

The Light company

Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

September 24, 1985
ST-HL-AE-1353
File No.: G4.2
G9.17
C13.5.3

Mr. George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

South Texas Project
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
Miller & Lents Report and
Main Cooling Reservoir Document Submittals

Reference: 1) ST-HL-AE-1240, May 6, 1985
2) ST-HL-AE-1293, July 1, 1985

Dear Mr. Knighton:

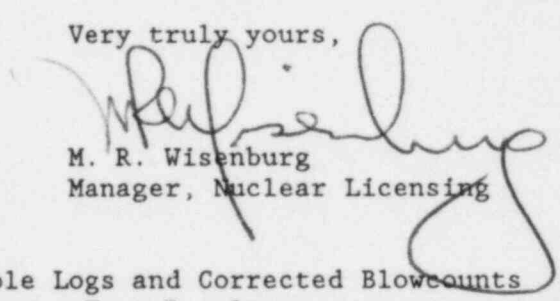
In accordance with NRC requests, Houston Lighting & Power is transmitting the following documents:

1) Test reports, borehole logs, and corrected blowcounts from the supplemental borings under the Main Cooling Reservoir (MCR) embankment at station 40+00 (attachments A and B).

2) Miller and Lent's Report "An Assessment of the Potential Likelihood of Economically Producing Hydrocarbons Located Beneath the South Texas Project Site" dated August 31, 1982 (attachment C).

If you have any questions, please contact Mr. M. E. Powell at (713) 993-1328.

Very truly yours,


M. R. Wisenburg
Manager, Nuclear Licensing

RLE/as

Attachments: 1) Attachment A - Borehole Logs and Corrected Blowcounts
2) Attachment B - Laboratory Test Results
3) Attachment C - An Assessment of the Potential Likelihood of Economically Producing Hydrocarbons Located Beneath the South Texas Project

SMH-6

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cc:

*Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

*Robert D. Martin
Regional Administrator, Region IV
Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

*N. Prasad Kadambi, Project Manager
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, MD 20814

Claude E. Johnson
Senior Resident Inspector/STP
c/o U.S. Nuclear Regulatory Commission
P.O. Box 910
Bay City, TX 77414

M. D. Schwarz, Jr., Esquire
Baker & Botts
One Shell Plaza
Houston, TX 77002

J. R. Newman, Esquire
Newman & Holtzinger, P.C.
1615 L Street, N.W.
Washington, DC 20036

Director, Office of Inspection
and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

*E. R. Brooks/R.L. Range
Central Light & Power Company
P.O. Box 2121
Corpus Christi, TX 78403

*H.L. Peterson/G. Pokorny
City of Austin
P.O. Box 1088
Austin, TX 78767

*J.B. Poston/A. vonRosenberg
City Public Service Board
P.O. Box 1771
San Antonio, TX 78296

Brain E. Berwick, Esquire
Assistant Attorney General for
the State of Texas
P.O. Box 12548, Capitol Station
Austin, TX 78711

Lanny A. Sinkin
3022 Porter Street, N.W. #304
Washington, DC 20008

Oreste R. Pirfo, Esquire
Hearing Attorney
Office of the Executive Legal Director
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Charles Bechhoefer, Esquire
Chairman, Atomic Safety & Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dr. James C. Lamb, III
313 Woodhaven Road
Chapel Hill, NC 27514

Judge Frederick J. Shon
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Mr. Ray Goldstein, Esquire
1001 Vaughn Building
807 Brazos
Austin, TX 78701

Citizens for Equitable Utilities, Inc.
c/o Ms. Peggy Buchorn
Route 1, Box 1684
Brazoria, TX 77422

Docketing & Service Section
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SMH-6

Revised 5/22/85

* - All attachments
All others w/o attachments

Attachment A
Borehole Logs and
Corrected Blowcounts

HARZA ENGINEERING COMPANY CHICAGO	SUBJECT <u>STA 40+00± EXPLORATION</u>	PROJECT <u>SOUTH TEXAS</u>
	<u>CORRECTED BLOWCOUNTS</u>	FILE NO. <u>1534</u>
	COMPUTED <u>S. R. PULLEY</u> CHECKED <u>PT</u>	DATE <u>5/28/85</u> PAGE <u>1</u> OF <u>1</u> PAGES

HOLE NO. L-1 STATION: 40+00 LOCATION: CREST

ELEVATION: 66± DEPTH TO WATER: 46' (EL 20)

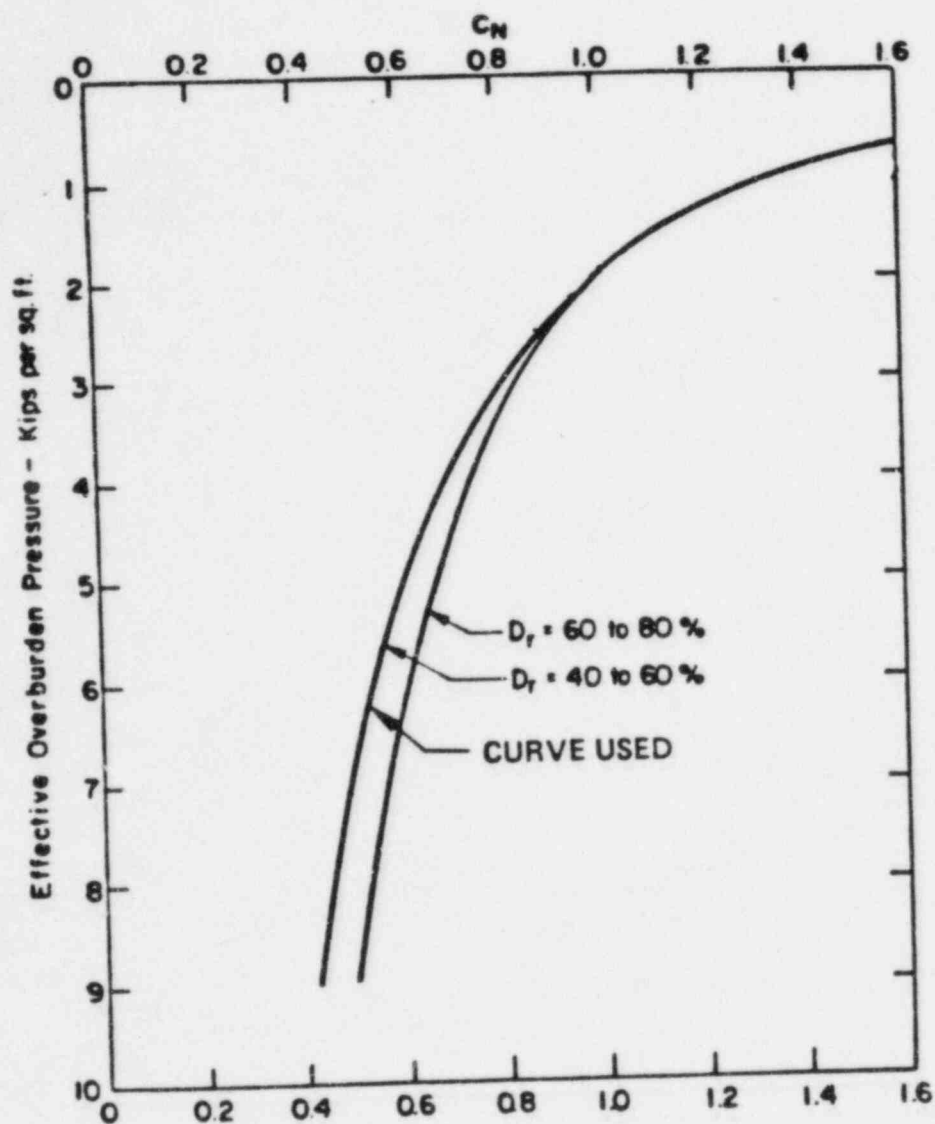
	AVE DEPTH (FT.)	N (BPF)	T _v (PSF)	U _w (PSF)	T _v ' (PSF)	C _N (FIG 1)	N _i (60) (N)(C _N)(E _f)	
TYPE	FIRST SAMPLE TAKEN AT			40'-4 1/5'				factor
CH	41	26	5125	0	5125	0.59	12	0.468
CH	43.5	12	5438	0	5438	0.57	5	0.452
CH	46	18	5750	0	5750	0.56	8	0.437
CH	48.5	22	6063	156	5907	0.55	9	0.429
CH SM	51	19	6375	312	6063	0.54	8	0.42
SM	53.5	28	6688	468	6220	0.53	12	0.413
"	56	26	7000	624	6376	0.52	11	0.406
CH	58.5	34	7313	780	6533	0.52	14	0.406
SM	61	50/6"	7625	936	6689	0.51	20/6"	0.398
SM	62.5	50/5"	7813	1030	6783	0.50	20/5"	0.390
SP/SM	63.5	88/11"	7938	1092	6846	0.50	34/11"	0.390
SP/SM	66	48	8250	1248	7002	0.50	19	0.390
ML	68.5	32	8563	1404	7159	0.49	12	0.38
BOTTOM OF HOLE AT 69.0'								
PIEZOMETER AT 40+20 ON CREST INDICATES WATER TO BE AT 46 AT DEPTH. USE THIS LEVEL FOR DETERMINING OVERBURDEN CORRECTION/ FACTOR C _N .								
DEPTH TO WATER = 47' 10"								
= 1' 10" = picked out for testing								
46'								
Factor = C _N = 0.78								

NOTES: 1. $\gamma = 125 \text{ pcf}$

2. $C_N = \text{OVERBURDEN CORRECTION FACTOR FROM FIGURE 1.}$

3. $E_f = \text{ENERGY FACTOR} = 47\%/60\% = 0.78 \text{ (NORMALIZE WRT 60\%,)}$

FIGURE 1



CURVES FOR DETERMINATION OF C_N

Seed, et al (1984)

BECHTEL ENERGY CORPORATION
SOUTH TEXAS PROJECT

SPT OVERBURDEN
CORRECTION CURVE

HARZA ENGINEERING CO., CHICAGO
APPROVED.....

DATE SEPTEMBER 1984 DWG. NO.

FIELD LOG OF BORING

SHEET 1 OF 2

LOCATION OF BORING:

STATION 40+00
D/S SIDE OF CREST
APPROXIMATE EL = 66±

NOTE: PIEZOMETER AT STA 40+20
(DIS EDGE OF CREST) INDICATES
WATER TO BE AT 47.8' DEPTH
(EL 18.2)

PROJECT:

STP

BORING NO. L-1

TOTAL DEPTH 6'

JOB NO.: 6068, 025.12

LOGGED BY: SP

PROJ. MGR: GF6

EDITED BY:

DRILLING CONTRACTOR: Gulf Coast Coring

DRILL RIG TYPE: Mayhew 200

DRILLERS NAME: Jim Turner

SAMPLING METHODS: SPT

HAMMER WT.: 140#

DROP: 30"

STARTED, TIME: 11:45am

DATE: 5/29/85

COMPLETED, TIME: 2:45pm

DATE: 5/29/85

BORING DEPTH (ft.)

CASING DEPTH (ft.)

WATER DEPTH (ft.)

TIME:

DATE:

BACKFILLED, TIME:

DATE:

BY:

SURFACE ELEV.:

DATUM:

CONDITIONS: crest embankment

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6-IN.	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION	DRILLING RATE (in./min)	DEPTH IN FEET	GRAPHIC LOG
							1	
							2	
							3	
							4	
							5	
							6	
							7	
							8	
							9	
40	SS	6 11 15	18	9	P		10	

0-40' was emplaced material.
NO SAMPLES RECOVERED from
0-40'

DARK GRAY CLAY (CH)

DEPTH	TYPE	BLOWS	DRIVEN	REC'D	COND	RATE	DEPTH	GRAPHIC LOG	PROJECT: STP	NO	BORING NO L-1
										6068,025.12	
							42		very stiff, moist		
42.5	SS	5 6 (12)	18	18	P		43		blocky		
45	SS	5 7 (18)	18	6	D		44				
47.5	SS	9 10 12 (21)	18	15	P		45				
							46				
							47				
							48		color change to gray and brown ferrous nodules 47.5'		
							49				
50	SS	3 6 13 (19)	18	12	P		50		increase sand content - 50'		
							51		LIGHT BROWN SILTY SAND (SM)		
52.5	SS	9 11 17 (28)	18	3	P		52		medium dense to dense, moist, fine grained		
							53				
							54				
55	SS	11 11 15 (26)	18	1	P		55				
							56				
57.5	SS	14 16 18 (34)	18	0	P		57				
							58		No recovery		
60	SS	27 30 36 (50)	18	0	P		59				
							60		No recovery		

DEPTH	TYPE	BLOWS	DRIVEN	SEC'D	COND.	RATE	DEPTH	GRAPHIC LOG
								PROJECT: <u>STP</u> NO <u>6068,025,12</u> BORING NO. <u>L-1</u>
61.5	SS	35 (54)	18	6	P		61	1
62.5	SS	21 38 (59)	18	6	P		62	decrease silt content
65	SS	18 18 30 (48)	18	9	P		65	1" clay seam - 65.6'
67.5	SS	6 18 14 (32)	18	12	P		67	LIGHT BROWN SANDY SILT (AL) dense, moist
							69	End of Boring - 69'
							70	Water level reading: 3:00 pm 5/29/85 21' to south of L-1 Depth = 47'10" from stickup STICKUP = 1'10" ∴ WATER @ 46' DEPTH (EL 20)
							1	
							2	
							3	
							4	
							5	
							6	
							7	
							8	
							9	
							0	

HARZA ENGINEERING COMPANY CHICAGO	SUBJECT <u>STA 40+00± EXPLORATION</u>	PROJECT <u>SOUTH TEXAS</u>
	<u>CORRECTED BLOWCOUNTS</u>	FILE NO. <u>1534</u>
	COMPUTED <u>S.R. PULLEY</u> CHECKED <u>P.T.</u>	DATE <u>5/28/85</u> PAGE <u>1</u> OF <u>1</u> PAGES

HOLE NO. L-2 STATION: 38+75 LOCATION: CREST
 ELEVATION: 66± DEPTH TO WATER: 46' (EL 20)*
 * ASSUMED SAME AS L-1

	AVE DEPTH (FT.)	N (BPF)	T _v (PSF)	U _w (PSF)	T _v ' (PSF)	C _N (FIG 1)	N _i (60) (N)(C _N)(E _f)	
TYPE	FIRST SAMPLE TAKEN AT 40-41.5'							Factor
CH	41	32	5125	0	5125	0.60	15	0.468
CH	43.5	20	5138	0	5438	0.58	9	0.452
CH	46	15	5750	0	5750	0.56	7	0.437
CH	48.5	24	6262	156	5907	0.55	10	0.429
CH	51	27	6175	312	6063	0.54	11	0.421
SM	53.5	38	6627	468	6220	0.53	16	0.413
SM	56	33	7000	624	6376	0.52	13	0.406
SM	58.5	50/6"	7313	780	6533	0.52	20/6"	0.406
CH	61	18	7625	936	6689	0.51	7	0.398
CH	63.5	37	7938	1092	6846	0.50	14	0.391
CH	66	20	8250	1248	7002	0.50	8	0.390
ML	68.5	26	8563	1404	7159	0.49	10	0.385
BOTTOM OF HOLE AT 69.0'								
NOTE: HOLE L-1 IS AT STA 40+00. WATER LEVEL IS LINED								
ON WELL AT STA 40+20 ON THE CREST.								
Factor = C _N × 0.78 = Picked out for testing								

NOTES: 1. $\gamma = 125 \text{ PCF}$

2. C_N = OVERBURDEN CORRECTION FACTOR FROM FIGURE 1.

3. E_f = ENERGY FACTOR = $47\%/60\% = 0.78$ (NORMALIZE WRT 60%)

FIELD LOG OF BORING

SHEET 1 OF 2

LOCATION OF BORING:

STATION 38+75
D/S SIDE OF CREST
APPROXIMATE EL = 66±

PROJECT:

STP

BORING NO. L-2TOTAL DEPTH 59'JOB NO. 6068,025,12LOGGED BY: SPPROJ. MGR: GFG

EDITED BY:

DRILLING CONTRACTOR: Gulf Coast CoringDRILL RIG TYPE: Mayhew 200DRILLERS NAME: Jim TurnerSAMPLING METHODS: SPTHAMMER WT.: 140#DROP: 30"STARTED, TIME: 3:30 pmDATE: 5/29/85COMPLETED, TIME: 5:45 pmDATE: 5/29/85

Rotary Wash

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6-IN.	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION	DRILLING RATE (min/ft)	DEPTH IN FEET	GRAPHIC LOG
							1	
							2	
							3	
							4	
							5	
							6	
							7	
							8	
							9	
40	SS	9 13 19	18	12	P			

BORING DEPTH (ft.)

CASING DEPTH (ft.)

WATER DEPTH (ft.)

TIME:

DATE:

BACKFILLED, TIME:

DATE:

BY:

SURFACE ELEV.:

DATUM:

CONDITIONS: embankment crest

0 to 40 feet was embankment material: NO SAMPLES RECOVERED from 0-40

STA. 38+75, Downstream side of crest.

DARK GRAY CLAY (CH)

DEPTH	TYPE	BLOWS	DRIVEN	REC'D	END	RATE	DEPTH	GRAPHIC LOG
								PROJECT: STP NO 6068,025,12 BORING NO L-2
								very stiff, moist
42.5	SS	5 14 (20)	18	3	P		42	
								blocky
45	SS	4 6 (8)	18	9	P		45	
47.5	SS	6 9 (15) (20)	18	12	P		47	
								color change to gray and brown ferrous nodules - 47.5'
50	SS	5 10 15 (30)	18	12	P		50	
								LIGHT BROWN SILTY SAND (SM) dense, moist, fine grained
52.5	SS	11 15 20 (36)	18	0	P		52	
								No recovery
55	SS	14 15 18 (33)	18	4	P		55	
57.5	SS	16 (59)	18	4	P		57	
60	SS	7 9 10 (26)	18	12	P		60	
								RED-BROWN SILTY CLAY (CL)

FIELD LOG OF BORING (CONTINUED)

SHEET 3 OF 3

DEPTH	TYPE	BLOWS	DRIVEN	SEC'D	COND	GRATE	DEPTH	GRAPHIC LOG	PROJECT: ST ^D	NO	BORING NO. 1-2
							61				6069,025,12
							62				
62.5	SS	18	18	18	P		63				
		(27)					64				
65	SS	12	18	18	P		65				
		(20)					66				
							67				
67.5	SS	13	18	15	P		68				
		(26)					69				
							70				
							1				
							2				
							3				
							4				
							5				
							6				
							7				
							8				
							9				
							0				

Very stiff, moist, with sand

increase clay content at 66'

2 foot clay (CH) seam - 66'

BROWN SANDY SILT (AL)
medium dense, moist, with clay

End of Boring - 69'

HARZA ENGINEERING COMPANY CHICAGO	SUBJECT	STA 40+00± EXPLORATION	PROJECT	SOUTH TEXAS
		CORRECTED BLOWCOUNTS	FILE NO.	1534
	COMPUTED	S. R. PULLEY	CHECKED	F
			DATE	5/28/85
			PAGE	OF

HOLE NO. L-3 STATION: 41+25 LOCATION: CREST

ELEVATION: 66± DEPTH TO WATER: 46' (EL 20)
 * ASSUMED SAME AS L-1.

	AVE DEPTH (FT.)	N (BPF)	T _V (PSF)	U _w (PSF)	T _V ' (PSF)	C _N (FIG 1)	N ₁ (60) (N)(C _N)(E _f)	
TYPE	FIRST SAMPLE TAKEN AT 40'							E _f L-1
CH	41	24	5125	0	5125	0.60	11	0.765
CH	43.5	21	5438	0	5438	0.58	9	0.752
CH	46	17	5750	0	5750	0.56	7	0.737
CL	48.5	21	6063	156	5907	0.55	9	0.729
CL	51	19	6375	312	6063	0.54	8	0.721
SM	53.5	26	6688	468	6220	0.53	11	0.713
SM	56	33	7000	624	6376	0.52	13	0.706
SM	58.5	30	7313	780	6533	0.52	12	0.706
SM	61	34	7625	936	6689	0.51	14	0.698
SM	63.5	50/6"	7938	1092	6846	0.50	20/6"	0.690
SM	66	50/5"	8250	1248	7002	0.50	20/5"	0.690
SM	68.5	73	8563	1404	7159	0.49	28	0.682
SM	71	50/5"	8875	1560	7315	0.48	19/5"	0.674
SM	73.5	50/6"	9188	1716	7472	0.48	19/6"	0.674
ML	76	70/11"	9500	1872	7628	0.47	26/11"	0.667
NOTE: HOLE L-1 IS AT STA 40+00. WATER LEVEL IS BASED ON WELL AT STA 40+20 ON THE CREST.								
FACTOR: C _N = 0.78					= Picked out for testing			

NOTES: 1. $\gamma = 125 \text{ PCF}$

2. C_N = OVERBURDEN CORRECTION FACTOR FROM FIGURE 1.

3. E_f = ENERGY FACTOR = $47\%/60\% = 0.78$ (NORMALIZE WRT 60%)

FIELD LOG OF BORING

SHEET 1 OF 2

LOCATION OF BORING:

PROJECT:

STP

BORING NO. 1

TOTAL DEPTH

JOB NO.: 6067-25-

LOGGED BY: SP

PROJ. MGR: CF

EDITED BY:

DRILLING CONTRACTOR: Galt Bros. Co.

DRILL RIG TYPE: Mayhew 200

DRILLERS NAME: Jim Turner

SAMPLING METHODS: SGT

HAMMER WT.: 140#

DROP: 30"

STARTED, TIME: 8:00 am

DATE: 5/5/85

COMPLETED, TIME: 11:00 am

DATE: 5/5/85

ROTARY WASH
~ 5# Bentonite
drilling mud used

BORING DEPTH (ft.)

CASING DEPTH (ft.)

WATER DEPTH (ft.)

TIME:

DATE:

BACKFILLED, TIME:

DATE:

BY:

SURFACE ELEV.:

DATUM:

CONDITIONS: r.m. dark gray clay

SAMPLE DEPTH

SAMPLER TYPE

BLOWS / 6-IN.

INCHES DRIVEN

INCHES RECOVERED

SAMPLE CONDITION

DRILLING RATE (in./min)

DEPTH IN FEET

GRAPHIC LOG

STA: 41+25, D.S. 211-1
rest

40 SS 7 10 18 12 P

DARK GRAY CLAY (C.H.)

DEPTH	TYPE	BLOWS	DRIVEN	REC'D	COND	D RATE	DEPTH	GRAPHIC LOG	PROJECT: STP	NO	BORING NO. 13
										6068, 025.12	
							41		Very stiff, moist		
							42				
42.5	SS	7 9 12 (21)	18	9	P		43				
							44				
							45				
45	SS	5 6 11 (17)	18	9	P		46				
							47				
47.5	SS	10 11 10 (21)	18	9	P		48		GRAY SANDY CLAY (CL)		
							49		very stiff, moist, mo		
							50		ferrous and calcareous nodules		
50	SS	3 5 14 (19)	18	12	P		51		color change to brown - 50'		
							52		BROWN SILTY SAND (SM)		
52.5	SS	7 12 14 (26)	18	9	P		53		medium dense to dense, moist,		
							54		fine grained		
							55				
55	SS	8 13 20 33	18	4	P		56		Increasing silt content		
							57				
57.5	SS	13 14 16 30	18	6	P		58				
							59				
60	SS	10 13 21 (34)	18	6	P		60				

FIELD LOG OF BORING (CONTINUED)

SHEET 3 OF 3

DEPTH	TYPE	BLOWS	DRIVEN	REC'D	COND	D RATE		DEPTH	GRAPHIC LOG	PROJECT: <u>STP</u>	NO.	BORING NO. <u>25</u>
												<u>6068,025.12</u>
								61				
								62				
62.5	SS	27 (58 1/4)	18	6	P			63				
								64				
								65				
65	SS	30 (58 1/2)	18	10	P			66				
								67				
67.5	SS	28 36 37 (73)	18	12	P			68				
								69				
								70				
70	SS	23 (59 1/3)	18	11	P			71				
								72				
72	SS	41 (59 1/6)	18	15	P			73				
								74				
								75				
75	SS	13 20 (59 1/4)	18	18	P			76				
								77				
								78				
								79				
								80				

BROWN SILT (ML)
dense, moist, with clay

End of Boring - 77'

HARZA ENGINEERING COMPANY CHICAGO	SUBJECT	STA 40+00± EXPLORATION	PROJECT	SOUTH TEXAS
		CORRECTED BLOWCOUNTS	FILE NO.	1534
	COMPUTED	S. R. PULLEY	CHECKED	PT
			DATE	5/28/85 PAGE 1 OF 1 PAGES

HOLE NO. L-4 STATION: 40+00 LOCATION: D/S BEEM
ELEVATION: 35± DEPTH TO WATER: 18' (EL 17±)*

	AVE DEPTH. (FT.)	N (BPF)	T _V (PSF)	U _w (PSF)	T _V ' (PSF)	C _N (FIG 1)	N _i (60) (N)(C _N)(E _f)	
TYPE	FIRST SAMPLE TAKEN AT 10'-11.5'							F ₆₀
CH	11	25	1375	0	1375	1.15	22	0.877
CH	13.5	13	1682	0	1688	1.07	11	0.835
CH	16	12	2000	0	2000	1.00	9	0.78
CH	18.5	18	2313	31	2282	0.94	13	0.73
SM	21	19	2625	187	2438	0.92	14	0.718
SM	22.5	19	2813	281	2532	0.90	13	0.702
SM	26	17	3250	499	2751	0.86	11	0.67
SP/SM	28.5	32	3563	655	2908	0.83	21	0.64
SP/SM	31	41	3875	811	3064	0.81	21	0.63
SP/SM	33.5	42	4188	967	3221	0.78	26	0.608
SP/SM	36	76/11½"	4500	1123	3377	0.75	44/11½"	0.585
SP/SM	38.5	80/11"	4813	1279	3534	0.73	46/11"	0.569
SP/SM	41	90/10"	5125	1435	3690	0.71	50/10"	0.554
SP/SM	43.5	26	5438	1591	3847	0.70	14	0.546
ML	46	90/9"	5750	1747	4003	0.68	48/9"	0.53
CL	48.5	29	6063	1903	4160	0.67	15	0.523
LAST SAMPLE TAKEN 47.5-49.0'								
* NOTE: WATER LEVEL TAKEN FROM PIEZOMETER AT STA 40+00± ON THE D/S BEFM. USING ESTIMATED BEFM ELEVATION 35± THE WATER WAS DETERMINED TO BE 17±.								
SP/SM = BORDERLINE SP or SM, BUT LIKELY SP. MATERIAL.								

NOTES: 1. γ = 125 PCF

2. C_N = OVERBURDEN CORRECTION FACTOR FROM FIGURE 1.

3. E_f = ENERGY FACTOR = 47%/60% = 0.78 (NORMALIZE WRT 60%)

4. FACTOR: C_N × 0.78

* Picked out for testing.

FIELD LOG OF BORING

SHEET 1 OF 2

LOCATION OF BORING:

PROJECT:

GTP

BORING NO. LC1

TOTAL DEPTH:

JOB NO.: 6048,025.12

LOGGED BY: SP

PROJ. MGR: GFC

EDITED BY:

DRILLING CONTRACTOR: Gulf Coast Coring

DRILL RIG TYPE: Mayhew 200

DRILLERS NAME: Jim Turner

SAMPLING METHODS: SPT

HAMMER WT.: 140 #

DROP: 30"

STARTED, TIME:

DATE:

COMPLETED, TIME:

DATE:

BORING DEPTH (ft.)

CASING DEPTH (ft.)

WATER DEPTH (ft.)

TIME:

DATE:

BACKFILLED, TIME:

DATE:

BY:

SURFACE ELEV.:

DATUM:

CONDITIONS:

ROTARY WASIT
Bentonite drilling mud

SAMPLE DEPTH

SAMPLER TYPE

BLOWS / 6-IN.

INCHES DRIVEN

INCHES RECOVERED

SAMPLE CONDITION

DRILLING RATE (min/ft)

DEPTH IN FEET

GRAPHIC LOG

STA 40+00 Embankment Berm

NO SAMPLES FROM 0-10'
= Embankment material

DARK GREY CLAY (CH)

Very stiff, moist

FIELD LOG OF BORING (CONTINUED)

SHEET 2 OF 3

PROJECT: STP

NO 6065.025

BORING NO 44

DEPTH	TYPE	BLOWS	DRIVEN	REC'D	COND	D.RATE	DEPTH	GRAPHIC LOG
11							11	
12							12	
13	SS	5	18	0	P		13	No recovery (catcher missing from split spoon)
14		(13)					14	
15	SS	1	18	18	P		15	color change to light grey, stiff, serious nodules
16		(13)					16	
17							17	
18	SS	1	18	18	P		18	18 in. with sand
19		(13)					19	
20	SS	1	18	9	P		20	Brown, SILTY SAND (M) medium dense, moist
21		(17)					21	
22	SS	6	18	8	P		22	1" clay seam at 22 ft.
23		(17)					23	
24							24	
25	SS	3	18	6	P		25	
26		(17)					26	
27							27	
28	SS	3	18	4	P		28	decrease in silt
29							29	
30							30	

FIELD LOG OF BORING (CONTINUED)

SHEET 3 OF 3

PROJECT STP

NO. 668, 825, 12 BORING NO. L4

DEPTH	TYPE	BLOWS DRIVEN	REC'D	COND.	D RATE	DEPTH	GRAPHIC LOG
						31	
						32	
		18	10	P		33	
		(12)				34	
		12	P			35	
						36	Very dense
			P			37	
		(5)				38	
		18	10	P		39	
		(4)				40	
						41	
42.5	SS	12	18	8	P	42	
		(26)				43	
						44	
45	SS	12	18	15	P	45	
		(13)				46	6" clay seam - 45.5'
						47	
47.5	SS	10	18	D		48	BROWN SILTY CLAY (CL)
		(21)				49	stiff, moist,
						50	End of Boring - 49'

HARZA ENGINEERING COMPANY CH:CA 10	SUBJECT <u>STA 40+00± EXPLORATION/</u>	PROJECT <u>SOUTH TEXAS</u>
	<u>CORRECTED BLOWCOUNTS</u>	FILE NO. <u>1534</u>
	COMPUTED <u>S. R. PULLEY</u> CHECKED <u>PT</u>	DATE <u>5/28/85</u> PAGE <u>1</u> OF <u>1</u> PAGES

HOLE NO. L-5 STATION: 40+00 LOCATION: U/S TOE

ELEVATION: 30 ± * DEPTH TO WATER: 12' (EL 20.2)†

* HOLE IS ABOUT 2' LOWER IN ELEVATION THAN PIEZOMETER

	AVE DEPTH (FT.)	N (BPF)	T _v (PSF)	U _w (PSF)	T _v ' (PSF)	C _N (FIG 1)	N ₁ (60) (N)(C _N)(E _f)	
TYPE	FIRST	SAMPLE	TAKEN	AT 5-6.5'				FACTOR
CH	6	16	750	0	750	1.52	19	1.8
CH	8.5	12	1063	0	1063	1.30	12	1.01
CH	11	16	1375	0	1375	1.15	14	0.875
CH	13.5	23	1682	94	1594	1.09	20	0.850
CH	16	18	2000	250	1750	1.05	15	0.819
M	18.5	18	2313	406	1907	1.02	14	0.796
CH	21	17	2625	562	2063	0.99	13	0.772
CH	23.5	25	2738	718	2220	0.95	19	0.741
CH	26	28	3250	974	2376	0.92	20	1.112
CH	28.5	17	3523	1030	2533	0.90	12	1.112
CH	31	40	3275	1180	2095	0.86	27	0.671
CH	33.5	18	4182	1342	2840	0.84	12	1.655
LAST SAMPLE TAKEN 32.5-34								
#								
NOTE: WATER TAKEN FROM PIEZOMETER NO. P170 AT U/S TOE STA 40+20±								
FACTOR: C _N × 0.78								
= Picked out for testing								

NOTES: 1. γ = 125 PCF

2. C_N = OVERBURDEN CORRECTION FACTOR FROM FIGURE 1.

3. E_f = ENERGY FACTOR = 47%/60% = 0.78 (NORMALIZE WRT 60%)

FIELD LOG OF BORING

SHEET 1 OF 3

LOCATION OF BORING:

PROJECT:

STP

BORING NO. LE

TOTAL DEPTH

JOB NO.: 6068,025.12

LOGGED BY: T

PROJ. MGR: G. GOODHEART

EDITED BY:

DRILLING CONTRACTOR: GULF COAST CORP.

DRILL RIG TYPE: MAHEW 200

DRILLERS NAME: JIM TURNER

SAMPLING METHODS: SPT

HAMMER WT.: 140 #

DROP: 30"

STARTED, TIME: 3:15

DATE: 5/30/85

COMPLETED, TIME: 4:27

DATE: 5/30/85

BORING DEPTH (ft.)

CASING DEPTH (ft.)

WATER DEPTH (ft.)

TIME:

DATE:

BACKFILLED, TIME:

DATE:

BY:

SURFACE ELEV.:

DATUM:

CONDITIONS:

UPSTREAM OF EMBANKMENT
STATION 40 + 00DARK GREY CLAY (CH)
very stiff, moist

light grey

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6-IN.	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION	DRILLING RATE (min/ft)	DEPTH IN FEET	GRAPHIC LOG
							1	
							2	
							3	
							4	
5	SS	3 6 10	18	12	P		5	
		(16)					6	
7.5	SS	3 4 8	18	9	P		7	
		(12)					8	
10	SS	3 5 11	18	18	P		9	
		(16)					10	

DEPTH	TYPE	BLOWS	DRIVEN	REC'D	COND	D.RATE	DEPTH	GRAPHIC LOG
12.5	SS	18	12	P			11	
15	SS	18	15	P			12	
18	SS	18	6	P			13	
20	SS	18		P			14	
22.5	SS	18		P			15	
25	SS	18	18	P			16	
27.5	SS	18	15	P			17	
30	SS	18	12	P			18	
							19	
							20	
							21	
							22	
							23	
							24	
							25	
							26	
							27	
							28	
							29	
							30	

PROJECT: ~~6068025~~ STP

NO 6068025

BORING NO L5

medium sand content

BROWN SILTY SAND - (SM)

medium dense, moist

RED, BROWN, and GREY CLAY
very stiff, blocky, moist

calcareous material

increasing silt content 27.5-
29.

PFS

Attachment B
Laboratory Test Results

FTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8
REV. NO. 2
DATE: 7-11-84

REPORT OF SIEVE ANALYSIS

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8107
D.C. NO. _____
TEST METHOD: ASTM D422-63 (72) ☒
N/A ☐

Date of Sample: 5-29-85 Date Tested: 6-10-85

Sample Description: Sandy Silt SM

Sample Identification: Res Dike, STA. 40, Dep. 50 to 51.5, L-1

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	72-100
8	0.2	0.1	99.9	N 44-100
16	0.2	0.1	99.9	26-80 A
30	0.2	0.1	99.9	16-50
50	1.7	1.2	98.8	5-26 98. 6-13 85
100	23.6	30.7	69.3	0-12
200	16.1	67.7	32.3	0-7
TOTAL	143.0	N/A	N/A	N/A

Original Weight of Sample: 143.0 grams: Time in Shaker: 10 min.

ORGANIC MATTER (ASTM D2488-69) none PARTICLE SHAPE (ASTM D2488-69) none

HARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & Friable

Test Equipment Serial No's.: TBB-5, shaker, scales, etc., etc.

Tested By: gm Level: _____

Reviewed By: JM Balnave Level: II

Requested By: S. PULLEY / gm Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8107
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-29-85 Date Tested 6-8-85

Sample Description SANDY SILT SM

Sample Identification RES. DIKE, STA. 40, DEP. 50 to 51.5, L-1

Original Oven Dry Weight (Gms.) 142.0 W_o

Oven Dry Weigh After Washing and Dry-Sieve (Gms.) 96.1 W_1

Difference (Gms.) 45.9 $(W_o - W_1)$

% Loss 32.3 $P = \frac{(W_o - W_1)}{W_o} \times 100$

Acceptance Criteria: NA

Remarks: NA

Test Equipment Serial Numbers: TAB-5, shaker, sieves, D-6

REMARKS: NA

Tested By: JCS Level: _____

Reviewed By: Joe Balushak Level: II

Requested By: S. PULLEY/gm Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8107
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

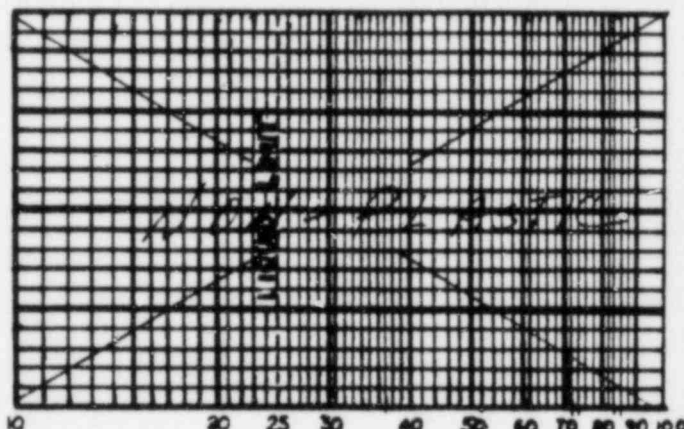
Date of Sample 5-29-85 Date Tested 6-6-85
Sample Description Sandy Silt SM
Sample Identification RES. DIKE, STA. 40, DEP. 50 + 0.51.5, N-1

PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS			
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
NON-PLASTIC		

MOISTURE CONTENT (%)



NUMBER OF BLOWS

Acceptance Criteria NA

Test Equipment Serial No's: NA, NA, NA, NA

REMARKS: N/A

Tested By: Janet Mullins Level II

Reviewed By: Joe Balmain Level II

Requested By: S. PULLEY JR. Company: HARZA

PTL - HOUSTON

SOUTH TEXAS PROJECT


**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8

REV. NO. 2

DATE: 7-11-84

REPORT OF SIEVE ANALYSISORDER NO. HO-4471LAB NO. 5-8108CLIENT HOUSTON LIGHTING & POWER

D.C. NO. _____

PROJECT SOUTH TEXAS PROJECTTEST METHOD: ASTM D422-63 (72) ☒N/A ☐Date of Sample: 5-29-85Date Tested: 6-10-85Sample Description: SANDY SILT SMSample Identification: RES. DIKE, STA 40, DEP. 52.5 TO 54, L-1

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	72-100
8	0.0	0.0	100.0	~ 44-100
16	0.0	0.0	100.0	26-80 ^A
30	0.1	0.1	99.9	16-50
50	0.2	0.1	99.9	5-26 ^{95.6-13-85}
100	25.0	59.4	40.6	0-12
200	125.4	89.7	10.3	0-7
TOTAL	143.0	N/A	N/A	N/A

Original Weight of Sample: 143.0 grams:Time in Shaker: 10 min.ORGANIC MATTER (ASTM D2488-69) NONE PARTICLE SHAPE (ASTM D2488-69) 1.2HARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & FriableTest Equipment Serial No's.: T60-5, shaker, Sievers, 0-3, 10Tested By: GH

Level: _____

Reviewed By: Joe BalusickLevel: IIRequested By: S. PULLEY / gr.Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8128
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-29-85 Date Tested 6-8-85

Sample Description SANDY SILT SM

Sample Identification RES DIKE, STA. 40, DEP. 52.5 to 54, L-1

Original Oven Dry Weight	(Gms.)	<u>143.0</u>	W_0
Oven Dry Weight After Washing and Dry-Sieve	(Gms.)	<u>125.4</u>	W_1
Difference	(Gms.)	<u>17.6</u>	$(W_0 - W_1)$
% Loss		<u>12.3</u>	$P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: NA

Remarks: N/A

Test Equipment Serial Numbers: TAB-5, Mikro, 21009, 5-6

REMARKS: N/A

Tested By: JCO Level: _____

Reviewed By: Joe Balusek Level: II

Requested By: S. PULLEY / JR Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8108
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

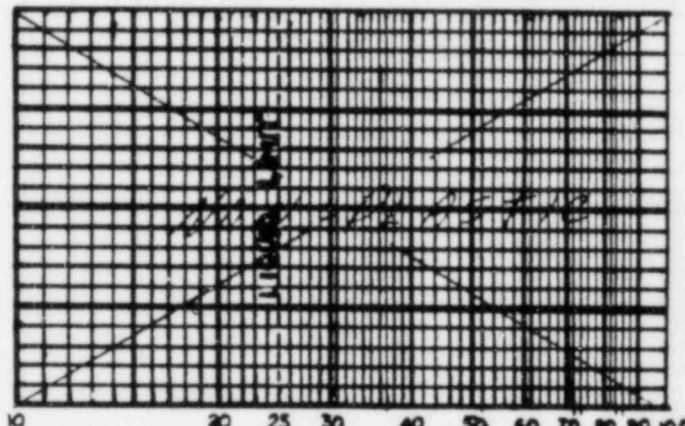
Date of Sample 5-29-85 Date Tested 6-6-85
Sample Description SANDY SILT SM
Sample Identification RES. DIKE STA. 40, DEP. 52.5 to 54, L-1

PLASTIC LIMIT			
DETERMINATION N°	1	2	3
CONTAINER N°			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N°	1	2	3
NUMBER OF BLOWS			
CONTAINER N°			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
NON-PLASTIC		

MOISTURE CONTENT (%)



NUMBER OF BLOWS

Acceptance Criteria N/A

Test Equipment Serial No's N/A, N/A, N/A, N/A

REMARKS: N/A

Tested By: Scott Mullins Level II

Reviewed By: Joe Balusik Level II

Requested By: S. PULLEY/gk Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8
REV. NO. 2
DATE: 7-11-84

REPORT OF SIEVE ANALYSIS

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8109
D.C. NO. _____
TEST METHOD: ASTM D422-63 (72) ☒
N/A ☐

Date of Sample: 5-29-85

Date Tested: 6-12-85

Sample Description: Sandy Silt SM

Sample Identification: RES. DIKE, STA. 40, DEP. 5440 56.5, L-1 SRP 6-11-85

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria
				SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	72-100
8	0.0	0.0	100.0	N 44-100
16	0.0	0.0	100.0	26-80 A
30	0.0	0.0	100.0	16-50
50	0.1	0.1	99.9	5-26 98.6-13-85
100	53.2	45.1	54.9	0-12
200	102.9	87.2	12.8	0-7
TOTAL	118.0	N/A	N/A	N/A

Original Weight of Sample: 118.0 grams: Time in Shaker: 10 min.

ORGANIC MATTER (ASTM D2488-69) NONE PARTICLE SHAPE (ASTM D2488-69) 0 N/A

HARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & Friable

Test Equipment Serial No's.: TBB-8, SHAKER, SIEVES, 0-6, N/A

Tested By: MP Level: _____

Reviewed By: Joe Balush Level: II

Requested By: S. PULLEY Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8109
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-29-85 Date Tested 6-8-85

Sample Description SANDY SILT SM

Sample Identification RES DIKE, STA 40, DEP 50 to 56.5, L-1

SRP
6-11-85

Original Oven Dry Weight (Gms.) 118.0 W_0

Oven Dry Weight After Washing and Dry-Sieve (Gms.) 102.9 W_1

Difference (Gms.) 15.1 $(W_0 - W_1)$

% Loss 12.8 $P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: NA

Remarks: N/A

Test Equipment Serial Numbers: TAB-5, shaker, sieves, C-6

REMARKS: N/A

Tested By: JCA Level: _____

Reviewed By: Joe Bahnsch Level: II

Requested By: S. PULLEY / JCB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8109
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-29-85 Date Tested 6-6-85

Sample Description SANDY SILT SM

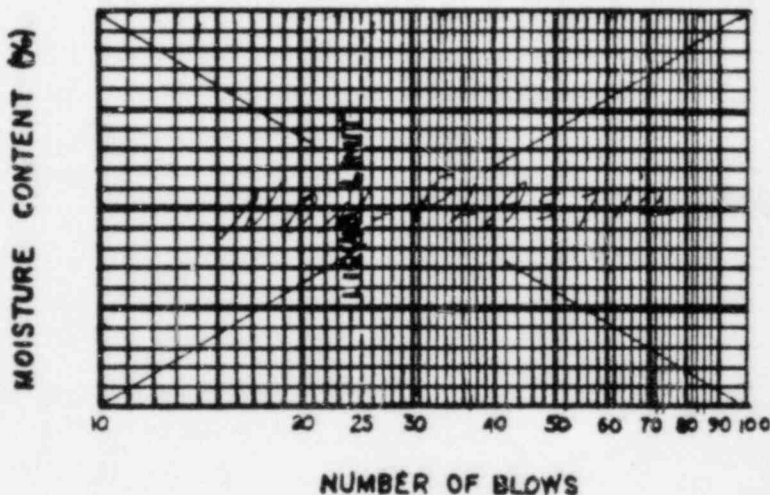
Sample Identification RES. DIKE, STA. 40, DEP. 58 to 56.5, L-1

SRP 6-17-85

PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS			
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
NON-PLASTIC		



Acceptance Criteria NA

Test Equipment Serial No's NA, NA, NA, NA

REMARKS: N/A

Tested By: David Mullins Level II

Reviewed By: Joe Balush Level II

Requested By: S. PULLEY/GB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-7
REV. NO. 1
DATE: 6-7-82

REPORT OF MOISTURE CONTENT OF SOIL

ORDER NO. HO-4471

LAB NO. S-8110

CLIENT HOUSTON LIGHTING & POWER

D.C. NO. _____

PROJECT SOUTH TEXAS PROJECT

TEST METHOD: ASTM D2216-71

Date Sampled: 5-29-85

Date Tested: 6-7-85

Sample Description: CLAY SILTY CL

40, DEP 67.5 TO 69

Sample Identification: RES DIKE STA 67.5 TO 69.0, L-1

A. Wet Wt. 258.7 g

B. Dry Wt. 214.8 g

C. Difference 43.9 g

D. % Moisture = (C/B) x 100 20.4 %

① 6-8-85 #E

Remarks: _____

N/A

Test Equipment Serial No's.: TBB-5 , 0-6 , N/A , N/A

Tested By: _____

Andy Latta

Level: IV

Reviewed By: _____

GARY R EUBANK

Level: II

Requested By: _____

S. PULLEY / JAB

Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8110
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-29-85 Date Tested 6-7-85

Sample Description CLAYEY SILTY CL

Sample Identification RES. DIKE STA. 40, DEP. 67.5 TO 69.0, L-1

Original Oven Dry Weight (Gms.) 214.8 W_0
Oven Dry Weigh After (Gms.) 24.8 W_1
Washing and Dry-Sieve
Difference (Gms.) 190.0 $(W_0 - W_1)$
% Loss 88.5 $P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: N/A

Remarks: N/A

Test Equipment Serial Numbers: TB3-5, 0-6, SIEVES

REMARKS: N/A

Tested By: Robert Rivera Robert Divers Level: II

Reviewed By: GARY R EUBANK Level: II

Requested By: S. PULLEY / JB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

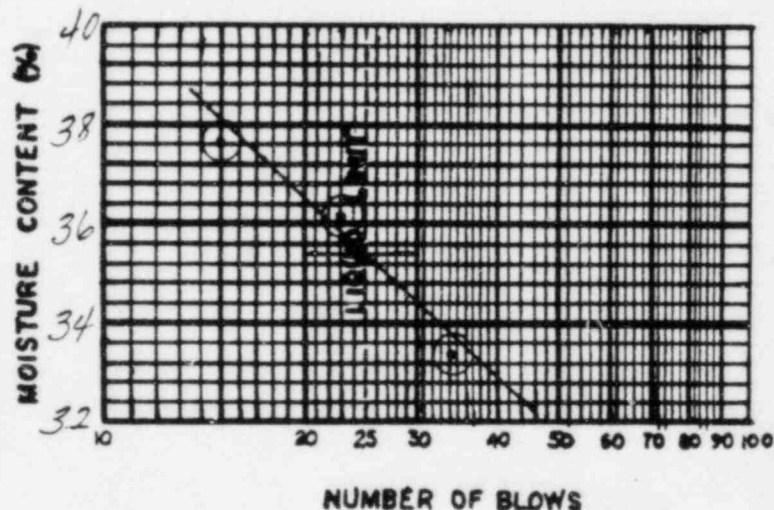
LAB NO. 5-8110
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample _____ Date Tested 6-11-85
Sample Description CLAY SILTY CL
Sample Identification RES DIKE, STA 46.675+0.69, L-1

PLASTIC LIMIT			
DETERMINATION N°	1	2	3
CONTAINER N°	AL-4		
CONTAINER + WET SOIL	23.27		
CONTAINER + DRY SOIL	22.09		
WEIGHT OF WATER	1.18		
CONTAINER + DRY SOIL	22.69	N	A
WEIGHT OF CONTAINER	14.30		
WEIGHT OF DRY SOIL	7.79		
PERCENT OF WATER	15		
LIQUID LIMIT			
DETERMINATION N°	1	2	3
NUMBER OF BLOWS	15	23	32
CONTAINER N°	AL-26	AL-27	AL-30
CONTAINER + WET SOIL	25.02	26.73	27.56
CONTAINER + DRY SOIL	22.05	23.53	24.20
WEIGHT OF WATER	2.97	3.20	3.36
CONTAINER + DRY SOIL	22.65	23.53	24.20
WEIGHT OF CONTAINER	14.16	14.68	14.16
WEIGHT OF DRY SOIL	7.89	8.85	10.04
PERCENT OF WATER	37.6	36.2	33.5

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
35	15	20



Acceptance Criteria 1/2

Test Equipment Serial No's 5135-2, sieves, cm.4, cm.5, 1/2

REMARKS: N/A

Tested By: Joe Mullins Level II

Reviewed By: Joe Balusick Level II

Requested By: S. PULLEY / g.m. Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-7
REV. NO. 1
DATE: 6-7-82

REPORT OF MOISTURE CONTENT OF SOIL

ORDER NO. HO-4471 LAB NO. S-8111
CLIENT HOUSTON LIGHTING & POWER D.C. NO. _____
PROJECT SOUTH TEXAS PROJECT TEST METHOD: ASTM D2216-71

Date Sampled: 5-29-85 Date Tested: 6-7-85

Sample Description: CLAY SILTY CL

Sample Identification: RES DIKE STA. 40 DEP 50 TO 51.5 L-2

A. Wet Wt. 320.5 g
B. Dry Wt. 269.7 g
C. Difference 50.8 g
D. % Moisture = (C/B) x 100 18.8 %

Remarks: N/A
A

Test Equipment Serial No's.: TBB-5, Q-6, N/A, N/A

Tested By: Andy Latta Level: II

Reviewed By: GARY R EUBANK Level: II

Requested By: S. PULLEY 198 Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471 LAB. NO. S-8111
CLIENT HOUSTON LIGHTING & POWER D.C. NO. _____
PROJECT SOUTH TEXAS PROJECT TEST METHOD: ASTM D-1140-54

Date of Sample 5-29-85 Date Tested 6-7-85

Sample Description ⁹⁸⁶⁻¹³⁻⁸⁵ CLAYEY SILTY CL

Sample Identification RES DIKE, STA 40, DEP. 50 TO 51.5 L-2

Original Oven Dry Weight (Gms.) 324.7 W_0
Oven Dry Weigh After (Gms.) 137.3 W_1
Washing and Dry-Sieve
Difference (Gms.) 187.4 $(W_0 - W_1)$
% Loss 57.7 $P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: N/A

Remarks: N/A

Test Equipment Serial Numbers: TBB-5, 0-6, SIEVES

REMARKS: N/A

Tested By: Robert L. Sims Robert L. Rivers Level: II

Reviewed By: GARY R. EZBANK Level: II

Requested By: S. PULLEY/gro Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

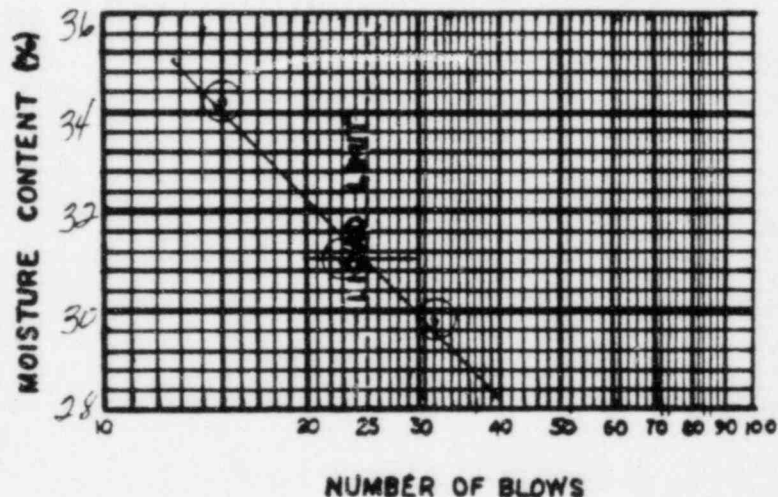
LAB NO. 5-8111
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-29-85 Date Tested 6-11-85
Sample Description Play Silty CL
Sample Identification Res. Dike, STA. 40, Dep. 50 to 51.5, L-2

PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o	42-5		
CONTAINER + WET SOIL	22.81		
CONTAINER + DRY SOIL	20.94		
WEIGHT OF WATER	1.67		
CONTAINER + DRY SOIL	20.94		
WEIGHT OF CONTAINER	14.37		
WEIGHT OF DRY SOIL	6.57		
PERCENT OF WATER	16.3		
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS	15	23	32
CONTAINER N ^o	24-215	24-28	24-31
CONTAINER + WET SOIL	24.28	24.16	25.33
CONTAINER + DRY SOIL	21.64	21.81	22.78
WEIGHT OF WATER	2.64	2.35	2.55
CONTAINER + DRY SOIL	21.64	21.81	22.78
WEIGHT OF CONTAINER	13.94	14.23	14.23
WEIGHT OF DRY SOIL	7.70	7.58	8.55
PERCENT OF WATER	34.3	31.6	29.8

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
31	16	15



Acceptance Criteria 1.0

Test Equipment Serial No's SPS-2, SIGUS, SM-1, SM-5, 17-1

REMARKS: N/A

Tested By: Janet Muller Level I

Reviewed By: Joe Balasch Level II

Requested By: S. PULLEY/gb Company: HARZA

PTL - HOUSTON

SOUTH TEXAS PROJECT

**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8

REV. NO. 2

DATE: 7-11-84

REPORT OF SIEVE ANALYSISORDER NO. HO-4471LAB NO. 5-P/12CLIENT HOUSTON LIGHTING & POWER

D.C. NO. _____

PROJECT SOUTH TEXAS PROJECTTEST METHOD: ASTM D422-63 (72) ☒N/A ☐Date of Sample: 5-29-85Date Tested: 6-10-85Sample Description: Sandy Silt SMSample Identification: RES DIKE, STA. 40, DEP. 55 to 56.5, L-2Acceptance Criteria
SPEC 5Y069YS0043

Sieve Size	Wt. Retained	% Retained	% Passing	
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	72-100
8	0.0	0.0	100.0	N 44-100
16	0.0	0.0	100.0	26-80 A
30	0.0	0.0	100.0	16-50 7B 6-13-85
50	0.0	0.0	100.0	5-26
100	94.3	34.7	65.3	0-12
200	224.3	82.4	17.6	0-7
TOTAL	272.1	N/A	N/A 7B 6-13-85	N/A

Original Weight of Sample: 272.1 grams:Time in Shaker: 10 min.ORGANIC MATTER (ASTM D2488-69) None PARTICLE SHAPE (ASTM D2488-69) NAHARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & FriableTest Equipment Serial No's.: TGB-5, shaker, sieves, 0-6, 110Tested By: GH Level: _____Reviewed By: Joe Balusik Level: IIRequested By: S. PULLEY 12B Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8112
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-29-85 Date Tested 6-8-85

Sample Description SANDY SILT SM

Sample Identification RES DIKE, STA. 40, DEP. 55 to 56.5, L-2

Original Oven Dry Weight (Gms.) 272.1 W_o

Oven Dry Weight After Washing and Dry-Sieve (Gms.) 224.3 W_1

Difference (Gms.) 47.8 $(W_o - W_1)$

% Loss 17.6 $P = \frac{(W_o - W_1)}{W_o} \times 100$

Acceptance Criteria: NA

Remarks: N/A

Test Equipment Serial Numbers: TBA-5, shaker, sieves, C-6

REMARKS: N/A

Tested By: JCD Level: _____

Reviewed By: Joe Baluszek Level: II

Requested By: S. PULLEY / gtb Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8112
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

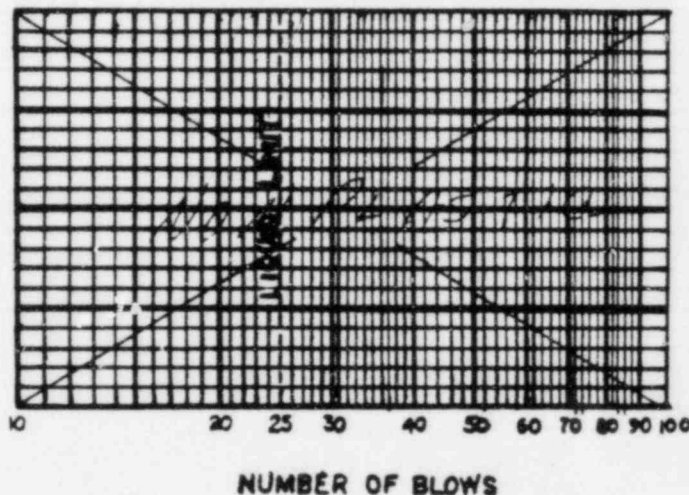
Date of Sample 5-29-85 Date Tested 6-6-85
Sample Description SANDY SILT SM
Sample Identification RES. DIKE, STA 40, DEP. 55 to 56 5', 4-2

PLASTIC LIMIT			
DETERMINATION N°	1	2	3
CONTAINER N°			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N°	1	2	3
NUMBER OF BLOWS			
CONTAINER N°			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
NON-PLASTIC		

MOISTURE CONTENT (%)



Acceptance Criteria NA

Test Equipment Serial No's NA, NA, NA, NA

REMARKS: N/A

Tested By: Janet Mullins Level II

Reviewed By: Joe Balunek Level II

Requested By: S. PULLEY Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. S-8113
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-29-85 Date Tested 6-7-85

Sample Description RED CLAY CL

Sample Identification RES DIKE, STA 40, DEP. 60 TO 61.5, L-2

Original Oven Dry Weight	(Gms.)	<u>298.0</u>	W_0
Oven Dry Weight After Washing and Dry-Sieve	(Gms.)	<u>95.9</u>	W_1
Difference	(Gms.)	<u>202.1</u>	$(W_0 - W_1)$
% Loss		<u>67.8</u>	$P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: NA

Remarks: NA
A

Test Equipment Serial Numbers: TBB-5, SIEVES, 0-6, NA

REMARKS: NA
A

Tested By: Robert Rivera Robert Divers Level: II

Reviewed By: GARY R EUBANK Level: II

Requested By: S. PULLEY / 1913 Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-7
REV. NO. 1
DATE: 6-7-82

REPORT OF MOISTURE CONTENT OF SOIL

ORDER NO. HO-4471

LAB NO. S-8113

CLIENT HOUSTON LIGHTING & POWER

D.C. NO. _____

PROJECT SOUTH TEXAS PROJECT

TEST METHOD: ASTM D2216-71

Date Sampled: 5-29-85

Date Tested: 6-7-85

Sample Description: RED CLAY CL

Sample Identification: RES DIKE STA 40 DEP 60 TO 61.5 L-2

A. Wet Wt. 356.7 g

B. Dry Wt. 297.0 g

C. Difference 59.7 g

D. % Moisture = (C/B) x 100 20.1 %

Remarks: N/A

Test Equipment Serial No's.: TAB-5 , 0-6 , N/A , N/A

Tested By: Andy Latta Level: IV

Reviewed By: GARY R EUBANK Level: II

Requested By: S. PULLEY 1213 Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

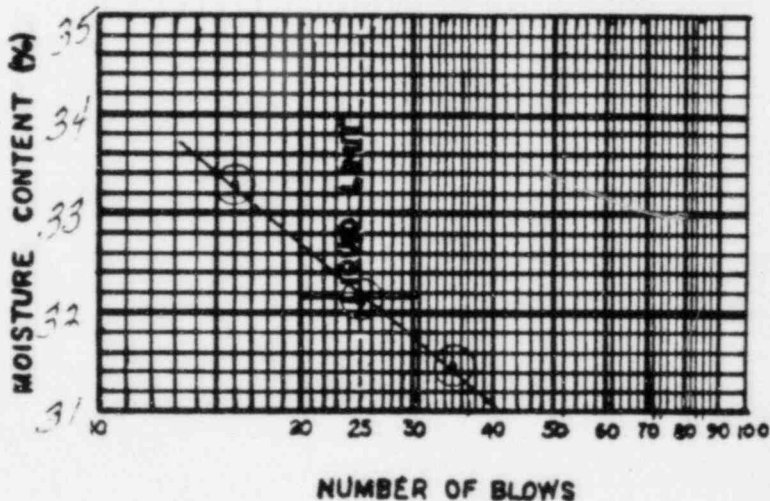
LAB NO. 5-2113
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-29-85 Date Tested 6-11-85
Sample Description Red Clay CL
Sample Identification RES DIKE STA. 40.60 + 0.6' 5, L-2

PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o	AL-22		
CONTAINER + WET SOIL	22.72		
CONTAINER + DRY SOIL	21.72		
WEIGHT OF WATER	1.62		
CONTAINER + DRY SOIL	21.70	N	A
WEIGHT OF CONTAINER	14.13		
WEIGHT OF DRY SOIL	7.57		
PERCENT OF WATER	21		
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS	16	25	35
CONTAINER N ^o	AL-23	AL-25	AL-26
CONTAINER + WET SOIL	26.94	25.49	25.91
CONTAINER + DRY SOIL	23.44	22.79	23.14
WEIGHT OF WATER	2.96	2.76	2.76
CONTAINER + DRY SOIL	23.44	22.79	23.14
WEIGHT OF CONTAINER	14.82	14.42	14.45
WEIGHT OF DRY SOIL	8.62	8.37	8.64
PERCENT OF WATER	33.6	32.3	31.9

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
32	14	18



Acceptance Criteria NA

Test Equipment Serial No's SBS-2, SBS-25, SP-2, 5M.5, CL-2

REMARKS: N/A

Tested By: Joe Mullins Level II

Reviewed By: Joe Balush Level II

Requested By: S. PULLEY / gB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8
REV. NO. 2
DATE: 7-11-84

REPORT OF SIEVE ANALYSIS

ORDER NO. HD-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8114
D.C. NO. _____
TEST METHOD: ASTM D422-63 (72) ☒
N/A ☐

Date of Sample: 5-22-85

Date Tested: 6-10-85

Sample Description: SANDY SILT SM

Sample Identification: RES DIKE, STA. 40, DEP. 50 to 51.5, L-3

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	72-100
8	0.0	0.0	100.0	N 44-100
16	0.0	0.0	100.0	26-80 A
30	0.0	0.0	100.0	16-50 98 6-13-85
50	0.2	0.1	99.9	5-26
100	45.4	23.8	76.2	0-12
200	120.2	63.1	36.9	0-7
TOTAL	190.6	N/A	N/A	N/A

Original Weight of Sample: 190.6 grams: Time in Shaker: 10 min.

ORGANIC MATTER (ASTM D2488-69) NONE PARTICLE SHAPE (ASTM D2488-69) N/A

HARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & Friable

Test Equipment Serial No's.: TBA-5, SHAKER, SIEVES, 0-1, 10

Tested By: GA Level: _____

Reviewed By: Joe Balusick Level: II

Requested By: S. PULLEY / JTB. Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8114
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-22-85 Date Tested 6-8-85

Sample Description Sandy Silt SM

Sample Identification RES. DIKE, STA 40, DEP. 50 to 51.5, L-3

Original Oven Dry Weight	(Gms.)	<u>196.6</u>	W_0
Oven Dry Weigh After Washing and Dry-Sieve	(Gms.)	<u>126.2</u>	W_1
Difference	(Gms.)	<u>70.4</u>	$(W_0 - W_1)$
% Loss		<u>36.9</u>	$P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: NA

Remarks: NA

Test Equipment Serial Numbers: TBB-5, Shaker, Sieves, 2-6

REMARKS: NA

Tested By: JCD Level: _____

Reviewed By: Joe Baluszak Level: II

Requested By: S. PULLEY / JCB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

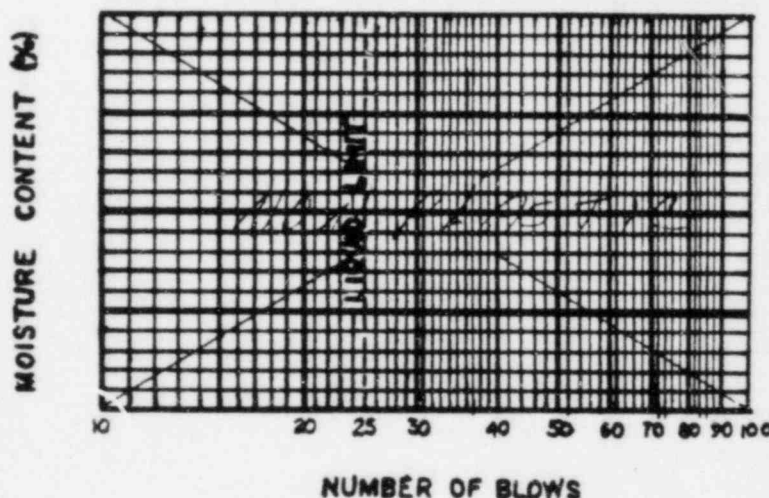
ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8114
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-22-85 Date Tested 6-6-85
Sample Description SANDY SILT SM
Sample Identification RES. DIKE, STA. 40, DEP. 50 to 51.5, L-3

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
<u>NON-PLASTIC</u>		



PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS			
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

Acceptance Criteria NA

Test Equipment Serial No's NA, NA, NA, NA

REMARKS: N/A

Tested By: Janet Mullins Level II

Reviewed By: Joe Balusik Level II

Requested By: S. PULLEY / JPB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8
REV. NO. 2
DATE: 7-11-84

REPORT OF SIEVE ANALYSIS

ORDER NO. HO-4471

CLIENT HOUSTON LIGHTING & POWER

PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8115

D.C. NO. _____

TEST METHOD: ASTM D422-63(72) ☒

N/A ☐

Date of Sample: 5-31-85

Date Tested: 6-11-85

Sample Description: SANDY SILT SM

Sample Identification: RES. DIKE, STA. 40, DEP. 52.5 TO 54, L-3

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	72-100
8	0.0	0.0	100.0	N 44-100
16	0.0	0.0	100.0	26-80 A
30	0.0	0.0	100.0	16-50 9.6-14-85
50	0.8	0.3	99.7	5-26
100	133.2	49.6	50.4	0-12
200	221.8	82.6	17.4	0-7
TOTAL	268.6	N/A	N/A	N/A

Original Weight of Sample: 268.6 grams:

Time in Shaker: 10 min.

ORGANIC MATTER (ASTM D2488-69) None PARTICLE SHAPE (ASTM D2488-69) 1.2

HARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & Friable

Test Equipment Serial No's.: TBB-3, shaker, sieves, 0-6, 12

Tested By: QH Level: _____

Reviewed By: Joe Balusch Level: II

Requested By: S. PULLEY 19B Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471 LAB. NO. 5-8115
CLIENT HOUSTON LIGHTING & POWER D.C. NO. _____
PROJECT SOUTH TEXAS PROJECT TEST METHOD: ASTM D-1140-54

Date of Sample 5-31-85 Date Tested 6-8-85

Sample Description Sandy silt SM

Sample Identification RES DIKE, STA. 40, DEP. 52.5 to 54, L-3

Original Oven Dry Weight (Gms.) 248.6 W_0

Oven Dry Weight After Washing and Dry-Sieve (Gms.) 221.8 W_1

Difference (Gms.) 26.8 $(W_0 - W_1)$

% Loss 17.4 $P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: 1/2

Remarks: 1/2

Test Equipment Serial Numbers: TAP-5, Shaker, Sieves, C-1

REMARKS: 1/2

Tested By: Jeb Level: _____

Reviewed By: Joe Balusik Level: II

Requested By: S. PULLEY 1983 Company: HARZA

PTL HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8115
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

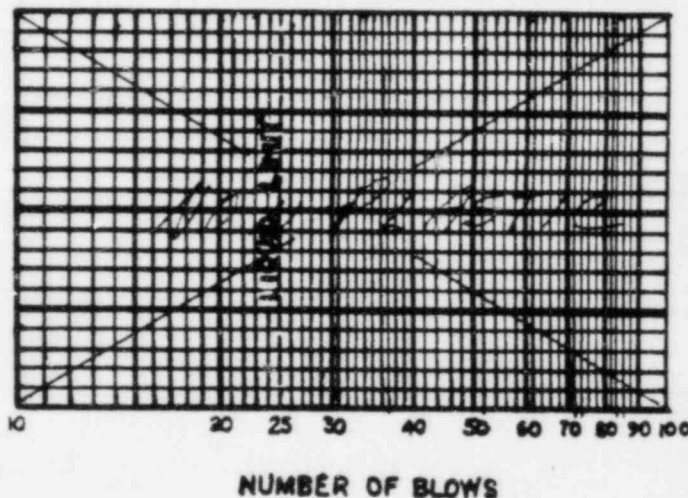
Date of Sample 5-30-85 Date Tested 6-6-85
Sample Description SANDY SILT SM
Sample Identification RES. DIKE, STA. 40, DEP. 52.5 to 54, L-3

PLASTIC LIMIT			
DETERMINATION N°	1	2	3
CONTAINER N°			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER	NON PLASTIC		
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N°	1	2	3
NUMBER OF BLOWS			
CONTAINER N°			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER	NON PLASTIC		
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
NON-PLASTIC		

MOISTURE CONTENT (%)



Acceptance Criteria NA

Test Equipment Serial No's NA, NA, NA, NA

REMARKS: NA

Tested By: Janet Mullins Level II

Reviewed By: Joe Baluch Level II

Requested By: S. PULLEY / JB Company: HARZA

PTL - HOUSTON

SOUTH TEXAS PROJECT

**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8

REV. NO. 2

DATE: 7-11-84

REPORT OF SIEVE ANALYSISORDER NO. HO-4471LAB NO. 5-8116CLIENT HOUSTON LIGHTING & POWER

D.C. NO. _____

PROJECT SOUTH TEXAS PROJECTTEST METHOD: ASTM D422-63 (72) ☒N/A ☐Date of Sample: 5-30-85Date Tested: 6-10-85Sample Description: SAND SILTY SMSample Identification: RES. DIKE, STA. 40, DEP. 55 to 56.5, L-3

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	72-100
8	0.0	0.0	100.0	N 44-100
16	0.0	0.0	100.0	26-80 A
30	0.0	0.0	100.0	16-50 98.6-14-85
50	1.1	0.0	100.0	5-26
100	80.4	38.2	61.8	0-12
200	183.8	87.2	12.8	0-7
TOTAL	210.7	N/A	N/A	N/A

Original Weight of Sample: 210.7 grams:Time in Shaker: 10 min.ORGANIC MATTER (ASTM D2488-69) None PARTICLE SHAPE (ASTM D2488-69) NAHARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & FriableTest Equipment Serial No's.: TBB-3, Shaker, Sieves, C-6, etc.Tested By: GP

Level: _____

Reviewed By: Joe BalushLevel: IIRequested By: S. PULLEY 198.Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8116
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-30-85 Date Tested 6-8-85

Sample Description SAND SILTY SM

Sample Identification RES DIKE, STA 40, DEP 55 to 56.5, L-3

Original Oven Dry Weight (Gms.) 210.7 W_0

Oven Dry Weight After Washing and Dry-Sieve (Gms.) 183.8 W_1

Difference (Gms.) 26.9 $(W_0 - W_1)$

% Loss 12.8 $P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: NA

Remarks: N/A

Test Equipment Serial Numbers: TBA-5, shaker, sieves, F-6

REMARKS: N/A

Tested By: JCD Level: _____

Reviewed By: Joe Balbach Level: II

Requested By: S. PULLEY JR. Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8116
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-30-85 Date Tested 6-6-85
Sample Description SAND SILTY SM
Sample Identification RES. DIKE, DEP. 55 TO 56.5, L-3

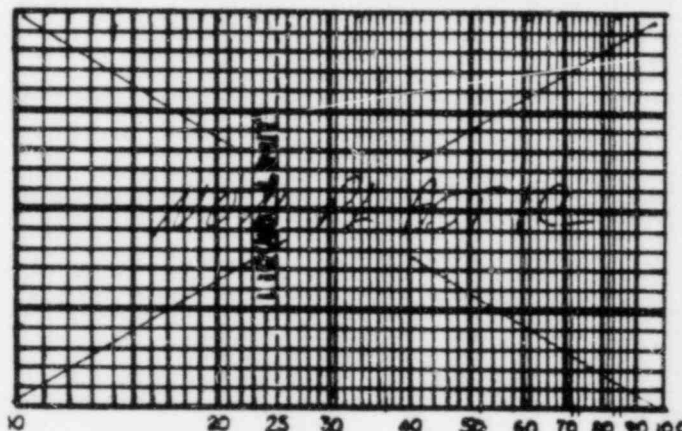
PLASTIC LIMIT

DETERMINATION N°	1	2	3
CONTAINER N°			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N°	1	2	3
NUMBER OF BLOWS			
CONTAINER N°			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
NON-PLASTIC		

MOISTURE CONTENT (%)



NUMBER OF BLOWS

Acceptance Criteria NA

Test Equipment Serial No's NA, NA, NA, NA

REMARKS: N

Tested By: Joe Mulline Level II

Reviewed By: Joe Balush Level II

Requested By: S. PULLEY JR Company: HARZA

PTL - HOUSTON

SOUTH TEXAS PROJECT

**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8

REV. NO. 2

DATE: 7-11-84

REPORT OF SIEVE ANALYSISORDER NO. HO-4471CLIENT HOUSTON LIGHTING & POWERPROJECT SOUTH TEXAS PROJECTLAB NO. 5-8117

D.C. NO. _____

TEST METHOD: ASTM D422-63 (72) ☒N/A ☐Date of Sample: 5-30-85Date Tested: 6-9-85Sample Description: SAND SILTY SMSample Identification: RES. DIKE, STA. 40, DEP. 57.5 TO 59, L-3

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	72-100
8	0.0	0.0	100.0	N 44-100
15	0.0	0.0	100.0	26-80 A
30	0.0	0.0	100.0	16-50 9/3 6-14-85
50	0.1	0.1	99.9	5-26
100	93.2	53.1	46.9	0-12
200	154.7	88.1	11.9	0-7
TOTAL	175.6	N/A	N/A	N/A

Original Weight of Sample: 175.6 grams:Time in Shaker: 10 min.ORGANIC MATTER (ASTM D2488-69) NONE PARTICLE SHAPE (ASTM D2488-69) NAHARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & FriableTest Equipment Serial No's.: TBB-5, SHAKER, SIEVES, C-1, NATested By: JcD Level: _____Reviewed By: Joe Balusick Level: IIRequested By: S. PULLEY 1983 Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471 LAB. NO. 5-8117
CLIENT HOUSTON LIGHTING & POWER D.C. NO. _____
PROJECT SOUTH TEXAS PROJECT TEST METHOD: ASTM D-1140-54

Date of Sample 5-30-85 Date Tested 6-8-85

Sample Description Sand SILTY SM

Sample Identification RES DIKE, STA. 40, DEP. 57.5 to 59, L-3

Original Oven Dry Weight (Gms.) 175.6 W_o
Oven Dry Weight After Washing and Dry-Sieve (Gms.) 154.7 W_1
Difference (Gms.) 20.9 $(W_o - W_1)$
% Loss 11.9 $P = \frac{(W_o - W_1)}{W_o} \times 100$

Acceptance Criteria: N/A

Remarks: N/A

Test Equipment Serial Numbers: TAB-5, shaker, sieves, 0-6

REMARKS: N/A

Tested By: JCD Level: _____

Reviewed By: Joe Badmick Level: II

Requested By: S. PULLEY 1983 Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8117
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

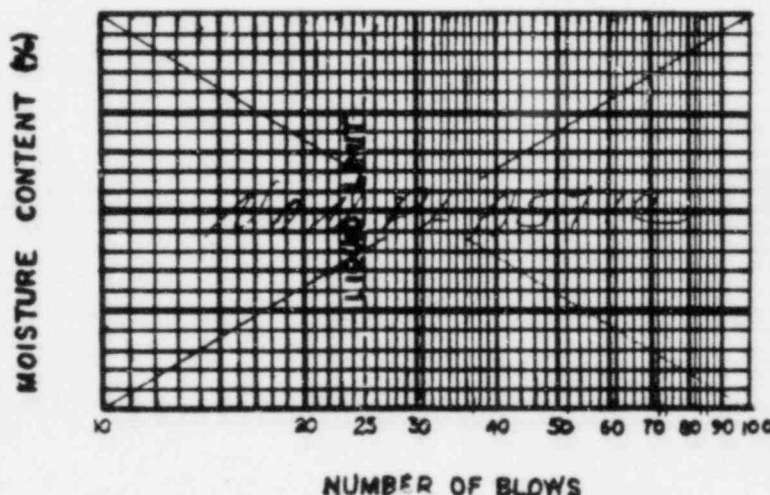
Date of Sample 5-30-85 Date Tested 6-6-85
Sample Description SAND SILTY SM
Sample Identification RES DIKE, STA. 40, DEP. 57.5 to 59, L-3

PLASTIC LIMIT

DETERMINATION N ^o	1	2	3
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS			
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
<u>NON-PLASTIC</u>		



Acceptance Criteria NA

Test Equipment Serial No's NA, NA, NA, NA

REMARKS: N/A

Tested By: Frank Mulline Level II

Reviewed By: Joe Balush Level II

Requested By: S. PULLEY / JMS Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8
REV. NO. 2
DATE: 7-11-84

REPORT OF SIEVE ANALYSIS

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8118
D.C. NO. _____
TEST METHOD: ASTM D422-63 (72) ☒
N/A ☐

Date of Sample: 5-30-85 Date Tested: 6-9-85

Sample Description: SAND SILTY SM

Sample Identification: RES. DIKE, STA. 40, DEP. 6.0 TO 61.5, L-3

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	72-100
8	0.0	0.0	100.0	N 44-100
16	0.0	0.0	100.0	26-80 A
30	0.2	0.1	99.9	16-50 98.6-14-85
50	0.3	0.2	99.8	5-26
100	54.6	29.7	70.3	0-12
200	141.8	89.1	10.9	0-7
TOTAL	183.6	N/A	N/A	N/A

Original Weight of Sample: 183.6 grams: Time in Shaker: 10 min.

ORGANIC MATTER (ASTM D2488-69) None PARTICLE SHAPE (ASTM D2488-69) N/A

HARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & Friable

Test Equipment Serial No's.: TAB-3, shaker, sieves, 0-6, 112

Tested By: JCO Level: _____

Reviewed By: Joe Balushak Level: II

Requested By: S. PULLEY 193 Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8118
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-30-85 Date Tested 6-9-85

Sample Description SAND SILTY SM

Sample Identification RES DIKE, STA. 40, DEP. 60 to 61.5, L-3

Original Oven Dry Weight	(Gms.)	<u>183.6</u>	W_0
Oven Dry Weight After Washing and Dry-Sieve	(Gms.)	<u>161.8</u>	W_1
Difference	(Gms.)	<u>21.8</u>	$(W_0 - W_1)$
% Loss		<u>11.9</u>	$P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: N/A

Remarks: N/A

Test Equipment Serial Numbers: TAB-5, shaker, sieves, L-6

REMARKS: N/A

Tested By: GP Level: _____

Reviewed By: Joe Balusik Level: II

Requested By: S. PULLEY JR. Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

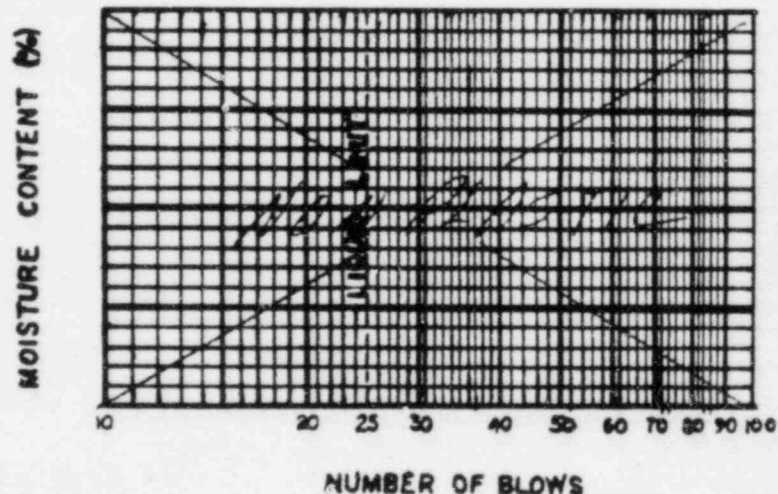
LAB NO. 5-8118
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-30-85 Date Tested 6-6-85
Sample Description SAND SILTY SM
Sample Identification RES DIKE, STA. 40, DEP. 60 TO 61.5, 6-3

PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS			
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
NON-PLASTIC		



Acceptance Criteria NA

Test Equipment Serial No's NA, NA, NA, NA

REMARKS: N/A

Tested By: James Mullins Level II

Reviewed By: Joe Baluch Level II

Requested By: S. PULLEY / gmb Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-7
REV. NO. 1
DATE: 6-7-82

REPORT OF MOISTURE CONTENT OF SOIL

ORDER NO. HO-4471

LAB NO. S-8119

CLIENT HOUSTON LIGHTING & POWER

D.C. NO. _____

PROJECT SOUTH TEXAS PROJECT

TEST METHOD: ASTM D2216-71

Date Sampled: 5-30-85

Date Tested: 6-7-85

Sample Description: GRAY TO YELLOW CLAY CH

Sample Identification: RES DIKE STA. 40 DEP 17.5 TO 19 L-4

A. Wet Wt. 264.2 g

B. Dry Wt. 219.2 g

C. Difference 45.0 g

D. % Moisture = (C/B) x 100 20.5 %

Remarks: _____

N/A
A

Test Equipment Serial No's.: TBB-5, 0-6, N/A, N/A

Tested By: _____

Andy Latta

Level: II

Reviewed By: _____

GARY R EUBANK

Level: II

Requested By: _____

S. PULLEY / JPB

Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471 LAB. NO. S-8119
CLIENT HOUSTON LIGHTING & POWER D.C. NO. _____
PROJECT SOUTH TEXAS PROJECT TEST METHOD: ASTM D-1140-54

Date of Sample S-30-85 Date Tested 6-7-85

Sample Description GRAY TO YELLOW CLAY CH

Sample Identification RES DIKE, STA 40, DEP 17.5 TO 19.0, L-4

Original Oven Dry Weight (Gms.) 221.2 W_0

Oven Dry Weigh After Washing and Dry-Sieve (Gms.) 41.3 W_1

Difference (Gms.) 179.9 $(W_0 - W_1)$

% Loss 81.3 $P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: N/A

Remarks: N/A

Test Equipment Serial Numbers: TBB-5, 0-6, SIEVES, N/A

REMARKS: N/A

Tested By: Robert Sivers Robert Divers Level: II

Reviewed By: GARY R EUBANK Level: II

Requested By: S. PULLEY / JTB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

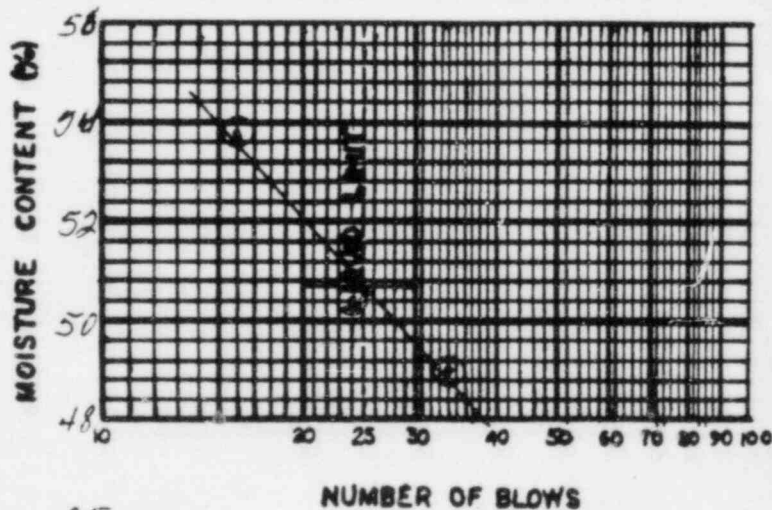
LAB NO. 5-8119
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-30-85 Date Tested 6-11-85
Sample Description Gray to Yellow Clay CH
Sample Identification RES. DIKE, STA. 40, DEP. 17.5 to 19, L-4

PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o	AL-22		
CONTAINER + WET SOIL	21.71		
CONTAINER + DRY SOIL	20.78		
WEIGHT OF WATER	0.99		
CONTAINER + DRY SOIL	20.78	N	A
WEIGHT OF CONTAINER	14.34		
WEIGHT OF DRY SOIL	6.44		
PERCENT OF WATER	14		
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS	16	24	35
CONTAINER N ^o	AL-17	AL-18	AL-19
CONTAINER + WET SOIL	21.89	22.66	23.36
CONTAINER + DRY SOIL	19.16	19.90	20.28
WEIGHT OF WATER	2.73	2.76	3.08
CONTAINER + DRY SOIL	14.16	19.90	20.28
WEIGHT OF CONTAINER	14.19	14.42	14.10
WEIGHT OF DRY SOIL	5.07	5.48	6.28
PERCENT OF WATER	53.8	50.4	49.0

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
51	14	37



Acceptance Criteria N/A

Test Equipment Serial No's SBS-2, sieves, SM-4, SM-5, C-6

REMARKS: N/A

Tested By: Janet Mullins Level II

Reviewed By: Joe Balusick Level II

Requested By: S. PULLEY JR. Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8
REV. NO. 2
DATE: 7-11-84

REPORT OF SIEVE ANALYSIS

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8120
D.C. NO. _____
TEST METHOD: ASTM D422-63 (72) ☒
N/A ☐

Date of Sample: 5-30-85

Date Tested: 6-9-85

Sample Description: SAND SILTY SM

Sample Identification: RES DIKE, STA 40, DEP. 20 TO 21.5, L-4

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	72-100
8	0.0	0.0	100.0	44-100 A
16	0.1	0.0	100.0	26-80
30	0.3	0.1	99.9	16-50 98.6-100-85
50	1.1	0.5	99.5	5-26
100	241	11.4	88.6	0-12
200	146.7	69.1	30.9	0-7
TOTAL	212.2	N/A	N/A	N/A

Original Weight of Sample: 212.2 grams:

Time in Shaker: 10 min.

ORGANIC MATTER (ASTM D2488-69) NONE PARTICLE SHAPE (ASTM D2488-69) N/A

HARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & Friable

Test Equipment Serial No's.: TBB-B⁵ shaker, sieves, C-6, N/A
6-11-85 PM

Tested By: JCD Level: _____

Reviewed By: Joe Baluszek Level: II

Requested By: S. PULLEY JR. Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8120
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-30-85 Date Tested 6-9-85

Sample Description SAND SILTY SM

Sample Identification RES DIKE, STA 40, DEP. 20 to 21.5, L-4

Original Oven Dry Weight	(Gms.)	<u>212.2</u>	W_0
Oven Dry Weigh After Washing and Dry-Sieve	(Gms.)	<u>146.7</u>	W_1
Difference	(Gms.)	<u>65.5</u>	$(W_0 - W_1)$
% Loss		<u>30.9</u>	$P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: N/A

Remarks: N/A

Test Equipment Serial Numbers: TBB-5, shaker, sieves, 0-6

REMARKS: N/A

Tested By: GP Level: _____

Reviewed By: Joe Balbach Level: II

Requested By: S. PULLEY JR. Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
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Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

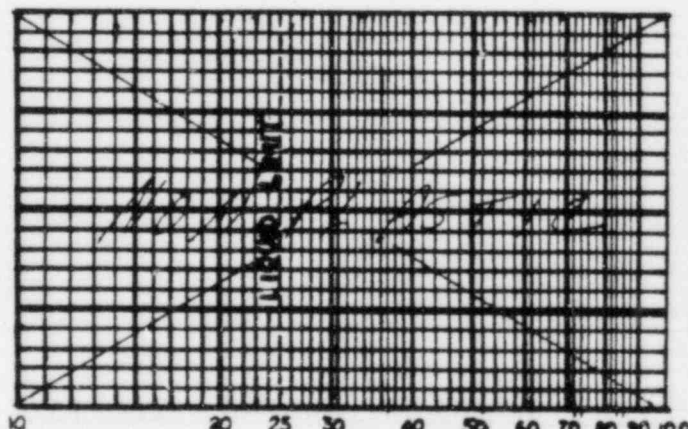
LAB NO. 5-8120
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-30-85 Date Tested 6-6-85
Sample Description SAND SILTY SM
Sample Identification RES DIKE, STA. 40, DEP. 20 to 21.5, L-4

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
NON-PLASTIC		

MOISTURE CONTENT (%)



NUMBER OF BLOWS

PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS			
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

Acceptance Criteria N/A

Test Equipment Serial No's N/A, N/A, N/A, N/A

REMARKS: N/A

Tested By: Joe Muller Level II

Reviewed By: Joe Balbach Level II

Requested By: S. PULLEY/ga Company: HARZA

PTL - HOUSTON

SOUTH TEXAS PROJECT


**Pittsburgh
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Laboratory**

FORM NO. ST-8

REV. NO. 2

DATE: 7-11-84

REPORT OF SIEVE ANALYSISORDER NO. HO-4471CLIENT HOUSTON LIGHTING & POWERPROJECT SOUTH TEXAS PROJECTLAB NO. 5-8121

D.C. NO. _____

TEST METHOD: ASTM D422-63 (72) ☒N/A ☐Date of Sample: 5-30-85Date Tested: 6-10-85Sample Description: SANDY SILT SMSample Identification: RES. DIKE, STA. 40, DEP. 21.5 to 23, L-4

Sieve Size	% Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.1	0.0	100.0	N 72-100
8	0.2	0.1	99.9	44-100 A
16	0.2	0.1	99.9	26-80
30	0.2	0.1	99.9	16-50 <u>98.6-14-85</u>
50	0.5	0.2	99.8	5-26
100	15.6	8.1	91.8	0-12
200	143.8	70.4	29.6	0-7
TOTAL	204.4	N/A	N/A	N/A

Original Weight of Sample: 204.4 grams: Time in Shaker: 10 min.ORGANIC MATTER (ASTM D2488-69) NONE PARTICLE SHAPE (ASTM D2488-69) N/AHARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & FriableTest Equipment Serial No's.: TAB-5, Shaker, Sieves, 0-6, N/ATested By: GP Level: _____Reviewed By: Joe Balusick Level: IIRequested By: S. PULLEY / JAB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
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FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8121
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-30-85 Date Tested 6-9-85

Sample Description Sandy Silt SM

Sample Identification RFS DIKE STA. 40, DEP 21.5 to 23, L-4

Original Oven Dry Weight	(Gms.)	<u>224.4</u>	W_0
Oven Dry Weigh After Washing and Dry-Sieve	(Gms.)	<u>143.8</u>	W_1
Difference	(Gms.)	<u>80.6</u>	$(W_0 - W_1)$
% Loss		<u>22.6</u>	$P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: 11.0

Remarks: N
A

Test Equipment Serial Numbers: TMB-5, shaker, ieves, B-6

REMARKS: N
A

Tested By: GP Level: _____

Reviewed By: Joe Balusik Level: II

Requested By: S. PULLEY / JMB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

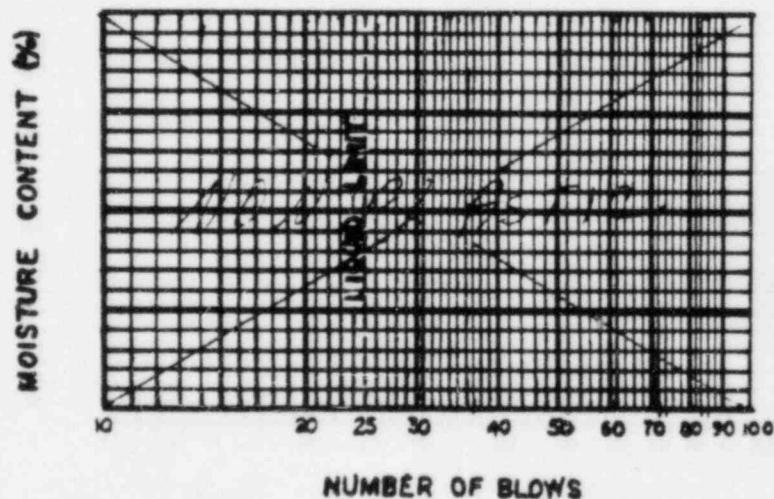
LAB NO. S-8121
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-30-85 Date Tested 6-6-85
Sample Description SANDY SILT SM
Sample Identification RES. DIKE, STA. 40, DEP. 21.5 TO 23, L-4

PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS			
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
NON-PLASTIC		



Acceptance Criteria NA

Test Equipment Serial No's NA, _____, _____, _____

REMARKS: N/A

Tested By: Wit Mullins Level II

Reviewed By: Joe Balnash Level II

Requested By: S. PULLEY JTB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8
REV. NO. 2
DATE: 7-11-84

REPORT OF SIEVE ANALYSIS

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8122
D.C. NO. _____
TEST METHOD: ASTM D422-63(72) ☒
N/A ☐

Date of Sample: 5-30-85

Date Tested: 6-9-85

Sample Description: Sandy Silt sm

Sample Identification: Res DIKE, STA. 40, Dep. 25 to 26.5, L-4

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	N 72-100
8	0.0	0.0	100.0	44-100
16	0.0	0.0	100.0	26-80 A
30	0.0	0.0	100.0	16-50 93.6-14-85
50	0.2	0.1	99.9	5-26
100	36.7	19.1	80.9	0-12
200	165.0	85.8	14.2	0-7
TOTAL	192.2	N/A	N/A	N/A

Original Weight of Sample: 192.2 grams:

Time in Shaker: 10 min.

ORGANIC MATTER (ASTM D2488-69) None PARTICLE SHAPE (ASTM D2488-69) CP

HARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & Friable

Test Equipment Serial No's.: TBB-5, shaker, Sieves, 0-6, CP

Tested By: JCP Level: _____

Reviewed By: Joe Balusick Level: II

Requested By: S. PULLEY / JTB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8122
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-30-85 Date Tested 6-9-85

Sample Description Sandy Silt sm

Sample Identification RES DIKE, STA 40, DEP. 25 to 26.5, L-d

Original Oven Dry Weight (Gms.) 192.2 W_o

Oven Dry Weight After Washing and Dry-Sieve (Gms.) 165.0 W_l

Difference (Gms.) 27.2 $(W_o - W_l)$

% Loss 14.2 $P = \frac{(W_o - W_l)}{W_o} \times 100$

Acceptance Criteria: NA

Remarks: NA

Test Equipment Serial Numbers: TAB-5, shaker, sieves, C-6

REMARKS: NA

Tested By: GP Level: _____

Reviewed By: Joe Balusick Level: II

Requested By: S. PULLEY / JPB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

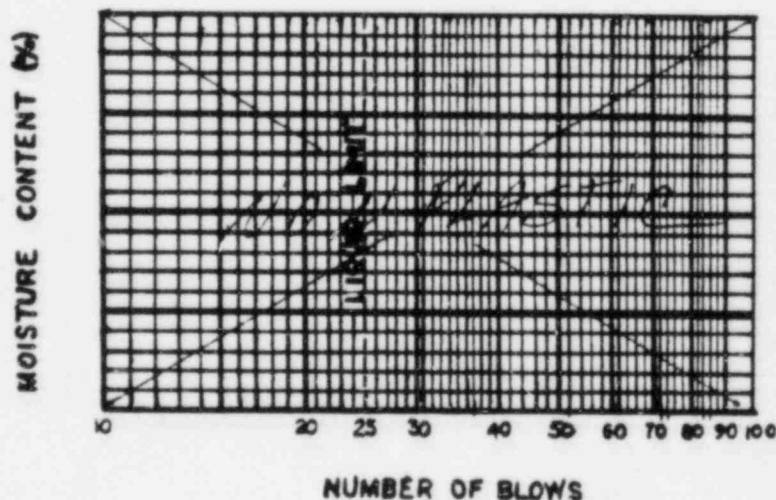
LAB NO. 5-8122
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-30-85 Date Tested 6-6-85
Sample Description Silty SAND Sm
Sample Identification RES. DIKE, STA. 40, Dep. 25 to 26.5, L-4

PLASTIC LIMIT			
DETERMINATION N°	1	2	3
CONTAINER N°			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER	NON PLASTIC		
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N°	1	2	3
NUMBER OF BLOWS			
CONTAINER N°			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER	NON PLASTIC		
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
NON PLASTIC		



Acceptance Criteria NA

Test Equipment Serial No's NA, NA, NA, NA

REMARKS: N/A

Tested By: David Mullins Level II

Reviewed By: Joe Balnash Level II

Requested By: S. PULLEY / JPB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8
REV. NO. 2
DATE: 7-11-84

REPORT OF SIEVE ANALYSIS

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8123
D.C. NO. _____
TEST METHOD: ASTM D422-63 (72) ☒
N/A ☐

Date of Sample: 5-30-85 Date Tested: 6-10-85

Sample Description: Sand SILTY SP/SM

Sample Identification: RES DIKE, STA. 40, DEP. 42.5 to 44, L-4

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	N 72-100
8	0.3	0.1	99.9	44-100 A
16	1.5	0.6	99.4	26-80
30	4.7	1.9	98.1	16-50 95.6-14-85
50	14.8	6.0	94.0	5-26
100	157.9	63.6	36.4	0-12
200	219.2	88.4	11.6	0-7
TOTAL	248.1	N/A	N/A	N/A

Original Weight of Sample: 248.1 grams: Time in Shaker: 10 min.

ORGANIC MATTER (ASTM D2488-69) NONE PARTICLE SHAPE (ASTM D2488-69) N/A

HARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & Friable

Test Equipment Serial No's.: TBB-5, CASIDAKER, SIFES, 1-6, 1-2
6-11-85 PM

Tested By: G.H. Level: _____

Reviewed By: Joe Balusak Level: II

Requested By: S. PULLEY Company: NARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8123
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-30-85 Date Tested 6-5-85

Sample Description Sand SILTY SP/SM

Sample Identification REG. NIKK, ST240, DEP 42.5 to 44, L-4

Original Oven Dry Weight	(Gms.)	<u>248.1</u>	W_0
Oven Dry Weight After Washing and Dry-Sieve	(Gms.)	<u>219.2</u>	W_1
Difference	(Gms.)	<u>28.9</u>	$(W_0 - W_1)$
% Loss		<u>11.6</u>	$P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: NP

Remarks: NP

Test Equipment Serial Numbers: TBB-5, Shaker, 512115, 1-6

REMARKS: NP

Tested By: GP Level: _____

Reviewed By: Joe Balmick Level: II

Requested By: S. PULLEY/gb Company: MARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

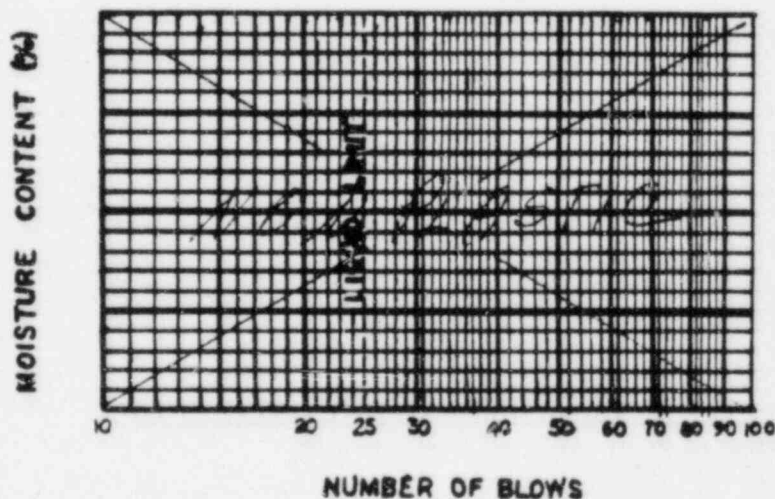
LAB NO. 5-8123
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-30-85 Date Tested 6-6-85
Sample Description SAND SILTY SP/SM
Sample Identification RES DIKE, STA. 40, DEP. 42.5 TO 44, L-4

PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS			
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
NON-PLASTIC		



Acceptance Criteria NA

Test Equipment Serial No's NA, NA, NA, NA

REMARKS: N/A

Tested By: Frank Mullins Level II

Reviewed By: Joe Balask Level II

Requested By: S. PULLEY / JLB Company: HARZA

PTL - HOUSTON

SOUTH TEXAS PROJECT


**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8

REV. NO. 2

DATE: 7-11-84

REPORT OF SIEVE ANALYSISORDER NO. HO-4471LAB NO. 5-8124CLIENT HOUSTON LIGHTING & POWER

D.C. NO. _____

PROJECT SOUTH TEXAS PROJECTTEST METHOD: ASTM D422-63(72) ☒N/A ☐Date of Sample: 5-30-85Date Tested: 6-8-85Sample Description: SAND SILTY SMSample Identification: RES DIKE, STA 40, DEP. 17.5 TO 19, L-5

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	N 72-100
8	0.1	0.0	100.0	44-100 A
16	0.2	0.1	99.9	26-80 98.6-14-85
30	0.2	0.1	99.9	16-50
50	2.0	0.7	99.3	5-26
100	146.1	50.0	50.0	0-12
200	217.9	74.5	25.5	0-7
TOTAL	292.3	N/A	N/A	N/A

Original Weight of Sample: 292.3 grams:Time in Shaker: 10 min.ORGANIC MATTER (ASTM D2488-69) NONE PARTICLE SHAPE (ASTM D2488-69) N/AHARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & FriableTest Equipment Serial No's.: TAB-5, shaker, sieves, 0-1, 100Tested By: GH Level: _____Reviewed By: Joe Bohmick Level: IIRequested By: S. PULLEY / JB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-7124
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-30-85 Date Tested 6-7-85

Sample Description SAND SILTY SM

Sample Identification RES DIKE, 5+0.0, DEP. 17.5 to 19.6-5

Original Oven Dry Weight (Gms.) 292.3 W_0

Oven Dry Weigh After Washing and Dry-Sieve (Gms.) 217.9 W_1

Difference (Gms.) 74.4 $(W_0 - W_1)$ 6-14-85

% Loss 25.5 $P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: NA

Remarks: N/A

Test Equipment Serial Numbers: TAP-5, shaker, scales, etc.

REMARKS: N/A

Tested By: GM Level: _____

Reviewed By: Joe B. Smith Level: II

Requested By: S. PULLEY / JTB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

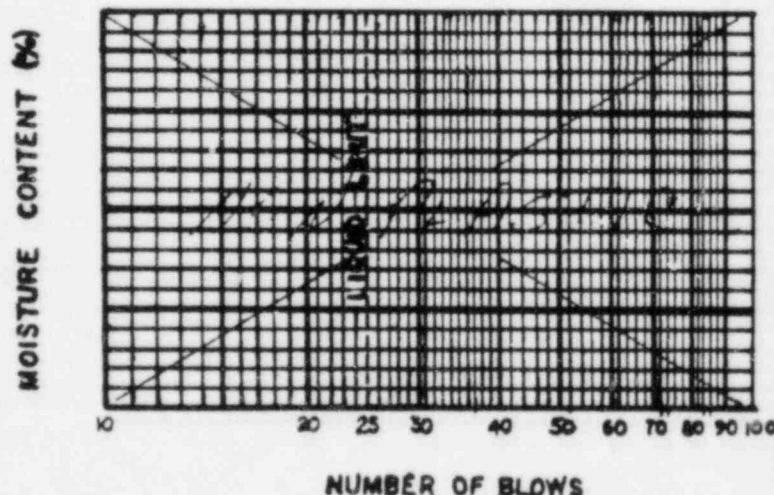
LAB NO. 5-8124
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-31-85 Date Tested 6-6-85
Sample Description SAND SILTY SM
Sample Identification RES DIKE, STA. 44, DEP. 12.5 to 19, L-5

PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS			
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
NON-PLASTIC		



Acceptance Criteria NA

Test Equipment Serial No's NA, NA, NA, NA

REMARKS: NA

Tested By: Janet Mullins Level II

Reviewed By: Joe Balmack Level II

Requested By: S. PULLEY JR. Company: HARZA

NYL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8
REV. NO. 2
DATE: 7-11-84

REPORT OF SIEVE ANALYSIS

ORDER NO. HO-4471

CLIENT HOUSTON LIGHTING & POWER

PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8125

D.C. NO. _____

TEST METHOD: ASTM D422-63(72) ☒

N/A ☐

Date of Sample: 5-30-85

Date Tested: 6-8-85

Sample Description: SAND SILTY SM

Sample Identification: RES. DIKE, STA. 40, DEP. 20 TO 21.5, L-5

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	72-100
8	0.0	0.0	100.0	N 44-100
16	0.1	0.0	100.0	26-80 A
30	4.7	1.5	98.5	16-50 98.6-14-85
50	114.7	33.5	66.5	5-26
100	215.8	69.0	31.0	0-12
200	277.9	88.9	11.1	0-7
TOTAL	312.6	N/A	N/A	N/A

Original Weight of Sample: 312.6 grams:
0.98 6-11-85

Time in Shaker: 10 min.

ORGANIC MATTER (ASTM D2488-69) NONE PARTICLE SHAPE (ASTM D2488-69) N/A

HARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & Friable

Test Equipment Serial No's.: TAB-5, SHAKER, SIEVES, 1-6, N/A

Tested By: GM Level: _____

Reviewed By: Joe Balusik Level: II

Requested By: S. PULLEY Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-8125
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-30-85 Date Tested 6-8-85

Sample Description SAND SILTY SM

Sample Identification RFS DIKE, SHAD, DEP. 21 to 21.5, L-5

Original Oven Dry Weight (Gms.) 312.6 W_o

Oven Dry Weight After Washing and Dry-Sieve (Gms.) 277.9 W_1

Difference (Gms.) 34.7 $(W_o - W_1)$

% Loss 11.1 $P = \frac{(W_o - W_1)}{W_o} \times 100$

Acceptance Criteria: N/A

Remarks: N/A

Test Equipment Serial Numbers: TBB-5, shaker, sieves, 0-6

REMARKS: N/A

Tested By: GM Level: _____

Reviewed By: Joe Balushak Level: II

Requested By: S. PULLEY / JTB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8125
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

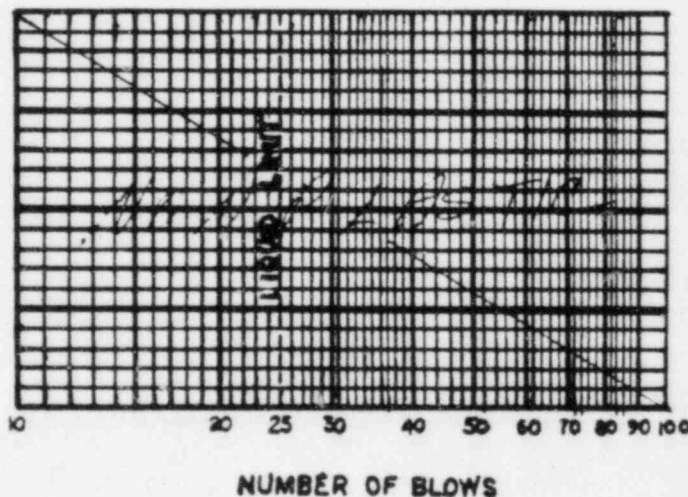
Date of Sample 5-31-85 Date Tested 6-6-85
Sample Description SAND SILTY sm
Sample Identification RES. DIKE STA. 40, DEP. 20 to 21.5, L-5

PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS			
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
<u>NO. LIQUID PLASTIC</u>		

MOISTURE CONTENT (%)



Acceptance Criteria 1.2

Test Equipment Serial No's 112, 112, 112, 112

REMARKS: 1.2

Tested By: Joe Mullins Level II

Reviewed By: Joe Balbach Level II

Requested By: S. PULLEY / JR. Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8
REV. NO. 2
DATE: 7-11-84

REPORT OF SIEVE ANALYSIS

ORDER NO. HO-4471

CLIENT HOUSTON LIGHTING & POWER

PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8127

D.C. NO. _____

TEST METHOD: ASTM D422-63(72) ☒

N/A ☐

Date of Sample: 5-29-85

Date Tested: 6-9-85

Sample Description: Sandy Silt SP/sm

Sample Identification: RES. DIKE, STA 40, DEP. 6.5 to 6.5, 6-1

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	1.2	0.4	99.6	72-100
8	1.7	0.6	99.4	44-100
16	2.7	0.9	99.1	26-80
30	2.9	0.9	99.1	16-50
50	4.1	1.3	98.7	5-26
100	17.4	5.9	94.1	0-12
200	277.6	91.5	8.5	0-7
TOTAL	306.8	N/A	N/A	N/A

Original Weight of Sample: 306.8 grams:

Time in Shaker: 10 min.

ORGANIC MATTER (ASTM D2488-69) None PARTICLE SHAPE (ASTM D2488-69) None

HARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & Friable

Test Equipment Serial No's.: TB-5, Shaker, 100, 100, 100

Tested By: GH Level: _____

Reviewed By: Joe Bohusik Level: II

Requested By: S. PULLEY / JPB Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471 LAB. NO. S-8127
CLIENT HOUSTON LIGHTING & POWER D.C. NO. _____
PROJECT SOUTH TEXAS PROJECT TEST METHOD: ASTM D-1140-54

Date of Sample 6-6-85 Date Tested 6-8-85

Sample Description SANDY SILT SP/Sm

Sample Identification RES. DIKE, STA. 40, DEPTH 65 TO 66.5 L-1

Original Oven Dry Weight	(Gms.)	<u>306.8</u>	W_0
Oven Dry Weigh After Washing and Dry-Sieve	(Gms.)	<u>277.6</u>	W_1
Difference	(Gms.)	<u>29.2</u>	$(W_0 - W_1)$
% Loss		<u>9.5</u>	$P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: N/A

Remarks: N/A

Test Equipment Serial Numbers: 0-6, SIEVES, TBB-5, N/A

REMARKS: N/A

Tested By: GH Gary Holmen Level: II

Reviewed By: Joe Balusik Level: II

Requested By: S. PULLEY / JS Company: H/1122A

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-4
REV. NO. 1
DATE: 6-7-82

REPORT OF LIQUID AND PLASTIC LIMIT

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

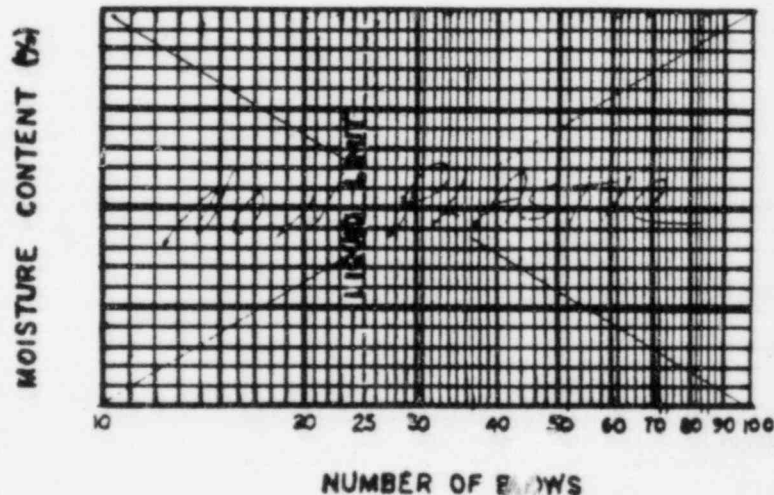
LAB NO. 5-8127
D. C. NO. _____
TEST METHOD ASTM D-423-66 &
ASTM D-424-59

Date of Sample 5-29-85 Date Tested 6-1-85
Sample Description SANDY SILT SP/SM
Sample Identification RES. DIKE, STA. 41, DEP. 6.5 to 66.5, L-1

PLASTIC LIMIT			
DETERMINATION N ^o	1	2	3
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			
LIQUID LIMIT			
DETERMINATION N ^o	1	2	3
NUMBER OF BLOWS			
CONTAINER N ^o			
CONTAINER + WET SOIL			
CONTAINER + DRY SOIL			
WEIGHT OF WATER			
CONTAINER + DRY SOIL			
WEIGHT OF CONTAINER			
WEIGHT OF DRY SOIL			
PERCENT OF WATER			

SUMMARY

LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX



Acceptance Criteria NA

Test Equipment Serial No's NA, NA, NA, NA

REMARKS: NA

Tested By: Timothy Miller Level II

Reviewed By: Joe Balazak Level II

Requested By: S. PULLEY / gpb Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-1
REV. NO. 2
DATE: 10-11-82

REPORT OF MATERIAL FINER THAN 200

ORDER NO. HO 4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB. NO. 5-P123
D.C. NO. _____
TEST METHOD: ASTM D-1140-54

Date of Sample 5-30-85 Date Tested 6-8-85

Sample Description Sandy Silt sm

Sample Identification RES DIKE, STA 40, DEP. 27.5 to 29 L-4

Original Oven Dry Weight (Gms.) 283.5 W_0

Oven Dry Weigh After Washing and Dry-Sieve (Gms.) 239.3 W_1

Difference (Gms.) 44.2 $(W_0 - W_1)$

% Loss 15.6 $P = \frac{(W_0 - W_1)}{W_0} \times 100$

Acceptance Criteria: N A

Remarks: N / A

Test Equipment Serial Numbers: TAB-5, shaker, sieves, 5-6

REMARKS: N / A

Tested By: JCO Level: _____

Reviewed By: Joe Balusak Level: II

Requested By: S. PULLEY / 93 Company: HARZA

PTL - HOUSTON
SOUTH TEXAS PROJECT



**Pittsburgh
Testing
Laboratory**

FORM NO. ST-8
REV. NO. 2
DATE: 7-11-84

REPORT OF SIEVE ANALYSIS

ORDER NO. HO-4471
CLIENT HOUSTON LIGHTING & POWER
PROJECT SOUTH TEXAS PROJECT

LAB NO. 5-8128
D.C. NO. _____
TEST METHOD: ASTM D422-63 (72) ☒
N/A ☐

Date of Sample: 5-30-85 Date Tested: 6-9-85

Sample Description: SANDY SILT Sm

Sample Identification: RFS DIKE, STA 40, DEP 27.5 to 29, L-4

Sieve Size	Wt. Retained	% Retained	% Passing	Acceptance Criteria SPEC 5Y069YS0043
3/4	0.0	0.0	100.0	97-100
3/8	0.0	0.0	100.0	88-100
4	0.0	0.0	100.0	N 72-100
8	0.0	0.0	100.0	44-100 A
16	0.1	0.0	100.0	26-80 28.6-14-85
30	0.6	0.2	99.8	16-50
50	0.8	0.3	99.7	5-26
100	30.6	32.0	68.0	0-12
200	239.3	84.4	15.6	0-7
TOTAL	283.5	N/A	N/A	N/A

Original Weight of Sample: 283.5 grams: Time in Shaker: 10 min.

ORGANIC MATTER (ASTM D2488-69) NONE PARTICLE SHAPE (ASTM D2488-69) N/A

HARDNESS (ASTM D422-63) ☒ Hard & Durable ☐ Soft ☐ Weathered & Friable

Test Equipment Serial No's.: TBB-5, shaker, sieves, C-6, 1-2

Tested By: GP Level: _____

Reviewed By: Joe Balush Level: II

Requested By: S. PULLEY / gr Company: HARZA