GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2319UD
Sample No.: UD-5
Elev. or Depth: 35-37 Ft **Sample Length(in./cm.):** ID#8354
Location: B-2319UD
Description: Brownish Yellow ~~Sandy~~ with Sand SILT (Visual) ZHU 5/12/08
Date: 2/2/08 **Natural Moisture:** 18.8
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** ML
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM Value from strength test performed.
Specific Gravity = 2.72 (ASTM D 854-06)
ND = Not Determined

Mechanical Analysis Data

	Initial
Dry sample and tare=	192.25
Tare =	109.04
Dry sample weight =	83.21

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.00	100.0
# 20	0.03	100.0
# 40	0.15	99.8
# 60	0.76	99.1
# 100	6.49	92.2
# 140	11.40	86.3
# 200	13.52	83.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =**
% SAND = 16.2 **(% coarse =** 0.0 **% medium =** 0.2 **% fine =** 16.0)
% FINES = 83.8

D_{85}= 0.09

MACTEC Engineering and Consulting, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/14/08

SAMPLE IDENTIFICATION: B-2319UD,UD-5 @ 35-37 Ft.

(A) Mass of oven-dried soil, grams:		37.31
(B) Mass of pycnometer filled with water at test temperature (T), grams:		339.40
(C) Mass of pycnometer, water and soil, grams:		363.02
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		24.2
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.725
(F)	***Correction factor:***	0.99904
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.723

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

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

REMARKS: Estimated % Passing # 4 : 100

~~Sandy~~ SILT (ML) - Visual
with Sand
EHU 5/12/08

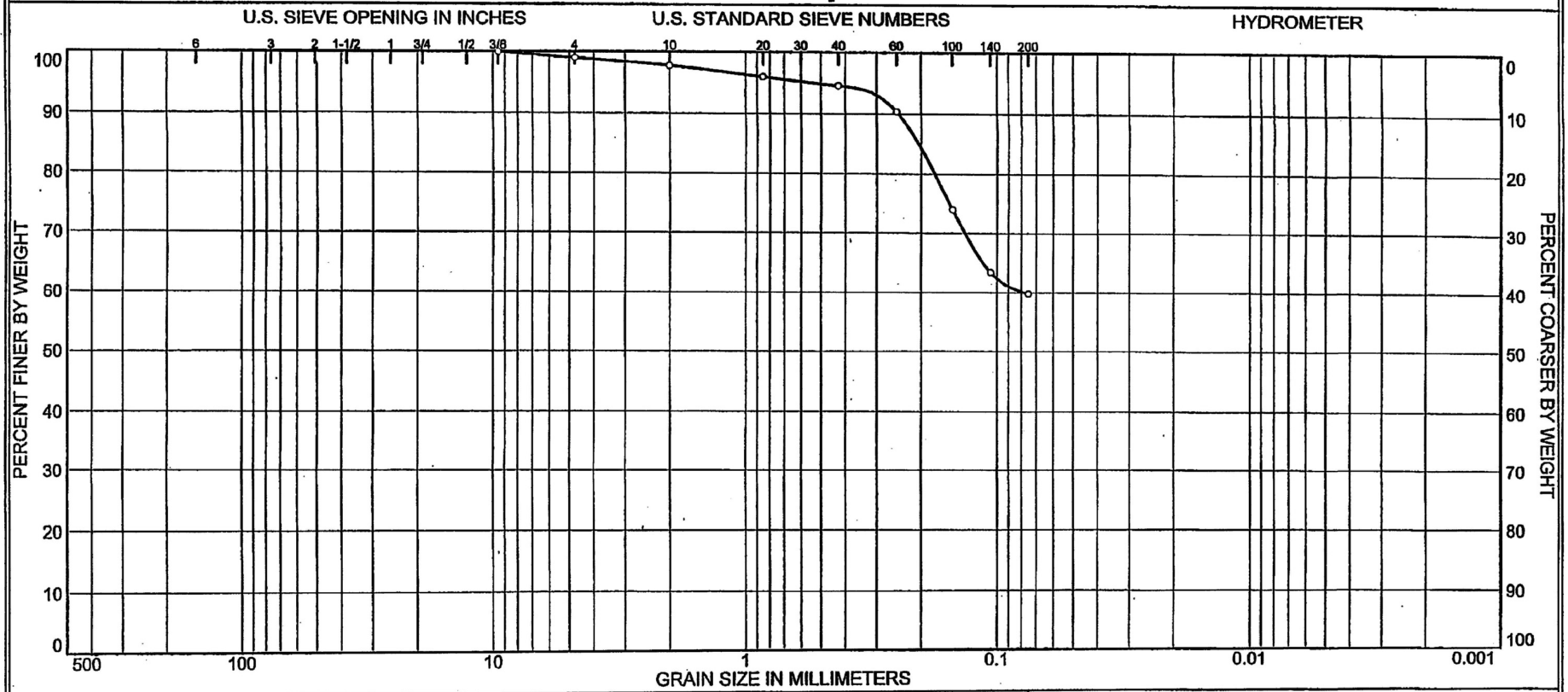
EQUIPMENT USED
SCALES : 418
OVEN : 144
THERMOMETER :2759
PYCNOMETER : 2053

TESTED BY: EH EH

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

REVIEWED BY: Harry Johnson HJ
KAW 5/9/08

Particle Size Distribution Report ASTM D6913-04 e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	1.0	1.2	3.2	34.8	59.8	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-2319UD	UD-6	55-57 Ft (Top)	2/3/08	ML	Light Yellowish Brown Sandy SILT (Visual)	30.7	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777 Lab No. 8355

MACTEC ENGINEERING AND CONSULTING, INC.

O Tested by: EH EH Reviewed by: HJ HJ

Sieve Analysis Only
NM Value from strength test performed
Specific Gravity = 2.71 (ASTM D 854-06)
ND = Not Determined

KAW 5/9/08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2319UD
Sample No.: UD-6
Elev. or Depth: 55-57 Ft (Top) **Sample Length(in./cm.):** ID#8355
Location: B-2319
Description: Light Yellowish Brown Sandy SILT (Visual)
Date: 2/3/08 **Natural Moisture:** 30.7
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** ML
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM Value from strength test performed
Specific Gravity = 2.71 (ASTM D 854-06)
ND = Not Determined

Mechanical Analysis Data

	Initial
Dry sample and tare=	193.22
Tare =	113.25
Dry sample weight =	79.97

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	0.83	99.0
# 10	1.74	97.8
# 20	3.20	96.0
# 40	4.28	94.6
# 60	7.64	90.4
# 100	20.79	74.0
# 140	29.27	63.4
# 200	32.13	59.8

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL = 1.0** **(% coarse = % fine = 1.0)**
% SAND = 39.2 **(% coarse = 1.2 % medium = 3.2 % fine = 34.8)**
% FINES = 59.8

D_{85}= 0.20 D_{60}= 0.08

MACTEC ENGINEERING AND CONSULTING, INC.

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: 4/9/08

SAMPLE IDENTIFICATION: B-2319UD,UD-6 @ 55-57 (Top) Ft.

(A) Mass of oven-dried soil, grams:	37.47
(B) Mass of pycnometer filled with water at test temperature (T), grams:	343.00
(C) Mass of pycnometer, water and soil, grams:	366.63
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	24.2
(G) Specific Gravity at observed temperature: A / [B - (C - A)]	2.707
(F) ***Correction factor:***	0.99904
(G x F) **SPECIFIC GRAVITY @ 20°C:**	2.705

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

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

REMARKS: Estimated % Passing # 4 : 99.0

Sandy SILT (ML) - Visual

EQUIPMENT USED
SCALES : 418
OVEN : 144
THERMOMETER :2759
PYCNOMETER : 2052

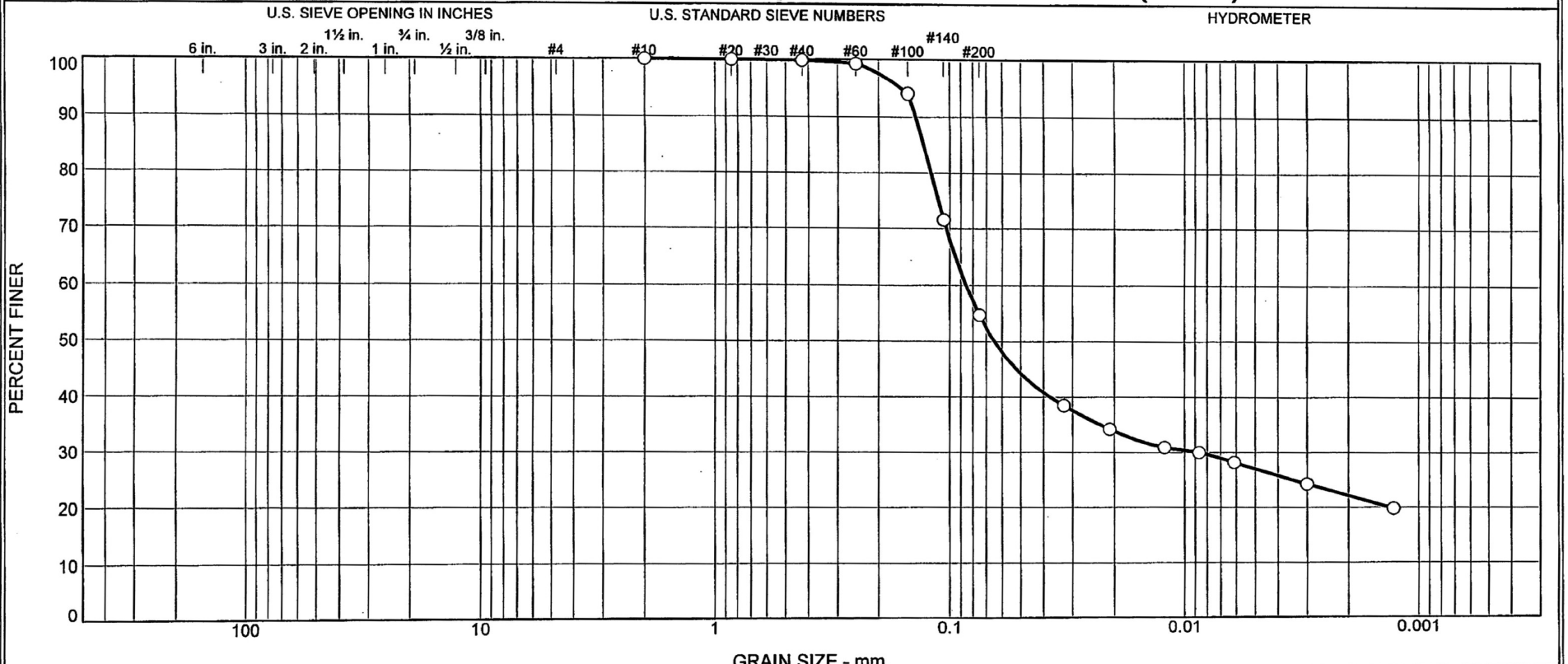
TESTED BY: EH EH

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

REVIEWED BY: Harry Johnson HJ

KAW 5/9/08

Particle Size Distribution Report / ASTM D422-63(2002)e1



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.2	45.1	27.7	27.0

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Boring B-2319UD	UD-7	65.0-67.0	2/3/08	CL	Light Yellowish Brown Sandy Lean CLAY	19.5	39	17

Client Bechtel

Project Exelon Texas COL (Victoria Reservoir)

Project No. 6468071777 | Figure

MACTEC, Inc.

Raleigh, North Carolina

○ Specific Gravity = 2.662 (ASTM D854-06)
NM is average of values obtained from consolidation and triaxial test specimens

KAW 5/8/08

Tested By: CS **Checked By:** LBJ

GRAIN SIZE DISTRIBUTION TEST DATA

5/8/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2319UD
Depth: 65.0-67.0 **Sample Number:** UD-7
Material Description: Light Yellowish Brown Sandy Lean CLAY
Date: 2/3/08 **Natural Moisture:** 19.5
Liquid Limit: 39 **Plastic Limit:** 17 **USCS Class.:** CL
Testing Remarks: Specific Gravity = 2.662 (ASTM D854-06)
NM is average of values obtained from consolidation and triaxial test specimens
Tested by: CS **Checked by:** LBJ

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
189.77	0.00	0.00	#10	0.00	100.0
48.67	0.00	0.00	#20	0.03	99.9
			#40	0.08	99.8
			#60	0.35	99.3
			#100	2.91	94.0
			#140	13.84	71.6
			#200	22.05	54.7

Hydrometer Test Data

Hydrometer test uses material passing#10
Percent passing #10 based upon complete sample =100.0
Weight of hydrometer sample =48.67
Hygroscopic moisture correction:
Moist weight and tare = 28.84
Dry weight and tare = 28.40
Tare weight = 15.49
Hygroscopic moisture =3.4%
Table of composite correction values:

Temp., deg. C:	11.3	29.5
Comp. corr.:	-8.0	-3.0

Meniscus correction only =1.0
Specific gravity of solids =2.662
Hydrometer type =152H
Hydrometer effective depth equation: L =16.294964 - 0.164 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.8	23.0	18.2	0.0131	24.0	12.4	0.0327	38.5
5.00	22.8	21.0	16.2	0.0131	22.0	12.7	0.0209	34.2
15.00	22.6	19.5	14.6	0.0132	20.5	12.9	0.0122	30.9
30.00	22.8	19.0	14.2	0.0131	20.0	13.0	0.0087	30.0
60.00	23.3	18.0	13.3	0.0131	19.0	13.2	0.0061	28.2
250.00	23.9	16.0	11.5	0.0130	17.0	13.5	0.0030	24.3
1440.00	23.5	14.0	9.4	0.0130	15.0	13.8	0.0013	19.8

MACTEC, Inc.

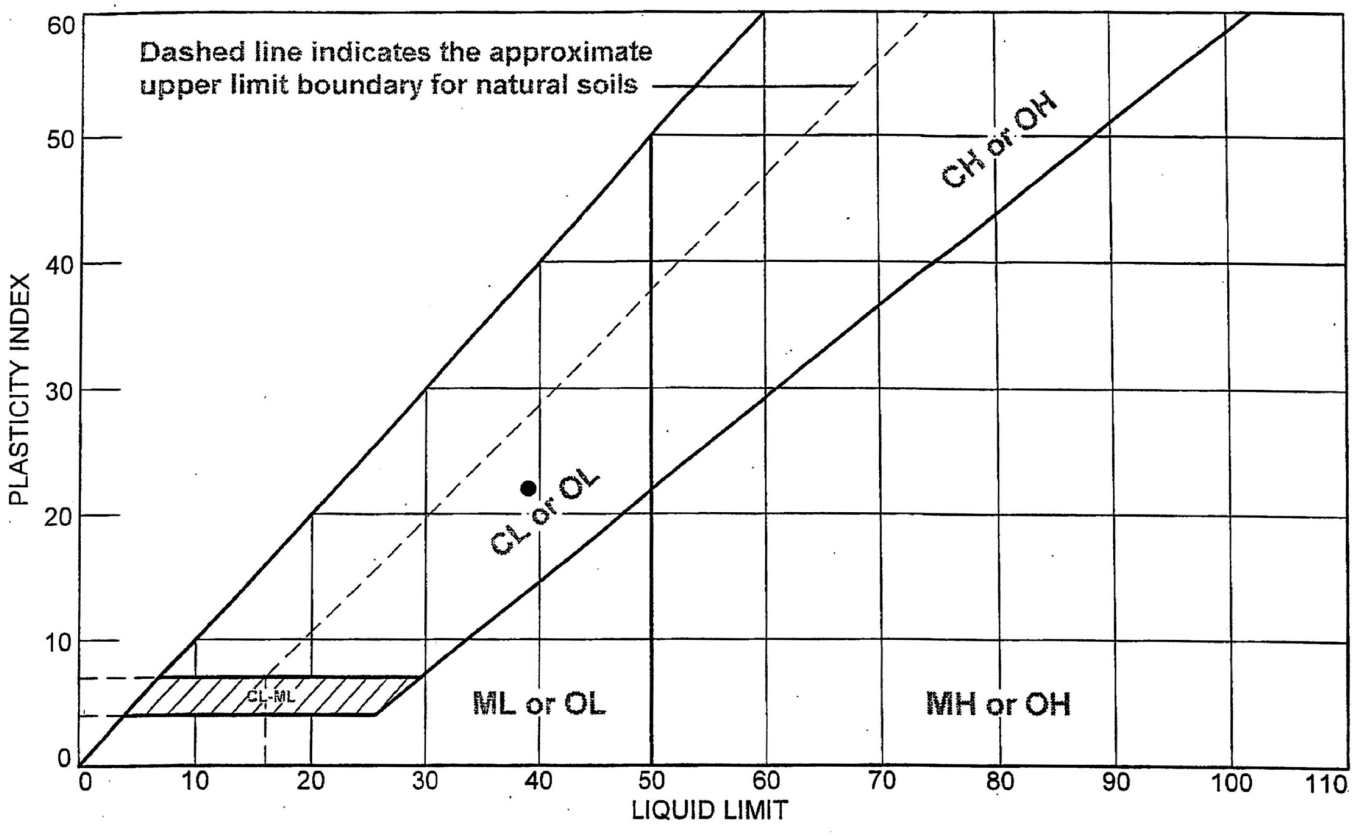
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	0.2	45.1	45.3	27.7	27.0	54.7

D_{10}	D_{15}	D_{20}	D_{30}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0013	0.0086	0.0647	0.0856	0.1198	0.1286	0.1390	0.1607

Fineness Modulus
0.07

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-2319UD	UD-7	65.0-67.0	19.5	17	39	22	CL

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

KAW 5/8/08

Tested By: CS **Checked By:** LBJ

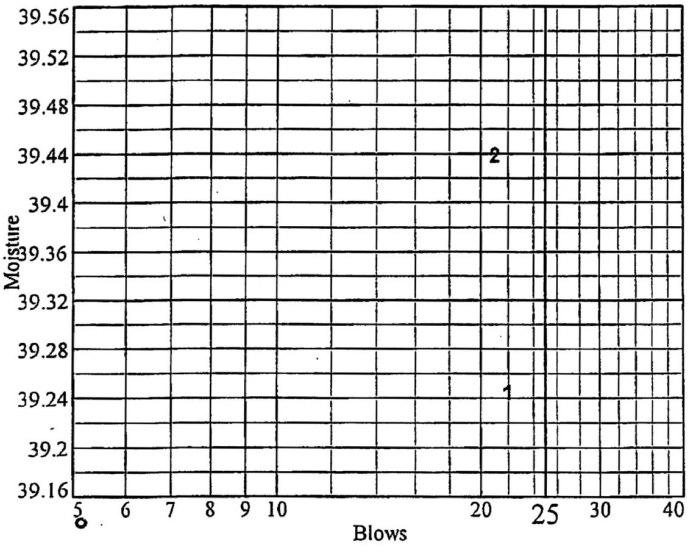
LIQUID AND PLASTIC LIMIT TEST DATA

5/7/2008

Client: Bechtel
Project: Exelon Texas COL (Victoria Reservoir)
Project Number: 6468071777
Location: Boring B-2319UD
Depth: 65.0-67.0 **Sample Number:** UD-7
Material Description: Light Yellowish Brown Sandy Lean CLAY
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	23.95	22.93				
Dry+Tare	21.56	20.82				
Tare	15.47	15.47				
# Blows	22	21				
Moisture	39.2	39.4				



Liquid Limit= 39
Plastic Limit= 17
Plasticity Index= 22
Natural Moisture= 19.5
Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	22.55	19.36			
Dry+Tare	21.53	18.17			
Tare	15.57	11.10			
Moisture	17.1	16.8			

MACTEC, Inc.

MACTEC ENGINEERING AND CONSULTING, INC.
RALEIGH, NORTH CAROLINA

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

PROJECT NAME:EXELON COL PROJECT (VICTORIA)

PROJECT NUMBER: 6468071777

DATE: 4/11/08

SAMPLE IDENTIFICATION: B-2319UD UD-7

(A) Mass of oven-dried soil, grams:	53.08
(B) Mass of pycnometer filled with water at test temperature (T), grams:	655.74
(C) Mass of pycnometer, water and soil, grams:	688.89
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:	21.4
(G) Specific Gravity at observed temperature: A / [B - (C - A)]	2.663
(F) ***Correction factor:***	0.99970
(G x F) **SPECIFIC GRAVITY @ 20°C:**	2.662

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

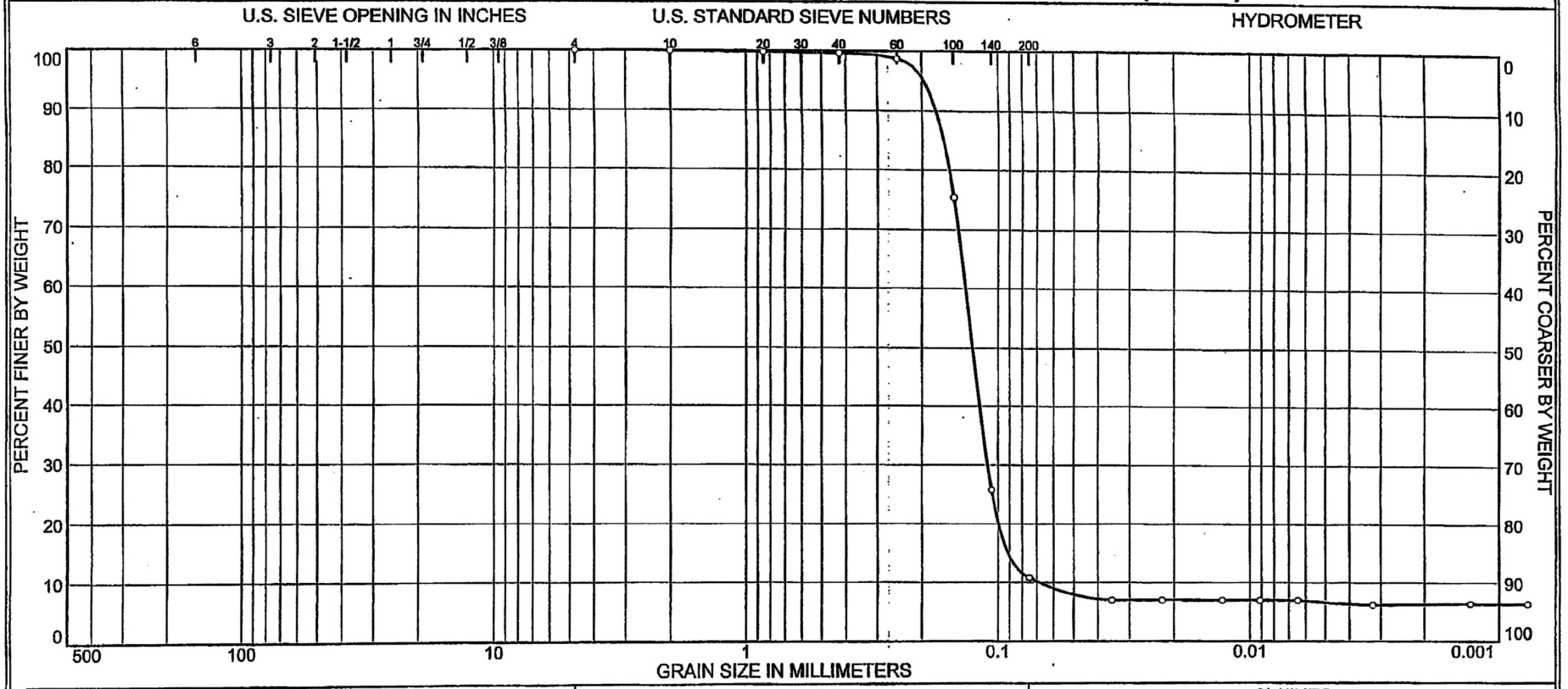
PYCNOMETER :P-3

TESTED BY: CS

REVIEWED BY: Brian Johnson

KAW 5/8/08

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



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	0.0	0.0	0.4	88.8	4.2	6.6

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-2319UD	UD-8	75-77 Ft	2/3/08	SP-SM	Light Gray Poorly Graded SAND with Silt	24.6	NV	NP

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777 Lab No. 8356

MACTEC ENGINEERING AND CONSULTING, INC.

O Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.73 (ASTM D 854-06)

KAW 4.15.08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2319UD
Sample No.: UD-8
Elev. or Depth: 75-77 Ft **Sample Length(in./cm.):** ID#8356
Location: B-2319UD
Description: Light Gray Poorly Graded SAND with Silt
Date: 2/3/08 **PL:** NP **LL:** NV **PI:** NP
USCS Classification: SP-SM **AASHTO Classification:**
Testing Remarks: Tested by: EH Reviewed by: HJ

NM value from first strength test performed.
Specific Gravity = 2.73 (ASTM D 854-06)

Mechanical Analysis Data

	Initial
Dry sample and tare=	73.40
Tare =	16.59
Dry sample weight =	56.81

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	0.00	100.0
# 20	0.10	99.8
# 40	0.21	99.6
# 60	0.75	98.7
# 100	13.99	75.4
# 140	42.19	25.7
# 200	50.69	10.8

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 10.8
Weight of hydrometer sample: 6.12
Calculated biased weight= 56.67
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.734
Specific gravity correction factor= 0.982
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

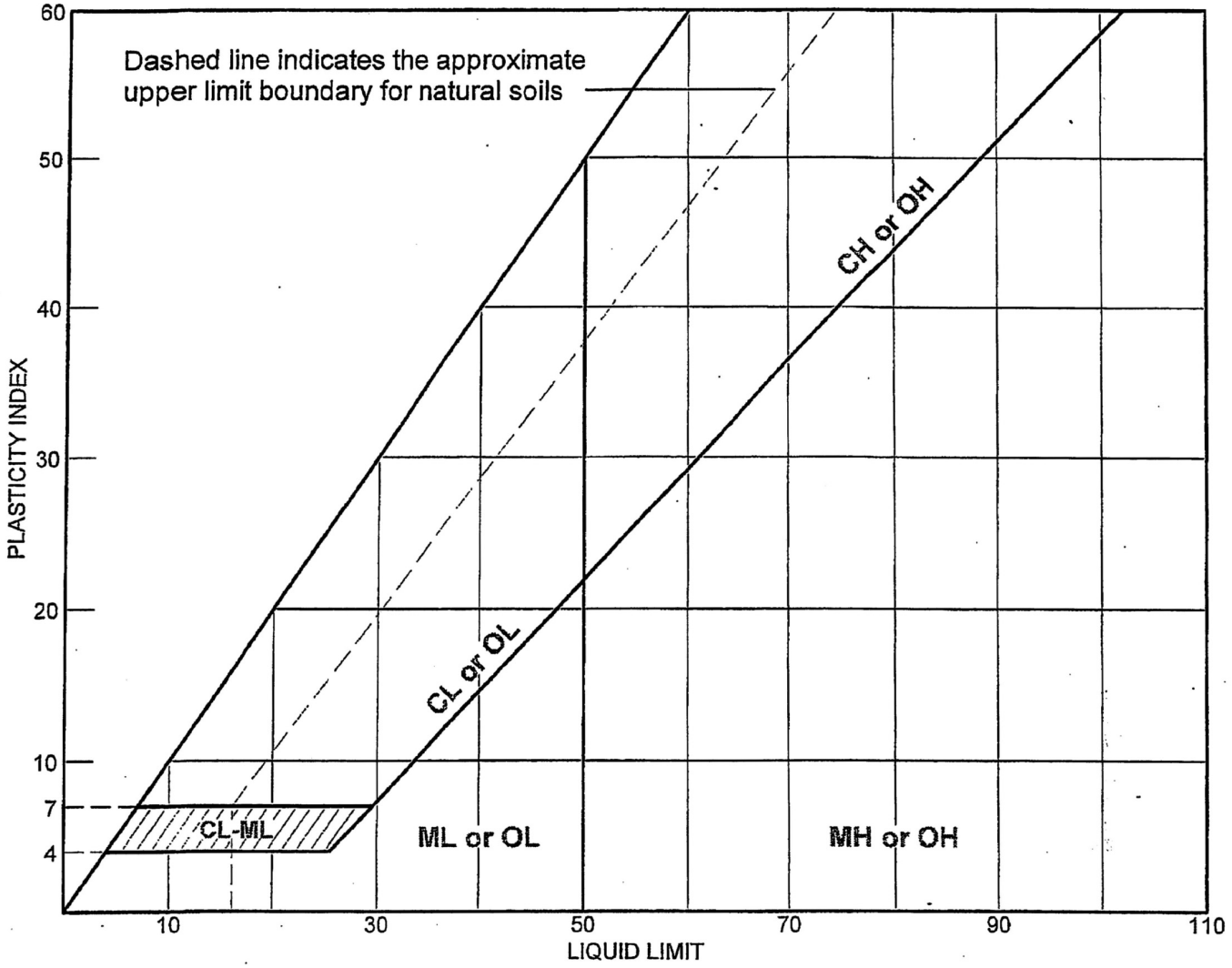
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.00	22.2	9.0	4.1	0.0130	9.0	14.8	0.0353	7.0
5.00	22.2	9.0	4.1	0.0130	9.0	14.8	0.0223	7.0
15.00	22.2	9.0	4.1	0.0130	9.0	14.8	0.0129	7.0
30.00	22.2	9.0	4.1	0.0130	9.0	14.8	0.0091	7.0
60.00	22.2	9.0	4.1	0.0130	9.0	14.8	0.0064	7.0
240.00	22.2	8.5	3.6	0.0130	8.5	14.9	0.0032	6.2
1440.00	22.8	8.5	3.7	0.0129	8.5	14.9	0.0013	6.4
4216.00	22.8	8.5	3.7	0.0129	8.5	14.9	0.0008	6.4

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =**
% SAND = 89.2 (**% coarse =** 0.0 **% medium =** 0.4 **% fine =** 88.8)
% SILT = 4.2 **% CLAY =** 6.6 (**% CLAY COLLOIDS =** 6.4)

D_{85}= 0.16 D_{60}= 0.13 D_{50}= 0.13
D_{30}= 0.11 D_{15}= 0.09 D_{10}= 0.07
C_c= 1.3063 C_u= 1.9535

LIQUID AND PLASTIC LIMITS TEST REPORT ASTM D4318 (05)



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-2319UD	UD-8	75-77 Ft	24.6	NP	NV	NP	SP-SM

MACTEC ENGINEERING AND CONSULTING, INC.	**Client:** Bechtel **Project:** Exelon Texas COL (Victoria) **Project No.:** 6468-07-1777 **Lab No.** 8356

LIQUID AND PLASTIC LIMIT TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2319UD
Sample No.: UD-8
Elev. or Depth: 75-77 Ft **Sample Length(in./cm.):** ID#8356
Location: B-2319UD
Description: Light Gray Poorly Graded SAND with Silt
Water Content: 24.6 **USCS:** SP-SM **AASHTO:**

Liquid Limit= NV
Plastic Limit= NP
Plasticity Index= NP

MACTEC ENGINEERING AND CONSULTING, INC.

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: 3/4/08

SAMPLE IDENTIFICATION: B-2319UD,UD-8 @ 75-77 Ft.

(A) Mass of oven-dried soil, grams:		37.30
(B) Mass of pycnometer filled with water at test temperature (T), grams:		366.05
(C) Mass of pycnometer, water and soil, grams:		389.71
(T) Temperature of pycnometer, water and soil, °C when mass (C) determined:		21.7
(G) Specific Gravity at observed temperature:	A / [B - (C - A)]	2.735
(F)	***Correction factor:***	0.99963
(G x F)	**SPECIFIC GRAVITY @ 20°C:**	2.734

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

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

REMARKS: Estimated % Passing # 4 : 100

SAND with Silt (SP-SM)

EQUIPMENT USED

SCALES : 418

OVEN : 144

THERMOMETER :2759

PYCNOMETER : 2193

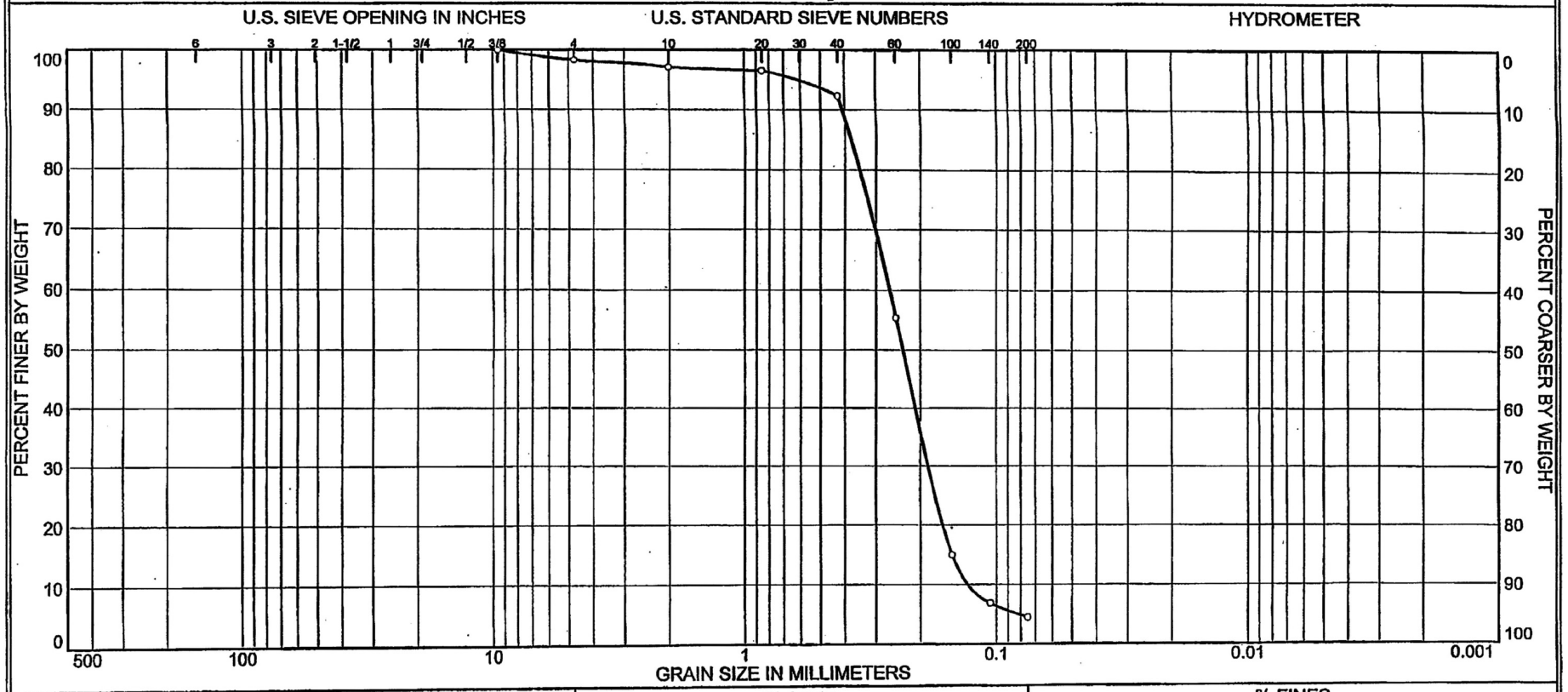
TESTED BY: EH

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

REVIEWED BY: Harry Johnson HJ

KAW 4.15.08

Particle Size Distribution Report ASTM D6913-04 e1



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
O	0.0	0.0	1.7	1.2	4.8	87.8	4.5	

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
O	B-2319UD	UD-10	95-97 Ft (Bottom)	2/3/08	SP	Mottled Light Gray and Brownish Yellow Poorly Graded SAND (Visual)	19.3	ND	ND

Client Bechtel

Project Exelon Texas COL (Victoria)

Project No. 6468-07-1777 Lab No. 8357

MACTEC ENGINEERING AND CONSULTING, INC.

O Tested by: EH EH Reviewed by: HJ HJ

Sieve Analysis Only
NM value from strength test performed.
Specific Gravity = 2.72 (ASTM D 854-06)
ND = Not Determined

KAW 5/9/08

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project Number: 6468-07-1777

Sample Data

Source: B-2319UD
Sample No.: UD-10
Elev. or Depth: 95-97 Ft (Bottom) **Sample Length(in./cm.):** ID#8357
Location: B-2319UD
Description: Mottled Light Gray and Brownish Yellow Poorly Graded SAND (Visual)
Date: 2/3/08 **Natural Moisture:** 19.3
Liquid Limit: ND **Plastic Limit:** ND **USCS Class.:** SP
Testing Remarks: Tested by: EH Reviewed by: HJ

Sieve Analysis Only
NM value from strength test performed.
Specific Gravity = 2.72 (ASTM D 854-06)
ND = Not Determined

Mechanical Analysis Data

	Initial
Dry sample and tare=	168.95
Tare =	88.23
Dry sample weight =	80.72

Tare for cumulative weight retained= .00

Sieve	Cumul. Wt. retained	Percent finer
.375 inch	0.00	100.0
# 4	1.35	98.3
# 10	2.34	97.1
# 20	2.79	96.5
# 40	6.18	92.3
# 60	35.98	55.4
# 100	68.62	15.0
# 140	75.13	6.9
# 200	77.06	4.5

Fractional Components

Gravel/Sand based on #4
Sand/Fines based on #200
% COBBLES = **% GRAVEL =** 1.7 **(% coarse =** **% fine =** 1.7)
% SAND = 93.8 **(% coarse =** 1.2 **% medium =** 4.8 **% fine =** 87.8)
% FINES = 4.5

D_{85}= 0.38 D_{60}= 0.26 D_{50}= 0.23
D_{30}= 0.19 D_{15}= 0.15 D_{10}= 0.13
C_c= 1.0114 C_u= 2.0246