GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 63.5-65.0 **Sample Number:** SS-16
Material Description: Light Gray Sandy Lean CLAY
Date: 1-17-08 **Natural Moisture:** 18.0
Liquid Limit: 45 **Plastic Limit:** 18 **USCS Class.:** CL
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
254.87	0.00	0.00	3/8"	0.00	100.0
			#4	0.11	100.0
			#10	4.37	98.3
53.29	0.00	0.00	#20	3.99	90.9
			#40	6.45	86.4
			#60	10.65	78.6
			#100	20.18	61.1
			#140	24.09	53.9
			#200	25.22	51.8

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 98.3
Weight of hydrometer sample =53.29
Hygroscopic moisture correction:
Moist weight and tare = 27.85
Dry weight and tare = 27.56
Tare weight = 15.37
Hygroscopic moisture = 2.4%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.6	32.0	27.1	0.0132	33.0	10.9	0.0307	50.5
5.00	21.6	31.0	26.1	0.0132	32.0	11.0	0.0196	48.7
15.00	21.6	30.0	25.1	0.0132	31.0	11.2	0.0114	46.8
30.00	21.6	29.0	24.1	0.0132	30.0	11.4	0.0081	44.9
60.00	21.6	28.0	23.1	0.0132	29.0	11.5	0.0058	43.1
240.00	21.9	26.5	21.7	0.0131	27.5	11.8	0.0029	40.5
1440.00	22.2	25.0	20.3	0.0131	26.0	12.0	0.0012	37.9

MACTEC, Inc.

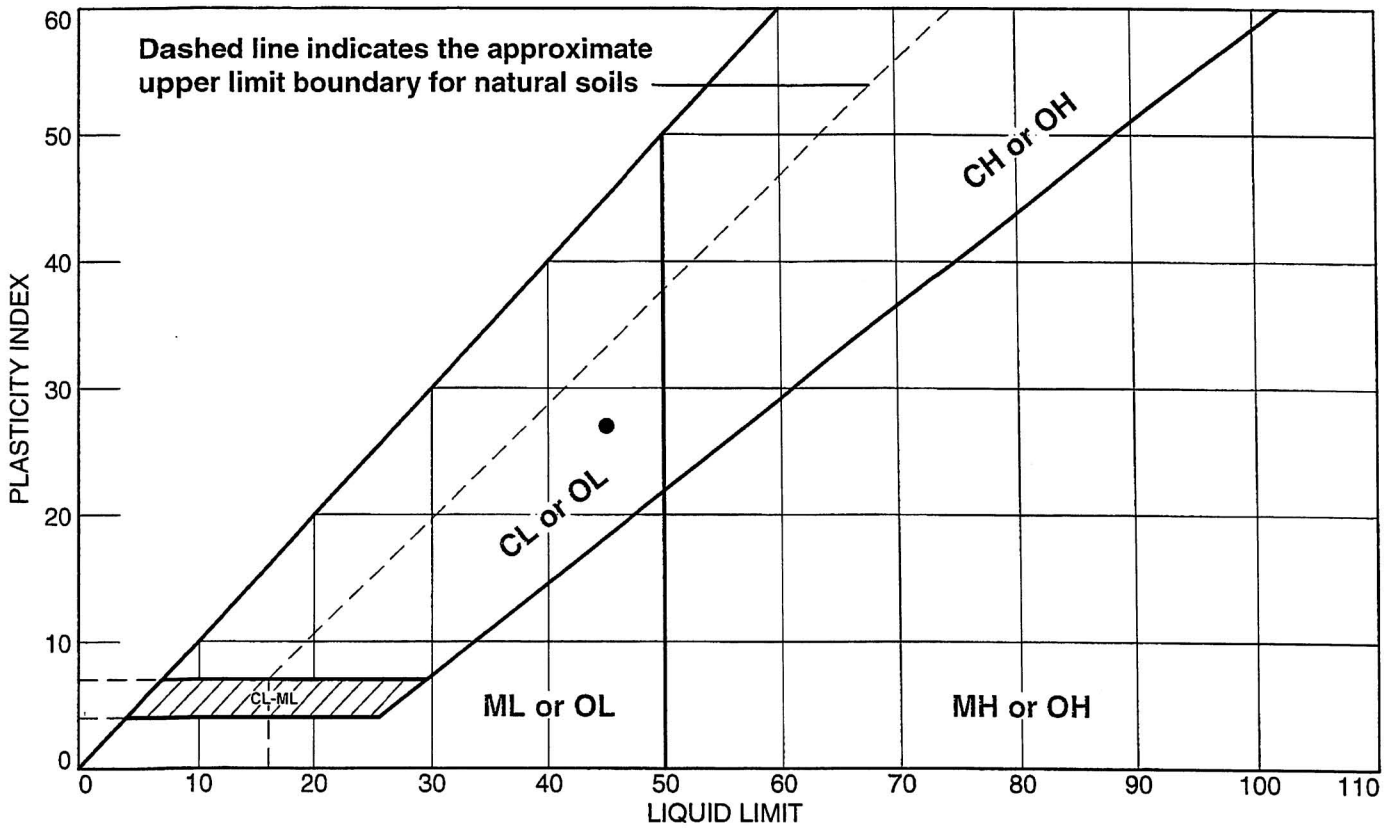
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.7	11.9	34.6	48.2	9.4	42.4	51.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0266	0.1446	0.2635	0.3595	0.7495	1.3298

Fineness Modulus
0.75

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-16	63.5-65.0	18.0	18	45	27	CL

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ DSC 4-2-08

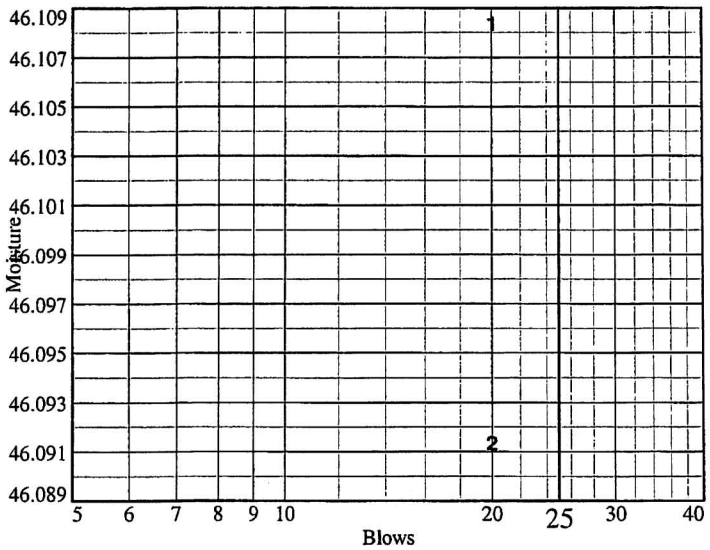
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 63.5-65.0 **Sample Number:** SS-16
Material Description: Light Gray Sandy Lean CLAY
USCS: CL **AASHTO:** A-7-6(10)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.46	30.15				
Dry+Tare	25.78	25.61				
Tare	15.63	15.76				
# Blows	20	20				
Moisture	46.1	46.1				



Liquid Limit= 45
Plastic Limit= 18
Plasticity Index= 27
Natural Moisture= 18.0
Liquidity Index= 0.0

Plastic Limit Data

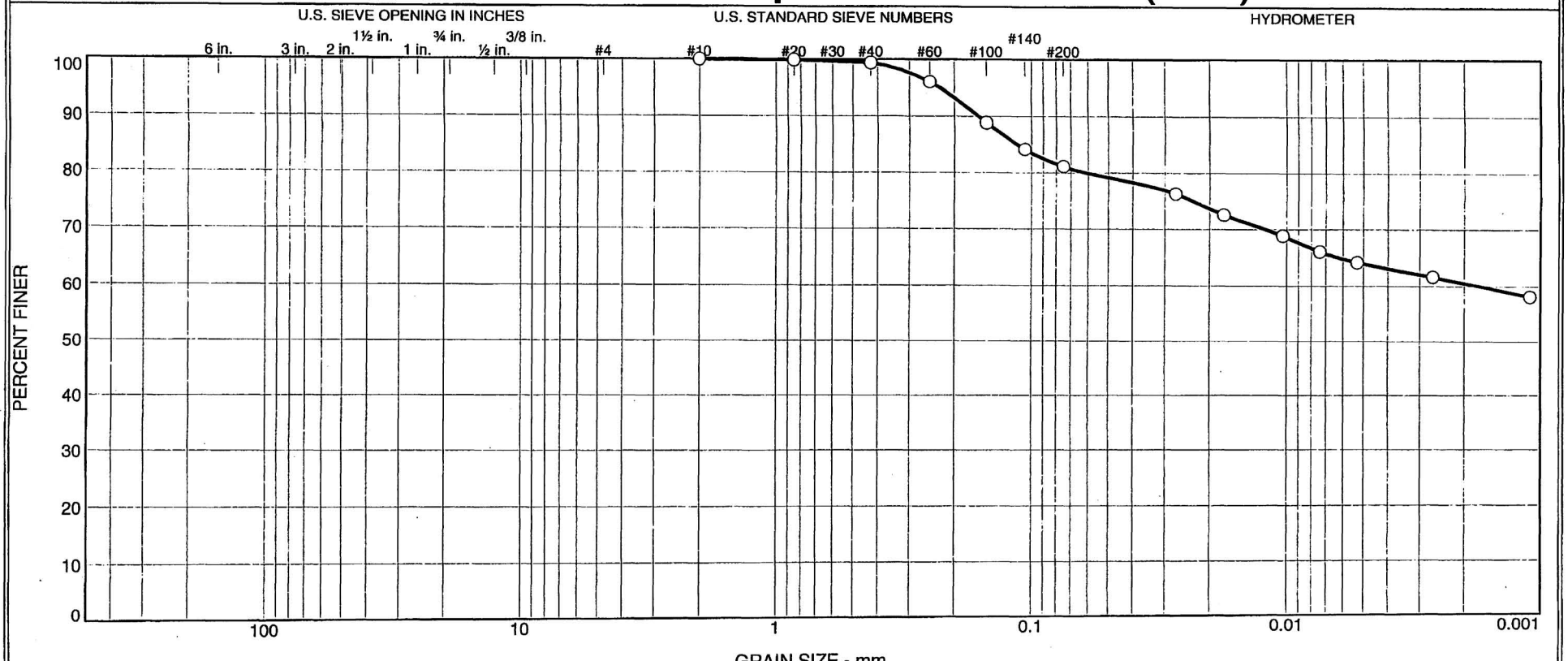
Run No.	1	2	3	4	
Wet+Tare	22.59	22.45			
Dry+Tare	21.47	21.43			
Tare	15.46	15.52			
Moisture	18.6	17.3			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
87.05	75.18	9.36	18.0

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.6	18.3	17.1	64.0

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-17	68.5-70	1-17-08	CH	Light Gray Fat CLAY with sand	19.8	56	22

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 68.5-70 **Sample Number:** SS-17
Material Description: Light Gray Fat CLAY with sand
Date: 1-17-08 **Natural Moisture:** 19.8
Liquid Limit: 56 **Plastic Limit:** 22 **USCS Class.:** CH
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
218.71	0.00	0.00	#10	0.00	100.0
54.49	0.00	0.00	#20	0.07	99.9
			#40	0.33	99.4
			#60	2.16	96.0
			#100	6.01	89.0
			#140	8.60	84.2
			#200	10.29	81.1

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =54.49
Hygroscopic moisture correction:
Moist weight and tare = 27.49
Dry weight and tare = 27.22
Tare weight = 15.41
Hygroscopic moisture = 2.3%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.7	46.0	41.1	0.0132	47.0	8.6	0.0273	76.3
5.00	21.7	44.0	39.1	0.0132	45.0	8.9	0.0176	72.6
15.00	21.7	42.0	37.1	0.0132	43.0	9.2	0.0103	68.9
30.00	21.7	40.5	35.6	0.0132	41.5	9.5	0.0074	66.1
60.00	21.7	39.5	34.6	0.0132	40.5	9.7	0.0053	64.2
240.00	22.0	38.0	33.2	0.0131	39.0	9.9	0.0027	61.7
1440.00	22.3	36.0	31.3	0.0131	37.0	10.2	0.0011	58.1

MACTEC, Inc.

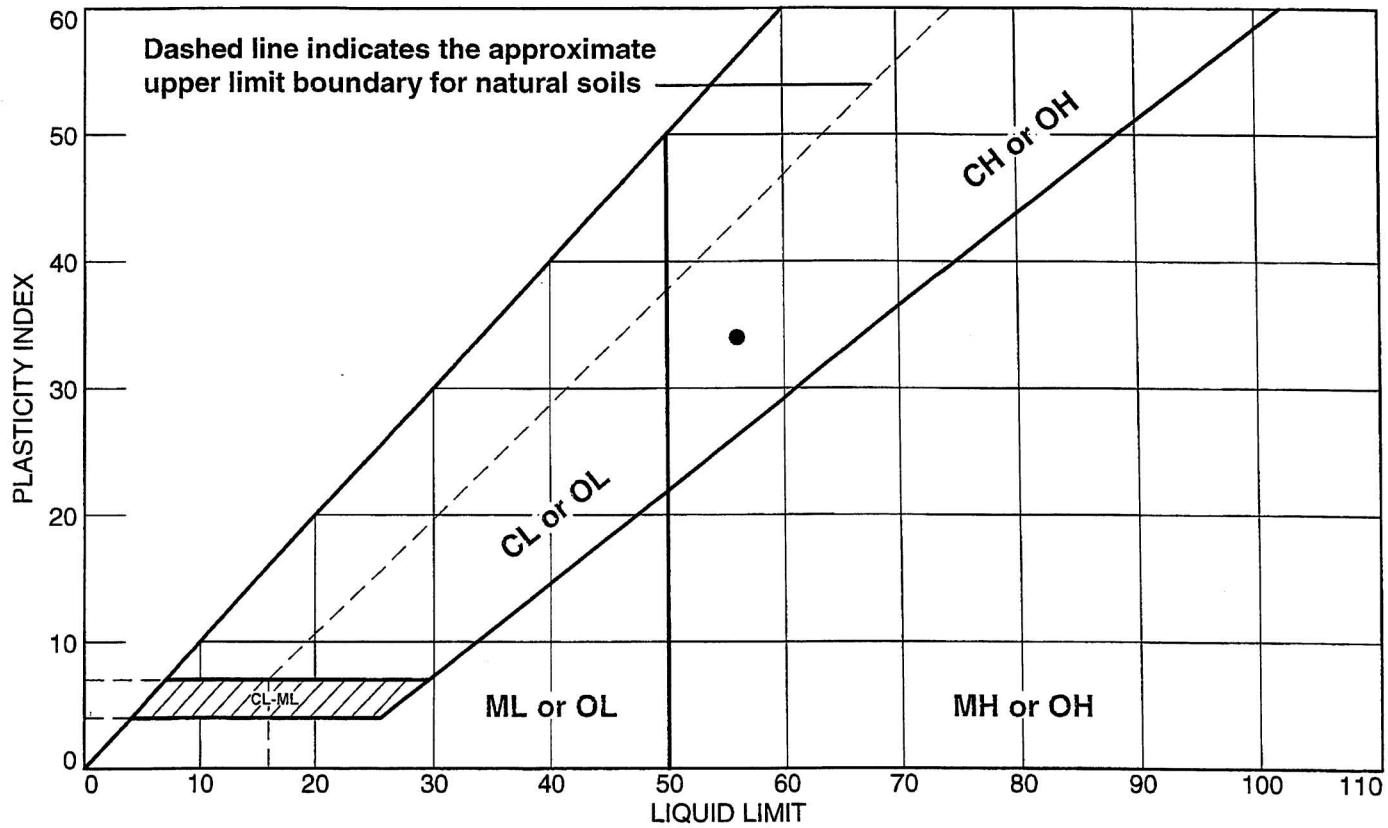
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.6	18.3	18.9	17.1	64.0	81.1

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0017	0.0613	0.1131	0.1606	0.2285

Fineness Modulus
0.14

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-17	68.5-70	19.8	22	56	34	CH

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ DSC 4-2-08

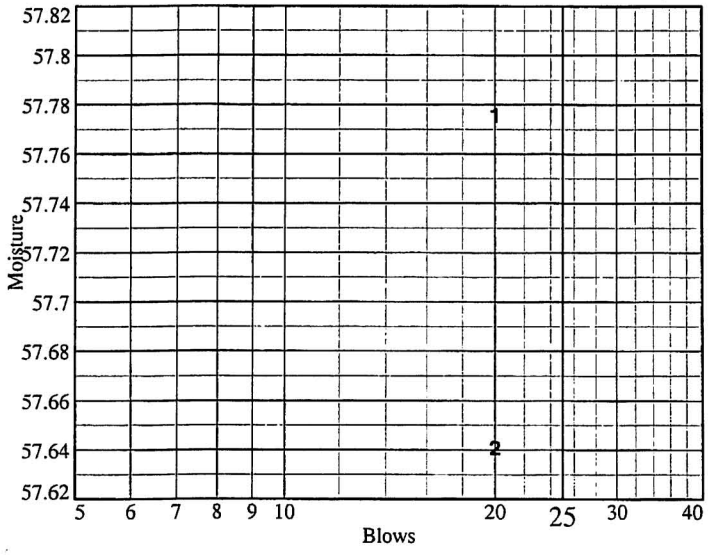
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 68.5-70 **Sample Number:** SS-17
Material Description: Light Gray Fat CLAY with sand
USCS: CH **AASHTO:** A-7-6(29)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.04	30.85				
Dry+Tare	26.65	25.23				
Tare	15.59	15.48				
# Blows	20	20				
Moisture	57.8	57.6				



Liquid Limit= 56
Plastic Limit= 22
Plasticity Index= 34
Natural Moisture= 19.8
Liquidity Index= -0.1

Plastic Limit Data

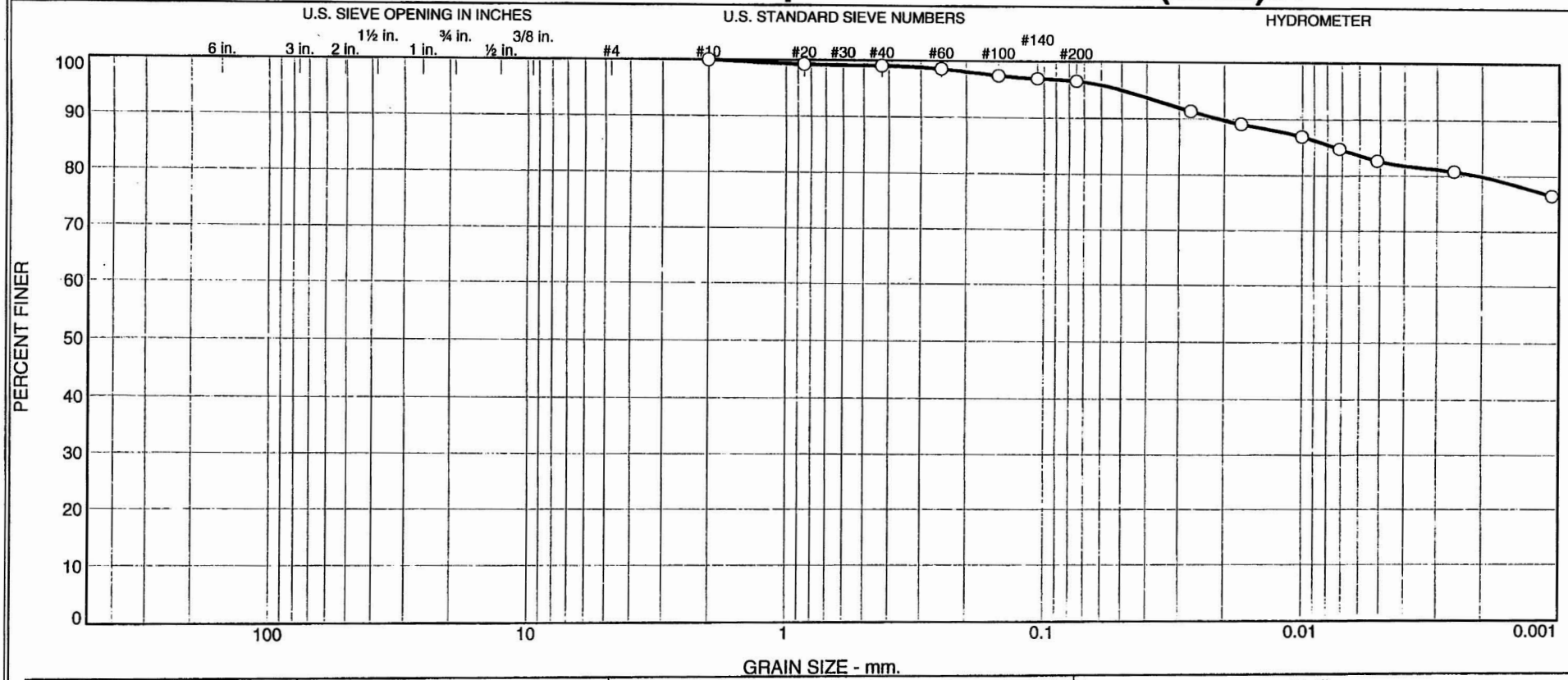
Run No.	1	2	3	4	
Wet+Tare	22.48	22.62			
Dry+Tare	21.20	21.32			
Tare	15.46	15.49			
Moisture	22.3	22.3			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
136.37	115.33	9.30	19.8

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.9	2.6	13.9	82.6

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-18	73.5-75.0	1-17-08	CH	Mottled Pale Yellow and Olive Yellow Fat CLAY	28.8	79	33

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 73.5-75.0 **Sample Number:** SS-18
Material Description: Mottled Pale Yellow and Olive Yellow Fat CLAY
Date: 1-17-08 **Natural Moisture:** 28.8
Liquid Limit: 79 **Plastic Limit:** 33 **USCS Class.:** CH
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
189.84	0.00	0.00	#10	0.00	100.0
48.09	0.00	0.00	#20	0.36	99.3
			#40	0.45	99.1
			#60	0.68	98.6
			#100	1.22	97.5
			#140	1.47	96.9
			#200	1.66	96.5

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.09
Hygroscopic moisture correction:
Moist weight and tare = 28.50
Dry weight and tare = 27.81
Tare weight = 15.50
Hygroscopic moisture = 5.6%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.6	47.0	42.1	0.0132	48.0	8.4	0.0270	91.4
5.00	21.6	46.0	41.1	0.0132	47.0	8.6	0.0173	89.2
15.00	21.6	45.0	40.1	0.0132	46.0	8.8	0.0101	87.0
30.00	21.6	44.0	39.1	0.0132	45.0	8.9	0.0072	84.8
60.00	21.6	43.0	38.1	0.0132	44.0	9.1	0.0051	82.7
240.00	22.0	42.0	37.2	0.0131	43.0	9.2	0.0026	80.8
1440.00	22.1	40.0	35.3	0.0131	41.0	9.6	0.0011	76.5

MACTEC, Inc.

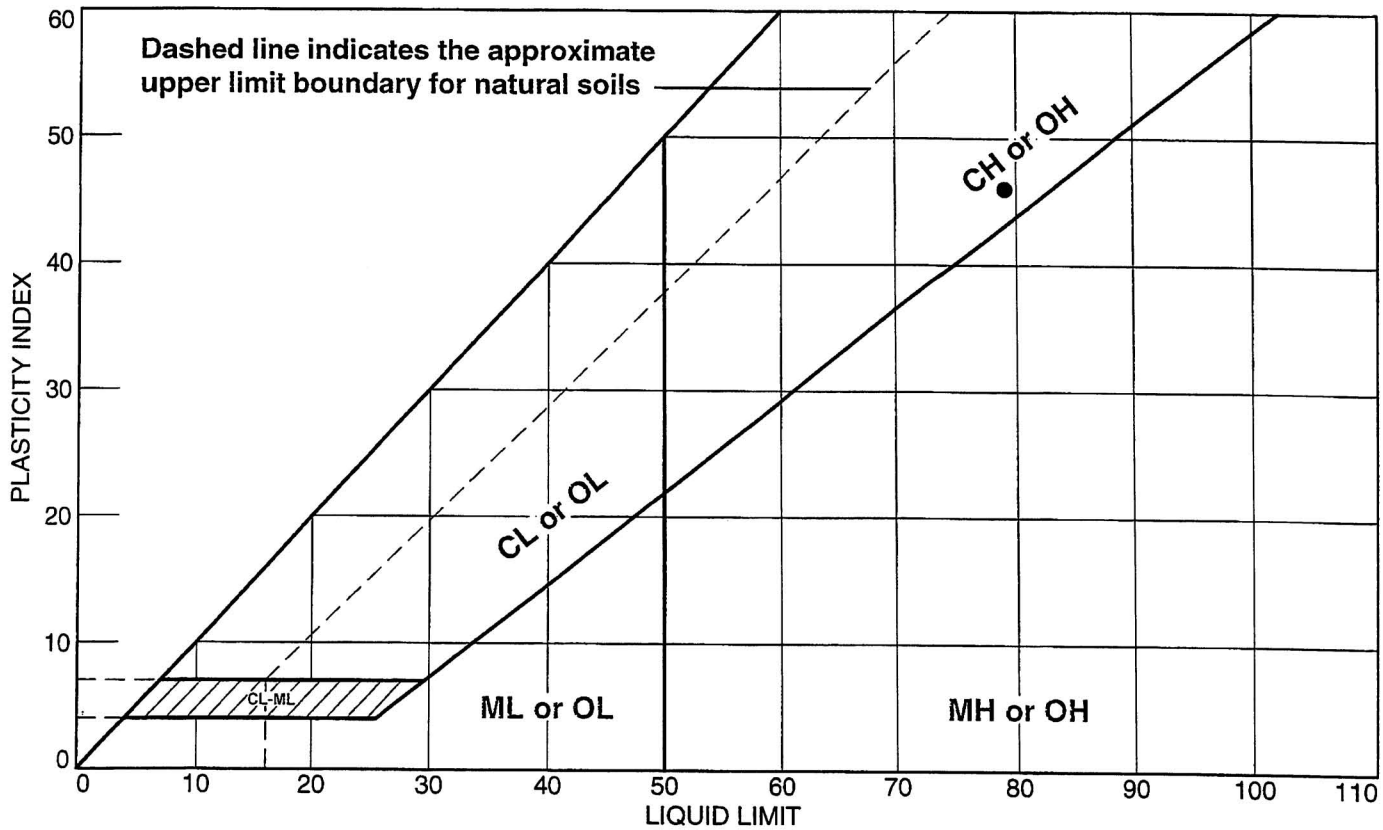
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.9	2.6	3.5	13.9	82.6	96.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0020	0.0073	0.0208	0.0502

Fineness Modulus
0.05

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-18	73.5-75.0	28.8	33	79	46	CH

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ DSC 4-2-08

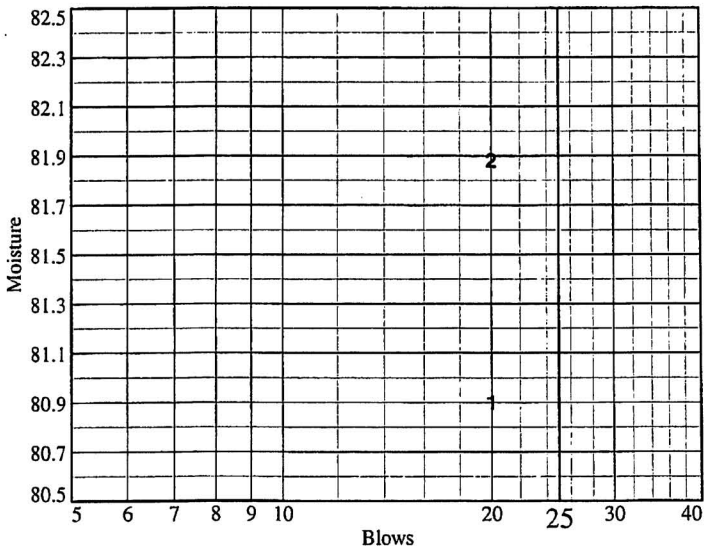
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 73.5-75.0 **Sample Number:** SS-18
Material Description: Mottled Pale Yellow and Olive Yellow Fat CLAY
USCS: CH **AASHTO:** A-7-5(53)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.71	30.52				
Dry+Tare	23.89	23.74				
Tare	15.46	15.46				
# Blows	20	20				
Moisture	80.9	81.9				



Liquid Limit= 79
Plastic Limit= 33
Plasticity Index= 46
Natural Moisture= 28.8
Liquidity Index= -0.1

Plastic Limit Data

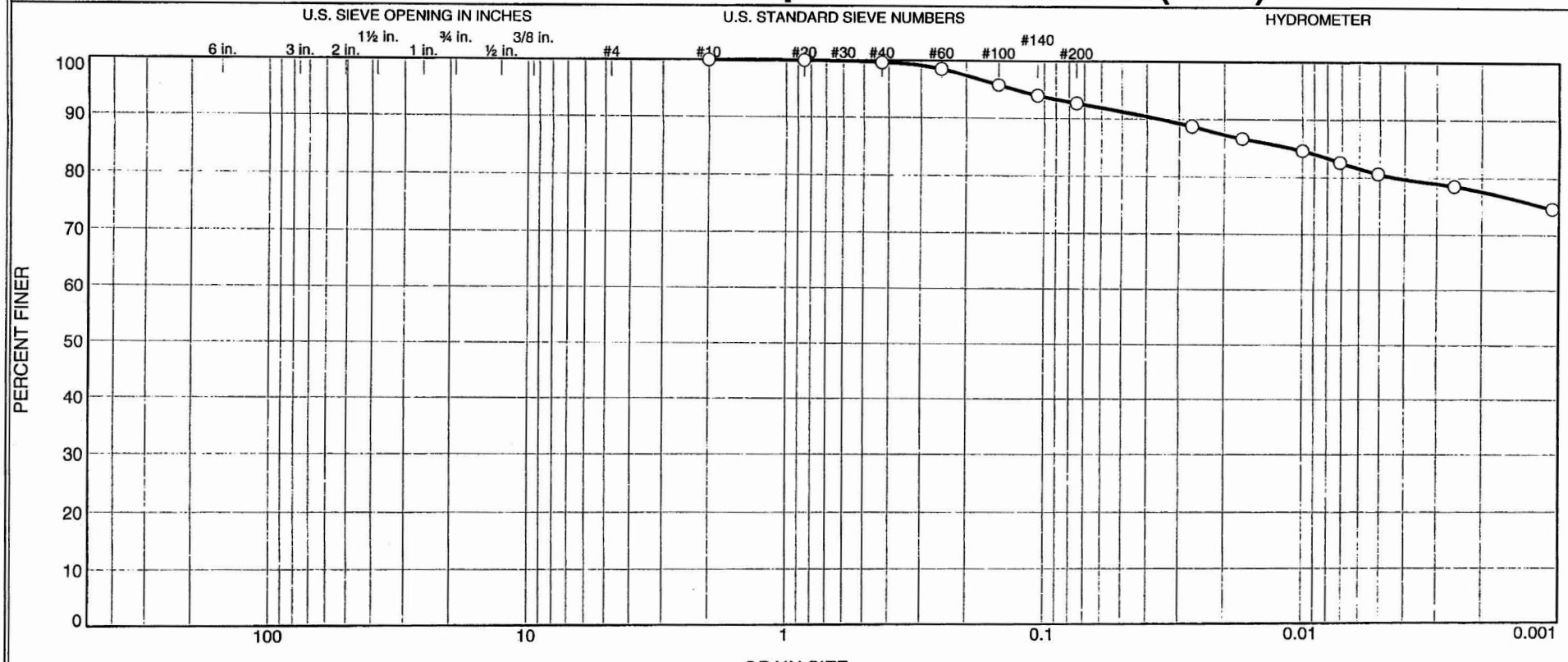
Run No.	1	2	3	4	
Wet+Tare	23.44	22.31			
Dry+Tare	21.43	20.62			
Tare	15.33	15.65			
Moisture	33.0	34.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
65.61	53.00	9.15	28.8

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.4	7.0	12.1	80.5

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-19	78.5-80.0	1-17-08	CH	Mottled Pale Yellow and Olive Yellow Fat CLAY	31.0	83	30

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 78.5-80.0 **Sample Number:** SS-19
Material Description: Mottled Pale Yellow and Olive Yellow Fat CLAY
Date: 1-17-08 **Natural Moisture:** 31.0
Liquid Limit: 83 **Plastic Limit:** 30 **USCS Class.:** CH
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
219.38	0.00	0.00	#10	0.00	100.0
50.76	0.00	0.00	#20	0.02	100.0
			#40	0.18	99.6
			#60	0.72	98.6
			#100	2.17	95.7
			#140	3.09	93.9
			#200	3.76	92.6

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.64
Hygroscopic moisture correction:
Moist weight and tare = 24.29
Dry weight and tare = 23.58
Tare weight = 11.04
Hygroscopic moisture = 5.7%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	48.0	43.0	0.0132	49.0	8.3	0.0268	88.8
5.00	21.5	47.0	42.0	0.0132	48.0	8.4	0.0171	86.7
15.00	21.5	46.0	41.0	0.0132	47.0	8.6	0.0100	84.7
30.00	21.5	45.0	40.0	0.0132	46.0	8.8	0.0071	82.6
60.00	21.6	44.0	39.1	0.0132	45.0	8.9	0.0051	80.6
240.00	21.6	43.0	38.1	0.0132	44.0	9.1	0.0026	78.6
1440.00	21.9	41.0	36.2	0.0131	42.0	9.4	0.0011	74.6

MACTEC, Inc.

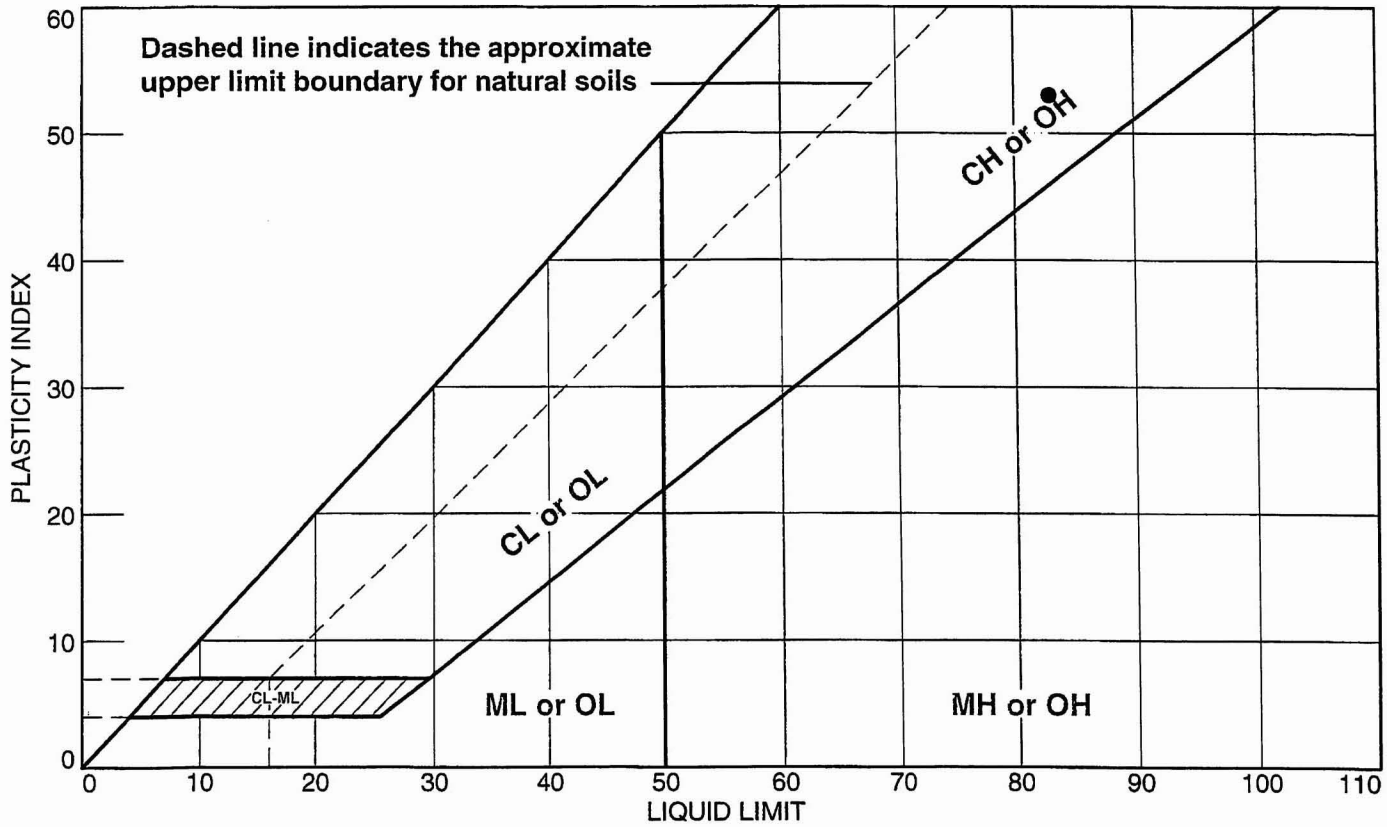
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.4	7.0	7.4	12.1	80.5	92.6

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0044	0.0107	0.0357	0.1320

Fineness Modulus
0.05

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-19	78.5-80.0	31.0	30	83	53	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project No.: 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ DSC 4-2-08

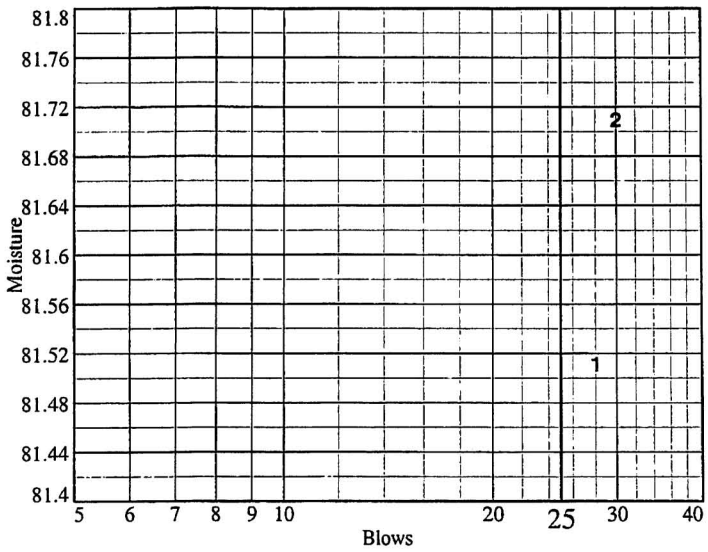
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 78.5-80.0 **Sample Number:** SS-19
Material Description: Mottled Pale Yellow and Olive Yellow Fat CLAY
USCS: CH **AASHTO:** A-7-5(58)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.93	30.77				
Dry+Tare	22.89	23.89				
Tare	15.48	15.47				
# Blows	28	30				
Moisture	81.5	81.7				



Liquid Limit= 83
Plastic Limit= 30
Plasticity Index= 53
Natural Moisture= 31.0
Liquidity Index= 0.0

Plastic Limit Data

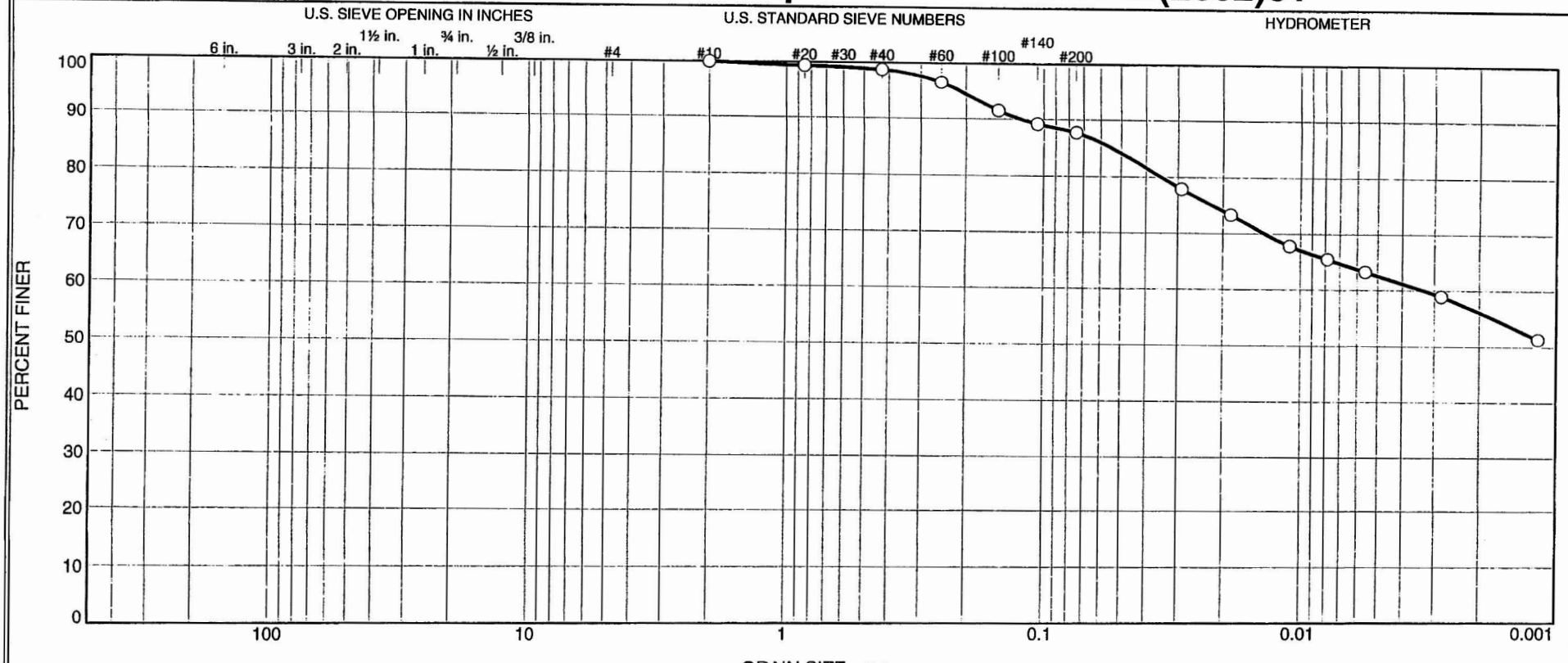
Run No.	1	2	3	4	
Wet+Tare	21.49	21.77			
Dry+Tare	20.09	20.32			
Tare	15.26	15.52			
Moisture	29.0	30.2			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
125.49	97.48	7.18	31.0

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	1.3	10.9	25.2	62.6

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-20	83.5-85.0	1-17-08	CH	Mottled Light Gray and Brownish Yellow Fat CLAY	33.3	81	32

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 83.5-85.0 **Sample Number:** SS-20
Material Description: Mottled Light Gray and Brownish Yellow Fat CLAY
Date: 1-17-08 **Natural Moisture:** 33.3
Liquid Limit: 81 **Plastic Limit:** 32 **USCS Class.:** CH
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
197.81	0.00	0.00	#10	0.00	100.0
46.20	0.00	0.00	#20	0.29	99.4
			#40	0.58	98.7
			#60	1.61	96.5
			#100	3.91	91.5
			#140	4.98	89.2
			#200	5.65	87.8

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =46.20
Hygroscopic moisture correction:
Moist weight and tare = 27.93
Dry weight and tare = 27.28
Tare weight = 15.42
Hygroscopic moisture = 5.5%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	39.5	34.5	0.0132	40.5	9.7	0.0290	77.9
5.00	21.4	37.5	32.5	0.0132	38.5	10.0	0.0187	73.4
15.00	21.5	35.0	30.0	0.0132	36.0	10.4	0.0110	67.8
30.00	21.5	34.0	29.0	0.0132	35.0	10.6	0.0078	65.6
60.00	21.5	33.0	28.0	0.0132	34.0	10.7	0.0056	63.3
240.00	21.7	31.0	26.1	0.0132	32.0	11.0	0.0028	58.9
1440.00	22.1	27.5	22.8	0.0131	28.5	11.6	0.0012	51.4

MACTEC, Inc.

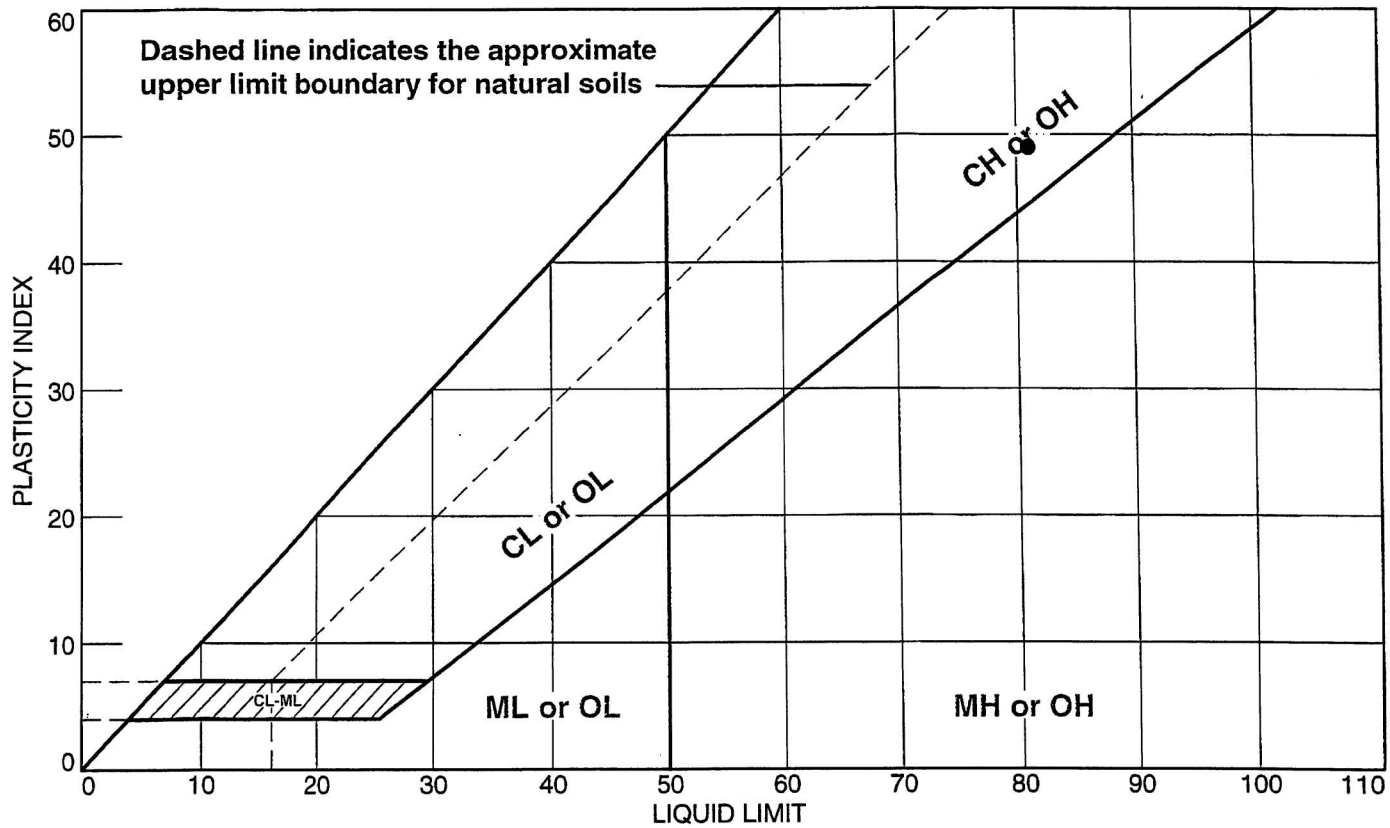
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.3	10.9	12.2	25.2	62.6	87.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0033	0.0349	0.0537	0.1225	0.2114

Fineness Modulus
0.12

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-20	83.5-85.0	33.3	32	81	49	CH

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ DSC 4-2-08

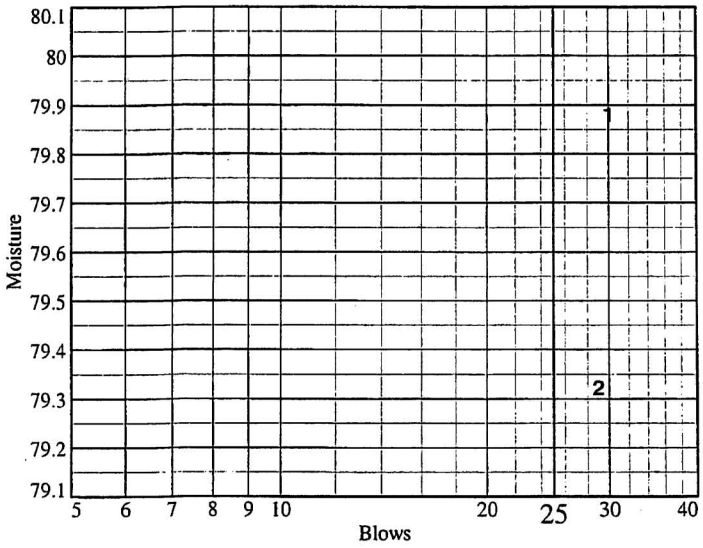
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 83.5-85.0 **Sample Number:** SS-20
Material Description: Mottled Light Gray and Brownish Yellow Fat CLAY
USCS: CH **AASHTO:** A-7-5(50)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.64	29.85				
Dry+Tare	23.93	23.52				
Tare	15.53	15.54				
# Blows	30	29				
Moisture	79.9	79.3				



Liquid Limit= 81
Plastic Limit= 32
Plasticity Index= 49
Natural Moisture= 33.3
Liquidity Index= 0.0

Plastic Limit Data

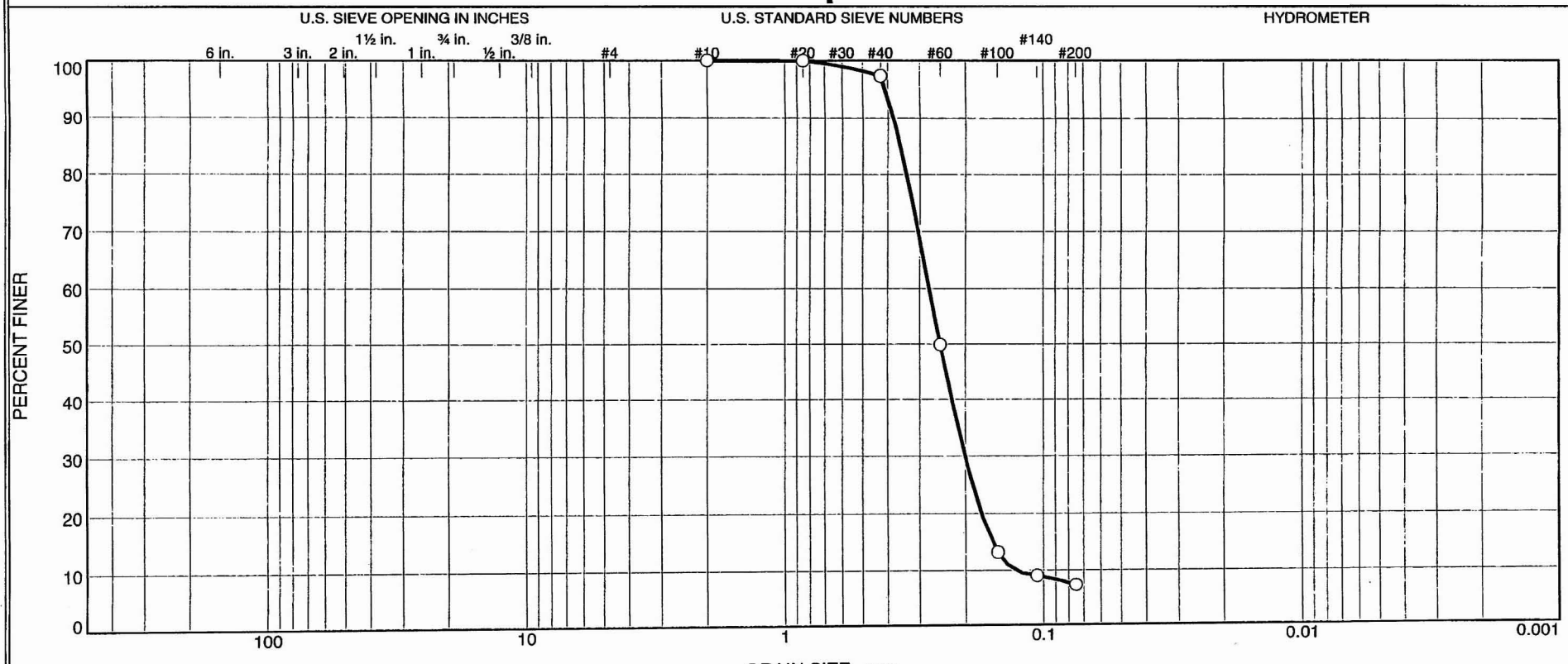
Run No.	1	2	3	4	
Wet+Tare	22.30	21.94			
Dry+Tare	20.64	20.36			
Tare	15.50	15.46			
Moisture	32.3	32.2			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
78.35	61.08	9.17	33.3

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	2.7	89.9	7.4	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-21	88.5-90.0	1-17-08	SP-SM	Pale Yellow Poorly Graded SAND with silt (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
Specific Gravity = 2.650 (ASTM D854-06)
ND= Not Determined

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 88.5-90.0 **Sample Number:** SS-21
Material Description: Pale Yellow Poorly Graded SAND with silt (Visual)
Date: 1-17-08 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SP-SM
Testing Remarks: SIEVE ANALYSIS ONLY
Specific Gravity = 2.650 (ASTM D854-06)
ND= Not Determined
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
217.77	0.00	0.00	#10	0.00	100.0
100.49	0.00	0.00	#20	0.04	100.0
			#40	2.70	97.3
			#60	50.36	49.9
			#100	87.18	13.2
			#140	91.38	9.1
			#200	93.07	7.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.7	89.9	92.6			7.4

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1283	0.1571	0.1734	0.2004	0.2503	0.2763	0.3378	0.3572	0.3799	0.4083

Fineness Modulus	C_u	C_c
1.19	2.15	1.13

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE: 4/1/08

SAMPLE IDENTIFICATION: B-2304A SS-21

(A) Mass of oven-dried soil, grams:		75.61
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.61
(C) Mass of pycnometer, water and soil, grams:		703.71
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.0
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.652
(F)	***Correction factor:***	0.99933
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.650

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100

Poorly Graded SAND with silt (SP-SM) - Visual

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER :P-6

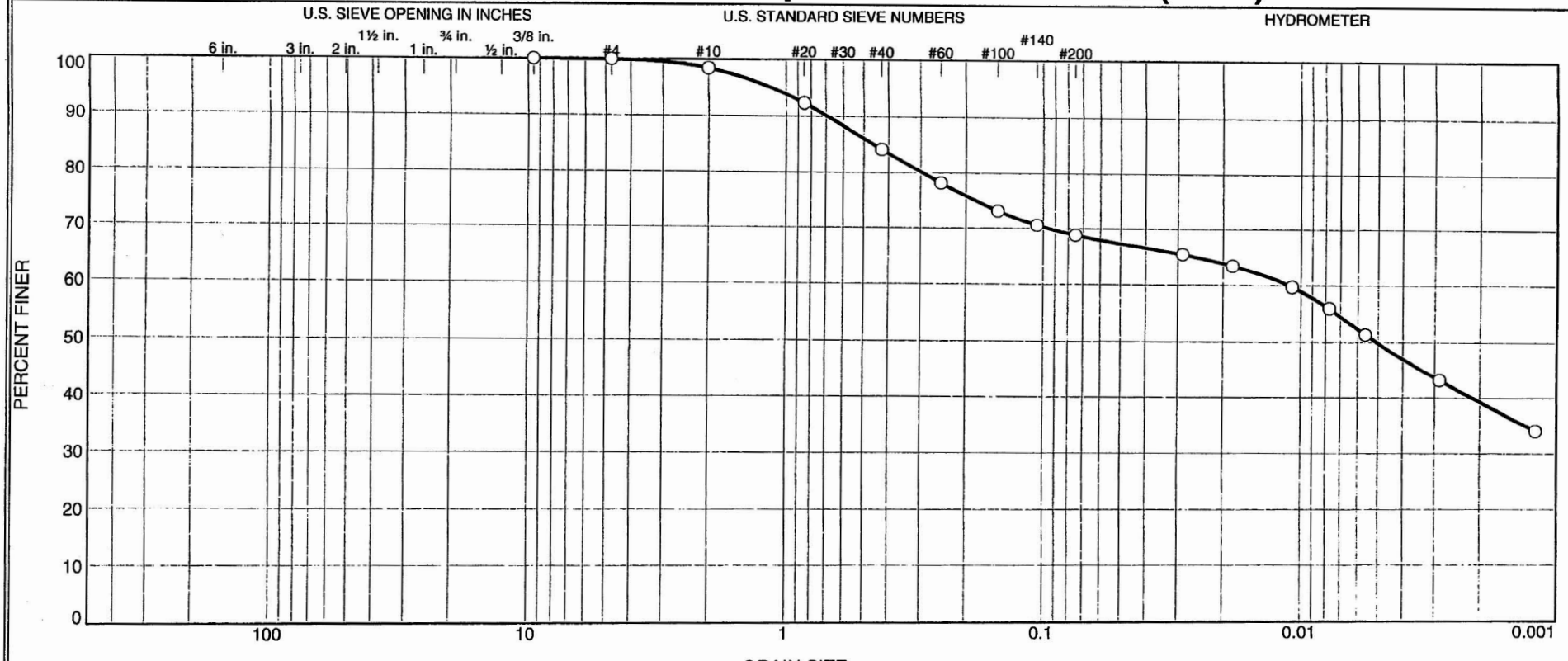
TESTED BY: CS

\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: LBJ

DSC 4-1-08

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.1	1.5	14.2	15.4	18.9	49.9

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-22	93.5-95.0	1-17-08	CL	Light Gray Sandy Lean CLAY	18.1	43	15

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specfic Gravity is assumed

Tested By: CS Checked By: LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 93.5-95.0 **Sample Number:** SS-22
Material Description: Light Gray Sandy Lean CLAY
Date: 1-17-08 **Natural Moisture:** 18.1
Liquid Limit: 43 **Plastic Limit:** 15 **USCS Class.:** CL
Testing Remarks: Specfic Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
141.02	0.00	0.00	3/8"	0.00	100.0
			#4	0.10	99.9
			#10	2.24	98.4
53.11	0.00	0.00	#20	3.29	92.3
			#40	7.66	84.2
			#60	10.90	78.2
			#100	13.64	73.1
			#140	15.01	70.6
			#200	15.96	68.8

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 98.4
Weight of hydrometer sample =53.11
Hygroscopic moisture correction:
Moist weight and tare = 27.86
Dry weight and tare = 27.67
Tare weight = 15.50
Hygroscopic moisture = 1.6%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.8	40.0	35.1	0.0131	41.0	9.6	0.0288	65.4
5.00	21.6	39.0	34.1	0.0132	40.0	9.7	0.0184	63.4
15.00	21.7	37.0	32.1	0.0132	38.0	10.1	0.0108	59.8
30.00	21.7	35.0	30.1	0.0132	36.0	10.4	0.0077	56.0
60.00	21.7	32.5	27.6	0.0132	33.5	10.8	0.0056	51.4
240.00	22.0	28.0	23.2	0.0131	29.0	11.5	0.0029	43.2
1440.00	22.3	23.0	18.3	0.0131	24.0	12.4	0.0012	34.1

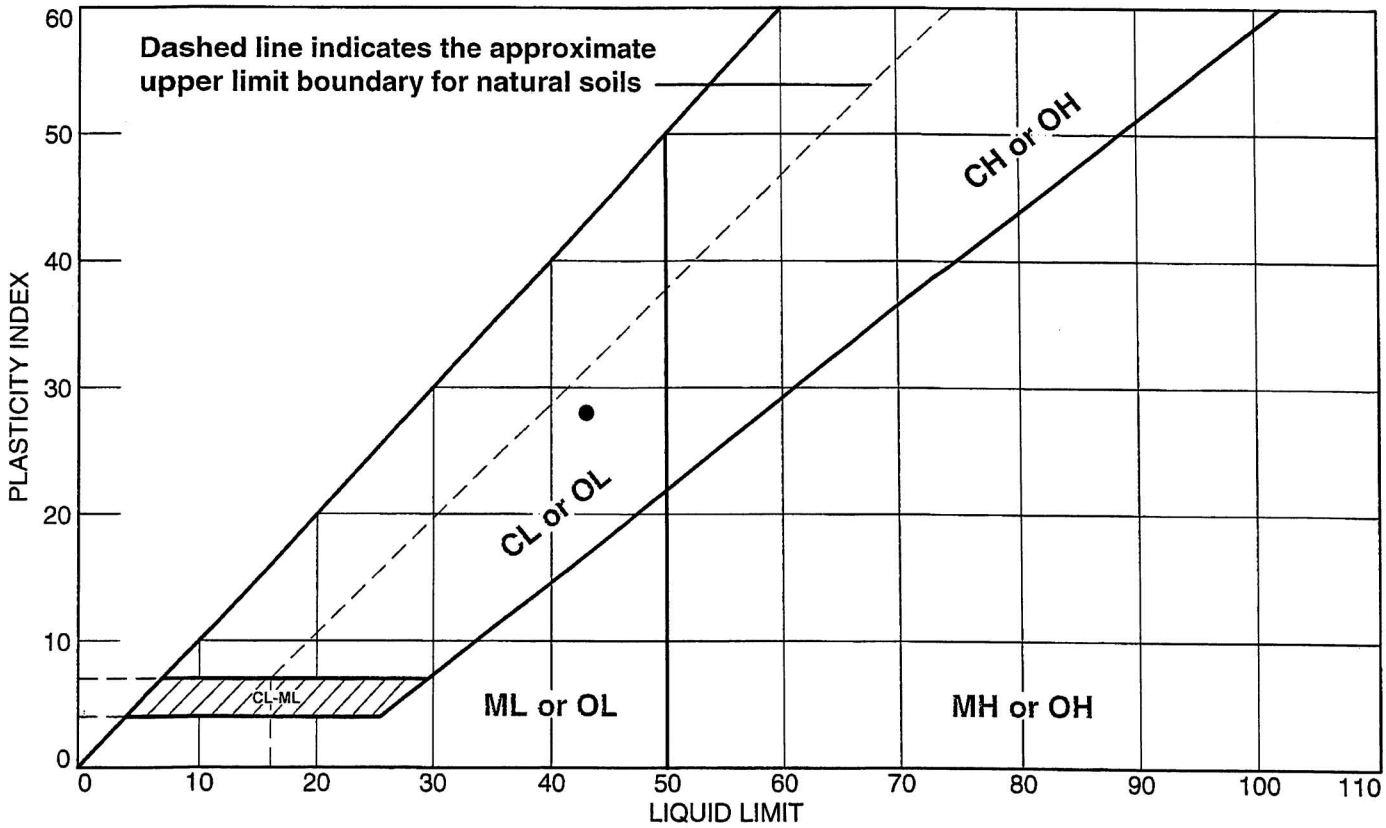
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.1	0.1	1.5	14.2	15.4	31.1	18.9	49.9	68.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0051	0.0111	0.2943	0.4536	0.6880	1.1383

Fineness Modulus
0.64

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-22	93.5-95.0	18.1	15	43	28	CL

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project No.: 6468071777
Figure NA

Tested By: CS **Checked By:** LBJ DSC 4-2-08

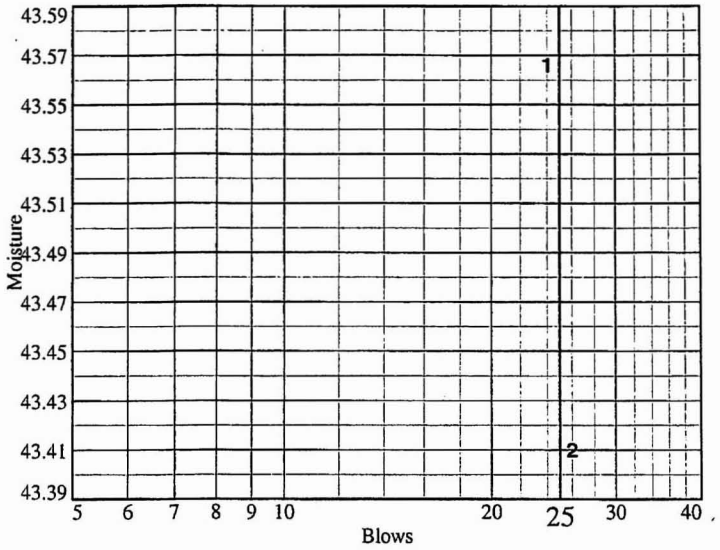
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 93.5-95.0 **Sample Number:** SS-22
Material Description: Light Gray Sandy Lean CLAY
USCS: CL **AASHTO:** A-7-6(17)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.58	33.05				
Dry+Tare	25.28	27.78				
Tare	15.41	15.64				
# Blows	24	26				
Moisture	43.6	43.4				



Liquid Limit= 43
Plastic Limit= 15
Plasticity Index= 28
Natural Moisture= 18.1
Liquidity Index= 0.1

Plastic Limit Data

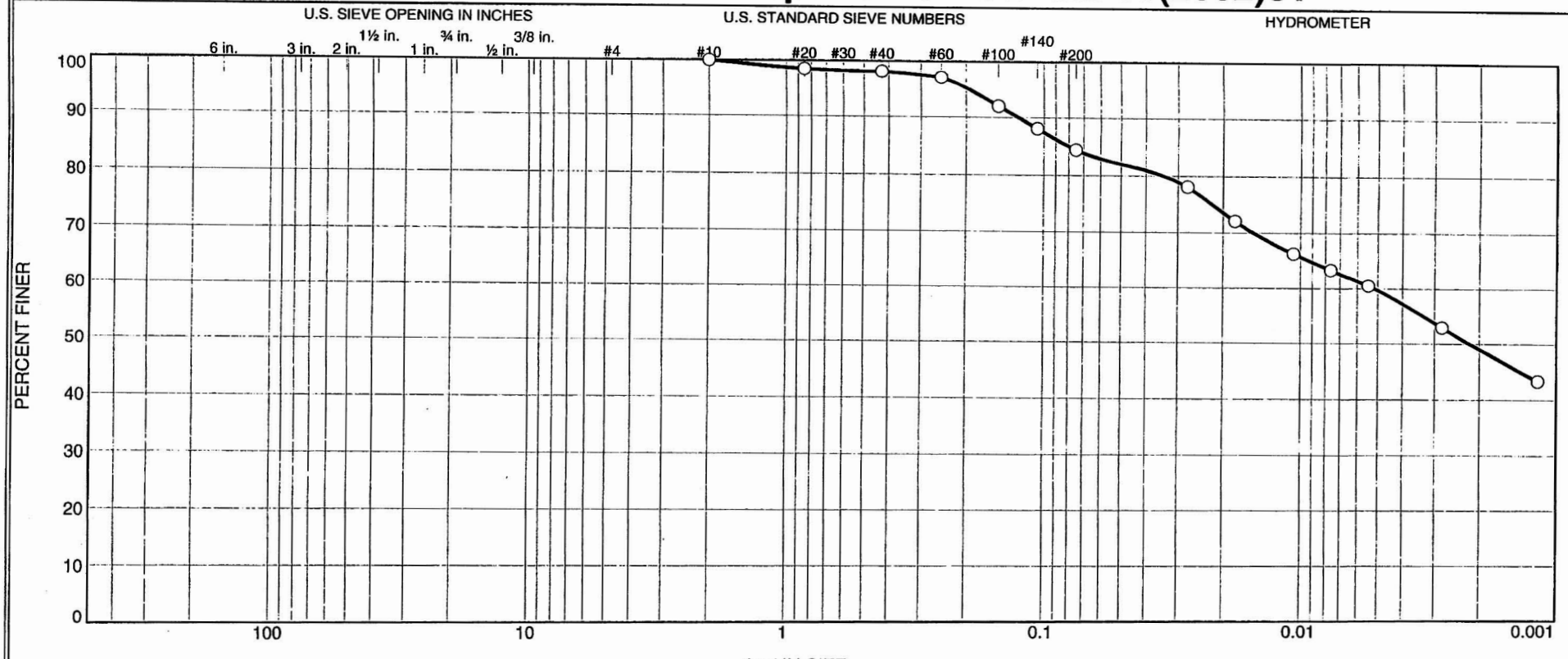
Run No.	1	2	3	4	
Wet+Tare	21.69	22.13			
Dry+Tare	20.88	21.25			
Tare	15.59	15.40			
Moisture	15.3	15.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
66.50	57.69	9.12	18.1

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	1.8	13.7	24.7	59.8

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-23	98.5-100.0	1-17-08	CH	Mottled Brownish Yellow and Light Gray Fat CLAY with sand	20.5	54	18

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 | Figure

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 98.5-100.0 **Sample Number:** SS-23
Material Description: Mottled Brownish Yellow and Light Gray Fat CLAY with sand
Date: 1-17-08 **Natural Moisture:** 20.5
Liquid Limit: 54 **Plastic Limit:** 18 **USCS Class.:** CH
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
225.93	0.00	0.00	#10	0.00	100.0
52.52	0.00	0.00	#20	0.78	98.5
			#40	0.97	98.2
			#60	1.52	97.1
			#100	4.20	92.0
			#140	6.21	88.2
			#200	8.15	84.5

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =52.52
Hygroscopic moisture correction:
Moist weight and tare = 26.86
Dry weight and tare = 26.47
Tare weight = 15.53
Hygroscopic moisture = 3.6%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	45.0	40.0	0.0132	46.0	8.8	0.0276	78.1
5.00	21.3	42.0	37.0	0.0132	43.0	9.2	0.0180	72.1
15.00	21.4	39.0	34.0	0.0132	40.0	9.7	0.0106	66.3
30.00	21.4	37.5	32.5	0.0132	38.5	10.0	0.0076	63.4
60.00	21.6	36.0	31.1	0.0132	37.0	10.2	0.0054	60.6
240.00	21.8	32.0	27.1	0.0131	33.0	10.9	0.0028	52.9
1440.00	22.0	27.0	22.2	0.0131	28.0	11.7	0.0012	43.3

MACTEC, Inc.

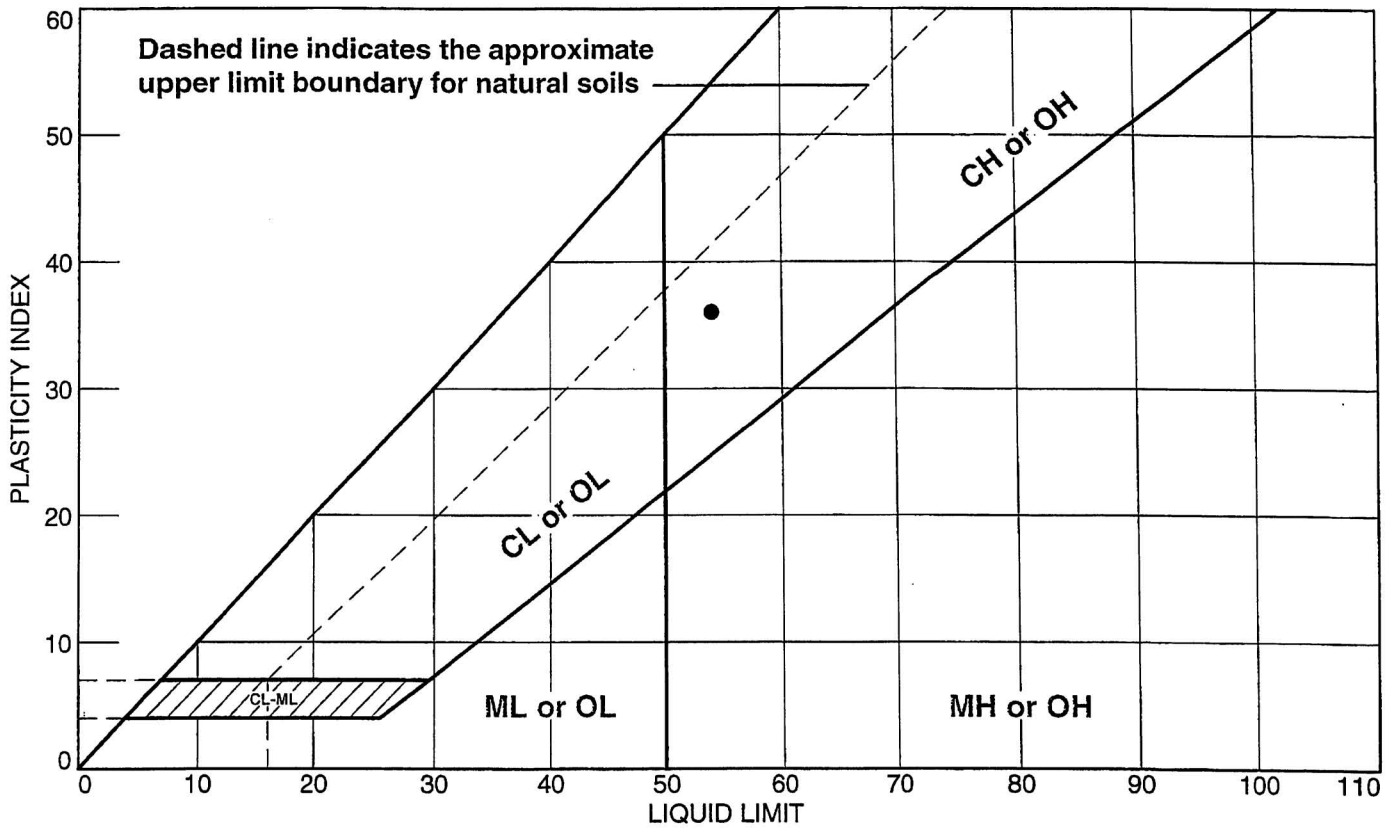
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.8	13.7	15.5	24.7	59.8	84.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0022	0.0051	0.0341	0.0793	0.1251	0.1959

Fineness Modulus
0.13

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-23	98.5-100.0	20.5	18	54	36	CH

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ DSC 4-2-08

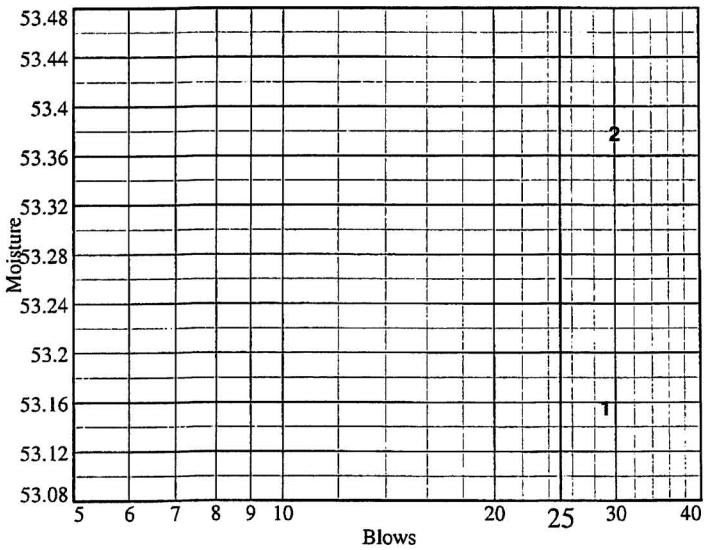
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 98.5-100.0 **Sample Number:** SS-23
Material Description: Mottled Brownish Yellow and Light Gray Fat CLAY with sand
USCS: CH **AASHTO:** A-7-6(31)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.84	31.43				
Dry+Tare	26.86	25.90				
Tare	15.61	15.54				
# Blows	29	30				
Moisture	53.2	53.4				



Liquid Limit= 54
Plastic Limit= 18
Plasticity Index= 36
Natural Moisture= 20.5
Liquidity Index= 0.1

Plastic Limit Data

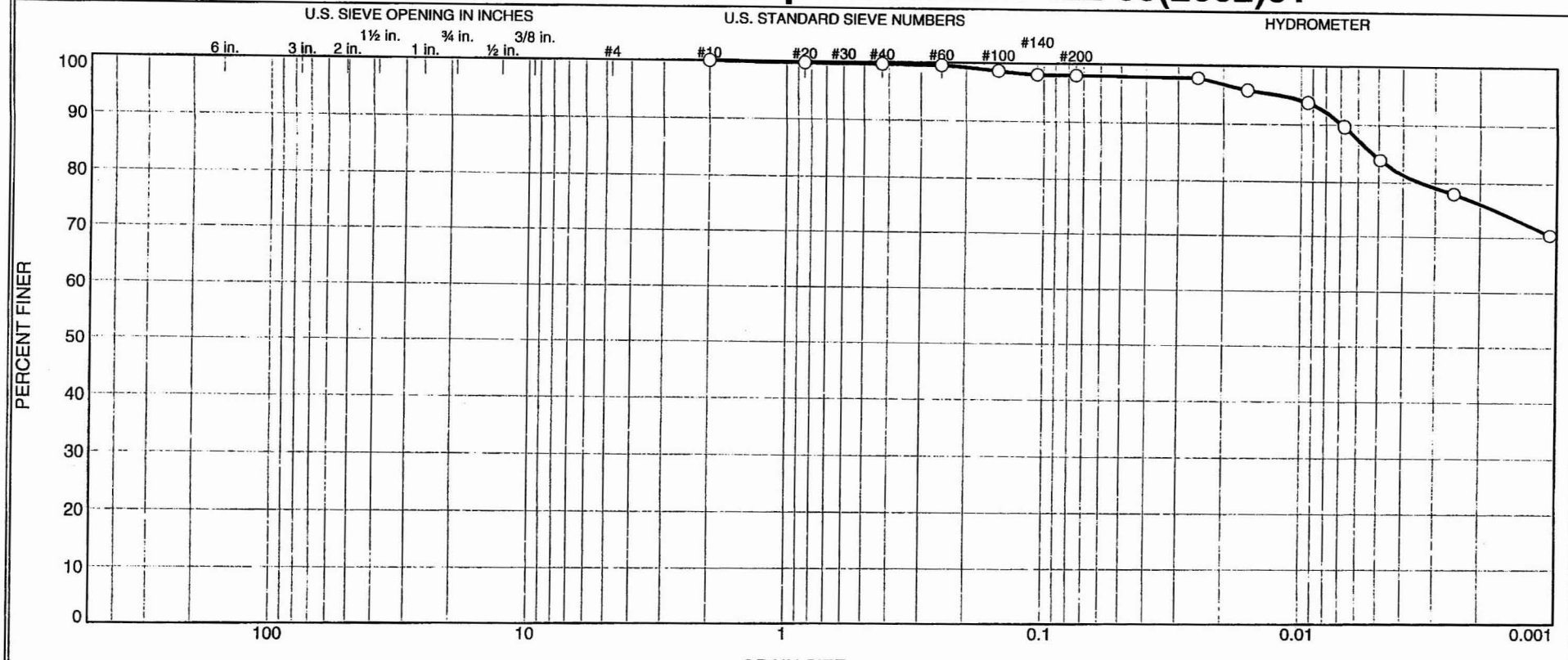
Run No.	1	2	3	4	
Wet+Tare	22.56	22.66			
Dry+Tare	21.50	21.54			
Tare	15.65	15.52			
Moisture	18.1	18.6			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
78.84	67.07	9.54	20.5

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.3	1.7	13.8	84.2

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-24	108.5-110.0	1-17-08	CH	Mottled Brownish Yellow and Pale Yellow Fat CLAY	23.5	77	27

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.699 (ASTM D854-06)

Tested By: CS Checked By: LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 108.5-110.0 **Sample Number:** SS-24
Material Description: Mottled Brownish Yellow and Pale Yellow Fat CLAY
Date: 1-17-08 **Natural Moisture:** 23.5
Liquid Limit: 77 **Plastic Limit:** 27 **USCS Class.:** CH
Testing Remarks: Specific Gravity = 2.699 (ASTM D854-06)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
249.48	0.00	0.00	#10	0.00	100.0
51.96	0.00	0.00	#20	0.13	99.7
			#40	0.18	99.7
			#60	0.24	99.5
			#100	0.71	98.6
			#140	1.02	98.0
			#200	1.06	98.0

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =51.97
Hygroscopic moisture correction:
Moist weight and tare = 28.19
Dry weight and tare = 27.62
Tare weight = 15.56
Hygroscopic moisture = 4.7%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.699
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	54.0	49.0	0.0132	55.0	7.3	0.0252	97.7
5.00	21.4	53.0	48.0	0.0132	54.0	7.4	0.0161	95.7
15.00	21.4	52.0	47.0	0.0132	53.0	7.6	0.0094	93.7
30.00	21.5	50.0	45.0	0.0132	51.0	7.9	0.0068	89.8
60.00	21.8	47.0	42.1	0.0132	48.0	8.4	0.0049	84.0
240.00	21.8	44.0	39.1	0.0132	45.0	8.9	0.0025	78.0
1440.00	22.4	40.0	35.4	0.0131	41.0	9.6	0.0011	70.5

MACTEC, Inc.

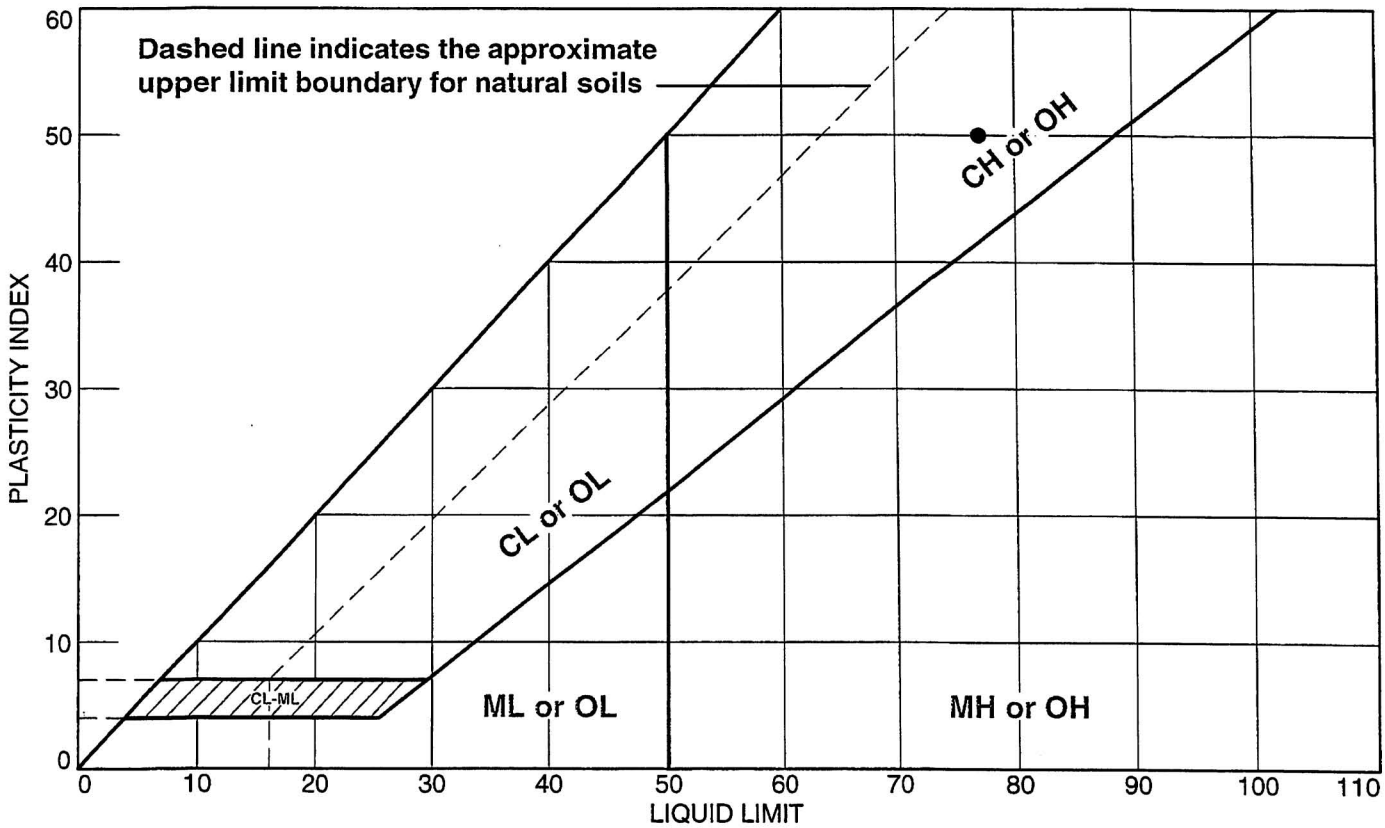
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	1.7	2.0	13.8	84.2	98.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0034	0.0052	0.0069	0.0126

Fineness Modulus
0.02

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-24	108.5-110.0	23.5	27	77	50	CH

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** N A

Tested By: CS **Checked By:** LBJ DSC 4-2-08

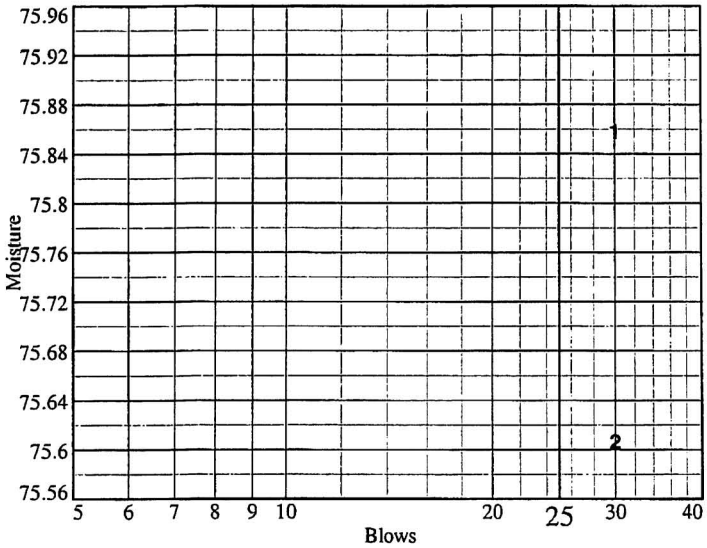
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 108.5-110.0 **Sample Number:** SS-24
Material Description: Mottled Brownish Yellow and Pale Yellow Fat CLAY
USCS: CH **AASHTO:** A-7-6(57)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.67	31.42				
Dry+Tare	25.38	24.57				
Tare	15.77	15.51				
# Blows	30	30				
Moisture	75.9	75.6				



Liquid Limit= 77
Plastic Limit= 27
Plasticity Index= 50
Natural Moisture= 23.5
Liquidity Index= -0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.67	22.38			
Dry+Tare	21.17	20.94			
Tare	15.57	15.51			
Moisture	26.8	26.5			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
108.84	89.43	6.86	23.5

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE: 4/1/08

SAMPLE IDENTIFICATION: B-2304A SS-24

(A) Mass of oven-dried soil, grams:		50.77
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.56
(C) Mass of pycnometer, water and soil, grams:		687.53
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		22.9
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.701
(F)	***Correction factor:***	0.99936
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.699

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER :P-3

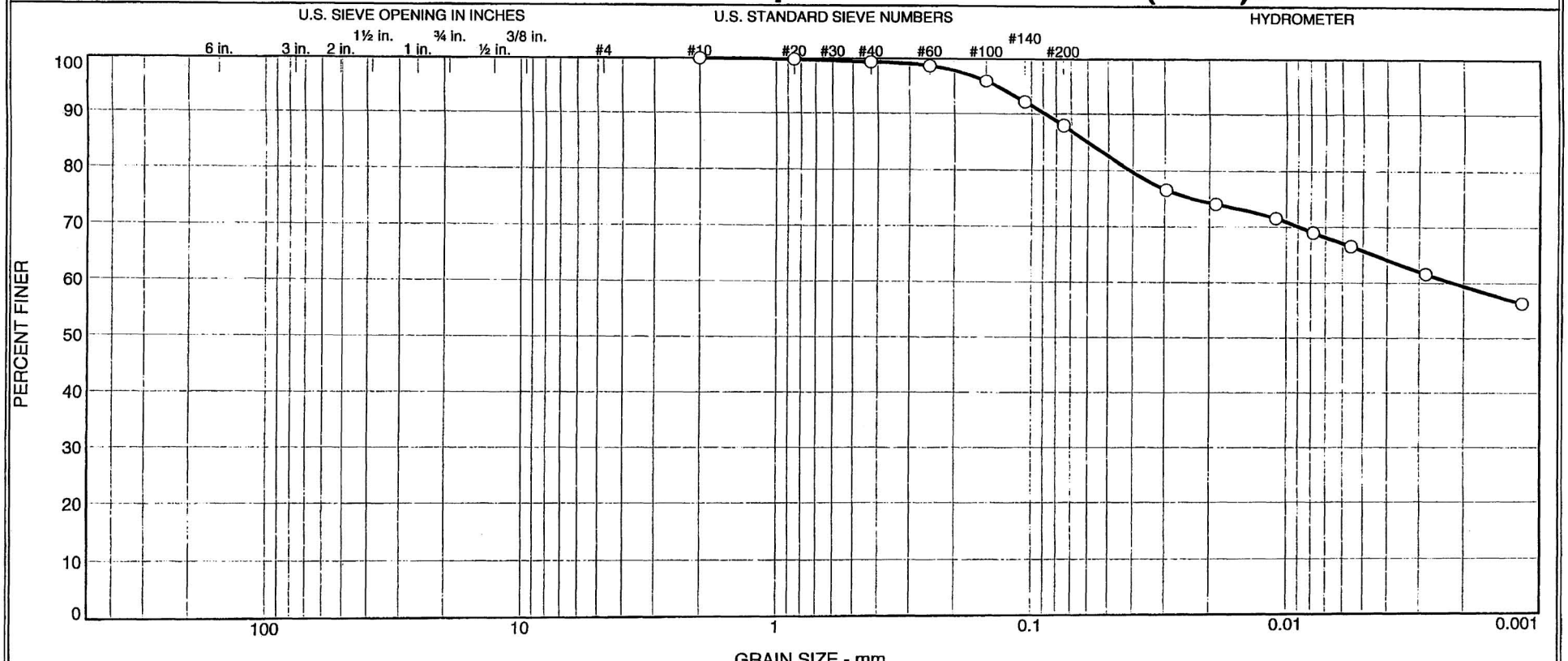
TESTED BY: CS

\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: **LBJ**

DSC 4-1-08

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.6	11.4	22.2	65.8

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-25	118.5-120.0	1-18-08	CH	Mottled Brownish Yellow and Pale Yellow Fat Clay	22.0	60	17

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 118.5-120.0 **Sample Number:** SS-25
Material Description: Mottled Brownish Yellow and Pale Yellow Fat Clay
Date: 1-18-08 **Natural Moisture:** 22.0
Liquid Limit: 60 **Plastic Limit:** 17 **USCS Class.:** CH
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
175.57	0.00	0.00	#10	0.00	100.0
44.55	0.00	0.00	#20	0.08	99.8
			#40	0.28	99.4
			#60	0.57	98.7
			#100	1.83	95.9
			#140	3.50	92.1
			#200	5.34	88.0

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =44.55
Hygroscopic moisture correction:
Moist weight and tare = 28.70
Dry weight and tare = 27.16
Tare weight = 15.40
Hygroscopic moisture = 13.1%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.8	35.0	30.5	0.0130	36.0	10.4	0.0296	76.6
5.00	22.8	34.0	29.5	0.0130	35.0	10.6	0.0189	74.1
15.00	22.8	33.0	28.5	0.0130	34.0	10.7	0.0110	71.5
30.00	22.8	32.0	27.5	0.0130	33.0	10.9	0.0078	69.0
60.00	22.9	31.0	26.5	0.0130	32.0	11.0	0.0056	66.6
240.00	23.0	29.0	24.6	0.0130	30.0	11.4	0.0028	61.7
1440.00	22.6	27.0	22.4	0.0130	28.0	11.7	0.0012	56.3

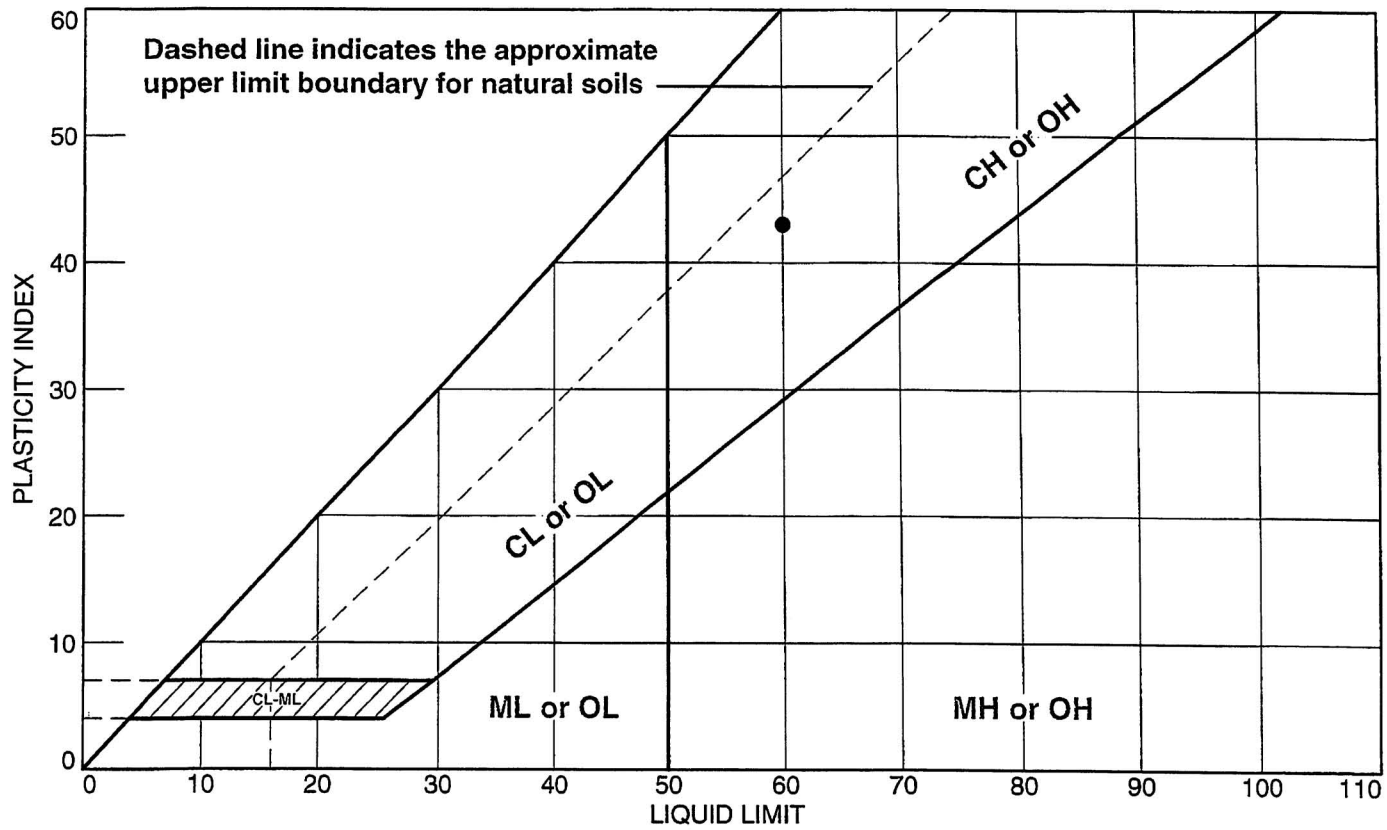
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.6	11.4	12.0	22.2	65.8	88.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.0022	0.0410	0.0598	0.0882	0.1368

Fineness Modulus
0.05

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-25	118.5-120.0	22.0	17	60	43	CH

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project No.: 6468071777
Figure N A

Tested By: CS **Checked By:** LBJ DSC 4-2-08

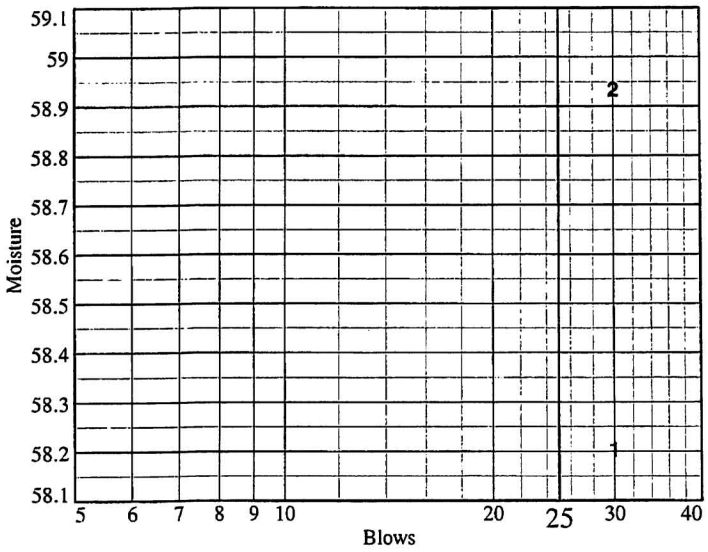
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 118.5-120.0 **Sample Number:** SS-25
Material Description: Mottled Brownish Yellow and Pale Yellow Fat Clay
USCS: CH **AASHTO:** A-7-6(40)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.96	31.44				
Dry+Tare	25.32	25.57				
Tare	15.63	15.61				
# Blows	30	30				
Moisture	58.2	58.9				



Liquid Limit= 60
Plastic Limit= 17
Plasticity Index= 43
Natural Moisture= 22.0
Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	25.82	22.42			
Dry+Tare	24.39	21.42			
Tare	15.60	15.60			
Moisture	16.3	17.2			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
83.59	70.24	9.50	22.0

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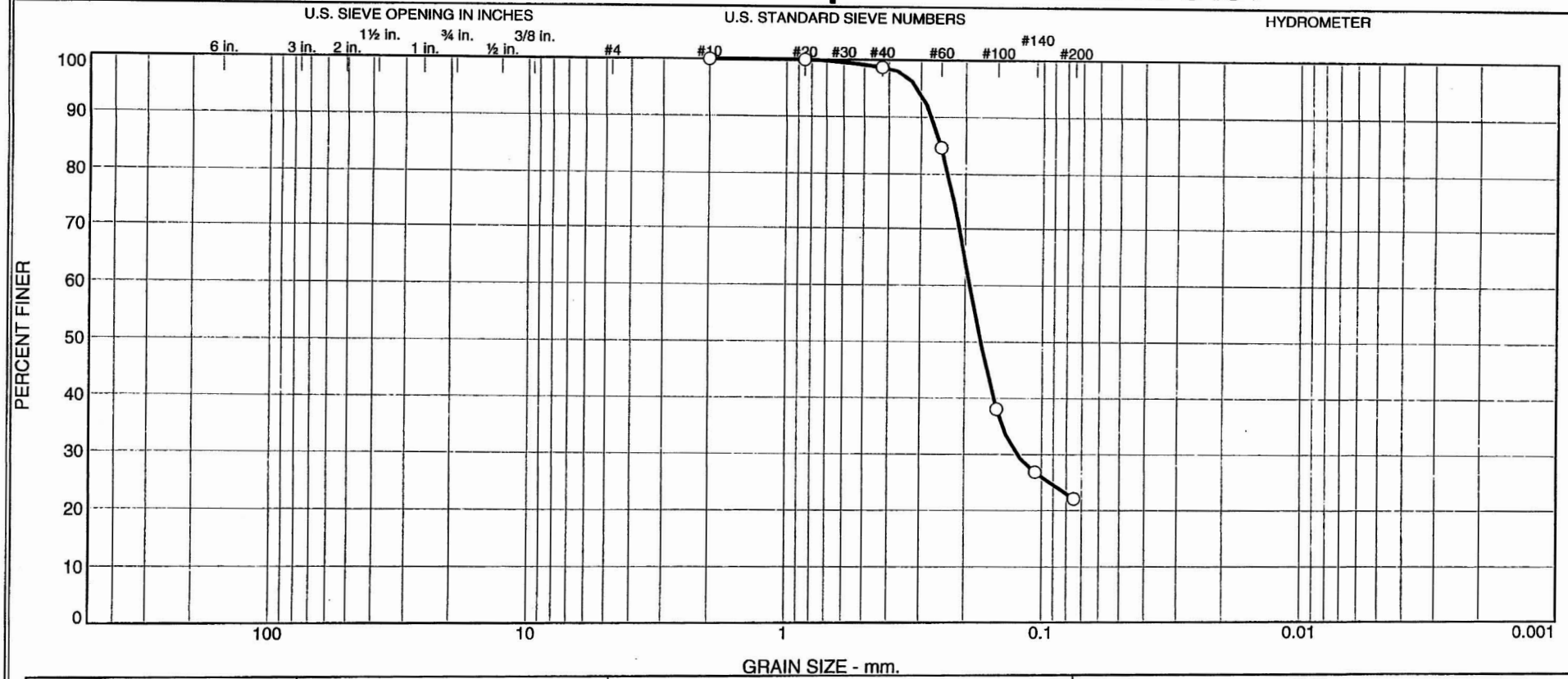
Particle Size Distribution Report / ASTM D 6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	1.3	76.7	22.0	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-26	128.5-130.0	1-18-08	SC	Pale Yellow Clayey SAND (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
Specific Gravity = 2.651(ASTM D854-06)
ND= Not Determined

Tested By: CS Checked By: LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 128.5-130.0 **Sample Number:** SS-26
Material Description: Pale Yellow Clayey SAND (Visual)
Date: 1-18-08 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SC
Testing Remarks: SIEVE ANALYSIS ONLY
Specific Gravity = 2.651(ASTM D854-06)
ND= Not Determined
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
207.42	0.00	0.00	#10	0.00	100.0
100.85	0.00	0.00	#20	0.03	100.0
			#40	1.36	98.7
			#60	15.41	84.7
			#100	62.42	38.1
			#140	73.73	26.9
			#200	78.63	22.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.3	76.7	78.0			22.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.1246	0.1734	0.1918	0.2354	0.2510	0.2725	0.3097

Fineness Modulus
0.68

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE: 4/1/08

SAMPLE IDENTIFICATION: B-2304A SS-26

(A) Mass of oven-dried soil, grams:		75.01
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.55
(C) Mass of pycnometer, water and soil, grams:		703.29
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.5
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.653
(F)	***Correction factor:***	0.99921
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.651

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100

Clayey SAND (SC) - Visual

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER :P-6

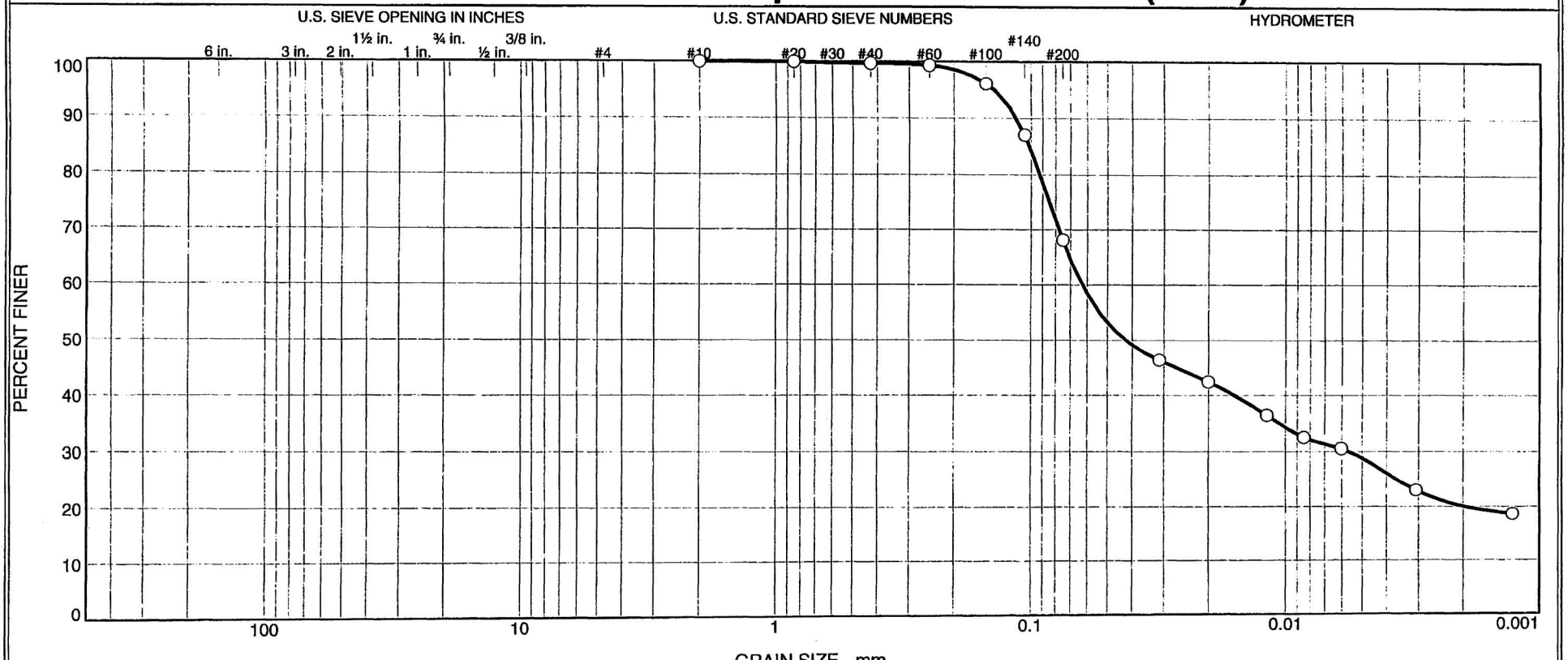
TESTED BY: CS

\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: LBJ

DSC 4-1-08

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
O	0.0	0.0	0.0	0.0	0.3	31.6	39.3	28.8

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2304A	SS-27	138.5-140.0	1-18-08	CL	Light Gray Sandy Lean CLAY	19.4	30	15

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

O Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 138.5-140.0 **Sample Number:** SS-27
Material Description: Light Gray Sandy Lean CLAY
Date: 1-18-08 **Natural Moisture:** 19.4
Liquid Limit: 30 **Plastic Limit:** 15 **USCS Class.:** CL
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
220.84	0.00	0.00	#10	0.00	100.0
51.11	0.00	0.00	#20	0.02	100.0
			#40	0.17	99.7
			#60	0.33	99.4
			#100	1.98	96.1
			#140	6.55	87.2
			#200	16.28	68.1

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =51.11
Hygroscopic moisture correction:
Moist weight and tare = 27.11
Dry weight and tare = 26.85
Tare weight = 15.58
Hygroscopic moisture = 2.3%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.6	28.0	23.4	0.0130	29.0	11.5	0.0313	46.4
5.00	22.6	26.0	21.4	0.0130	27.0	11.9	0.0201	42.4
15.00	22.6	23.0	18.4	0.0130	24.0	12.4	0.0118	36.5
30.00	22.6	21.0	16.4	0.0130	22.0	12.7	0.0085	32.5
60.00	22.6	20.0	15.4	0.0130	21.0	12.9	0.0060	30.5
240.00	23.2	16.0	11.6	0.0129	17.0	13.5	0.0031	23.0
1440.00	22.6	14.0	9.4	0.0130	15.0	13.8	0.0013	18.7

MACTEC, Inc.

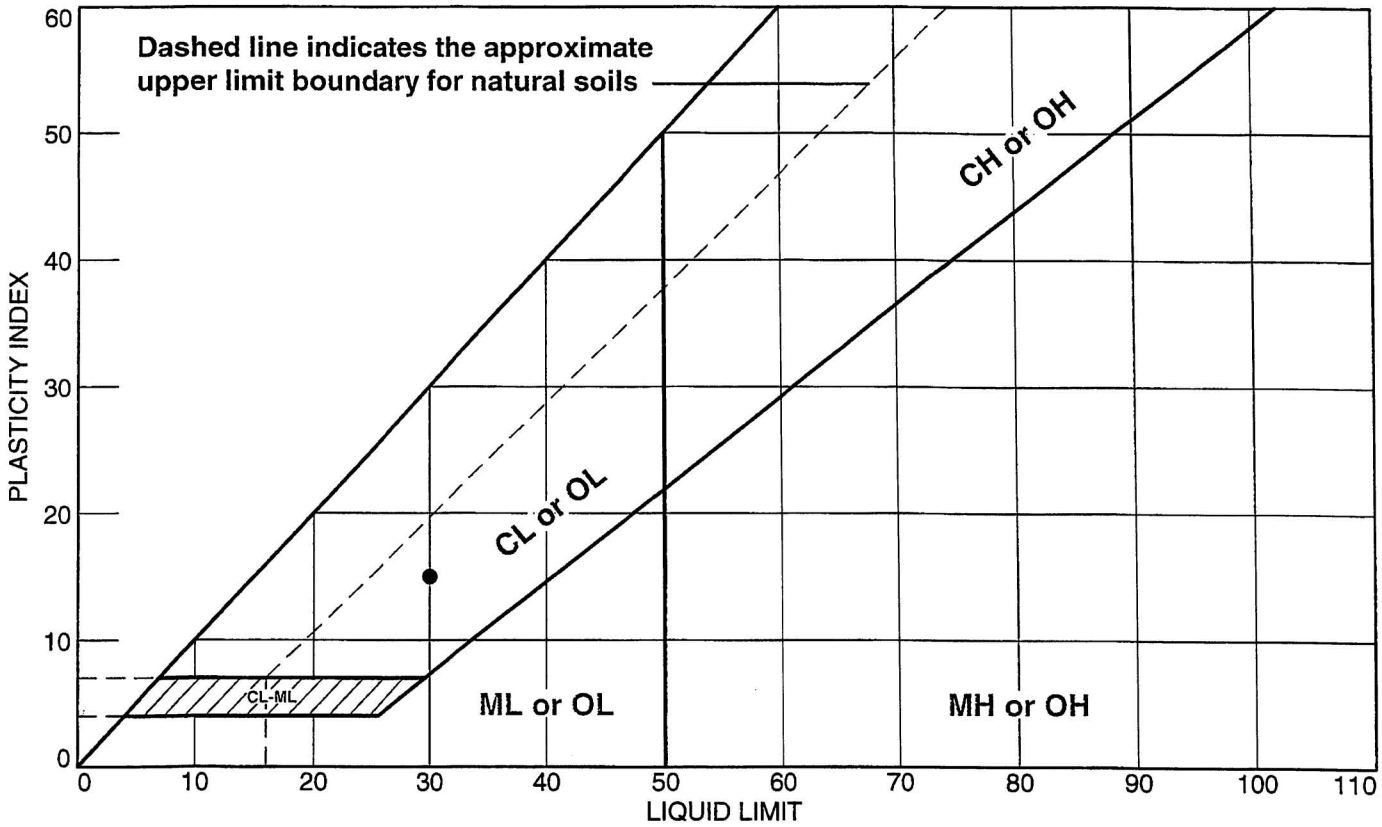
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	31.6	31.9	39.3	28.8	68.1

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0020	0.0056	0.0423	0.0625	0.0923	0.1012	0.1139	0.1392

Fineness Modulus
0.05

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-27	138.5-140.0	19.4	15	30	15	CL

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ DSC 4-2-08

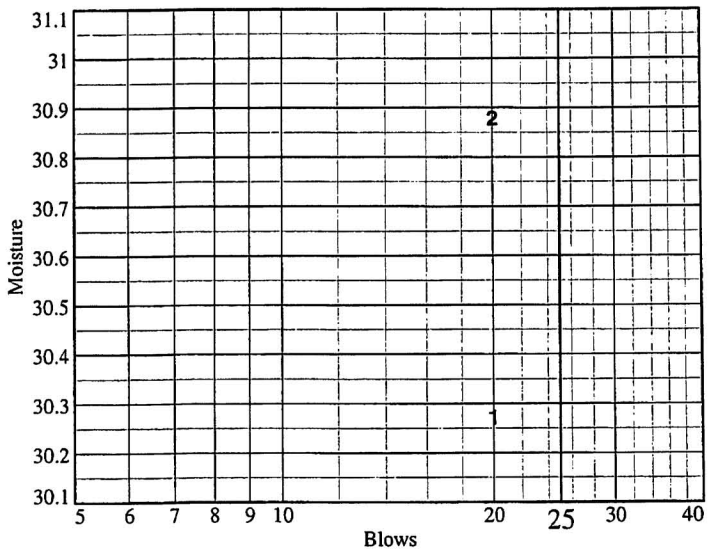
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 138.5-140.0 **Sample Number:** SS-27
Material Description: Light Gray Sandy Lean CLAY
USCS: CL **AASHTO:** A-6(8)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	36.40	38.26				
Dry+Tare	31.52	32.89				
Tare	15.40	15.50				
# Blows	20	20				
Moisture	30.3	30.9				



Liquid Limit= 30
Plastic Limit= 15
Plasticity Index= 15
Natural Moisture= 19.4
Liquidity Index= 0.3

Plastic Limit Data

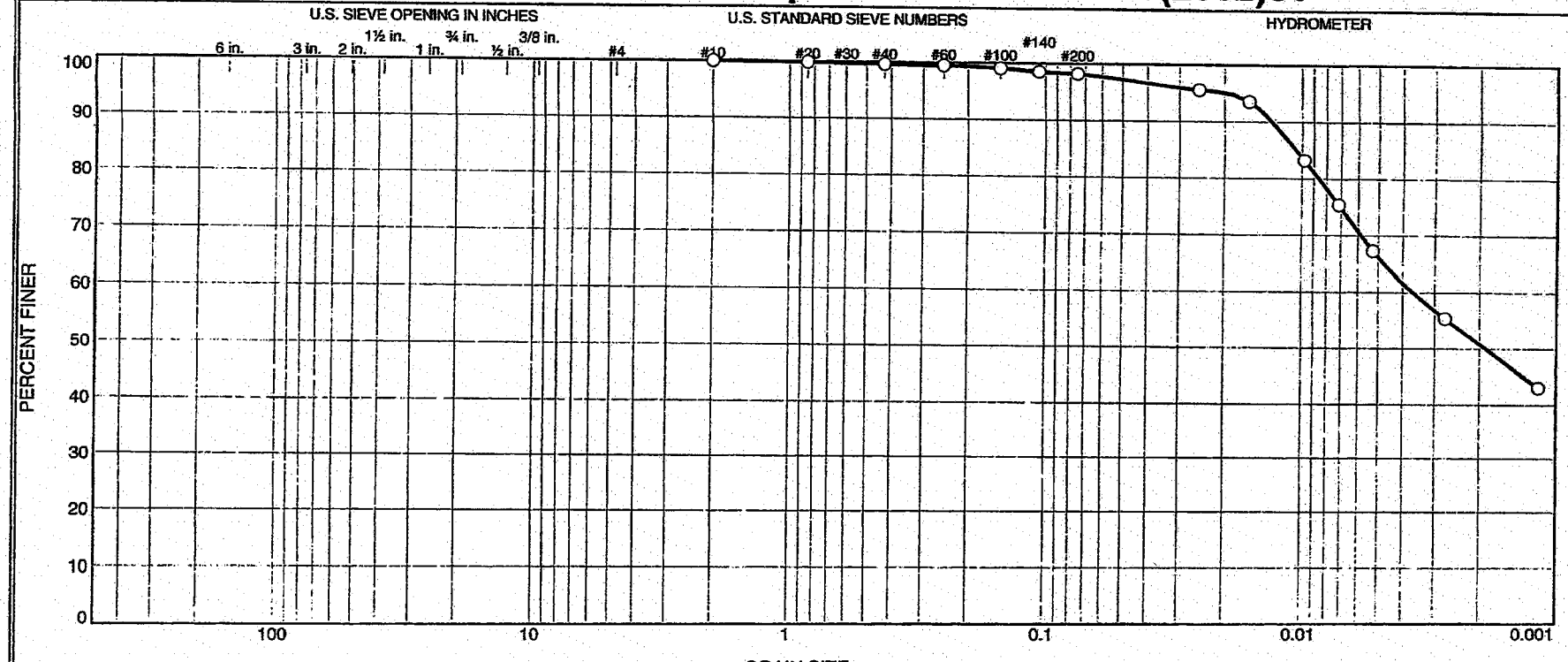
Run No.	1	2	3	4	
Wet+Tare	24.97	25.79			
Dry+Tare	23.69	24.42			
Tare	15.27	15.56			
Moisture	15.2	15.5			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
118.23	100.11	6.78	19.4

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.4	1.4	32.0	66.2

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-28	148.5-150.0	1-18-08	CH	Mottled Pale Yellow and Yellow Fat CLAY	21.6	53	15

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.724 (ASTM D854-06)

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 148.5-150.0 **Sample Number:** SS-28
Material Description: Mottled Pale Yellow and Yellow Fat CLAY
Date: 1-18-08 **Natural Moisture:** 21.6
Liquid Limit: 53 **Plastic Limit:** 15 **USCS Class.:** CH
Testing Remarks: Specific Gravity = 2.724 (ASTM D854-06)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
194.84	0.00	0.00	#10	0.00	100.0
50.46	0.00	0.00	#20	0.07	99.9
			#40	0.19	99.6
			#60	0.27	99.5
			#100	0.46	99.1
			#140	0.74	98.5
			#200	0.91	98.2

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.50
Hygroscopic moisture correction:
Moist weight and tare = 29.60
Dry weight and tare = 29.18
Tare weight = 15.73
Hygroscopic moisture = 3.1%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.724
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.8	52.0	47.5	0.0129	53.0	7.6	0.0252	95.4
5.00	22.8	51.0	46.5	0.0129	52.0	7.8	0.0161	93.4
15.00	22.7	46.0	41.5	0.0129	47.0	8.6	0.0098	83.3
30.00	22.9	42.0	37.5	0.0129	43.0	9.2	0.0072	75.4
60.00	22.8	38.0	33.5	0.0129	39.0	9.9	0.0052	67.3
240.00	23.2	32.0	27.6	0.0128	33.0	10.9	0.0027	55.5
1440.00	22.6	26.0	21.4	0.0129	27.0	11.9	0.0012	43.0

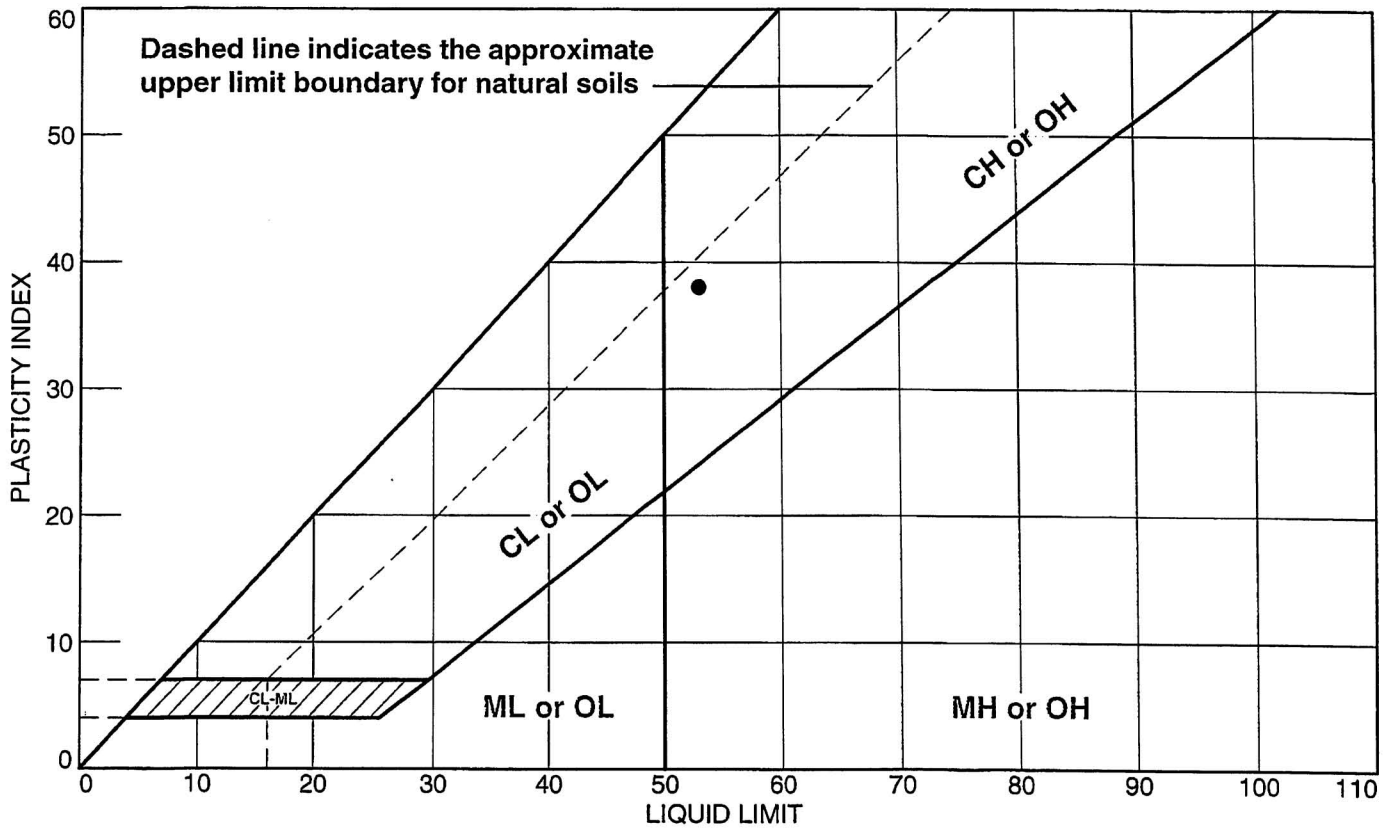
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.4	1.4	1.8	32.0	66.2	98.2

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0019	0.0036	0.0086	0.0105	0.0130	0.0202

Fineness Modulus
0.02

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-28	148.5-150.0	21.6	15	53	38	CH

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ DSC 4-2-08

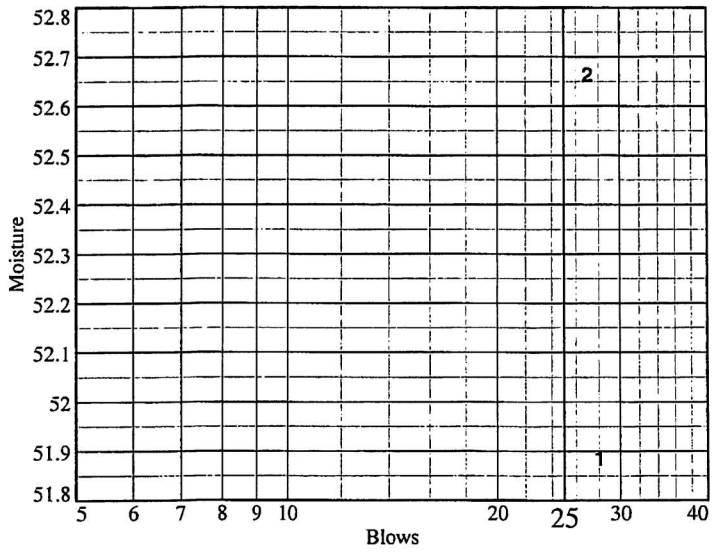
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 148.5-150.0 **Sample Number:** SS-28
Material Description: Mottled Pale Yellow and Yellow Fat CLAY
USCS: CH **AASHTO:** A-7-6(40)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.74	32.51				
Dry+Tare	26.24	26.78				
Tare	15.64	15.90				
# Blows	28	27				
Moisture	51.9	52.7				



Liquid Limit= 53
Plastic Limit= 15
Plasticity Index= 38
Natural Moisture= 21.6
Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.60	24.25			
Dry+Tare	26.00	23.15			
Tare	15.48	15.49			
Moisture	15.2	14.4			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
101.22	84.88	9.10	21.6

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE: 4/1/08

SAMPLE IDENTIFICATION: B-2304A SS-28

(A) Mass of oven-dried soil, grams:		48.77
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.48
(C) Mass of pycnometer, water and soil, grams:		686.36
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.6
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.726
(F)	***Correction factor:***	0.99919
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.724

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER :P-3

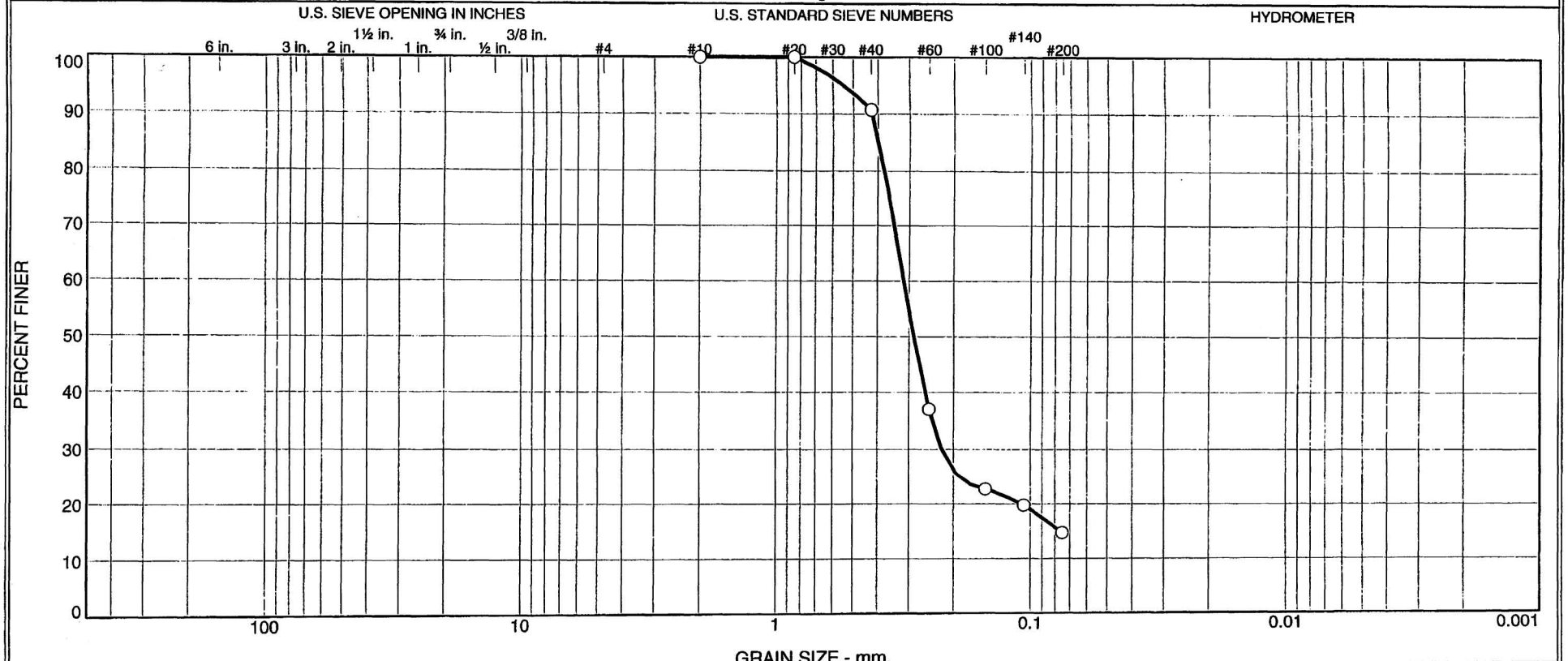
TESTED BY: CS

\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: LBJ

DSC 4-1-08

Particle Size Distribution Report / ASTM D 6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	9.3	76.0	14.7	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-29	158.5-160.0	1-18-08	SC	Pale Yellow Clayey SAND (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
ND= Not Determined

Tested By: CS Checked By: LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 158.5-160.0 **Sample Number:** SS-29
Material Description: Pale Yellow Clayey SAND (Visual)
Date: 1-18-08 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SC
Testing Remarks: SIEVE ANALYSIS ONLY
ND= Not Determined
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
248.54	0.00	0.00	#10	0.00	100.0
104.65	0.00	0.00	#20	0.02	100.0
			#40	9.70	90.7
			#60	65.83	37.1
			#100	80.90	22.7
			#140	83.99	19.7
			#200	89.26	14.7

Fractional Components

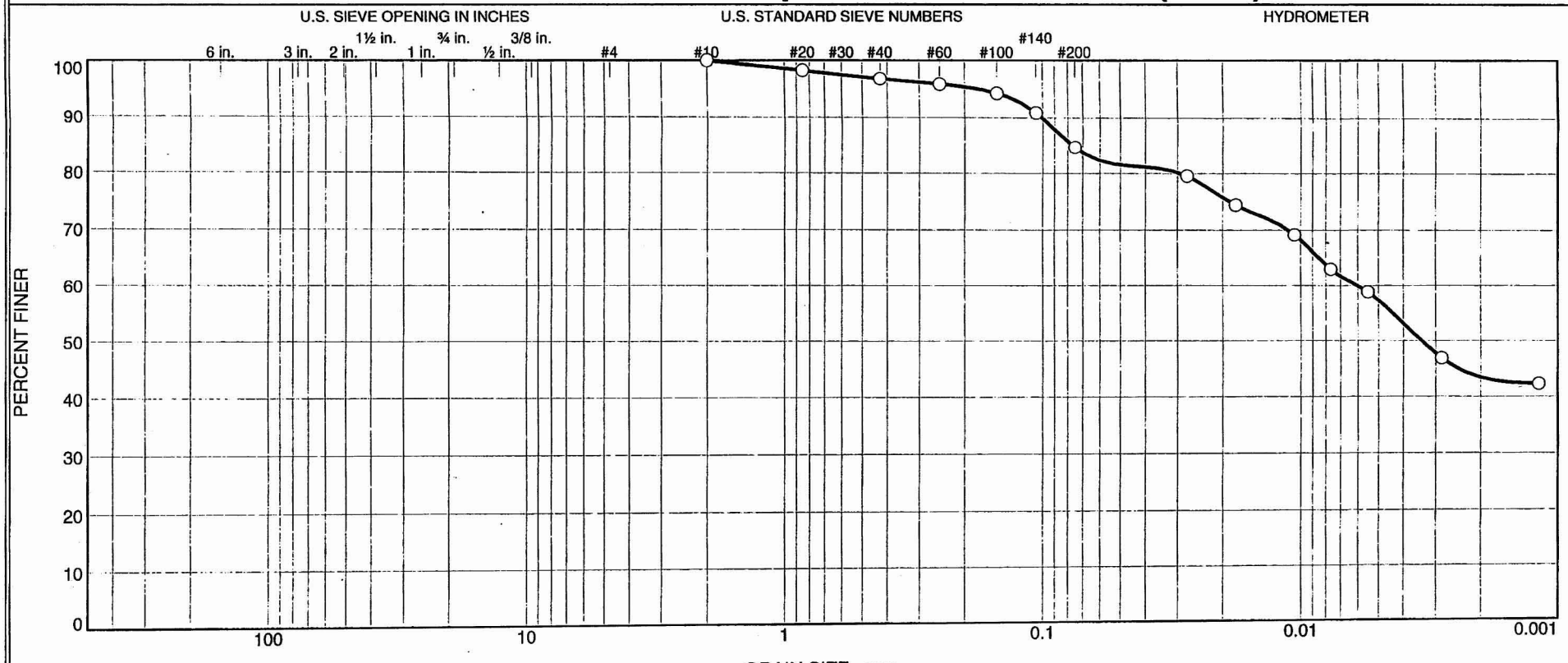
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	9.3	76.0	85.3			14.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0764	0.1084	0.2223	0.2875	0.3148	0.3773	0.3971	0.4210	0.5450

Fineness Modulus
1.26

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	3.2	12.1	27.2	57.5

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-30	168.5-170	1-18-08	CH	Light Gray Fat CLAY with sand	22.9	50	14

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.706 (ASTM D854-06)

Tested By: CS Checked By: LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 168.5-170 **Sample Number:** SS-30
Material Description: Light Gray Fat CLAY with sand
Date: 1-18-08 **Natural Moisture:** 22.9
Liquid Limit: 50 **Plastic Limit:** 14 **USCS Class.:** CH
Testing Remarks: Specific Gravity = 2.706 (ASTM D854-06)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
187.15	0.00	0.00	#10	0.00	100.0
49.62	0.00	0.00	#20	0.86	98.3
			#40	1.58	96.8
			#60	2.04	95.9
			#100	2.84	94.3
			#140	4.51	90.9
			#200	7.60	84.7

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =49.62
Hygroscopic moisture correction:
Moist weight and tare = 28.23
Dry weight and tare = 27.77
Tare weight = 15.51
Hygroscopic moisture = 3.8%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.706
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.9	43.0	38.5	0.0130	44.0	9.1	0.0276	79.6
5.00	22.9	40.5	36.0	0.0130	41.5	9.5	0.0178	74.4
15.00	22.8	38.0	33.5	0.0130	39.0	9.9	0.0105	69.2
30.00	22.8	35.0	30.5	0.0130	36.0	10.4	0.0076	63.0
60.00	22.8	33.0	28.5	0.0130	34.0	10.7	0.0055	58.9
240.00	23.4	27.0	22.7	0.0129	28.0	11.7	0.0028	46.9
1440.00	22.8	25.0	20.5	0.0130	26.0	12.0	0.0012	42.3

MACTEC, Inc.

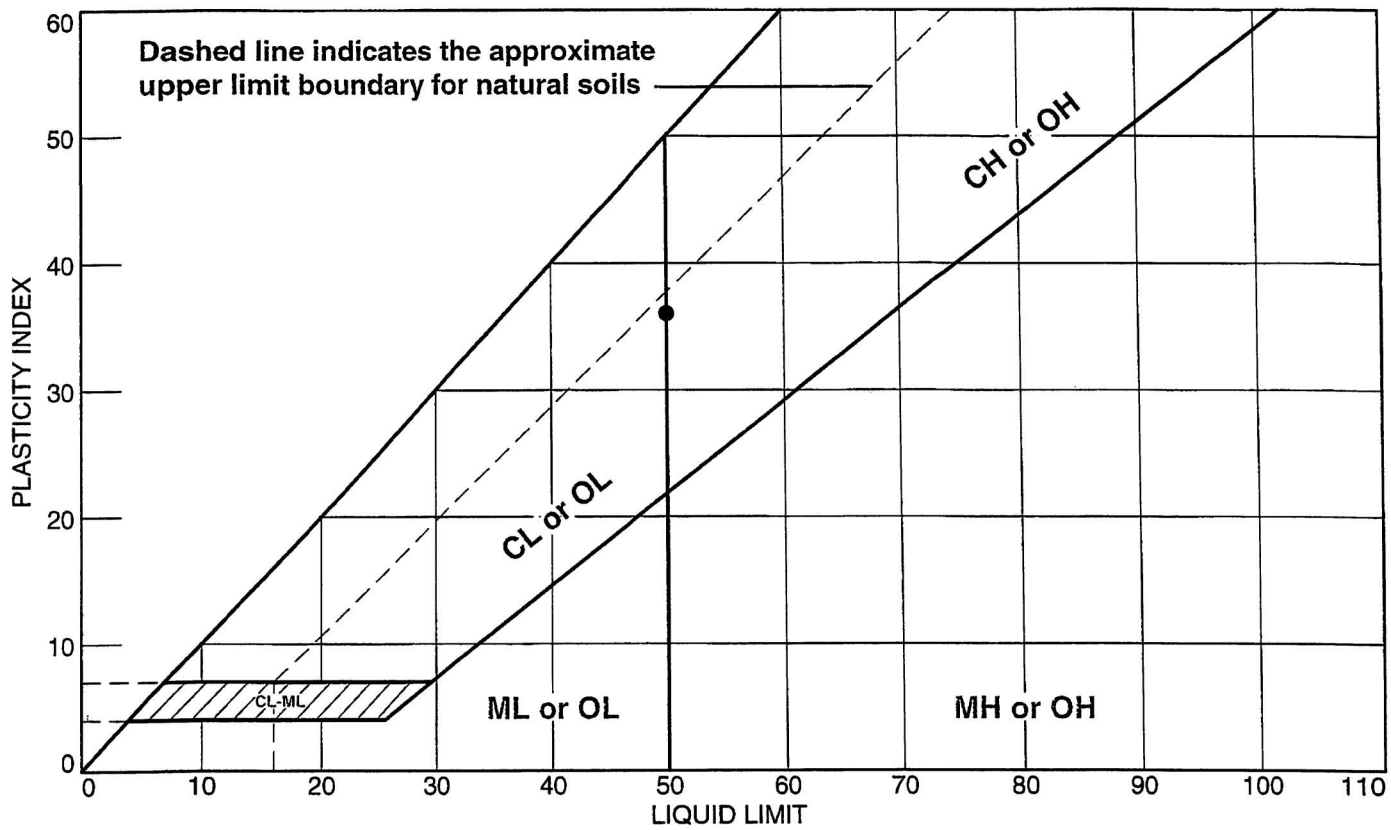
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	3.2	12.1	15.3	27.2	57.5	84.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0034	0.0060	0.0291	0.0765	0.1004	0.1756

Fineness Modulus
0.13

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-30	168.5-170	22.9	14	50	36	CH

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ DSC 4-2-08

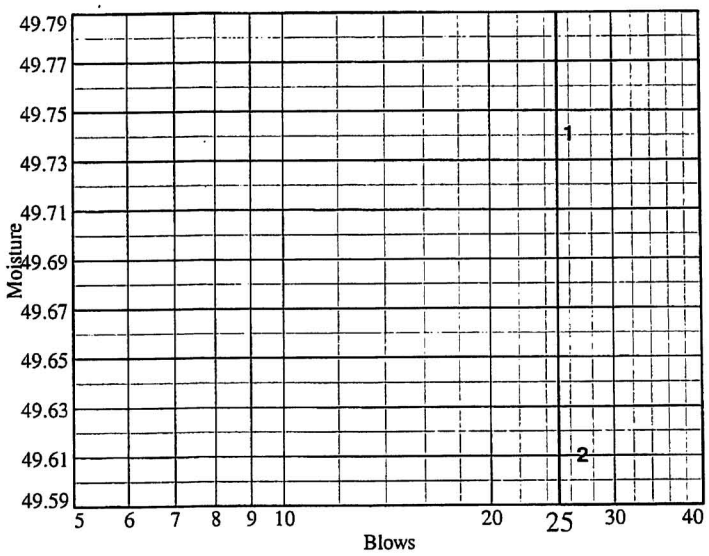
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 168.5-170
Sample Number: SS-30
Material Description: Light Gray Fat CLAY with sand
USCS: CH
AASHTO: A-7-6(31)
Tested by: CS
Checked by: LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.03	34.70				
Dry+Tare	25.23	28.33				
Tare	15.58	15.49				
# Blows	26	27				
Moisture	49.7	49.6				



Liquid Limit= 50
Plastic Limit= 14
Plasticity Index= 36
Natural Moisture= 22.9
Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	25.37	22.86			
Dry+Tare	24.12	21.98			
Tare	15.30	15.45			
Moisture	14.2	13.5			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
136.13	112.40	8.95	22.9

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE: 4/1/08

SAMPLE IDENTIFICATION: B-2304A SS-30

(A) Mass of oven-dried soil, grams:		50.36
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.60
(C) Mass of pycnometer, water and soil, grams:		688.36
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.1
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.708
(F)	***Correction factor:***	0.99931
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.706

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100

Fat CLAY with sand (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER :P-6

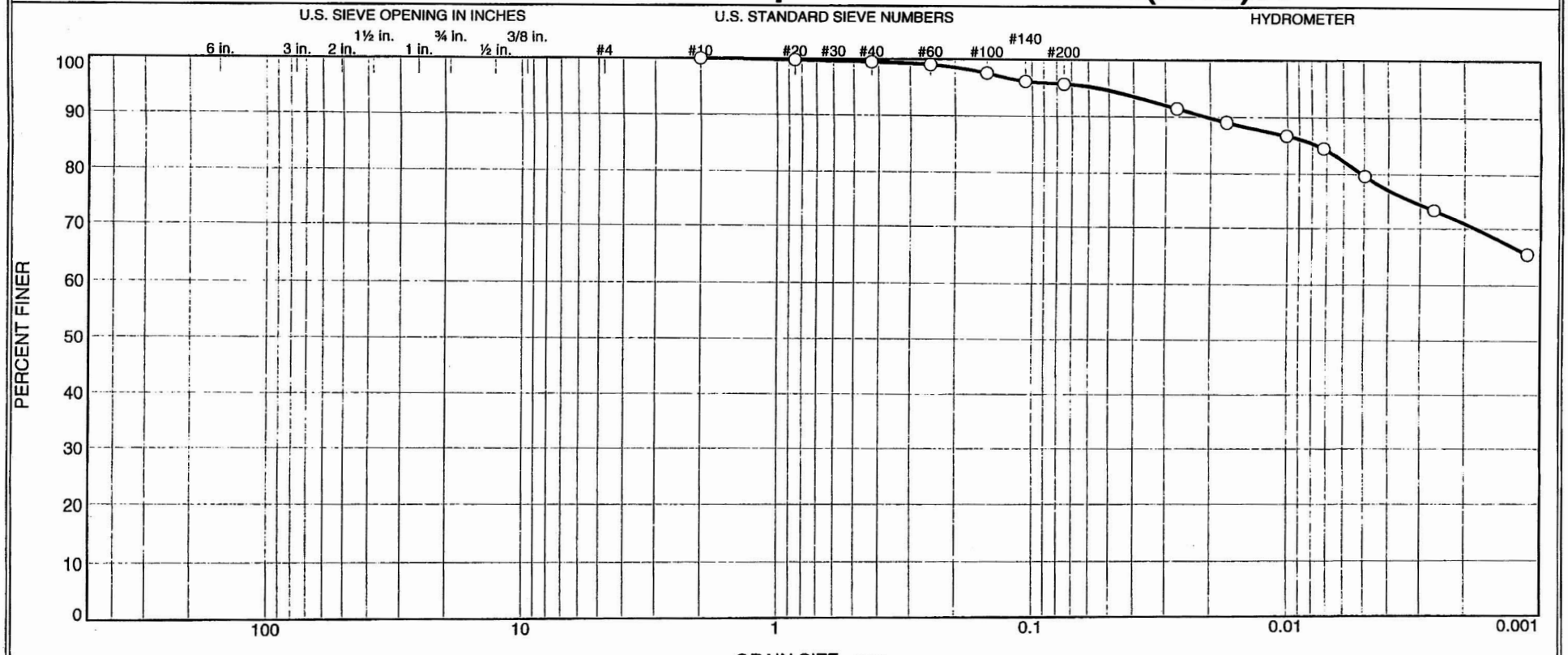
TESTED BY: CS

\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: LBJ

DSC 4-1-08

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.5	3.9	15.9	79.7

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-31	178.5-180.0	1-18-08	CH	Mottled Light Gray and Yellow Fat CLAY	30.7	76	29

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 178.5-180.0 **Sample Number:** SS-31
Material Description: Mottled Light Gray and Yellow Fat CLAY
Date: 1-18-08 **Natural Moisture:** 30.7
Liquid Limit: 76 **Plastic Limit:** 29 **USCS Class.:** CH
Testing Remarks: Specific Gravity is assumed
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
182.99	0.00	0.00	#10	0.00	100.0
47.30	0.00	0.00	#20	0.11	99.8
			#40	0.26	99.5
			#60	0.46	99.0
			#100	1.17	97.5
			#140	1.87	96.0
			#200	2.07	95.6

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =47.30
Hygroscopic moisture correction:
Moist weight and tare = 33.53
Dry weight and tare = 32.57
Tare weight = 20.16
Hygroscopic moisture = 7.7%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.700
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	23.1	45.0	40.6	0.0129	46.0	8.8	0.0271	91.5
5.00	23.0	44.0	39.6	0.0130	45.0	8.9	0.0173	89.1
15.00	23.0	43.0	38.6	0.0130	44.0	9.1	0.0101	86.9
30.00	23.0	42.0	37.6	0.0130	43.0	9.2	0.0072	84.6
60.00	28.0	38.0	35.4	0.0122	39.0	9.9	0.0050	79.6
240.00	23.1	37.0	32.6	0.0129	38.0	10.1	0.0027	73.4
1440.00	21.6	34.0	29.1	0.0132	35.0	10.6	0.0011	65.5

MACTEC, Inc.

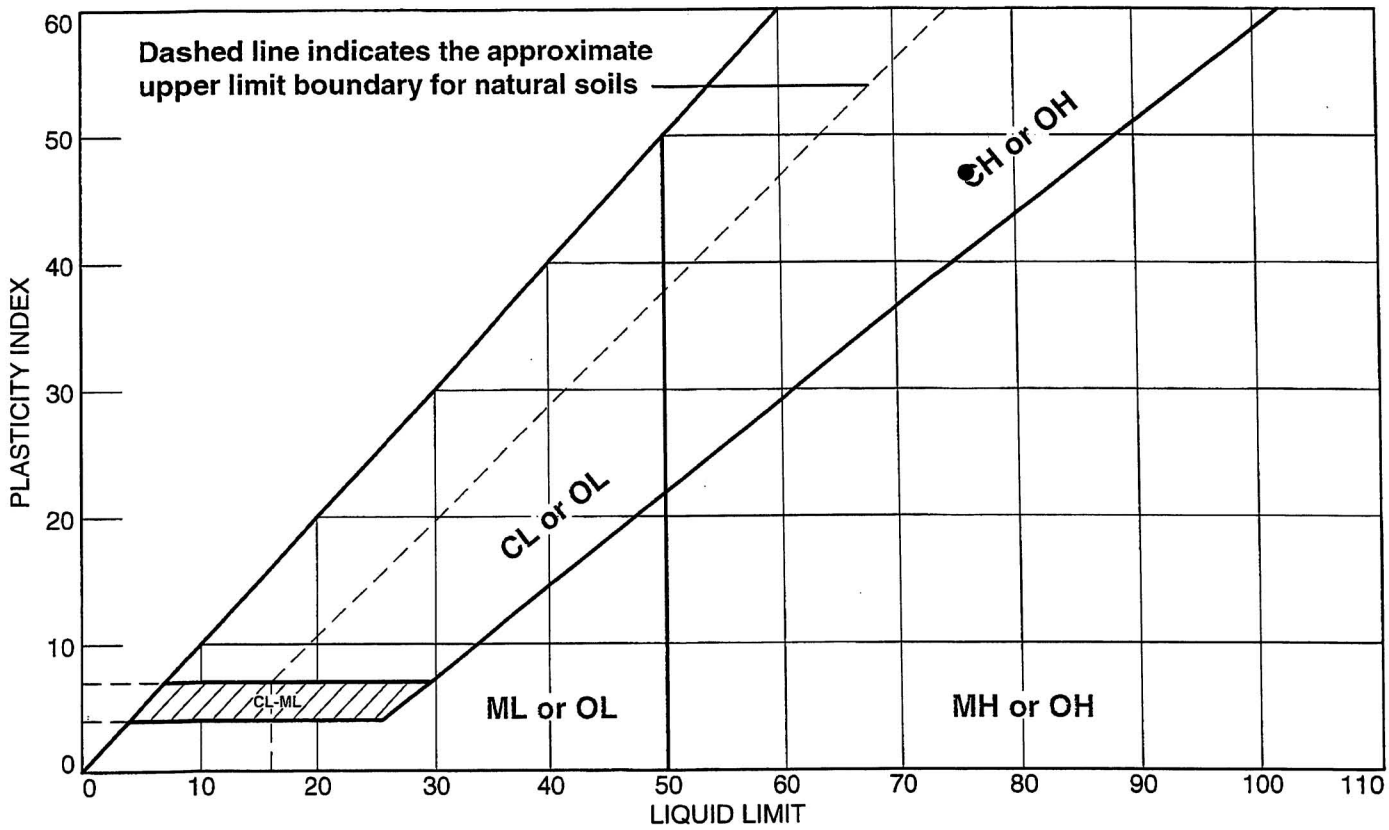
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.5	3.9	4.4	15.9	79.7	95.6

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0051	0.0075	0.0206	0.0570

Fineness Modulus
0.04

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-31	178.5-180.0	30.7	29	76	47	CH

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** N A

Tested By: CS **Checked By:** LBJ DSC 4-2-08

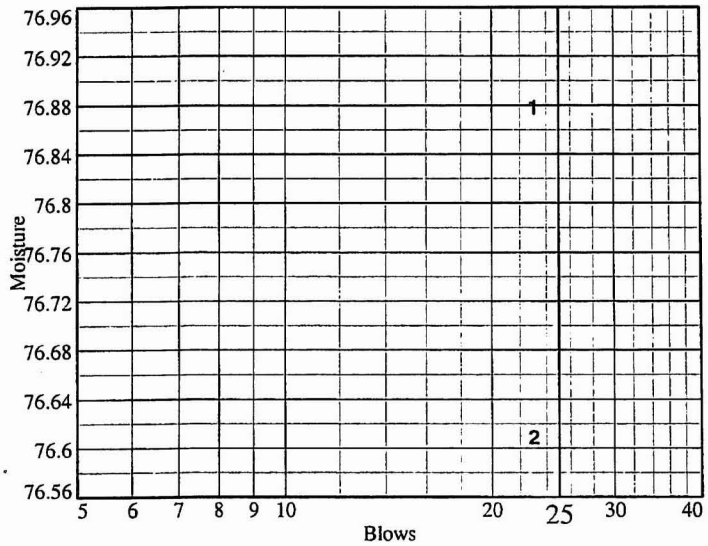
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 178.5-180.0 **Sample Number:** SS-31
Material Description: Mottled Light Gray and Yellow Fat CLAY
USCS: CH **AASHTO:** A-7-6(53)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.68	19.36				
Dry+Tare	20.69	15.79				
Tare	15.50	11.13				
# Blows	23	23				
Moisture	76.9	76.6				



Liquid Limit= 76
Plastic Limit= 29
Plasticity Index= 47
Natural Moisture= 30.7
Liquidity Index= 0.0

Plastic Limit Data

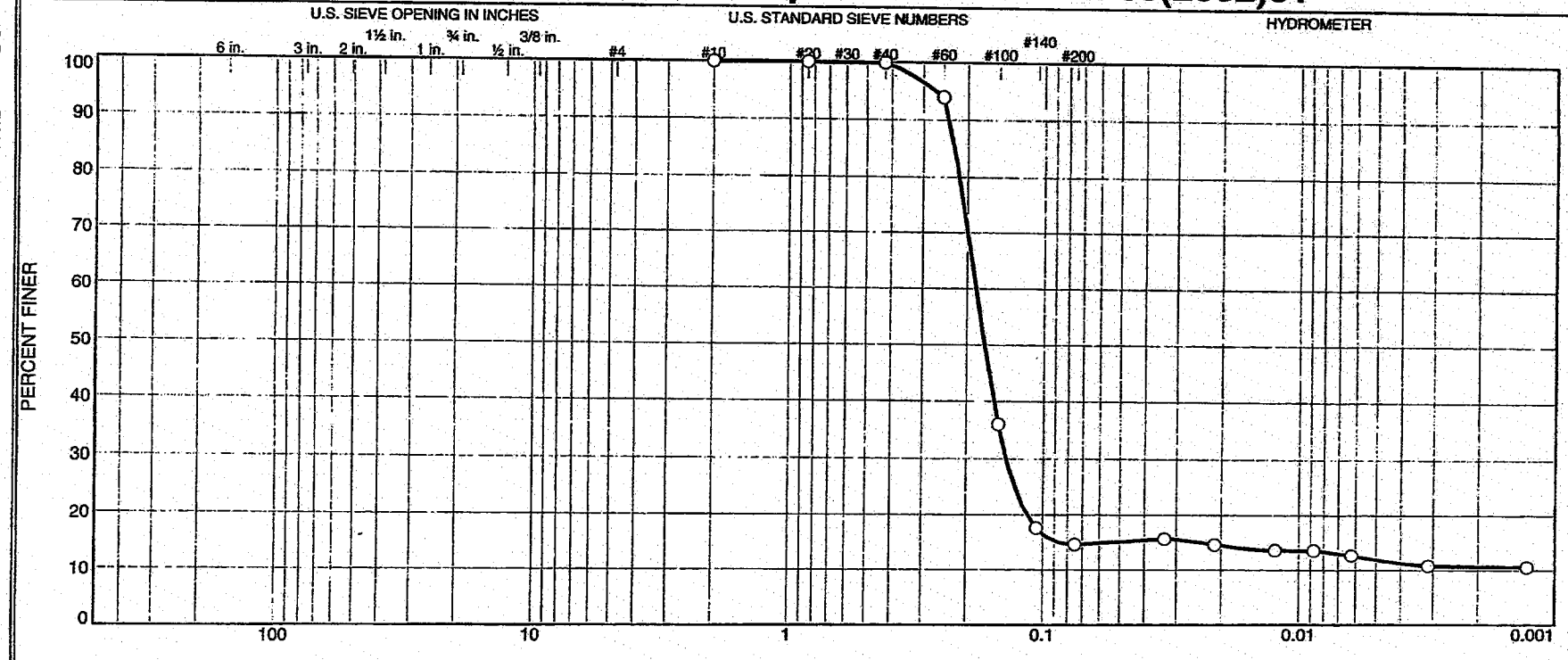
Run No.	1	2	3	4	
Wet+Tare	22.21	22.00			
Dry+Tare	20.69	20.53			
Tare	15.45	15.47			
Moisture	29.0	29.1			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
86.17	67.58	7.03	30.7

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.1	85.2	2.7	12.0

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-32	188.5-190.0	1-18-08	SM	Pale Yellow Silty SAND	20.4	NV	NP

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.655 (ASTM D854-06)

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 188.5-190.0 **Sample Number:** SS-32
Material Description: Pale Yellow Silty SAND
Date: 1-18-08 **Natural Moisture:** 20.4
Liquid Limit: NV **Plastic Limit:** NP **USCS Class.:** SM
Testing Remarks: Specific Gravity = 2.655 (ASTM D854-06)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
257.76	0.00	0.00	#10	0.00	100.0
99.72	0.00	0.00	#20	0.02	100.0
			#40	0.11	99.9
			#60	6.04	93.9
			#100	63.80	36.0
			#140	82.13	17.6
			#200	85.09	14.7

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =99.72
Hygroscopic moisture correction:
Moist weight and tare = 28.25
Dry weight and tare = 28.10
Tare weight = 15.50
Hygroscopic moisture = 1.2%
Table of composite correction values:

Temp., deg. C:	13.0	29.8
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.655
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.8	20.0	15.5	0.0132	21.0	12.9	0.0334	15.7
5.00	22.8	19.0	14.5	0.0132	20.0	13.0	0.0212	14.7
15.00	22.7	18.0	13.5	0.0132	19.0	13.2	0.0124	13.6
30.00	22.6	18.0	13.4	0.0132	19.0	13.2	0.0087	13.6
60.00	22.8	17.0	12.5	0.0132	18.0	13.3	0.0062	12.7
240.00	23.2	15.0	10.6	0.0131	16.0	13.7	0.0031	10.8
1440.00	22.6	15.0	10.4	0.0132	16.0	13.7	0.0013	10.6

MACTEC, Inc.

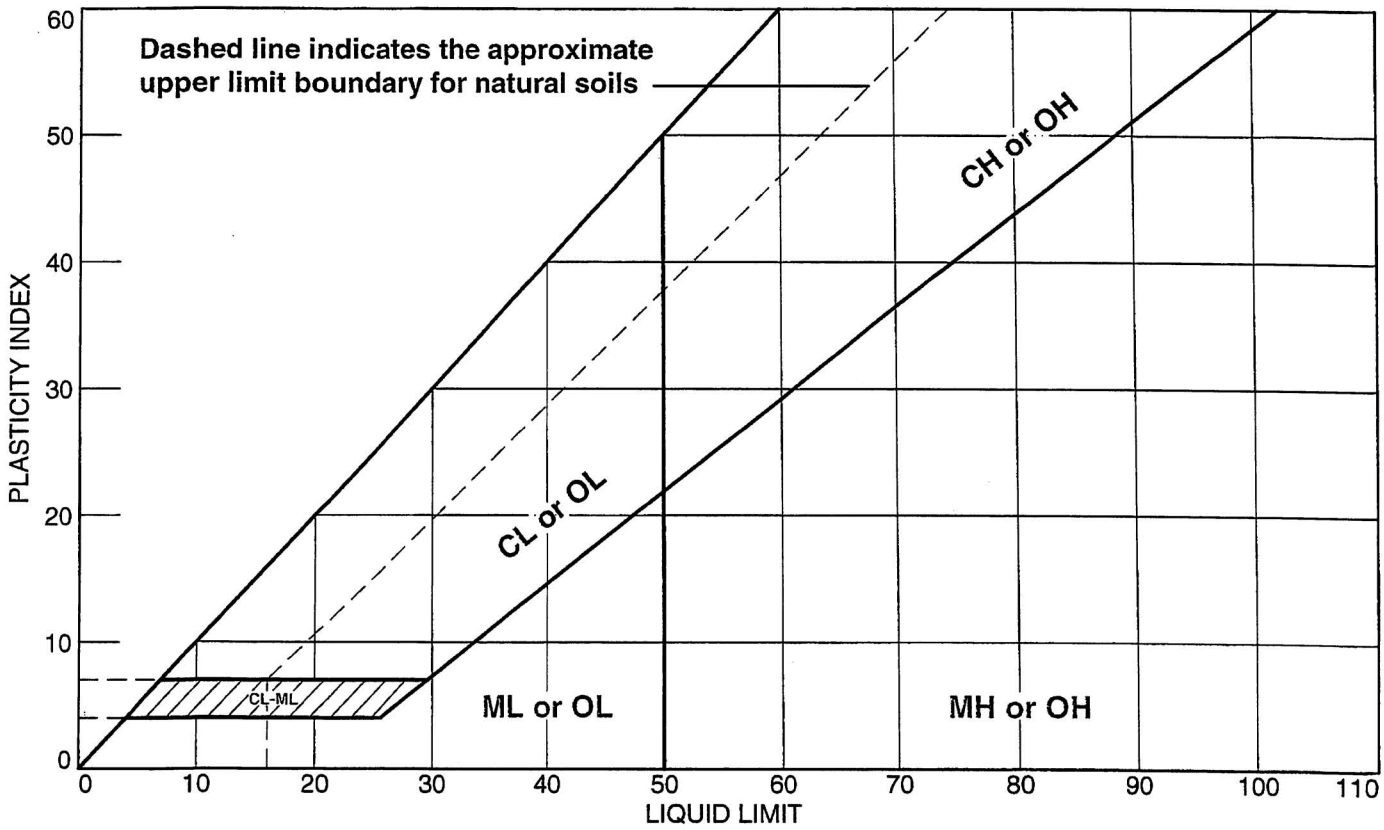
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	85.2	85.3	2.7	12.0	14.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0235	0.1154	0.1396	0.1703	0.1844	0.2165	0.2265	0.2383	0.2678

Fineness Modulus
0.67

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-32	188.5-190.0	20.4	NP	NV	NP	SM

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** N A

Tested By: CS **Checked By:** LBJ DSC 4-2-08

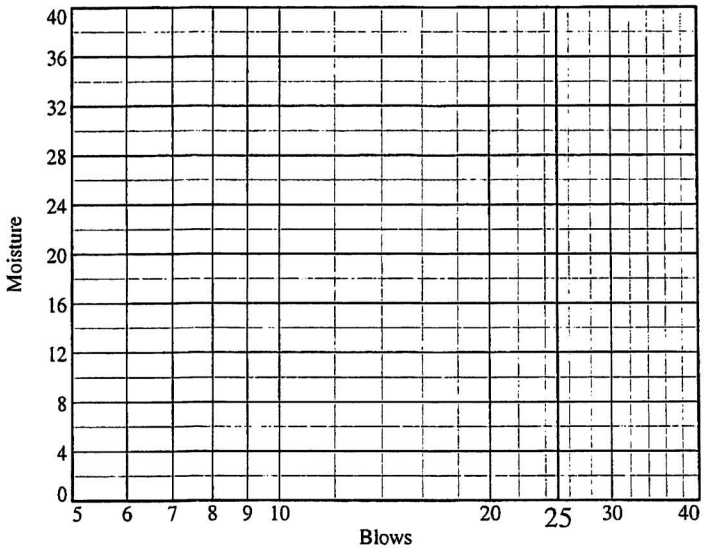
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 188.5-190.0 **Sample Number:** SS-32
Material Description: Pale Yellow Silty SAND
USCS: SM **AASHTO:** A-2-4(0)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare						
Dry+Tare						
Tare						
# Blows						
Moisture						



Liquid Limit= NV
Plastic Limit= NP
Plasticity Index= NP
Natural Moisture= 20.4

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare					
Dry+Tare					
Tare					
Moisture					

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
142.43	119.89	9.33	20.4

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE:4/1/08

SAMPLE IDENTIFICATION: B-2304A SS-32

(A) Mass of oven-dried soil, grams:		75.02
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.58
(C) Mass of pycnometer, water and soil, grams:		702.36
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		22.8
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.657
(F)	***Correction factor:***	0.99938
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.655

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100

Silty SAND (SM)

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER :P-3

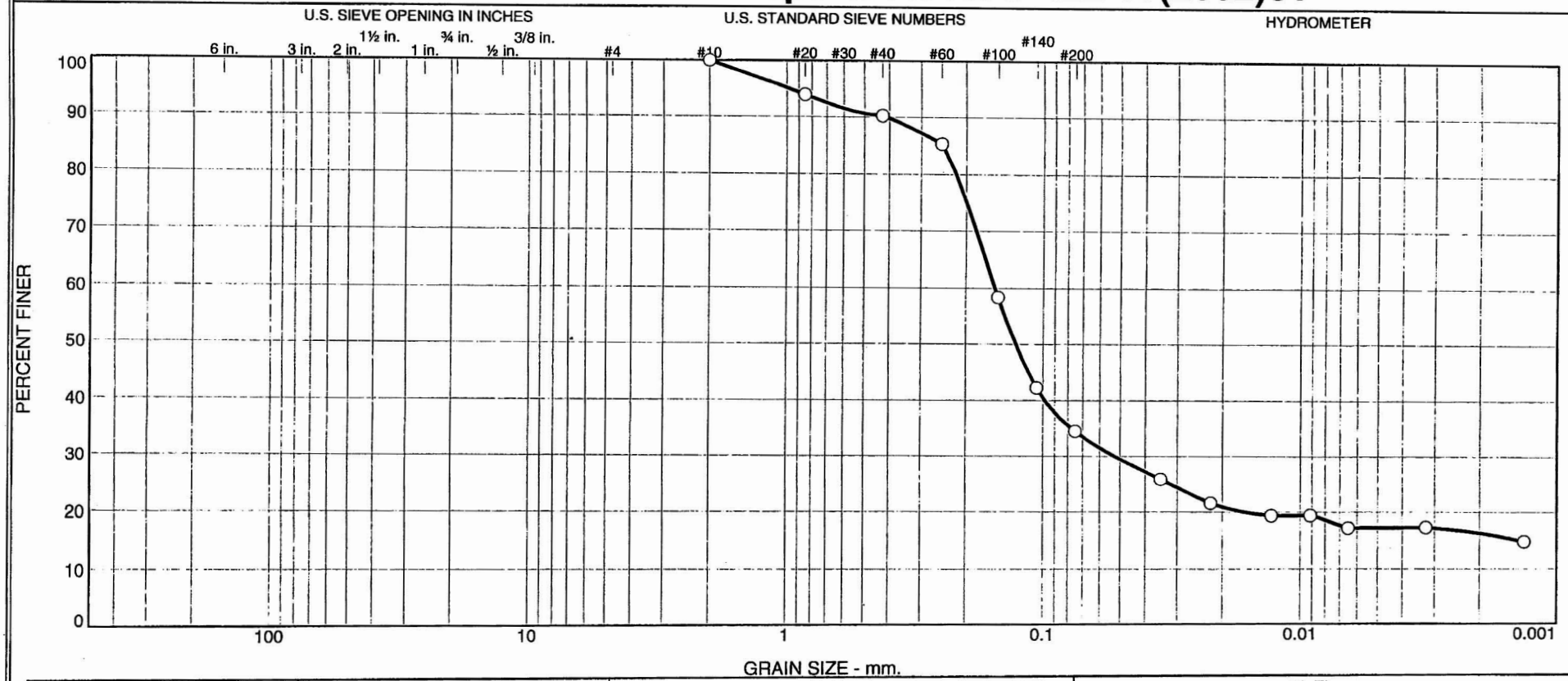
TESTED BY: CS

\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: LBJ

DSC 4-1-08

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	9.7	55.8	17.2	17.3

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-33	198.5-200.0	1-19-08	SC	Pale Yellow Clayey SAND	17.1	27	19

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.653 (ASTM D854-06)

Tested By: CS Checked By: LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 198.5-200.0 **Sample Number:** SS-33
Material Description: Pale Yellow Clayey SAND
Date: 1-19-08 **Natural Moisture:** 17.1
Liquid Limit: 27 **Plastic Limit:** 19 **USCS Class.:** SC
Testing Remarks: Specific Gravity = 2.653 (ASTM D854-06)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
227.86	0.00	0.00	#10	0.00	100.0
47.27	0.00	0.00	#20	2.86	93.9
			#40	4.58	90.3
			#60	6.88	85.4
			#100	19.65	58.4
			#140	27.28	42.3
			#200	30.94	34.5

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =47.27
Hygroscopic moisture correction:
Moist weight and tare = 28.21
Dry weight and tare = 27.85
Tare weight = 15.95
Hygroscopic moisture = 3.0%
Table of composite correction values:

Temp., deg. C:	12.9	29.9
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.653
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.1	17.0	11.9	0.0134	18.0	13.3	0.0347	25.9
5.00	21.1	15.0	9.9	0.0134	16.0	13.7	0.0222	21.5
15.00	21.1	14.0	8.9	0.0134	15.0	13.8	0.0129	19.4
30.00	21.2	14.0	8.9	0.0134	15.0	13.8	0.0091	19.4
60.00	21.2	13.0	7.9	0.0134	14.0	14.0	0.0065	17.3
240.00	21.3	13.0	8.0	0.0134	14.0	14.0	0.0032	17.3
1440.00	20.9	12.0	6.8	0.0135	13.0	14.2	0.0013	14.9

MACTEC, Inc.

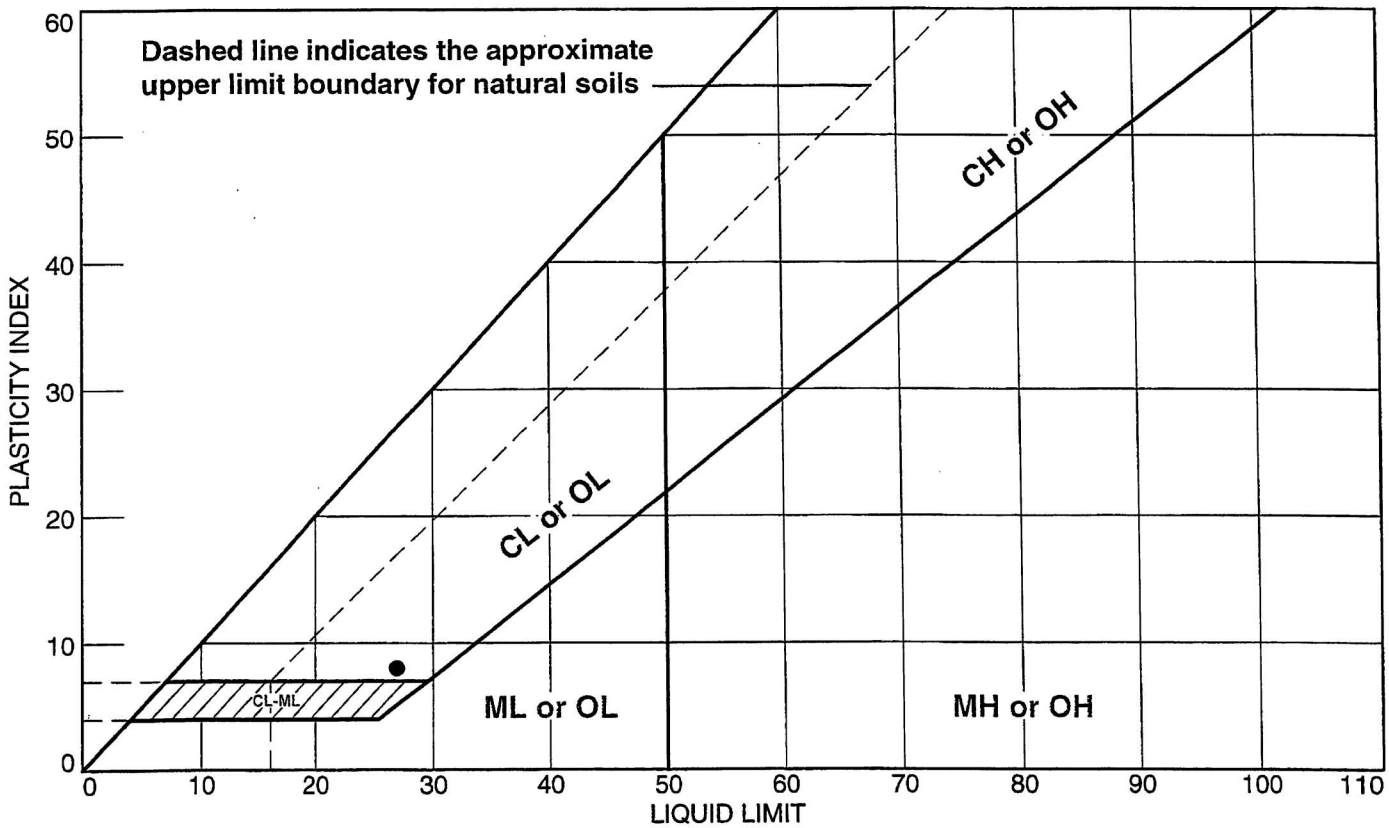
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	9.7	55.8	65.5	17.2	17.3	34.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0014	0.0165	0.0524	0.1279	0.1541	0.2189	0.2467	0.4080	0.9803

Fineness Modulus
0.66

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-33	198.5-200.0	17.1	19	27	8	SC

MACTEC, Inc. **Raleigh, North Carolina**	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria Reservoir) **Project No.:** 6468071777 **Figure** NA

Tested By: CS **Checked By:** LBJ DSC 4-2-08

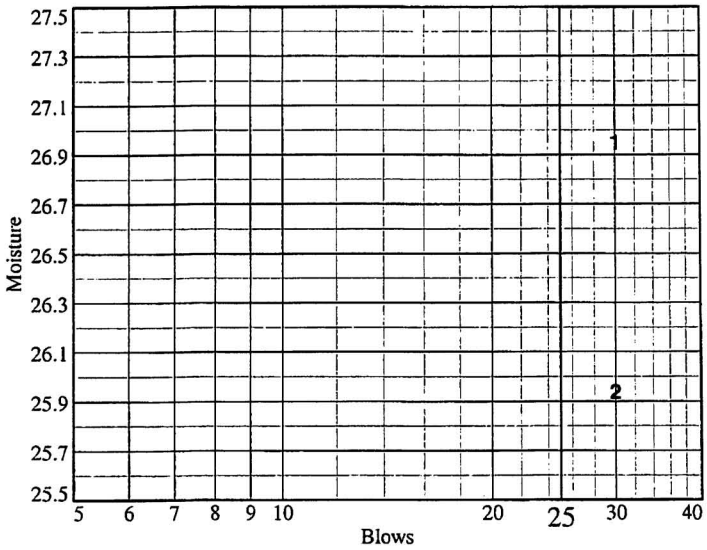
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 198.5-200.0 **Sample Number:** SS-33
Material Description: Pale Yellow Clayey SAND
USCS: SC **AASHTO:** A-2-4(0)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.10	33.12				
Dry+Tare	28.58	29.47				
Tare	15.52	15.40				
# Blows	30	30				
Moisture	27.0	25.9				



Liquid Limit= 27
Plastic Limit= 19
Plasticity Index= 8
Natural Moisture= 17.1
Liquidity Index= -0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.26	22.09			
Dry+Tare	21.18	21.07			
Tare	15.51	15.50			
Moisture	19.0	18.3			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
117.86	102.05	9.53	17.1

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE:4/1/08

SAMPLE IDENTIFICATION: B-2304A SS-33

(A) Mass of oven-dried soil, grams:		51.30
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.78
(C) Mass of pycnometer, water and soil, grams:		688.75
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		21.5
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.654
(F)	***Correction factor:***	0.99968
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.653

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100

Clayey SAND (SC)

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER :P-6

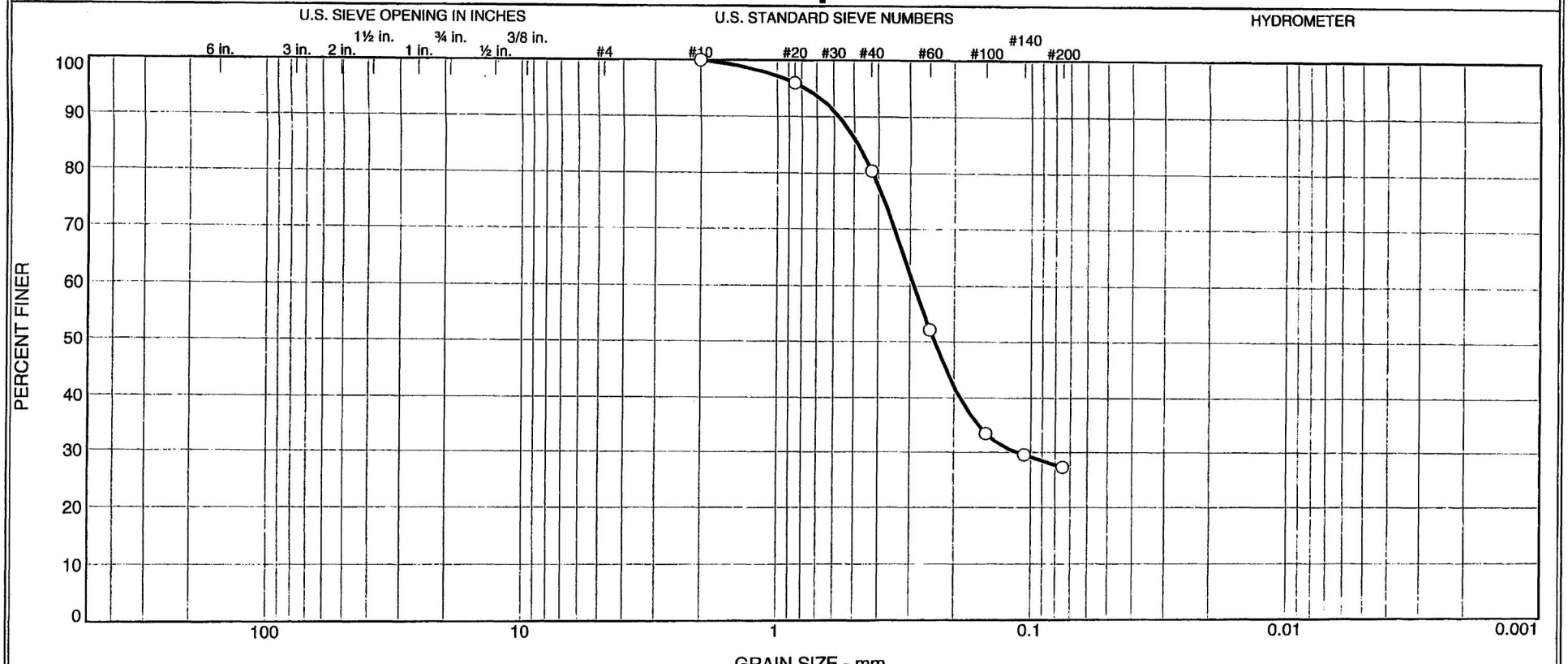
TESTED BY: CS

\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: LBJ

DSC 4-1-08

Particle Size Distribution Report / ASTM D 6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	19.6	53.0	27.4	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-34	218.5-220.0	1-23-08	SM	White Silty SAND (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ SIEVE ANALYSIS ONLY
ND= Not Determined

Tested By: CS Checked By: LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 218.5-220.0 **Sample Number:** SS-34
Material Description: White Silty SAND (Visual)
Date: 1-23-08 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SM
Testing Remarks: SIEVE ANALYSIS ONLY
ND= Not Determined
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
238.73	0.00	0.00	#10	0.00	100.0
101.30	0.00	0.00	#20	4.14	95.9
			#40	19.84	80.4
			#60	48.47	52.2
			#100	67.37	33.5
			#140	71.33	29.6
			#200	73.59	27.4

Fractional Components

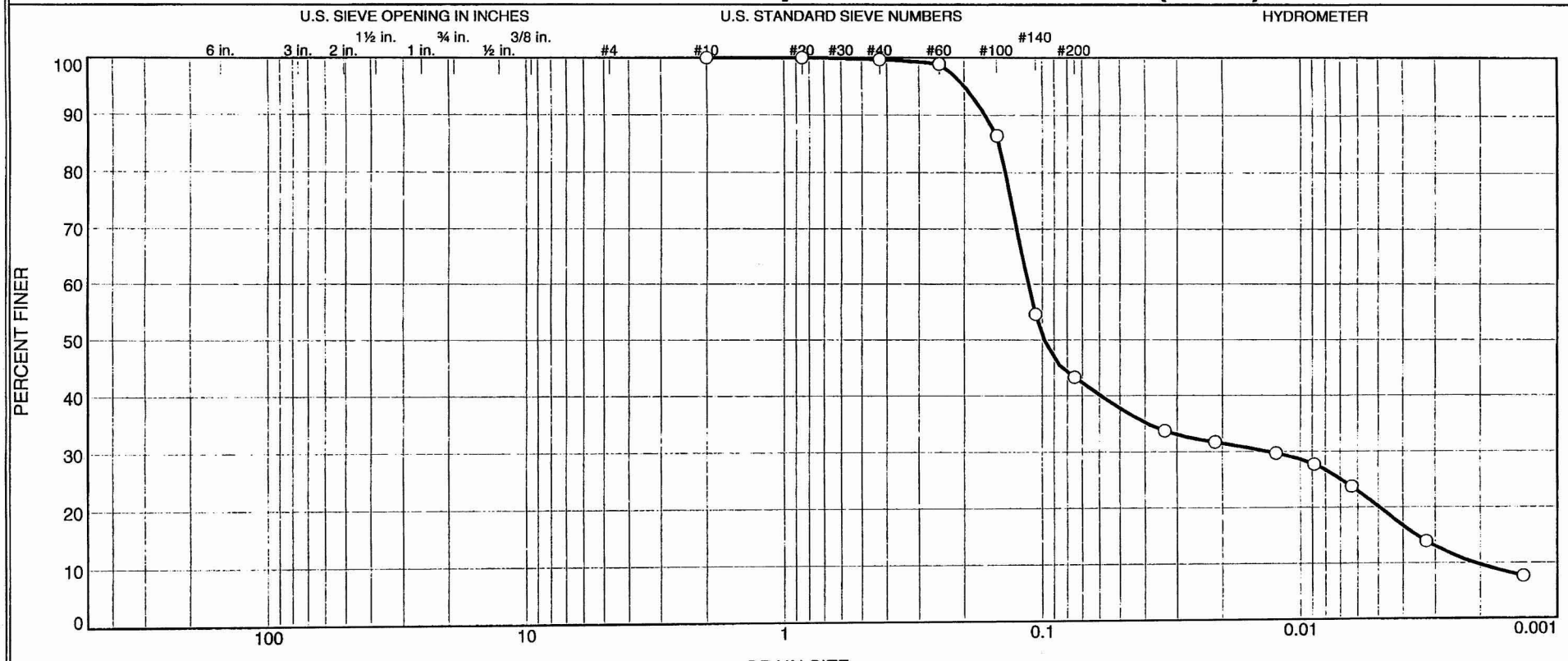
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	19.6	53.0	72.6			27.4

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.1125	0.2395	0.2889	0.4210	0.4787	0.5711	0.7763

Fineness Modulus
1.15

MACTEC, Inc.

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.3	56.4	23.2	20.1

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-35	238.5-240.0	1-23-08	SC	Pale Yellow Clayey SAND	16.8	23	13

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure N A

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.656 (ASTM D854-06)

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 238.5-240.0 **Sample Number:** SS-35
Material Description: Pale Yellow Clayey SAND
Date: 1-23-08 **Natural Moisture:** 16.8
Liquid Limit: 23 **Plastic Limit:** 13 **USCS Class.:** SC
Testing Remarks: Specific Gravity = 2.656 (ASTM D854-06)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
255.62	0.00	0.00	#10	0.00	100.0
51.03	0.00	0.00	#20	0.01	100.0
			#40	0.16	99.7
			#60	0.56	98.9
			#100	6.87	86.5
			#140	23.18	54.6
			#200	28.95	43.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =51.03
Hygroscopic moisture correction:
Moist weight and tare = 29.53
Dry weight and tare = 29.35
Tare weight = 15.37
Hygroscopic moisture = 1.3%
Table of composite correction values:

Temp., deg. C:	12.9	29.9
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.656
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	22.0	17.0	0.0134	23.0	12.5	0.0335	33.7
5.00	21.4	21.0	16.0	0.0134	22.0	12.7	0.0213	31.7
15.00	21.4	20.0	15.0	0.0134	21.0	12.9	0.0124	29.7
30.00	21.4	19.0	14.0	0.0134	20.0	13.0	0.0088	27.8
60.00	21.3	17.0	12.0	0.0134	18.0	13.3	0.0063	23.7
240.00	21.5	12.0	7.0	0.0134	13.0	14.2	0.0032	13.9
1440.00	21.0	9.0	3.9	0.0135	10.0	14.7	0.0014	7.6

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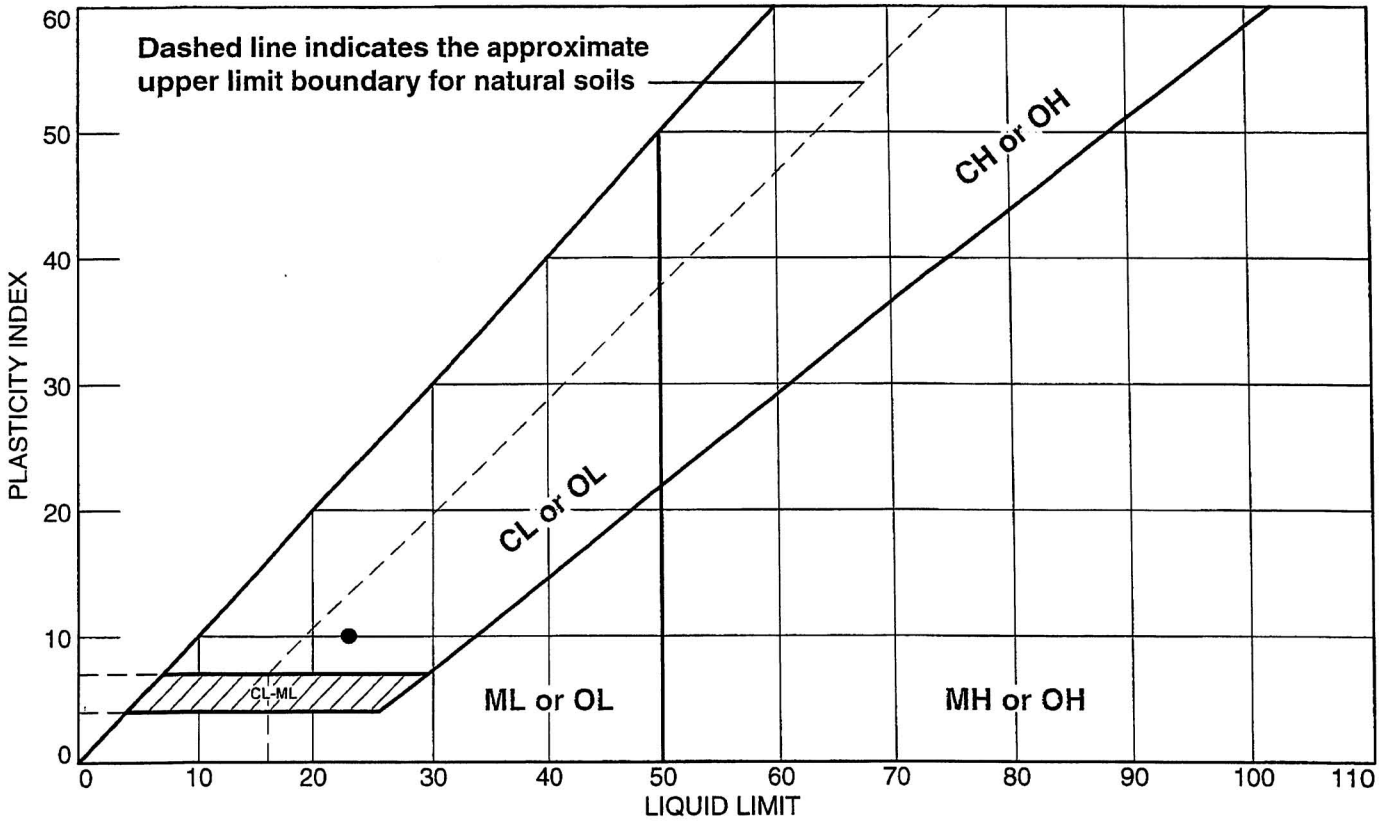
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	56.4	56.7	23.2	20.1	43.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0021	0.0035	0.0050	0.0132	0.0981	0.1133	0.1390	0.1471	0.1666	0.2009

Fineness Modulus	C_u	C_c
0.14	54.08	0.74

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-35	238.5-240.0	16.8	13	23	10	SC

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project No.: 6468071777
Figure N A

Tested By: CS **Checked By:** LBJ DSC 4-2-08

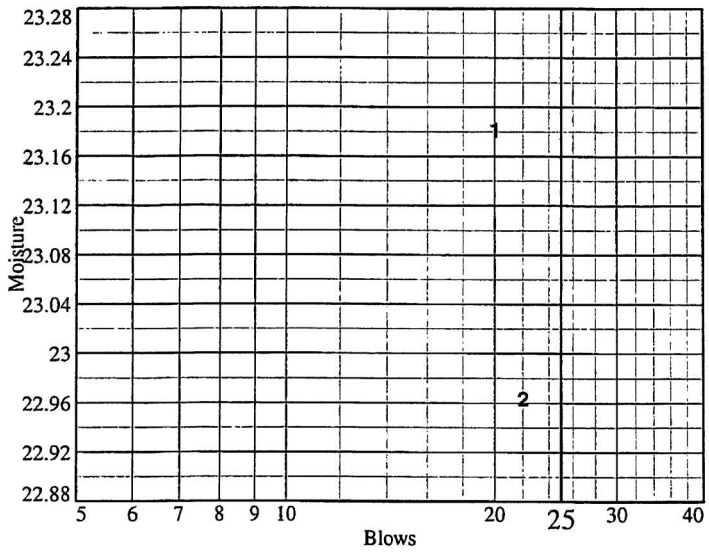
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 238.5-240.0 **Sample Number:** SS-35
Material Description: Pale Yellow Clayey SAND
USCS: SC **AASHTO:** A-4(1)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	31.71	33.90				
Dry+Tare	28.65	30.46				
Tare	15.45	15.48				
# Blows	20	22				
Moisture	23.2	23.0				



Liquid Limit= 23
Plastic Limit= 13
Plasticity Index= 10
Natural Moisture= 16.8
Liquidity Index= 0.4

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	23.40	22.24			
Dry+Tare	22.50	21.46			
Tare	15.55	15.48			
Moisture	12.9	13.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
121.89	105.65	9.15	16.8

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

REPORT OF THE STANDARD TEST METHOD FOR SPECIFIC GRAVITY OF SOILS
Performed in General Accordance with ASTM D 854-06 (Method B)

PROJECT NAME:EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE:4/1/08

SAMPLE IDENTIFICATION: B-2304A SS-35

(A) Mass of oven-dried soil, grams:		75.01
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.71
(C) Mass of pycnometer, water and soil, grams:		702.49
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		21.6
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.657
(F)	***Correction factor:***	0.99966
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.656

MATERIAL TESTED: [X] **- # 4** [ ] **- # 10**

PREPARATION METHOD: [X] **DRY** [ ] **WET (dispersed)**

REMARKS: Estimated % Passing # 4 : 100

Clayey SAND (SC)

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER :P-3

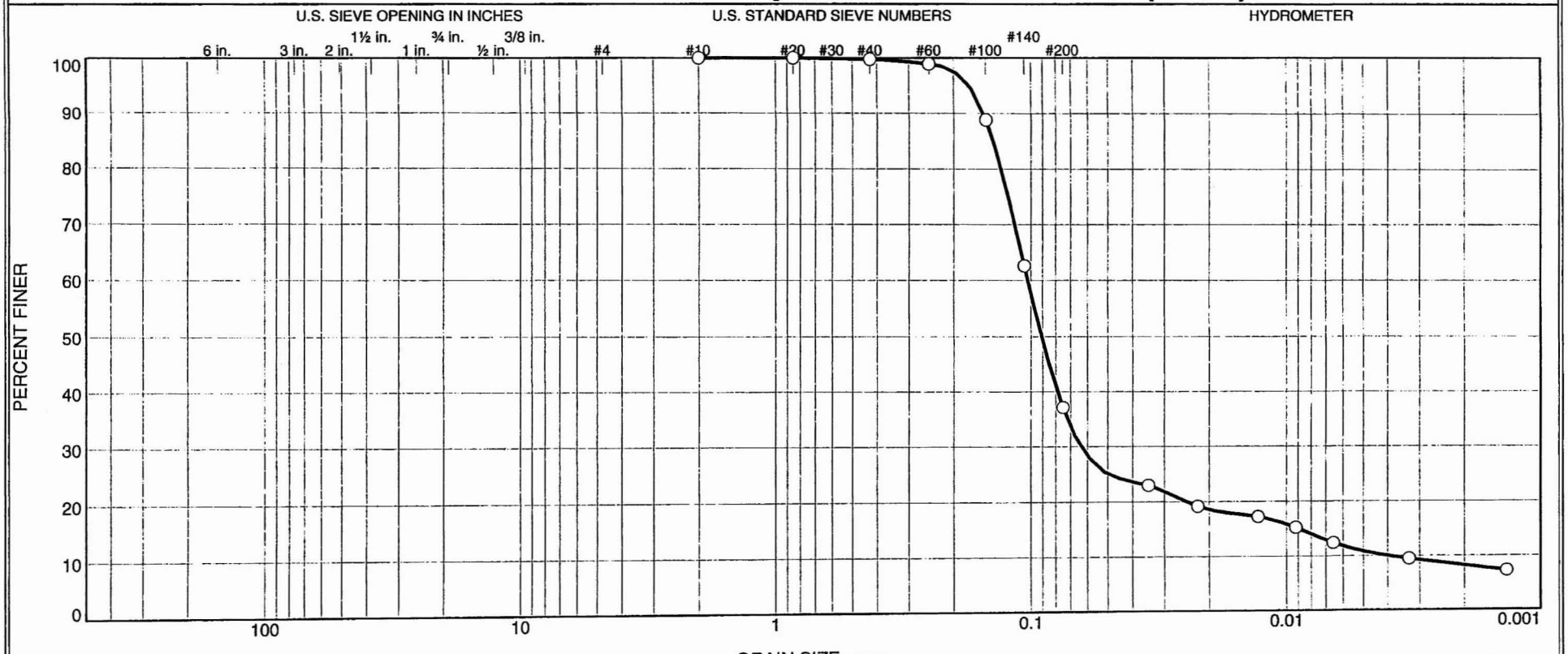
TESTED BY: CS

\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: **LBJ**

DSC 4-1-08

Particle Size Distribution Report / ASTM D 422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.2	62.6	26.3	10.9

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-36	258.5-260.0	1-23-08	SC	Light Gray Clayey SAND	22.6	24	13

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

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Raleigh, North Carolina

○ Specific Gravity = 2.650 (ASTM D854-06)

Tested By: CS **Checked By:** LBJ DSC 4-2-08

GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 258.5-260.0 **Sample Number:** SS-36
Material Description: Light Gray Clayey SAND
Date: 1-23-08 **Natural Moisture:** 22.6
Liquid Limit: 24 **Plastic Limit:** 13 **USCS Class.:** SC
Testing Remarks: Specific Gravity = 2.650 (ASTM D854-06)
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
276.15	0.00	0.00	#10	0.00	100.0
53.12	0.00	0.00	#20	0.01	100.0
			#40	0.12	99.8
			#60	0.58	98.9
			#100	5.89	88.9
			#140	19.83	62.7
			#200	33.38	37.2

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =53.12
Hygroscopic moisture correction:
Moist weight and tare = 28.97
Dry weight and tare = 28.74
Tare weight = 15.63
Hygroscopic moisture = 1.8%
Table of composite correction values:

Temp., deg. C:	12.9	29.9
Comp. corr.:	-8.0	-2.0

Meniscus correction only = 1.0
Specific gravity of solids = 2.650
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.4	17.0	12.0	0.0134	18.0	13.3	0.0346	23.0
5.00	21.4	15.0	10.0	0.0134	16.0	13.7	0.0222	19.2
15.00	21.4	14.0	9.0	0.0134	15.0	13.8	0.0129	17.2
30.00	21.3	13.0	8.0	0.0134	14.0	14.0	0.0092	15.3
60.00	21.4	11.5	6.5	0.0134	12.5	14.2	0.0065	12.5
240.00	21.3	10.0	5.0	0.0134	11.0	14.5	0.0033	9.5
1440.00	20.9	9.0	3.8	0.0135	10.0	14.7	0.0014	7.3

MACTEC, Inc.

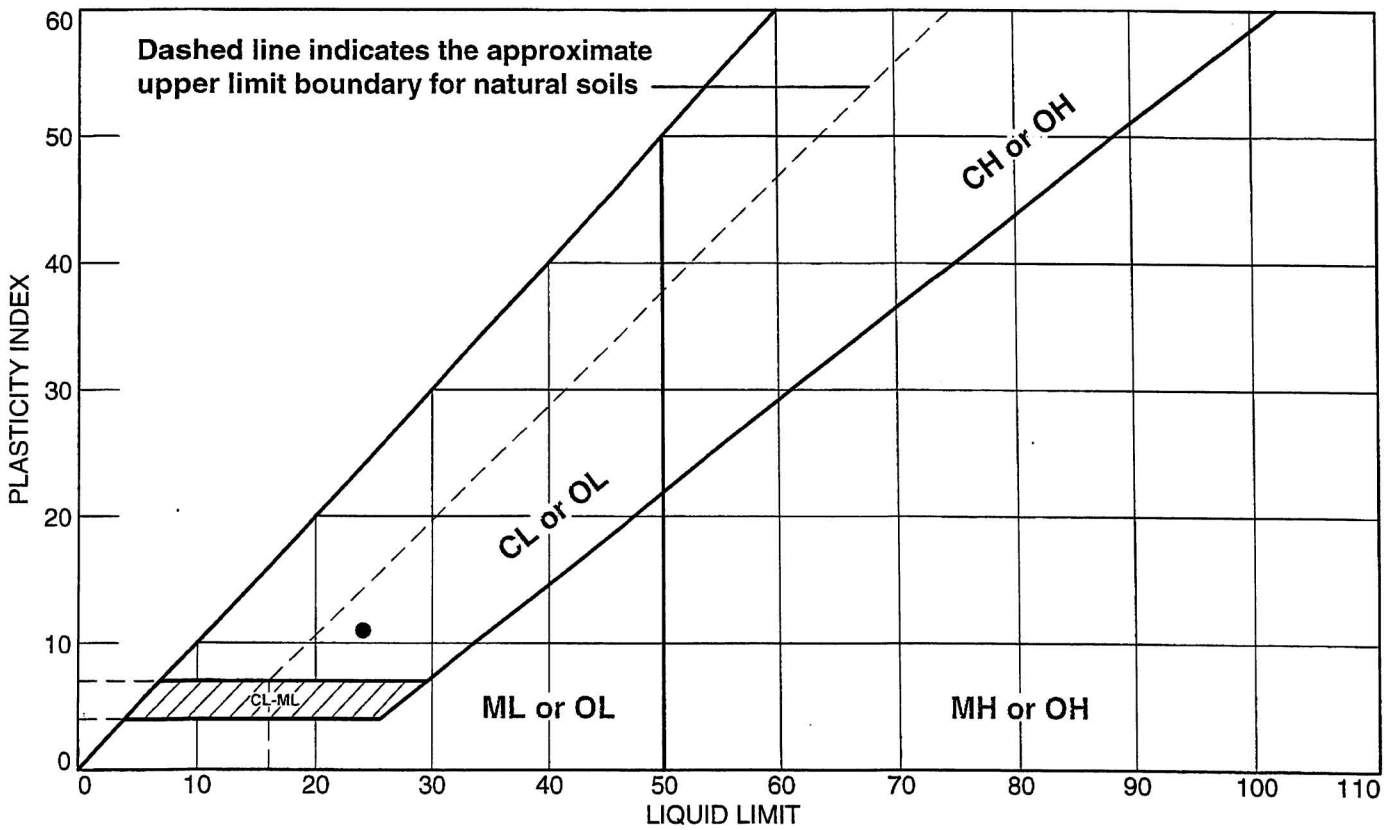
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	62.6	62.8	26.3	10.9	37.2

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0039	0.0089	0.0246	0.0634	0.0908	0.1027	0.1309	0.1405	0.1532	0.1747

Fineness Modulus	C_u	C_c
0.12	26.14	9.97

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	Boring B-2304A	SS-36	258.5-260.0	22.6	13	24	11	SC

MACTEC, Inc.

Raleigh, North Carolina

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project No.: 6468071777
Figure NA

Tested By: CS **Checked By:** LBJ DSC 4-2-08

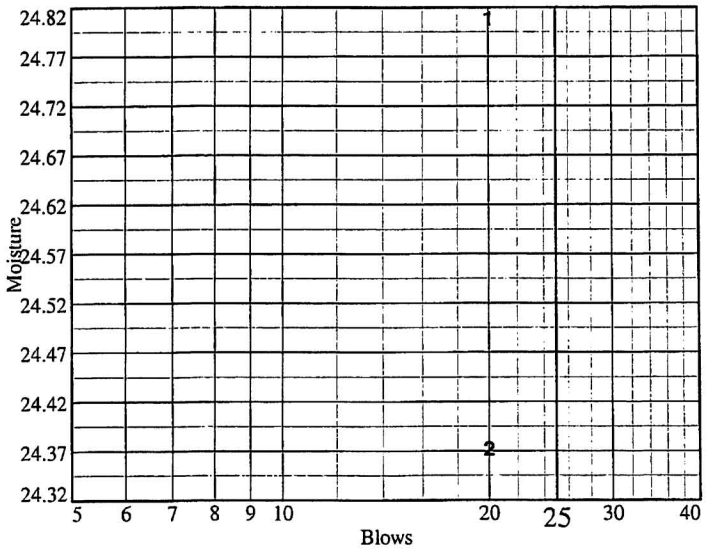
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 258.5-260.0 **Sample Number:** SS-36
Material Description: Light Gray Clayey SAND
USCS: SC **AASHTO:** A-6(0)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	33.51	35.01				
Dry+Tare	29.94	31.22				
Tare	15.55	15.67				
# Blows	20	20				
Moisture	24.8	24.4				



Liquid Limit= 24
Plastic Limit= 13
Plasticity Index= 11
Natural Moisture= 22.6
Liquidity Index= 0.9

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	23.20	22.01			
Dry+Tare	22.29	21.25			
Tare	15.46	15.47			
Moisture	13.3	13.1			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
148.02	121.96	6.78	22.6

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