S&ME

Job No. 012.01559.201 Date 5/30/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-14

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D1557 Method B

TEST RESULTS

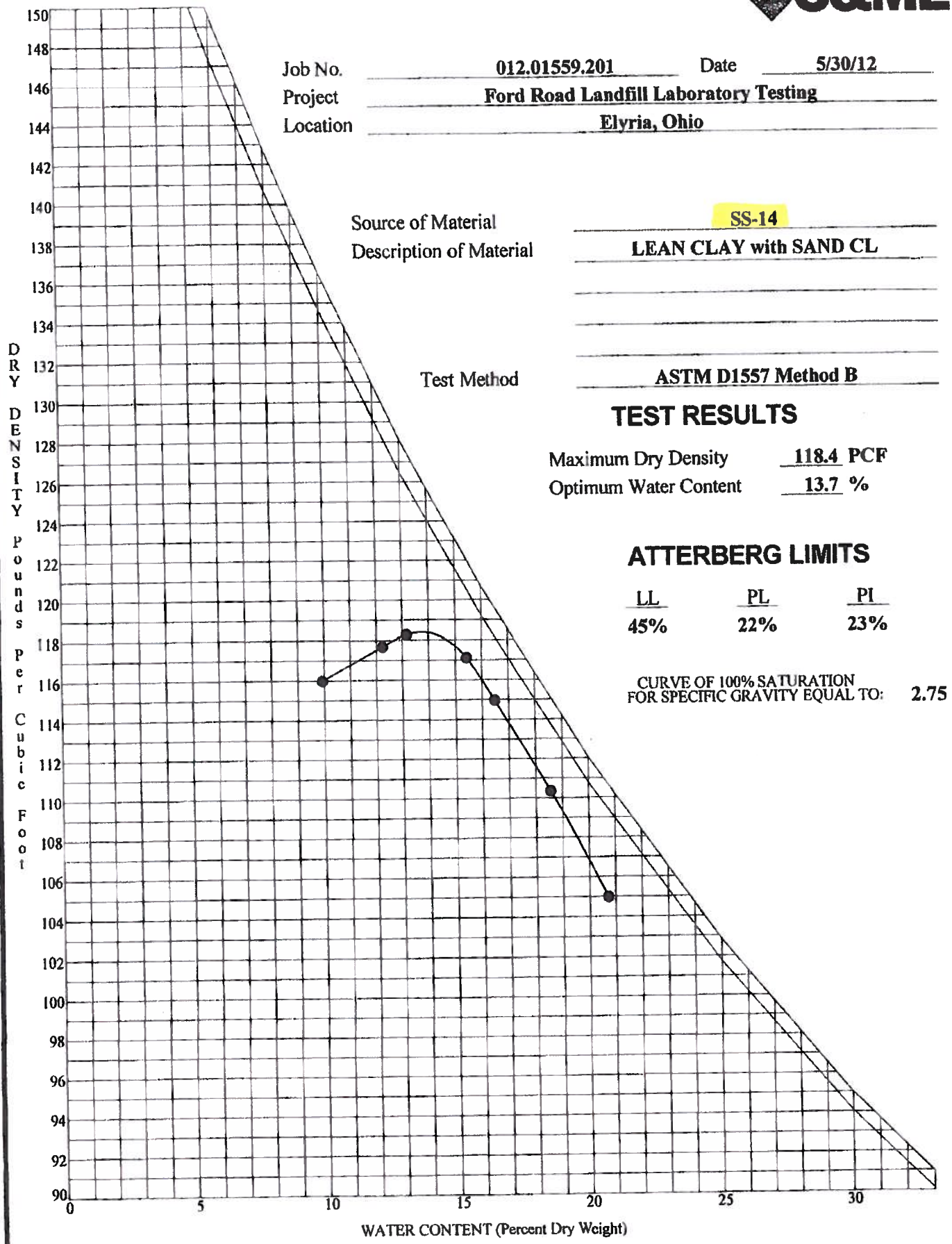
Maximum Dry Density 118.4 PCF

Optimum Water Content 13.7 %

ATTERBERG LIMITS

LL	PL	PI
45%	22%	23%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75

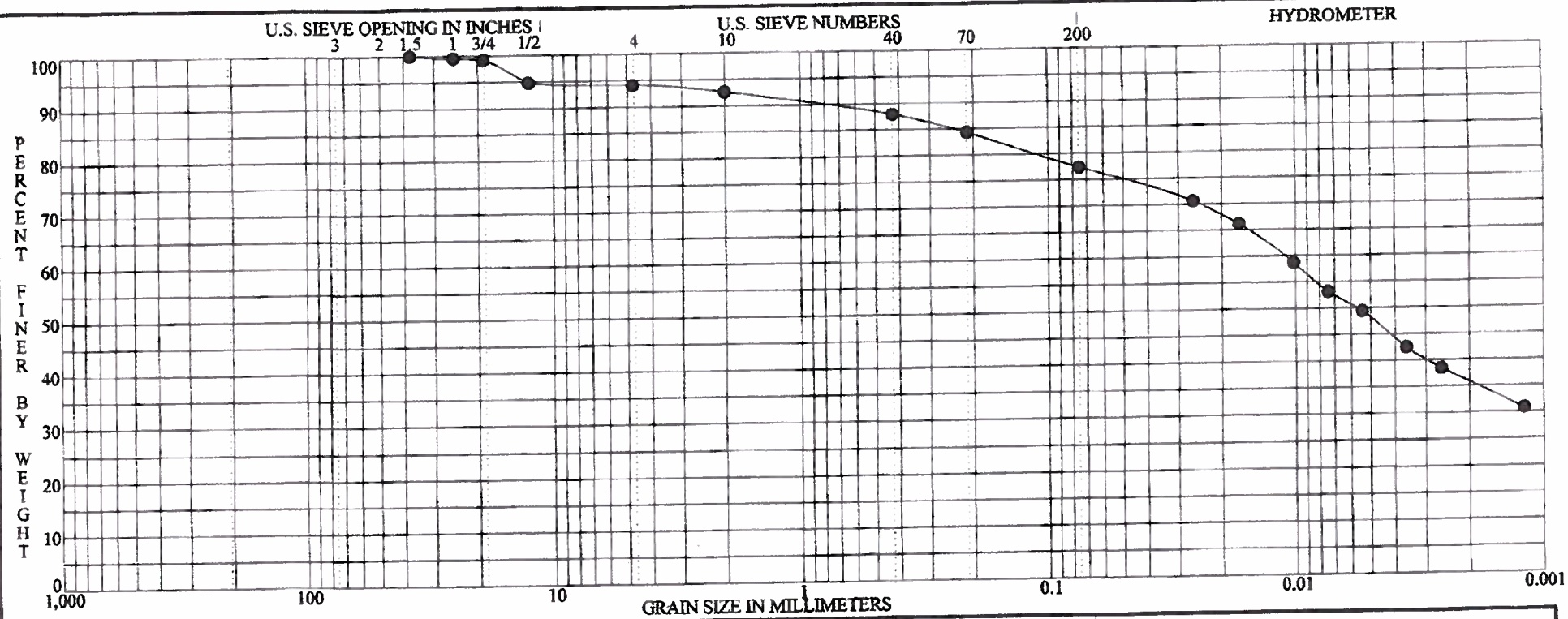


MOISTURE-DENSITY RELATIONSHIP

COMP-EPA

PLATE 9

S&ME



BOULDERS	COBBLES	GRAVEL coarse	GRAVEL fine	SAND coarse	SAND medium	SAND fine	SILT OR CLAY

	Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
●	SS-14	LEAN CLAY with SAND CL	20	45	22	23	13.7	118.4

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-14	37.5000	12.8011	0.0111	0.0057		6.0	16.7	41.5	35.9

ASTM D422 | **GRADATION CURVE**

PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 5/30/12

GRN-EB-VA

PLATE 9

S&ME

Job No. 012.01559.201 Date 5/30/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-15

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D1557 Method B

TEST RESULTS

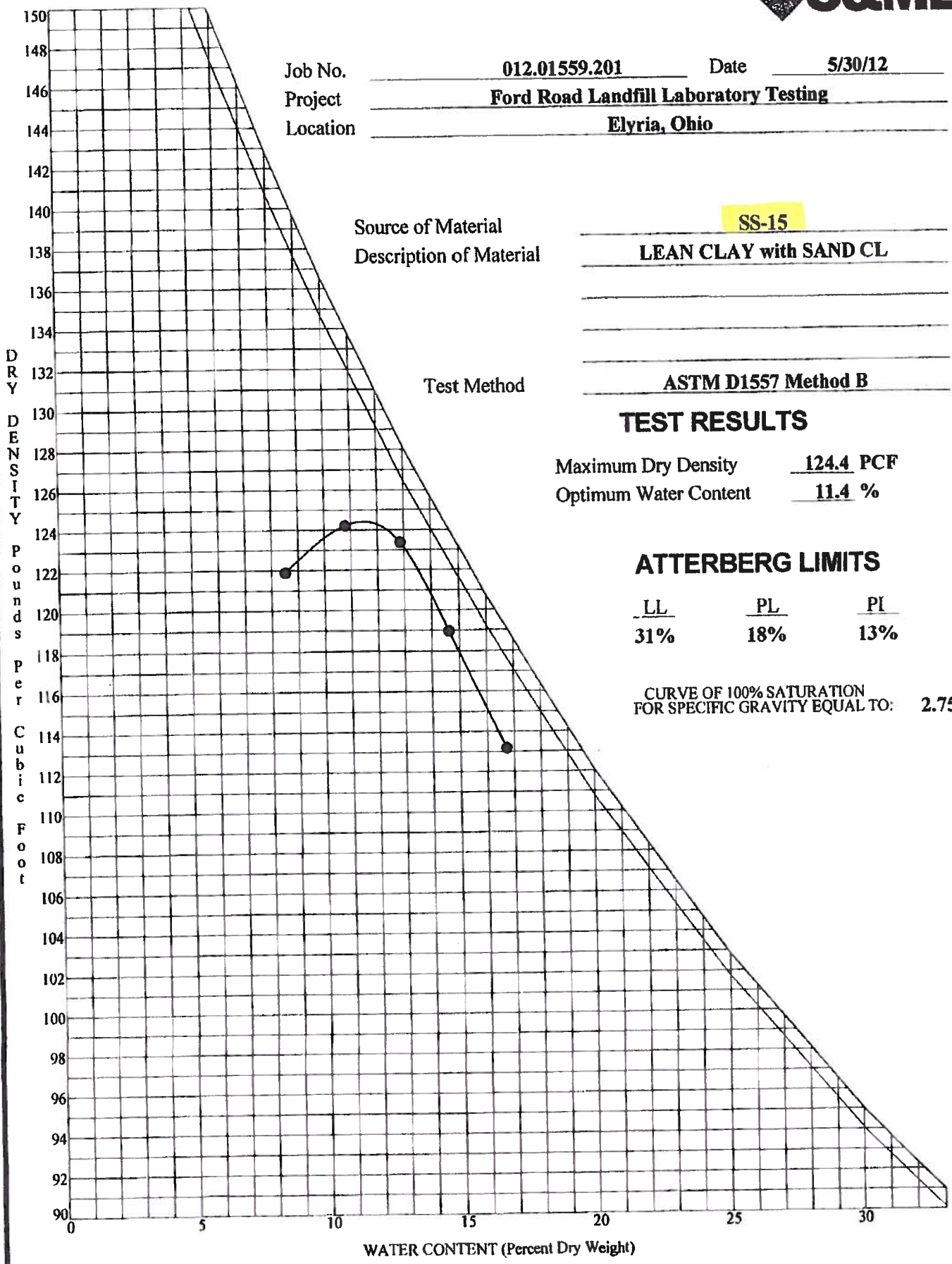
Maximum Dry Density 124.4 PCF

Optimum Water Content 11.4 %

ATTERBERG LIMITS

LL	PL	PI
31%	18%	13%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75

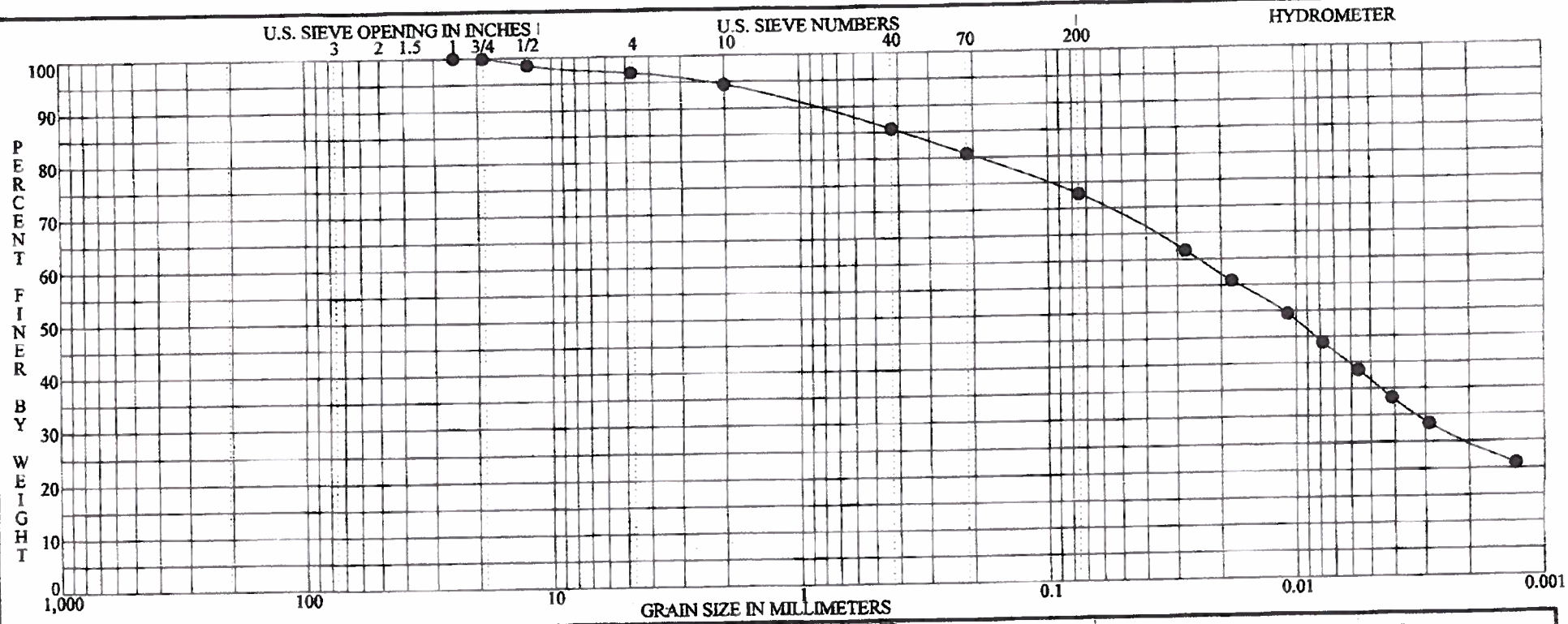


MOISTURE-DENSITY RELATIONSHIP

COMP-EPA

PLATE 10

S&ME



BOULDERS	COBBLES	GRAVEL coarse	GRAVEL fine	SAND coarse	SAND medium	SAND fine	SILT OR CLAY

	Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
●	SS-15	LEAN CLAY with SAND CL		31	18	13	11.4	124.4

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-15	25.0000	2.4404	0.0244	0.0113		3.1	24.0	47.9	25.0

ASTM D422 | **GRADATION CURVE**

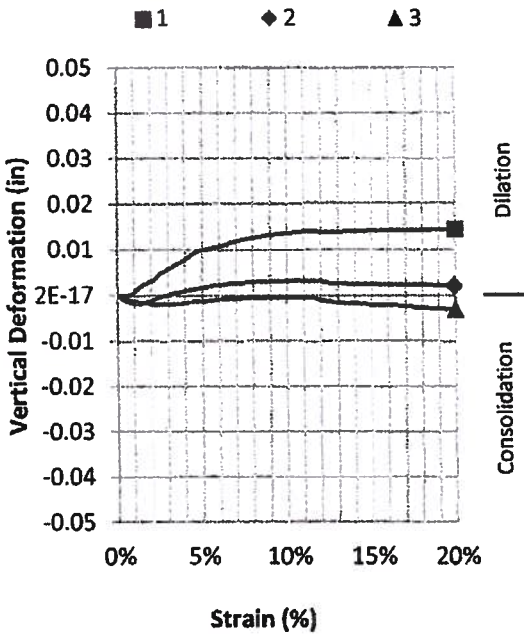
PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 5/30/12

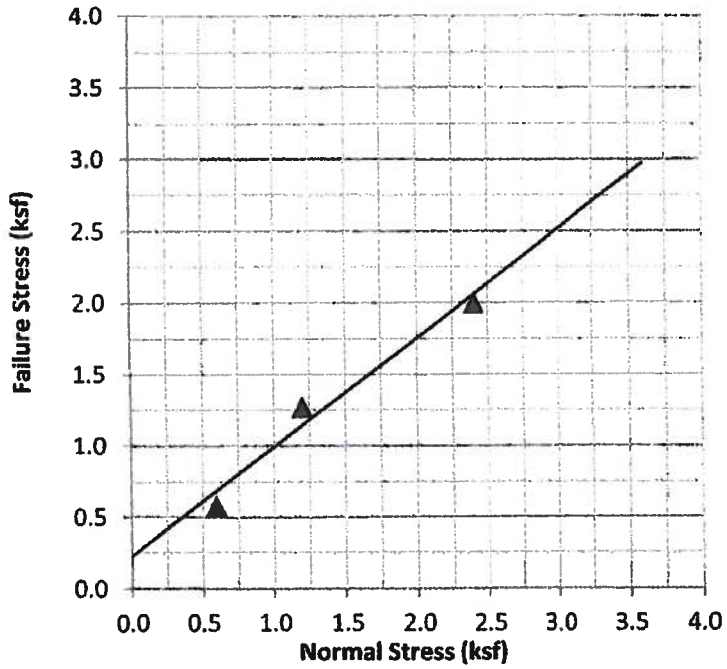
GRN-EPA

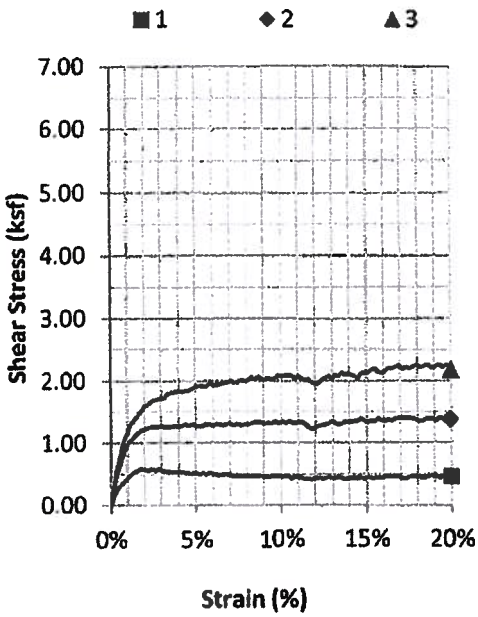
PLATE 10

DIRECT SHEAR TEST REPORT

Results: C (ksf) = 0.24 ϕ (deg) = 37







Sample No.		1	2	3
Initial	Moisture Content (%)	13.45%	12.89%	12.52%
	Dry Density (pcf)	116.95	117.75	118.00
	Saturation (%)	82.4%	80.8%	79.0%
	Void Ratio	0.4406	0.4309	0.4278
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	19.04%	18.17%	17.70%
	Dry Density (pcf)	110.06	112.32	113.57
	Saturation (%)	96.9%	98.1%	98.9%
	Void Ratio	0.5307	0.5000	0.4835
	Diameter (in)	2.5	2.5	2.5
	Height (in)	1.01	1.00	0.99
Normal Stress (ksf)		0.60	1.20	2.40
Failure Stress (ksf)		0.58	1.27	2.00
- Strain at Failure (%)		2.81%	2.97%	7.11%
Ultimate Stress (ksf)		0.46	1.38	2.18
- Strain at Ultimate (%)		20.00%	19.93%	20.00%
Avg. Strain Rate (in/min)		0.0016	0.0017	0.0017

Sample Type: Bulk Sample
Sample Description:
LEAN CLAY with SAND CL

Comments:
Remolded to 95% of Modified Proctor maximum dry density and plus 1.0% of the optimum moisture content.

LL = 31 **PI =** 13
Assumed Specific Gravity = 2.7

Client: Brown and Caldwell
Project Name: Ford Road Landfill Laboratory Testing
Project Location: Elyria, Ohio
Project No.: 012.01559.201 / 1179-11-024B

Boring ID: N/A
Sample ID: SS-15
Sample Depth: Bulk Sample
Date(s) Tested: 05/15/12 - 05/21/12

Tested By: JJ Checked By: BKS

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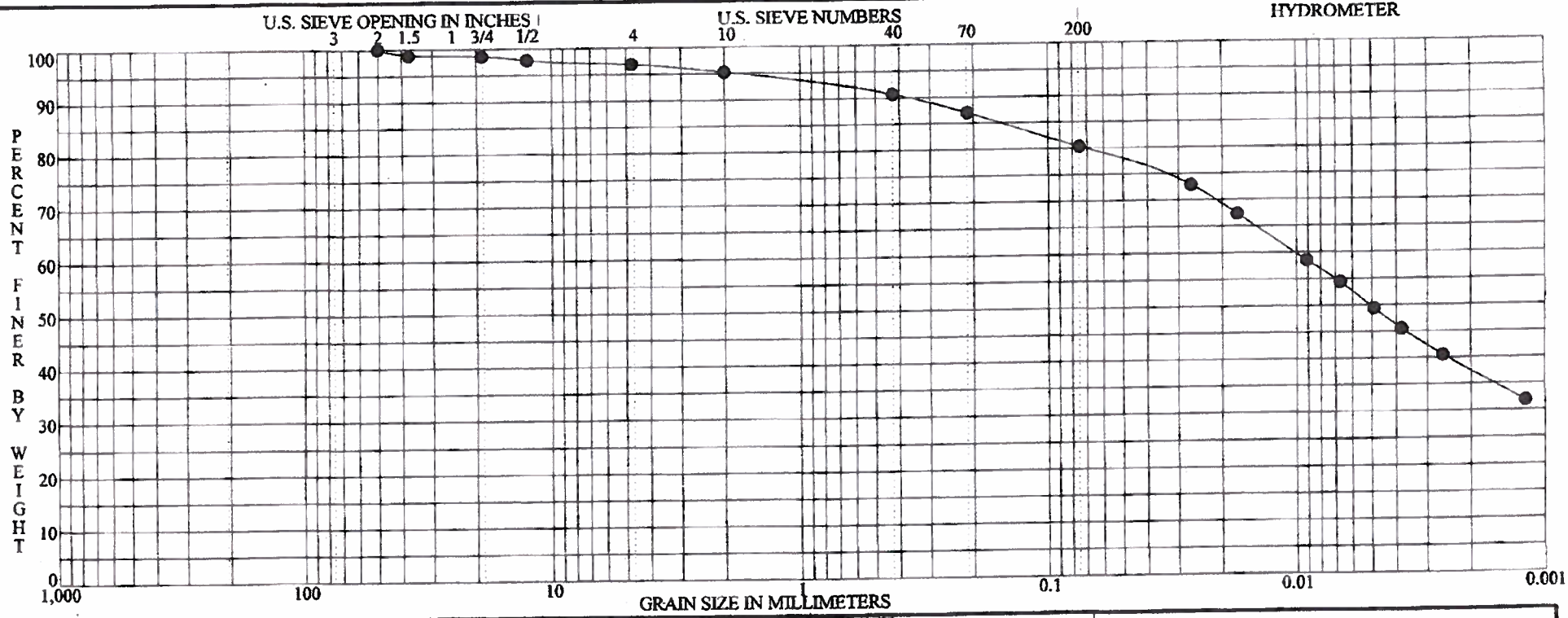
S&ME



BOULDERS	COBBLES	GRAVEL coarse	GRAVEL fine	SAND coarse	SAND medium	SAND fine	SILT OR CLAY

	Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
●	SS-16	LEAN CLAY with SAND CL	22	45	22	23		

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-16	50.0000	1.8561	0.0101	0.0051		3.1	16.5	42.8	37.6

ASTM D422 | **GRADATION CURVE**

PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 5/30/12

GRN-EPA

PLATE 11

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S&ME

Job No. 012.01559.201 Date 5/30/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-17

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D1557 Method B

TEST RESULTS

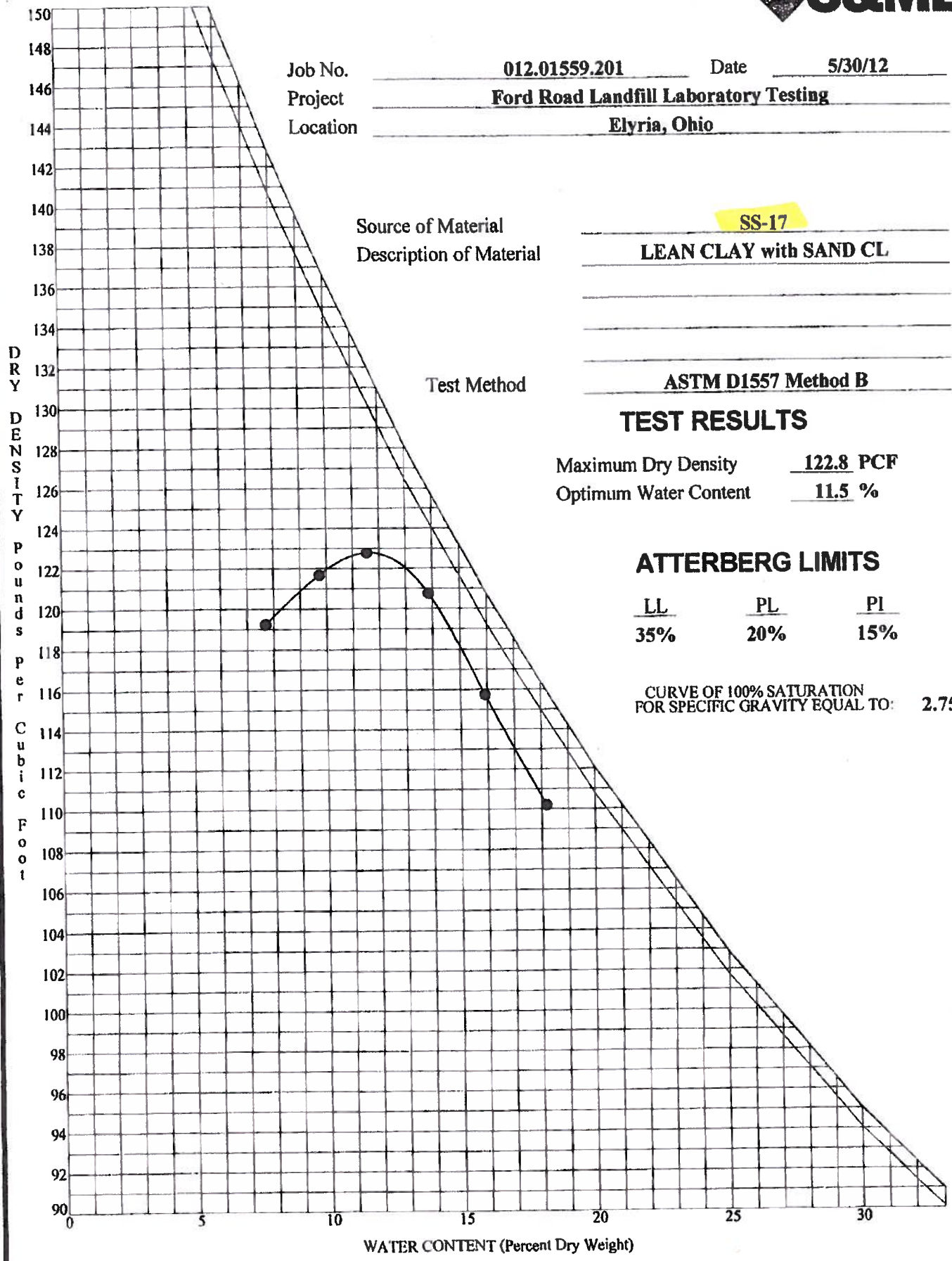
Maximum Dry Density 122.8 PCF

Optimum Water Content 11.5 %

ATTERBERG LIMITS

LL	PL	PI
35%	20%	15%

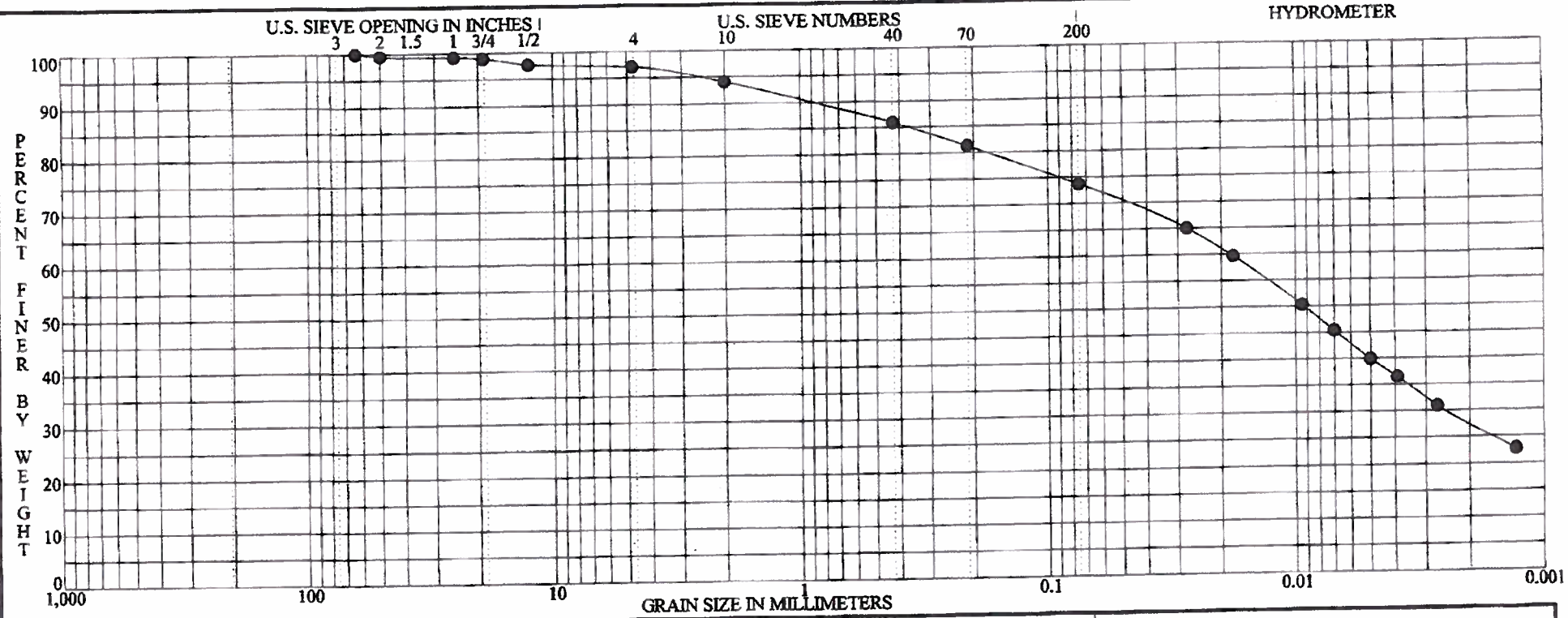
CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75



MOISTURE-DENSITY RELATIONSHIP

COMP-EPA

S&ME



BOULDERS	COBBLES	GRAVEL coarse	GRAVEL fine	SAND coarse	SAND medium	SAND fine	SILT OR CLAY

	Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
●	SS-17	LEAN CLAY with SAND CL	17	35	20	15	11.5	122.8

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-17	63.0000	2.6625	0.0184	0.0092		2.9	23.3	46.1	27.6

ASTM D422 | **GRADATION CURVE**

PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 5/30/12

GRN-EPA

PLATE 12

S&ME

Job No. 012.01559.201 Date 5/30/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-18

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D1557 Method B

TEST RESULTS

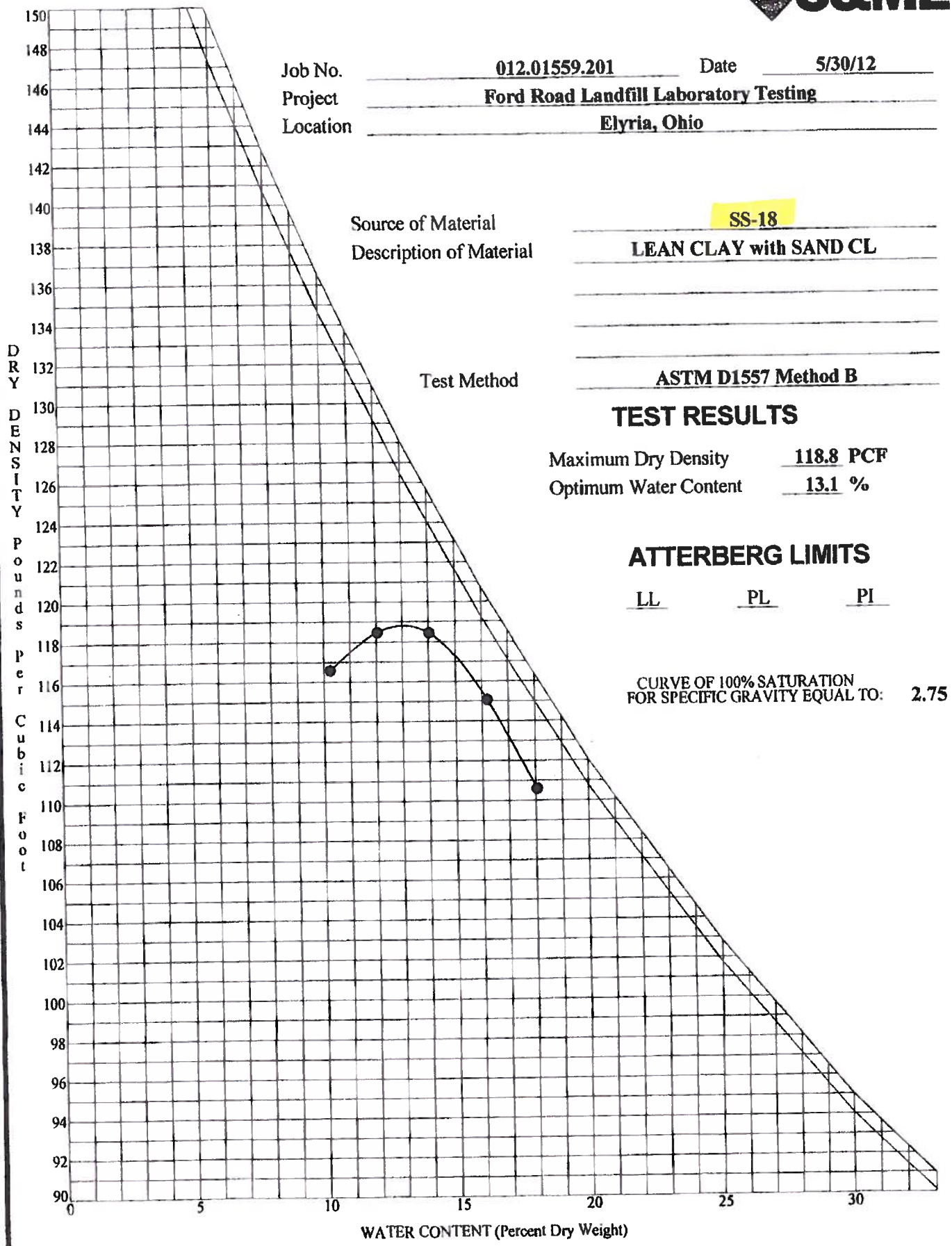
Maximum Dry Density 118.8 PCF

Optimum Water Content 13.1 %

ATTERBERG LIMITS

LL	PL	PI

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75

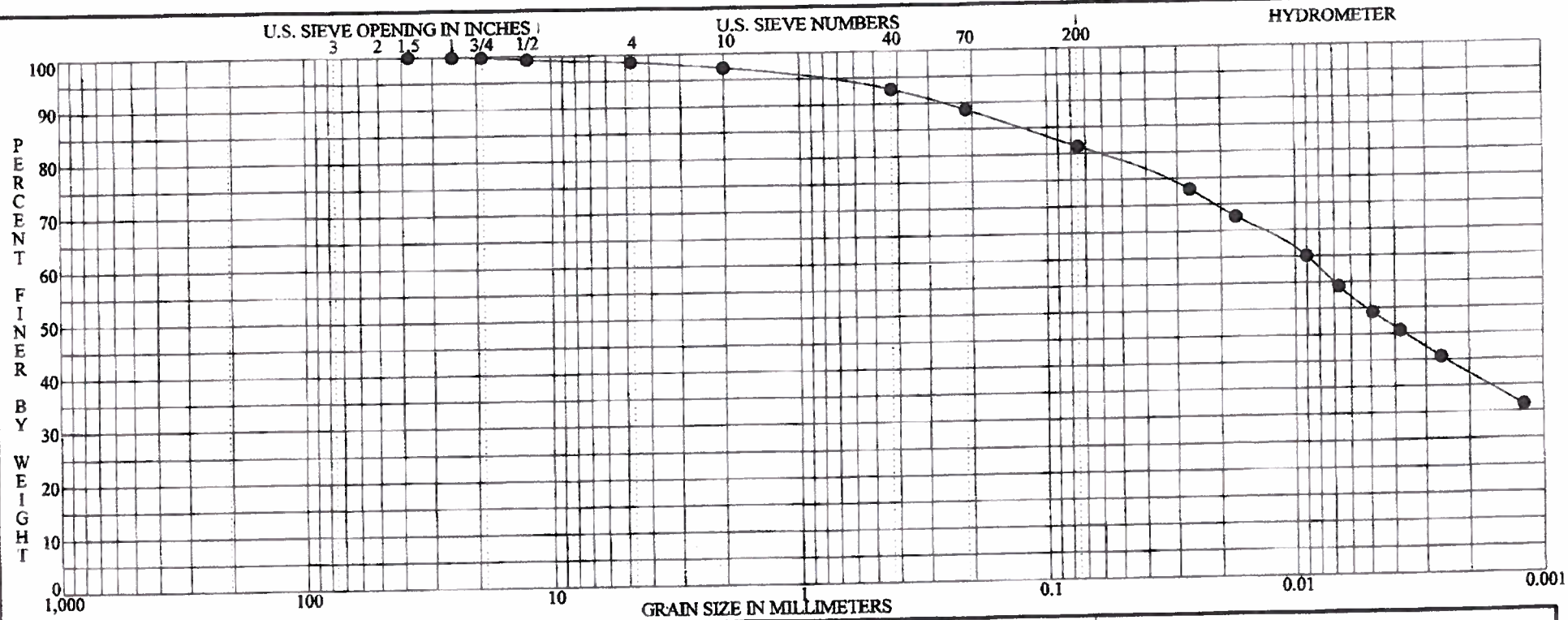


MOISTURE-DENSITY RELATIONSHIP

PLATE 2

COMP-EPA

S&ME



BOULDERS	COBBLES	GRAVEL coarse	GRAVEL fine	SAND coarse	SAND medium	SAND fine	SILT OR CLAY

	Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
●	SS-18	LEAN CLAY with SAND CL	20				13.1	118.8

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-18	37.5000	0.9309	0.0090	0.0052		1.5	17.2	43.9	37.4

ASTM D422	GRADATION CURVE	PROJECT	Ford Road Landfill Laboratory Testing
		LOCATION	Elyria, Ohio
		JOB NO.	012.01559.201
		DATE	5/30/12

PLATE 1

VBP-RNG

S&ME

Job No. 012.01559.201 Date 5/30/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-19

Description of Material SANDY LEAN CLAY CL

Test Method ASTM D1557 Method B

TEST RESULTS

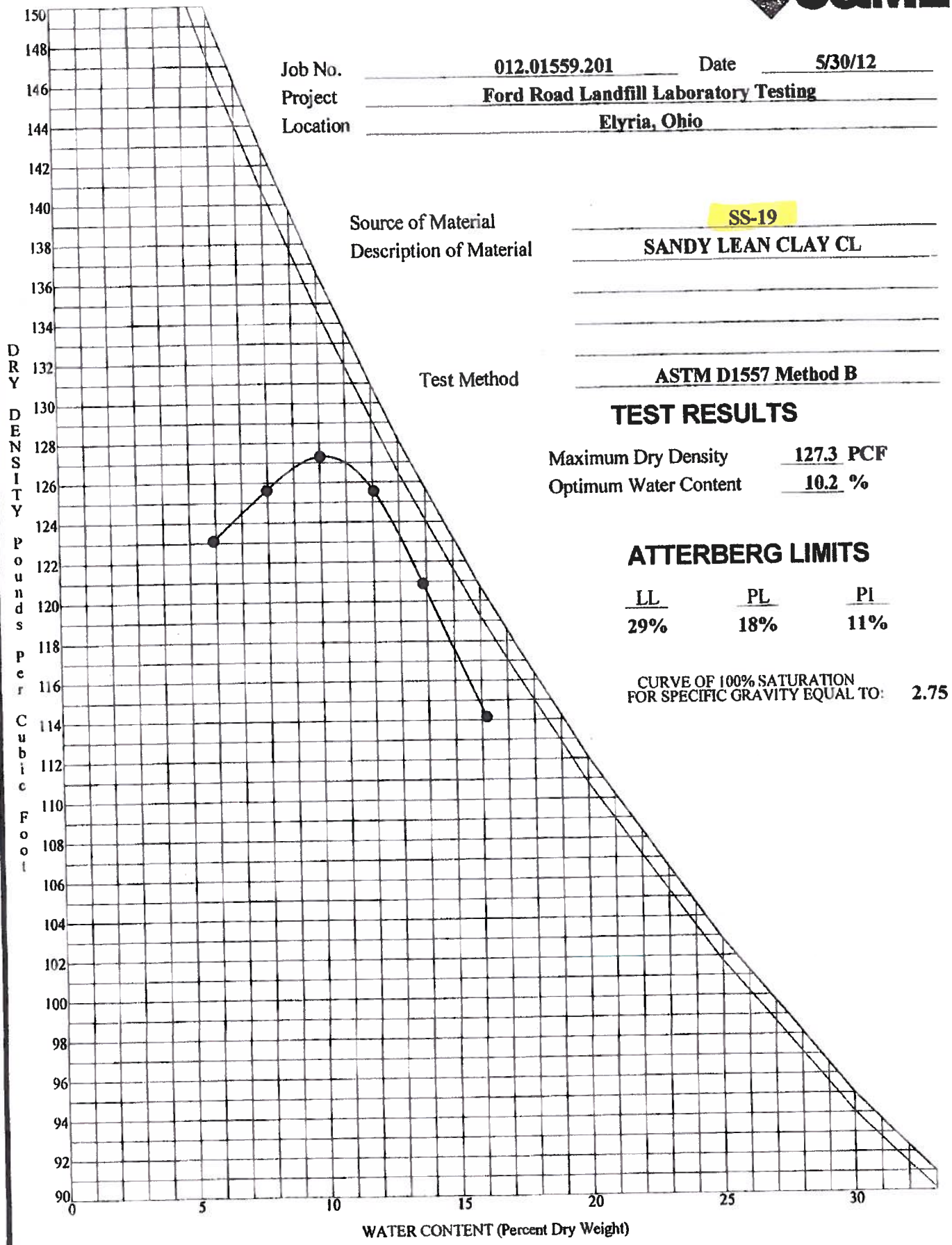
Maximum Dry Density 127.3 PCF

Optimum Water Content 10.2 %

ATTERBERG LIMITS

LL	PL	PI
29%	18%	11%

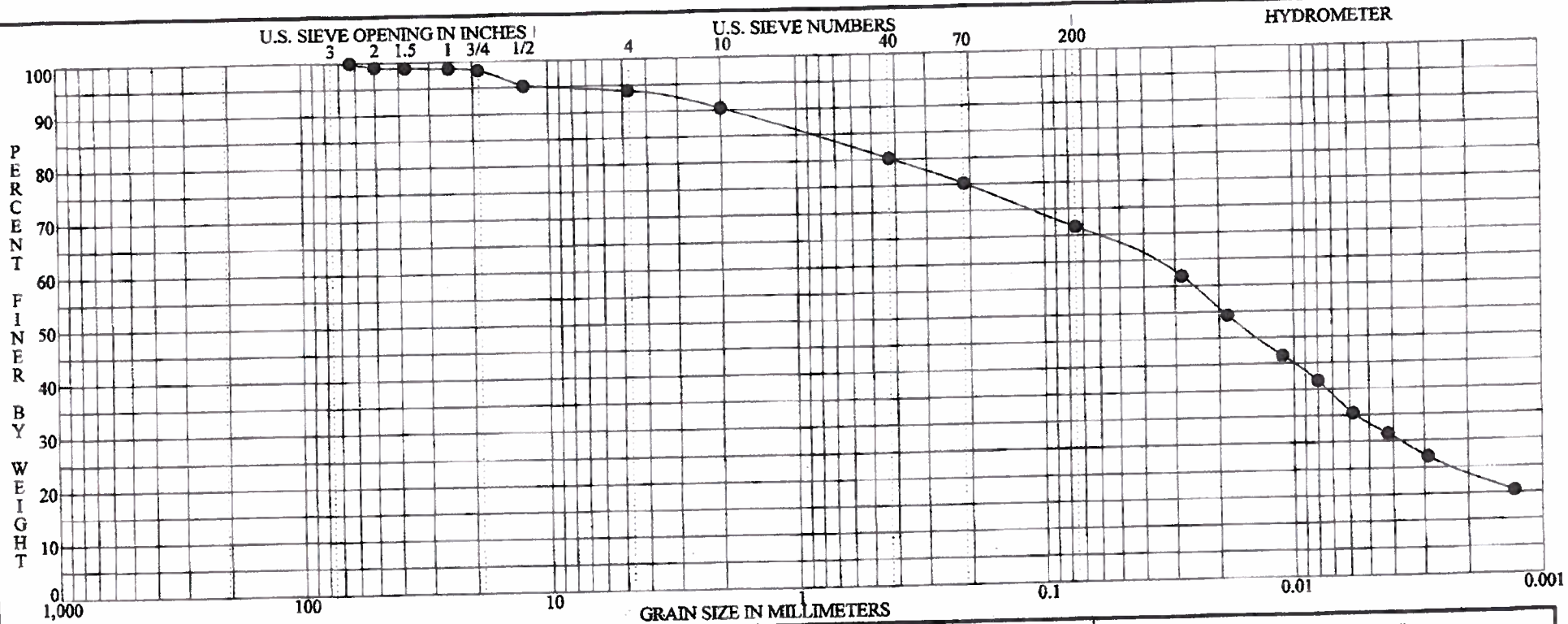
CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75



MOISTURE-DENSITY RELATIONSHIP

COMP-EPA

S&ME



BOULDERS	COBBLES	GRAVEL coarse	GRAVEL fine	SAND coarse	SAND medium	SAND fine	SILT OR CLAY

Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
● SS-19	SANDY LEAN CLAY CL	19	29	18	11	10.2	127.3

Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
● SS-19	63.0000	11.0516	0.0384	0.0192		6.1	27.3	47.6	19.0

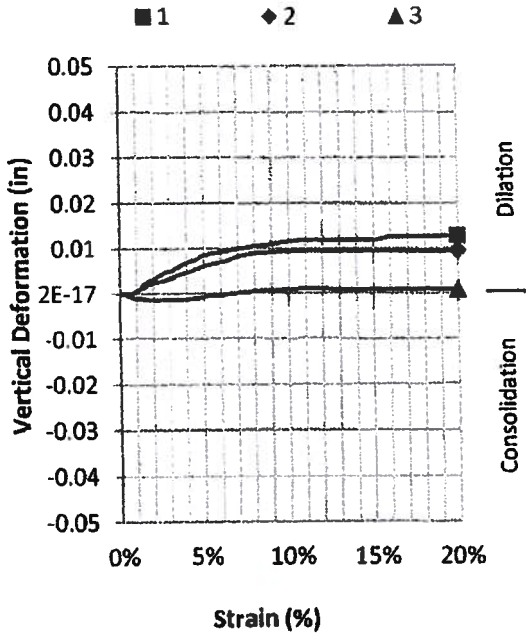
ASTM D422 | **GRADATION CURVE**

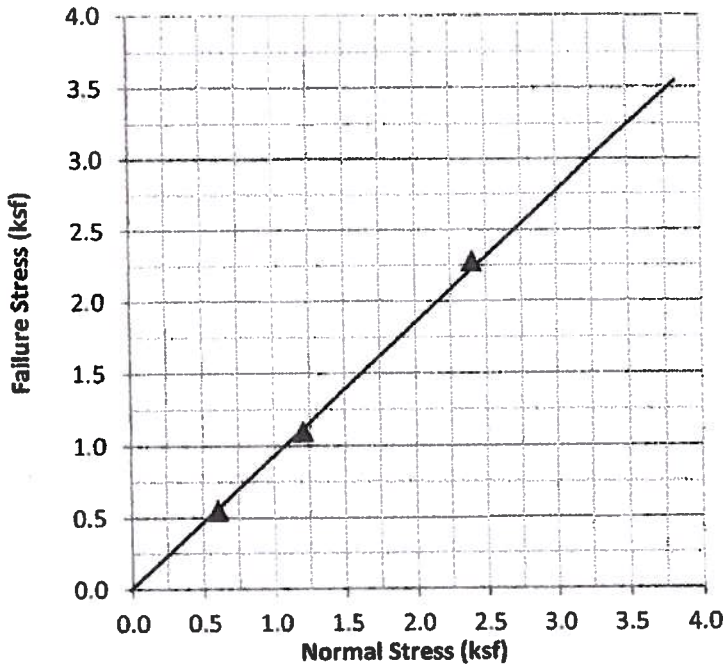
PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 5/30/12

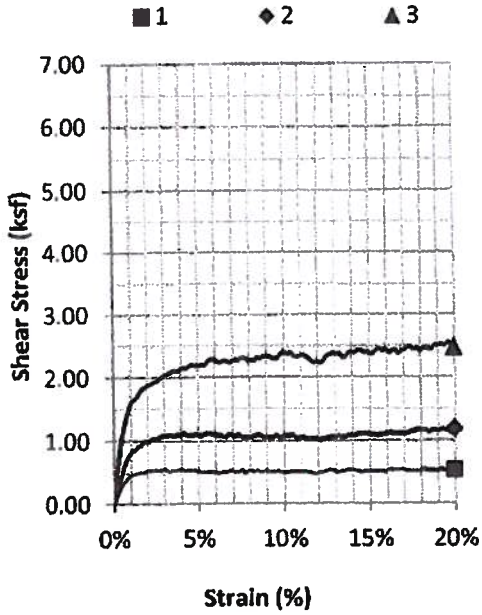
VB3-NRG

S&ME DIRECT SHEAR TEST REPORT

Results: C (ksf) = 0.00 ϕ (deg) = 43







Sample No.		1	2	3
Initial	Moisture Content (%)	11.18%	10.86%	11.07%
	Dry Density (pcf)	120.62	121.49	121.04
	Saturation (%)	76.1%	75.8%	76.3%
	Void Ratio	0.3968	0.3868	0.3919
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	17.39%	16.89%	16.09%
	Dry Density (pcf)	113.25	115.20	117.16
	Saturation (%)	96.2%	98.6%	99.2%
	Void Ratio	0.4877	0.4625	0.4380
	Diameter (in)	2.5	2.5	2.5
	Height (in)	1.01	1.00	0.99
Normal Stress (ksf)		0.60	1.20	2.40
Failure Stress (ksf)		0.55	1.10	2.28
- Strain at Failure (%)		3.00%	3.34%	5.99%
Ultimate Stress (ksf)		0.52	1.18	2.47
- Strain at Ultimate (%)		20.00%	20.00%	20.00%
Avg. Strain Rate (in/min)		0.0017	0.0016	0.0016

Sample Type: Bulk Sample
Sample Description:
SANDY LEAN CLAY CL

Comments:
Remolded to 95% of Modified Proctor maximum dry density and plus 1.0% of the optimum moisture content.

LL = 29 **PI =** 11
Assumed Specific Gravity = 2.7

Client: Brown and Caldwell
Project Name: Ford Road Landfill Laboratory Testing
Project Location: Elyria, Ohio
Project No.: 012.01559.201 / 1179-11-024B

Boring ID: N/A
Sample ID: SS-19
Sample Depth: Bulk Sample
Date(s) Tested: 05/24/12 - 05/30/12

Tested By: JJ Checked By: BKS

PERMEABILITY TEST DATA AND COMPUTATION SHEET

((ASTM D-5084) FALLING HEAD, METHOD C)

S&ME

Job Number:	1179-11-024B	Date:	5/16-17/2012	Maximum Dry Density:	127.30 pcf
Project Name:	Ford Rd. Landfill Lab Testing	Boring:	SS-19	Optimum Moisture Content:	10.20 %
Project Location:	Elyria, Ohio	Sample:		% Compaction.:	84.73 %
Tested By:	PJM	Depth:		Optimum +/-:	6.52 %
Remarks:	Remold to 107.6 pcf @ 17.0% moisture			Natural:	
Material:	SANDY LEAN CLAY CL			Remolded:	X

Sample:

Initial Length:	3.0000 in = 7.620 cm
Final Ave. Length (L):	2.9798 in = 7.569 cm
Diameter:	2.8650 in = 7.28 cm
Area (A):	6.447 sq in = 41.59 sq cm
Volume (V):	19.340 cu in = 316.93 cu cm
Wet Wt.:	639.12 grams
Unit Wet Wt.:	125.90 pcf
Unit Dry Wt.:	107.86 pcf

Test Conditions:

Chamber Pressure:	62 psi
Back Pressure:	58 psi
Confining Pressure:	4 psi
Temp. @ Start:	21.7 °C
Temp. @ End:	21.9 °C
Average Temp.:	21.8 °C
B Parameter:	0.99

Moisture Content:

	Before Test	After Test
Pan No. =	H	H
Wet Wt. + Pan =	639.12	649.96
Dry Wt. + Pan =	547.57	547.57
Wt. of Pan =		
Wt. of Dry Soil =	547.57	547.57
Wt. of Water =	91.55	102.39
% Moisture =	16.72	18.70
% SATURATION	80.22	91.43

S.G.(est) = 2.7000

Pipette Pressures During Test:

Top Pipette:	60 psi	= 4220.3 cm
Bottom Pipette:	58 psi	= 4079.6 cm

Pipette:

Area (a): 0.3435 sq in = 0.8725 sq cm

Calculations:

$$k = \frac{a \cdot L}{2 \cdot A \cdot \Delta t} \ln\left(\frac{h_1}{h_2}\right)$$

where:

- k = Hydraulic Conductivity
- a = Pipette Cross-Sectional Area
- L = Length of Sample
- A = Sample Cross-Sectional Area
- Δt = Time Interval ($t_2 - t_1$)
- h_1 = Head Loss Across Permeameter/Specimen at t_1
- h_2 = Head Loss Across Permeameter/Specimen at t_2
- ln = Natural Logarithm (Base e = 2.71828)

Date	Time Readings	Time Interval Δt Seconds	Top Pipette cc	Hydraulic Head Headwater H_1 cm	Bottom Pipette cc	Hydraulic Head Tailwater H_2 cm	Head Loss $h = H_1 - H_2$ cm	$\ln(h_1/h_2)$	Temp. Corr. Permeability k cm/sec
5/16/2012	12:12 PM	0.00	48.00	4092.59	5.70	4281.75	-189.16	-	-
5/16/2012	12:23 PM	660	41.20	4100.39	12.40	4274.07	-173.69	0.08534	9.832E-06
5/16/2012	12:32 PM	540	36.10	4106.23	17.30	4268.46	-162.23	0.06827	9.613E-06
5/16/2012	12:43 PM	660	30.40	4112.77	23.00	4261.93	-149.16	0.08397	9.674E-06
5/16/2012	12:52 PM	540	26.20	4117.58	27.20	4257.11	-139.53	0.06673	9.395E-06
5/16/2012	1:10 PM	1,080	21.20	4123.31	32.30	4251.27	-127.95	0.08661	6.098E-06

Time Weighted Average, k [cm/sec] = 8.541E-06

S&ME

Job No. 012.01559.201 Date 5/30/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-21

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D1557 Method B

TEST RESULTS

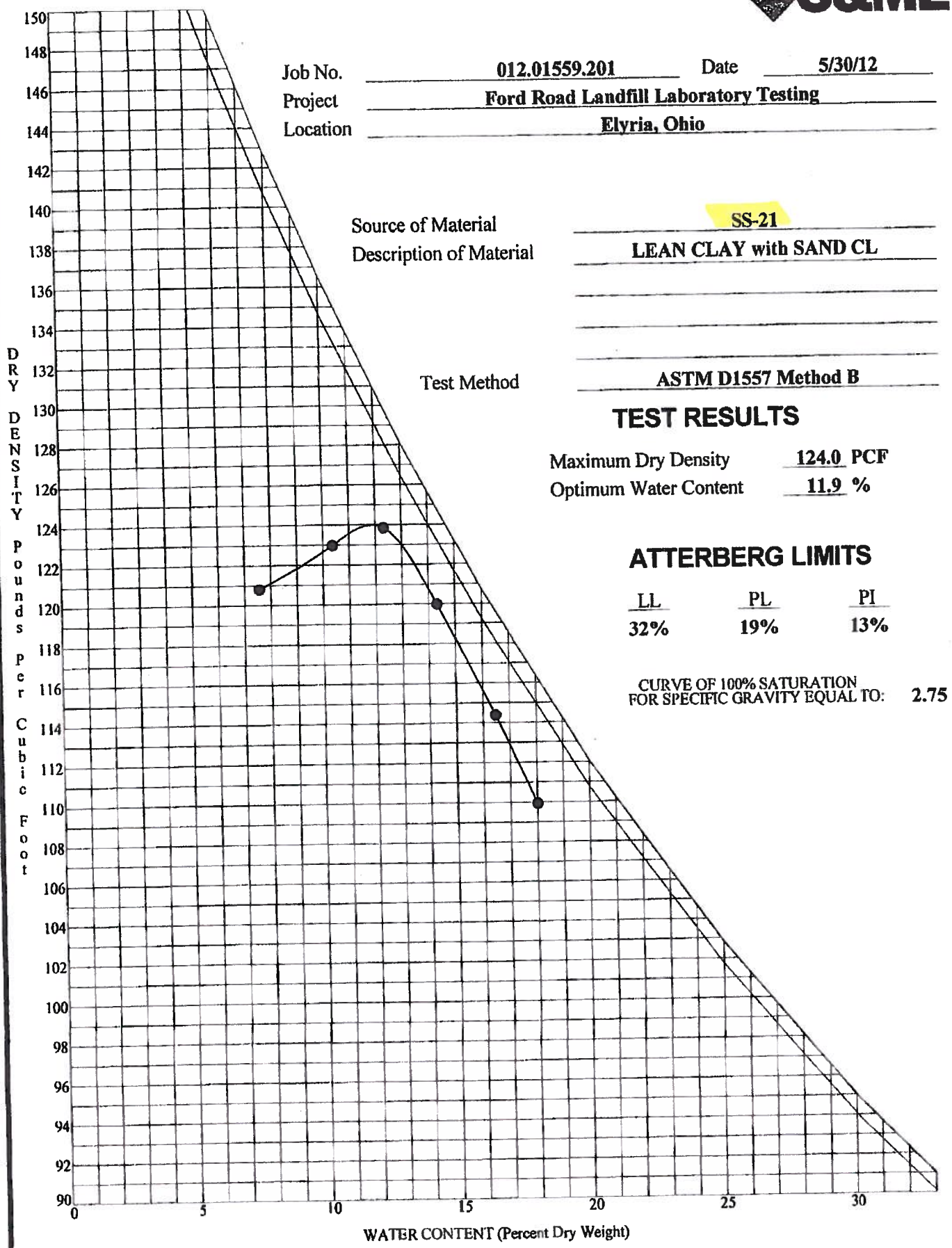
Maximum Dry Density 124.0 PCF

Optimum Water Content 11.9 %

ATTERBERG LIMITS

LL	PL	PI
32%	19%	13%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75

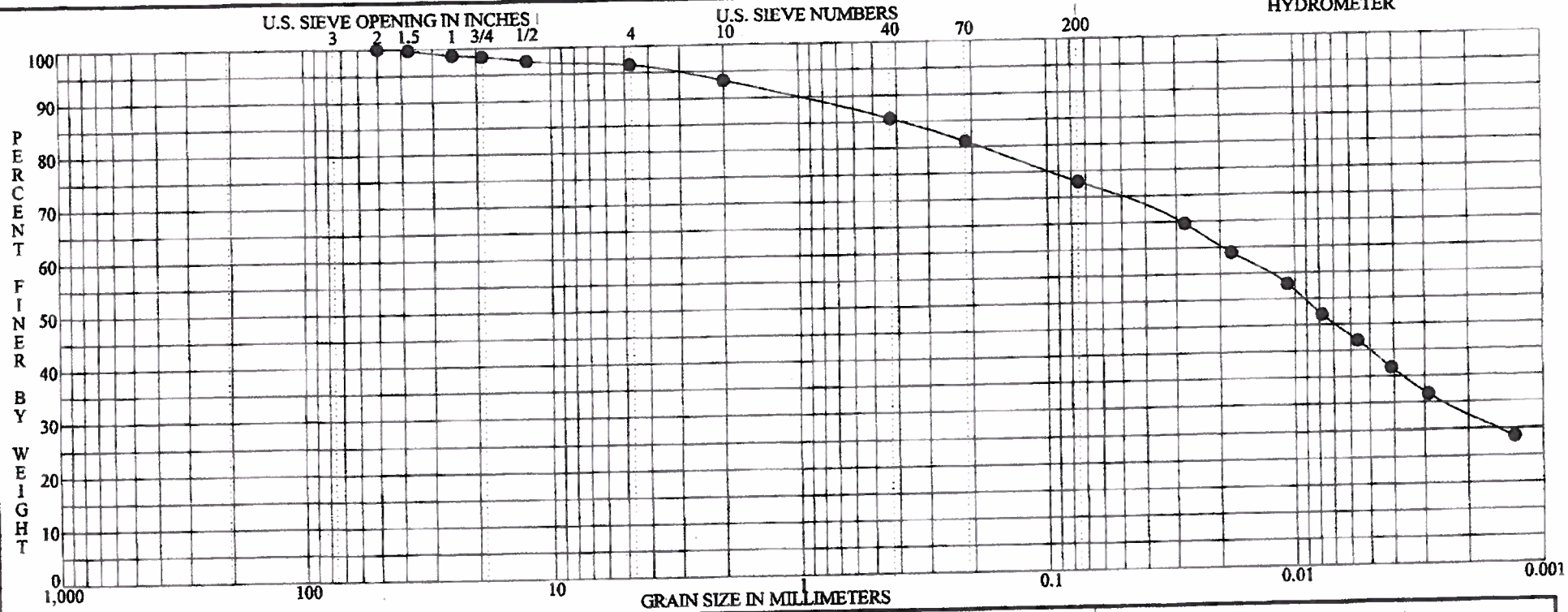


COMP-EPA

MOISTURE-DENSITY RELATIONSHIP

PLATE 14

S&ME



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
● SS-21	LEAN CLAY with SAND CL	15	32	19	13	11.9	124.0

Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
● SS-21	50.0000	3.1920	0.0194	0.0092		3.5	23.5	45.1	27.9

ASTM D422 | **GRADATION CURVE**

PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 5/30/12

GRN-BPV

PLATE 15

Chain of Custody Record

Brown AND Caldwell

☒ Columbus Office
4700 Lakehurst Ct, Ste 100
Dublin, Ohio 43016
(614) 410-6144
(614) 410-3088 fax

☐ Cleveland Office
6055 Rockside Woods Blvd., Ste 350
Independence, OH 44131
(216) 606-1300
(216) 606-1350 fax

☐ Cincinnati Office
135 Merchant St, Ste 240
Cincinnati, Ohio 45246
(513) 719-6100
(513) 719-6105 fax

COC No: 1912
Page 1 of 2
Lab Quote No:

Project Name: FORD ROAD
Project Location: ELYRIA, OHIO
Project Number: 141617
Project Manager: DAN DUFFY
Sampler's Name: RICHARD A. BAAL
Sampler's Signature: [illegible]
Field Phone: (614) 477-1029

1 None
2 HCl
3 H2SO4
4 HNO3
5 NaOH
6 Other ____

Lab: S&ME
Address: 6190 ENTERPRISE COURT
DUBLIN, OHIO 43016
Phone: (614) 793-1226
Carrier: HAND-DELIVERED
Airbill:

Container Size and Type (P/G)
Preservative Code

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	ASTM D422	ASTM D1557	ASTM D2216	ASTM D2487	ASTM D2488	ASTM D2974	ASTM D3080	ASTM D4318	ASTM D4972	ASTM D5084	Remarks:
SS-7	5/4/12	1045	GRAB	SOIL	2	X	X	X	X	X	X		X		X	
SS-8	5/4/12	1055	GRAB	SOIL	2	X	X	X	X	X	X	X	X			
SS-9	5/4/12	1115	GRAB	SOIL	2	X	X	X	X	X	X		X			
SS-10	5/4/12	1133	GRAB	SOIL	2	X	X	X	X	X	X	X	X		X	
SS-11	5/4/12	1140	GRAB	SOIL	2	X	X	X	X	X	X		X		X	
SS-12	5/4/12	1153	GRAB	SOIL	2	X	X	X	X	X	X		X			
SS-13	5/4/12	1205	GRAB	SOIL	2	X	X	X	X	X	X		X			
SS-14	5/4/12	1215	GRAB	SOIL	2	X	X	X	X	X	X		X			
SS-15	5/4/12	1228	GRAB	SOIL	2	X			X	X	X	X				
SS-16	5/4/12	1240	GRAB	SOIL	2	X	X	X	X	X	X					

Special Instructions/QC Requirements & Comments:

Relinquished by: [illegible]	Date/Time: 5/7/12 10:45 AM	Received by: [illegible]	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:

Cooler TEMPERATURE upon arrival at laboratory _____ °C *(To be filled in by LABORATORY upon receipt)*

Distribution: WHITE - Accompanies shipment YELLOW - Returns with report PINK - Sampler's copy

Chain of Custody Record

Brown AND Caldwell

☒ Columbus Office
4700 Lakehurst Ct, Ste 100
Dublin, Ohio 43016
(614) 410-6144
(614) 410-3088 fax

☐ Cleveland Office
6055 Rockside Woods Blvd., Ste 350
Independence, OH 44131
(216) 606-1300
(216) 606-1350 fax

☐ Cincinnati Office
135 Merchant St, Ste 240
Cincinnati, Ohio 45246
(513) 719-6100
(513) 719-6105 fax

COC No: 1913
Page 2 of 2
Lab Quote No:
Lab: SIME
Address: 6190 ENTERPRISE COURT DUBLIN OHIO 43016
Phone: (614) 793-2226
Carrier: HAND DELIVERED
Airbill:

Project Name: FORD ROAD
Project Location: ELYRIA, OHIO
Project Number: 141617
Project Manager: DAN DUFFY
Sampler's Name: RICHARD A. ISAAC
Sampler's Signature: [signature]
Field Phone: (614) 477-1029

1 None
2 HCl
3 H2SO4
4 HNO3
5 NaOH
6 Other ___

Container Size and Type (P/G)
Preservative Code

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	ASTM D492	ASTM D1557	ASTM D2216	ASTM D2487	ASTM D2488	ASTM D2974	ASTM D3080	ASTM D4318	ASTM D4972	ASTM D5084	Remarks:
SS-17	5/4/12	1250	GRAB	SOIL	2	X	X	X	X	X	X		X			
SS-18	5/4/12	1300	GRAB	SOIL	2	X	X	X	X	X						
SS-19	5/4/12	1312	GRAB	SOIL	2	X	X	X			X	X	X		X	
SS-20	5/4/12	1328	GRAB	SOIL	2											HOLD IN RESERVE
SS-21	5/4/12	1337	GRAB	SOIL	2		X	X					X			
TS-2	5/4/12	1125	GRAB	SOIL	1	X		X					X	X		
TS-3	5/4/12	1323	GRAB	SOIL	1						X		X	X		

Special Instructions/QC Requirements & Comments:

Relinquished by: [signature]	Date/Time: 5/7/12 10:45AM	Received by: [signature]	Date/Time: [illegible]
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:

Cooler TEMPERATURE upon arrival at laboratory _____ °C *(To be filled in by LABORATORY upon receipt)*

Distribution: WHITE - Accompanies shipment YELLOW - Returns with report PINK - Sampler's copy

Chain of Custody Record

Brown AND Caldwell

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4700 Lakehurst Ct, Ste 100
Dublin, Ohio 43016
(614) 410-6144
(614) 410-3088 fax

☐ Cleveland Office
6055 Rockside Woods Blvd., Ste 350
Independence, OH 44131
(216) 606-1300
(216) 606-1350 fax

☐ Cincinnati Office
135 Merchant St, Ste 240
Cincinnati, Ohio 45246
(513) 719-6100
(513) 719-6105 fax

COC No: 1772

Page 1 of 1

Lab Quote No:

Lab:

Address:

Phone:

Carrier:

Airbill:

Project Name:

Project Location:

Project Number:

Project Manager:

Sampler's Name:

Sampler's Signature:

Field Phone:

1 None
2 HCl
3 H2SO4
4 HNO3
5 NaOH
6 Other____

Container Size and Type (P/G)

Preservative Code

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.										Remarks:

Special Instructions/QC Requirements & Comments:

Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:

Cooler TEMPERATURE upon arrival at laboratory _____ °C *(To be filled in by LABORATORY upon receipt)*

Distribution: WHITE - Accompanies shipment YELLOW - Returns with report PINK - Sampler's copy

Chain of Custody Record

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4700 Lakehurst Ct, Ste 100
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☐ Cincinnati Office
135 Merchant St, Ste 240
Cincinnati, Ohio 45246
(513) 719-6100
(513) 719-6105 fax

COC No: 1836

Page 1 of 2

Lab Quote No:

Lab: S&ME

Address: 6190 ENTERPRISE G DUBLIN, OH 43016

Phone: 614-793-2226

Carrier: HAND DELIVER

Airbill:

Project Name: FORD ROAD RA PHASE 2

Project Location: ELYRIA, OH

Project Number: 141617

Project Manager: ELENA GOODHALL

Sampler's Name: LIZ VAUGHAN

Sampler's Signature: Liz Vaughan

Field Phone: 614-323-0568

1 None
2 HCl
3 H2SO4
4 HNO3
5 NaOH
6 Other___

Container Size and Type (P/G): 5GAL

Preservative Code

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	ASTM D1557										Remarks:
DENNIS N+S - SS-5	3-6-12	1045	GRAB	SOLID	4	X										
B.R. TRAIL - SS-6	3-6-12	1045	GRAB	SOLID	4	X										

Special Instructions/QC Requirements & Comments: TEST THESE SAMPLES FIRST

Relinquished by: Liz Vaughan	Date/Time: 3/6/12 1436	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:

Cooler TEMPERATURE upon arrival at laboratory _____ °C *(To be filled in by LABORATORY upon receipt)*

Distribution: WHITE - Accompanies shipment YELLOW - Returns with report PINK - Sampler's copy

Chain of Custody Record

Brown AND Caldwell

☒ Columbus Office
4700 Lakehurst Ct, Ste 100
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(614) 410-6144
(614) 410-3088 fax

☐ Cleveland Office
6055 Rockside Woods Blvd., Ste 350
Independence, OH 44131
(216) 606-1300
(216) 606-1350 fax

☐ Cincinnati Office
135 Merchant St, Ste 240
Cincinnati, Ohio 45246
(513) 719-6100
(513) 719-6105 fax

COC No: 1835

Page 2 of 2

Lab Quote No:

Project Name: FOED ROAD RA PHASE 2
Project Location: ELYRIA, OH
Project Number: 141617
Project Manager: ELENA GOODHALL
Sampler's Name: LIZ VAUGHAN
Sampler's Signature: Liz Vaughan
Field Phone: 614-323-0568

1 None
2 HCl
3 H2SO4
4 HNO3
5 NaOH
6 Other ____

Lab: S&ME
Address: 6190 ENTERPRISE CT. DUBLIN, OH 43016
Phone: 614-793-2226
Carrier: HAND DELIVER
Airbill:

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	ASTM D422 (5GAL)	ASTM D2216	ASTM D2487	ASTM D2488	ASTM D2974	ASTM D3080	ASTM D4318				Remarks:
DENNIS N+S - SS-5	3-6-12	1045	GRAB	SOLID	4	X	X	X	X	X	X	X				
B.R. TRAIL - SS-6	3-6-12	1045	GRAB	SOLID	4	X	X	X	X	X	X	X				

Special Instructions/QC Requirements & Comments: HOLD UNTIL CONTACTED BY BROWN AND CALDWELL

Relinquished by:	Date/Time: 3/12 1436	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:

Cooler TEMPERATURE upon arrival at laboratory _____ °C *(To be filled in by LABORATORY upon receipt)*

Distribution: WHITE - Accompanies shipment YELLOW - Returns with report PINK - Sampler's copy

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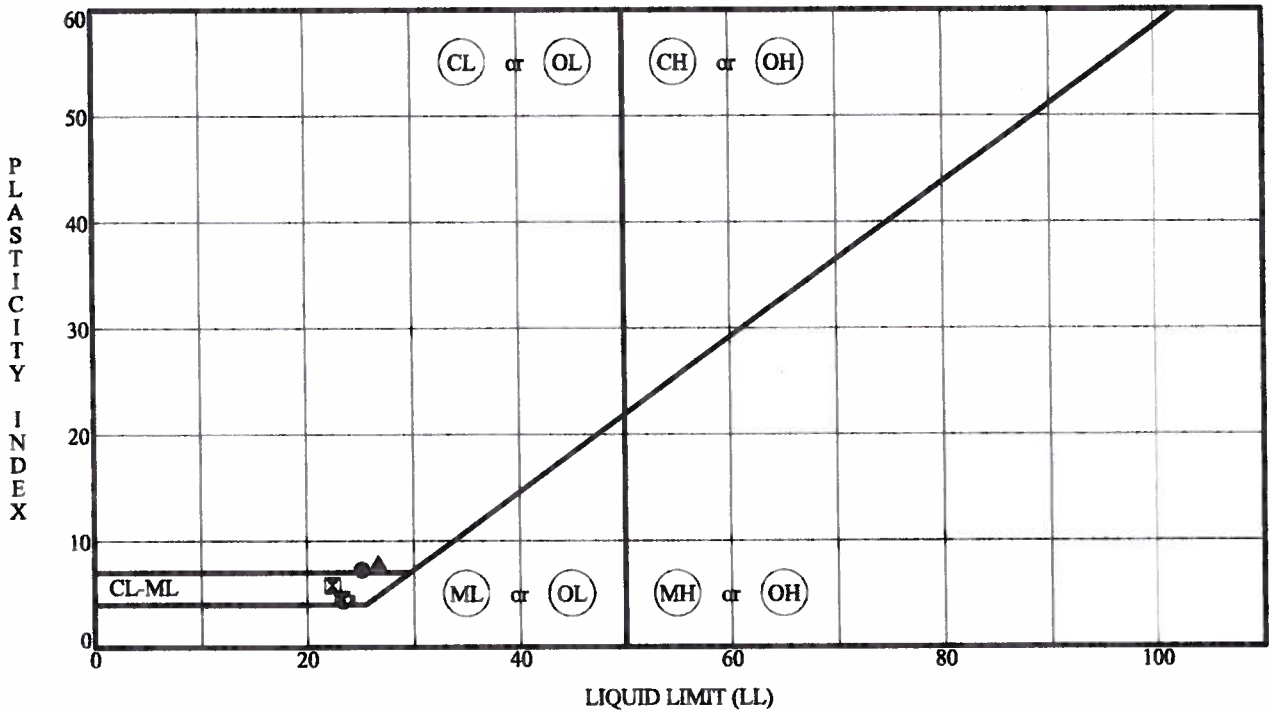
ATTERBERG LIMITS' RESULTS

S&ME



	Specimen Id.	Pt. ID	MC	LL	PL	PI	.002mm	ASTM Classification
●	SS-22	0.00	18	25	18	7	13.5	SANDY SILTY CLAY CL-ML
⊠	SS-23	0.00	16	22	17	5	12.5	SANDY SILTY CLAY CL-ML
▲	SS-24	0.00	17	27	19	8	13.4	LEAN CLAY with SAND CL
★	SS-25	0.00	17	23	18	5	9.9	SILTY CLAY with SAND CL-ML
⊙	SS-26	0.00	18	23	19	4	9.7	SANDY SILTY CLAY CL-ML
✿	SS-27	0.00	18	24	19	5	7.8	SANDY SILTY CLAY CL-ML

PROJECT Ford Road Landfill Laboratory Testing
LOCATION Elyria, Ohio
JOB NO. 012.01559.201 DATE 6/26/12

ALPTEPA

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S&ME

Job No.	012.01559.201	Date	6/26/12
Project	Ford Road Landfill Laboratory Testing		
Location	Elyria, Ohio		

Source of Material: SS-22

Description of Material: SANDY SILTY CLAY CL-ML

Test Method: ASTM D1557 Method B

TEST RESULTS

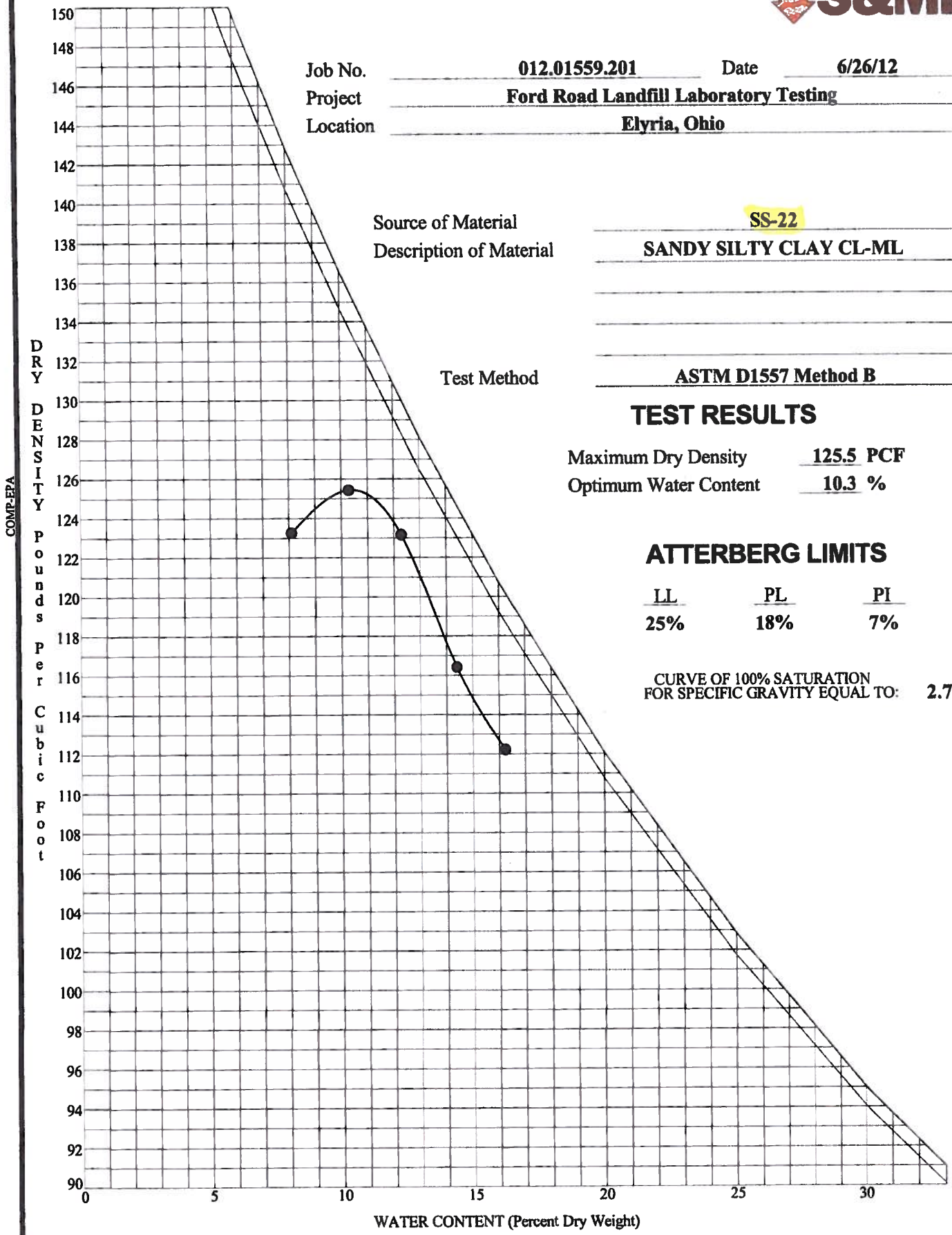
Maximum Dry Density: 125.5 PCF

Optimum Water Content: 10.3 %

ATTERBERG LIMITS

LL	PL	PI
25%	18%	7%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75

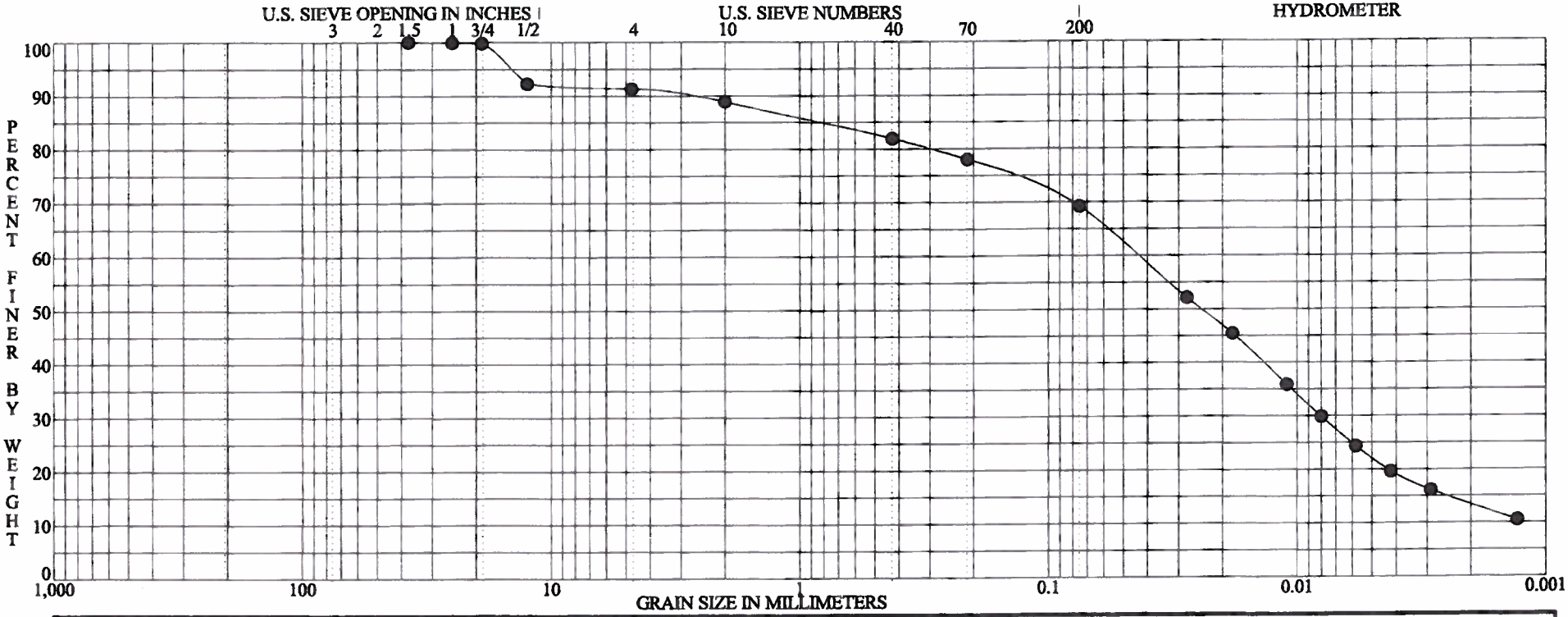


COMP-EPA

MOISTURE-DENSITY RELATIONSHIP

PLATE 1

S&ME



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
●	SS-22	SANDY SILTY CLAY CL-ML	18	25	18	7	10.3	125.5

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-22	37.5000	14.5399	0.0438	0.0242		8.7	22.1	55.7	13.5

ASTM D422 | **GRADATION CURVE**

PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 6/26/12

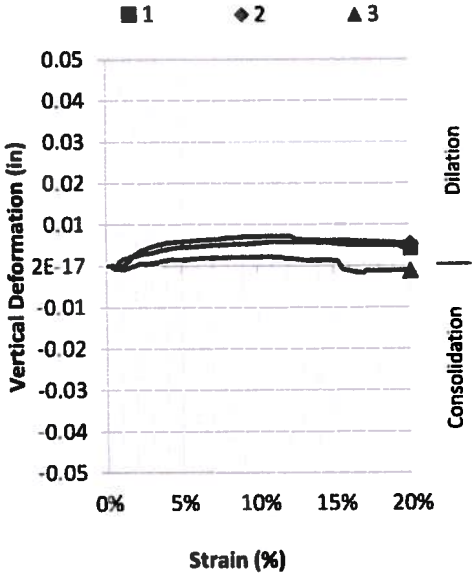
PLATE 1

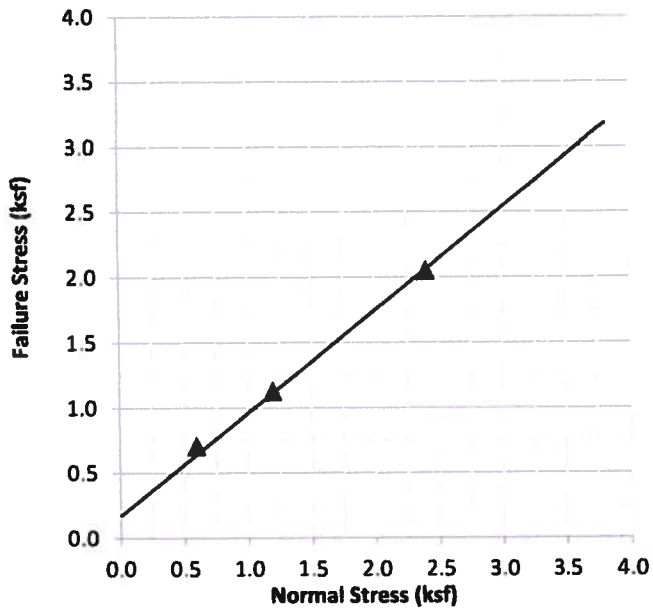
GRN-VAB

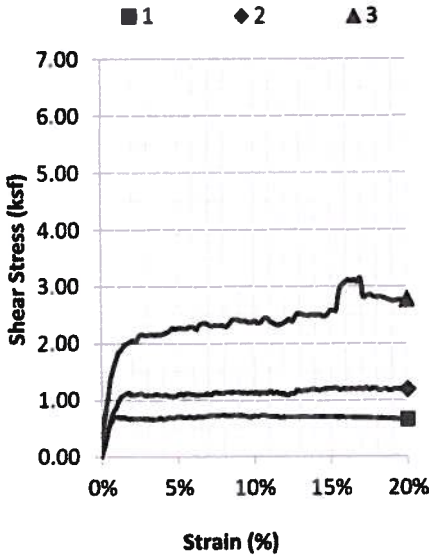
S&ME

DIRECT SHEAR TEST REPORT

Results: C (ksf) = 0.18 ϕ (deg) = 36







Sample No.		1	2	3
Initial	Moisture Content (%)	11.72%	11.90%	11.19%
	Dry Density (pcf)	118.91	118.48	119.24
	Saturation (%)	75.9%	76.1%	73.2%
	Void Ratio	0.4169	0.4221	0.4129
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	16.97%	16.99%	16.76%
	Dry Density (pcf)	113.20	113.82	114.37
	Saturation (%)	93.8%	95.5%	95.6%
	Void Ratio	0.4883	0.4802	0.4731
	Diameter (in)	2.5	2.5	2.5
	Height (in)	1.00	1.00	0.99
Normal Stress (ksf)		0.60	1.20	2.40
Failure Stress (ksf)		0.71	1.13	2.05
- Strain at Failure (%)		0.98%	1.76%	2.07%
Ultimate Stress (ksf)		0.65	1.18	2.77
- Strain at Ultimate (%)		20.00%	20.00%	20.00%
Avg. Strain Rate (in/min)		0.0016	0.0015	0.0017

Sample Type: Bulk Sample
Sample Description:
SANDY SILTY CLAY CL-ML

Comments:
Remolded to 95% of Modified Proctor maximum dry density and plus 1.0% of the optimum moisture content.

LL = 25 **PI =** 7
Assumed Specific Gravity = 2.7

Client:	Brown and Caldwell
Project Name:	Ford Road Landfill Laboratory Testing
Project Location:	Elyria, Ohio
Project No.:	012.01559.201 / 1179-11-024B
Boring ID:	N/A
Sample ID:	SS-22
Sample Depth:	Bulk Sample
Date(s) Tested:	6/27/12 - 7/02/12

Tested By: JJ Checked By: BKS

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S&ME

Job No. 012.01559.201 Date 6/26/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-23

Description of Material SANDY SILTY CLAY CL-ML

Test Method ASTM D1557 Method B

TEST RESULTS

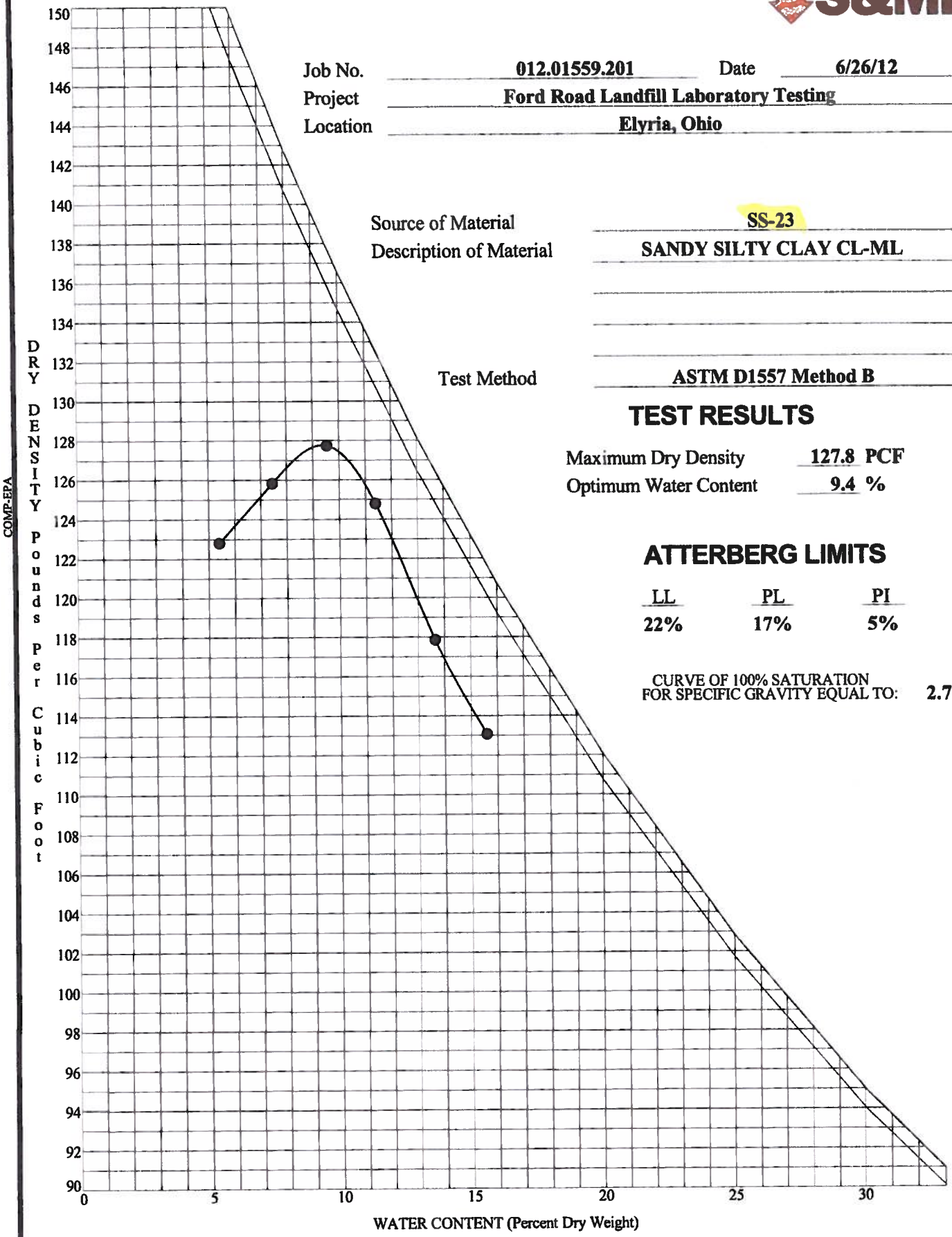
Maximum Dry Density 127.8 PCF

Optimum Water Content 9.4 %

ATTERBERG LIMITS

LL	PL	PI
22%	17%	5%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75

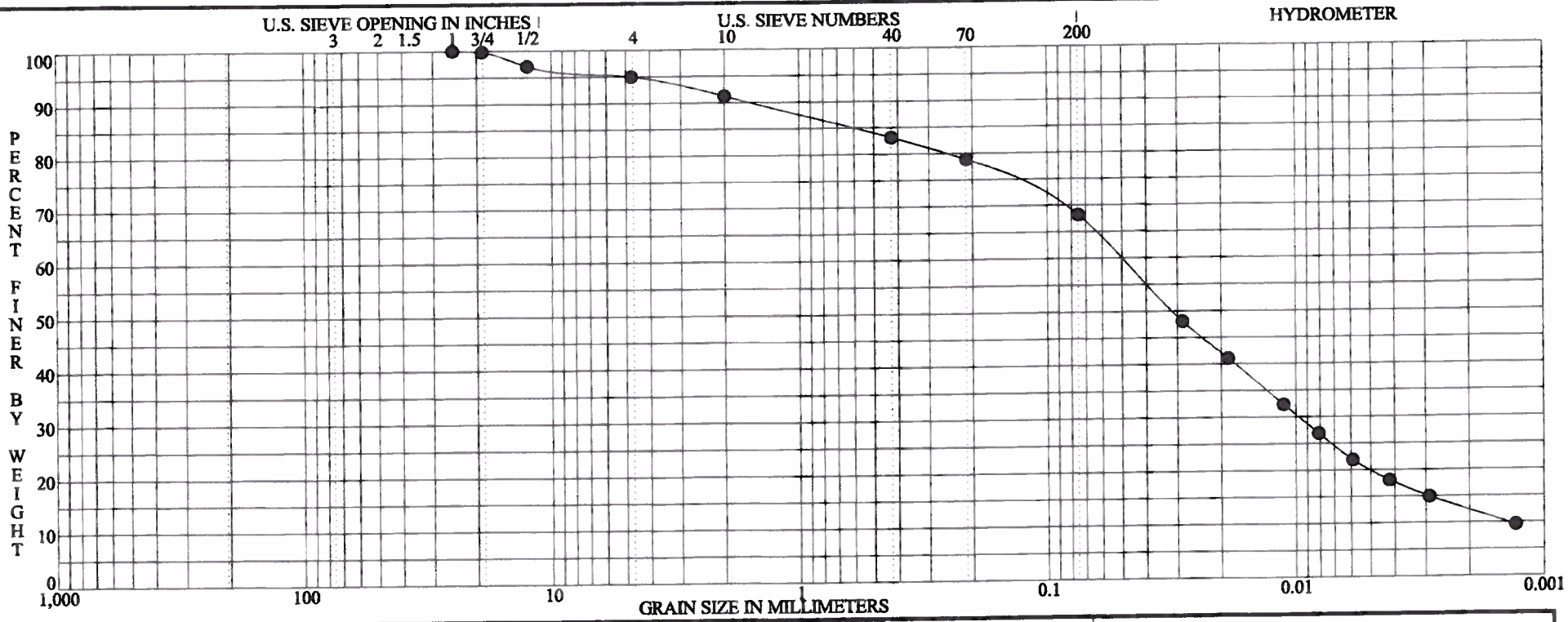


MOISTURE-DENSITY RELATIONSHIP

COMP-EPA

PLATE 2

S&ME



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
●	SS-23	SANDY SILTY CLAY CL-ML	16	22	17	5	9.4	127.8

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-23	25.0000	4.8397	0.0505	0.0313	0.0014	5.0	26.7	55.7	12.5

ASTM D422 | **GRADATION CURVE**

PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 6/26/12

GEN-EBA

PLATE 2

S&ME

Job No. 012.01559.201 Date 6/26/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-24

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D1557 Method B

TEST RESULTS

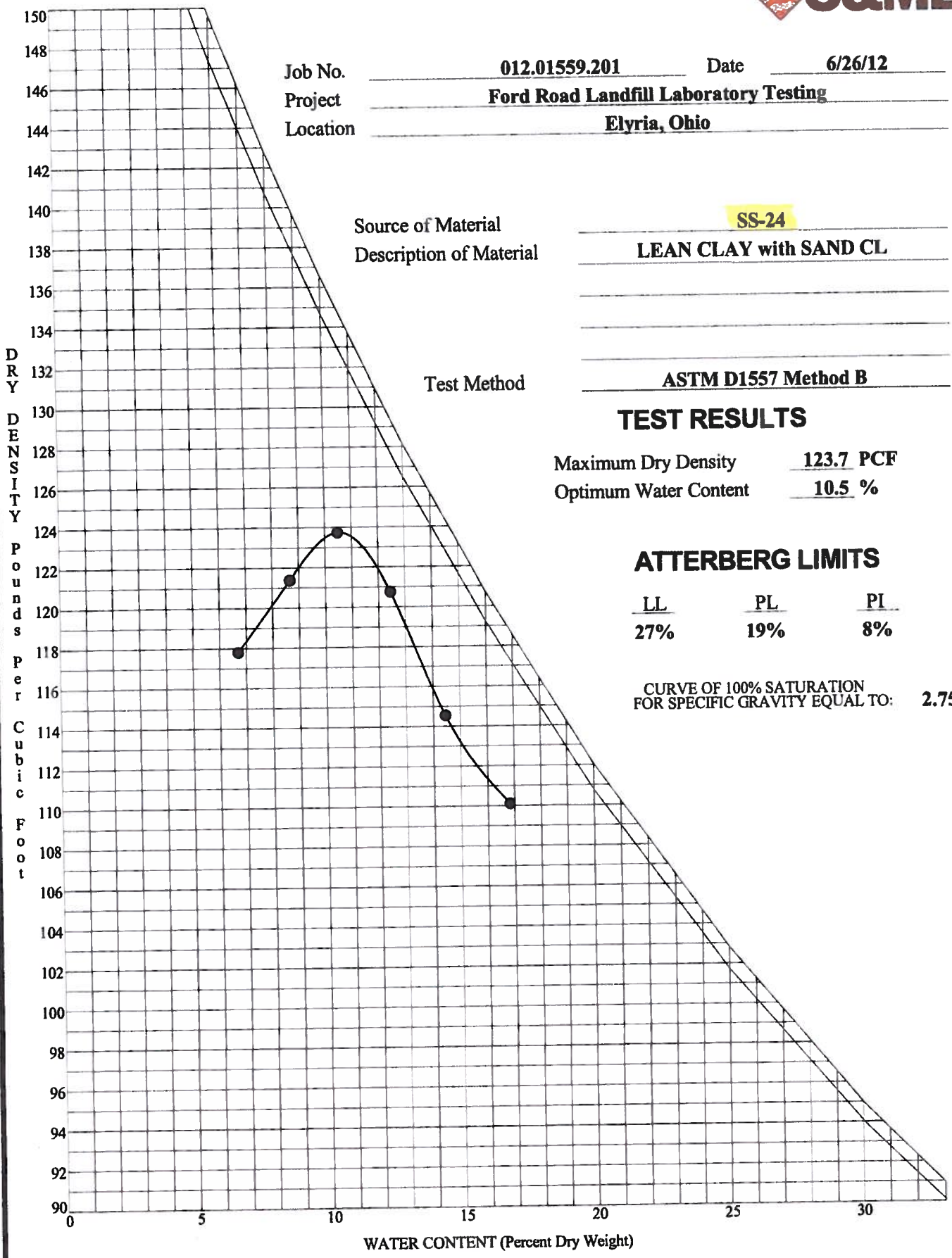
Maximum Dry Density 123.7 PCF

Optimum Water Content 10.5 %

ATTERBERG LIMITS

LL	PL	PI
27%	19%	8%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75

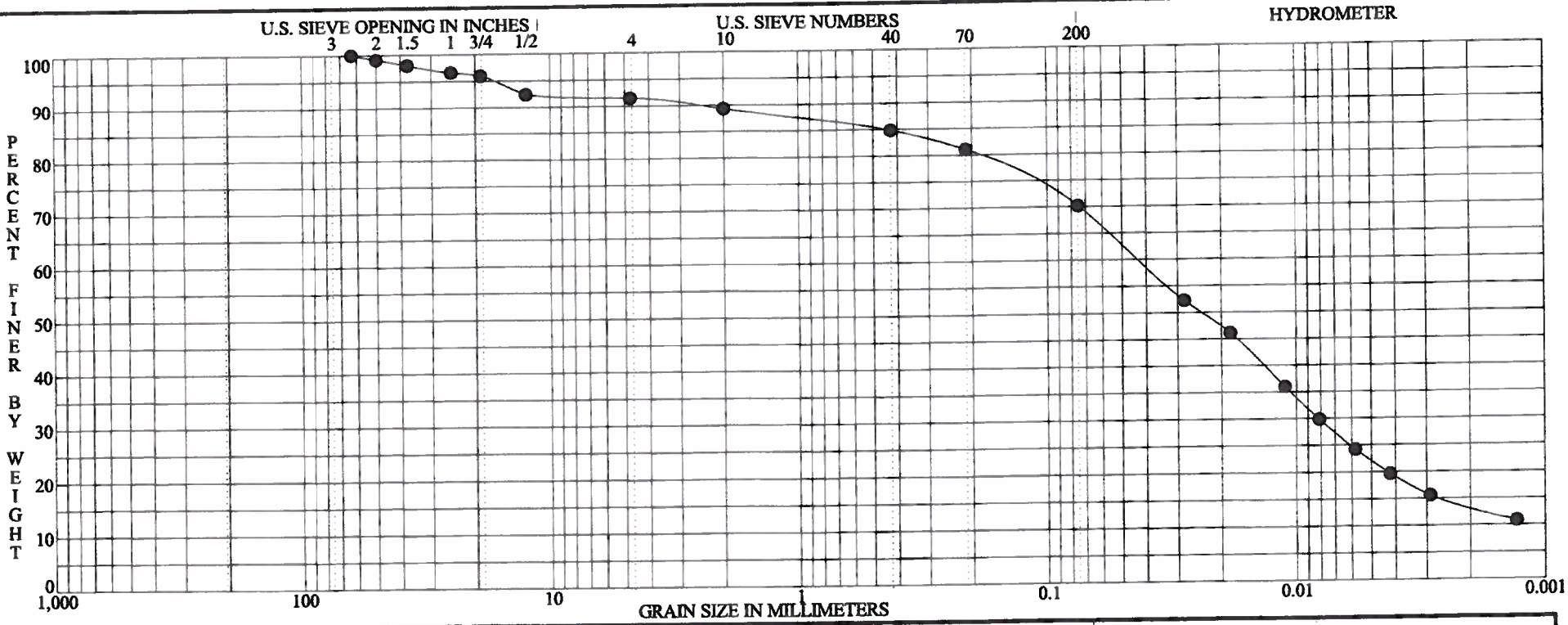


MOISTURE-DENSITY RELATIONSHIP

COMP-EPA

PLATE 3

S&ME



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
●	SS-24	LEAN CLAY with SAND CL	17	27	19	8	10.5	123.7

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-24	63.0000	17.0828	0.0429	0.0240		8.5	21.2	56.8	13.4

ASTM D422 | **GRADATION CURVE**

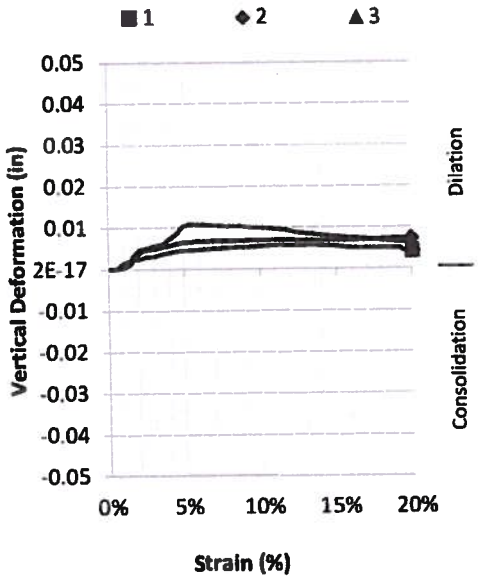
PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO. 012.01559.201 DATE 6/26/12

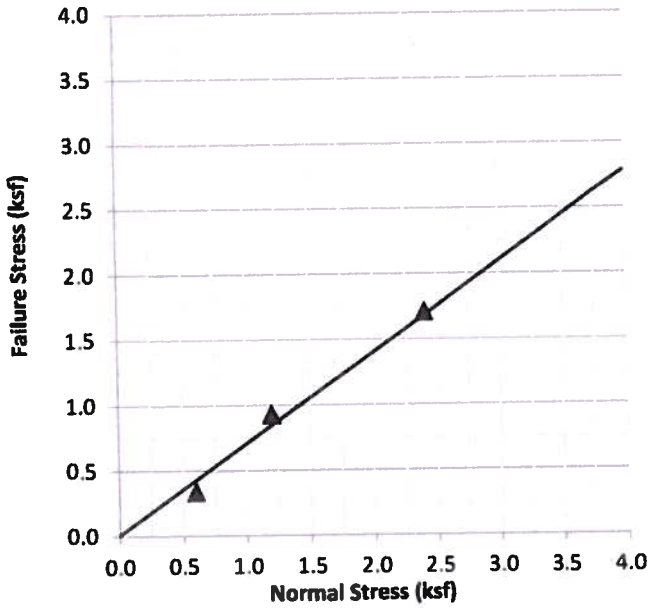
GRN-EPA

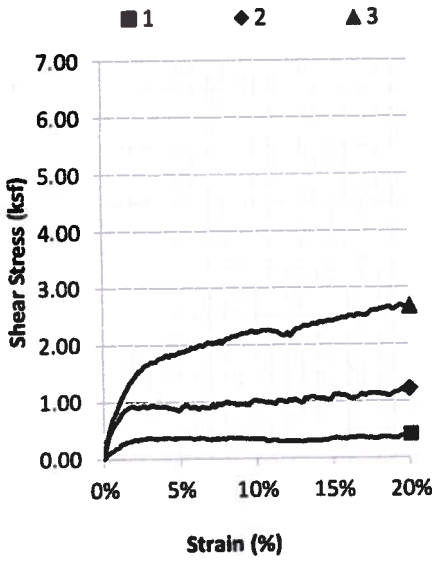
PLATE 3

DIRECT SHEAR TEST REPORT

Results: C (ksf) = 0.00 ϕ (deg) = 35







Sample No.		1	2	3
Initial	Moisture Content (%)	11.77%	11.75%	11.71%
	Dry Density (pcf)	118.17	117.66	118.45
	Saturation (%)	74.6%	73.4%	74.9%
	Void Ratio	0.4257	0.4319	0.4223
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	19.81%	18.36%	18.24%
	Dry Density (pcf)	111.68	112.23	113.70
	Saturation (%)	105.2%	98.9%	102.2%
	Void Ratio	0.5086	0.5011	0.4818
	Diameter (in)	2.5	2.5	2.5
	Height (in)	0.99	0.99	0.98
Normal Stress (ksf)		0.60	1.20	2.40
Failure Stress (ksf)		0.34	0.93	1.71
- Strain at Failure (%)		2.05%	1.87%	3.15%
Ultimate Stress (ksf)		0.42	1.22	2.67
- Strain at Ultimate (%)		20.00%	19.94%	20.00%
Avg. Strain Rate (in/min)		0.0016	0.0017	0.0016

Sample Type: Bulk Sample
Sample Description:
LEAN CLAY with SAND CL

Comments:
Remolded to 95% of Modified Proctor maximum dry density and plus 1.0% of the optimum moisture content.

LL = 27 **PI =** 8
Assumed Specific Gravity = 2.7

Client:	Brown and Caldwell
Project Name:	Ford Road Landfill Laboratory Testing
Project Location:	Elyria, Ohio
Project No.:	012.01559.201 / 1179-11-024B
Boring ID:	N/A
Sample ID:	SS-24
Sample Depth:	Bulk Sample
Date(s) Tested:	06/22/12 - 06/26/12

Tested By: JJ Checked By: BKS

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S&ME

Job No. 012.01559.201 Date 6/26/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-25

Description of Material SILTY CLAY with SAND CL-ML

Test Method ASTM D1557 Method B

TEST RESULTS

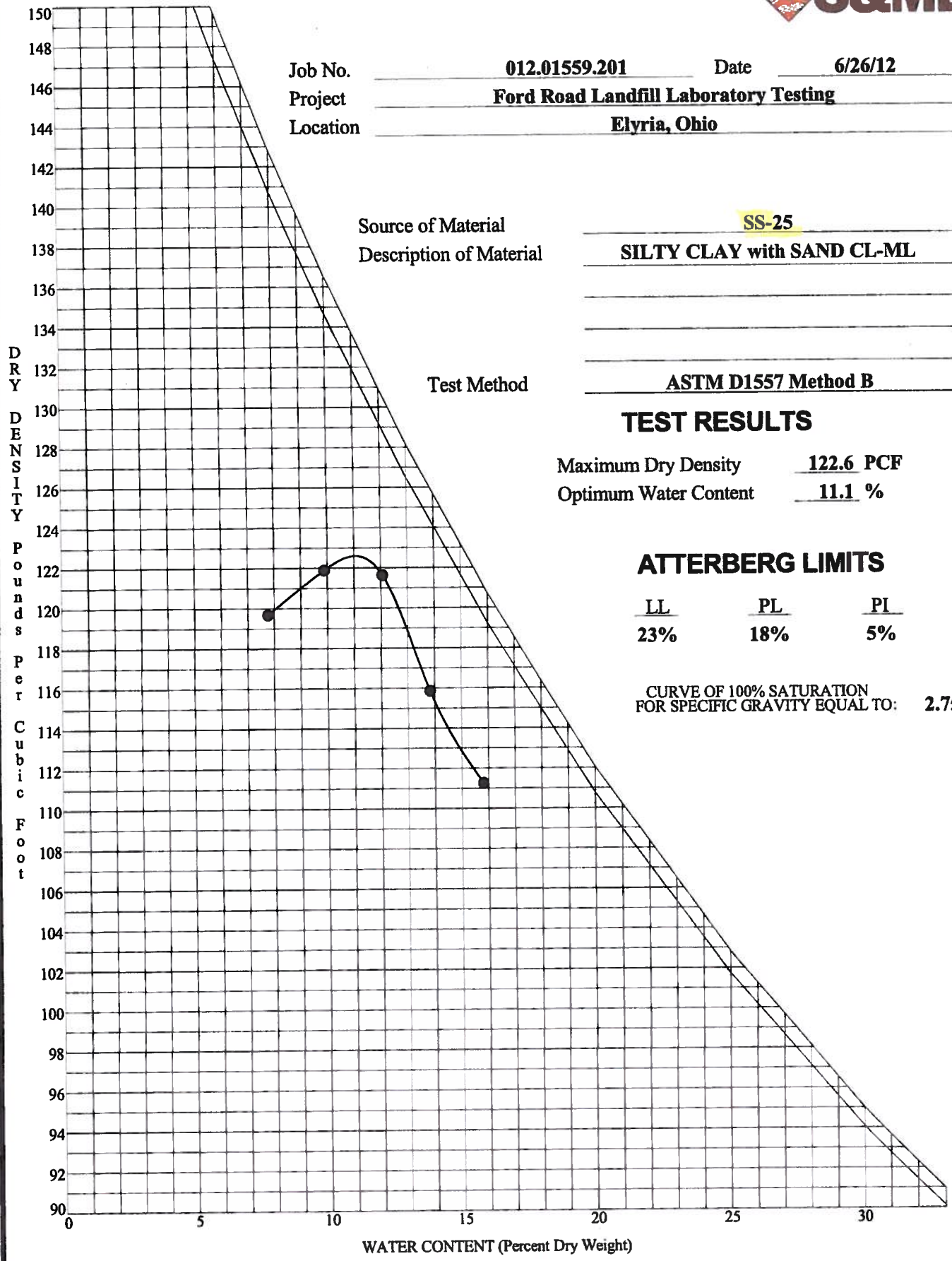
Maximum Dry Density 122.6 PCF

Optimum Water Content 11.1 %

ATTERBERG LIMITS

LL	PL	PI
23%	18%	5%

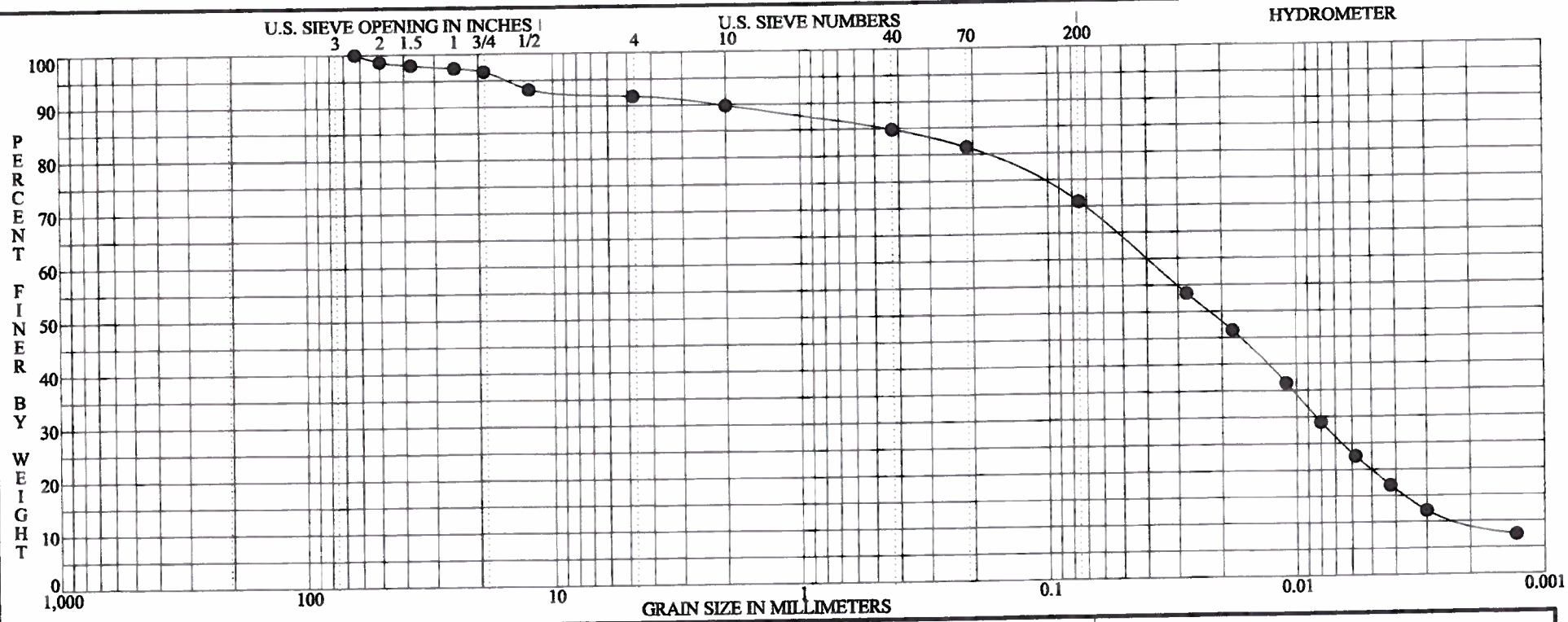
CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75



COMP-EPA

MOISTURE-DENSITY RELATIONSHIP

S&ME



BOULDERS	COBBLES	GRAVEL coarse	GRAVEL fine	SAND coarse	SAND medium	SAND fine	SILT OR CLAY

Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
● SS-25	SILTY CLAY with SAND CL-ML	17	23	18	5	11.1	122.6

Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
● SS-25	63.0000	15.6338	0.0401	0.0224	0.0020	8.3	20.8	61.1	9.9

ASTM D422 | **GRADATION CURVE**

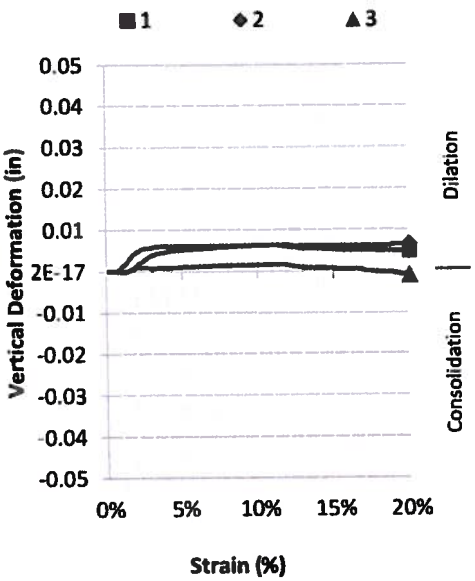
PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 6/26/12

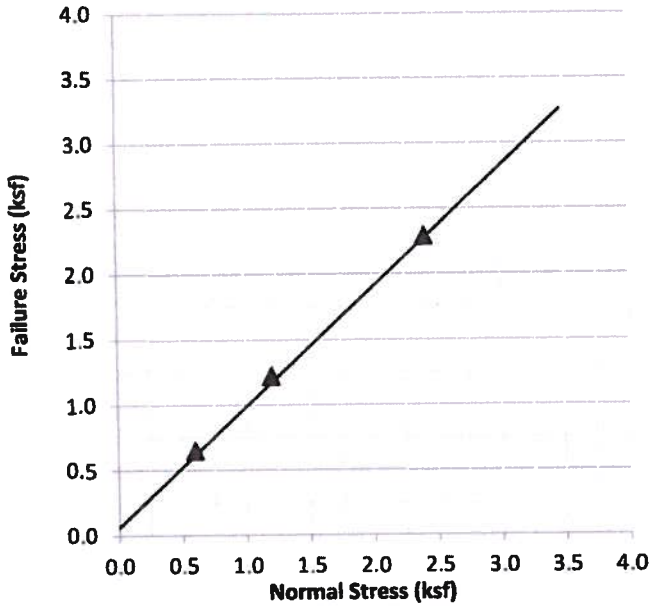
GRN-EPA

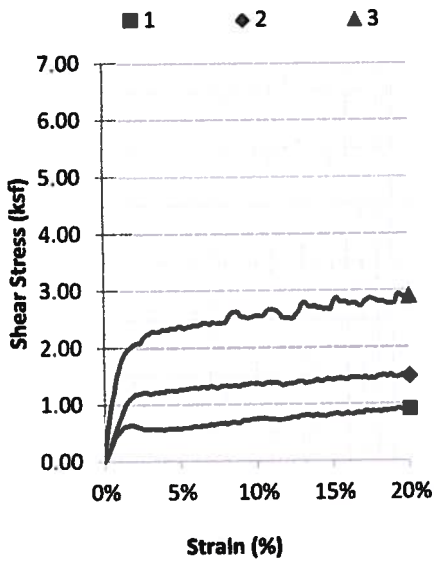
PLATE 4

DIRECT SHEAR TEST REPORT

Results: C (ksf) = 0.07 ϕ (deg) = 43







Sample No.		1	2	3
Initial	Moisture Content (%)	13.03%	13.10%	12.48%
	Dry Density (pcf)	115.16	116.08	116.70
	Saturation (%)	76.0%	78.4%	76.0%
	Void Ratio	0.4630	0.4514	0.4437
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	19.01%	18.66%	18.09%
	Dry Density (pcf)	109.47	111.73	112.86
	Saturation (%)	95.2%	99.2%	99.1%
	Void Ratio	0.5391	0.5079	0.4928
	Diameter (in)	2.5	2.5	2.5
	Height (in)	1.00	0.99	0.98
Normal Stress (ksf)		0.60	1.20	2.40
Failure Stress (ksf)		0.65	1.22	2.29
- Strain at Failure (%)		1.76%	2.71%	3.16%
Ultimate Stress (ksf)		0.91	1.49	2.90
- Strain at Ultimate (%)		20.00%	20.00%	20.00%
Avg. Strain Rate (in/min)		0.0016	0.0017	0.0017

Sample Type: Bulk Sample
Sample Description:
SILTY CLAY with SAND CL-ML

Comments:
Remolded to 95% of Modified Proctor maximum dry density and plus 1.0% of the optimum moisture content.

LL = 23 **PI =** 5
Assumed Specific Gravity = 2.7

Client:	Brown and Caldwell
Project Name:	Ford Road Landfill Laboratory Testing
Project Location:	Elyria, Ohio
Project No.:	012.01559.201 / 1179-11-024B
Boring ID:	N/A
Sample ID:	SS-25
Sample Depth:	Bulk Sample
Date(s) Tested:	7/02/12 - 7/06/12

Tested By: JJ Checked By: BKS

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S&ME

Job No. 012.01559.201 Date 6/26/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-26

Description of Material SANDY SILTY CLAY CL-ML

Test Method ASTM D1557 Method B

TEST RESULTS

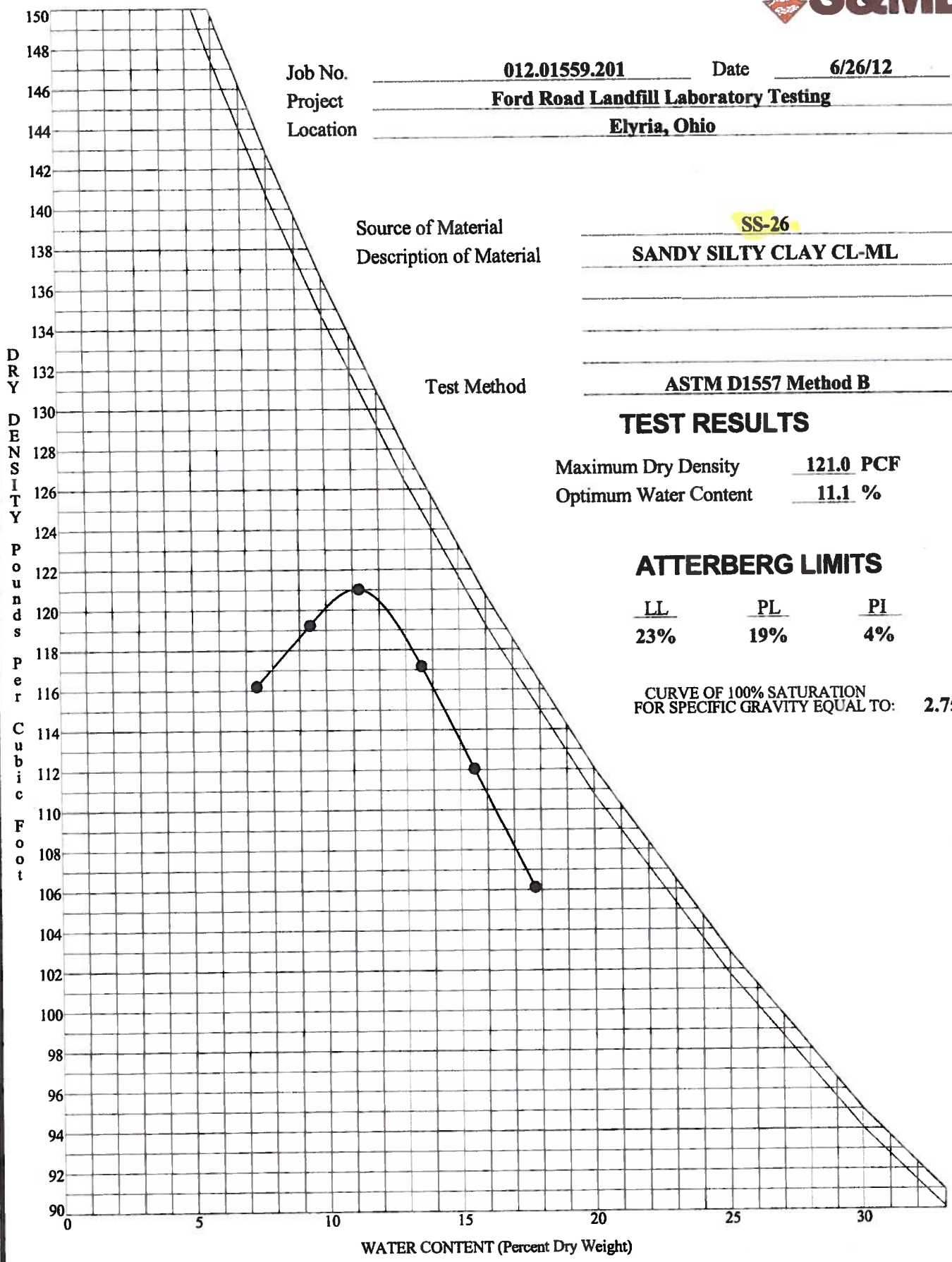
Maximum Dry Density 121.0 PCF

Optimum Water Content 11.1 %

ATTERBERG LIMITS

LL	PL	PI
23%	19%	4%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75

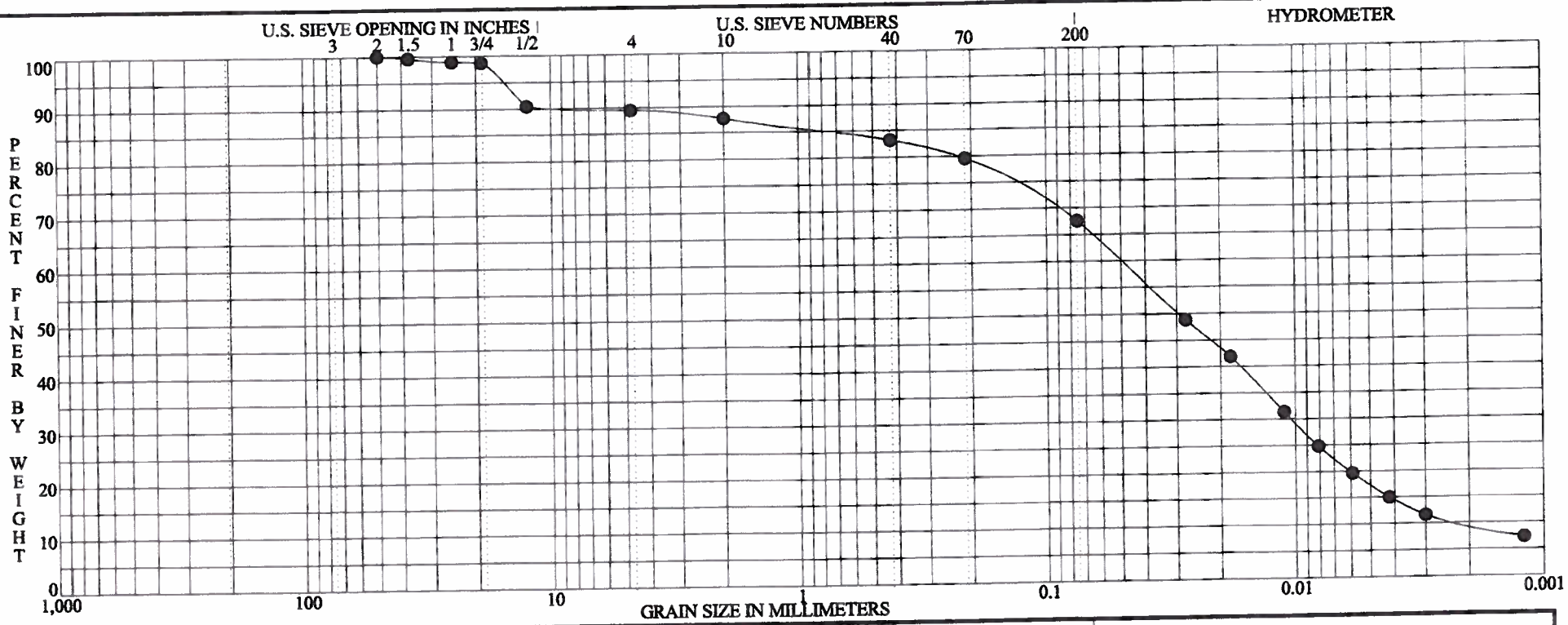


MOISTURE-DENSITY RELATIONSHIP

COMP-EPA

PLATE 5

S&ME



BOULDERS	COBBLES	GRAVEL coarse	GRAVEL fine	SAND coarse	SAND medium	SAND fine	SILT OR CLAY

	Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
●	SS-26	SANDY SILTY CLAY CL-ML	18	23	19	4	11.1	121.0

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-26	50.0000	15.7539	0.0499	0.0293	0.0021	10.5	21.8	58.0	9.7

ASTM D422 | **GRADATION CURVE**

PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 6/26/12

GRN-PA

PLATE 5

S&ME

Job No. 012.01559.201 Date 6/26/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-27

Description of Material SANDY SILTY CLAY CL-ML

Test Method ASTM D1557 Method B

TEST RESULTS

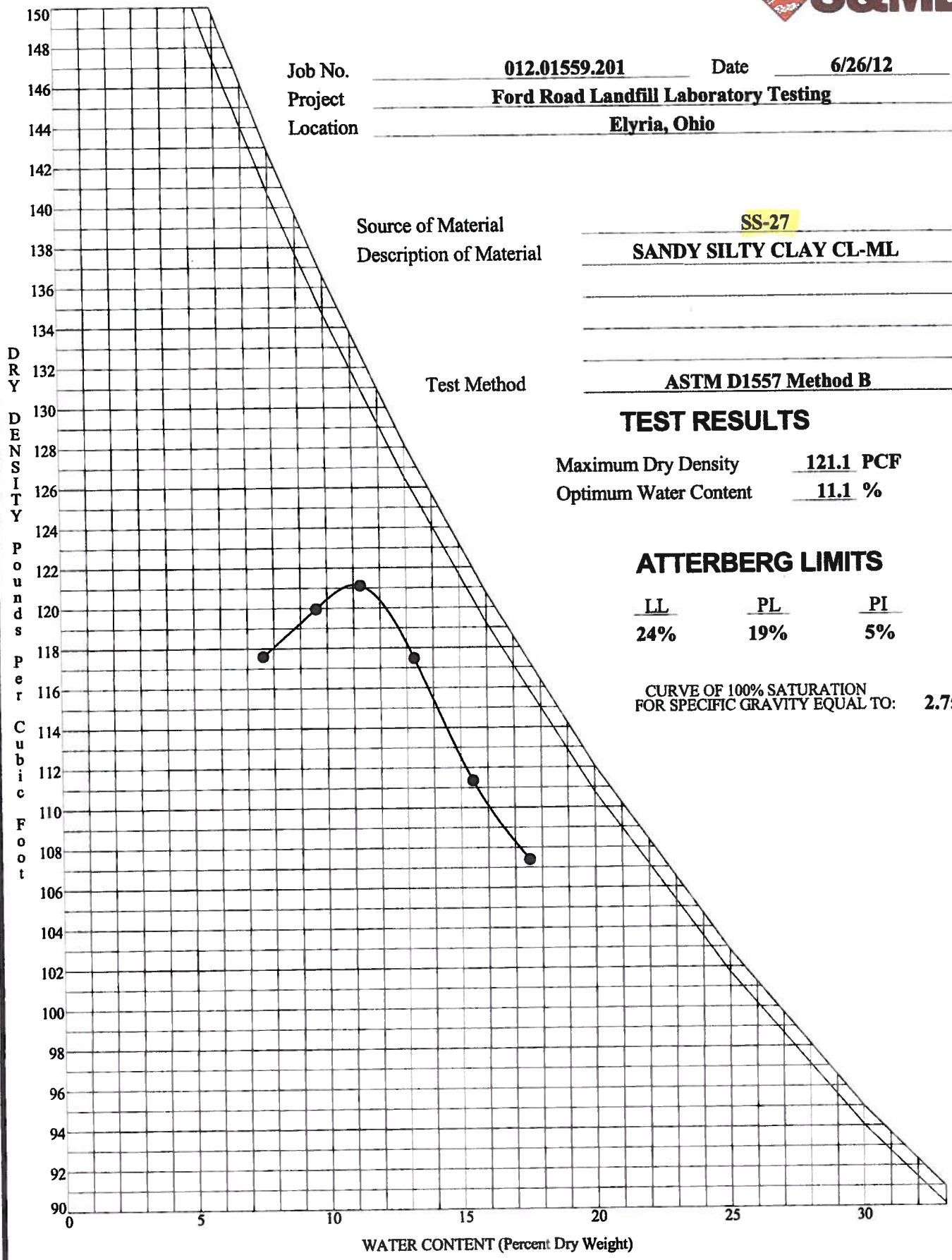
Maximum Dry Density 121.1 PCF

Optimum Water Content 11.1 %

ATTERBERG LIMITS

LL	PL	PI
24%	19%	5%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75

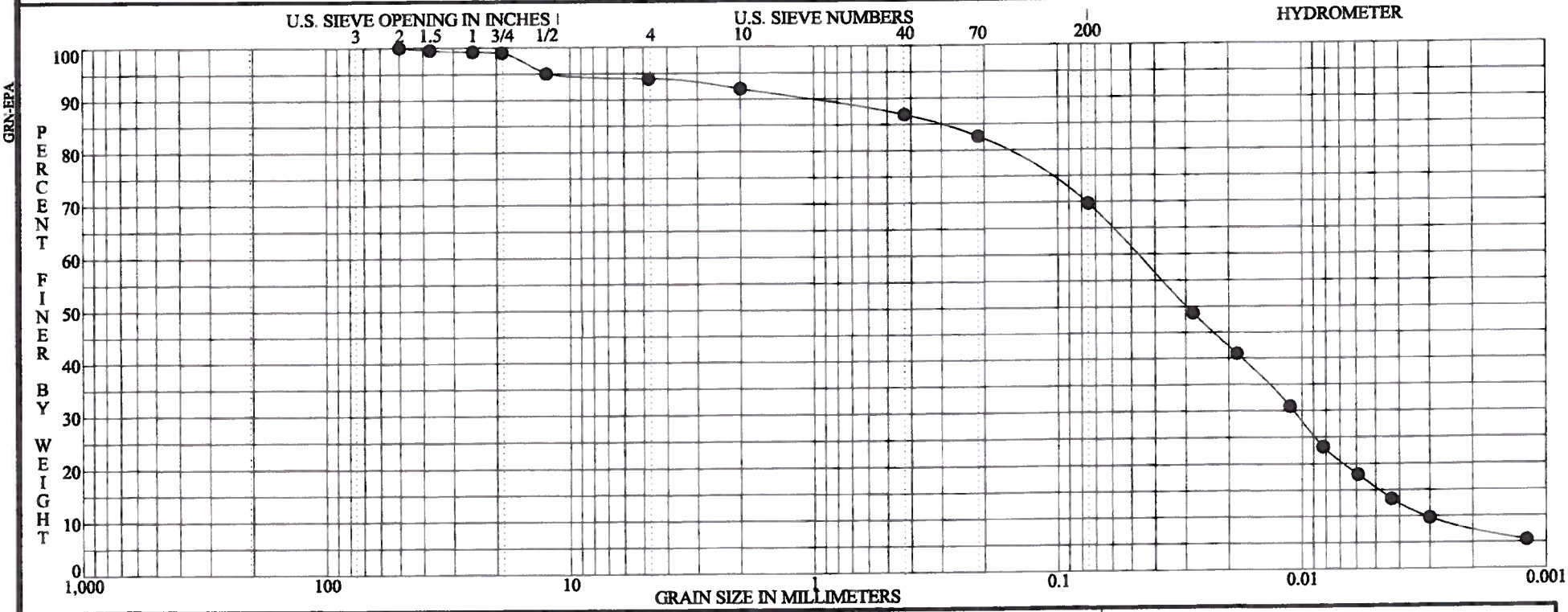


MOISTURE-DENSITY RELATIONSHIP

COMP-EPA

PLATE 6

S&ME



BOULDERS	COBBLES	GRAVEL coarse	GRAVEL fine	SAND coarse	SAND medium	SAND fine	SILT OR CLAY

	Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
●	SS-27	SANDY SILTY CLAY CL-ML	18	24	19	5	11.1	121.1

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-27	50.0000	12.4165	0.0474	0.0296	0.0031	6.0	24.2	61.9	7.8

ASTM D422 | **GRADATION CURVE**

PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 6/26/12

GRN-AFA

PLATE 6

Chain of Custody Record

Brown AND Caldwell

☒ Columbus Office
4700 Lakehurst Ct, Ste 100
Dublin, Ohio 43016
(614) 410-6144
(614) 410-3088 fax

☐ Cleveland Office
6055 Rockside Woods Blvd., Ste 350
Independence, OH 44131
(216) 606-1300
(216) 606-1350 fax

☐ Cincinnati Office
135 Merchant St, Ste 240
Cincinnati, Ohio 45246
(513) 719-6100
(513) 719-6105 fax

COC No: 1935
Page 1 of 1
Lab Quote No:

Project Name: FORD ROAD
Project Location: ELYRIA, OHIO
Project Number: 142.889
Project Manager: DAN DUFFY
Sampler's Name: RICHARD A. KIRK
Sampler's Signature: [signature]
Field Phone: (614) 477-1029

1 None
2 HCl
3 H2SO4
4 HNO3
5 NaOH
6 Other ____

Lab: SIME
Address: 6190 ENTERPRISE CONCT DUBLIN OHIO 43016
Phone: (614) 793-2226
Carrier: HAND DELIVERED
Airbill:

Container Size and Type (P/G)
Preservative Code

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	ASTM D422	ASTM D1557	ASTM D2216	ASTM D2487	ASTM D2488	ASTM D2974	ASTM D3080	ASTM D4318	ASTM D4972	ASTM D5084	Remarks:
SS-22	6/11/12	1100	GRAB	SOIL	2	X	X	X	X	X	X	X	X			
SS-23	6/11/12	1100	GRAB	SOIL	2	X	X	X	X	X	X		X			
SS-24	6/11/12	1100	GRAB	SOIL	2	X	X	X	X	X	X	X	X			
SS-25	6/11/12	1100	GRAB	SOIL	2	X	X	X	X	X	X	X	X			
SS-26	6/18/12	1100	GRAB	SOIL	2	X	X	X	X	X	X		X			
SS-27	6/18/12	1100	GRAB	SOIL	2	X	X	X	X	X	X		X			

Special Instructions/QC Requirements & Comments: HOLD ENOUGH SOIL [illegible] PH AND PERM [illegible] LA = DATE

Relinquished by: [illegible]	Date/Time: 6/18/12 11:[illegible]	Received by:	Date/Time:
Relinquished by: [signature]	Date/Time: 6/20/12 9:00	Received by: [signature]	Date/Time: 6/20/12 9:00 AM
Relinquished by:	Date/Time:	Received by:	Date/Time:

Cooler TEMPERATURE upon arrival at laboratory _____ °C *(To be filled in by LABORATORY upon receipt)*

Distribution: WHITE - Accompanies shipment YELLOW - Returns with report PINK - Sampler's copy

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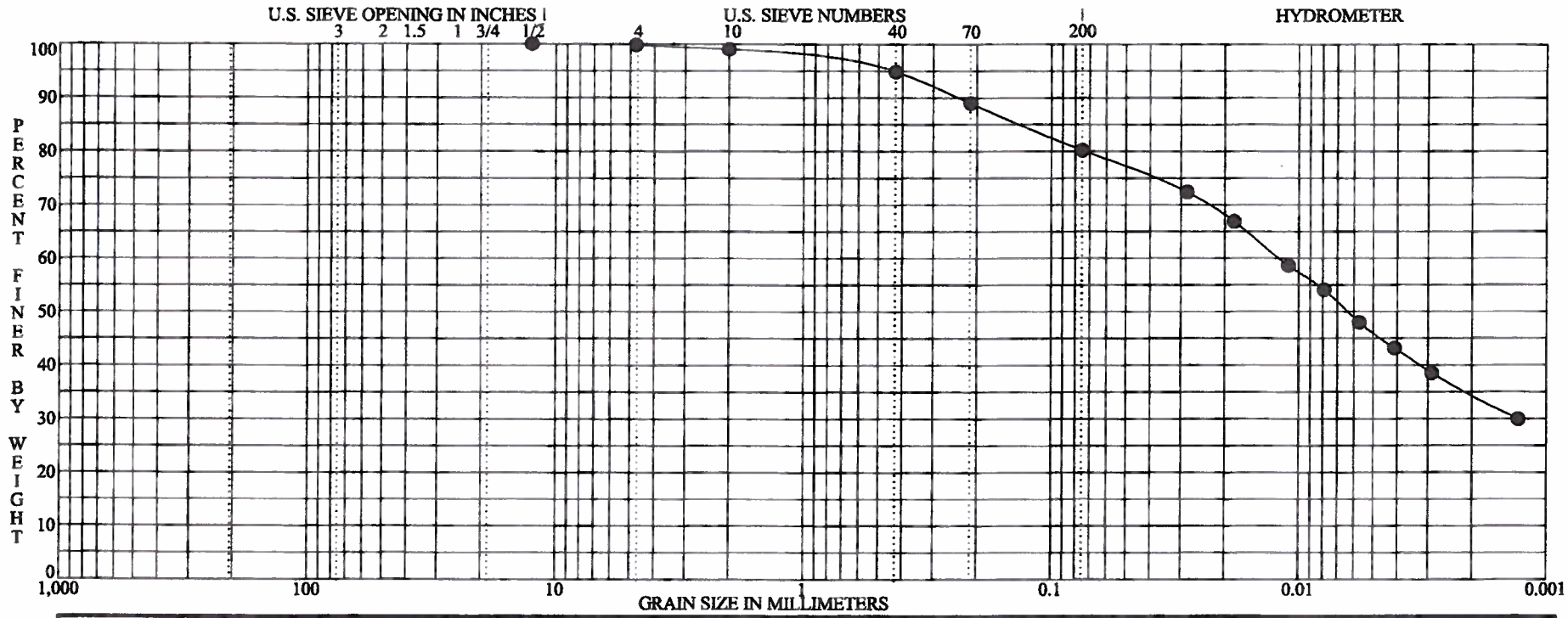

BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
●	TS-1		28					
		LOI = 5.8%						

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	TS-1	12.5000	0.4491	0.0120	0.0063		0.2	19.6	34.1	46.1

ASTM D422 | **GRADATION CURVE**

PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201 DATE: 1/17/12

PLATE 1

GRN-EPA

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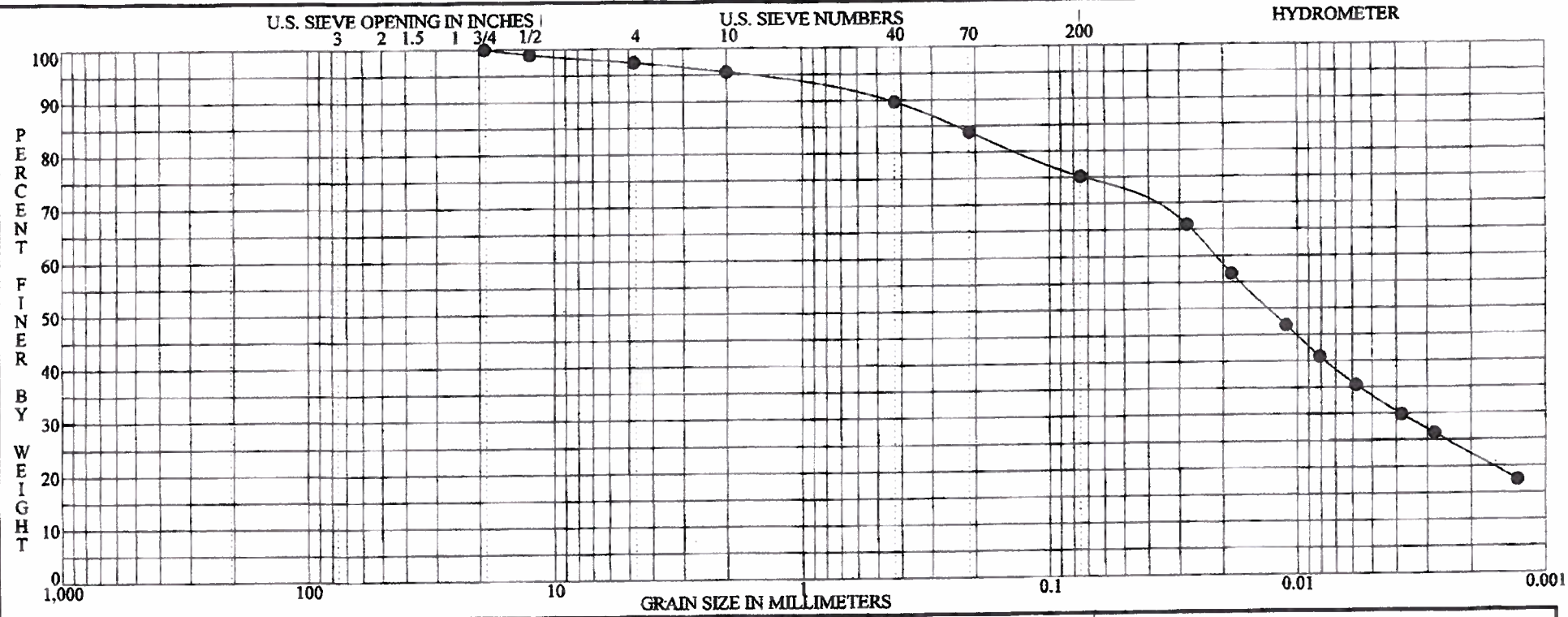

BOULDERS	COBBLES	GRAVEL coarse	GRAVEL fine	SAND coarse	SAND medium	SAND fine	SILT OR CLAY

	Specimen Identification	Classification	MC%	LL	PL	PI	opt mc%	max pcf
●	TS-2	ORGANIC SILT with SAND OH	32	54	32	22		

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	TS-2	19.0000	1.7503	0.0214	0.0131		2.6	22.2	52.8	22.4

ASTM D422 | **GRADATION CURVE**

PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 5/30/12

GRN-EPA

PLATE 16

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pH of SOIL

(ASTM D 4972)

S&ME

PROJECT : FORD ROAD LANDFILL

JOB NUMBER: 1179-11-024B

DATE: 5/23/2012

TECHNICIAN: PJM

	SAMPLE I.D.	DISH NO.	pH	TEMP.	pH	TEMP.	pH	TEMP.	AVERAGE pH	AVERAGE TEMP.
Distilled water	SP-6A	8	7.22	22.6	7.19	22.6	7.20	22.6	7.20	22.6
calcium chloride solution	SP-6A	9	6.96	22.7	6.99	22.7	7.01	22.7	6.99	22.7
Distilled water	TS-2	2	5.21	22.4	5.17	22.4	5.15	22.4	5.18	22.4
calcium chloride solution	TS-2	3	4.80	22.6	4.76	22.6	4.83	22.6	4.80	22.6
Distilled water	TS-3	7	5.09	22.4	4.98	22.4	4.94	22.4	5.00	22.4
calcium chloride solution	TS-3	10	4.32	22.5	4.34	22.5	4.34	22.6	4.33	22.5

Distilled Water and Calcium Chloride Solution used for Test

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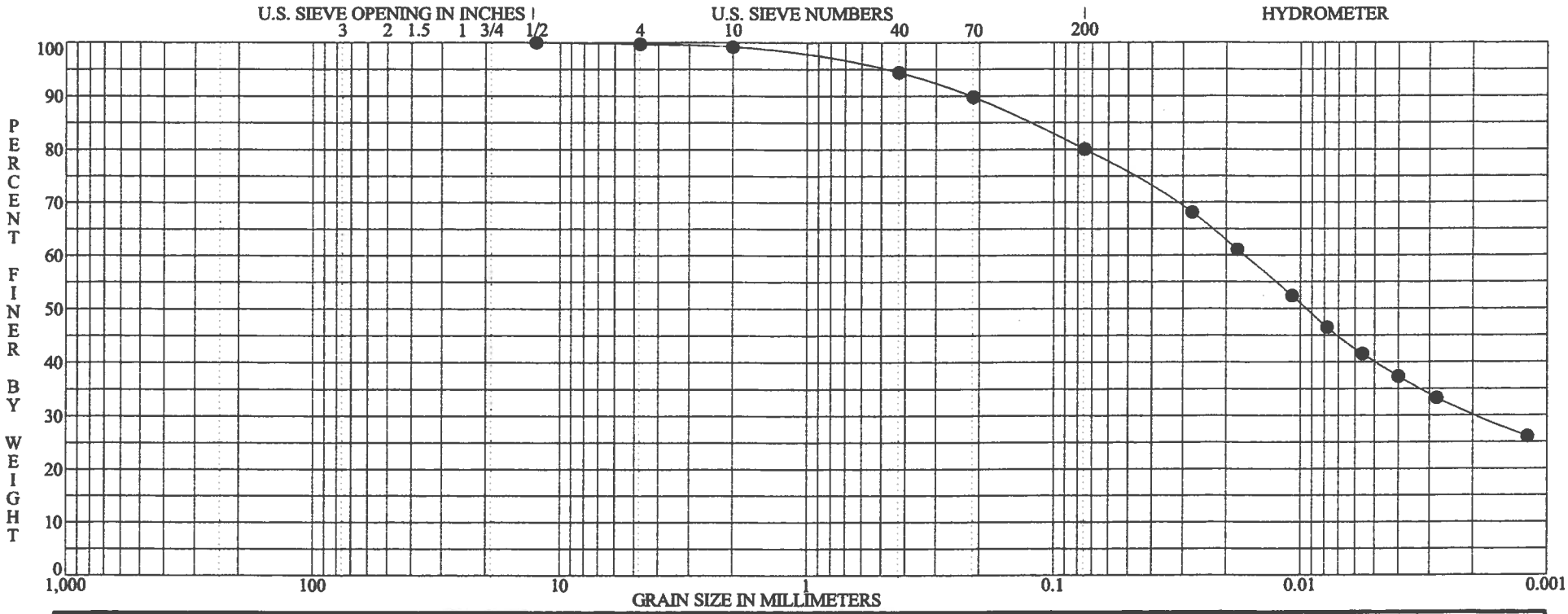

BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		coarse	fine	coarse	medium	fine	

	Specimen Identification - Depth	Classification	MC%	LL	PL	PI	Cc	Cu
●	TS-1 Sample TS-1	Brown silty clay, little fine to coarse sand, trace fine gravel,contains roots and organics. Loss-of-Ignition (LOI) value = 4.24%.	24	42	22	20		

	Specimen Identification - Depth	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	TS-1 Sample TS-1	12.5000	0.5224	0.0169	0.0095		0.3	19.6	40.0	40.1

ASTM D422 | **GRADATION CURVE**

PROJECT: FORD ROAD LANDFILL
LOCATION: ELYRIA, OHIO
JOB NO.: 1179-11-024C
DATE: 9/14/12

PLATE I

GBF-NRG

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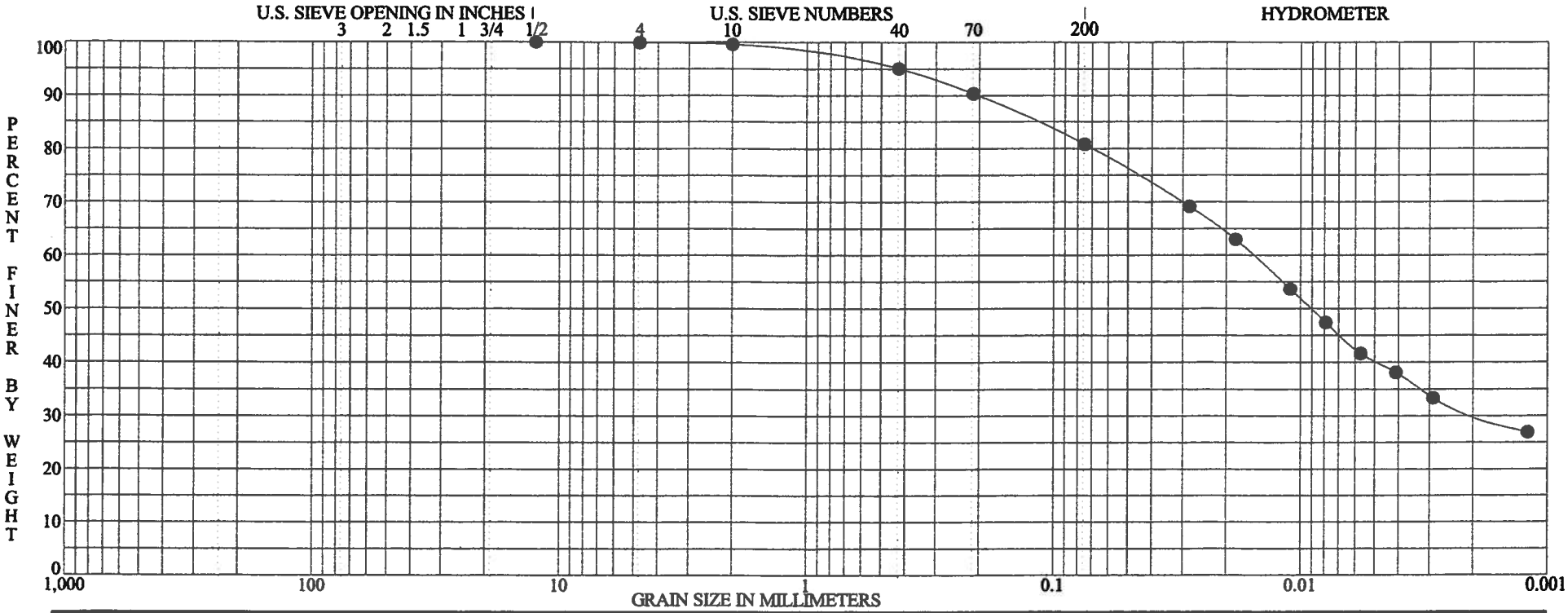
S&ME



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		coarse	fine	coarse	medium	fine	

	Specimen Identification - Depth	Classification	MC%	LL	PL	PI	Cc	Cu
●	TS-2 Sample TS-2	Brown silty clay, little fine to coarse sand, trace fine gravel,contains roots and organics. Loss-of-Ignition (LOI) value = 4.67%.	27	41	22	19		

	Specimen Identification - Depth	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	TS-2 Sample TS-2	12.5000	0.4218	0.0155	0.0091		0.1	19.1	40.6	40.2

ASTM D422 | **GRADATION CURVE**

PROJECT: FORD ROAD LANDFILL
LOCATION: ELYRIA, OHIO
JOB NO.: 1179-11-024C
DATE: 9/14/12

PLATE 2

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Soil Analysis Report

HAYNES CONSTRUCTION

SUNRISE COOP/NORWALK AG BRANCH
3130 GREENWICH MILAN TL ROAD N
00233622 BRYAN LISKAI

Farm REGULAR

Received: 03-Oct-12
Reported: 04-Oct-12

Lab Number	**505843**
Field	**SAMPLE 1**
Sample No.	TS-3 1
C.E.C.	6.3
Org Matter	2.3
Soil pH	7.1
Lime Index	70
P lbs/ac	24
K lbs/ac	139
Ca lbs/ac	1855
Mg lbs/ac	351
SO4S lbs/ac	
B lbs/ac	
Cu lbs/ac	
Mn lbs/ac	
Zn lbs/ac	
Ca Sat'n.	74 %
Mg Sat'n.	23 %
K Sat'n.	3 %
Base Sat'n.	99 %
Ca/Mg	3.2
Mg/K	8.2
NO3N ppm	
Na lbs/ac	
Fe	
SS mS/cm	
Pct. Sand	
Pct. Silt	
Pct. Clay	
Texture	

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Chain of Custody Record

Brown AND Caldwell

☐ Columbus Office
4700 Lakehurst Ct, Ste 100
Dublin, Ohio 43016
(614) 410-6144
(614) 410-3088 fax

☐ Cleveland Office
6055 Rockside Woods Blvd., Ste 350
Independence, OH 44131
(216) 606-1300
(216) 606-1350 fax

☐ Cincinnati Office
135 Merchant St, Ste 240
Cincinnati, Ohio 45246
(513) 719-6100
(513) 719-6105 fax

COC No: 1937
Page 1 of 1
Lab Quote No: —

Project Name: [illegible] Phase 2
Project Location:
Project Number: 142889
Project Manager: Rick Tsaoi
Sampler's Name:
Sampler's Signature: [illegible]
Field Phone:

1 None
2 HCl
3 H2SO4
4 HNO3
5 NaOH
6 Other____

Lab: S + ME
Address: 8555 Street Valley Dr. FHS Cleveland OH 44125
Phone: 216-401-1000
Carrier: BC
Airbill: —

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.		ASTM D422-63	ASTM D2216-05	ASTM-D2974-07a	ASTM-D4318-05	ASTM D4972-01					Remarks:
						Container Size and Type (P/G)	5 g-1	5 g-1	5 g-1	5 g-1	5 g-1					
						Preservative Code										
[illegible]					1			X	X	X	X					
[illegible]					1		X	X	X	X	X					

Special Instructions/QC Requirements & Comments:

Relinquished by:	Date/Time:	Received by:	Date/Time:
[illegible]	07/30/12 1100		

Cooler TEMPERATURE upon arrival at laboratory _____ °C *(To be filled in by LABORATORY upon receipt)*

Distribution: WHITE - Accompanies shipment YELLOW - Returns with report PINK - Sampler's copy

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Appendix N: Interim O & M Inspection Reports

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INTERIM SITE INSPECTION FORM

Ford Road Landfill
Elyria, Ohio

Inspector: James Peepler
Date: 1/18/12 **Time:** 14:30

			Sources/Comments:
Main Site Entrance:			
Cable in place?	Yes	No	
Lock present and locked?	Yes	No	
Any damage - tree falls, vandalism, trespass, etc	Yes	No	
Upper Surface Area:			
Significant erosion issues/rills/channels?	Yes	No	
Standing water observed?	Yes	No	Mostly in grassed areas
Polytarps present and intact?	Yes	No	About 20% blown onto - replaced
Slopes:			
Polytarps present and intact?	Yes	No	South area complete, North ~ 5-10% open
Silt fence below polytarps present and intact?	Yes	No	12' section down in south area
Changes in identified seeps?	Yes	No	2 Main seeps - still in same locations
New seeps identified?	Yes	No	
Significant erosion issues/rills/channels?	Yes	No	
South Access Road:			
Erosion issues/development of rills/channels?	Yes	No	Some rills ~ 6" deep
Obstructions/debris in ditches?	Yes	No	
Erosion Controls:			
Silt fence present and intact?	Yes	No	in good shape
Straw bales present and intact?	Yes	No	
Obstructions/debris in ditches?	Yes	No	
Rills/channels? Where? Describe.	Yes	No	
Evidence of flooding in the river plain?	Yes	No	Recent flood through large part of river plain
Riprap present and intact?	Yes	No	Rip-rap + willow stalks in good condition

Additional Observations:

The flood water (or water level) today is below top of rip-rap

Minor seeps also observed at top rim of North 50' excavation area, but none are clearly defined. No petroleum sheen on seeps. Iron staining for both north and south seeps

INTERIM SITE INSPECTION FORM

Ford Road Landfill
Elyria, Ohio

Inspector: Vanessa Steigerwald-Dick & Clarissa Gereby
Date: 1/24/12 **Time:** 11 30 am - 1 00 pm

Photo # **Main Site Entrance:** — **Sources/Comments:**

Cable in place?	(Yes)	No	Photos taken
Lock present and locked?	(Yes)	No	" "
Any damage - tree falls, vandalism, trespass, etc.?	Yes	(No)	

Upper Surface Area:

Significant erosion issues/development of rills/channels	Yes	(No)	
Standing water observed?	Yes	(No)	
Polytarps present and intact?	(Yes)	No	Photos taken to document polytarps in place over North & South removal area piles on top of Landfill

Slopes:

Polytarps present and intact?	Southern (Yes)	(No) Northern	Photos taken, Polytarps blown off of northern pile much of soil exposed.
Silt fence below polytarps present and intact?	most (Yes)	(No)	Damaged silt fencing along part of southern polytarp area
Significant erosion issues/development of rills/channels	(Yes)	No	Significant orange Fe stained seeps emanating from southern polytarp area.
Identification of Leachate Seeps	yes		

South Access Road:

Erosion issues/development of rills/channels?	(Yes)	No	Leachate seep migrating along road channel to breach in silt fencing + Discharges to Black River.
Obstructions/debris in ditches?	Yes	(No)	

Erosion Controls:

Silt fence present and intact?	mostly (Yes)	(No)	3+ areas where silt fencing Laying Down, needs to be repaired.
Straw bales present and intact?	(Yes)	No	But only a few straw bales present.
Obstructions/debris in ditches?	Yes	(No)	
Development of rills/channels? Where? Describe.	(Yes)	No	Along area where straw placed in northern excavation area there were 2 more prominent, and 2 smaller Leachate seeps.
Evidence of flooding in the river plain?	(Yes)	No	
Riprap present and intact?	(Yes)	No	Willows and rip rap + silt fencing in northern removal area in very good condition.

Additional Observations:

Flow rate between 1-2 gallons per minute of significant leachate seep in southern slope polytarp area. Seep clearly documented emanated along road channel to Black River.

INTERIM SITE INSPECTION FORM

Ford Road Landfill
Elyria, Ohio

Inspector: Josh Poling BR-3
Date: 1-25-12 **Time:** 11:00 Am

			Sources/Comments:
Main Site Entrance:			
Cable in place?	Yes	No	
Lock present and locked?	Yes	No	
Any damage - tree falls, vandalism, trespass, etc	Yes	No	
Upper Surface Area:			
Significant erosion issues/rills/channels?	Yes	No	
Standing water observed?	Yes	No	moderate
Polytarps present and intact?	Yes	No	
Slopes:			
Polytarps present and intact?	Yes	No	2 of 6 are uncovered
Silt fence below polytarps present and intact?	Yes	No	approximately 12' down
Changes in identified seeps? Explain.	Yes	No	
New seeps identified? Describe.	Yes	No	
Significant erosion issues/rills/channels?	Yes	No	
South Access Road:			
Erosion issues/development of rills/channels?	Yes	No	Some Rills - 5" to 6"
Obstructions/debris in ditches?	Yes	No	
Erosion Controls:			
Silt fence present and intact?	Yes	No	approximately 30' total down fence
Straw bales present and intact?	Yes	No	
Obstructions/debris in ditches?	Yes	No	
Rills/channels? Where? Describe.	Yes	No	
Evidence of flooding in the river plain?	Yes	No	
Riprap present and intact?	Yes	No	

Additional Observations:

The week of 1-25-12 heavy rains + wind -

INTERIM SITE INSPECTION FORM

Ford Road Landfill
Elyria, Ohio

Inspector: Bill Foster

Date: 2/9/2012 **Time:** 08:00 - 12:00

Main Site Entrance:			**Sources/Comments:**
Cable in place?	Yes	No	
Lock present and locked?	Yes	No	
Any damage - tree falls, vandalism, trespass, etc.?	Yes	No	
Upper Surface Area:			
Significant erosion issues/rills/channels?	Yes	No	
Standing water observed?	Yes	No	
Polytarps present and intact?	Yes	No	
Slopes:			
Polytarps present and intact?	Yes	No	I fixed the polytarps while onsite.
Silt fence below polytarps present and intact?	Yes	No	I fixed the silt fence while onsite.
Changes in identified seeps?	Yes	No	
New seeps identified?	Yes	No	
Significant erosion issues/rills/channels?	Yes	No	
South Access Road:			
Erosion issues/development of rills/channels?	Yes	No	
Obstructions/debris in ditches?	Yes	No	
Erosion Controls:			
Silt fence present and intact?	Yes	No	I fixed the silt fence while onsite.
Straw bales present and intact?	Yes	No	I removed silt/debris from the straw bales while onsite.
Obstructions/debris in ditches?	Yes	No	
Rills/channels? Where? Describe.	Yes	No	
Evidence of flooding in the river plain?	Yes	No	
Riprap present and intact?	Yes	No	

Additional Observations: