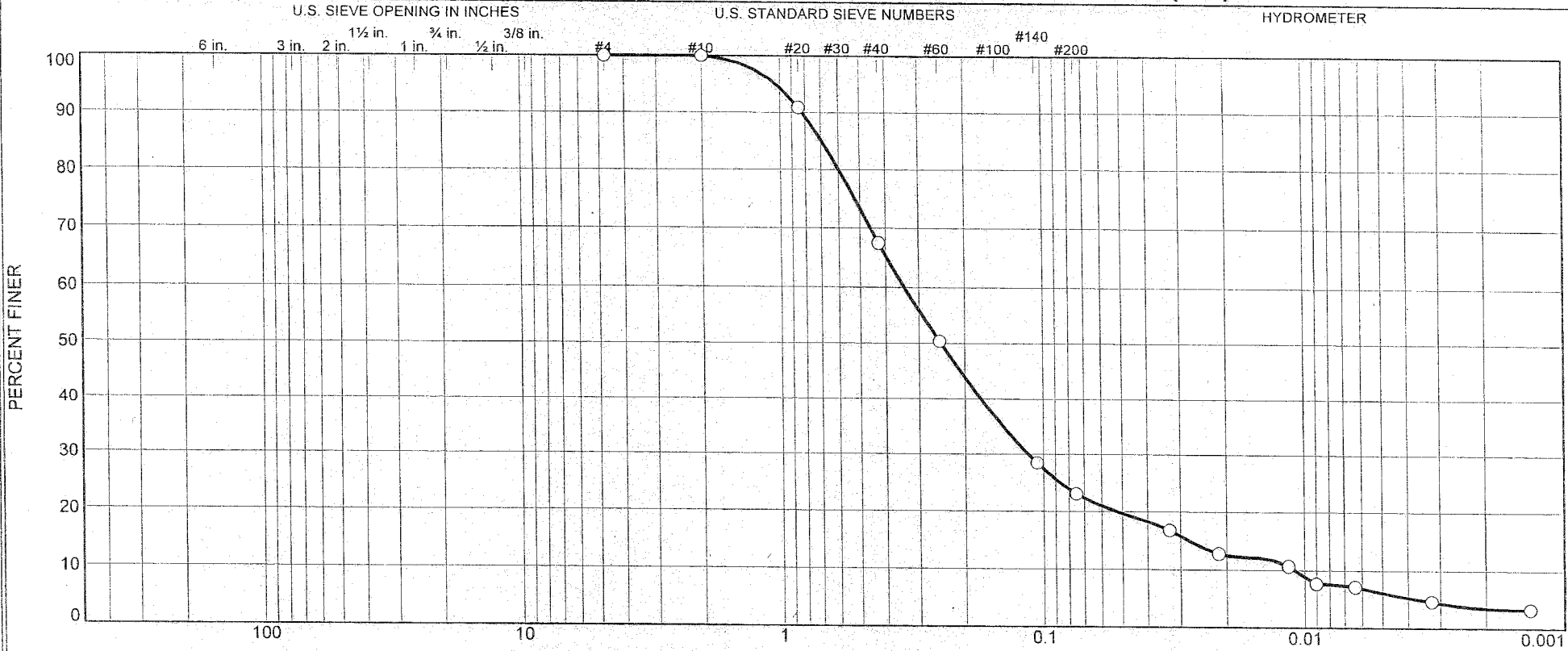


# Particle Size Distribution Report/ASTM-422-63(02)



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	32.5	44.4	17.0	6.1

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-929	B-929-7	23-24.5'	8/8/06	ND	Reddish yellow silty sand.	18.8	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ND=SPECIFIC GRAVITY IS ASSUMED. ENTIRE SAMPLE WAS TESTED.
Project North Anna COL Project		
Project No. 6468061472      Figure		
<b>Raleigh, North Carolina</b>		

Tested By: JPD

Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-929

Depth: 23-24.5'

Sample Number: B-929-7

Material Description: Reddish yellow silty sand.

Date: 8/8/06

Natural Moisture: 18.8

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ND=SPECIFIC GRAVITY IS ASSUMED.

ENTIRE SAMPLE WAS TESTED.

Tested by: JPD

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
239.13	0.00	0.00	#4	0.00	100.0
			#10	0.05	100.0
100.43	0.00	0.00	#20	9.18	90.8
			#40	32.62	67.5
			#60	49.81	50.4
			#140	71.81	28.5
			#200	77.21	23.1

**Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =100.43

Hygroscopic moisture correction:

Moist weight and tare = 30.42

Dry weight and tare = 30.26

Tare weight = 15.49

Hygroscopic moisture =1.1%

Table of composite correction values:

Temp., deg. C: 12.8 28.0

Comp. corr.: -7.0 -2.5

Meniscus correction only =1.0

Specific gravity of solids =2.7

Hydrometer type =152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	22.0	21.0	16.7	0.0131	22.0	12.7	0.0330	16.6
5.00	22.0	17.0	12.7	0.0131	18.0	13.3	0.0214	12.7
16.00	27.0	13.5	10.7	0.0124	14.5	13.9	0.0115	10.7
30.00	22.0	12.0	7.7	0.0131	13.0	14.2	0.0090	7.7
60.00	22.0	11.5	7.2	0.0131	12.5	14.2	0.0064	7.2
240.00	21.9	9.0	4.7	0.0131	10.0	14.7	0.0032	4.7
1440.00	20.5	8.0	3.3	0.0134	9.0	14.8	0.0014	3.3

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	32.5	44.4	76.9	17.0	6.1	23.1

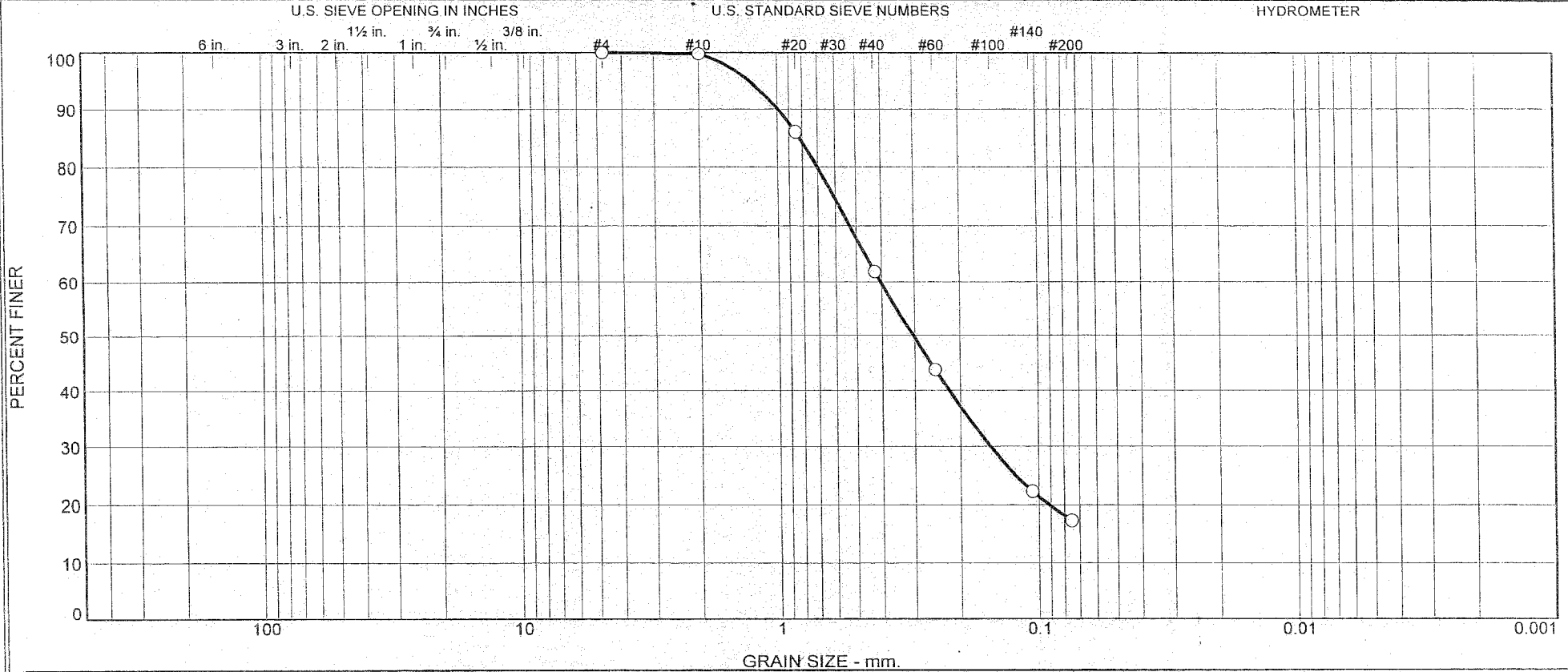
D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0109	0.0281	0.0526	0.1144	0.2467	0.3406	0.5994	0.6943	0.8225	1.0418

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.31	31.21	3.52

# Particle Size Distribution Report/ASTM-422-63(02)

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	37.9	44.6	17.3	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-929	B-929-9	33-34.5'	8/8/06	ND	Reddish yellow silty sand.	16.9	ND	ND

Client Dominion Nuclear North Anna Project North Anna COL Project	<h2 style="margin: 0;">MACTEC, Inc.</h2> <h3 style="margin: 0;">Raleigh, North Carolina</h3>	○ ND=NOT DETERMINED. ENTIRE SAMPLE WAS TESTED.
Project No. 6468061472	Figure	

1/23/07

**Tested By:** JPD

**Checked By:** ABS



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

**Client:** Dominion Nuclear North Anna

**Project:** North Anna COL Project

**Project Number:** 6468061472

**Location:** BORING B-929

**Depth:** 33-34.5'

**Sample Number:** B-929-9

**Material Description:** Reddish yellow silty sand.

**Date:** 8/8/06

**Natural Moisture:** 16.9

**Liquid Limit:** ND

**Plastic Limit:** ND

**USCS Class.:** ND

**Testing Remarks:** ND=NOT DETERMINED.

ENTIRE SAMPLE WAS TESTED.

**Tested by:** JPD

**Checked by:** ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
287.95	0.00	0.00	#4	0.00	100.0
			#10	0.60	99.8
116.91	0.00	0.00	#20	16.14	86.0
			#40	44.45	61.9
			#60	65.61	43.8
			#140	90.78	22.3
			#200	96.60	17.3

**Fractional Components**

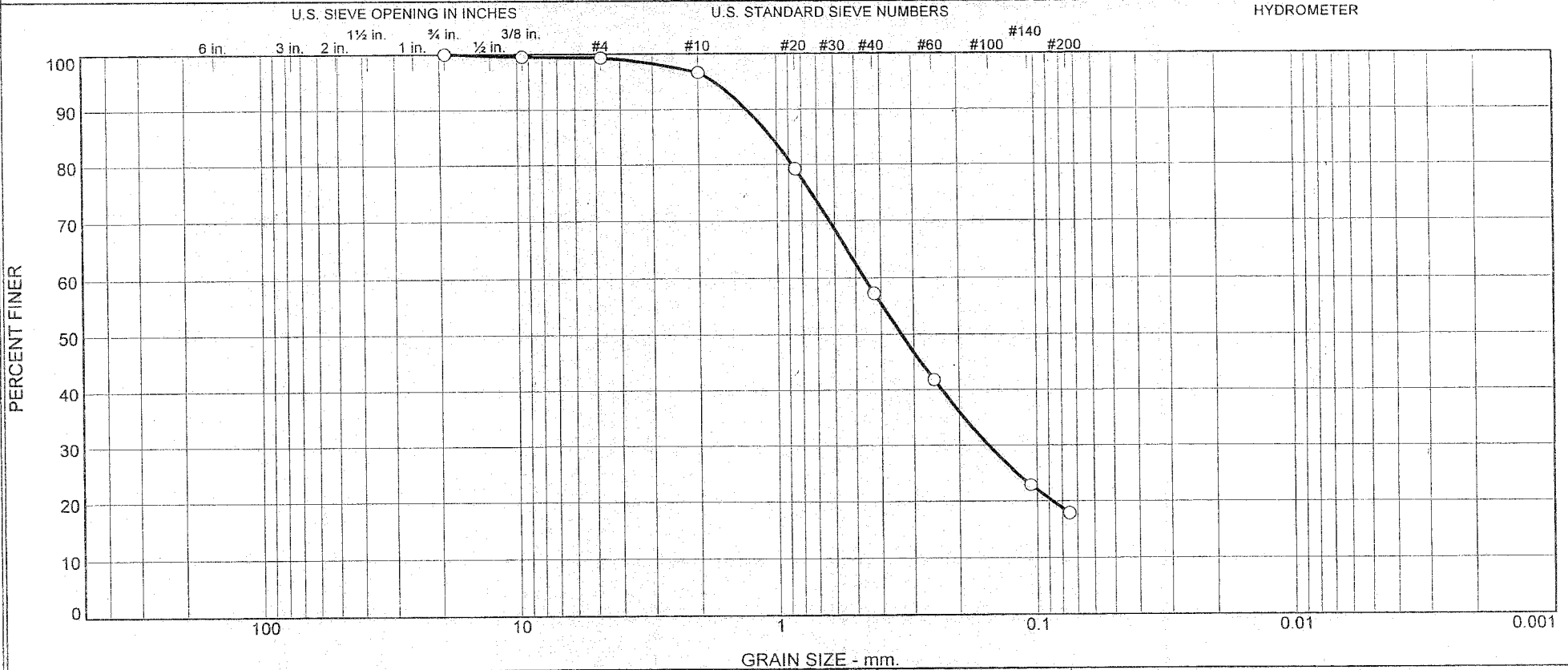
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	37.9	44.6	82.7			17.3

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
		0.0914	0.1533	0.3029	0.4039	0.7005	0.8206	0.9920	1.2792

<b>Fineness Modulus</b>
1.53

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.7	2.7	39.3	39.4	17.9	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-929	B-929-11	43-44.5'	8/8/06	ND	Reddish yellow silty sand.	17.2	ND	ND

Client Dominion Nuclear North Anna Project North Anna COL Project	<h2 style="margin: 0;">MACTEC, Inc.</h2> <h3 style="margin: 0;">Raleigh, North Carolina</h3>	○ ND=NOT DETERMINED. ENTIRE SAMPLE WAS TESTED.
Project No. 6468061472	Figure	

Tested By: JPD

Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-929

Depth: 43-44.5'

Sample Number: B-929-11

Material Description: Reddish yellow silty sand.

Date: 8/8/06

Natural Moisture: 17.2

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ND=NOT DETERMINED.

ENTIRE SAMPLE WAS TESTED.

Tested by: JPD

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
289.19	0.00	0.00	.75	0.00	100.0
			.375	1.44	99.5
			#4	2.04	99.3
			#10	9.94	96.6
110.71	0.00	0.00	#20	19.79	79.3
			#40	45.01	57.3
			#60	62.78	41.8
			#140	84.48	22.9
			#200	90.15	17.9

**Fractional Components**

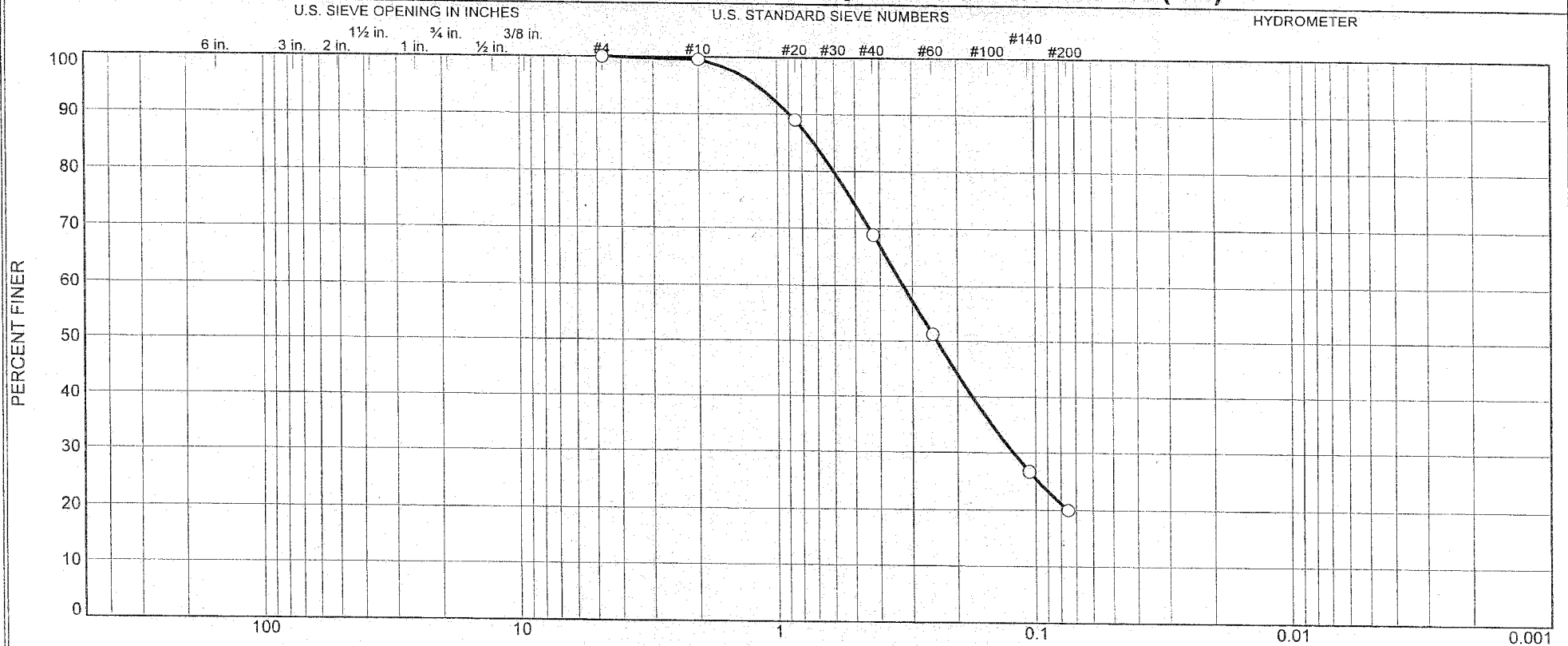
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.7	0.7	2.7	39.3	39.4	81.4			17.9

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
		0.0874	0.1542	0.3345	0.4624	0.8710	1.0507	1.3100	1.7559

<b>Fineness Modulus</b>
1.71

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.5	30.6	48.9	20.0	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-929	B-929-13	53-54.5'	8/8/06	ND	Light brown silty sand.	13.8	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ND=NOT DETERMINED. ENTIRE SAMPLE WAS TESTED.
Project North Anna COL Project		
Project No. 6468061472		
Figure	<b>Raleigh, North Carolina</b>	

Tested By: JPD

Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-929

Depth: 53-54.5'

Sample Number: B-929-13

Material Description: Light brown silty sand.

Date: 8/8/06

Natural Moisture: 13.8

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ND=NOT DETERMINED.

ENTIRE SAMPLE WAS TESTED.

Tested by: JPD

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
299.67	0.00	0.00	#4	0.00	100.0
			#10	1.43	99.5
107.68	0.00	0.00	#20	11.42	89.0
			#40	33.13	68.9
			#60	52.24	51.2
			#140	78.79	26.7
			#200	86.04	20.0

**Fractional Components**

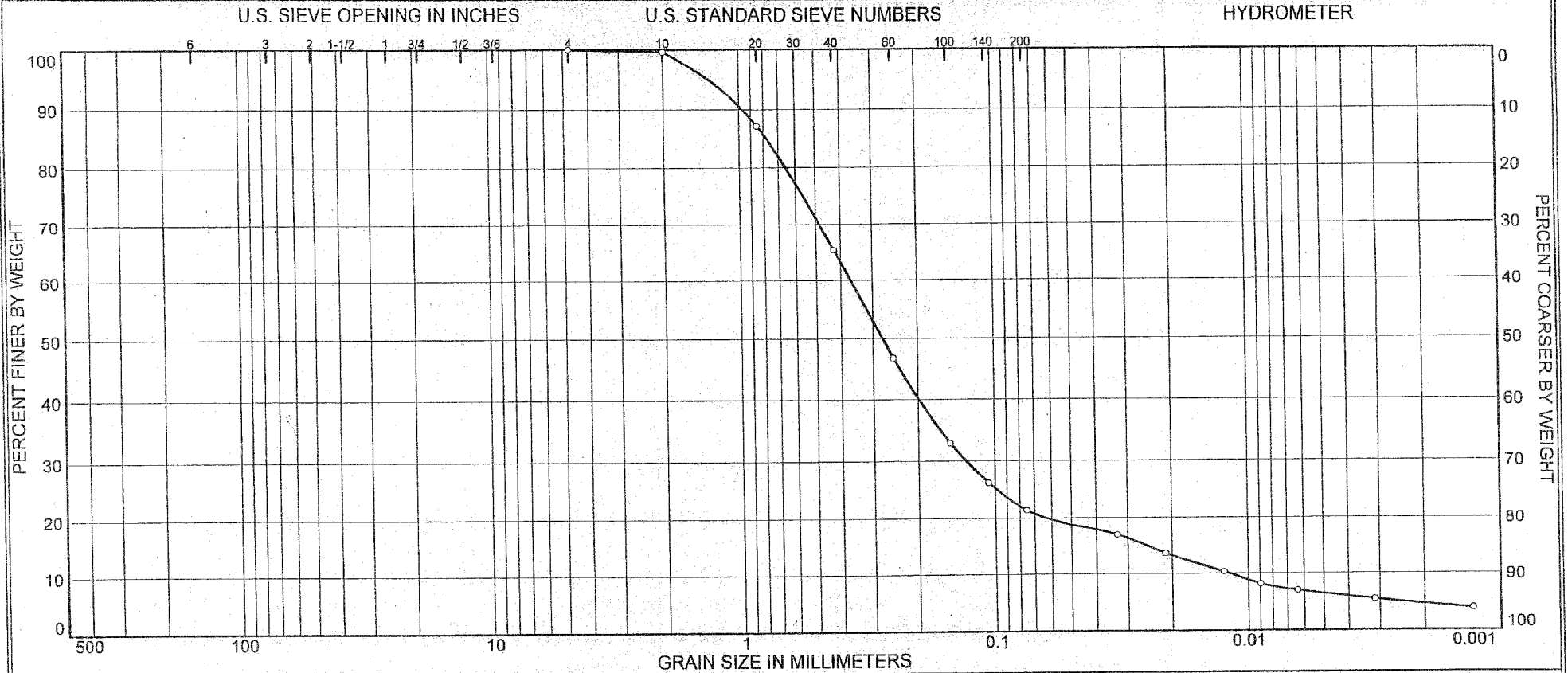
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.5	30.6	48.9	80.0			20.0

D10	D15	D20	D30	D50	D60	D80	D85	D90	D95
			0.1221	0.2407	0.3253	0.6036	0.7217	0.8918	1.1932

<b>Fineness Modulus</b>
1.33

MACTEC, Inc.

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



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.4	34.3	43.9	15.1	6.3

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-929A	UD-1	15 Ft.	12/11/06	ND	Gray Silty sand	13.1	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC ENGINEERING AND CONSULTING, INC.</b>	Tested by: JM 12/11/06	Reviewed by: HJ 1/2/07
Project North Anna COL		ND= NOT DETERMINED	
Project No. 6468-06-1472		Lab ID # 6768	

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

GRAIN SIZE DISTRIBUTION TEST DATA

Client: Dominion Nuclear North Anna
Project: North Anna COL
Project Number: 6468-06-1472

Sample Data

Source: B-929A
Sample No.: UD-1
Elev. or Depth: 15 Ft.
Location: B-929A
Description: Gray Silty sand
Date: 12/11/06
Liquid Limit: ND
Plastic Limit: ND
USCS Class.: ND
Testing Remarks: Tested by: JM Reviewed by: HJ ND= NOT DETERMINED
12/11/06 1/2/07

Mechanical Analysis Data

Initial
Dry sample and tare= 89.66
Tare = 0.00
Dry sample weight = 89.66
Tare for cumulative weight retained= .00
Sieve Cumul. Wt. Percent
retained finer
# 4 0.00 100.0
# 10 0.35 99.6
# 20 11.63 87.0
# 40 31.08 65.3
# 60 47.67 46.8
# 100 60.05 33.0
# 140 66.21 26.2
# 200 70.48 21.4

Hydrometer Analysis Data

Separation sieve is #200
Percent -#200 based upon complete sample= 21.4
Weight of hydrometer sample: 19.18
Calculated biased weight= 89.63
Automatic temperature correction
Composite correction at 20 deg C = -5.4

Meniscus correction only= 0
Specific gravity of solids= 2.7
Specific gravity correction factor= 0.989
Hydrometer type: 152H
Effective depth L= 16.294964 - 0.164 x Rm

Table with 9 columns: Elapsed time, min; Temp, Actual deg C; reading; Corrected reading; K; Rm; Eff. depth; Diameter mm; Percent finer. Rows include data for 2.00, 5.00, 15.00, 30.00, and 60.00 minutes.

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
250.00	23.1	9.5	4.8	0.0129	9.5	14.7	0.0031	5.3
1560.00	21.8	8.5	3.5	0.0131	8.5	14.9	0.0013	3.8

### Fractional Components

Gravel/Sand based on #4

Sand/Fines based on #200

% COBBLES =                      % GRAVEL =

% SAND = 78.6    (% coarse = 0.4    % medium = 34.3    % fine = 43.9).

% SILT = 15.1            % CLAY = 6.3

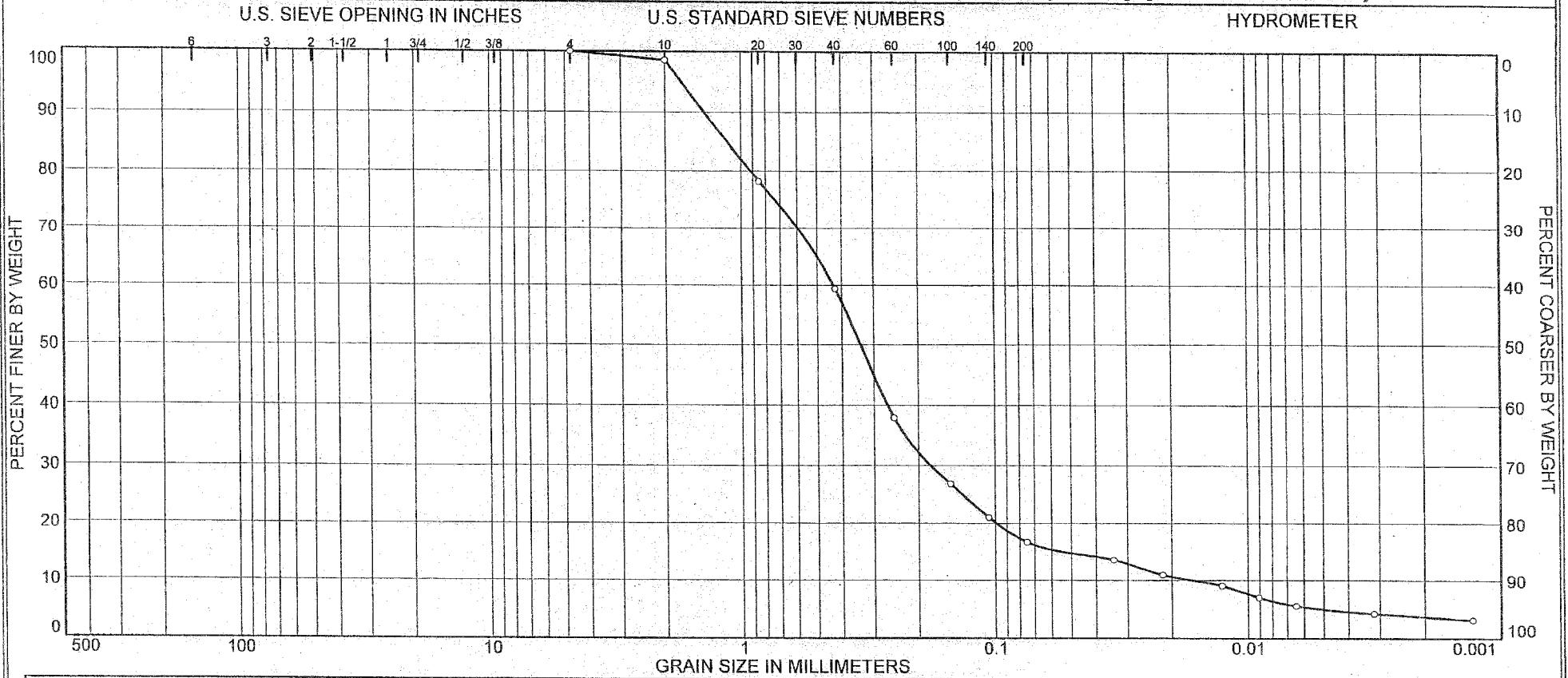
D<sub>85</sub> = 0.78    D<sub>60</sub> = 0.37    D<sub>50</sub> = 0.28

D<sub>30</sub> = 0.13    D<sub>15</sub> = 0.03    D<sub>10</sub> = 0.01

C<sub>c</sub> = 3.8738    C<sub>u</sub> = 30.7363



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



% COBBLES	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	1.4	39.2	42.7	11.7	5.0

SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
B-929A	UD-6	40 Ft.	12/11/06	ND	Tan Silty Sand	16.9	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC ENGINEERING AND CONSULTING, INC.</b>	Tested by: JM    Reviewed by: HJ 12/11/06        1/2/07  ND= NOT DETERMINED
Project North Anna COL		
Project No. 6468-06-1472    Lab ID # 6770		

DATA REPORT Rev: 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

Client: Dominion Nuclear North Anna  
 Project: North Anna COL  
 Test Number: 6468-06-1472

**Sample Data**

Source: B-929A  
 Sample No.: UD-6  
 Elev. or Depth: 40 Ft.  
 Location: B-929A  
 Description: Tan Silty Sand  
 Date: 12/11/06  
 Liquid Limit: ND  
 Plastic Limit: ND  
 Testing Remarks: Tested by: JM  
 Natural Moisture: 16.9  
 USCS Class.: ND  
 ND= NOT DETERMINED  
 Reviewed by: HJ  
 12/11/06 1/2/07

**Mechanical Analysis Data**

	<b>Initial</b>	
Dry sample and tare=	75.59	
Tare =	0.00	
Dry sample weight =	75.59	
Tare for cumulative weight retained=	.00	

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 10	1.05	98.6
20	16.50	78.2
# 40	30.70	59.4
# 60	46.90	38.0
# 100	55.35	26.8
# 140	59.78	20.9
# 200	62.96	16.7

**Hydrometer Analysis Data**

Separation sieve is #200  
 Percent -#200 based upon complete sample= 16.7  
 Weight of hydrometer sample: 12.63  
 Calculated biased weight= 75.63  
 Automatic temperature correction  
 Composite correction at 20 deg C = -5.4  
 Meniscus correction only= 0  
 Specific gravity of solids= 2.7  
 Specific gravity correction factor= 0.989  
 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	23.3	15.0	10.3	0.0129	15.0	13.8	0.0340	13.5
5.00	23.3	13.0	8.3	0.0129	13.0	14.2	0.0217	10.9
15.00	23.3	11.5	6.8	0.0129	11.5	14.4	0.0127	9.0
30.00	23.2	10.0	5.3	0.0129	10.0	14.7	0.0090	7.0
60.00	23.1	9.0	4.3	0.0129	9.0	14.8	0.0064	5.6

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
250.00	23.1	8.0	3.3	0.0129	8.0	15.0	0.0032	4.3
1560.00	21.8	7.5	2.5	0.0131	7.5	15.1	0.0013	3.2

---

**Fractional Components**

---

Gravel/Sand based on #4

Sand/Fines based on #200

% COBBLES =                      % GRAVEL =

% SAND = 83.3    (% coarse = 1.4    % medium = 39.2    % fine = 42.7)

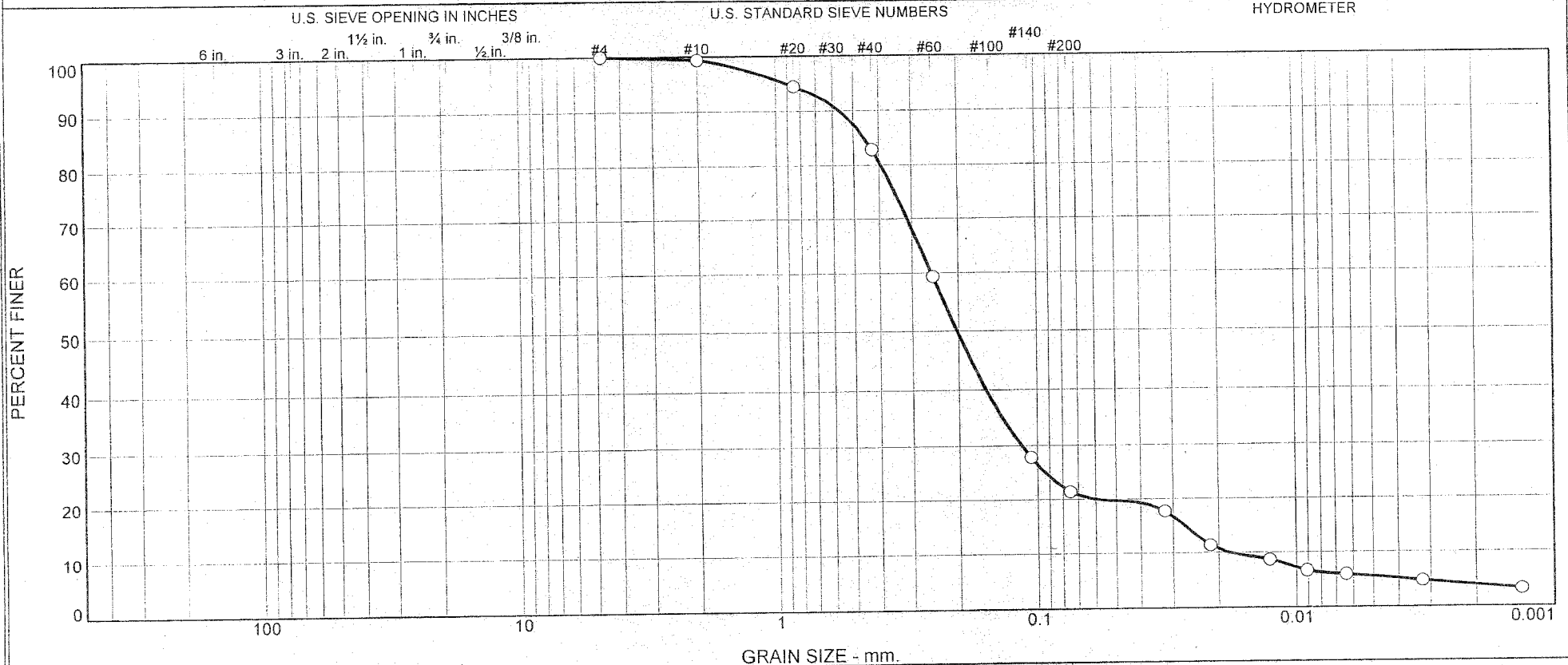
% SILT = 11.7    % CLAY = 5.0

D<sub>85</sub> = 1.14    D<sub>60</sub> = 0.43    D<sub>50</sub> = 0.34

D<sub>30</sub> = 0.18    D<sub>15</sub> = 0.06    D<sub>10</sub> = 0.02

C<sub>c</sub> = 4.46    C<sub>u</sub> = 25.6522

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.6	16.5	61.4	15.9	5.6

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-931	B-931-10	47.3-48.8	11-6-06	ND	Light olive silty sand.	ND	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472	<b>Raleigh, North Carolina</b>	
Figure		

Tested By: LBJ

Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

GRAIN SIZE DISTRIBUTION TEST DATA

1/17/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-931

Depth: 47.3-48.8

Sample Number: B-931-10

Material Description: Light olive silty sand.

Date: 11-6-06

Natural Moisture: ND

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
310.48	0.00	0.00	#4	0.00	100.0
			#10	1.88	99.4
125.68	0.00	0.00	#20	6.14	94.5
			#40	20.91	82.9
			#60	50.64	59.3
			#140	90.43	27.9
			#200	98.55	21.5

Hydrometer Test Data

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =99.4

Weight of hydrometer sample =125.68

Hygroscopic moisture correction:

Moist weight and tare = 27.58

Dry weight and tare = 27.54

Tare weight = 15.48

Hygroscopic moisture =0.3%

Table of composite correction values:

Temp., deg. C: 12.8 29.5

Comp. corr.: -5.0 -2.0

Meniscus correction only =1.0

Specific gravity of solids =2.7

Hydrometer type =152H

Hydrometer effective depth equation:  $L = [6.294964 - 0.164 \times R_m]$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.3	26.0	22.5	0.0132	27.0	11.9	0.0322	17.7
5.00	21.3	18.0	14.5	0.0132	19.0	13.2	0.0215	11.4
15.00	21.4	14.5	11.0	0.0132	15.5	13.8	0.0127	8.7
30.00	21.4	12.0	8.5	0.0132	13.0	14.2	0.0091	6.7
61.00	21.6	11.0	7.6	0.0132	12.0	14.3	0.0064	5.9
240.00	21.9	9.5	6.1	0.0131	10.5	14.6	0.0032	4.8
1440.00	21.9	7.5	4.1	0.0131	8.5	14.9	0.0013	3.2

MACTEC, Inc.

**Fractional Components**

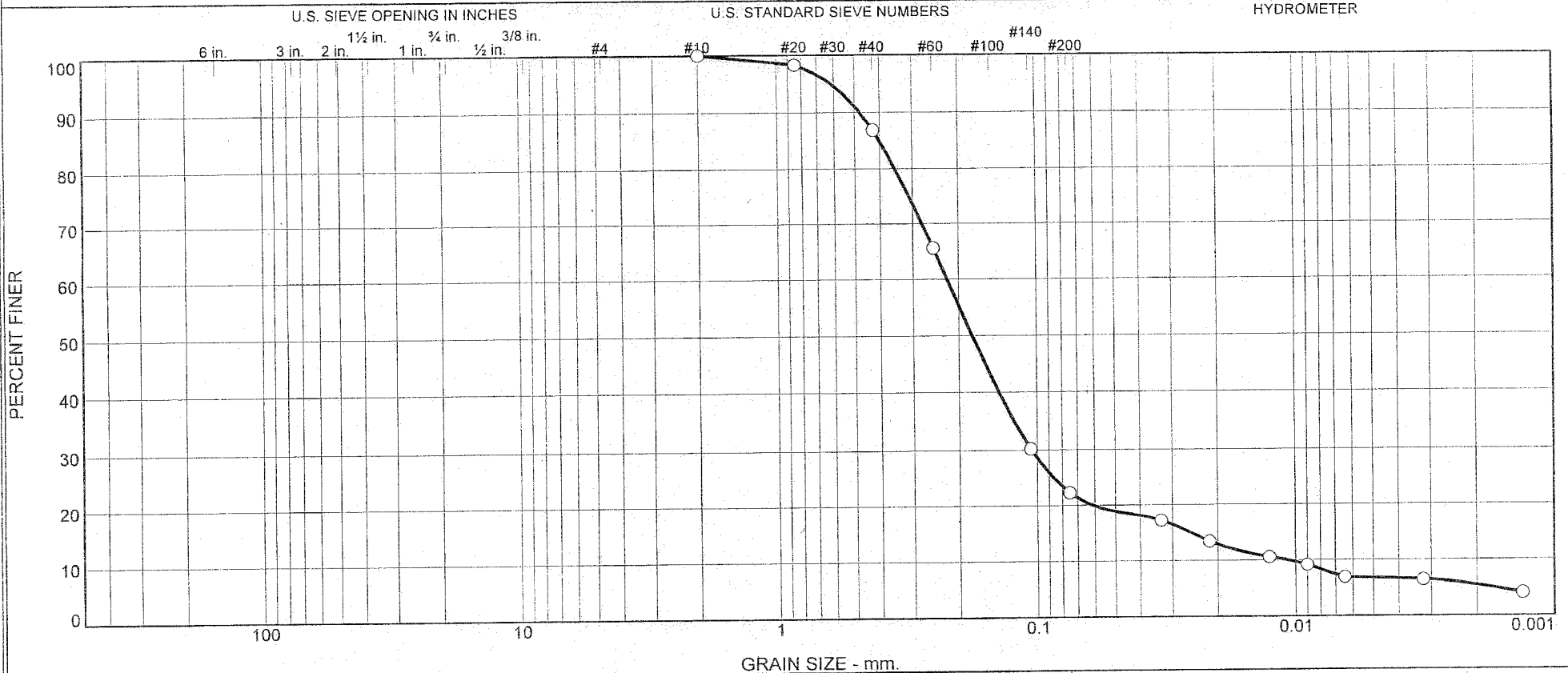
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.6	16.5	61.4	78.5	15.9	5.6	21.5

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0183	0.0270	0.0604	0.1150	0.2028	0.2535	0.3928	0.4551	0.5671	0.9024

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.06	13.89	2.86

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	13.3	64.4	15.7	6.6

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-932	B-932-5	18.5-19'	11-8-06	ND	Yellowish brown silty sand.	21.5	ND	ND

Client Dominion Nuclear North Anna Project North Anna COL Project Project No. 6468061472	<b>MACTEC, Inc.</b>  <b>Raleigh, North Carolina</b>	○ ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
--	---	---

Tested By: LBJ

Checked By: ABS

DATA REPORT Rev 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-932

Depth: 18.5-19'

Sample Number: B-932-5

Material Description: Yellowish brown silty sand.

Date: 11-8-06

Natural Moisture: 21.5

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
106.40	0.00	0.00	#10	0.00	100.0
			#20	1.90	98.2
			#40	14.10	86.7
			#60	36.70	65.5
			#140	74.30	30.2
			#200	82.70	22.3

**Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =106.4

Hygroscopic moisture correction:

Moist weight and tare = 27.38

Dry weight and tare = 27.08

Tare weight = 15.45

Hygroscopic moisture =2.6%

Table of composite correction values:

Temp., deg. C: 12.8                      29.5

Comp. corr.: -5.0                      -2.0

Meniscus correction only =1.0

Specific gravity of solids =2.7

Hydrometer type =152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	21.5	18.1	0.0132	22.5	12.6	0.0331	17.2
5.00	21.5	17.5	14.1	0.0132	18.5	13.3	0.0215	13.4
15.00	21.6	14.5	11.1	0.0132	15.5	13.8	0.0126	10.6
30.00	21.6	13.0	9.6	0.0132	14.0	14.0	0.0090	9.1
60.00	21.8	10.5	7.1	0.0131	11.5	14.4	0.0064	6.8
240.00	22.1	10.0	6.7	0.0131	11.0	14.5	0.0032	6.4
1451.00	22.0	7.5	4.2	0.0131	8.5	14.9	0.0013	4.0

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	13.3	64.4	77.7	15.7	6.6	22.3

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0108	0.0256	0.0613	0.1054	0.1777	0.2216	0.3502	0.4023	0.4784	0.6202

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
0.90	20.62	4.66

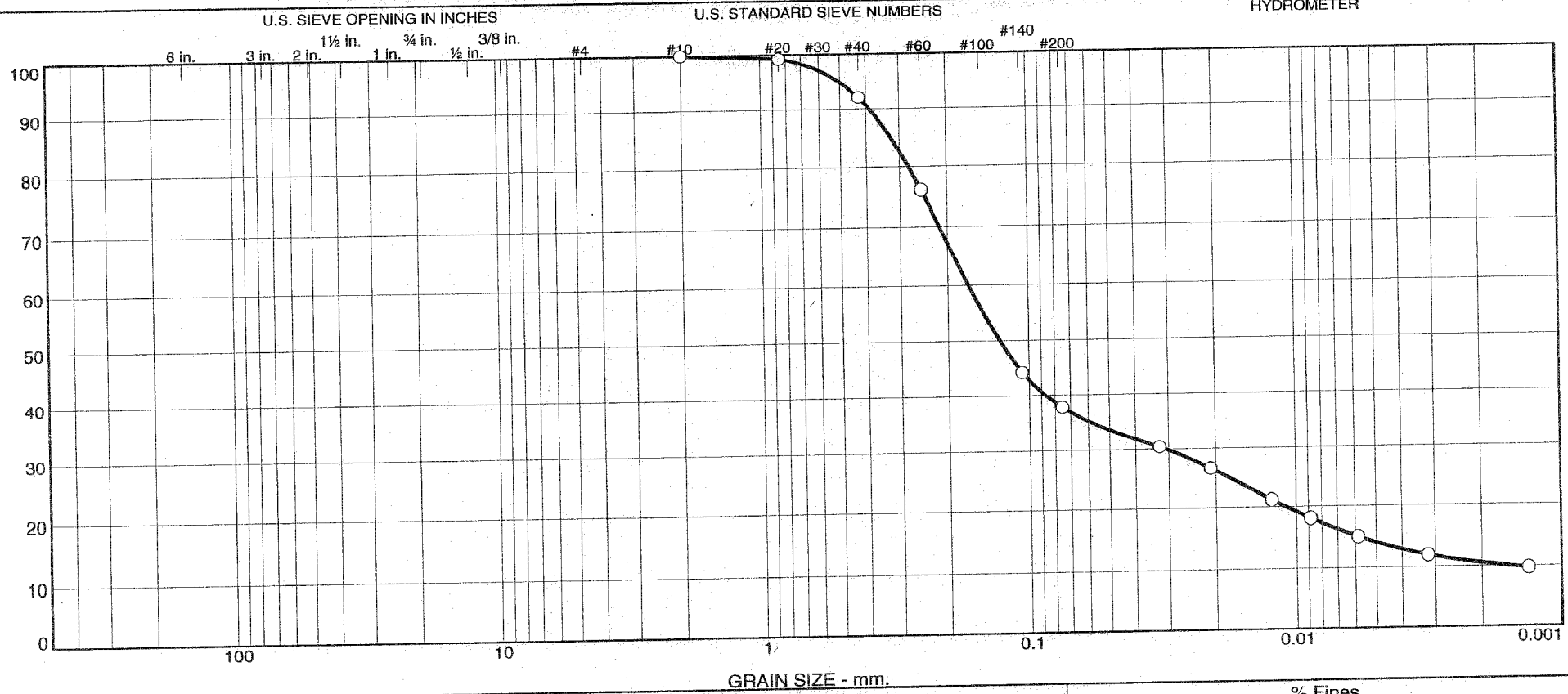
MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	7.9	54.4	23.7	14.0

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-933	B-933-3	6-7.5'	9/8/06	SM	REDDISH YELLOW SILTY SAND.	24.2	28	25

Client Dominion Nuclear North Anna Project North Anna COL Project	<h2 style="margin: 0;">MACTEC, Inc.</h2> <h3 style="margin: 0;">Raleigh, North Carolina</h3>	○ ENTIRE SAMPLE WAS TESTED.
Project No. 6468061472	Figure	

Tested By: JPD                      Checked By: ABS

**GRAIN SIZE DISTRIBUTION TEST DATA**

12/18/2006

**Client:** Dominion Nuclear North Anna

**Project:** North Anna COL Project

**Project Number:** 6468061472

**Location:** BORING B-933

**Depth:** 6-7.5'

**Sample Number:** B-933-3

**Material Description:** REDDISH YELLOW SILTY SAND.

**Date:** 9/8/06

**Natural Moisture:** 24.2

**Liquid Limit:** 28

**Plastic Limit:** 25

**USCS Class.:** SM

**Testing Remarks:** ENTIRE SAMPLE WAS TESTED.

**Tested by:** JPD

**Checked by:** ABS

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
272.05	0.00	0.00	#10	0.00	100.0
65.24	0.00	0.00	#20	0.48	99.3
			#40	5.16	92.1
			#60	15.59	76.1
			#140	36.36	44.3
			#200	40.62	37.7

Hydrometer test uses material passing #10  
 Percent passing #10 based upon complete sample = 100.0

Weight of hydrometer sample = 65.24

Hygroscopic moisture correction:

Moist weight and tare = 27.08

Dry weight and tare = 26.85

Tare weight = 15.59

Hygroscopic moisture = 2.0%

Table of composite correction values:

Temp., deg. C: 12.8 28.0

Comp. corr.: -7.0 -2.5

Meniscus correction only = 1:0

Specific gravity of solids = 2.7

Hydrometer type = 152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.8	24.0	19.7	0.0131	25.0	12.2	0.0325	30.4
5.00	21.8	21.5	17.2	0.0131	22.5	12.6	0.0209	26.5
15.00	21.8	18.0	13.7	0.0131	19.0	13.2	0.0123	21.1
30.00	21.9	16.0	11.7	0.0131	17.0	13.5	0.0088	18.1
70.00	21.9	14.0	9.7	0.0131	15.0	13.8	0.0058	15.0
240.00	21.9	12.0	7.7	0.0131	13.0	14.2	0.0032	11.9
1445.00	20.5	11.0	6.3	0.0134	12.0	14.3	0.0013	9.7

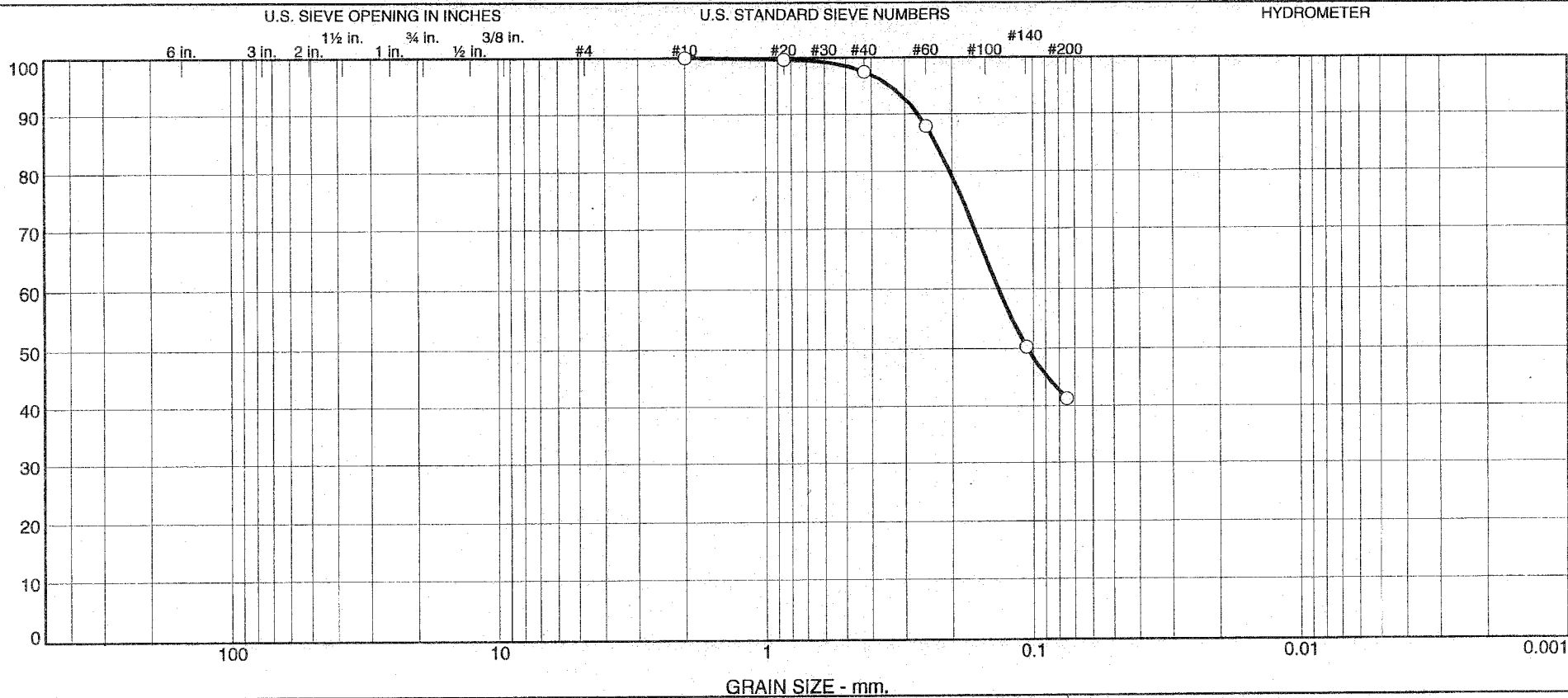
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	7.9	54.4	62.3	23.7	14.0	37.7

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0015	0.0058	0.0109	0.0308	0.1282	0.1673	0.2782	0.3236	0.3876	0.5009

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
0.65	108.09	3.65

# Particle Size Distribution Report/ASTM-422-63(02)

DATA REPORT Rev. 0  
MACTEC ENGINEERING & CONSULTING, INC.  
1/23/07



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	2.4	56.4	41.2	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-933	B-933-5	11.2-12.7'	9/8/06	ND	LIGHT GRAY SILTY SAND.	25.9	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ND=NOT DETERMINED. ENTIRE SAMPLE WAS TESTED.
Project North Anna COL Project		
Project No. 6468061472	<b>Raleigh, North Carolina</b>	

Tested By: JPD

Checked By: ABS

## GRAIN SIZE DISTRIBUTION TEST DATA

12/18/2006

**Client:** Dominion Nuclear North Anna

**Project:** North Anna COL Project

**Project Number:** 6468061472

**Location:** BORING B-933

**Depth:** 11.2-12.7'

**Sample Number:** B-933-5

**Material Description:** LIGHT GRAY SILTY SAND.

**Date:** 9/8/06

**Natural Moisture:** 25.9

**Liquid Limit:** ND

**Plastic Limit:** ND

**USCS Class.:** ND

**Testing Remarks:** ND=NOT DETERMINED.

ENTIRE SAMPLE WAS TESTED.

**Tested by:** JPD

**Checked by:** ABS

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
118.74	0.00	0.00	#10	0.00	100.0
118.74	0.00	0.00	#20	0.37	99.7
			#40	2.89	97.6
			#60	14.39	87.9
			#140	59.07	50.3
			#200	69.77	41.2

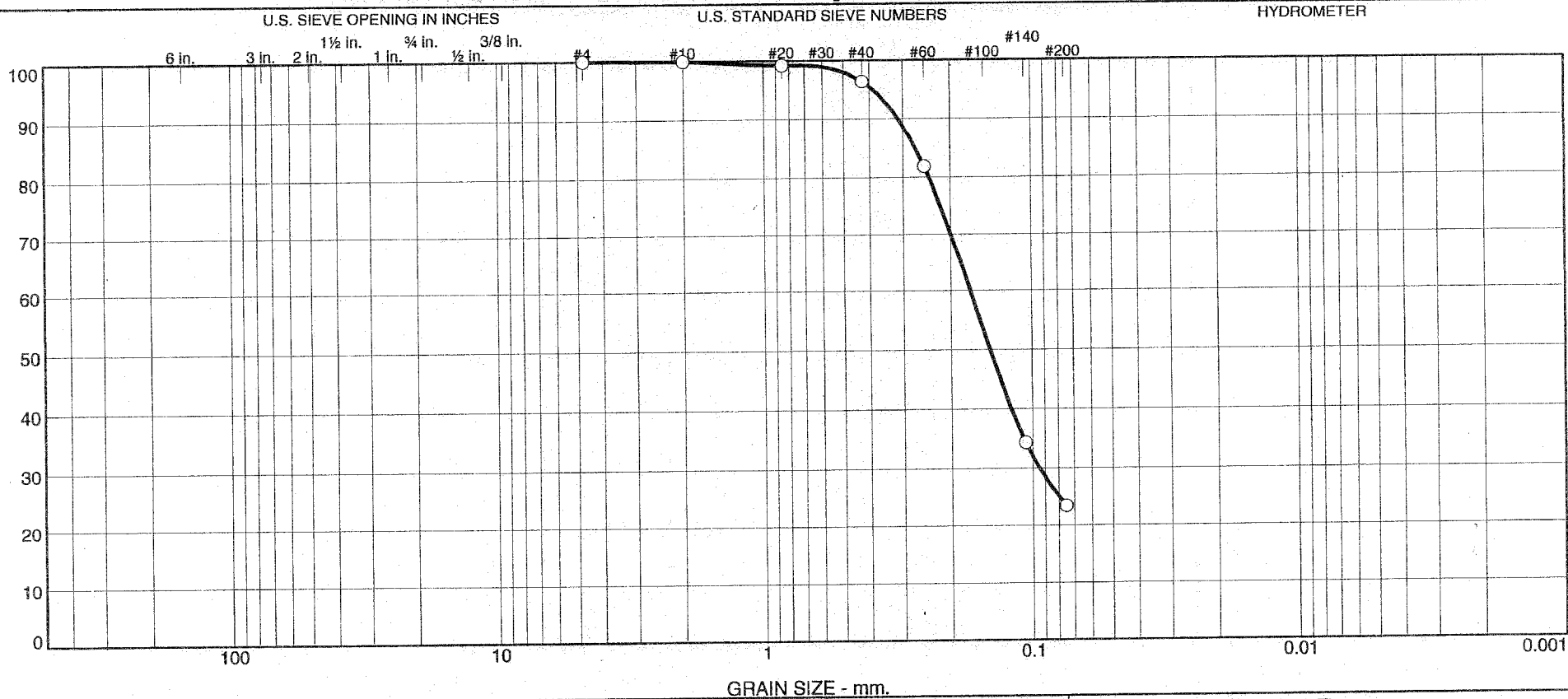
Cobbles	Gravel			Sand				Fines	
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay
0.0	0.0	0.0	0.0	0.0	2.4	56.4	58.8		

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
				0.1052	0.1345	0.2045	0.2307	0.2679	0.3386

<b>Fineness Modulus</b>
0.43

**MACTEC, Inc.**

# Particle Size Distribution Report/ASTM-422-63(02)

 DATA REPORT Rev. 0  
 MACTEC ENGINEERING & CONSULTING, INC.  
 1/23/07


% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	3.5	73.0	23.4	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-933	B-933-7	19.5-21'	9/8/06	ND	BROWN SILTY SAND.	26.7	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ND=NOT DETERMINED. ENTIRE SAMPLE WAS TESTED.
Project North Anna COL Project		
Project No. 6468061472      Figure		
<b>Raleigh, North Carolina</b>		

Tested By: JPD

Checked By: ABS

**GRAIN SIZE DISTRIBUTION TEST DATA**

12/18/2006

**Client:** Dominion Nuclear North Anna

**Project:** North Anna COL Project

**Project Number:** 6468061472

**Location:** BORING B-933

**Depth:** 19.5-21'

**Sample Number:** B-933-7

**Material Description:** BROWN SILTY SAND.

**Date:** 9/8/06

**Natural Moisture:** 26.7

**Liquid Limit:** ND

**Plastic Limit:** ND

**USCS Class.:** ND

**Testing Remarks:** ND=NOT DETERMINED.

ENTIRE SAMPLE WAS TESTED.

**Tested by:** JPD

**Checked by:** ABS

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
261.79	0.00	0.00	#4	0.00	100.0
			#10	0.14	99.9
105.10	0.00	0.00	#20	0.76	99.2
			#40	3.72	96.4
			#60	19.06	81.8
			#140	69.01	34.3
			#200	80.49	23.4

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	3.5	73.0	76.6			23.4

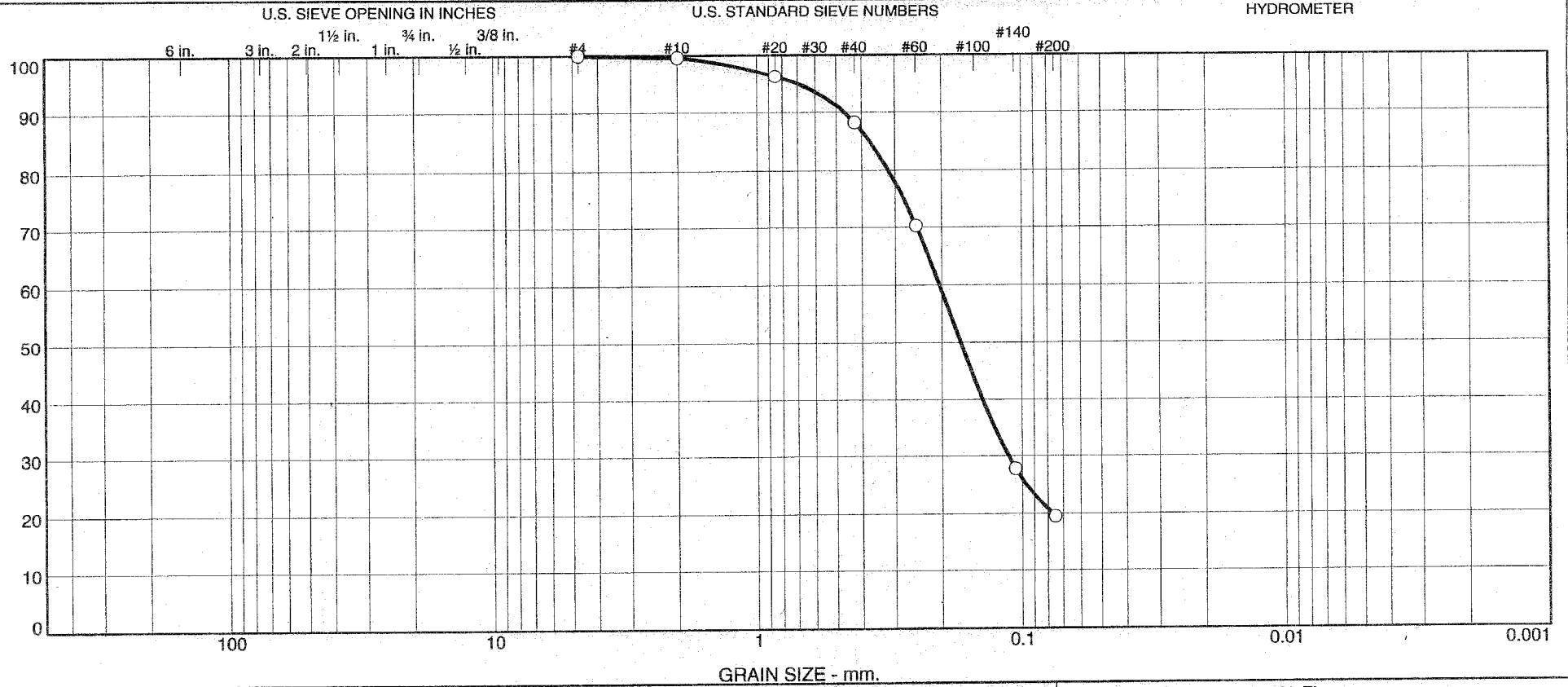
D10	D15	D20	D30	D50	D60	D80	D85	D90	D95
			0.0944	0.1434	0.1690	0.2404	0.2695	0.3119	0.3874

<b>Fineness Modulus</b>
0.60



# Particle Size Distribution Report/ASTM-422-63(02)

DATA REPORT Rev. 0 MACTEC ENGINEERING & CONSULTING, INC. 1/23/07



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.4	11.4	68.7	19.5	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-933	B-933-8	24.5-25.0	9/8/06	ND	GRAY SILTY SAND.	18.7	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ND=NOT DETERMINED. ENTIRE SAMPLE WAS TESTED.
Project North Anna COL Project		
Project No. 6468061472	Figure	<b>Raleigh, North Carolina</b>

Tested By: JPD

Checked By: ABS

**GRAIN SIZE DISTRIBUTION TEST DATA**

12/18/2006

**Client:** Dominion Nuclear North Anna

**Project:** North Anna COL Project

**Project Number:** 6468061472

**Location:** BORING B-933

**Depth:** 24.5-25.0

**Sample Number:** B-933-8

**Material Description:** GRAY SILTY SAND.

**Date:** 9/8/06

**Natural Moisture:** 18.7

**Liquid Limit:** ND

**Plastic Limit:** ND

**USCS Class.:** ND

**Testing Remarks:** ND=NOT DETERMINED.

ENTIRE SAMPLE WAS TESTED.

**Tested by:** JPD

**Checked by:** ABS

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
275.01	0.00	0.00	#4	0.00	100.0
			#10	1.03	99.6
114.09	0.00	0.00	#20	3.80	96.3
			#40	13.05	88.2
			#60	33.60	70.3
			#140	82.20	27.8
			#200	91.80	19.5

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.4	11.4	68.7	80.5			19.5

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
		0.0771	0.1126	0.1699	0.2040	0.3176	0.3729	0.4641	0.6969

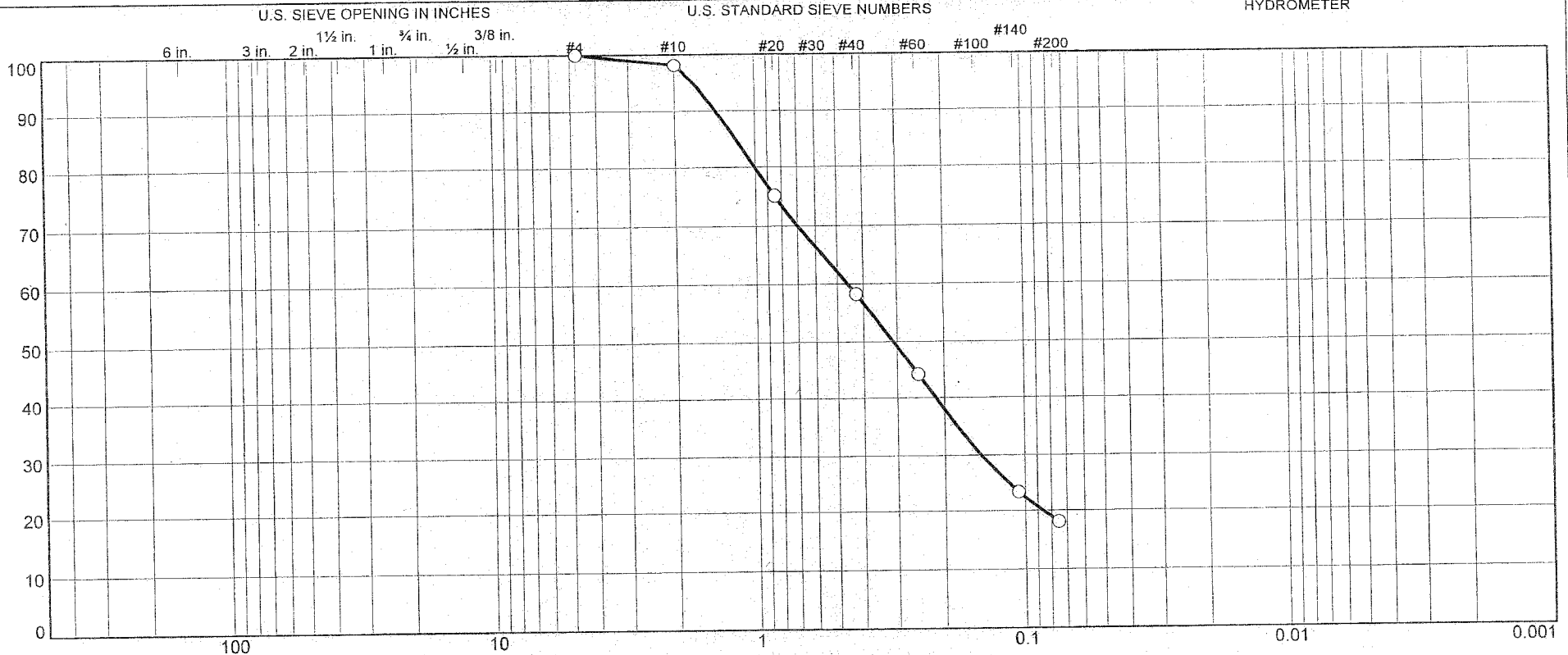
<b>Fineness Modulus</b>
0.87

# Particle Size Distribution Report/ASTM-422-63(02)

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.9	39.9	40.2	18.0	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-945	B-945-1	1.5-3'	10/25/06	ND	Pale brown silty sand.	14.5	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472		
Figure	<b>Raleigh, North Carolina</b>	

Tested By: LBJ

Checked By: ABS

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-945

Depth: 1.5-3'

Sample Number: B-945-1

Material Description: Pale brown silty sand.

Date: 10/25/06

Natural Moisture: 14.5

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
220.89	0.00	0.00	#4	0.00	100.0
			#10	4.21	98.1
108.20	0.00	0.00	#20	25.37	75.1
			#40	43.96	58.2
			#60	59.58	44.1
			#140	82.52	23.3
			#200	88.30	18.0

**Fractional Components**

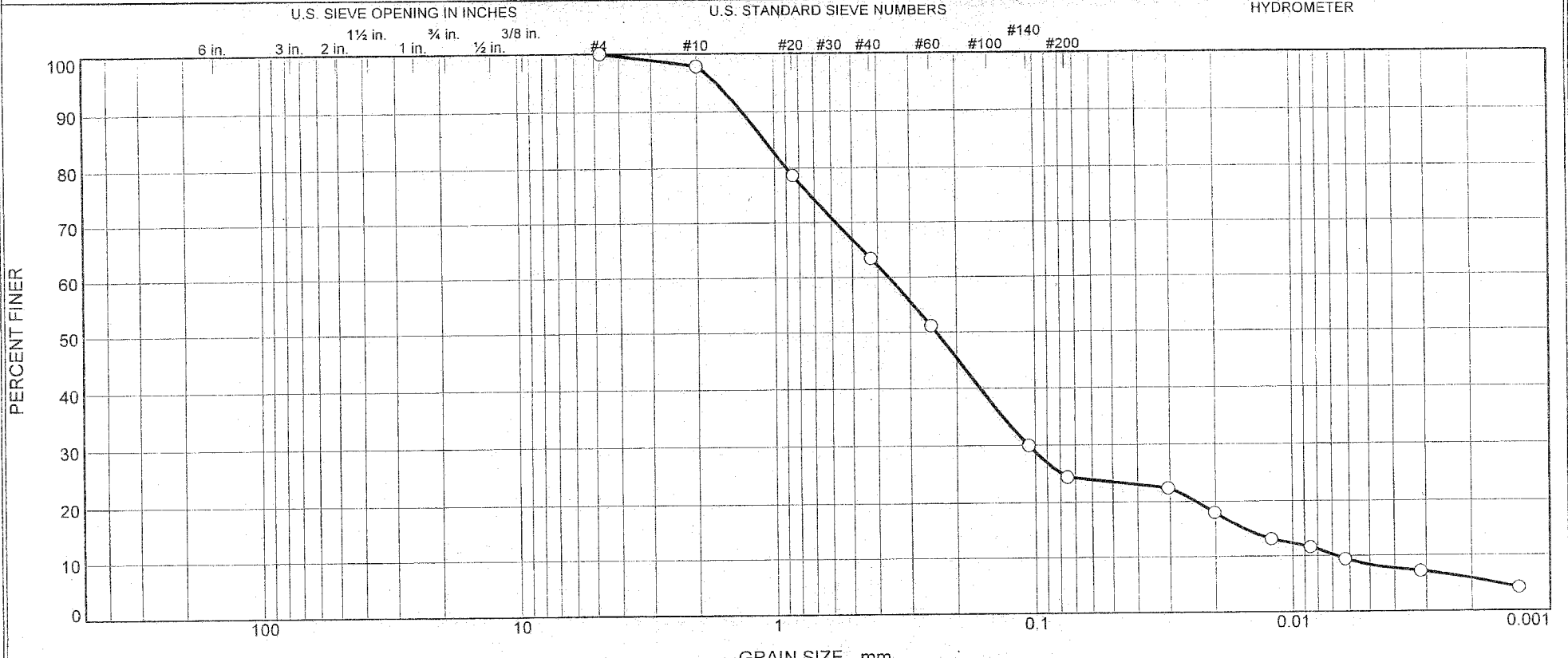
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.9	39.9	40.2	82.0			18.0

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
		0.0862	0.1462	0.3100	0.4570	1.0057	1.1855	1.4054	1.7077

<b>Fineness Modulus</b>
1.71

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.2	34.4	38.9	16.2	8.3

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-945	B-945-3	4.7-6.2	10/25/06	ND	Pale brown silty sand.	15.9	ND	ND

Client Dominion Nuclear North Anna Project North Anna COL Project	<h2 style="margin: 0;">MACTEC, Inc.</h2> <h3 style="margin: 0;">Raleigh, North Carolina</h3>	○ SPECIFIC GRAVITY WAS ASSUMED. ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project No. 6468061472	Figure	

Tested By: LBJ

Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-945

Depth: 4.7-6.2

Sample Number: B-945-3

Material Description: Pale brown silty sand.

Date: 10/25/06

Natural Moisture: 15.9

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: SPECIFIC GRAVITY WAS ASSUMED.  
ENTIRE SAMPLE WAS TESTED.  
ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
260.70	0.00	0.00	#4	0.00	100.0
			#10	5.70	97.8
130.27	0.00	0.00	#20	25.50	78.7
			#40	45.80	63.4
			#60	62.20	51.1
			#140	90.40	29.9
			#200	97.70	24.5

**Hydrometer Test Data**

Hydrometer test uses material passing #10  
 Percent passing #10 based upon complete sample =97.8  
 Weight of hydrometer sample =130.27  
 Hygroscopic moisture correction:  
 Moist weight and tare = 27.06  
 Dry weight and tare = 27.01  
 Tare weight = 15.46  
 Hygroscopic moisture =0.4%  
 Table of composite correction values:  
 Temp., deg. C: 12.8 29.5  
 Comp. corr.: -5.0 -2.0  
 Meniscus correction only =1.0  
 Specific gravity of solids =2.7  
 Hydrometer type =152H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.5	33.5	30.1	0.0132	34.5	10.6	0.0304	22.4
5.00	21.5	27.5	24.1	0.0132	28.5	11.6	0.0201	17.9
15.00	21.5	21.0	17.6	0.0132	22.0	12.7	0.0121	13.1
31.00	21.6	19.0	15.6	0.0132	20.0	13.0	0.0085	11.6
60.00	21.8	16.0	12.6	0.0131	17.0	13.5	0.0062	9.4
240.00	22.2	13.0	9.7	0.0131	14.0	14.0	0.0032	7.2
1451.00	21.9	9.0	5.6	0.0131	10.0	14.7	0.0013	4.2

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	2.2	34.4	38.9	75.5	16.2	8.3	24.5

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0068	0.0155	0.0237	0.1063	0.2392	0.3639	0.8974	1.0930	1.3366	1.6835

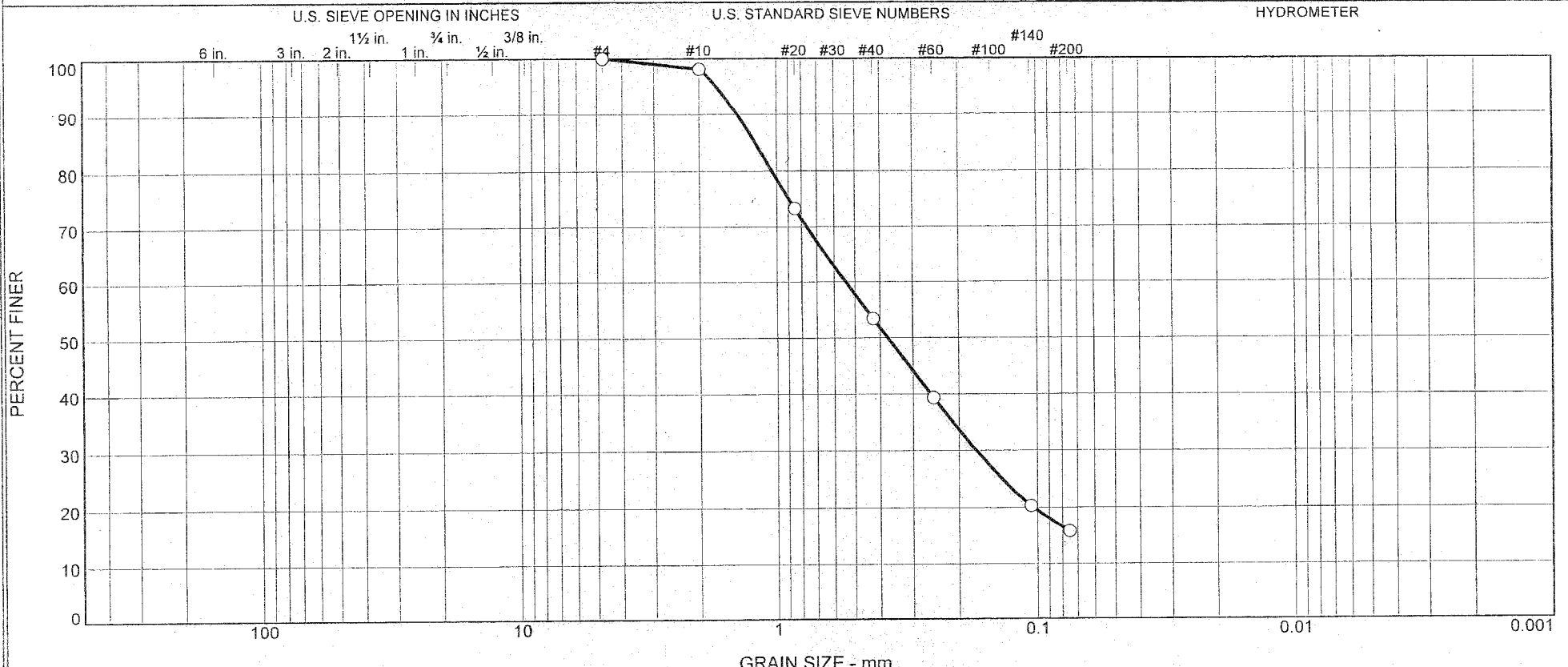
Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.51	53.62	4.58

# Particle Size Distribution Report/ASTM-422-63(02)

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.9	44.7	37.6	15.8	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-945	B-945-5	11.3-12.8"	10/25/06	ND	Pale brown silty sand.	21.6	ND	ND

Client Dominion Nuclear North Anna Project North Anna COL Project	<h2 style="margin: 0;">MACTEC, Inc.</h2> <h3 style="margin: 0;">Raleigh, North Carolina</h3>	○ ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project No. 6468061472	Figure	

Tested By: LBJ

Checked By: ABS



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-945

Depth: 11.3-12.8"

Sample Number: B-945-5

Material Description: Pale brown silty sand.

Date: 10/25/06

Natural Moisture: 21.6

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
188.23	0.00	0.00	#4	0.00	100.0
			#10	3.50	98.1
93.11	0.00	0.00	#20	23.57	73.3
			#40	42.40	53.4
			#60	55.75	39.4
			#140	73.82	20.3
			#200	78.15	15.8

**Fractional Components**

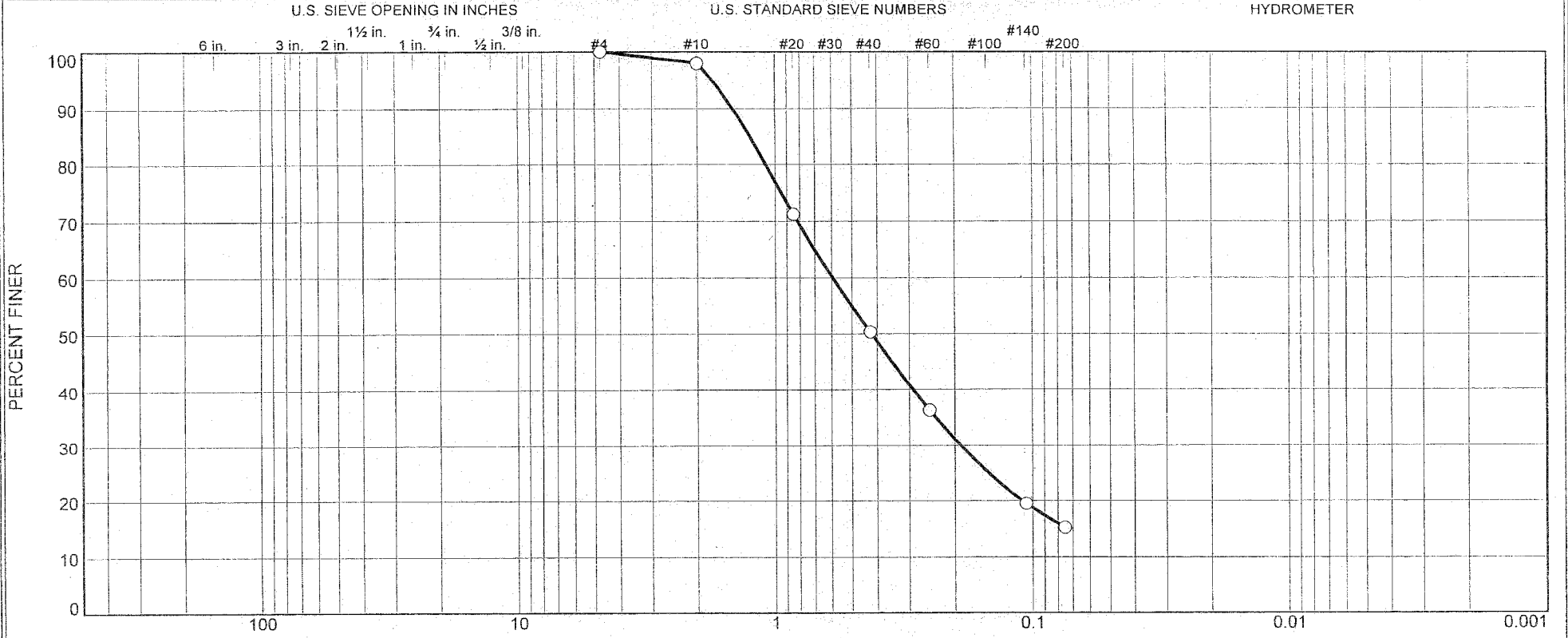
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.9	44.7	37.6	84.2			15.8

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
		0.1037	0.1718	0.3737	0.5413	1.0413	1.2110	1.4217	1.7135

<b>Fineness Modulus</b>
1.83

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.1	47.5	35.2	15.2	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-945	B-945-7	19.4-20.9	10-25-06	ND	Pale brown silty sand.	27.6	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472	<b>Raleigh, North Carolina</b>	

Tested By: LBJ

Checked By: ABS

DATA REPORT Rev. 0 MACTEC ENGINEERING & CONSULTING, INC. 1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-945

Depth: 19.4-20.9

Sample Number: B-945-7

Material Description: Pale brown silty sand.

Date: 10-25-06

Natural Moisture: 27.6

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
161.07	0.00	0.00	#4	0.00	100.0
			#10	3.33	97.9
79.33	0.00	0.00	#20	21.55	71.3
			#40	38.53	50.4
			#60	49.89	36.3
			#140	63.54	19.5
			#200	66.99	15.2

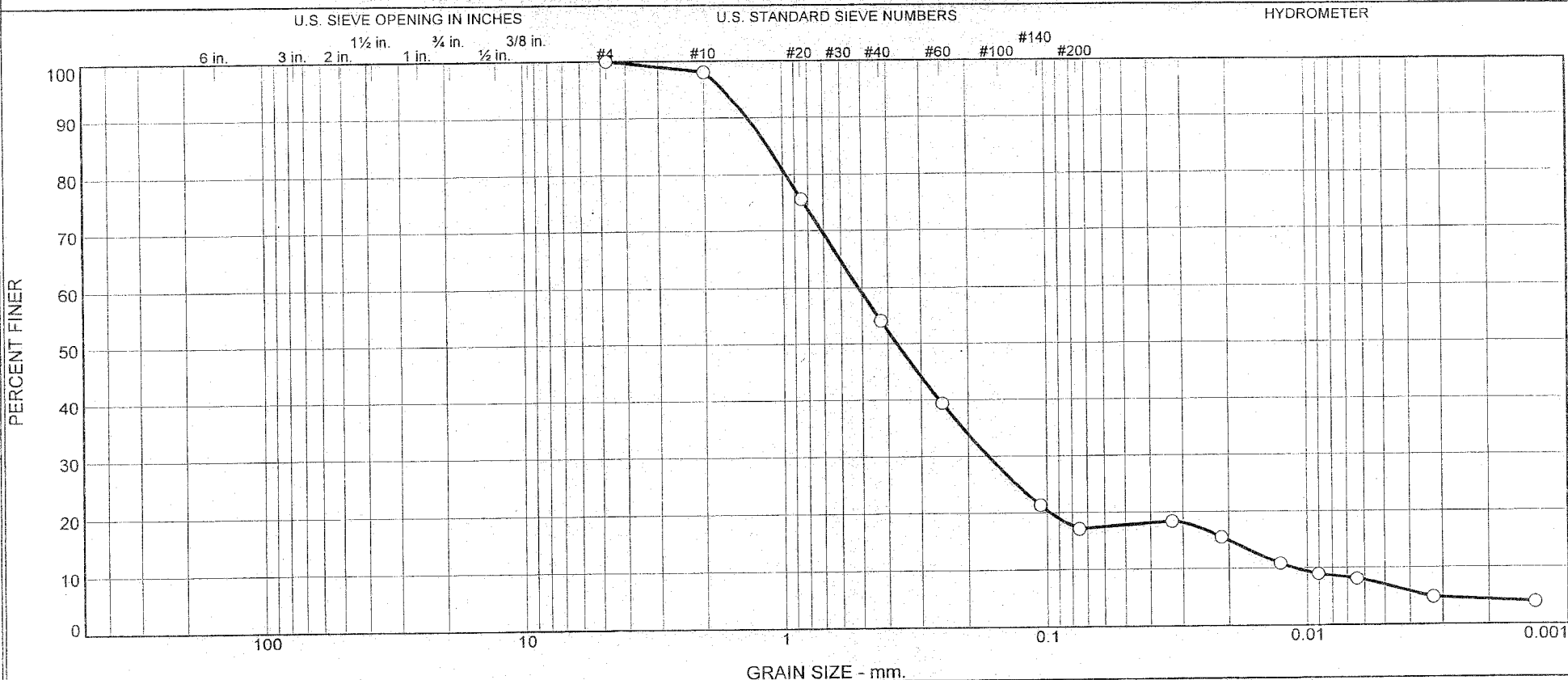
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	2.1	47.5	35.2	84.8			15.2

D10	D15	D20	D30	D50	D60	D80	D85	D90	D95
		0.1098	0.1900	0.4194	0.5953	1.0861	1.2522	1.4586	1.7439

<b>Fineness Modulus</b>
1.92

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.9	44.1	36.9	10.2	6.9

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-945	B-945-9	27.8-29.4	10/25/06	ND	Pale brown silty sand.	24.1	ND	ND

Client Dominion Nuclear North Anna Project North Anna COL Project	<b>MACTEC, Inc.</b>  <b>Raleigh, North Carolina</b>	○ SPECIFIC GRAVITY WAS ASSUMED. ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project No. 6468061472	Figure	

Tested By: LBJ Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-945

Depth: 27.8-29.4

Sample Number: B-945-9

Material Description: Pale brown silty sand.

Date: 10/25/06

Natural Moisture: 24.1

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: SPECIFIC GRAVITY WAS ASSUMED.

ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
227.28	0.00	0.00	#4	0.00	100.0
			#10	4.31	98.1
103.31	0.00	0.00	#20	23.61	75.7
			#40	46.41	54.0
			#60	61.88	39.3
			#140	80.85	21.3
			#200	85.25	17.1

**Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =98.1

Weight of hydrometer sample =103.31

Hygroscopic moisture correction:

Moist weight and tare = 26.28

Dry weight and tare = 26.24

Tare weight = 15.33

Hygroscopic moisture =0.4%

Table of composite correction values:

Temp., deg. C: 12.8 29.5

Comp. corr.: -5.0 -2.0

Meniscus correction only =1.0

Specific gravity of solids =2.7

Hydrometer type = 152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.0	23.0	19.5	0.0133	24.0	12.4	0.0330	18.4
5.00	21.0	20.0	16.5	0.0133	21.0	12.9	0.0213	15.5
15.00	21.0	15.0	11.5	0.0133	16.0	13.7	0.0127	10.8
30.00	21.1	13.0	9.5	0.0133	14.0	14.0	0.0091	8.9
60.00	21.3	12.0	8.5	0.0132	13.0	14.2	0.0064	8.0
240.00	21.8	8.5	5.1	0.0131	9.5	14.7	0.0033	4.8
1448.00	22.0	7.5	4.2	0.0131	8.5	14.9	0.0013	3.9

MACTEC, Inc.

**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.9	44.1	36.9	82.9	10.2	6.9	17.1

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0113	0.0201	0.0973	0.1680	0.3702	0.5176	0.9729	1.1435	1.3627	1.6785

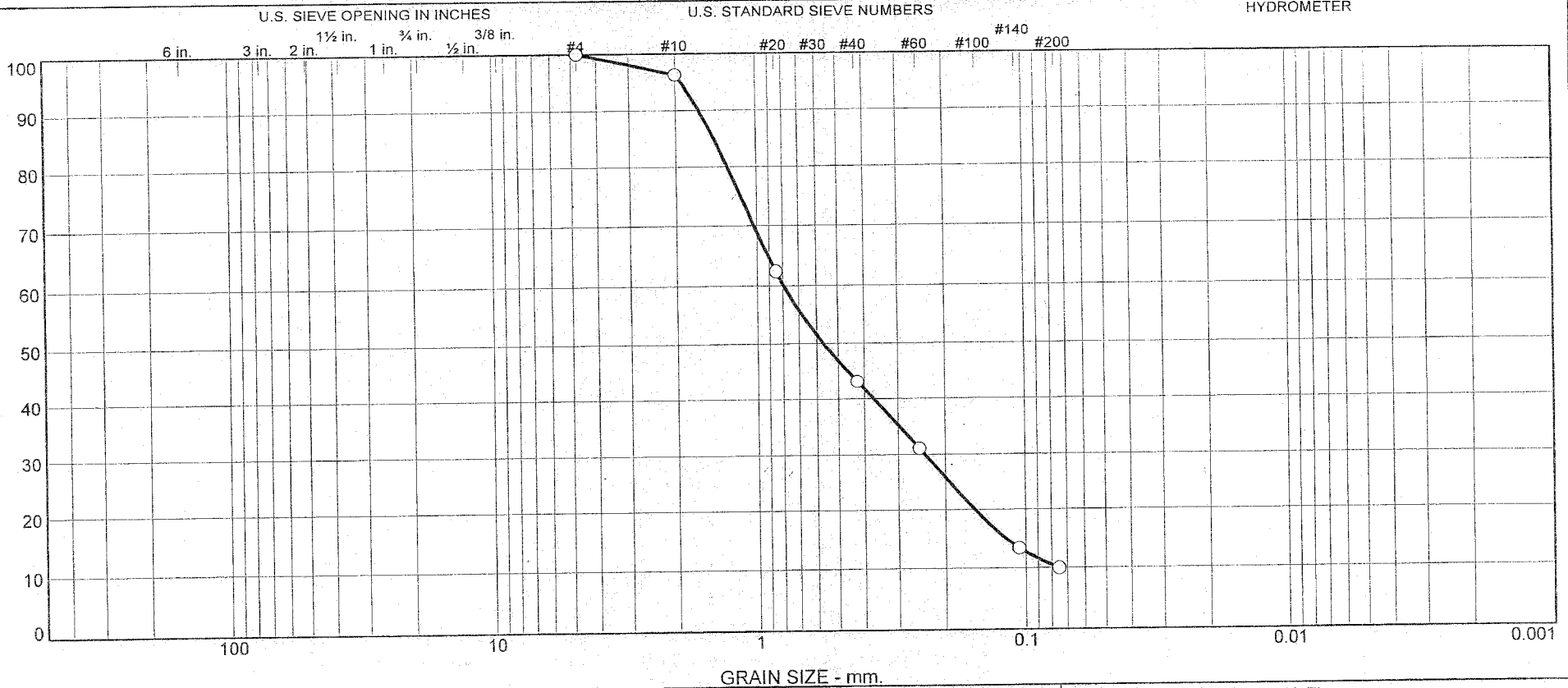
Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.79	45.98	4.84

# Particle Size Distribution Report/ASTM-422-63(02)

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	3.7	53.1	33.3	9.9	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-945	B-945-11	39.4-40.9	10-25-06	ND	Pale brown sand with silt.	20.0	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472		
Figure	<b>Raleigh, North Carolina</b>	

Tested By: LBJ

Checked By: ABS

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

**Client:** Dominion Nuclear North Anna

**Project:** North Anna COL Project

**Project Number:** 6468061472

**Location:** BORING B-945

**Depth:** 39.4-40.9

**Sample Number:** B-945-11

**Material Description:** Pale brown sand with silt.

**Date:** 10-25-06

**Natural Moisture:** 20.0

**Liquid Limit:** ND

**Plastic Limit:** ND

**USCS Class.:** ND

**Testing Remarks:** ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

**Tested by:** LBJ

**Checked by:** ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
200.39	0.00	0.00	#4	0.00	100.0
			#10	7.45	96.3
94.45	0.00	0.00	#20	33.22	62.4
			#40	52.09	43.2
			#60	63.97	31.1
			#140	81.38	13.3
			#200	84.69	9.9

**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	3.7	53.1	33.3	90.1			9.9

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0755	0.1189	0.1549	0.2389	0.5675	0.7953	1.2832	1.4420	1.6374	1.9064

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
2.21	10.54	0.95

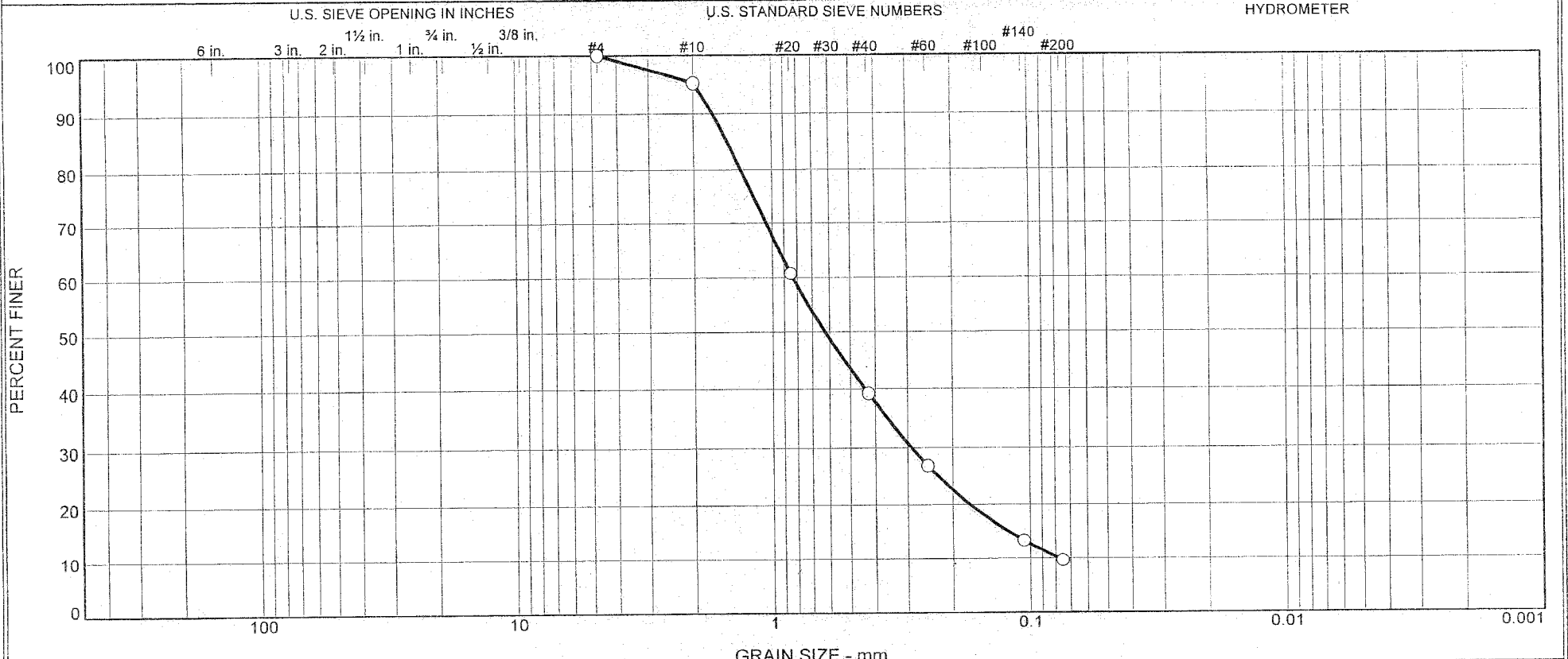
MACTEC, Inc.



# Particle Size Distribution Report/ASTM-422-63(02)

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	4.7	56.1	29.5	9.7	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-945	B-945-13	49.4-50.9	10-25-06	ND	Pale brown sand with silt.	15.6	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472	<b>Raleigh, North Carolina</b>	

Tested By: LBJ

Checked By: ABS

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-945

Depth: 49.4-50.9

Sample Number: B-945-13

Material Description: Pale brown sand with silt.

Date: 10-25-06

Natural Moisture: 15.6

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
187.52	0.00	0.00	#4	0.00	100.0
			#10	8.86	95.3
87.27	0.00	0.00	#20	31.61	60.8
			#40	51.33	39.2
			#60	62.66	26.9
			#140	75.06	13.3
			#200	78.41	9.7

**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	4.7	56.1	29.5	90.3			9.7

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0775	0.1216	0.1719	0.2893	0.6263	0.8338	1.3166	1.4807	1.6862	1.9789

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
2.31	10.76	1.30

MACTEC, Inc.

**LIQUID AND PLASTIC LIMIT TEST DATA**

1/17/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-947

Depth: 1.5-3

Sample Number: B-947-1

Material Description: LIGHT GREENISH GRAY SILTY CLAY.

%<#40: 89.5

%<#200: ND

USCS: ND

AASHTO: ND

Tested by: LBJ

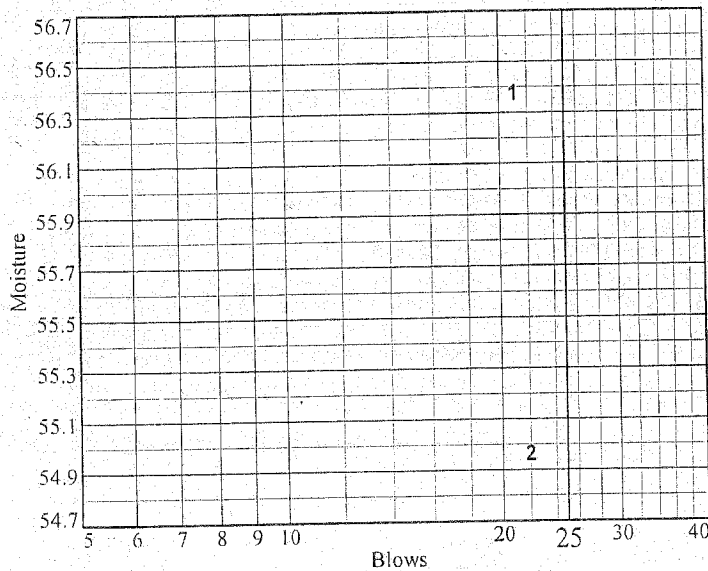
Checked by: ABS

Testing Remarks: NATURAL MOISTURE 16.7.

ENTIRE SAMPLE WAS TESTED.

**Liquid Limit Data**

Run No.	1	2	3	4	5	6
Wet+Tare	27.62	29.21				
Dry+Tare	23.29	24.34				
Tare	15.61	15.48				
# Blows	21	22				
Moisture	56.4	55.0				



Liquid Limit= 55  
 Plastic Limit= 30  
 Plasticity Index= 25  
 Natural Moisture= 16.7  
 Liquidity Index= -0.5

**Plastic Limit Data**

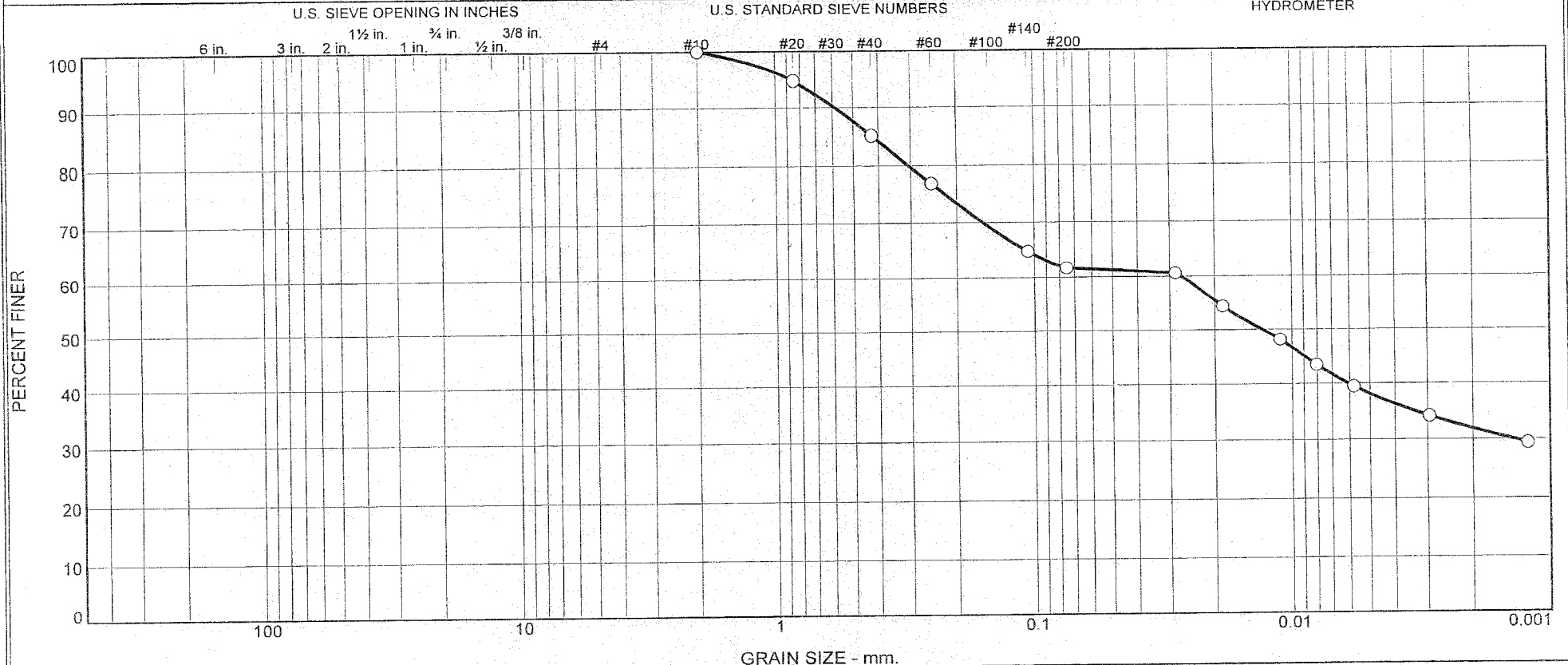
Run No.	1	2	3	4
Wet+Tare	22.09	22.29		
Dry+Tare	20.60	20.81		
Tare	15.62	15.81		
Moisture	29.9	29.6		

**Natural Moisture Data**

Wet+Tare	Dry+Tare	Tare	Moisture
78.57	70.9	24.93	16.7

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	15.0	23.3	23.6	38.1

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-947	B-947-3	4.5-6'	9-27-06	MH	Light brown reddish yellow sandy silt.	36.0	56	37

Client Dominion Nuclear North Anna Project North Anna COL Project	<h2 style="margin: 0;">MACTEC, Inc.</h2> <h3 style="margin: 0;">Raleigh, North Carolina</h3>	○ ENTIRE SAMPLE WAS TESTED.
Project No. 6468061472	Figure	

Tested By: LBJ

Checked By: ABS

DATA REPORT Rev. 0  
MACTEC ENGINEERING & CONSULTING, INC.  
1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

**Client:** Dominion Nuclear North Anna

**Project:** North Anna COL Project

**Project Number:** 6468061472

**Location:** BORING B-947

**Depth:** 4.5-6'

**Sample Number:** B-947-3

**Material Description:** Light brown reddish yellow sandy silt.

**Date:** 9-27-06

**Natural Moisture:** 36.0

**Liquid Limit:** 56

**Plastic Limit:** 37

**USCS Class.:** MH

**Testing Remarks:** ENTIRE SAMPLE WAS TESTED.

**Tested by:** LBJ

**Checked by:** ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
158.89	0.00	0.00	#10	0.00	100.0
			#20	8.43	94.7
			#40	23.77	85.0
			#60	36.71	76.9
			#140	55.99	64.8
			#200	60.80	61.7

**Hydrometer Test Data**

Hydrometer test uses material passing #10  
 Percent passing #10 based upon complete sample =100.0  
 Weight of hydrometer sample =65.04  
 Hygroscopic moisture correction:  
 Moist weight and tare = 26.02  
 Dry weight and tare = 25.65  
 Tare weight = 15.47  
 Hygroscopic moisture =3.6%  
 Table of composite correction values:  
 Temp., deg. C: 12.8 29.5  
 Comp. corr.: -5.0 -2.0  
 Meniscus correction only =1.0  
 Specific gravity of solids =2.7  
 Hydrometer type =152H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.2	42.0	38.5	0.0132	43.0	9.2	0.0285	60.7
5.00	21.2	38.0	34.5	0.0132	39.0	9.9	0.0186	54.4
15.00	21.1	34.0	30.5	0.0133	35.0	10.6	0.0111	48.0
30.00	21.3	31.0	27.5	0.0132	32.0	11.0	0.0080	43.4
60.00	21.4	28.5	25.0	0.0132	29.5	11.5	0.0058	39.5
240.00	21.8	25.0	21.6	0.0131	26.0	12.0	0.0029	34.1
1446.00	22.0	22.0	18.7	0.0131	23.0	12.5	0.0012	29.4

**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	15.0	23.3	38.3	23.6	38.1	61.7

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
			0.0014	0.0131	0.0268	0.3062	0.4239	0.5889	0.8756

<b>Fineness Modulus</b>
0.63

MACTEC, Inc.

**LIQUID AND PLASTIC LIMIT TEST DATA**

1/17/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-947

Depth: 4.5-6'

Sample Number: B-947-3

Material Description: Light brown reddish yellow sandy silt.

%<#40: 85.0

%<#200: 61.7

USCS: MH

AASHTO: A-7-5(12)

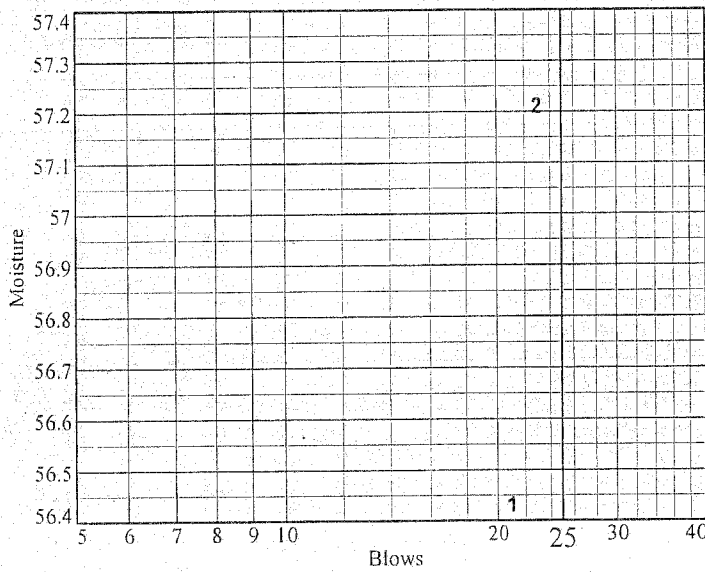
Tested by: LBJ

Checked by: ABS

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

**Liquid Limit Data**

Run No.	1	2	3	4	5	6
Wet+Tare	26.25	25.21				
Dry+Tare	22.39	21.68				
Tare	15.55	15.51				
# Blows	21	23				
Moisture	56.4	57.2				



Liquid Limit= 56  
 Plastic Limit= 37  
 Plasticity Index= 19  
 Natural Moisture= 36.0  
 Liquidity Index= -0.1

**Plastic Limit Data**

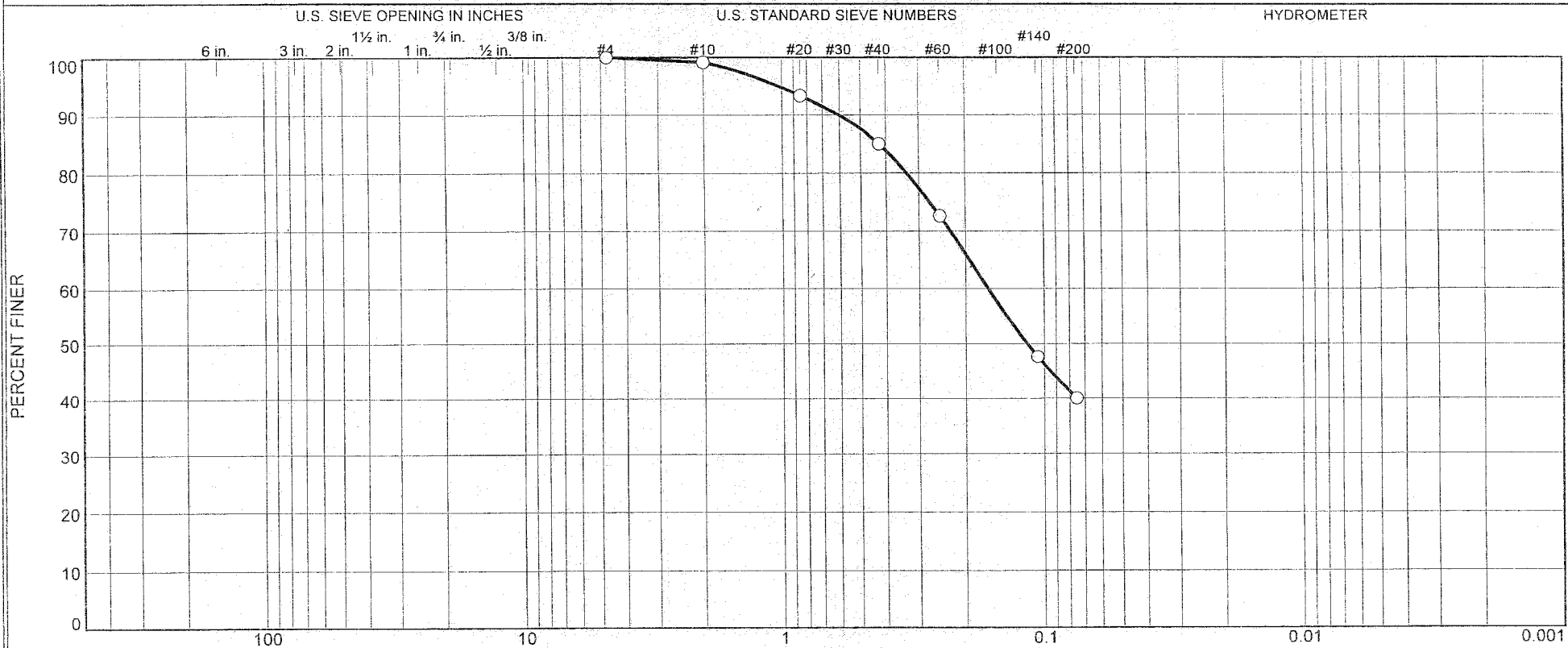
Run No.	1	2	3	4
Wet+Tare	21.81	20.79		
Dry+Tare	20.09	19.40		
Tare	15.62	15.59		
Moisture	38.5	36.5		

**Natural Moisture Data**

Wet+Tare	Dry+Tare	Tare	Moisture
35.34	30.10	15.56	36.0

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.9	14.2	44.9	40.0	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-947	B-947-4	8.5-10.0'	9/27/06	SM	Light brown reddish yellow sandy silt.	20.7	38	29

Client Dominion Nuclear North Anna  
 Project North Anna COL Project  
 Project No. 6468061472      Figure

**MACTEC, Inc.**  
**Raleigh, North Carolina**

○ ENTIRE SAMPLE WAS TESTED.

Tested By: LBJ      Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-947

Depth: 8.5-10.0'

Sample Number: B-947-4

Material Description: Light brown reddish yellow sandy silt.

Date: 9/27/06

Natural Moisture: 20.7

Liquid Limit: 38

Plastic Limit: 29

USCS Class.: SM

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
160.59	0.00	0.00	#4	0.00	100.0
			#10	1.40	99.1
76.98	0.00	0.00	#20	4.51	93.3
			#40	11.02	84.9
			#60	20.55	72.7
			#140	39.99	47.6
			#200	45.89	40.0

**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.9	14.2	44.9	60.0			40.0

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
				0.1162	0.1639	0.3333	0.4265	0.6067	1.0342

<b>Fineness Modulus</b>
0.80

MACTEC, Inc.

**LIQUID AND PLASTIC LIMIT TEST DATA**

1/17/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-947

Depth: 8.5-10.0'

Sample Number: B-947-4

Material Description: Light brown reddish yellow sandy silt.

%<#40: 84.9

%<#200: 40.0

USCS: SM

AASHTO: A-4(1)

Tested by: LBJ

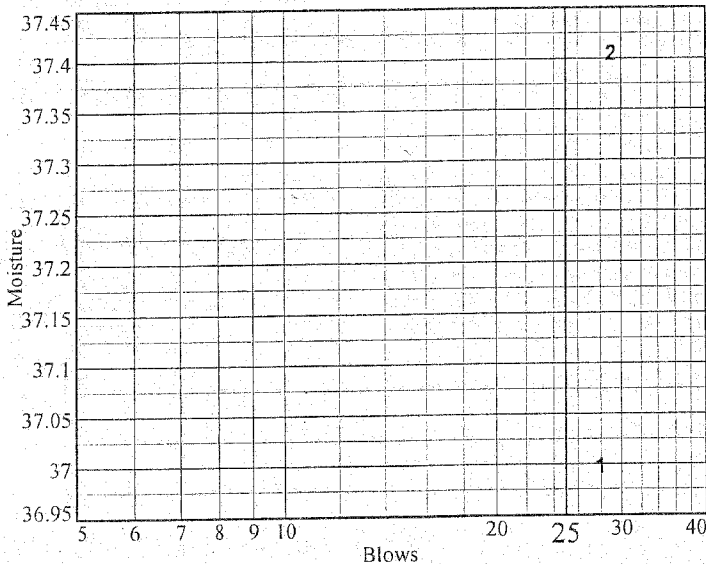
Checked by: ABS

Testing Remarks: SPECIFIC GRAVITY IS ASSUMED.

ENTIRE SAMPLE WAS TESTED.

**Liquid Limit Data**

Run No.	1	2	3	4	5	6
Wet+Tare	25.99	26.39				
Dry+Tare	23.13	23.42				
Tare	15.40	15.48				
# Blows	28	29				
Moisture	37.0	37.4				



Liquid Limit= 38  
 Plastic Limit= 29  
 Plasticity Index= 9  
 Natural Moisture= 20.7  
 Liquidity Index= -0.9

**Plastic Limit Data**

Run No.	1	2	3	4
Wet+Tare	21.81	22.2		
Dry+Tare	20.45	20.71		
Tare	15.66	15.52		
Moisture	28.4	28.7		

**Natural Moisture Data**

Wet+Tare	Dry+Tare	Tare	Moisture
35.78	30.8	6.79	20.7

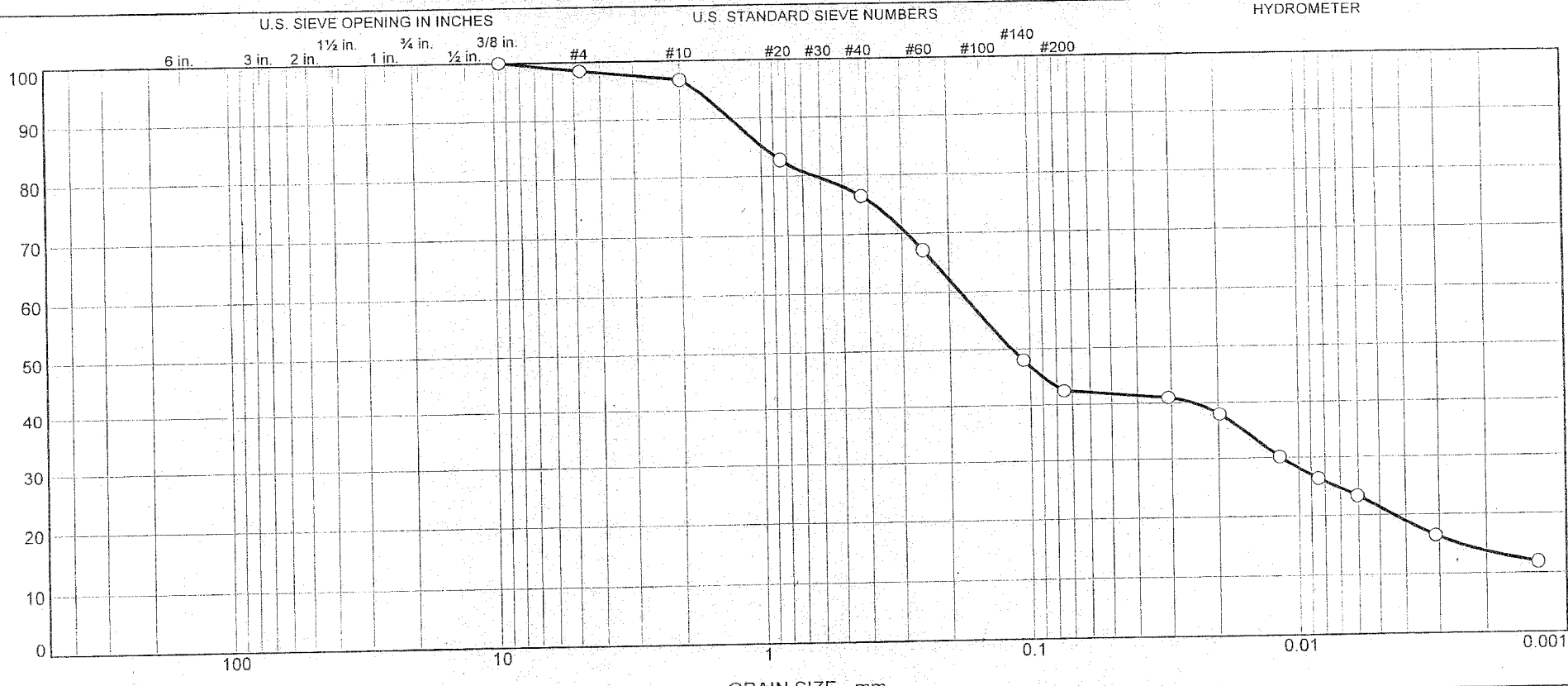
MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.6	1.7	20.2	34.0	21.2	21.3

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-947	B-947-5	9.5-11'	9/27/06	ND	Light brown reddish yellow silty sand.	28.2	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472	<b>Raleigh, North Carolina</b>	
Figure		

Tested By: LBJ Checked By: ABS

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/17/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-947

Depth: 9.5-11'

Sample Number: B-947-5

Material Description: Light brown reddish yellow silty sand.

Date: 9/27/06

Natural Moisture: 28.2

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
175.94	0.00	0.00	.375	0.00	100.0
			#4	2.83	98.4
			#10	5.86	96.7
64.05	0.00	0.00	#20	9.18	82.8
			#40	13.36	76.5
			#60	19.53	67.2
			#140	32.23	48.0
			#200	35.88	42.5

**Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =96.7

Weight of hydrometer sample =64.05

Hygroscopic moisture correction:

Moist weight and tare = 26.49

Dry weight and tare = 25.95

Tare weight = 15.54

Hygroscopic moisture =5.2%

Table of composite correction values:

Temp., deg. C: 12.8 29.5

Comp. corr.: -5.0 -2.0

Meniscus correction only =1.0

Specific gravity of solids =2.77

Hydrometer type =152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.2	30.0	26.5	0.0130	31.0	11.2	0.0307	41.0
5.00	21.0	28.0	24.5	0.0130	29.0	11.5	0.0198	37.9
15.00	21.1	23.0	19.5	0.0130	24.0	12.4	0.0118	30.2
30.00	21.2	20.5	17.0	0.0130	21.5	12.8	0.0085	26.3
60.00	21.4	18.5	15.0	0.0129	19.5	13.1	0.0060	23.3
240.00	21.7	14.0	10.6	0.0129	15.0	13.8	0.0031	16.4
1443.00	22.0	11.0	7.7	0.0129	12.0	14.3	0.0013	11.8

MACTEC, Inc.

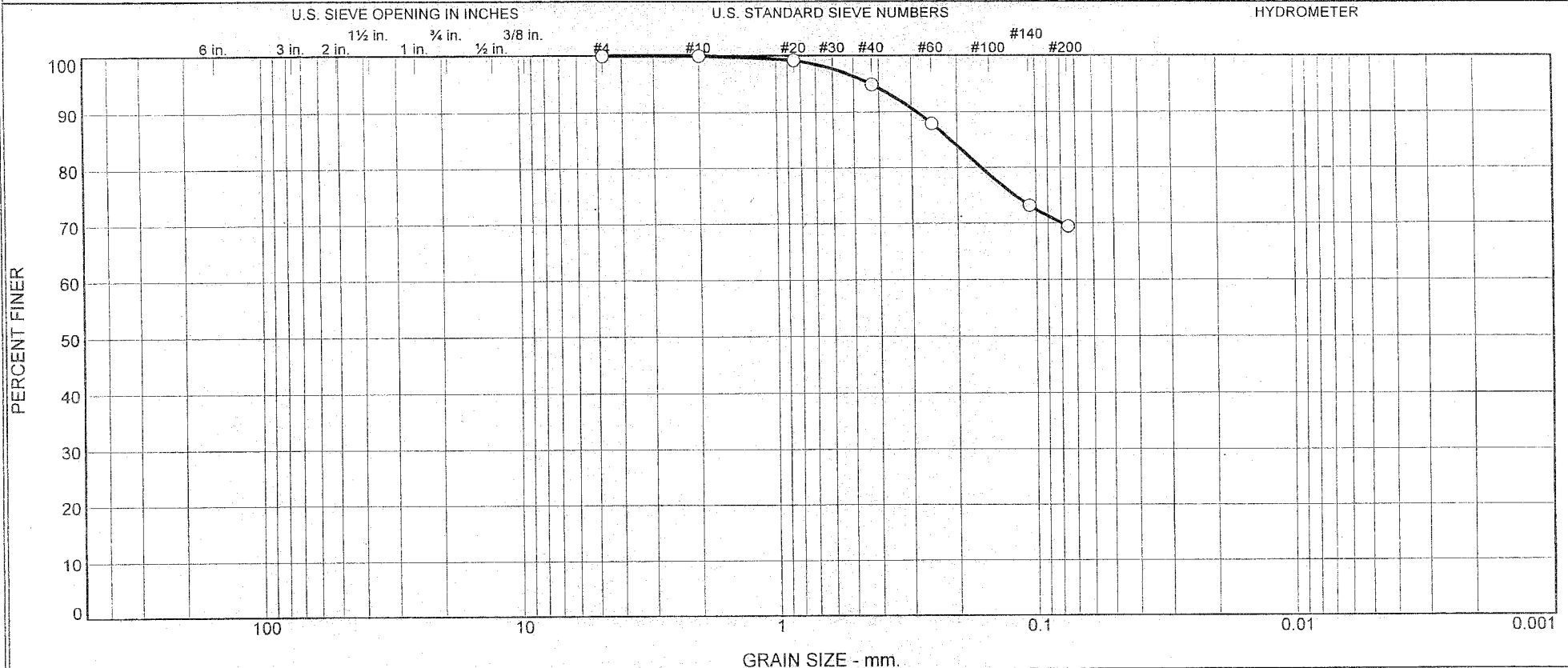
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.6	1.6	1.7	20.2	34.0	55.9	21.2	21.3	42.5

D10	D15	D20	D30	D50	D60	D80	D85	D90	D95
	0.0026	0.0044	0.0117	0.1168	0.1819	0.6347	0.9866	1.3050	1.7514

Fineness Modulus
1.10

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	5.1	25.4	69.5	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-947	B-947-6	13.5-15'	9/27/06	ND	Light brown reddish yellow silty sand.	22.5	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ SPECIFIC GRAVITY IS ASSUMED. ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472	<b>Raleigh, North Carolina</b>	

DATA REPORT Rev. 0  
 MACTEC ENGINEERING & CONSULTING, INC.  
 1/23/07

Tested By: LBJ Checked By: ABS

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-947

Depth: 13.5-15'

Sample Number: B-947-6

Material Description: Light brown reddish yellow silty sand.

Date: 9/27/06

Natural Moisture: 22.5

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: SPECIFIC GRAVITY IS ASSUMED.

ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
167.59	0.00	0.00	#4	0.00	100.0
			#10	0.05	100.0
81.21	0.00	0.00	#20	0.63	99.2
			#40	4.08	94.9
			#60	9.85	87.8
			#140	21.78	73.2
			#200	24.79	69.5

**Fractional Components**

Cobbles	Gravel			Sand				Fines		Total
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	
0.0	0.0	0.0	0.0	0.0	5.1	25.4	30.5			69.5

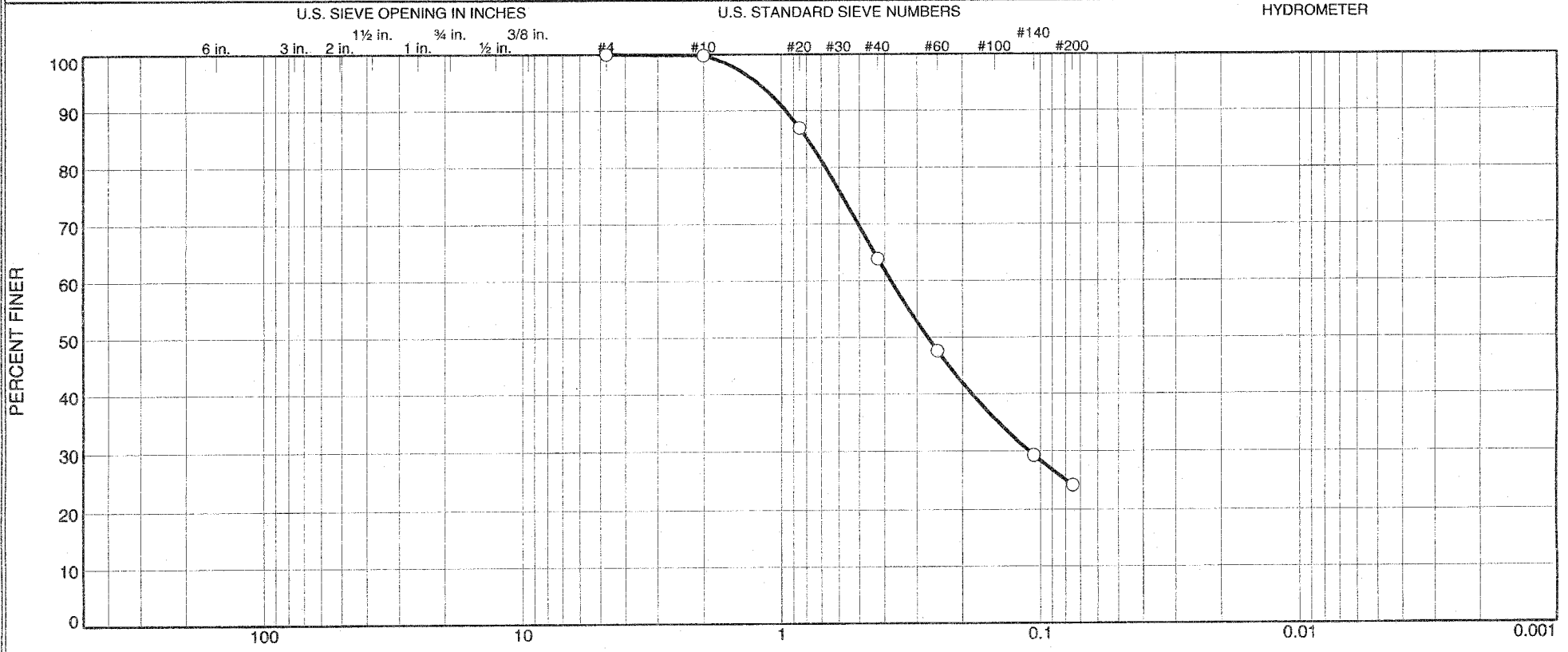
D10	D15	D20	D30	D50	D60	D80	D85	D90	D95
						0.1618	0.2124	0.2865	0.4272

<b>Fineness Modulus</b>
0.33

MACTEC, Inc.

DATA REPORT Rev. 0  
 MACTEC ENGINEERING & CONSULTING, INC.  
 1/23/07

## Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	35.9	39.7	24.2	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-947	B-947-7	17.2-18.7'	9/27/06	ND	Light brown reddish yellow silty sand.	21.1	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ SPECIFIC GRAVITY IS ASSUMED. ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472		
Figure	<b>Raleigh, North Carolina</b>	

Tested By: I.B.I

Checked By: ABS



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

**Client:** Dominion Nuclear North Anna

**Project:** North Anna COL Project

**Project Number:** 6468061472

**Location:** BORING B-947

**Depth:** 17.2-18.7'

**Sample Number:** B-947-7

**Material Description:** Light brown reddish yellow silty sand.

**Date:** 9/27/06

**Natural Moisture:** 21.1

**Liquid Limit:** ND

**Plastic Limit:** ND

**USCS Class.:** ND

**Testing Remarks:** SPECIFIC GRAVITY IS ASSUMED.

ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

**Tested by:** LBJ

**Checked by:** ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
148.11	0.00	0.00	#4	0.00	100.0
			#10	0.25	99.8
73.11	0.00	0.00	#20	9.42	87.0
			#40	26.31	63.9
			#60	38.28	47.6
			#140	51.62	29.3
			#200	55.39	24.2

**Fractional Components**

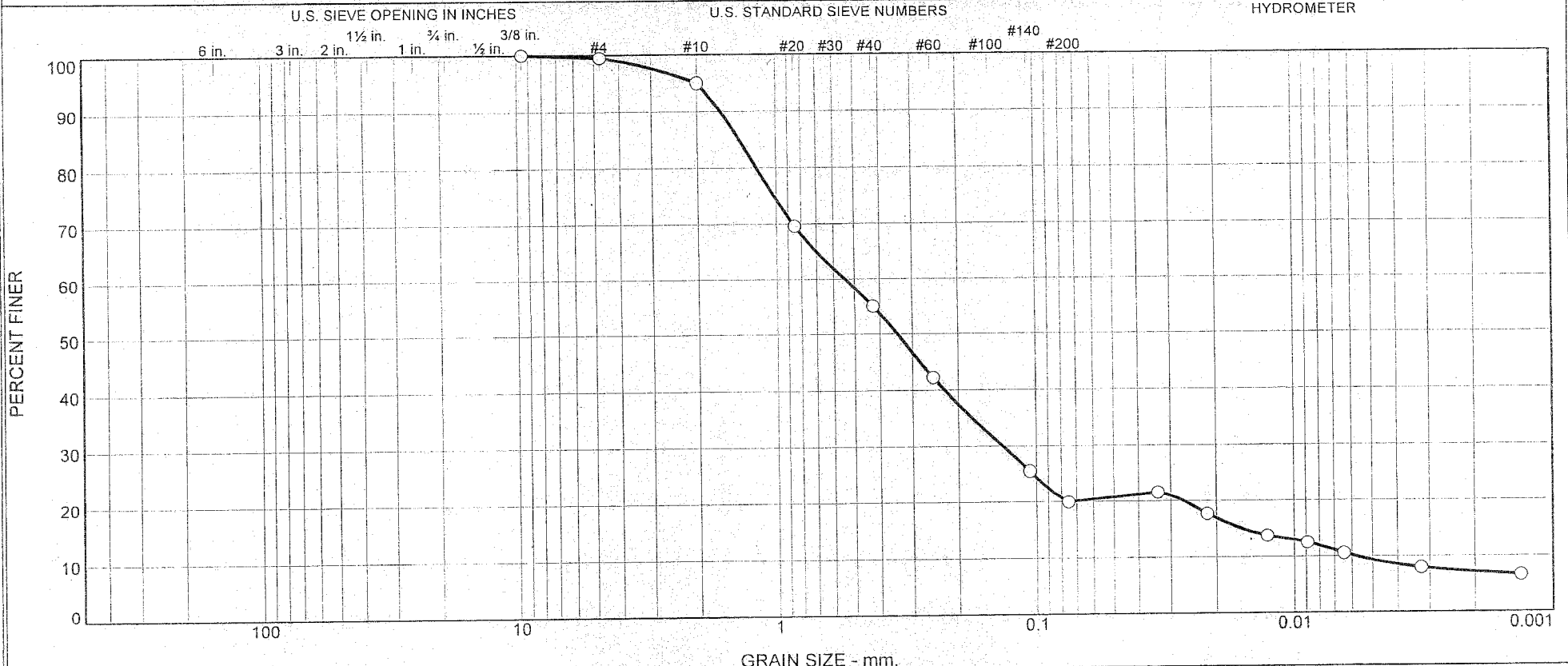
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	35.9	39.7	75.8			24.2

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
			0.1104	0.2730	0.3783	0.6751	0.7925	0.9594	1.2427

<b>Fineness Modulus</b>
1.42

**MACTEC, Inc.**

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	4.4	39.9	35.1	10.7	9.3

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-947	B-947-8	22.2-23.7'	9/27/06	ND	Light brown reddish yellow silty sand.	24.3	ND	NP

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472      Figure		
<b>Raleigh, North Carolina</b>		

Tested By: LBJ

Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-947

Depth: 22.2-23.7'

Sample Number: B-947-8

Material Description: Light brown reddish yellow silty sand.

Date: 9/27/06

Natural Moisture: 24.3

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
239.25	0.00	0.00	.375	0.00	100.0
			#4	1.38	99.4
			#10	12.06	95.0
83.47	0.00	0.00	#20	22.27	69.6
			#40	35.05	55.1
			#60	46.32	42.3
			#140	60.99	25.6
			#200	65.92	20.0

**Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =95.0

Weight of hydrometer sample =72.19

Hygroscopic moisture correction:

Moist weight and tare = 25.12

Dry weight and tare = 25.05

Tare weight = 15.44

Hygroscopic moisture =0.7%

Table of composite correction values:

Temp., deg. C: 29.5 12.8

Comp. corr.: -2.0 -5.0

Meniscus correction only =1.0

Specific gravity of solids =2.7

Hydrometer type =152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.2	20.0	16.5	0.0132	21.0	12.9	0.0336	21.6
5.00	21.2	17.0	13.5	0.0132	18.0	13.3	0.0216	17.7
15.00	21.2	14.0	10.5	0.0132	15.0	13.8	0.0127	13.8
31.00	21.3	13.0	9.5	0.0132	14.0	14.0	0.0089	12.5
60.00	21.4	11.5	8.0	0.0132	12.5	14.2	0.0064	10.5
240.00	21.8	9.5	6.1	0.0131	10.5	14.6	0.0032	8.0
1442.00	21.9	8.5	5.1	0.0131	9.5	14.7	0.0013	6.7

MACTEC, Inc.

**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.6	0.6	4.4	39.9	35.1	79.4	10.7	9.3	20.0

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0058	0.0159	0.0753	0.1345	0.3425	0.5436	1.1882	1.3837	1.6308	2.0108

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.84	93.12	5.70

MACTEC, Inc.

LIQUID AND PLASTIC LIMIT TEST DATA

1/17/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-947

Depth: 22.2-23.7'

Sample Number: B-947-8

Material Description: Light brown reddish yellow silty sand.

%<#40: 55.1

%<#200: 20.0

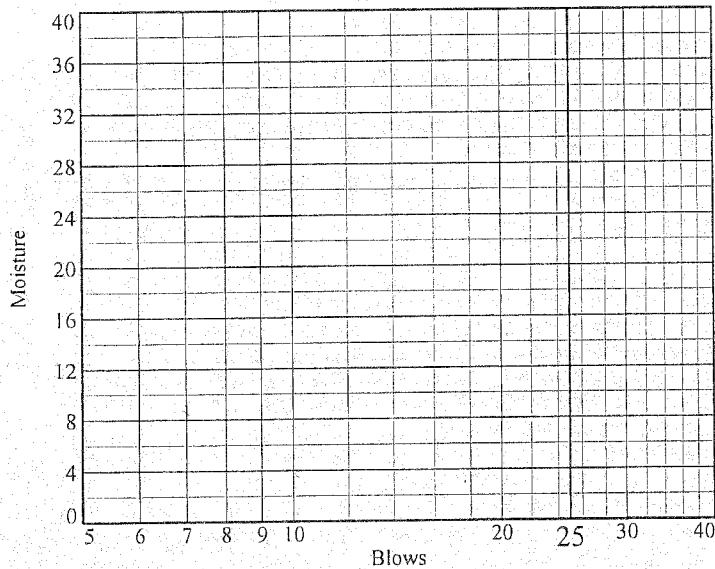
USCS: ND

AASHTO: ND

Tested by: LBJ

Checked by: ABS

Testing Remarks: ENTIRE SAMPLE WAS TESTED.  
 SLIDING IN CUP NON-PLASTIC.  
 LIQUID LIMIT NOT DETERMINED.



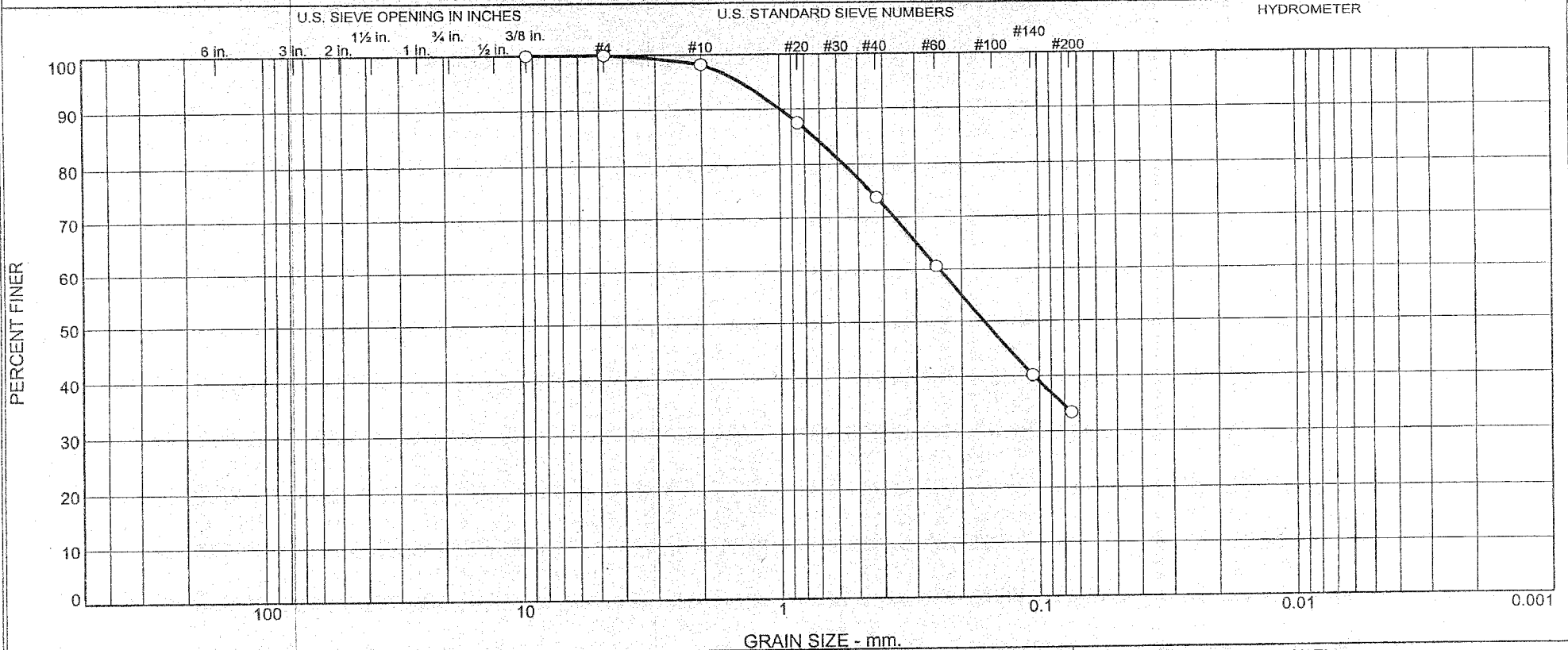
Liquid Limit= \_\_\_\_\_  
 Plastic Limit= NP  
 Plasticity Index= \_\_\_\_\_  
 Natural Moisture= 24.3

Plastic Limit Data

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

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.8	24.5	40.3	33.4	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-947	B-947-9	28.7-30.2'	9/27/06	SM	LIGHT YELLOW, OLIVE FINE TO MEDIUM SILTY SAND.	28.8	33	NP

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ENTIRE SAMPLE WAS TESTED.
Project North Anna COL Project		
Project No. 6468061472	<b>Raleigh, North Carolina</b>	

Tested By: LBJ

Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

GRAIN SIZE DISTRIBUTION TEST DATA

12/18/2006

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-947

Depth: 28.7-30.2'

Sample Number: B-947-9

Material Description: LIGHT YELLOW, OLIVE FINE TO MEDIUM SILTY SAND.

Date: 9/27/06

Natural Moisture: 28.8

Liquid Limit: 33

Plastic Limit: NP

USCS Class.: SM

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

Tested by: LBJ

Checked by: ABS

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
153.77	0.00	0.00	.375	0.00	100.0
			#4	0.05	100.0
			#10	2.80	98.2
75.14	0.00	0.00	#20	8.20	87.5
			#40	18.70	73.7
			#60	28.80	60.5
			#140	44.40	40.2
			#200	49.60	33.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.8	24.5	40.3	66.6			33.4

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
				0.1639	0.2447	0.5676	0.7379	0.9928	1.4247

Fineness Modulus
1.15

MACTEC, Inc.

LIQUID AND PLASTIC LIMIT TEST DATA

1/17/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-947

Depth: 28.7-30.2'

Sample Number: B-947-9

Material Description: LIGHT YELLOW, OLIVE FINE TO MEDIUM SILTY SAND.

%<#40: 73.7

%<#200: 33.4

USCS: SM

AASHTO: A-2-4(0)

Tested by: LBJ

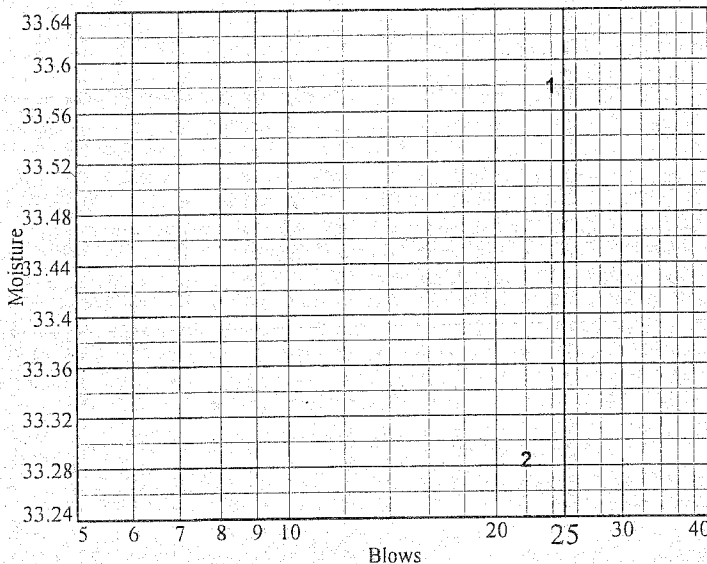
Checked by: ABS

Testing Remarks: SPECIFIC GRAVITY IS ASSUMED.

ENTIRE SAMPLE WAS TESTED.

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.49	24.69				
Dry+Tare	23.76	22.39				
Tare	15.63	15.48				
# Blows	24	22				
Moisture	33.6	33.3				



Liquid Limit= 33  
 Plastic Limit= NP  
 Plasticity Index= NP  
 Natural Moisture= 28.8

Plastic Limit Data

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

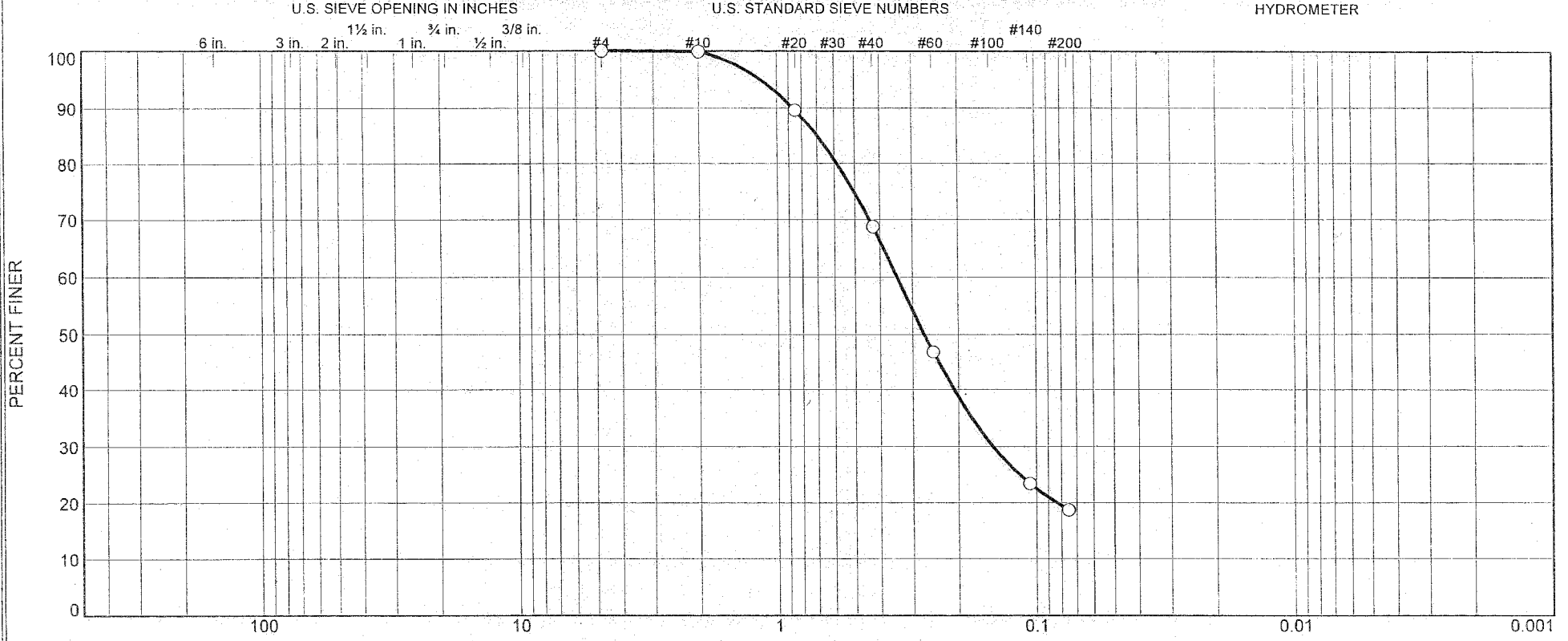
Natural Moisture Data

Wet+Tare	Dry+Tare	Tare	Moisture
55.25	44.4	6.70	28.8

MACTEC, Inc.



# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	31.1	50.1	18.7	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-947	B-947-10	33.7-52.2	9/27/06	ND	Light yellow olive silty sand.	20.2	ND	ND

Client Dominion Nuclear North Anna Project North Anna COL Project	<h2 style="margin: 0;">MACTEC, Inc.</h2> <h3 style="margin: 0;">Raleigh, North Carolina</h3>	○ ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project No. 6468061472      Figure		

Tested By: LBJ      Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-947

Depth: 33.7-52.2

Sample Number: B-947-10

Material Description: Light yellow olive silty sand.

Date: 9/27/06

Natural Moisture: 20.2

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
199.86	0.00	0.00	#4	0.00	100.0
			#10	0.22	99.9
99.68	0.00	0.00	#20	10.26	89.6
			#40	31.04	68.8
			#60	53.05	46.7
			#140	76.39	23.3
			#200	81.00	18.7

**Fractional Components**

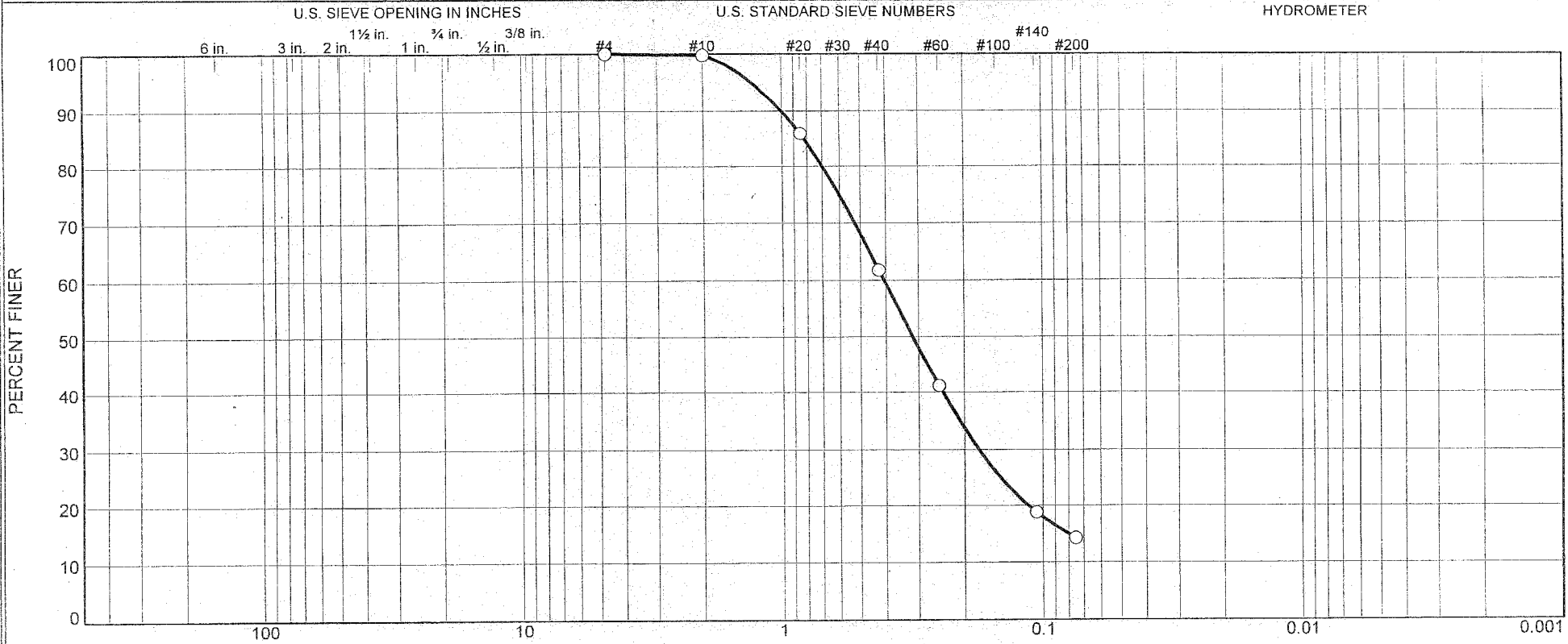
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.1	31.1	50.1	81.3			18.7

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
		0.0834	0.1472	0.2713	0.3437	0.5861	0.6992	0.8661	1.1560

<b>Fineness Modulus</b>
1.39

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.3	37.9	47.6	14.2	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-947	B-947-11	38.7-40.2'	9/27/06	ND	Light yellow olive silty sand.	16.9	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472		
Figure	<b>Raleigh, North Carolina</b>	

Tested By: LBJ                      Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-947

Depth: 38.7-40.2'

Sample Number: B-947-11

Material Description: Light yellow olive silty sand.

Date: 9/27/06

Natural Moisture: 16.9

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
260.48	0.00	0.00	#4	0.00	100.0
			#10	0.66	99.7
133.19	0.00	0.00	#20	18.56	85.8
			#40	50.68	61.8
			#60	78.20	41.2
			#140	108.15	18.8
			#200	114.22	14.2

**Fractional Components**

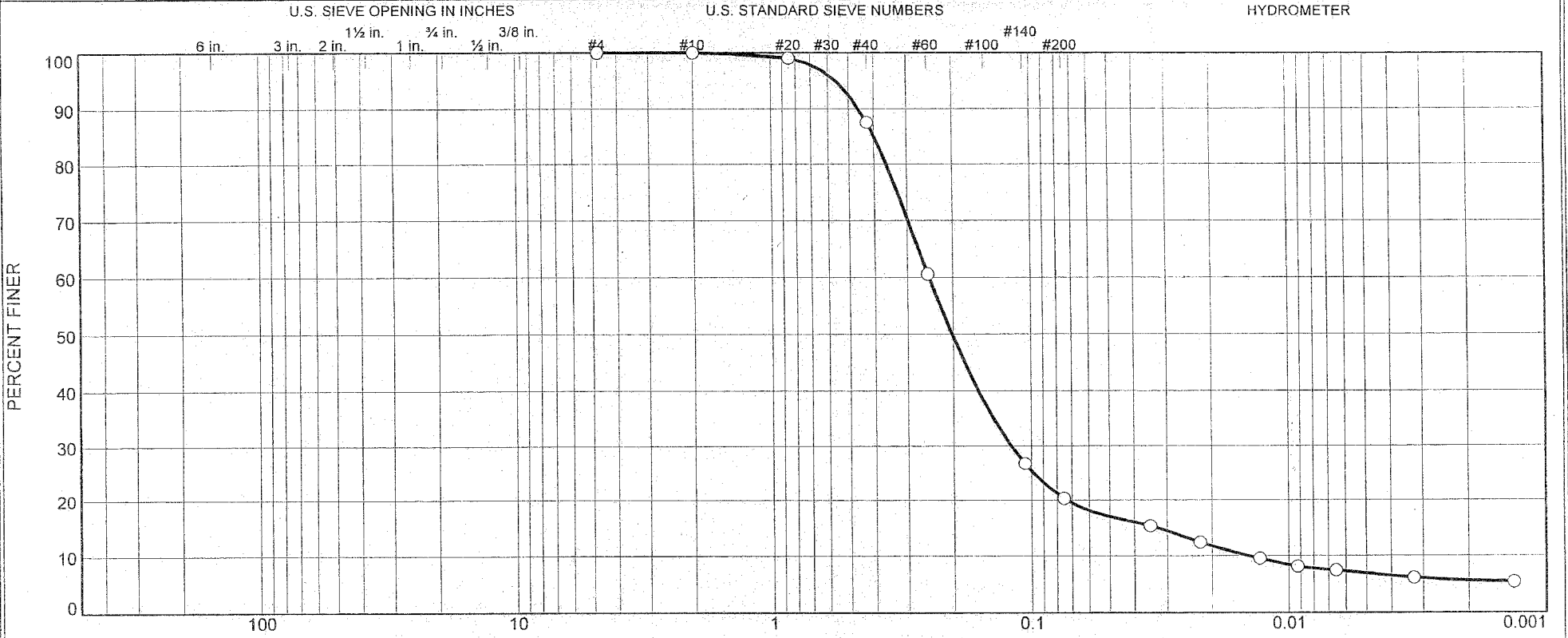
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.3	37.9	47.6	85.8			14.2

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
	0.0802	0.1141	0.1762	0.3159	0.4062	0.6992	0.8245	1.0035	1.2997

<b>Fineness Modulus</b>
1.58

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	12.6	67.1	13.4	6.9

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-947	B-947-12	42.2-43.7'	9/27/06	ND	Light yellow olive silty sand.	20.5	ND	ND

Client Dominion Nuclear North Anna Project North Anna COL Project Project No. 6468061472	<b>MACTEC, Inc.</b>  <b>Raleigh, North Carolina</b>	○ SPECIFIC GRAVITY IS ASSUMED. ENTIRE SAMPLE WAS TESTED. ND=NOT DETERMINED.
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Tested By: LBJ Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

**Client:** Dominion Nuclear North Anna

**Project:** North Anna COL Project

**Project Number:** 6468061472

**Location:** BORING B-947

**Depth:** 42.2-43.7'

**Sample Number:** B-947-12

**Material Description:** Light yellow olive silty sand.

**Date:** 9/27/06

**Natural Moisture:** 20.5

**Liquid Limit:** ND

**Plastic Limit:** ND

**USCS Class.:** ND

**Testing Remarks:** SPECIFIC GRAVITY IS ASSUMED.

ENTIRE SAMPLE WAS TESTED.

ND=NOT DETERMINED.

**Tested by:** LBJ

**Checked by:** ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
267.49	0.00	0.00	#4	0.00	100.0
			#10	0.01	100.0
68.35	0.00	0.00	#20	0.68	99.0
			#40	8.61	87.4
			#60	26.96	60.6
			#140	50.08	26.7
			#200	54.50	20.3

**Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =68.35

Hygroscopic moisture correction:

Moist weight and tare = 27.69

Dry weight and tare = 27.60

Tare weight = 15.57

Hygroscopic moisture =0.7%

Table of composite correction values:

Temp., deg. C: 12.8 29.5

Comp. corr.: -5.0 -2.0

Meniscus correction only =1.0

Specific gravity of solids =2.7

Hydrometer type =152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.3	14.0	10.5	0.0132	15.0	13.8	0.0348	15.3
5.00	21.2	12.0	8.5	0.0132	13.0	14.2	0.0223	12.4
15.00	21.3	10.0	6.5	0.0132	11.0	14.5	0.0130	9.5
30.00	21.4	9.0	5.5	0.0132	10.0	14.7	0.0092	8.1
60.00	21.5	8.5	5.1	0.0132	9.5	14.7	0.0065	7.4
240.00	22.0	7.5	4.2	0.0131	8.5	14.9	0.0033	6.1
1440.00	21.9	7.0	3.6	0.0131	8.0	15.0	0.0013	5.3

MACTEC, Inc.

**Fractional Components**

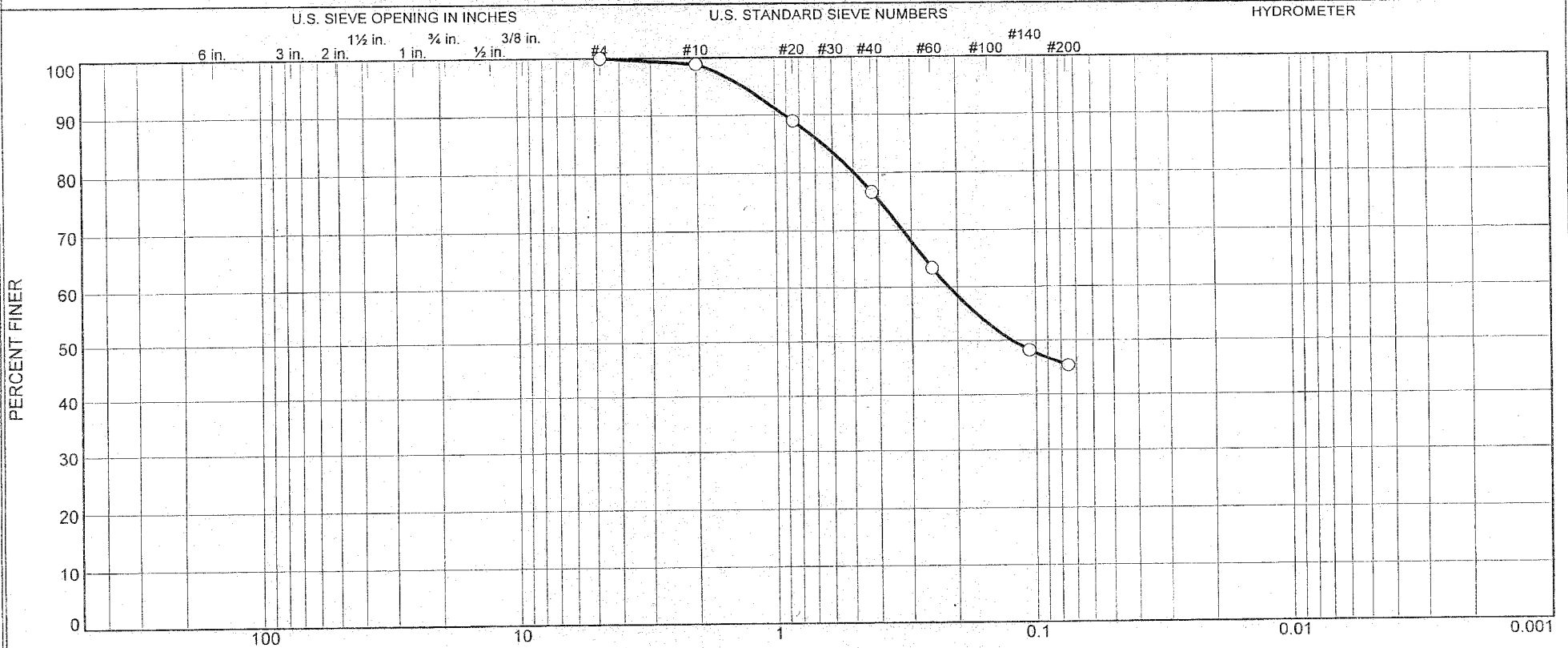
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	12.6	67.1	79.7	13.4	6.9	20.3

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0144	0.0328	0.0735	0.1197	0.2023	0.2474	0.3594	0.4005	0.4580	0.5611

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
0.96	17.19	4.02

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.1	22.2	31.4	45.3	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-948	B-948-1	1.5-3.0'	9/26/06	ND	Reddish yellow silty sand.	18.3	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ SPECIFIC GRAVITY IS ASSUMED. ENTIRE SAMPLE WAS TESTED. ND= NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472	Raleigh, North Carolina	

Tested By: LBJ

Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07



GRAIN SIZE DISTRIBUTION TEST DATA

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-948

Depth: 1.5-3.0'

Sample Number: B-948-1

Material Description: Reddish yellow silty sand.

Date: 9/26/06

Natural Moisture: 18.3

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: SPECIFIC GRAVITY IS ASSUMED.

ENTIRE SAMPLE WAS TESTED.

ND= NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
169.41	0.00	0.00	#4	0.00	100.0
			#10	1.90	98.9
83.69	0.00	0.00	#20	8.49	88.8
			#40	18.78	76.7
			#60	29.99	63.4
			#140	42.90	48.2
			#200	45.32	45.3

Fractional Components

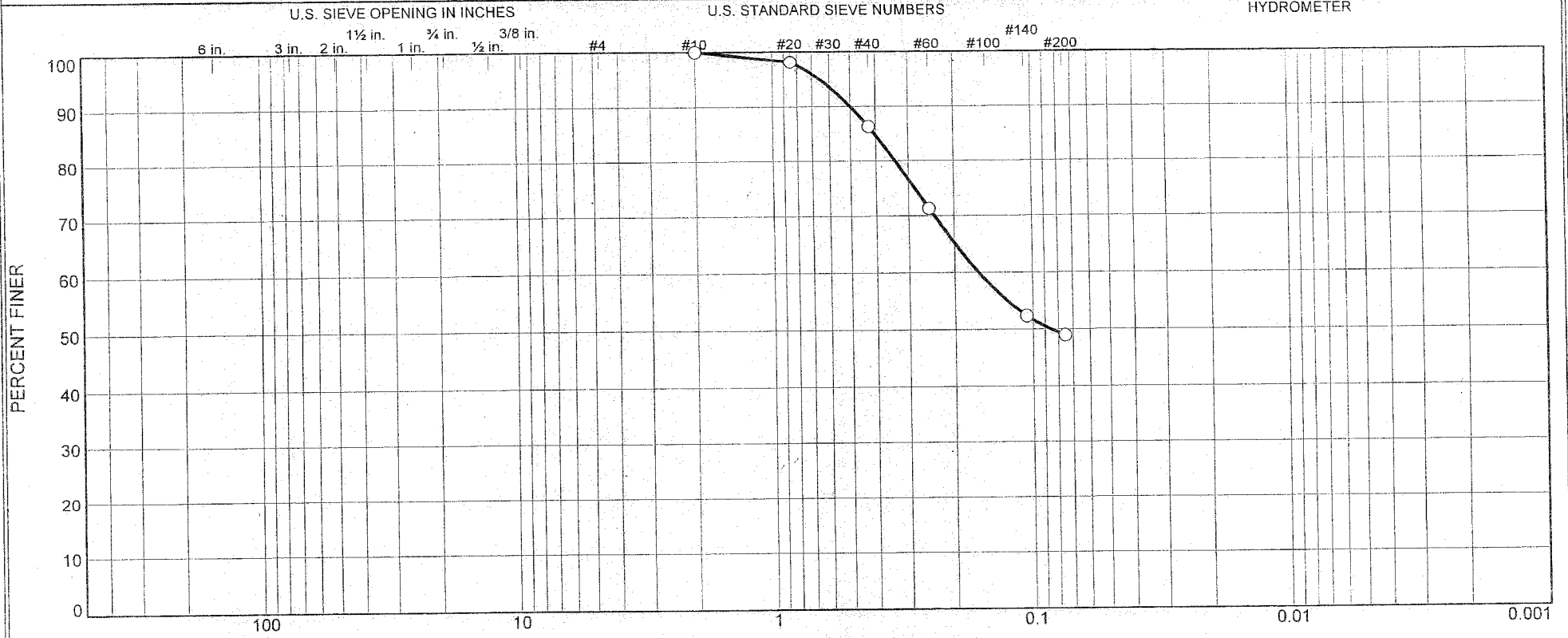
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.1	22.2	31.4	54.7			45.3

D10	D15	D20	D30	D50	D60	D80	D85	D90	D95
				0.1235	0.2157	0.4976	0.6606	0.9195	1.3303

Fineness Modulus
1.03

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	13.7	37.4	48.9	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-948	B-948-3	6-7.5'	9/26/06	ND	Reddish yellow silty sand.	16.2	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ SPECIFIC GRAVITY IS ASSUMED. ENTIRE SAMPLE WAS TESTED. ND= NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472		
Figure	<b>Raleigh, North Carolina</b>	

Tested By: LBJ

Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-948

Depth: 6-7.5'

Sample Number: B-948-3

Material Description: Reddish yellow silty sand.

Date: 9/26/06

Natural Moisture: 16.2

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: SPECIFIC GRAVITY IS ASSUMED.

ENTIRE SAMPLE WAS TESTED.

ND= NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
106.64	0.00	0.00	#10	0.00	100.0
			#20	2.04	98.1
			#40	14.65	86.3
			#60	30.57	71.3
			#140	50.89	52.3
			#200	54.45	48.9

**Fractional Components**

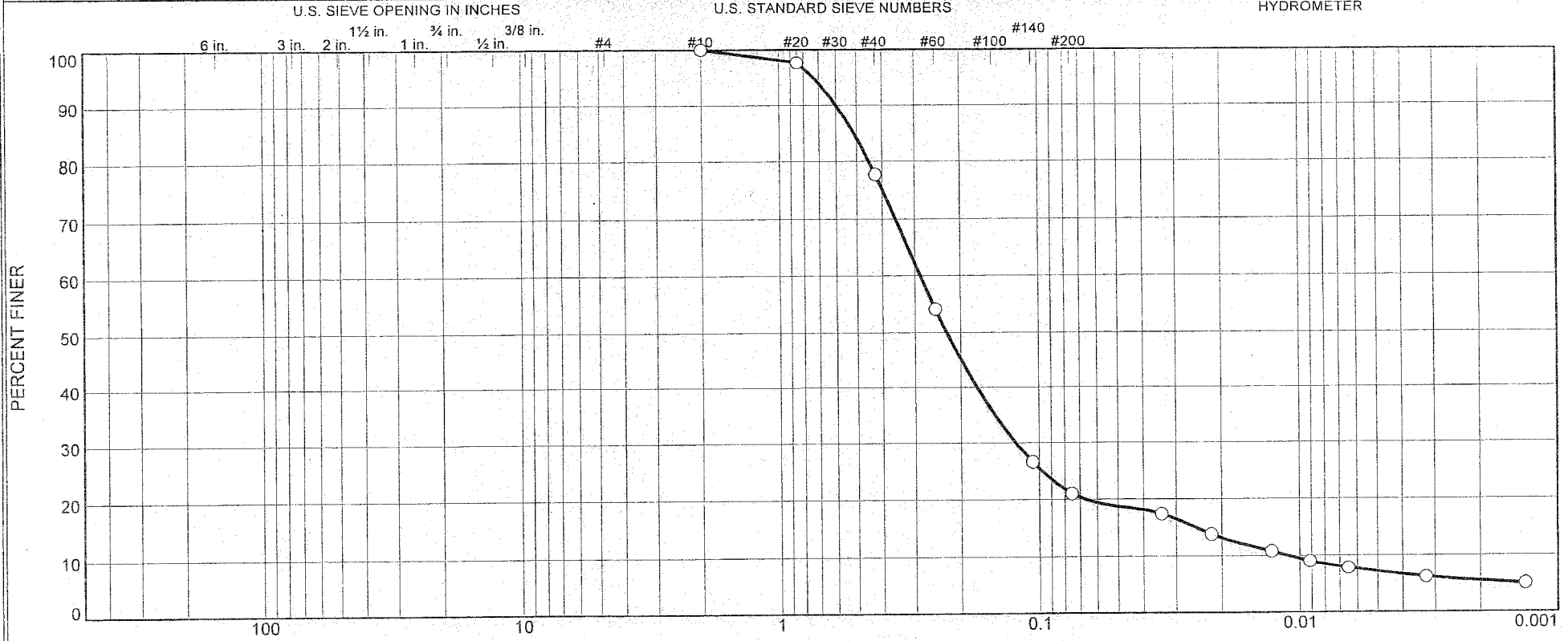
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	13.7	37.4	51.1			48.9

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
				0.0853	0.1619	0.3370	0.4044	0.4995	0.6576

<b>Fineness Modulus</b>
0.73

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	22.2	56.8	13.9	7.1

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-948	B-948-5	9.5-11'	9/26/06	ND	Reddish yellow silty sand.	13.7	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ENTIRE SAMPLE WAS TESTED. ND= NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472		
Figure	<b>Raleigh, North Carolina</b>	

Tested By: LBJ      Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-948

Depth: 9.5-11'

Sample Number: B-948-5

Material Description: Reddish yellow silty sand.

Date: 9/26/06

Natural Moisture: 13.7

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

ND= NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
211.55	0.00	0.00	#10	0.00	100.0
82.98	0.00	0.00	#20	1.96	97.6
			#40	18.46	77.8
			#60	38.07	54.1
			#140	60.97	26.5
			#200	65.57	21.0

**Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =100.0

Weight of hydrometer sample =82.98

Hygroscopic moisture correction:

Moist weight and tare = 30.27

Dry weight and tare = 30.20

Tare weight = 15.44

Hygroscopic moisture =0.5%

Table of composite correction values:

Temp., deg. C: 29.5 12.8

Comp. corr.: -2.0 -5.0

Meniscus correction only =1.0

Specific gravity of solids =2.7

Hydrometer type =152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.2	18.0	14.5	0.0132	19.0	13.2	0.0340	17.4
5.00	21.2	15.0	11.5	0.0132	16.0	13.7	0.0219	13.8
15.00	21.2	12.5	9.0	0.0132	13.5	14.1	0.0128	10.8
30.00	21.3	11.0	7.5	0.0132	12.0	14.3	0.0091	9.0
60.00	21.4	10.0	6.5	0.0132	11.0	14.5	0.0065	7.8
240.00	21.9	8.5	5.1	0.0131	9.5	14.7	0.0033	6.1
1440.00	22.0	7.5	4.2	0.0131	8.5	14.9	0.0013	5.0

MACTEC, Inc.

**Fractional Components**

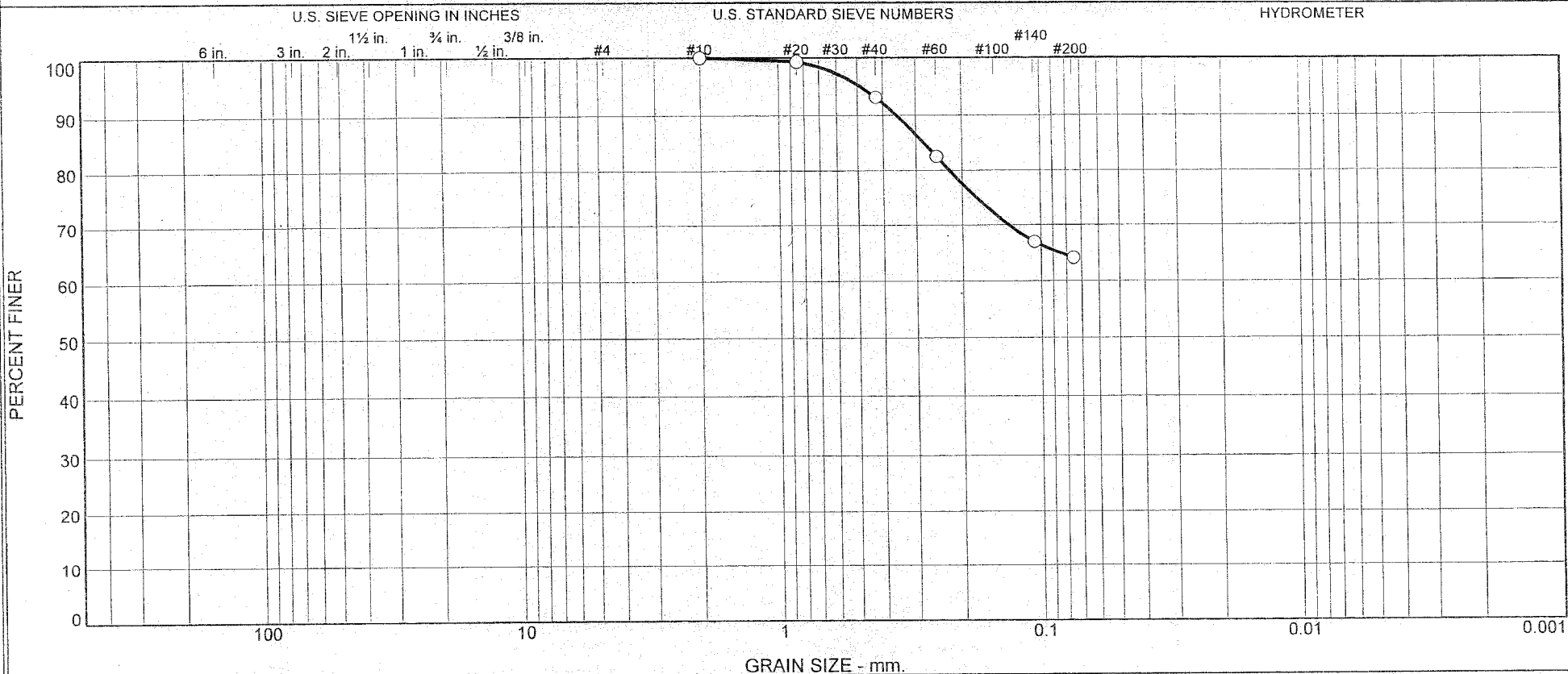
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	22.2	56.8	79.0	13.9	7.1	21.0

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0111	0.0253	0.0671	0.1233	0.2265	0.2855	0.4495	0.5145	0.6021	0.7348

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.14	25.73	4.80

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	6.7	29.2	64.1	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-948	B-948-7	18.5-20'	9/26/06	ND	Reddish yellow sandy silt.	15.2	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ SPECIFIC GRAVITY IS ASSUMED. ENTIRE SAMPLE WAS TESTED. ND= NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472	<b>Raleigh, North Carolina</b>	

Tested By: LBJ

Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-948

Depth: 18.5-20'

Sample Number: B-948-7

Material Description: Reddish yellow sandy silt.

Date: 9/26/06

Natural Moisture: 15.2

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: SPECIFIC GRAVITY IS ASSUMED.

ENTIRE SAMPLE WAS TESTED.

ND= NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
179.80	0.00	0.00	#10	0.00	100.0
			#20	1.26	99.3
			#40	12.13	93.3
			#60	31.50	82.5
			#140	59.36	67.0
			#200	64.49	64.1

**Fractional Components**

Cobbles	Gravel			Sand				Fines		Total
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	
0.0	0.0	0.0	0.0	0.0	6.7	29.2	35.9			64.1

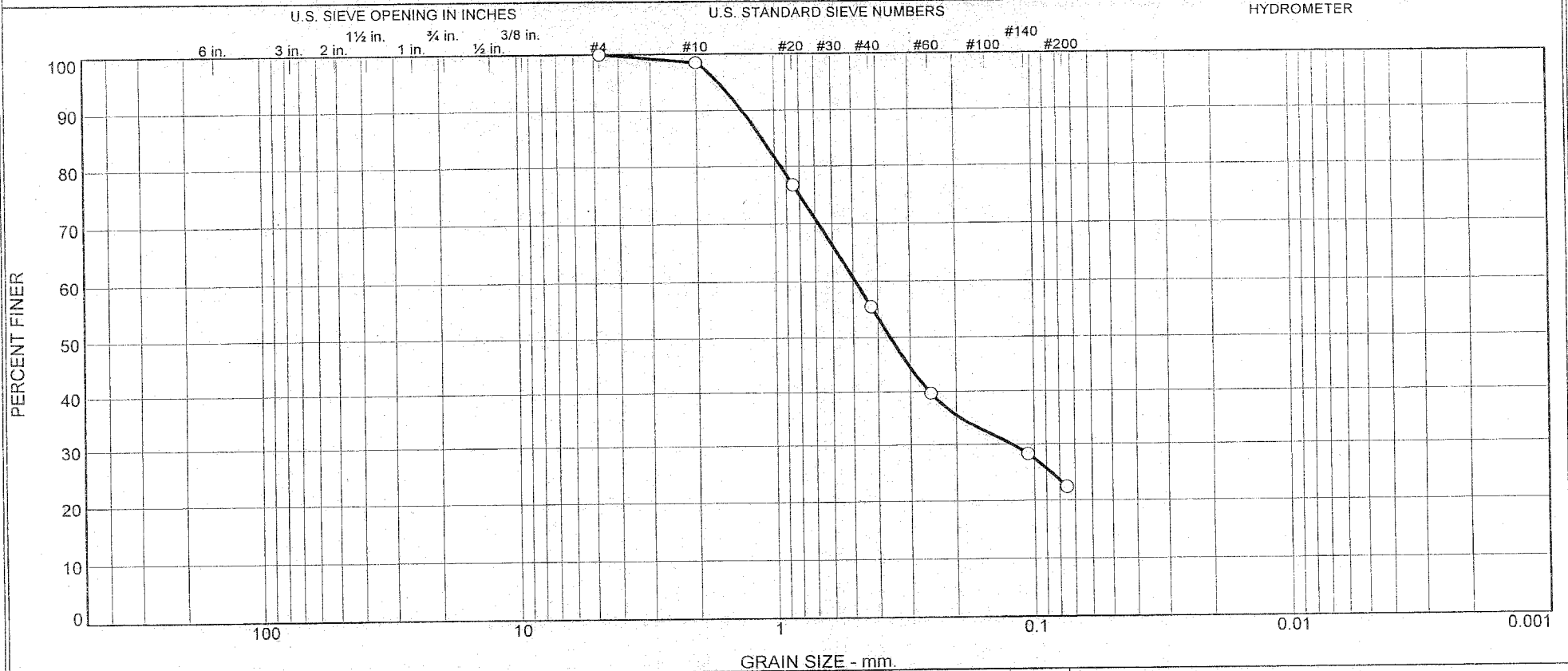
D10	D15	D20	D30	D50	D60	D80	D85	D90	D95
						0.2233	0.2800	0.3546	0.4800

<b>Fineness Modulus</b>
0.45

MACTEC, Inc.



# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.5	42.9	33.3	22.3	

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-948	B-948-8	23.5-24.4'	9/26/06	ND	Tan gray and brown tan silty sand.	13.6	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ENTIRE SAMPLE WAS TESTED. ND= NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472	<b>Raleigh, North Carolina</b>	

Tested By: LBJ

Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-948

Depth: 23.5-24.4'

Sample Number: B-948-8

Material Description: Tan gray and brown tan silty sand.

Date: 9/26/06

Natural Moisture: 13.6

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

ND= NOT DETERMINED.

Tested by: LBJ

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
246.65	0.00	0.00	#4	0.00	100.0
			#10	3.77	98.5
124.16	0.00	0.00	#20	27.36	76.8
			#40	54.09	55.6
			#60	74.21	39.6
			#140	88.62	28.2
			#200	95.98	22.3

**Fractional Components**

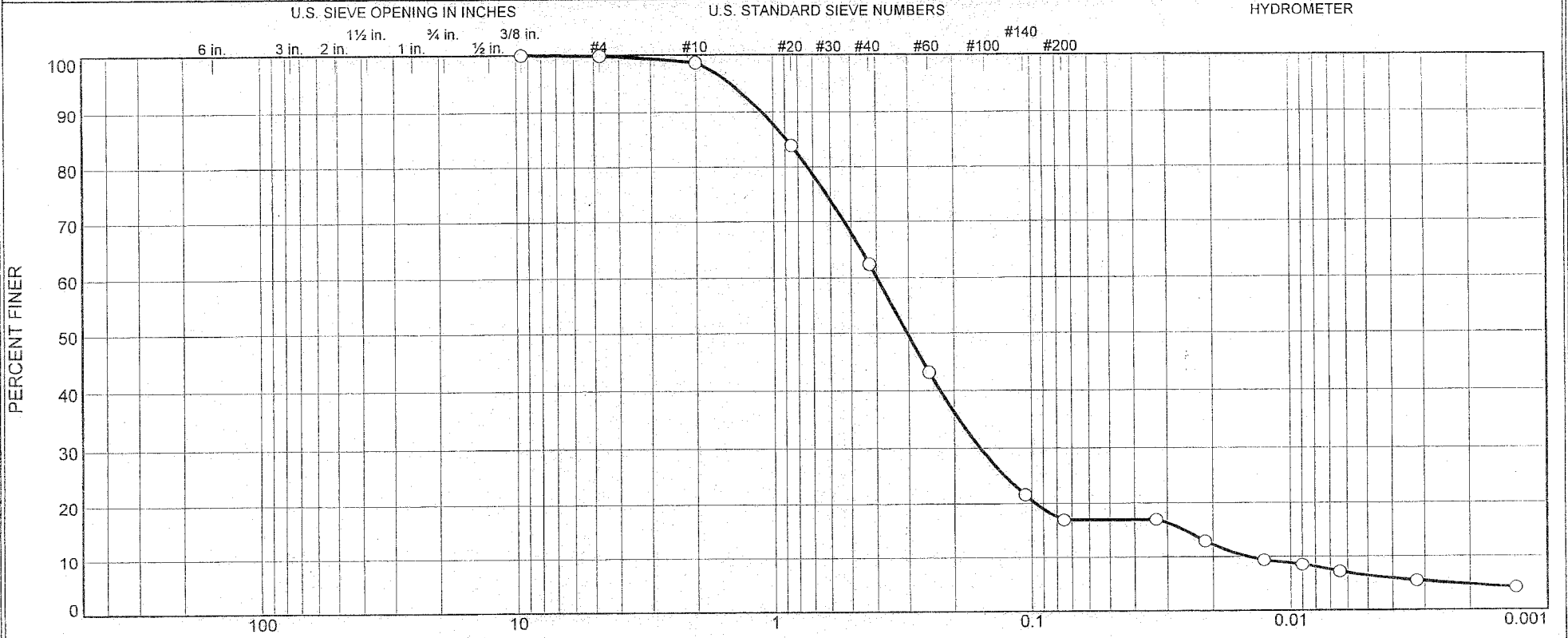
Cobbles	Gravel			Sand				Fines		Total
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	
0.0	0.0	0.0	0.0	1.5	42.9	33.3	77.7			22.3

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
			0.1227	0.3585	0.4885	0.9452	1.1167	1.3345	1.6434

<b>Fineness Modulus</b>
1.72

MACTEC, Inc.

# Particle Size Distribution Report/ASTM-422-63(02)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	1.2	36.2	45.5	10.5	6.4

Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
BORING B-951	B-951-8	23-24.5'	8/16/06	ND	Dark greenish gray silty sand.	13.9	ND	ND

Client Dominion Nuclear North Anna	<b>MACTEC, Inc.</b>	○ ENTIRE SAMPLE WAS TESTED. ND= NOT DETERMINED.
Project North Anna COL Project		
Project No. 6468061472	<b>Raleigh, North Carolina</b>	

Tested By: JPD

Checked By: ABS

DATA REPORT Rev. 0

MACTEC ENGINEERING & CONSULTING, INC.

1/23/07

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/15/2007

Client: Dominion Nuclear North Anna

Project: North Anna COL Project

Project Number: 6468061472

Location: BORING B-951

Depth: 23-24.5'

Sample Number: B-951-8

Material Description: Dark greenish gray silty sand.

Date: 8/16/06

Natural Moisture: 13.9

Liquid Limit: ND

Plastic Limit: ND

USCS Class.: ND

Testing Remarks: ENTIRE SAMPLE WAS TESTED.

ND= NOT DETERMINED.

Tested by: JPD

Checked by: ABS

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
286.00	0.00	0.00	.375	0.00	100.0
			#4	0.50	99.8
			#10	3.90	98.6
110.19	0.00	0.00	#20	16.50	83.9
			#40	40.50	62.4
			#60	62.00	43.1
			#140	86.10	21.6
			#200	91.30	16.9

**Hydrometer Test Data**

Hydrometer test uses material passing #10

Percent passing #10 based upon complete sample =98.6

Weight of hydrometer sample =110.19

Hygroscopic moisture correction:

Moist weight and tare = 26.36

Dry weight and tare = 26.31

Tare weight = 15.54

Hygroscopic moisture =0.5%

Table of composite correction values:

Temp., deg. C: 12.8 29.5

Comp. corr.: -5.0 -2.0

Meniscus correction only =1.0

Specific gravity of solids =2.7

Hydrometer type = 152H

Hydrometer effective depth equation:  $L = 16.294964 - 0.164 \times R_m$

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer
2.00	21.3	22.5	19.0	0.0132	23.5	12.4	0.0330	16.9
5.00	21.4	18.0	14.5	0.0132	19.0	13.2	0.0215	12.9
15.00	21.3	14.0	10.5	0.0132	15.0	13.8	0.0127	9.4
30.00	21.4	13.0	9.5	0.0132	14.0	14.0	0.0090	8.5
60.00	21.6	11.5	8.1	0.0132	12.5	14.2	0.0064	7.2
240.00	22.0	9.5	6.2	0.0131	10.5	14.6	0.0032	5.5
1447.00	22.0	8.0	4.7	0.0131	9.0	14.8	0.0013	4.1

MACTEC, Inc.

**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.2	0.2	1.2	36.2	45.5	82.9	10.5	6.4	16.9

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0147	0.0260	0.0967	0.1584	0.3037	0.3980	0.7358	0.8891	1.1064	1.4598

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.58	27.08	4.29

MACTEC, Inc.