Exhibit P - Geotechnical Study
Industrial Park East

REPORT OF GEOTECHNICAL INVESTIGATION

PORT INDUSTRIAL PARK - EAST
LAKE CHARLES, LOUISIANA

FOR

LAKE CHARLES HARBOR & TERMINAL DISTRICT
CALCASIEU PARISH, LOUISIANA

AND

MEYER & ASSOCIATES, INC.
SULPHUR, LOUISIANA

STE
Soil Testing Engineers, Inc.
GEOTECHNICAL, ENVIRONMENTAL & MATERIALS CONSULTANTS

STE File: 95-2083
January 5, 1996

LAKE CHARLES, LA • BATON ROUGE, LA

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January 5, 1996

Meyer & Associates, Inc.
P. O. Box 2149
Sulphur, Louisiana 70664-2149

Attention: Mr. Charles Stutes, P.E.

Re: Geotechnical Investigation
Port Industrial Park - East
Lake Charles, Louisiana
STE File: 95-2083

Gentlemen:

We have completed this investigation and are submitting our findings, together with the engineering analyses and conclusions based on them, in the attached report.

We will be pleased to discuss any questions you may have concerning this project. It has been a pleasure to work with Meyer & Associates, Inc. on this project, and we look forward to continued service.

Sincerely,
SOIL TESTING ENGINEERS, INC.

Jerry W. Arkless

Jerry Arkless, E.I.T.
Project Engineer

Ronald H. Jones

Ronald H. Jones, P.E.
Manager, Lake Charles Office

JWA/RHJ/jll
Copies Submitted: (2)

STE
Soil Testing Engineers, Inc.

REPORT OF GEOTECHNICAL INVESTIGATION

PORT INDUSTRIAL PARK - EAST LAKE CHARLES, LOUISIANA

The findings of this investigation are presented below, together with the analyses and conclusions based on them. The field and laboratory procedures are described in Appendix A.

SITE CONDITIONS

1. Topography and Geology. The site for the new industrial park is located on a 116 acre tract, located in Section 1, Township 10 South, Range 8 West, Calcasieu Parish, Louisiana. This property abuts Highway 397 and Swift Plant Road.

The site is presently used as pasture land for cattle and horses. A new concrete paved road at the northern portion and an existing dirt farm road in the southern portion provide access to the site. Vegetation consists of short grass and some shrubs across the majority of the site. However, in the northern portion of the site, there is a grove of trees. The terrain is relatively flat with minor relief of approximately 0.5 feet in isolated areas; drainage is poor throughout the area.

Geologically, this site is underlain by the Prairie Formation of Pleistocene age. This consists of overconsolidated and quite strong clays and sands to depths of several hundred feet. The upper few feet are often weathered and somewhat weaker.

2. Soil Conditions. Fifteen (15) soil borings were made for this investigation. The approximate location of the borings are indicated on the Boring Plan, Figure 1. Borings B-1 and B-2 were made to the 24 depth. Borings B-3 and B-4 were made to the 20 depth. Borings B-5 through B-7 were made to the 15 depth. Borings B-8 through B-11 were made to the 10 depth. Borings B-12 through B-15 were made to the 6 depth.

Borings B-1 through B-7 were located along the proposed route of the sewer pipeline. Borings B-8 through B-15 were located along the proposed route of the potable water service line. Borings B-3 through B-11 encompassed the route of the proposed paved access road.

In general, the soil conditions encountered at the boring locations consisted of soft to firm SILT, SANDY SILT (ML) or CLAYEY SILT (CL-ML) in the upper 2 feet. The surficial silts were underlain by firm to stiff CLAY (CH) or SILTY or SANDY CLAY (CL) from the 2 to 6 foot depth range. These materials were underlain by loose to medium dense CLAYEY or SANDY SILT (ML) or SILTY SAND (SM) to about the 13 foot depth. Below the silts and sands, the materials consisted of firm to stiff SILTY CLAY (CL) and CLAY (CH) to at least the 24 foot depth.

The stratification described above has been simplified and interpolated between the borehole locations and does not define the continuity of strata between or away from the borehole locations. For details of the conditions encountered at each borehole, refer to the individual boring logs attached in Appendix A.

3. Groundwater. A majority of the borings were advanced by the hollow stem auger drilling method. This method provides a means to establish the depth to, and rise characteristics, of the ground water. Free water was generally encountered in the silt and sand zone in 8 to 13 foot depth range. After a brief observation period of about 15 minutes, the water level in the boring holes rose approximately 1 to 2 feet. Note, however, that longer term (e.g., 24 hours) static water levels in this zone are expected to be about 4 feet below ground surface

Of course, the depth to groundwater can fluctuate with rainfall or other seasonal variations. It should be verified prior to beginning any operations which groundwater can affect.

PROJECT CONSIDERATIONS

4. Description of Project. Information on this project was provided by Mr. Charles Stutes, P.E., of Meyer and Associates, Inc. The project consists of the construction of a roadway and two pipelines (water service and sewer service).

The roadway is to join the southern end of the existing concrete paved road and run south approximately 1500 feet. The water service pipeline will parallel the roadway on the east side and join an existing pipeline along Swift Plant Road; the approximate length is 2540 feet, with a depth of about 4 feet. The sewer service pipeline will parallel the roadway on the west side and run north approximately 1500 feet, turning west and proceeding approximately 800 feet before turning north again. The depth ranges from about 5 feet on the southernmost end to approximately 15 feet on the northernmost end.

5. Limitations. The analyses and recommendations presented in this report are based on the preceding project information, as well as on the results of the investigation. While it is not likely that conditions will differ greatly from those observed in the borings, it is always possible that variations can occur between or away from the borehole locations. If it becomes apparent during construction that soil conditions differing significantly from those discussed in Paragraph (2) are being encountered, this office should be notified at once so that their effects can be determined and any remedial measures necessary be prescribed. Also, should the nature of the project change to a major degree, these recommendations may have to be re-evaluated.

6. Geotechnical & Construction Considerations.

6.A. Roadway. The surficial layer of silt will not provide suitable support for the proposed roadway. These soils are "topsoil" type materials which are prone to severe softening when wet. However, stable material is present at a depth of about 2 feet below present grade. For ease of construction, the silty material of the upper 2 feet should be removed and replaced with structural fill in accordance with the recommendations provided in Paragraph (9). Alternatively, some of the silt can remain in place, if stabilized.

Establishing and maintaining good positive drainage along the roadway is of critical importance to the long-term success of this pavement. Without good drainage, premature failure of the roadway can be expected.

6.B. Sewer Service Pipeline. The bearing material for the support of the pipeline should be acceptable for that purpose. However, the main concern is the constructibility of the excavation for the pipeline. Shallow excavations should not present a problem, but below about 6 feet, water bearing layers of silt and sand ranging in thickness from less than a foot to about 7 feet could present significant construction concerns.

Significant seepage expected from water bearing silts and sands are expected to pose problems with the construction of excavations. The accumulation of water in the bottom of the trench may make installation of the pipeline more difficult. Also, the soils to may collapse into the excavation, causing safety concerns. When excavations are made below the waterline in the silt or sand material, excessive seepage may cause the soil material to "run", (quick condition) thereby reducing the density of the material. This may lead to excessive differential settlement of the pipeline, or even disjuction of the pipe, after the backfill is placed. Construction should include dewatering by well points or combination stable shoring and in-trench dewatering. Control of groundwater druing construction will be required.

6.C. Water Service Pipeline. The shallow excavation required for the installation of the water main should not present a problem. Excavations to the 4 foot depth or less can likely be made with only minor bottom seepage.

SITE PREPARATION

7. General. The clayey silt soils present in the upper 2 feet are unsuitable for the support of pavements. The recommendations for site preparation presented herein apply to all pavement areas of proposed construction at the site, and call for removal and/or stabilization of the surficial silts.

8. Surface Preparation.

8.A. Alternative I. In order to prepare all areas for construction, the site should first be stripped of all vegetation, organic matter, and surficial silts in the upper 2 feet and then be inspected by the design geotechnical engineers to detect any soft spots or undesirable subgrade which should also be removed under their guidance.

Across a majority of the site, the surface of the exposed silty clay and clay will likely be moist after the removal of the surficial silts in the upper 2 feet. The surface may rut (and may pump) under the loads of construction traffic (particularly loaded dump trucks transporting fill). Rather than remove additional depth of material, it may be more economical to treat the surface of the clay to provide a firm rolling base upon which to conduct fill placement and compaction operations.

For wet weather construction, the upper 6 inches of the exposed surface may be treated with 6% (by volume) lime and recompacted to 95% of the maximum dry density as determined by the Standard Proctor Compaction Test (ASTM D 698). The lime treatment operations should be performed using the general guidelines of Louisiana DOTD Standard Specifications for Roads and Bridges, Section 304, Type D treatment. An alternate treatment material which has proven effective for these purposes is Class C Flyash (or approved equivalent) which is sometimes available locally in bulk. For Class C Flyash, a minimum treatment percentage of 10% (by volume) is recommended.

Should construction take place during a prolonged period of dry weather, it may be possible to establish a firm base by tilling, drying, and recompacting the upper 6 inches of the exposed surface. In this case, the area should then be kept well drained prior to fill placement, and the first lift of fill should be placed expeditiously.

The above recommended procedures are intended to serve as an aid to the construction of site fill and not as a method of providing "all weather" construction conditions. Higher treatment percentages may be necessary if soil moisture contents become elevated due to exposure during wet weather. Establishing good site drainage before and during construction will serve to reduce the potential for compaction difficulties.

8.B. Alternative II. As an alternative to removing all of the surficial silts, a portion of the silts can remain in place if the material is properly stabilized. In this case, the upper 15 inches of the silts should be removed. The remaining 9 inches should be treated with 6% (by volume) lime or 10% (by volume) Class C Flyash (or approved equivalent) and recompacted.

The flyash or lime should be thoroughly blended into the soil using a stabilizer machine. Experience has shown that blending methods such as the use of farm discs do not provide

satisfactory results. The required degree of compaction of the blended material should be determined by the design geotechnical engineer during construction. After the stabilization operations are completed, a curing time of 2 to 3 days should be observed before construction traffic is allowed on the stabilized area.

The above recommended procedures are intended to serve as an aid to the construction of site fill and not as a method of providing "all weather" construction conditions. Higher treatment percentages may be necessary if soil moisture contents become elevated due to exposure during wet weather. Establishing good site drainage before and during construction will serve to reduce the potential for compaction difficulties.

9. Fill Placement. After surface preparation has been completed, the area should be brought to grade using a clean, select fill material free from debris or organic matter. We recommend a silty or sandy clay with a Plasticity Index of 12 to 22 and a Liquid Limit of 30 to 42. All fill should be placed in 6 inch loose lifts and compacted to a dry density at least equal to 98% of its maximum as determined by the Standard Compaction Test before another lift is added. Moisture content of the fill should not exceed 3% above optimum moisture content at the time of compaction.

PAVING

10. General Paving Considerations. Included herein are rigid pavement designs applicable to the project site. Data is provided for an adequate pavement design life considering frequent heavy trucks not exceeding LA DOTD maximum loads (18 kip single axle or 34 kip tandem axle).

11. Rigid Concrete Pavement. The subgrade should be prepared as discussed in the site preparation section of this report. The design thicknesses for concrete pavement are based on a modulus of subgrade reaction of 100 pci. The recommended concrete pavement thickness is 8 inches. A crushed limestone roadbased thickness of at least 6 inches is recommended. Further details regarding the design of Portland cement pavements are left up to the discretion of the design consultant.

Good surface and subsurface drainage are essential to the success of the pavement. Premature failure can be expected unless good drainage is established and maintained.

PIPELINES

12. Pipeline Excavations. The major consideration for construction in this portion of the project area will be the effect of the water-bearing silt or sand strata on excavation for the pipelines. Excavations to the 4 foot depth or less can likely be made with only minor bottom seepage. Such minor seepage can generally be handled with simple sump and pump operations.

Should seepage be experienced, some softening of the clays in the bottom of the excavation can be expected; this can be minimized by placing the pipe, and backfilling expeditiously, in short sections. Deeper excavations will likely encounter significant seepage. Excavation depths which penetrate the water bearing silts or sands will likely encounter substantial seepage and "running sand", i.e., sands which become liquified due to the inflow of water. This condition cannot generally be handled with simple sump and pump operations, but will require sheeting and shoring and/or dewatering with well points.

13. Bedding Material. Pipeline bedding material need only to provide for relatively uniform support of the pipe and thus avoid stress concentrations caused unusual soft or hard material (such as muck or rock). No extremely soft or hard materials were encountered during the investigation and none are anticipated. Seepage into the base of the trench excavation could produce relatively weak support conditions.

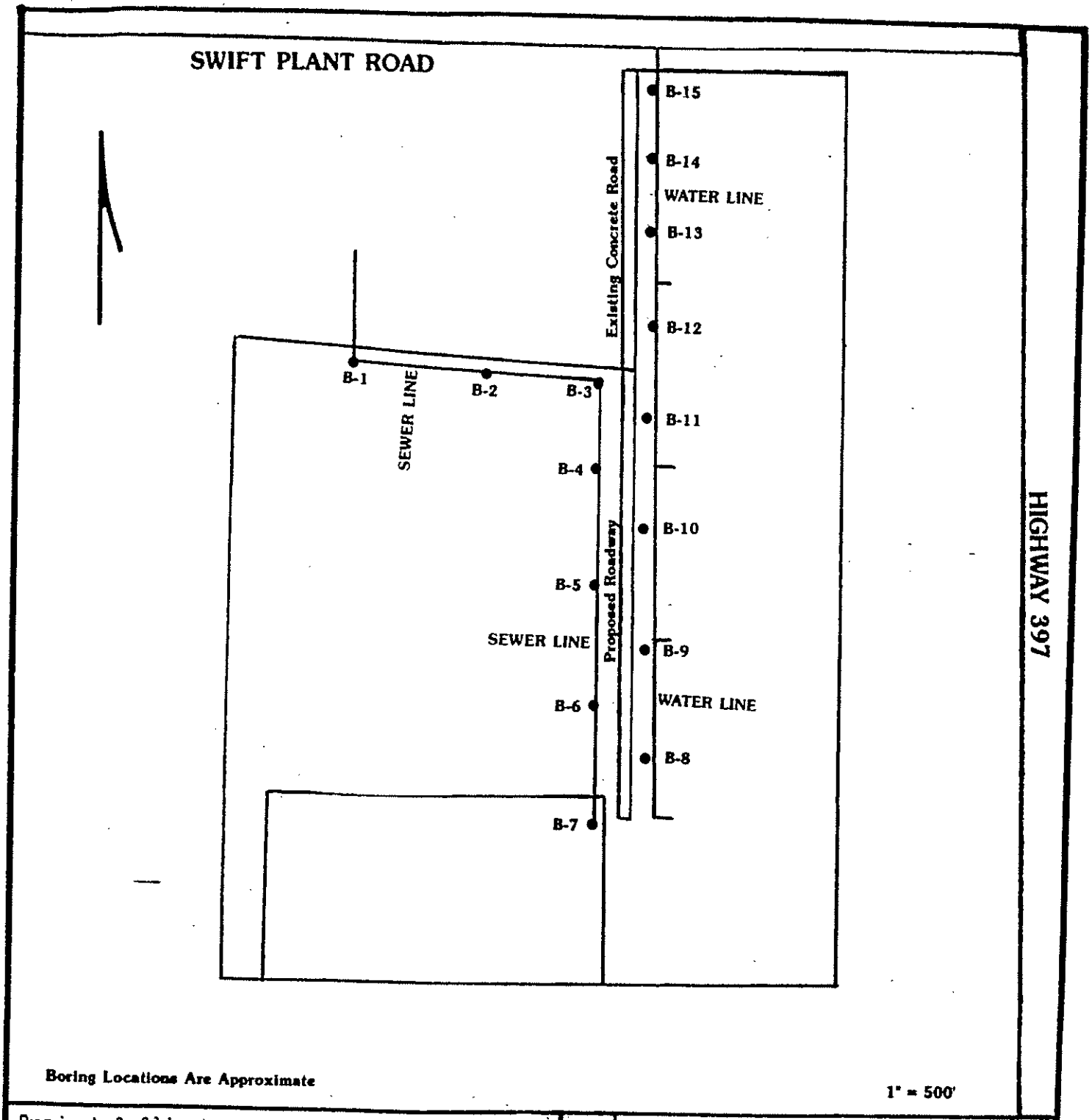
Any bedding material which is used should consist of clean sand (less than 10% passing #200 sieve and 60% passing the No. 50 Sieve) or pea gravel. In no instance should clay backfill be placed beneath the pipeline.

14. Excavations. In accordance with OSHA regulations, the construction contractor is responsible for developing and implementing protective systems for excavations. Attention is directed to CFR 1926.650 through 1926.652, (and appendix A to subpart P). For excavations deeper than 4 feet, the soils at this site should be classified as Type C.

MISCELLANEOUS

15. Quality Control. All proof-rolling, stripping, stabilization, and fill placement/compaction should be closely monitored by the design geotechnical engineers.

16. Consultation. Often, during final design and/or construction, questions can arise which are not specifically covered in the report. They can normally be handled by a brief call or conference with the designers.



Boring Locations Are Approximate

1" = 500'

Project & Client:

PORT INDUSTRIAL PARK - EAST
LAKE CHARLES, LOUISIANA

FOR

MEYER & ASSOCIATES, INC.
SULPHUR, LOUISIANA

SOIL INVESTIGATION BY
SOIL TESTING ENGINEERS, INC.
Baton Rouge, LA. Lake Charles, LA.

Project Engineer:	Drawn by:	Checked by:
J. Arkless	JWA	RHJ
File No.:	Date:	Figure No.:
95-2083	12-11-95	1

Title:-

BORING PLAN

STE
Soil Testing Engineers, Inc.

APPENDIX A

SUBSURFACE EXPLORATION AND LABORATORY PROCEDURES,

AND SOIL BORING LOGS

95-2083

STE
Soil Testing Engineers, Inc.

APPENDIX A

SUBSURFACE AND LABORATORY PROCEDURES

SUBSURFACE EXPLORATION

General. The approximate locations of the borings are shown on the Boring Plan of Figure 1. These borings were made with buggy-mounted, hollow stem-type drilling equipment on November 14, 15 and 27, 1995. Samples were obtained continuously in the upper 10 feet to provide detailed information for shallow foundations and on 3 to 5 foot centers thereafter. The total exploration program consisted of 197 lineal feet of standard borings, 134 feet of which were sampled continuously. Detailed logs of the borings are attached.

Sampling Procedures. In these cohesive and semi-cohesive soils, relatively undisturbed samples were secured using a 3 inch diameter, thin-wall shelby tube sampler. In this sampling procedure, the borehole is advanced to the desired level, and the tube is lowered to the bottom of the boring. It is then forced about 2 feet into the undisturbed soil in one continuous stroke. The tube is retrieved and the sample extruded by a hydraulic piston. The sample is then visually classified and a penetrometer relative strength test performed. Any disturbed portions are discarded, and the sample protected for transportation to the laboratory.

In the less cohesive materials, standard penetration tests were performed; these provide a measure of the in situ characteristics of the soil and secure a disturbed sample. In this test, a 2 inch OD, 1.37 ID, heavy-walled "split spoon" sampler is driven into the undisturbed soil at the bottom of the borehole with a drop hammer weighing 140 pounds and having a stroke of 30 inches. It is first seated 6 inches, then driven an additional two 6-inch increments. The "Penetration Resistance" is the number of such blows required to drive the spoon the final 12 inches. It is recorded on the boring log in the following manner:

5 b/f
(1-2-3)

where the figures in parenthesis indicate the number of blows required for each 6 inch increment.

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Soil Testing Engineers, Inc.

APPENDIX A
(CONTINUED)

SUBSURFACE AND LABORATORY PROCEDURES

LABORATORY PROCEDURES

General. Some samples from the various strata were tested in the laboratory to determine their pertinent physical characteristics. The samples and types of tests performed were selected by a soils engineer to develop information necessary for pertinent analyses. The testing program conducted is described below:

Strength Tests. The strength characteristics of the various strata are important for almost all soils engineering analyses. Nine (9) Unconfined Compression Tests (ASTM D 2166) and nine (9) Unconsolidated, Undrained Triaxial Compression Tests (ASTM D 2850) were performed to develop this data.

Classification Tests. In order to classify the soils more definitely than can be done by field methods, thirty-three (33) Atterberg Limit Determinations (ASTM D 4318), thirty-nine (39) Moisture Content Determinations (ASTM D 2216), and twenty-one (21) Dry Unit Weight Determinations and four (4) Particle Size Analysis (ASTM D 422) were made.

The results of the testing program are presented in the appropriate columns of the boring logs.

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-1

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/15/95
Geol: M. Allen
Driller: M. McCollough
Rig: CME 550

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA							
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)		Soil Type	DESCRIPTION
			5 b/f 1-2-3								Loose gray SILT (ML)
			1.0 (P)								Firm light gray & tan SILTY CLAY (CL), w/silt pockets
	5		1.5 (P)	0.7 t	18	111	29	11			
▽			7 b/f 1-3-4		20		22	6			Loose gray & tan CLAYEY SILT (ML)
▽			8 b/f 2-3-5		25				PSA		
	10										
			3.0 (P)	1.5	32	92	63	39			Stiff reddish brown CLAY (CH), w/calcium traces
	15										
			2.5 (P)								
	20										
			2.75 (P)								
	25										Boring Completed @ 24'
	30										

Ground Water Level Data

▽ Free Water First Encountered
▽ Water Level After 15 Minute Observation Period

Boring Advancement Method

Auger: 0' to 24'

Boring Abandonment Method

Borehole Backfilled w/Soil Cuttings Upon Completion

Notes

t: Unconsolidated, Undrained Triaxial Compression Test. Lateral Pressure = 5 psi

PSA: Particle Size Analysis, Sand Content = 23%

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-2

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/15/95
Geol: M. Allen
Driller: M. McCollough
Rig: CME 550

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA							
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)		Soil Type	DESCRIPTION
			4 b/f 1-2-2								Loose dark gray SILT (ML)
			2.2 (P)		17		36	19			Stiff reddish brown, tan & gray SILTY CLAY (CL), w/silt seams & pockets, & sand layers
	5		1.0 (P)	1.1 t1	20	104	33	15			
▽			10 b/f 3-5-5		25				PSA		
			3.0 (P)	1.6 t2	23	101	47	29			
	10										
			2.25 (P)								
	15										
			2.75 (P)	1.7 t3	30	93	65	42			Stiff brown & gray CLAY (CH), w/silt seams
	20										
			2.75 (P)								
	25										Boring Completed @ 24'
	30										

Ground Water Level Data

▽ Free Water First Encountered
▽ Water Level After 15 Minute Observation Period

Boring Advancement Method

Auger: 0' to 24'

Boring Abandonment Method

Borehole Backfilled w/Soil Cuttings Upon Completion

Notes

t: Unconsolidated, Undrained Triaxial Compression Test.
1) Lateral Pressure = 5 psi
2) Lateral Pressure = 8 psi
3) Lateral Pressure = 17 psi

PSA: Particle Size Analysis,
Sand Content = 2%
Silt Content = 63%
Clay Content = 35%

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-3

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/27/95
Geol: M. Allen
Driller: R. Fazio
Rig: CME 550

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA						
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)	Soil Type	DESCRIPTION
			2.0 (P)							Loose brown SILT (ML)
			1.5 (P)	1.8	20	109	54	37		Stiff to very stiff light gray CLAY (CH)
	5		1.5 (P)							
			2.0 (P)							
			4.0 (P)	2.3	26	103	54	31		
			3.0 (P)		23		48	27		Stiff reddish brown SILTY CLAY (CL), w/silt pockets
	10									
▽										
			2.75 (P)							Stiff brown & gray CLAY (CH)
	15									
			3.25 (P)		20		52	33		
	20									
										Boring Completed @ 20'
	25									
	30									

Ground Water Level Data	Boring Advancement Method	Notes
▽ Free Water First Encountered ▽ Water Level After 15 Minute Observation Period	Auger: 0' to 20'	
	Boring Abandonment Method Borehole Backfilled w/Soil Cuttings Upon Completion	

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-4

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/27/95
Geol: M. Allen
Driller: R. Fazio
Rig: CME 550

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA						
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)	Soil Type	DESCRIPTION
			1.0 (P)							Loose gray SILT (ML)
			1.5 (P)	1.2 t	19	106	54	37		Stiff tan & light gray CLAY (CH), w/silt seams
	5		2.5 (P)							Very stiff reddish brown SILTY CLAY (CL), w/silt pockets & sand seams
			2.5 (P)	2.4	23	104	47	27		
			3.25 (P)							
	10									
▽										
▽			2.25 (P)		26		46	25		Stiff tan & gray SILTY CLAY (CL), w/sand seams
	15									
			4.0 (P)							
	20									Boring Completed @ 20'
	25									
	30									

Ground Water Level Data	Boring Advancement Method	Notes
▽ Free Water First Encountered ▽ Water Level After 15 Minute Observation Period	Auger: 0' to 20'	t: Unconsolidated, Undrained Triaxial Compression Test. Lateral Pressure = 3 psi
	Boring Abandonment Method Borehole Backfilled w/Soil Cuttings Upon Completion	

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-5

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/27/95
Geol: M. Allen
Driller: R. Fazio
Rig: CME 550

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA						
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)	Soil Type	DESCRIPTION
✳			5 b/f 1-2-3							Loose dark gray SILT (ML)
			1.25 (P)	1.1	21	103	58	41		Stiff light gray & tan CLAY (CH)
	5		2.0 (P)							Stiff reddish brown SILTY CLAY (CL), w/silt seams & pockets, & sand & silt layers
			10 b/f 2-5-5							
			2.5 (P)	1.8 t	22	104	45	22		
	10									
			2.5 (P)							
	15									Boring Completed @ 15'
	20									
	25									
	30									

Ground Water Level Data	Boring Advancement Method	Notes
✳ No Free Water Encountered	Auger: 0' to 15'	t: Unconsolidated, Undrained Triaxial Compression Test. Lateral Pressure = 8 psi
	Boring Abandonment Method: Borehole Backfilled w/Soil Cuttings Upon Completion	

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-6

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/27/95
Geol: M. Allen
Driller: R. Fazio
Rig: CME 550

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA						
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)	Soil Type	DESCRIPTION
✳			7 b/f 3-3-4							Loose dark gray SILT (ML)
			1.25 (P)		21		56	38		Stiff tan & gray CLAY (CH), w/silt pockets
	5		1.5 (P)	0.7 t	26	100	39	20		Firm reddish brown SILTY CLAY (CL), w/silt seams & layers
			1.5 (P)							
			2.5 (P)							
	10									
			3.0 (P)		31	91				Stiff brown & gray CLAY (CH)
	15									Boring Completed @ 15'
	20									
	25									
	30									

Ground Water Level Data	Boring Advancement Method	Notes
✳ No Free Water Encountered	Auger: 0' to 15'	t: Unconsolidated, Undrained Triaxial Compression Test. Lateral Pressure = 5 psi
	Boring Abandonment Method: Borehole Backfilled w/Soil Cuttings Upon Completion	

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-7

STE
Soil Testing Engineers, Inc.

Meyer & Associates, Engineers
Sulphur, Louisiana

File: 95-2083
Date: 11/27/95
Geol: M. Allen
Driller: R. Fazio
Rig: CME 550

FIELD DATA				LABORATORY DATA							
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)		Soil Type	DESCRIPTION
			6 b/f 2-3-3		17		24	8			Loose dark gray SILT (ML)
			2.0 (P)	1.4	20	108	46	31			Stiff tan & gray SILTY CLAY (CL), w/sand layers & pockets
▽	5		2.5 (P)								
			0.75 (P)		21				PSA		Loose gray SILTY SAND (SM)
▽			7 b/f 3-3-4								
	10										
			2.0 (P)	1.4	34	87	78	52			Stiff brown & gray CLAY (CH), w/silt pockets
	15										Boring Completed @ 15'
	20										
	25										
	30										

Ground Water Level Data

▽ Free Water First Encountered
▽ Water Level After 15 Minute Observation Period

Boring Advancement Method

Auger: 0' to 15'

Boring Abandonment Method

Borehole Backfilled w/Soil Cuttings Upon Completion

Notes

PSA: Particle Size Analysis,
Sand Content = 55%

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-8

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/14/95
Geol: M. Allen
Driller: M. McCollough
Rig: CME 550

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA							
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)		Soil Type	DESCRIPTION
			0.25 (P)		21		23	4	PSA		Loose dark gray CLAYEY SILT (ML)
			1.25 (P)	1.0	21	104	52	37			Stiff tan brown & light gray CLAY (CH), w/silt seams & pockets
	5		1.75 (P)								
			13 b/f 4-6-7								Medium dense gray & reddish brown SANDY SILT (ML), w/silty clay seams
▽											
▽			1.0 (P)								
	10										Boring Completed @ 10'
	15										
	20										
	25										
	30										

Ground Water Level Data

▽ Free Water First Encountered
▽ Water Level After 15 Minute Observation Period

Boring Advancement Method

Auger: 0' to 10'

Boring Abandonment Method

Borehole Backfilled w/Soil Cuttings Upon Completion

Notes

PSA: Particle Size Analysis,
Sand Content = 23%
Silt Content = 63%
Clay Content = 14%

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-9

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/14/95
Geol: M. Allen
Driller: M. McCollough
Rig: CME 550

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA						
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)	Soil Type	DESCRIPTION
✳			7 b/f 3-4-3							Loose dark gray SANDY SILT (ML)
			2.0 (P)		18		42	26		Stiff gray & tan SILTY CLAY (CL), w/silt & sand seams & pockets
	5		1.75 (P)							
			14 b/f 4-7-7							
			1.75 (P)							
	10									Boring Completed @ 10'
	15									
	20									
	25									
	30									

Ground Water Level Data	Boring Advancement Method	Notes
✳ No Free Water Encountered	Auger: 0' to 10'	
	Boring Abandonment Method: Borehole Backfilled w/Soil Cuttings Upon Completion	Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-10

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/14/95
Geol: M. Allen
Driller: M. McCollough
Rig: CME 200

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA						
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)	Soil Type	DESCRIPTION
✳			7 b/f 4-3-4							Loose dark gray SANDY SILT (ML)
			1.0 (P)	1.4 t1	23	101	67	46		Stiff tan, gray & reddish brown CLAY (CH), w/silt & sand seams & pockets
	5		1.0 (P)	1.4 t2	20	105	50	31		
			3.0 (P)							
			2.25 (P)							
	10									Boring Completed @ 10'
	15									
	20									
	25									
	30									

Ground Water Level Data
✳ No Free Water Encountered

Boring Advancement Method
Auger: 0' to 10'

Boring Abandonment Method
Borehole Backfilled w/Soil Cuttings Upon Completion

Notes
t: Unconsolidated, Undrained Triaxial Compression Test.
1) Lateral Pressure = 3 psi
2) Lateral Pressure = 5 psi

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-11

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/15/95
Geol: M. Allen
Driller: M. McCollough
Rig: CME 200

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA							
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)		Soil Type	DESCRIPTION
✳			3.0 (P)								Loose dark gray SILT (ML)
			1.0 (P)		21		39	21			Stiff tan & gray SILTY CLAY (CL), w/silt seams & pockets
	5		2.5 (P)		18		30	13			
			18 b/f 3-4-4								Medium dense reddish brown CLAYEY SILT (ML)
			2.25 (P)								Stiff reddish brown SILTY CLAY (CL), w/silt seams & pockets
	10										Boring Completed @ 10'
	15										
	20										
	25										
	30										

Ground Water Level Data
✳ No Free Water Encountered

Boring Advancement Method
Auger: 0' to 10'

Boring Abandonment Method
Borehole Backfilled w/Soil Cuttings Upon Completion

Notes

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-12

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/27/95
Geol: M. Allen
Driller: R. Fazio
Rig: CME 550

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA						
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)	Soil Type	DESCRIPTION
✳			4 b/f 1-2-2							Loose dark gray SILT (ML)
			2.0 (P)		18		40	23		Stiff gray & tan SILTY CLAY (CL)
	5		1.75 (P)		20		40	23		
	10									Boring Completed @ 6'
	15									
	20									
	25									
	30									

Ground Water Level Data	Boring Advancement Method	Notes
✳ No Free Water Encountered	Auger: 0' to 6'	
	Boring Abandonment Method Borehole Backfilled w/Soil Cuttings Upon Completion	

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-13

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/15/95
Geol: M. Allen
Driller: M. McCollough
Rig: CME 200

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA						
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)	Soil Type	DESCRIPTION
✳			0.25 (P)							Loose dark gray CLAYEY SILT (ML)
			3.0 (P)							
			4.0 (P)		16	116				Stiff light gray & tan SILTY CLAY (CL), w/silt seams & pockets
	5		3.5 (P)							
			23 b/f 6-10-13							Medium dense light gray & tan SANDY SILT (ML)
	10									Boring Completed @ 6.5'
	15									
	20									
	25									
	30									

Ground Water Level Data	Boring Advancement Method	Notes
✳ No Free Water Encountered	Auger: 0' to 6.5'	
	Boring Abandonment Method	
	Borehole Backfilled w/Soil Cuttings Upon Completion	

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-14

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/15/95
Geol: M. Allen
Driller: M. McCollough
Rig: CME 200

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA							
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)		Soil Type	DESCRIPTION
✳			15 b/f 3-7-8								Medium dense dark gray SILT (ML)
			4.0 (P)		14	113					Hard gray SILTY CLAY (CL)
	5		2.0 (P)								Stiff reddish brown SILTY CLAY (CL)
	10										Boring Completed @ 6'
	15										
	20										
	25										
	30										

Ground Water Level Data
✳ No Free Water Encountered

Boring Advancement Method
Auger: 0' to 6'

Boring Abandonment Method
Borehole Backfilled w/Soil Cuttings Upon Completion

Notes

Strata Boundaries May Not Be Exact

Port Industrial Park - East
Lake Charles, Louisiana

LOG OF SOIL BORING B-15

STE
Soil Testing Engineers, Inc.

File: 95-2083
Date: 11/15/95
Geol: M. Allen
Driller: M. McCollough
Rig: CME 200

Meyer & Associates, Engineers
Sulphur, Louisiana

FIELD DATA				LABORATORY DATA						
Ground Water Level	Depth (feet)	Samples	Field Test Results	Comp. Strength (tsf)	MC (%)	γ_d (pcf)	LL (%)	PI (%)	Soil Type	DESCRIPTION
✳			1.0 (P)							Soft black CLAYEY SILT (ML)
			>4.0 (P)		21		41	22		Very stiff dark gray & tan SILTY CLAY (CL)
			>4.0 (P)		15		49	31		
	5		2.25 (P)	2.0	29	95	60	37		Very stiff reddish brown, tan & light gray CLAY (CH)
	10									Boring Completed @ 6'
	15									
	20									
	25									
	30									

Ground Water Level Data	Boring Advancement Method	Notes
✳ No Free Water Encountered	Auger: 0' to 6'	
	Boring Abandonment Method	
	Borehole Backfilled w/Soil Cuttings Upon Completion	

Strata Boundaries May Not Be Exact