U.S. ARMY CORPS OF ENGINEERS

BORING NO. 99-5 DATE: BEGIN 4-27-99 PAGE 1 / 2
JOB NO. 1140114808 COMPLETE 4-27-99 Thin Walled Tube
PROJECT Neches River Saltwater Barrier ■ 3" □ 6"
LOCATION N = 876098.83, E = 3543163.16
ELEVATION OF HOLE -0.4
MANUFACTURER'S DESIGNATION OF DRILL RIG DNR75 w/Brag & Track Buggy
GROUNDWATER: DEPTH @ ft., ELEV. ft., at end of Drilling
WEATHER Clear
DRILLER Dempsey Cocaren LOGGER Iraj Mostamand

DEPTH, FEET	SAMPLE	SAMPLE NO.	PEN./TORVANE SPT.-BLOW COUNT	COLOR	MATERIAL TYPE	CONSISTENCY	SECONDARY CONSTITUENTS	STRUCTURAL FEATURES AND COMMENTS
mud line 0	J	1	0.00	Gray	Clay	V.soft		@ 3ft of water -w/decayed wood 0 - 6' -sample fell out of Tube 0-6'
	J	2	0.00	Gray	Clay	V.soft		
5	J	3	0.00	Gray	Clay	V.soft		
		4	0.00	Gray	Clay	V.soft		-w/decayed wood -Set 10' of casing Total casing below mudline 5.5'
	J	5	0.00	Gray	Clay	V.Soft		-w/decayed wood sample fell out of Tube
10		6	0.00	Gray	Clay	V.Soft		-w/decayed wood
	X	7	7/12/12	Gray	Sand	M.Dense	Silt	
15								
	X	8	5/7/9	Gray.	Sand	M.Dense		-w/pea gravel
20		9	2.50	olive gray	Clay	V.stiff		-w/cala nod & fer st, SLKS
		10	0.75	Yellowish gray Yellowish g.	Clay	M.stiff	Silt	-w/cala nod & fer stains

(9)

Project: Neches River Saltwater Barrier

SUMMARY OF LABORATORY TEST RESULTS

Contract No. DACW64-98-D-0002 Delivery Order No. 0010

Boring No. 99-5

S #	Depth (ft)	P P (tsf)	SPT Blows per Foot	Visual Classification	U S C	Mc (%)	Dry Unit Wt (pcf)	Wet Unit Wt (pcf)	L L (%)	PL (%)	Mechanical Analysis % Passing					Specific Gravity	q u (tsf)
											#4	#10	#40	#100	#200		
1	0 - 2	0.00		Clay,w/decayed wood,Very soft,Gray	C H	107.6											
2	2 - 4	0.00		Clay,w/decayed wood,Very soft,Gray	C H	104.7											
3	4 - 6	0.00		Clay,w/decayed wood,Very soft,Gray	C H	87.9											
4	6 - 8	0.00		Clay,w/decayed wood,Very soft,Gray	C H	74.5											
5	8 - 10	0.00		Clay,w/decayed wood,Very soft,Gray	C H	72.4											
6	10 - 12	0.00		Clay,w/decayed wood,Very soft,Gray	C H	70.2											
7	12-13.5		24	Sand,Medium dense,Gray	S P						100.0	100.0	63.6	4.5	3.7		
8	17-18.5		16	Sand,w/pea gravel,Medium dense,Gray	S P						98.9	98.1	37.6	3.7	3.1		
9	20-22	2.50		Clay,w/calc nod & fer stains,slks,Very stiff, Olive gray	C H	29.1											
10	22-24	0.75		Silty Clay,w/calc nod & fer stains,Medium stiff,Yellowish gray	C L	20.2	105.4	126.7									0.60
11	24-26	1.00		Silty Clay,w/calc nod & fer stains,Stiff, Yellowish gray	C L	20.6	107.3	129.5									1.13
12	26-28	3.25		Silty Clay,w/calc nod & fer stains,Very stiff, Yellowish gray	C L	18.5	107.7	127.5	45.0	19.0							2.13
13	28-30	3.00		Clay,w/fer stains,slks,Very stiff,Yellowish brown & gray	C H	20.0											
14	30-32	3.00		Clay,w/fer stains,slks,Very stiff,Yellowish brown & gray	C H	26.6											
15	32-34	3.25		Clay,w/calc nod & fer stains,slks,Very stiff, Yellowish brown & gray	C H	29.6											
16	34-36	2.25		Silty Clay,w/fer stains,Very stiff,Yellowish brown & gray	C L	21.0											
17	36-38	4.50+		Silty Clay,w/fer stains,Hard,Yellowish brown & gray	C L	19.0											
18	38-40	2.75		Silty Clay,w/fer stains,Very stiff,Yellowish brown & gray	C L	25.3	96.0	120.3	40.0	19.0							2.07
19	40-42	2.75		Silty Clay,w/fer stains,Very stiff,Yellowish brown & gray	C L	22.1											
20	42-44	3.75		Clay,w/fer stains,slks,Very stiff,Red & gray	C H	24.0											

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classifcation, M c : Moisture Content
q u : Unconfined Compressive Strength, W O H : Weight of hammer, W O P : Weight of Pipe

Project: Neches River Saltwater Barrier

SUMMARY OF LABORATORY TEST RESULTS

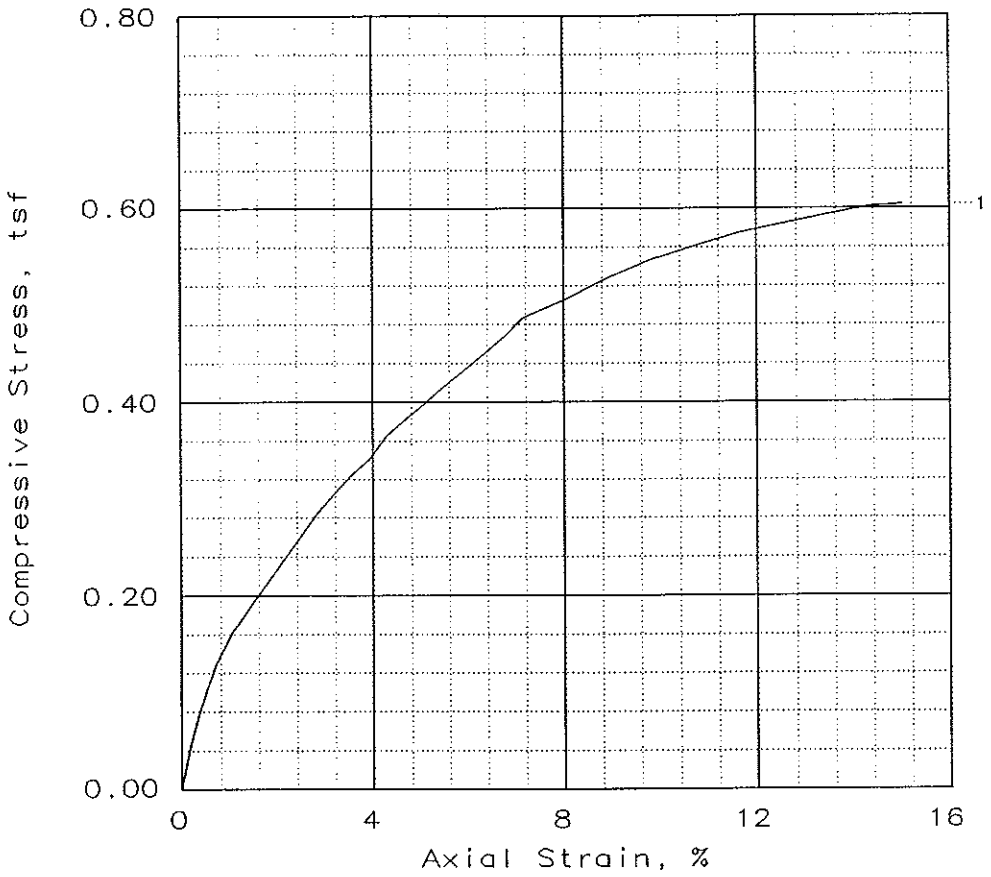
Contract No. DACW64-98-D-0002 Delivery Order No. 0010

Boring No. 99-5

S #	Depth (ft)	P P (tsf)	SPT Blows per Foot	Visual Classification	U S C	Mc (%)	Dry Unit Wt (pcf)	Wet Unit Wt (pcf)	L L (%)	PL (%)	Mechanical Analysis % Passing					Specific Gravity	q u (tsf)
											#4	#10	#40	#100	#200		
21	44-46	3.50		Clay,w/fer stains,slks,Very stiff,Reddish brown & gray	C H	30.9											
22	46-48	3.75		Clay,w/caly stone & fer stains,slks,Very stiff,Reddish brown & gray	C H	29.0											
23	48-50	3.50		Clay,w/fer stains,slks,Very stiff,Reddish brown & gray	C H	24.7											
24	50-52	3.50		Clay,w/fer stains,slks,Very stiff,Reddish brown & gray	C H	29.8											
25	52-54	3.75		Clay,w/fer stains & silt seams,slks,Very stiff,Reddish brown & gray	C H	30.9											
26	54-56	4.25		Clay,w/fer stains,slks,Hard,Reddish brown & gray	C H	31.8											
27	56-58	3.75		Clay,w/fer stains,slks,Very stiff,Reddish brown & gray	C H	34.0											
28	58-60	3.75		Clay,w/fer stains,slks,Very stiff,Reddish brown & gray	C H	31.9											

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classifcation, M c : Moisture Content
q u : Unconfined Compressive Strength, W O H : Weight of hammer, W O P : Weight of Pipe

UNCONFINED COMPRESSION TEST



SAMPLE NO.:	1			
Unconfined strength, tsf	0.60			
Undrained shear strength, tsf	0.30			
Failure strain, %	15.0			
Strain rate, %/min	1.07			
Water content, %	20.2			
Wet density, pcf	126.7			
Dry density, pcf	105.4			
Saturation, %	92.2			
Void ratio	0.5880			
Specimen diameter, in	2.83			
Specimen height, in	5.60			
Height/diameter ratio	1.98			

Description: Silty Clay,w/calc nod&fer stains,Med S.,Yish Gy

ASS. GS= 2.68 | Type: Undisturbed

Project No.: 1140114810
Date: 6-10-99
Remarks:
Assumed Specific gravity

Fig. No.: ——

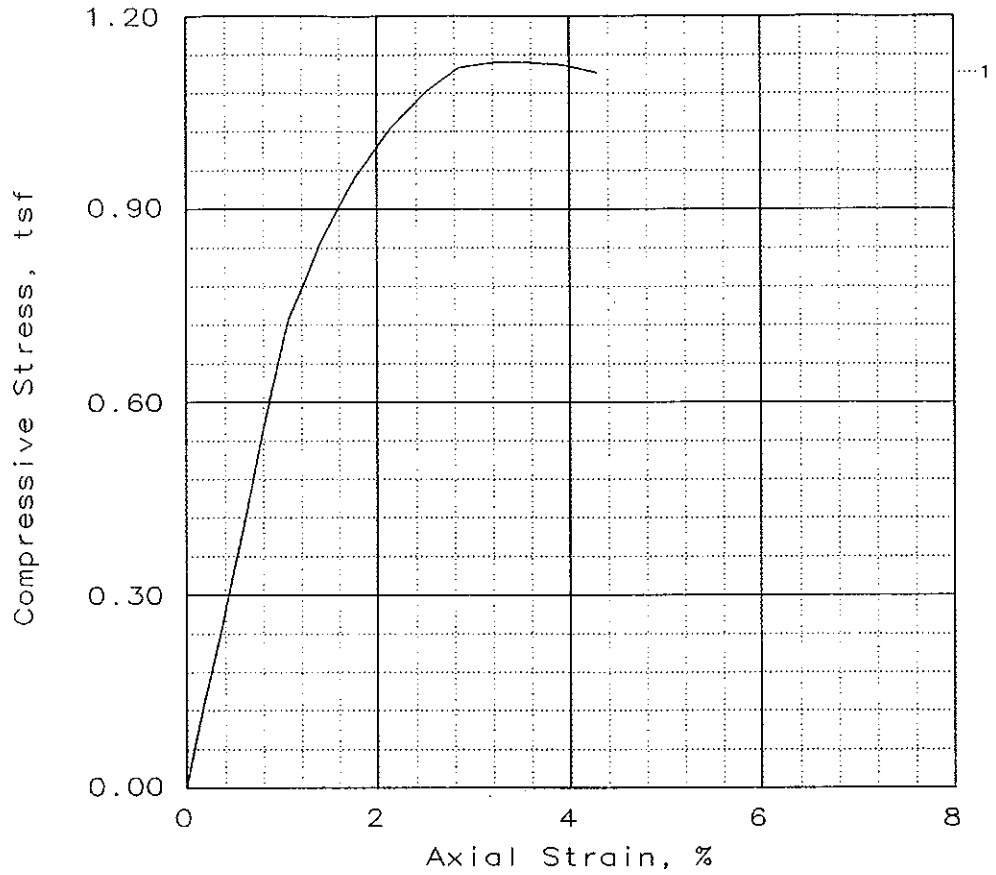
Client: U.S Army Corps of Engineers
Galveston office District
Project: Neches River Saltwater Barrier

Location: Boring No. 99-5
Sample No. 10 Depth: 22-24 ft

UNCONFINED COMPRESSION TEST

GEOTEST ENGINEERING, INC.

UNCONFINED COMPRESSION TEST



SAMPLE NO.:	1			
Unconfined strength, tsf	1.13			
Undrained shear strength, tsf	0.56			
Failure strain, %	3.6			
Strain rate, %/min	1.07			
Water content, %	20.6			
Wet density, pcf	129.5			
Dry density, pcf	107.3			
Saturation, %	98.9			
Void ratio	0.5593			
Specimen diameter, in	2.83			
Specimen height, in	5.60			
Height/diameter ratio	1.98			

Description: Silty Clay,w/calc nod&fer stains,Stiff,Yish Gy

ASS. GS= 2.68 | Type: Undisturbed

Project No.: 1140114810
Date: 6-10-99
Remarks:
Assumed Specific gravity

Fig. No.: ——

Client: U.S Army Corps of Engineers
Galveston office District
Project: Neches River Saltwater Barrier

Location: Boring No. 99-5
Sample No. 11 Depth: 24-26 ft

UNCONFINED COMPRESSION TEST

GEOTEST ENGINEERING, INC.

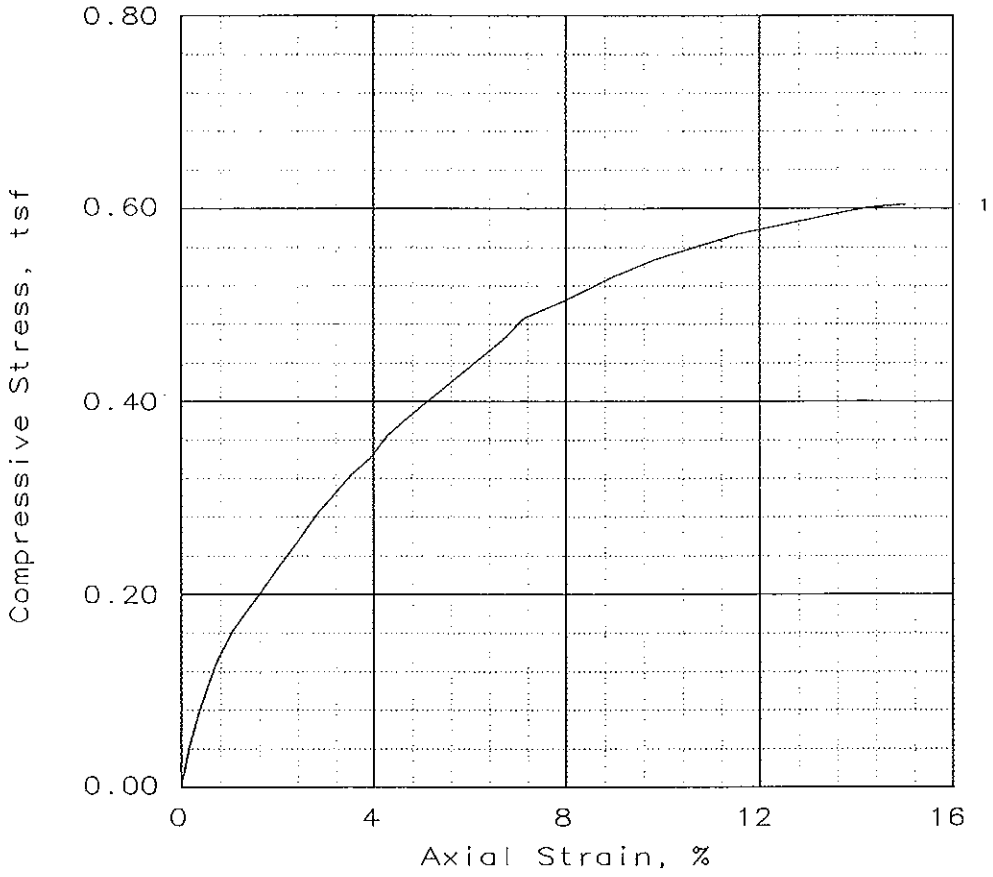
SUMMARY OF LABORATORY TEST RESULTS

Project:Neches river Saltwater barrier
Contract No. DACW64-98-D-0002

Boring No.	S#	Visual Classification	U S C	Mechanical Analysis % Passing																
				#2	#1 1/2	#1	#1/2	#3/4	#3/8	#4	#8	#10	#16	#20	#30	#40	#50	#70	#100	#140	#200
99-1	5	Sandy Silt,w/decayed wood & sand,very loose,gray	ML	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.8	99.6	98.2	87.4	68.3	50.3
99-1	8	Sand,w/decayed wood & silt,loose, gray	SP-SM	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	95.6	82.3	54.9	27.1	14.4	10.4	9.1	8.3	7.6
99-2	9	Sand,w/decayed wood,medium dense,gray	SP	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.6	98.2	94.7	80.1	38.6	7.6	4.3	3.7	3.3
99-3	8	Sand,w/pea gravel,medium dense,gray	SP	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.8	98.9	96.6	90.3	74.7	43.5	5.5	1.7	1.3	1.2
99-4	8	Silty Sand,w/roots,loose,gray	SM	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.3	97.4	89.7	69.7	46.7	33.0	27.8	23.7
99-5	7	Sand,medium dense,gray	SP	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	97.3	88.3	63.6	28.4	6.7	4.5	4.0	3.7
99-5	8	Sand,w/pea gravel,medium dense,gray	SP	100.0	100.0	100.0	100.0	100.0	99.6	98.9	98.4	98.1	95.7	87.7	66.6	37.6	16.1	5.6	3.7	3.3	3.1
99-6	11	Sand,w/decayed wood & pea gravel,medium dense gray	SP	100.0	100.0	100.0	100.0	100.0	100.0	99.5	98.0	97.1	91.3	83.2	69.8	53.8	31.6	10.3	6.4	5.1	3.9
99-7	5	Sand,w/silt,loose,gray	SP-SM	100.0	100.0	100.0	100.0	100.0	100.0	99.8	98.6	98.1	95.4	87.4	69.6	46.5	28.1	13.8	7.8	6.3	5.7
99-7	7	Sand,w/silt & pea gravel, medium dense, gray	SP-SM	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.7	92.3	73.1	44.9	23.0	9.9	6.3	5.6	5.2
99-8	5	Sand,w/pea gravel, loose, gray	SP	100.0	100.0	100.0	100.0	100.0	100.0	99.7	98.8	98.1	93.0	79.7	53.1	28.1	18.1	10.6	6.3	5.4	4.9
99-8	7	Sand, w/decayed wood & gravel,medium dense, gray	SP-SM	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	98.5	91.2	77.4	54.4	32.2	17.8	10.2	8.1	7.1	6.5
99-8	15	Clayey Silt,w/sand,medium dense,yellowish gray	ML	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.9	99.8	99.5	93.3	82.2	64.6
99-10	6	Sand,loose,gray	SP-SM	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.2	92.6	78.6	50.2	27.4	14.1	8.4	6.5	5.4
99-10	8	Sand,w/silt,clay pockets,medium dense,gray	SP-SM	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.1	91.3	71.5	42.1	20.2	10.9	9.0	8.0	7.2
99-10	13	Silt,medium dense,yelllowish brown & gray	ML	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.9	99.9	99.9	99.9	99.8	98.7
99-11	6	Sity Sand,medium dense,gray	SM	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.3	96.4	76.6	32.5	18.7	14.3

S#: Sample Number, U S C: Unified Soil Classification

UNCONFINED COMPRESSION TEST



SAMPLE NO.:	1			
Unconfined strength, tsf	0.60			
Undrained shear strength, tsf	0.30			
Failure strain, %	15.0			
Strain rate, %/min	1.07			
Water content, %	20.2			
Wet density, pcf	126.7			
Dry density, pcf	105.4			
Saturation, %	92.2			
Void ratio	0.5880			
Specimen diameter, in	2.83			
Specimen height, in	5.60			
Height/diameter ratio	1.98			

Description: Silty Clay,w/calc nod&fer stains,Med S.,Yish Gy

			ASS. GS= 2.68	Type: Undisturbed

Project No.: 1140114810
Date: 6-10-99
Remarks:
Assumed Specific gravity

Fig. No.: ———

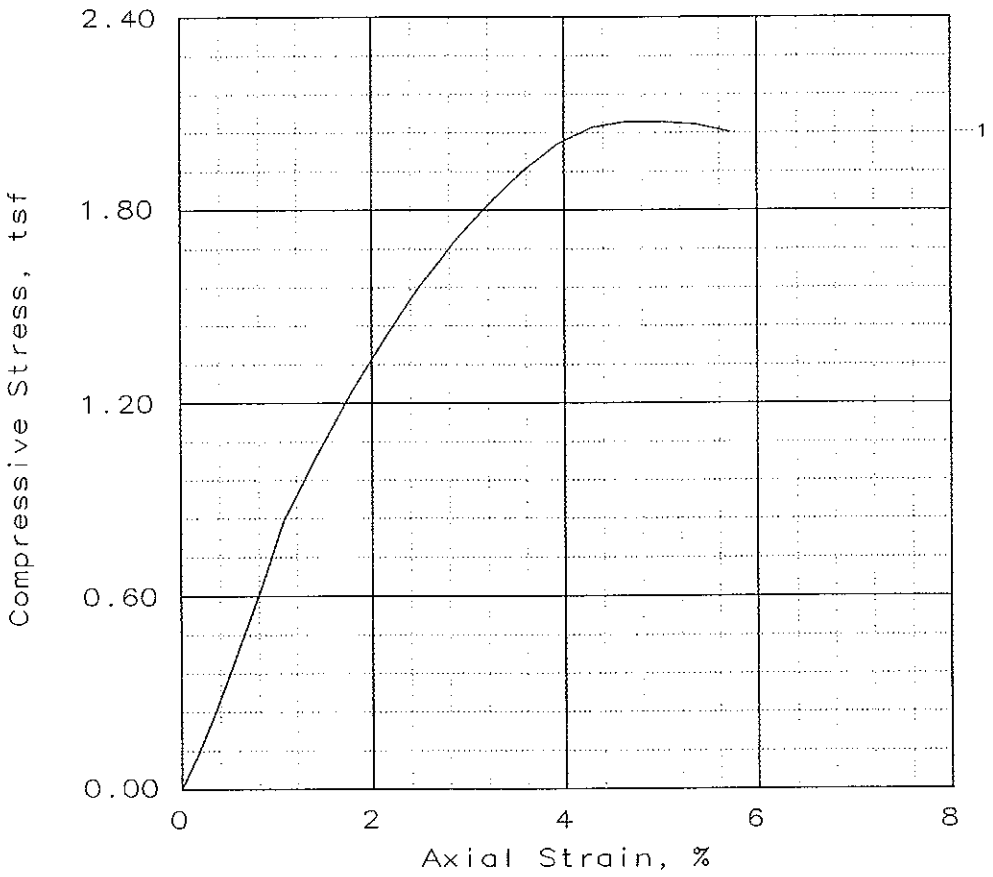
Client: U.S Army Corps of Engineers
Galveston office District
Project: Neches River Saltwater Barrier

Location: Boring No. 99-5
Sample No. 10 Depth: 22-24 ft

UNCONFINED COMPRESSION TEST

GEOTEST ENGINEERING, INC.

UNCONFINED COMPRESSION TEST



SAMPLE NO.:	1			
Unconfined strength, tsf	2.07			
Undrained shear strength, tsf	1.04			
Failure strain, %	5.0			
Strain rate, %/min	1.07			
Water content, %	25.3			
Wet density, pcf	120.3			
Dry density, pcf	96.0			
Saturation, %	91.2			
Void ratio	0.7425			
Specimen diameter, in	2.83			
Specimen height, in	5.60			
Height/diameter ratio	1.98			

Description: Silty Clay,w/fer stains,V S.,Yish Bn & Gy

LL = 40	PL = 19	PI = 21	ASS. GS= 2.68	Type: Undisturbed

Project No.: 1140114810
Date: 6-10-99
Remarks:
Assumed Specific gravity

Fig. No.: ____

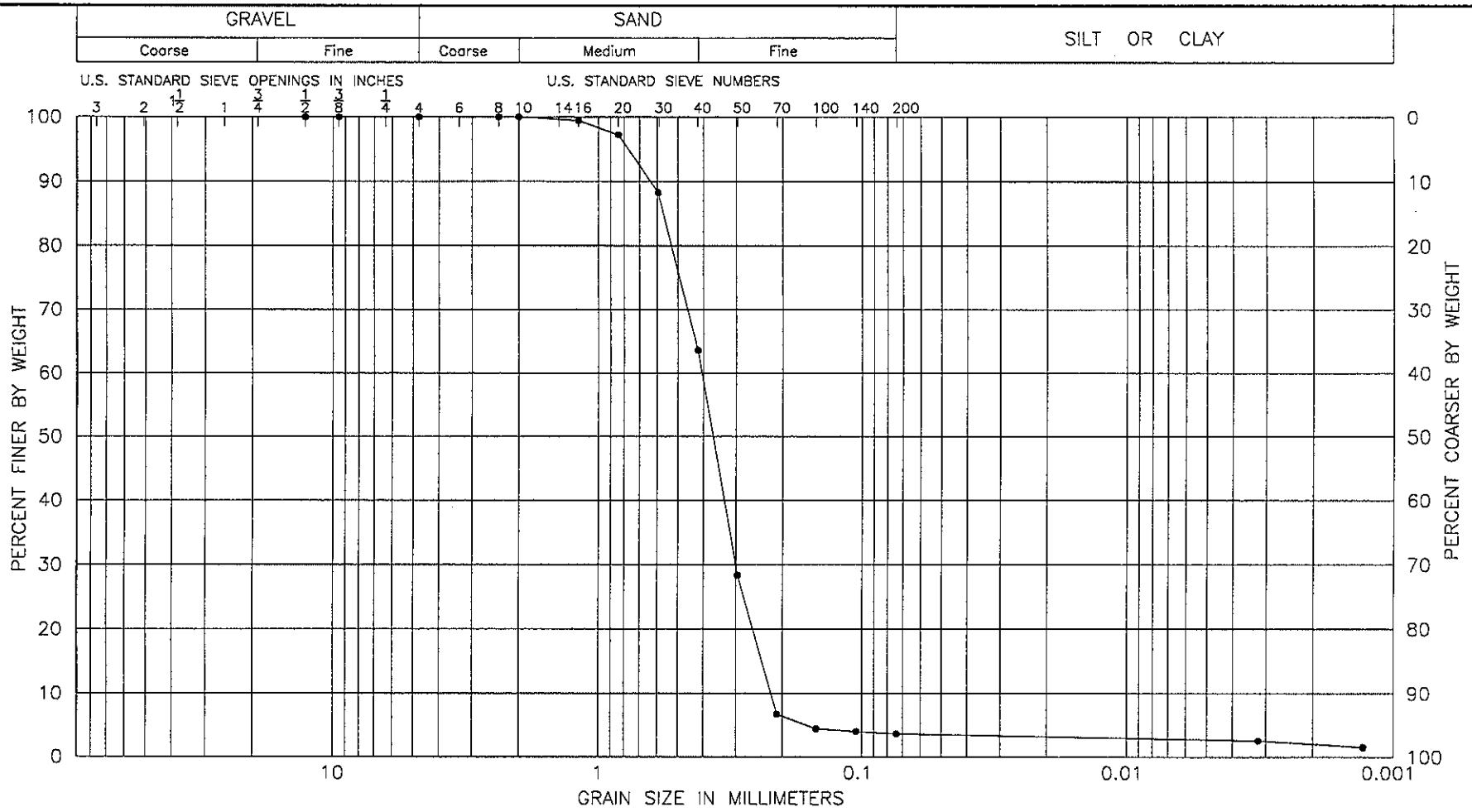
Client: U.S Army Corps of Engineers
Galveston office District
Project: Neches River Saltwater Barrier

Location: Boring No. 99-5
Sample No. 18 Depth: 38-40 ft

UNCONFINED COMPRESSION TEST

GEOTEST ENGINEERING, INC.

Job No. 1140114810



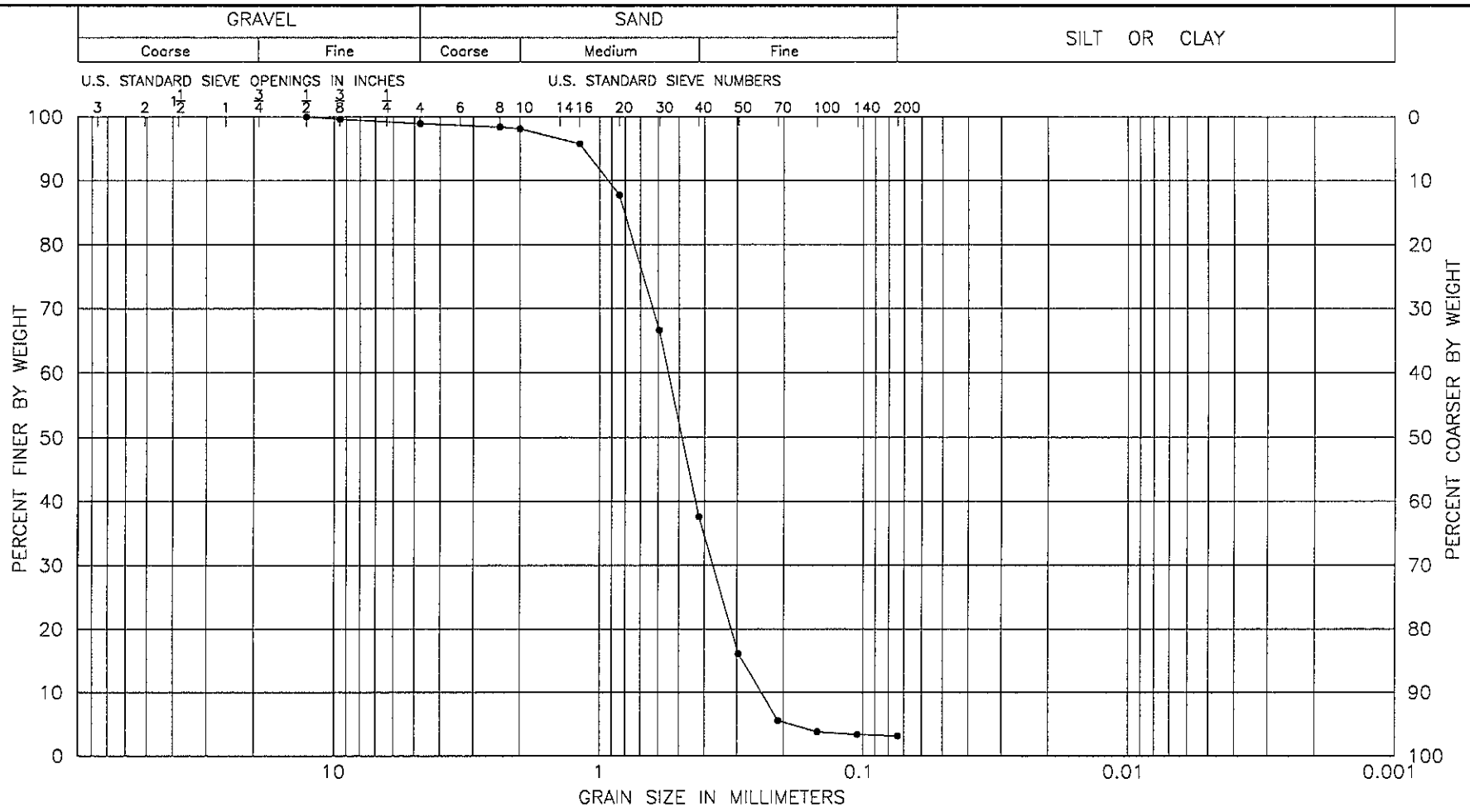
LEGEND	BORING NO.	SAMPLE NO.	DEPTH FT.	SAMPLE DESCRIPTION
●●●●●	99–5	7	12–13.5	Sand, medium dense, gray

FIGURE

GRAIN SIZE DISTRIBUTION CURVES

Geotest Engineering, Inc.

Job No. 1140114810



LEGEND	BORING NO.	SAMPLE NO.	DEPTH FT.	SAMPLE DESCRIPTION
●●●●●	99–5	8	17–18.5	Sand, w/pea gravel, medium dense, gray

FIGURE

GRAIN SIZE DISTRIBUTION CURVES

Geotest Engineering, Inc.