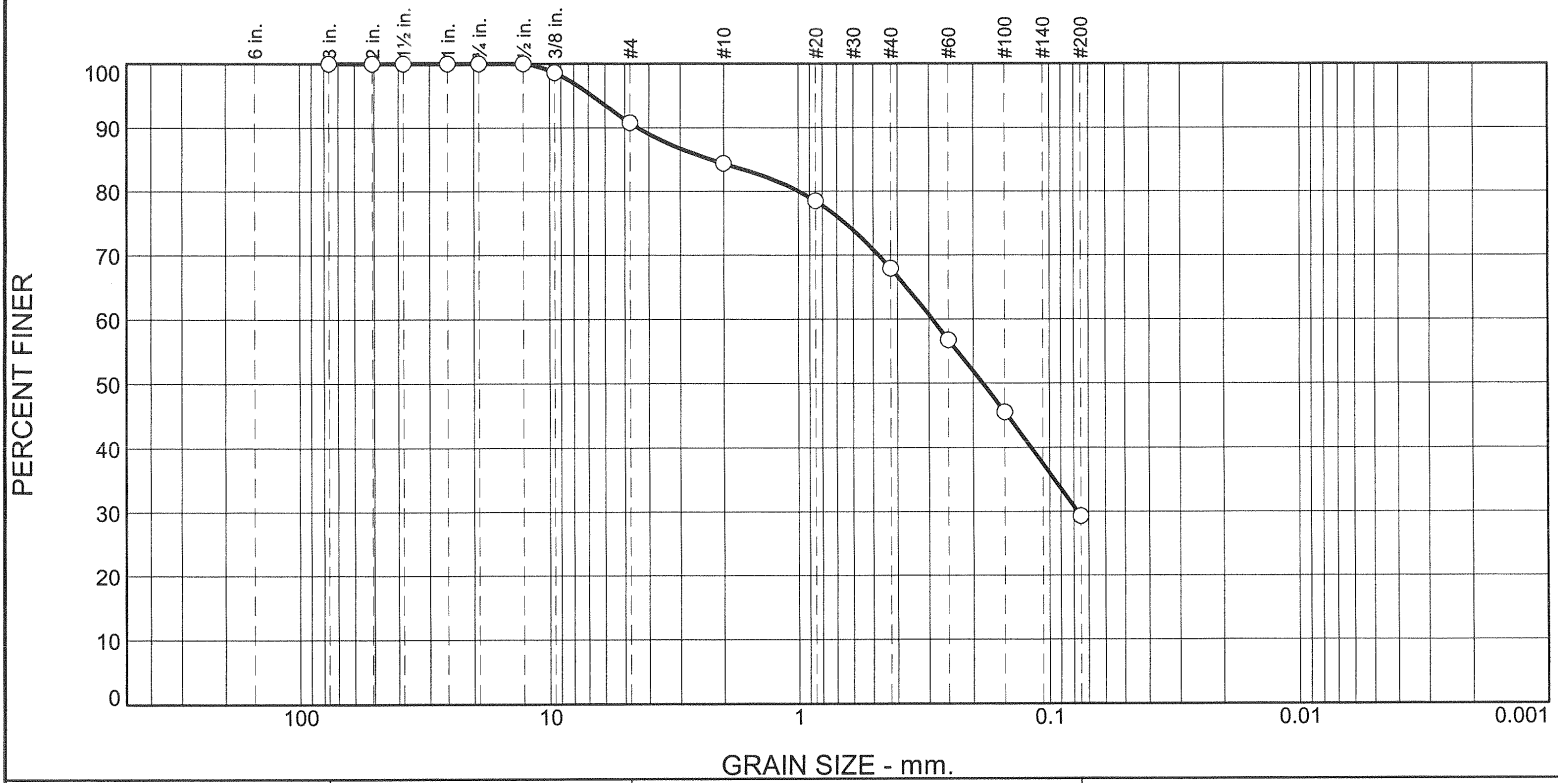
Project: Plant Yates Ash Pond
Project Number 6189-10-9008
Date Performed 4/2/2010
Date Sampled

Moisture Content Calculation: (WetWt-DryWt)/(DryWt-can wt)

Boring Number	AP1-1	AP1-1	AP1-1	AP2-1	AP2-1	AP2-1	AP2-1	AP2-2 DEEP	AP2-2 DEEP	AP2-2 DEEP
Sample Number	2	4	6	2	6	8	10	1	2	4
Depth	9.5-11	19.5-21	29.5-31	9.5-11	29.5-31	39.5-41	49.5-51	4.5-6	9.5-11	19.5-21
Can Number										
Can Weight	55.76	54.25	50.83	50.42	51.67	55.88	54.96	53.73	53.15	55.21
Wet wt w/ Can	193.21	96.15	192.67	199.71	213.46	187.23	121.91	235.66	166.27	117.54
Dry wt. W/ Can	165.5	87.83	161.26	176.47	190.3	156.36	99.99	209.44	150.5	98.92
Percent Moisture	25.3%	24.8%	28.4%	18.4%	16.7%	30.7%	48.7%	16.8%	16.2%	42.6%

Boring Number	AP2-2 DEEP	AP2-2 DEEP	AP2-2 SHALLOW	AP2-3	AP2-3	AP2-3	APA-1	APA-1	APA-1	APA-1
Sample Number	6	8	2	1	2	3	3	4	5	7
Depth	29.5-31	39.5-41	6.5-8	4.5-6	9.5-11	15-16.5	14.5-16	19.5-21	24.5-26	37.5-39
Can Number										
Can Weight	53.26	49.04	49.97	50.19	49.76	54.75	49.13	49.84	55.54	50.17
Wet wt w/ Can	173.93	251.55	193.23	144.33	169.21	201.5	102.61	197.05	204.24	229.87
Dry wt. W/ Can	139.13	223.41	174.12	120.7	137.87	158.81	88.89	151.98	164.48	191.61
Percent Moisture	40.5%	16.1%	15.4%	33.5%	35.6%	41.0%	34.5%	44.1%	36.5%	27.1%

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	9.3	6.4	16.4	38.6	29.3	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	98.6		
#4	90.7		
#10	84.3		
#20	78.5		
#40	67.9		
#60	56.7		
#100	45.5		
#200	29.3		

* (no specification provided)

Material Description

Light Reddish Brown Medium to Fine SAND with Silt

Atterberg Limits (ASTM D 4318)

PL= 41 LL= 51 PI= 10

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-2-5(0)

Coefficients

D_{90}= 4.4266 D_{85}= 2.2615 D_{60}= 0.2906
D_{50}= 0.1836 D_{30}= 0.0772 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-1 **Depth:** 9.5'-11.0' **Date Sampled:**

Sample Number: 2

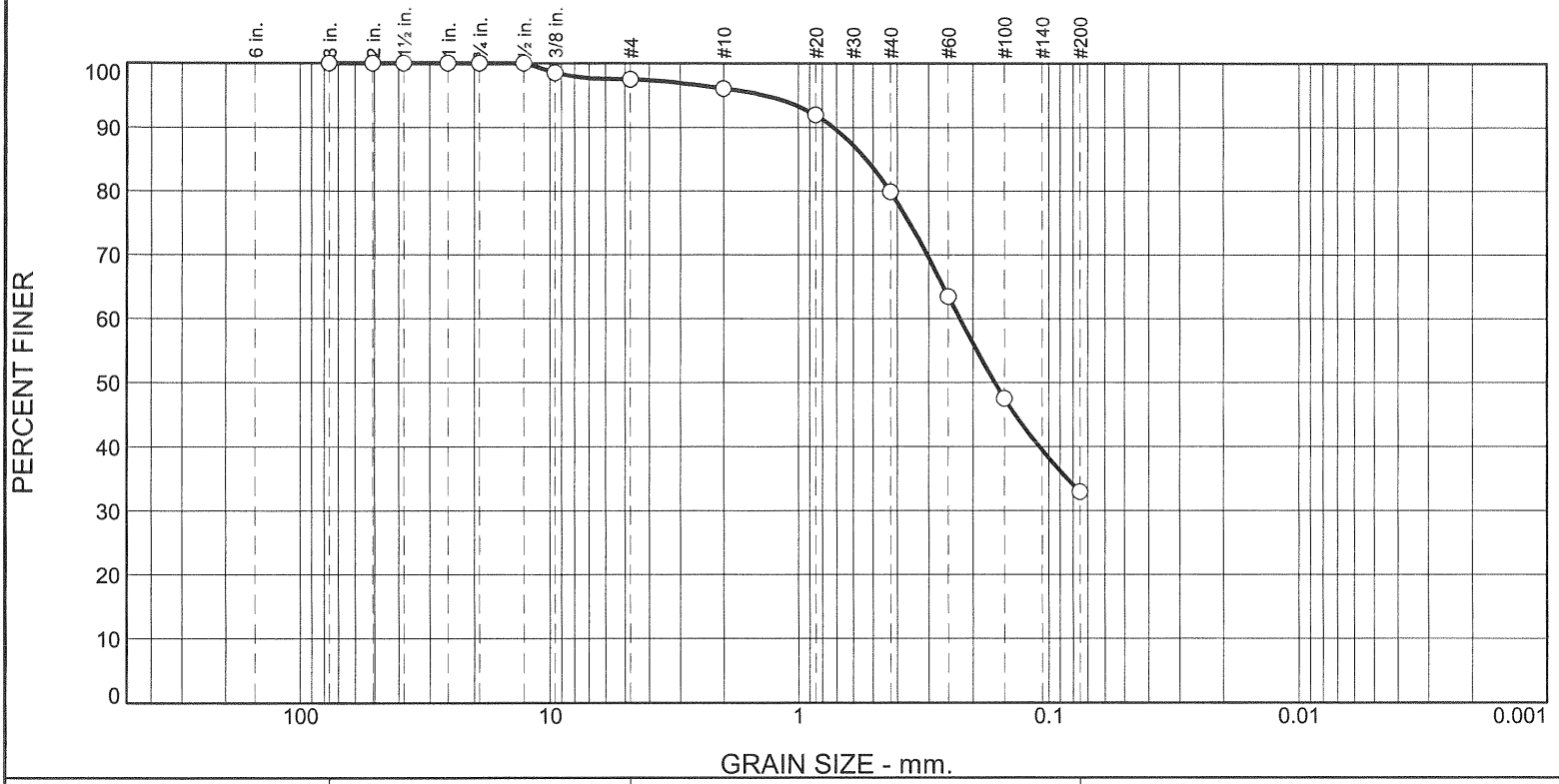
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.5	1.5	16.2	46.9	32.9	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	98.5		
#4	97.5		
#10	96.0		
#20	91.9		
#40	79.8		
#60	63.5		
#100	47.5		
#200	32.9		

* (no specification provided)

Material Description

Light Brown Medium to Fine SAND with Clay

Atterberg Limits (ASTM D 4318)

PL= 23 LL= 34 PI= 11

Classification

USCS (D 2487)= SC AASHTO (M 145)= A-2-6(0)

Coefficients

D_{90}= 0.7201 D_{85}= 0.5321 D_{60}= 0.2253
D_{50}= 0.1640 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-1 **Depth:** 29.5'-31.0' **Date Sampled:**

Sample Number: 6

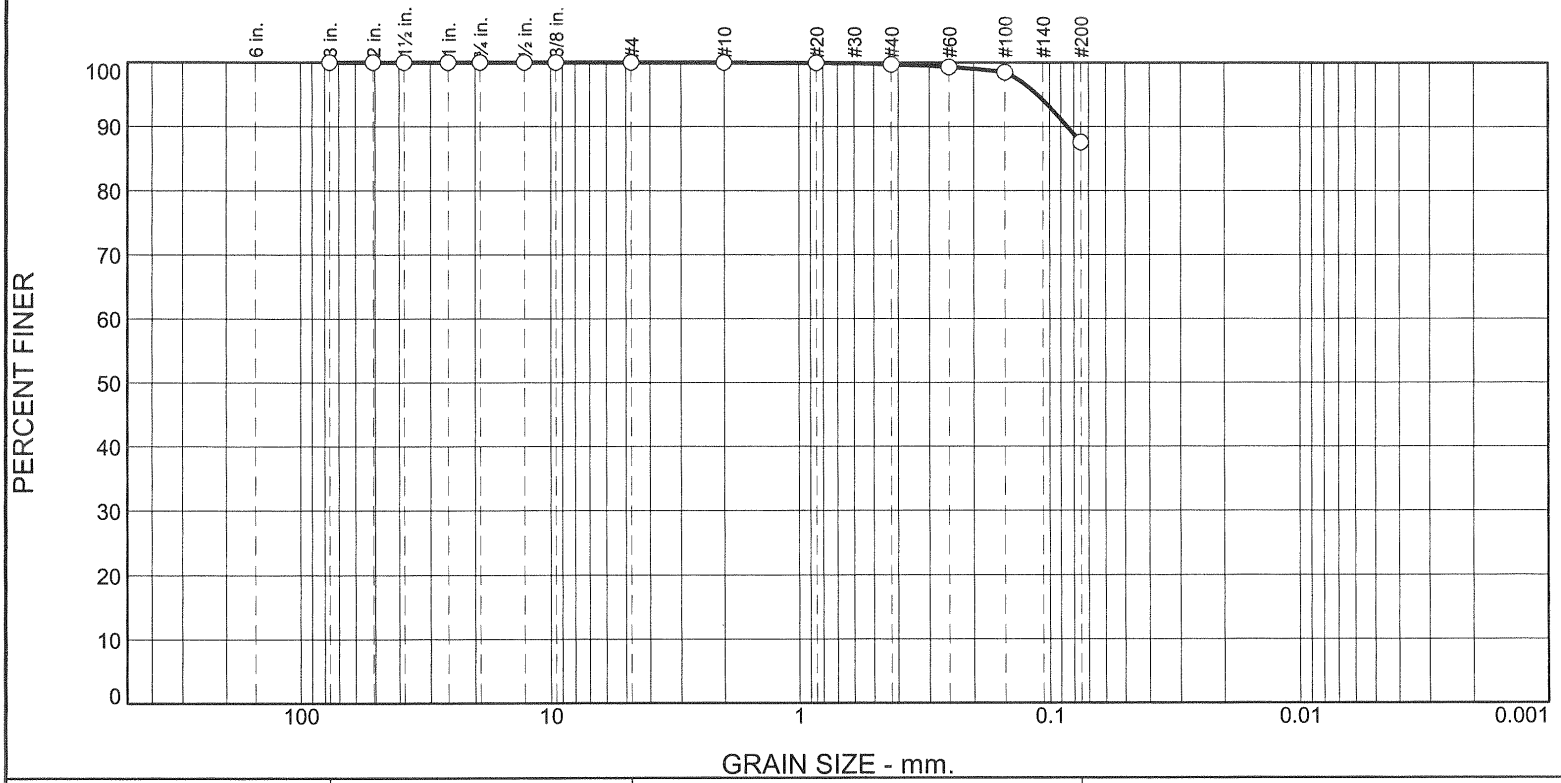
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	12.1	87.6	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#10	100.0		
#20	99.9		
#40	99.7		
#60	99.3		
#100	98.5		
#200	87.6		

* (no specification provided)

Material Description

Light Brown SILT with Sand

Atterberg Limits (ASTM D 4318)

PL= 30 LL= 45 PI= 15

Classification

USCS (D 2487)= ML AASHTO (M 145)= A-7-5(16)

Coefficients

D_{90}= 0.0848 D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-1 **Depth:** 39.5'-41.0' **Date Sampled:**

Sample Number: 8

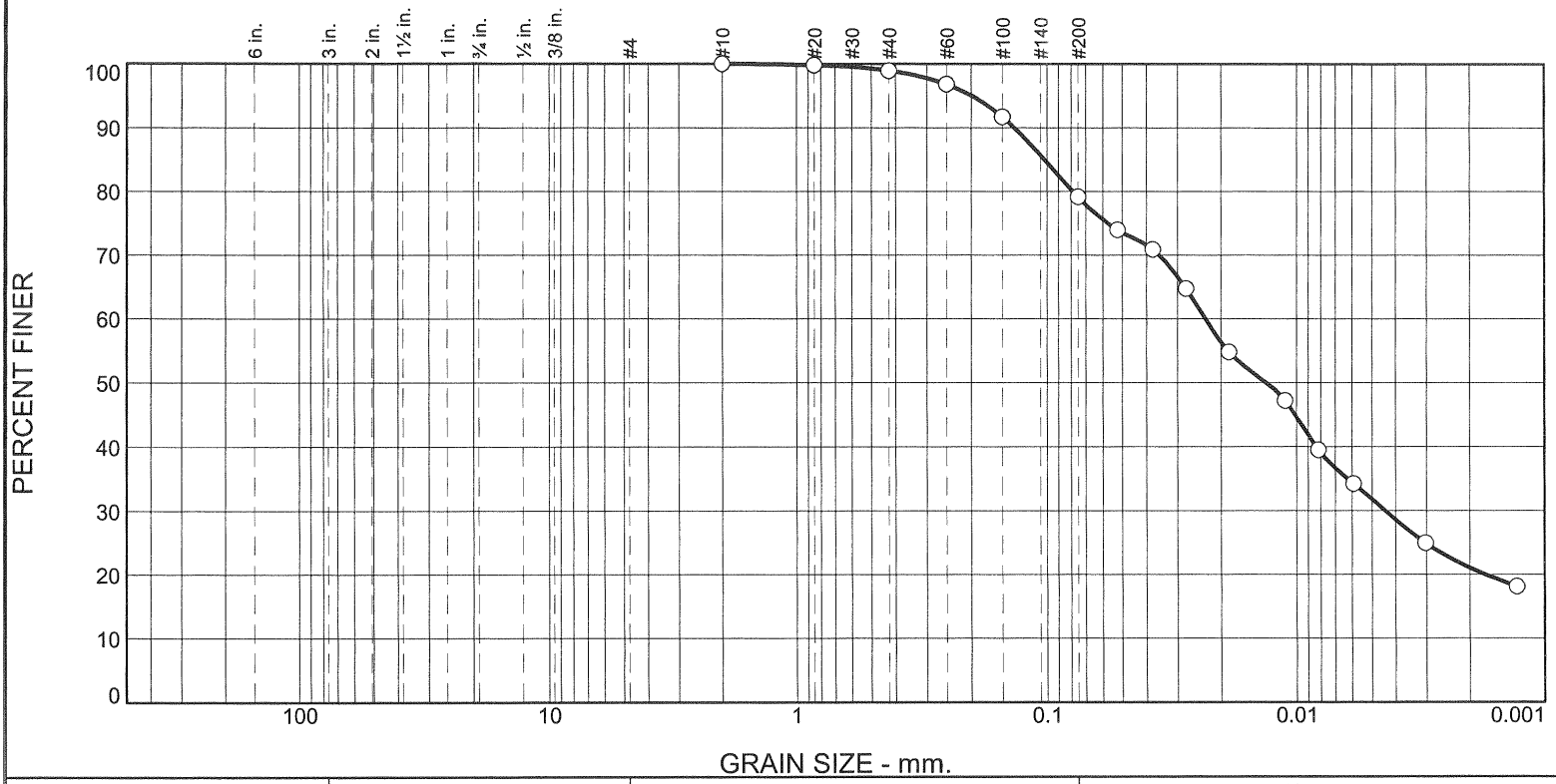
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.1	19.8	47.3	31.8

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#10	100.0		
#20	99.8		
#40	98.9		
#60	96.8		
#100	91.7		
#200	79.1		
0.0521 mm.	73.9		
0.0376 mm.	70.9		
0.0277 mm.	64.7		
0.0185 mm.	54.8		
0.0111 mm.	47.2		
0.0082 mm.	39.5		
0.0059 mm.	34.2		
0.0030 mm.	24.9		
0.0013 mm.	18.1		

* (no specification provided)

Material Description

Dark Gray Elastic SILT with Sand

Atterberg Limits (ASTM D 4318)

PL= 47 LL= 71 PI= 24

Classification

USCS (D 2487)= MH AASHTO (M 145)= A-7-5(25)

Coefficients

D_{90}= 0.1347 D_{85}= 0.1024 D_{60}= 0.0231
D_{50}= 0.0132 D_{30}= 0.0044 D_{15}=
D_{10}= C_u= C_c=

Remarks

Assumed specific gravity: 2.690

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By: _____

Title: _____

Source of Sample: Boring No.: AP2-1 **Depth:** 49.5'-51.0' **Date Sampled:**

Sample Number: 10

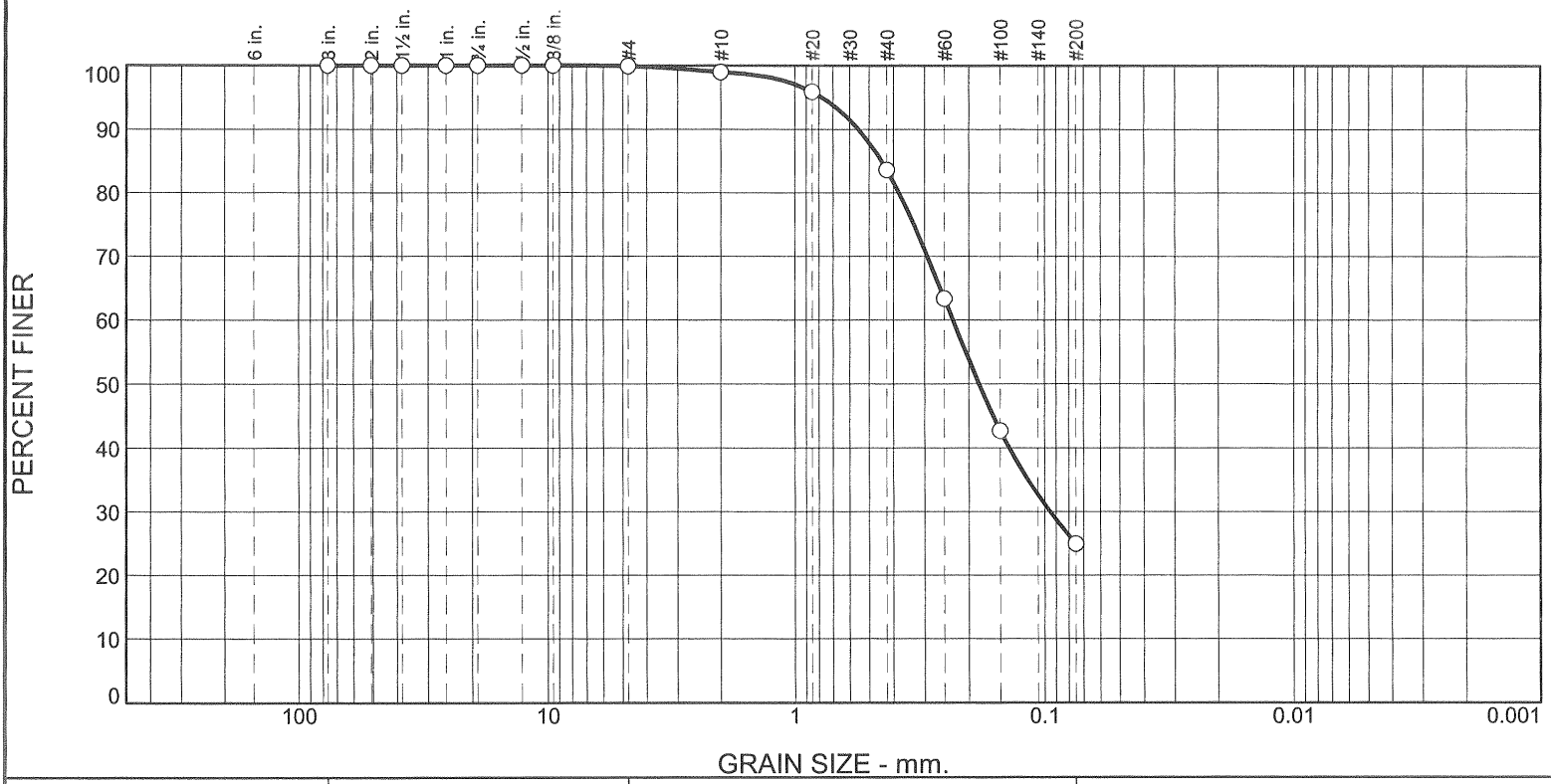
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.9	15.4	58.7	24.9	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	99.9		
#10	99.0		
#20	95.9		
#40	83.6		
#60	63.3		
#100	42.7		
#200	24.9		

* (no specification provided)

Material Description

Light Brown Medium to Fine SAND with Silt

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 0.5515 D_{85}= 0.4465 D_{60}= 0.2313
D_{50}= 0.1823 D_{30}= 0.0948 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-2 **Depth:** 4.5'-6.0' **Date Sampled:**

Sample Number: 1

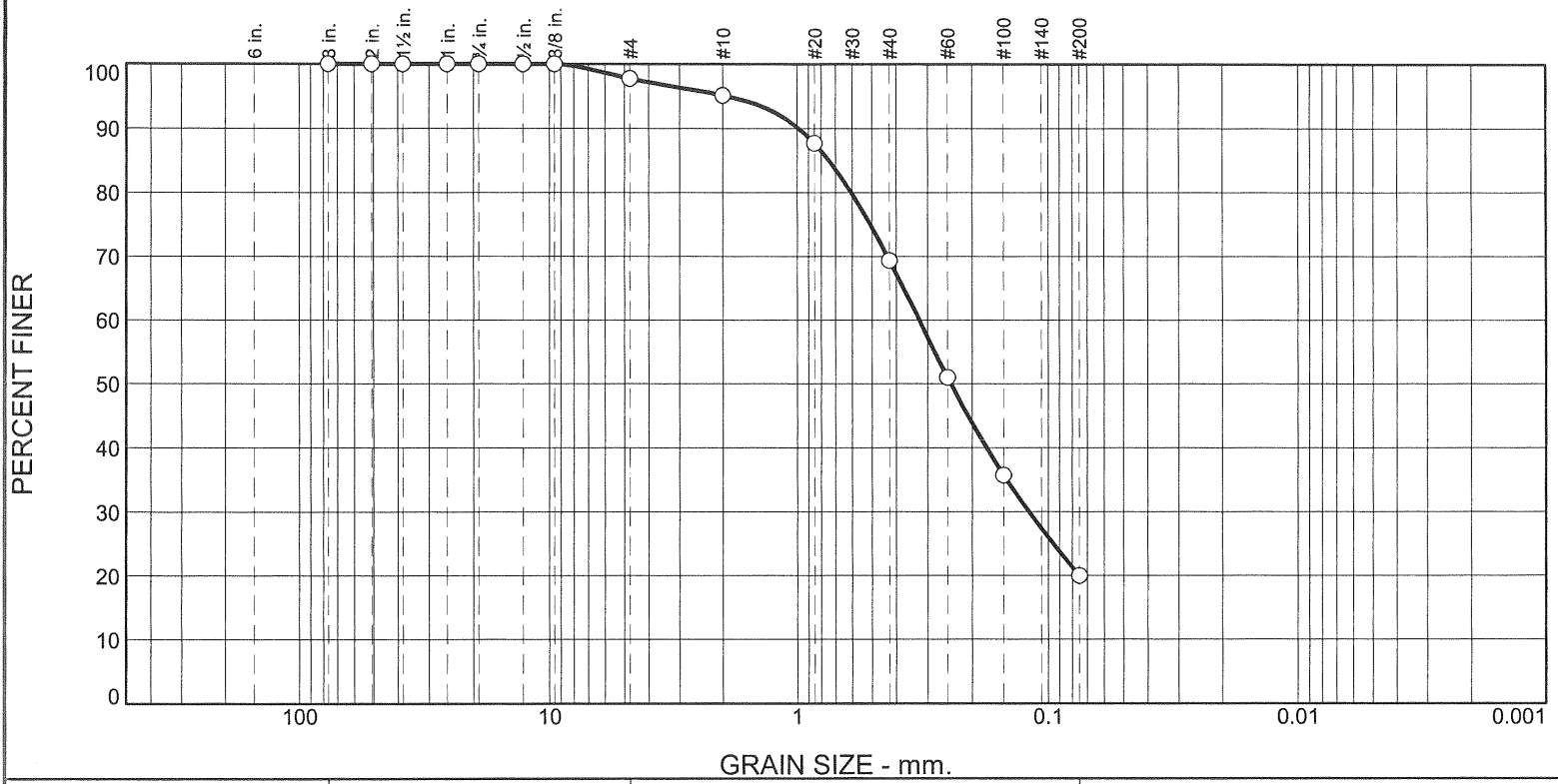
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.2	2.7	25.8	49.3	20.0	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	97.8		
#10	95.1		
#20	87.7		
#40	69.3		
#60	51.0		
#100	35.7		
#200	20.0		

* (no specification provided)

Material Description

Light Brown Medium to Fine SAND with Silt

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 0.9845 D_{85}= 0.7419 D_{60}= 0.3244
D_{50}= 0.2427 D_{30}= 0.1190 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-2 **Depth:** 9.5'-11.0' **Date Sampled:**

Sample Number: 2

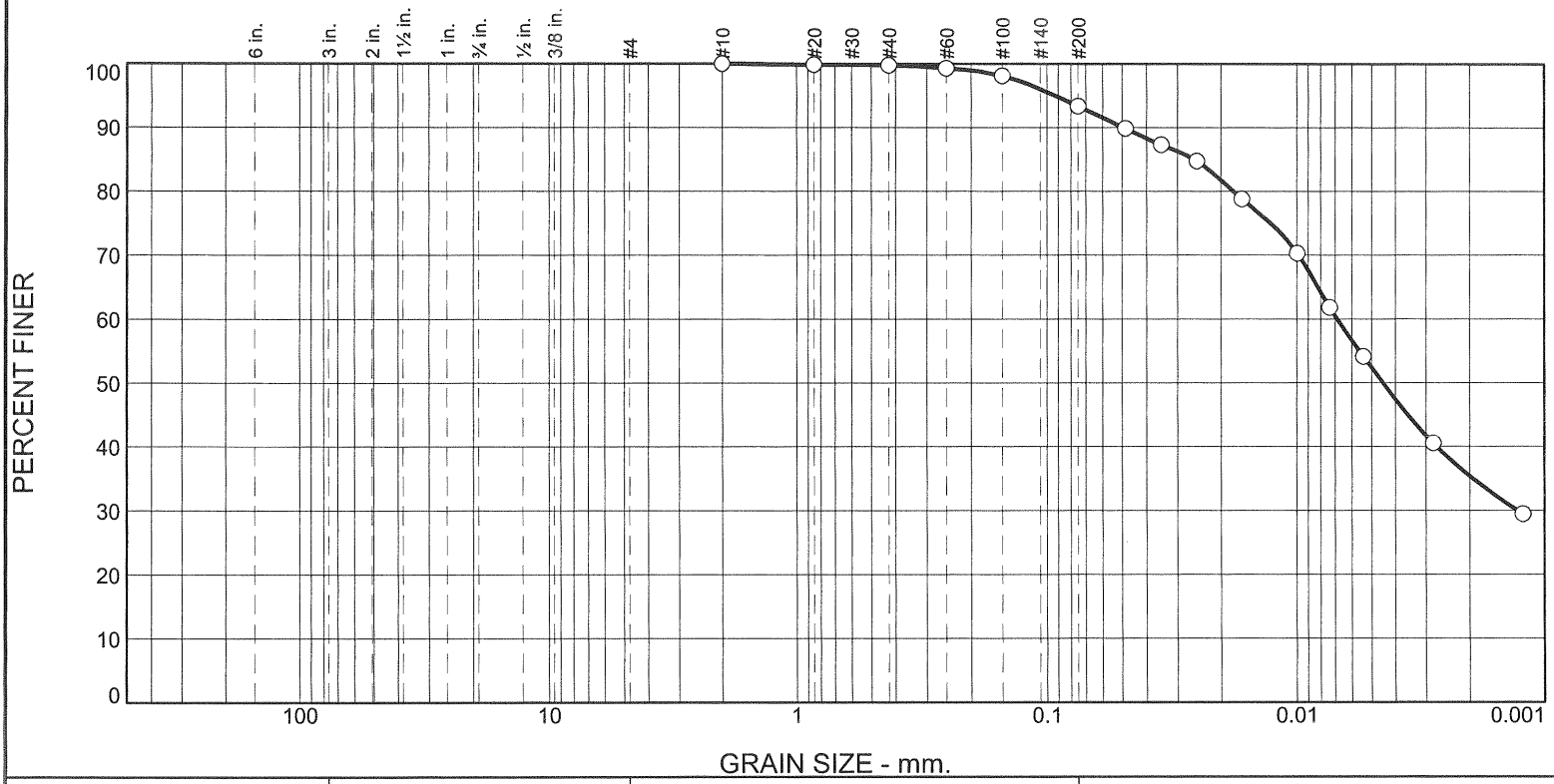
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	6.4	40.9	52.4

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#10	100.0		
#20	99.8		
#40	99.7		
#60	99.3		
#100	98.1		
#200	93.3		
0.0484 mm.	89.8		
0.0348 mm.	87.3		
0.0250 mm.	84.7		
0.0164 mm.	78.8		
0.0100 mm.	70.2		
0.0073 mm.	61.8		
0.0054 mm.	54.1		
0.0028 mm.	40.5		
0.0012 mm.	29.4		

* (no specification provided)

Material Description

Light Brown Fat Clay with Sand

Atterberg Limits (ASTM D 4318)

PL= 26 LL= 52 PI= 26

Classification

USCS (D 2487)= CH AASHTO (M 145)= A-7-6(28)

Coefficients

D_{90}= 0.0494 D_{85}= 0.0257 D_{60}= 0.0069
D_{50}= 0.0045 D_{30}= 0.0013 D_{15}=
D_{10}= C_u= C_c=

Remarks

Specific gravity: 2.774

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-2 **Depth:** 19.5'-21.0' **Date Sampled:**

Sample Number: 4

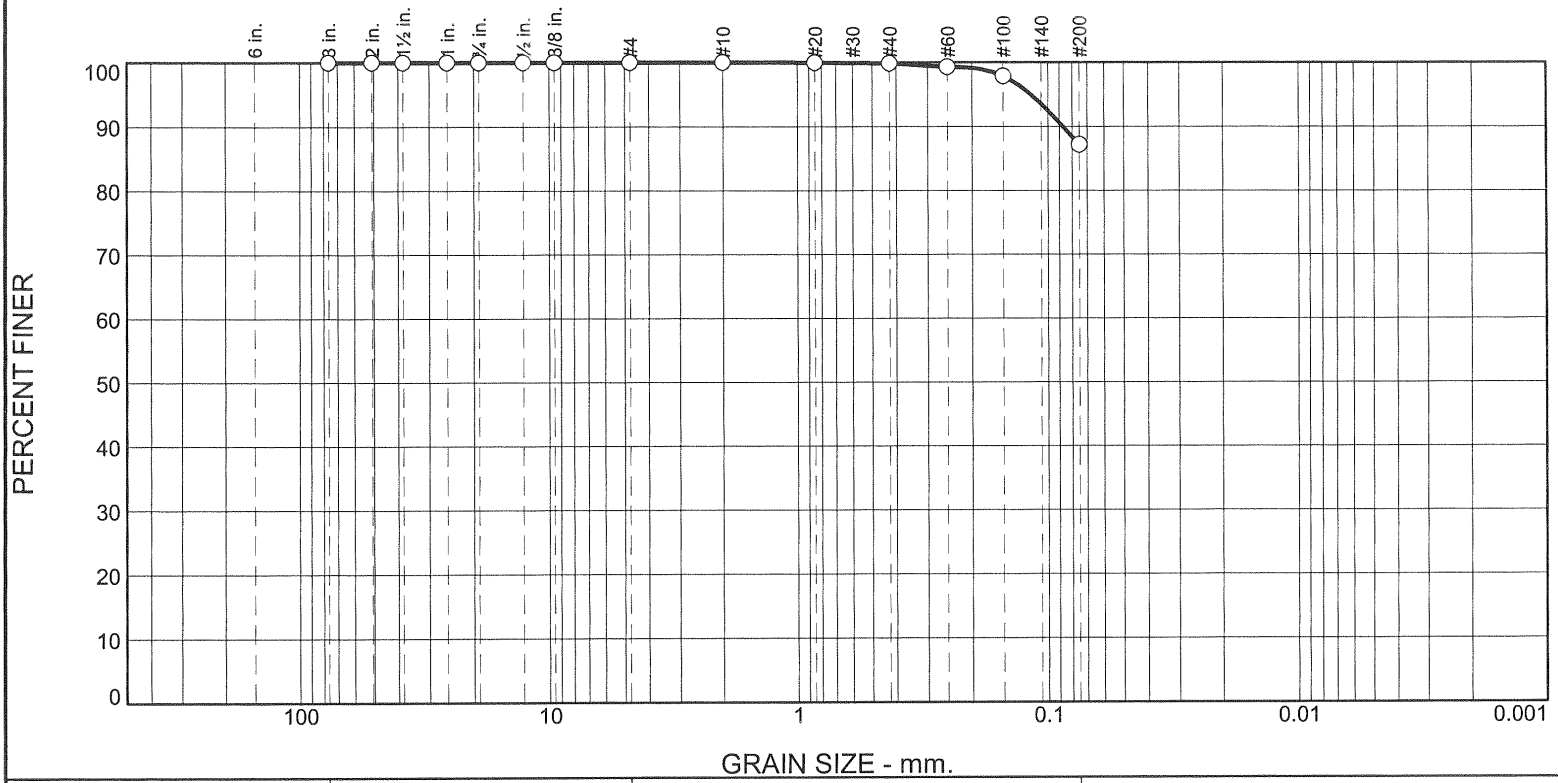
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.2	12.6	87.2	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#10	100.0		
#20	99.9		
#40	99.8		
#60	99.3		
#100	97.9		
#200	87.2		

* (no specification provided)

Material Description

Light Brown Elastic SILT with Sand

Atterberg Limits (ASTM D 4318)

PL= 33 LL= 53 PI= 20

Classification

USCS (D 2487)= MH AASHTO (M 145)= A-7-5(21)

Coefficients

D_{90}= 0.0871 D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-2 **Depth:** 29.5'-31.0' **Date Sampled:**

Sample Number: 6

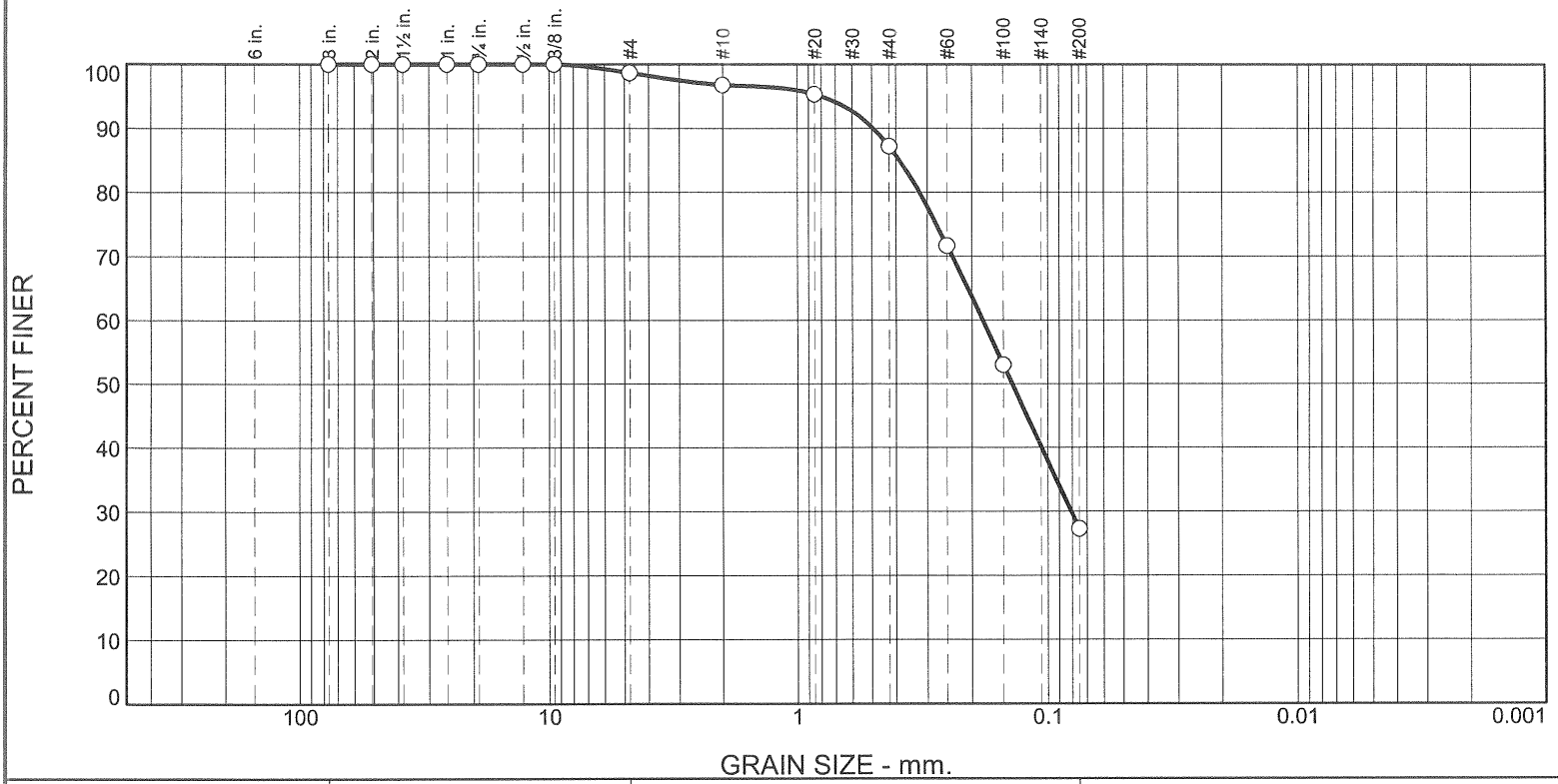
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.4	1.8	9.6	59.9	27.3	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	98.6		
#10	96.8		
#20	95.3		
#40	87.2		
#60	71.7		
#100	53.0		
#200	27.3		

* (no specification provided)

Material Description

Light Brown Medium to Fine SAND with Silt

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 0.4925 D_{85}= 0.3870 D_{60}= 0.1810
D_{50}= 0.1385 D_{30}= 0.0807 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-2 **Depth:** 39.5'-41.0' **Date Sampled:**

Sample Number: 8

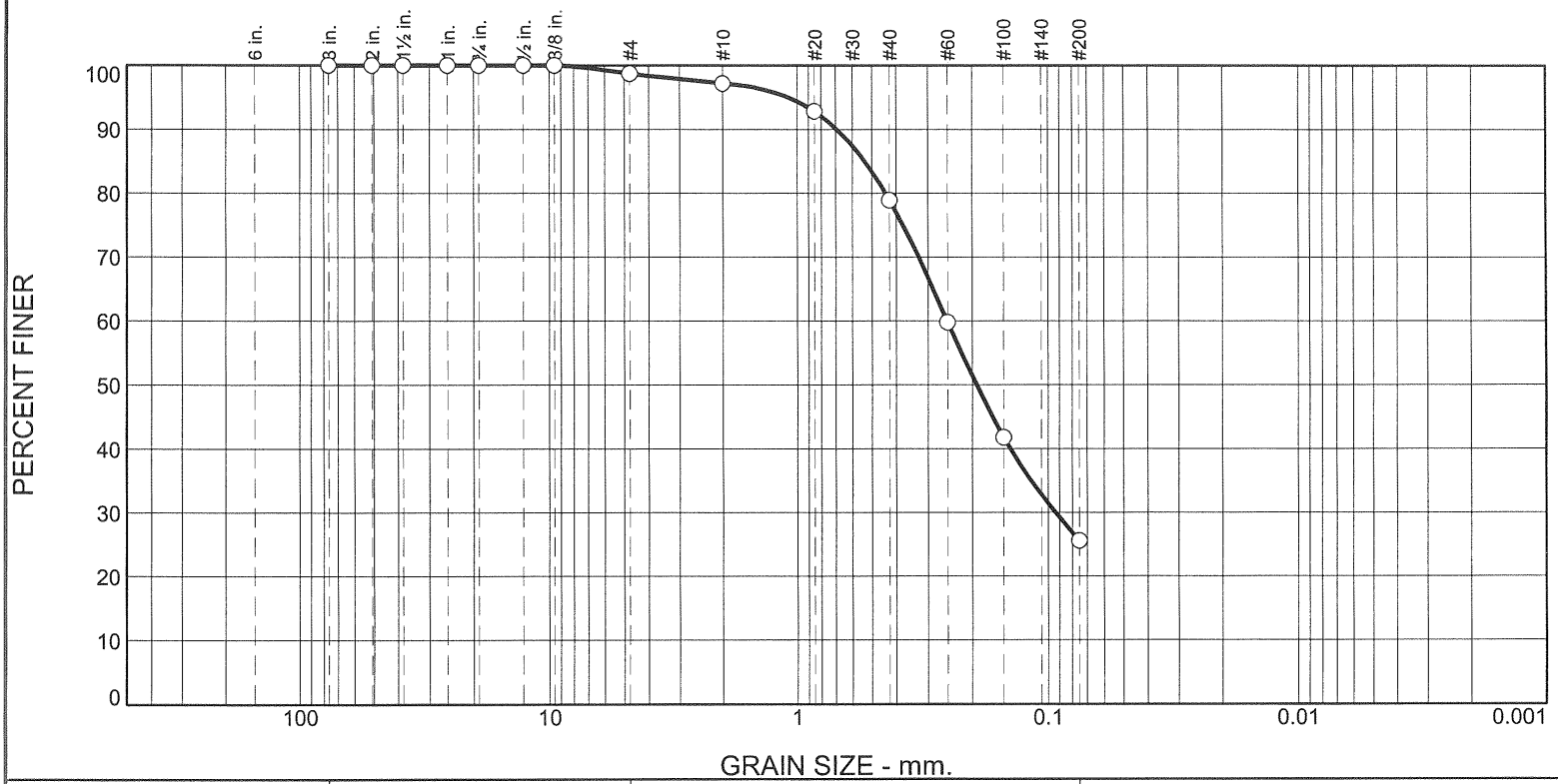
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.3	1.5	18.3	53.3	25.6	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	98.7		
#10	97.2		
#20	92.8		
#40	78.9		
#60	59.8		
#100	41.8		
#200	25.6		

* (no specification provided)

Material Description

Light Brown Medium to Fine SAND with Silt

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)=

Coefficients

D_{90}= 0.6908 D_{85}= 0.5344 D_{60}= 0.2515
D_{50}= 0.1924 D_{30}= 0.0932 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-2 **Depth:** 6.5'-8.0' **Date Sampled:**

Sample Number: 2

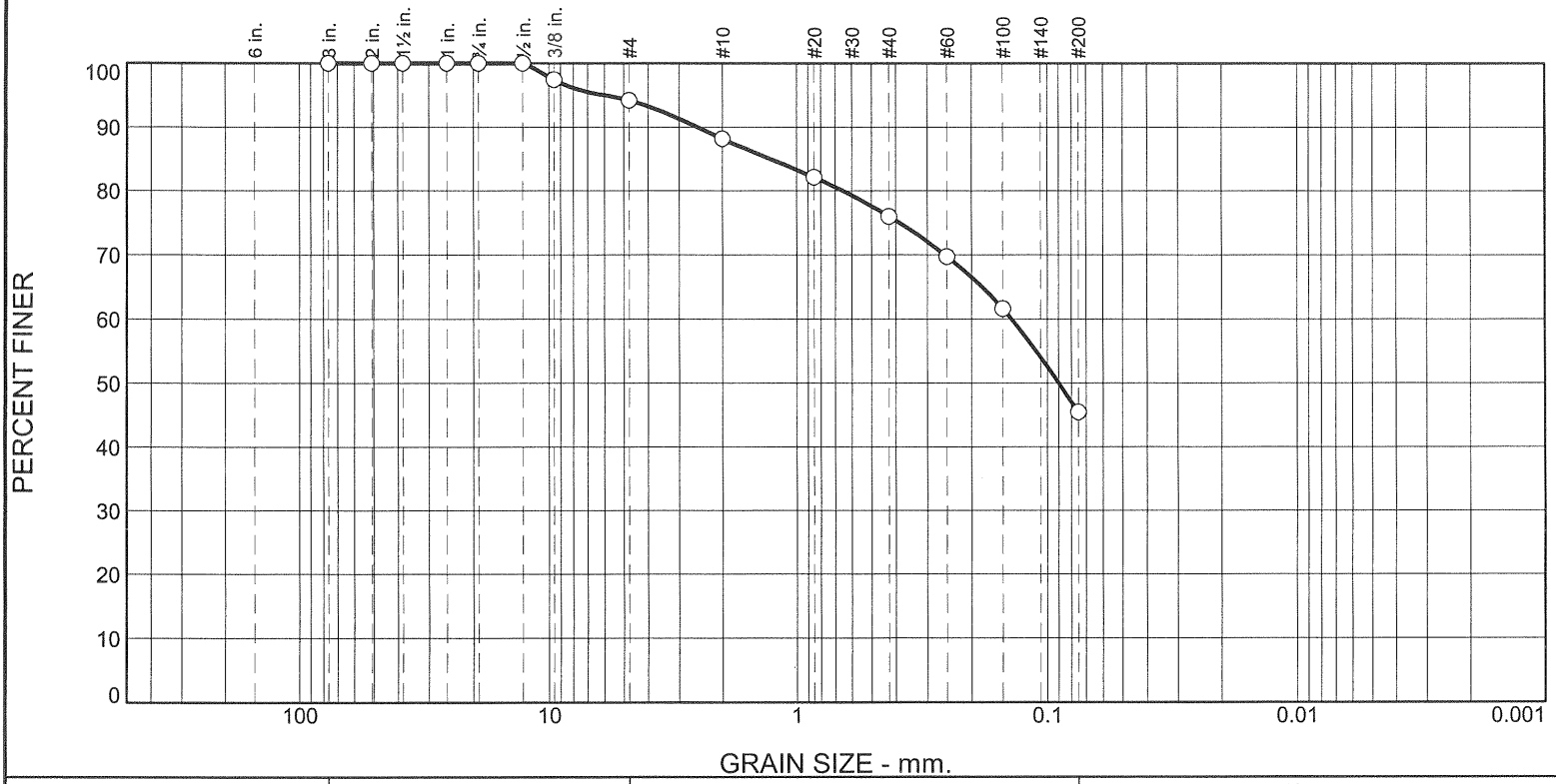
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.8	6.0	12.2	30.5	45.5	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	97.4		
#4	94.2		
#10	88.2		
#20	82.1		
#40	76.0		
#60	69.7		
#100	61.6		
#200	45.5		

* (no specification provided)

Material Description

Dark Gray Fly Ash

Atterberg Limits (ASTM D 4318)

PL= NP LL= NP PI= NP

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-4(0)

Coefficients

D_{90}= 2.5327 D_{85}= 1.2784 D_{60}= 0.1386
D_{50}= 0.0899 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-3 **Depth:** 4.5'-6.0' **Date Sampled:**

Sample Number: 1

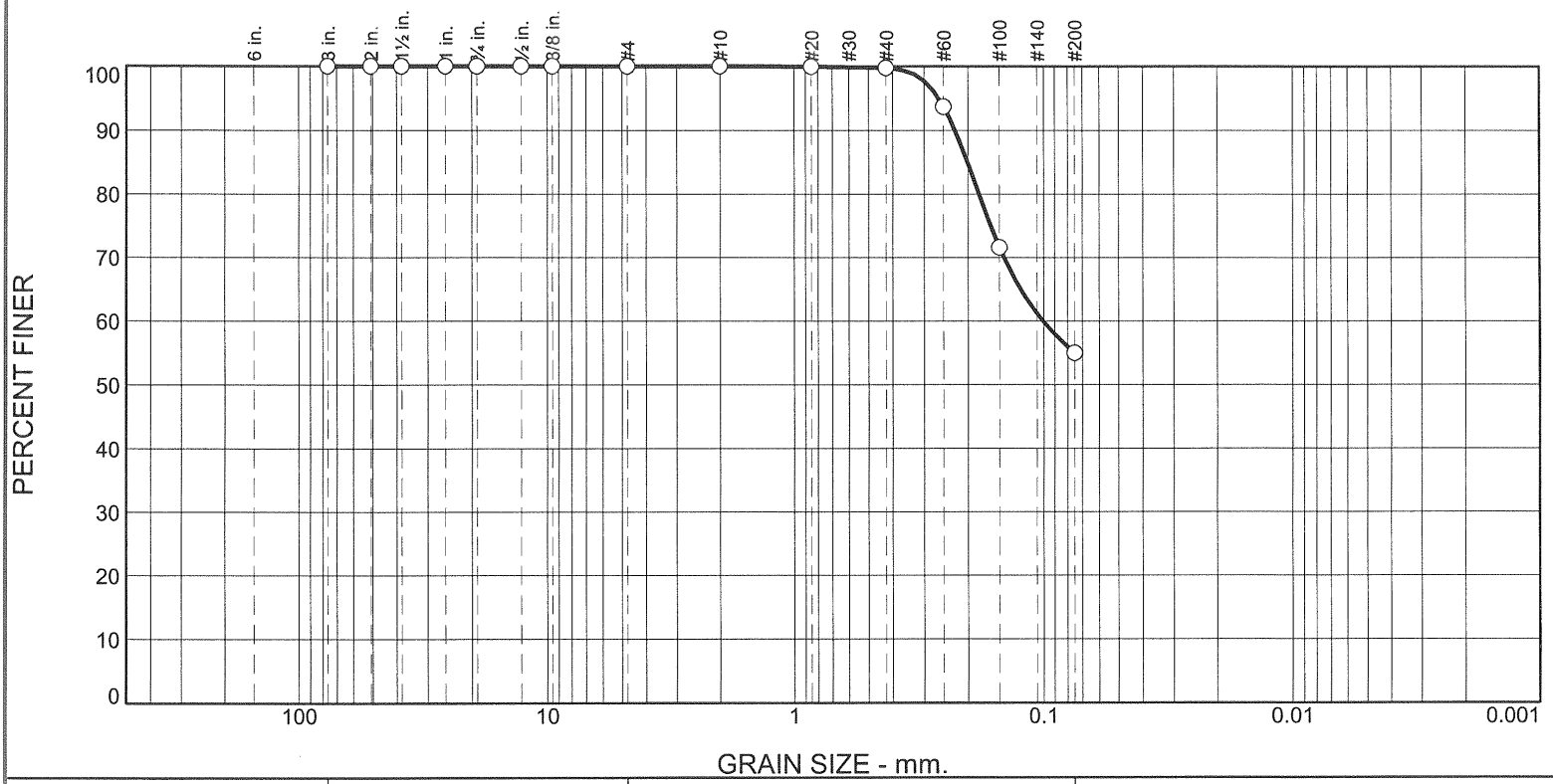
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	44.7	55.0	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#10	100.0		
#20	99.9		
#40	99.7		
#60	93.7		
#100	71.6		
#200	55.0		

* (no specification provided)

Material Description

Light Brown SILT with Sand

Atterberg Limits (ASTM D 4318)

PL= 26 LL= 35 PI= 9

Classification

USCS (D 2487)= ML AASHTO (M 145)= A-4(3)

Coefficients

D_{90}= 0.2254 D_{85}= 0.2010 D_{60}= 0.1004
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By: _____

Title: _____

Source of Sample: Boring No.: AP2-3 **Depth:** 9.5'-11.0' **Date Sampled:**

Sample Number: 2

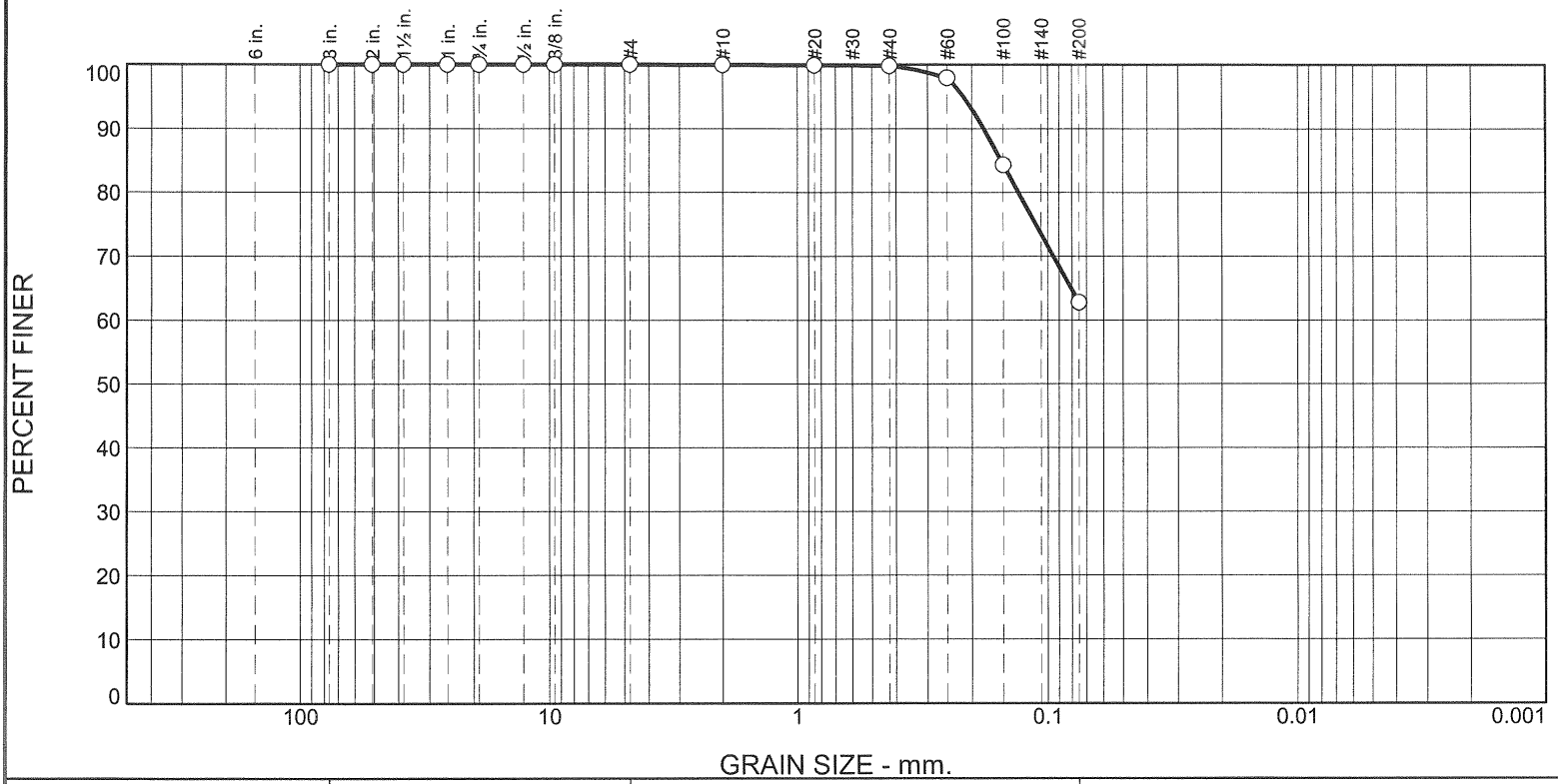
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	0.1	37.0	62.8	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0		
2"	100.0		
1.5"	100.0		
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#10	99.9		
#20	99.9		
#40	99.8		
#60	97.9		
#100	84.3		
#200	62.8		

* (no specification provided)

Material Description

Light Gray SILT with Fine Sand

Atterberg Limits (ASTM D 4318)

PL= 25 LL= 34 PI= 9

Classification

USCS (D 2487)= ML AASHTO (M 145)= A-4(4)

Coefficients

D_{90}= 0.1796 D_{85}= 0.1532 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-3 **Depth:** 15.0'-16.5' **Date Sampled:**

Sample Number: 3

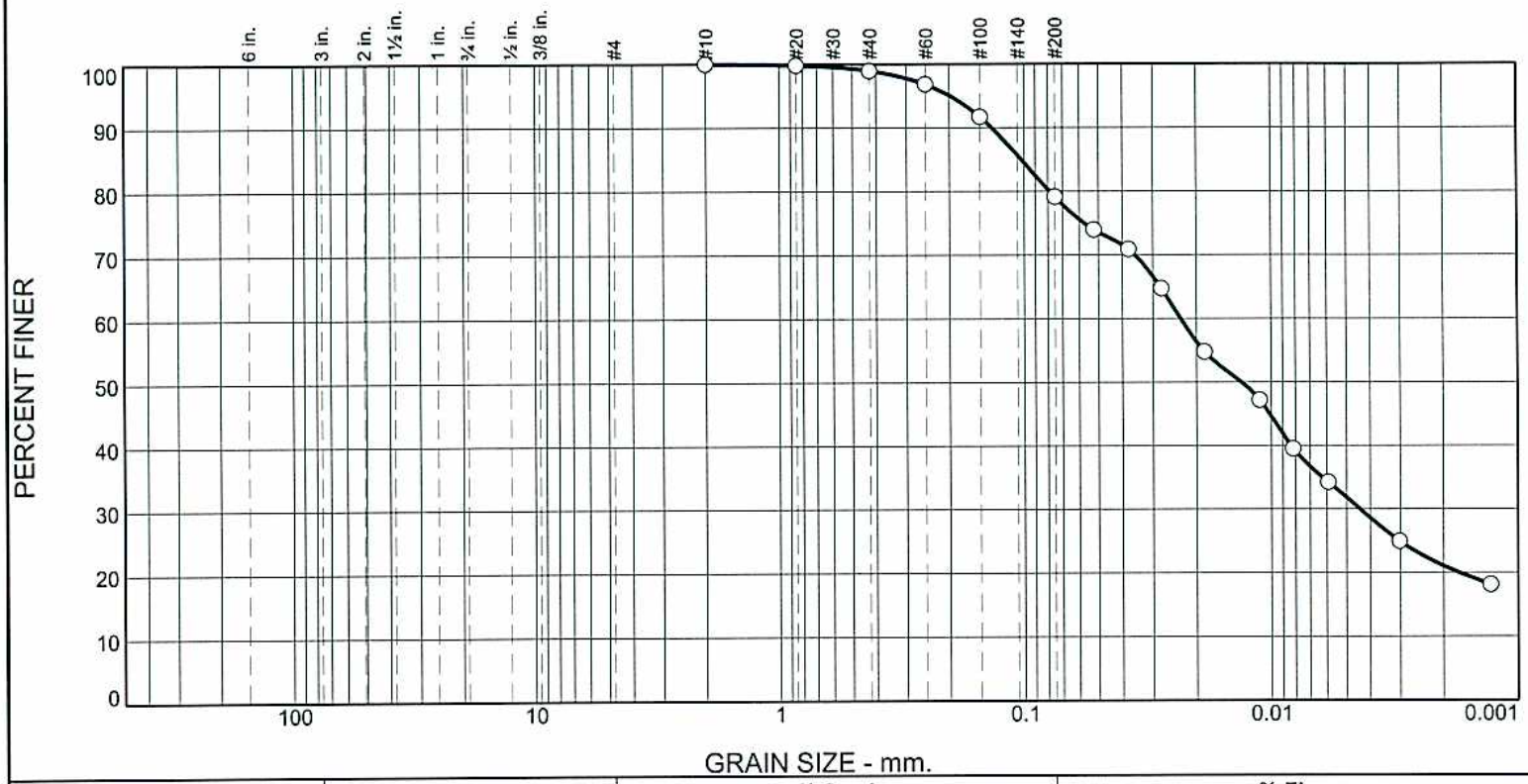
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.1	19.8	47.3	31.8

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#10	100.0		
#20	99.8		
#40	98.9		
#60	96.8		
#100	91.7		
#200	79.1		
0.0521 mm.	73.9		
0.0376 mm.	70.9		
0.0277 mm.	64.7		
0.0185 mm.	54.8		
0.0111 mm.	47.2		
0.0082 mm.	39.5		
0.0059 mm.	34.2		
0.0030 mm.	24.9		
0.0013 mm.	18.1		

* (no specification provided)

Material Description

Dark Gray Elastic SILT with Sand

Atterberg Limits (ASTM D 4318)

PL= 47 LL= 71 PI= 24

Classification

USCS (D 2487)= MH AASHTO (M 145)= A-7-5(25)

Coefficients

D_{90}= 0.1347 D_{85}= 0.1024 D_{60}= 0.0231
D_{50}= 0.0132 D_{30}= 0.0044 D_{15}=
D_{10}= C_u= C_c=

Remarks

Assumed specific gravity: 2.690

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-1 **Depth:** 49.5'-51.0' **Date Sampled:**

Sample Number: 10

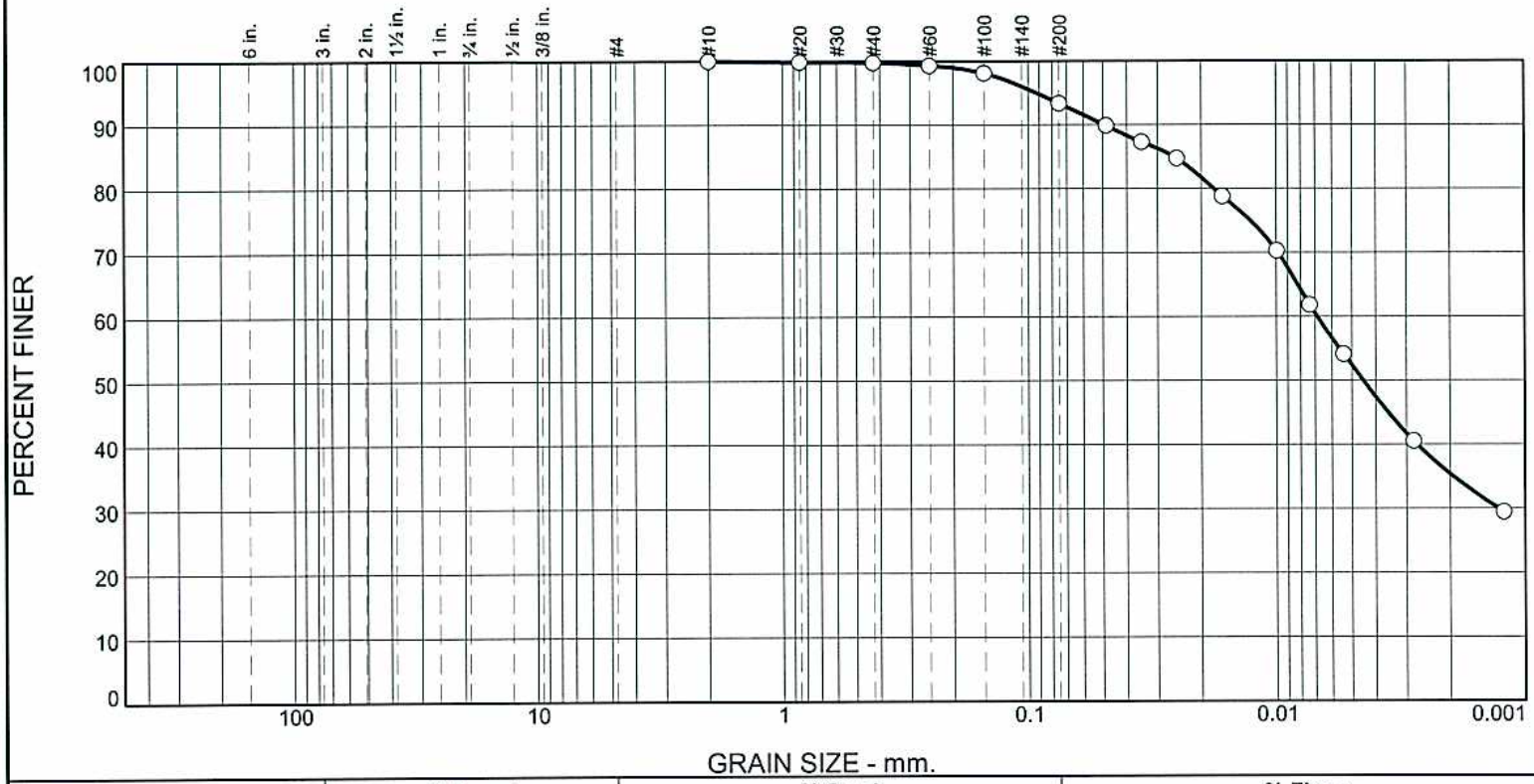
MACTEC ENGINEERING. AND CONSULTING, INC.

Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 **Jax FL.**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	6.4	40.9	52.4

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#10	100.0		
#20	99.8		
#40	99.7		
#60	99.3		
#100	98.1		
#200	93.3		
0.0484 mm.	89.8		
0.0348 mm.	87.3		
0.0250 mm.	84.7		
0.0164 mm.	78.8		
0.0100 mm.	70.2		
0.0073 mm.	61.8		
0.0054 mm.	54.1		
0.0028 mm.	40.5		
0.0012 mm.	29.4		

* (no specification provided)

Material Description

Light Brown Fat Clay with Sand

Atterberg Limits (ASTM D 4318)

PL= 26 LL= 52 PI= 26

Classification

USCS (D 2487)= CH AASHTO (M 145)= A-7-6(28)

Coefficients

D_{90}= 0.0494 D_{85}= 0.0257 D_{60}= 0.0069
D_{50}= 0.0045 D_{30}= 0.0013 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 4-2-10 **Date Tested:** 4-8-10

Tested By: MC

Checked By:

Title:

Source of Sample: Boring No.: AP2-2 **Depth:** 19.5'-21.0' **Date Sampled:**

Sample Number: 4

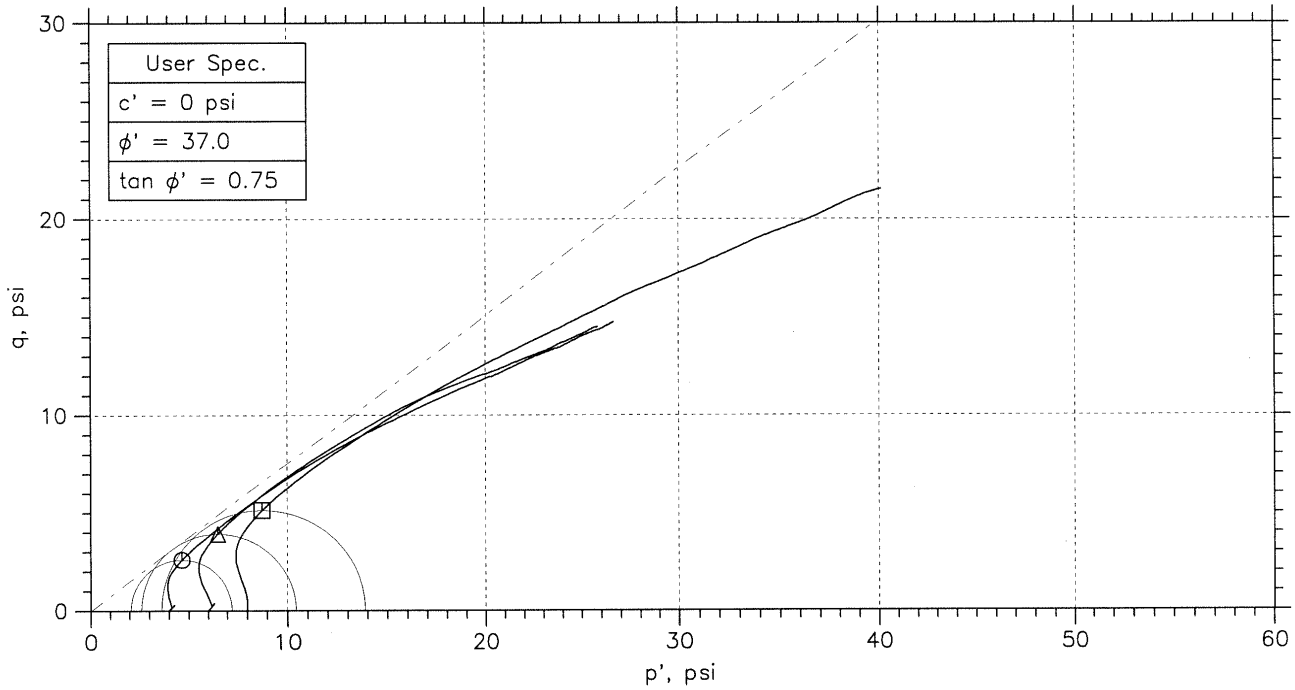
MACTEC ENGINEERING. AND CONSULTING, INC.

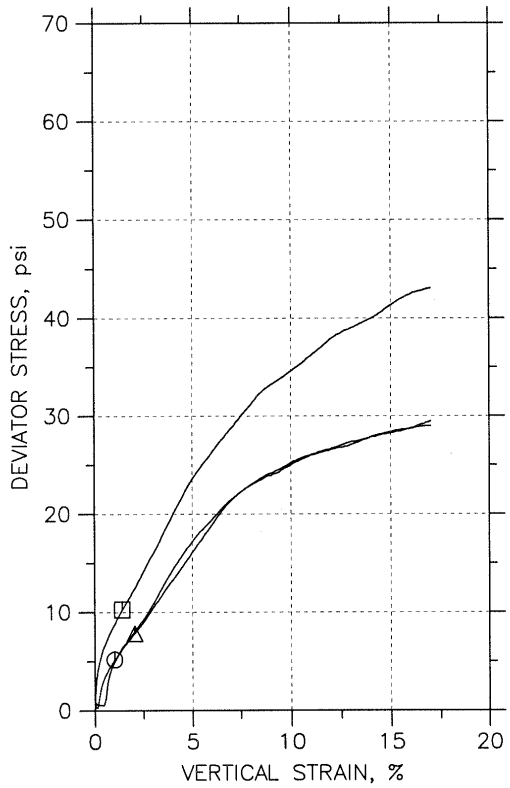
Client: Southern Company

Project: Plant Yates Ash Pond

Project No: 6189109008 Jax FL.

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⊙	△	⊡	
Sample No.		IS-1	IS-1	IS-1	
Test No.		10099.1	10099.2	10099.3	
Depth		10-12 ft	10-12 ft	10-12 ft	
Initial	Diameter, in	2.878	2.873	2.856	
	Height, in	5.977	5.574	5.572	
	Water Content, %	20.1	17.4	19.4	
	Dry Density, pcf	103.3	106.2	105.9	
	Saturation, %	85.1	79.2	87.4	
	Void Ratio	0.643	0.599	0.603	
Before Shear	Water Content, %	23.2	21.1	21.9	
	Dry Density, pcf	104.	107.9	106.4	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.632	0.574	0.596	
	Back Press., psi	120.	134.	134.	
Ver. Eff. Cons. Stress, psi		4.001	5.997	8.009	
Shear Strength, psi		2.584	3.912	5.121	
Strain at Failure, %		1.03	2.05	1.43	
Strain Rate, %/min		0.05	0.05	0.05	
B-Value		0.96	0.96	0.95	
Measured Specific Gravity		2.72	2.72	2.72	
Liquid Limit		NP	NP	NP	
Plastic Limit		NP	NP	NP	

MACTEC

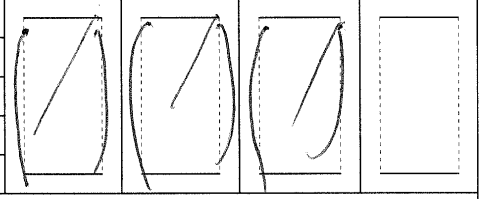
Project: Plant Yates Ash Pond

Location: AP2-1

Project No.: 6189109008

Boring No.: AP2-1

Sample Type: Undisturbed



Description: Brown Silty Sand with Mica

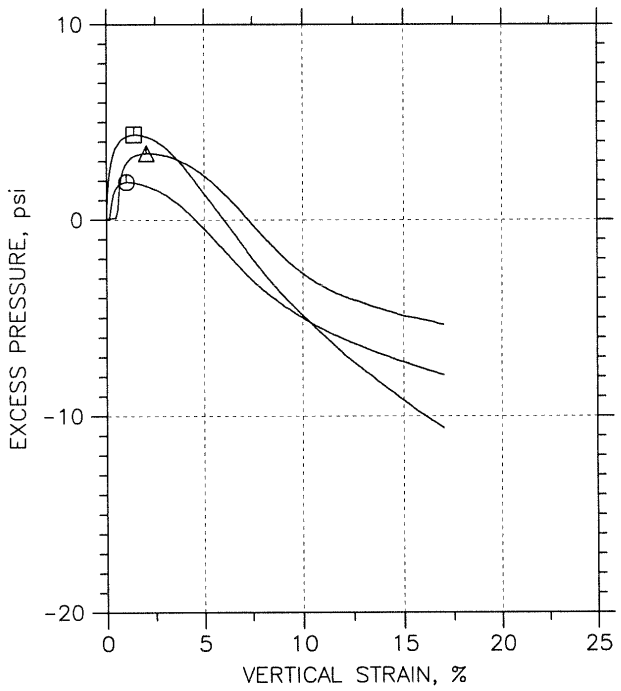
Remarks: ASTM D4767-04 Strains at failure based on peak excess pore pressure.

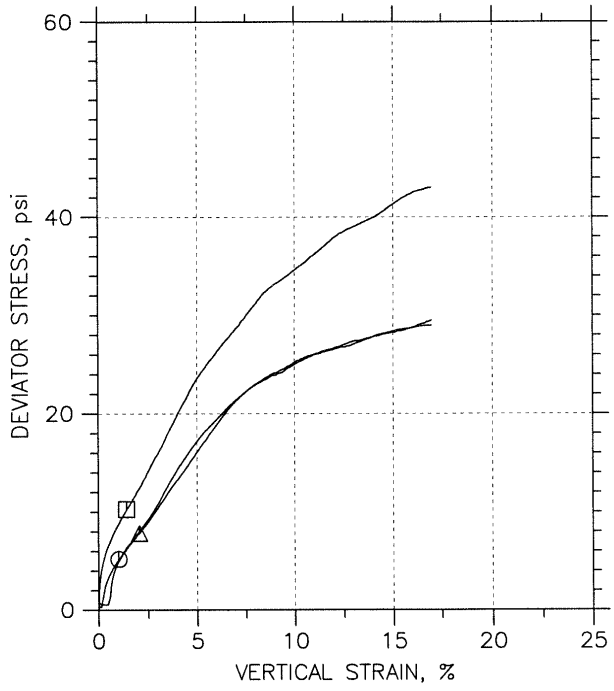
Phase calculations based on start and end of test.

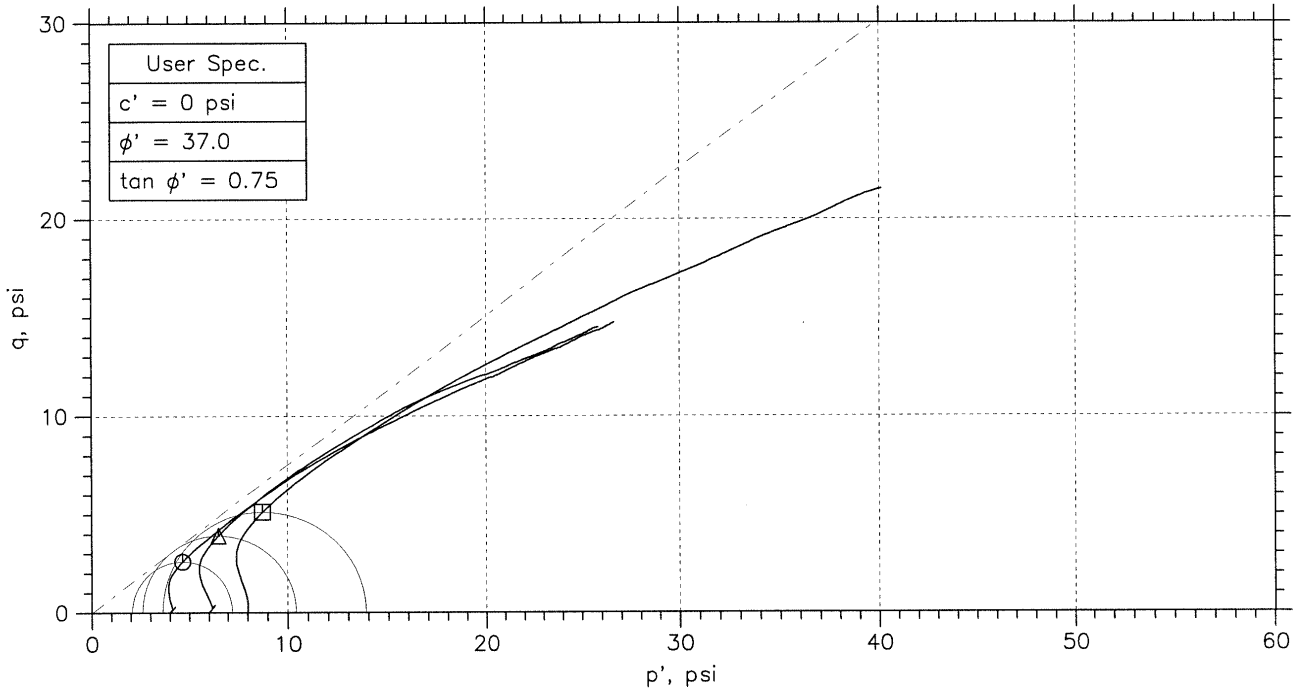
* Saturation is set to 100% for phase calculations.

Wed, 19-MAY-2010 13:43:59

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







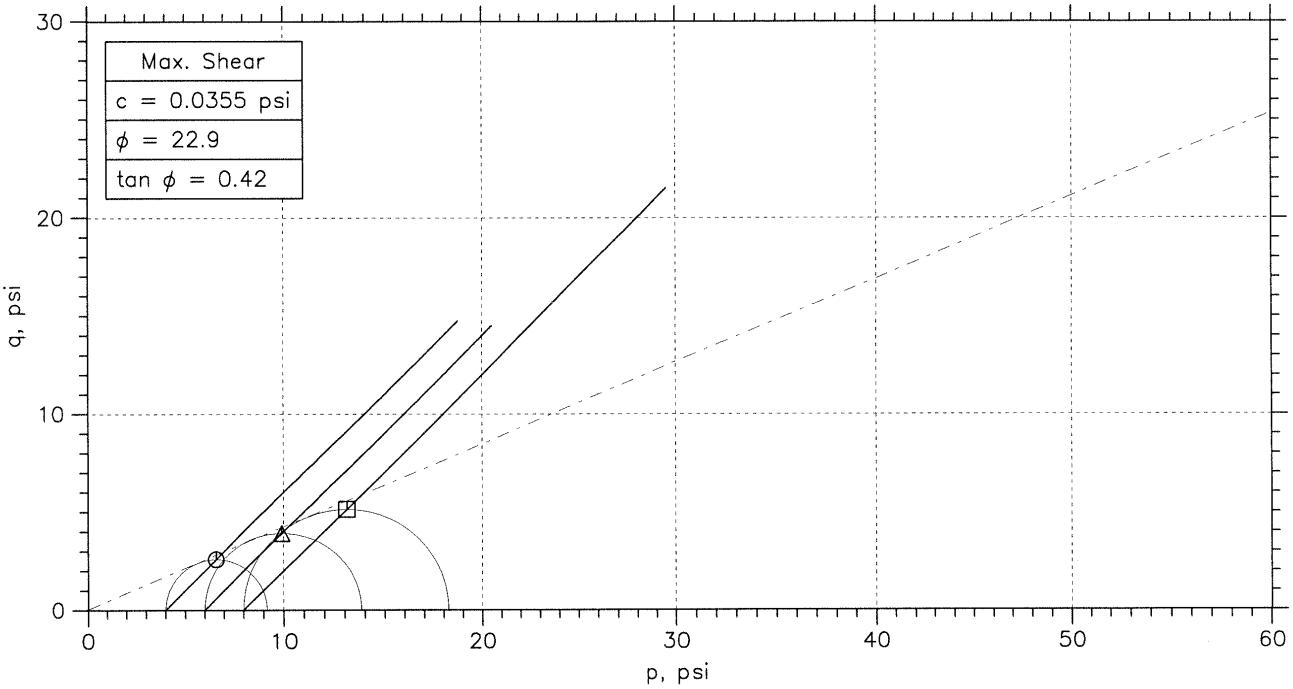
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	IS-1	10099.1	10-12 ft	JW	3/26/10			10099.1_2547.dat
△	IS-1	10099.2	10-12 ft	JW	3/26/10			10099.2_2580.dat
⊡	IS-1	10099.3	10-12 ft	JW	3/26/10			10099.3_2546.dat

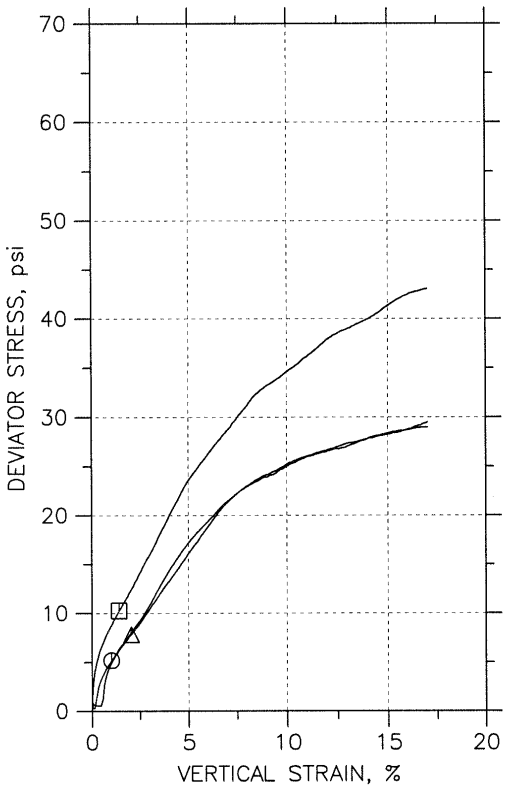
MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silty Sand with Mica		
Remarks: ASTM D4767-04 Strains at failure based on peak excess pore pressure.		

Wed, 19-MAY-2010 13:43:59

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⏲	△	⏍	
Sample No.		IS-1	IS-1	IS-1	
Test No.		10099.1	10099.2	10099.3	
Depth		10-12 ft	10-12 ft	10-12 ft	
Initial	Diameter, in	2.878	2.873	2.856	
	Height, in	5.977	5.574	5.572	
	Water Content, %	20.1	17.4	19.4	
	Dry Density, pcf	103.3	106.2	105.9	
	Saturation, %	85.1	79.2	87.4	
	Void Ratio	0.643	0.599	0.603	
Before Shear	Water Content, %	23.2	21.1	21.9	
	Dry Density, pcf	104.	107.9	106.4	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.632	0.574	0.596	
	Back Press., psi	120.	134.	134.	
Ver. Eff. Cons. Stress, psi		4.001	5.997	8.009	
Shear Strength, psi		2.584	3.912	5.121	
Strain at Failure, %		1.03	2.05	1.43	
Strain Rate, %/min		0.05	0.05	0.05	
B-Value		0.96	0.96	0.95	
Measured Specific Gravity		2.72	2.72	2.72	
Liquid Limit		NP	NP	NP	
Plastic Limit		NP	NP	NP	

MACTEC

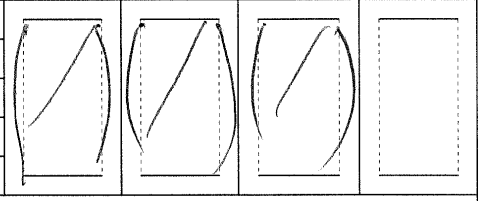
Project: Plant Yates Ash Pond

Location: AP2-1

Project No.: 6189109008

Boring No.: AP2-1

Sample Type: Undisturbed



Description: Brown Silty Sand with Mica

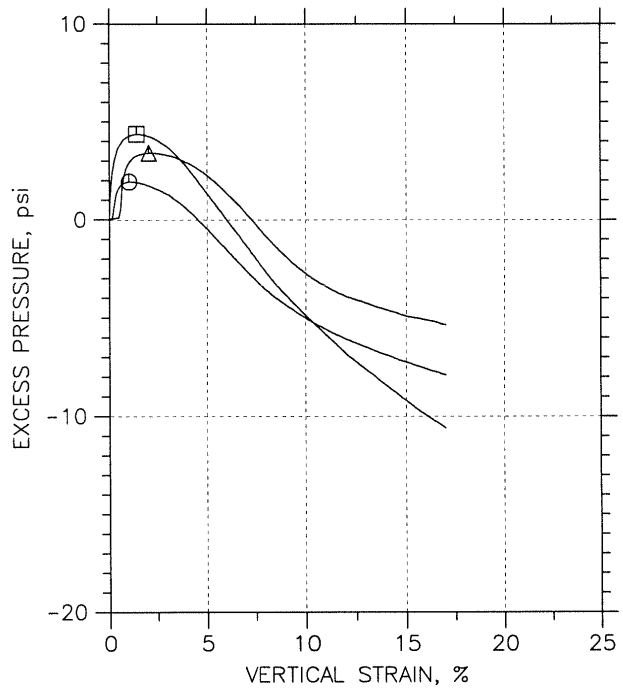
Remarks: ASTM D4767-04 Strains at failure based on peak excess pore pressure.

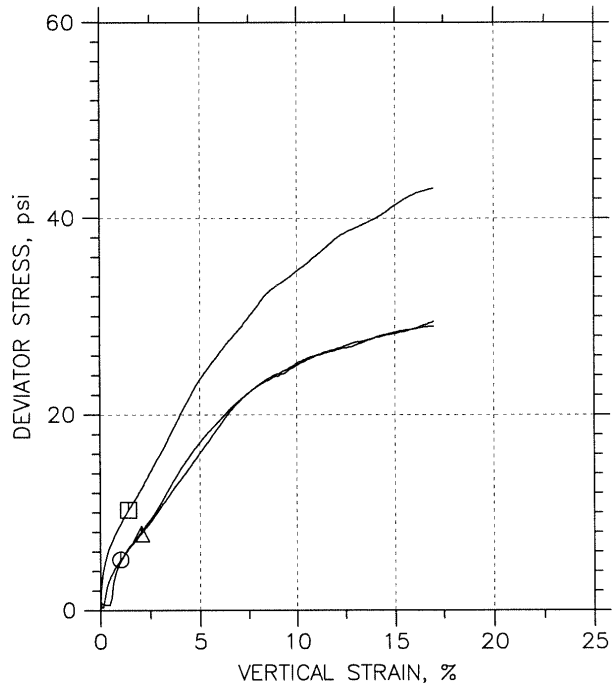
Phase calculations based on start and end of test.

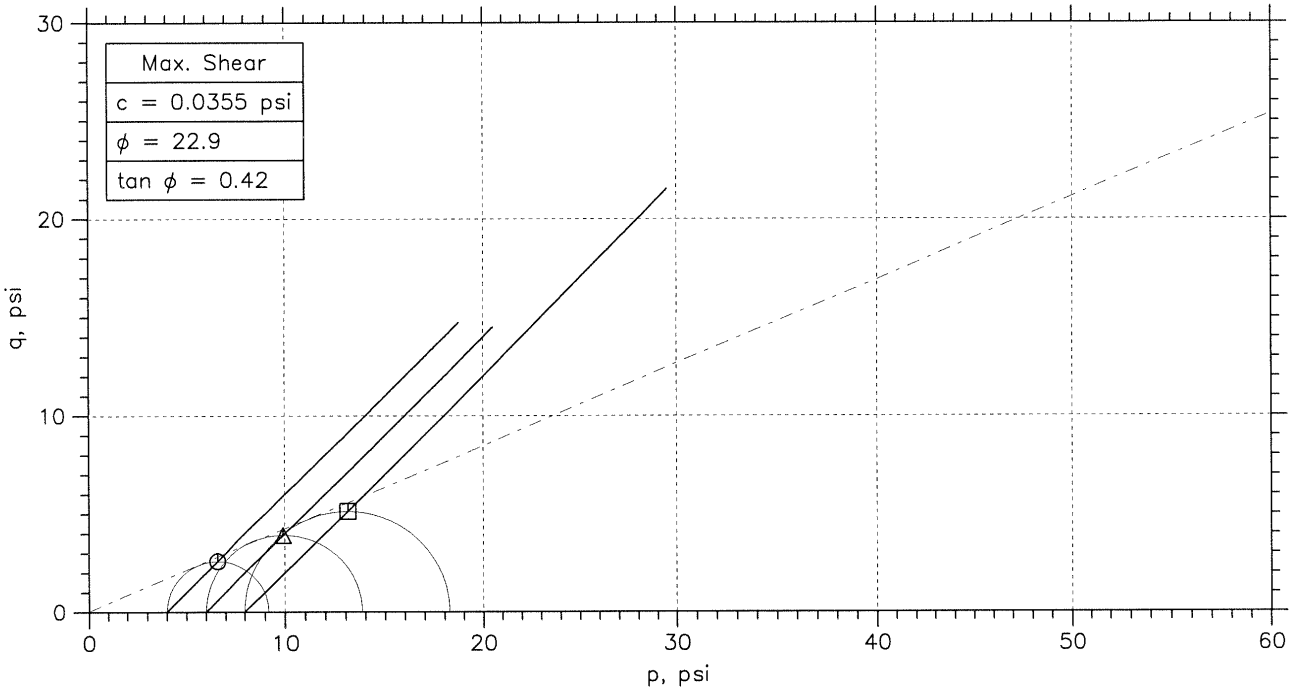
* Saturation is set to 100% for phase calculations.

Wed, 19-MAY-2010 13:44:12

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







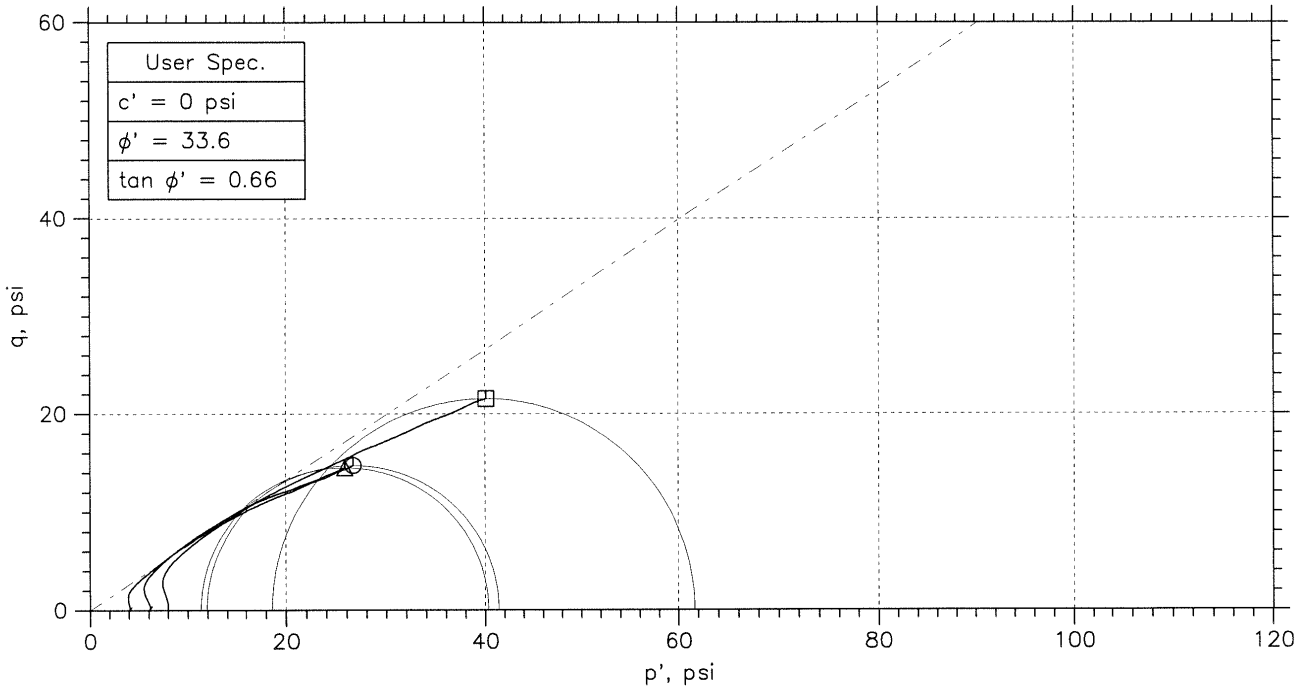
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	IS-1	10099.1	10-12 ft	JW	3/26/10			10099.1_2547.dat
△	IS-1	10099.2	10-12 ft	JW	3/26/10			10099.2_2580.dat
⊡	IS-1	10099.3	10-12 ft	JW	3/26/10			10099.3_2546.dat

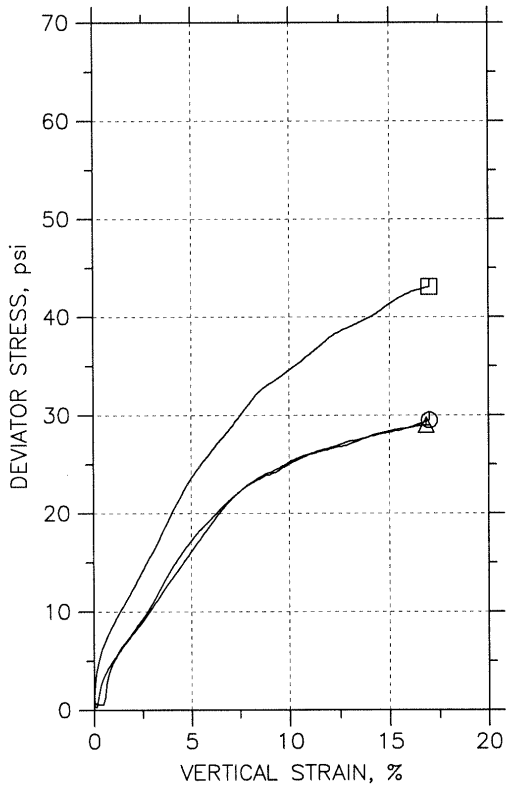
MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silty Sand with Mica		
Remarks: ASTM D4767-04 Strains at failure based on peak excess pore pressure.		

Wed, 19-MAY-2010 13:44:12

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⏲	△	⊡	
Sample No.		IS-1	IS-1	IS-1	
Test No.		10099.1	10099.2	10099.3	
Depth		10-12 ft	10-12 ft	10-12 ft	
Initial	Diameter, in	2.878	2.873	2.856	
	Height, in	5.977	5.574	5.572	
	Water Content, %	20.1	17.4	19.4	
	Dry Density, pcf	103.3	106.2	105.9	
	Saturation, %	85.1	79.2	87.4	
	Void Ratio	0.643	0.599	0.603	
Before Shear	Water Content, %	23.2	21.1	21.9	
	Dry Density, pcf	104.	107.9	106.4	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.632	0.574	0.596	
	Back Press., psi	120.	134.	134.	
Ver. Eff. Cons. Stress, psi		4.001	5.997	8.009	
Shear Strength, psi		14.74	14.5	21.53	
Strain at Failure, %		17	16.8	17	
Strain Rate, %/min		0.05	0.05	0.05	
B-Value		0.96	0.96	0.95	
Measured Specific Gravity		2.72	2.72	2.72	
Liquid Limit		NP	NP	NP	
Plastic Limit		NP	NP	NP	

MACTEC

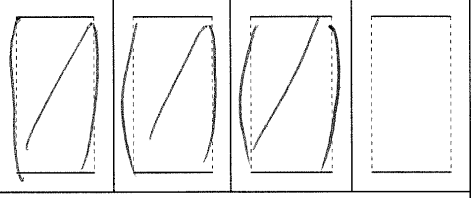
Project: Plant Yates Ash Pond

Location: AP2-1

Project No.: 6189109008

Boring No.: AP2-1

Sample Type: Undisturbed



Description: Brown Silty Sand with Mica

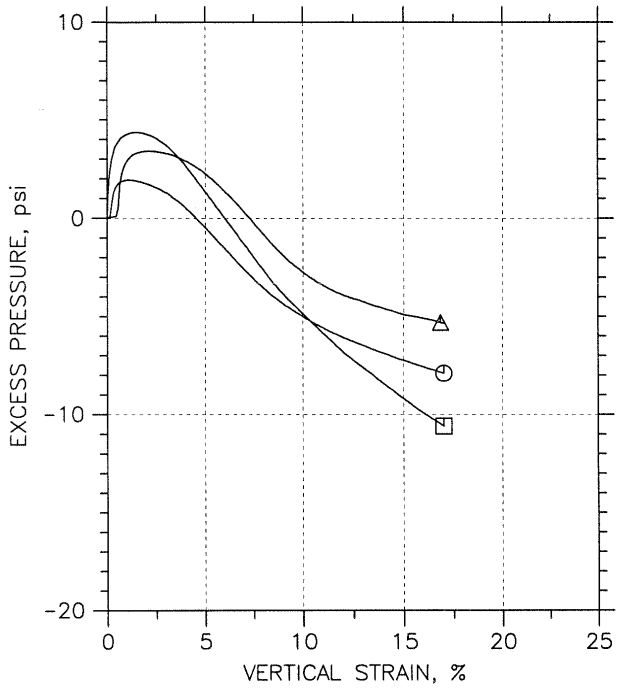
Remarks: ASTM D4767-04

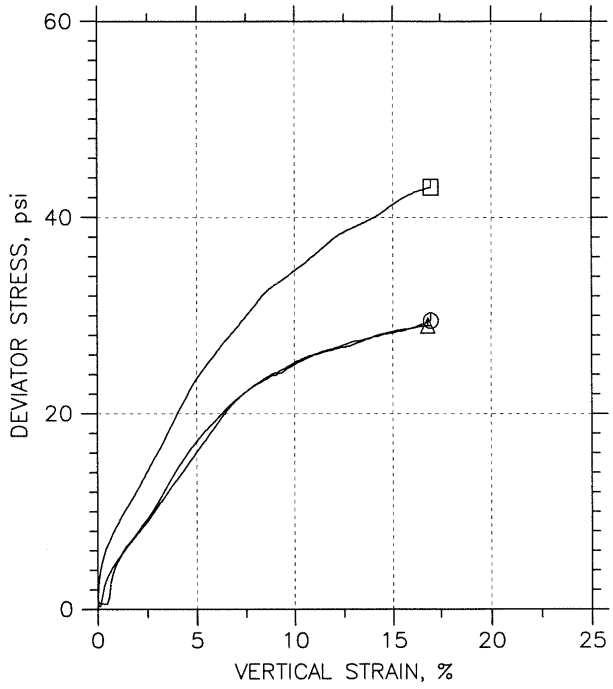
Phase calculations based on start and end of test.

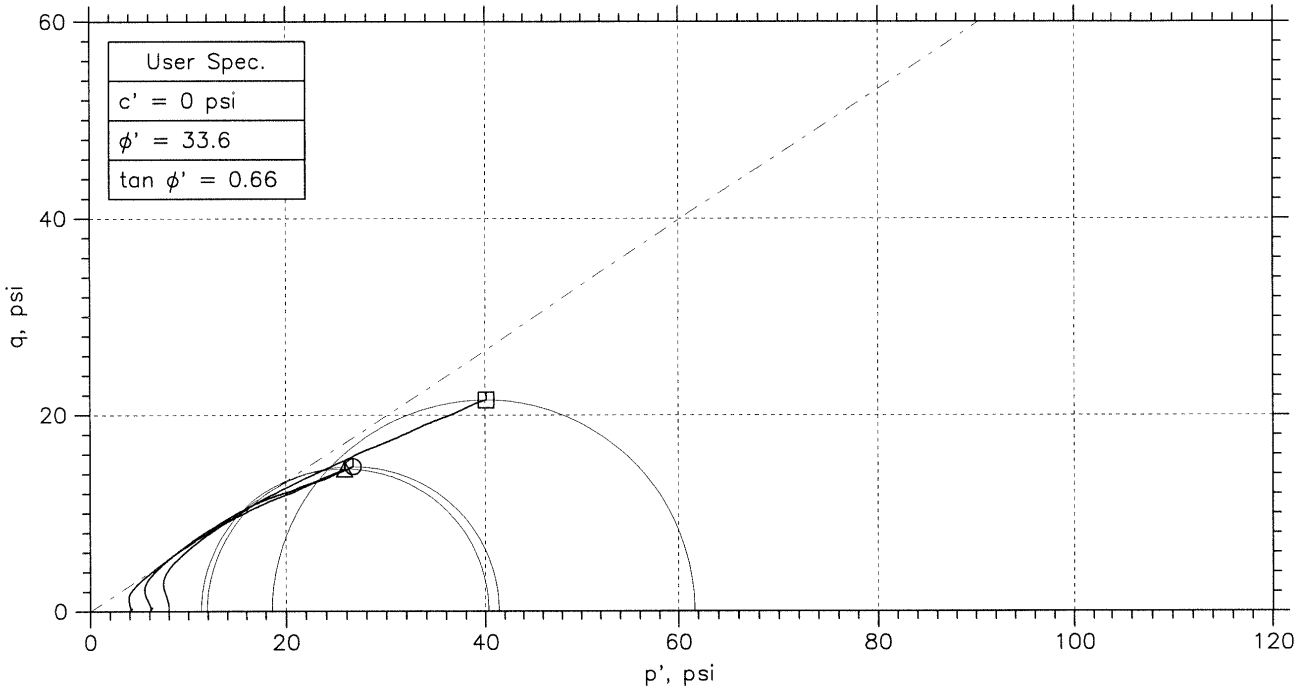
* Saturation is set to 100% for phase calculations.

Wed, 19-MAY-2010 13:53:49

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







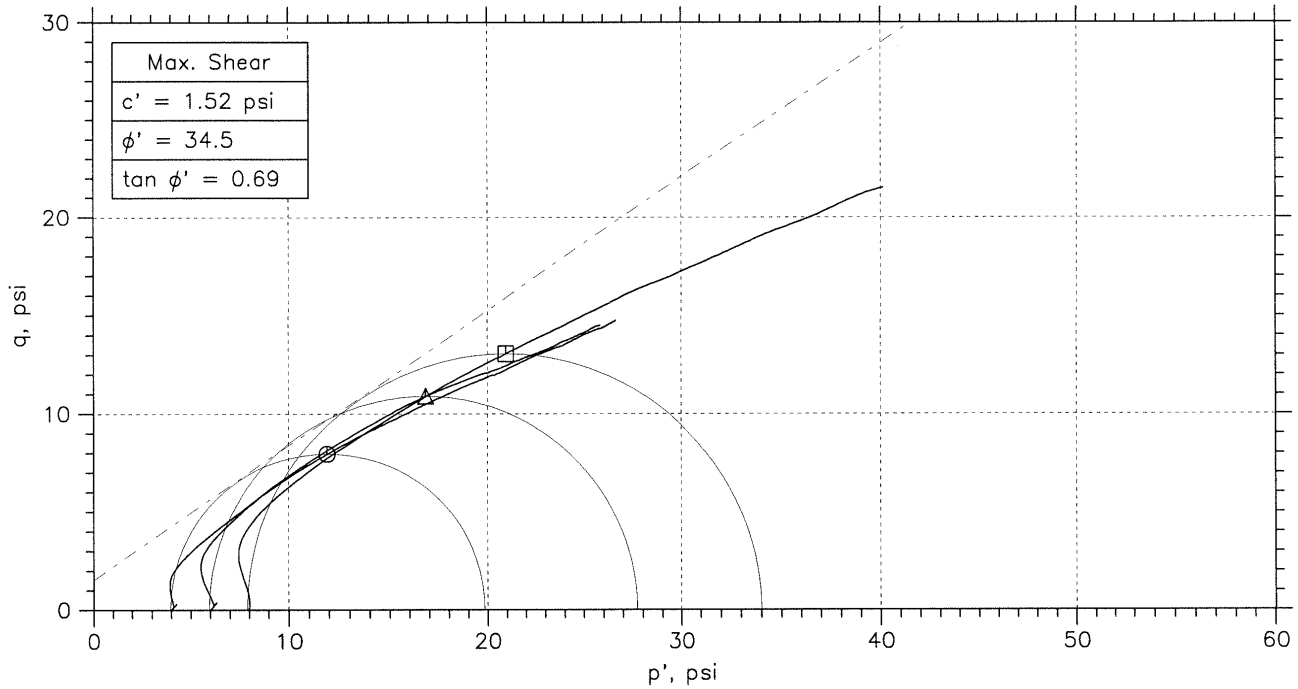
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	IS-1	10099.1	10-12 ft	JW	3/26/10			10099.1_2547.dat
△	IS-1	10099.2	10-12 ft	JW	3/26/10			10099.2_2580.dat
⊡	IS-1	10099.3	10-12 ft	JW	3/26/10			10099.3_2546.dat

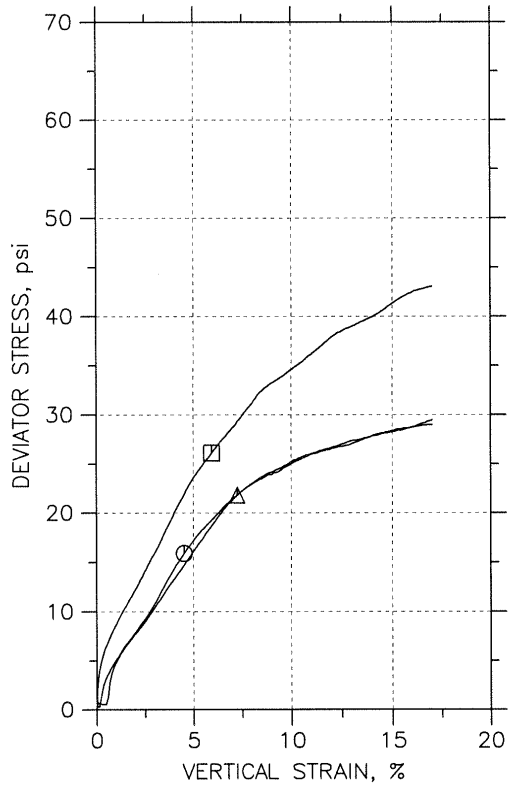
MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silty Sand with Mica		
Remarks: ASTM D4767-04		

Wed, 19-MAY-2010 13:53:49

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⏲	△	⏍	
Sample No.		IS-1	IS-1	IS-1	
Test No.		10099.1	10099.2	10099.3	
Depth		10-12 ft	10-12 ft	10-12 ft	
Initial	Diameter, in	2.878	2.873	2.856	
	Height, in	5.977	5.574	5.572	
	Water Content, %	20.1	17.4	19.4	
	Dry Density, pcf	103.3	106.2	105.9	
	Saturation, %	85.1	79.2	87.4	
	Void Ratio	0.643	0.599	0.603	
Before Shear	Water Content, %	23.2	21.1	21.9	
	Dry Density, pcf	104.	107.9	106.4	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.632	0.574	0.596	
	Back Press., psi	120.	134.	134.	
Ver. Eff. Cons. Stress, psi		4.001	5.997	8.009	
Shear Strength, psi		7.937	10.88	13.05	
Strain at Failure, %		4.52	7.24	5.94	
Strain Rate, %/min		0.05	0.05	0.05	
B-Value		0.96	0.96	0.95	
Measured Specific Gravity		2.72	2.72	2.72	
Liquid Limit		NP	NP	NP	
Plastic Limit		NP	NP	NP	

MACTEC

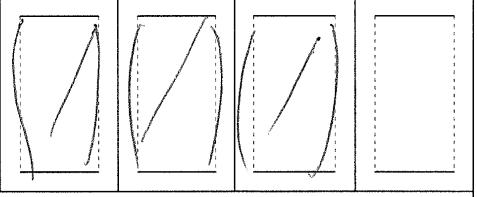
Project: Plant Yates Ash Pond

Location: AP2-1

Project No.: 6189109008

Boring No.: AP2-1

Sample Type: Undisturbed



Description: Brown Silty Sand with Mica

Remarks: ASTM D4767-04 Strains at failure based on A=0.

Phase calculations based on start and end of test.

* Saturation is set to 100% for phase calculations.

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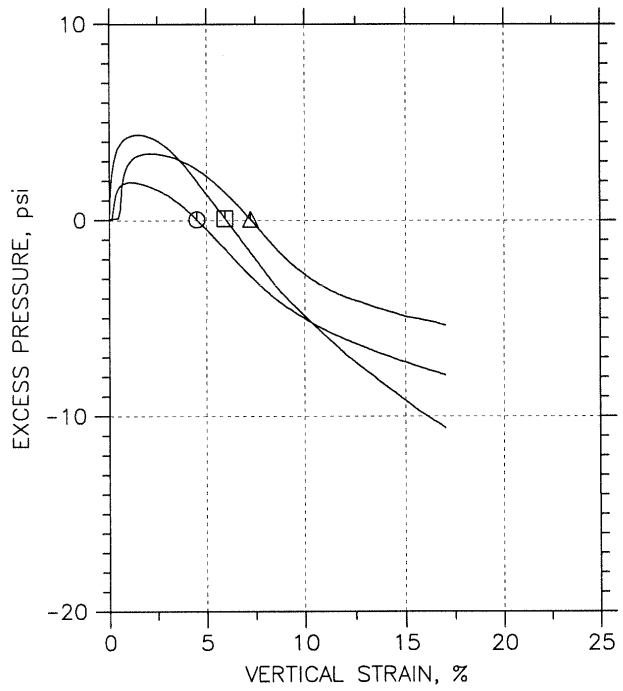
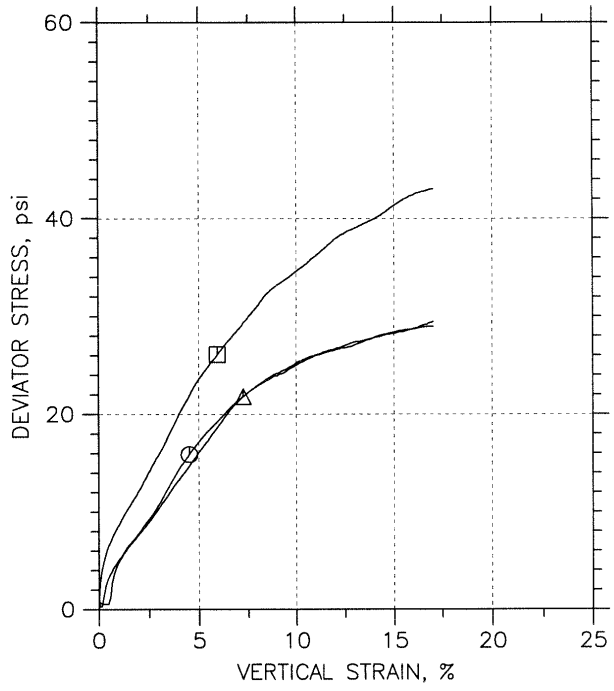
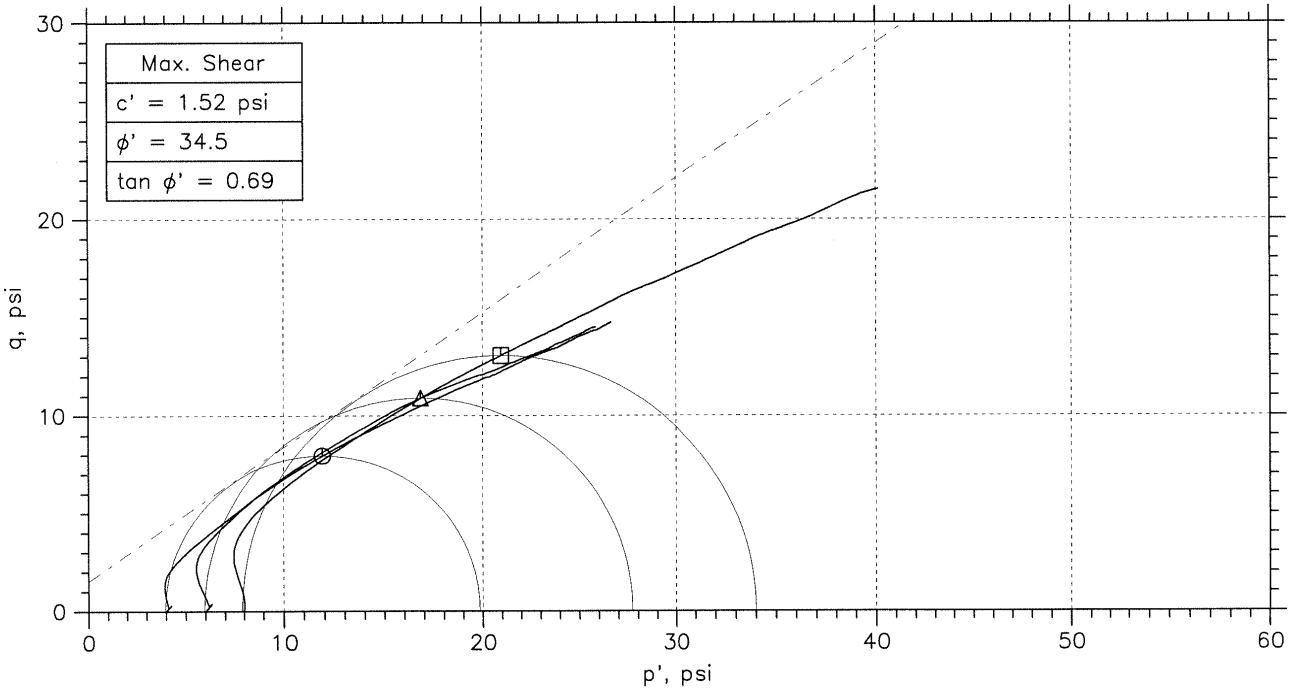
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







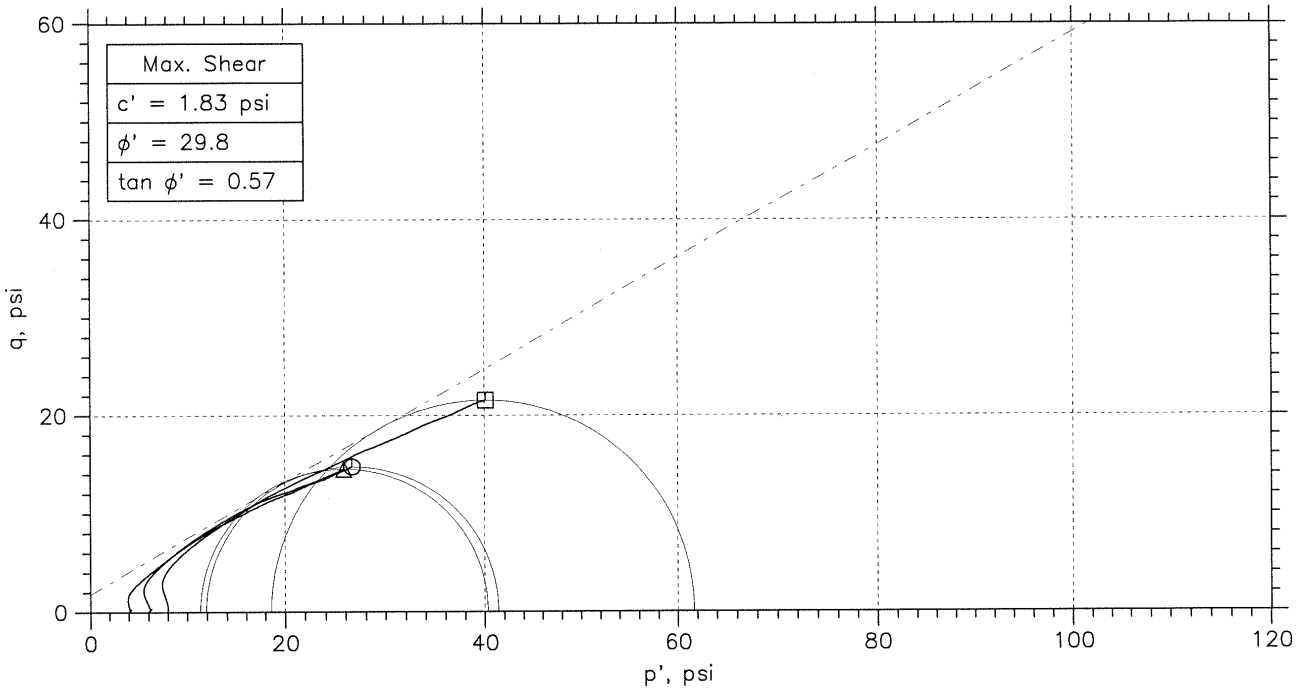
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	IS-1	10099.1	10-12 ft	JW	3/26/10			10099.1_2547.dat
△	IS-1	10099.2	10-12 ft	JW	3/26/10			10099.2_2580.dat
⊡	IS-1	10099.3	10-12 ft	JW	3/26/10			10099.3_2546.dat

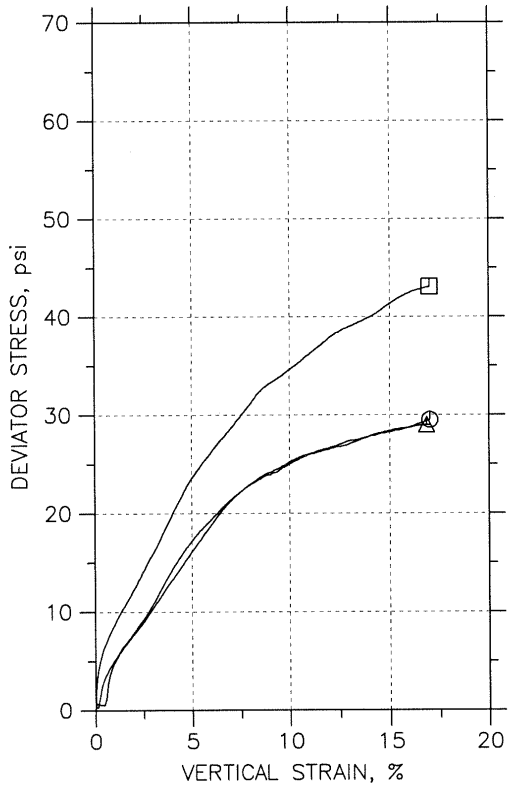
MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silty Sand with Mica		
Remarks: ASTM D4767-04 Strains at failure based on A=0.		

Wed, 19-MAY-2010 13:45:30

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⏲	△	⏍	
Sample No.		IS-1	IS-1	IS-1	
Test No.		10099.1	10099.2	10099.3	
Depth		10-12 ft	10-12 ft	10-12 ft	
Initial	Diameter, in	2.878	2.873	2.856	
	Height, in	5.977	5.574	5.572	
	Water Content, %	20.1	17.4	19.4	
	Dry Density, pcf	103.3	106.2	105.9	
	Saturation, %	85.1	79.2	87.4	
	Void Ratio	0.643	0.599	0.603	
Before Shear	Water Content, %	23.2	21.1	21.9	
	Dry Density, pcf	104.	107.9	106.4	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.632	0.574	0.596	
	Back Press., psi	120.	134.	134.	
Ver. Eff. Cons. Stress, psi		4.001	5.997	8.009	
Shear Strength, psi		14.74	14.5	21.53	
Strain at Failure, %		17	16.8	17	
Strain Rate, %/min		0.05	0.05	0.05	
B-Value		0.96	0.96	0.95	
Measured Specific Gravity		2.72	2.72	2.72	
Liquid Limit		NP	NP	NP	
Plastic Limit		NP	NP	NP	

MACTEC

Project: Plant Yates Ash Pond

Location: AP2-1

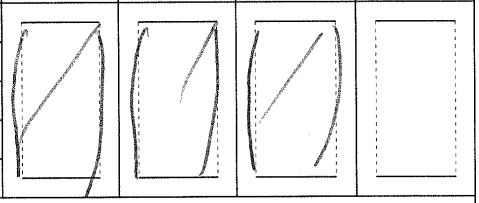
Project No.: 6189109008

Boring No.: AP2-1

Sample Type: Undisturbed

Description: Brown Silty Sand with Mica

Remarks: ASTM D4767-04

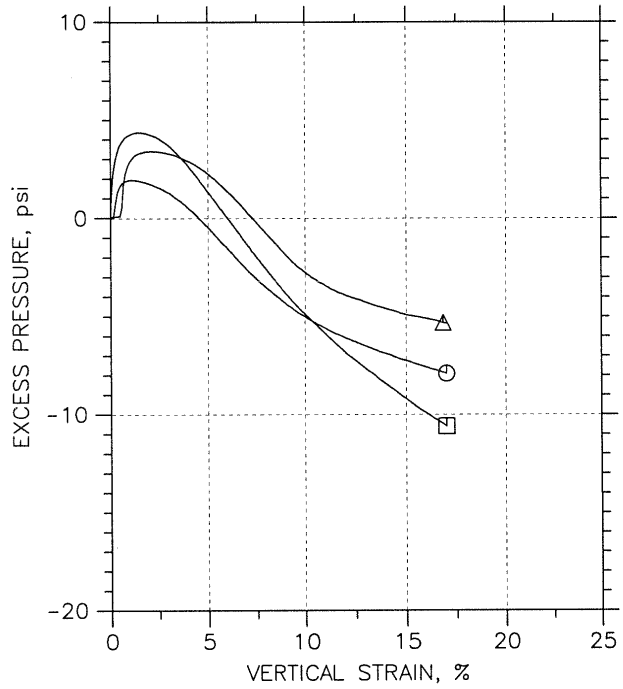


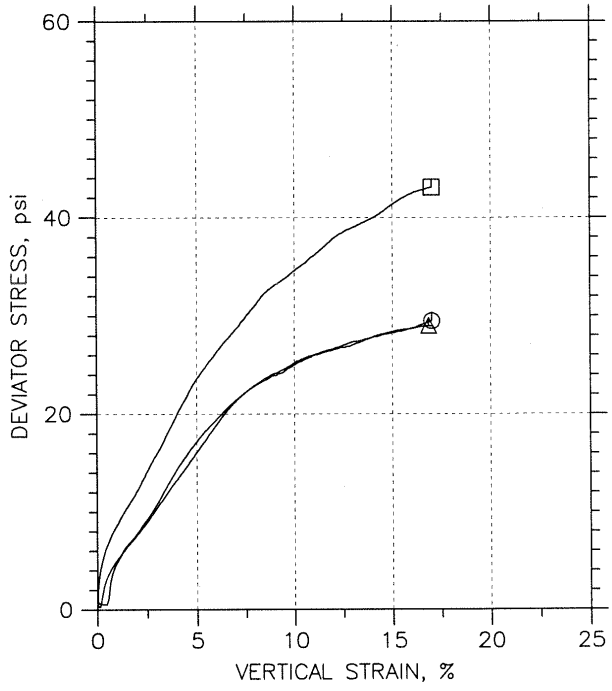
Phase calculations based on start and end of test.

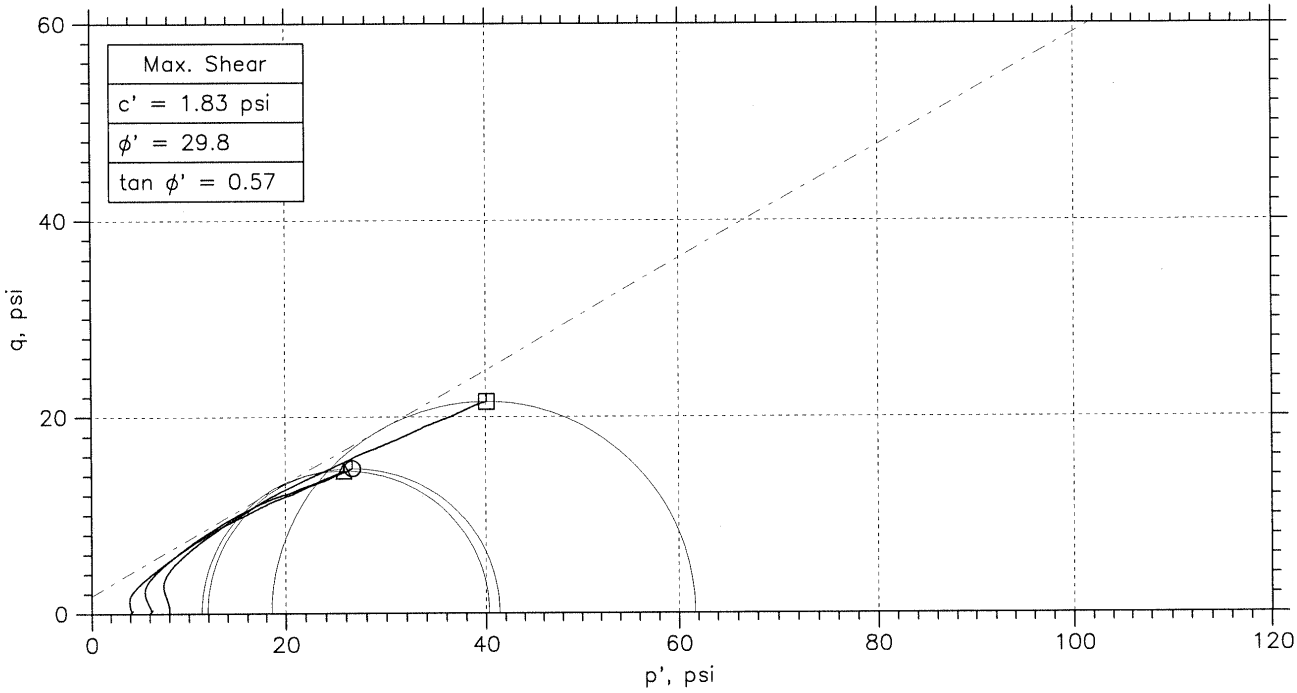
Wed, 07-APR-2010 16:57:03

* Saturation is set to 100% for phase calculations.

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	IS-1	10099.1	10-12 ft	JW	3/26/10			10099.1_2547.dat
△	IS-1	10099.2	10-12 ft	JW	3/26/10			10099.2_2580.dat
⊡	IS-1	10099.3	10-12 ft	JW	3/26/10			10099.3_2546.dat

MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silty Sand with Mica		
Remarks: ASTM D4767-04		

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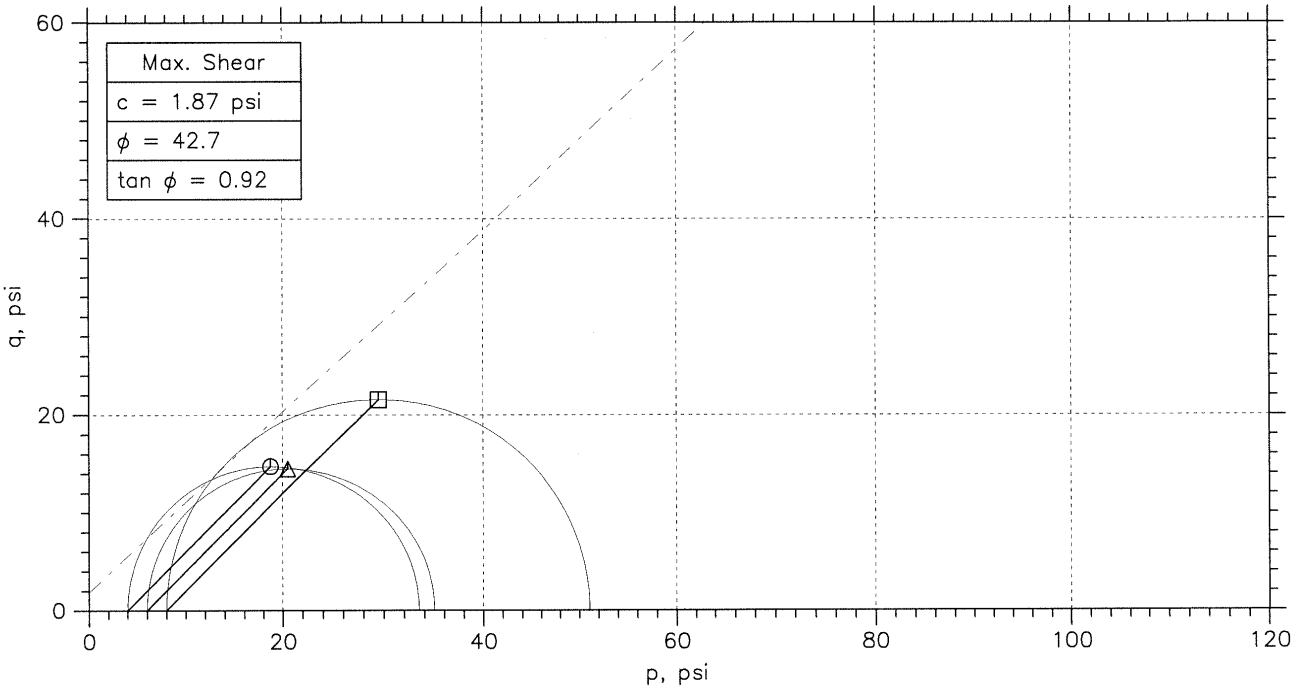
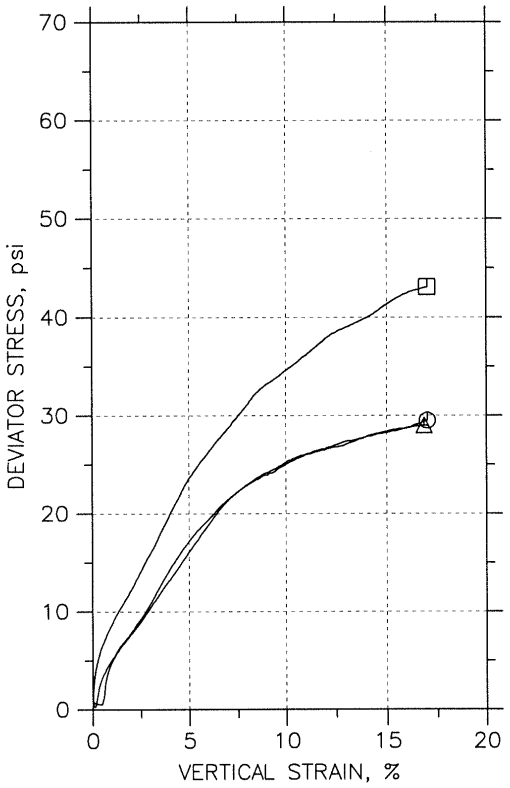
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⏲	△	⏍	
Sample No.		IS-1	IS-1	IS-1	
Test No.		10099.1	10099.2	10099.3	
Depth		10-12 ft	10-12 ft	10-12 ft	
Initial	Diameter, in	2.878	2.873	2.856	
	Height, in	5.977	5.574	5.572	
	Water Content, %	20.1	17.4	19.4	
	Dry Density, pcf	103.3	106.2	105.9	
	Saturation, %	85.1	79.2	87.4	
	Void Ratio	0.643	0.599	0.603	
Before Shear	Water Content, %	23.2	21.1	21.9	
	Dry Density, pcf	104.	107.9	106.4	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.632	0.574	0.596	
	Back Press., psi	120.	134.	134.	
Ver. Eff. Cons. Stress, psi		4.001	5.997	8.009	
Shear Strength, psi		14.74	14.5	21.53	
Strain at Failure, %		17	16.8	17	
Strain Rate, %/min		0.05	0.05	0.05	
B-Value		0.96	0.96	0.95	
Measured Specific Gravity		2.72	2.72	2.72	
Liquid Limit		NP	NP	NP	
Plastic Limit		NP	NP	NP	

MACTEC

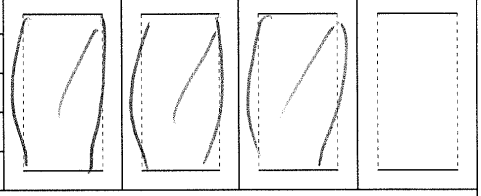
Project: Plant Yates Ash Pond

Location: AP2-1

Project No.: 6189109008

Boring No.: AP2-1

Sample Type: Undisturbed



Description: Brown Silty Sand with Mica

Remarks: ASTM D4767-04

Phase calculations based on start and end of test.

* Saturation is set to 100% for phase calculations.

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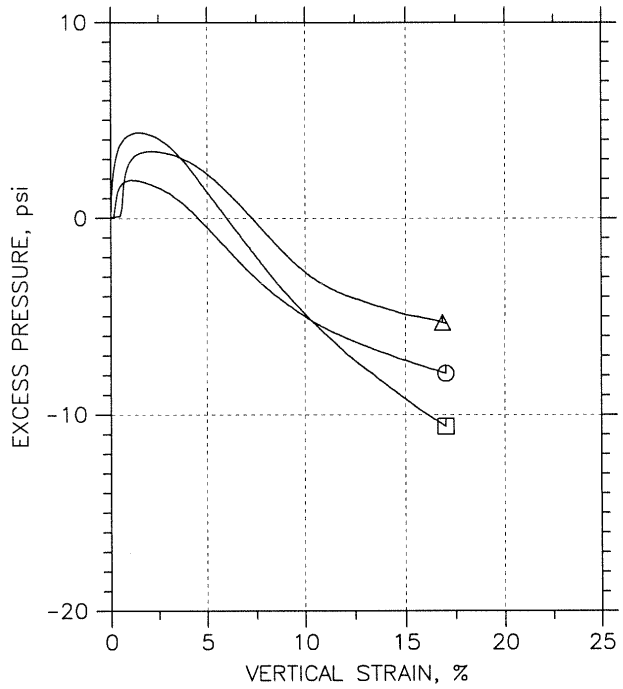
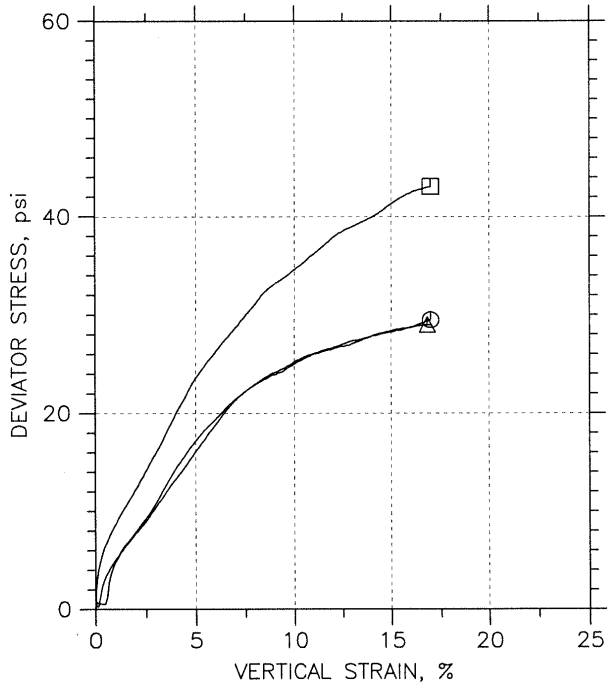
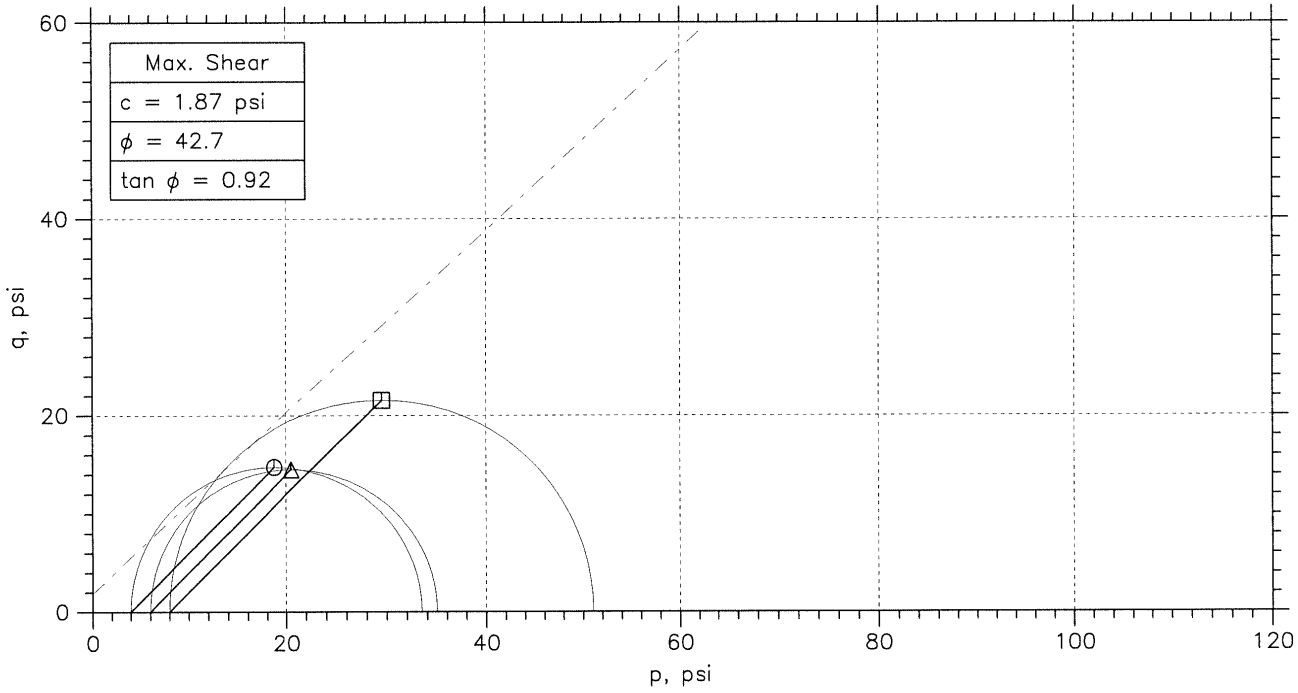
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







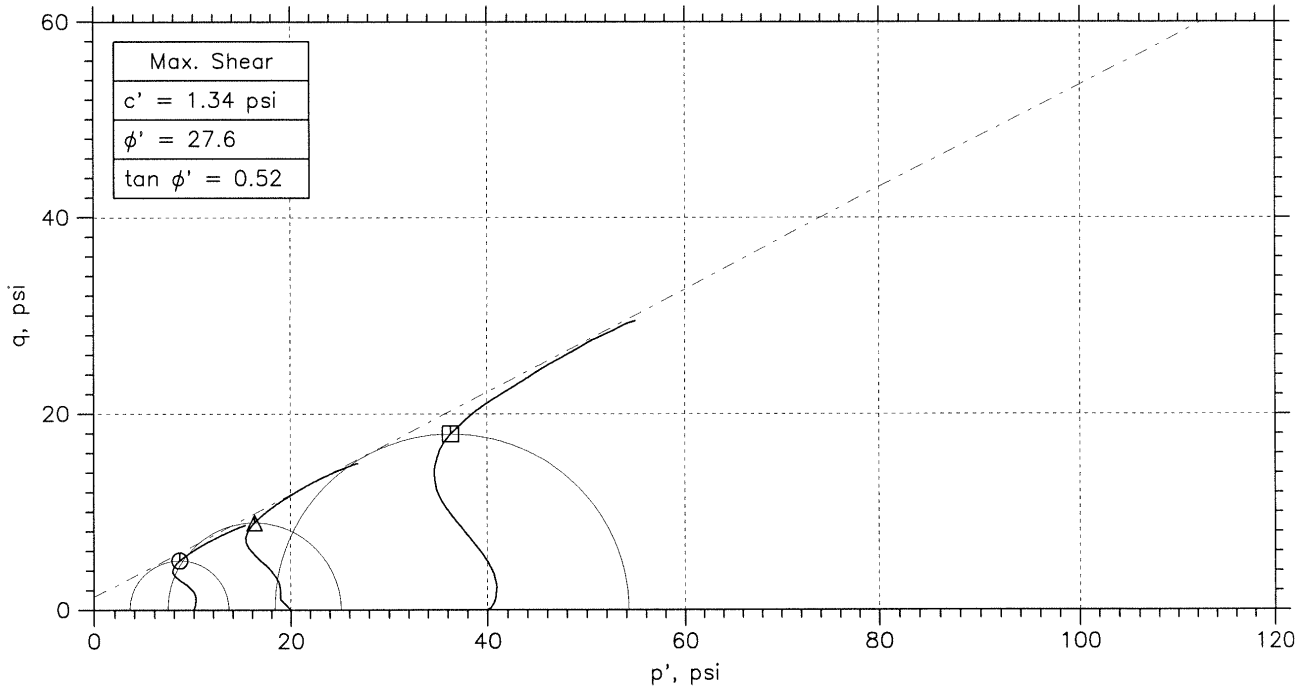
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⏲	IS-1	10099.1	10-12 ft	JW	3/26/10			10099.1_2547.dat
△	IS-1	10099.2	10-12 ft	JW	3/26/10			10099.2_2580.dat
⊡	IS-1	10099.3	10-12 ft	JW	3/26/10			10099.3_2546.dat

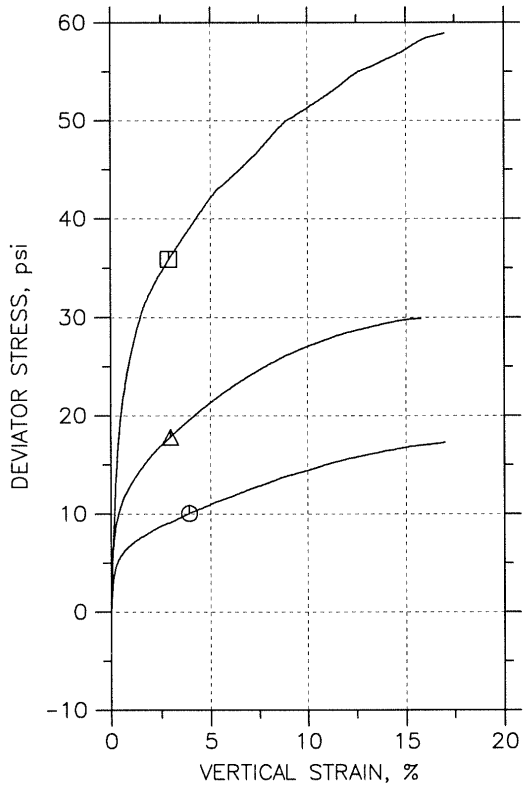
MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silty Sand with Mica		
Remarks: ASTM D4767-04		

Wed, 07-APR-2010 16:57:17

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⏲	△	⏍	
Sample No.		IS-2	IS-2	IS-2	
Test No.		10100.1	10100.2	10100.3	
Depth		44-46 ft	44-46 ft	44-46 ft	
Initial	Diameter, in	2.867	2.863	2.867	
	Height, in	5.926	5.959	5.606	
	Water Content, %	34.9	30.8	29.2	
	Dry Density, pcf	88.11	93.09	95.02	
	Saturation, %	103.6	103.2	102.3	
	Void Ratio	0.906	0.804	0.767	
Before Shear	Water Content, %	31.6	27.8	24.6	
	Dry Density, pcf	90.82	96.09	101.1	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.849	0.748	0.661	
	Back Press., psi	30.	93.98	104.	
Ver. Eff. Cons. Stress, psi		9.991	20.02	40.02	
Shear Strength, psi		5.018	8.891	17.93	
Strain at Failure, %		3.91	2.95	2.89	
Strain Rate, %/min		0.02	0.02	0.02	
B-Value		1.01	0.96	0.93	
Measured Specific Gravity		2.69	2.69	2.69	
Liquid Limit		38	38	38	
Plastic Limit		25	25	25	

MACTEC

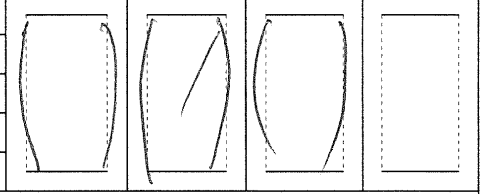
Project: Plant Yates Ash Pond

Location: AP2-1

Project No.: 6189109008

Boring No.: AP2-1

Sample Type: Undisturbed



Description: Brown Silt with Sand

Remarks: ASTM D4767-04 Strains at failure based on peak excess pore pressure.

Phase calculations based on start and end of test.

* Saturation is set to 100% for phase calculations.

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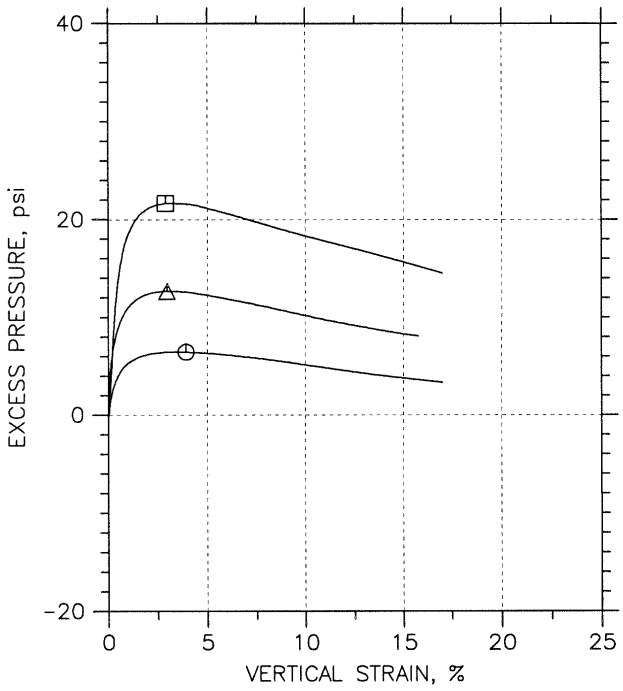
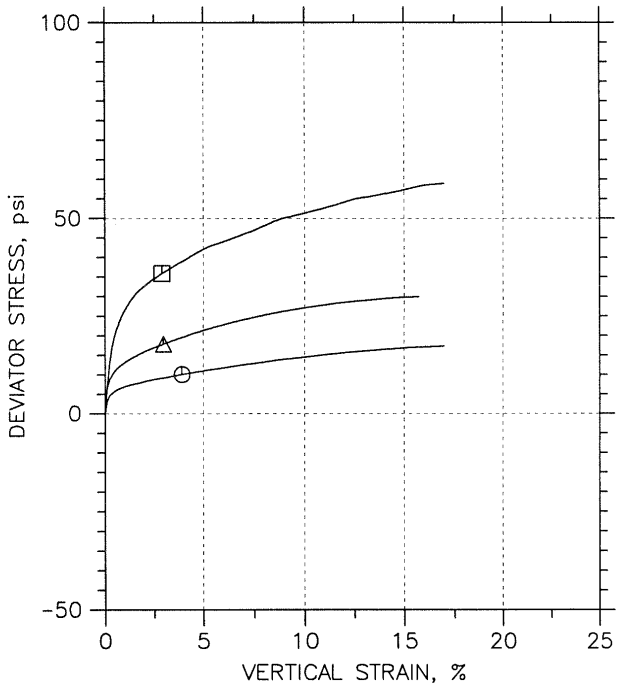
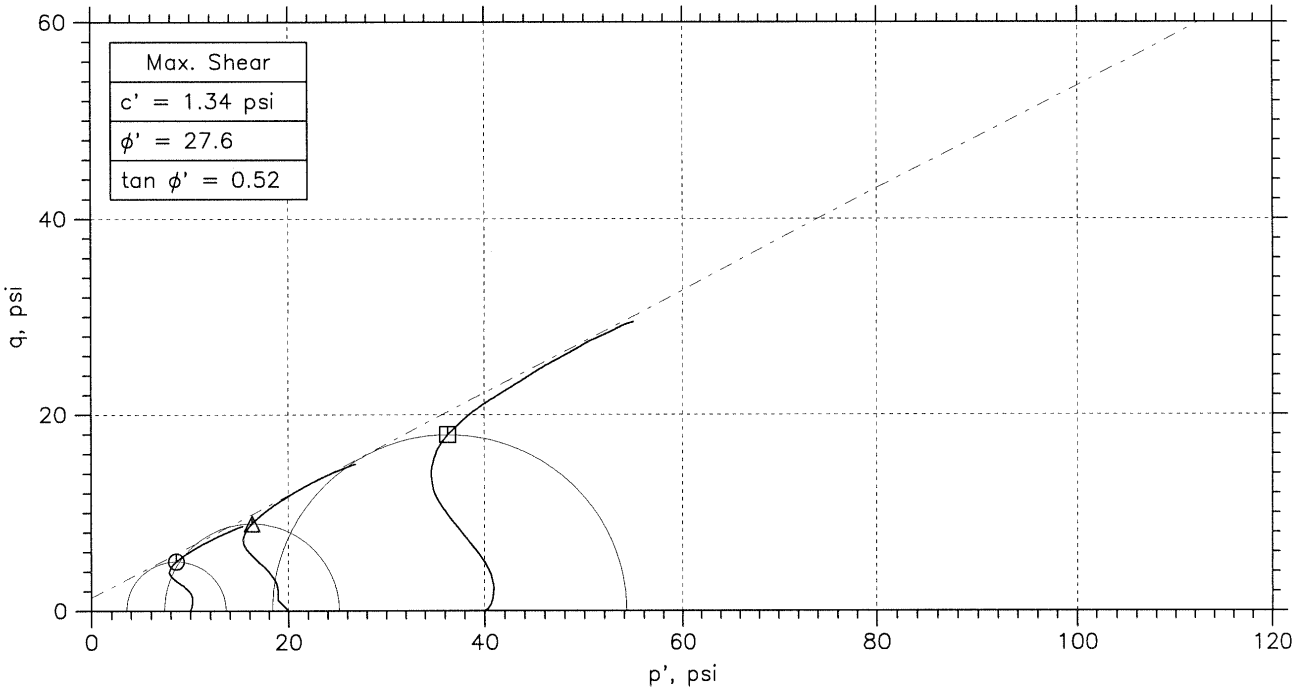
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







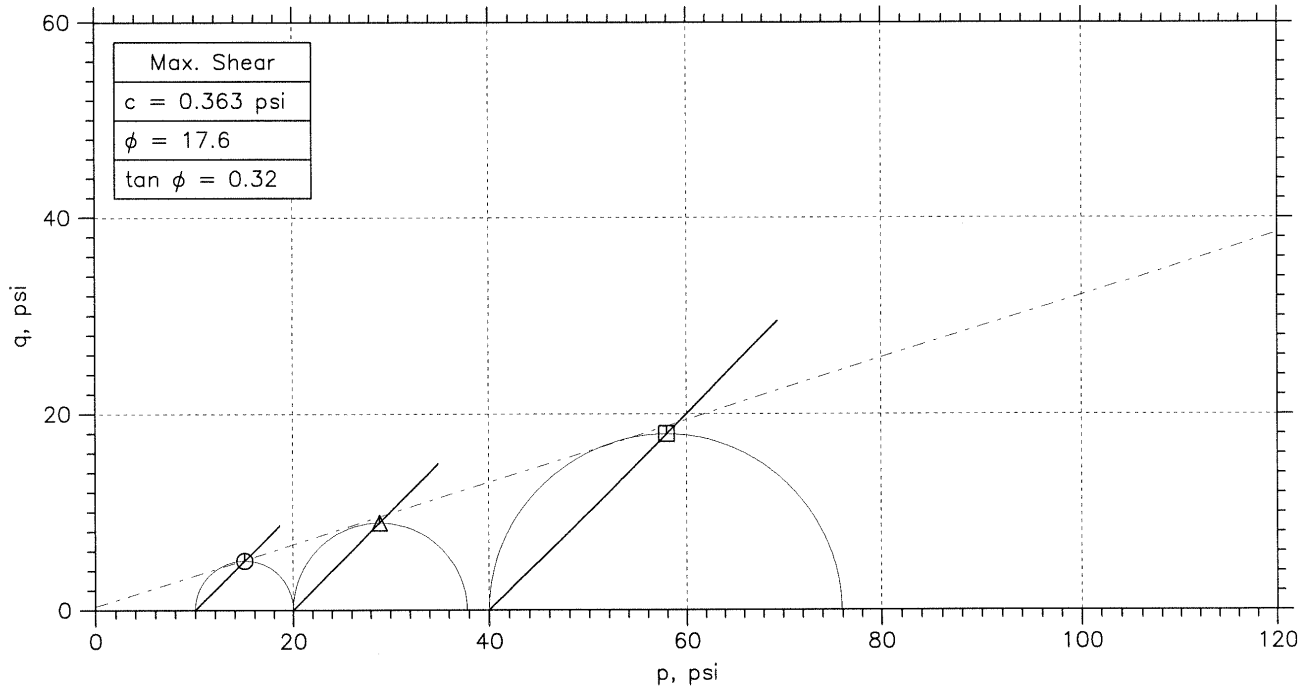
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	IS-2	10100.1	44-46 ft	JW	3/30/10			10100.1_2547.dat
△	IS-2	10100.2	44-46 ft	JW	3/30/10			10100.2a_2580.dat
⊡	IS-2	10100.3	44-46 ft	JW	3/30/10			10100.3_2546.dat

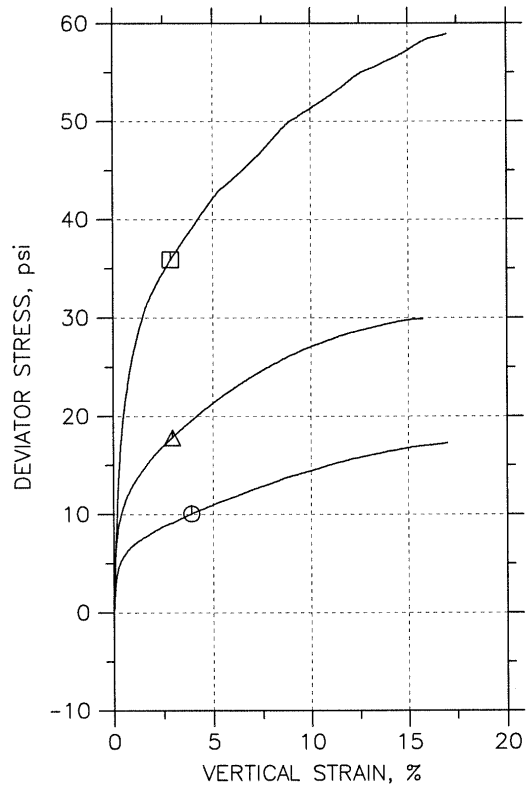
MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silt with Sand		
Remarks: ASTM D4767-04 Strains at failure based on peak excess pore pressure.		

Wed, 19-MAY-2010 14:39:51

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⏲	△	⊡	
Sample No.		IS-2	IS-2	IS-2	
Test No.		10100.1	10100.2	10100.3	
Depth		44-46 ft	44-46 ft	44-46 ft	
Initial	Diameter, in	2.867	2.863	2.867	
	Height, in	5.926	5.959	5.606	
	Water Content, %	34.9	30.8	29.2	
	Dry Density, pcf	88.11	93.09	95.02	
	Saturation, %	103.6	103.2	102.3	
	Void Ratio	0.906	0.804	0.767	
Before Shear	Water Content, %	31.6	27.8	24.6	
	Dry Density, pcf	90.82	96.09	101.1	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.849	0.748	0.661	
	Back Press., psi	30.	93.98	104.	
Ver. Eff. Cons. Stress, psi		9.991	20.02	40.02	
Shear Strength, psi		5.018	8.891	17.93	
Strain at Failure, %		3.91	2.95	2.89	
Strain Rate, %/min		0.02	0.02	0.02	
B-Value		1.01	0.96	0.93	
Measured Specific Gravity		2.69	2.69	2.69	
Liquid Limit		38	38	38	
Plastic Limit		25	25	25	

MACTEC

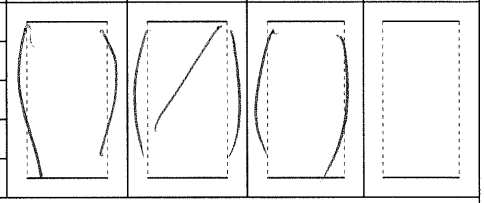
Project: Plant Yates Ash Pond

Location: AP2-1

Project No.: 6189109008

Boring No.: AP2-1

Sample Type: Undisturbed



Description: Brown Silt with Sand

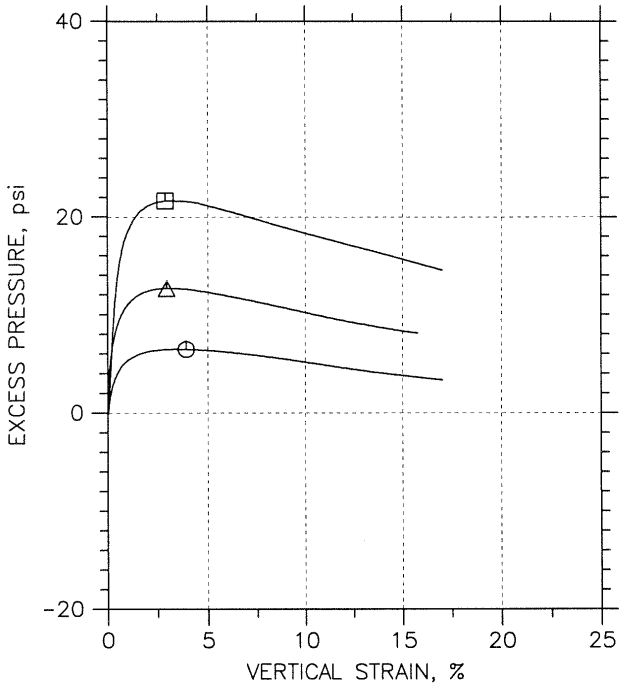
Remarks: ASTM D4767-04 Strains at failure based on peak excess pore pressure.

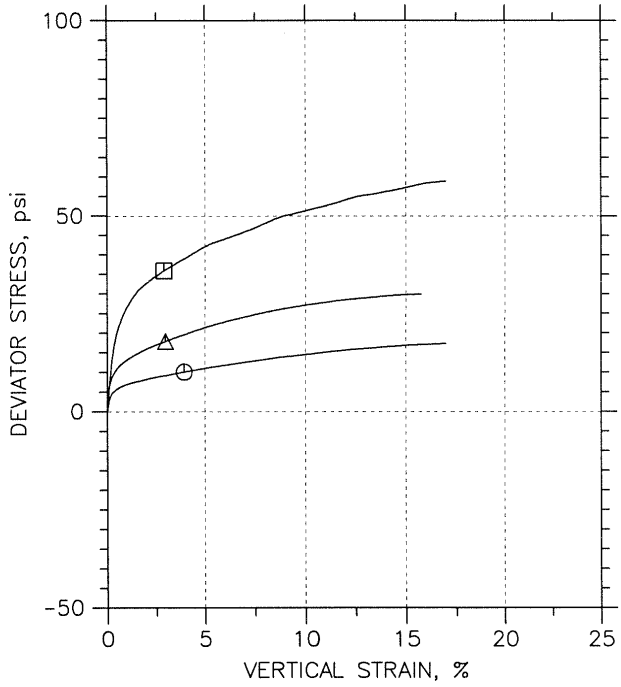
Phase calculations based on start and end of test.

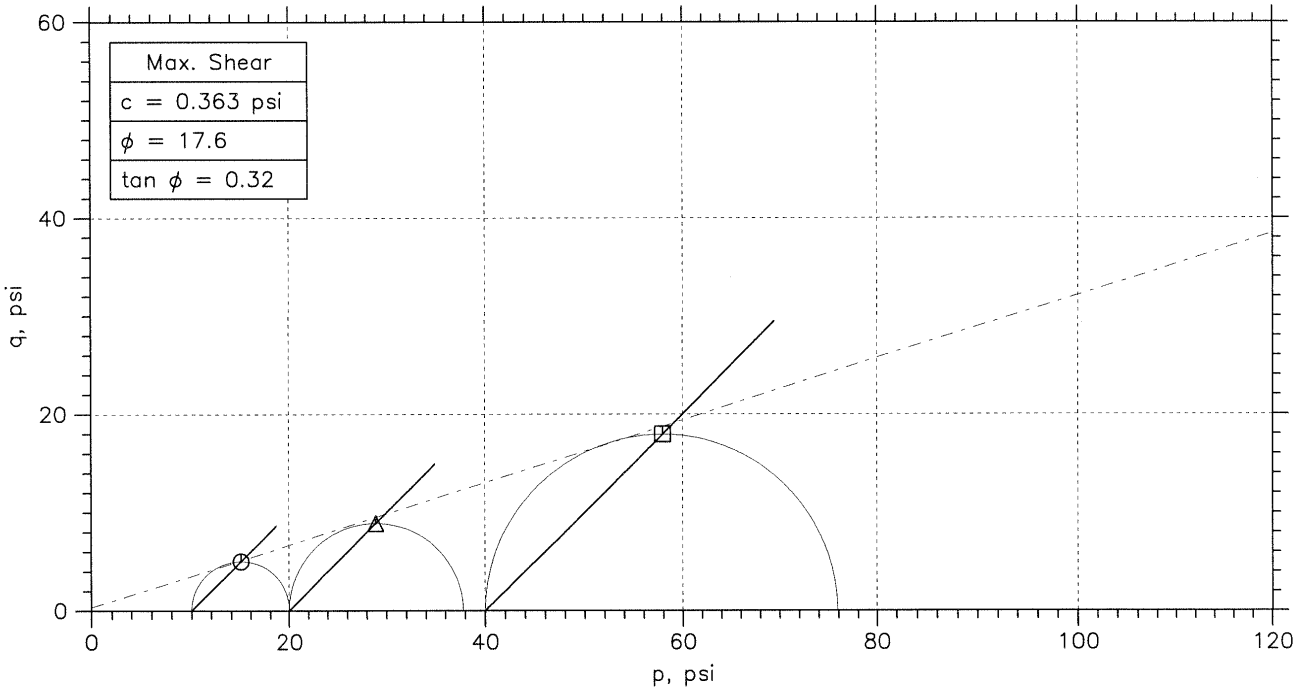
* Saturation is set to 100% for phase calculations.

Wed, 19-MAY-2010 14:39:58

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







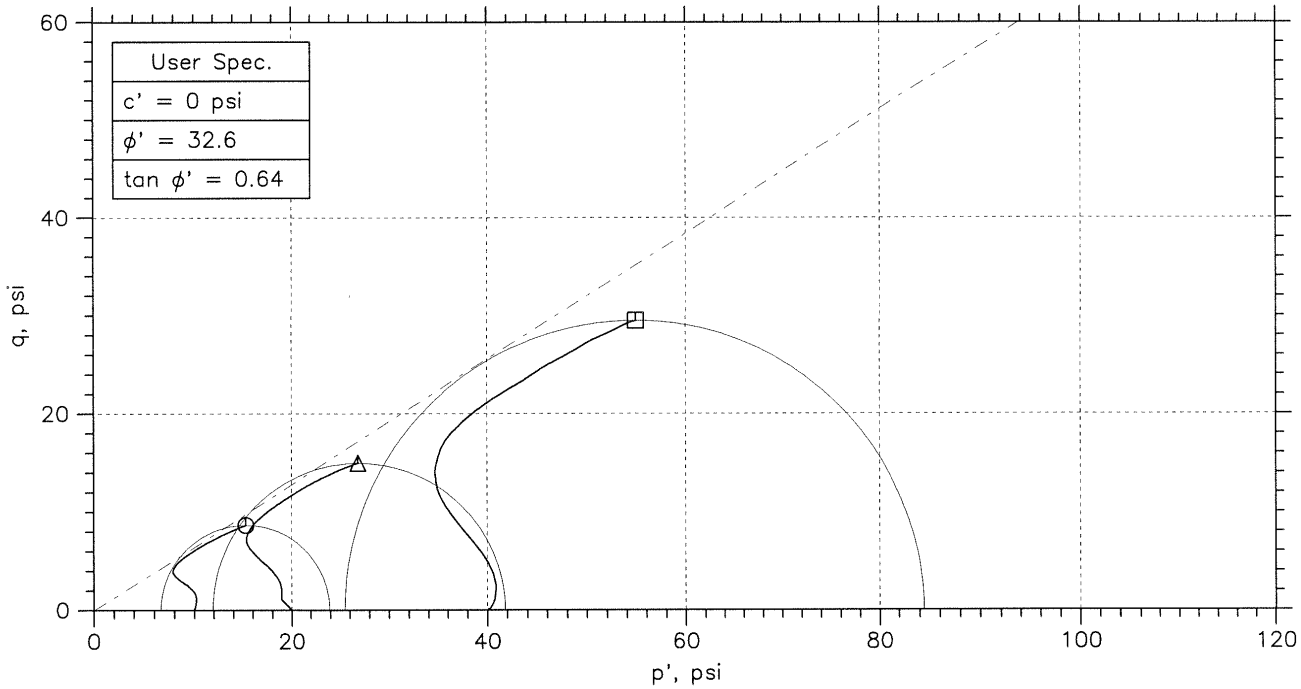
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	IS-2	10100.1	44-46 ft	JW	3/30/10			10100.1_2547.dat
△	IS-2	10100.2	44-46 ft	JW	3/30/10			10100.2a_2580.dat
⊡	IS-2	10100.3	44-46 ft	JW	3/30/10			10100.3_2546.dat

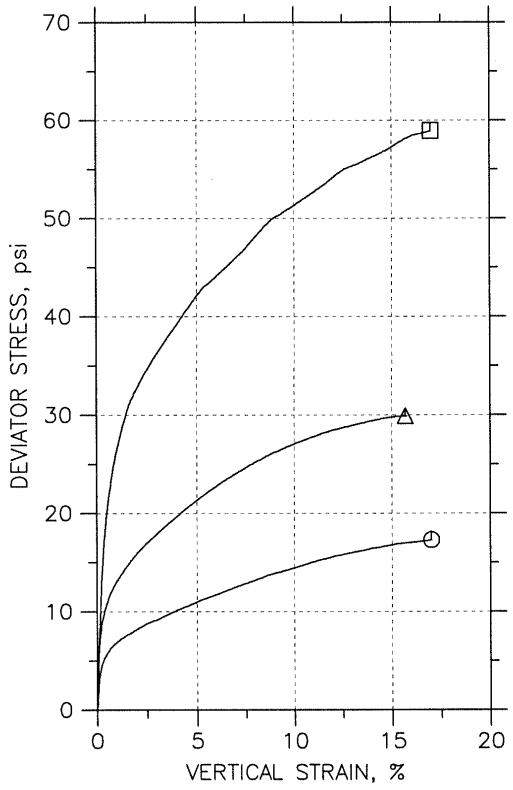
MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silt with Sand		
Remarks: ASTM D4767-04 Strains at failure based on peak excess pore pressure.		

Wed, 19-MAY-2010 14:39:58

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

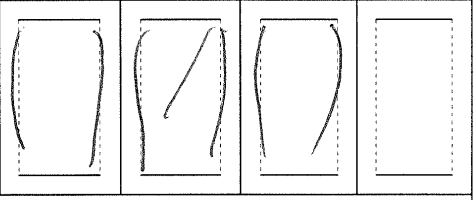




Symbol		⏲	△	⏍	
Sample No.		IS-2	IS-2	IS-2	
Test No.		10100.1	10100.2	10100.3	
Depth		44-46 ft	44-46 ft	44-46 ft	
Initial	Diameter, in	2.867	2.863	2.867	
	Height, in	5.926	5.959	5.606	
	Water Content, %	34.9	30.8	29.2	
	Dry Density, pcf	88.11	93.09	95.02	
	Saturation, %	103.6	103.2	102.3	
	Void Ratio	0.906	0.804	0.767	
Before Shear	Water Content, %	31.6	27.8	24.6	
	Dry Density, pcf	90.82	96.09	101.1	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.849	0.748	0.661	
	Back Press., psi	30.	93.98	104.	
Ver. Eff. Cons. Stress, psi		9.991	20.02	40.02	
Shear Strength, psi		8.634	14.94	29.46	
Strain at Failure, %		17	15.7	17	
Strain Rate, %/min		0.02	0.02	0.02	
B-Value		1.01	0.96	0.93	
Measured Specific Gravity		2.69	2.69	2.69	
Liquid Limit		38	38	38	
Plastic Limit		25	25	25	

MACTEC

Project: Plant Yates Ash Pond
Location: AP2-1
Project No.: 6189109008
Boring No.: AP2-1
Sample Type: Undisturbed
Description: Brown Silt with Sand
Remarks: ASTM D4767-04

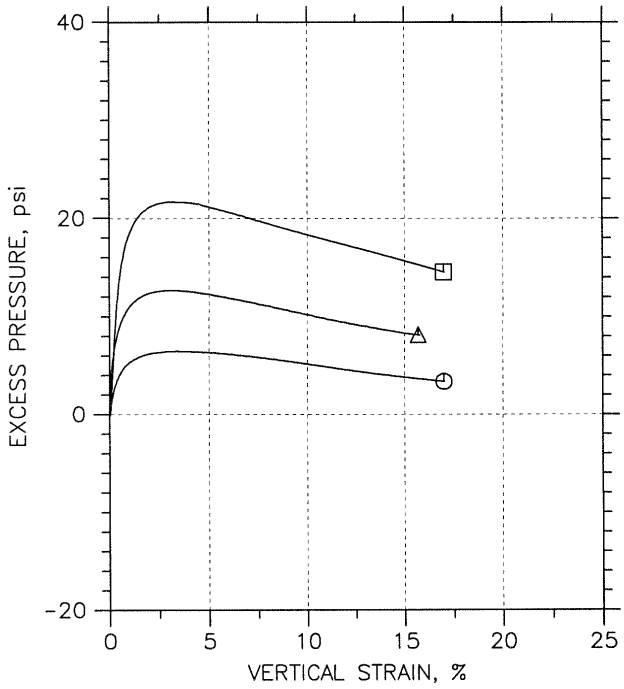


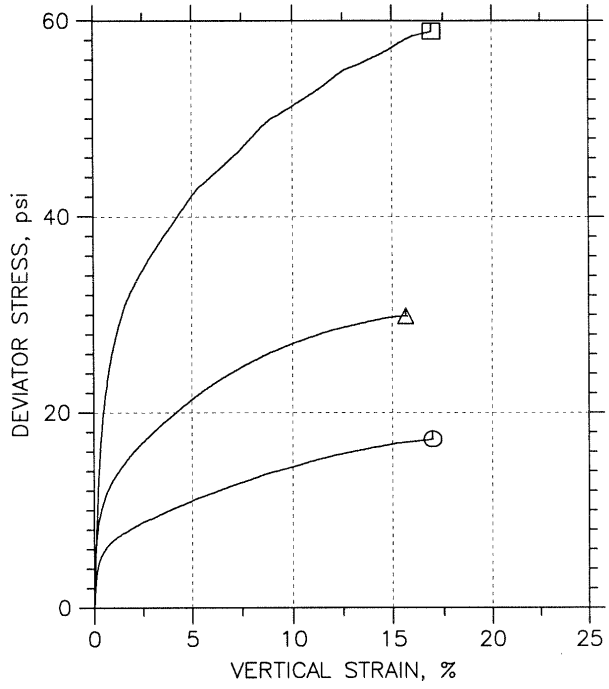
Phase calculations based on start and end of test.

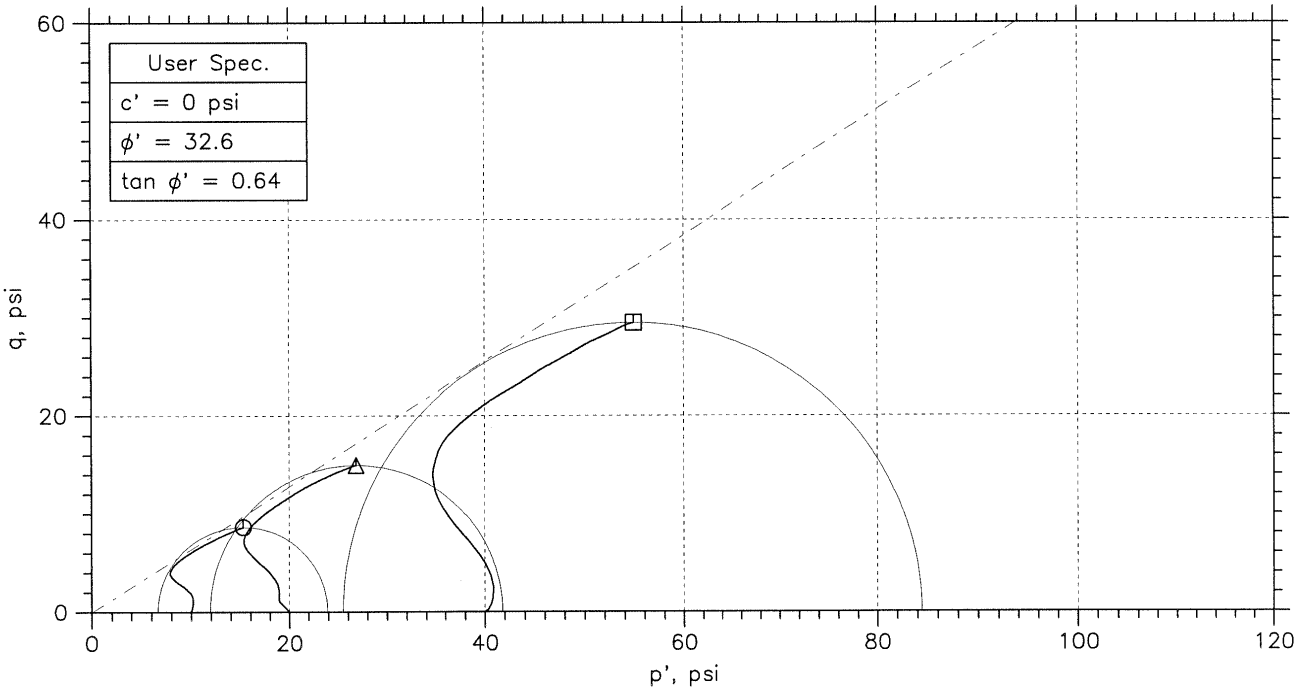
* Saturation is set to 100% for phase calculations.

Wed, 19-MAY-2010 14:45:00

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







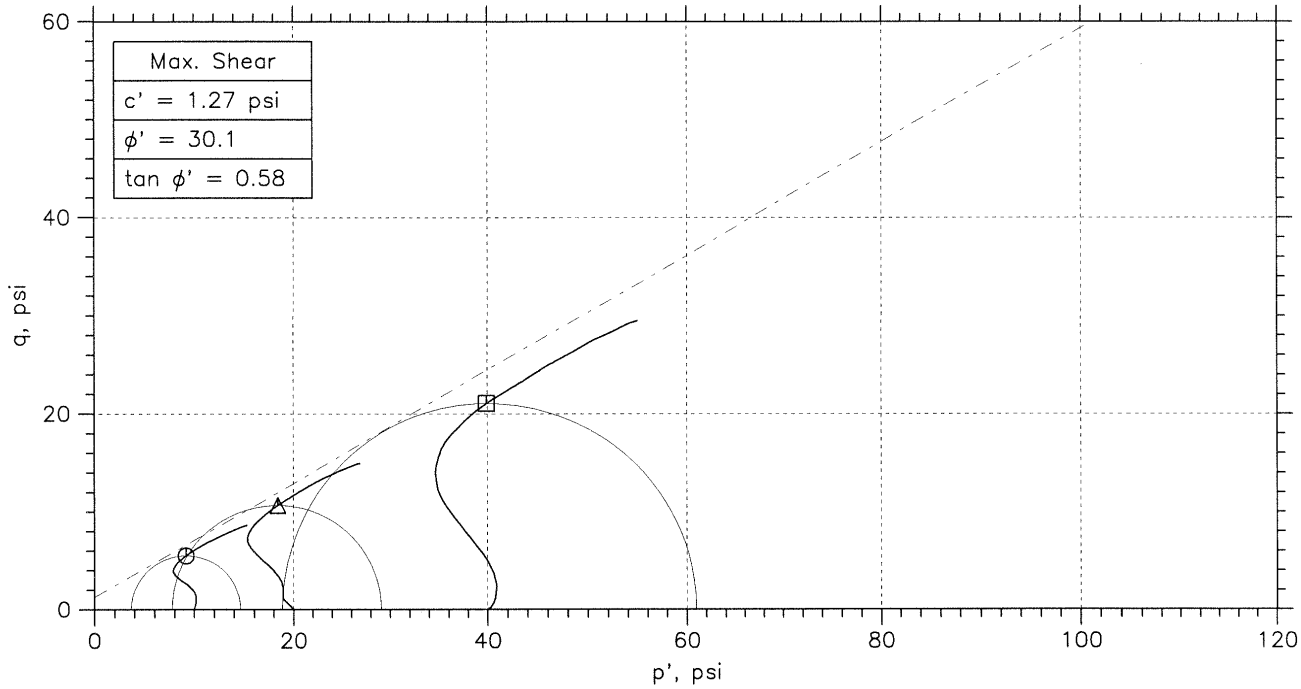
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	IS-2	10100.1	44-46 ft	JW	3/30/10			10100.1_2547.dat
△	IS-2	10100.2	44-46 ft	JW	3/30/10			10100.2a_2580.dat
□	IS-2	10100.3	44-46 ft	JW	3/30/10			10100.3_2546.dat

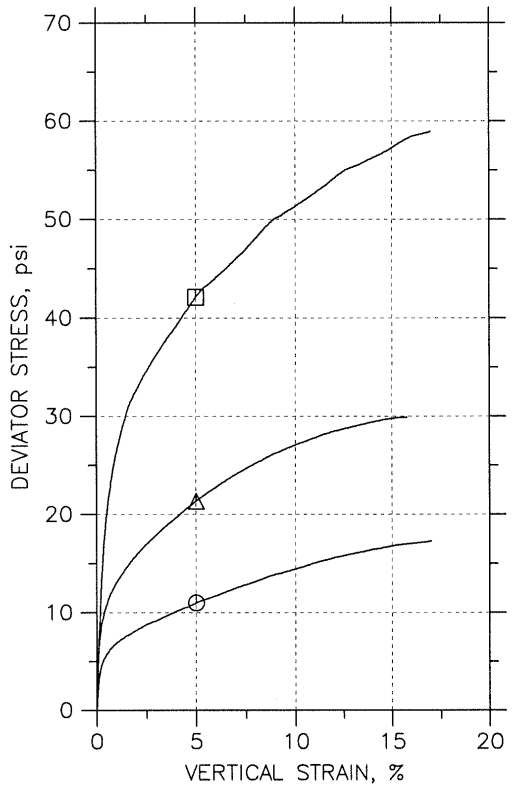
MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silt with Sand		
Remarks: ASTM D4767-04		

Wed, 19-MAY-2010 14:45:01

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⊙	△	⊡	
Sample No.		IS-2	IS-2	IS-2	
Test No.		10100.1	10100.2	10100.3	
Depth		44-46 ft	44-46 ft	44-46 ft	
Initial	Diameter, in	2.867	2.863	2.867	
	Height, in	5.926	5.959	5.606	
	Water Content, %	34.9	30.8	29.2	
	Dry Density, pcf	88.11	93.09	95.02	
	Saturation, %	103.6	103.2	102.3	
	Void Ratio	0.906	0.804	0.767	
Before Shear	Water Content, %	31.6	27.8	24.6	
	Dry Density, pcf	90.82	96.09	101.1	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.849	0.748	0.661	
	Back Press., psi	30.	93.98	104.	
Ver. Eff. Cons. Stress, psi		9.991	20.02	40.02	
Shear Strength, psi		5.488	10.66	21.05	
Strain at Failure, %		5	5	5	
Strain Rate, %/min		0.02	0.02	0.02	
B-Value		1.01	0.96	0.93	
Measured Specific Gravity		2.69	2.69	2.69	
Liquid Limit		38	38	38	
Plastic Limit		25	25	25	

MACTEC

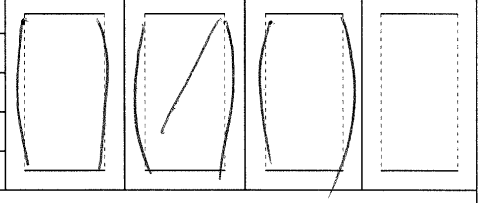
Project: Plant Yates Ash Pond

Location: AP2-1

Project No.: 6189109008

Boring No.: AP2-1

Sample Type: Undisturbed



Description: Brown Silt with Sand

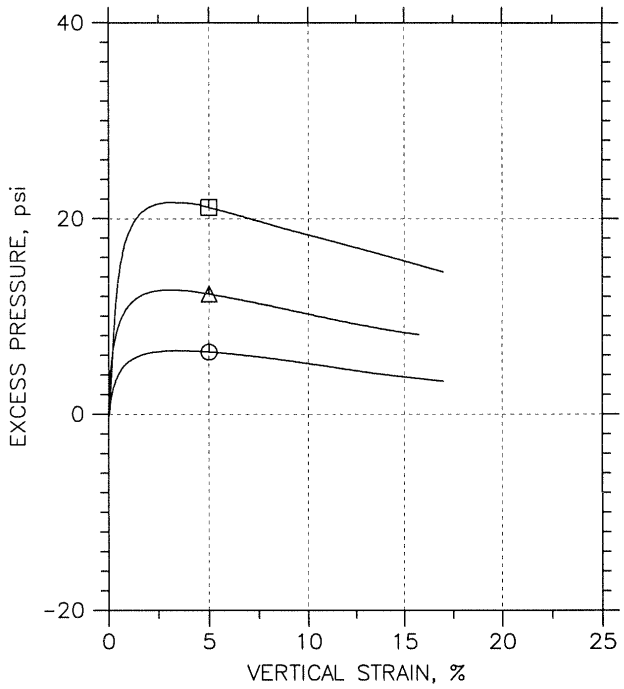
Remarks: ASTM D4767-04

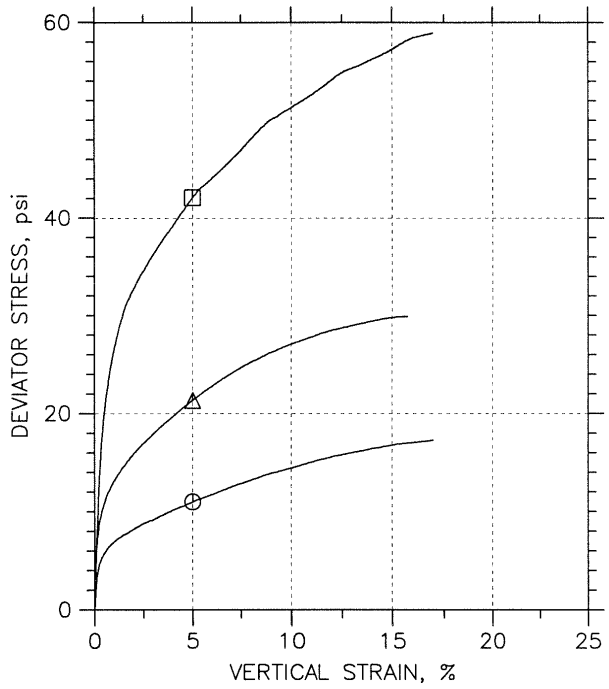
Phase calculations based on start and end of test.

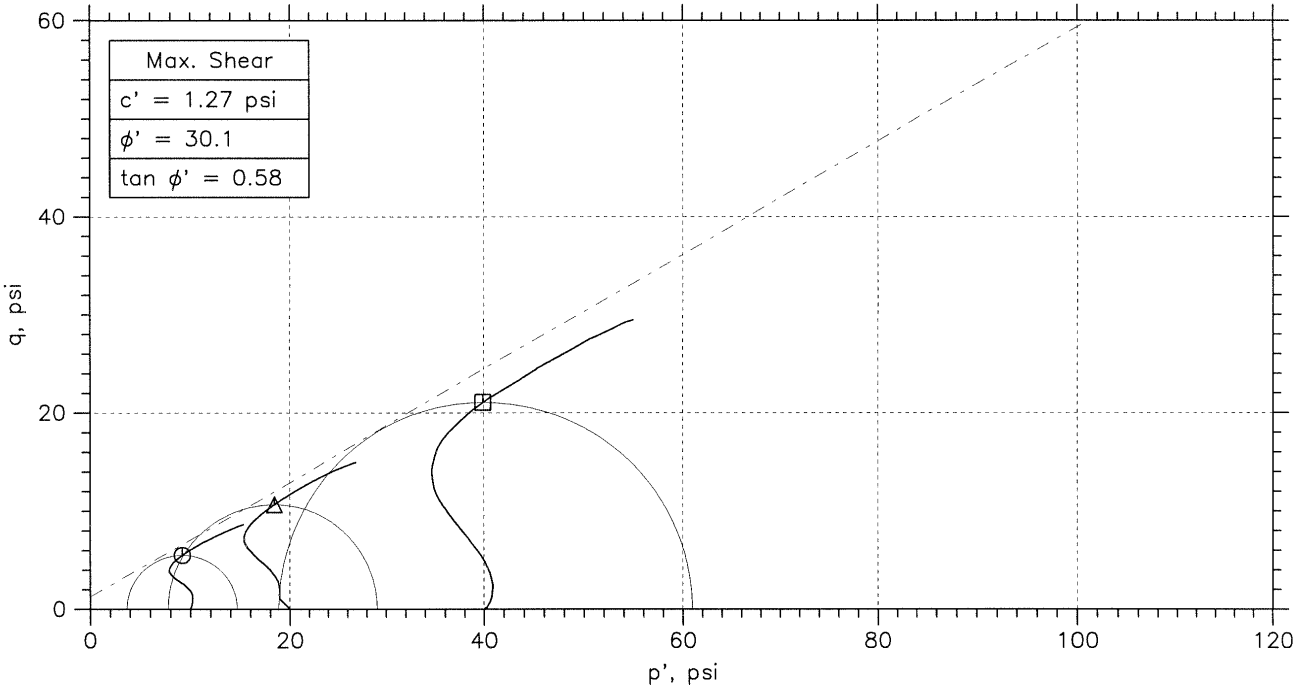
* Saturation is set to 100% for phase calculations.

Wed, 19-MAY-2010 14:16:46

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







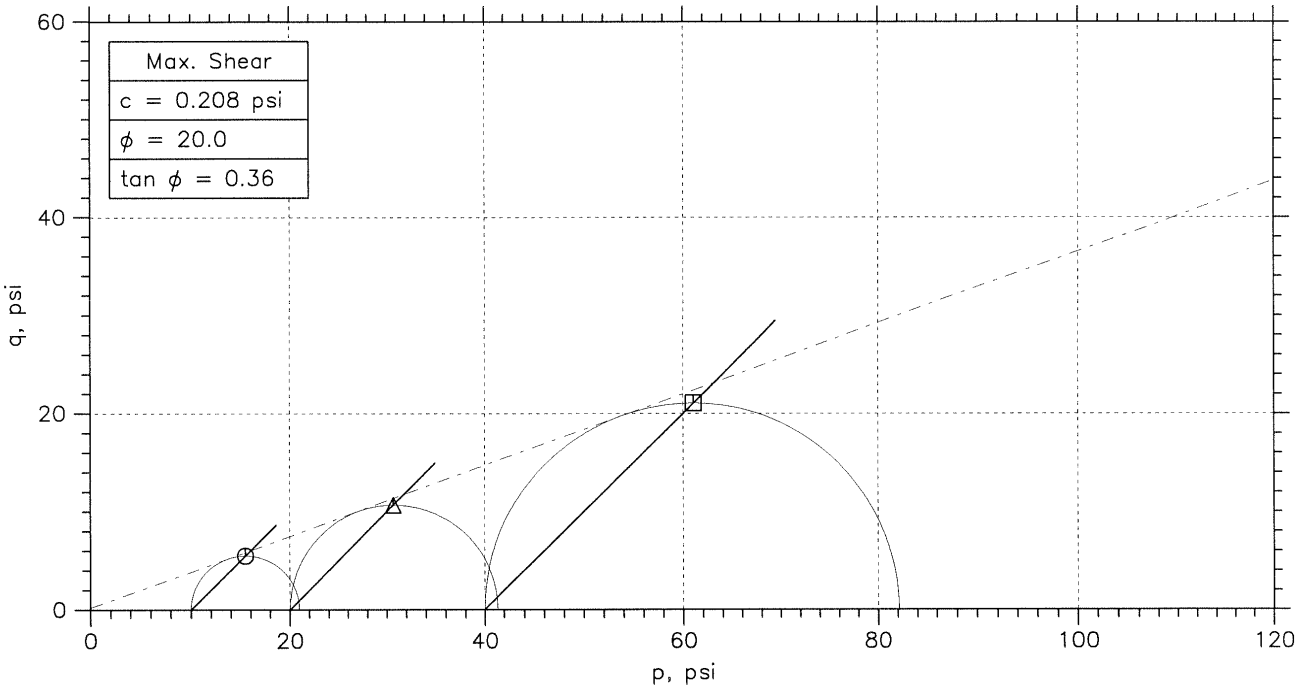
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	IS-2	10100.1	44-46 ft	JW	3/30/10			10100.1_2547.dat
△	IS-2	10100.2	44-46 ft	JW	3/30/10			10100.2a_2580.dat
⊡	IS-2	10100.3	44-46 ft	JW	3/30/10			10100.3_2546.dat

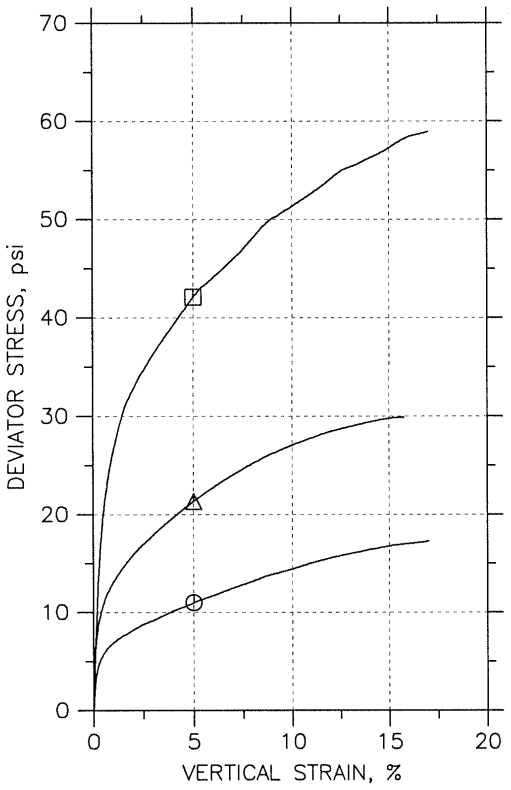
MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silt with Sand		
Remarks: ASTM D4767-04		

Wed, 19-MAY-2010 14:16:46

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⏲	△	⊡	
Sample No.		IS-2	IS-2	IS-2	
Test No.		10100.1	10100.2	10100.3	
Depth		44-46 ft	44-46 ft	44-46 ft	
Initial	Diameter, in	2.867	2.863	2.867	
	Height, in	5.926	5.959	5.606	
	Water Content, %	34.9	30.8	29.2	
	Dry Density, pcf	88.11	93.09	95.02	
	Saturation, %	103.6	103.2	102.3	
	Void Ratio	0.906	0.804	0.767	
Before Shear	Water Content, %	31.6	27.8	24.6	
	Dry Density, pcf	90.82	96.09	101.1	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.849	0.748	0.661	
	Back Press., psi	30.	93.98	104.	
Ver. Eff. Cons. Stress, psi		9.991	20.02	40.02	
Shear Strength, psi		5.488	10.66	21.05	
Strain at Failure, %		5	5	5	
Strain Rate, %/min		0.02	0.02	0.02	
B-Value		1.01	0.96	0.93	
Measured Specific Gravity		2.69	2.69	2.69	
Liquid Limit		38	38	38	
Plastic Limit		25	25	25	

MACTEC

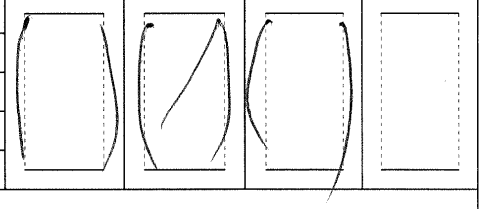
Project: Plant Yates Ash Pond

Location: AP2-1

Project No.: 6189109008

Boring No.: AP2-1

Sample Type: Undisturbed



Description: Brown Silt with Sand

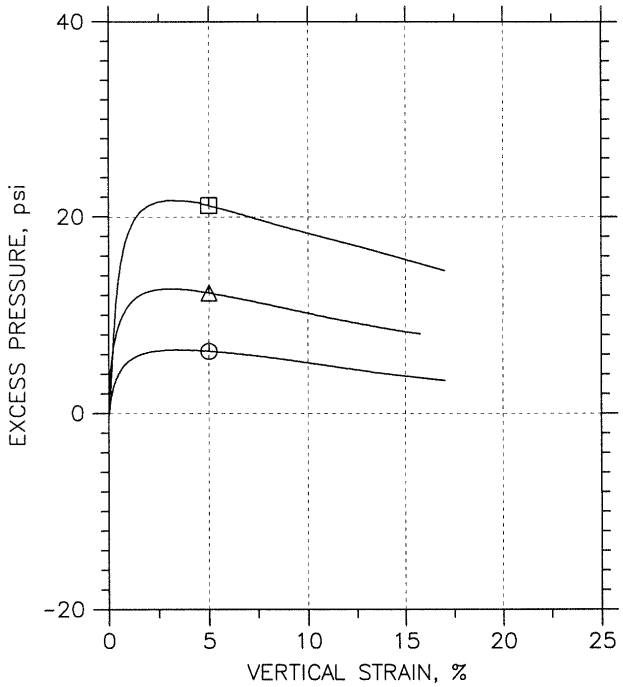
Remarks: ASTM D4767-04

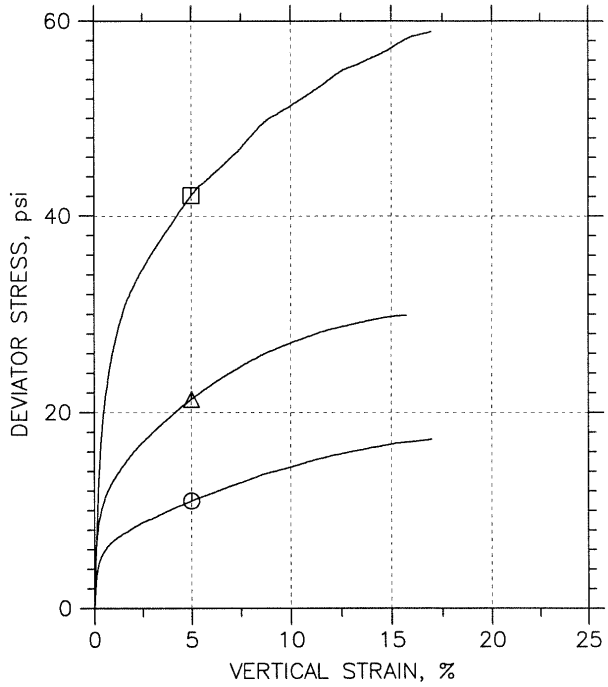
Phase calculations based on start and end of test.

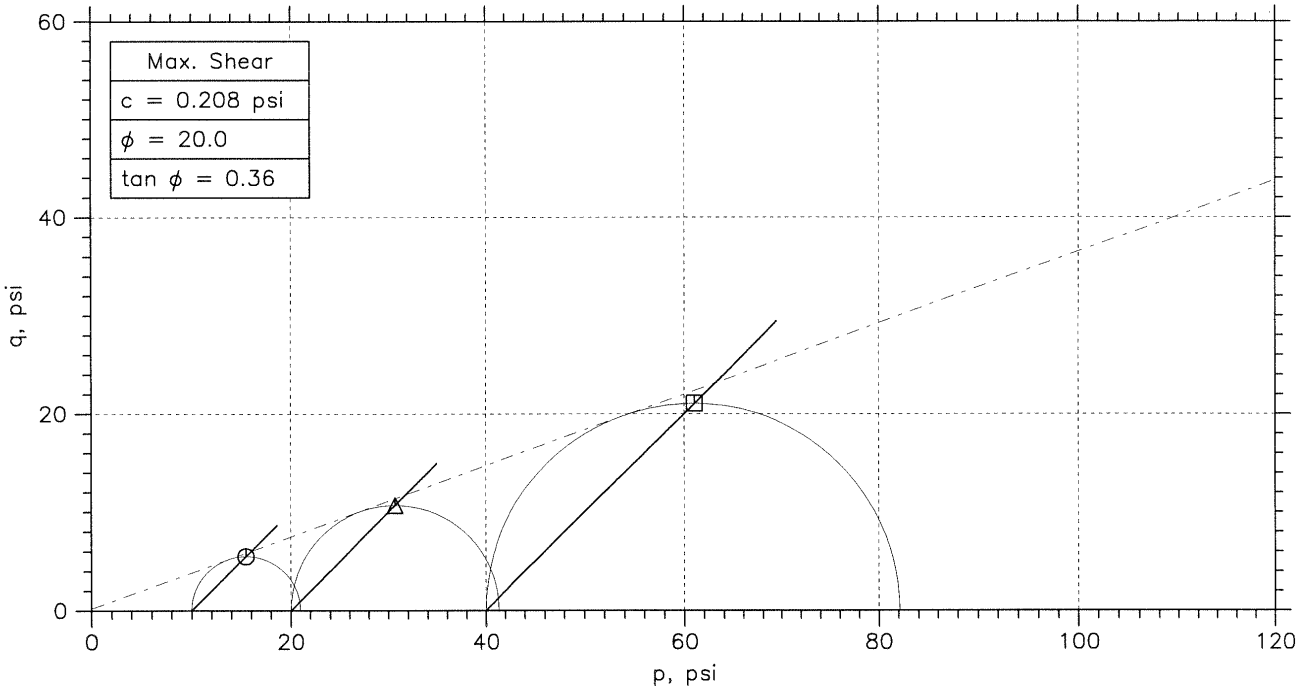
* Saturation is set to 100% for phase calculations.

Wed, 19-MAY-2010 14:17:14

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







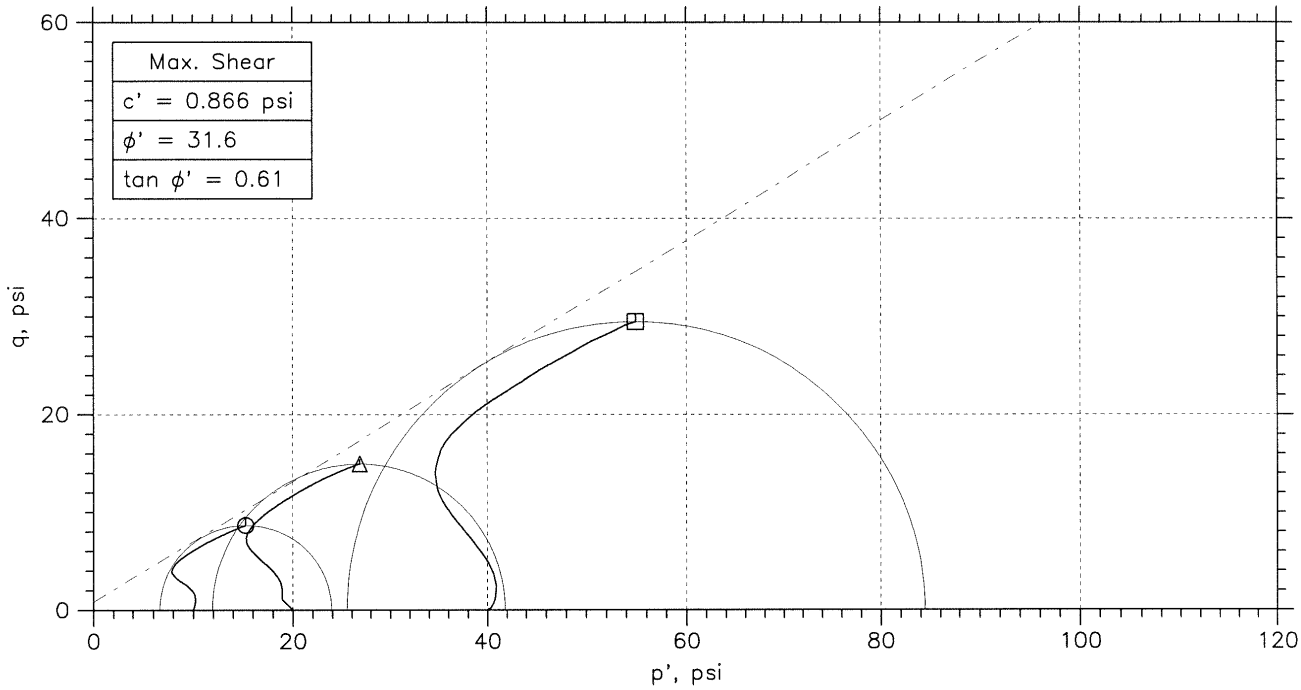
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	IS-2	10100.1	44-46 ft	JW	3/30/10			10100.1_2547.dat
△	IS-2	10100.2	44-46 ft	JW	3/30/10			10100.2a_2580.dat
⊡	IS-2	10100.3	44-46 ft	JW	3/30/10			10100.3_2546.dat

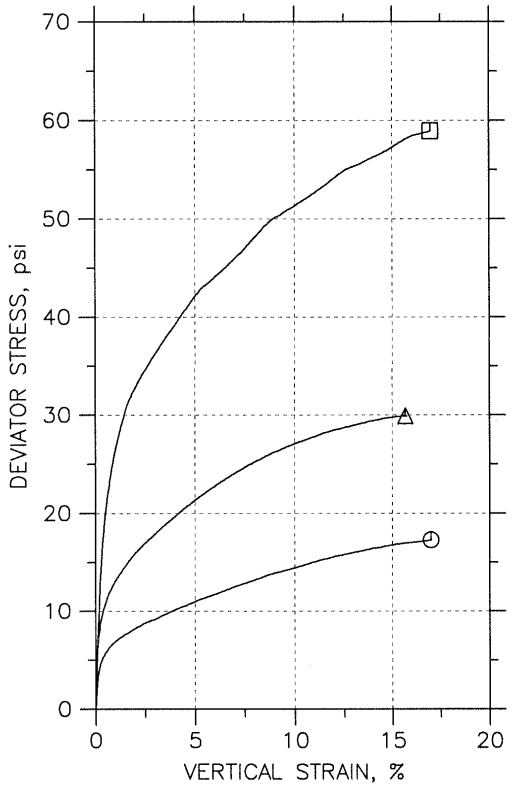
MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silt with Sand		
Remarks: ASTM D4767-04		

Wed, 19-MAY-2010 14:17:15

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⏲	△	⏍	
Sample No.		IS-2	IS-2	IS-2	
Test No.		10100.1	10100.2	10100.3	
Depth		44-46 ft	44-46 ft	44-46 ft	
Initial	Diameter, in	2.867	2.863	2.867	
	Height, in	5.926	5.959	5.606	
	Water Content, %	34.9	30.8	29.2	
	Dry Density, pcf	88.11	93.09	95.02	
	Saturation, %	103.6	103.2	102.3	
	Void Ratio	0.906	0.804	0.767	
Before Shear	Water Content, %	31.6	27.8	24.6	
	Dry Density, pcf	90.82	96.09	101.1	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.849	0.748	0.661	
	Back Press., psi	30.	93.98	104.	
Ver. Eff. Cons. Stress, psi		9.991	20.02	40.02	
Shear Strength, psi		8.634	14.94	29.46	
Strain at Failure, %		17	15.7	17	
Strain Rate, %/min		0.02	0.02	0.02	
B-Value		1.01	0.96	0.93	
Measured Specific Gravity		2.69	2.69	2.69	
Liquid Limit		38	38	38	
Plastic Limit		25	25	25	

MACTEC

Project: Plant Yates Ash Pond

Location: AP2-1

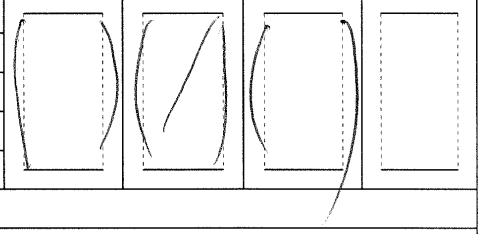
Project No.: 6189109008

Boring No.: AP2-1

Sample Type: Undisturbed

Description: Brown Silt with Sand

Remarks: ASTM D4767-04

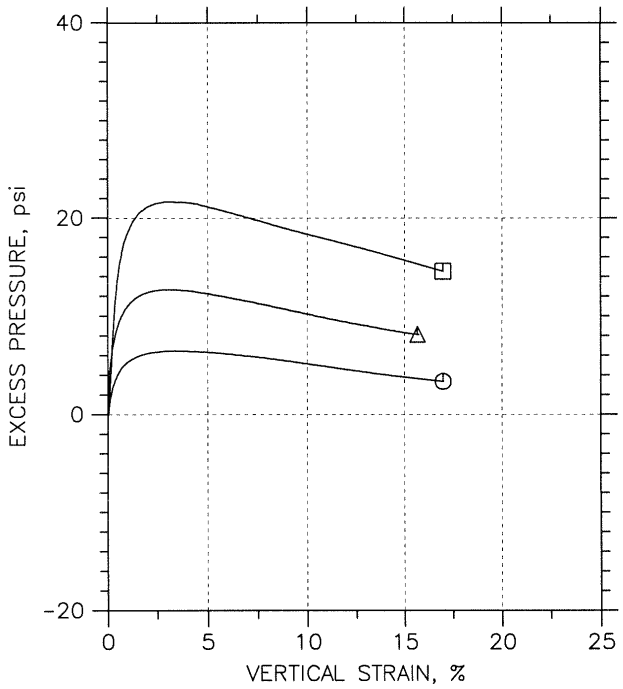


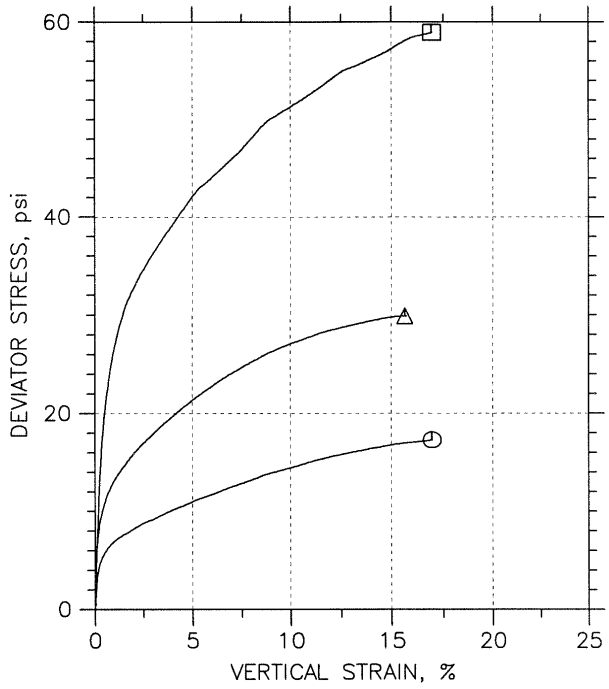
Phase calculations based on start and end of test.

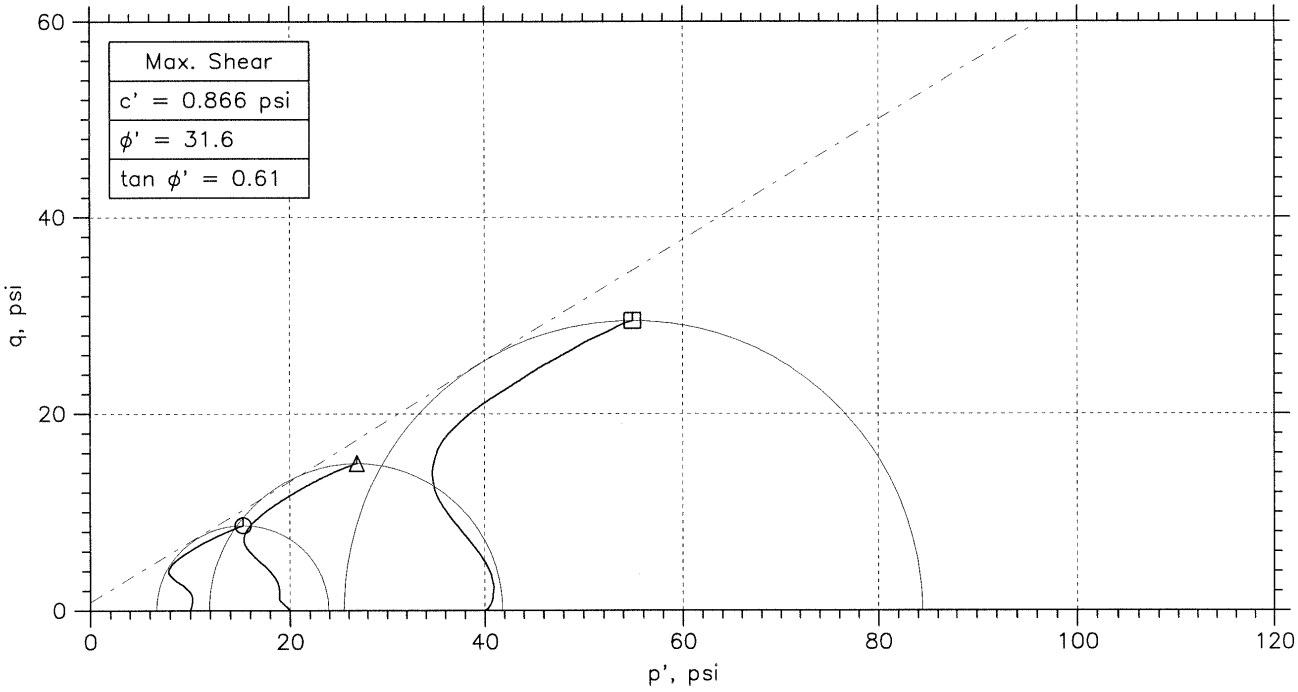
* Saturation is set to 100% for phase calculations.

Wed, 19-MAY-2010 14:18:09

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







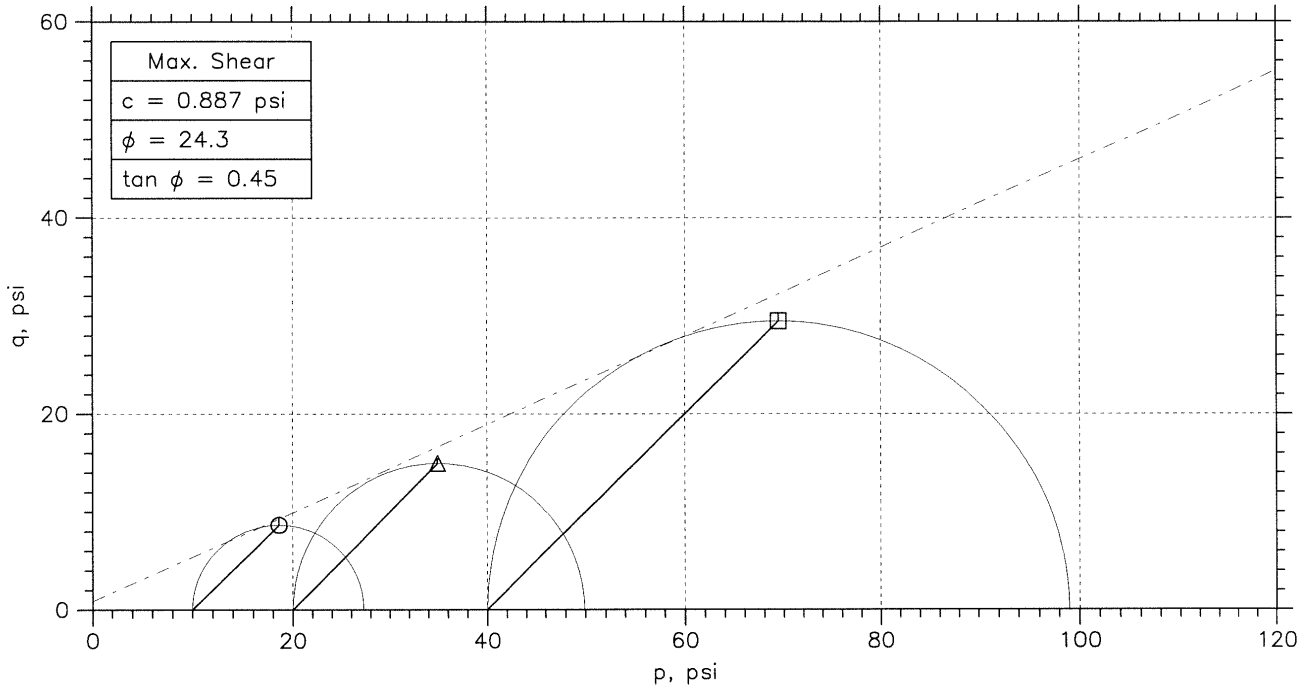
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	IS-2	10100.1	44-46 ft	JW	3/30/10			10100.1_2547.dat
△	IS-2	10100.2	44-46 ft	JW	3/30/10			10100.2a_2580.dat
⊡	IS-2	10100.3	44-46 ft	JW	3/30/10			10100.3_2546.dat

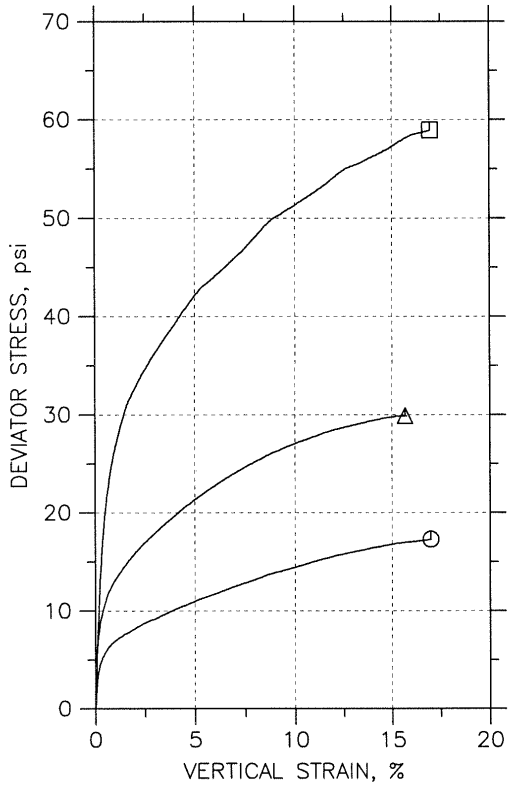
MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silt with Sand		
Remarks: ASTM D4767-04		

Wed, 19-MAY-2010 14:18:09

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

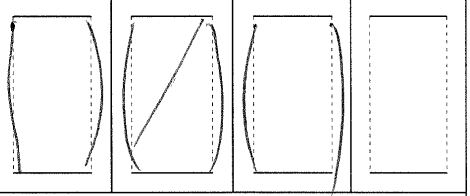




Symbol		⏲	△	⏍	
Sample No.		IS-2	IS-2	IS-2	
Test No.		10100.1	10100.2	10100.3	
Depth		44-46 ft	44-46 ft	44-46 ft	
Initial	Diameter, in	2.867	2.863	2.867	
	Height, in	5.926	5.959	5.606	
	Water Content, %	34.9	30.8	29.2	
	Dry Density, pcf	88.11	93.09	95.02	
	Saturation, %	103.6	103.2	102.3	
	Void Ratio	0.906	0.804	0.767	
Before Shear	Water Content, %	31.6	27.8	24.6	
	Dry Density, pcf	90.82	96.09	101.1	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.849	0.748	0.661	
	Back Press., psi	30.	93.98	104.	
Ver. Eff. Cons. Stress, psi		9.991	20.02	40.02	
Shear Strength, psi		8.634	14.94	29.46	
Strain at Failure, %		17	15.7	17	
Strain Rate, %/min		0.02	0.02	0.02	
B-Value		1.01	0.96	0.93	
Measured Specific Gravity		2.69	2.69	2.69	
Liquid Limit		38	38	38	
Plastic Limit		25	25	25	

MACTEC

Project: Plant Yates Ash Pond
Location: AP2-1
Project No.: 6189109008
Boring No.: AP2-1
Sample Type: Undisturbed
Description: Brown Silt with Sand
Remarks: ASTM D4767-04

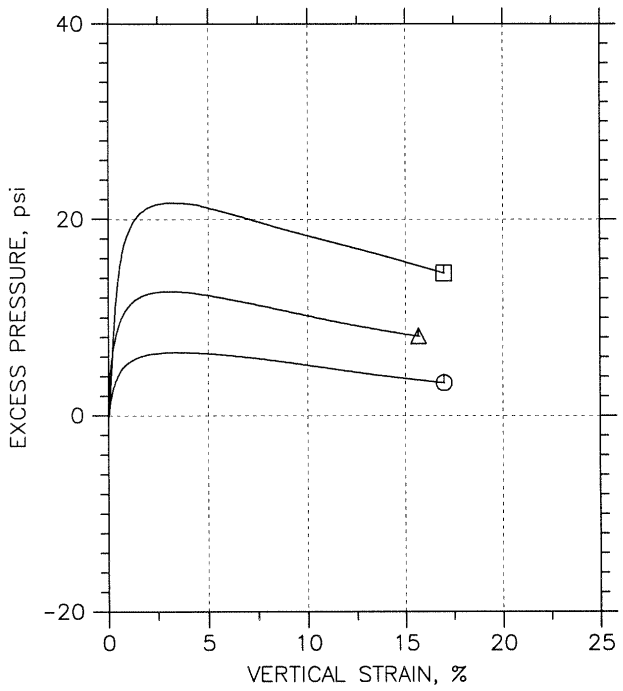


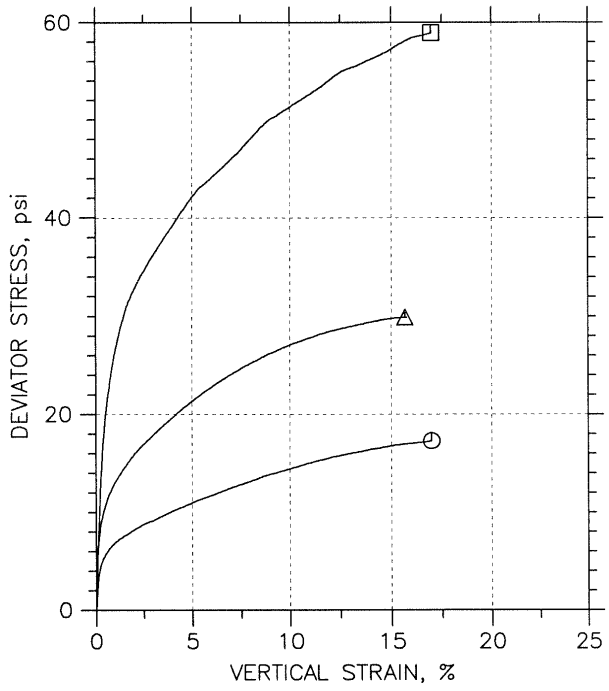
Phase calculations based on start and end of test.

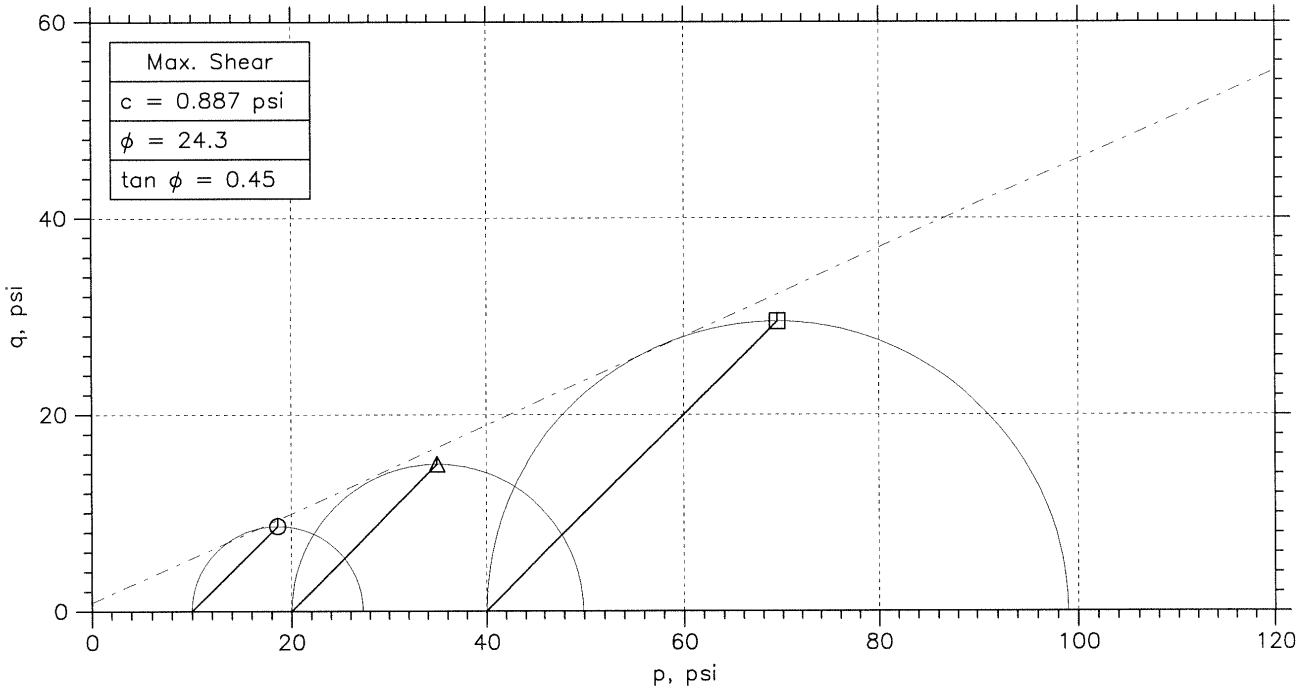
* Saturation is set to 100% for phase calculations.

Wed, 19-MAY-2010 14:18:21

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⏲	IS-2	10100.1	44-46 ft	JW	3/30/10			10100.1_2547.dat
△	IS-2	10100.2	44-46 ft	JW	3/30/10			10100.2a_2580.dat
⊡	IS-2	10100.3	44-46 ft	JW	3/30/10			10100.3_2546.dat

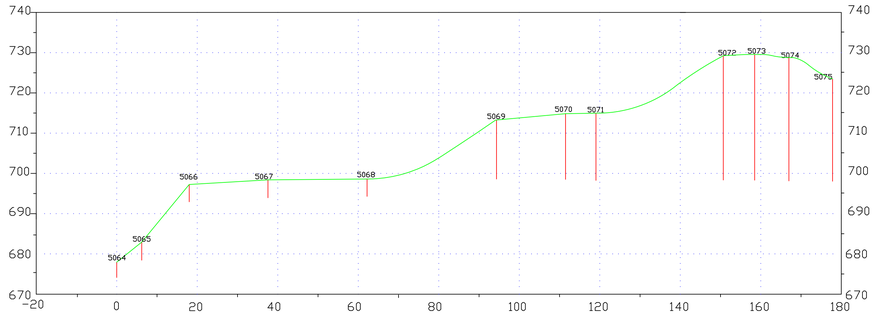
MACTEC

Project: Plant Yates Ash Pond	Location: AP2-1	Project No.: 6189109008
Boring No.: AP2-1	Sample Type: Undisturbed	
Description: Brown Silt with Sand		
Remarks: ASTM D4767-04		

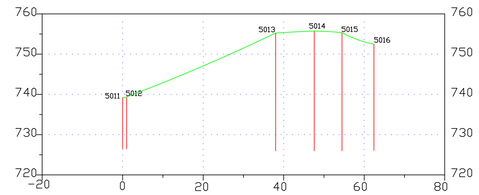
Wed, 19-MAY-2010 14:18:21

Attachment D
Critical Section Profile

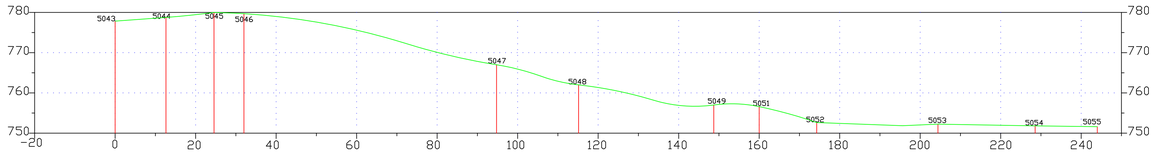
SECTION A-Ash Pond 1
Vertical Scale: 1" = 20'
Horizontal Scale: 1" = 100'



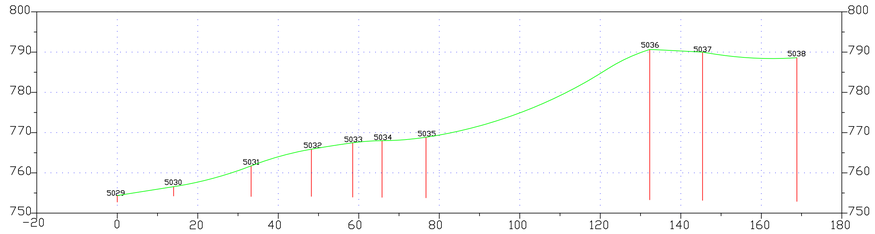
SECTION B-Ash Pond 2
Vertical Scale: 1" = 20'
Horizontal Scale: 1" = 20'



SECTION C-Ash Pond 3
Vertical Scale: 1" = 20'
Horizontal Scale: 1" = 20'



SECTION D-Ash Pond A
Vertical Scale: 1" = 20'
Horizontal Scale: 1" = 20'



SECTION E-Ash Pond B'
Vertical Scale: 1" = 20'
Horizontal Scale: 1" = 20'

Southern Company Generation
Engineering and Construction Services
FOR

Georgia Power Company

PLANT YATES
ASH POND DIKE
CROSS SECTIONS

SCALE	PROJ I.D.	DRAWING NUMBER	SHEET	CONT'D
AS SHOWN		**ES1836S1B**	1B	FINAL

ANSI F: 40x28 Acad2004