GRAIN SIZE DISTRIBUTION TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2302A
Depth: 83.5-85 **Sample Number:** SS-20
Material Description: Pale Yellow Silty SAND (Visual)
Date: 1-2-08 **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
233.57	0.00	0.00	#10	0.00	100.0
101.06	0.00	0.00	#20	0.05	100.0
			#40	0.33	99.7
			#60	9.68	90.4
			#100	71.14	29.6
			#140	83.81	17.1
			#200	84.84	16.0

Fractional Components

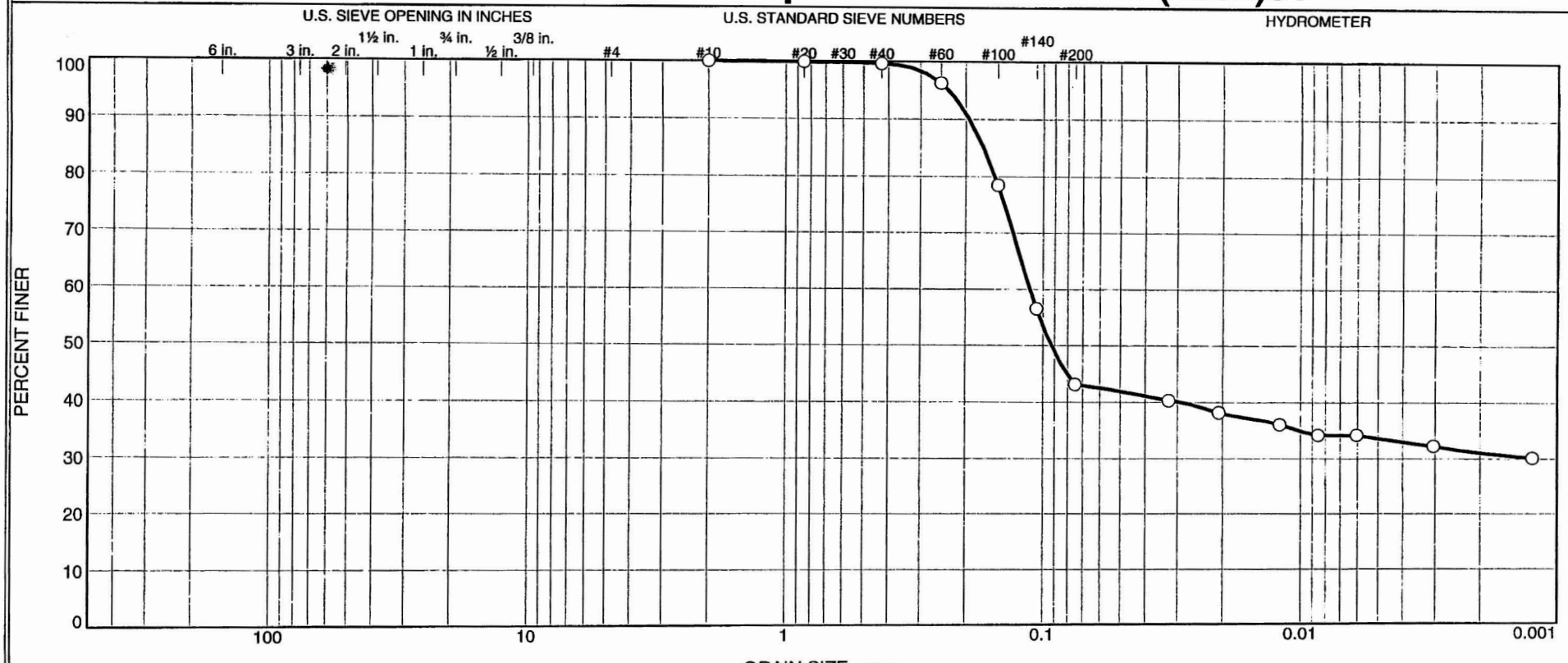
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	83.7	84.0			16.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.1261	0.1507	0.1797	0.1936	0.2258	0.2362	0.2488	0.3081

Fineness Modulus
0.76

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	56.5	9.5	33.6

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2302A	SS-23	98.5-100.0	1-2-08	SC	Pale Yellow Clayey SAND	17.5	39	16

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.695 (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-2302A
Depth: 98.5-100.0 **Sample Number:** SS-23
Material Description: Pale Yellow Clayey SAND
Date: 1-2-08 **Natural Moisture:** 17.5
Liquid Limit: 39 **Plastic Limit:** 16 **USCS Class.:** SC
Testing Remarks: Specific Gravity = 2.695 (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
220.85	0.00	0.00	#10	0.00	100.0
50.52	0.00	0.00	#20	0.06	99.9
			#40	0.20	99.6
			#60	1.92	96.2
			#100	10.85	78.5
			#140	21.92	56.6
			#200	28.73	43.1

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.52
Hygroscopic moisture correction:
Moist weight and tare = 28.95
Dry weight and tare = 28.60
Tare weight = 15.50
Hygroscopic moisture = 2.7%
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 = 2.695
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	25.0	20.0	0.0132	26.0	12.0	0.0324	40.3
5.00	21.4	24.0	19.0	0.0132	25.0	12.2	0.0207	38.2
15.00	21.3	23.0	18.0	0.0132	24.0	12.4	0.0120	36.1
30.00	21.4	22.0	17.0	0.0132	23.0	12.5	0.0085	34.2
60.00	21.4	22.0	17.0	0.0132	23.0	12.5	0.0060	34.2
240.00	21.5	21.0	16.0	0.0132	22.0	12.7	0.0030	32.3
1440.00	21.4	20.0	15.0	0.0132	21.0	12.9	0.0013	30.2

MACTEC, Inc.

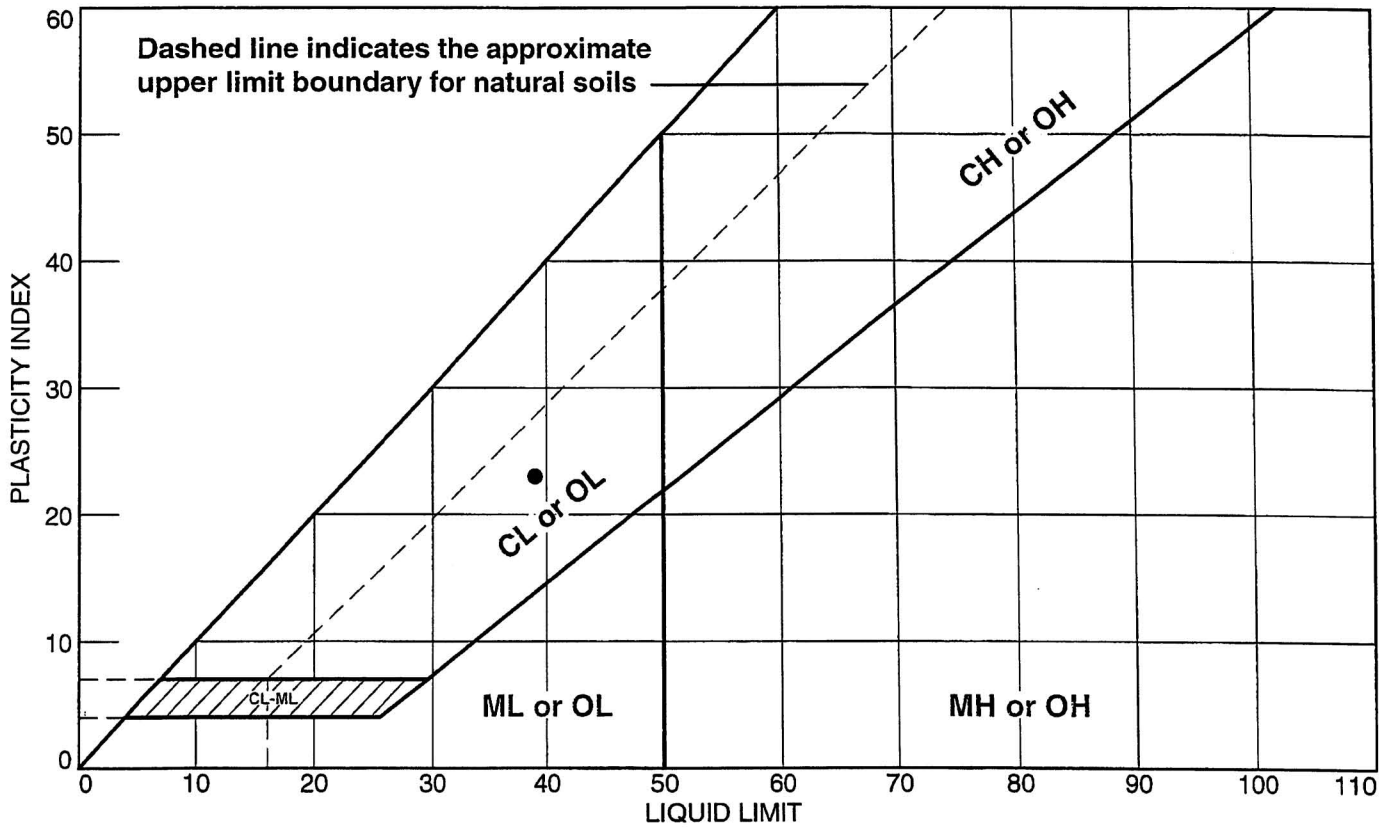
Fractional Components

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	56.5	56.9	9.5	33.6	43.1

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0927	0.1122	0.1540	0.1704	0.1938	0.2341

Fineness Modulus
0.23

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-2302A	SS-23	98.5-100.0	17.5	16	39	23	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

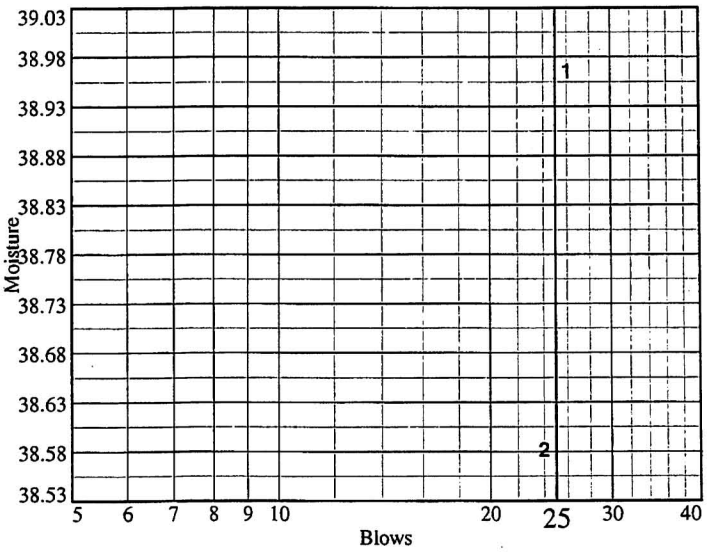
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2302A
Depth: 98.5-100.0 **Sample Number:** SS-23
Material Description: Pale Yellow Clayey SAND
USCS: SC **AASHTO:** A-6(5)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	22.46	22.51				
Dry+Tare	20.50	20.55				
Tare	15.47	15.47				
# Blows	26	24				
Moisture	39.0	38.6				



Liquid Limit= 39
Plastic Limit= 16
Plasticity Index= 23
Natural Moisture= 17.5
Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.11	22.70			
Dry+Tare	25.54	21.10			
Tare	15.54	11.10			
Moisture	15.7	16.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
132.84	114.10	6.80	17.5

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-2302A SS-23

(A) Mass of oven-dried soil, grams:		50.88
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.56
(C) Mass of pycnometer, water and soil, grams:		687.57
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		21.9
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.696
(F)	***Correction factor:***	0.99936
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.695

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

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

REMARKS: Estimated % Passing # 4 : 100%

Clayey SAND (SC)

EQUIPMENT USED

SCALES : 3.1.19

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNOMETER : P-3

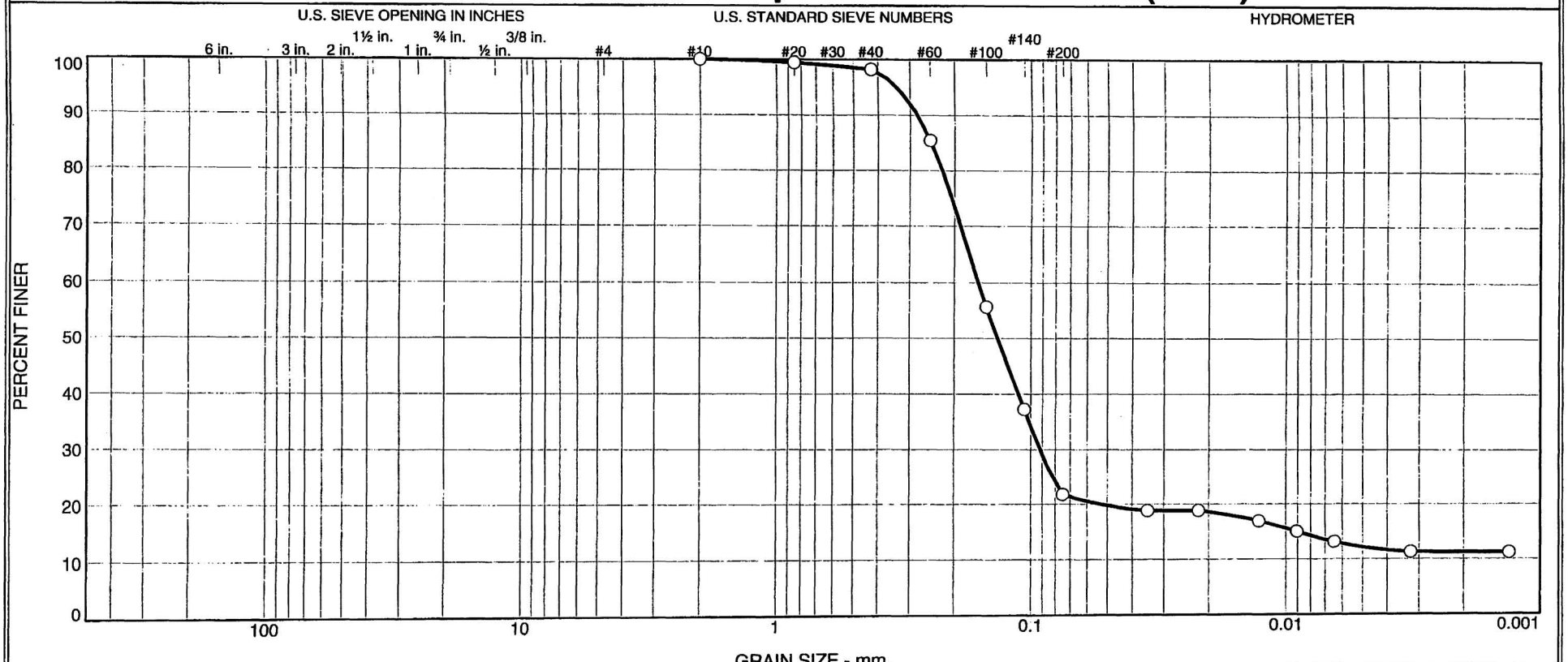
TESTED BY: CS

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

REVIEWED BY: **Brian Johnson**

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	1.7	76.5	9.7	12.1

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2302A	SS-24	108.5-110.0	1-2-08	SM	Yellow Silty SAND	ND	NV	NP

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed
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-2302A
Depth: 108.5-110.0 **Sample Number:** SS-24
Material Description: Yellow Silty SAND
Date: 1-2-08 **Natural Moisture:** ND
Liquid Limit: NV **Plastic Limit:** NP **USCS Class.:** SM
Testing Remarks: Specific Gravity is assumed
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
237.82	0.00	0.00	#10	0.00	100.0
52.31	0.00	0.00	#20	0.30	99.4
			#40	0.91	98.3
			#60	7.58	85.5
			#100	23.16	55.7
			#140	32.82	37.3
			#200	40.93	21.8

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =52.31
Hygroscopic moisture correction:
Moist weight and tare = 27.60
Dry weight and tare = 27.51
Tare weight = 15.58
Hygroscopic moisture = 0.8%
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 = 2.700
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	21.1	15.0	9.9	0.0133	16.0	13.7	0.0347	18.8
5.00	21.1	15.0	9.9	0.0133	16.0	13.7	0.0219	18.8
15.00	21.1	14.0	8.9	0.0133	15.0	13.8	0.0127	16.9
30.00	21.1	13.0	7.9	0.0133	14.0	14.0	0.0091	15.0
60.00	21.1	12.0	6.9	0.0133	13.0	14.2	0.0064	13.1
240.00	21.2	11.0	5.9	0.0132	12.0	14.3	0.0032	11.3
1440.00	21.1	11.0	5.9	0.0133	12.0	14.3	0.0013	11.2

MACTEC, Inc.

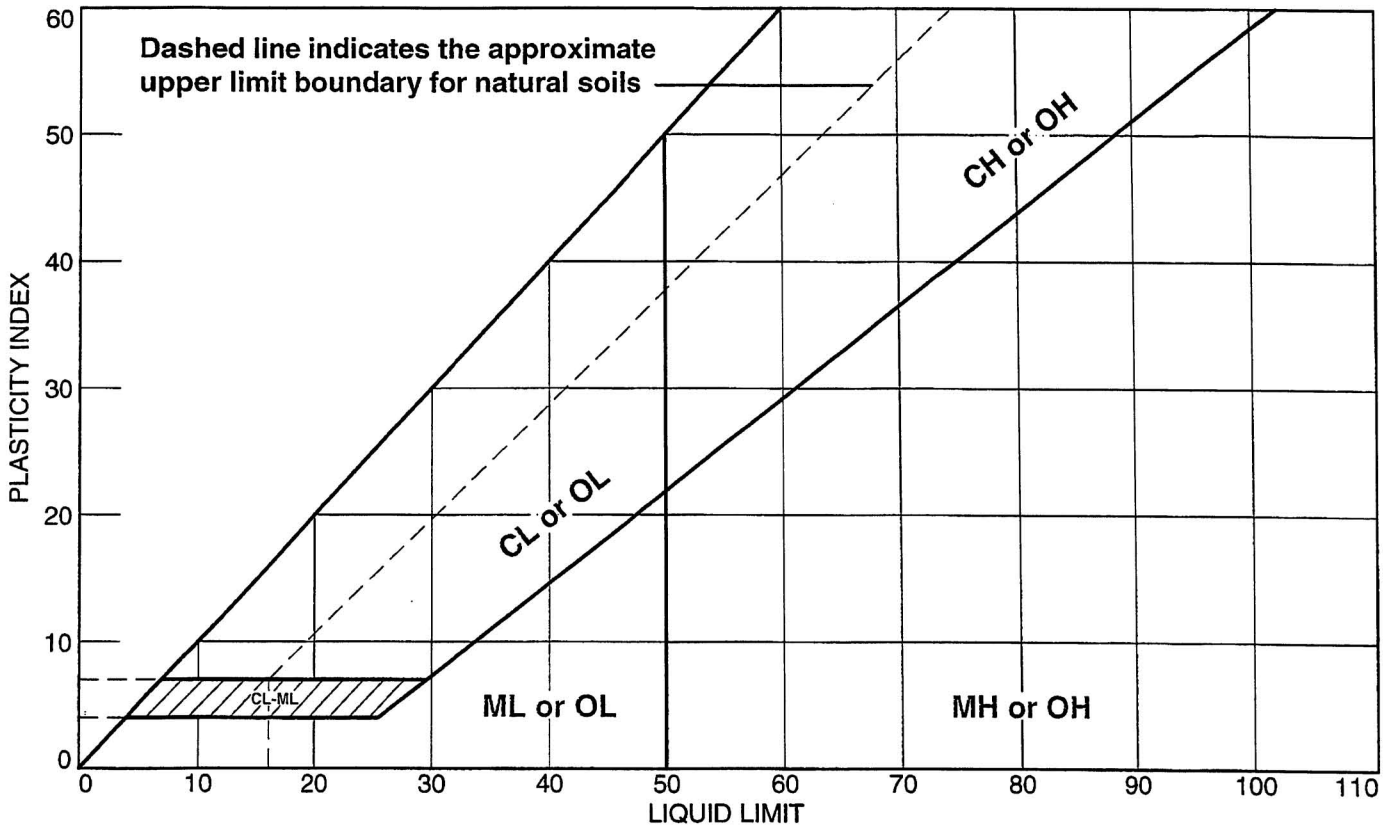
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	1.7	76.5	78.2	9.7	12.1	21.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0090	0.0531	0.0917	0.1355	0.1611	0.2240	0.2472	0.2800	0.3370

Fineness Modulus
0.53

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-2302A	SS-24	108.5-110.0	ND	NP	NV	NP	SM

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

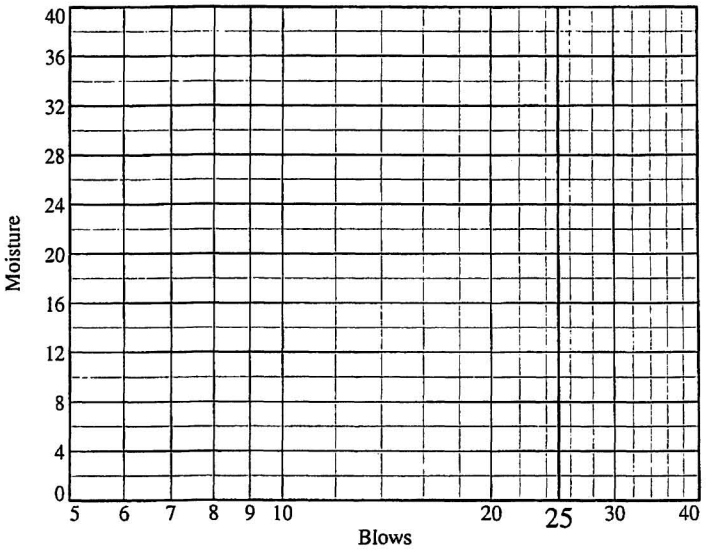
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2302A
Depth: 108.5-110.0 **Sample Number:** SS-24
Material Description: 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						



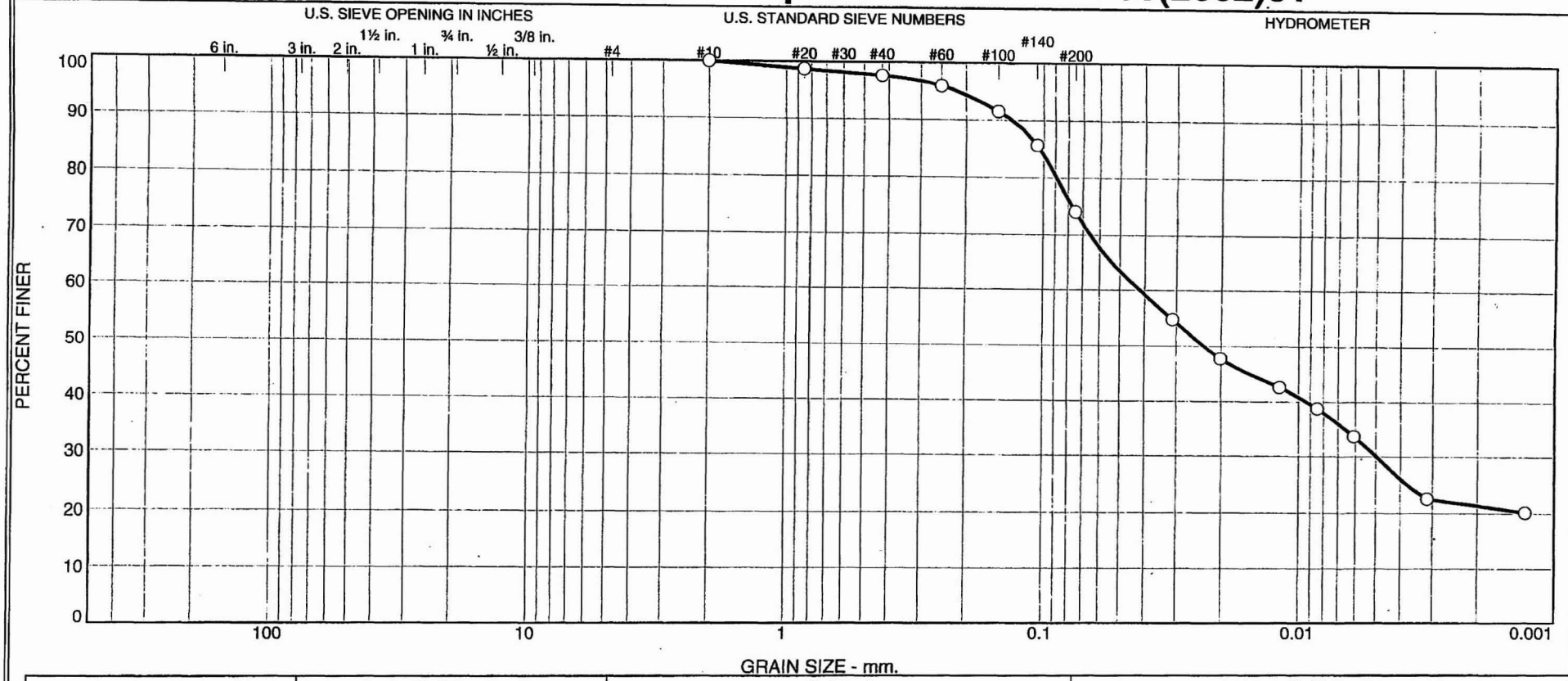
Liquid Limit= NV
Plastic Limit= NP
Plasticity Index= NP
Natural Moisture= ND

Plastic Limit Data

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

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	2.4	23.5	44.0	30.1

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2302A	SS-26	128.5-130.0	1-3-08	CL	Very Pale Brown Lean CLAY with sand	19.8	29	14

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.686 (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-2302A
Depth: 128.5-130.0 **Sample Number:** SS-26
Material Description: Very Pale Brown Lean CLAY with sand
Date: 1-3-08 **Natural Moisture:** 19.8
Liquid Limit: 29 **Plastic Limit:** 14 **USCS Class.:** CL
Testing Remarks: Specific Gravity = 2.686 (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
263.70	0.00	0.00	#10	0.00	100.0
49.62	0.00	0.00	#20	0.64	98.7
			#40	1.18	97.6
			#60	2.02	95.9
			#100	4.19	91.6
			#140	7.09	85.7
			#200	12.84	74.1

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 = 27.17
Dry weight and tare = 26.93
Tare weight = 15.55
Hygroscopic moisture = 2.1%
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 = 2.686
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	32.0	26.9	0.0133	33.0	10.9	0.0311	54.9
5.00	21.1	28.5	23.4	0.0133	29.5	11.5	0.0202	47.8
15.00	21.1	26.0	20.9	0.0133	27.0	11.9	0.0118	42.6
30.00	21.4	24.0	19.0	0.0133	25.0	12.2	0.0085	38.8
60.00	21.4	21.5	16.5	0.0133	22.5	12.6	0.0061	33.7
240.00	21.6	16.0	11.1	0.0132	17.0	13.5	0.0031	22.6
1440.00	21.1	15.0	9.9	0.0133	16.0	13.7	0.0013	20.2

MACTEC, Inc.

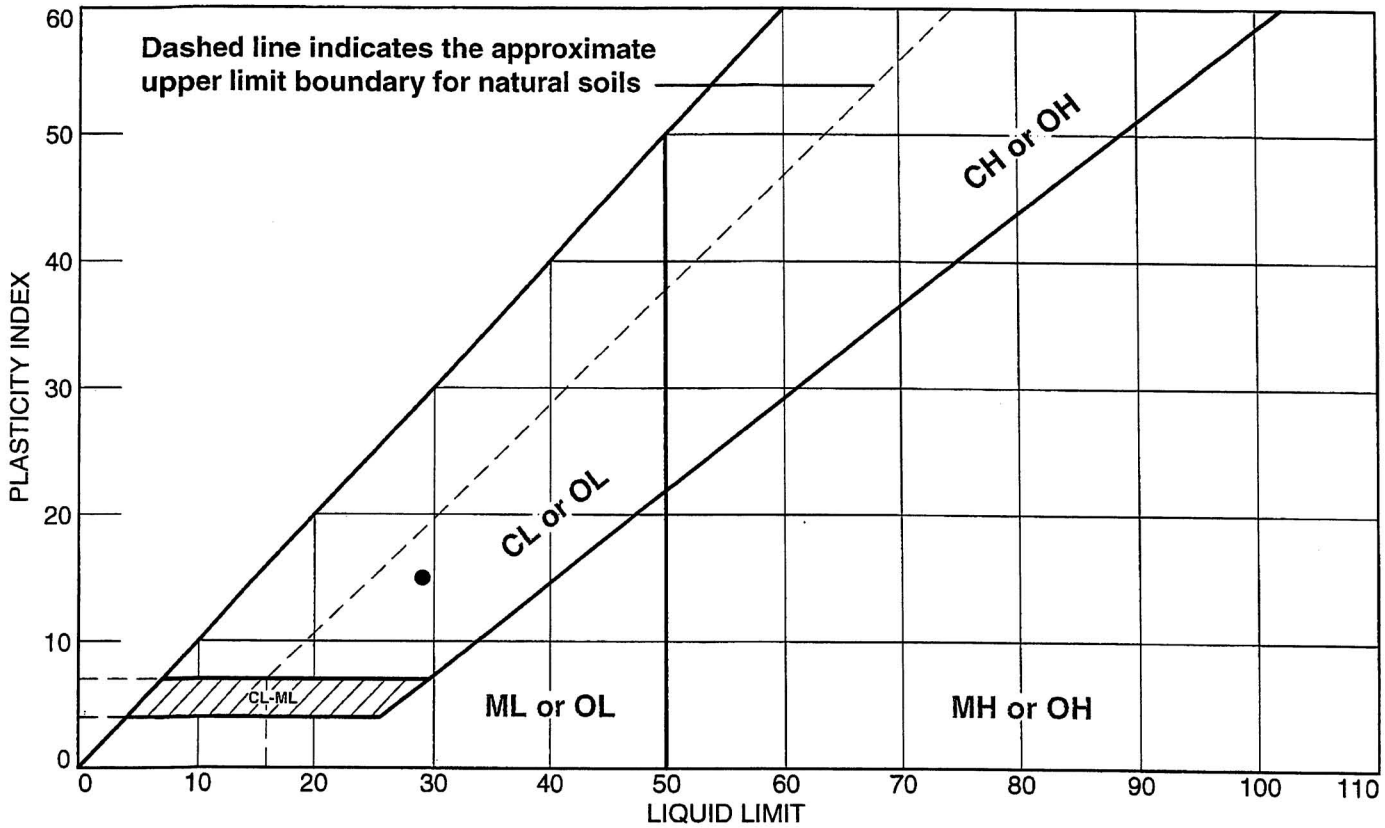
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.4	23.5	25.9	44.0	30.1	74.1

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0050	0.0234	0.0417	0.0887	0.1033	0.1321	0.2167

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-2302A	SS-26	128.5-130.0	19.8	14	29	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

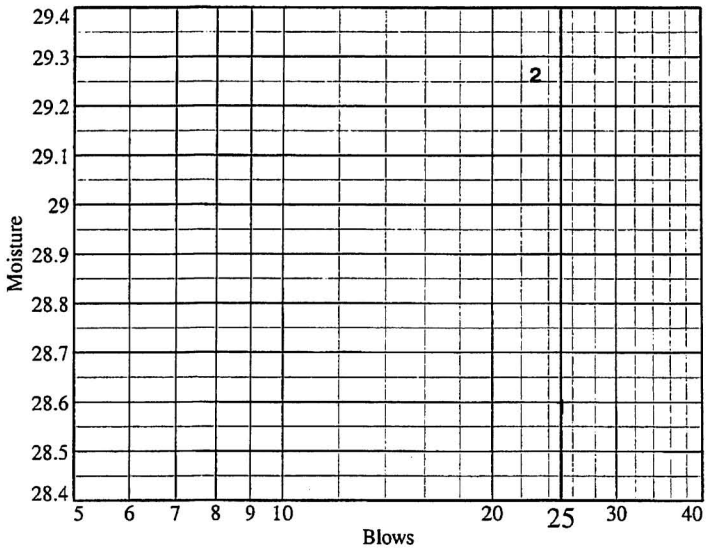
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2302A
Depth: 128.5-130.0 **Sample Number:** SS-26
Material Description: Very Pale Brown Lean CLAY with sand
USCS: CL **AASHTO:** A-6(9)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.86	24.97				
Dry+Tare	22.73	22.86				
Tare	15.28	15.65				
# Blows	25	23				
Moisture	28.6	29.3				



Liquid Limit= 29
Plastic Limit= 14
Plasticity Index= 15
Natural Moisture= 19.8
Liquidity Index= 0.4

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	27.70	26.74			
Dry+Tare	26.16	25.32			
Tare	15.55	15.42			
Moisture	14.5	14.3			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
137.52	115.91	6.62	19.8

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-2302A SS-26

(A) Mass of oven-dried soil, grams:		49.98
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.75
(C) Mass of pycnometer, water and soil, grams:		688.13
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		21.9
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.687
(F)	***Correction factor:***	0.99959
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.686

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

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

REMARKS: Estimated % Passing # 4 : 100%

Lean CLAY with sand (CL)

EQUIPMENT USED

SCALES : 3.1.19

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNOMETER : P-6

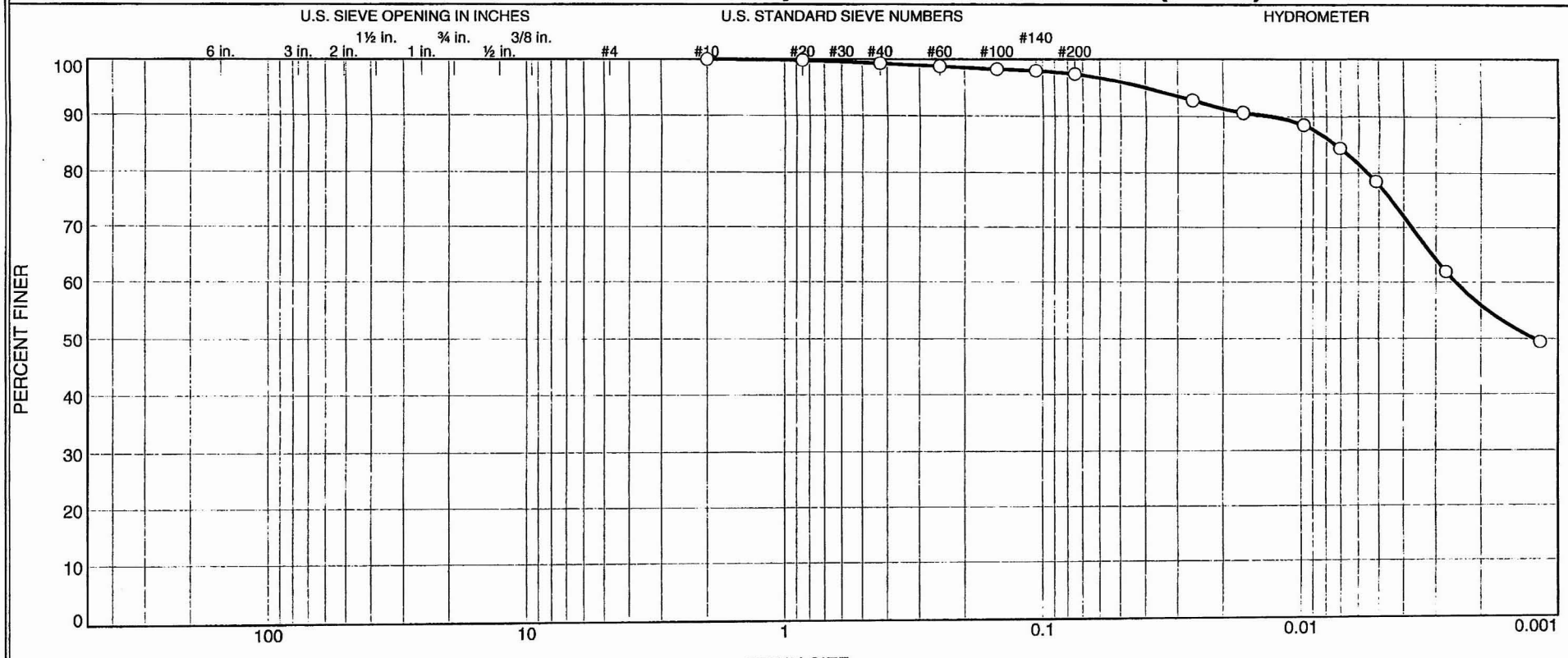
TESTED BY: CS

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

REVIEWED BY: **Brian Johnson**

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	0.8	1.9	19.4	77.9

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2302A	SS-28	143.5-145.0	1-3-08	CH	Light Gray Fat CLAY	25.7	51	16

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-2302A
Depth: 143.5-145.0 **Sample Number:** SS-28
Material Description: Light Gray Fat CLAY
Date: 1-3-08 **Natural Moisture:** 25.7
Liquid Limit: 51 **Plastic Limit:** 16 **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
239.31	0.00	0.00	#10	0.00	100.0
49.79	0.00	0.00	#20	0.10	99.8
			#40	0.38	99.2
			#60	0.63	98.7
			#100	0.88	98.2
			#140	1.02	98.0
			#200	1.32	97.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =49.79
Hygroscopic moisture correction:
Moist weight and tare = 28.56
Dry weight and tare = 28.09
Tare weight = 15.52
Hygroscopic moisture = 3.7%
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	21.4	50.0	45.0	0.0132	51.0	7.9	0.0263	92.7
5.00	21.4	49.0	44.0	0.0132	50.0	8.1	0.0168	90.7
15.00	21.4	48.0	43.0	0.0132	49.0	8.3	0.0098	88.6
30.00	21.4	46.0	41.0	0.0132	47.0	8.6	0.0071	84.5
60.00	21.6	43.0	38.1	0.0132	44.0	9.1	0.0051	78.4
240.00	21.6	35.0	30.1	0.0132	36.0	10.4	0.0027	62.0
1440.00	21.4	29.0	24.0	0.0132	30.0	11.4	0.0012	49.4

MACTEC, Inc.

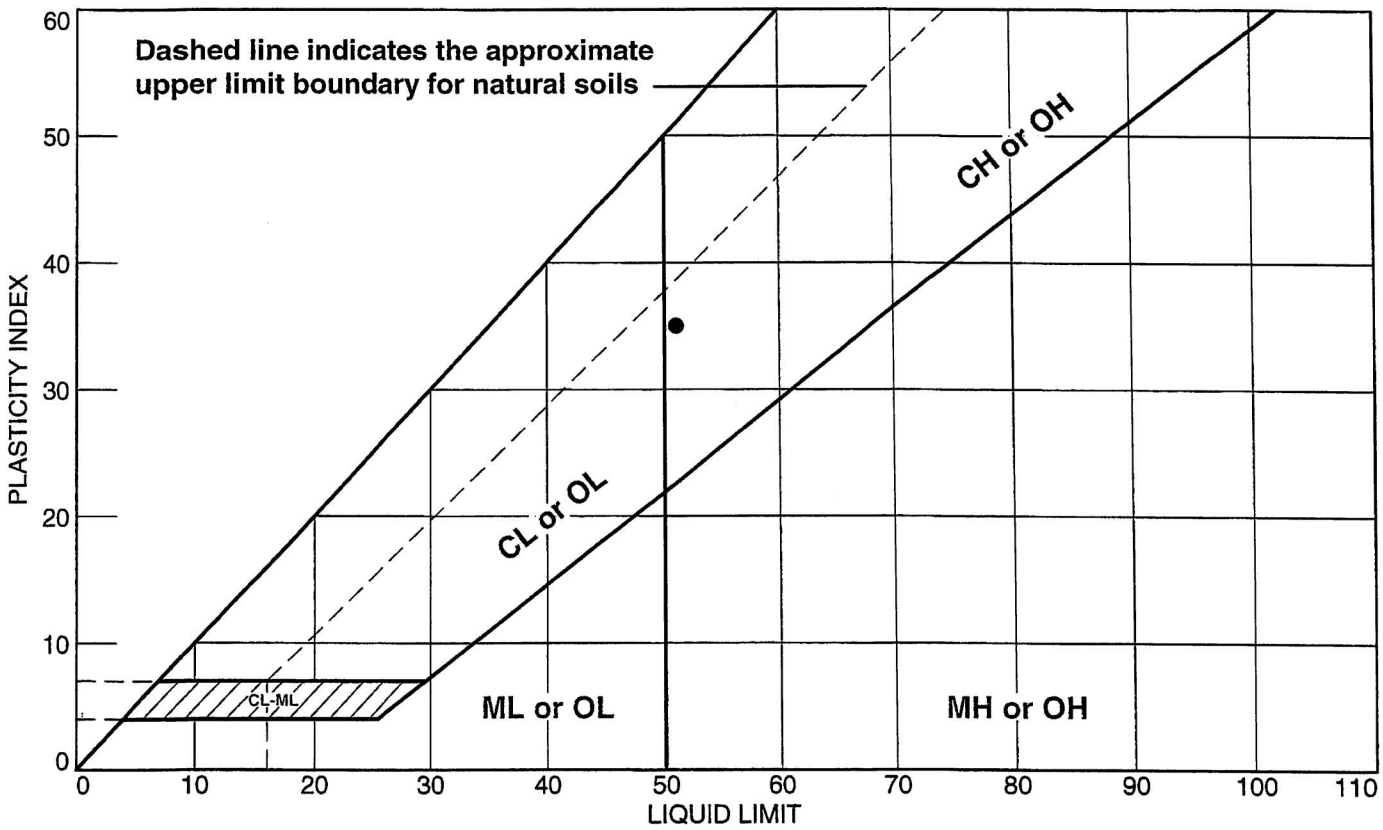
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.8	1.9	2.7	19.4	77.9	97.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0012	0.0025	0.0055	0.0073	0.0128	0.0408

Fineness Modulus
0.03

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-2302A	SS-28	143.5-145.0	25.7	16	51	35	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

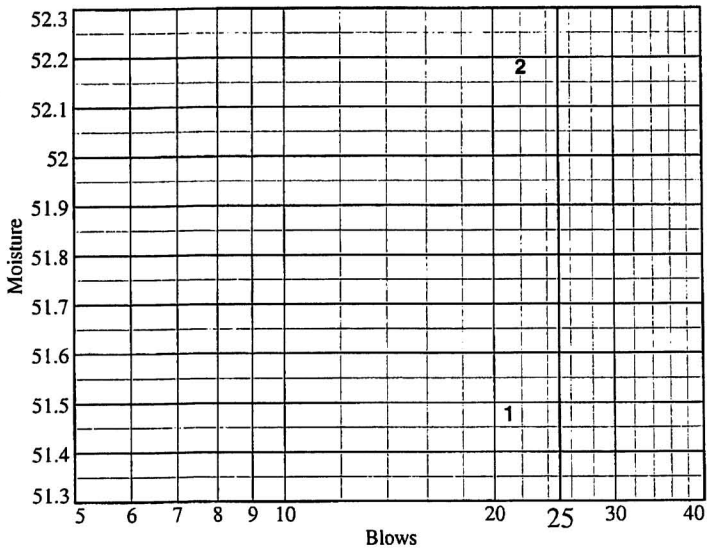
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2302A
Depth: 143.5-145.0 **Sample Number:** SS-28
Material Description: Light Gray Fat CLAY
USCS: CH **AASHTO:** A-7-6(36)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	21.65	23.50				
Dry+Tare	19.56	20.75				
Tare	15.50	15.48				
# Blows	21	22				
Moisture	51.5	52.2				



Liquid Limit= 51
Plastic Limit= 16
Plasticity Index= 35
Natural Moisture= 25.7
Liquidity Index= 0.3

Plastic Limit Data

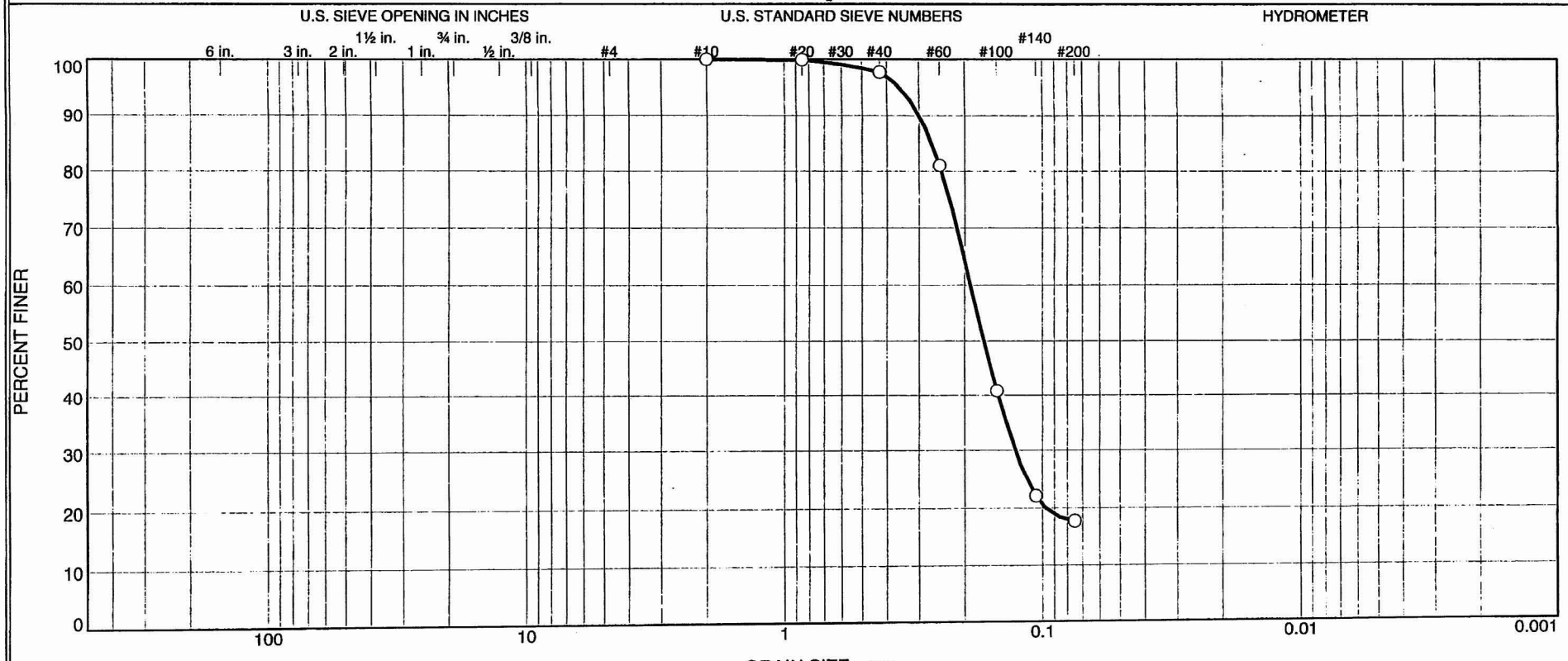
Run No.	1	2	3	4	
Wet+Tare	23.31	26.47			
Dry+Tare	21.63	25.00			
Tare	11.08	15.55			
Moisture	15.9	15.6			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
138.21	111.35	6.80	25.7

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	2.2	80.0	17.8	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2302A	SS-29	148.5-150	1-3-08	SC	Light Gray 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-2302A
Depth: 148.5-150 **Sample Number:** SS-29
Material Description: Light Gray Clayey SAND (Visual)
Date: 1-3-08 **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
173.07	0.00	0.00	#10	0.00	100.0
100.95	0.00	0.00	#20	0.12	99.9
			#40	2.27	97.8
			#60	19.14	81.0
			#100	59.75	40.8
			#140	78.63	22.1
			#200	82.96	17.8

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	2.2	80.0	82.2			17.8

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0971	0.1272	0.1685	0.1897	0.2459	0.2682	0.3002	0.3571

Fineness Modulus
0.70

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-2302A SS-29

(A) Mass of oven-dried soil, grams:		75.69
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.58
(C) Mass of pycnometer, water and soil, grams:		702.74
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		22.8
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.653
(F)	***Correction factor:***	0.99959
(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 : 3.1.19

OVEN : 5.1.16

THERMOMETER : 5.1.01

PYCNOMETER : P-3

TESTED BY: CS

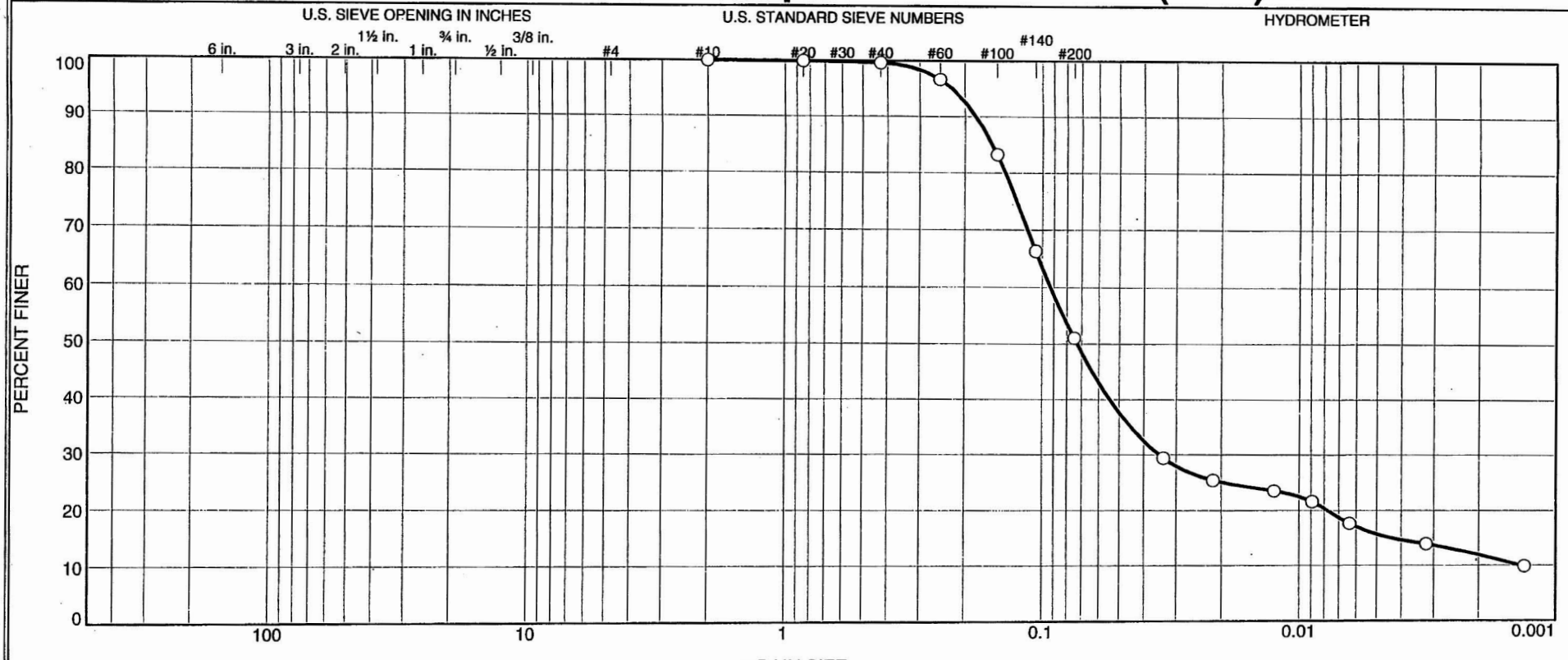
\Test Reports\Soils\SPECIFIC GRAVITY(ref).xls

REVIEWED BY: **Brian Johnson**

DSC 4-1-08

Boring B-2304A

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	48.6	35.3	15.7

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-1	0.0-1.5	1-17-08	ML	Very Dark Gray Sandy SILT	18.7	21	20

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed
Organic content = 3.1 (ASTM D2794-07)

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: 0.0-1.5 **Sample Number:** SS-1
Material Description: Very Dark Gray Sandy SILT
Date: 1-17-08 **Natural Moisture:** 18.7
Liquid Limit: 21 **Plastic Limit:** 20 **USCS Class.:** ML
Testing Remarks: Specific Gravity is assumed
Organic content = 3.1 (ASTM D2794-07)
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
136.62	0.00	0.00	#10	0.00	100.0
50.93	0.00	0.00	#20	0.05	99.9
			#40	0.18	99.6
			#60	1.69	96.7
			#100	8.52	83.3
			#140	17.14	66.3
			#200	24.94	51.0

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.93
Hygroscopic moisture correction:
Moist weight and tare = 26.95
Dry weight and tare = 26.79
Tare weight = 15.53
Hygroscopic moisture = 1.4%
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	21.2	20.0	14.9	0.0132	21.0	12.9	0.0336	29.4
5.00	21.2	18.0	12.9	0.0132	19.0	13.2	0.0215	25.5
15.00	21.3	17.0	12.0	0.0132	18.0	13.3	0.0125	23.6
30.00	21.3	16.0	11.0	0.0132	17.0	13.5	0.0089	21.6
60.00	21.3	14.0	9.0	0.0132	15.0	13.8	0.0064	17.7
240.00	21.6	12.0	7.1	0.0132	13.0	14.2	0.0032	13.9
1440.00	21.4	10.0	5.0	0.0132	11.0	14.5	0.0013	9.8

MACTEC, Inc.

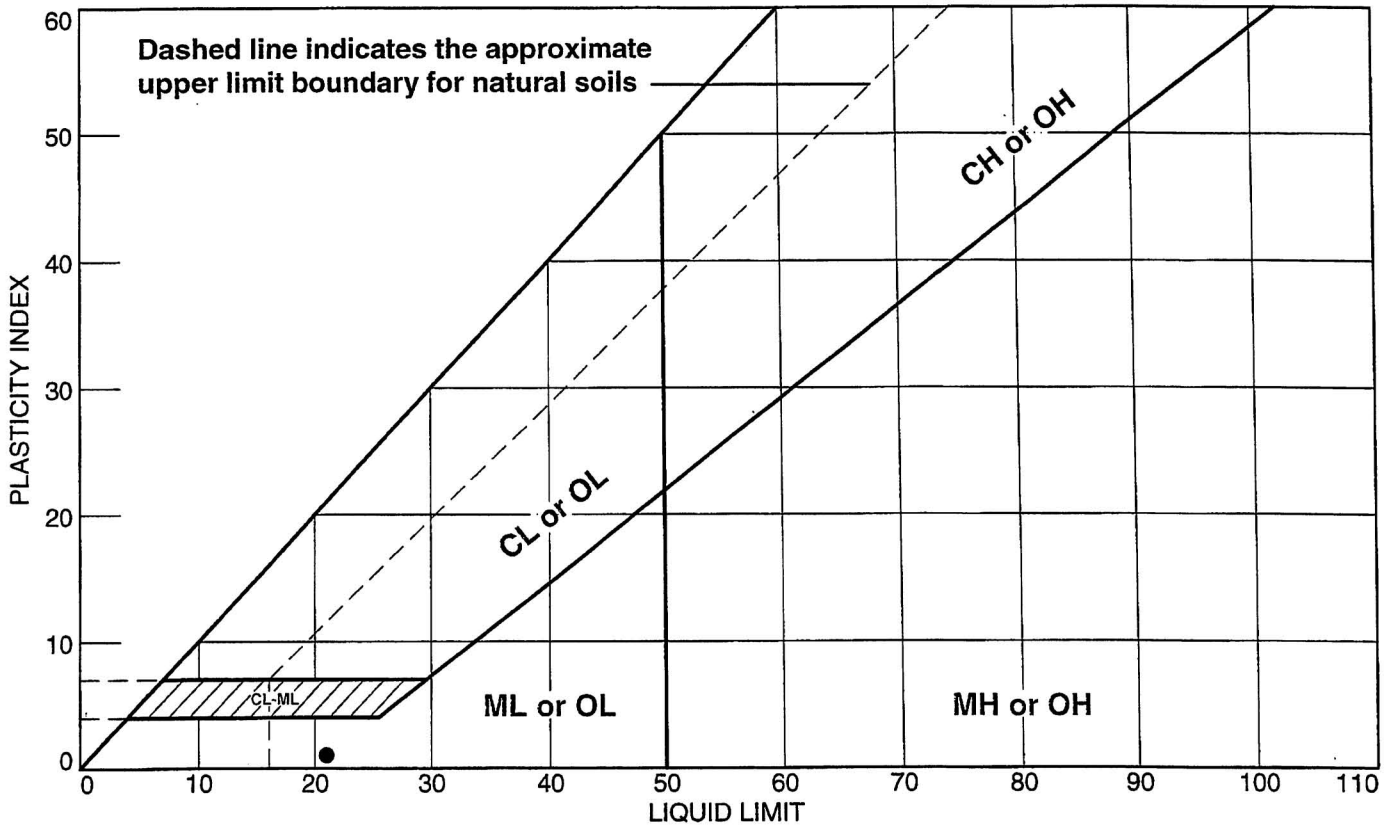
Fractional Components

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	48.6	49.0	35.3	15.7	51.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0014	0.0043	0.0077	0.0349	0.0730	0.0927	0.1394	0.1565	0.1812	0.2243

Fineness Modulus	C_u	C_c
0.19	67.92	9.65

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-1	0.0-1.5	18.7	20	21	1	ML

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

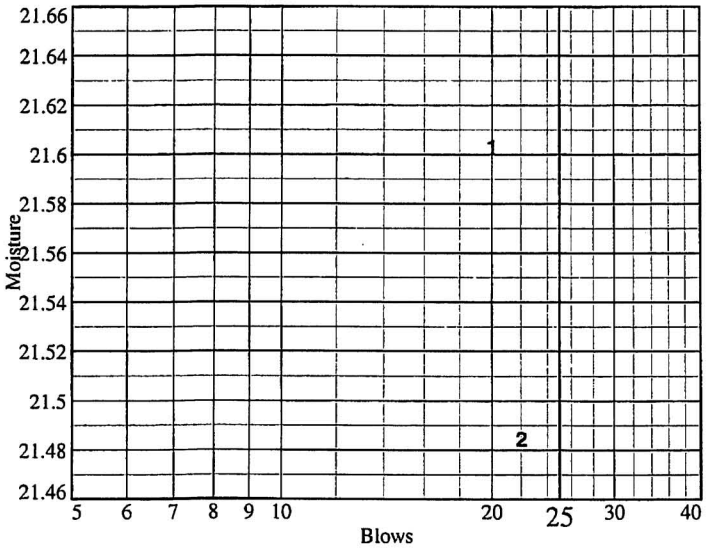
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 0.0-1.5 **Sample Number:** SS-1
Material Description: Very Dark Gray Sandy SILT
USCS: ML **AASHTO:** A-4(0)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	27.97	29.39				
Dry+Tare	25.76	26.93				
Tare	15.53	15.48				
# Blows	20	22				
Moisture	21.6	21.5				



Liquid Limit= 21
Plastic Limit= 20
Plasticity Index= 1
Natural Moisture= 18.7
Liquidity Index= -1.3

Plastic Limit Data

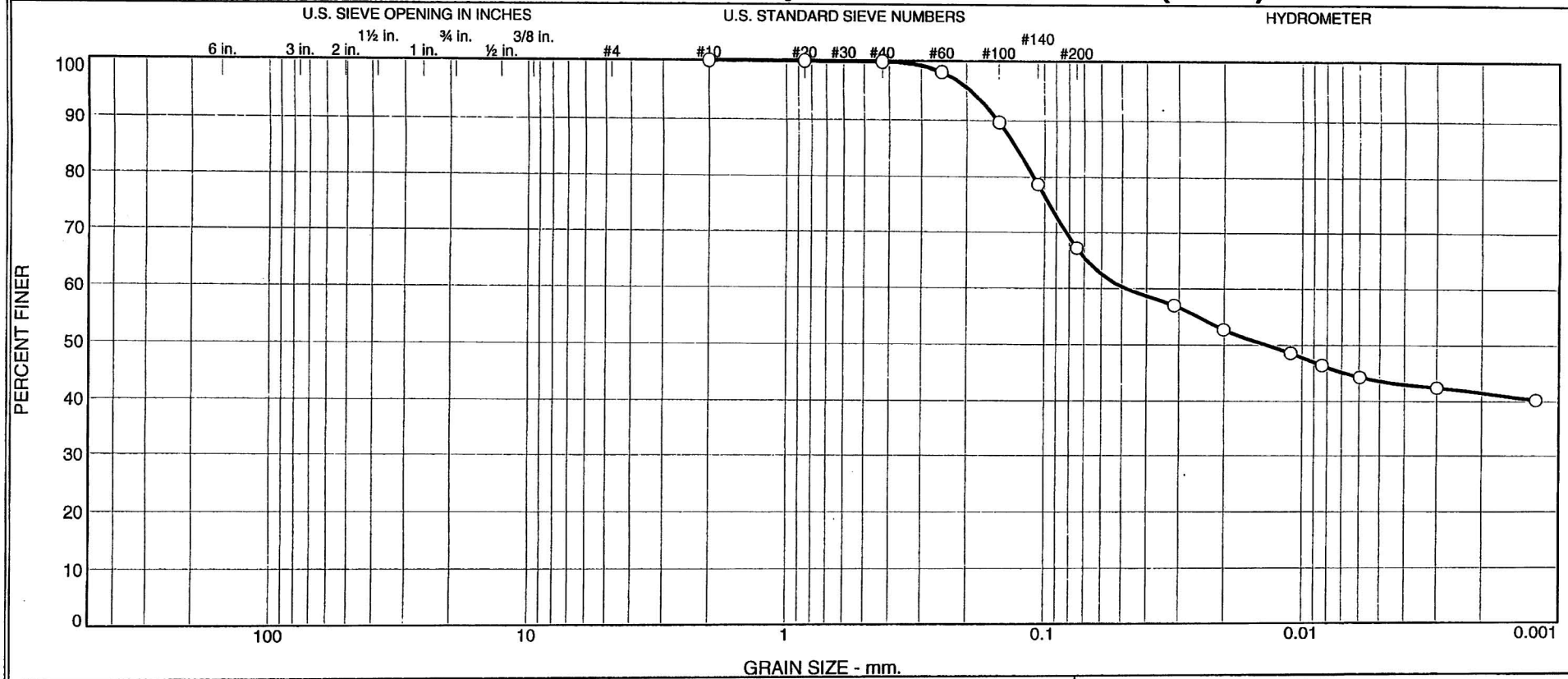
Run No.	1	2	3	4	
Wet+Tare	25.60	26.39			
Dry+Tare	23.86	24.60			
Tare	15.33	15.64			
Moisture	20.4	20.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
84.30	72.49	9.50	18.7

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	32.7	23.6	43.6

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-2	3.5-5.0	1-17-08	CL	Yellowish Brown Sandy Lean CLAY	19.0	47	15

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.665 (ASTM D850-06)
Organic content = 1.7 % (ASTM D2794-07)

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: 3.5-5.0 **Sample Number:** SS-2
Material Description: Yellowish Brown Sandy Lean CLAY
Date: 1-17-08 **Natural Moisture:** 19.0
Liquid Limit: 47 **Plastic Limit:** 15 **USCS Class.:** CL
Testing Remarks: Specific Gravity = 2.665 (ASTM D850-06)
Organic content = 1.7 % (ASTM D2794-07)
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
241.78	0.00	0.00	#10	0.00	100.0
48.24	0.00	0.00	#20	0.03	99.9
			#40	0.06	99.9
			#60	0.87	98.2
			#100	4.96	89.7
			#140	10.28	78.7
			#200	15.82	67.2

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.24
Hygroscopic moisture correction:
Moist weight and tare = 29.27
Dry weight and tare = 28.90
Tare weight = 15.49
Hygroscopic moisture = 2.8%
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 = 2.665
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	21.0	32.0	26.9	0.0134	33.0	10.9	0.0313	57.0
5.00	21.0	30.0	24.9	0.0134	31.0	11.2	0.0201	52.8
17.00	21.1	28.0	22.9	0.0134	29.0	11.5	0.0110	48.6
30.00	21.1	27.0	21.9	0.0134	28.0	11.7	0.0084	46.5
60.00	21.1	26.0	20.9	0.0134	27.0	11.9	0.0060	44.4
240.00	21.4	25.0	20.0	0.0134	26.0	12.0	0.0030	42.5
1440.00	21.3	24.0	19.0	0.0134	25.0	12.2	0.0012	40.3

MACTEC, Inc.

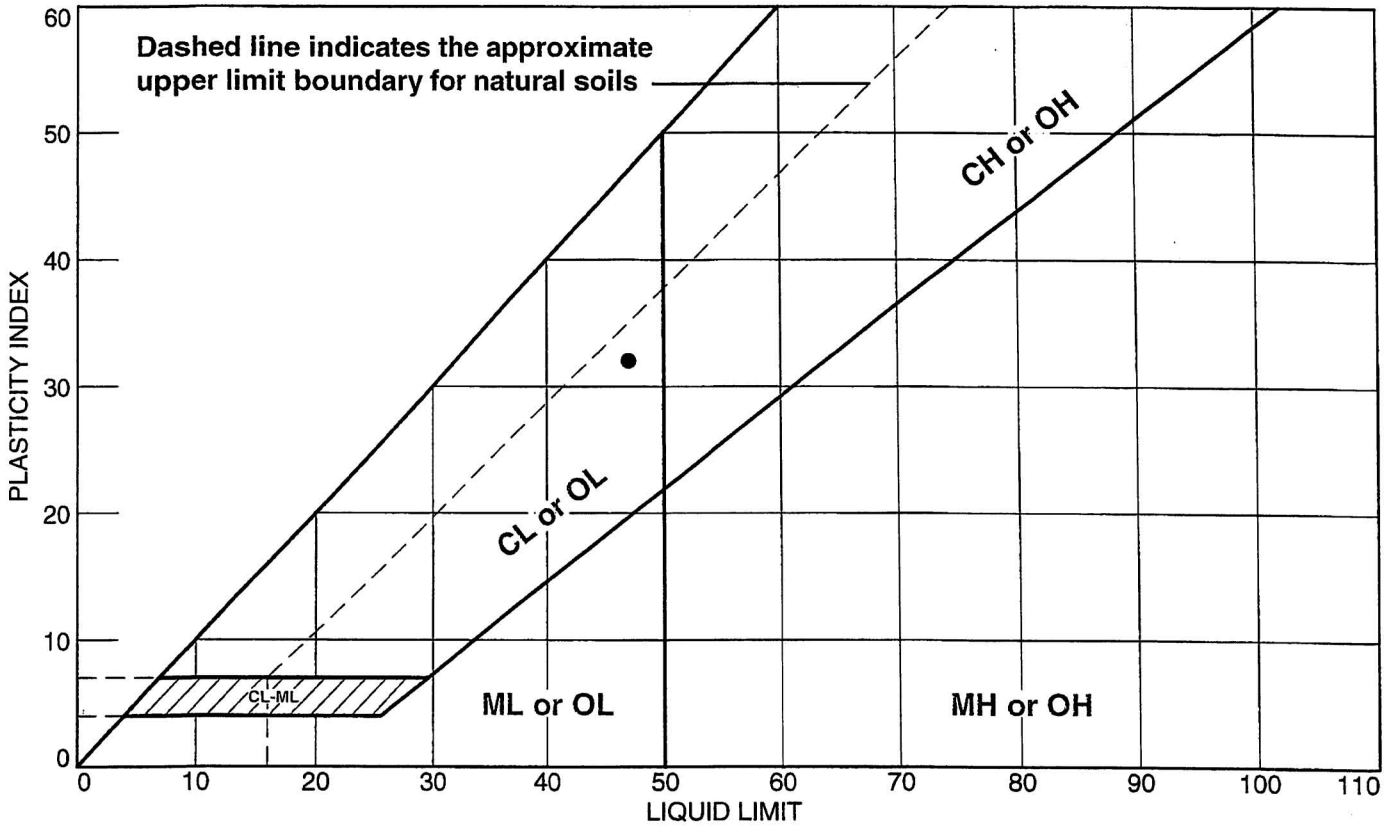
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	32.7	32.8	23.6	43.6	67.2

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0136	0.0482	0.1100	0.1277	0.1516	0.1924

Fineness Modulus
0.11

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-2	3.5-5.0	19.0	15	47	32	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

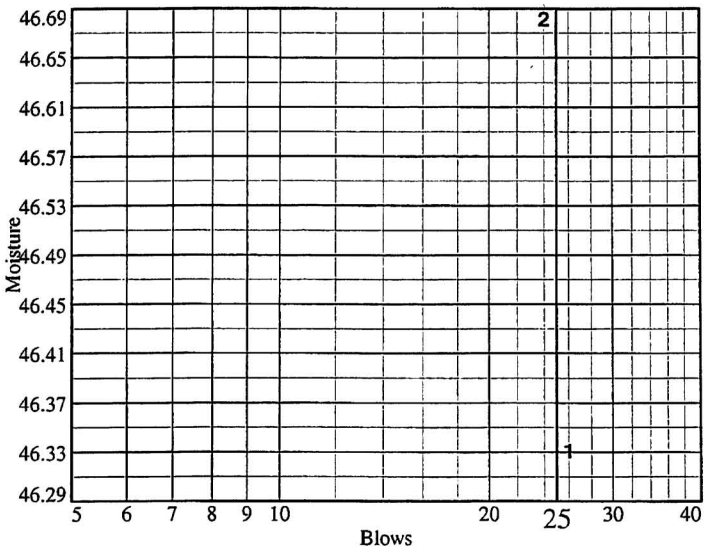
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 3.5-5.0 **Sample Number:** SS-2
Material Description: Yellowish Brown Sandy Lean CLAY
USCS: CL **AASHTO:** A-7-6(19)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	22.48	21.93				
Dry+Tare	20.27	19.89				
Tare	15.50	15.52				
# Blows	26	24				
Moisture	46.3	46.7				



Liquid Limit= 47
Plastic Limit= 15
Plasticity Index= 32
Natural Moisture= 19.0
Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	24.50	23.77			
Dry+Tare	23.31	22.67			
Tare	15.65	15.54			
Moisture	15.5	15.4			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
195.01	165.01	6.80	19.0

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-2

(A) Mass of oven-dried soil, grams:		50.64
(B) Mass of pycnometer filled with water at test temperature (T), grams:		656.61
(C) Mass of pycnometer, water and soil, grams:		688.26
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		23.0
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.667
(F)	***Correction factor:***	0.99933
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.665

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

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

REMARKS: Estimated % Passing # 4 : 100

Sandy Lean CLAY (CL)

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER :P-6

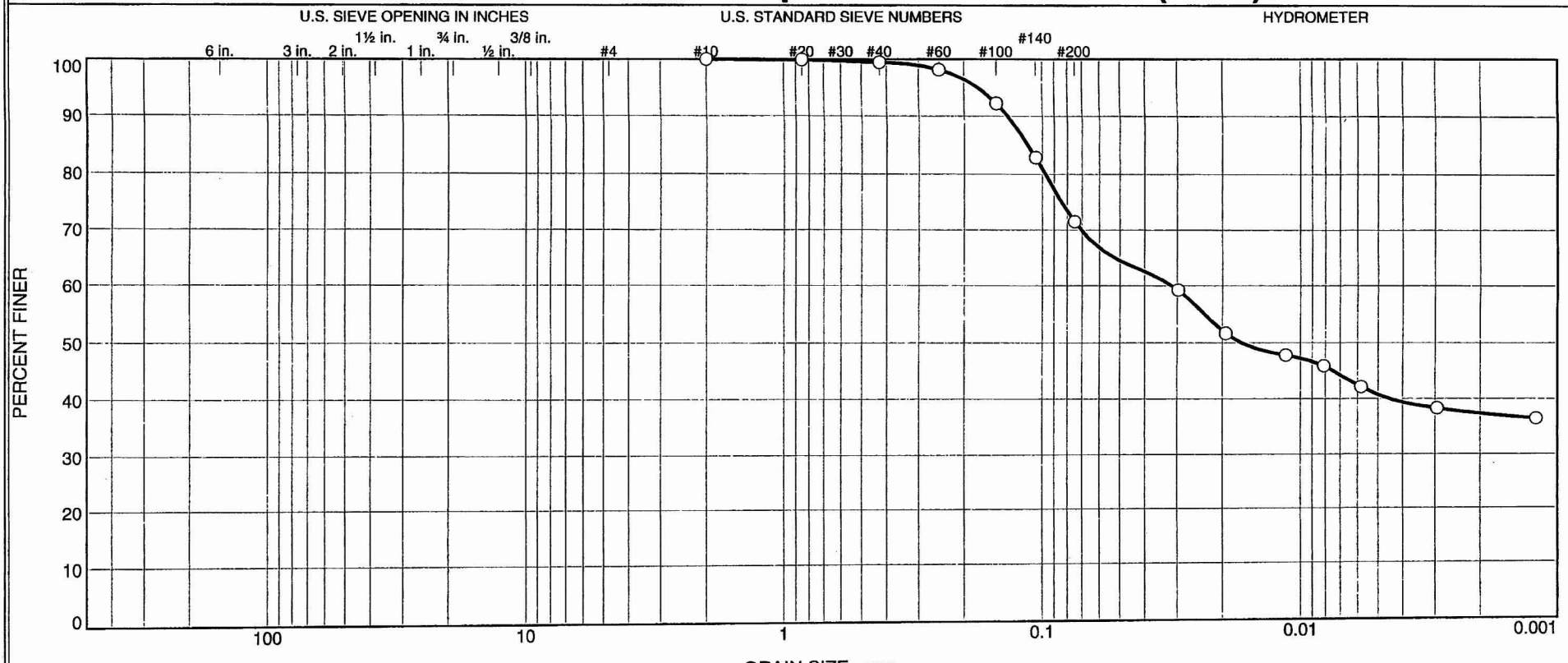
TESTED BY: CS

\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	0.6	27.9	30.8	40.7

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-3	6-7.5	1-17-08	CL	Brownish Yellow Lean CLAY with sand	18.8	43	14

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity is assumed
Organic content = 1.2% (ASTM D2794-07)

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: 6-7.5 **Sample Number:** SS-3
Material Description: Brownish Yellow Lean CLAY with sand
Date: 1-17-08 **Natural Moisture:** 18.8
Liquid Limit: 43 **Plastic Limit:** 14 **USCS Class.:** CL
Testing Remarks: Specific Gravity is assumed
Organic content = 1.2% (ASTM D2794-07)
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
230.83	0.00	0.00	#10	0.00	100.0
53.47	0.00	0.00	#20	0.06	99.9
			#40	0.31	99.4
			#60	0.98	98.2
			#100	4.19	92.2
			#140	9.11	83.0
			#200	15.23	71.5

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =53.47
Hygroscopic moisture correction:
Moist weight and tare = 28.11
Dry weight and tare = 27.76
Tare weight = 15.49
Hygroscopic moisture = 2.9%
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	36.0	31.1	0.0131	37.0	10.2	0.0297	59.2
5.00	21.8	32.0	27.1	0.0131	33.0	10.9	0.0194	51.6
15.00	21.8	30.0	25.1	0.0131	31.0	11.2	0.0114	47.8
30.00	21.8	29.0	24.1	0.0131	30.0	11.4	0.0081	45.9
60.00	21.8	27.0	22.1	0.0131	28.0	11.7	0.0058	42.1
240.00	21.8	25.0	20.1	0.0131	26.0	12.0	0.0029	38.3
1440.00	21.9	24.0	19.2	0.0131	25.0	12.2	0.0012	36.5

MACTEC, Inc.

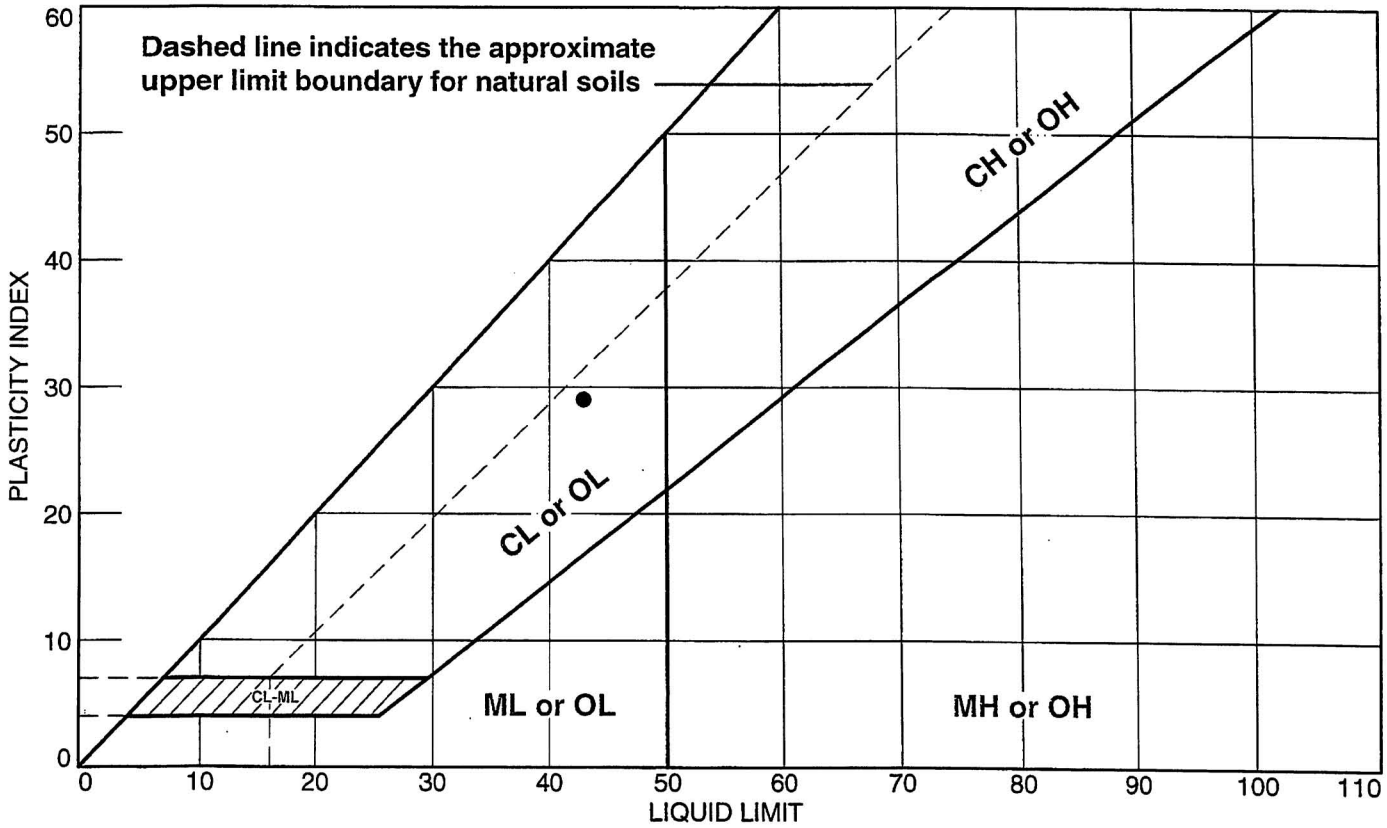
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.6	27.9	28.5	30.8	40.7	71.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0169	0.0314	0.0972	0.1130	0.1359	0.1776

Fineness Modulus
0.09

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-3	6-7.5	18.8	14	43	29	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

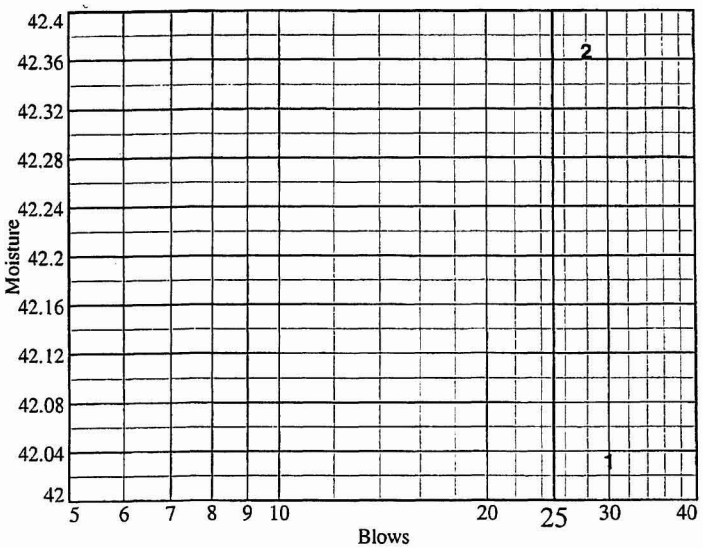
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 6-7.5 **Sample Number:** SS-3
Material Description: Brownish Yellow Lean CLAY with sand
USCS: CL **AASHTO:** A-7-6(19)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	22.67	23.85				
Dry+Tare	20.56	21.38				
Tare	15.54	15.55				
# Blows	30	28				
Moisture	42.0	42.4				



Liquid Limit= 43
Plastic Limit= 14
Plasticity Index= 29
Natural Moisture= 18.8
Liquidity Index= 0.2

Plastic Limit Data

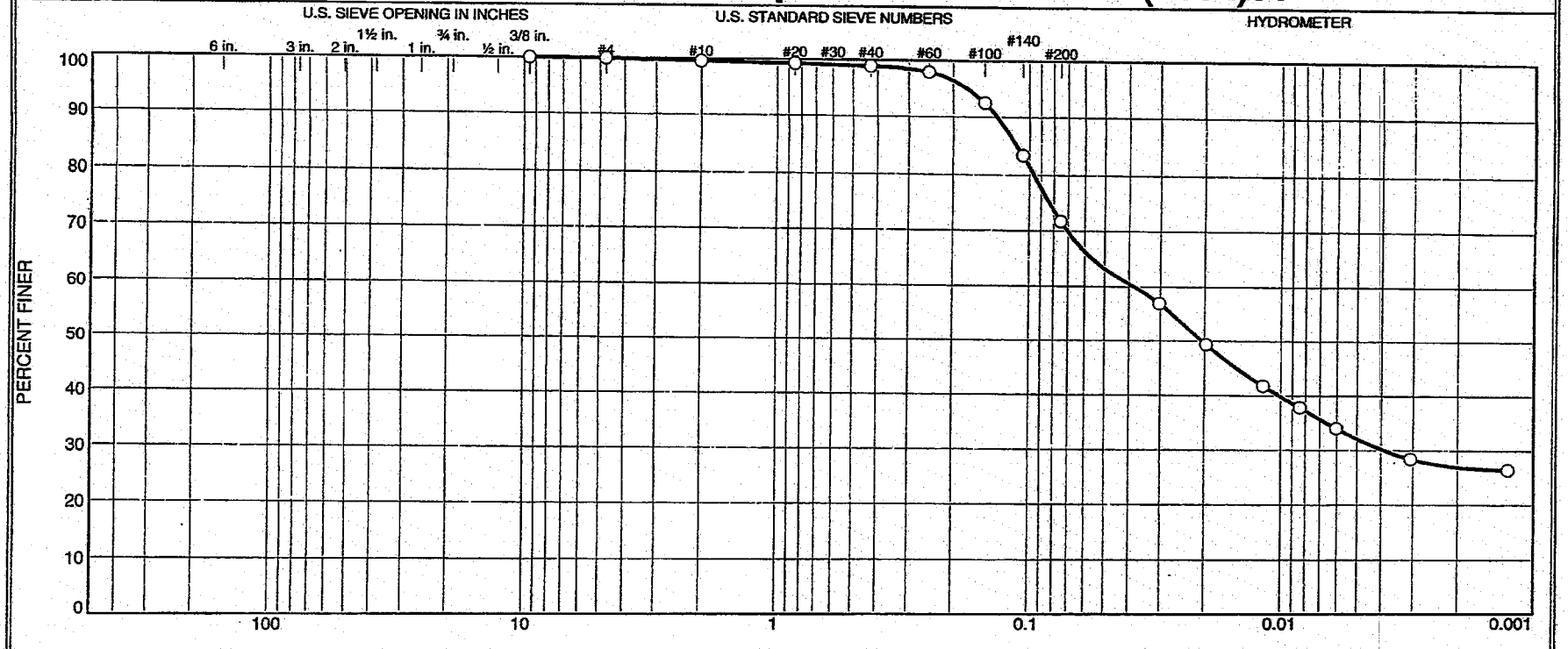
Run No.	1	2	3	4	
Wet+Tare	26.96	24.72			
Dry+Tare	25.56	23.58			
Tare	15.72	15.49			
Moisture	14.2	14.1			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
119.69	101.86	7.08	18.8

MACTEC, Inc.

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	0.4	0.7	27.2	39.5	32.2

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2304A	SS-4	8.5-10.0	1-17-08	CL	Olive Yellow Lean CLAY with sand	19.6	36	14

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: 8.5-10.0 **Sample Number:** SS-4
Material Description: Olive Yellow Lean CLAY with sand
Date: 1-17-08 **Natural Moisture:** 19.6
Liquid Limit: 36 **Plastic Limit:** 14 **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
214.48	0.00	0.00	3/8	0.00	100.0
			#4	0.10	100.0
			#10	0.89	99.6
52.42	0.00	0.00	#20	0.16	99.3
			#40	0.34	98.9
			#60	0.85	98.0
			#100	3.73	92.5
			#140	8.52	83.4
			#200	14.68	71.7

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 99.6
Weight of hydrometer sample =52.42
Hygroscopic moisture correction:
Moist weight and tare = 28.40
Dry weight and tare = 28.19
Tare weight = 15.44
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	21.0	35.0	29.9	0.0133	36.0	10.4	0.0303	57.0
5.00	21.0	31.0	25.9	0.0133	32.0	11.0	0.0197	49.4
15.00	21.0	27.0	21.9	0.0133	28.0	11.7	0.0117	41.7
30.00	21.0	25.0	19.9	0.0133	26.0	12.0	0.0084	37.9
60.00	21.0	23.0	17.9	0.0133	24.0	12.4	0.0060	34.1
240.00	21.2	20.0	14.9	0.0132	21.0	12.9	0.0031	28.5
1440.00	21.1	19.0	13.9	0.0133	20.0	13.0	0.0013	26.5

MACTEC, Inc.

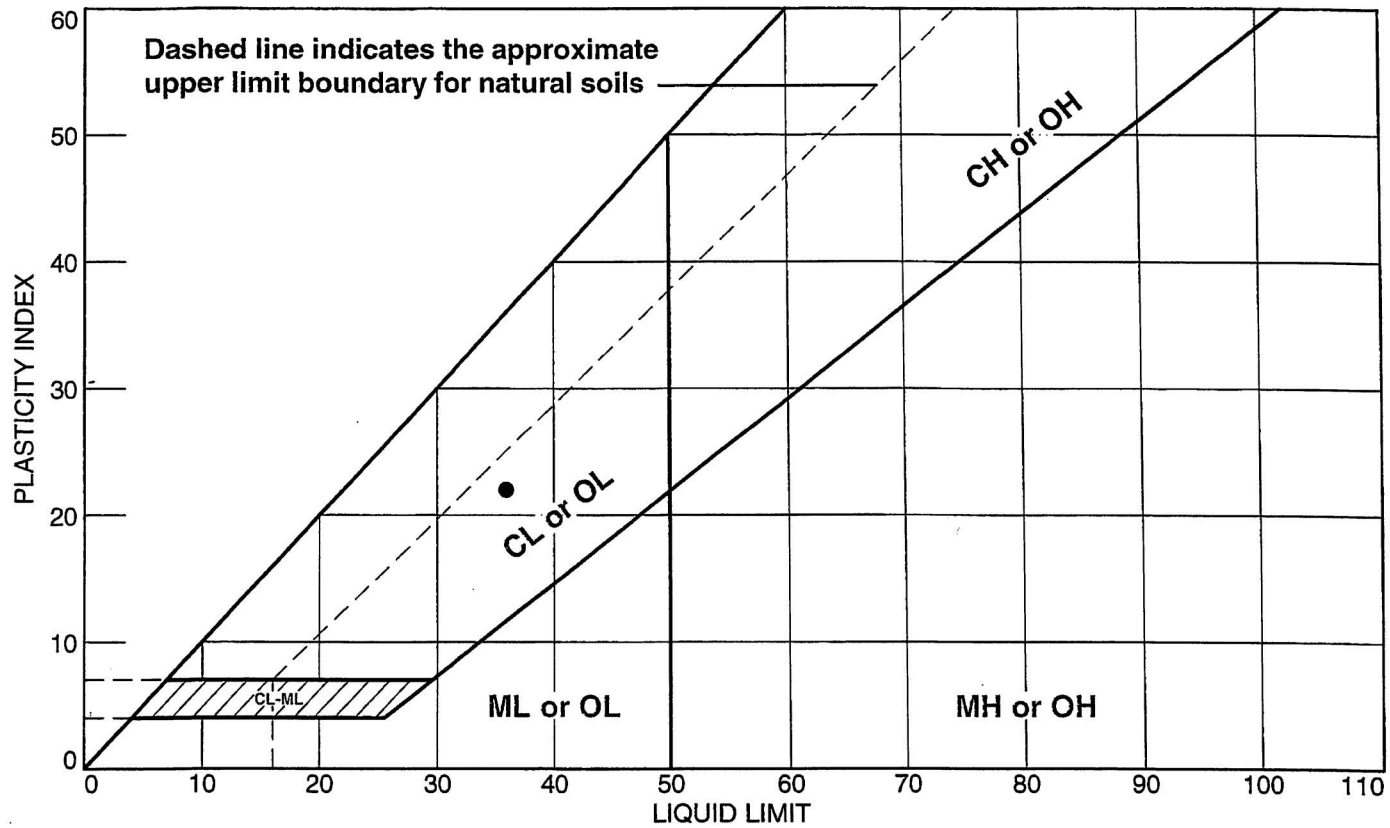
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.4	0.7	27.2	28.3	39.5	32.2	71.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0039	0.0204	0.0380	0.0960	0.1114	0.1336	0.1751

Fineness Modulus
0.11

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-4	8.5-10.0	19.6	14	36	22	CL

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

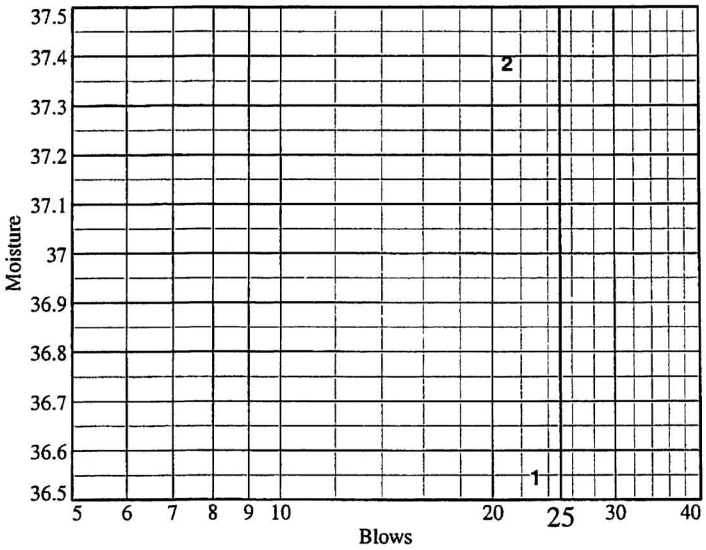
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 8.5-10.0 **Sample Number:** SS-4
Material Description: Olive Yellow Lean CLAY with sand
USCS: CL **AASHTO:** A-6(14)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	22.54	23.03				
Dry+Tare	20.72	20.97				
Tare	15.74	15.46				
# Blows	23	21				
Moisture	36.5	37.4				



Liquid Limit= 36
Plastic Limit= 14
Plasticity Index= 22
Natural Moisture= 19.6
Liquidity Index= 0.3

Plastic Limit Data

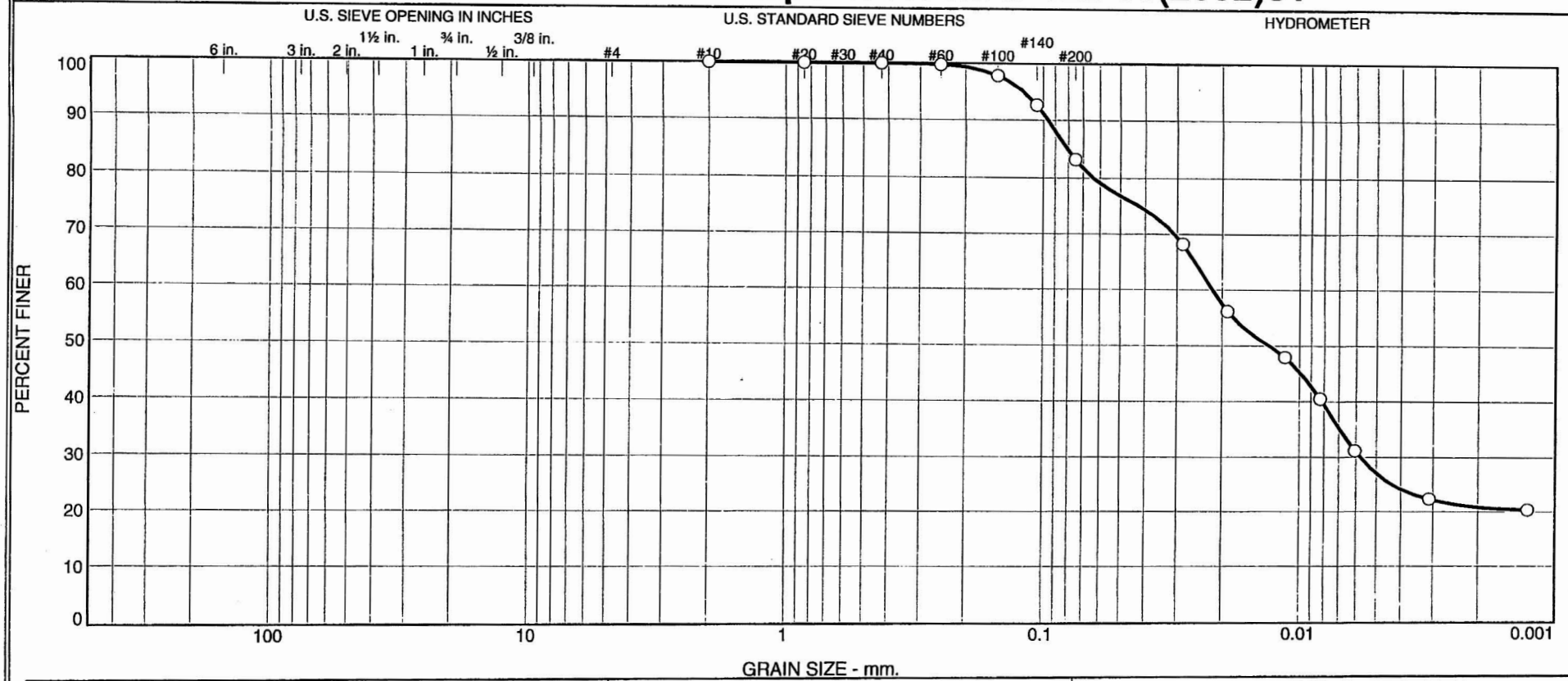
Run No.	1	2	3	4	
Wet+Tare	25.42	28.46			
Dry+Tare	24.22	26.77			
Tare	15.46	15.44			
Moisture	13.7	14.9			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
131.53	111.06	6.69	19.6

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	16.7	56.1	27.1

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-5	11-12.5	1-17-08	CL	Brownish Yellow Lean CLAY with sand	17.3	27	16

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: 11-12.5 **Sample Number:** SS-5
Material Description: Brownish Yellow Lean CLAY with sand
Date: 1-17-08 **Natural Moisture:** 17.3
Liquid Limit: 27 **Plastic Limit:** 16 **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
225.81	0.00	0.00	#10	0.00	100.0
54.56	0.00	0.00	#20	0.02	100.0
			#40	0.03	99.9
			#60	0.12	99.8
			#100	1.20	97.8
			#140	4.02	92.6
			#200	9.14	83.2

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =54.56
Hygroscopic moisture correction:
Moist weight and tare = 27.14
Dry weight and tare = 26.91
Tare weight = 15.60
Hygroscopic moisture = 2.0%
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	21.1	42.0	36.9	0.0133	43.0	9.2	0.0285	68.2
5.00	21.1	35.5	30.4	0.0133	36.5	10.3	0.0190	56.2
15.00	21.1	31.0	25.9	0.0133	32.0	11.0	0.0114	47.9
30.00	21.1	27.0	21.9	0.0133	28.0	11.7	0.0083	40.5
60.00	21.1	22.0	16.9	0.0133	23.0	12.5	0.0061	31.2
240.00	21.6	17.0	12.1	0.0132	18.0	13.3	0.0031	22.3
1440.00	21.4	16.0	11.0	0.0132	17.0	13.5	0.0013	20.3

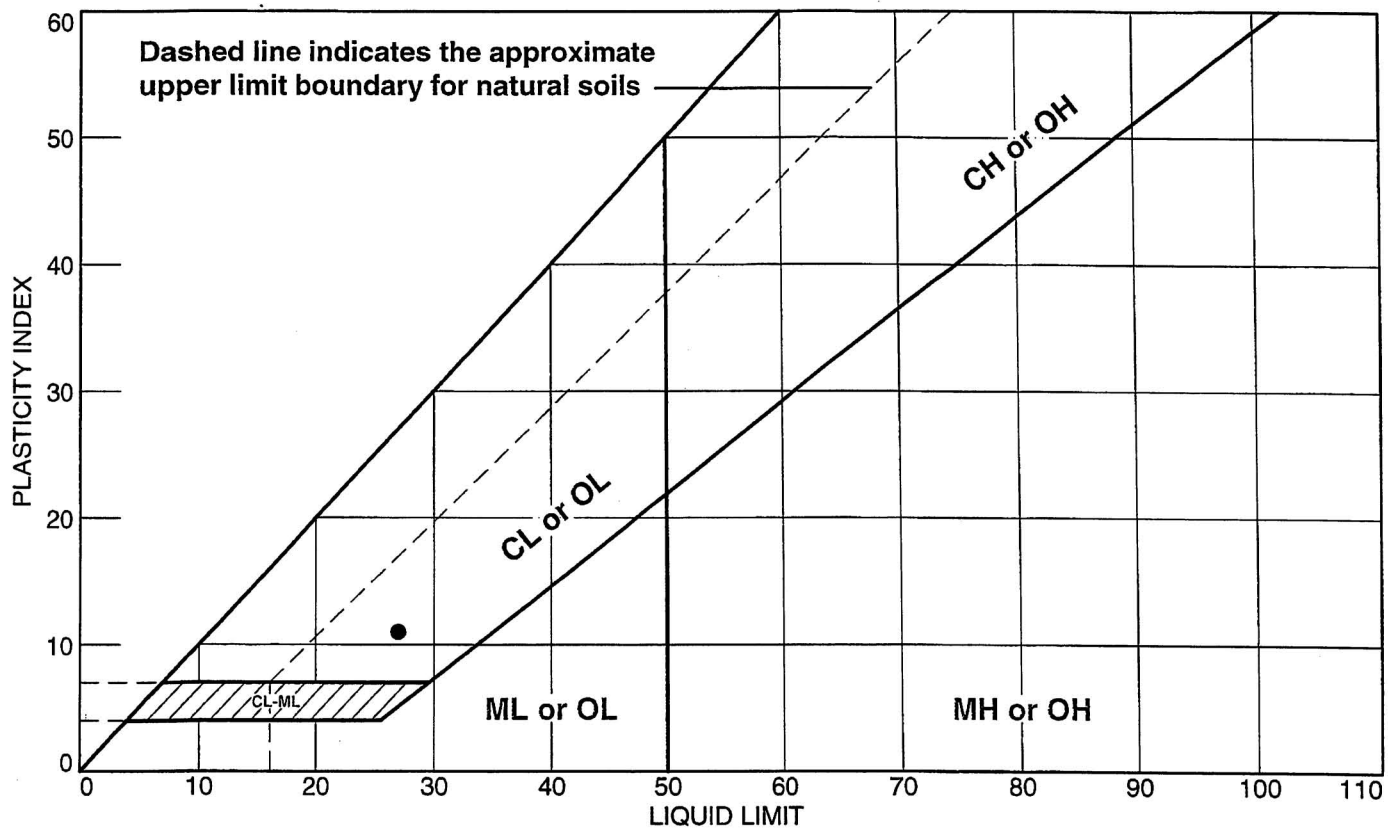
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.1	16.7	16.8	56.1	27.1	83.2

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0058	0.0131	0.0218	0.0637	0.0803	0.0958	0.1193

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-5	11-12.5	17.3	16	27	11	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

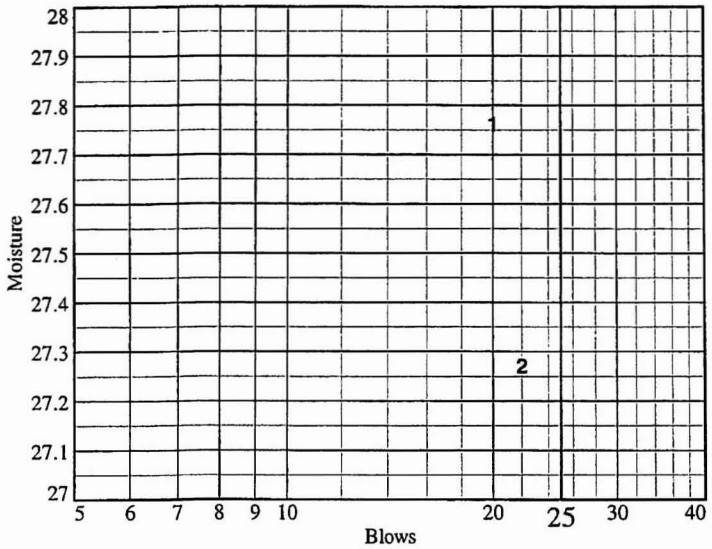
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 11-12.5 **Sample Number:** SS-5
Material Description: Brownish Yellow Lean CLAY with sand
USCS: CL **AASHTO:** A-6(7)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	24.63	22.63				
Dry+Tare	22.67	21.10				
Tare	15.61	15.49				
# Blows	20	22				
Moisture	27.8	27.3				



Liquid Limit= 27
Plastic Limit= 16
Plasticity Index= 11
Natural Moisture= 17.3
Liquidity Index= 0.1

Plastic Limit Data

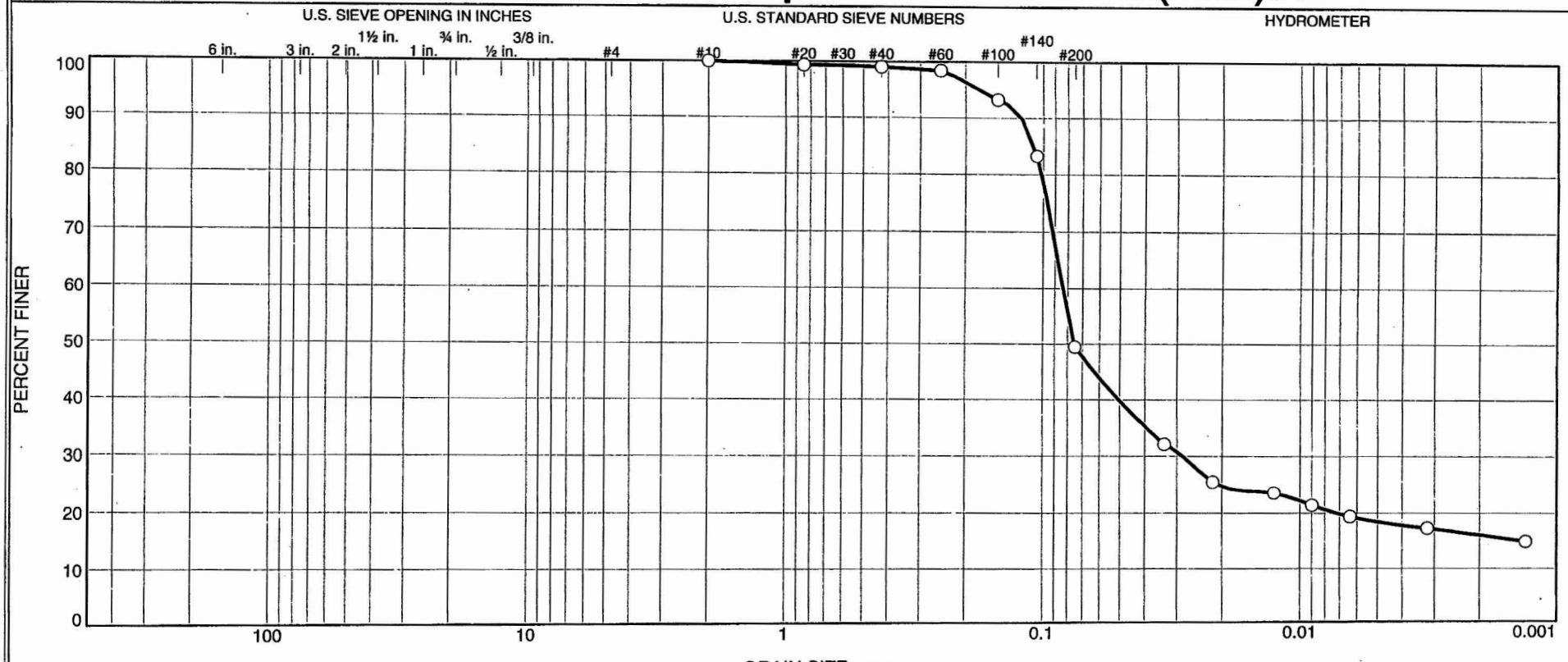
Run No.	1	2	3	4	
Wet+Tare	25.85	26.36			
Dry+Tare	24.35	24.88			
Tare	15.33	15.64			
Moisture	16.6	16.0			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
122.01	104.98	6.66	17.3

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	49.7	30.9	18.5

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-6	13.5-15	1-7-08	SC-SM	Mottled Olive Yellow and Pale Yellow Silty, Clayey SAND	17.9	22	15

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.672 (ASTM D850-06)

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: 13.5-15 **Sample Number:** SS-6
Material Description: Mottled Olive Yellow and Pale Yellow Silty, Clayey SAND
Date: 1-7-08 **Natural Moisture:** 17.9
Liquid Limit: 22 **Plastic Limit:** 15 **USCS Class.:** SC-SM
Testing Remarks: Specific Gravity = 2.672 (ASTM D850-06)
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
217.64	0.00	0.00	#10	0.00	100.0
47.47	0.00	0.00	#20	0.30	99.4
			#40	0.45	99.1
			#60	0.73	98.5
			#100	3.23	93.2
			#140	7.92	83.3
			#200	24.00	49.4

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =47.47
Hygroscopic moisture correction:
Moist weight and tare = 28.60
Dry weight and tare = 28.45
Tare weight = 15.52
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 = 2.672
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	20.0	15.1	0.0133	21.0	12.9	0.0336	32.1
5.00	21.6	17.0	12.1	0.0133	18.0	13.3	0.0217	25.6
15.00	21.8	16.0	11.1	0.0133	17.0	13.5	0.0126	23.6
30.00	21.7	15.0	10.1	0.0133	16.0	13.7	0.0090	21.4
60.00	21.8	14.0	9.1	0.0133	15.0	13.8	0.0064	19.4
240.00	21.9	13.0	8.2	0.0132	14.0	14.0	0.0032	17.3
1440.00	21.6	12.0	7.1	0.0133	13.0	14.2	0.0013	15.0

MACTEC, Inc.

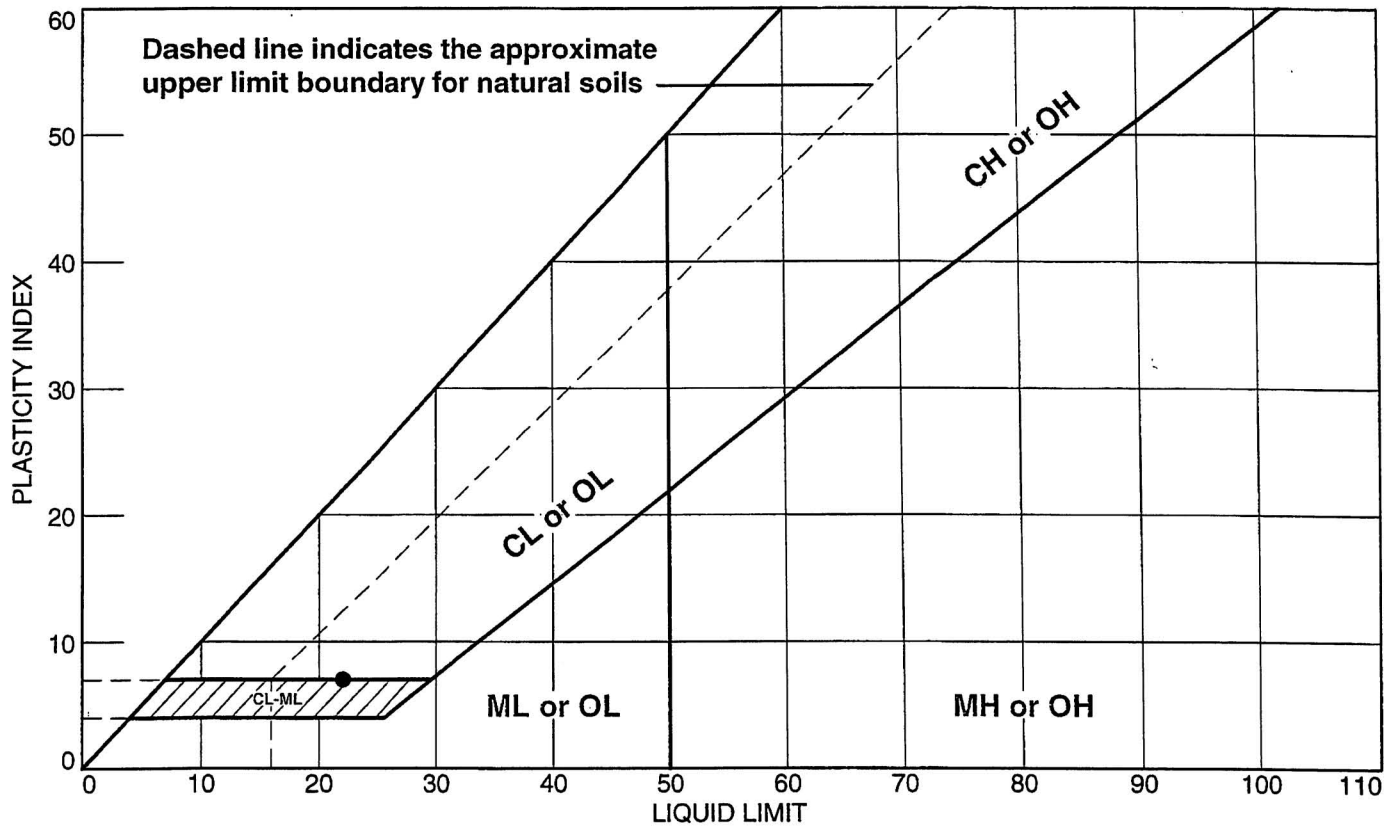
Fractional Components

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	49.7	50.6	30.9	18.5	49.4

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0013	0.0072	0.0284	0.0755	0.0835	0.1016	0.1087	0.1217	0.1776

Fineness Modulus
0.09

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-6	13.5-15	17.9	15	22	7	SC-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

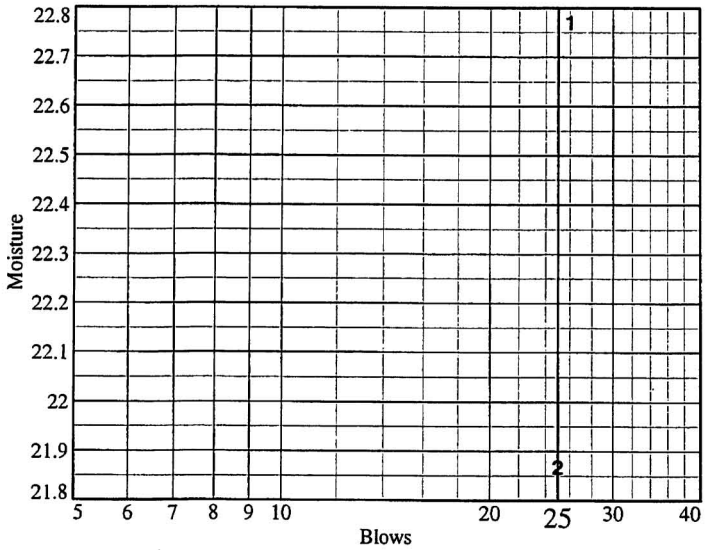
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 13.5-15 **Sample Number:** SS-6
Material Description: Mottled Olive Yellow and Pale Yellow Silty, Clayey SAND
USCS: SC-SM **AASHTO:** A-4(1)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	27.20	27.80				
Dry+Tare	25.08	25.60				
Tare	15.77	15.54				
# Blows	26	25				
Moisture	22.8	21.9				



Liquid Limit= 22
Plastic Limit= 15
Plasticity Index= 7
Natural Moisture= 17.9
Liquidity Index= 0.4

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	26.52	28.09			
Dry+Tare	25.06	26.50			
Tare	15.43	15.47			
Moisture	15.2	14.4			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
104.48	89.63	6.79	17.9

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-6

(A) Mass of oven-dried soil, grams:		52.28
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.58
(C) Mass of pycnometer, water and soil, grams:		688.31
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		22.8
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.674
(F)	***Correction factor:***	0.99938
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.672

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

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

REMARKS: Estimated % Passing # 4 : 100

Silty, Clayey SAND (SC-SM)

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER :P-3

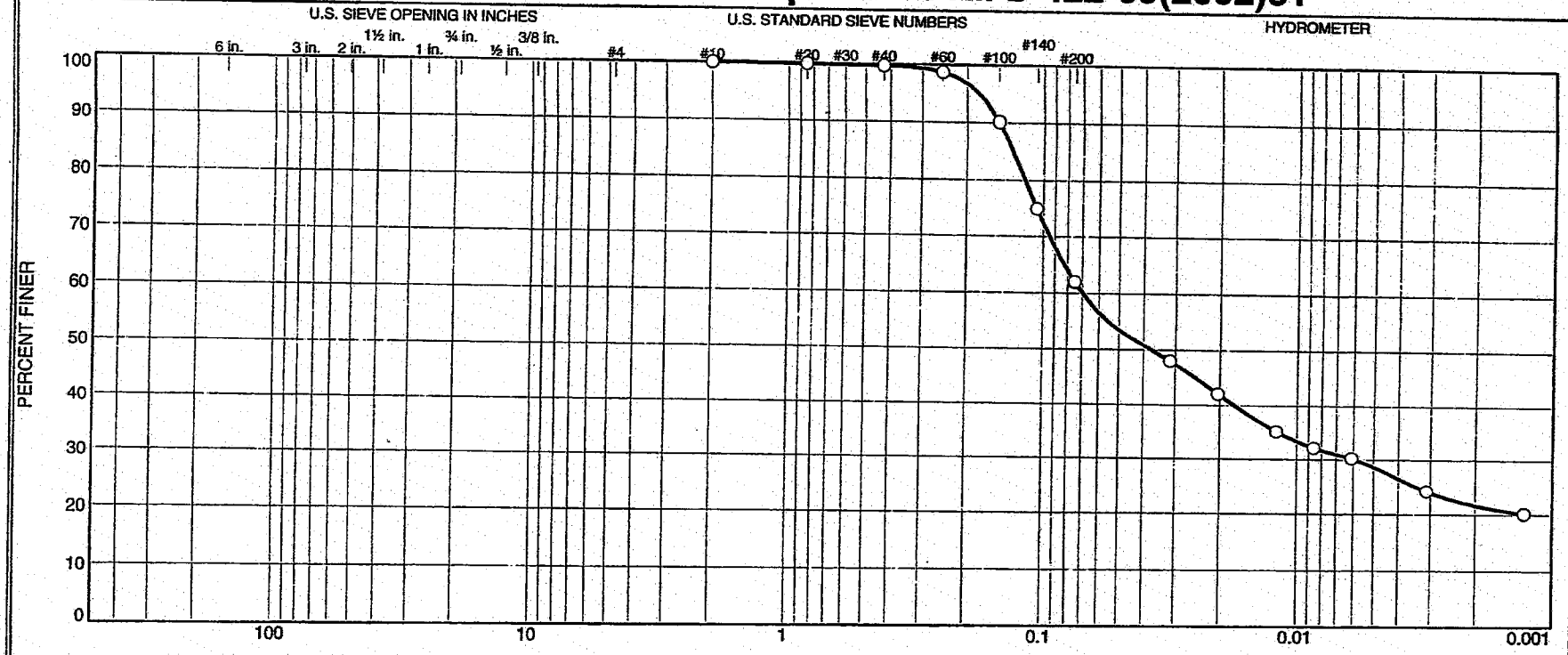
TESTED BY: CS

\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
O	0.0	0.0	0.0	0.0	0.3	37.6	33.4	28.7

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
O	Boring B-2304A	SS-7	18.5-20.0	1-17-08	CL	Mottled Olive Yellow and Pale Yellow Sandy Lean CLAY	16.3	27	16

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: 18.5-20.0 **Sample Number:** SS-7
Material Description: Mottled Olive Yellow and Pale Yellow Sandy Lean CLAY
Date: 1-17-08 **Natural Moisture:** 16.3
Liquid Limit: 27 **Plastic Limit:** 16 **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
235.05	0.00	0.00	#10	0.00	100.0
50.34	0.00	0.00	#20	0.05	99.9
			#40	0.14	99.7
			#60	0.66	98.7
			#100	4.94	90.2
			#140	12.58	75.0
			#200	19.10	62.1

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.34
Hygroscopic moisture correction:
Moist weight and tare = 27.64
Dry weight and tare = 27.42
Tare weight = 15.66
Hygroscopic moisture = 1.9%
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	29.0	24.0	0.0132	30.0	11.4	0.0315	48.1
5.00	21.5	26.0	21.0	0.0132	27.0	11.9	0.0203	42.1
15.00	21.6	22.5	17.6	0.0132	23.5	12.4	0.0120	35.2
30.00	21.6	21.0	16.1	0.0132	22.0	12.7	0.0086	32.2
60.00	21.7	20.0	15.1	0.0132	21.0	12.9	0.0061	30.2
240.00	21.7	17.0	12.1	0.0132	18.0	13.3	0.0031	24.2
1440.00	21.6	15.0	10.1	0.0132	16.0	13.7	0.0013	20.2

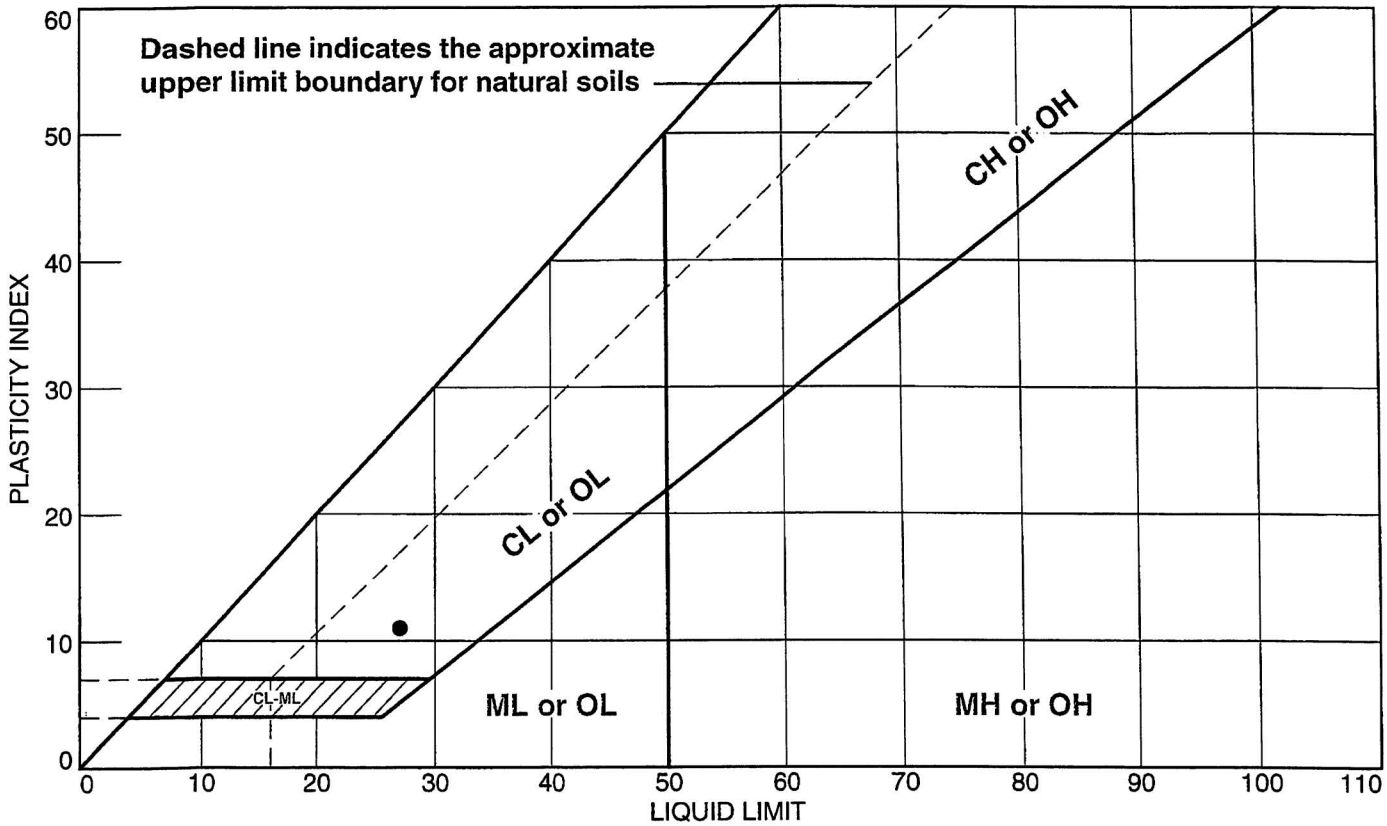
Fractional Components

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	37.6	37.9	33.4	28.7	62.1

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0059	0.0372	0.0696	0.1181	0.1317	0.1492	0.1794

Fineness Modulus
0.11

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-7	18.5-20.0	16.3	16	27	11	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

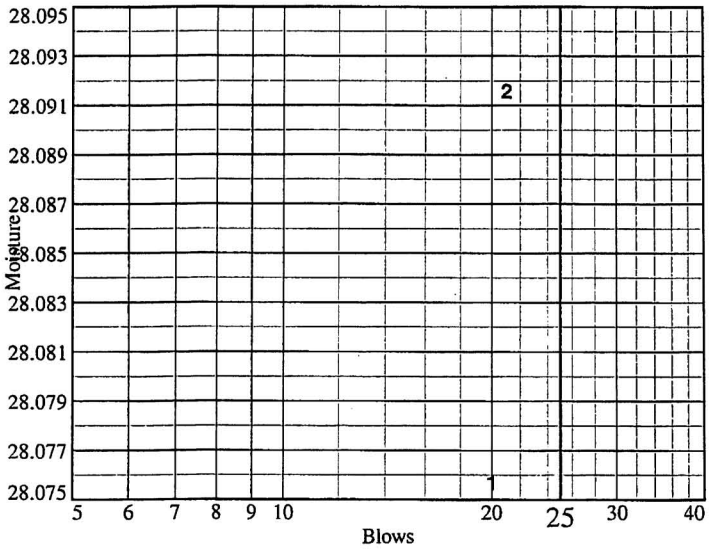
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 18.5-20.0 **Sample Number:** SS-7
Material Description: Mottled Olive Yellow and Pale Yellow Sandy Lean CLAY
USCS: CL **AASHTO:** A-6(4)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	23.57	23.72				
Dry+Tare	21.79	21.88				
Tare	15.45	15.33				
# Blows	20	21				
Moisture	28.1	28.1				



Liquid Limit= 27
Plastic Limit= 16
Plasticity Index= 11
Natural Moisture= 16.3
Liquidity Index= 0.0

Plastic Limit Data

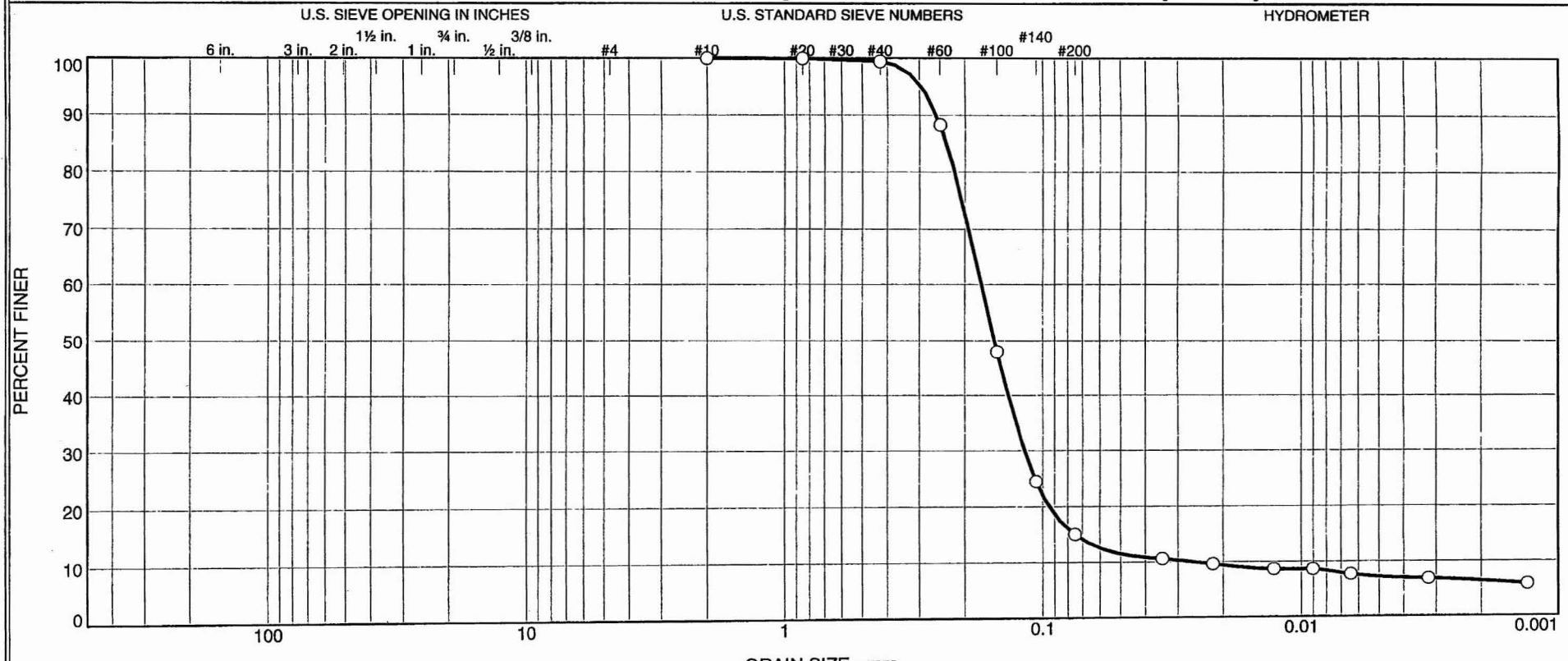
Run No.	1	2	3	4	
Wet+Tare	24.34	29.02			
Dry+Tare	23.12	27.18			
Tare	15.45	15.44			
Moisture	15.9	15.7			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
133.91	116.04	6.50	16.3

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	84.3	8.0	7.1

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-8	23.5-25.0	1-17-08	SM	Light Yellowish Brown Silty SAND	11.0	NV	NP

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: 23.5-25.0 **Sample Number:** SS-8
Material Description: Light Yellowish Brown Silty SAND
Date: 1-17-08 **Natural Moisture:** 11.0
Liquid Limit: NV **Plastic Limit:** NP **USCS Class.:** SM
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
246.76	0.00	0.00	#10	0.00	100.0
101.83	0.00	0.00	#20	0.05	100.0
			#40	0.57	99.4
			#60	11.88	88.3
			#100	52.99	48.0
			#140	76.89	24.5
			#200	86.47	15.1

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =101.83
Hygroscopic moisture correction:
Moist weight and tare = 27.80
Dry weight and tare = 27.78
Tare weight = 15.44
Hygroscopic moisture = 0.2%
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 = 2.700
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	21.1	16.0	10.9	0.0133	17.0	13.5	0.0345	10.6
5.00	21.1	15.0	9.9	0.0133	16.0	13.7	0.0219	9.6
15.00	21.1	14.0	8.9	0.0133	15.0	13.8	0.0127	8.7
30.00	21.0	14.0	8.9	0.0133	15.0	13.8	0.0090	8.6
60.00	21.0	13.0	7.9	0.0133	14.0	14.0	0.0064	7.6
240.00	21.4	12.0	7.0	0.0132	13.0	14.2	0.0032	6.8
1440.00	21.3	11.0	6.0	0.0132	12.0	14.3	0.0013	5.8

MACTEC, Inc.

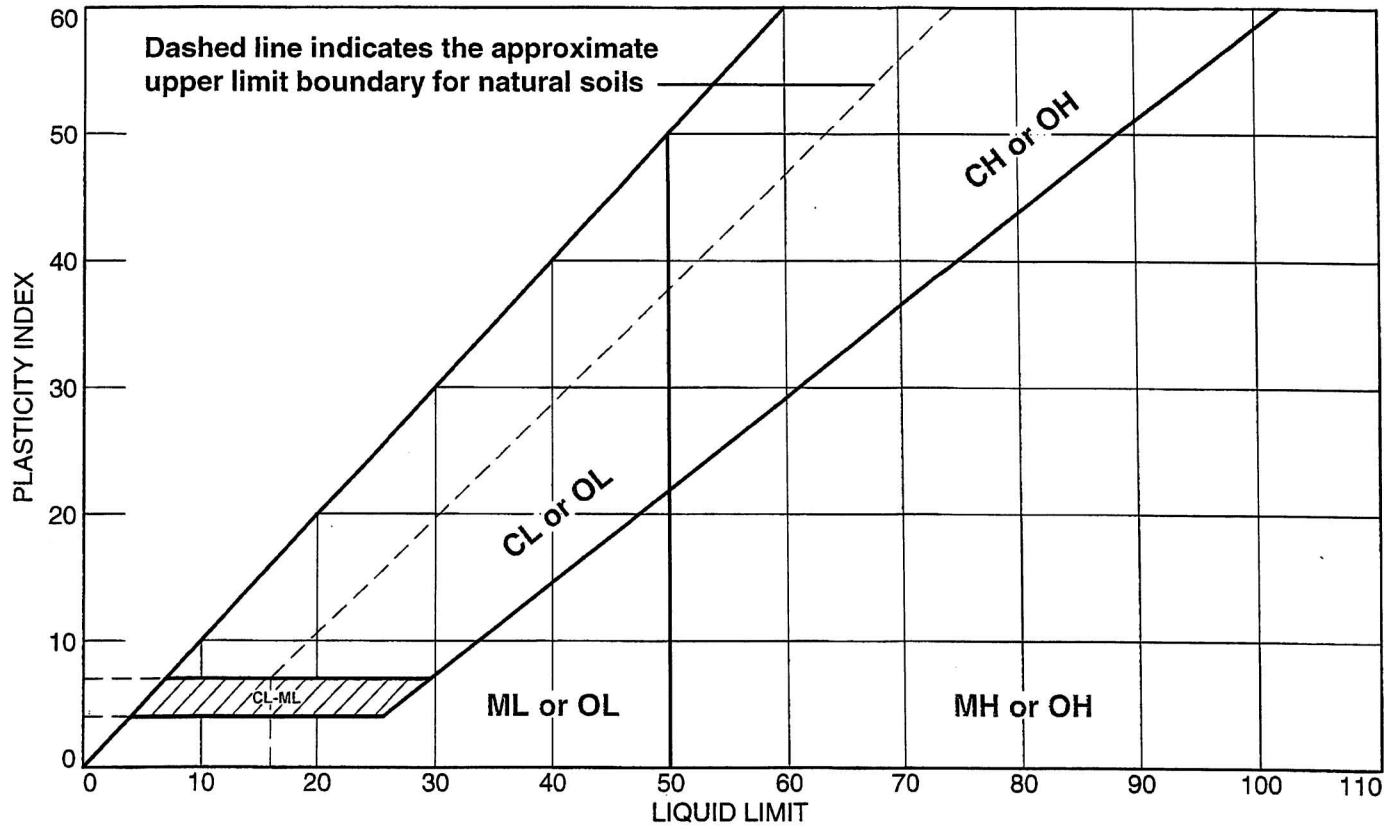
Fractional Components

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	84.3	84.9	8.0	7.1	15.1

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0257	0.0746	0.0943	0.1174	0.1537	0.1724	0.2195	0.2362	0.2583	0.2950

Fineness Modulus	C_u	C_c
0.57	6.70	3.11

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-8	23.5-25.0	11.0	NP	NV	NP	SM

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

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

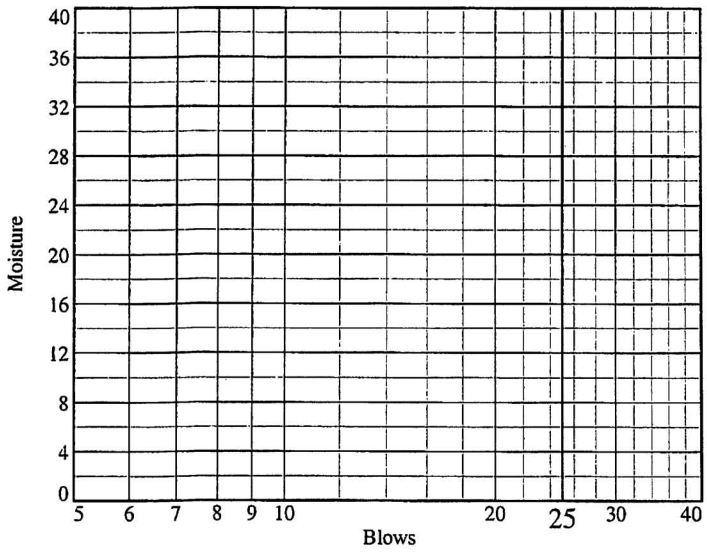
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 23.5-25.0 **Sample Number:** SS-8
Material Description: Light Yellowish Brown 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= 11.0

Plastic Limit Data

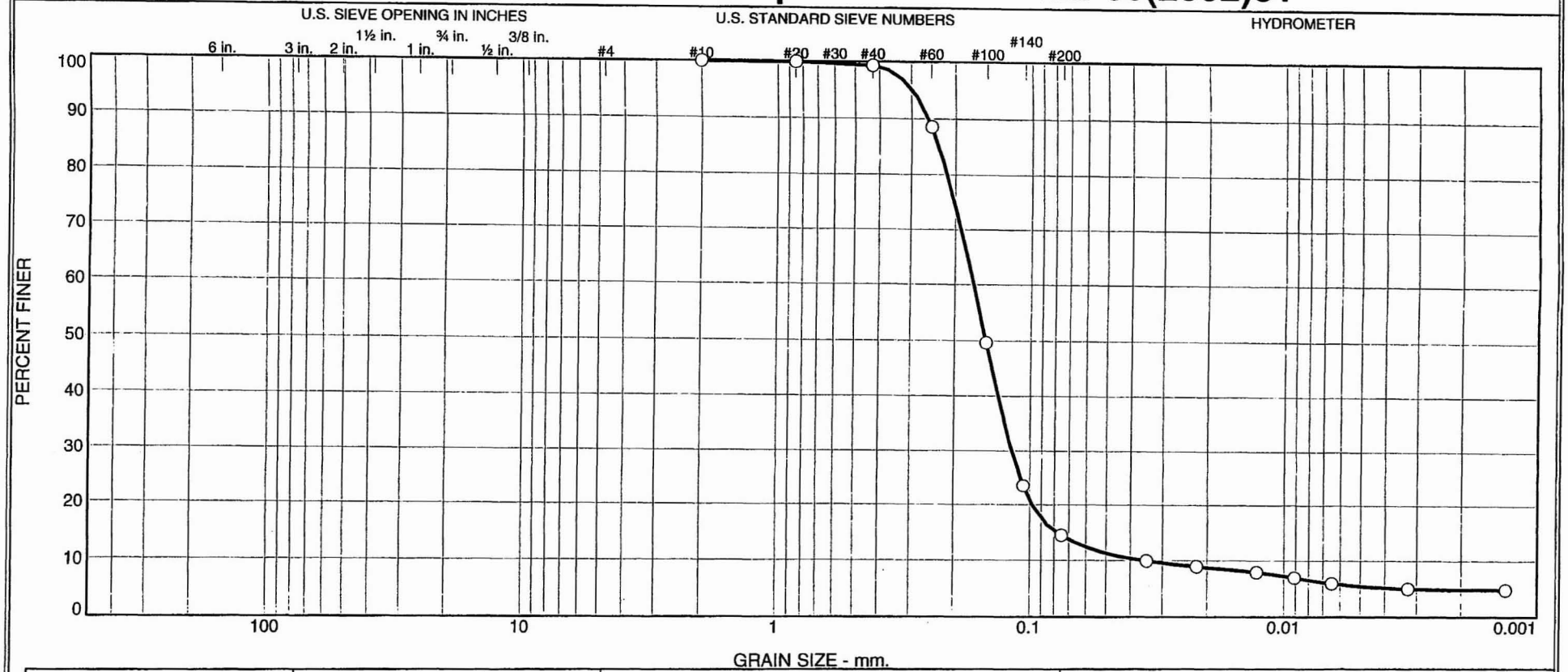
Run No.	1	2	3	4	
Wet+Tare					
Dry+Tare					
Tare					
Moisture					

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
110.07	99.86	6.80	11.0

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	0.7	84.8	9.0	5.5

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-9	28.5-30.0	1-17-08	SM	Pale Yellow Silty SAND	10.4	NV	NP

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: LBL 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: 28.5-30.0 **Sample Number:** SS-9
Material Description: Pale Yellow Silty SAND
Date: 1-17-08 **Natural Moisture:** 10.4
Liquid Limit: NV **Plastic Limit:** NP **USCS Class.:** SM
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
233.46	0.00	0.00	#10	0.00	100.0
99.83	0.00	0.00	#20	0.10	99.9
			#40	0.69	99.3
			#60	11.36	88.6
			#100	50.23	49.7
			#140	76.39	23.5
			#200	85.36	14.5

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =99.83
Hygroscopic moisture correction:
Moist weight and tare = 27.81
Dry weight and tare = 27.68
Tare weight = 15.50
Hygroscopic moisture = 1.1%
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	21.3	15.0	10.0	0.0132	16.0	13.7	0.0346	10.0
5.00	21.3	14.0	9.0	0.0132	15.0	13.8	0.0220	9.0
15.00	21.3	13.0	8.0	0.0132	14.0	14.0	0.0128	8.0
30.00	21.4	12.0	7.0	0.0132	13.0	14.2	0.0091	7.0
60.00	21.4	11.0	6.0	0.0132	12.0	14.3	0.0065	6.0
240.00	21.6	10.0	5.1	0.0132	11.0	14.5	0.0032	5.1
1440.00	21.1	10.0	4.9	0.0133	11.0	14.5	0.0013	4.9

MACTEC, Inc.

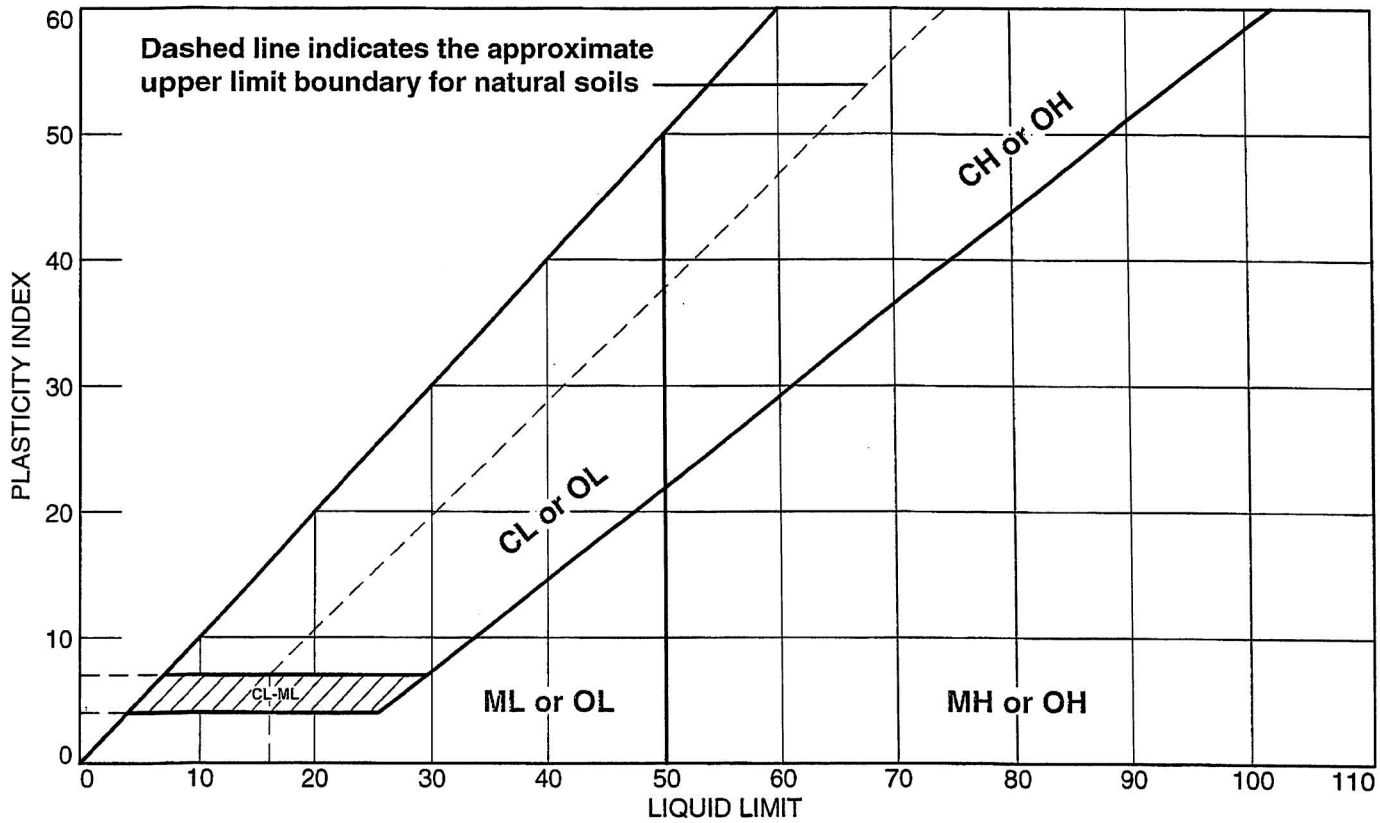
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.7	84.8	85.5	9.0	5.5	14.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0349	0.0782	0.0978	0.1180	0.1505	0.1686	0.2166	0.2340	0.2574	0.2967

Fineness Modulus	C_u	C_c
0.55	4.83	2.36

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-9	28.5-30.0	10.4	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

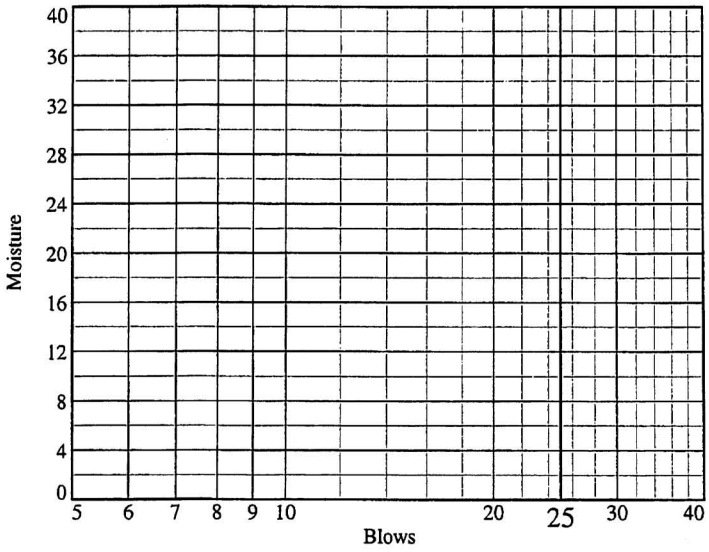
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 28.5-30.0 **Sample Number:** SS-9
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= 10.4

Plastic Limit Data

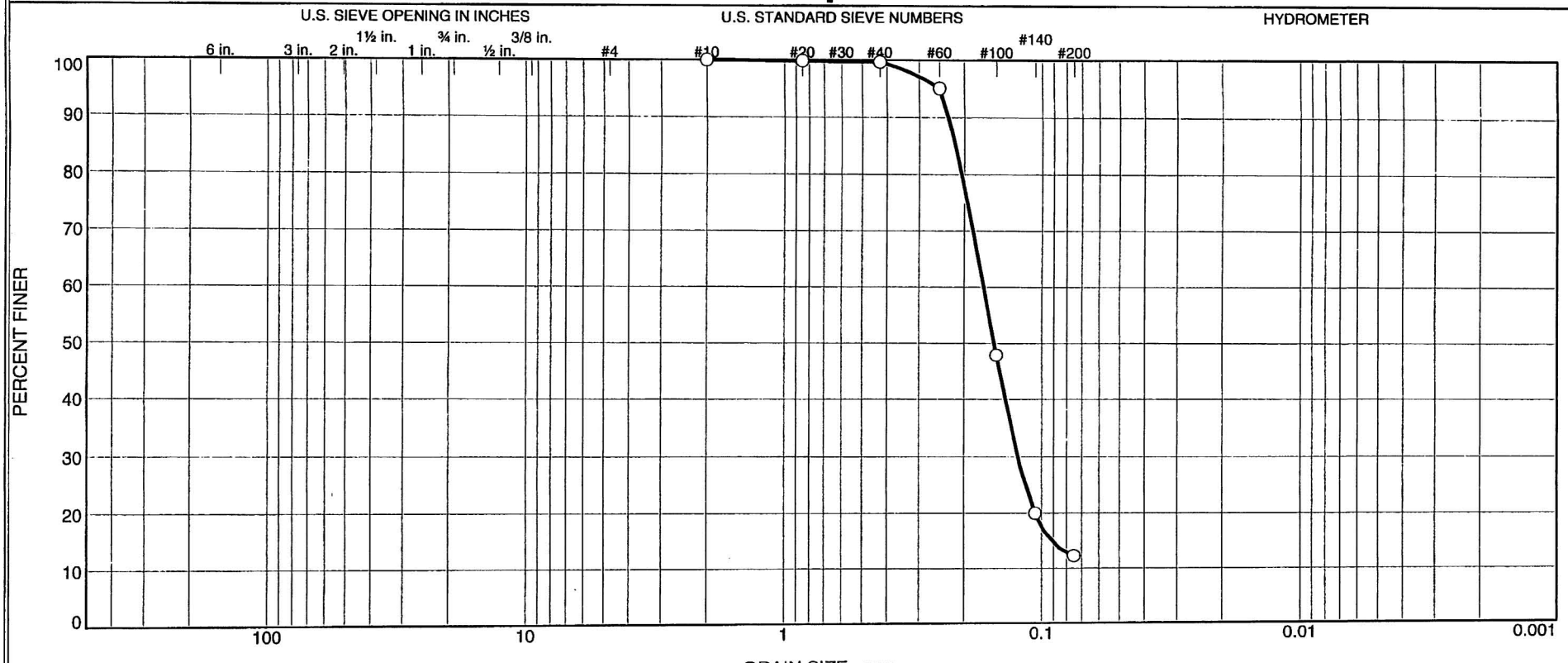
Run No.	1	2	3	4	
Wet+Tare					
Dry+Tare					
Tare					
Moisture					

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
130.98	120.16	15.69	10.4

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	0.3	87.4	12.3	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-10	33.5-35	1-17-08	SM	Pale Yellow Silty SAND (Visual)	ND	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 Figure NA

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.655 (ASTM D2794-07)
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: 33.5-35 **Sample Number:** SS-10
Material Description: Pale Yellow Silty SAND (Visual)
Date: 1-17-08 **Natural Moisture:** ND
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SM
Testing Remarks: Specific Gravity = 2.655 (ASTM D2794-07)
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
221.08	0.00	0.00	#10	0.00	100.0
97.85	0.00	0.00	#20	0.14	99.9
			#40	0.32	99.7
			#60	4.85	95.0
			#100	50.96	47.9
			#140	78.27	20.0
			#200	85.85	12.3

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	0.3	87.4	87.7			12.3

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0918	0.1060	0.1236	0.1531	0.1682	0.2047	0.2165	0.2307	0.2498

Fineness Modulus
0.55

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-10

(A) Mass of oven-dried soil, grams:		76.40
(B) Mass of pycnometer filled with water at test temperature (T), grams:		655.67
(C) Mass of pycnometer, water and soil, grams:		703.31
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		22.0
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.656
(F)	***Correction factor:***	0.99957
(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) - Visual

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER :P-3

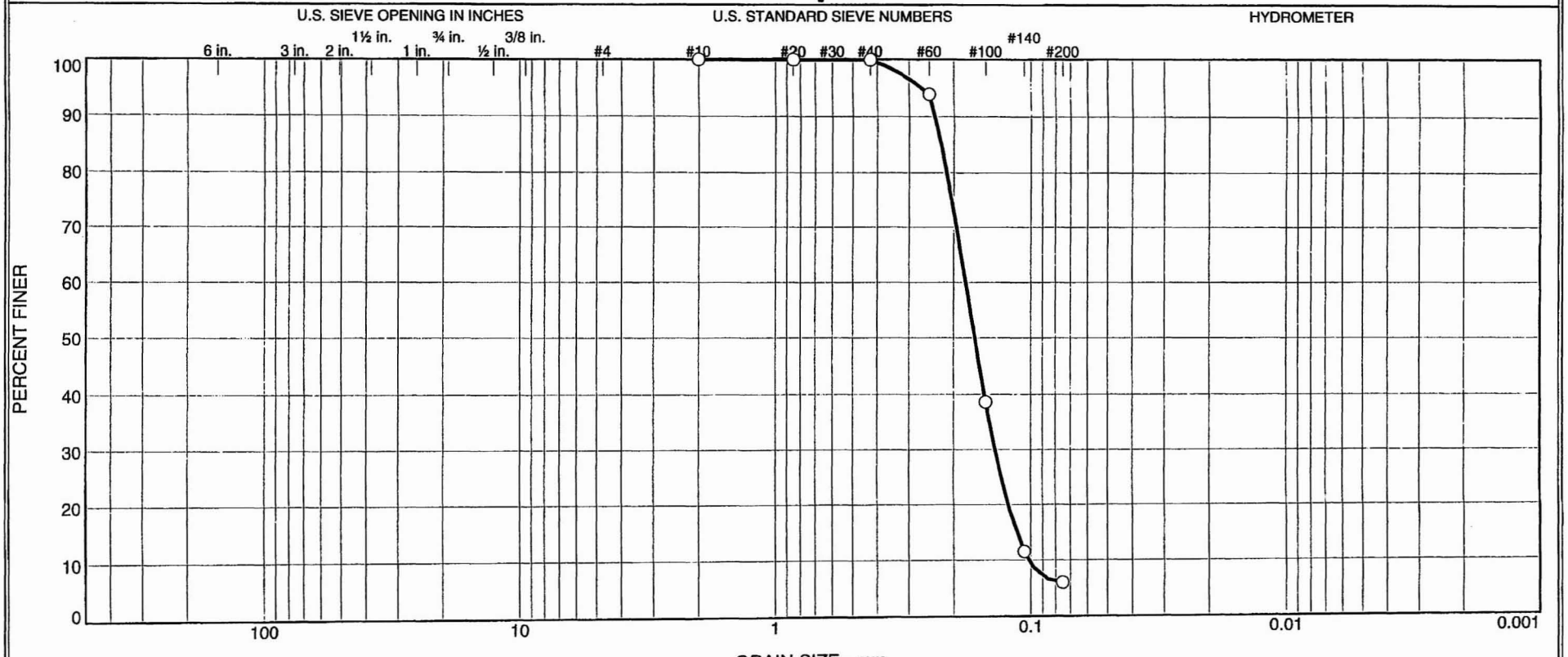
TESTED BY: CS

\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	0.1	93.9	6.0	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-11	38.5-40	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
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: 38.5-40 **Sample Number:** SS-11
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
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
199.80	0.00	0.00	#10	0.00	100.0
100.62	0.00	0.00	#20	0.03	100.0
			#40	0.11	99.9
			#60	6.13	93.9
			#100	61.74	38.6
			#140	89.03	11.5
			#200	94.56	6.0

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	0.1	93.9	94.0			6.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1018	0.1136	0.1226	0.1379	0.1655	0.1796	0.2133	0.2241	0.2371	0.2683

Fineness Modulus	C_u	C_c
0.65	1.76	1.04

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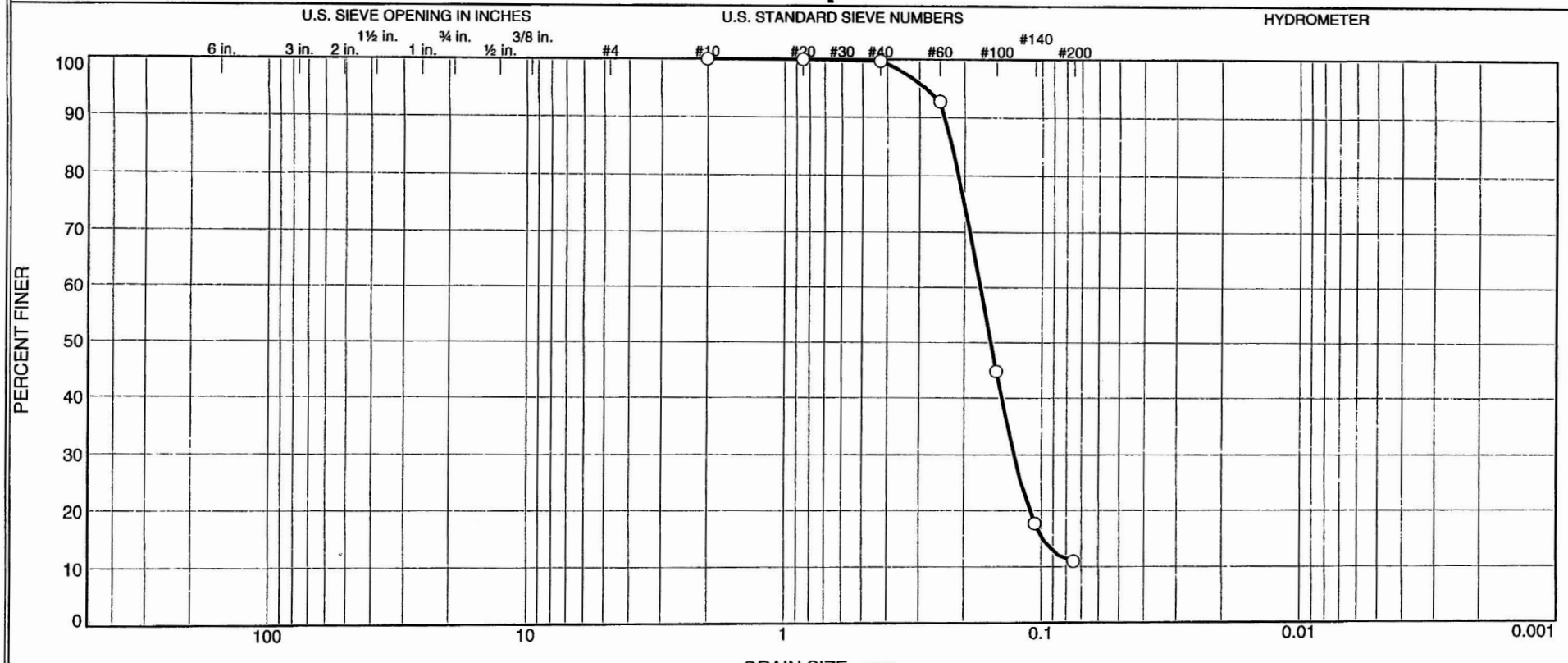
Particle Size Distribution Report / ASTM D 6913-04e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.3	88.7	11.0	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-12	43.5-45.0	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
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: 43.5-45.0 **Sample Number:** SS-12
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
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
217.39	0.00	0.00	#10	0.00	100.0
102.98	0.00	0.00	#20	0.04	100.0
			#40	0.29	99.7
			#60	7.53	92.7
			#100	56.82	44.8
			#140	84.74	17.7
			#200	91.66	11.0

Fractional Components

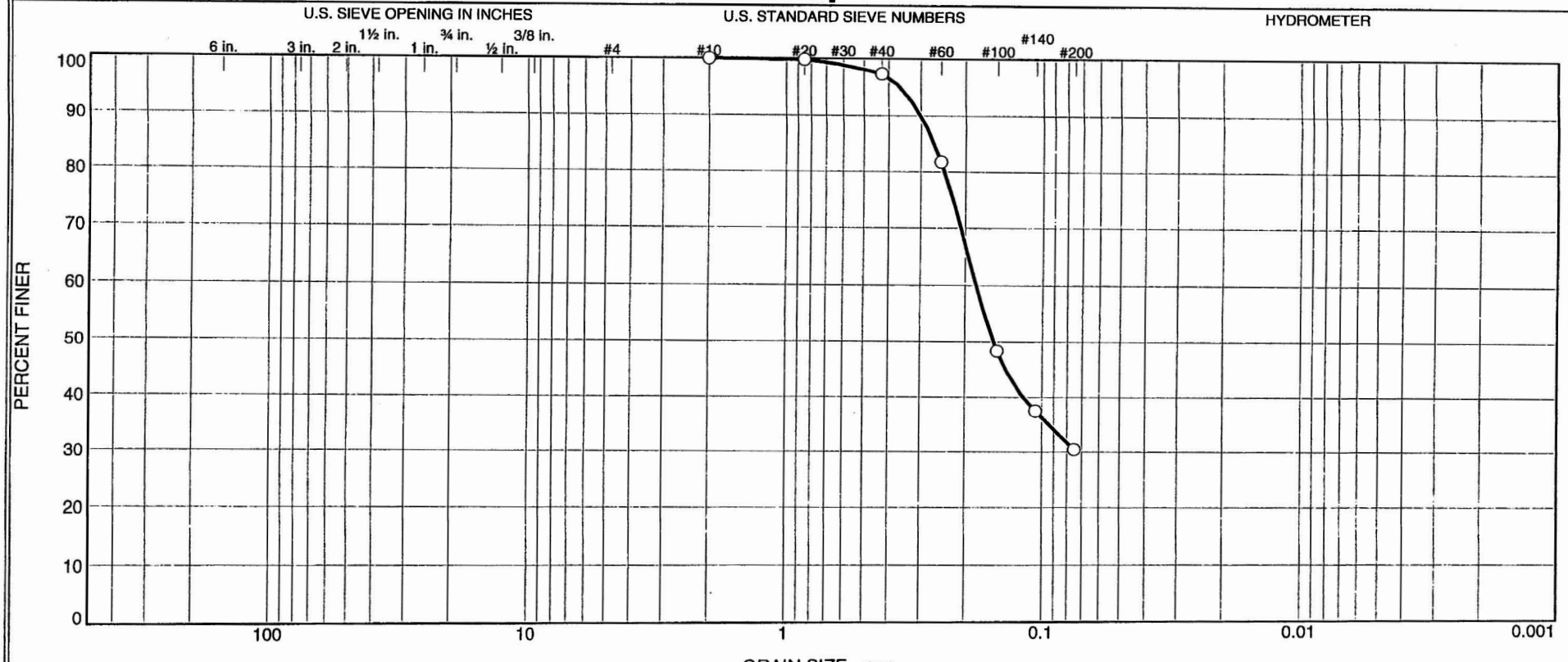
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.3	88.7	89.0			11.0

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.0988	0.1108	0.1278	0.1577	0.1733	0.2113	0.2239	0.2394	0.2854

Fineness Modulus
0.60

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	66.8	30.5	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-13	48.5-50.0	1-17-08	SM	Pale Yellow 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: 48.5-50.0 **Sample Number:** SS-13
Material Description: Pale Yellow Silty SAND (Visual)
Date: 1-17-08 **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
204.15	0.00	0.00	#10	0.00	100.0
98.56	0.00	0.00	#20	0.19	99.8
			#40	2.63	97.3
			#60	17.95	81.8
			#100	50.95	48.3
			#140	61.53	37.6
			#200	68.50	30.5

Fractional Components

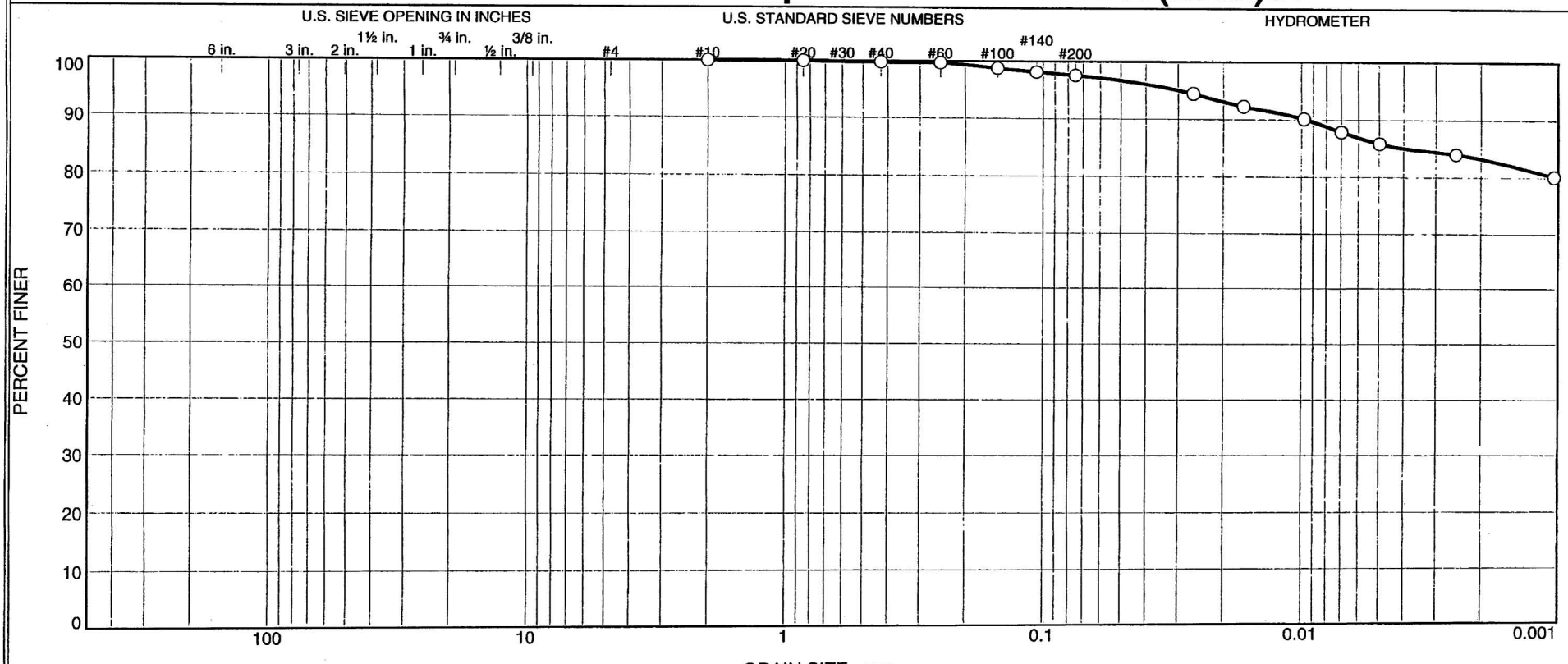
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.7	66.8	69.5			- 30.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.1549	0.1814	0.2424	0.2659	0.3002	0.3630

Fineness Modulus
0.63

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	2.2	11.6	85.9

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-14	53.5-55	1-17-08	CH	Pale Yellow Fat CLAY	30.6	89	30

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: 53.5-55 **Sample Number:** SS-14
Material Description: Pale Yellow Fat CLAY
Date: 1-17-08 **Natural Moisture:** 30.6
Liquid Limit: 89 **Plastic Limit:** 30 **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
163.90	0.00	0.00	#10	0.00	100.0
50.17	0.00	0.00	#20	0.02	100.0
			#40	0.13	99.7
			#60	0.16	99.7
			#100	0.64	98.7
			#140	0.96	98.1
			#200	1.25	97.5

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.17
Hygroscopic moisture correction:
Moist weight and tare = 27.27
Dry weight and tare = 26.58
Tare weight = 15.52
Hygroscopic moisture = 6.2%
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 = 2.706
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	21.7	50.0	45.1	0.0131	51.0	7.9	0.0262	94.3
5.00	21.7	49.0	44.1	0.0131	50.0	8.1	0.0167	92.2
15.00	21.7	48.0	43.1	0.0131	49.0	8.3	0.0098	90.2
30.00	21.5	47.0	42.0	0.0132	48.0	8.4	0.0070	87.9
60.00	21.6	46.0	41.1	0.0132	47.0	8.6	0.0050	85.9
240.00	21.9	45.0	40.2	0.0131	46.0	8.8	0.0025	84.0
1440.00	22.3	43.0	38.3	0.0130	44.0	9.1	0.0010	80.1

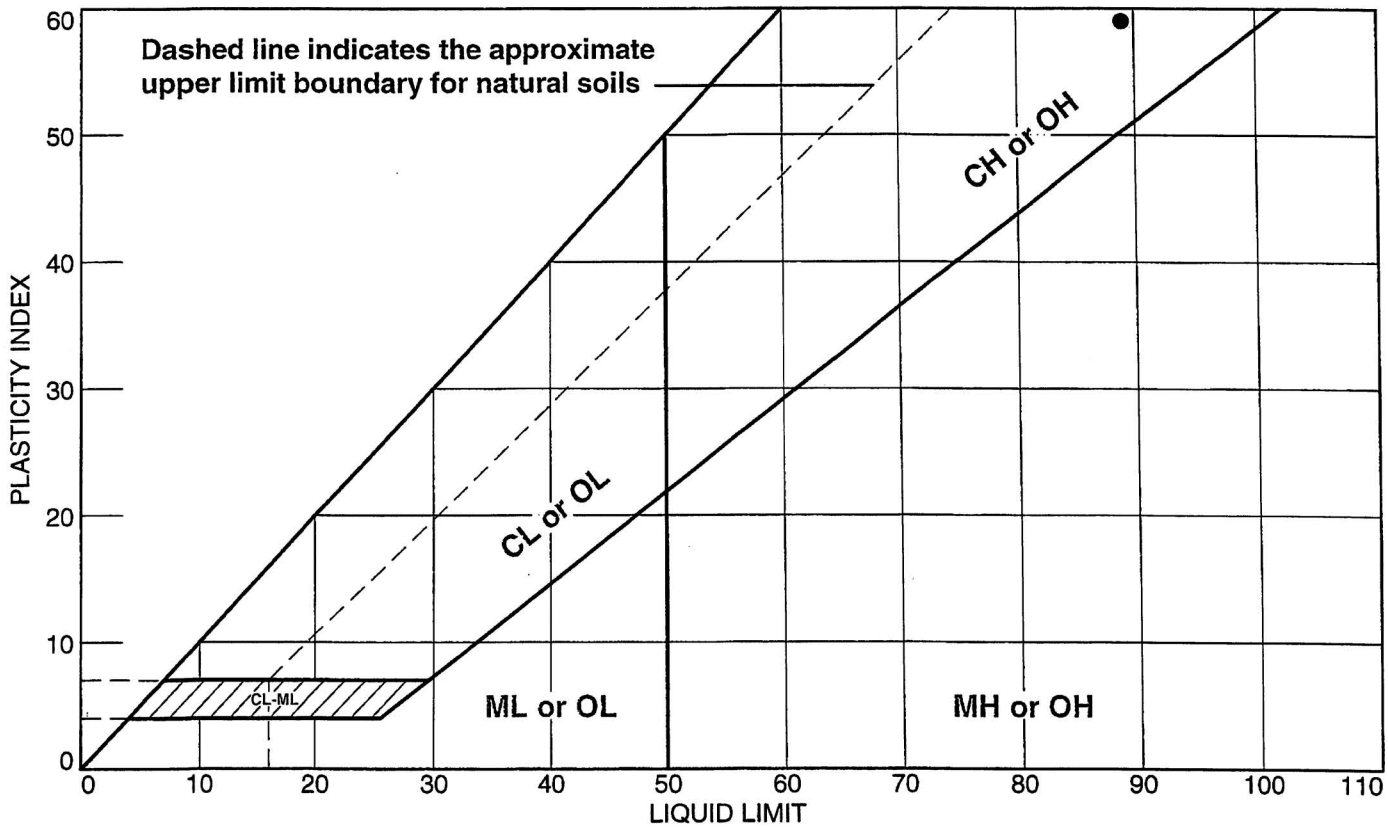
Fractional Components

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	2.2	2.5	11.6	85.9	97.5

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
							0.0038	0.0095	0.0305

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-14	53.5-55	30.6	30	89	59	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

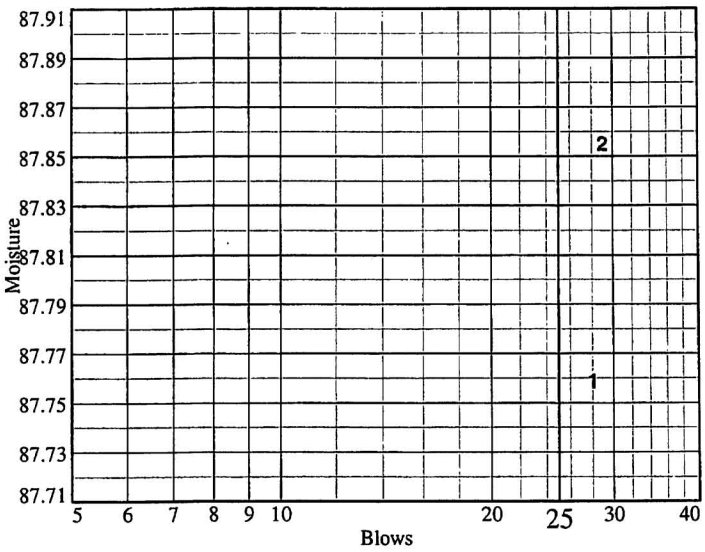
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 53.5-55 **Sample Number:** SS-14
Material Description: Pale Yellow Fat CLAY
USCS: CH **AASHTO:** A-7-5(69)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	25.50	29.96				
Dry+Tare	20.84	23.16				
Tare	15.53	15.42				
# Blows	28	29				
Moisture	87.8	87.9				



Liquid Limit= 89
Plastic Limit= 30
Plasticity Index= 59
Natural Moisture= 30.6
Liquidity Index= 0.0

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	21.56	22.34			
Dry+Tare	20.16	20.78			
Tare	15.49	15.48			
Moisture	30.0	29.4			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
112.09	87.39	6.77	30.6

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-14

(A) Mass of oven-dried soil, grams:	49.44
(B) Mass of pycnometer filled with water at test temperature (T), grams:	656.72
(C) Mass of pycnometer, water and soil, grams:	687.90
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	22.0
(G) Specific Gravity at observed temperature: A / [B - (C - A)]	2.708
(F) ***Correction factor:***	0.99957
(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 (CH)

EQUIPMENT USED

SCALES : 3.1.99

OVEN :5.1.16

THERMOMETER :5.1.01

PYCNOMETER :P-6

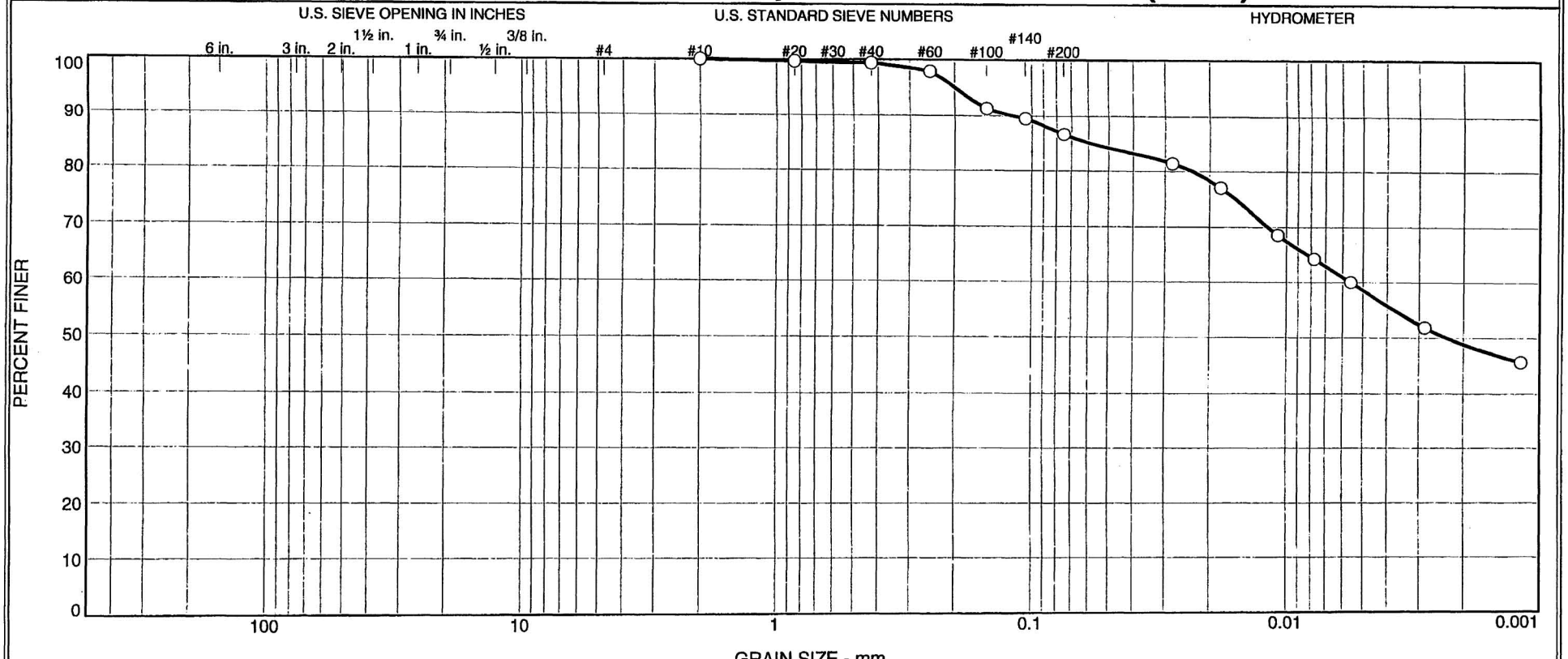
TESTED BY: CS

\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	0.6	12.7	28.1	58.6

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-15A	58.5-59.5	1-2-08	CH	Pale yellow Fat CLAY	26.7	54	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: 58.5-59.5 **Sample Number:** SS-15A
Material Description: Pale yellow Fat CLAY
Date: 1-2-08 **Natural Moisture:** 26.7
Liquid Limit: 54 **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
227.99	0.00	0.00	#10	0.00	100.0
47.91	0.00	0.00	#20	0.16	99.7
			#40	0.30	99.4
			#60	0.98	98.0
			#100	4.16	91.3
			#140	5.01	89.5
			#200	6.38	86.7

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =47.91
Hygroscopic moisture correction:
Moist weight and tare = 29.19
Dry weight and tare = 28.72
Tare weight = 15.45
Hygroscopic moisture = 3.5%
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	21.6	43.0	38.1	0.0132	44.0	9.1	0.0281	81.4
5.00	21.6	41.0	36.1	0.0132	42.0	9.4	0.0181	77.1
15.00	21.6	37.0	32.1	0.0132	38.0	10.1	0.0108	68.5
30.00	21.6	35.0	30.1	0.0132	36.0	10.4	0.0078	64.3
60.00	21.6	33.0	28.1	0.0132	34.0	10.7	0.0056	60.0
240.00	22.1	29.0	24.3	0.0131	30.0	11.4	0.0029	51.8
1440.00	22.4	26.0	21.4	0.0131	27.0	11.9	0.0012	45.6

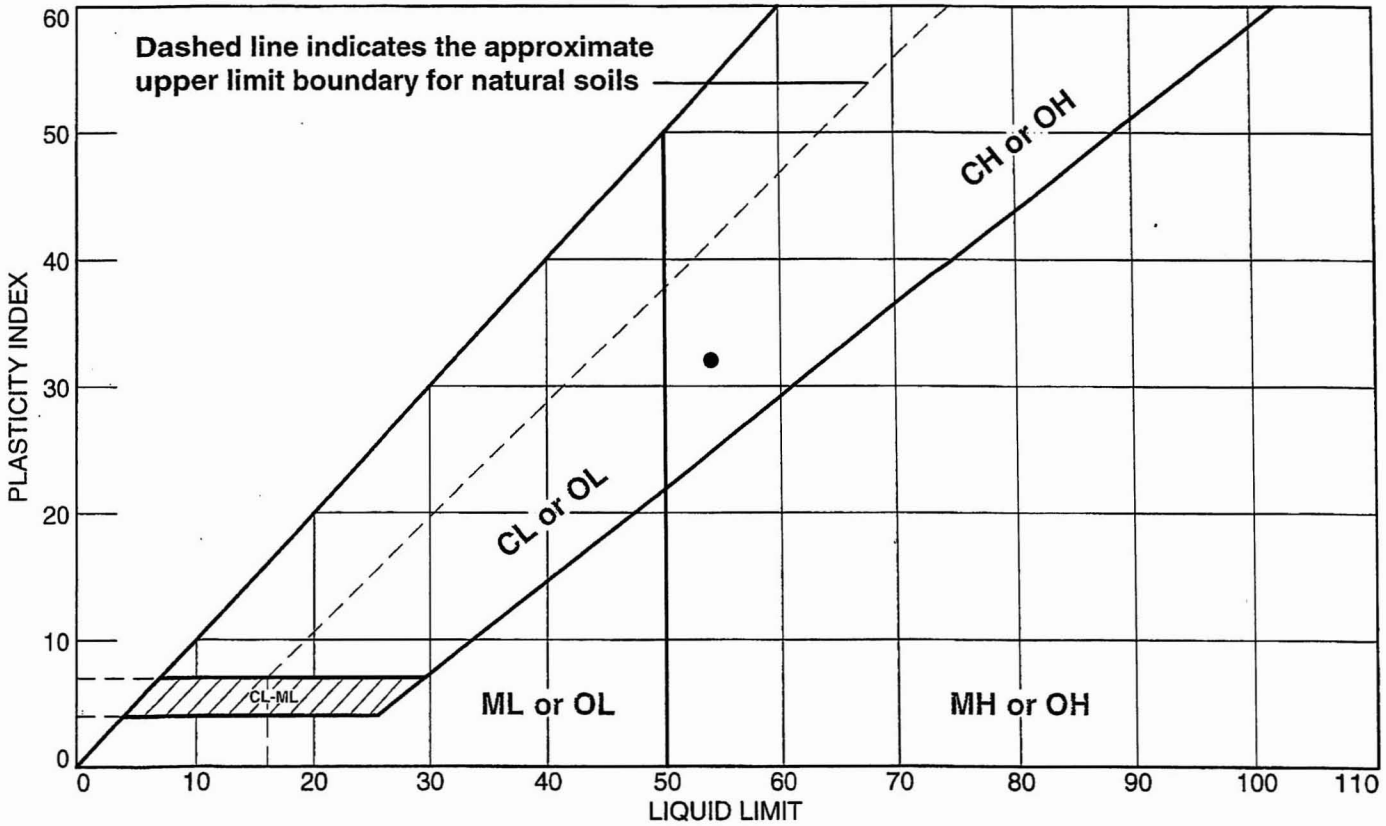
Fractional Components

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	12.7	13.3	28.1	58.6	86.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.0023	0.0056	0.0234	0.0587	0.1168	0.1993

Fineness Modulus
0.11

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-15A	58.5-59.5	26.7	22	54	32	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

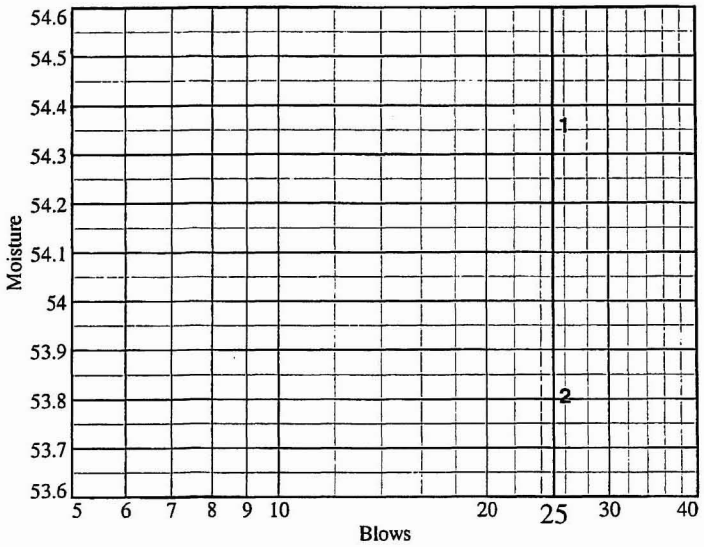
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 58.5-59.5 **Sample Number:** SS-15A
Material Description: Pale yellow Fat CLAY
USCS: CH **AASHTO:** A-7-6(30)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.24	30.82				
Dry+Tare	24.44	25.45				
Tare	15.61	15.47				
# Blows	26	26				
Moisture	54.4	53.8				



Liquid Limit= 54
Plastic Limit= 22
Plasticity Index= 32
Natural Moisture= 26.7
Liquidity Index= 0.1

Plastic Limit Data

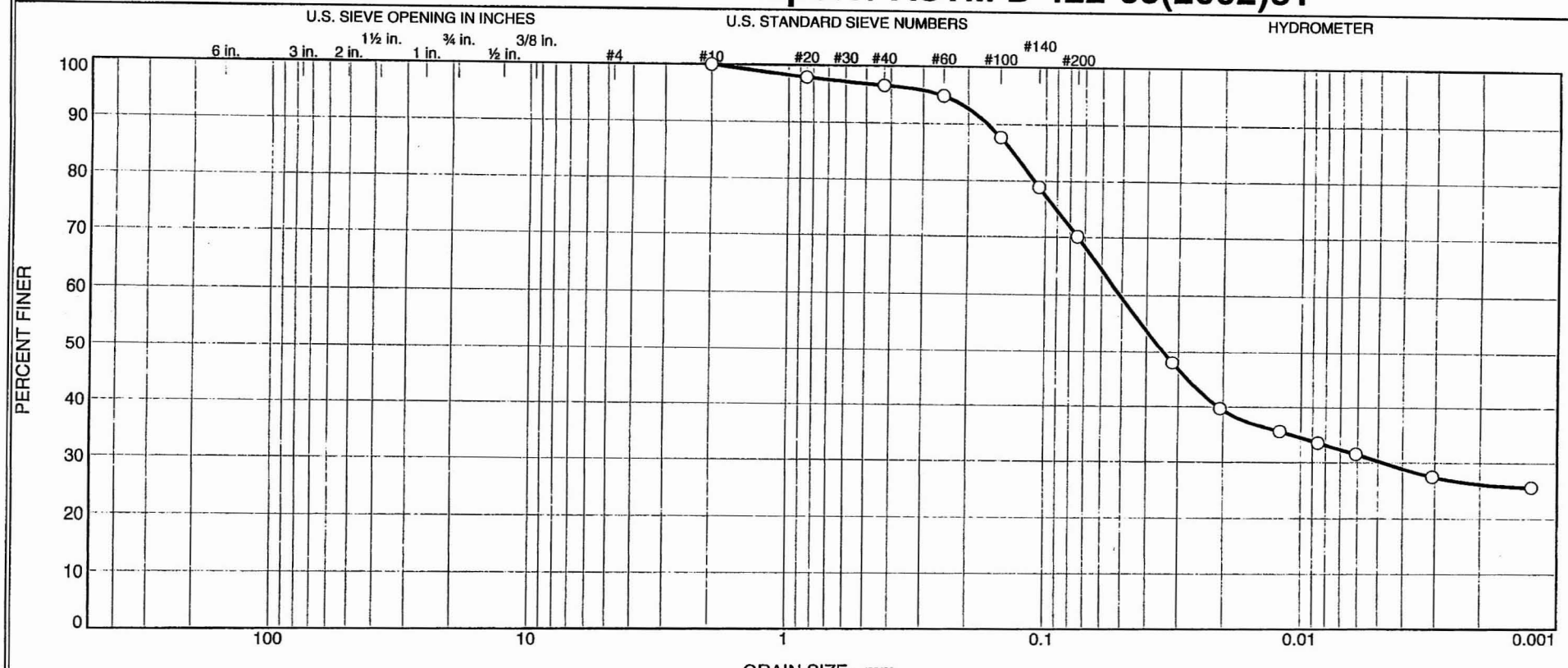
Run No.	1	2	3	4	
Wet+Tare	23.69	21.61			
Dry+Tare	22.23	20.47			
Tare	15.63	15.44			
Moisture	22.1	22.7			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
109.95	88.23	6.77	26.7

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	3.5	26.3	39.9	30.3

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-15B	59.5-60.0	1-17-08	CL	Pale Yellow Sandy Lean CLAY	18.2	32	14

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: 59.5-60.0 **Sample Number:** SS-15B
Material Description: Pale Yellow Sandy Lean CLAY
Date: 1-17-08 **Natural Moisture:** 18.2
Liquid Limit: 32 **Plastic Limit:** 14 **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
142.15	0.00	0.00	#10	0.00	100.0
48.12	0.00	0.00	#20	1.02	97.9
			#40	1.67	96.5
			#60	2.50	94.8
			#100	5.88	87.8
			#140	10.15	78.9
			#200	14.36	70.2

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =48.12
Hygroscopic moisture correction:
Moist weight and tare = 27.05
Dry weight and tare = 26.90
Tare weight = 15.47
Hygroscopic moisture = 1.3%
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	21.6	28.0	23.1	0.0132	29.0	11.5	0.0317	48.0
5.00	21.6	24.0	19.1	0.0132	25.0	12.2	0.0206	39.7
15.00	21.6	22.0	17.1	0.0132	23.0	12.5	0.0120	35.5
30.00	21.7	21.0	16.1	0.0132	22.0	12.7	0.0086	33.5
60.00	21.8	20.0	15.1	0.0131	21.0	12.9	0.0061	31.5
240.00	22.0	18.0	13.2	0.0131	19.0	13.2	0.0031	27.5
1440.00	22.3	17.0	12.3	0.0131	18.0	13.3	0.0013	25.7

MACTEC, Inc.

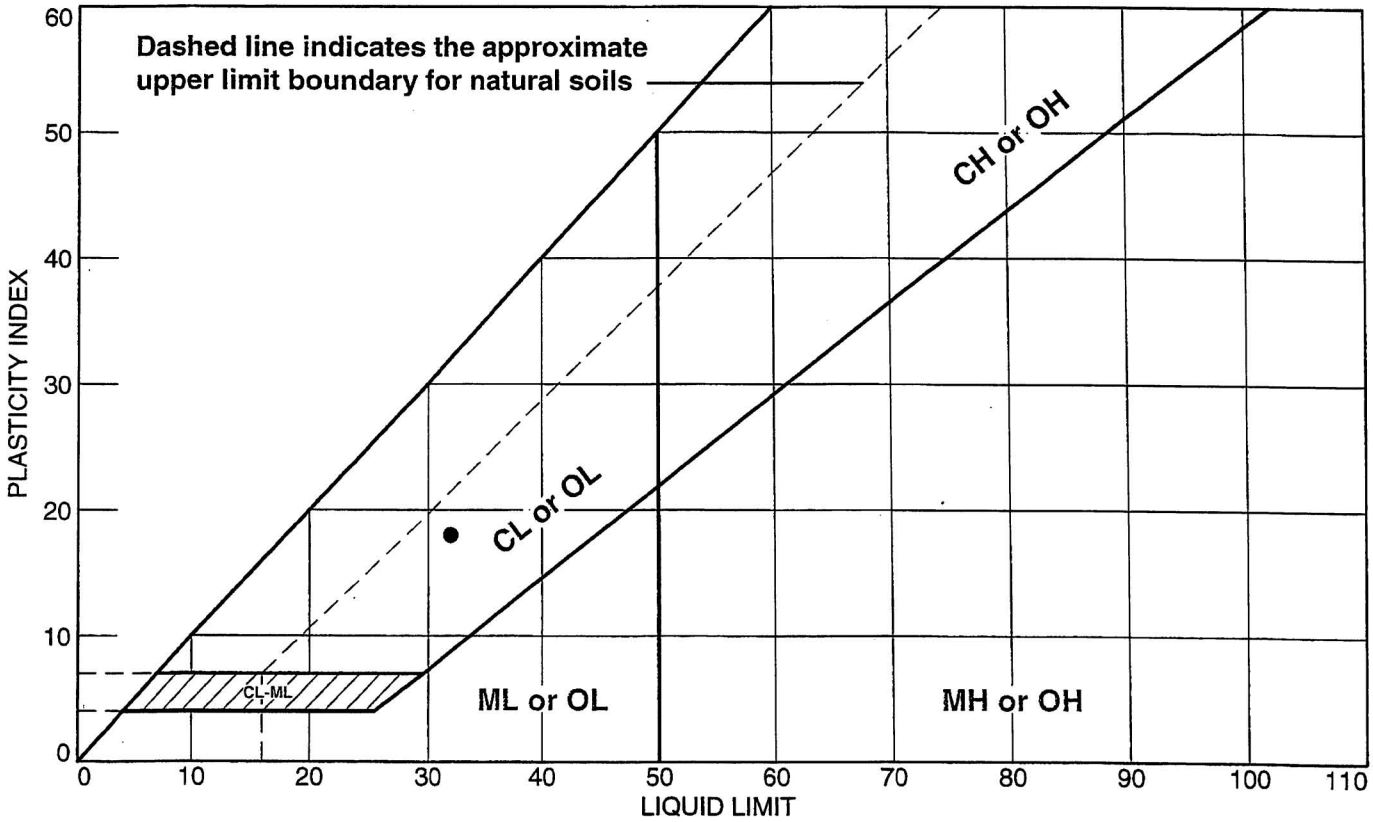
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	3.5	26.3	29.8	39.9	30.3	70.2

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.0048	0.0344	0.0508	0.1105	0.1335	0.1677	0.2575

Fineness Modulus
0.21

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-15B	59.5-60.0	18.2	14	32	18	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

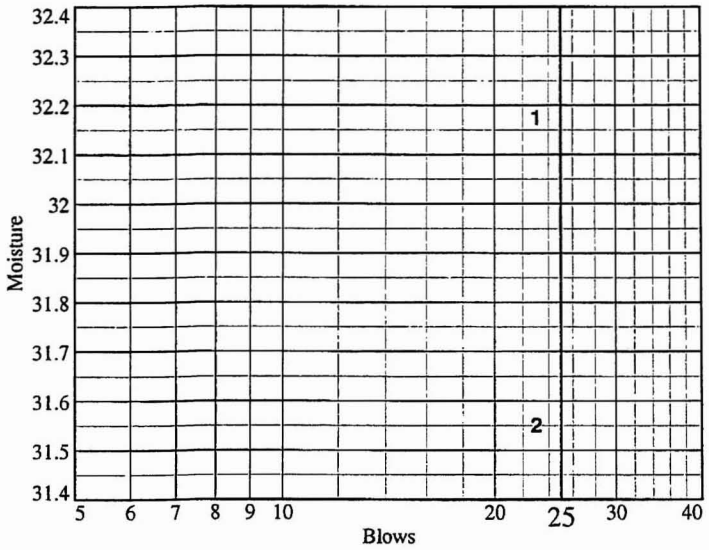
LIQUID AND PLASTIC LIMIT TEST DATA

4/2/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2304A
Depth: 59.5-60.0 **Sample Number:** SS-15B
Material Description: Pale Yellow Sandy Lean CLAY
USCS: CL **AASHTO:** A-6(10)
Tested by: CS **Checked by:** LBJ

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	32.87	31.35				
Dry+Tare	28.70	27.57				
Tare	15.74	15.59				
# Blows	23	23				
Moisture	32.2	31.6				



Liquid Limit= 32
Plastic Limit= 14
Plasticity Index= 18
Natural Moisture= 18.2
Liquidity Index= 0.2

Plastic Limit Data

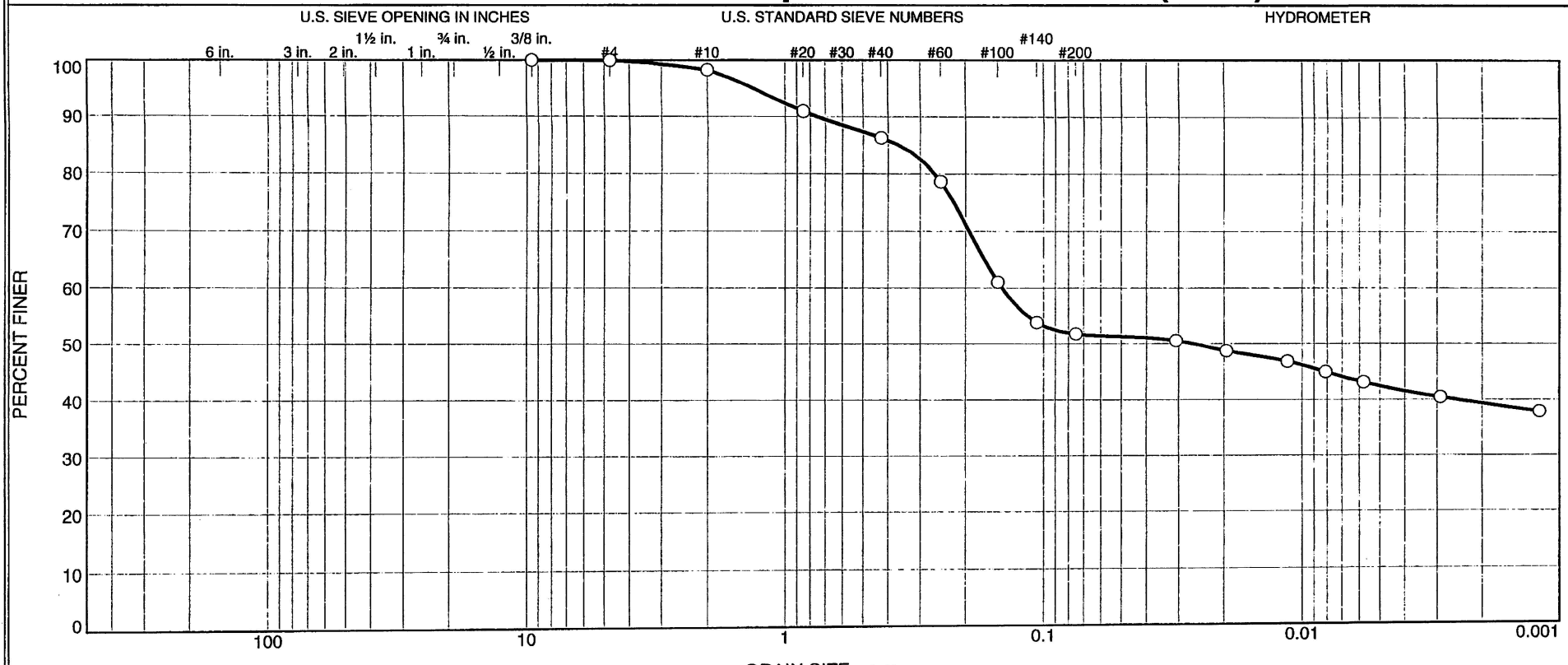
Run No.	1	2	3	4	
Wet+Tare	23.47	22.32			
Dry+Tare	22.50	21.43			
Tare	15.44	15.47			
Moisture	13.7	14.9			

Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
52.22	45.20	6.66	18.2

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	1.7	11.9	34.6	9.4	42.4

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2304A	SS-16	63.5-65.0	1-17-08	CL	Light Gray Sandy Lean CLAY	18.0	45	18

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